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With a Special Australian Case Study
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Preface

The present study was initiated in 2009 which was a path-breaking year for the transition of governance studies into the study of information and communication technology especially in the Asian countries. Some of the leading global governance research institutions with interest in the region, like the United Nations Development Programme (UNDP), Asian Development Bank (ADB, Manila), Asian Development Bank Institute (ADBI, Tokyo), Global Development Network (GDN, New Delhi) and the South Asia Division of the World Bank, had started taking keen interest in the intractable gaps within the development process in this region. In India, the energy for change was visible in the constitution of the Second Administrative Reforms Commission under the chairmanship of Mr. Veerappa Moily and Additional Secretary Mr. P.I. Suvrathan, and the eleventh report on reforms was brought out in the same year with its focus on 'Promoting e-Governance: The SMART Way Forward'. The same year, the Network of Asia Pacific Schools and Institutes on Public Administration and Governance (NAPSIPAG-INTAN[1] in Kuala Lumpur), which is the only non-West platform for collaborative governance research, shifted to India at Jawaharlal Nehru University in New Delhi which offered a more open and discursive space for research on institutional and administrative reforms. The change was substantially visible. Peter Korsten, the Global Leader of the IBM Institute for Business Value, expressed this in his spirited remark: 'More than ever before, 2009 will in hindsight be seen as "The year of truth" …those that invest aggressively, competitively and wisely in ramping up connectedness and usage of the Internet and that create and drive innovative content and services will reap the benefits for many, many years to come'. This book reveals who did and who could not.

A comparative analysis of progress could be more authentically possible from 2009 onwards as more varieties of databanks were available for innumerable indicators and variables. This also revealed the progress which the countries were making, and this also put most of them in a tight and embarrassing situation. The post-war trend to control Asia Pacific politics on grounds of gallant non-aligned history,

[1] Institut Tadbiran Awam Nigara or the National Institute of Public Administration.

cultural glory and rich heritage seemed weak to camouflage the lack of the countries' capacities to raise statistical rankings on poverty reduction, maternal mortality and access to health, education and clean environment. The ICT industry was able to measure every effort on a scale of achievement on MDGs, and by virtue of this development, statistical analysis or analytics and evaluation became unavoidable in governance. From Los Angeles to New York, Hong Kong to Melbourne, everything in governance was convertible to understandable scores on policy achievements. The emerging tech-savvy citizens of the Asia Pacific could evaluate the performance of governance better than a social scientist and, in turn, helped them by suggesting resuscitation programmes through the application of ICT. This new technology opened new economic opportunities, transparency in public-private transactions, land-ecosystem repository, insight into outsourcing processes and accountable administration. The industry of corruption in China, India, Thailand and even Korea and Singapore indicated that e-governance could introduce a minimal guarantee against arbitrary exchanges and government procurements and bring in some form of standardisation of procedures. ICT had a phenomenal role to embark upon in governance. Malaysia, Indonesia and the Philippines were moving faster than the South Asian countries in e-file management, total quality management, e-procurement, e-transfers and e-billings in government. Smart governance captured the soul of governance which aspired for institutional reform without inculcating the demeanour to displace vested interests in pre-existing forms and structures. The study also comes across the coexistence of authoritarianism in governance and successful e-governance in Sri Lanka, South Korea and Malaysia, as much as it discovers cities with higher-quality e-governance infrastructure but low performance, such as the Cyber City called Gurgaon in India.

This book, *A Critical Impulse to e-Governance in the Asia Pacific*, is an effort to understand the technology in use, how it influences e-governance and what is the likelihood of its sustenance in view of the rising world of remote controls in the hands of transnational technology providers. It is a comparative study of selected Asia Pacific countries which are moving fast on the road to smart governance through e-governance. Administrators and politicians are central to public sector decision-making for adopting a particular technology for setting the pace for organisational innovations and accelerating the processes of change. The erstwhile authoritative and laid-back image of administrators is changing and the pervasive belief about their resistance to change is also in the waning. The new information and communication technology has brought many benefits to those who manage organisations besides a cutting-edge competitive management of the knowledge and skills of bureaucracy. Governments have lately shown a greater inclination towards communicating with people through a medium of invisibility, such as the one provided by the Internet, and look for reasonable solutions for deepening gulfs between the privileged and the marginalised, mainstream and the peripheral, rural and the urban. Law and order maintenance, police accountability and local governance had substantial curiosity for e-governance programmes. Moreover, even citizens' predisposition to the use of Internet and mobile technology spread widely and penetrated faster in daily communication which kick-started networking for the delivery of services. It would be a

dangerous oversight if governments fail to use such an opportunity for expanding its outreach of governance to ordinary people.

Technology comes with challenges to be addressed and opportunities to be reaped. Timely and appropriate collective decision-making is the key. Therefore, in such a situation, leaders and laggards of the region could be identified. This book particularly focuses on the enormous potential of this technology to transform public sector performance and overcome the democratic deficit in the distribution of public services and public resources to ordinary people. Eventually, the argument rests upon the need for greater understanding, rigour and resonance in an appropriate application of ICT in e-governance efforts, generating futuristic vision and in the ability to develop professional bureaucracy with skills in analytics, data management and organisational decision-making. This would help to overcome technological determinism on one hand and overtly shaky and politicised administration on the other. There is no escape from e-governance, and there is also no return journey to where the world started from. The Asia Pacific region needs to shed away mutual fears and step into partnerships and collaborations particularly on e-projects and initiate a fearless knowledge-driven mutual learning process. Technology changes very fast, which indicates that this suggested process of collaboration and mutual learning should be continuous and consistent. As governments are extraordinary information creators, users and providers, they are best located to initiate a knowledgeable shift towards change management. This book addresses many avenues in e-governance which could help policy making and further research in interactive governance processes in the years to come.

New Delhi, India Amita Singh

Acknowledgements

‘Help comes when initiatives are undertaken’ were the words of our academic leader and JNU Vice Chancellor Prof. S.K. Sopory who made this long pending work possible by granting me a year’s sabbatical leave during which I could complete it to my satisfaction. I also wish to thank everyone in the brilliant administrative channel through which my request papers were passed and finally stamped for approval. My Centre’s Chairperson Prof. Niraja G. Jayal and other colleagues were generous in undertaking the added workload of students and courses as I went missing for the book. I was delighted to be part of an intellectually brimming institutional environment.

Ideas find their way as flowing water. This is exactly what happened when I and my former colleague and co-researcher Dr. Jennifer Jalal navigated through the modest establishments of local community development NGOs in 2005. I would like to mention here and acknowledge the support of some of them. Between 2005 and 2008, as I travelled through the interiors of extremely neglected rural areas in some of the backward regions in India, such as Purba Medinipur and Barasat in West Bengal; Bundelkhand at the intersection of Madhya Pradesh and Uttar Pradesh; Kalchini, Ramjhora and Dheklapara in Jalpaiguri in West Bengal; and Gogumba in the Panchmahal district of Gujarat, I was fascinated to find an oasis of progress shining bright in the midst of gloom. Some committed local NGOs had launched e-governance initiatives which had brought employment opportunities, dreams and energy for self-governance amongst the failing poor population. I am grateful to the TARAhaat team of ‘Development Alternatives’ at Niwari village, ‘Change Initiatives’ in Barasat and ‘Abhyudaya’ from the Ramakrishna Mission Trust at Purba Medinipur and 24 Parganas who helped me move into the adventurous journey to the interiors and hold meetings with sarpanchas and the local labour. I was able to repeat this in the Gunasekara Foundation’s work undertaken in the Jaffna region and Basel Vergese’s initiatives with the poor families in Melbourne. A study of Harlem in New York provided further insight into its comparability with South Asian poverty issues, prioritising capacities, coordination and performance. Much learning has also taken place due to my interaction with Ms. Claudia Morrell at the University of Maryland, Baltimore, who later formed the Multinational Development

of Women in Technology (MDWIT) which extended its work to Arab countries. It would be unfair to miss out on any name which assisted me through my travels and meetings, and therefore I extend my appreciation to all those known and little known local people who helped me in developing a better understanding of the problem. I am also grateful to Prof. Steven Goldsmith, heading the Global Innovators Network at the Ash Institute of Democratic Governance at Harvard Kennedy School of Governance, and Chicago Police Headquarters for sharing their best practices and findings from their e-initiatives in the multicultural cities of Boston and Chicago, respectively.

The largest interdisciplinary platform for developing insight into e-governance issues arrived through my 3-year-long association with the project 'Governance Knowledge Centre' of the Department of Administrative Reform and Public Grievances, Government of India. Dr. D.V. Singh (Additional Secretary) and Mr. Alok Ranjan (Director) are particularly remembered for their critical inputs. There are a few others currently in the Department of Information Technology, namely, Dr. N. Ravishankar, former head of the National Internet Exchange of India, and Mr. Ajay Kumar, former Director of Institute of Management in Government (IMG) in Trivandrum, who were admired by our young research team as the most appropriate democratic personalities for the advancement of Information and Communications Technology (ICT) and Internet in India.

NAPSIPAG (Network of Asia-Pacific Schools and Institutes on Public Administration and Governance) provided the much needed interaction with international experts like (Late) Prof. Victoria Bautista (Vice Chancellor, Open University of Philippines), who as a friend and colleague was always ready to correct me on capacity studies involving ICT in Southeast Asia, and in her sudden demise in 2008, the Asia Pacific public administration studies lost a sensitive scholar on inclusive studies. Prof. Alex Brillantes (National College of Public Administration and Governance (NCPAG), University of Philippines), Prof. Alan Mayne (University of Southern Australia (UniSA), Adelaide, Australia) and Prof. Robin Jeffery (formerly at the University of Canberra, Australia) are remembered here for sharing their very wide understanding on governance and development. Prof. Richard Nile, my mentor during the Australia India Council Fellowship tenure at Perth, and Prof. Krishna Sen, ICT expert on Indonesia, both of whom I interacted with at the Curtin University at Perth, directed me to look into India and Indonesia as nations to capture the core of democratic e-governance processes as the world neared the Millennium Development Goals (MDG) deadline of 2015. Prof. Marika Vicziany, Director of the Asia Monash Institute in Melbourne, is especially remembered for having provided office and research space during my visit to Monash University besides unfolding a very extensive world of ICT through her insightful and deeply understood micro-level technology initiatives in the Asia Pacific and particularly in India, which formed the enticing part of her academic pursuits.

My gratitude also goes to three gleaming IT experts in e-governance who gave me continuous support for clarifying areas of technology – Ms. Malavika Singh, MIS, Senior Business Analyst at REI Systems in Washington, DC; Mr. Chetan Sharma, CEO, Datamation Foundation, New Delhi; and Mr. Vikas Kanungo, CEO, Society

for the Promotion of e-Governance, New Delhi – because of whom technology found a more respectable place in this work of a social scientist.

I profoundly thank my family back home, especially Kartika who suffered my anxieties and absence from home as she herself was starting her career as a film producer but willingly shared a large amount of data on social media which has been of great value for the book.

Last of all, my deep admiration goes to the most indispensable team of Springer without whom this work could have taken two more years to reach the publication desk. I particularly mention Ms. Sagarika Ghosh and Ms. Nupoor Singh for their pertinacity and patience as ideas were getting translated into words and then corrected, revised and rewritten to set up balanced arguments which are understandable to a 'technology-disinterested' social scientist. I am sure to have inadvertently missed out some supporters with whom I have interacted during these years of my study and to whom I express my gratitude before I end here.

Amita Singh

Contents

Chapter 1
From Governance to e-Governance

1.1 Catching Up with Governance Reforms or Racing Through ICT

In the decades to follow, the nature of governance will be highly influenced by the spread of information and communication technology (ICT). ICT (information and communication technology) is commonly used for a combination of IT (information technology), IS (information systems) and CT (communication technology), particularly the Internet. It would be interesting to place at this point the concern expressed by Cees Hamelink in his keynote address to the first preparatory meeting for the UN World Summit on Information Society (WSIS) in 2003, 'It is disconcerting that in the context of the "Information Society" the notion "communication" has disappeared. Yet the real core question is how we should shape future "communication societies"…'. However, the fact that ICT does not observe geographical and cultural boundaries demands a new form of regulatory system which applies surveillance without dispiriting and monitoring without protectionism. With the world societies increasingly moving onto the Internet-driven world, governance is likely to redefine its boundaries to suit the needs of changing times. The perplexing question is to encourage the use of technology for facilitating inclusive governance without letting government sink into technological determinism.[1]

Undoubtedly, governance is likely to acquire an extended reference to e-governance to be able to describe its full potential of influencing policies and lives of citizens. Notwithstanding the technological control of the nature and direction of information, governance across nations would have to deal with the technological simulation of human consciousness in institutional processes. The change from 'rain-weather-daylight' regulated work culture of the pre-industrial era to the 'clock-driven' industrial societies – the world has transcended all of these defining

[1] Technological determinism is a condition when governments start treating technology as one-stop solution to all governance problems. They would then ignore larger substantive governance reforms, deliberative democracy and interactive society to implant mega models of technology.

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features and moved into one of the most fundamental transformation in recorded history. Eric Hobsbawm (1995, p. 8) writes that the revolution in transport and communication has virtually annihilated time and distance. Countries which have already moved in the direction of applying information and communication technology tools in governance suggest that this change is much more than just a wadding device to governance as some perceive it to be. Governance is already a matted with 'e' which suggests 'electronic governance' or 'digital governance' so that many of the traditionally inherited pathologies of bureaucracy and politics may be surpassed to achieve a 'low cost and low friction' governance (Viniegra 2012, p. 1). e-Governance has already demonstrated its potentially powerful ability to supply unmitigated administrative dispersal, transparency and accountability without compromising its inbuilt succour to control governance to the extent of making public institutions dependent of 'e' and rendering a strong civil society to impact upon the government. To bypass such a surge of power and ability to bring many policy transformations for the good of the society would be rejecting a golden platter full of solutions and alternative designs. Besides, little or half-hearted measures on the e-front, at this point of time, may be inviting and also empowering the undeserved in decision making and subsequently hastening the much feared public and private institutional catastrophe. Experience of the rise and fall of governments across the world in recent past and the belligerence of trans-national commerce indicates that this is not the time for administration to sink into routine slumber but to emerge as leaders to supervise the drift of governance towards digitisation and direct the e-route towards development, equity and sustainability.

The 'catching up' witnessed in the first and the second developmental decades of the 1960s and 1970s took an entirely new turn as catching up did not mean more development but more technology which litters the countryside as discarded skeletons (Eric Michaels 1990, p. 20). The electronic waste is one of the most fatal devastation of land and water, notwithstanding the environmental disasters which are waiting to wipe off a healthy human society.[2] Thus, more land was required to expand e-governance as business units within cyber cities which constituted an ICT Special Economic Zone as production units.

Experience across the transitional countries of Asia Pacific region also suggests that while there is enormous activity on the e-front of governance, much of this has merely streamlined assembly line kind of e-activity devoid of innovation, original thinking and leadership in e-governance. The large-scale production of technically trained young e-workers, engineers and administrators in the last two decades has camouflaged production as innovation and engineers from IIT as the real leaders of e-governance. The technical bureaucracy has taken over regular generalist bureaucracy. As a consequence technological determinism or the potential power of technology with its nuts and bolts science is considered to be an answer to many e-governance problems. Moreover the science of 'e' takes a larger share of funds

[2] Grossman (2006) notes that the world generates somewhere between 20 and 50 million metric tons of 'e-waste' every year, which includes LCD screens but keeps the calculations on mobiles on hold as all phones which are bought may not necessarily lead to discarding the older ones.

and attention as it carries with it some subtle sense of urgency and lack of alternative design, while the community administration's direct participatory strategies including the need to reform bureaucracy become secondary and sometimes treated as an extension of e-governance. Thus, e-governance is promoted in many regions and in many departments as part of the TINA[3] ideology which eventually berates non-technical forms of policy resuscitation.[4] Interestingly, for the rest of its life, the failed 'e-practice' becomes a 'best practice' song of technical bureaucracy. This may not be misunderstood as an effort to make a case for regular bureaucracy but to emphasise an increasing need for interdisciplinary institutional mechanisms to bring e-governance as countries are littered with such failed practices which were designed over sophisticated and flawless technical systems. The present work is a comparative analysis of e-governance in selected countries of the region through multivariate comparison of data on public sector institutions, regulatory measures, practices, access, degree of coordination and management, a futuristic vision and transparency of service delivery. This study would highlight findings from country experiences of e-governance and create a vision for critical understanding of its adoption into citizen's life and achieve a reasonable rather than an unjustified race towards swank wired governance.

1.2 Understanding e-Governance

The lure of accelerated economic growth led the bandwagon of e-governance in the Asia Pacific. The UNDP document on human development in 2001 (UNDP 2001, p. 2) was upbeat to declare the agenda of ICT in governance, 'People all over the world have high hopes that these new technologies will lead to healthier lives, greater social freedoms, increased knowledge and more productive livelihoods'(UNDP 2001). Since 2001, e-governance has travelled a long distance from the ideal of a one-stop solution to all governance problems to a more intractable problem of implementation, inclusive development and upgradation. Many fear that it has been a severe drain on resources and public institutions without improving institutional accountability. Many studies highlight failures of e-governance (Heeks 1999; Sachdeva 2006; Felix et al. 2011; Viniegra 2012). As it emerges out of these studies that while there is no one single reason for the failure of e-governance, there is also one dominant reason why they have mostly failed which is one principle of organisational management philosophy of the Luther Gulick and Lyndall Urwick's 'Papers on Science of Administration' written in 1937, i.e. the principle of 'coordination'. However, the challenge of coordination has become more externalised in contrast to Gulick and Urwick's understanding of

[3] There is no alternative (TINA) but to adopt it instantly.

[4] This is indicating a non-technical attempt to revive a failed policy through people's participatory efforts, skill development, legal changes and accountability measures for bureaucracy and community practices.

coordination within and between government agencies and departments. Currently, e-governance requires not just coordination within government agencies but more profoundly a coordination which extends towards business, law and civil society. Failure to develop an institutional ability to coordinate various public agencies, technological structures, human variables and data supply systems and bring them all under the driving force of a dynamic leader makes many e-governance initiatives redundant in the first few years of their implementation. Therefore, the standard argument for institutional reforms, which had been navigating through governance studies, suits e-governance as well as is strongly brought out in a wide-ranging empirical analysis of American states by Tolbert et al. (2008, pp. 549–563).

e-Governance suggests wired governance. If governance is understood as a concept which is wider than that of government and refers to a 'looser and wider distribution of both internal and external political and economic power' (Lofchie 1989, pp. 121–122), then wiring such disparate and dissimilar centres of power and activity would make the system too susceptible to deadlocks and distrust. The earlier system of e-government, which connected all government departments on wire or computer's local area network, was simpler as it was merely connecting offices which were ideologically and normatively similar. The challenge of e-governance is to bind this looseness prevailing within governance, where dissimilar organisations and institutions come together for achieving the ends of development. As governance refers to a system of rules by which the productive and distributive life of society is governed (Leftwich 1994, p. 371), e-governance has a high potential of achieving ends of economic and human development. It retains the governance feature of pursuing collective interests and striving for legitimacy as it is with governance. Ironically, much of this is bypassed to achieve technological ends which lead to failure of e-governance projects.

Most definitions on 'e-government' in contrast to those on 'e-governance' indicate a limitation of freedom to collaborate and use discretion to unite in versatile set of strategies. The United Nations Public Administration Network (www.unpan.org) defines e-government as '… utilizing the internet and the world-wide-web *for delivering government information and services to citizen*'. Similar to this, the Organisation for Economic Cooperation and Development (OECD) defines e-government as '…the use of information and communication technologies and particularly the *Internet, as a tool to achieve better government*'. Even the World Bank definition of e-government as 'the *use by government agencies* of information technologies, such as Wide Area Networks, the Internet, and mobile computing, that have the *ability to transform relations with citizens, businesses, and other arms of government*. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions'. The International Telecommunication Union (ITU) is closer to the de facto location

of e-government which is to *improve managerial effectiveness and to promote democratic values and mechanisms*.

The e-governance is to be understood in its outreach activities and the significant role in public policy from the formulation stage to its implementation as well as evaluation. These outreach activities do not belong to e-governance per se but to governance, which, because of its inherent limitations, is not able to resolve. Given that 'e' is an extension and continuation of governance, it would do what governance does. According to Keohane and Nye (2000), 'Governance implies the processes and institutions, both formal and informal, that guide and restrain the collective activities of a group. Government is the subset that acts with authority and creates formal obligations. Governance need not necessarily be conducted exclusively by governments. Private firms, associations of firms, nongovernmental organizations (NGOs), and associations of NGOs all engage in it, often in association with governmental bodies, to create governance; sometimes without governmental authority'. Kettl (2002) also suggested that 'Governance is a way of describing the links between government and its broader environment - political, social, and administrative'. These definitions have paved the way for greater freedom and also caution in adopting models of e-governance; once governance goes online, the controls may shift from regular bureaucracy and political executives to technological regimes who would supply softwares, hardwares and varieties of technologies to keep e-governance going, so much so that many global technology regimes may occupy the steering seat to control governance through e-governance. This is the point which the present genre of country governance has reached and which now requires them to coordinate on governing the global supply, regulations and management of 'e' technology itself or 'governing the Internet'[5] appropriately being referred to as 'Internet governance' which makes the invisible wire underneath governance more accountable and visible to respective countries.

Governance, on a narrower side, is a technical strategy to deliver goods and services to citizens, but considering the diversity of interests and differentials prevailing in developmental and democratising processes in each society, this narrower meaning of governance may not be appropriate. Governance has a broader meaning which builds, manages and sustains institutions to achieve well-being of citizens. This broader meaning suggests that governance is the art and science of the configuring power and managing resource distribution to achieve political and economic control. This entails that governance is about a legal framework for regulating income, wealth and control of political authority. While the promoters of the ICT technology have insisted on an apolitical and technical meaning to e-governance, yet it is obvious that the nature of governance does not change once it is transferred to the e-wire. ICT serves as a tool in governance to overcome limited human capacities and geographical hindrances of difficult terrains, distances and land disruptions.

[5] D'Monte (2013).

It is simpler to build a wired electronic network of communities than to actually bring these communities physically closer and communicative with each other. It is also simpler to prevent most of the bureaucratic pathologies such as the 'red tape' (Bozeman 2000), Parkinson's behaviour (Niskanen, and Niskanen 1971), rent seeking (Krueger 1974) and politicisation (Peters and Pierre 2004) by creating a wired electronic network highlighting accountability and transparency of processes. This helps to overcome or compensate for many human deficiencies which affect implementation and create obstinate structural obstructions in performance.

The new e-location of governance raises various concerns as it is technologically driven by a new breed of administrators who are engineers. Considering their training and occupational perceptions, they work in a cause-effect and cost-benefit framework of analysis, leaving aside some of the dominant strands of political decision making which brings technological and marketing deviations, investment compromises and implementation-related geographical bargaining which takes place in the implementation process. Thus, eventually, e-governance is decisive and deterministic in development and service delivery but is nevertheless laden with the fear of being ideologically dogmatic and inflexible. In contrast to the failures in governance which indicate gaps and weaknesses in participation, legislative processes and bureaucratic pathologies, the failures in e-governance are directed to revisit softwares and vendors who were responsible for magical transformation of society through technology. A good example to this is the open-source software debate which has diverted issues of equity and social justice from community programmes to technological systems, and consequently social engineering has been replaced by strategic technological implantations. Interestingly the technology companies blur the understanding between the 'sentient' and the 'simulant' which are interesting terms borrowed from physics to explain the objects which naturally exist as part of the organic chain of evolution and those which are implanted or replicated from the original formula. Much of the 'e' comes into governance as a 'simulant' and not through the 'sentient' organic chain of human evolution.

The element of 'e' in a lowest common denominator is information and communication technology (ICT), but its spread in the public policy domain is all encompassing from the home computer, Internet, television, mobile phones, iPhones, satellite surveillance and all media-related technology to defence systems and missile control systems. As the Report of the Digital Review of Asia Pacific[6] (2009–2010) mentions, 'ICTs are not a single neutral technology, but a complex field of activity encompassing many different technologies and various types of information that existed prior to these technologies coming into being'. ICT appears benign as it helps overcome poverty, but the metaphysics of information generates new controls of the whole governance systems and the benign

[6] http://web.idrc.ca/openebooks/456-7/

may mutate to a powerful 'Neuromancer[7]', the character of Gibson's (1984) science fiction. These new inhabitants of public policy were all set to redefine the boundaries of political science (Hassler and Donald 2008). and public administration. Governance acquires a new meaning and appropriates new authoritativeness as it advances into the 'cyberspace' creating a 'consensual hallucination' (Gibson 1984, p. 51).

Thus human perception about governance depends much upon how the element of 'e' is conceived. A lot has been written on the failures or successes of 'e-governance' programmes, notwithstanding the cultural framework within which it operates in the desired direction. There are terminological clarifications which are required before one proceeds any further into the debate. The 'e' in governance has far-reaching ability to intercept public as well as private lives of people much beyond anyone's imagination and control. This raises several ethical questions, but most important is that the ICT may spin itself out of governance and start dictating rather than listening and assisting stakeholders.

The need for governance and the idea of uploading it over electronic systems almost came together, perhaps to release the congestion of traffic around the public sector through automation and assistive intelligence for decision making. Whether it is a dilemma of chicken and egg or the deliverance of the Siamese twins, the 'e' has since then shown no signs of walking away; on the contrary the relationship has become thicker and more dependable. There are many reasons for this besides the multi-stakeholder partnership which the public sector has to deal with.

The decade of the 1980s had handcuffed developing countries with the structural adjustment policies of Bretton Woods institutions, while the developed world encountered the impact of cold war by refining its interceptor technology to enhance surveillance against their citizens and beyond national boundaries. The increasing sophistication of information and communication technology during this decade facilitated global capital flows around the world and increased dependence of high-technology markets upon unstoppable inventions in electronic hardware, software, digital data processing, biometry and cryptography. The new technology started unfolding itself into a form which was more omnipotent and intimidating than whatever could be controlled by the government while applying it to many of its development programmes.

[7] *Neuromancer* is a 1984 novel by William Gibson, written at the time of the rise of computers. *Neuromancer* is a kind of cyberpunk or the undefinable as Gibson writes (New York: Ace Books). Coined by Bruce Bethke as the title of his short story 'Cyberpunk', published in 1983 (http://en.wikipedia.org/wiki/Cyberpunk#cite_note-2, http://en.wikipedia.org/wiki/Cyberpunk#cite_note-3). It features advanced science, such as information technology and cybernetics, coupled with a degree of breakdown or radical change in the social order (http://en.wikipedia.org/wiki/Cyberpunk#cite_note-4). Cyberpunk works are well situated within postmodern literature (http://en.wikipedia.org/wiki/Cyberpunk#cite_note-5).

1.3 Central Argument of the Book

The book delineates the political vision, administrative attitudes, institutional responses and e-readiness of selected countries in the Asia Pacific towards new challenges of transition to e-governance. The central argument which drives the book is the fact that e-governance is the future direction of governance, and nations in the Asia Pacific could channelise this movement through dynamic collaboration, knowledge partnerships for mutual learning and replicating successful practices. The MDG Goal No. 8 has already explained and emphasised the need for collaboration for achieving developmental targets and lamented the neglect with which nations have treated it. Some of the major concerns which the book would discuss are given below:

- *Preventing technological determinism by democratising the Internet:* e-Governance is the defining factor for governance in coming times and whether nations want or not, they would be driven into it as they were driven into globalisation two decades ago, despite the anxieties against it. The spread of technological determinism which has been arriving with e-governance can be countered by taking some pre-emptive measures. This would mean that governments should strengthen democracy, interactive citizenry and deeper penetration of the Internet in society so that e-governance does not create a digital divide and obstruct goals for an inclusive governance.
- *Bringing governance reforms as a precondition to e-governance*: As e-governance rides over the governance framework, the framework may influence its performance. Thus, e-governance is not a substitute for governance reforms nor is it a strategy to bypass pathologies of bureaucracy. A malfunctioning government can bring a catastrophic drain on the country's resources by attempting to implement e-governance systems.
- *e-Governance is a global activity driven by Internet users:* e-Governance is dependent upon the larger number of Internet users having IP addresses and email IDs. This entails that governments should be driven by knowledge and futuristic vision of decision makers who could relate to citizens' requirements, country's demands and global challenges in an appropriate manner. Concomitantly, governments should be adequately equipped to interact with global technology regimes of Google, Yahoo and Apple which help dispersal of Internet in society. e-Governance is a global activity with the strongest players being those who have the capacity to influence global technology regimes.

This work encounters *three* challenges:

First, the *progress on e-governance is pathetically slow even though there is an ever-increasing traffic of citizens over the Internet every day.* The laggard attitude of governments towards e-governance is not a result of an inert civil society as the scores of their interactive and communicative behaviour in other e-forums and social media are much higher. Table 1.1 is an indication of the rousing zeal amongst citizens to use Internet and Facebook (and other social networking forums). Government websites and communicative networks are generally believed to be

Table 1.1 Internet active and communicative societies

Countries	Internet users 2000	Internet users 2012	% Population penetration	% Internet users in Asia	Facebook users	% Facebook of total Internet users
China	22,500,000	538,000,000	40.1	50	633,300	0.117
S. Korea	19,040,000	40,329,660	82.5	3.7	10,012,400	24.82
Australia	6,600,000	19,554,832	88.8	80.5	11,680,640	59.73
India	5,000,000	137,000,000	11.4	11.4	62,713,680	45.77
Malaysia	3,700,000	17,723,000	60.7	1.6	13,589,520	76.67
Philippines	2,000,000	36,600,000	32.4	3.1	29,890,900	81.66
Indonesia	2,000,000	55,000,000	22.1	5.1	51,096,860	92.9
Pakistan	133,900	29,128,970	15.3	2.7	7,984,880	27.41
Sri Lanka	121,500	3,222,200	15	0.3	1,515,720	47.03
Bangladesh	100,000	8,054,190	5	0.7	3,352,680	41.62
Nepal	50,000	2,690,162	9	0.2	1,940,820	72.14
Afghanistan	1,000	1,520,996	5	0.1	383,220	25.19
Bhutan	500	150,548	21	0	82,040	54.49

Source: Internet World Statistics, http://www.internetworldstats.com/stats3.htm, Accessed 26 March 2013

uninspiring and not motivating enough for citizens to sustain interaction. To compensate for the staid government websites, UNDP has set up interactive online governance communities like the ICT Solutions Exchange, Decentralisation Community or Gender Community which have become platforms of open dialogue, mutual learning and knowledge sharing between administrators and citizens. These e-communities extend and transcend beyond political boundaries in the region and conform to the objectives of collaborative search for replicating successful practices and sharing local alerts against designs which are likely to generate negative externalities and backlash.

Second, despite the rising number of Internet users in the Asia Pacific, *the Internet penetration into society is extremely low and feeble due to which e-governance programmes fail to influence or catalyse government policies on development and well-being.* This is also creating a digital divide, whereas the poor, differently abled and girls are being pushed to the periphery for not being able to access the Internet and benefitting out of many online opportunities. The scores of access to the ordinary masses have been so low that despite huge investments ranging from almost INR 40,000 crore in India (NeGP budget), TK 2.81b. and TK 10.97b. spent in Bangladesh(BanglaGovnet) and PKR 2.6 b. (ITS Notification, 19.10.2002) already exhausted in Pakistan (TRE survey) for the development of ICT infrastructure and procurement proposals, the percentage population outreach efforts have not shown any significant change (see Table 1.1). Despite adequate investments in South Asian society, governments have somewhere been inactive or ignorant of radical interventions to generate a meaningful e-governance. By accessing comparative data from a variety of national, global and statistical online sites, it is fairly clear that e-governance has been more speedily adopted and implemented in commercial and financial establishments rather than the government welfare sites. One reason for the slow adoption of e-governance in government as compared

to the private establishments has been that companies undertake experimental risks more readily in commercial standardised transactions which are able to deliver measurable profits. On the other hand, governments work amidst a political framework of constitutional accountability due to which most e-ideas are implanted through the borrowed wisdom of hired technical experts.

Third, to meet deadlines and targets, *most e-policies are seldom revisited or evaluated during implementation as a result of which several negative tradeoffs take place to selectively highlight success stories to international donor agencies and obtain a political mandate back home.* The urgency of implementing e-governance has primarily been to improve country's economic position through revenue collection, widening the tax net, balance of payments and wealth regulations, banking reforms involving transparency about cash reserve ratio, credit worthiness and foreign investments. Thus, while e-governance reforms have dramatically transformed those departments which deal with revenue collection and savings such as the income tax and banking departments, they have a highly scattered and patchy record of parliamentary and administrative reforms, service delivery and judicial reforms. In this context it has been mentioned previously that several meaningful e-governance studies conducted in the last decade have raised concerns about the economic priorities of e-governance policies in abeyance of productive collaborations with citizens. Scholars have identified culture, capacity, skill development, literacy, content and affordability as issues which need to receive attention of the government. The present study takes a social science approach to study e-governance within its ecosystem composed of technology regimes, community of expertise, politics of the state, leadership, peoples' aspirations and ethnographic and geographic influences. The most important factor is the government's ability to live up to the expectations of the new and emerging population of younger professionals who are time tied and e-savvy and have an ability to create a storm on the social media. A futuristic vision may help in implementing most of the e-governance policies with an embedded sensitivity towards this new class of citizenry. A comparative data along with a critical theory analysis may analyse country-level efforts in coping up with all these facets of e-governance.

1.4 Rise of the Internet

The history of Internet is a story of collective, coordinated and passionate team research by engineers at MIT, but its origin has been in an environment which our younger generation may not believe it to be. Internet has originated out of ARPANET (Advanced Research Projects Agency Network), a very small network of computer-based network information exchange fashioned by scientists working out of the American Military Industrial Complex in response to perceived cold war threats (Castells 2000). The objective of this early Internet system was to protect the military industrial data from a nuclear holocaust wipeout. Thus, access to this Internet did not allow users from Europe to browse freely into all its spaces. However,

Internet has grown to be very different from what it originally was, because it has moved out of a very restricted and closely monitored science-based specialised exchange system to a diversified and distributed diffusion of information exchange amongst citizens and administrators as well as the market.

Their work suggests that Internet technology has four main aspects which have contributed to its growth: research on packet switching[8] and ARPANET, operations and management, social aspects where a broad community of 'internauts' continuously work to evolve technology to make it more user friendly and lastly its commercialisation or its effective transition to information infrastructure (Kahn et al. 2012). The rise of the Internet has been an American phenomenon, a typical strategy in the direction of American exceptionalism where organisational effectiveness and efficiency as a mathematical design could be established to manage business. Internet, in this manner, could be treated as one more philosophy after the Scientific Management era to achieve higher productivity through a set of mathematically deduced principles. Yet, organisational theory was the most neglected section of the Internet as the Internet decided a future of its own with the coming of globalisation. The origin of the Internet lies in the year 1962 when JCR Licklider at MIT discussed his 'Galactic Network' concept as part of his dream to connect computers on a global scale for accessing data and programmes from any site (Kahn et al. 2012). The American government organisation ARPA (Advanced Research Project Agency) which was at least three times changed to DARPA (Defence Advanced Research Project Agency) played a crucial role in developing the Internet. The first book on the subject of networking was published in 1964 by Leonard Kleinrock at MIT, who again, in 1976, published another book on the subject of the ARPANET. In 1969 the research team was successful in connecting four host computers to launch Internet in the making. The present day open architecture networking was well demonstrated by Robert Kahn in one of the biggest International Computer Communication Conference (ICCC) in 1972. This developed a new protocol called Transmission Control Protocol/Internet Protocol (TCP/IP). This gradually led to some other applications, including packet-based voice communication or Internet telephony and research on file sharing and viruses. Since Internet had wider applications, the World Wide Web emerged by virtue of the TCP/IP. Initially only three networks were formed – the ARPANET, Packet Radio and Packet Satellite along with their initial research communities; this evolved to spread the network for global developmental needs. Some developments are worth mentioning here as these innovations are habitually being used by non-technical communities such as the social scientists in research and widespread development of LANS, PCs and workstations along with the fundamental navigating power of the 'Ethernet technology', developed by Bob Metcalfe at Xerox PARC in 1973. This spread of a very large number

[8] Packet switching is a digital networking communication method that packs up all types of data into specially formatted units called 'packets' and delivers them across computer network connections, typically routing information from source to destination using network switches and routers (for further details, see Mitchell, Bradley (2013). What is packet switching on computer networks? at http://compnetworking.about.com/od/networkprotocols/f/packet-switch.htm).

of independently networks or LANs made the single table of hosts impossible. At this time Paul Mockapetris invented the Domain Name System (DNS) which distributed host names to a hierarchical system such as .com, .org or .net. After sometime even this distribution became overcrowded and had to be further distributed to regional networks with an Interior Gateway Protocol (IGP) used inside each region of the Internet and an Exterior Gateway Protocol (EGP) used to tie the regions together.

The privatisation of the Internet technology started in 1995 when the National Science Foundation (NSF) of the USA brought in a number of regional and privately managed networks to build national capacities. Currently there are 50,000 networks across the world with around 29,000 networks in the USA alone. While the Internet defies not only corporate control but also any other form of centralised institutional control, as was the case with previous communication and media technologies such as the radio and television (see Hauben and Hauben 1997; Norris 2001, Elmer 2002). Thus, Internet and the p2p (peer-to-peer) exchange has also rendered somewhat more artificial the appearance of 'information scarcity' – the perception that news represents a difficult-to-obtain resource (Garcelon 2006, p. 57). A special issue of a publication by Scientific American in 1996 on 'Key Technologies for the 21st Century' starts with a mild warning from John Rennie (p. xi) about the uncertainties of technical innovations, 'Even the greatest ideas and inventions can flounder, whereas more modest steps forward sometimes change the world'. Thus, some of the fundamental technologies which lie in the backwaters of the mighty Internet have a capacity to change the domain of governance but in turn may impose new tensions over it.

Microprocessors, being the most basic to run the Internet, have led to a chain of inventions such as computers, laptops, fax machines, sophisticated automobile technologies, wrist watches and other home and office appliances. It has been estimated that their performance has increased 25,000 times since they were invented in the 1960s. On the basis of its size, it was named a 'microprocessor' and could be made in bulk, thereby keeping its cost very reasonably low. The scope and rate of improvement in computer microprocessors or chip design technology have moved so fast that the present processors are many times faster than the previous ones.

This enormous boom of science is not expected to continue with the same pace in coming times. The challenges of fast-rising global procurement cost, implementation handicaps and the need for consistent expert support of administrative innovators may not sustain these technologies in the Asia Pacific, especially as they are being adopted on a scale which is beyond administrative capacity to supervise and set directions for.

Another powerful back-end Internet technology is that of 'wireless networks'. This technology has revolutionised the metros as well as the countryside by delivering personalised communications to people and basic telephone services to underprivileged poor, who never dreamt of having one ever in their lifetime. Invented by Guglielmo Marconi, this experiment of sending radio waves has grown into a wireless network which is becoming digital and more 'intelligent'. It is a technology to locate roaming subscribers and customise the services they receive. An increasing

improvement in microelectronics, digital radio and signal processing has spread the usage with speed and vigour across the developed and transitional countries.

The need for technology in governance and changing lifestyle demands of citizens has brought in an increased control of governments over decisions of great national importance. One such is the contestations involving 'predation over the spectrum space'. Governments have to issue or auction licenses and allot space on radio spectrum around the frequency of 2 GHz for this personal communication services (PCS). This in turn brings an obligation of infrastructural installation on the licensees to move PCS systems. Since this requires capital investments which most government network companies are not in a position to make, thus the government opens up for investment from private telecom companies. These companies in turn bargain for more spectrum space and on service providers so that spectrum could be used more cost-effectively. Hence, while this has served to help people in developing and transitional countries in connecting them to global markets, it has also made governance of technology intensively fuzzier and therefore open to high-level corruption in government.[9]

A technology which has been changing the course of data management, retrieval and national security domains especially of counter-terrorism and militancy prevention activities of governments is artificial intelligence, or AI. It has emerged as a storehouse of commonsense knowledge from its first invention in Dartmouth College in 1956. This is being increasingly used in face recognition, medical diagnoses, security devices, airports and customs, automobiles and appliances. It is nevertheless laden in problems which have prevented its growth to the level of its two previously described technologies. First, there are commonalities of expressions, language and linguistic features which prevent a commonly applicable programme to study, direct or guide objects. Secondly, an object may have multiple contexts, hence the limited capacity of AI to take up the job of human brains. Third, most intelligible detections are based on commonsense understandings and intuitive push. Thus, an excessive promotion of AI may give a feeling of sophisticated technology but, in many areas where governments unthinkably push the installation of this technology, may turn out to be an avoidable investment. This is where technodeterminism rules decision making. AI is not just a support to mind as in computers but has replaced mind with a computer and therefore raises serious philosophical questions about the cognitive experiences fed in this computer which replaces the mind. If this technology originates in a Western developed country, then how could one expect a diagnosis on features related to a developing or underdeveloped society? Thus, AI has become a highly debated technology in present times.

Thus, the new ICT technology which combines authoritative controls over both knowledge storage and communication has started mediating choices made by people and governments. Andrew Feenberg[10] insists in all his writings on a critical

[9] The 'Spectrum Scam' which has led to the axing of leading ministers and executives in India, which has rocked the Parliament several times of the UPA's ruling regime, is suggested an additional reading but is not being discussed here, since this is not the focus of the book.

[10] Transforming Technology, p. 3.

theory of technology that the design of technology is an ontological decision fraught with political consequences. In all circumstances such decisions tend to exclude a large majority of citizens clustered at the lower end of the socio-economic system in every country developed or underdeveloped. Thus, technology of this sort cannot bring any fundamental change in society such as a radical poverty eradication drive unless it is democratically transformed.

The power of the Internet is grossly misunderstood, and the technical bureaucracy is by and large so drenched in the technological systems, as much as the generalist bureaucracy is engrossed in its politics that the combination of the two always escapes the policymakers attention. The e-governance is already going to be affected by the debates over control of the domain name space and intricacies of the next generation of IP addresses. While technology and a serious understanding about its functionality and appropriate use cannot be ignored at any point, it is also imperative for departments, ministries and agencies to collaborate within the country as well as in regional and global platforms so that technology is tamed to serve the interests of people in the most intelligible and cost-effective manner. Internet is continuously growing, and one does not know that with the speed with which numerous 'ontologies' are being constructed over the World Wide Web (WWW), the Internet may become a place for intense battle of the belligerent political and ideological hacker groups to control it. To quote the closing statement of the article posted on its site by the Internet Society,[11] 'If the internet stumbles, it will not be because we lack for technology, vision, or motivation. It will be because we cannot set a direction and march collectively into the future'.

e-Governance is one of the most powerful tools of governance in present times. It is embedded within the information and communication technology which has come to control not just the processes of development but also the minds which generate pedagogies of development. Thus, the world is likely to be steered by a design which would move the world in one particular direction and bypass a number of parallel trends and alternate designs which bring continuity and sustainability in development. A critical insight would deepen understanding on the cross-cultural and diverse governance perspectives which lie beneath the outstanding superstructure of e-governance in the Asia Pacific. The objective is to explain and clarify the relationship between e-governance and larger institutional reforms to strengthen governance and then to explore those manifold strategies which make them complementary and supplementary to each other. This presumptive relationship between the 'e' and 'governance' is also expected to highlight many of those missing links in implementation which retard performance and prevent the achievement of any of developmental goals.

The rapid strides towards e-governance take a visible turn with the beginning of the year 2000. As citizens fretted the intrusion of this new technology-based governance interventions, most nations also felt the need to provide a legal framework to it. Information and Communication Technology Act was passed by the legislatures of

[11] Retrieved from http://www.internetsociety.org/sites/default/files/Brief_History_of_the_Internet.pdf.

Pakistan, India, Bangladesh, Sri Lanka, China, Malaysia and Nepal as development and good governance became more and more dependent upon the ICT technology.

This is followed by three extremely important United Nations documents: the *Digital Review of Asia Pacific* (starting 2003–2004), the *UN E-Government Development Database Surveys* (starting 2004) and the *Global Information Technology Report* (2012). Amongst many institutions which have been actively participating in data management activities, United Nations Public Administration Network, World Economic Forum, World Bank, Central Information Technology Office (WB), International Telecommunication Union along with the World Economic Forum and organisations such as the Orbicom, INSEAD and IBM have led the movement towards increased sophistication of e-governance research. Databases such as www.worldeconomist.com, www.internetworldstats.com, www.tradingeconomics.com, TRE Surveys, Lirneasia.net, APNIC database for the Asia Pacific and www.nationmaster.com have set up a large number of indicators and sub-indicators which contain a well of knowledge for any researcher to analyse differentiated data to understand issues woven around e-governance in the region. These databases and publications on e-governance initiated a competitive environment in seeking investments, funding, partnerships and software research in connecting people and strengthening governance. United Nations generated new indices in line with the well-being indicators annually presented in the form of Human Development Index (HDI). These were the e-Governance Index (EGI), e-Readiness Index (ERI), Networked Readiness Index (NRI), Web Measure Index (WMI), Telecommunication Infrastructure Index (TII) and Human Capital Index (HCI). These indices attend to the problem of biases embedded into qualitative assessments and make benchmarking and measurement more authentic. Such a sophistication sets measurable directions and dimensions for countries to achieve e-governance targets. e-Governance has generated so much interest across the globe that several databases have been built to sustain and initiate new and innovative analytics and ideas.

The march of the Internet into the lives of people in Asia Pacific has been rapid. The www.internetworldstats has brought together data from sources such as Nielsen Online, ITU and Facebook. This is the most recent data till 31 December 2012 which suggests that 44.8 % use Internet in Asia as compared to 55.2 % in the rest of the world. However, the discouraging part is that out of the Asian population of 55.9 %, only 27.5 % have access to the Internet, whereas in the rest of the world, out of a much less population of 44.1 %, the Internet users constitute 42.9 % (Internet World Statistics, http://www.internetworldstats.com/stats3.htm, accessed on 26 March 2013). India, Sri Lanka and China added 27 %, 26 % and 25 %, respectively, to their Internet user population; Nepal, Pakistan and Bhutan added 53 %, 217 % and 301 % population of Internet users. Afghanistan took a giant leap by demonstrating a 15–20 % growth of Internet users. Table 1.1 suggests that transitional economies have a better market for Internet, and as economy stabilises and requisite governance reforms settle down, the percentage rise of Internet users also stabilises. Australia, South Korea and Malaysia represent a more stable advance of Internet. The social vibrancy in terms of cyber group interaction and online communities is

very high in Malaysia, India, Indonesia, the Philippines and Australia. This work at a later stage would link this up to a surveillance society, the norms of which are still active in the governance of China and Pakistan. Informal and formal data collected from visits to Pakistan has brought out some brave facts about their society and especially about their women. A large number of the population including that of educated and professional women in Lahore, Karachi and Peshawar insist going on the Facebook and other social media Internet sites despite the blockage and bans declared by the government on one side and Talibani groups on the other.

The data given in Table 1.1 suggests that the spread of Internet in Asian countries has been patchy and uneven. While China constitutes almost half of the Internet users in Asia, India has only 11.4 % and the rest of the South Asian countries fall below one per cent usage barring Pakistan which is little above these. Another interesting fact which is further going to help understand the relationship of accessibility to Internet with better well-being of people in South Korea, Malaysia, Indonesia and the Philippines is the fact that Internet is better dispersed; its penetration into lives of people is not confined to the privileged few but is much deeper. Table 1.1 suggests that even though the number of Internet users has not increased as astoundingly as China, yet they have a much higher accessibility scores or deeper penetration into their population.

ICT influences the fun loving educated young population as much as it controls hard facts about decision making and governance, looking for connecting strategies in relationships at work or in informal groups, elderly people opening a discourse over community portals called ‘addas’ or ‘abodes’ or city activists generating support and marketing ideologies and culture. ICTs now are safely perched at the centres of the most indomitable offices of political power and unassailable supply chains in banking and commerce. Never in the history of technology would one find such close proximity of technology to politics and business and a technology which advances with the willing support of varieties of modern world messiahs like the media baron Keith Rupert Murdoch,[12] world visionary saints like the late Steven P. Jobs[13] and strategic genies such as Bill Gates,[14] Bob Young and Marc Ewing.[15]

[12] He is an American Australian business tycoon who shot into popularity due to his rapid strides in controlling the digital media and expanding it into a monopoly business through ‘News Corporation’ owning over 800 companies in more than 50 countries with a net worth of over $5 billion.

[13] The iconic co-founder of the Fortune 500 Apple Company which not only ushered in an era of personal computers and touch screens but also a cultural transformation of all entertainment business in music, movies, iPhones and social networking sites on digital media. He died on 5 October 2011.

[14] The American software genius and business leader in computers and founder of Microsoft Company which is constantly innovating softwares for personal computers and for long remained uncontested in the market.

[15] Bob Young and Mark Ewing are two founders of the Open Software movement called the Red Hat movement in 1993, which since then has broken the Microsoft’s expensive monopoly of softwares. Red Hat has decontrolled ownership of these softwares for the benefit of smaller businesses, firms and public sector applications. Red Hat movement can be referred to as a digital grassroot movement serving the interests of the underprivileged in electronic industry.

Any understanding of ICT is based on praxis or an ability to implement the theory. This would mean that ICT would carry the intention of fulfilling a particular function. Politics of the perplexing questions surrounding this function as the nature of this technology would depend upon the kind of users which it would attract and the objective which it sets for itself. The three questions about the function, the users and the objectives of ICT are best responded through the e-governance strategies which nations adopt for development and poverty reduction. The success of ICT depends upon the synergy created by a multi-stakeholder participation in the e-governance programmes. Ability to formulate laws for intellectual property, copyrights restrictions, regulating pricing and privacy, deterring cybercrimes and helping forensic research suggests that applications of ICT depend more upon the activity outside technology. There are many best practices to substantiate this argument such as the Mahiti Shakti, an e-governance programme successfully introduced by a District Magistrate in Godhra after the riots and later made self-steering through innovative support systems generated within the market. Similarly, TaraHaat in Bundelkhand could be launched only through the political leadership and grassroot cultural interaction to mobilise participation of poor tribal population around the Orchha town in Bundelkhand. Thus, the 'People First' argument governs the success of ICT applications, but this effort should reflect into appropriate laws and regulations which help dissemination of information rather than stifle the usage.

ICT has redrawn the map of democracy and participation across the world. Originally meant to enhance managerial capabilities through computerisation of records and data within offices and corporations, it has grown into a dominant form of governance itself. Thus, in less than a decade, governance reforms became identified with ICT-enabled activity set to transform lives of millions of poor in India and other regions of the world. The technology juggernaut is moving forward, and, increasingly, segments of society find themselves displaced or simply left behind as a consequence (Gurstein 2000, p. 2). Fundamental to the idea of ICT-driven development is the issue of providing a 'least minimal access' which depends the least on technological solutions but upon a complex ramification of citizen's right to education, health, equality and employment which form fundamental ethical principles of democratic theory some times referred to as an 'Access Rainbow' (Clement and Reagan 1996) suggesting a coterminous of technology with socio-economic and physical access issues. Internet management and governance itself is currently one of the biggest challenges for governance as any laxity on this front may deter foreign investment, global partners as network providers, system builders with a futuristic vision and sense of sustainability. Government would work on the razor's edge in governing the Internet and at the same time preventing the Internet bureaucracy from submerging itself in some form of technological determinism[16] unsuitable for development in transitional and poor countries.

[16]Technological determinism as explained earlier is a combination of treating 'technological sophistication as the best solution' and thus popularise a new lexicon of terminology such as hardware, software, connectivity, online support, community networks, use-nets, e-lists, World Wide Web, bandwidth, e-governance, online participation, telework and service design. Most of these are ill defined and therefore provide little insight into the processes of technological applications

1.5 Globalisation and ICT

Speaking at the UNDESA (UN Department for Economic and Social Affairs) and IIAS (International Institute of Administrative Sciences) joint conference at New York in 2001, Anthony Giddens gave an outstanding description of globalisation. He explained that those who continue to suggest that globalisation is an expansion of the global market place or the role of financial institutions have not understood what globalisation is. According to him, 'globalization is the marriage between communications technology and computerization that has changed so much about our lives' (Giddens 2002, p. 88). Some of the changes which occurred during globalisation are the enormous growth of grassroot NGOs, rise of the investment state, global information about people and services, increased cross-country and offshoring manufacturing, telemarketing, production and service industry. A number of global technology innovations which have become a norm of living and working, such as ATMs, credit cards, satellite television, GPS, GIS, social media, Facebook, FaceTime, video conferencing, telemarketing, Skype and cyber communities of resident welfare associations across the world, animal and environmental activists and gender groups, are now difficult to live without. From bride hunting by a non-resident citizen to providing medical resuscitation assistance to a road side accident victim, ICTs have definitely brought people together. However, the criticism that these people who matter over the Internet are knowledge generators and information suppliers in contrast to the marginalised population which neither has access to the internet nor has the language to share emotions and knowledge may get further alienated and deprived should also be taken more seriously in the design of public policy. So globalisation has only deepened the pre-existing gulf between the technology-superior communities and technology-deprived communities in the world.

'The propinquity between globalisation and ICT' is not a matter of debate as globalisation could not have been possible without the global network which was already laid across the world by the ICTs. Generally, they are considered to be coming together, but the later discussion in this section would reveal that globalisation came riding the World Wide Web to connect businesses and services across the world. Governments discovered that this technology could be manoeuvred to obtain a cost-effective self-sustenance in times of economic crises. Globalisation provided an impetus to the ICT industry to knit the world together as the World Trade Organization is launched to manage global transactions, production and supply chains.

The present phase of globalisation begins from the anxieties created by the failed Bretton Woods institutions in the 1980s. When discussions on the Dunkel Draft was taking place in the early 1980s, Internet was already doing business and research in the USA and Europe as the academic, business and engineering communities were closely coordinating the applications, feasibility and viability of the Internet. While these Internet and business communities discovered amazing results about the

in development policy. It also puts corporates such as Microsoft, Apple Computers, Dell, IBM, Sony and Mitsubishi as the engines of state's developmental progress thereby closing the cycle of equitable access to all poor communities.

Internet's outreach and functional capability, they were not too sure about the areas where it could be applied and therefore held several meetings with vendors to learn about commercial requirements as well as convey whatever was possible through the usage of the Internet.

The Uruguay Round is the eighth round of this kind and is the longest round in the international trade history, taking 8 long years (1986–1993) to conclude. Hence its conclusion is a landmark. This round has been the most complex and ambitious. For the first time, its accords extend fair trade rules to sectors like agriculture, textiles, services, intellectual property rights (IPR) and foreign investments. With the signing of the Final Act agreement at Marrakesh in Morocco on 15 April 1994 by 117 governments giving approval to about 20 decisions, the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) virtually came to a conclusion. A Trade Negotiating Committee (TNC) was constituted as an overseeing body. Fifteen negotiating groups started to work on the issues. Many agreements such as the Multi-Fibre Arrangement (MFA) and agriculture were included in the GATT on one hand and on the other developed countries insisted upon the inclusion of trade-related intellectual property rights (TRIPs) and trade-related investment matters (TRIMs) within the GATT. In 1994, 117 countries sign the Marrakesh agreement in Morocco. The signing of the Final Act of Uruguay Round has paved the way for setting up of the World Trade Organization (WTO) with effect from first January 1995 as a successor to GATT. The preparatory committee setup for creating the WTO is to take up, inter alia, issues like labour standard, immigration policies, competition policies and financial services in its agenda. Till such issues are resolved, a great deal of ambiguity about the precise nature of the final multilateral system will remain. In 1991 when the Indian government adopted the New Economic Policy and alongside most Asian states had moved deeper into global market economy, the business was largely led by the multinational corporations or the trans-national businesses.

Most Asian countries lagged behind in technology. The WTO agreement had already paved the way for the developed countries for not transferring their technological innovations to the Asian region. The monopoly rights of the USA over technology of ICT had launched the control of these MNCs over development in the south.

According to the World Health Organizations (WHO), the average expenditure on research work on any new discovery is estimated to the tune of Rs. 200 crores. The developing countries cannot afford such a huge amount of money for research work. When MNCs spend 18 % of their total expenditure on the research work in India, the corresponding figure is only 2 %. The adoption of the trade in services in 1994, the year when privatisation of the Internet has started, suggests that the service sector would all go online for use by the MNCs.

As the global marketplace expanded due to market integration and expansion, the ICT companies of the USA nearly tripled their market sales over the decade of the 1990s.

This income gain was greater for services and software and to some extent even the hardware. ICTs were changing the nature of task in business from routine administrative jobs to skill-based jobs in the labour markets (Bhagwati et al. 2004).

Globalisation has created a dispersal of knowledge communities which are 'information hubs' or as Haas suggests 'epistemic communities' which innovate and provide leadership in technological transformations in societies. McLuhan's metaphor of a global village is critical of communication models which fail to understand the multidimensionality of communication. As he writes (1989, p. 3) that present form of communication is 'all-at-onceness' data which moves at the speed of light. It is voice, print, image and sensory data delivered without sequential relationship. His criticism of the Shannon-Weaver model is in its failure to understand the modern day communication which is multidirectional, 'All Western scientific models of communication are – like the Shannon-Weaver model – linear, sequential, and logical as a reflection of the late medieval emphasis on the Greek notion of efficient causality' (1989, p. 3).

Globalisation of information has also brought to surface many invisible tensions of social existence and state prowess. In his book 'McWorld vs. Jihad', Barber (1995) reflects upon a 'McWorld tied together by communication, information, entertainment and commerce' vs. 'Jihad…against technology, against pop culture and against integrated markets, against modernity itself' (1995, p. 40). The United Nations provides a benign image to the much criticised globalisation by suggesting that ICTs could be harnessed to achieve global peace and development (United Nations 1998).

Globalisation arrived over the wings of the internet and the cage of the transnational companies. These companies did not loose any opportunity to generate internet networks for transactions in goods, services and financial transfers to propagate their business on a reduced manufacturing cost. The transition from governance to e-governance became a natural corollary of globalisation. However, this change produces a new paradigm of public management based on the emerging criterion of efficiency and performance.

1.6 e-Governance, Well-Being and the MDGs

More than seven billion people inhabit the earth now. Human Development Report 2010 indicates with concern the deepening divide between the wealthy and the poor. Resources are limited and so is the human will and capacity to limit consumption. Thus, vested interests divert resources to the powerful few. Despite the rising incomes and GDP of nations, the world remains a home for more than 1 billion people with less than $1 a day and more than 2 billion who live on less than $2 a day. The majority of people in poverty are women who globally earn roughly half as much as men. Approximately 600 million children live in extreme poverty.[17] This precarious state of affairs does not show signs of ending as the number of poor people living under $1.25 a day has increased from 421 million in 1981 to 456 million in 2005 (http://www.worldbank.org.in/). The Asia Pacific has rising incomes, but this has not translated into equitable distribution of resources to support the poor who languish in inhuman conditions of starvation, disease and death. This sentiment emerged

[17] The Chen and Ravallion (2008) research still stands as the latest comprehensive estimate of poverty in developing countries.

as the core of a new global discourse within United Nations in the mid-1980s. Human Development Index (HDI) was designed as an alternative signpost of progress, prosperity and well-being of nations. The GDP-driven conventional measurement of progress came under scathing attack, but the issue seemed too firmly seated in global developmental economics till 2010 when President Sarkozy lamented its obstinate presence despite the irrelevance to the issue of prosperity.[18]

Some dramatic changes were occurring in terms of global population which was a mere 1.6 billion in 1900 but grew to an additional 1 billion by 1950 and exploded to 3 billion more by 1995. The advances in medical technology had increased longevity and prosperity, pulled down hierarchies and levelled many social injustices. The governments were adopting various forms of democracy, and there were more people clustering around their administrators for services and demands. Population growth had been uneven in the Asia Pacific region. Many other calamities came associated with the population explosion which this region encountered. Land degradation, soil erosion, food crisis, famine and floods multiplied the number of poor, hungry and those suffering from varieties of preventable diseases.

Population explosion combined with increasing democratisation of countries in the Asia Pacific led to a pressure of demands and expectations. The decade of 1960s has been a period of severe economic downturn for the whole of Asia Pacific, and United Nation's continuous failure to turn the declared development decades into success stories indicated institutional failures. Thus, the primary contention of this work is to treat institutional failure as a raison d'être of e-governance. So 'e' has arrived as some form of a resuscitation measure to failing institutions or a design to fix immunodeficiency of governance.[19]

The 'e' by its very nature is endowed with the freedom of 'unbelongingness' or to be with none and everyone, yet exclusive and unbridled. Thus, the fear is that despite its applications and adoption for poverty reduction purposes, it may be easily hijacked to serve the vested interests. It can acquire manifold morphologies and can befriend quite unsimilar and disparate groups of people. It can traverse the boundaries of sacrosanct privacy and isolation and be placed as one of the most omnipotent discoveries of the period of globalisation. Its characteristics match that of global capital industry, the TNCs. The combination of the two helped the flight of global capital to unknown lands and hands and ended up in profits for the few stronger groups. The technology implanted programmes and their infrastructural requirements; subsequently, the city looked more beautiful and offices better organised; nevertheless, the nature of governance remained the same. The methodological

[18] The Pakistan Planning Commission economist Mahbub ul Haq had indicted the measurement of development through the GDP scale and broadened this dimension of measurement to many other areas of subjective well-being. In 2009, the French President Nicolas Sarkozy reiterated the sentiment at Sorbonne in Paris (HDR 2010, p. 12). This suggests that the persistence of most transitional countries to showcase the health of their economy through the only single dimension of GDP is also an effort to hide or ignore injustices behind the rapid strides in global advancement.

[19] 'A key issue is that the way that ICTs are conceived has a big impact on the efficiency of development projects, and the views of ICTs of policymakers and practitioners on the ground are often different'. 'ICT for development in Asia Pacific: Emerging themes in a diverse region' (Butt and Sarkar 2009–2010).

individualism which had been the lamp post of governance studies also guided the technology manufacturers, vendors and global funding agencies to deepen pre-existing social divisions of class, caste, gender, linguistic and race and then treat the pathology of digital divide with some more technology.

'e' when added to governance can have a transformational impact upon the way democracy functions. The digitisation of democracy has been able to transcend local disturbances and disruptions of the electoral processes but at the same time created new concerns on the ethics of social mobilisation and elite control of public policies. The biggest threat to democracy in present times is from the way powerful groups hijack social and administrative issues to desired personal ends. Thus, the state remains 'predatory'[20] more than ever before.

The 'e' has also pushed administrative reforms with new rigour and speed. This has brought 'e-governance' to a central location within the governance agenda. The face of modernisation and the drive towards sophistication have inspired governments to adopt high-end strategies like TQM, MIS and MBS, and the previously failed and discarded PPBS has acquired a new lease of life in the present day planning.

Poverty being multidimensional is now better understood as a problem of inaccessibility to services, inappropriate data to define vulnerability and failure of institutions to deliver capacities. With the above three characteristics entwined with governance, the issue of pro-poor governance becomes more politicised. The rise of NGOs and other civil society pressure groups has now intervened to facilitate service delivery and increased stakeholders and structures of implementation at the ground level. To coordinate such diverse groups having different interests for participation raises many more concerns of accountability and transparency.

Poverty has also remained an undying concern of public policy due to the terminological errors in defining development and progress. The 2004 World Development Report titled 'Making Services Work for the Poor' has indicated in detail that human development has lagged behind the increases in wealth. Thus, economic growth alone is not enough despite being essential as investments in health and education. These egalitarian concerns are surfacing due to the wealth getting accumulated with the wealthy top. The WDR 2004 has highlighted the fact that for most public services, there is more public spending on rich than the poor. It suggests that 'poor people are often trapped in a system of dysfunctional service delivery relationships' (2004, p. 12), but finding a way to decentralise controls over services, better information, increased public spending and appropriate monitoring can help deliver pro-poor services. This would however require a public expenditure tracking system so that the funds allocated for pro-poor services may be rightly directed. Therefore, public administration is expected to redesign or abandon the linear model of development to adopt an appropriate multivariate model that can connect, coordinate and balance various stakeholders in a policy

[20] Deepak Lal describes the state as 'predatory' due to 'its monopoly of violence (like that of a mafia gang controlling a neighbourhood) within its territory. The aim of this predatory state would be to maximise its net revenues and its net takings' (2004, In Praise of Empires, Globalization and Order, London: Palgrave Macmillan. p. 5).

Poverty reduction exercise can begin only if the actual poor are identified. This involves a complicated exercise which involves data on consumption per member in different households. Since data on consumption per household is difficult to obtain, researchers segregate people to quintiles on the basis of asset ownership. Besides, there are concerns related to gender, ethnicities, physically and visually challenged, migrants or those who sink into poverty due to various health emergencies or livelihood loss. The process of collection, aggregation and management of all these data is beyond human capacities to comprehend or too expensive and time-consuming for researchers. This task is slowly effectively transferred to the 'e' in governance which ensures better analysis and micro-level research. Every country in the Asia Pacific zone has a Bureau of Statistics and Programme Implementation for the state of people's well-being, employment scenario and issues of development, besides having an Office of Spatial Data for the country's complete information on land, water, forest and other environmental and geophysical issues. Quantifying poverty, justifying methodologies of quantification and corroborating national, regional and local information have been possible due to ICT.

MDGs have set a direction for 189 signatory states to the UN Millennium Summit in 2000 towards achieving a minimum standard of well-being in a nation. Even though the list is not comprehensive nor can that be a priority for all varying nations in the world, yet the agreement over eight basic goals characterises well-being. The targets of well-being are these goals (Box 1.1) which are to be achieved by the year 2015. The repeated failure of governments to provide a minimum standard of basic services required by a citizen to overcome chronic poverty and vulnerability to disease, debt and death led to the framing of these policy targets made mandatory for signatory countries. While this targeted approach had strict deadlines for country's governance, it also required knowledge and information for the implementing agencies to achieve them within the set time period.[21] e-Governance became the most sought-after tool in the decade following 2000 to achieve MDGs. The last Goal No. 8 intensified e-governance efforts with the objective of building

Box 1.1: Millennium Development Goals

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Improve maternal health
5. Reduce child mortality
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

[21] See Singh, A. 2011, *Governance* http://onlinelibrary.wiley.com/doi/10 and Blindenbacher et al. (2010).

partnerships and carry out regional initiatives, which allow UNDP, governments and other development partners to identify, create, share and apply knowledge to solve priority development challenges. These efforts are of particular importance in the Pacific region especially the small island states which face multifarious challenges of development due to their size, remoteness and resources crunch. e-Governance has the capacity to overcome their remoteness, distance and geographical challenges and at the same time equip them with a disaster management tool which would improve life of citizens by bringing social, economic and environmental security. The threat of disasters and submergence due to climate change further increases the need for strong e-linkages with neighbouring mainland countries and with islands within. USPNet is a satellite communications network connecting 12 countries of the region through a live video. Many regional organisations have successfully pushed the e-governance networking in the region. The Pacific Island Forum, Info Development, Pacific Resources for Education and Learning (PREL) (http://www.pacificplan.org) and many other efforts of AusAid, UNESCO and Peoples First Network Rethinking service delivery and reducing transaction cost suggested e-Governance to be raised to a recognisable priority in member countries as an essential pillar in reforming local service delivery. Still, this policy dimension has however been severely contested on grounds of overgenerating substandard and misdirected e-governance programmes. The strict deadlines for fund use, arbitrary procurement processes in governance, lack of political leadership and unaccountable administrative performance raise anxiety of country governments to meet deadlines for quantitative targets without ensuring quality and sustainability of governance.

Achieving the mutually agreed Millennium Development Goals is the major concern of Asia Pacific countries, and this requires a mutual acceptability of commitments made, a global partnership which provides Asia Pacific to air their voice and creation of a network governance on socio-economic and environmental issues. The Brundtland Commission Report of 1987 (OUP 1987) had highlighted the world as having a ‘Common Future’, but the subsequent realities of the global unfolding of events have made partnership indispensable for survival. Chronic poverty persists in almost the whole of Asia Pacific despite a large number of innovations in poverty reduction strategies. The world developmental crisis led 189 UN member states at the September 2000 UN summit to accept a set of eight targets of development by 2015. Reducing poverty and achieving development have become the top agenda for the decade following the year 2000 through a targeted plan to overcome at least eight biggest vulnerabilities which have obstructed development.

Interestingly, in a 2005 Millennium Development Project findings and recommendations prepared by world’s leading policy analysts under the leadership of Jeffery Sachs (2005, London: Earthscan) to accelerate the policy process, there was no specific mention of e-governance or the ICT-driven innovations or reforms to speed up national efforts. The policy of development through the MDG-suggested pathway has been questioned by many scholars, but the important observation comes from the celebrity ICT scholar Richard Heeks. He has advised policy protagonists of the MDGs to be discerning on e-governance and creation of telecentres

as most of the e-governance projects have been adding to the technology garbage of governance around the Asia Pacific. Scholars have seen MDGs as a North-driven technology agenda: 'The MDGs are not the devil's brew, deliberately cooked up for the purposes of under-development. But nor are they tablets of stone that "shalt not be questioned". They do run the risk of skewing the development agenda, and they also run the risk of marginalizing ICTs' (Heeks 2005, 2008, pp. 26–33).

Scholars have also been finding the ICT connection to MDG a rather impulsive agenda of the North to be imposed with no choice over the South, and this has become a bane for e-governance programmes.[22] While simple applications of 'e' can transform the poor countryside, the state goes to adopt a technology which is exotic and complex (Heeks 2002, pp. 1–11). This mindset which prefers to rate higher any technology which appears complex and rare inadvertently alienates people from using it. Some of the expensive mega-plans such as the National e-Governance Plan for India or the Digital Bangladesh National project are close examples to this.

Irrespective of the connection of MDG policies to e-governance, most countries in the region are showing consistent improvement on their Human Development Indicators and their ability to collaborate in capital investments and resources generation. This positive energy is an outcome of their people being in constant communication with each other, sharing and debating policy outcomes as well as uniting to face environmental and political calamities together such as the tsunami and the battle against corruption. The leaders in broadband services, chip foundries, Internet, e-governance innovations and mobile telephony join many social groups to improve access and performance of public institutions in achieving MDGs. Currently, the need to achieve inclusive governance has intensified efforts across the South Asian region which has the highest number of poor in the world to enable e-technology to penetrate deeper into society for improving their access to development programmes. This has given a fresh impetus to develop a cost-effective convergence technology which is a combination of mobiles, television, radio and advanced satellite communication. The penetration of mobile telephony has been the highest and deepest in the poor regions as compared to other e-technologies, thus ensuring greater access to excluded communities as well as to Asia Pacific where digital divide has become a serious matter of concern for disseminating information and encouraging participation in developmental programmes.

ICT applications within the Asia Pacific have a daunting problem of digital divide to be resolved with the dissemination of this technology. On one hand this region has awe-inspiring success stories such as that of Singapore, Taiwan, Hong Kong and South Korea, while on the other, there are many failed developmental narratives from countries of South Asia and Pacific Islands. Notwithstanding the

[22] 'Today, the "e-Development" agenda has been pressed through the MDG filter, leaving many elements behind. We are left with an agenda that prioritises the use of ICTs in those domains in which they are often least able to be implemented, least able to succeed, least able to sustain and, hence, least able to make a contribution to development' (February 2005 | www.i4donline.net, p. 11).

Table 1.2 Changing demographic features as indicative of new governance challenges

HDI Rank	Countries	0–14 years population		Age dependency (young)		Age dependency (old)		15–64 years population		65+ population	
		2002	2011	2002	2011	2002	2011	2002	2011	2002	2011
2	Australia	20.13	18.95	29.99	28.13	18.97	20.33	67.13	67.36	12.74	13.69
12	S. Korea	19.92	15.95	27.83	21.99	11.86	15.89	71.59	72.53	8.49	11.53
62	Malaysia	32.65	29.92	51.62	45.92	6.48	7.55	63.25	65.16	4.1	4.92
92	Sri Lanka	25.42	24.89	37.54	37.32	10.16	12.62	67.7	66.7	6.88	8.41
101	China	23.31	19.07	33.62	26.29	10.61	11.54	69.33	72.56	7.36	8.37
114	Philippines	37.73	35.07	63.96	57.28	5.57	6.04	58.99	61.23	3.28	3.7
121	Indonesia	29.47	27.7	44.92	39.51	7.52	8.32	65.63	66.9	4.93	5.63
136	India	33.43	30.21	53.81	46.63	7.15	7.71	62.13	64.79	4.44	4.99
146	Bangladesh	35.47	34.87	58.77	47.41	6.92	7.15	60.35	64.7	4.18	4.62
146	Pakistan	39.41	34.84	69.66	57.27	7.11	7.12	56.57	60.83	4.02	4.33
157	Nepal	40.14	35.51	71.46	58.91	6.55	7.01	56.17	60.27	3.68	4.22

Source: World Development Indicators 2012, available at www.tradingeconomics.com
2002 Data
2011 Data

current rising graph of achievements, there is a common platform of challenges which all these countries are encountering without a sustainable remedy to offset the suffering. This is evident from the demographic features of the region which indicate the need for innovating governance structures to become more responsive, attentive and knowledgeable. Table 1.2 highlights certain demographic challenges and changing population dynamics in the region which in turn would entail a serious reinvention of government performance:

(a) Column one suggests that in all countries undertaken for this study, younger population from 0 to 14 years is decreasing. The drop is highest in Nepal, followed by Pakistan, China, South Korea and India. This is likely to impact upon the workforce available in competitive domains of government departments and commercial establishments. This is also likely to affect implementation of e-governance programmes or ICT-based developmental initiatives, outsourcing, offshoring (Call Centres) and service industry where the workforce is perceptively younger. This being the Asia Pacific region's major job market, the impact of reduced younger workforce may disrupt many operations.
(b) Column three, four and five suggest a substantial rise in the number of elderly people not just in the 65 plus category when most of them are 'not working' but also in the age dependency, old, category. Age dependency ratio, old, shows the ratio of older dependents (age 64 years plus) to the working age population (15–64 years). This suggests that the government should give urgent attention to a secure networking for home service delivery of products, medicines, nursing care, ambulances, medical assistance, security, bill payments and something which could be glimpsed as 'government at your doorstep' ('Sarkar Aapke Dwar' as named in India).

(c) Column two suggests that age dependency, young, has substantially decreased. The drop is highest in Nepal,[23] Pakistan[24] and Bangladesh.[25] While population control is one factor for the lesser number of young people in homes, this is also attributed to brain drain and migration for better opportunities (Castles and Miller 2009). As it is provoked by unstable political scenario, it is also pushed by the unreliable job market back home. China, South Korea, the Philippines, Indonesia and India are also on the higher side of age dependency, young, which is indicative of the fact that while the burden of caretaking for children has undoubtedly come down, yet the number of working young in the coming years and those who could provide family support to their ageing members in the family may drastically fall. This would need an interventionist state which could invest in preventing brain drain and migration and at the same time implement social security and support programmes for greater well-being of citizens.

ICT has a political agenda as most other technologies have, but this technology has the capacity to create vendor's access to the legislature only to marshal influence over procurement laws and competition regulations in a manner which is much difficult to expose than other procurements in government purchases. In the last 20 years which is the golden phase of this technology, many nongovernment and government missionaries have influenced debates in the Parliament and on many occasions even controlled the Parliament from within. Many such scandalising reports from Australia, India and Malaysia have featured in public discourse to reveal that ICT companies are represented by leading politicians in the Parliament. The Australian and Indian Parliament has been rocked several times with the charges of ICT vendors controlling debates on new technologies. In Australia, eBay, Cisco, SAP and Oracle are amongst some of those technology companies which are reported to have influenced some former politicians in government (Tung 2009), and in India was the notorious Ramalinga Raju's Satyam Computer Company's scam in which the company paid huge sums of money to the Andhra Pradesh Chief Minister Chandrababu Naidu to obtain favourable decisions in the State legislature to do business (http://www.ysrcong.com.). In UK, five technology giants, Oracle, Xerox, Dell, CSC Computer Sciences and Symantec, had a turnover of more than £7billion and earned £500million from taxpayer-funded government contracts and paid no UK corporation tax. Microsoft, which took £700million in government contracts, paid only £19million in tax (Daily Mail, Wednesday 3 April 2013, 12 pm).

[23] Manandhar, Shilu writes that 'every year 250,000 youths leave Nepal due to political, educational, employment and settling abroad' (2010).

[24] The research economist Abid Ali Abid from Pakistan revealed the data available with the Overseas Employment Corporation that more than 36,000–45,000 young graduates leave Pakistan annually for better opportunities abroad (The Daily Times, July 05, 2009).

[25] Rahman (2010) made a survey in Bangladesh to find out that if some young workforce population returned to Bangladesh; it was only for looking after old parents and providing cultural support to their children, but none said that they get better job opportunities, work environment or security or safety for themselves. Most Bangladeshi students and skilled workers prefer not to return unlike the trend lately being seen in India and China.

1.7 Rationale for Comparison and Methodology

In the first instance, it would be imperative to sketch a rationale for the selection of particular countries as a focus of comparative analysis in the Asia Pacific. This study is essentially a macro-level policy analysis which is logically emerging out of micro-level practices where many of the subjective and intangible sociological, cultural and political aggregation norms influence the implementation of e-governance. Considering the deep historical, anthropological, cultural and geographical varieties which exist over the Asia Pacific in contrast to Europe or America, it was evident that taken together, there would be a huge variance between and amongst populations spread in the region. For theoretical sampling purposes, the variables from different populations are obtained to understand their standard deviation and probability distribution. The following sociological and political variables are identified to indicate representative countries from each region:

1. History and origin of society
2. Nature of foreign rule and constitutional features
3. Political and administrative structures
4. Cultural and ethnic differences and conflicts
5. Rebuilding and development process in the globalisation period
6. Local government's role in governance and service delivery
7. Normative behaviour of administration

On this basis, five South Asian countries are found to constitute one group. Implementation of any ICT development policy passes through more or less similar trajectories given their commonality of history, land and people. Panchayats or local governments in villages act like autonomous republics and have managed to sustain customary practices of social control and institutional freedom despite a constitutional framework.

Southeast Asia is represented by Malaysia, Indonesia and the Philippines. The three nations have overlapping claims over many territories such as Sabah, North Borneo, East and West Kalimantan and continental shelf referred by Indonesians as 'Ambalat'. These countries have been undergoing violence due to ethnic rivalries and rise of militant disturbances. The locally active village governments like the Desa (village) or Kelurahan in Indonesia, Kempongs (villages) headed by Ketua (elected village chief) in Malaysia and Barangay (village) administered by Punong Barangay (chairman) have been relatively active and have maintained local economies. However, as Indonesia and the Philippines suffer serious governance inaction due to internal political crisis, Malaysia has been relatively better placed to pull through sincere structural reforms not just in the period of Tunku Abdul Rahman who was their first Prime Minister but also during Mohamad Mahathir's period.

The third group of representative nations from the East Asia region is constituted of China and South Korea. Due to their economic successes and ability to translate their weaknesses into success stories, these two nations have demonstrated strategic decision making, leadership and sustainable production to guide their political vision.

Table 1.3 Internet active and communicative societies

Countries	Internet users 2000	Internet users 2012	% Population penetration	% Internet users in Asia	Facebook users	% Facebook of total Internet users
China	22,500,000	538,000,000	40.1	50	633,300	0.117
S. Korea	19,040,000	40,329,660	82.5	3.7	10,012,400	24.82
Australia	6,600,000	19,554,832	88.8	80.5	11,680,640	59.73
India	5,000,000	137,000,000	11.4	11.4	62,713,680	45.77
Malaysia	3,700,000	17,723,000	60.7	1.6	13,589,520	76.67
Philippines	2,000,000	36,600,000	32.4	3.1	29,890,900	81.66
Indonesia	2,000,000	55,000,000	22.1	5.1	51,096,860	92.9
Pakistan	133,900	29,128,970	15.3	2.7	7,984,880	27.41
Sri Lanka	121,500	3,222,200	15	0.3	1,515,720	47.03
Bangladesh	100,000	8,054,190	5	0.7	3,352,680	41.62
Nepal	50,000	2,690,162	9	0.2	1,940,820	72.14
Afghanistan	1,000	1,520,996	5	0.1	383,220	25.19
Bhutan	500	150,548	21	0	82,040	54.49

Source: Internet World Statistics, http://www.internetworldstats.com/stats3.htm. data.worldbank.org/indicators

Pacific region has its sole representative in Australia. With its high Human Development Indicator rank at 2, Australia is in a position to explain with greater authenticity the story behind those large gaps in well-being and life chances, which continue to prevail in countries which have shown better e-governance records such as South Korea (HDI 12), Malaysia (HDI 62), China (HDI 101) or Indonesia (121). Besides, this Australia's information and communications technology (ICT) sector has emerged as one of the most highly developed and cost-competitive ICT platforms. ICT generates 5 % of GDP of Australia, and approximately half of GDP growth can be attributed to ICT. ICT is a key enabler for industries such as mining and energy, agriculture, finance and transport. Besides a strong local industry, many international ICT corporations have significant global operations based in Australia. For AIIA (Australian Information Industry Association) and ASOCIO, the pan-Asian grouping of national ICT associations, to promote SME collaboration, this is an area of growing interest. The AIIA report on outsourcing says that the offshore outsourcing represents a significant structural challenge for the Australian ICT industry with potentially profound and far-reaching impacts for both individuals and companies alike (Table 1.3).

The Australia Trade Commission (Austrade) which is Australia's trade and investment development agency emphasised that Australia is the region's strongest economies. It accounted for over 300,000 businesses generating in excess of Aus$120 billion in 2008–2009 and growing at a phenomenal speed of 12.8 % consistently every year. Thus, Australia surpasses the growth rates of markets in Japan, Hong Kong and South Korea. Australia has also emerged as a hub of ICT innovations and sustainable technology (Frost and Sullivan report). The demand for Australian products is significantly increasing in India and Southeast Asia, while in Bangladesh the investment and technology support is arriving from South Korea.

The last group of nations, i.e. Afghanistan and Bhutan, represents nations which have overcome the economic, geographical and political crisis valiantly to achieve ends of ICT. They would present a picture of success in ICT without translating it into e-governance and well-being.

Significant disparities in the degree of democratic development tarnish the achievement of Millennium Development Goals (MDG). These are disparities in income, educational attainment, gender and access to resources including training in science, technology, legal frameworks and governance which keep a large majority of people out of the social net. Alienation and marginalisation seep into efforts of reform leading to a completely uneventful and ritualistic policy implementation (see MDG in Human Development Report 2003, pp. 1–13). The report admitted that these goals cannot be realised with business as usual approach, but the pace of progress must be dramatically accelerated. It was also clarified that even though a stronger economic growth was required, yet growth alone will not be enough as policies also need to strengthen the links between stronger growth and higher incomes in the poorest households (p. 5 HDR 2003). For achieving this access to education, food, technology and health services becomes a dire requirement of sustaining growth. For Australia the issue is to sustain growth and development for a longer period of time in this competitive market system.

ICT services have played a major role in bringing South Asia out of stagnation and economic depression as trans-national banks and service industries like the American Express, British Airways, General Electrics, Canadian Nortel Networks and US's Texas Instruments were able to apply ICT to resuscitate their positions in the world market. The domestic market in India is well developed for a major outflow of FDI since Tata Consultancy, Infosys, Wipro and Satyam computers are at par with foreign rivals (McKinsey & Co Reports). Indo-Australian collaboration can safely broaden up in ICT services such as customer care, finance, human resources, billing and payments, administration and content development. Engineering, design, knowledge processing and logistics are further going to generate a major employment market which is slated to show the highest growth in coming times. The prospects of collaboration are bright in the South Asian region. In as early as 2004, the World Investment Report had foreseen a large-scale movement of Fortune 500 companies towards India, China and the Philippines (2004, p. 161). Looking at the composition of FDI services, one can notice the shift from trade and finance to IT-enabled corporate services including electricity, water, telecommunications and business where it has risen 14-fold. Even in telecom storage and transport, the rise is 16-fold and in business services 9-fold. What is of particular interest for this paper is that FDI inflow is decreasing in developed countries, while the outflow is increasing for which India is ranked as the foremost destination for reasons described in the World Bank Report (2004) as 'Firms are attracted not just by its base of low cost and skilled labour, it also has first mover and agglomeration advantages'. The report further states that 'the growing technological capabilities of Indian firms and their rising exports, particularly IT services are driving FDI growth'. This in turn has been strengthening regulatory systems, reliability of services and consumer protection laws. Thus, IT-enabled services have opened up doors for partnerships in legal services besides infrastructural issues.

1.8 Conclusion

This opening chapter of the book is an introduction to some of the basic concepts of e-governance, its relationship to governance and the challenges which are encountered in transition from governance to e-governance platforms. In recent years there has been an overflow of research findings on e-governance and writings on empirical micro-level analysis of e-governance. The focus has mostly been the development in the direction of better quality of services, improved accessibility and affordability. The chapter emphasises the point that e-governance is not just a technological tool for service delivery which in principle may not really be possible even if it is initially assumed to be so. It distances government from governance to technology outputs in specific areas which in many ways may gradually become irrelevant for citizens, thereby preventing them from accessing such services online with an invisible power holder. On the other side, such services, due to lack of interactive citizenry, are likely to drag on outmoded and user-unfriendly technology systems which in consequence may demotivate and discourage people to deal with government services online. Thus, the chapter emphasises the need for a citizen-driven technology, the alternative of which is an economic or a technology disaster in public services.

On hindsight, the rise of Internet is grounded in its democratic nature, decentralised management and ability to commercialise use of softwares for the new generation networking. The role of MIT experts in the USA is in developing the Internet technology and popularising its usability and feasibility for the market and government but most importantly disseminating information to absorb the rising number of people to the Internet. The origins of ISP/IP, DNS, regional inventories, microprocessors, wireless networks and artificial intelligence have all pushed the growth of Internet besides, at the same time, making it more sophisticated.

ICT-driven governance has its primary focus and concern to eradicate abject poverty of the Asia Pacific region and achieve the Millennium Development Goals (MDGs). This chapter does not deal with the philosophy and epistemology of e-governance which would be taken up in later chapters. However, the chapter is a factsheet about the need and indispensability of implementing e-governance for improving well-being in the Asia Pacific region. There are many new challenges of changing population profile and demographic developments in the region. The younger population is decreasing in some of the fast-growing nations. Dependent old population is increasing which is a significant development to identify directions and pathways for e-governance priorities. The chapter also raises concern about migration and brain drain, the prevention of which should be incorporated in the design of economy but also in convergence systems of offshoring and production management systems, preferably in the management of information systems. This may pave the way for understanding the need and notion of technological citizenship which is being ignored by the government. This chapter explains the fundamentals of e-governance and technology used for making it relevant and functional. It draws relationship of ICT with development, growth, MDGs and politics and suggests that

an appropriate and astute approach to technological development guided by standard principles of democratic governance can usher in a future of well-being, better human development and knowledge-based governance.

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Chapter 2
Epistemology and Theoretical Explorations of e-Governance

2.1 Epistemological Search for e-Governance Constructs

The present work being a 'critical impulse of e-governance' cannot be taken any further without navigating through the epistemological explorations of the subject. Policymaker would be better equipped to deal with issues arising through the mega-structures of e-governance if some light is shed over its origin and advancement into the course of governance. Investigators of e-governance would be curious to know how this knowledge arises and how it extends to many of its domain areas which it presently occupies.

There ought to be various twists and turns in the transition of information and communication technology into a governance process. As given in the previous chapter, the dedicated group of engineers who invented the Internet realised its fascinating power in networking, transmission and multidimensionality of control of its outside socio-economic environment. Thus, a team was formed to carry on an inexorable journey of a variety of inventions within the larger term of ICT which were to be utilised in e-governance later. Thus, the transition of technology into e-governance becomes a complicated and at times a fuzzy governance process because the inputs to ICT may not really match the outputs into e-governance. At this juncture where ICT spreads its wings to fly into the real world of politics, the new relationships which emerge reflect upon the nature and potential of technology itself. Epistemology helps to see through the layers of the network's evolutionary journey and assess its real potential for providing services to citizens.

There are a few anxious moments related to the nature of e-governance. Any description of e-governance becomes a description of mega-structures of technology-based solutions to governance which subordinates rational critique to political defence. The contestations surrounding e-governance refer to issues of technology vs. human roles and capacities, control and the retention of power underneath the promotion of technology to human needs. As e-governance works upon ICT, the deficits of knowledge about the functioning of this technology and the embedded fears of its dispersed and complicated network generate passion-driven debates by

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its protagonists and those who claim to be concerned about the democratic state and freedom of citizens. The ICT has a transmission role through the wires which connect a number of softwares and hardwares where knowledge and information are stored and delivered to its destination. The connecting point in a network is a 'node' which is a connection point, either a redistribution point or an end point for data transmissions (Rouse 2006). This creates a 'rhizome-like unseen activity' in creating partnerships and collaborations, manufacturing compliance and promoting markets of e-governance. Theoretical analysts have feared a fuzzy activity of politics to blight this process as one is read to be transparent and accountable when it is not, just as one is believed to be efficient when the results may not be very different from the earlier situations. An enriching discourse of technological rationality and determinism drives theoretical explorations to suggest a balanced view which is protected from the control of vendors, markets and the industrially advanced countries. As e-governance appears to be a game of small players at the local governance level in the manner they generate local connectivity and manage content, much of e-governance is a matter of big global players who provide ISP/ID, broadband, softwares, big data storage and all advancements in this rapidly competitive outreach of technology. These theoretical concerns may help to understand the processes of governance related to further transitions to advanced systems such as Cloud and IPv6, as discussed in the later part of this book.

Epistemology is derived from the Greek *epistēmē* ('knowledge') and *logos* ('reason'). Placed alongside metaphysics, logic and ethics, it is one of the four main branches of philosophy. Epistemology attempts to construct knowledge through reason by consistently involving into two main tasks of description of a situation and possible justification of the described content. Any effort to understand the world becomes clearer and closer to truth as this process of enquiry moves further and is used by philosophers to construct theories and offer rationally accurate systems of thoughts. Philosophers have repeatedly emphasised that what we see may not really be correct as sense experience cannot be a source of knowledge. A straight stick submerged in water looks bent, though it is not and the mirage while driving through the desert may give the feeling of water, even though there is nothing but sand. Thus, what appears from outside may not be the real nature of anything yet certain perceptions are given priority over others to accept that the stick is not bent but is straight and there is no water but only sand. Bertrand Russell explains the process through which epistemologies are created and constructed in our minds which generates or builds a specific perception towards a situation. There are two stages to the building up of perceptions. First stage is when one infers through the data collected by one's senses and the second stage is the construction of a perception by such inferences drawn from the collected data. In an analysis of e-governance, the most encompassing technology of present times, the ICT, is able to promote itself by the use of new satellite media as an easy, cost-effective device which would usher in a transparent, accountable and livelihood-generating governance. This influences mental constructions about the changing world through ICT and, in turn, diverts attention from many other much needed reforms in governance. Human desire to comprehend the world is an unstoppable natural phenomena, and it is

through this process that many theories are constructed. Not every situation is explainable but one may expect to reach closer to reality with the construction of theory. Epistemology has proved to be a reliable way to study these constructions in e-governance as well as the perceptions of progress created through it.

The problem around e-governance analysis is about tautological arguments which seem like forecasting performance even before it is constructed. The arguments which promote e-governance are tautological in the sense that they are a priori and necessary which have no cognitive import. Wittgenstein in *Philosophical Investigations* (1953) and later Bertrand Russell in *Theory of Knowledge* (1913) state that explanation must be replaced by description so one could access knowledge which is free of inferences of the tautological kind. However, explanations about e-governance became a norm and a symptom of technological determinism which goes with it.

2.2 Technological Determinism

Fascination with the prowess of technology and the celebration of victory over limitations to control generates an ethos of having achieved a magic wand. Most people are so overawed with the invention of technology and innovations which it brings that they see a mission in defending its advance for the cause of human welfare and development. This form of rationality builds a halo of technological determinism in the promotion of ICT in state policies.

Daniel Bell (1974) is considered to be one of the most original and powerful theorists along with Castells has also been found to incline towards technological determinism. Bell refers to the post-industrial society as an information and service society. Information and services are products of ICT which is a medium to usher in an era of efficiency and well-being. As one of the prominent theorists, his writings have produced wide-ranging benefits which accrue out of the use of ICT in society. Hugh Mackay (2001) has indicated that technology becomes central to his arguments while issues surrounding class, capital and power find no place. This has become one of the most popular methods of analysing technology in social sciences where delivery of basic services which produce general well-being becomes a form of new consciousness as they bring a social change. Researchers and scholars writing on cyber technology, including some of the lead critiques of the instrumental rationality of the new public management-based reforms such as Lawrence Lynn (Jr), also have looked at ICT with admiration and awe. This chapter attempts to break through the 'one dimensionality', and in doing so some of the fascinating arguments presented by Marcuse have helped to diagnose how we have become 'preconditioned' to think one dimensionally (Marcuse 1964, p. 8); in fact most scholars despite the disagreement prefer to take the same route. Much of this section would be devoted to many critical studies which highlight attention and focus on the product and its medium which enlightens to understand the ICT.

Technological determinism can be explained by two underlying notions: One, the path of technological development is predetermined and normative influences may not be able to deter it from its advance. Two, society has to adapt itself to the moving frontiers of technology rather than vice versa as technological paths are not socially determined. An important question which arises at this juncture is to explore the nature of relationship between technology and society. A dominant view about this relationship is referred to as 'instrumental theory' (Feenberg 2002b, p. 5). Technology becomes a neutral participant in governmental activities and gets thoroughly detached with the ends it seeks to pursue. It also becomes disconnected from working within a socio-economic system of institutions in a particular space and time. At this point the mission it sets for itself as a justification for neutrality is 'pure efficiency', and in this way it is able to set for itself universally approved global measurement scales for good governance and high growth.

In contrast to the instrumental theory, Feenberg suggests 'a substantive theory of technology'. Promoted by critical theorists this theory suggests that a cultural system constructed every technology and any technological development which is appropriate to its milieu as a democratic technological system. Heidegger[1] warns that technology is controlling our minds to such an extent that it is impossible to create another civilisation using the same technological system. Carr (2010) brings together an extensive and impressive body of research in psychology, neuroscience and philosophy to reveal the Internet to be detrimental to our development of abilities for deep understanding and concept formation which can be related to a loss of ability to critically question the Internet. The medium has a powerful impact upon mental processes and one reason for that is also as suggested by McLaren's commentary on the 'internet as a technology designed to continually distract us' or as referred to as 'an ecosystem of interruption' (McLaren 2012, p. 384). McLuhan in Understanding Media (1964) had presented perceptive views on the medium as a real message and the content which it produces trivial effect only. As people tend to focus upon the content rather than its medium, one escapes focus on the medium's stronger ability to change the 'scale of human association and action' (p. 9). Thus, due to the medium in which this content is supplied, many subtle changes gradually impact upon the society's value system, normative conditions and lifestyles itself. The individual is not even aware as cultural and social transformations seep into an otherwise rigid society. Something similar to this idea is expressed by Karl Marx in his preface to *A Contribution to the Critique of Political Economy* (1859) when he writes that 'the mode of production of material life determines the social, political and intellectual life process in general. It is not the consciousness of men that determines their being, but on the contrary, their social being that determines their consciousness'. Any transformation brought about by the introduction of technology as suggested by Lukacs and Heidegger is not a metaphysical event or at no point is an inevitable workmanship of divine forces but a means to social domination. Therefore, they suggest that such developments should be mastered through democratisation processes

[1] This view that technologies are mere tools has been extensively challenged, perhaps most famously by Martin Heidegger (1977).

failing which there is immense likelihood that they may end up in an authoritative domination over society. The fears embedded in the writings of critical theorists are about the dominant role which such a technology would bring in decisions related to human civilisation. George Lukacs took a cue from Marx to suggest that the forces of production included not just work relations but technology as well; therefore, capitalistic technology should be replaced with proletarian technology if socialism is the destination. Marcuse and Foucault present one of the most powerful critiques of technological domination. In his work *One Dimensional Man* (1964, p. 154), Marcuse writes that when 'technics becomes the universal form of material production, it circumscribes an entire culture; it projects a historical totality – a world'. He makes reference to technical rationality as a characteristic of advanced industrial societies which overrides the more substantive, values-laden forms of reason to create a 'world of instrumentalities' (1964, p. 218). Such objects of technology according to him are emptied of any transcendent meaning beyond perhaps their exchange value (p. 219).

> [T]he notion of the 'neutrality' of technology can no longer be maintained. Technology as such cannot be isolated from the use to which it is put; the technological society is a system of domination which operates already in the concept and construction of technique. (Marcuse 1964, p. xvi) 2

Marcuse's theory of technological rationality was a direct attack on Max Weber's theory which to a larger part remains mainly an instrumental rationality rather than a substantive one even though he does try to justify the presence of substantive rationality with its unavoidable value biases. Marcuse emphasised that 'technological rationality' paves the way for social domination as the rules which are formulated to achieve it are generally excluding workers from designing the implementation of the efficiency principle.

'The efficiency of the system', writes Marcuse, 'blunts the individual's recognition that it (technology) contains no facts which do not communicate the repressive power of the whole' (Marcuse 1964, p. 11). As material abundance is demonstrated and consumerism becomes a norm, policy-related thoughts converge for a magical dip into a world of well-being through ICT.

Foucault has also been arguing for a historical investigation into power systems legitimised by forms of technological systems. Foucault (1980, p. 98) writes that 'power flows in a circuit' which means that if faced with resistance, the current is simply diverted into another wire. Thus, he suggests (1980, p. 98) that one should 'stop relying solely on the tactic of looking for ways to resist power (especially in the form of tangible authority figures) and instead concentrate on recognizing the expansive and pervasive "structures" through which power is actually transferred'. He studied the growth of modern social and administrative systems and strongly rejects the belief that technology is neutral in any way. According to him new forms of knowledge and new forms of social controls are connected at their origin. Nothing explains Marx, Marcuse and Foucault better than a statement from Feenberg, 'capitalism is a kind of collective automaton, the parts of which are human beings organized into a self- reproducing, self-expanding system of dependencies' (2002, p. 70).

Technological determinism has also evoked many unfounded fears amongst workforce from time to time. When computers and ICT were introduced in Asia in the mid-1980s, workers were antagonised as the fear of downsizing gripped trade unions and administrative hierarchies. This was proved wrong when the literature on downsizing in the Asian countries revealed that the process of agencification as part of the new public management reforms has merely split big and loathsome government departments into slimmer, functional and specialised agencies which accommodated most of the erstwhile workforce and not reduced them. In fact ICT, like bureaucracy, is driven by the Parkinson's law of bureaucracy where the reducing amount of work does not bring down the number of workers. C. Northcote Parkinson (1955, 1958) had studied the British colonial office to reach these conclusions. This colonial office had consistently increased its workforce despite the fact that the British overseas empire had declined. Parkinson established through his empirical surveys that 'Officials make work for each other even when the actual work decreases'. ICT also created its own requirement for the workforce as it evolved.

Some writings in the early era of computerisation had analysed the workforce connection to the new technology. Harley Shaiken (1984) clarified that no direct correlation exists between them. This study drew conclusions quite opposite to what had been the central concerns of a previous bestseller, *The Future Shock* by Alvin Toffler (1970). Shaiken further went on to explain the nature of the new electronic technology which also made authoritative demands upon employees to serve its needs rather than the needs of labour as human beings.

> It is ironic that computers and microelectronics should be used to create a more authoritarian workplace. They could just as easily be deployed to make jobs more creative and increase shop floor decision-making. …the technology could be used to bring the work under the more complete control of the people who do it rather than the other way around. (1984, p. 267)

To say that ICT made workforce servile to machines rather than making machines serve the workers would not be an exaggeration. What has been happening unintentionally is that people have routinely changed themselves to the needs of changing technology and have almost stopped questioning the shaping of technology to suit their own needs. Thus, a technological system is created and people fitted into it like cogs in a machine while those who cannot be fitted are thrown out. This commonsense way of thinking about technology prescribes a one-way relationship between machines and systems and is commonly referred to as 'technological determinism'. This belief further goes on to mistakenly conclude that technological change brings about social change which it does not as the above description of Parkinson and Shaiken clarifies.

Another explanation comes from the findings of Donald MacKenzie and Judy Wajcman (1999). They forcefully argue against the notion of technological determinism and believe in the proposition that technologies are socially shaped. Their findings about technology as the product of social preferences, bureaucratic mandates and economic pressures indicate that technological determinism stands upon a weak ground of state control. This interaction is as much true for computer-mediated informational systems such as the Internet as it is for cell phones, TV and other satellite-based media communicational devices. It is further developed by an increasing number of

postmodern theorists in the field of computer-mediated communication. Many deterministic beliefs about ICT receive a systematic treatment in the work of Poster (1990) which studies postmodernism and its application to ICT.

It is important to find out the environment in which a particular science or technology has risen so that the contextuality of the new invention may be linked to societal demands. Many contemporary authors[2] in the discipline of cultural and ecological studies have found this task relevant to answer issues of technological determinism. Andrew Webster (1991) puts forth an idea of 'epistemic relativism' in the study of science or the relationship of a particular scientific knowledge to its space and time to conclude that it has a cultural, historical and geographical location. S.L. Star (1995) has extended the argument to treat scientific and technological systems as economic and political objects. Thus, technology has a social construction in which sociological methodologies, ethnographic and discourse analysis are commonly used techniques to evaluate its relationship to society. A strong theorist on technological determinism, David Bell's writing on 'Cultural Studies in Cyberspace' (2006, p. 5) has highlighted another interesting dimension of technological determinism. The hostility between technologists and social scientists has been mentioned and explained as an important factor of a defensive approach towards technological systems. Both technology and cultural studies have grown within polarised domains, and a more interdisciplinary approach through narratives in cultural studies explains with clarity the 'cultural embeddedness'[3] of scientific and cultural systems. Cultural studies of science and technology have in fact stood like a wall against technological determinism by raising issues of political domination, disempowerment and control in the applications of technologies which are advanced by the state power in defiance of cultural negotiations.

2.3 ICT, Surveillance and State Power

The theoretical explorations of e-governance centre around the nature of ICT. Some theorists see this potentially powerful technology as a progenitor of a newly transformed world of opportunities, freedom and knowledge for all who wish to browse. These theorists as Webster (1995) observes have not delved into the meaning or significance of such transformations. Others see this development as a process which deepens and strengthens the pre-existing social inequalities, exploitation of labour and the rise of surveillance society[4] (Lyon 2001). Who coined the term 'sur-

[2] Bjiker and Law (1992).

[3] Balsamo (1998).

[4] As David Lyon (2001, p. 33) puts it, '*The notion of surveillance society indicates that surveillance activities have long since spilled over the edges of government bureaucracies to flood every conceivable social conduit*'. As a result, many other social actors, such as businesses, have become involved in the creation or use of surveillance. It is also referred to as 'total surveillance society' (Parker 2001; Rule 2002) and 'maximum security society' (Lyon 1992; Marx 1988) in which pervasive, perpetual, invisible, and dispersed surveillance of individuals becomes an undismissible part of everyday life.

veillance society' called ICT as a technology device to take full social control. This becomes possible due to the creation of 'e' networks which are dispersed through 'nodes' or powerful data transmission and redistribution junctions. These nodes transmit and bring together data accumulated by the previous networks from dispersed regions of activity such as economics, politics as well as culture, thereby turning benign information giving networks as politically manoeuvered networks of production, power and experience. This change in the manner of information dissemination and business transactions constructs a culture of virtuality in the global flows that transcend time and space (Castells 1998, p. 370). The spread of globalisation can be attributed to this culture of virtuality without which much of investment-driven development had not been possible. While ICTs have liberated citizens from the bondage of time and distance, it had increased controls over citizens' life through many so-called efficiency drives such as citizen's cards (called Aadhar and BPL Cards in India, Social Security numbers in the USA), Bank Credit rating, Permanent Account Number or PAN Card which enable authenticity in insurance policies, income tax and loan disbursals. Besides this, huge investments are being made in every city towards installing video surveillance, closed-circuit television (CCTV), screening at highway toll passes, metal detectors, fingerprinting, drug and DNA testing for improving police and forensic responsibilities. Even the bodies of citizens have become objects of surveillance through biometrics in identification exercises, and right now this has become the main anxiety in the discourse on state efficiency vs. state power.[5] This has raised theoretical questions particularly in the post-9/11 literature on the jurisdiction of the state in using ICT in biometric surveillance such as mapping, recording and data storage of individuals without their knowledge. Giorgio Agamben in his 'state of exception' has described the manner in which the 'state of exception' is able to annul the right to individual's privacy.

This surveillance is increasingly applied in both public and private organisations. Clarke (1988) explains how the process called dataveillance refers to a control of peoples' action and communication. Thus, ICTs have led to the rise of a new state which is omnipotent and in complete control of socio-political economic lives of citizens. Lyon (2003) takes this further to differentiate between state policies of 'categorical suspicion' and 'categorical seduction'; the former is applied to trace and track terrorist activities and the latter is to seduce new clients and customers into marketing and business. Some studies have brought out the manner in which companies and businesses track down adverse opinions by safely intruding into the area of privacy. Rheingold (1993) mentions the way companies created customer profile files on users' hard drives and were able to read private information of clients.

Foucault's panopticon model of a prison or more appropriately the state authority 'is to induce in the inmate a state of conscious and permanent visibility that assures the automatic functioning of power' (Foucault 1972, p. 201). This helps the state to eliminate unwanted groups and strengthen state power of control over individuals. The Internet eliminates the need for a physical brick and mortar archetype of a

[5] Higgs (2001), Lyon (2003), Crompton (2004), Solove (2004), Agamben (2005).

panopticon as the networks spread across the cyberspace have not allowed anyone to escape from its sight unless one does not use it at all. Society is rushing into the world of mobiles which has seen the fastest growth even across the poorest regions. The IMEI number which is the International Mobile Equipment Identity pulls the user within the control loop just as the ISP/IP number tracks down individuals through Internet. The regime of power is enlarged with the expansion of ICT. As Brignall (2002) laments that only those that refuse to use the technology will be free from being observed. Thus, the kind of conformity to state ideology which the panopticon model brought about is now being manufactured by the popularisation and use of ICT.

The postmodernists have also contributed to the insightful analysis of ICT. Most of those who draw critical perceptions from the French theorists of the 1960s have highlighted the fuzziness of complicated networks within ICT. Particularly Gilles Deleuze and Felix Guattari, in their seminal work *A Thousand Plateaus* (1987), have looked into the problem of state control and individual freedom in ICT applications. The issue of jurisdiction becomes extremely contentious when dealing with boundaries which exist only in space, but the debate on this 'cyberspace' is interesting in the ICT discourse. For philosophers ICT presented a space for networks where all wires were connected in a non-linear manner, but despite being a region of high-tension work area, it remained a silent zone. The term 'cyberspace' came into use in the 1980s, but William Gibson (1984) can be attributed the title of the 'father of cyberspace'. His work explains the features of cyberpunk science in his book *Neuromancer*.

Cyberspace has also become an area of both fascination and fear for being a space which is undefinable and unexplored. An insightful discussion on this is found in the work of Gilles Deleuze and Felix Guattari which describes cyberspace as rhizomes or bodies without organs or some form of an unregulated life or nomadism. This imagination of cyberspace as a rhizome is interesting as rhizome which is otherwise a botanical terminology for explaining a category of plants called tubers such as potatoes which grow under the ground. The soft green plant which one sees from outside may not show any symptom matching the arbitrary form of expansion beneath. As Deleuze and Guattari (1987, p. 8) state that 'There are no points or positions in a rhizome, such as those found in a structure, tree, or root. There are only lines'.

Cyberspace is described as rhizomatic because it reflects upon innumerable interconnections and heterogeneity which indicate a form of governance which would not be easy to explore and not be approached by non-technical or simply semi-specialised individuals. The introduction to *A Thousand Plateaus* elaborates that a 'rhizome ceaselessly establishes connections between semiotic chains – a semiotic chain is like a tuber agglomerating very diverse acts, not only linguistic, but also perceptive, mimetic, gestural and cognitive' (1987, p. 7), and in this multiplicity there is no unity to hold the organisation together. Gibson's 'cyberspace' and Deleuze's and Guattari's 'rhizome' appeared at almost the same time in 1984 and 1983, respectively. More scholars understood the rhizomatic nature of the cyberspace and some like Hamman (1996) clearly and undoubtedly declared that 'rhizome is Internet'.

Deleuze and Guattari as postmodernists communication theorists have assigned a 'rhizomatic' nature to the cyberspace and from this argument suggest that cyberspace also contains characteristics of a liberal state which is unregulated growth in many directions. The metaphors, rhizomatic and nomadic as embedded in the nature of the Internet, carry some form of a fear against unknown regulations which is symptomatic of the era of advancing globalisation or deregulated capitalism of transactions in space. Foucault attended to the crucial question of how forms of rationality and technology are involved in power/knowledge relations. Globalisation of the capitalist economy plays a crucial role in this (Willcocks 2006, p. 292).

The insignificant and unstable boundaries which harbour intense contingency and unpredictability, such as in a moment people participate as distantly placed bodies while in another moment they disappear and become un-contactable, are what suggest nomadic nature of the Internet. Therefore, the advent and description of nomadic thought in *A Thousand Plateaus* opposes any form of preset direction to the movement and because of which the growth which in early eras was planned and time monitored has now defied control and state authority. This characteristic of cyberspace as rhizomatic and nomadic is akin to the global business transactions in a liberal state where speculative fund transfers, online commerce, online mergers, auctions and offshoring strategies were made possible by the advent of ICT. This equivalence with the globalised capitalistic state is one of the most interesting description of the cyberspace, the area within which ICT functions. Some authors in the postmodern philosophical thought have drawn clear relationship of cyberspace to the consumption-driven capitalist state. Markley (1996, p. 74) described it as 'the ultimate capitalist fantasy because it promises to exploit our own desires as the inexhaustible material of consumption'. He further categorically declares that 'the dream of cyberspace is the dream of infinite production' (p. 74), whereby, the ultimate destination and advance of cyber technology can only be a consistent and unstoppable tendency to raise profits.

The new world of cyber technology besides being rhizomatic and nomadic has been seen to mobilise resistance against the controllers of this technology itself, which suggests that the technology in its labyrinthine network can even transcend controls by the state. This characteristic has also liberated the underserved voiceless confined to remote regions to share information and cause for vulnerability. The potential power over the Internet is the number of signatories to an online petition rather than the might of the war machine which the state nurtures. Some of the biggest and most powerful anti-state movements in the last two decades have been the outcome of the disgruntled ideologues like nomadic travellers meeting in cyberspace. The movement against the nexus of G-7 countries with the trans-national companies continued to strengthen from its earlier show at the Rio de Janeiro Meeting of the World Commission of Environment and Development in 1992 to Seattle, Copenhagen and thereafter emerging as a consolidated alternative philosophy of development. It even defied the world's most powerful US State intelligence. Seattle's sudden outburst of more than 40,000 strong NGOs and individuals is beyond comprehension without an understanding of the rhizomatic nature which the ICT subscribes to. The potential power over the Internet is the number of

signatories to a petition rather than the might of the war machine which the state nurtures. Foucault (1977) has analysed this 'resistant Internet use' to have emerged from a dialectic or dyadic communication between the forces of rhizomatic-nomadic anti-State and anti-capitalist resistance against panoptic State and capitalist control. The 'panoptic' is Foucault's term for the unseen overseer or the surveillance State that monitors lives of individuals, and Foucault's analysis helps in dismantling or taking a balanced view of the ICT which can promote a treasonable state power under the garb of a liberal democratic state with a decentralised e-governance system. Nonetheless, there are also clear links between Deleuze and Guattari and the Foucauldian analysis referred to earlier. As Willcocks points out, 'Deleuze…. stresses that Foucault was one of the first to say that we have been shifting from disciplinary societies to what Deleuze calls control societies. These no longer operate by, for example, physically confining people but through continuous control and instant communication enabled by developments in material technology. In this rendering, what has been called information society can also be read as control society. If this is correct, then Foucault's power/knowledge, discourse, biopower and governmentality remain as thoroughly applicable concepts, as Foucault intended them' (Wilcox 2006, p. 277).

2.4 The Macro- and the Micro-domains Within the Networked e-Governance

On interrogating the theoretical domain of e-governance, one is confronted with the structure of e-governance which is also the core of networked[6] governance of the present times. It would be reasonable to start with the unique configuration of institutions and processes in e-governance as given in Fig. 2.1. The leading institutions and agencies which play a crucial role in e-governance are new, an outcome of innovation and a product of the market. They represent diverse field and also have distinct epistemological origins but are interlinked and interdependent much like the rhizomatic cyberspace of Deleuze and Guattari (1987) mentioned in the earlier section of this chapter. In contrast, public sector institutions have a common historical origin in the administrative history and the constitutional framework of the country. Yet whatever is the form of governance in a country, be it a democracy, an authoritarian or the one ruled by a monarch, they retain a standardised operational location of e-governance institutions as dispersed as given above. The most indispensable and powerful of them like the IANA and the Community of Expertise

[6] Networked governance in the present context refers to the global to local linkages through internet and mobile satellite technologies. Networked governance is one of the major discourses on governance in present times. It refers to a dynamic, flexible and evolving method of working that rely on horizontal, self-governing networks, reflecting the complex realities of welfare, which is delivered by a range of providers (Rhodes 2000). Such networks reflect the diversity and pluralism of modern society (Rhodes 1997). Stoker (2000) suggests that in a networked governance, the central government acts only as an enabler, rather than a coercing agent.

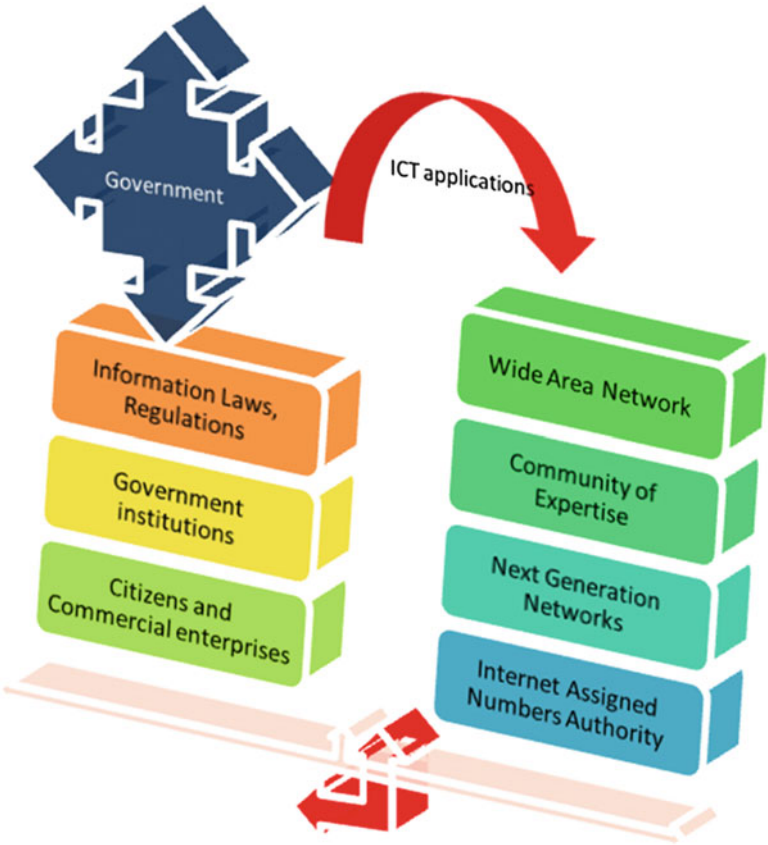

Fig. 2.1 Local and global linkages of e-governance network

which constitutes a closely knit community of STEM (Science, Technology, Engineering and Mathematics) graduates are mostly influenced and governed by international institutions like the International Telecom Union, World Economic Forum, United Nations Information and Communication Technology Task Force (UN ICT TF), Internet Governance Forum, UN Group on the Information Society (UN GIS), Global Alliance for ICT and Development (GAID), Global ePolicy Resource Network (ePol-NET), Global Centre for ICT in Parliament and the Regional Internet Registries. These exogenous but a new breed of organisations and some institutions have defining influence upon the infrastructural and technological requirements of e-governance institutions; the government generally turns into a facilitator for policies coming from outside.

Global and local governance has become increasingly contingent due to technical uncertainties and complexities which is further exacerbated by the lack of capacity with governments to be able to coordinate such policies. Peter Haas explores that the

task of coordination cannot be left with governments; hence, a specialised group should be coordinating such policy areas. Haas refers to this specialised group as an 'epistemic community' which forms 'a network of professionals with recognized expertise, and competence in a particular domain and an authoritative claim to policy relevant knowledge within that domain…' (Haas 1992, p. 3). A politically strong government will however use these exogenous pressures as a cue for bringing in-house institutional reforms which enable the government to generate epistemic communities in governance to coordinate and direct the processes of e-governance with knowledge and developmental requirements. This in any case is an ideal situation as most countries rush into e-governance before they are able to set their own house in order, leading to a large scale derailment of e-governance projects in most countries.[7]

For a holistic understanding and analysis of e-governance, this chapter attempts to study it within a sociological framework of governance structures where the micro- as well as the macro-structures play an equally important role. It is widely seen that e-governance has neglected macro-actors in a manner similar to what sociological theory had done by neglecting influential personalities, dominant communities, donor agencies, leaders and global institutions. On the other hand the excessive preoccupation with the micro-studies remained a dominant trend because as Mouzelis (1995, p. 15) said, 'there is excessive fear of reification that haunts hermeneutically and ethnomethodologically-oriented sociologists' which prevented the evolution of sociological theory towards relevance and policy implementation studies. Due to this disjunction of micro-macro structuralism carried into e-governance structures, it was faced with two main criticisms: one, by those who have great inclination for the grassroot structures and often lean towards mundane narratives of local experiences for generalisation into a theory. This tends to confine e-governance to LAN structures only and reduce it for serving minimal local needs rather than a knowledge build-up for capacity enhancement and entrepreneurship training of local people. Gradually people tend to understand the irrelevance of such structures and find alternatives to getting services available to themselves. With the privatisation of many basic services like telephone, transport and electricity, government services tend to lose their sheen much sooner. For example, Bharat Sanchar Nigam Ltd. (BSNL) in India almost lost the competition against Airtel, Hutch (now Vodafone) and other private telephone operators as they could not connect the customer to many offers, plans and gifts to suit their unique requirements.

The other criticism is against the popularisation of technological determinism in e-governance, which suggests that the choice of technology should be made by the committee of expertise without the need for involvement or feedback from local people who in any case would adapt to technological changes. This has distanced many macro-level institutions from participating or having an opinion on e-governance in their areas, especially organisations such as NGOs; professional collectives or occupational groups of lawyers, doctors and academia; educational

[7] Felix et al (2011) study explains in detail the failure of e-governance projects.

institutions, corporations, election commission, district office and political parties in decision making. Coleman's Foundations of Social Theory (1990) clarifies that the micro- to macro-transition is reductive as it does not express the micro-characteristics even though it is formed of the micro-elements. e-Governance structures find an explanation in this approach as the macro is not found to be an aggregation of the micro-elements. The distinction between the micro and macro is also seen as a difference between the subjective and less stable micro and a stable and rational macro-structure which is a form of an understanding emerging out of technological deterministic thought in e-governance.[8]

There has been a preoccupation of sociological theorists with the micro-factors in policy issues. Not that the micro-issues are of any less importance but certainly they could not be treated as suggestive and reflective of the macro-reality as was done by the interpretative theorists in their attempt to rectify Talcott Parson's neglect for micro-factors. This has resulted into a thorough neglect of studying powerful individuals or institutions which may be called 'mega-actors',[9] which through their resourceful presence direct the objective of growth. The studies remain polarised as administrative theorists (Weber 1978; Blau 2002) have tried to focus on purely macro-realities just as sociologists (Durkheim 1938; Goffman 1967) have remained preoccupied with micro-analysis. While this has given rise to some meaningful methodologies to sociological research such as ethnomethodology, conversational analysis and cognitive sociology, this has also resulted into a distorted and an over-simplified explanation to macro-reality by ignoring the aspect of 'interaction' as a social reality quite distinct from both individual agents and macro-social structures.[10] Goffman (1967) had not shown any interest in the new and emerging technologies of ICT, but his micro-level behavioural studies in sociological research are quite appropriate to understand human emotions and behaviour which work in their most pristine manner when human beings directly or 'face to face'. Interestingly he explains in his work, *The Presentation of Self in Everyday Life* (1959), that when one is not able to express the way one desires to, then the personality gets masked and the masks cause a certain 'bureaucratization of the spirit' (p. 84). His works have aptly brought out the uniqueness of spontaneity and personal touch which are more convincing and effective than the expressions of a masked individual. This leads to an understanding that 'glances, gestures, positioning and personal statements' which are brought by citizens to public spaces in governance are likely to be lost when communication goes on line (Smith 2003, p. 270). Goffman's analysis deepens our understanding of the distinction between micro and macro. If direct interaction is the creator of effective organisations which are better adapted and accepted, then even macro-institutions using their administrative skills may bring

[8] Micro-reality is primarily a face to face interaction, which is treated as a building block to macro-structures or institutional frameworks (see Mouzelis1995).

[9] 'Individual actors in control of considerable resources, whose decisions stretch widely in space and time' (Mouzelis 1995, p. 16).

[10] To look into the debate on Goffman's idea of 'interaction' see A.W. Rawls 'The Interaction Order *sui generis* : Goffman's contribution to Social Theory, *Sociological Theory,* Vol.5, 1987.

about this direct interaction. In this way, organisations and institutions can be both micro and macro in different situations. This has been an undeniable fact of social interaction which also indicates the prevalence of embedded social hierarchies which bridge the micro-macro gap via the logic of aggregation or representation (Mouzelis 1995, p. 19). These social hierarchies become the real engines of social dynamism as well as that of failed policies. The disjunction between the micro- and macro-structural factors as created by the sociological theorists prevents a clearer view on interaction which in fact is possible at both levels. e-Governance by its very nature is embedded within the nature of 'interaction', which is also one consistent problem of governance in contemporary times.

A study of e-governance highlights the fact that even though the word 'governance' comes matted with 'e', it is more a 'wiring' process than a process of 'governance'. Thus, the inherent nature of governance remains a continuation of the micro-macro simplifications leading to the passing of controls with the macro-actors for the improvement of micro-situations. The rational-choice theorists have tried to reduce the wide micro-phenomena into fractions of wider reality. James S. Coleman (1990) and R. Collins (1981) in their writings attempt to encounter the problem by explaining that some of the factors that affect the decision on participation at the micro-level and the decision on divesting at the macro-level are conditions that exist at the level of system in question. Coleman (1990) reiterates that as the task of social sciences lies in the explanation of the broad social phenomena not restricted study about the behaviour of single individuals, the major problem for explaining the system comes in the task of moving from the micro-level to the macro-level or that of moving from a lower level to the higher one. Coleman (p. 6) observes that 'this micro to macro problem is pervasive throughout social sciences'. Collins explains the phenomena of transition by clarifying that 'the large scale changes in social structures are produced by aggregate changes in the three types of micro-resources: increases in generalized culture due to new communication media or specialized culture producing activities; new "technologies" of emotional production; and new particularized cultures (individual reputation) due to dramatic usually conflictual events'. Thus, Collins proposes 'a method of macrosampling the distribution of microresources' (1981, p. 984).

The above explanation of the nature of micro-macro disjunctions seem to suggest that the e-governance functioning and requirements at the micro-level may not really be the same at the macro-level which is generally the argument presented to propose e-governance megaprojects affecting macro-level governance. The justification that e-governance succeeds at the service delivery level and so it should become a norm for all other levels is a belief which is unfounded and unjustifiable. However, what comes out more forcefully from this debate is the fact that an understanding about e-governance as an extension of the operative nature of governance seems logically well founded. Both forms exhibit a tendency of mediated communication[11] where the competition for power and control between the dominant opinions which are also in control of ICT marginalises the micro-level subsidiary of problems.

[11] It has also been looked as an engineering of consent (Graebner 1987).

2.5 Engineering and Governance

Engineering has been at the core of governance since the advent of the industrial era. Various popular labels to the nature of advancement such as modernisation, globalisation and liberalisation carry the concoctions of various specialised branches of engineering. Modernisation began with the technological discoveries of the hundred years of industrialisation between 1750 and 1850. From inventions in science such as bicycle and steam engine to an electric bulb and telephone, the unbroken chain of discoveries in radio technology, television, aeroplanes and wireless systems have revolutionised both human thought processes and also theoretical developments in social sciences. These engineering achievements have developed a new understanding about human life processes which has questioned metaphysical controls by the church, religion and occult thought processes. Thus, the whole culture of modernity has grown around the idea of 'technical rationality' generated after the fall of metaphysical and idealistic superstructures in philosophy (Barrett 1979). Thus, modernity becomes 'secularization, the universalistic claims of instrumental rationality, the differentiation of the various spheres of the life world, the bureaucratization of economic, political and military practices, and the growing monetarization of values' (Turner 1990, p. 6). Further to this Guy Adams (1992) makes an insightful analysis of the development of technical rationality along with professionalism in public administration which emphasises science and efficiency in his essay 'Enthralled with Modernity: The Historical Context of Knowledge and Theory Development in Public Administration'. He makes a strong plea for greater attention to history that produces a 'genuinely open enquiry' into the field but however admits that in the battle between organic idealism and scientific pragmatism the latter won the battle. This sets the debate in favour of functional efficiency by breaking wholes into parts to achieve instrumental aims of public policy. Karl Mannheim (1940) contrasted 'functional rationality' with 'substantive rationality' as the latter's ability to understand the purposeful nature of the whole system of which a particular task is the part. When engineers and factory managers came to the forefront in public policy deliberations during the scientific management era in the USA, they were readily accepted as hope guardians who understood the power of technology to overcome human miseries. This accelerated the processes of technological controls over human lives in society giving priority to instrumentation of knowledge, specialisation and control of experts. Thus, public administration across the world grew as Guy Adam explains (1992, p. 367) in its persistent a temporality with a diminished space for historical analysis or any contextual or epistemological significance. Weber's bureaucratic model in its main striving for legitimacy also conformed to this demand for technical rationality and as a result generated more debate on democracy and technical rationality of organisations than any other philosopher of his times. The whole Comparative Administration Movement led by F.W. Riggs[12] in the early 60s indicated the discomfort

[12] Riggs identified three trends in comparative study of public administration. The first was a movement from normative towards empirical approaches, the second from idiographic to nomothetic approaches and the third from non-ecological to ecological modes of thought.

which this model had created amongst cultural historians in public administration. A midway winding up of this research helped the sustenance of technical rationality and a resultant rise of managerialism in the present governance systems. This also downplayed a more sociological conceptualisation of institutions as being shaped by social realities that determine the patterns of possible behaviour. 'The bottomline is that institutions are not only effect producing but also distinct "realities" that mould patterns of behaviour of groups and organizations' (Keman 1997, p. 8). Accordingly, institutional analysis is based upon three key questions: First is about rules, be it formal or informal, second is about the relationship between behaviour and action and the third question is on how do rules affect political processes. This critical investigation into the theory of institutions interrogated western systems of knowledge for being fragmented platforms of activities and indicated a more holistic approach through an understanding of the socio-psychological domains of non-American systems across the world.

The embedded engineering in systems of governance is based upon pure deductive reasoning which is free of value systems and therefore gains legitimacy through instrumental means of politics such as elections. In this era of globalisation, governance becomes engineering and vice versa. The rise of cyber technocrats, data analysts, system managers and web administrators has thrown a number of political beliefs into redundancy since the media produces data-supported analytical and therefore believable reports of political events and statecraft. Habermas's analysis of the public sphere suggests that public opinion in fact 'represents political potentials that can be used for influencing the voting behavior of citizens or the will formation in parliamentary bodies, administrative agencies and courts' (1996, p. 363). In *Between Facts and Norms*, Habermas found a close connection between legitimacy and communication power as he writes that 'Not influence per se, but influence transformed into communicative power, legitimates political decisions' (Ibid, p. 371). In this process an informed and responsive civil society has a much larger role to play since the deliberative process in the public sphere is the only way to curtail influence of the elite over free communication. Habermas describes the public sphere 'as a network for communicating information and points of view (that is, opinions expressing affirmative or negative attitudes)' and filters and synthesizes the streams of communication in such a way that they 'coalesce into bundles of topically specified public opinions' (Habermas 1996, p. 360).

Thus, engineering of 'stored big data' (historical and contemporary analytics) influences the 'deliberative perspective of politics' in which people participate, confront and debate in local institutions to solve common problems and also shape a collective identity. Most ethical and moral questions which fail to feature in large national legislatures become important issues for local bodies as data for discussion is available for evaluation of performance. Thus, ICT engineers control the domain of discourse model in governance which brings legitimacy to claims and achievements while at the same time expose many myths which have sustained traditional governance systems.

Legitimisation through the engineering-based techno-rationality and instrumental knowledge has also come from the way modern economics has evolved. Business analysts in the software industries control data of the biggest commercial establishments.

While dealing with the questions of good life, economics has never been vary of suggesting models for the profit industry and then linking it to life attainments. All citizens expect their state to provide them a good life which may have different connotations for different people, but as a problem of governance there is a level at which all debates coalesce, that is, the fulfilment of basic needs which should be treated as one primary criterion of good life in any given society. This may bring in an implementation priority to the issue of 'distribution' rather than to 'maintenance'. These two traditions which Amartya Sen (1987) prefers to call two different origins of economics, as one deals with 'ethics' and the other with 'engineering'. The former goes back to Aristotle in which economics was to serve politics or the welfare of people as brought out in *The Nicomachean Ethics* and in *Politics.* Judged on this scale development would be assessed on its ethical and sustainable human need fulfilment criterion rather than simply on efficiency-based evaluations.

The second approach of 'maintenance-' or engineering-based analysis is suggestive of models for living. In present times of ICT-based governance systems, the usage of the 'engineering' as a technical pursuit and as strategy has overlapping domains and in practice indicates similar manoeuvering of information and data. Amartya Sen has elaborately explained the origin of this approach in his book *On Ethics and Economics.* The origin of the engineering approach has been in Kautilya's *Arthashastra* as a logistic approach to statecraft finds its most intense justification. This was an effort to keep the mess of religion, class and caste sentiments out of governance, and for doing it Kautilya fought his contemporary trends of sociocultural norms and traditions for which he had to pay a very heavy price. Brahmins, as a dominant class of vested interests, mobilised against his propagation of the so-called atheism which stood in direct contrast to *Shanti Parva*, the revered book of Hindus. However, looking at the rise of modern economics, we see the growth of this tendency with a vengeance. The mighty wall of Marxism had prevented or suppressed this aggressive march of methodologies of positive economics which 'not only shunned normative analysis in economics but—ignored a variety of complex ethical considerations which affect actual human behaviour' (Sen 1987, p. 7). The issue here is certainly one of clean governance which has ethical considerations to service delivery systems, but at the same time one may not make it a mess draped in fuzzy ethics totally incapable of serving anyone. Yet instead of a healthy reconciliation between the two approaches, the fall of Marxism in the split of USSR hastened the process of distancing between them and thus a complete mesmerism of not one but both of them. Even Sen (1987, p. 8) through the study of 'general equilibrium theory' has recognised the contribution of engineering approaches in achieving many basic problems of social interdependence. Thus, economics graduated more sharply from pure utilitarian or pure ethical considerations to one of providing answers to issues of instrumentality and strategies which guide interdependence in societies.

Engineering ensures data safety and ability to sustain contingencies. It becomes a tool for modern economics, as contingencies and uncertainties are defined as risk through general equilibrium theory (Hirshleifer and Riley 1992). Modern management systems require a set of rational agents who work on fixed preferences,

predetermined goals and reject any existence of 'embeddedness' of social structures for fear of challenging their mechanical rationality. There is no scope for changing their statistics-based theoretical structures, and they become rigid and permanent rather than fluid and changing. There is not much difference with Max Weber's rationality of a bureaucratic pyramid which maximises utility as uncertainties did not allow individuals to anticipate results. Thus, economic rationality indicated 'construction of the meaning of rational economic action' rather than on the identification of optimal strategy (Beckert 2003). There are two predominant methods of defining rationality in economic theory: One is to see rationality as internal *consistency* of choice, and the other is to identify rationality with *maximisation of self-interest* (Sen 1987, p. 12). Thus, rationality is closely equated with and understood as consistent and coordinated functioning of systems. This became the basis of the enormous enterprise of Weber's bureaucratic theory where preset systems were made to function in widely disparate circumstances, but this was not a sufficient push to disconnect departmental wires of bureaucracies. It is this control by engineers that governments design softwares for planning, policy evaluation, disinvestment and forecasting. The most sought-after tools which can sell any institutional and organisational ideology and seek legitimacy and acceptance for them are the simplest and most approached ones like the PowerPoint and Excel programmes. A tiny chip with a size of the tip of a needle can contain all data to vanquish the most powerful competitors in the world and bring bankruptcy to a country's investment banks showing overflowing profits. If by any means the programme gets corrupted, there would be no deliverables to the field and citizens. If rationality is the requirement of governance yet by its very nature it is so predetermined, then ICTs need to be taken with a greater seriousness in governance.

The new economics which suggests increased need for efficiency in place of normative considerations also prepares a blueprint for ICTs control over state machinery. One example to understand how this need for efficiency replaces many concerns of fair distribution which are central to sustainable governance is drawn from the study of Pareto optimality. Efficiency is Pareto optimality or allocation of resources for satisfying individual demands as per their income and wealth. So there is nobody worse off than another. Thus, the luxury of governing without distribution stops at Pareto optima. A state desiring to improve the lot of poor will have to be Pareto optimal by cutting into the luxury of the rich. However, if the income and wealth factors change, then the state will have a different Pareto optima as people will change their desires and wants accordingly. Political economy literature has not considered and compared many such varieties of Pareto optimality. It is also seen that during the high season of economic growth, governments generally do not prioritise the distribution issue as everyone is getting something more through the aggregate growth. Any insistence on the legitimacy of distribution during the period of abundance may also weaken the government's claim for efficiency in the allocation of aggregate growth. If fairness in distribution is accepted, then efficiency in allocation will suffer. The issue for this work is not whether the state prioritises distribution or not but that these complicated dimensions are based upon electronic-based 'Big Data' stored in servers and Clouds, accessed by limited number of

specialist data analysts or controlled by big players like PricewaterhouseCoopers, Oracle and IBM who make technology and investment forecasts which affect government decisions in a very decisive manner. As interest maximisation and Pareto optimality are interwoven systems to sustain modern welfare economics, e-governance becomes an engineering tool rather than a discourse on rights, responsibilities and accountability. Thus, ICTs can be used to sustain a system of welfare economics which has emerged out of the distancing of two streams of thoughts: the ethical and the engineering.

Theoretical questions which interrogate the new information technology tend to polarise opinions and writings on e-governance. One needs to understand the nature of new technology institutions, engineering hubs, Big Data companies and methodologies of policy analytics to approach an informed debate on e-governance. As it is in most other policies of electricity, transport and electoral process, even ICT applications find the governance discourse trapped 'into a politics of struggle where the representation of social antagonisms and historical contradictions can take no other form than a binarism[13] of theory vs. politics' (Bhabha 2006, p. 28). This is just one of the many reasons why it is important to draw on theory while analysing ICT governance practices and that is precisely one of the things which this book attempts to do, both through an interrogation of the theory and by an analysis of case studies on ICT performance in governance.

2.6 Cultural Parameters of e-Governance

Culture reflects in the consciousness of human beings, and Internet is one of the strongest influences on human consciousness in the present century. Therefore, Walsham writing in 2000 made a strong appeal for 'the need to take culture seriously' (Walsham 2000, p. 227). During the writing of this book, responses were gathered from the administrators, practitioners and NGO trainers participating in NAPSIPAG activities. It was observed that the younger generation between the age group of 15 and 35 was sharing more or less similar behavioural resonance and did not consider the need for bringing major changes in the ICT dispersal strategies on grounds of cultural differences. Culture is a defining factor in the dissemination of ICT only to the extent of using local language. In a world which is becoming increasingly belligerent on ethnic and cultural lines, it is presumed that a culture which controls the Internet language may control all progress on science, technology, literature and global movements. For most Commonwealth countries like the Philippines, Pakistan, India, Bangladesh, Malaysia and Australia, the language problem is not as demanding as in some other countries. Moreover, the cultural fixation of the ICT as emphasised in Islamic countries has been found to be less

[13] 'The Olympian realms of what is mistakenly labeled "pure theory" are assumed to be eternally insulated from the historical exigencies and tragedies of the wretched of the earth. Must we always polarize to polemize?' (Bhabha 2006, pp. 28–29).

concerned with language as with the fear of American monotheism and control by the *Kafirs* (non-believers in Islam).

The case of Mauritanian Islamic society is worth mentioning here. The moral dilemma faced by Muslims in promoting ICTs in governance has been a difficult bridge to cross. The customs and social values feel threatened at the coming of the Internet. However, the implementation of ICT policy in 2002 has led the country towards a more open society as far as adoption of new technologies is concerned. Mohamed-Saleck in 'ICT in the Islamic World' (2007) critically examines the evolution of e-government in Islamic countries. Pakistan, despite a different image in the outside world, has a vibrant group of youngsters and professional women who manage governance issues with great proficiency over the Internet. Three of the leading law firms in Islamabad, Karachi and Lahore have many of their operations online which is managed largely by a smart group of energetic professionally qualified young lawyers. Kuwait's e-governance department is an oasis of French perfumes, designer dresses, scarves and gowns. Most girls working in the building of Kuwait Civil Service Commission, which hosts the e-governance section, flaunt their gorgeous hairstyles and have a friendly open interaction with their young men colleagues similar to that seen in the West or Indian offices. Much of the ICT cultural syndrome as emphasised by hardliner Muslims does not exist on ground. Malaysia would treat this as a trash argument and the coming of the 'Arab Spring' confirms that Internet and Islam are mutually complementary.

On 18 April 2012, the Economist published three articles on Islam and the Internet which brought out revealing facts of greater usage of the Internet in Islamic activities than any other (http://www.economist.com/node/21560541, Beirut edition). In dealing with Muslim rituals 'preaching and practicing', the Pew Research Centre surveyed 39 countries to find what Muslims actually follow despite the preaching. Another article, 'Islam and Technology: The Online Ummah', suggests that a number of iPhone apps are used to set fasting times, and Arif Hisam, the head of a Pakistani Company PakData, proudly admits to be the creator of that app. The hardliners have castigated cyber technology by linking it to 'flirting', but Muslims have not shared this in anyway differently as other non-Islamic less educated and feudal societies. A market-research firm Ipsos has found that some of the world's highest smartphone users come from both the rich and the poor Muslim countries. The Middle East's use of Internet (40.2 %) is higher than the world average (34.3 %) (http://www.internetworldstats.com/stats5.htm, for year 2012).

Bart Barendregt of Leiden University, who has studied Southeast Asia's growing digital culture in a most potent and extensive manner, does not find much difference in the way young people use and accommodate to ICT devices in their daily lives (Barendregt 2006, 2008, 2009, 2010, 2011).

An Internet survey revealed that the invisibility of the Internet-based services has enabled a large number of Muslim women to start online commercial transactions and businesses. The survey also reveals how this technological development is changing Islam itself. The *Ummah* which means the 'single nation of Muslims' now has an online site which could be accessed and interacted with. A Turkish businessman Artik Kuzmin launched a website 'Salaamworld', a Facebook for Muslims where

moderators would make the site acquiescent to Islamic moral standards; nevertheless, the Sharia-compliant online dating site from Amsterdam such as El Asira's owner Abdelaziz Aouragh believes that 'far more is permissible in Islam than people think'. Besides this the new breed of 'cyber muftis' such as the Sheikh Hamza Yusuf of Jannah.com leads sermons over the websites. To quote one of his sermons, 'The word "technology" is from a Greek word – and the word technae is the opposite of sizzus. And sizzus is everything in nature. And technae is everything man adds to nature….' Here is an interesting verse in the Koran – 'Do you worship what you create with your hands? Allah has created you, and what you do and what you make. Allah is the creator of every toolmaker and every tool that (the toolmaker) creates' (http://www.npr.org/programs/watc/cyberislam/fatima.html).

Muslim women have opened a world of business for themselves within the cosy confines of their homes. Given below are some of the most popular websites run by Muslim women: www.twomuslimgirls.com (Florida-based catalogue for Muslim women's clothes and garments), www.mwlusa.org (mwlusa.org, illiteracy, poverty, violence, exclusion, etc. problems), www.learningpartnership.com (funding education and technology training) and www.creatinghope.org, an Afghan women website sponsored by a Michigan-based organisation called 'Creating Hope International' which empowers refugee Afghan women. The www.muslimwomenstudies.com is an online Muslim first Islamic university with learning institutes spread around the world, founded by a Muslim woman, Fatima Al-Fihriyya. The university has opened up a world of books and libraries for societies and cities destroyed by war and civil warfare as in Afghanistan. Md. Sakina Yakoubi gives computer and Internet training to Afghan refugee women through Women's Learning Partnership, an organisation based in Bethesda. Internet communication has helped Muslim women to encounter and enlighten their counterparts on the misinterpretation of Islamic laws which have created a stereotypical image of a woman in Islam. The Muslim Women's League website (http://www.mwlusa.org/) posts articles analysing laws of marriage, divorce, political and inheritance rights under Islamic law and tradition. In fact the opening note of the website is motivational as 'working to implement the values of Islam and thereby reclaim the status of women as free, equal and vital contributors of society'.

In summary one can see the visible change that Internet brings in human psyche. The opening of opportunities, person-to-person interaction in complete invisibility and confidentiality of one's home, where restrained clannish and physical conscriptions and societal norms do not affect the way an individual wants to carry herself or himself through the globe, is one of the most liberating and empowering directions that Internet offers to cultures.

2.7 Conclusion

This chapter attempts to explore the epistemology of e-governance and the theory of knowledge over which many of its substructures are constructed. Investigators and researchers are curious to know how this knowledge arises and how it extends

to many of its domain areas which it presently occupies. Epistemology attempts to construct knowledge through reason by consistently involving into two main tasks of description of a situation and possible justification of the described content. Any effort to understand the world becomes clearer and closer to truth as this process of enquiry moves further and is used by philosophers to construct theories and offer rationally accurate systems of thoughts. The problem around e-governance analysis is about tautological arguments which seem like forecasting performance even before it is constructed.

Much of this chapter is devoted to the debate on technological determinism and the critical theory's cutting-edge arguments and sometimes raising another form of determinism to marginalise the dominant ideology of technology. Arguments of theorists from many diverse areas of social sciences have been comparatively analysed. Daniel Bell, Castell, Deleuze and Guattari have helped to highlight attention and focus on the product and its medium which enlightens the ICT vision. Arguments which emphasise pure efficiency through neutrality have been looked into through the functioning of new organisational data management structures which litter the landscape of policy sciences in the present times. The increasing ability of the state for intruding privacy and legitimising controls in seeking efficiency has given rise to a surveillance society which make Deleuze and Guattari's concepts of 'rhizomatic' and 'nomadic' more understandable in policy constructs. The Internet also eliminates the need for a physical brick and mortar archetype of a panopticon model of Foucault as the networks spread across the cyberspace have not allowed anyone to escape from its sight unless one does not use it at all.

The chapter has brought the analysis to another domain of e-governance which is the activity during the transition of a programme from a micro-level to a macro-level. The process is quite different at both levels, and success at one may not be promoted as a universally successful policy to be invested into on a big scale. Goffman's analysis deepens our understanding of the distinction between micro and macro. The presence of many social hierarchies becomes the real engines of social dynamism, success as well as failure of e-policies. A study of e-governance highlights the fact that even though the word 'governance' comes matted with 'e', it is more a 'wiring' process than a process of 'governance'. Thus, the inherent nature of governance remains a continuation of the micro-macro simplifications leading to the passing of controls with the macro-actors for the improvement of micro-situations.

Engineering, data analysis and forecasting based upon Big Data stored by big companies are seen as the location of controls in governance. The rise of cyber technocrats, data analysts, system managers and web administrators has thrown a number of political beliefs into redundancy since the media produces data-supported analytical and therefore believable reports of political events and statecraft. It is this control by engineers that governments design softwares for planning, policy evaluation, disinvestment and forecasting. One example to understand how this need for efficiency replaces many concerns of fair distribution which are central to sustainable governance is drawn from the study of Pareto optimality. A state desiring to improve the lot of poor will have to be Pareto optimal by cutting into the luxury of the rich. However, if the income and wealth factors change, then the state will have a different Pareto optima as people will change their desires and wants accordingly.

The issue for this work is not whether the state prioritises distribution or not but that these complicated dimensions are based upon electronic-based 'Big Data' stored in servers and Clouds, accessed by limited number of specialist data analysts or controlled by big cyber TNCs. Thus, ICTs can be used to sustain a system of welfare economics which may be efficient but not ethical.

Last section of this chapter deals with the cultural parameters as a defining factor in ICT usage and e-governance promotion. Culture is a defining factor in the dissemination of ICT as the world is becoming increasingly belligerent on ethnic and cultural lines. It is presumed that a culture which controls the Internet language may control all progress on science, technology, literature and global movements. For most Commonwealth countries like the Philippines, Pakistan, India, Bangladesh, Malaysia and Australia, the language problem is not as demanding as in some other countries. Moreover, the cultural fixation of the ICT as emphasised in Islamic countries has been found to be less concerned with language as with the fear of American monotheism and control by the *Kafirs* (non-believers in Islam). However, despite the fundamentalists opposing the spread of social media and Internet, there are new emerging groups of youth, women and even cyber muftis who have made their own lives as well as the lives of their communities better by using Internet and opportunities on e-governance.

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Chapter 3
Developmental Aspirations and Networked Readiness

3.1 The Challenge of Development in a Networked World

Development in a networked world has a much wider connotation. While there are varieties of participants representing different cultural and behavioural perceptions, there are also many platforms raising demands, mobilising opinion, generating critiques of policies and competing to be heard. There are various possibilities and opportunities which governments and citizens can utilise and learn from and develop abilities to enlarge the scale and proportion of their activities without impinging additional burden of cost and time on participation and implementation. In a world full of information and alternatives, no government can deny the need for networking nor can citizens escape being part of at least some of these networks. While the second chapter established the necessity for formulating e-governance policies with a critical insight on state power and the likely impact upon citizen's lives, freedom and privacy, the present chapter would highlight the need for revisiting the linear implementation designs of developmental policies and programmes to a more meandering, warped and sometimes entwined process in which contingencies and exigencies can make impactful changes in policies while they are implemented. While this needs knowledge-based governance, it also requires skill, technology and connectivity for preventing the society from splitting into counterproductive digital divides.

Development and ICTs are related and nothing proves it better than the rising GDP of countries as the score on 'Networked Readiness Index' (NRI) goes up. NRI is propensity of countries to exploit opportunities for bringing development. ICT makes it easier to achieve the targets and the goals by transcending many traditional handicaps of geography, bureaucratic behaviour, human error and institutional designs. As the year of MDG deadline of 2015 draws to a close, nations are fervently gyrating to explore, invent and discover strategies, innovations and shortcuts to achieve the committed targets. Many data management and survey companies across the world are becoming active on identifying and selecting indices and policy categories for ranking countries in some of the key areas of governance and

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well-being. This has become a key concern for the country since any slackness would make them lose business and investments and threaten their political prospects.

In September 2000, the 189 member states of the United Nations General Assembly adopted the Millennium Declaration which is currently setting the pace and direction of all developmental work going around the world. The eight goals of the declaration referred to as MDG confirmed '…to making the right to development a reality for everyone and to freeing the entire human race from want…' (UNO 2000, p. 11). It set monitorable targets for poverty reduction, education, health and environment for achieving human development in a manner 'in which globalization can benefit all' and 'to ensure that the benefits of new technologies, especially information and communication technologies, are available to all' (UNO 2000). The challenge of development is to innovate governance and make use of all the knowledge explosion through ICT to find solutions and design e-governance most appropriate for achieving MDGs. Governments which are able to generate an ability to transform many obstructions of developmental trajectory into opportunities for inclusive governance would win their battle against poverty, disease and violence.

Some of the recent initiatives at the macro-level governance indicate a need for a more intensive search for the causes which lead to a more 'reasonably satisfied life' or 'well-being' of citizens. Certainly, it was not GDP- or GNP-based measurement which could define well-being. The rise of worldwide discourses on the type of progress which nations were being sucked into led Nicolas Sarkozy, the French President in 2008, to bring Joseph Stiglitz, Amartya Sen and Jean Paul Fitoussi to create a commission, subsequently called 'The Commission on the Measurement of Economic Performance and Social Progress' (CMEPSP) or Stiglitz-Sen-Fitoussi Report on rethinking GDP. The issue which became important for the indispensability of ICT tools in governance was the commission's task of rigorous search and identification of the limits of GDP as an indicator of economic performance and social progress and to bring together information from every micro-level and macro-level developmental activities to collate measurement indices to assess progress and present individual well-being in an appropriate way. The linear processes of data collection transformed into expressions, consumptions and inclinations of communities and individuals which could direct studies to find out 'what brings happiness and in a sustainable manner'. The report in its Executive Summary[1] recognised the increasing role played by ICT tools in facilitating the statistical measurements and information corroboration as 'what we measure affects what we do' (2008, p. 1). With the presence of learned and insightful scholars in the commission, there was a clear break from the

[1] 'This reflects improvements in the level of education in the population, increases in the complexity of modern economies and the widespread use of information technology. In the "information society", access to data, including statistical data, is much easier. More and more people look at statistics to be better informed or to make decisions. To respond to the growing demand for information, the supply of statistics has also increased considerably, covering new domains and phenomena' (http://www.stat.si/doc/drzstat/Stiglitz%20report.pdf).

deterministic attitude of earlier economists dominating the new public management processes in governance reforms. This is well expressed in a section of the Executive Summary of the report, 'It is perhaps going too far to hope that had we had a better measurement system, one that would have signalled problems ahead, so governments might have taken early measures to avoid or at least to mitigate the present turmoil. But perhaps had there been more awareness of the limitations of standard metrics, like GDP, there would have been less euphoria over economic performance in the years prior to the crisis; metrics which incorporated assessments of sustainability (e.g. increasing indebtedness) would have provided a more cautious view of economic performance. But many countries lack a timely and complete set of wealth accounts – the "balance sheets" of the economy – that could give a comprehensive picture of assets, debts and liabilities of the main actors in the economy' (p. 3).

This report is important in highlighting the value of individual perceptions on personal well-being or happiness which individuals strive for, and because they strive to achieve it, they are also able to measure it. This lies at the core of collective action which societies strive for in their regions and nations. The key message of the report is to explore avenues beyond economic production of goods and services to issues of well-being. Measuring well-being would mean to measure collective aspirations, identities, rootedness or linkages to local issues of land and habitat, creative freedom, respect for diversity and cultural inclinations which are deeply embedded into a form and direction of progress. A micro-level study proves this further. In July 2011 the Jawaharlal Nehru University (Delhi) organised an open forum debate on 'Happiness Perception Index in a Cyber City of Gurgaon'. This was done in the context of embedded incongruities in the manner of developmental processes which created this so-called Cyber City. The city set up the world's top 20 highest profit-making IT companies over its land and took less than 10 years to transform itself through the 'change of land use laws' from a cattle-rearing rural habitat to a top earning IT destination of the world, but it took 20 years to constitute its municipal corporation and conduct elections for the first set of 35 municipal councilors for the city. The debate highlighted the manner in which a small-scale municipal election process entangled the erstwhile rural landlords and dominant caste leaders into a gory battle to capture political power. However, one councilor, an engineer woman who had returned after leaving behind a cushy IT job in the USA, was able to enjoy a landslide victory despite her keeping away from the bloody battle going around the city and remaining within the confines and calm of her apartment and connecting and communicating with the Cyber City denizens on Facebook, emails and every other social media site. The debate on Happiness Perception Index indicates that despite the fact that Gurgaon earnings have been one of the highest in the country, it has failed to bring happiness to its residents so GDP is not related to happiness. More than 25 civil society organisations and an equal number of senior academia, public administration institutes, universities and a few Members of Parliament participated to converge discussion on some broad intangible issues which restrict the achievement of happiness and well-being but which have never featured into any GDP measurements, such as the anger and frustration due to traffic jams; deepening divides between the rich and the ordinary people

exacerbated by a vulgar display of limousines, road rage and anxiety that the police and the administrative machinery would work for the developers' interest; misuse of official and legal machinery by property dealers and estate developers; ill treatment and violence against women, children and underprivileged; capture of water bodies; dumping of electronic waste; audacious liquor lobbies; and untold miseries and institutional negligence of farm and other animals in the city as the villages are rolled over by foreign investors. All civil society groups representing unhappiness on issues mentioned above had been a creation of emails, social media and Google groups, thus making it easier for the councilor Nisha Singh to catch them online. However, it is beyond human capacity to bring so much data together and in a manner that could make sense of it.

Increasing communication, social consciousness, democratization of institutions and marketing interventions in public sector the need for Big Data storage in development policies. Public sector and private enterprises across the world are creating and making use of stored data every day in the improvement of their value analytics in policy, planning and in implementing. IBM in an e-write up *Bringing Big Data to the Enterprise*[2] brought out the phenomenal amount data, 2.5 quintillion bytes that is created every day, and around 90 % of the data in the world today has been created in the last 2 years alone. This data comes from a number of sources such as social media sites, digital pictures, videos, e-commerce, cell phone GPS signals and all satellite data on climate and other global environmental issues. In its 2011 report,[3] *Big data: The next frontier for innovation, competition, and productivity,* McKinsey Global Institute (MGI) indicates that social technologies have given social interactions the speed and scale of the Internet. From consumer products to socio-political movements, the interactive sites generate information which is used to improve business and governance across the world. It is declared that Big Data is now an important factor of production, alongside labour and capital. It is also an important factor to generate a new wave of productivity growth and consumer surplus. While it would help retailers to remain cost-effective in marketing of products, it would also help consumers through personal location-based e-arrangements to capture $600 billion in economic surplus. Big Data can unlock significant value of product and services in public and private sectors. It would also direct the process of governance towards greater transparency and adaptability as governments are the biggest buyers of the most expensive commercial and developmental technologies and products.

Another MGI's report,[4] *The social economy: Unlocking value and productivity through social technologies* (2012), explores the potential economic impact of new social technologies. These technologies, which create value by improving productivity across the value chain, could potentially contribute $900 billion to $1.3 trillion in annual value across the four selected sectors in their study, i.e. consumer packaged goods, retail financial services, advanced manufacturing and professional services. Developmental processes and the direction of meaningful investments to generate

[2] http://www-01.ibm.com/software/in/data/bigdata/

[3] http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation

[4] http://www.mckinsey.com/insights/high_tech_telecoms_internet/the_social_economy

income and employment in transitional countries are going to be significantly influenced by their capacity to access Big Data. US government has been making some radical advancement in health policies through their access to Big Data. The speed and volume of activities to achieve the MDG Goals would have been more intelligible and focused with the nations being able to access Big Data. This could help segmentation of population according to needs, forecasting power and energy requirements, transport and checking corrupt practices in transactions or speculative investments being done by globally managed companies.

Internet or the ICT, which creates Big Data and also a platform for e-governance, has been a great transformer of economies across the world. In fact it is not just a creation of possible options for people and nations to explore but Internet in itself has been contributing to economic growth. Manyaka and Roxburgh (2011, p. 2) in their empirical studies have found that the Internet contributes 3.4 % of GDP in large and developed economies. In comparison to agriculture (2.2 %) and utilities (2 %), the contribution of Internet is much higher if it is taken as a sector in itself. There is a link between progress, well-being and e-governance. Nations which have made a timely and intelligent use of ICTs in governance have progressed fast to achieve educational, health and other standards of development. A sub-Saharan and South Asian study made by Pigato (2001) writes that 'Lack of access to ICTs in developing countries has not traditionally been viewed as a deprivation in the way that lack of food, basic health care and shelter have been. However, there is increasing evidence that access to ICTs can have a direct impact on raising living standard and quality of life of the poor. The indirect impact on poverty alleviation, through growth and productivity, has long been recognized (p. i)'. This leaves behind many other nations in the same region both in economic and human development indices. There emerges an intractable digital divide leading to developmental gaps within regions and nations, which if allowed to continue may prove counterproductive to holistic development and sustainable well-being. The digital divide is likely to exacerbate economic, social and democratic divides which may have its worst impact upon South Asia, the region which continues to have more than 65 % of its population living below $2 a day and 36 % living below $1.25 as shown in Fig. 2.1. The world of poverty is a world without basic services such as food, sanitation, health, electricity, transport and education. Safe drinking water is still not available to 780 million people even though it has been highlighted that every dollar spent on providing clean drinking water brings $4 of economic opportunities to people (www.one.org/c/international/issue/954). There are more than 2.5 billion people who continue to lack basic sanitation such as access to toilets which has been responsible for the spread of a number of diseases like cholera, diarrhoea, helminthes and schistosomiasis. It is reported that increasing access to toilets alone may help save US$260 billion in economic losses (WB 2012[5]). A WHO/ UNICEF [6]Report of 2013 mentions that

[5] http://www.childinfo.org/water_status_trends.html

[6] WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP). These are published in the 'Progress on Drinking Water and Sanitation – 2013 Update' http://www.wsp.org/sites/wsp.org/files/publications/Sanitation_Impact_Synthesis_2.pdf.

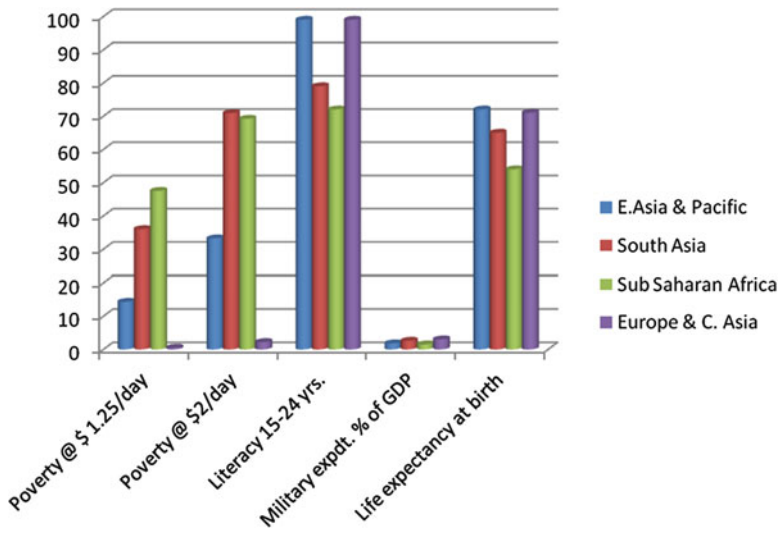

Fig. 3.1 Regional disparities: leaders and the laggards (Source of data: World Bank (data.worldbank.org/topic/poverty) (Accessed 31 March 2013))

an estimated 768 million people did not use an improved source for drinking water in 2011 and 185 million relied on surface water to meet their daily drinking-water needs. Another report on Southeast Asia's four-country study found that Cambodia, Indonesia, the Philippines and Vietnam lose an estimated US$9 billion a year because of poor sanitation which is approximately 2 % of their combined GDP. The annual economic impact is approximately US$6.3 billion in Indonesia, US$1.4 billion in the Philippines, US$780 million in Vietnam and US$450 million in Cambodia (WB 2008). It has been estimated that improved action on this front can lead to an annual gain of US$6.3 billion in all these countries. An IT initiative of the global Indian company Infosys launched a South Asia-based programme called *Sanitation Hackathon* to create 18 innovative solutions to the crisis of sanitation in South Asia where poor sanitation costs a combined GDP loss of US$ 50 billion in Bangladesh, India and Pakistan alone.[7] From India and Bangladesh there are many more IT companies which are joining the initiative of finding innovative solutions to the need for sanitation in poverty-infested areas. There are a number of ICT initiatives launched with the IT companies across the Asia Pacific which are involved in information dissemination, awareness campaigns, capacity building and search for solutions. There are many more which are building partnerships with governments to help implement many of the MDG-related poverty reduction and well-being programmes to be leaders in the application of IT in developmental policies (Fig. 3.1).

[7] WHO/UNICEF (2013b).

One of the initial documents of United Nations (UN Survey 2003, p. 5) suggests that the potential of e-government as a development tool hinges upon three prerequisites: a minimum threshold level of technological infrastructure, human capital and e-connectivity. e-Governance would be able to facilitate inclusive governance, provided the basic goals for literacy and education are met which include knowledge of computer and Internet use. The readiness of a country to be e-governed depends largely on achieving as fast as possible functional literacy and education for all and to ensure that they also attain access and user proficiency in computers.

As the society becomes increasingly heterogeneous due to global socio-economic changes such as, migration, offshoring and e-commerce, it also becomes less coordinated and the family, community and organisational bonds also start loosening. United Nations realised the need for greater cooperation, collaboration and coordination to create sustainable partnerships for development. Ironically, this is one goal which none of the member countries have been able to realise satisfactorily. The MDG Gap Task Force Report (2012) has indicated that the MDG Goal No. 8 which is the only goal to indicate human interaction, collaboration and partnership in place for physical, monetary and numerical targets remains unattended and unachieved. The attainment of this goal is possible only if nations dilute their political distrust and differences to move further towards networking, collaborating, developing partnerships and inter-agency coordination for mutual learning. Much of what nations refer to as developmental tasks are largely dependent upon the above-mentioned imperatives of administrative capacity to perform. e-Governance, if appropriately implemented, would not only facilitate efficiency in bureaucratic performance but also convert this institution into a dynamic and responsive system with improved legitimacy and trust. However, many developing and transitional states have a sketchy graph of performance on the adoption of ICT in e-governance due to which bureaucracy retains an overall control of policy structures and implementation. This chapter would compare country-level efforts in achieving developmental goals through ICT.

3.2 Governance Reforms Alongside e-Reforms

In traditional literature, public sector has been criticised as a complacent and an apathetic organisation which is more concerned about achieving quantitative targets and less about sustainable qualitative improvements. The coming of the ICT era has put administrators face to face with performance deadlines and evaluation of their activities and initiatives. In contemporary scenario they are faced with a real-time economy which demands round the clock response, quick mental cognition to translate digital demands into citizens' services and a time bound service delivery. For the public sector to work in a real-time economy, certain amount of new public management reforms need to be undertaken. Some of the most basic reforms would be a clear division of labour, task allocation, appropriate skills for organisational management, value of time-based response mechanism and ability for the economic

calculations of non-performance within traditional supervisory skills. If e-governance is implanted prior to the government's preparedness to achieve these real-time strategy-based administrative reforms, then the impact factor may turn out to be negative in the light of investments in the e-governance infrastructure. In such scenario of half-baked strategies in e-governance, the problematic infestations by middlemen may only get emboldened rather than eradicated. In many cases, they may attain substantial legitimacy for continuing to be part of the new service delivery system and help in the subsequent denouncement, criticism and derailment of e-governance.

This is likely to create conditions which facilitate a flow of rent alongside the delivery of services. This condition is one of the most accepted conditions in local governance as it never challenges bureaucracy and has no strength to displace vested interests. So nothing changes. As this rent would be shared and circulated amongst politicians involved in formulating law and regulations in the legislatures and committees, vendors who market during procurement processes, administrators who enter partnerships with donors and NGOs as they create service infrastructures and allocate projects. This spillover of costs in rent may on one hand delay a foolproof implementation of e-governance initiatives while, on the other hand, it may de-motivate mission-driven administrators and aspiring citizens to customise e-governance to social needs where the field is controlled by middlemen and not experts. Some of the e-governance practices discussed in the later chapter suggest how middlemen squeeze into gaps left open within a desultory and haphazardly implemented e-governance. Thus, even though most developing and transitional countries may claim to have achieved the implementation of e-governance, they may just be hosting a den of luxurious and boastful infrastructure with much reduced capacity to deliver.[8]

e-Governance enables the government to transcend the limitations of office space, move beyond physical boundaries and reach out to the otherwise unreachable population. In a well-planned and thoughtfully implemented e-governance, traditional pathologies of bureaucracies such as inertia, apathy, red tape and Parkinson's syndrome[9] may gradually be replaced by a more personalised digital interaction. This change is in the interest of the investors as well as governments. They could also evaluate their e-governance initiatives on a pari-passu approach (assessment along with implementation) which may seek fast inputs from stakeholders on modifications and additions at every stage. Yet the murky terrain of pari-passu due to political and economic uncertainties prevailing in individual countries may sometimes weaken implementation of e-governance initiatives. It would be more plausible to explore a more scientific and measurable set of indices to compare

[8] An evaluation of several public sector award winning e-governance projects in India and Asia was conducted under the Governance Knowledge Centre of DARPG (GoI, Delhi). This includes passport and visa reforms (India and Bangladesh), e-district courts (Bangladesh and India), jail reforms (Karachi), transport reforms (the Philippines), Primary health Services and telemedicine (Sri Lanka and India), Education and Schools reforms (Delhi and Mindanao in the Philippines).

[9] The tendency of bureaucracy to increase personnel demands and raise budget despite their reducing role and responsibilities.

countries. To do this, some characteristic features are merged in clusters which define 'commonalities' amongst countries. Such an effort of putting together granular data in commonalities and then analysing features of e-governance has been made in the last decade by various development, academic and financial institutions, and substantial amount of realistic databases and standards of evaluation have been created.

3.3 Search for Measurable Indices for e-Governance

Granularity of metadata which serves as a design for the purpose of studying e-governance in different countries has become finer over the last decade. From the 2003 UN Survey woven around the minimum threshold level of technological infrastructure, human capital and e-connectivity have deepened to a complicated set of data which is diverse, yet each data field can be treated in isolation. The traditional set of indicators to evaluate e-governance were mostly linked to the mindset of Scientific Management era, such as fixing response time on digital highways, allocation of responsibilities, training of personnel, supervision, competitive evaluation of departments and connectivity. These are nevertheless important even today, yet search for metadata of e-governance has moved into qualitative value-based segregated data designs. Many indicators and sub-indicators have been used by researchers, and interestingly the list increases every year. Currently, there are many indices which look into the performance and achievement charts of e-governance projects. e-Readiness Index (ERI), e-Government Readiness Index (EGRI) and Networked e-Readiness Index (NRI) are the major survey tools. A few other sub-indices which are complementary to the above-mentioned tools are Web Measure Index (WMI), Telecommunication Infrastructure Index (TII) and Human Capacity Index (HCI). Data management companies have evolved faster in the last 5 years, and currently with the use of these indices, it has become much easier to even obtain understandable data on a country's transition to higher technological systems which contribute to development such as the IPv6 and Cloud Computing (CC).[10]

The relevance of e-governance to the socio-economic life of a country is reflected in the types of indices such as WMI, TII and HCI which have been created to measure variables and factors which impact upon e-governance. WMI looks into the willingness and capacity of governments to use e-governance as a means to inform, interact, transact and network with the public. Similarly, TII explores the number and volume of Internet users, the online population, mobile phone users, TVs for every 100 people, the provision for government services and products online. HCI gathers information on human capital, essentially on education and technology users. Thus, it deals with the level of public education and awareness created on the subject of ICT and e-governance. The United Nations and the World Economic

[10] Business Software Alliance (2013).

Forum have been leading in collecting data through surveys on a country's capacity to adopt and implement e-governance policies. World Economic Forum has also made surveys on e-readiness and has come up with more than 53 indicators and sub-indicators for assessment purposes. These indices are relevant for both public and private sector governance as the epistemological differentiation between the public and the private is substantially blurred in present times, thereby making government services and commercial services a matter of choice as intended by their researchers. The three major indicators for making a reasonable assessment of e-governance programmes and policies of governments are ERI, EGRI and NRI. They are being explained and discussed below.

3.3.1 e-Readiness Index

'Readiness' involves an understanding about one's 'willingness and capacity' to undertake a responsibility. One may be willing but may lack capacity and vice versa. This would mean that any description of e-readiness would involve a large amount of intangible data under broad themes of the quality of decision making, meaningful partnerships and fixing accountability to assess 'willingness' and tangible data like infrastructure, tele-density and broadband connectivity to assess 'capacity'. As e-readiness is a country's willingness and capacity to adopt ICTs in governance and facilitating citizen's well-being, there are serious and unavoidable gaps which have raised questions on the concept of e-readiness as a tool to assess a country's preparedness to adopt ICTs. The Economic Intelligence Unit of *the Economist* has used a comprehensive description of e-readiness defining it as 'a "state of play" of a country's information and communications technology (ICT) infrastructure and the ability of its consumers, businesses and governments to use ICT to their benefit. e-Readiness is not simply a matter of the number of computers, broadband connections and mobile phones in the country (although these naturally form a core component of the rankings); it also depends on such things as citizens' ability to utilise technology skillfully, the transparency of the business and legal systems, and the extent to which governments encourage the use of technologies' (EIU 2006, p. 1). This definition however lacks the fact that in developing countries 'readiness' is dependent upon cultural and institutional biases in participation and willingness of governments to overcome them. These issues would be discussed with other related literature and studies on e-readiness at the end of this section.

One of the earlier efforts to look for *e-Readiness Index* was made by Bui et al. (2003) which proposes a framework to evaluate the e-readiness of a nation based on eight factors: digital infrastructure, macroeconomy, ability to invest, knowledgeable citizens, competitiveness, access to skilled workforce, culture and cost of living and pricing. The framework further identifies 52 surrogate measures that can be used to quantify these factors and describe an algorithm to calculate an overall e-readiness index for a country (2003, p. 3).

The ‘e-readiness’ is more a commercial effort to improve marketing of a product in transitional times. It has been defined by Bui et al. (2003, p. 3) ‘as the aptitude of an economy to use information and communications technologies to migrate traditional businesses into the new economy’. The e-readiness tool comes as a great support to forecast the performance of a country’s economy by highlighting factors of embedded elasticity of procedures and flexibility of structures to be able to adopt new techniques, skills and production methods: consumer packaged goods, retail financial services, advanced manufacturing and professional services. This ability reaches its optimal level when the economy is able to create new business opportunities that could not be done otherwise. There is another definition of e-Readiness Index coming from the Economist Intelligence Unit (EIU) which has been working on it since the year 2000. EIU defines e-readiness as a measure of the quality of a country’s infrastructure and the ability of its consumers, businesses and governments to use ICT to their benefit (EIU 2001). This would mean the ability of government to adopt ICTs and use it for economic and social benefit. This indicator is also a lighthouse to the developing country as it moves through the digital transformation. EIU has been ranking countries to identify and suggest most attractive business destinations across the globe.

e-Readiness has immense scope in economic planning. This has led many governmental and nongovernmental global organisations to contribute to e-readiness through its survey and self-assessment tools. Some of the prominent organisations which have contributed in clarifying and broadening the understanding on e-readiness are the World Bank, Mc Connell, EIU, ASEAN, APEC, MOSAIC and CSPP, notwithstanding their perceptional differences and customised standards which they apply.

As mentioned in the beginning of this section, e-readiness should to be looked into with some scepticism. ‘There is a risk that these e-readiness assessments will have little or no impact in the countries, and that much of the work will not translate into much beyond bound reports gathering dust in bookshelves’ (Bridges.org 2005, p. 87). In fact this study conducted by the world bank was so dejected that it declared it to be a waste of time and money to keep writing papers and holding conferences that do these same things over and over again (p. 93). There were some reasons mentioned to justify the dejection following the e-readiness assessments:

- They provided high-level recommendations without specific next steps for action.
- Most shortcomings were explained due to lack of time and resources besides the non-participation of the government.
- A lack of institutional memory was a problem at every level of administration as those officials who were transferred or those who left their jobs took all knowledge of the assessment with them.
- There was a felt need to integrate ICT and e-governance efforts into efforts working towards the MDGs.
- There was a need to move to specifics as generalised growth of e-services does not work. Strategic recommendations need to be broken down into specific achievable task lists, with time frames and deliverables.

e-Readiness may not be a defining factor in attracting business and investment for well-being of citizens and MDG achievement, but it does create a welcome image for those who look for business and investment into the country. Much would then depend upon the focused and well-directed policies coming from a firm and stable government.

3.3.2 e-Government Readiness Index

The United Nations has developed an interactive e-Government Development Database (UNeGovDD). This has generated support to all research which focuses on government efforts in developing e-governance. It reflects upon government's action towards improved coordination, institutional linkages, partnerships developed and information disseminated on country's governance through interactive websites and other e-channels to achieve the targeted goals of well-being and sustainable development, especially in the context of the MDG deadline of 2015. e-Government Readiness Index is different from the e-Readiness Index as the latter is about the ICT infrastructure, access and affordability, while the former is more about internal governmental reforms which generate or attempt to facilitate mutual learning, team spirit, task performance, institutional memory, transparency and financial propriety. The database for information to governments and those working on government was created by the Division for Public Administration and Development Management (DPADM) which comes under the UN Department of Economic and Social Affairs (UNDESA). The processes of government direct the quality of governance, and unless these are well defined and attained, there is little scope for e-governance to achieve success.

e-Government Readiness Index has been created by UNPAP (United Nations Public Administration Programme) and is published by the UN Public Administration Network (UNPAN). The UNPAN's e-Government Survey 2008 is used as a main reference document to clarify the meaning of e-Government Readiness Index. The aforementioned survey suggests that the e-Government Readiness Index which is a composite index comprising three sub-indices, i.e. WMI, TII and HCI (UNPAN 2008, p. 12), reflects upon government's ability to utilise developments in ICT for social and economic benefits to people. Studies on e-Government Readiness (2009) suggest that the major concern right now is not the availability of technology but the way it is to be used because 'an integrated e-government system available round the clock undoubtedly will tie agencies, processes and systems together in a more efficient manner and faster way'. Governments which are able to interlink their own processes and structures of decision making would be better positioned to speed delivery of services, gain confidence of service seekers and motivate people to participate online. South Asian countries have been slow in reaching anywhere close to the desirable e-government readiness position which could clear off their backlog of failed policies and innovate strategies for future. However, they have created an exceptionally noisy arena for ICT companies to compete and promote e-services

alongside the government services and thus pushing through a tough public vs. private market. The telecommunication company (mobiles, Internet providers and broadband services and apps, etc.), power providers, e-billing, financial services, banks, property registration and loan companies witness a tough battle between government agencies and private companies.

3.3.3 EGRI's Constituents

EGRI is composed of three indices WMI, TII and HCI. A short description about the three would explain how they reflect upon the government's e-readiness. The first impression about the government of any country is its website and its availability to citizens through the web. This may sound awkward to a resident of a remote region in a country where there is no electricity, no roads and not even any government's presence to deliver services. There are innumerable areas scattered around every Asian country where citizens' are underserved due to lack of infrastructure or because governments perceive political gains in their neglect. The argument that everyone should be served on a priority does not dismiss the fact that some would certainly become the primary recipients of benefits. Thus, e-development would begin at a small scale with a website to disseminate all information that constitutes institutions of law and governance, citizens' rights and government's responsibilities. This being a primary resource brings a nation in the midst of global political network that encourages financial institutions, businesses and companies to assess the feasibility of moving their assets and investments into it. Development and international relations in present times are not directed to invade and loot. Law, human rights, status of women and children, health and environment, etc. are currently having global dimensions as a result of which every country of the civilised world led by the United Nations has to seek legitimacy through website as a primary window for having achieved them.

Web Measure Index is the online presence of governments. This is composed of information about its structure, processes and citizens' services which it takes care of. The national portal, home page, history of programmes and policies are entwined with the 'web' of that institution. WMI is also about the governments' ability to provide tools and technology to fulfil the aspirations of the rising new generation into education and professional areas. The UN e-Government Readiness Survey 2008 suggested that for WMI, it is not only the back office and front office processes which are important but also the whole-of-government value of services which come from connected government. The survey suggested five stages to help measure the web presence of governments:

I. Emerging: Brief static description on the website about the structure and processes of the government
II. Enhanced: Interlinking departments and improved search engines for finding services and office locations

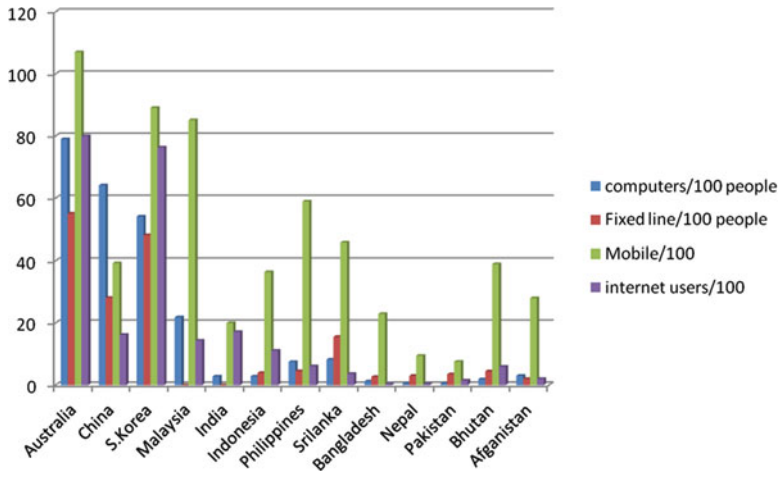

Fig. 3.2 TII (high potential for mobile telephony in e-governance) (Source of data: 2012, http://www.internetworldstats.com/stats3.htm, Accessed 26 March 2013)

III. Interactive: Making services available to citizens in an improved convenient manner like downloading forms and online messages and grievances
IV. Transactional: Two-way communication like tax payments, financial transactions such as fee and registration of societies and other admissible office requirements
V. Connected: Improved coordination amongst government agencies for providing single-window system-based services to citizens such as passports and visa services

Telecommunication Infrastructure Index is explained by the UNPAN[11] as a composite weighted average index of six primary indices based on basic infrastructural indicators, which define a country's ICT infrastructure capacity. These are as follows: PCs/1,000 persons, Internet users/1,000 persons, telephone lines/1,000 persons, online population, mobile phones/1,000 persons and TVs/1,000 persons. Figure 3.2 gives detailed comparative data on the status of TII in the Asia Pacific. The interesting side of this data is the significant rise of mobile telephones in communication which further suggests that e-governance to be successful should go beyond computers and Internet and start 'convergence' of services. With convergence of services there is also an increased need for apps, or applications. An app is a piece of software. It can run on the Internet, on computers, on mobile phone or on any other electronic device. Cloud-based apps are becoming more popular, and many big TV channels have started diversifying into apps. As e-governance advances, the TII's composite measurement would also include a country's Cloud

[11] http://www.unpan.org/egovkb/

Computing and apps alongside the government's ability towards convergence of services.

Human Capital Index is defined by the UN e-Government Survey as a composite of adult literacy rate combined with gross enrolment ratio at the primary, secondary and tertiary level, with two thirds weight given to adult literacy and one third to the gross enrolment ratio (2008, p. 17). HCI reflects upon human capacity to be able to navigate through technology with ease and use it for accessing new opportunities for improving one's income and well-being. It suggests the degree of transformation possible in a country and the multidimensional usage possible on digital equipments.

3.4 The Challenge of Networked Governance

Networked governance is an expression used for modern day governance where administrative agencies work in partnerships and in communication with many other governmental and nongovernmental agencies for political, informational and social reasons. Above all, the administrative choice to do so has no alternative today considering the nature of present day policy structures which have to work hard to keep secrets from the media. 'Community policing' is one such example of networked governance where networking with agencies outside the regular hierarchical police department has become a requirement by law. 'Finance Ministry' is another example where the department would be completely handicapped in its functioning if it fails to keep tap and communication with all private and public departments, investors and international financial agencies. One can see the functioning of one of the smallest banks or its branch in any remote region of Asia which is not working in alliance with money transfer agencies like Western Union, currency converting agents, investors, loan agencies, recovery agencies, credit and debit card management companies and intelligence and evaluation teams from private firms. In a bigger market, the same bank may join operations with developers, estate agents, foreign universities, placement agencies, gold sellers, hotels and travel agents. As these new challenges cast their shadow over traditional structures of governance, issues of coordination and collaboration and communication may come centre stage and demand ICT applications.

Soumitra Dutta (2012) suggests that a nation's ability to put the available technology to proper and greater use in a networked society, also referred to as a 'hyperconnected world', will set the pace for a competitive environment as well as a flow of new opportunities for its people. The exponential growth in mobile and Internet telephony (see Table 1, Chap. 1 and Fig. 3.2 below.) has increased greater scope for networked governance in the region, and governments can ignore this change only at their own peril.

Figure 3.2 reveals that even in countries with extremely low number of computers and Internet users, there has been a steep rise in the use of mobiles, i.e. Afghanistan, Bangladesh, Nepal, the Philippines and Indonesia. This suggests that

e-governance to be used in its full potential would require technologies which can be used with equal ease both on mobiles and computers. Besides the need for convergence, there is a need to put information at one place and coordinate its distribution and use appropriately. It also indicates efforts in the direction of appropriate Internet governance so that a few multinational companies or system generators may not control the whole world of aspiring users.

Governance of ICT is indispensable to facilitate development and productivity in a manner that the fruits of progress are shared by all citizens. It is not just the availability of technology which is of importance but the way governments are able to customise it for use by their people. The degree of government's ability to stay networked in a world exploding with social media, big data and people's connectivity and to channelise it to gain competitive edge and increase social well-being will reflect upon the Networked e-Readiness Index ranking.

There are differing perceptions which help to clarify this transition of technology to development. Some writings have contested this notion of ICT-led development (Sein and Ahmad 2001; Yang 2001; Davison et al. 2000). Many writers have written about its poor impact upon organisational reforms and productivity (Brynjolfsson 1993; Wilson 1995; Solow 1987). Thus, the number of Internet users, number of telephone lines or the rise in cell phone users indicate technology diffusion but may not be sufficient indicators to study development (Malone and Rockart 1991). These researchers sceptically suggest that ICTs may be replacing traditional technologies but doing the same job or helping people to communicate more in an arbitrary manner without contributing to strengthening deliberative democracy or this may also empower business firms to divert public discourses or even obstruct deliberative democracy. However, with the coming of the twenty-first century and the empirical evidence on developmental achievements as part of the MDGs, it has become evident that ICT has enormous unexplored potential especially for women, children, underprivileged and persons with medical deformities and disabilities which can be utilised to achieve well-being more robustly (Heeks 2010; Maier 2007; Mossberger et al. 2013; Piatkowski 2004; Dorgan and Dowdy 2004). The oft-quoted examples of the earlier era writings found the 'village well' an interactive community being replaced by a cyber-net community or a Town Hall Municipal Meeting getting substituted by video conferencing, FaceTime or Skype. Devoid of its intimate community bonds of shared space and common geography, ICTs have recuperated communities and demonstrated their ability to improve law and order maintenance as much as making them politically and culturally more interactive. Some of the best practices discussed in Chapter V may help to understand the need and challenges of networking efforts of governments. This may however not provide any evidence of their direct contribution to justice dispensation. It is true that some of the quality services embedded within the framework of cognitive human sensibilities and consciousness cannot be transferred online and governance has a very large subsection of services which draw their strength from this framework. For example, ICT applications can collect data, corroborate and help the policymaker for the formulation of policies, but it cannot ensure its neutrality from human biases and discriminatory perceptions on the collection of data at source. Similarly, it can ensure that a judge and a teacher are punctual in attending to the courtroom and

classroom, respectively, but what it cannot ensure is that they also deliver fair justice or quality teaching. It becomes obvious that ICTs lean towards quantitative contributions which may or may not contribute to better qualitative performance such as the reduced pendency of cases in the court may relieve the judge for putting in a more qualitatively studied judgments. Undeniably, ICTs do indicate a new jugglery of connectivity, pricing and softwares in governance, which may slow or speed up access to some services in contrast to others due to economic or political reasons. It has also been found that ICT-led governance works better under a political leadership with strong nationalist focus such as Mahathir Mohammad of Malaysia which can influence people more effectively and formulate supportive laws and strategies which bring greater accountability of the process of governance and increased productivity. Ironically, for lack of political leadership and national vision about progress, all South Asian and some Southeast Asian nations have not been able to generate a meaningful e-governance policy. For lack of a coordinated and consistent e-governance policy, their e-readiness scores have slowed down or dropped substantially. Figure 3.3 shows that only two regions in the world, South Asia (.3395) and Southeast Asia (.429), show scores lower than the world score of .4513. Three countries in South Asia, Bangladesh (.2936), Nepal (.2725) and Afghanistan (.2048), are struggling to bypass their volatile politics for providing uninterrupted services to people. Individually, Malaysia (.5001) and the Philippines (.5001) fare better in the region. East Asia has shown superb performance with South Korea (.8317) and Japan (.7703). If some of the traditional public administration (emerging out of the Scientific Management movement, First and Second Minnowbrook Conferences) sub-indices (planning, organising, staffing, budgeting, ecology, supervision, direction, human relations, rigour and resonance) are included in the granularity of metadata for assessment, then the scores of e-readiness may further fall. Some of the following sub-indices which emerged in the course of evaluating e-governance practices in Asia and Australia could be taken into consideration for a cross-cultural critical evaluation of e-governance:

1. Number of citizens charters
2. Number of functional citizens charters
3. Centralised metadata on grassroot resources and indigenous wisdom
4. Central Monitoring Committee and project management committees
5. Record of segregated data (deprived, caste, class, differently able and gender) on citizens' access to e-governance and services obtained
6. Websites with functional online grievance redressal system
7. Convergence of all ICT technology-based services
8. Integrated voice recording system (IVRS), video conferencing and networked government departments for completing the loop of online service delivery
9. Citizens' rights for fair services in a public-private partnership projects in e-governance
10. Linking performance of an administrator in a skill development programme and maintenance of records
11. Implementation of community policing
12. e-Courts for reducing pendency of cases (Fig. 3.3)

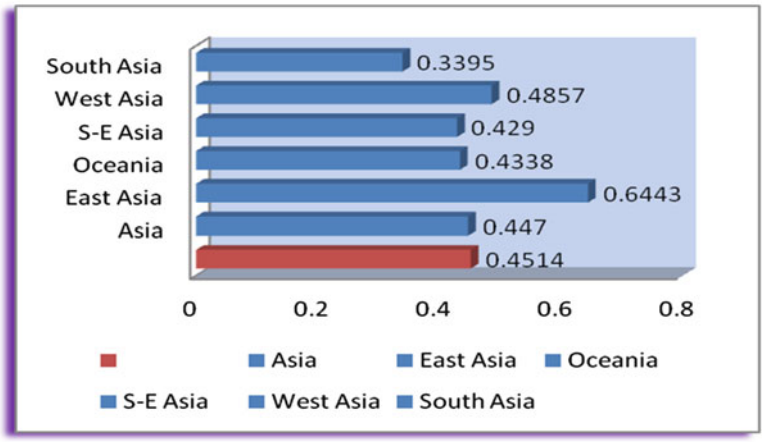

Fig. 3.3 Regional e-Readiness Indices as compared to the World e-Readiness Index (Source of data: UN e-Government Survey 2008, pp. 17–19)

Some writers and researchers have made detailed list of cultural factors which influence e-governance in a country. Bouaziz (2008, p. 14) used Dutch sociologist Geert Hofstede's et al. (2010) cultural dimensions (Individualistic/Collectivistic, Masculine/Feminine, Uncertainty Avoidance, Power Distance, Time Perspective and Indulgence vs. Restraint). Undoubtedly, cultural characteristics have influenced acceptability of e-governance projects (Erumban and de Jong 2006) (see Box below).

An Indian NGO 'Developmental Alternatives' has successfully implemented an e-governance project called TaraHaat or 'Star Market' in Bundelkhand located in the Central Indian State of MP. This region was poor due to a large tribal population which had a literacy rate of 3 % at the time of starting it. Out of many problems they encountered while initiating Internet-connected computers in their Kiosks, one was unique. The tribal population refused to stand in front of the computer and face the screen. The technician told us that the middlemen who received regular rent for providing many government-approved services to them had alerted them that the ghost sitting behind the screen would remember their face and follow them everywhere to create dangers for them.

3.5 What Does the Networked e-Readiness Index (NRI) Reveal?

Looking at the Networked e-Readiness Index of selected Asia Pacific countries given in the Table 3.2, there is a clear divide visible between the countries of South Asia and the rest in the region. In the introductory chapter of this book, their

e-progress in the region was highlighted with their rapid strides in adding numbers of Internet users, mobile penetration and regulatory arrangements to streamline services and governance over ICT. The NRI studies with sub-indices and granular data on a qualitative set of analysis reveal a different picture. The Table 3.1 would reflect upon some of the analytical and interpreted findings.

South Asia as a region demonstrates a substantial performance gap due to the need for ICT in developmental programmes and the government's inability in providing it to its departments and citizens. Countries in this region have not been able to lift ICT to its optimum usage in developmental issues. India (NRI 3.89) and Sri Lanka (NRI 3.88) stand closer as frontrunners, but drawing correlation between some indices suggests that Sri Lanka is likely to move ahead, leaving India behind. While Sri Lanka scores less on Internet access in schools, it has higher scores on access to basic services which are the ultimate determinant of efficient governance

Table 3.1 Assessing challenges and sustainability of e-governance in Asia Pacific

Indices	S.Kor.	Aus.	Mal.	Chn.	Ind.	S.Lnk.	Indo.	Phil.	Pak.	BDH.	Nep.
1.Global Competition Index	5.02	5.11	5.08	4.9	4.3	4.33	4.38	4.08	3.58	3.73	3.47
2.ICT use &Govt. efficieny	5.68	4.62	5.55	4.91	4.48	4.78	4.2	3.66	3.65	3.65	3.2
3.Internet access in schools	6.18	5.92	5.17	5.69	4	3.42	4.65	4.03	3.67	2.5	3.07
4.Internet access in schools	5.97	5.28	5.59	5.26	4.37	4.69	4.27	3.87	3.8	3.88	3.4
5.Social Impacts	6.21	5.57	5.31	4.77	3.76	3.68	3.72	3.42	3.29	2.91	2.75
6.Impact of ICT on Organizational models	5.13	4.92	5.35	4.77	4.84	4.48	4.35	4.25	3.94	3.57	3.45
7.New services/products	5.94	5.21	5.48	4.99	5.05	4.82	4.46	4.49	4.01	4	3.62
8.Eco. Impacts	5.31	4.75	3.97	3.15	3.64	3.3	2.84	3.16	2.95	2.53	2.33
9.ICT & Govt. vision	4.99	4.78	5.35	4.97	4.45	4.87	4.15	3.44	3.54	4.07	3.19
10.Priority to ICT in Govt.	5.7	5.41	5.91	5.56	5.13	5.52	4.49	4.18	4.14	4.96	3.65
11.Govt. usage	5.9	5.26	5.35	4.58	4.26	4.32	3.7	3.66	3.39	4.06	2.95
12.Staff training	4.28	4.87	5.18	4.24	4.02	4.17	4.15	4.42	3.46	3.27	2.87
13.Business Internet use	6.39	5.98	5.76	5.26	5.13	5.53	4.88	4.7	4.3	4.21	4.09
14.Innovation capacity	4.33	3.98	4.35	4.23	3.6	3.28	3.8	2.71	3.25	2.38	2.29

(continued)

Table 3.1 (continued)

15.Use of virtual social networks.	5.81	6.1	5.93	4.95	4.93	4.59	5.67	5.75	4.83	4.29	4.05
16.Quality of maths/Sc. Educ.	5.24	5.09	5.02	4.75	4.74	4.21	4.26	3.14	3.62	3.31	3.28
17.Educational system	3.93	5.12	5.09	3.97	4.38	4.32	4.23	3.83	3.49	3.37	3.19
18.Skills	5.72	6.03	5.29	5.18	4.27	5.2	4.99	4.86	3.13	3.32	3.22
19. Affordability	5.22	3.97	5.69	5.67	6.94	6.02	5.78	5.18	5.91	5.41	5.14
20.Accessibility to digital content	6.24	6.06	5.66	5.63	4.76	4.51	5	4.82	4.71	4.05	3.62
21.Readiness sub-index	**5.64**	**5.53**	**5.03**	**4.78**	**4.79**	**4.78**	**4.63**	**4.57**	**4.03**	**3.87**	**3.47**
22.Govt. procurement of advanced technology	4.13	3.93	4.91	4.44	3.5	4.44	4.11	2.82	3.36	2.97	2.58
23.Intensity of local competition	5.65	5.87	5.45	5.55	5.39	5.36	4.58	5.16	4.54	4.54	4.03
24.Venture capital availability	2.19	3.54	4.13	3.5	3.37	2.81	3.67	2.58	2.93	2.26	2.21
25. Efficiency of legal system	3.06	4.81	4.87	4	3.9	4.3	3.77	2.78	3.36	3.32	2.69
26. Political & regulatory environment	4.14	5.48	4.87	4.07	3.65	3.75	3.48	3.15	3.08	2.75	2.93
Rank/Networked Readiness Index	**12/5.4 7**	**17/5. 29**	**29/4. 80**	**51/4. 11**	**69/3. 89**	**71/3. 88**	**80/3. 75**	**86/3. 64**	**102/ 3.39**	**113/3. 20**	**128/2. 92**

Study relevant 26 indicators selected from the 53 sub-indicators evaluated on a scale of 1-7 in Global Information Technology Report 2012,pp.xxiii

demonstrate country potential for growth

UNDERLINED Areas which demand serious attention and government action.

and well-being of people. The ICT usage in government is more in Sri Lanka which has been effectively translated into reduced delays, corruption and fast performance of bureaucracy. Sri Lanka has also been able to prioritise ICT in governance as the scores of Sri Lanka suggest. Both countries have almost a similar score on e-readiness index which indicates that their infrastructural base, connectivity and computer literacy, etc. is more or less on a platform of equality from where they could take their different flights to progress. However, the data indicates some long-term effects upon the two countries which are likely to hold back India more than Sri Lanka:

1. India scores low on the procurement of new technology which could negatively influence adoption of IPv6, VoIP and Cloud technology, under sea and submarine fibre optic cables for larger data transfers, speed and dissemination. These tech-

nologies are indispensable for an inclusive, smooth and accessible e-governance in any country. Sri Lanka has been able to connect 475 government organisations under a Lanka Government Network (LGN) and the Lanka Government Information Infrastructure Pvt. Ltd. which is established by the Information and Communication Technology of Sri Lanka. India has a relatively weaker monitoring and supervisory arrangement than Sri Lanka.

2. Sri Lanka scores high on the efficiency of the legal system. In Sri Lanka, the doable measures such as Automation of Registry in Supreme Court, procurement of Case Monitoring System for the Supreme Court and Judicial Services Commission, A Court of Appeal (www.courtofappeal.lk), setting up of Law Net as the largest legal database under the Ministry of Justice. All short judgments, bench orders and directions are immediately issued electronically after pronouncement. Sri Lanka Computer Emergency Readiness Team (SLCERT) was appointed to the Global Response Centre of IMPACT, the security arm of ITU-T or Telecom Standardisation Sector to monitor developments.

Between India and Sri Lanka one of the major factors which enabled the latter to sustain its ICT and ICT-enabled services (ICTES) has been the role and impact of political leadership. India's NRI rank in 2005 (Table 10) was higher than China and Sri Lanka by six and twenty places, respectively. China implemented appropriate governance reforms, set up regular monitoring and supervision committees and invested in innovation and procurement of new technology to leave India behind by 12 ranks in 2010 and 18 ranks in 2011. India and Sri Lanka managed to maintain their neighbourhood spirit in 2012 by staying close at ranks 68 and 69, respectively. Australia, Malaysia and Indonesia have shown relatively better consistency and calm in bringing ICT reforms in relation to developmental imperatives. Pakistan, Bangladesh and Nepal have been victims of political instability which is a situation that would derail any prospective investment, public-private partnership and citizens' participation in the design and infrastructure development of ICT. ICT policies are most dependent upon partnership with private technology support companies, international investors, legal framework and above all political leadership. Thus, progress on the ICT policies is entangled with other political and human development issues notwithstanding the quantitative advancement which some nations have demonstrated in websites, information laws and communication technologies. The role of ICT is to enhance the ability for networking within the government by linking all departments, implementing agencies and decision makers and with the government through NGOs, people's groups, citizens and global organisations. Wise and visionary governments undertake inclusive planning and surveys prior to adopting an ICT policy which is intelligently designed and backed by political will. Heeks (1998) speaks strongly about the need for a political will to institutionalise reforms.

Table 3.2 brings out NRI ranking over the years which shows the progress made by each country on adopting e-networked governance. All countries have scored well on the use of virtual social networks, affordability and the intensity of local competition with a few deviations and exceptions. Indonesia and the Philippines scores are comparable to that of Australia and South Korea which show a substantially high activity on this front. The issue of affordability has been handled efficiently in India and Sri Lanka by opening up the industry to competition. An extremely low score of Australia (3.97)

Table 3.2 Networked e-Readiness Index ranking

1	Australia	15	11	15	14	16	17	17	18
2	S. Korea	20	24	19	11	15	10	12	11
3	Malaysia	26	27	26	28	27	28	29	30
4	India	45	39	50	54	43	48	69	68
5	China	51	41	57	46	37	36	51	58
6	Sri Lanka	66	71	79	72	72	66	71	69
7	Philippines	69	67	81	85	85	86	86	86
8	Indonesia	73	51	76	83	67	53	80	76
9	Pakistan	76	63	89	98	87	88	102	105
10	Bangladesh	93	100	124	130	118	115	113	114
11	Nepal	NA	NA	119	124	124	131	128	126

Source of data: http://www3.weforum.org/docs/WEF_GITR_Report_year.pdf

on the affordability measures is an issue embedded in state politics and the considerable influence and controls of telecom companies over legislatures and law making. This has been critically analysed in the detailed case study of Australia in the next chapter. A critical analysis of such deviations draws attention especially when Australia scores highest (5.87), even higher than the aggressive runners, South Korea and Malaysia, on the efficiency of the legal system. Malaysian experience on information technology suggests a model which can generate interest for mutual interaction with other neighbours. Most of the indices and sub-indices selected by the World Economic Forum for assessing networked e-readiness do not tell anything in isolation, but approximations are closer to truth if many human, economic and infrastructural indices are taken together, correlated and compared in a wider political and constitutional context of the country. Lately a lot of emphasis is being laid on the cultural context of e-governance especially in the non-English-speaking countries. This is critically explored in the second chapter on theoretical locations of e-governance. However, there is no single determinant in any country which can be singled out for pushing e-governance reforms.

3.6 Identifying the Achievers and Laggards in e-Government Reforms

This section would study comparative efforts made by countries on creating an e-platform for improving governance. While surveying individual efforts of countries in achieving e-governance, it has been noticed that the following areas have received some degree of special attention by governments.

1. Technology infrastructure, which includes the institutions for policy formulation, implementation and evaluation, softwares and hardwares, manpower support, electricity, connectivity, bandwidth, number of computers, cyber café and kiosks
2. Number of services put online, municipal services, basic services, family support services, services and support for differently able, primary health care and medical support

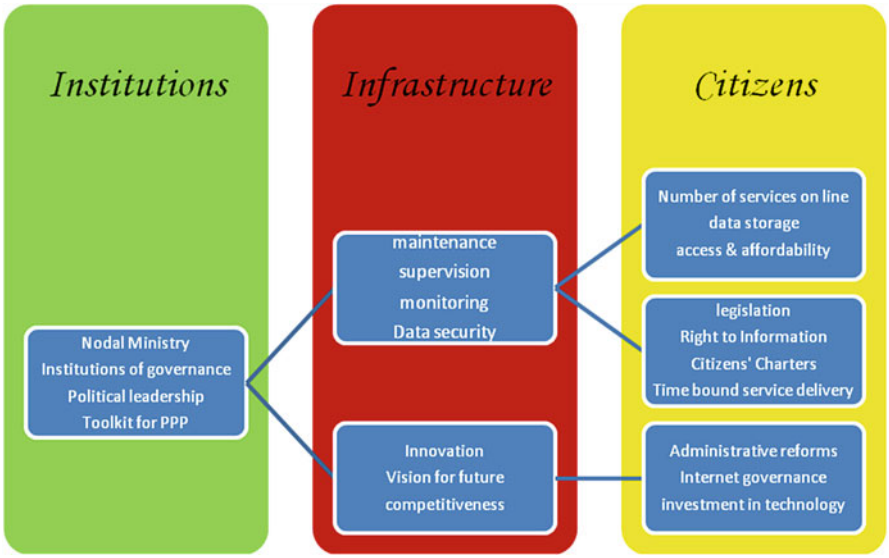

Fig. 3.4 A basic model of e-governance imperatives in Asia Pacific

3. e-Literacy programmes, computer proficiency, Internet use, training in hardwares and softwares and basic Internet use training
4. Law, Regulations and Implementation, Telecom Act, Copyrights Act, Intellectual property law, Telecom Regulatory Authority, Framework for PPP
5. Political leadership, ICT under the direct charge of the Prime Minister, President or Minister with some of the best administrators on the job

Two basic institutions (an ICT Ministry and a Telecom Regulatory agency), an ICT national policy and a Telecom Act, prevail in all countries. This constitutes the nature, direction and speed of e-governance reforms in any country. This would also define the norms which would be followed by the decision makers to formulate programmes, facilitate procurements, innovate efforts and promote competition in the telecom market. Some countries go beyond some of the above-mentioned basic efforts to become achievers (see Fig. 3.4). Any effort beyond this basic initiative also becomes the defining characteristic for a country's progress on e-governance.

3.7 Creating Interactive Portals and Motivating Content

To provide a trouble-free and successful e-governance for developmental activities, two facets of technology become important. One is what citizens are able to see and what they cannot. What they see is the portal with information, presentation of

information and embedded incentives for using it. A good government portal would not just be a defensive newsletter about one's achievements but interactive feat of communication. The other part of technology is what the user cannot see but does use it all the time with a demand for efficiency and sophistication. These technologies are also referred to as the frontline and back-end technologies (Lallana et al. 2002). It has been observed that very few countries are able to balance efficiency and sophistication at both ends of technology.

Countries have varying dimensions of e-governance. Most countries have sought investments into infrastructure such as modern buildings, electricity, transport and water availability. Despite the state of the art office spaces, e-governance could not be improved. An e-governance infrastructure alone does not serve the needs of governance. There must be sufficient incentive for people to use it. What would the citizen get from it? How would the nature of services change his life? Why would the citizen trust the faceless and wired service delivery system? A country with low literacy levels may have a low desire for information as compared to countries where the literacy level is high and the government is expected to works on the razor's edge in supplying the right and relevant information. Thus, for an uninterrupted flow of information and connectivity, governments have to seek advanced systems and softwares to be able to stay up to citizens' expectations. In many countries governments have lost legitimacy for their information deficits. In such cases e-governance would become an implantation of technology without having the rigour to impact upon development and economic growth of society. It has been observed that in a majority of countries in South Asia, governments have introduced e-governance without much empirical investigation beyond an engineer's perception of usability of the machine. e-Governance is rooted into interdisciplinary studies which could help government to attract citizen's to its portals. In many regions of South Asia, where economic backwardness and political violence inhibited participation, NGOs did fantastic participatory exercises to regain confidence of people. In Karachi (Pakistan), PANAH, an NGO working to rehabilitate women in distress, had set up links with many other NGOs within the country and also outside the country for online training, participation in government welfare activities and also seeking funds and support. In Bundelkhand region of Madhya Pradesh in India, Developmental Alternatives, an NGO had to organise village meetings, folk activities and street theatres involving the same tribal people who were to be brought within the e-governance loop. The experiment of community NGO Kudumbashree in Kerala has been one of the biggest partners of government in eradicating poverty and building up lives especially of women. This experiment was instrumental in linking with the local government portals (Panchayat Portals) to display opportunities, markets for products and incentives for participation. In Bangladesh, the microcredit NGO Grameen Bank has become one of the richest sources of income for a very large population. Currently more than 700 NGOs are working with the Department of non-formal education in various capacities to pull people out of illiteracy and ignorance. In the Philippines, the Visayas Network of NGOs and the Mindanao Coalition of Development NGOs form strong regional coalitions to strengthen conviction in government's e-efforts for service delivery. Indonesia's

e-governance owes the success of its empowerment programmes to LP3ES, Dian Desa Foundation and Bina Swadaya Foundation. Cyber Care, an NGO run by young Malaysians since 1998, is training and empowering people to use ICT and computers and participate in governance. Malaysian government has a number of interactive local portals like the Penang e-Community Volunteer Centre which enables the community to access information on community services and volunteer opportunities. This motivates people to participate with consistency and involve themselves in learning and also training others. In India the Planning Commission Portal has some of the highest number of offered positions for the young volunteers in governance, but since its local wings, the District Planning Committees have no websites; the incentive to participate in planning is completely absent.

In Australia, Basil Varghese's Brotherhood of St. Lawrence in Melbourne and National Education and Employment Foundation (NEEF) has worked closely with the Melbourne government to help people overcome homelessness, destitution, medical emergencies, illiteracy and skill deficits.

Singapore is able to make the best out of its e-governance in the Asia region and so would Vietnam and Bangladesh most likely to do in coming times due to their smaller area, accessible geography and well-bonded communities. Singapore's e-citizen portal (www.ecitizen.gov.sg) provides access to one of the largest number of e-services to citizens. The portal has now become a one-stop access to government services without having to go around several portals in search of a single opportunity or information.

The Philippines made an earliest start in the region towards computerisation which was in 1971 and initiated the beginning of e-governance activities in 1994 with the setting up of the National Information Technology Council (NITC). Two important milestones were thoughtfully achieved in 2000: the e-Commerce Act (Republic Act 8792) in June 2000 and Government Information Systems Plan (GISP). Subsequently, lack of a unified vision and right investments in technology allowed the neighbours to take over this e-progress.

One e-governance project studied in the Panchmahal district of Gujarat would reveal the necessity of such a back-end support technology in e-governance to complete the loop of participation and trust. This programme called 'Mahiti Shakti' in the local Gujarati language meant the 'Power of Information'. A particular community due to cultural and socio-economic reasons had not been participating in government programmes. The district administration set up computer kiosks at grocery and daily needs shops around that community area. Men and women started using government support services through the shopkeeper on payment of a minimal fee. They found themselves in a comfortable situation as they got the doctor's appointment at a government hospital and received free medical care and medicines, hassle-free driving license, employment, support for daughter's wedding, admission in schools and colleges, minority- and caste-based employment and financial support. Most of the women in these backward communities had never ventured out of their homes, but once they did, the world opened up for them with immense opportunities within the city. Once a family starts participating, others are never held back. However, this increased access on the wire increasingly depends

upon a broad spreadsheet of back end technology to bring sustainability and continuity in the functioning of e-governance. First is the GSWAN (Gujarat State Wide Area Network) easy to press a single button and reach the decision maker to report a grievance. Second is the Integrated Voice Recording System (IVRS) which the district administrator is expected to make use of for registering complaints against subordinate offices who failed to deliver. Third is video conferencing under the leadership of the Chief Minister himself who would let the service provider administrator and the complainant citizen face each other and explain why a service could not be delivered. The fear of facing the video conference is enough for administrators to perform. Many of these simple technologies if wisely applied may serve a large number of aspiring citizens.

3.8 Right to Information as a Facilitator to Interactive Portals

There exists a positive correlation between the Right to Information Laws (RTI) or Freedom of Information Laws (FOI) and good governance. This has been empirically tested in a number of country reports of United Nations as brought out from time to time. Freedom of expression is a sin qua non of citizens' fundamental liberties. United Nations had realised its indispensability in governance more than even the Declaration of Human Rights which came much later in 1948 and in its very first session in 1946 UN General Assembly adopted resolution 59(I) stating 'Freedom of information is a fundamental human right and … the touchstone of all the freedoms to which the United Nations is consecrated'.[12] The UN spirit for the access to information is of key significance in the design of e-governance. Government portals have not been interactive as far as sharing of information is concerned. They have been reduced to 'portals on government', such as a display of whatever the government is doing, from the official ribbon cutting in ceremonial executive gatherings to the Minister's visit to underprivileged communities, global honours to political leaders and international and national conferences. All this information rationalises the existence of bureaucracy as well connected but has no relevance for an individual service seeker. Right to information recharges the department from within and pressurises the bureaucracy to be as transparent as possible over the portal.

The first RTI law was enacted by Sweden in 1766. USA's Watergate Scandal forced the government to pass the Freedom of Information Law in 1976. By 2010, more than 85 countries have Right to Information Acts. The transparency legislation which includes the Right to Information law has brought a revival of e-governance in Mexico. Between 2000, when the Act was passed to 2005, the government's Instituto Federal de Acceso a la Información handled more than

[12] Department of Public Information (DPI), Dag Hammarskjöld Library (DHL) http://www.un.org/depts/dhl/resguide/r1.htm.

200,000 requests.[13] Almost 20 nations in Asia have adopted the Right to Information Acts in various forms and degrees. These nations which function under the ICT driven, Right to Information are, South Korea (1996, as amended in 2004), Japan (1999 as amended in 2003), Thailand (1997), Pakistan (2002), India (2005), Nepal (2007), Bangladesh (2009), China (2009) and Indonesia(2010). Three notable exceptions to this Freedom of Information Law are Malaysia, the Philippines and Sri Lanka. Quite interestingly these three countries are high achievers on the e-governance performance.

Southeast Asia has been a difficult region for citizens to obtain access to information as a right. Two conditions have apparently acted as deterrent against this freedom. First is the Malaysian Official Secrecy Act of 1972 and the second is the overpowering influence of Mahathir's look East philosophy. Mahathir was critical of Western universalism and the liberal notion of human rights which emerged from the natural law and liberal Western philosophy. He looked at them as corrupting influences upon human mind (Mahathir and Ishihara 1995, pp. 71–86). Thus, NGOs and the notion of civil society were also looked at with revulsion as 'they aim to weaken government authority and do not contribute to public good' (Mahathir 1982, p. 127). He emphasised the notion of social and community rights over individual rights. The Malaysian civil society groups led by a forward-looking NGO, the Centre for Independent Journalism (CIJ),[14] even called upon the present Prime Minister Najib Razak to plead for the Freedom of Information Law, but the law does not resonate with the Federal government in Malaysia. As a result, two states in Malaysia Selangor and Penang, which are ruled by the opposition party Pakatan Rakyat, have enacted the Freedom of Information Acts to allow people to access public documents.

The Republic of the Philippines under the 1987 Constitution is declared a democracy. Under 'Section 1. The Philippines is a democratic and republican State. Sovereignty resides in the people and all government authority emanates from them'. Further, Article 3, Section 7(a) of the Philippine Constitution says, 'The right of the people to information on matters of public concern shall be recognized. Access to official records, and to documents and papers pertaining to official acts, transactions, or decisions, as well as to government research data used as basis for policy development, shall be afforded the citizen, subject to such limitations as may be provided by law'. Yet there is no Right to Information or the Freedom of Information Law in the Philippines. The Supreme Court under some of the oft-quoted cases has also suggested the need for people to have access to official documents.

In *Valmonte v. Belmonte, Jr.,*[15] the Supreme Court declared that 'an essential element of this freedom is to keep open a continuing dialogue or process of communication between the government and the people. It is in the interest of the State

[13] CUTS (2010) studies on consumer unity and Trust Society.

[14] Centre for Independent Journalism http://cijmalaysia.org/2011/09/28/pm-must-introduce-right-to-information-law-to-democratise-msia/ [accessed 30 April, 2012].

[15] Ricardo Valmonte, et al. vs. Feliciano Belmonte, Jr. G.R. No. 74930 February 13, 1989.

that the channels for free political discussion be maintained to the end that the government may perceive and be responsive to the people's will. Yet, this **open dialogue can be effective only to the extent that the citizenry is informed and thus able to formulate its will intelligently**. Only when the participants in the discussion are aware of the issues and have access to information relating thereto can such bear fruit'.

In another path-breaking judgment Chavez vs. NHA, et al.[16] it was clarified that 'the other aspect of the people's right to know apart from the duty to disclose is the duty to allow access to information on matters of public concern under Sec. 7, Art. III of the Constitution. The gateway to information opens to the public the following: (1) official records; (2) documents and papers pertaining to official acts, transactions, or decisions; and (3) government research data used as a basis for policy development'.

The Philippines was ranked 129th out of 183 countries in the 2011 Report on Corruption Perception Index. Many governance measures backed by improved accountability of public officials and functionality of e-governance have improved the rank to 105th out of 176 countries.

Sri Lanka is different from Malaysia. There is no 'Mahathir-ism', but the long civil war and internal insecurities have created a fear that such rights may obstruct the rapid progress of Sri Lanka on a road to recovery. In 2004, the former President Chandrika Bandaranaike approved of the Freedom of Information Bill, but for the early dissolution of the Parliament, the bill could not be laid before it. Again in 2011 the Bill was brought before the Parliament but was defeated.

e-Governance is nourished by the right to information and preventing such a right would certainly indicate a dangerous direction which e-governance is most likely to take when left in the hands of those who do not want to share information but are legitimate rulers of a country. The biggest danger lies with Malaysia due to a relatively weak civil society which is being ideologically driven. Sri Lanka and the Philippines have a strong civil society base which is likely to invoke the Freedom of Information Law in coming times as political images are replaced by aspirations of the rising power of youth.

3.9 Institutional Status and Technological Diffusion

Institutions play a decisive role in technology policies and as Wilson (2004, p. 56) remarked that information revolution is an institutional and political revolution more than a technical one. Successful technological diffusion depends upon a democratic institutional culture (Wilson 2004, p. 56). All countries picked up for comparability assessment have put their policies in place through a central coordinating ministry of the government. Amongst the South Asian countries,

[16] Chavez v. NHA, et al., G.R. No. 164527, August 15, 2007.

India has been able to build strong institutions with stable and accountable administrative leadership and knowledge-based governance. The Ministry of Communication and Information Technology coordinates two departments: first the Department of Telecommunications (DoT) and the other Department of Information Technology (DIT). Besides this the Telecom Regulatory Authority of India was set up by an Act of Parliament in 1997 to regulate the emerging market of private companies in the area of telecoms. There have been a number of task forces to look after the introduction of new technologies and the rising challenges in the communications and information field. **Bangladesh** has taken sharp strides in promoting ICT in government. In 2002 the name of the Ministry of Science and Technology was changed to the 'Ministry of Science and Information and Communication Technology' with ICT as a Division of the Ministry. The division was upgraded as Ministry of Information and Communication Technology in December 2011. Government's keen interest in upgrading the ICT infrastructure of the country was demonstrated with subsequent initiatives taken by it.

Bangladesh Telecommunication Regulatory Commission (BTRC) is an independent commission established under the Bangladesh Telecommunication Act, 2001 (Act no. 18 of 2001). BTRC started functioning from 31 January 31 2002.[17] Over 60 plus Union Information Centres have been launched since 2009. The well-designed project called 53 'Quick Win' is a government initiative which is meant to quickly showcase the impact of the newly engineered ICT-enabled service delivery mechanisms to the citizens, receive their feedback and allow government the necessary preparation time for nationwide implementation (e.g. early warning dissemination through cell broadcasts, payment of utility bills, booking of railway tickets and sending timely notification to sugarcane farmers using SMS). The A2I programme is working with the Election Commission and Civil Service Change Management Project (CSCMP) to reutilise over 600 laptops at every level of governance. The government's 'Digital Bangladesh' vision has provided e-governance initiatives new vigour and momentum nationwide. Local Digital Livelihood content generation and Bangladesh Telecentre Network (KATALYST) are working for the small and medium enterprises with the Development Research Network (D.Net) to train local people in creating local content. D.Net extended its activities to Pallitathya action research to evaluate the impact of information and communication upon the lives of the poor and marginalised.

In **Sri Lanka**, **Pakistan and Nepal**, the Ministry of Telecommunication and Information Technology began almost at the same time in 2002. In **Sri Lanka** an Inter-Ministerial Committee established under the Sec.5(3) of the Information and Communication Technology (Amendment) Act 2008 creates a platform for academia, administrators, public administration and telecom stakeholders to periodically review the ICT policy. The Information and Communication Agency has been in the forefront of implementing developmental projects. It also establishes a

[17] http://web.undp.org/comtoolkit/success-stories/ASIA-Bangladesh-demgov1.shtml

subsidiary 'Lanka Government Information Infrastructure Private Ltd.' to manage Lanka Government Network. Sri Lanka has keenly brought up a Sri Lanka Emergency Readiness Team and Coordination Centre (SLCERT/CC) mandated to protect the information infrastructure of the government.

Pakistan is the only country in South Asia where the e-Governance Division which is called the Electronic Government Directorate is headed by a woman Federal Minister, the knowledgeable Dr. Sania Nishtar. The Ministry of Information Technology (MoIT) is the national focal Ministry and enabling arm of the Government of Pakistan for planning, coordinating and directing efforts to initiate and launch Information Technology and Telecommunications programmes and projects aimed at economic development of the country. MoIT consists of one division: Information Technology and Telecommunications Division. In October 2002, the Electronic Government Directorate (EGD) was launched as a cell within the MoIT, which replaced the former Information Technology Commission. A number of e-governance projects have been functioning under the EGD, namely, e-services for some Ministries, e-Enablement of Senate and the National Assembly of Pakistan to mention a few. The Directorate has a division of IT and Telecom which has three wings: Projects, Finance and Administration and Strategic Planning and Architecture. While the first two are led by managers and administrators, the third is managed by Business Analysts who are by and large trained in the Managerial Information Systems for economic development and business planning.

Nepal as a small Himalayan state divided into five developmental regions which are dispersed and remotely connected through hills and valleys. e-Governance is an ideal arrangement for promoting development and citizens' access to government programmes. Nepal started using ICT in governance in 1972 when an IBM 1401 computer was rented to process census data. The machine was later purchased for use in the Bureau of Statistics. In 1995 Electronic Data Processing Centre (EDPC) was established which was replaced in 1981 by a National Computer Centre. The Computer Association of Nepal (CAN) has remained a loyal partner to e-governance in Nepal. The National Information Technology Centre (NITC) was established in the year 2002 in line with the IT Policy 2000 under the Ministry of Science and Technology (MOST). NITC also acts as a Secretariat for High-Level Commission for Information Technology (HLCIT) which was constituted in 2003. Some positive developments for the consolidation of government efforts in e-governance are the Electronics Transaction Act (ETA), establishment of IT Parks and portals for the different government Ministries and subsequently their evolution into service delivery anchors.

Indonesia's main institution governing ICT is the National ICT Council (Dewan TIK Nasional-DETIKNAS) established in 2006. It has seven flagship programmes which synchronise the government departments on one side and improve delivery of services and accountability on the other. Besides this the implementation of telecommunications standards, rules and policies is the joint responsibility of Dirjen Postel which is under the Depkominfo, the Indonesia Telecommunications Regulatory Body (Badan Regulasi Telekomunikasi Indonesia-BRTI), the Directorates of Telecommunication, Radio Frequency Spectrum Satellite Orbit, Post and Telecommunication Standardize and the International Post and

Telecommunication Institutional. This decentralised structure of ICT management and governance is further scattered into many other institutional bodies as the State Ministry of Research and Technology (Kementerian Negara Riset dan Teknologi-Ristek) works to the advancement of ICT infrastructure in government. Most ICT-related private associations come under the Indonesian Information Technology Federation (Federasi Teknologi Informasi Indonesia-FTII) and Indonesia ISP Association. These institutions are made accountable to people through civil society and consumer groups absent in other countries especially in South Asia. The Indonesian Telecommunications User Groups, 'Air Putih Foundation', 'Internet Sehat', etc., form a strong accountability ring from outside.

Malaysian arrangement to develop technology infrastructure is a step ahead of Indonesia in decentralising and yet having a centralised monitoring arrangement for performance management. Malaysia set up the National IT Council in as early as 1994 to provide a policy direction to the advancement of ICT. Malaysia launched a 5-year ICT master plan in 2006 to work in the direction of adopting new technological innovations in 3G, VoIP, IPv6 and related advances in ICT. This would however be the allocated responsibility of 26 ministries and not just one as in other countries. To ensure that the technological development does not become an upper crust of ministries but also percolates down to local city councils, state governments and local authorities are coordinated and monitored by the State Technology Advancement Unit (KIT).

In the **Philippines**, the Information and Communications Technology Office (ICTO) of the Department of Science and Technology (DOST) was created through Executive Order (EO) 47 which transferred the former Commission on Information and Communications Technology (CICT) from the Office of the President to the DOST. The ICTO is tasked to be the lead implementing agency of Government in most of its ICT-related efforts such as industry development, policy formulation, ICT infrastructure development, R&D, ICT capacity building for the public sector and administration of the e-Governance Fund. The office is currently headed by Executive Director Louis Napoleon C. Casambre. The Philippine Digital Strategy (PDS) is the successor to the Philippine Strategic Roadmap for the Information and Communications Technology Sector 2006–2010. Unlike its predecessor which had limited scope, the PDS is national in scope, it recognises that ICT is not limited only to government and industry but to all levels of society. In line with required progress in e-governance, many projects have been launched to improve governance in the Philippines. Some tend to strengthen technology support like the TV White Space Initiative (TVWS) to provide connectivity for those beyond the reach of commercial wired or wireless broadband service. Government Fiber Core Network providing secure data connectivity between government agencies, data centres and the public Internet. Some projects improve convergence of services like the Integrated Government Philippines (iGov Phil) that will facilitate deployment and integration of mission-critical ICT projects, especially those that deliver common government services. At the local level, Electronic Governance in Local Government Unit (eLGU) and the Contact Center Bayan (CCB), CCB is a joint initiative to improve service delivery and reduce red tape in government frontline services. e-Governance in the Philippines is working at all levels of multilevel governance.

China initiated ICT development in 1998 through the Ministry of Information Industry, which is a subtle revelation about the missing 'communication' in the title. This is compensated by putting some non-profit bodies such as the China Internet Network Information Centre (CNNIC) and the Computer Network Information Centre (CNIC) and the Secretariat of the Internet Policy and Resource Committee which functions under the Internet Society of China (ISC). China's model of adopting and deploying IPv6 is superior to even that in the USA and other developed countries due to its alert ICT institutions.

One would be curious to know about institutions which have changed **South Korea** to a miracle of ICT governance despite many other stereotypical features missing in its administrative framework. In 1994 the Ministry of Information and Communication was set up to provide a unified and synchronised approach to the erstwhile scattered information and communication initiatives going on in different ministries and departments. Following this, a 25-member team which included main Ministers from the Cabinet constituted the 'Informatization Promotion Committee' (IPC, http://www.ipc.go.kr) headed by the Prime Minister himself. The implementation tasks were transferred to two ministries, namely, the Ministry of Public Administration and Security (MOPAS) and the Ministry of Knowledge Economy (MKE). MOPAS promotes sophistication in e-governance through a thorough integration of other relevant ministries in a leadership role. MKE promotes business, industry and commercial activities by integrating relevant ministries and R&D offices. That most of these rapid efforts move in the right direction without creating a digital divide in society, Korean Agency for Digital Opportunity and Promotion (KADO) works with MOPAS.

Australia is a thriving knowledge economy which has shown the most sustained growth since the time of the economic downturn in the last phase of 1990s. The indicator of sustained progress is the Australian society's ability to resonate with the demands of global developments and at the same time keep their feet deeply grounded in the requirements and challenges of human development and sustainable well-being of their society. A democratic constitution and faith of the majority in multicultural society strengthen their orientation towards accountable and transparent governance. The Department of Communication and Information Technology was changed to the Department of Broadband Communications and Digital Economy. While this indicates the new focus of Australian government, it also suggests the linking up of many departments from the Department of Foreign Affairs and Trade (DFAT) to the Department of Finance and Deregulation.

3.10 Conclusion

Significant disparities tarnish the achievement of Millennium Development Goals (MDG). These are disparities in income, educational attainment, gender and access to resources including access to training in science and technology as well as an understanding of the country's legal framework and government. Therefore, the

issue of 'Access' keeps a large majority of people out of the social net. Alienation and marginalisation seep into efforts of reform leading to a completely uneventful and ritualistic policy implementation (see MDG in Human Development Report 2003, pp. 1–13).

ICT links with poverty eradication are contestable (Hamelink 2001; Sein and Ahmad 2001, Heeks 1999a). Yang (2001), Harindranath and Liebenau (1998) have shown an inverse relationship between investment in ICT and economic growth. Thus, a more knowledge-based framework is needed to bring about a meaningful collaboration between government departments, NGOs and citizens or between democracy, human rights and public security (Davison et al. 2000). This would seek to build sustainable institutions for the larger benefit of society (Arquette 2001 and Bimber 2001), but it may also need to redefine relationship between the citizen and the government. This is where the significant role of e-governance arrives to bring the government closer to the citizen so that development becomes the voice of people. The chapter suggests that developmental aspirations are best addressed in a networked governance composed of energetic departments which aspire to do more for the largest number of people. However, the path to e-governance is laden with a number of technology and manpower-related handicaps. While institutional reforms set the pace for e-governance, laws and regulations should not be overlooked. This chapter has analysed the role of the right to information in the dissemination of information which attracts business and commerce. A motivating e-governance should balance the frontline support with the back-end arrangements. Government policies should be reinvented to make institutions functional or e-governance would end up as services on the wire and nothing beyond that.

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Chapter 4
Towards Sustainability of e-Governance

4.1 The Challenge of Sustainability of e-Governance

Most countries in the Asia-Pacific have launched mega e-governance programmes. South Asian countries have been late starters in e-governance, but they have come up with some of the biggest and most complex of e-governance programmes such as India's 'National e-Governance Programme' and Bangladesh's 'Digital Bangladesh'. As these mega projects pick up, there is a big challenge for these countries to sustain them in a manner that more people are able to access sites of governance and are able to get relevant information which can be downloaded with speed and continuity. If more and more people access the Internet, they need to have IP addresses, and if the government intends to quench their thirst for information, the stored data should be readily available within departments and with all institutions of people. Authenticity and surveillance can be maintained when the government manages data with appropriate analytic skills applied for stored data. Much of what we call sustainability is the ability of governments to manage timely transition to higher technology and provide undisturbed e-governance to people.

When researchers analyse these programmes, they are either looking at affordability, accessibility or capacity issues even though managing transition in a cost-effective manner is the most potent requirement. Most people do not realise that every new registered user over the Internet occupies space, and the global shortage of this space is already a policy concern. Once these mega schemes of e-governance start working to their optimum, countries may have to create more spaces and more IDs. How can a country obtain this as these are technologies with developed nations, and how would this be regionally distributed and what would the cost be? The work of government does not end by preparing a mega project of e-governance but how to sustain it as it advances. The progress from IPv4 to IPv6 is reflective of government's seriousness towards sustaining e-governance.

Similarly, e-governance needs to have a good storage space for retaining institutional memory. For example, if X seeks a loan from a public sector bank, a single-window system can work appropriately if the computer can show a history of his transactions,

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credit bureau report of his credit history and liabilities along with assets. If all this information is to be collected without the e-governed departmental network, then the process would take nothing less than 2–3 months to enable the bank to sanction the loan. The constraint for retaining institutional memory is the storage space. However, nobody questions the government on its provisioning of 'Big Data management' and 'Cloud Computing' which provide customised local storage and Internet storage spaces, respectively, for the data produced by departments and enterprises. The world is producing without which e-governance may not have the capacity to deliver to the increasing number of people or may end up taking as long as non-e-services. This chapter is reflective of government's capacity to deliver, make services affordable and accessible. The way country governments conduct themselves in the international technology regimes such as Internet Assigned Numbers Authority (IANA) and Regional Internet Registry (RIR) for their perceptive and long term planning, calculated economic cooperation, skill development and choice of technology back home would decide the success of e-governance programmes in times to come.

The new world is heading towards some major challenges for services provided by the government. The traditional system of linear and pyramidical decision-making may not serve new interests. The challenge is phenomenal as both the number and quantum of Internet users along with an equivalent high amount of data produced and created are extraordinary and unique. The Internet adds eight new users every second, and this number is steadily and steeply rising. In a study titled 'Internet's New Billion', the Boston Consulting Group (BCG) said Brazil, Russia, India, China and Indonesia (BRICI) will have more than 1.2 billion Internet users by 2015, which is over three times the number of Internet users in Japan and USA combined.

India's Internet users would triple to 237 million from the current 81 million by 2015 (Aguiar et al. 2010). Asia had 44.8 % of Internet users of the world in June 2012 which shows an 841.9 % growth as compared to 2000 (Internet World Stats 2012).[1] Some visionaries, like the Google Executive Chairman Eric Schmidt quite upbeat on seeing the Internet statistics showing this steep rise even in the erstwhile laggard states, declared that by 2020 which is less than 7 years from now, everyone will be online. The impact of this rise in numbers is directly visible in the manifold increase of online data being produced by users from social, commercial and government sites which poses a new management challenge to all governments across the world. A combined data from all Internet sites produced 2.5 quintillion bytes of data (1 followed by 18 zeros) per day and 90 % of the world's data created in the last 2 years alone. It is being calculated through a number of analytic sites,[2] which suggest that the world society today is producing more data than it ever did since

[1] http://www.newmediatrendwatch.com/regional-overview/90-asian, http://www.internetworldstats.com/stats3.htm

[2] http://www.sandvine.com/downloads/documents/Phenomena_1H_2012/Sandvine_Global, internetworldstats.com

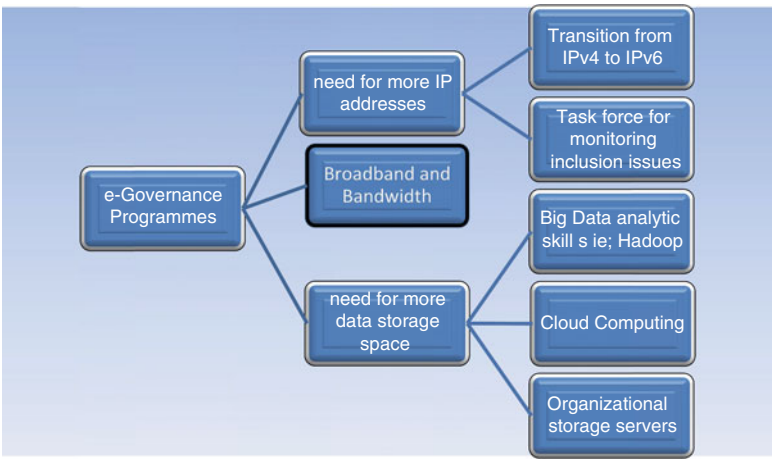

Fig. 4.1 Sustainable e-governance policy framework

the beginning of this earth. It is projected to be much more than the DVD stack reaching from earth to moon (Conner 2012).

Governments across the region of Asia-Pacific have introduced ambitious programmes to widen the net of e-governance. India has put in place a nationwide National e-Governance Plan comprising of 27 Mission Mode Projects and 10 components in May 2006. Services would be delivered through 100,000 Common Service Centres across the country, mostly through a public-private partnership approach. Bangladesh has Tk 2.81 billion e-governance projects to bring all the departments, agencies and associated organisations run by the ministries under the e-governance system to introduce a state-of-the-art service delivery system. This project titled 'Development of National ICT Infra-Network for Bangladesh Government (BanglaGovNet)' and the Digital Bangladesh project bring a sudden expansion of governance which demands deeper penetration of ICT and a more far-sighted approach towards issues of sustainability. Indonesia, Malaysia, Pakistan and other Asian countries have also introduced ambitious e-governance projects which demand deeper understanding and rigor of the government departments which are implementing e-governance projects. There are some macro-level skills and decisions related to the transition of IPv4 to IPv6, Big Data and Cloud Computing which would strengthen e-governance as an institutional policy rather than a politically correct ad hoc arrangement to attract foreign businesses and social capital at the local governance level.

A 'Sustainable e-Governance Policy' framework as given in Fig. 4.1 presents prospective challenges and possible solutions which need to be inbuilt in the policy structure right from its inception stage. The framework identifies two major challenges which all e-governance programmes are likely to face. First is the increasing number of users as Internet readiness of society expands. Second, challenge comes out of the first one as more users would create more data and need for information which

governments and businesses may together have to provide to people. This enormous flow of interactive Internet traffic creates Big Data and the need for organisations to be discerning about segregating the routine and mundane from relevant over which forecasting on value creation is obtained and knowledge economy is prepared. Such a rapid stride of informational need and the construction of governance and legal institutions based upon this available information have an embedded danger of digital divide. Therefore, the framework suggests that e-governance should work on an empirically tested set of impact studies produced by a standing task force to involve largest number of people into the e-governance loop irrespective of their regional and economic statuses, class-caste-gender divides and language dexterousness. This would mean that the task force collaborates with educational institutions and NGOs for mandatory, performance-based capacity-building programmes to bridge digital divides which mar the penetration of e-governance in society. There are two ways of storing Big Data. First is to undertake Cloud storage, but due to the fears of adequate data security in Cloud Computing, departments and enterprises use Hadoop to store the avalanche of data within their own organisational storage space with safety. Such arrangements on managing the scale and quantum of user and knowledge base would bring greater transparency, accountability and efficiency in information and services delivered online to citizens.

In the coming years, the sustainability of e-governance would largely depend upon how governments in the Asia-Pacific countries act and decide in three prime areas which ensure their global competitiveness. First is the dissemination of broadband services, second to ensure speedy and smooth transition from IPv4 to IPv6 and third is to initiate Cloud Computing. These are new areas in social science research even though a very high number of Internet users are growing everyday in the world and especially in the Asia-Pacific. Effort has been made to provide a simple and laymen understanding of these potentially powerful technology areas which are crucial for a continued promotion of the ambitious e-governance programmes in this or any other region.

4.2 Bandwidth, Broadband and Spectrum Space

When Hart, Reed and Bar wrote ‘The building of the Internet: Implications for the Future of Broadband Networks’ (1992), little was known that in the twenty-first century this area would become the central ground of political power play. The phenomenal growth of Internet users and the extraordinary quantum of data which is downloaded or retrieved every second across the world demand special attention. The worldwide chain of banking transactions, taxation departments, commercial activities, entertainment and e-games industry, government data, procurements, statistics, meteorological and travel information depends on data retrieval and download. e-Governance may have to compete through these hurdles to sustain itself with consistency and continuity.

The data is transferred through Kbps, Mbps or Gbps. Kbps is the smallest data transfer rate which is one kilobit or 1,000 bits[3] per second. One megabit is equal to 1,000 Kbps, and one gigabit is equal to 1,000 Mbps. This helps to measure data transfer rate in a computer network connection.

Next is an explanation of the term 'bandwidth' in a computer network. It refers to the capacity a network has through which it can help better performance in accessing different Internet sites and downloading data. When the researchers had started work on the evaluation of selected best practices across the world in 2004, it was found that there was an extremely high rate of failure of e-governance programmes. Most areas in South Asia were struggling to sustain the elementary small programmes of e-governance over a dial-up Internet access, but relatively the condition in East Asia was better especially in Malaysia and China which were moving very fast in 2003–2004, both in the adoption of broadband as well as innovating e-governance alongside the much required monitoring strategies like TQM online or total quality management systems for the public sector organisations.

Due to an extremely narrow bandwidth, it was difficult to transfer multiple signals and traffic such as a song of an average 3.5 MB downloading would take around 30 min and a film of around 700 MB used to take more than a day, but most of us using dial-up during those days would never try downloading a film as the process was disrupted several times and would keep the telephone line occupied for that period of download which extended beyond a day many times. The change came with the introduction of the cable modem in 1997, but it reached people's desktops as late as 2004 or 2005 and that too only in urban areas.

The coming of the broadband can be treated as a revolution in the Asia-Pacific lifestyle both of the government as well as the people. Broadband is technically a little different from bandwidth as it refers to the mode of communication which can be speech cum sound cum high-frequency visual data distributed over a wide range of channels which also enables the use of telephone lines along with other channels on the same single wire. It can be referred to as a multichannel high-frequency transmission rather than the width of the band alone which indicates the amount of data that passes through the connection over time. In the USA, broadband is referred to as wideband. The popularly known DSL services are broadband due to their high-bandwidth channels.

Broadband penetration is the key to the advancement and success of e-governance. Broadband is a high-speed access Internet service in contrast to the previously used dial-up connection. It can be offered in four different forms: DSL (digital subscriber line), fibre optics, cable and satellite services. Broadband resolves most problems associated with connectivity and access. Following the government of India's National e-Governance Plan in 2006, public and private sector organisations set up National Broadband Network (NICNET) at the centre, State Wide Area Networks (SWAN) at the state level and district and block level Citizen Service and data centres

[3] Bits and bytes are different as one byte is equal to 8 bits, i.e. 32 bits equals 4 bytes. Generally bandwidth is measured in bits.

(CSC) at grassroot level. The purpose was to allow seamless and smooth access and flow of government information across ministries and departments, and for doing it, NICNET provided 512 Kbps,[4] SWAN gave 2 Mbps while the Common Service Centres with a KIOSK for integrated delivery of all government services in a dispersed set of bandwidth[5] supply link with SWAN, NICNET or Private Co's provided 2–5 Mbps speed. Inefficient bandwidth service provisioning has been a major hurdle for e-governance. Wider spectrum space provides more bandwidth for better and faster transfer of information. This helps providers to satisfy customers' growing demands for mobile telephony, convergence technologies, texts and Internet usage. It also speeds up download and undisturbed Internet connectivity. It also prevents crippling of the network due to data overload which is one of the main reasons why some companies keep expanding their spectrum space at the cost of many others who are not in a position to spend billions to buy spectrum space and the divide continues to deepen between them. Spectrum crunch would severely increase as more people join the Internet users every day, and companies compete to have more bandwidth to satisfy their customers.

Some interesting broadband adoption and usage trends emerge from the Asia-Pacific region. The Point Topic Broadband Statistics Data Report[6] has highlighted in its findings (Q2,2012,10–14) that the broadband adoption rate in the Asia-Pacific is largely dependent upon the growth in China and USA. If their growth slows down, it immediately gets reflected in the broadband decline in the region. East Asia's positive growth of broadband is due to their economy's close connection to that of China. Well, the issue of an increase in broadband is not directly a reason for e-governance, but its growth reflects increasing capacity of the nation in accessing more information and also government services. In the list of top ten broadband subscriber countries, China is at the top with 167 m subscribers and India at the 10th position immediately after Korea and Brazil with 14 m subscribers only. No other country from the East except Japan and none from Southeast Asia are seen in this list. Of the top ten broadband 'net additions' countries, the positions change. While China is firmly placed on the top, Japan goes down from its 3rd position to the 8th position, but India rises to the 7th position. The next list which places top ten countries showing their growth of broadband, the Asian performers like India, Korea, China and Japan are not found, but two new countries Sri Lanka and Vietnam emerge at the 8th and the 9th position, respectively.

[4] Kbps is 'kilobits per second', while Mbps is 'megabits per second'. One megabit is equal to 1024 kilobits, thus Mbps is more than 1000 times faster than Kbps. The difference between 'bits' and 'bytes' may be made here as one 'byte' or 'B' is equal to eight 'bits' or 'b'. Bytes is used to measure data storage capacity while 'bits' is used to measure data transfer rates.

[5] Bandwidth is the 'data transfer rate' or the amount of data that can be transmitted in a given amount of time. The bandwidth is expressed in cycles per second or Hertz (Hz).

[6] http://point-topic.com/wp-content/uploads/2013/02/Sample-Report-Global-Broadband-Statistics-Q2-2012.pdf

Population penetration is the key to expanding e-governance without deepening digital divides and frustration of capacity deficits. However, this list does not feature a single Asia-Pacific country except Korea in the 6th position. Worse still, it also reflects that despite the expanding broadband services in these regions, there is a clear indication that the digital divide is a serious problem which needs to be immediately addressed to sustain e-governance as inclusive governance.

4.3 Transition from IPv4 to IPv6

Every Internet user needs an address space, and with the explosive rise of Internet users in the Asia-Pacific, this space is at the verge of exhaustion. To make this understanding clearer, IP or Internet Protocol provides address space to users. The Version 4 or IPv4 which is being used so far has limited address space, and in many countries it is at the verge of exhaustion. This would stop the entry of new users over the Internet. Accessibility to e-governance would get severely restricted, and the goal for inclusive governance may not be met. IPv4 is a 25-year-old protocol having a major limitation of 32-bit addressing space. The total number of IP addresses which it could accommodate is 4.3 billion. With the world population in 2013 having crossed 7 billion, the number of cellular phone subscription[7] rising to almost the same number as the population, 40 % of world population always online and global commerce consistently shooting up new demands for IP addresses, the IPv4 version has already exhausted its address space. The rapid growth of Internet and wireless subscribers and deployment of next-generation network[8] (NGN) technology is leading to accelerated consumption of IP addresses, and this will result in exhaustion of IPv4 addresses in the coming years. It is expected that the existing pool of IPv4 addresses will exhaust by August 2012. To overcome this problem of shortage, Internet Protocol version 6 (IPv6) was developed by the Internet Engineering Task Force (IETF), which improves upon the address capacities of IPv4 by using 128 bits addressing instead of 32 bits used in IPv4**.**

e-Governance sustains upon its increasing user strength combined with the penetration of Internet in society. Maintaining a scalable Internet for everyone is the basic requirement of e-governance. Adoption and deployment of IPv6 will open a world of infinite opportunities for citizens. A study of country specific ‘road maps’ would lead to an understanding about the strategies which bring coordination, discipline and knowledge together for the fulfillment of a mission which would define its transition from IPv4 to IPv6.

[7] http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2013.pdf

[8] NGN technology is a new access network technology which enables the deployment of voice, video, data and signalling through the same IP thereby providing many sets of services by converging fixed and mobile networks.

4.3.1 Institutions for IP Address Allocation

IP addresses are centrally managed by the Internet Assigned Numbers Authority (IANA) located at Los Angeles in California. It has five Regional Internet Registries (RIR) for assignment of addresses in local territories to end users and ISPs. On 31 January 2011, IANA announced that it has exhausted its free pool of IP addresses. The RIRs would also exhaust according to the time frame mentioned below.[9] The IPv4 exhaustion time frame[10] across all the RIRs is projected as below:

ARIN (American Registry for Internet Numbers) June 2013
APNIC (Asia-Pacific Network Information Centre) April 2011
AfriNIC (African Network Information Centre) November 2014
RIPE (Réseaux IP Européens Network Coordination Centre) August 2012
LACNIC (Latin American and Caribbean Network Information Centre) February 2014

Nations generally use technologies through which they are able to provide Internet to more people than the assigned address space. India had 18.2 m IPv4 addresses with less than .018 IP per citizen, but it was able to provide Internet to more than 18 m people. This was possible due to the extensive use of Network Address Translation (NAT). In contrast USA has the largest chunk of IPv4 addresses bringing 5.3 IP address per US citizen. China has .15 addresses per citizen. The APNIC pool is drying out for releasing any more IP addresses to the countries in the Asia-Pacific, and therefore, the transition to IPv6 is already being adopted by some far-sighted nations as they restructure their Internet governance.

In view of the IPv4 exhaustion concern, five Internet companies, Facebook, Google, Yahoo!, Akmai and Limelight networks, got together on 8 June 2011 for a global scale 24-h trial of IPv6. It indicated that the major Internet service provider (ISP) companies, home networking equipment manufacturers and web companies should ensure that they had products and services ready for IPv6 use. This became a tough challenge, as it required coordinated actions of many actors within the Internet, including content providers, equipment vendors, application developers, Internet service providers, policymakers and many others. One of the major inputs to this coordination process is good, reliable data on deployment of IPv6, which sectors have built up competitive advantage on its adoption, the suitability of the time frame and the challenges of transition of the Internet to IPv6. Much of the comparative information is available at APNIC, which is the Asia-Pacific Network Information Centre and the Regional Internet Registry for this region.

APNIC, which is one of the largest data and space allocation organisation in the Asia-Pacific, has warned that this challenge of transition will require the coordinated actions of many actors within the Internet, including content providers, equipment vendors, application developers, Internet service providers, policymakers and

[9] Réseaux IP Européens Network Coordination Centre (RIPE NCC) is the Regional Internet Registry (RIR) for Europe, the Middle East and parts of Central Asia.

[10] National IPv6 Deployment Roadmap Version-II First Published : March 2013.

many others. It also suggests that there is a prime need for a reliable sectoral data on IPv6 deployment.

Some countries in the region have moved faster with the deployment of IPv6 and its subsidiary technology called the next-generation networks (NGN). NGN applications have the capacity to change the cost base, agility and service capabilities of telecom providers. Its key enabling technologies are IP (Internet Protocol), MPLS (Multi Protocol Label Switching), ADSL (Asymmetrical Digital Subscriber Lines), Metro Ethernet (an ethernet technology in a metropolitan area that connects subscribers and businesses to a WAN (Wide Area Network) and the Internet or connects branch offices to an Intranet), Session Initiation Protocol and H.248 (Media Gateway Control Protocol which is a standard protocol for handling the signalling and session management needed during a multimedia conference[11]).

Australian government's transition to IPv6 has been an effective activity of coordination within the government. A Strategy for the Implementation of IPv6 in Australian Government Agencies was first prepared for the Australian Government Chief Information Officer Committee (CIOC) in 2007. The Strategy was distributed to all Australian Government agencies and made publicly available in January 2008. The Strategy proposed the following requirements for every agency:

- That all government agencies should have IPv6 capable hardware and software platforms by 2012.
- Be able to operate dual stack IPv4/IPv6 environments by 2015.
- The Network Infrastructure Backbone should be the first hardware segment of the network to be made IPv6 ready. Other segments of the network can be staged as required.
- Upgrade of operating systems to be IPv6 ready.
- Agencies' operating systems should be upgraded to ensure IPv6 capability and compatibility.
- Upgrade of ICT gateways to be IPv6 ready.

A revised IPv6 transition strategy was endorsed by CIOC in January 2009. The CIOC provides oversight for the whole-of-government implementation of the Strategy through a Community of Expertise (CoE) to advise and share expertise. The Australian Government Information Management Office (AGIMO), a business group of the Department of Finance and Deregulation, is the central coordination body for the transition of Australian Government Agencies. AGIMO prepared a road map and a work plan through which government agencies would be subjected to a structured transition pathway. The agencies were alerted for a finale in December 2012 due to which monitoring and quarterly surveys by the Chief Information Officer Committee as the Reporting office were insisted upon by the government. The government ensured that all 110 Financial Management and Accountability Act (FMA Act) Agencies would roll out the IPv6. Larger departments such as Defence, Foreign Affairs and Trade, Human Services, Finance and Deregulation, Broadband, Communications, Digital Economy and the Australian Taxation Office

[11] http://searchnetworking.techtarget.com/definition/Media-Gateway-Control-Protocol

along with the smaller departments of sports and Anti-Doping Authority which would coordinate to launch IPv6.

China has a massive Internet user base but too few IP addresses. While its netizens reached 513 m at the end of 2011 – which accounts for 38 % of its total population (CNNIC Report 2012), China has only 330 m IPv4 addresses. It is estimated that a total of 34.5 billion IP addresses will be needed in China in the next 5 years. The 12th Five-Year-Plan period priorities for next-generation Internet development have been set to achieve this goal (Jones 2012). Way back in 2001, China initiated a discussion on the China Next Generation Internet (CNGI). Gradually, with the support which came from the National Development and Reform Commission (NDRC), an eight ministry-driven inter-ministerial effort coordination attempted to make Internet more viable and affordable towards commercial purposes. The ministries included the Ministry of Science and Technology (MST), Ministry of Education (ME), Ministry of Information Industry (MII), the State Council information Office (SCIO), Chinese Academy of Science (CAS), Chinese Academy of Engineering (CAE) and National Natural Science Foundation of China (NSFC). This level of coordination is missing out in South Asian countries. National Development and Reform Commission (NDRC) organised strategic experts committees on Internet deployment and instituted a full adoption policy of IPv6 by creating the China Next Generation Internet (CNGI) in 2006. CNGI was conceptualised to become the nationwide backbone for the convergence of services from fixed, mobile, GRID and research. China owes its rise to CNGI which has leapfrogged and shortened the gap with developed countries in not just the Internet development but in all subsequent value-added returns which came to China due to improved access to the Internet.

South Korea initiated its IPv6 journey in February 2001. The government started promotion of IPv6 by devising a new platform called IT839 and selecting some basic services minimal infrastructure. Boosted by the government support and willing adoption by communication carriers and a few others led to an accelerated development of equipment needed for deployment of the next-generation Internet address system. As part of their IT839 strategy, the Ministry of Information and Communication implemented first phase pilot project of KOREAv6 in 2004 and then conducted the second phase pilot service in 2005 to foster adoption of IPv6 technologies and energise the new communication service. The South Korean public sector has been engaged in deploying IPv6 on national level by building a nationwide IPv6 MPLS (Multi Protocol Label Switching) backbone which is a progress towards a router-free high-performance communication network. IPv6 has been deployed in 2004 in the e-government networks, postal office, universities, schools, ministry of defence, local governments, etc. (Table 4.1).

In **India,** TRAI (2005) declared that the usage of IPv6, a new Internet Protocol platform in e-governance projects, be made mandatory to give a head start to the deployment of IPv6. Its deployment would expand the available IP address space and provide better service, mobility support and security. Issuing its draft recommendations, the telecom regulator said this is considered necessary in view of fast expanding Internet usage and increased demand on the IP address space. The government said

Table 4.1 Total number of IPv4 and IPv6 addresses delegated

S.N.	Countries	IPv4/32 s	IPv6/48 s
1	Afghanistan	85,248	nil
2	Australia	42,103,808	546,177,072
3	Bangladesh	859,648	917,505
4	Bhutan	22,528	131,072
5	China	250,320,384	25,755,651
6	South Korea	87,109,120	341,049,345
7	Malaysia	5,481,216	2,555,909
8	Nepal	191,488	458,755
9	Pakistan	2,883,328	1,310,721
10	Philippines	4,586,496	1,966,081
11	Sri Lanka	520,704	458,753
12	India	22,525,184	3,276,804
13	Indonesia	10,170,880	2,818,059

Source of data: APNIC, Brisbane, Australia. http://www.apnic.net/__data/assets/pdf_file/0009/21222/. Accessed 30 Mar 2011

that 'the usage of IPv6 in the platforms/applications pertaining to e-governance is to be mandated for IPv6 deployments. The Government should also mandate IPv6 compatibility in its own procurement of IT systems and networks'. The suggestion of setting up of test beds for experimentation in IPv6 technologies, creation of a National Internet Registry in the country in addition to the current Regional Internet Registry, presently located in Australia and bringing awareness about IPv6 through the government agencies has been very slow process since then despite a hectic government activity with experts and ISP Companies. Recently in March 2013, Indian government brought out a comprehensive 'National IPv6 Deployment Roadmap Version-II' which introduces strategies for the transition.

In 2010, the Policy Document 'National IPv6 Deployment Roadmap' was released by the Minister. The function marked the completion of one year of activities on IPv6 entrusted to TEC by the Telecom Commission. TEC had conducted various workshops and seminars throughout the country during 2009–2010, and based upon the inputs from them the 'National IPv6 Deployment Roadmap', a policy document for transition from IPv4 to IPv6 in India was prepared and approved by the government for implementation by different stakeholders especially central and state government departments and Telecom Service providers. Sify Technologies Ltd., a private Internet service provider, rolled out IPv6 in 2005. Sify has a dual stack network through which commercial services on IPv6 are transported to customers. ERNET (Education Research Network) in the Department of Electronics and IT, Government of India, has been providing dual stack since 2006. ERNET provides Consultancy and Turnkey project Implementation to organisations migrating to IPv6 along with fulfilling their Training needs. ERNET is setting up an IPv6 central facility aimed at system and network administrators to provide hands-on training in the use and configuration of web, mail, proxy, DNS and other such servers on IPv6.

In a report released in 2011 (Ram 2011), the IPv6 Deployment Roadmap was drawn by the Department of Telecommunications in the Ministry of Communications and IT. The following outcomes were presented and agreed upon:

- All major service providers (having at least 10,000 Internet customers or STM-1 bandwidth) will target to handle IPv6 traffic and offer IPv6 services by December 2011.
- All central and state government ministries and departments, including its PSUs, shall start using IPv6 services by March 2012.
- Formation of the India IPv6 Task Force.
- Setting up of IPv6 innovation centre by 2012.
- All the government websites on dual stack in 2012.
- Regarding IPv6 Readiness of the Supporting Ecosystem the content delivery network readiness already available with Akamai, Limelite, Level 3, etc.

However, some pitfalls have also been mentioned in the report, i.e. in web analytics, geo-mapping database and security provisions much needs to be done. Also, it was found that only the large B2C vendors seem to be IPv6 compliant; BSNL, Vodafone, Tata Communications Ltd., Sify, HFCL Infotel Ltd. and Tata Tele Services Ltd. (TTSL) are some of the compliant companies which have already started the use of IPv6.

Sri Lanka The Lanka Government Information Infrastructure (LGII) which includes the Lanka Government Network (LGN) was formerly managed by Samsung Lanka Ltd. Much information of government efforts is available at the Sri Lanka Telecom Network site of IPv6.

Jayasekara et al. (2012)[12] suggest that as the exhaustion of IPv4 address space comes close and Sri Lanka continues to have tens of thousands people using one IP address, it will result in potential network breakdowns, decrease in value-added services (VAS) as well as security issues. Therefore, the only proper solution for this is switching to a more spacious method of IP addressing – that is, IPv6.

Internet Society (ISOC) has helped Sri Lanka for setting up the Internet in the early days and has worked with the Telecom Regulatory Commission of Sri Lanka (TRCSL) to set up a very crucial IPv6 Working Committee in 2011 to monitor the transition issues. The working committee is jointly chaired by ISOC and TRCSL. All ISPs, ICTA, LEARN, SLCERT, LGII, LK registry and Schoolnet are members of the committee and it holds regular meetings monthly under the patronage of SLTRC.

The objectives of IPv6 Working Committee are as follows:

1. Formulate IPv6 road map of Sri Lanka
2. Formulate the policies (such as allocating IPv6 addresses) related to IPv6
3. Gauge the status of IPv6 readiness of all ISPs in Sri Lanka
4. Test the IPv6 readiness and connectivity of IPv6 at Internet Exchanges (IXs) in Sri Lanka
5. Educate Enterprises, ISPs and the public on the importance of migration from IPv4 to IPv6

[12] http://www.saitm.edu.lk/fac_of_eng/RSEA/SAITM_RSEA_2012/imagenesweb/36.pdf)

Almost all ISPs have done the peer testing of IPv6 very successfully and have begun deploying it to various sites. Sri Lanka Telecom Network (SLTNet), Dialog, Suntel, Lanka Bell and Etisalat have already been allocated IPv6 addresses.[13] Interestingly Airtel, which is still to confirm its IPv6 compliance in India, has already been given an IPv6 address in Sri Lanka which indicates the presence of a heavy bureaucratic gauze of decision-making which prevents the speed of ICT dissemination in India. The Lanka Education and Research Network (LEARN) in collaboration with TRCSL, ISOC (Sri Lanka Chapter) and ICTA has been facilitating and promoting the adoption and deployment of IPv6. LEARN was the first organisation to adopt IPv6 in 2008 and continues to deliver IPv6 connectivity to its customers.

Bangladesh is on a very speedy move on the IPv6 highway. The government and private efforts are well coordinated and the administrators have provided a leadership which is much needed in such a dispersed, multi-organisational and multidimensional globally linked policy. The IPv6 Forum Bangladesh was established in January 2010. The leaders of this initiative, Mr. S M Altaf Hossain as its National Convener and Mr. Sohel Awrangzeb as Member Secretary, were experienced specialists in the field. Besides, the forum brought together members from the Bangladesh NGOs Network for Radio and Communication (BNNRC) and UN Global Alliance for ICT and Development (UN GAID).

The IPv6 Forum Bangladesh is mandated to bring the new-generation Internet technologies and create momentum in deploying IPv6 in collaboration with the key stakeholders drawn from government, industry and academia to design the IPv6 road map and vision together for Bangladesh.

Mr. Hasanul Haq, Chairman of the Parliamentary Committee for Post and Telecommunication IPv6 Government Deployment Plan, suggested a governance framework which directs Bangladesh Government towards IPv6 deployment. The efforts are summarised as follows:

a. An advisory group would be formed
b. Establishing an Interagency IPv6 Working Group
c. Open communication between task force and stakeholders
d. Interagency forums to share planning, best practices, challenges and experience
e. Initiation of an IPv6 collaboration and sharing information-sharing work space
f. Acquisition of IPv6 address space
g. Implementation of common IPv6 acquisition and procurement policy through the regulatory policy through the issuance of IPv6 standards and guidance as necessary

Qing (2012) maintains that technologically advanced nations like Hong Kong and Korea are slower in migrating to the new Web protocol than countries such as Thailand, Malaysia and Sri Lanka, and this is likely to impact upon their existing

[13] http://www.ipv6.sltnet.lk/, http://www.ipv6.lankabell.net/, www.dialogv6.lk/, http://ipv6.wow.lk/, http://ipv6.lankacom.net/, http://ipv6.airtel.lk/, http://ipv6.etisalat.lk/, http://ipv6.mobitel.lk/

competitiveness. The analysis also indicates that the APNIC's concern about the slow uptake by the mature markets could hamper competitiveness in the long run. According to a recent study by APNIC,[14] the estimated IPv6 users in Hong Kong and South Korea as a percentage of the overall Internet population are 0.02 % and 0.01 %, respectively. Comparatively, the study showed Thailand (0.17 %), Malaysia 0.03 %, Sri Lanka 0.03 % and Indonesia 0.10 % had higher IPv6 penetration than the two developed markets of Hong Kong and South Korea in the region. The **Philippine** government passed the Executive Order 893 in June 2010 to hasten the country's transition to Internet Protocol version 6 (IPv6). Since then the Commission on Information and Communications Technology (CICT) is actively taking steps towards the adoption of IPv6. CICT Commissioner Ivan John Uy enthusiastically remarked at the opening of an 'IPV6 Seminar The internet is changing: Are You Ready?' He indicated that the deployment of IPV6 will require a carefully crafted migration strategy – prioritisation of activities and identification of resources needed such as budget and human resources. CICT and Cisco brought together government officials and technology experts together (Chandrasekaran and Kapoor 2011).

An Akamai Report (2012) has given that the top 5 Asian markets in IPv6 adoption are led by Japan at 2.4 %, followed by China at 0.67 %. Australia had 0.42 %, while Taiwan had 0.19 % and Singapore 0.17 %. The number of Internet users is growing faster in emerging markets than mature ones such as Hong Kong and South Korea. In India, NIXI has been officially recognized as the National Internet Registry since 2012 and it is responsible for the coordination of the IP Address allocation with other internet resource management functions in the country. India's VSNL (Tata Communications) owns and runs one of the largest international networks. NIXI is setting up parallel IPv6 Exchange Routers in Mumbai and Delhi and dual stack routers in Mumbai, Delhi (Noida), Chennai and Bangalore. IRINN (Indian Registry for Internet Names and Numbers) is a division functioning under NIXI and provides allocation and registration services of Internet Protocol addresses (IPv4 & IPv6) and Autonomous System numbers to its Affiliates. NIXI has been moving fast towards issues such as IPv6 security, Internet Resource Management (IRM) and Internet Routing Registry (IRR) training and a large number of workshops for engineers and management staff.

4.4 Cloud Computing

'Cloud' refers to a remote computer which exists in cyberspace. As individual users we access 'sites'. All these sites are stored in the 'Cloud'. We access these sites through a local server (network computer) and reach the Cloud. If one server goes down, the connection goes undisturbed as services are switched to another server without posing any alerts to the end user. Thus, Cloud is a remote service provider

[14] APNIC documents (http://meetings.apnic.net/__data/assets/pdf_file/0010/30988/Kenny-Huang-APNIC31-policy-framework-v1x.pdf) March 30. 2013.

which allows us to take seamless flights through the most constricted and unreachable alleys of the big globe, connect to people, generate a dialogue and form groups and Internet communities. Cloud Computing is indispensable for delivering smooth, transparent and uninterrupted e-governance services to citizens. It is also as a way of both delivering new and existing services more cost-effectively besides attracting new business and investors in development. Consequently, it has a huge potentiality for creating new jobs and a participatory citizenry. But it is not just one machine or a software device; it is a mix of software-enabled resources and services that can be delivered to the user on an 'as needed' basis. America's most potent institution of science, the National Institute of Standards and Technology explains it as 'Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction'.[15]

Cloud Computing is a broad term that describes a 'stack' or a broad range of services. It can be useful to the organization in various ways such as providing Software as a Service (SaaS), Platform as a Service (PaaS) or even providing Infrastructure as a Service (IaaS). In short, it can be understood as a provider of on-demand network access to many types of services which enable organizations to overcome their lack of or shortage of governance and computing services. The wide and unbridled precincts of the present day social media which nevertheless has exploded into increased knowledge and understanding of diversities, multicultural identities and ideologies, product marketing and subsequently empowerment of an individual against the state have been possible due to the Cloud storage activity. Before drawing a relationship of 'Cloud' to 'e-governance', it becomes pertinent to spell out some of the Cloud activities. The 'Cloud' has been doing many support functions such as storing files, creating movie halls such as the YouTube and running an office as it is through the Microsoft Office Suite available presently on the Cloud as Office 365. Similarly Google has 'Docs', and it also provides a number of indispensable office software used for running commercial offices and business transactions through Zoho.com. For example, 'SAP' software is especially used for corroborating data and forecasting, while 'Tally' is used as an accounting software.

As all email sites, i.e. hotmail.com, Yahoo.com or gmail.com, are stored on the Cloud, one can exchange messages while running filters and tagging them can save appointments, dates, add Word and Excel graphs made online, calendar events, songs and videos. The user is not even aware that sites like Dropbox.com and Box.net do enormous business as they help people carry on their routine professional and other activities through. Such sites have been providing a large number of support services to the public sector including activism to draw their attention to certain problems of industry and management. One of the most recent examples comes from Facebook, whose co-founder Mark Zuckerberg launched a site and a political action group 'FWD.us' (pronounced Forward US). Considering the long-standing

[15] (http://cloudscorecard.bsa.org/2012/).

battle between the IT companies and the US Government, the new site claims to solve and streamline the immigration policy from which USA could benefit in the long run. The group believes that the US policy is biased against women H1B visa seekers. One of the advocates Karen Panetta of the Institute of Electrical and Electronics Engineers asked members of Congress to delay any reforms until the Department of Homeland Security responds to her request for a gender breakdown of the programme. The group members believe that most visas go to men. The group also advocates that the STEM (Science, Technology, Engineering and Mathematics) graduates should not be made to return to their country arbitrarily, but the government should increase the number of visas for skilled workers, develop a 'simple and effective' system to verify employment, create a clear path for immigrants to become US citizens and reform the legal immigration system. The group is growing as a strong lobby to influence Congress. Tsukayama (2013) highlights that while Zuckerberg is the group's leading famous face, its list of supporters reads like a who's who of the tech industry: LinkedIn co-founder Reid Hoffman, John Doerr of the venture capitalist firm Kleiner Perkins Caufield & Byers, Jim Breyer of Accel Partners and angel investor Ron Conway, Yahoo chief executive Marissa Mayer, Google Executive Chairman Eric Schmidt and other CEOs of big name firms, such as Netflix's Reed Hastings, Zynga's Mark Pincus, Path's Dave Morin, Instagram's Kevin Systrom, Tesla's Elon Musk and Airbnb's Brian Chesky. The article further says that the group also has the backing of Paul Graham, who founded the start-up incubator Y-Combinator. To imagine that such a potentially powerful activity of influencing the decision-making process of government and help gain access to the highest political body of legislators is taking place over the Cloud speaks the need for governments to start acting fast on this issue.

Australia, South Korea and Malaysia are relatively moving faster than other countries in the region in adopting Cloud Computing. At the same time, Australia, India, China and many others including some from the developed regions have been cautious and slow due to the fear of data security and breakdowns. Moreover, an aggressive broadband is a precursor to convenient Cloud services. Most South Asian nations are still struggling to achieve an adequate bandwidth, electricity and other basic infrastructure which are few of the many preconditions to accessing the Cloud.

Australian Government's phased Cloud Implementation Strategy is largely driven with caution. The Australian Government has been concerned due to the uncertainty over storing data in offshore data centres as e-government is currently also managing many offshore projects. The ICT budgets have gradually been shrinking due to economic crises; therefore, the Cloud adoption is limited to the few agencies given below (Chandrasekaran and Kapoor 2011)

- Australian Taxation Office (ATO) has moved eTax, Electronic Lodgement System (ELS) and Tax Agent.
- Board administrative support systems into the Cloud.
- Australian Bureau of Statistics has implemented a virtualisation solution to enable transition to a private Cloud environment.

- Treasury/ATO has migrated Standard Business Reporting (SBR) and Business Names projects into the Cloud.
- Department of Immigration and Citizenship (IMMI) initiated a proof of concept for the provisioning of an end-to-end online client lodgement process on a Cloud platform.
- Australian Maritime Safety Authority has implemented a Public Cloud for SaaS and PaaS deployments from Salesforce.com.
- Department of Immigration and Citizenship (DIAC) has implemented a Hybrid Cloud for IaaS as a proof of concept.

The government has recently put together a draft framework to guide its Cloud Computing strategy on a more broad-based manner. It has consolidated all its data centre requirements for the next 10–15 years, a move which is expected to save $1 billion during that time period. The government is looking to expand this approach to Cloud.

The **South Korean** Government has been investing into Cloud Computing to drive the ICT industry's competitiveness. It has been collaborating with the Electronics and Telecommunications Research Institute in the Open Cirrus collaborative Cloud Computing research programme to strengthen its efforts. The South Korea Communication Commission (KCC) has allocated about $500 million for the development of Korean Cloud Computing (KCC) facilities. In achieving better security and data privacy, KCC has partnered with the Ministry of Knowledge Economy and the Ministry of Public Administration and Security for the creation of Cloud-based IT infrastructure that supports the government as well as the ICT industry. The government appears to be promoting the usage of Cloud services at the local government level for ensuring that data privacy, security and cyber crime do not overshadow the larger national performance at this transitional phase. However, usage by local officials would then depend upon the training and capacity building of local users and local managers in the global enterprises. As the Frost and Sullivan Report (Chandrasekharan and Kapoor 2011, p. 12) suggests, 'this is aimed toward garnering a 10 % of the global cloud computing market as well as a reduction of 50 % in public sector's ICT spending by 2014'.

Malaysia has been moving ahead in a strategic manner to become a developed economy by 2020. Cloud Computing is closely linked to its economic transformation programme, the Digital Malaysia Masterplan[16] and the Multimedia Super Corridor Programme. The Malaysian Government is making planned efforts to adopt Cloud services in e-governance. The SME Cloud Computing Adoption Programme which has been showcased as an incentive programme by Multimedia Development Corporation (MDeC) of Malaysia has focused upon SMEs which comprise 99 % of businesses in Malaysia, 56 % of employment, 31 % of GDP and 19 % of exports, thereby leading the 10th Malaysian Plan to its desired destination (Galligan, and Mansor 2011). Malaysia has been strict with deadlines and for that

[16] http://www.investkl.gov.my/News-@-M'sia_scores_big_in_cloud_computing.aspx

reason had achieved its earlier public sector ICT plans of 2003 and 2010. In the 10th Plan (2011–2015), four strategic thrusts have been identified in order for the government to realise its vision for 2020, i.e.:

- People First, Performance Now
- Government Transformation Programme (GTP)
- Economic Transformation Programme (ETP)
- 10th Malaysian Plan

In a Microsoft Study (Cheah 2012), it has been observed that the SMEs enjoy substantial security on the Cloud, and this seems to be the beginning of a huge activity under the Digital Malaysia programme. MIMOS is a national research institute of Malaysia for Information and Communications Technology under the provision of Ministry of Science, Technology and Innovation (MOSTI). In mid-2009, MIMOS took the first step towards public sector Cloud Computing by joining the open source Cloud Computing test bed called Open Cirrus, created by HP, Intel and Yahoo to learn from global adoption methods. MIMOS Cloud Computing has been developing and managing many layers of technology such as SAS (Software as a Service), IaaS (Infrastructure as a Service) and SDP (Services Delivery Platform). This direction takes into account that Cloud services are a megatrend towards the delivery of ICT applications. This is slated to complement the National Broadband Initiative and promotes e-governance. The Malaysian Information System Officer Association looks towards greater transparency in e-government through the Cloud system. Furthermore, Malaysian e-government and the National Archives database use certain elements of the private Cloud platform as well. However, there is significant room for the expansion of Cloud services in the country.

India has been demonstrating fast strides on Cloud adoption in e-governance. Even though the Frost and Sullivan Report has indicated that planned Cloud strategy has still not been adopted in India (Chandrasekaran and Kapoor 2011), the Indian government has moved much faster in Cloud adopting services than even the NeGP, the main e-governance plan for the nation. Interestingly, many state governments have moved faster than the central government in using Cloud services such as the Jammu and Kashmir state government, Madhya Pradesh, Himachal Pradesh and Uttaranchal states have used State Data Centres in provisioning e-governance services to citizens through the Cloud. Many India-based companies such as Bharti Airtel, Netmagic and Wipro Infotech have been in the forefront of pushing the adoption of Cloud services in government by assisting in the creation of test beds, multiple Cloud service initiatives and Cloud grids. On the issue of security, authentication is a crucial component in e-governance services which is likely to be provided by the 'Unique Identification (UID)' or Aadhar Cards which have already been distributed across states. This could also be complimented with an integrated platform stack as early as possible. The government has already taken a decision to move the critical information infrastructure on the Cloud, and DIT has taken steps towards a national Cloud-based network that connects all state data centres. Once this is done, the National e-Governance Plan is likely to get a shot in the arm in delivering most government services more efficiently and with complete data back-up for enhancing

speed and quality of e-services to citizens. This would form the backbone of the NeGP which would be developing capacity through the Cloud Computing to disperse many government services.

e-Government in **Indonesia** has been functional since 2003 but has become mandatory since the presidential decree on the implementation of e-government at central and local government agencies in 2008. Indonesia has lately started moving very fast towards Cloud Computing-based e-governance. This has been supported and pushed by the rising numbers of Internet users in the country. Microsoft influences Cloud Computing solutions in Indonesia and is in tough competition with Indosat, one of Indonesia's largest IT companies in Indonesia Cloud Computing. Indonesia's Technology Assessment and Application Agency (BPPT) has selected Fujitsu to provide Cloud services for one of its critical information technology operations[17] Fujitsu is a leading provider for business solution, technology information and communication, which believes that a private Cloud model will be used by BPPT's Network Centre of Science and Technology (IPTEKnet) and Centre for Data and Information. This has also helped at least two city governments of Cimahi and Pekalongan to adopt Cloud services for delivering their e-services. Indonesia's Technology Assessment and Application Agency is also attracting many other city and municipal governments and SMEs to adopt Cloud Computing. The high cost of information technology infrastructure must have a positive impact in terms of presentation and service to the people of Indonesia. Hariguna (2011) emphasised a 'service-oriented architecture (SOA)' for e-government in Indonesia. The high cost of such an information technology infrastructure is expected to have a positive impact in terms of presentation of policies and basic to people provided it is protected from frequent breakdowns and disruptions which demotivate citizens. Cloud Computing is supposedly an innovative strategy to answer such issues in e-government.

China has taken strides in refining its e-governance access and affordability for its citizens and at the same time retains and attracts foreign investors and commercial enterprises (Luo 2013). Its first country level Cloud Computing data centre in Wuyuan, Jiangxi Province, has been launched with a total investment of 500 m CNY, and the Chinese Academy of Sciences has taken special interest in supporting it. The data centre with a computing speed of 300 trillion times/second, and a super computer storage space, it will become the largest headquarter data centre and supercomputer data centre which would provide supercomputing and storage services for many industries including banking and education and provincial governments of Jiangxi, Hubei and Anhui. Next is the Beijing Super Cloud Computing Data Center, a cooperative project between the Beijing Municipal Government and the Chinese Academy of Science. There are some provincial level Cloud Computing centres coming up in China to be used for commercial and informational purposes. The Jinan Public Security Bureau and Inspur, one of China's leading Cloud Computing solution providers, signed a strategic cooperation agreement for the

[17] http://www.fujitsu.com/id/news/pr/20111202ii-en.html

Jinan Public Security Bureau's Cloud Computing data centre, to become the first public security Cloud Computing data centre for a large scale use in China. Cloud adoption in the public sector in China is also being driven by local government's efforts especially in the cities of Dongying and Wuxi. The Mayor of Dongying Municipal Government plans to transform the city of Dongying with the help of the Cloud Computing. The Yellow River Delta Cloud Computing Center, being built by IBM is a major breakthrough in China's e-governance efforts and would definitely enhance adoption of services over the Cloud.

In **Sri Lanka**, 'Lanka Government Information Infrastructure (LGII)' launched their first Cloud platform 'Lanka Cloud' in August 2012. This has furthered the government of Sri Lanka's vigorous adoption of e-governance over a Cloud Computing platform (Mascarenhas 2012) called the 'Lanka Cloud'. LGII has been mandated to administer the information infrastructure of the government which includes the Lanka Government Network formerly administered by Samsung Lanka Ltd. Lanka Cloud is implemented by ICTA, maintained by LGII and promoted by the motivated political and administrative leadership which considers it a dream which needs to be realised for Sri Lanka's development as Lalith Weeratunga, the Presidential Secretary declared during his launching of the Cloud platform in Colombo.

Philippine government lacks a central coordinating government agency, and thus it seems to be scattering out its efforts from the main pathway to the Cloud. Many companies have been treating Cloud Computing, mobility and social media as separate silos – serving different business needs. However, they are all interrelated and their true potential can be unlocked only when companies utilise them as a single entity to address different business goals and needs. Chandrasekaran and Kapoor (2011) reports that Singapore, Hong Kong and Malaysia alone would drive the market for Cloud Computing by 36.5 % increase between 2013 and 2016.

4.5 Country's Competitiveness on Cloud Computing

Cloud Computing indicates the next-generation role of software and computing technologies which would take the world towards development, transparency and a better connected world. As the key to all global information over the Cloud would be the unique password of the operating agency or government, concerns for data security and cyber crimes have become the greatest deterrent against Cloud Computing. Most countries across the developed and developing world face security concerns which prevent and slow down access to the Cloud. Analysts (Qing 2013) suggest that while there is a demand from local and provincial governments for Cloud infrastructure buildout, the security and connectivity issues dampen adoption.

At least one data management company known as the Business Software Alliance (BSA) has measured preparedness of 24 countries which cover 80 % of global ICT

market to support the growth of Cloud Computing. The ranking on Cloud preparedness is based upon seven policy categories given below:

1. Data privacy
2. Security
3. Cyber crime
4. Intellectual property
5. Support for industry-led standards and international harmonisation of rules
6. Promoting free trade
7. ICT readiness and broadband deployment

Some interesting facts are highlighted through this Cloud preparedness or readiness assessment exercise. The first two positions in the world for Cloud readiness ranking belong to the Asia-Pacific countries, even though ranking for the adoption of an advanced technology is not an easy one and may also lead to results which make comparisons fuzzy and unreliable. However, the ranking of countries as done by BSA is the first global attempt built on a lowest common denominator of seven indices which create a measurable scale for comparing Cloud Computing efforts of individual countries. Japan leads the 24 selected countries of the world with rank one. The present work has been focusing on Australia (rank 2), South Korea (rank 8), Malaysia (rank 13), India (rank 19), Indonesia (rank 20), China (rank 21) and therefore analysis would be restricted to these six countries only. China has the lowest score on data privacy (3.5), security (2.0) and cyber crime (4.6) which is even lower than India and Indonesia despite its otherwise high economic ascent. Yet, the high e-readiness score has been pushing China to speed up access to Cloud Computing. Efforts to promote free trade is perceived as a condition which improves Cloud preparedness of a country. Interestingly Malaysia has the lowest score on efforts to promote free trade whereas Australia, South Korea and India do better on this category. India has the lowest score out of these seven countries on ICT Readiness and broadband deployment which indicates a bleak future on Cloud Computing despite huge efforts and high investments being made in the deployment of the Cloud services. High scores on intellectual property is an indicator of a country's ability to nurture talent and incentivise innovation. India's low score on this category in comparison to the other six, points out towards the need for a strong legislation to protect intellectual contribution and retain talent. Even though Singapore, Thailand and Vietnam are not selected for the present comparative study, their extremely low scores on security (3.6, 1.6, 2.8, respectively) is an indicator of brewing problems for Cloud Computing in Asia (see Fig. 4.2).

According to Salyards (2013), opportunities are already ripe in the Asia-Pacific region towards growth and adoption of Cloud and mobile technology. The results are already beginning to show – according to Frost and Sullivan, a few countries like the Singapore, Hong Kong and Malaysia are the next hotbeds of Cloud adoption and the Asia-Pacific market for Cloud Computing is expected to grow at 36.5 % between 2013 and 2016. The most successful companies will be those that are able to easily transition their existing infrastructure to integrate Cloud

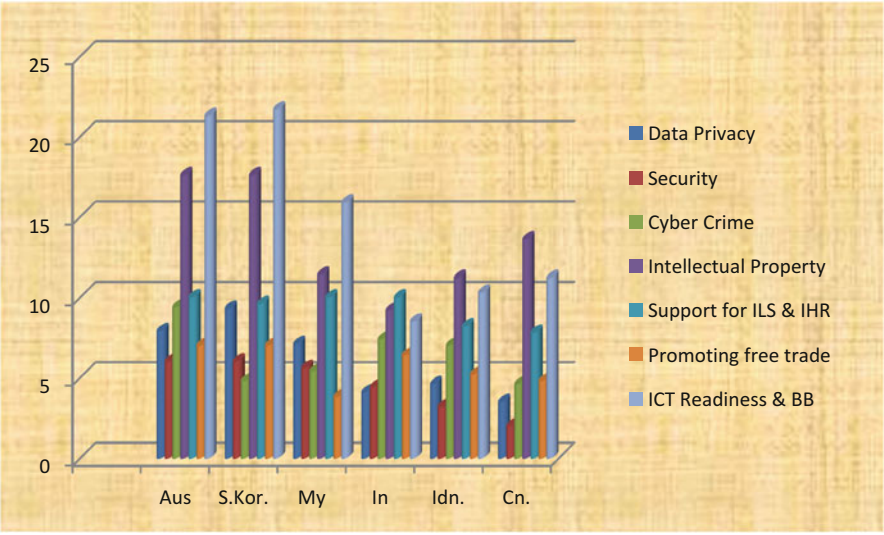

Fig. 4.2 Ranking on Cloud readiness. Source of data: Business Software Alliance (BSA Global Cloud Computing scorecard) (http://cloudscorecard.bsa.org/2012/assets/PDFs/BSA_GlobalCloud-Scorecard.pdf)

Computing, mobility and social media into their daily business process. A global survey of KPMG found that:

1. The top challenge companies using Cloud Computing face is the high cost of implementation and transition into the Cloud from existing infrastructure
2. The second most common problem faced by companies adopting Cloud was data loss and privacy threat
3. With the rise in BYOD kind of practices, convergence of technology is the gateway to improved and sustainable efficiency

4.6 Achieving MDGs Through Partnerships and Collaborations

Any study on reforms done in isolation of an understanding of the reasons and the nature of these gaps would simply be a theoretical exploration which may enlighten the formulator without bringing substance for implementation. MDG targets have paved the way for country governance to link their paths of development to measurable targets. As discussed in the first chapter, United Nations has for the first time taken the initiative to set minimum empirical limits to government action on bringing well-being of citizens. Criticism aside, MDGs have put countries on regional and global scales of evaluation and competition. This has resuscitated and pushed smaller powers to undertake a committed and disciplined direction towards goals common to

all, build local capacities and emerge out of the shadows and clutches of big dominant donor countries. It has also given a fair chance to struggling nations to reinvent peace, well-being and capacities out of their differently abled resources. The strides of countries like Afghanistan, Bangladesh and Maldives have never been so well directed, focused and speedy. The myth of Pakistan as a terror industry for the outside world is watered down with its record of strategic progress being fed into well-being. The marketing dragon, China, is also made to share its neighbourhood with many erstwhile ignored states of Southeast Asia. To many analysts MDGs sound unrealistic[18] and authoritative[19] and carry embedded gender[20] concerns in their design and construction. However, since MDGs carry a penchant for development, a need for innovation and radical reforms, they have set in motion even those states which were heading towards a political and administrative doom. Focus upon the macro-economic policy has been retrieved as required under MDG 8, and these erstwhile low-performing governments have discovered a new incentive to perform.

e-Governance becomes an indispensable tool with most governments to achieve partnerships and collaborations. Whereas partnerships and collaborations are important, they need a direction and a focus. The following parameters precede the task of achieving them:

1. **Creating one's own Internet company:** India has yet to create an Internet company of its own despite the fact that the number of Internet users is expected to cross 250 million mark by 2015. The forecasters in business predict that India, China, Australia and Japan which generated around US$258 billion in commerce sales in 2012 (Nielson 2013) may create an explosively profitable market very fast. China already worked on setting up three globally competitive Internet companies Tencent, Baidu and Alibaba. Russia is also not far behind with Mail.ru and Yandex (Lacy 2012).[21] Creating one's own company may bring cultural synchronisation with the emerging needs of non-English-speaking Indians going online and help deepen the web penetration which is crucial for the success of e-governance.
2. **Preventing e-catastrophe:** e-Governance is based on knowledge-driven governance, but knowledge about what? Administrators and bureaucrats in charge of ministries and departments of e-governance carry the challenge of knowing about the future of technology used in e-services, e-welfare and data used prior to formulating plans for development. Lack of knowledge may lead to an e-catastrophe

[18] 'MDGs assume that development is essentially a linear process which can only be achieved by following neo-liberal and capitalist dictates'(Chant and McIlwaine 2009, p. 22).

[19] Amin, Samir.(2006), who is the director of the Third World Forum in Dakar, Senegal, observed that the MDG policy is against the policy of 'consensus' practiced in the UN as USA and its European and Japanese allies are now able to exert hegemony over a domesticated UN.

[20] MDGs have become a primary global development framework within the UN system which would clash with the larger goals of women's movement across the world (Barton and Prendergast,2004).

[21] **Lacy S (2012) Yebhi.com Raises $20 m: Is this the Indian Internet Giant We've Been Waiting for?**

http://pandodaily.com/2012/07/10/yebhi-com-raises-20m-is-this-the-indian-internet-giant-weve-been-waiting-for/

which would bring the whole nation to a standstill, trains would stop, flights may not take off, ATMs screens may turn black and suddenly all communities, commerce and investment would disappear. Nations would become lifeless and staid as statues. Knowledge about the consequences of deploying or adopting an e-programme may become the centre-stone of serious administrative training process.

3. **Preparing e-leaders:** In a visionary developmental programme which is concerned about sustaining development through technological progress, political leadership does matter. Chandrababu Naidu in Andhra Pradesh or the Secretary of IT Ministry Mr. Chandrasekaran, President Rajapaksha in Sri Lanka or Prime Minister Mahathir Mohd. in Malaysia have dashed through the platform of stronger and dominant nations to bring benefits to their countrymen. Lack of leadership has derailed many good initiatives. This factor of political leadership becomes relatively more important in present times when split-second decisions may destroy many good achieved successes.
4. **Coordinating e-decision-making:** 'IPv6 adoption needs coordination with different types of stakeholders'.[22] Left to politics, e-governance would find it difficult to move beyond the web pages which provide the structure of government. Left to administration, the number of services would be mentioned without putting them within the rights-based framework of Citizens' Charters, Right to Public Service Act or laws which demarcate property, land and wealth. Left to technologists, e-governance would entail a huge expenditure to bring the world's most sophisticated technology systems which would have little or no relevance to citizens' requirements and understanding. Many governments just pull through a morass of decision-making by marketing themselves on fancy portals. Improved interdepartmental coordination would prevent unnecessary and repetitive investments and overstaffing.

The above parameters empower governments to generate a vision for the future and take pre-emptive action to sustain e-governance. Picked up from the vivid descriptions about the future of e-governance, two indispensable efforts may help in understanding the role that governments are expected to play in their adoption and deployment of IPv6. First is the adoption and deployment of IPv6 before the IPv4 completely gets exhausted. Second is the adoption of 'Cloud Computing' for ensuring larger data storage space and with greater reliability of transfer and application.

4.7 Is Technology a Substitute for Organisational Reform?

There are authors who are driven by faith in the Internet so much so that they have addressed it as an 'organisational substitute' and also 'an equal opportunity technology' (Buechler 2011, p. 221). Another author (Salter 2003) refers to computer-mediated communication as nonhierarchical and a self-reflexive discourse which is difficult

[22] National IPv6 Deployment Roadmap Version-II First Published: March 2013.

to achieve in conventional settings but remain central to progressive activism. If there are believers of 'e-governance as a magic wand' which can reform organisations and transform work culture, they are highly mistaken as e-governance can be easily highjacked by powerful lobbies who have stakes in the continuation of the existing regime. In most Asia-Pacific countries, organisations which were associated with tax collection, revenue generation and foreign direct and institutional investments were faster in implementing e-reforms in governance as compared to community or local service delivery organisations. In reality the issue of organisational reform cannot be achieved by introducing technology alone.

To understand organisational dynamics at the dawn of ICT, organisations may be distinguished from other gatherings of individuals by their stability, longevity, routineness of formal structures and ability to use environment to produce outputs. Every organisation has internal rules and procedures to gain compliance and grant punishments. The behaviour of organisations is dependent upon the organisational culture, structure, politics, business processes, environment, privileges, obligations and responsibilities that are delicately balanced over a period of time through conflict and conflict resolution (Laudon and Laudon 2008, p. 85). Most descriptions of organisations have an embedded cultural context and therefore may not be suitable for use in every setting. It is for this reason that organisational definitions may not be predictive of life outside.

ICT has helped a two-way communication and interaction with the outer world. Internet, mobiles, social media (Skype), software apps and the access to 'Cloud Computing' have transformed organisational systems. Organisations respond faster and with greater rigor so that modern day emergencies, quick decisional needs and international collaborations and partnerships are simpler to manage than previous times. The cost of transactions, capital investments in labour and overstaffing is minimising. ICT may greatly benefit governance through lower cost and better services that could be offered (Bowersox and Closs 1996). In fact many organisations have been able to reduce the cost of infrastructural expenditure by an intelligent use of ICT. International ICT Companies like Accenture and IBM have extended the 'work from home option'[23] to a large number of its employees so that they can save millions of dollars in office space infrastructure maintenance cost. The e-governance model of the Asia-Pacific is increasingly moving into the direction of increased interaction on policy issues and information dissemination on governance. This is already challenging the outdated administrative models which are resistant to change and sometimes create obstructions with the intention of rent seeking (Krueger 1974).

Peter Drucker (1993), the legendary management Guru, suggests that the rise of knowledge and competence in organisational management has replaced authority-based hierarchies which worked on formal positions. Thus, ICT has flattened hierarchies and its knowledge-based networking skills may also improve coordination (Drucker 1988).

[23] An informal discussion with young engineers in Accenture in Gurgaon city and IBM in Gurgaon and Bangalore cities also revealed that they are even paid a 'work from home bonus' for having made that choice.

From the above description, it appears that ICT will usher in a smart work culture, efficient personnel and a transparent or corruption-free organisation. However, in reality even the most e-ready and e-advanced countries like Singapore and USA, where government procurement is totally through 'e' system, have been plagued by financial bungling, corruptions and administrative scandals involving big national projects. As e-governance works within the larger framework of politics,[24] the pre-existing organisations continue to control the new and reformed e-based organisations. There are many others who believe in the power of organisations to control the impact of systems over structures (Laudon and Laudon 1988).

ICT is merely a device, and it realises its full potential when it becomes part of a strategy. Every strategy has a context, an ideology of performance and a field of politics due to which it brings many stakeholders together to achieve its objectives in a desired manner. As Garrido et al. (2007) explain, 'a strategy specifies how a business intends to compete in the markets it chooses to serve'. Today's business strategy model should be integrated, consisting of a market and a policy component (Baron 1996). An inability of ICT alone to transform organisations is due to the fact that it has to align itself with a strategy, but in this alignment it serves the predefined lanes of the political field, ideology and priorities of the decision-makers. Innovations help to overcome the baggage of politics, ideology and negligence. Organisational changes through e-governance programmes have been mild and nonimpactful as the presence of dominant bureaucratic ideology in the implementation field not just lacks adequate skills but also seems unprepared to accept any change due to their utter lack of exposure to knowledge and global currents of governance. As part of the Governance Knowledge Centre (GKC 2008) of the Department of Administrative Reforms and Public Grievances, Government of India, more than 80 e-governance projects across the world were studied. The following reasons were discovered for their lack of impact in the areas they were designed to serve:

Strongest reasons

- Lack of institutional memory due to which once the administrator gets transferred the next incumbent fails to generate ideas and motivation to carry it forward.
- Lack of cooperation/coordination from state or central (federal) government which if governed by two different political parties fail to synchronise policies on infrastructure support, fund disbursement, dissemination of knowledge and disinterested district level government.
- Absence of leadership which could promote, market and motivate citizens to participate in e-governance initiatives.
- Patriarchal social structures which prevented the participation of women in technology-driven governance even though many policies were exclusively for them.
- Relevant information and user-friendly softwares were not promoted.
- Outsourcing of many requirements of e-governance like softwares, hardwares, infrastructures, management of Kiosks, skill development and evaluation tasks was based upon flawed principles due to which citizens, clients and service providers had more issues to battle than to cooperate. This increased cumulative cost of the project.

[24] The next chapter on the case study from Australia has studied this particular aspect in detail.

Routine reasons

- Connectivity issues demotivated most service seekers. This had many reasons such as power availability, bandwidth, etc.
- The NIC supplied programmes and softwares required constant upgradation, maintenance and monitoring, but this could not be undertaken on a consistent basis.
- The consultants appointed under the schemes had personal agenda, and due to their proximity to senior administrators or Ministers, they could influence administrative decisions favourable to the donor agency.
- Most middle and junior level officers in government offices thought that it was a new policy fad to obtain foreign investment, without which the policy has no local connect. So they felt that their task was almost achieved with attractive websites and everything else will just follow.
- Funding was not streamlined and standardised due to which the real doers got much less than the NGOs who could show high turnover and could network better.
- Stakeholders were dispersed, and no department got involved in a consistent and committed skill building and e-training workshops.
- The linguistic and cultural disconnect with local regions prevented participation.

Bretschneider and Mergel (2011) believe that technology does not drive the change but enables new forms and approaches or helps in the creation of new and improved organisational structures. However, these authors are apprehensive about technology-driving change as even though technology is important, it is not sufficient for institutional and organisational change. They suggest that the bottom line is that the diffusion process spreads technology, but pre-existing structures and human actions affect the final impacts and potential from these changes (p. 190).

As much as the adoption and deployment of new technology is important for an effective and sustainable e-governance, organisational issues cannot be delayed. The fear that technological determinism may lead bureaucracy towards the adoption of e-governance as a substitute for effective governance is also not unfounded. There is much that needs to be undertaken to see that adopted new technologies do not become a substitute for administrative and organisational reforms and create a new niche for rent-seeking middlemen in service delivery. Lastly, the issues of diffusion, transition and replication indicate a set of political and administrative processes which turn passive adopters to dynamic leaders.

4.8 Conclusion

The present chapter is an interrogation of the issue of sustainability. As Asia-Pacific countries progress towards megastructures of e-projects with more complicated networked technologies and concerns which surround these technologies such as Big Data and Cloud as storage spaces and broadband and IPv6 as connectivity requirements. Thus, the work of government does not end by launching a megaproject of e-governance but to make efforts on sustaining it.

The traditional system of linear and pyramidical decision-making is changing as both the number and quantum of Internet users along with an equivalent high

amount of data produced and created is extraordinary and unique. The Internet adds eight new users every second, and this number is steadily and steeply rising. In a study titled 'Internet's New Billion', the Boston Consulting Group (BCG) said Brazil, Russia, India, China and Indonesia (BRICI) will have more than 1.2 billion Internet users by 2015, which is over three times the number of Internet users in Japan and USA combined.

Every Internet user needs an address space, and with the explosive rise of Internet users in the Asia-Pacific, this space is at the verge of exhaustion. The IPv4 version has already exhausted its address space. The rapid growth of Internet and wireless subscribers and deployment of next-generation network[25] (NGN) technology is leading to accelerated consumption of IP addresses. In view of the IPv4 exhaustion concern, five Internet companies, Facebook, Google, Yahoo!, Akmai and Limelight networks, got together on 8 June 2011 for a global scale 24-h trial of IPv6.

As IPv6 is indispensable for accommodating the explosive growth of new Internet users, Cloud Computing is indispensable for delivering smooth, transparent and uninterrupted e-governance services to citizens. It is also a way of delivering both new and existing services more cost-effectively besides attracting new business and investors in development. Consequently, it has a huge potentiality for creating new jobs and a participatory citizenry, tax collection, revenue generation and implementing e-reforms in governance. ICT is merely a device, and it realises its full potential when it becomes part of a strategy. Every strategy has a context, an ideology of performance and a field of politics due to which it brings many stakeholders together to achieve its objectives in a desired manner. Technology does not drive the change but enables new forms and approaches or helps in the creation of new and improved organisational structures. However, these authors are apprehensive about technology-driving change as even though technology is important, it is not sufficient for institutional and organisational change which takes place within a much larger and complex field of administrative and political processes.

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[25] NGN technology is a new access network technology which enables the deployment of voice, video, data and signalling through the same IP thereby providing many sets of services by converging fixed and mobile networks.

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Chapter 5
Information Technology and the Role of Government in Australia: Political Ideology and Discourse in the "Asian Century"

5.1 Technology as a Site for Political Contestations

The analysis in this chapter has implications for the interrogations of more abstract theoretical writings that took place in Chaps. 2 and 3. For example, although he was writing before the information revolution, the relevance of Foucault for the analysis of ICT has been emphasised by commentators such as Willcocks (2006, pp. 274–295). The analysis that follows will confirm Foucaultian insights (e.g. those of Miller and Rose 1993, pp. 79–81) that techniques of governance are involved in reconceptualising and constituting domains such as 'the economy', as well as the role that professional expertise, in this case that of ICT professionals, can play in that occurring. The analysis of the intersections between ideology, discourse and the legitimation of policy which is undertaken in the following pages also gives new force to Marcuse's (1964, pp. xv–xvi) observation that 'culture, politics, and the economy merge into an omnipresent system which swallows up or repulses all alternatives. …Technological rationality has become political rationality'. Similarly, Habermas's later observation that science and technology were now performing 'the function of legitimating political power' also has force, although Habermas arguably didn't anticipate how that influence would continue during both Keynesian and neo-liberal periods of governance (Habermas 1971, pp. 96–101; Johnson 2000, pp. 123–144).

The importance placed on the crucial role of information technology in Australian political discourse also reinforces Lyotard's (1984, pp. 4–5) argument that 'knowledge has become the principle force of production over the last few decades'. Nonetheless while both modernist theorists such as Marcuse and Habermas and postmodernist

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theorists such as Lyotard have insights to offer, one would not want to go too far in embracing the postmodern. We will see that the twenty-first-century economy being analysed here is not the free-floating cyberspace economy anticipated in some earlier Baudrillardian and postmodern-influenced works (Baudrillard 1997; Kroker and Kroker 1997, p. 9; Kroker and Weinstein 1994) but one that is firmly grounded in the material political economy of Australia as it tackles issues of globalisation in the Asian Century. Indeed, one could argue that Australia's engagement with ICT in the context of the Asian Century reflects merely the latest version of what Marx described so long ago. After all, Marx (1976, p. 488) wrote of how capitalism utilises new forms of communication, as well as the cheap prices of its commodities, to break down trade barriers and force all nations 'on pain of extinction, to adopt the bourgeois mode of production'. Meanwhile, the ideological struggles that will be discussed here graphically illustrate Donna Haraway's (1997, p. 270) point that 'technoscience' is itself a site of political contestation.

Above all, the analysis in this chapter draws attention to the need to have a very broad conception of both e-government and e-governance. The Australian government regularly ranks very highly internationally in assessments of the provision of e-information to citizens (Qian 2011, pp. 122–123). This is despite ongoing concerns over how much e-information and services are utilised, over the impact of the digital divide on the ability of all groups in Australian society to access that information equally (Gauld et al. 2010, pp. 177–186) and concerns about whether government agencies have good enough response rates in relation to citizens' electronic queries (Gauld et al. 2009, pp. 69–74). Undoubtedly there is much work that still needs to be done, not least because, as many commentators have noted, both the Internet and democracy are still works in progress (Chen 2007, pp. 7–9). Indeed, one can see the historical process of this development and the intersections between them, not just in terms of the provision of government services and information but also in terms of their increasing, although not predominant, importance for electoral processes (Gibson and Cantijoch 2011, pp. 4–17).

However, increasingly 'governance' is understood not just in terms of narrow definitions of government action confined to parliamentary processes, state bureaucracies and state services but also in terms of the intersection between government and private sector provision that contributes to citizens' well-being (Qian 2011, p. 120). It is noticeable that a table that ranks Australia highest in terms of 'e-information' provision ranks it only no. 17 in the world in terms of e-infrastructure (Qian 2011, p. 123). Much of the debate in Australia over the role of government in relation to ICTs has therefore taken place in the context of debates over what the role of government should be in facilitating the development of technology infrastructure that is necessary for the provision of both public and private sector services in areas ranging from health to education, as well as the provision of ICT infrastructure that enables Australian businesses to develop and to compete in the world market. It is the development and outcomes of that debate that will be analysed here.

5.2 The Hawke and Keating Labor Governments (1983–1996)

ICT first emerged as a mainstream Australian political issue during the period of Labor government in the 1990s, as the Internet moved out of the Australian university system to become commercially available. However, even before the Hawke Labor government was elected, Barry Jones (subsequently a prominent Labor minister), had written a prescient book, *Sleepers Wake* (Jones 1982), about the future impact of new information technology. Prior to the introduction of the Internet, the major focus of Labor policy had been on developing technology in Australian manufacturing industry. That focus had continued during the early years of the Hawke Labor government (Hawke 1983). However, Hawke's successor, Keating, focused more on ICT, emphasising its compatibility with the government's broader political agenda, including its commitment to globalisation and trade liberalisation. Labor argued that new international financial communication systems made national regulation of banking both impractical and undesirable (Edwards 1996, p. 265). Prominent Keating government minister, Kim Beazley, argued that the global financial linkages and transfers facilitated by ICT necessitated not only deregulation of the Australian banking industry but also the partial privatisation of the government-owned Commonwealth Bank (*Sydney Morning Herald*, 13 May 1995). Developments in ICT also confirmed that older-style social democratic policies of nationalising 'physical capital' (never pursued extensively in Australia anyway for constitutional and ideological reasons) were outdated and inappropriate (*Sydney Morning Herald*, 13 May 1995). In other words, new information technology was used to justify the Keating government's watered-down neo-liberalism in regard to more free market policies, deregulation and privatisation. It was a classic example of a form of technology being contentiously identified as world and paradigm-changing (Edgerton 2006). The TINA (There is No Alternative) arguments associated with neo-liberalism melded with the TINA arguments associated with technological determinism. However, as we shall see, the introduction of technology was being socially shaped, in this case by those very same neo-liberal ideological arguments that the new information technology was seen to justify.[1]

The Keating government also saw ICT as being compatible with its broader social agenda. In Keating's view (1995, p. 14): 'the communications revolution… suits our social ambitions—our egalitarian and inclusive ambitions'. New information technology promised a brave new world in which Australia could overcome the 'tyranny of distance' both within and outside of its borders. Keating envisaged an Australia striding the global information superhighway, using the language and cultural skills of its multicultural population to engage with, and export to, the world.

[1] For general arguments on the social shaping of technology, see MacKenzie and Wajcman (1985). For a more detailed analysis of the social shaping of technology during the Keating period and the role of neo-liberalism, see Johnson (2000, pp. 125–128) and Andrews (2006). Australia was not of course alone in the influence of neo-liberalism on technology policy, see, e.g. Braun (2006).

Cultural industries, including indigenous Australian ones, would flourish in a new information economy, which would transform conceptions of the economy (Keating 1994b, pp. 2444–2447; Department of Communications and the Arts 1994, p. 7).

Information technology was also facilitating economic and social links in the Asian region, to Australia's advantage (Keating 1994a, p. 216). However, as we shall see, the assumption that Australia would be an ICT leader in the region was to be increasingly challenged. Domestically, the government argued that new information technology could be used to overcome internal tyrannies of distance in a huge country with a small population, thereby lessening rural inequality (Commonwealth of Australia 1995, pp. 45–46). Keating (1997) also argued that increasing access to education was crucial since 'a decade ago, anyone in public life should have known that information was the way that value was going to be added'. Consequently, 'right from 1983, we went out of our way to try and build the base. I mean you can't have an information, knowledge-based society if only three kids in ten complete year twelve'. Training young people in new information technology would be a particularly important part of their education in order to overcome potential divisions between 'the information rich and the information poor', which, it was argued (Baldwin 1995, p. 29), would become an increasingly important form of inequality in Australian society. Indeed, Jones (1988) had alerted Labor to this issue many years before. Government could help overcome such divisions, not only by educational training but also by providing computer access, including the increasing amount of government services which it was intended to offer online (Baldwin 1995, p. 56).

It was an ambitious agenda. Nonetheless, there were costs to be paid for the Labor government's embrace of neo-liberal market-driven policies. John Andrews (2006) points out that the Keating government's embrace of market forces involved establishing a competitive environment but then leaving it up to commercial interests to develop the technology (without clear government preferences regarding the form that technology should take). Andrews argues this contributed to dysfunctional outcomes, including significant duplication. For example, HFC (hybrid fibre coaxial) cable was run out by two rival consortiums at an estimated additional cost of over $2 billion (Andrews 2006).

As we shall see, the lessons of relying on market provision were not learned by the Keating government's Liberal successor.[2]

5.3 The Howard Government (1996–2007)

Some background information on Howard government ICT policy is necessary in order to explain Labor's subsequent policies, the ways in which Rudd differentiated himself from the Howard government position during the 2007 election campaign

[2] The Liberal Party is the major conservative party in Australia, i.e. the term Liberal is not in the American sense (that implies progressive left policies) but in a sense that draws on broader liberal democratic traditions, including increasingly a combination of free market and socially conservative views.

and the differences between Labor and Liberal that were also apparent during the 2010 election campaign.

John Howard never embraced new information technology as enthusiastically as Paul Keating did. Visions of a cosmopolitan Australia celebrating diversity did not fit well with Howard's socially conservative picture of a society in which difference was ideally to be 'integrated' into the values of traditional Anglo-Celtic Australia (Johnson 2007). Nor did exciting visions of technological change gel with Howard's social conservatism generally. Some of Howard's ministers, including communications ministers Richard Alston and Helen Coonan, were to prove more enthusiastic than Howard himself (see, e.g. Alston 1997).[3] Furthermore, some of their advisors wrote almost lyrically about the opportunities offered by a new information economy and the ways in which it would transform existing conceptualisations of both governance and the economic. Indeed, their arguments sometimes seemed to reflect postmodern visions outlined in earlier chapters. An Information Policy Advisory Report asserted not only that 'a new political economy' was being created by the Internet but that

> Some have referred to this new political economy as a 'Commonwealth of Information', suggesting the emergence of new political and economic boundaries and new sources of identity. 'Community' as well as consumption is becoming a smorgasbord of individual choice. In this world of borderless electronic coordination, sovereign governments are 'reinventing' their concepts of jurisdiction and their sources of authority. (Information Policy Advisory Council 1997, pp. 1 and 4)

However, far from being a 'new' political economy, in so far as the embrace of new information technology did fit into a Howard government narrative, it was into a vision which, even more than in Keating's case, emphasised neo-liberal, free-market policies. That vision had major implications for the role of government in technology provision. Like Alston before her, Coonan (2004) emphasised that the government should rely primarily on the market claiming, despite Labor's own economic rationalist views, that the Coalition's degree of support for the market marked a significant ideological difference with the Opposition (e.g. on issues such as Labor's favouring of Australian providers in government procurement):

> With the world of IT moving so quickly, the challenge for governments is to get the settings right: to regulate with a light touch, in my view, and to support rather than hinder our IT community. This is an area where there is a clear ideological difference between the Government and the Opposition….Governments should enable, support and promote the IT industry, not try and pick technologies which change constantly or systems or dictate suppliers or tie the industry up in red tape. (Coonan 2004)

Coonan (2004) went on to argue that in both telecommunications and IT 'an open and competitive market is the cornerstone to our approach'.

It was precisely this free market approach that was to be increasingly criticised as the Howard decade moved on. As we shall see, complaints primarily focused around Australia's backwardness in the provision of high broadband speeds. As late as

[3] There were also some Liberal state politicians who were ICT enthusiasts, e.g. Jeff Kennett and Alan Stockdale in Victoria.

August 2006, Coonan was still claiming that 'broadband using the copper network could give sufficiently high speeds. That is very good technology and currently no one is complaining about the speeds of broadband in metropolitan areas'. The implication was that competition was working since there were 'nine other companies' in addition to Telstra providing broadband (*The Age* 9 August 2006). The government's Broadband Blueprint (Australian Government 2006, p. 12) continued to emphasise the crucial role of the market, stating 'the private sector operating in a competitive market environment will continue to be the key driver of investment in broadband infrastructure and services'. The market would be 'supported by a regulatory regime that is technology-neutral and encourages market-driven solutions' (Australian Government 2006, p. 15). The government boasted of the resulting mix of broadband technologies based on wireline, wireless and satellite technology (Australian Government 2006, p. 22). The Liberal government did however promise some support, albeit partly as a result of pressure from National Party politicians such as Barnaby Joyce and Fiona Nash (Robertson 2005) as well as in response to Labor policies . This support included its $1.1 billion Connect Australia package and a $2 billion Communications Fund in addition to a previous $1 billion. Such schemes were particularly designed to assist broadband access in rural Australia, including the provision of health and education services but also included funding for linking key capital cities (Australian Government 2006, pp. 68–72).

Nonetheless, critics argued that the government failed to play a sufficiently active role. Dunleavy et al. (2008) noted that Australia scored poorly internationally compared with countries ranging from the USA to South Korea when it came to government policies for implementing a digital future. A key reason lay in the Liberal government's private sector outsourcing policy from 1997 on and the 'contract regime' relationships that resulted. The result was an increasing dominance of EDS and IBM, uncompetitive prices and a reduction in IT expertise within government (Dunleavy et al. 2008, 17). In a comparative study of Australia, Canada, Japan, New Zealand, the Netherlands, the UK and the USA, Dunleavy et al. (2008, pp. 23–24) 'found that the market was particularly dominant vis-à-vis the government'.

5.4 The Rudd Opposition

By the end of the Howard period, market failures in ICT, particularly in the provision of broadband, were becoming more apparent. Rudd's predecessor as Labor opposition leader, Kim Beazley (2006), argued that Australia needed nation-building economic strategies because 'instead of getting an information superhighway, we've been left with an IT goat track'. Rudd had stated his position in regard to the government's role in ICT long before he succeeded Beazley. Responding to a government MP during a 2001 debate, Rudd noted that the Coalition member

> seems to be puzzled as to whether we have a coherent program based on a point of philosophical departure from liberalism or neo-liberalism.... L. The Liberal Party's view of research and development is this: one, government should absent the field; two, the

> magic of the marketplace should then ensue; and, three through an act of mysterious, spontaneous combustion, research and development will rise like a phoenix from the ashes and the Australian economy will power forward to a glorious future. I simply ask: where is the evidence of that in the last 5 years? I see none at all.
>
> Our approach by contrast is this: this is a small country. It is a small economy; we are 19 million people in a world of six billion-plus people. We are the 14th largest economy in the world. We are only the fourth largest economy in East Asia. We are a small place and, because of that, we have no alternative but for government, unapologetically, to take the lead. That is how this country developed—by government taking the lead. (Rudd, *Parliamentary Debates*, Representatives, 8 August 2001, pp. 29398–29399)

Rudd was particularly worried about whether we 'will we have an ICT industry of any comparable international understanding and competitiveness' by 2010 given that Australia had become an 'also-ran' in ICT (Rudd, *Parliamentary Debates*, Representatives, 8 August 2001, p. 29398).

Rudd (2007a) developed this critique in even more depth in the lead-up to the 2007 election, slating Liberal government Treasurer Peter Costello for his over-reliance on the market to provide adequate broadband and arguing that 'if you need the new infrastructure of the future given the realities of a small population and a massive continent…there is a key role for government in doing that'. Shadow Minister Stephen Conroy (2006b) also identified the Howard government's neo-liberalism as a problem, claiming that 'the arrogant Howard government's ideological obsession with privatising Telstra is its only telecommunications policy'.

However, Rudd was still sufficiently influenced by watered-down, social democratic forms of neo-liberalism to clarify that he was not talking about 'universal, public provision', in terms of the state itself providing communication services to all citizens, but rather joint ventures involving public-private partnerships. In the case of broadband, Labor would put up half the finance (Rudd 2007b; Swan and Tanner 2007). Despite being critical previously of completing the privatisation of Telstra, Labor apparently decided this was now a done deal and pledged to invest $2.7 billion from the Telstra sale into a public-private partnership venture 'to provide world-class broadband' (Swan and Tanner 2007). Such investment was necessary if Australia was to be economically competitive:

> Why is it that all of our competitor economies in the world are laying out national broadband networks rights across their countries? …. Yet here in Australia we have an internet bandwidth which is the 25th, shall we say, narrowest in the world… In the 19th century when we're trying to open up the great economy, which is Australia, what did governments do? They built a national railway network…. In the 21st century we've got to lay out the railway network of the future — and that's a national broadband network. It takes leadership to do it but we're going to do it in partnership with the private sector. (Rudd 2007b)

The poor performance of Australian broadband internationally was a point Labor repeatedly returned to:

> Australia's poor broadband performance must be improved. The latest OECD Broadband Statistics show Australia is ranked only 17th out of 30 surveyed economies in the developed world. The world economic Forum ranks Australia 25th in the world in terms of available internet bandwidth. (Australian Labor Party 2007, p. 25)

The Liberal government disputed such figures, claiming, for example, that the OECD ranking of 17 was consistent with Australia's per capita income and population density (Australian Government 2006, p. 27).

Nonetheless, Labor marshalled considerable evidence to support its case, including criticisms of Australian broadband performance made by James Packer. Packer, chair of Publishing and Broadcasting Ltd., argued that Australia's broadband capabilities were 'embarrassing' (cited in Conroy 2006c). Expatriate Australian media entrepreneur Rupert Murdoch had also strongly criticised Australia's broadband capability, arguing that Australia was far behind many other countries and 'we should look at Korea or Japan and put in first-class broadband into every home' (*Advertiser* 14 November 2007).

Labor also cited the experiences of ordinary Australians such as troops on peacekeeping missions who could obtain high-speed broadband connections in the Solomons, but whose relatives in regional towns like Tweed Heads could not use Skype to communicate with them (Conroy 2006a). Labor further argued that businesses could not obtain sufficiently high-speed broadband to participate in national and international tendering processes, to transfer huge quantities of information or to provide world-best information and data processing services. Universities were similarly handicapped in regard to exchanging curriculum materials and hospitals and doctors in regard to exchanging medical images for long-distance diagnostics (Rudd and Gillard 2007). Furthermore, Australian school children were missing out on the educational opportunities, afforded by high-speed fibre networks, that were available to 'their rivals in South Korea, in Singapore, in the UK, in Germany, in France' (Conroy 2007).

The Rudd government was particularly aware that Australian ICT development had not been keeping pace with that of many of its Asian neighbours and competitors. A Labor policy document had already noted that Australia's 'mega-challenges' for the twenty-first century included 'more intense competition from regional trading partners like China and India'(Australian Labor Party 2007, p. 1). Rudd (2008) argued that China and India are 'looming to dominate the twenty-first century, just as the United States and the United Kingdom had dominated the twentieth'. Consequently, Rudd was more concerned than Keating that Australia would fall behind in the Asia Pacific region. Providing adequate broadband was a central plank in Rudd's plans to prepare the Australian economy for both the difficult times and economic opportunities that lay ahead.

However, there were also clear domestic economic and social implications. There were major discrepancies between school children in cities and those in many regional areas, as Labor Shadow Minister Tanya Plibersek pointed out:

> You can have two kids, one in the city, one in the country, both doing the same school project. They go home, the kid in the city hops on the internet, looks add[sic] half a dozen sites, downloads them, doesn't understand something, e-mails the teacher and a friend, can talk online to a tutor. The same kid in the country goes home, *Google* searches something, half a dozen sites, tries to download one, goes off, walks the dog, has a quick game of cricket, comes back, the site is still not downloaded. How can you say that those two children start off their lives with the same opportunities when those country kids are so unable to experience the same educational benefits of broadband that kids in the city can? (Plibersek 2007)

Similarly, Plibersek (2007) argued that 'we've got home-based businesses all around Australia where people can't make a living because they can't get decent internet speeds'. Rudd (2007b) also argued that regional businesses were missing out in cities like Newcastle and Toowoomba and that only optical fibre network could provide the speeds needed (rather than the wireless technology advocated by the Liberals in many regional and rural areas).

As well as addressing issues of regional inequity, Labor argued that government needed to ensure that children from poorer families had good access to information technology and could develop the relevant skills. In the 2007 election campaign, Rudd promised to defer proposed tax cuts to high-income earners who were earning over $180,000 annually. The resulting revenue would generate $2.9 billion that would be used to help low-income families buy computers for their children and thereby help 'bridge the digital divide' (*Weekend Australian*, 20–21 October 2007).

This was a somewhat more modest social agenda than during the Keating years when a new information cultural economy was seen as being closely interconnected with encouraging (and selling) cultural diversity. Kim Beazley's *Knowledge Nation* policies had still shown some Keating influences. The Knowledge Nation Taskforce Report wrote of 'the use of knowledge resources to promote the public good, encourage access and equity, provide resources for Aboriginal and Torres Strait Islander peoples, and overcome social, class, regional, ethnic and gender barriers' (Chifley Research Centre n.d., p. iii).[4] Nonetheless, Rudd Labor was clearly still drawing on previous Labor arguments that government needed to address equity issues in an information economy. Giving children access to good computers and information technology skills in schools had also been a priority of the Keating Labor government (Commonwealth of Australia 1995, pp. 57–59). As we have seen, Barry Jones and Peter Baldwin had alerted Labor to issues of the digital divide and the Keating government had also targeted issues of regional inequality of access.

There were therefore clear links between Rudd's policies and previous Labor policies. However, it should be noted that there were also significant differences with the policies of one predecessor as opposition leader, Mark Latham. Sandwiched between two periods of Beazley leadership, Latham (1998, pp. xxv, xxix) had also argued that the key social division was now between the information poor and the information rich (Latham 1998, pp. xxi, xxv, xix; Latham 2001, p. 30).[5] However, Latham had gone much further than other Labor leaders. He argued (before becoming opposition leader) that information technology had not only superseded the need for social ownership but also class struggle itself (Latham 1999, p. 10). He claimed that 'the labour market bargaining power of …—the so-called "knowledge workers"—often exceeds that of the owners of capital' (Latham 1997, p. 48). Latham (2002) then went on to argue that the major role of the state should be merely in helping to

[4] On broadband and indigenous communities, see Rennie et al. 2010.

[5] For a more detailed analysis of Latham's position on these and other issues, including the major influence of neo-liberalism on his thought, see Johnson (2004).

train the knowledge worker, given that free market forces and competition policy should drive state action.

Rudd, as we have seen, agreed with Latham regarding the importance of access to new information technology, but he did not see it as overriding older equity issues. Rudd also saw the state as having a far more important role to play in providing new information technology than Latham had allowed for. Rudd would also not have agreed with Beazley's earlier view, when a Keating government minister, that the development of new information technology reinforced free-market policies; on the contrary, as we have seen, Rudd argued that the failure of the private sector to provide adequate broadband was a key example of market failure and Beazley, as opposition leader, had also come to argue that more government intervention was required.

Above all, new information technology was important for Rudd as a symbol of the difference between Labor and the Liberals. This wasn't just an issue of policy, it was also reflected in the way that Labor used ICT during the 2007 election campaign. The 'kevin07' website was specifically designed to indicate that Rudd was a different (and younger) style of politician from John Howard. As Chen and Walsh point out (2010, p. 49): 'Media coverage of the kevin07 website with its YouTube and Myspace links and mobile phone video content, reinforced notions of progressiveness, change and modernity, a favourable image the ALP was happy to project'.

In other words, for Rudd Labor, as for Keating Labor, ICT wasn't just a technology, it was a particularly meaningful sign—and, in Rudd's case—one that arguably played a role in his defeat of the Howard government (see further Johnson 2010). However, ICT wasn't just a sign of modernity and the need for change; increasingly for Labor it also became a sign of the problems of market failure. This was to become even more apparent after the Rudd government was elected and the Global Financial Crisis (GFC) began to hit.

5.5 The Rudd Government (2007–2010)

The Rudd government therefore came into office with ambitious plans for rolling out broadband. However, those government plans soon encountered problems. In particular, Telstra was hesitant about cooperating, given issues about other carriers gaining access to Telstra's network.[6] Then Telstra boss, Sol Trujillo, initially rejected Telstra cooperation and reportedly (*The Australian* 7 December 2007) mocked the government's plan as 'some sort of "kumbaya, holding hands" theory'. Trujllio generally advocated minimal government regulation in the telecommunications area. He was recruited from the USA, where he had been a co-chairman of Republican presidential candidate John McCain's National Hispanic Advisory Board (see, e.g. *The Australian*, 28 June 2008).

[6] For a detailed account of Telstra's actions in regard to broadband (albeit from a former Optus executive and Liberal staffer), see Fletcher (2009).

The problems with Telstra reached a head when Telstra's (extremely brief) document expressing interest in the national broadband tender process was deemed ineligible for consideration (*The Australian*, 27 February 2009). The situation became even more problematic for Labor when the expert panel set up to advise the government on tender bids recommended that none of them adequately met the government's requirements. The government claimed that the main reason was the Global Financial Crisis (GFC) and the related drying up of credit and capital for private sector investment (Rudd 2009c; Conroy 2009).

Consequently, the government decided that the only alternative was to massively increase its own role and funding contribution (Rudd 2009c; Conroy 2009). Furthermore, the government would provide fibre optic, not to the node, but to the premises (as recommended by its expert panel), in its desire to meet the download and upload speeds it believed would be required for the twenty-first century. The government would ask for investment from the private sector of up to 49 % in a public trading enterprise that the government would aim to eventually sell, with the intention being that the government would fund $21–22 billion of a $43 billion cost. The government would run the company for approximately 13 years and then sell it off (Rudd 2009c; Conroy 2009). Conroy made it clear that the government was taking a 'decisive step to …correct a market failure. We're establishing this company, we are changing the structure of the market, we are driving competition, and that competition will ultimately lead to cheaper prices' (Conroy 2009). Rudd concurred, stating that 'right now… it is not possible to deliver this through pure market mechanisms' and he was not going to 'sit back' and be the prime minister who consigned 'our twenty-first century to a twentieth century technology' (*Australian*, 8 April 2009). The aim of the National Broadband Network was to ensure that 'every person and business in Australia, no matter where they are located, will have access to affordable, fast broadband at their fingertips' (Rudd et al. 2009. Rudd described their broadband plans as 'an historic act of nation-building' and the largest infrastructure project Australia had seen (*Australian*, 8 April 2009). Needless to say, the plan was not without its critics, with the Liberals querying the government's costings and whether an adequate business plan had been drawn up (Minchin 2009).

The government's broadband announcement provided the clearest indication yet that new information technology was no longer being used to justify free market policies but was now being used to justify the opposite. While the amount of the investment may have taken some commentators by surprise, the direction of the shift was far from a surprise given the impact of the GFC on the availability of credit and Rudd's repeated statements regarding the need for social democratic governments to compensate for market failure. We have seen that Rudd had been arguing for government to play more of a role in information technology provision since 2001 at least. The GFC and the consequent perceived need for massive government stimulus packages strengthened a tendency that was already present in Rudd's critique of neo-liberalism (e.g. Rudd 2006a, p. 50; 2006b; 2009b).

Fortunately for Rudd and Conroy, Trujillo's departure facilitated the government being able to negotiate a deal with Telstra that the government claimed would save

taxpayers between $4 and $6 billion (while also having $11 billion of value for Telstra). As part of this deal, the government could use Telstra's existing infrastructure rather than having to duplicate it (Rudd et al. 2010; Conroy 2010b). Labor's broadband package was therefore in place in time for the 2010 election campaign. However, just days after the agreement with Telstra was announced, Julia Gillard replaced Rudd as prime minister and Labor leader.

5.6 The 2010 Election and Aftermath

During the 2010 election campaign, Tony Abbott (2010a) continued to put forward arguments that reflected the Liberal's support for more market-oriented information technology policies: 'we just don't believe that re-creating a government-owned telecommunications monopoly is the way to go. We think that competition and diversity of technology is the way to go'. In particular, in an argument that reflected Helen Coonen's comments of 6 years before, he reaffirmed that 'a range of technologies is better than putting all your eggs in the fibre basket'. Indeed, the Liberal scheme involved contributing a billion dollars towards a metropolitan wireless network, rather than fibre to the home (Abbott 2010a). In line with his arguments about reducing government debt and waste, Abbott also repeatedly stated that the Coalition's $6 billion plan would 'cost vastly less' than the government's. He subsequently claimed that Labor's broadband scheme would be 'school halls on steroids' (Abbott 2010b). However, one interview was a potential embarrassment to Abbott (2010a) as he was unable to answer technical questions, including regarding a Liberal promised peak speed of up to 12 rather than 100 megabits.[7] Abbott (2010a) repeatedly explained that he was not a 'tech head'.

In an election campaign that was cautiously small target, Gillard did not engage in the major discussions of the relationship between government provision of broadband and market failure that her predecessor had done during, and prior to, the 2007 election campaign. Nor did she provide the detailed arguments in support of high-speed fibre optic broadband that had been provided by shadow ministers. However, in the Leaders' Debate Gillard reaffirmed that the National Broadband Network (NBN) was 'important to the jobs of the future, and how we will live in the future' (Gillard and Abbott 2010). During her 2010 campaign launch speech, Gillard (2010) gave the example of how high-speed fibre optic broadband would facilitate regional health services by enabling doctors to consult with, and assess, rural patients in need. Her statement echoed one given jointly with Rudd during the 2007 campaign that has been cited previously (Rudd and Gillard 2007). Gillard's arguments regarding the important role that high-speed broadband could play in providing services in rural areas and in facilitating regional economic development played a central role in winning the support of rural independent members of parliament to support her forming government (Windsor 2010; Oakshott 2010; Darby 2010).

[7] For a Liberal account of Liberal policy and its differences with Labor's plan, see also Smith and Robb (2010) and Smith and Conroy (2010).

Following the formation of a Gillard minority government, Abbott announced the appointment of Malcolm Turnbull as communications spokesman. Turnbull was given the job, in Abbott's words, of holding 'the government ferociously to account' on the NBN (*The Australian*, 15 September 2010). Turnbull (2010) continued to articulate a Liberal position that the NBN scheme was excessively expensive and lacked an adequate cost-benefit assessment. He claimed it would result in a government monopoly with reduced market competition and would consequently fail to respond to consumer preferences for diverse broadband technologies other than fibre optic cable, including wireless, HFC and ADSL. Turnbull (2010) particularly suggested that consumers might prefer the convenience of mobility over high fixed line fibre optic speeds that were far higher than they could currently envisage having a need for. That mobility is currently being provided via Wi-Fi local area network technology and via an increasing range of devices using long-range wireless technology to provide a direct mobile broadband connection to an ISP (Internet service provider). Turnbull (2010) reiterated the Liberal's position that 'governments are better off leaving it to the private sector to create, own and operate businesses'.

Whether the Liberals will significantly reshape their policy in the light of their failure to win the key independents' support to form a minority government remains to be seen. However, Turnbull has continued to reiterate arguments that the market was already providing high broadband speeds and that governments should not impose a particular technology on consumers. He argued that not only was the government choosing fixed line over mobile delivery but that the NBN would effectively ban competition from both the existing copper network and HFC cable. He argued that 'picking technologies is hard enough if you are in business. If you are a government, you are sure to fail' (*Parliamentary Debates*, Representatives, Hansard (proof), 15 November 2010, 64). Turnbull (*Parliamentary Debates*, Representatives, Hansard (proof), 15 November 2010, 64) was particularly concerned that the $43 billion NBN proposal had not been subject 'to a rigorous, independent cost-benefit analysis' calling this 'one of the most disgraceful abdications of fiscal responsibility in our nation's history'. The Coalition not only wanted to see a detailed business plan but also argued that the NBN proposal should be assessed by the Productivity Commission. Independent Senator Nick Xenophon eventually agreed to vote for the government's legislation splitting Telstra after being reassured by a summary of the NBN business plan. However, he has raised concerns regarding the possibility that Telstra will obtain an unfair competitive advantage in the NBN due to discounts it will receive for migrating customers from its copper network *(Sydney Morning Herald*, 30 November 2010).

Conroy (2010a) affirmed that the substantial government funding provided in Labor's existing broadband scheme for providing high-speed fibre optic broadband to regional towns, combined with their faster implementation of the regional rollout and promises of cross-subsidies for regional subscribers, had proved particularly attractive to the rural independents on whom the government relied for support. In supporting the passage of key NBN legislation through the Senate, Conroy (2010b) also affirmed many of the arguments that had been made since 2007, including the NBN's crucial economic role (both internationally and domestically); its key role in health and education service delivery and in connecting Australia.

Indeed, he argued that the provision of 'improved broadband services to rural and regional Australians at the same wholesale prices as city dwellers pay' was an example of this 'government implementing practical social and economic inclusion' (Conroy 2010b). The splitting of Telstra's retail and wholesale arms and a new regulatory framework would ensure improved competition, while the universal service obligations of providing high-quality communication services to all Australians would also be assured. The summary of the NBN business plan released by the government claimed that the overall cost of the NBN would now be $35.7 billion rather than $43 billion, that the NBN would be able to repay the taxpayers contribution (that had increased to 27 billion) and that a $13.8 billion contribution to Telstra would be covered by revenue (*The Australian* 25 November 20120; *The Australian*, 26 November 2010). Conroy (2010b) remained convinced that, while mobile broadband 'was a wonderful service', the fixed network already carried over 90 % of downloaded data and the volume of data downloaded and uploaded was growing so extraordinarily that mobile broadband would be merely 'a complement to fixed lines' given the 'immutable laws' of the radio spectrum. The Liberal opposition was putting forward misleading arguments, including regarding what other countries such as New Zealand were doing, to try to argue otherwise (Conroy 2011). In other words, one needed fibre optic cable that transmitted at the speed of light, with the extensive and expensive role for government provision that that would involve in Australian circumstances. Although the government had to agree that the eventual privatisation of the NBN would be subject to parliamentary scrutiny in return for Greens support for passing crucial legislation, Gillard (*Parliamentary Debates*, Representatives, 22 November 2010, Hansard proof 54) confirmed that the government did still intend to privatise it in due course.

The recourse to privatisation reflects the extent to which even governments prepared to use interventionist measures are constrained by the privileging of market relations and the power of the private sector in a capitalist economy. Yet, the prospect of such privatisation, which involves the possibility of windfall profits for successful private sector providers after government has taken on the unprofitable aspects of building the network, has not been sufficient to stifle private sector criticism of government involvement in such a huge infrastructure project. The most dangerous criticisms for the government have come from the Murdoch media empire and particularly from the Murdoch national daily *The Australian*. *The Australian* has subjected the NBN process to an extraordinary level of scrutiny, including via a regular 'NBN watch' column. While the newspaper has argued that this is just because of the paper's concern to ensure good governance of one of the largest infrastructure projects in Australia's history, critics have not been so sure. As one professor of journalism has written:

> News Ltd, controlling more than two thirds of press circulation, in addition to Sky News … has for some time now functioned as a cheerleader for the Coalition [the conservative parties], and a relentless campaigner against the government on issues such as the National Broadband Network….Murdoch doesn't like the idea of the NBN because it might limit his ability to make money in the future, and so his newspapers must swing into line. (McNair 2011; see further Maher and Hepworth 2010; Smith 2011)

However, it is not just some large companies such as News Ltd that are worried. The Australian Productivity Commission has had several complaints brought to it by smaller companies, arguing that the NBN breaks (neo-liberal) regulations designed to ensure that government does not compete unfairly with the private sector. The Minister for Communications has responded angrily to the resulting Productivity Commission reservations, arguing that the NBN requires government support and is not intended to make high commercial profits given, for example, that it cross-subsidies rural and remote users. Commentators on ICT have also pointed out that it is precisely because ICT investors are normally only interested in high, short-term returns that they did not invest in the NBN in the first place (Australian Broadcasting Corporation 2011).

Conroy's arguments with sections of ICT business and with the Productivity Commission (which tends to take a neo-liberal attitude to issues of market competition), demonstrates how sensitive Australian government intervention in the provision of ICT services and business is. That sensitivity is further exacerbated by the close connections between ICT companies and former politicians and public servants who are operating as lobbyists. An example was exposed via the analysis of a Queensland government register of lobbyists (some of whom also lobbied at federal government level). Queensland is particularly significant because it had attempted to position itself as the Australian 'smart state' and therefore as a centre of ICT business. Liam Tung has pointed out that one company lobbying on behalf of key ICT interests was part-owned by a former Labor Deputy Premier of Queensland, another by a former chief of staff to a New South Wales state Labor premier and another by a former federal Labor minister (Tung 2009). Indeed, the proliferation of ICT lobbyists, often representing their own narrow sectional interests, has led to complaints from key figures in the industry that the industry voice is becoming excessively fragmented and that this is having the unintended effect of diminishing the broader ICT industry's influence on federal government policy. Consequently, some ICT players are turning to broader established industry groups for representation (Colley 2011).

5.7 Australian ICT in the 'Asian Century'

The analysis of the role of ideology and discourse so far has focused on debates regarding issues such as the role of the state in respect to the role of markets. However, there have already been brief references to another theme that is implicated in policy discourse over the role of government in developing ICT infrastructure, namely, its potential role in meeting the challenges that Australia will face in the 'Asian Century'. For, despite the Labor government's problems in regard to handling winners and losers from the NBN, the government remained convinced that it had a major role to play in developing a strong Australian-based ICT industry that can benefit from Asian markets and Australia's proximity as a predominantly Western country that is

nonetheless geographically adjacent to the economic powerhouse of the twenty-first century. Keating's confidence about Australian ICT capacity in regard to Asian markets may have reflected a tendency, also present in the arguments of Bill Clinton and Tony Blair, to assume a generalised western superiority in technology.[8] Commentators such as Dinerstein (2006, pp. 569–574) and Edgerton (2006, p. 132) have drawn attention to the intersections between conceptions of race and conceptions of technological superiority that can underlie such assumptions. Furthermore, as John M. Hobson points out (2004, pp. 162–218, 302–303), the traditional assumption of western technological superiority overlooks the Eastern historical origins of many forms of older technology that the West now claims as its own.

By the Rudd period, as we have seen, such easy assumptions of western dominance no longer held sway. Rudd was well aware that Australia's ICT capacity, in respect to high-speed broadband in particular, was falling behind that of countries such as Singapore and Korea. The NBN therefore had a crucial role to play in Rudd's view in ensuring that Australia could be a successful part of the 'Asian Century'. For Rudd had no doubt regarding the changing geopolitics of the world. Indeed, he argued that that was one of the reasons why he had become Prime Minister was because electors felt he would be better able to manage the increasing dominance of India and China (Rudd 2008).

Rudd was also well aware of the contributions that Asia had made to 'civilisation' and human knowledge and therefore did not hold comfortable assumption regarding Western superiority. In a key speech as prime minister, Rudd, whose tertiary education was in Asian Studies, approvingly cited Nehru's 1947 observation that

> We stand at the end of an era and on the threshold of a new period of history. Standing on this watershed which divides two epochs of human history and endeavour, we can look back on our long past and look forward to the future that is taking shape before our eyes. Asia … has suddenly become important again in world affairs. If we view the millennia of history, this continent of Asia … has played a mighty role in the evolution of humanity. It was there that civilisation began and man started on his unending adventure of life. Here the mind of man searched unceasingly for truth and the spirit of man shone out like a beacon which lightened up the whole world. (Rudd 2009a)

Rudd also went on to acknowledge the postcolonial nature of what was occurring: 'Speaking a decade before I was even born, Nehru saw already what we have now witnessed: the rise of Asia following centuries of European colonialism to become the centre of global strategic and economic gravity that beckons for the century ahead' (Rudd 2009a).

However, Rudd was also well aware that the shift to Asia posed major challenges for Australia's economy. He declared that he didn't want Australia to end up being merely a 'quarry' or a 'beach' for powerful Asian economies (Rudd 2007c). Rather Australia needed to have a diverse economy with a well-educated, highly skilled workforce. High-speed broadband was a crucial building block for achieving such an economy. Importantly, Rudd argued that partnerships with countries such as India could play a crucial role in facilitating Australia's success in the new knowledge

[8] On Blair's view of British technological superiority, see Johnson (2002, pp. 166–167).

economy, in which ICT would be central. In a joint statement with Indian Prime Minister Singh, it was stated that

> India and Australia are building a broad knowledge partnership …. Both Prime Ministers acknowledged the important role science plays in the bilateral relationship and the potential to work more closely in this area of shared strength. Building on the success of the Australia-India Strategic Research Fund, Australia will increase its commitment to bilateral research efforts to A$10 million per year for the next 5 years, which will be matched by India….. Both governments will continue to support leading-edge research in areas, including in information and communication technology, micro-electronic devices and materials, earth sciences, nanotechnology, astronomy and biotechnology. (Rudd and Singh 2009)

Rudd's successor as prime minister, Julia Gillard, also recognised both the opportunities and problems that the Asian Century poses for Australia. The opportunities are huge and include the growth of new markets for Australian technology:

> This is the region where the economic history of the 21st century will be written. By 2020, it is estimated that 1.2 billion people will join the middle classes of Asia. We are witnessing enormous economic and human transformation and that creates enormous opportunity. That shift is already well underway, as any visitor to the streets of Jakarta, Kuala Lumpur or Bangkok will attest. We are witnessing the growth of financial and legal services. Higher education. Technology and innovation. (Gillard 2011)

However, the Labor government was also aware of major downsides to the otherwise extremely beneficial impact which the Asian Century is having on Australia. The Gillard government was not only worried that Australia would become a mineral and oil resources 'quarry' for the growing economies of China and India but that the very demand for Australia's resources, and the resultant resources boom had detrimental impacts on other sectors of the Australian economy because of the rising Australian dollar and the highly paid jobs available in the mining sector (Gillard and Swan 2011). For example, the high Australian dollar was impacting negatively on the educational and tourism industries as well as on manufacturing, while the high pay available in the resources sector was draining labour from manufacturing and services industries.

One of the implications for government was the need to ensure prosperity across the Australian regions and not just in the areas benefitting from the resources boom. As we have seen, the NBN was increasingly sold in terms of the benefits it had for regional Australia. The NBN was also intended to have a more facilitative role, as a massive, cutting-edge infrastructure project that would assist in the development of numerous forms of ICT expertise that would assist in making Australia a twenty-first-century knowledge economy (and thereby not just an economy based on selling resources to the rising powers of Asia). Consequently, Australian governments at both state and federal level are already identifying markets in India and China for Australian ICT companies to engage in and in which possible transfers of knowledge can occur.

The Victorian government cited the NBN as a factor that would revolutionise ICT technology in its attempts to attract Indian business and goes on to argue that

> The Victorian ICT companies travelling to India are looking to partner with India's best and brightest companies. In particular, in recognition of India's considerable and fast growing ICT capabilities, Victoria is intent on becoming the destination of choice for Indian ICT companies. Victoria is already home to several of the leaders of India's ICT sector, including

> Wipro, Tech Mahindra and iGate. The State Government of Victoria is keen to continue developing partnerships between Indian and Victorian companies, to win business in emerging markets and build on the already significant trade between the two regions. (Government of Victoria 2011)

Meanwhile the federal government's department of trade has identified ICT opportunities for Australian trade with India in a wide range of areas which will be facilitated by access to the NBN's high-speed broadband. These included health care, banking, financial services, insurance, education, public services, telecommunications, animation and gaming, automotive, building and construction, aviation, retail, resources and mining and IT-enabled services. The Department cites a yearly growth rate of 20 % in the Indian top IT companies, $76 billion revenues in financial year 2011 in the Indian IT software and service sector and projections of 237 million Internet users by 2015. Interestingly, the Department specifically acknowledges the role played by the Indian government, arguing that the 'Government sector is a key catalyst for increased IT adoption—through sectors reforms that encourage IT acceptance, National eGovernance Programs (NeGP) , and the Unique Identification Development Authority of India (UIDAI) program that creates large scale IT infrastructure and promotes corporate participation' (Austrade 2011b).

However, it is noticeable that Austrade has also targeted China as a crucial market:

> Currently, 10 first or second tier Chinese cities have established creative industry development hubs, which mainly focus on digital content, mobile content, games and applications, and animation, etc….It was reported the number of Chinese netizens had reached 457 million in 2010, an increase of 73.3 million compared with the same period in 2009. The number of mobile Internet users in China reached 303 million, an increase of 69.3 million over 2009. At the same time, the mobile Internet users accounted for 66.2 % of total Internet users in China. The ratio was 60.8 % in 2009. Furthermore, 92.7 % Chinese SMEs have connected their businesses with the Internet and the rate is almost 100 % for large enterprises. Meanwhile, 43 % Chinese enterprises have independent websites or online stores on e-commerce platforms. (Austrade 2011a)

Once again, the crucial role of government in these developments is acknowledged. For example, Austrade (2011a) noted that the Chinese government had placed great emphasis in its next 5-year plan on developing 'new generation' ICT and that its Domestic Innovation Initiatives offered great opportunities for research collaboration between Chinese and Australian research organisations and corporates. Indeed, an example of a successful research collaboration between the CSIRO and China Post & Telecommunication University to develop the next generation of broadband was cited. Austrade's increasing focus on China reflects the increasing challenge which Chinese ICT development is posing to India's ICT industries (Malik and Vigneswara Ilavarasan 2011).

However, what is also significant is the aforementioned recognition by Austrade of the important role of the Indian and Chinese governments in facilitating trade in their own countries. As the Australian Labor government's involvement in developing a National Broadband Network makes clear, there is an increasing recognition of the important role that government can play. Needless to say, there is little critical analysis of the potential downsides of that role, including the extent to which the Chinese government is using e-governance to increase control and oversight of its citizens (Seifert and Chung 2009).

5.8 Conclusion

While the Australian government does not utilise the Internet in as authoritarian a way as its Chinese counterpart, it is also far from clear that the Australian Labor government's involvement in the provision of the NBN revolved around a belief in e-governance as a constituent of democratisation processes, despite its relatively good performance, mentioned earlier, on many e-democracy/e-information measures. After all, the Australian Labor government decided to step in to play such a central role in establishing a National Broadband network mainly because the private sector had failed to do so. However, it did so on the basis of assuring the private sector that the network will be privatised in the future. It is not clear at this stage exactly what safeguards will be in place to ensure that services are provided on an equitable basis once such privatisation occurs, or how strong such safeguards will be. Meanwhile, the Australian government is encouraging ICT trade with the new Asian economic powers but that encouragement is largely based on encouraging private sector businesses to enter the Asian markets. The Australian Labor government may have decided that it needed to play a more interventionist role in the provision of ICT infrastructure; however, in such respects, the role of government is still constrained by the role of markets. Indeed, as we have seen, much of the debate about the role of government, and the ideology and discourse implicated in that debate, still revolves around the respective roles of the government and the market. Australian debates about e-governance and e-democratisation have to be understood in that context.

The Australian Labor government, once again being led by Kevin Rudd as Prime Minister, was defeated in the September 2013 Election. The new Liberal government of Tony Abbott has instituted a review of the NBN project. The Abbott government has vowed to focus on predominantly providing fibre to the node broadband rather than fibre to the premises. It has also vowed to facilitate increased private sector participation (and greater market competition) in the provision of broadband services.

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Chapter 6
Privacy, Control and the Law

6.1 The Ungovernable Internet

e-Governance is primarily is about accessing services provided by governments online. One may do it from a home Internet service or from cyber cafes or any other computer which is away from home. To access a service, there are certain authentication requirements such as name, address, email, telephone number, password and sometimes bank details if financial transactions such as property registration, tax payment, investments or account management are to be done. Sometimes people go to public computers or ATM machines and do not log off, or many such computers are fitted with cookies to record the user's communication, password and address book. In e-governance, password is the key to one's privacy; once this is procured by an unauthorised intruder into one's e-machine, then the access may be endless, unlimited, leading to some of the worst forms of financial and physical harassment and harm. The hacked data may also be used to send unwarranted, obscene or hate mails with the purpose of inciting communal or racist violence, disturbances or misinformation. Currently, this is one of the major concerns of law administering agencies since both citizens and the law are not in a position to capture the complete dimension, process and impact of such a crime. More so because the digitised content cannot be deciphered by existing terrestrial laws. Many questions emerge on the theme which would be discussed in this chapter such as why should the Internet be governed, who should govern the Internet, and, lastly, how can accountability of users be balanced with their autonomy? The fundamental issue which has been creating fuzziness on the issue of authority, control and privacy is the fact that both the 'Internet' as well as 'governance' are multifaceted and remain till today multi-definitional about which the holistic understanding is one big casualty.

The policymakers in the developing countries are now beginning to see the inherent dangers of Internet misuse when large-scale disruptions in cities and in personal and business lives can be caused by mischievous and hate content passed on emails or on social media sites. Governments have been readying to confront the issue and to enact rules to hold intermediaries responsible for user-generated

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content that is allegedly obscene, infringing, defamatory or otherwise illegal. This has brought down business of cyber cafes which are closing down. Cyber cafes have been responsible for the success of e-governance programmes in Gujarat, Hyderabad, Bangalore and other emerging cyber cities across the world. Of those many new areas of employment which came to the Internet-skilled youth in the last decade and a half, cyber café had been one of the frontrunners. A large number of them have already closed down. More than the regulations which they are to follow are the constant surveillance visits of police to their cafes which disturbed user clients and this also increased rent seeking from these places. If local law enforcement authorities and international rights holders associations have their way, intermediaries will be saddled with strict obligations to take down (or, worse, monitor) content and retain user data for investigatory purposes, turning litigation-averse intermediaries into de facto censors (Rizk 2011).

Internet governance is becoming a concern for nations and international agencies such as the International Telecom Union (ITU), ICANN and the WSIS which have been occupied since 2003 to find a reasonable solution to the whole complicated problem. The problem is acute when the law itself comes in question since terrestrial and cyber laws would be different at many points even though they converge sometimes at their contours. There are issues of boundary, sovereignty and control. Thus to find laws which are workable across the concept of boundaries, they could be self-regulated rather than under a single institutional control such as what exists today under the USA. Whatsoever be the structure of such a cyber law, it indicates a paradigm shift in the understanding of law. The gist of the paper 'Law and Borders: The Rise of Law in Cyberspace' by David R. Johnson and David G. Post is that the Internet should be self-governed rather than being governed by one particular state. This would then define citizenship of Internet users not by boundaries but by location in cyber space. The authors forecast that 'Separated from doctrine tied to territorial jurisdictions, new rules will emerge, in a variety of on-line spaces, to govern a wide range of new phenomena that have no clear parallel in the nonvirtual world. These new rules will play the role of law by defining legal personhood and property, resolving disputes, and crystallizing a collective conversation about core values' (1996, p. 1367).

A recent book on the subject *The New Digital Age (2013)* suggests many insights on the subject of regulations, and the authors being the Executive Chairman Eric Schmidt and Google Ideas Director Jared Cohen have added a form of passion in suggesting ideas which demand understanding of the Internet by policymakers. They start by highlighting a major challenge about the governability of Internet as they initiate the discussion with rapt comments on the state of things to come over the digital platform, 'Internet is among the few things humans have built that they don't really understand. What began as a means of electronic information transmission-room sized computer has transformed into an omnipresent endlessly multifaceted outlet of human energy and expression' (2013, p. 3). Internet by its very nature is difficult to control as once initiated the packets of data keeps moving which is called 'packet switching' which moves forward from nodes to various nodes which are accessed by multiple users and in multiple ways. The data is not

transferred as it is but it is coded in binary numbers which need to be deciphered before they are regulated. Therefore it is 'the largest experiment involving anarchy in history' (Schmidt and Cohen 2013, p. 3). As law enforcing agencies navigate the rich virtual landscape of Internet, they pass through the online scams, e-groups of militants and religious fundamentalists with their targeted, maligning and malicious campaigns. One would agree to a point with the Google authors that Internet is the largest 'ungoverned space' (p. 3) because it is a less understood phenomenon with a high traffic of innocents in the midst of scheming pirates. Internet governance is the demand of the day, but it should also be kept out of the passion for governance by many governments. Due to the combination of two equally 'misunderstood' terms such as the Internet and governance, the arena is vulnerable to misuse by every regulator, be it the United Nations, Internet multinationals and country governments. John Mathiason sums up the problem of the prevalent ignorance about an understanding of both the Internet and governance as 'when internet is defined the aspects that can be regulated can also be defined. When governance is defined the limits of regulation will also be set out' (2009, p. 6).

6.2 Growing Government Censorship of the Internet

After the great Watergate Scandal in the USA which led to the resignation of President Nixon, it was realised that individual privacy had become more vulnerable with the coming of the electronic communication. In passing of the Privacy Act[1] of 1974, the Congress[2] found that 'the privacy of an individual is directly affected by the collection, maintenance, use, and dissemination of personal information by Federal agencies' and that 'the increasing use of computers and sophisticated information technology, while essential to the efficient operations of the government, has greatly magnified the harm to individual privacy that can occur from any collection, maintenance, use, or dissemination of personal information'. From the 1970s to the present, electronic communication has moved much further from simply recording on cassettes to public display of multiparty communication like on Facebook and Twitter, and the boundary reach of such communication could be unimaginable by any law-making agency.

The debate on control has been exacerbated by many incidents of administrative overstepping in resolving electronic communication conflicts across the world. In India during November 2012 Shaheen Dhada, a young college student, was arrested by the Mumbai Police for posting a message on Facebook to her friend Rinu Srinivasan. The two girls were charged under Section 295A for hurting religious sentiments, apart from Section 66(a) of the Information Technology Act 2000. The comment posted was

[1] The Privacy Act of 1974 , 5 U.S.C. § 552a.

[2] Public Law No. 93–579 (1974).

> With all respect, everyday thousands of people die, but still the world moves on. Just due to one politician dies a natural death, everyone just goes bonkers. They should know, we are resilient by force, not by choice. When was the last time, did anyone showed some respect or even a two minute silence for Shaheed Bhagat Singh, Azad and Sukhdev or any of the people because of whom we are free living Indians? Respect is earned, given and definitely to forced. Today, Mumbai shuts down due to fear, not due to respect.

The wrongful arrest incited public protest, and even the Chairman of the Press Council of India Justice Markandey Katju criticised the police high-handedness and noticed the mischief which had gone behind misinterpreting and misusing the provisions of law by the police. The girls were later freed and the four police officers were indicted after an internal enquiry.[3]

Asian governments have been showing an increasing trend towards controlling online data which is somewhat an emerging negative tendency against Internet users and is likely to affect the advancement of e-governance. As terrestrial laws are applied to deal with Internet issues, there are more problems which affect individual freedom as boundaries are unlimited and jurisdictions undefined. Notwithstanding the realisation that even though the basic framework of law agencies is more or less similar in the treatment of 'privacy' and 'theft' or 'misuse of information', the approach would be greatly different. Internet is a free mode of communication for the dissemination of knowledge in dialectics or in continuous growth. Thus the provisions which prohibit 'hate speech' in several sections of the Indian Penal Code and the Code of Criminal Procedure to restrict the freedom of expression may prove a disaster if applied on communication over the Internet. Section 95 of the Code of Criminal Procedure gives to government the right to declare certain publications 'forfeited' if the 'publications…..appear to the State Government to contain any matter, the publication of which is punishable' under Section 124 A or Sections 153A, 153B, 292 and 293 or Section 295A of the Indian Penal Code. Section 295A says, 'Whoever, with deliberate and malicious intention of outraging the religious feelings of any class of citizens of India [by words, either spoken or written or by signs or by visible representations or otherwise]insults or attempts to insult the religion or the religious beliefs of that class shall be punishable with imprisonment of either description for a term which may extend to [3 years] or with a fine or with both'. Indian Penal Code was enacted in 1927 but continues to be a dominant paradigm for the police to take action against crimes of 'free expression in print or otherwise'. The abuse of Section 66A of the Information Technology Act of 2000 which is not limited to procedural issue of arrest on a scale of 'grossly offensive' acts has been ignored.

The amendments to the Information Technology Act in India have brought much relief to the Internet users. The language of Section 66 'computer related offences' has been revised. The Report of the Expert Committee (2005) expressed that 'sometimes

[3] Mumbai Mirror, (2012, 19 November) 'In Palghar, cops book 21-year-old for FB post', Mumbai and The Hindu, (2012, 19 November)' Mumbai shuts down due to fear not respect', New Delhi edition.

because of lack of knowledge or for curiosity, new learners/Netizens unintentionally or without knowing that it is correct to do so end up doing certain undesirable acts on the Net. For a country like India where efforts are being made to enhance the positive use of internet and working towards reducing the digital divide, it needs to be ensured that new users do not get scared away because of publicity of computer related offences',[4] The Committee warned that the IT Act in order to ensure that it promotes the use of e-commerce, e-governance and other online uses has been cautious not to use the word cybercrime in the text. Section 43, dealing with 'Penalties and Adjudication on data security and privacy', has been revisited to ensure that a distinction is made between causal comments and gross offences while at the same time adding Section 43A for bringing greater clarity on institutional security policy on the issue of hacking of computer-based 'sensitive personal data information'(The Gazette of India 2009, p. 6). A larger part of the language of Section 66A of the amended IT Act has been borrowed from Section 127 of the UK's Communication Act 2003. This section should be read in line with the famous House of Lords verdict[5] which read, 'The test is whether a message is couched in terms liable to cause gross offence to those to whom it relates'. It further said that the words in question must be judged by applying 'the standards of an open and just multiracial society' and 'taking account of their context and all relevant circumstances'. About a yardstick to judge such offences, the verdict suggested, 'there can be no yardstick of gross offensiveness otherwise than by the application of reasonable enlightened, but not perfectionist contemporary standards to the particular message sent in its particular context'. Judging by these standards, much of the free expression of youngsters over the net will not be treated as a 'gross violation' and would indicate that 'policing of the type taking place across the Asian region is a gross violation of personal liberty and free expression'. Matters are worsened when the larger framework of an authoritative state invokes terrestrial laws to strengthen a cause for punishment, such as the 'bailable' Section 66A of the IT Act was combined with Section 295A (deliberate, malicious acts intended to outrage religious feelings or any class by insulting religion or religious beliefs) and Section 505 (statements conducing to public mischief) just to make the offence 'non-bailable'. The bench indicated a 'motive' or 'mens rea' behind the incident of Palghar against the Mumbai girls. The issue which emerges out of the law enforcement agencies' failure to understand and interpret the nature of offence and the language of law in the context of cyber communication, respectively, has become a major challenge for the Indian judiciary.

In this context, a detailed elaboration of the above-mentioned judgement from the Royal Court of London straightens the twisted problem of freedom and control over the net. It substantially settles the whole issue which has been perplexing the Asia Pacific emerging economies where the ideology and expressions of the

[4] Report of the Expert Committee (2005) Proposed Amendments to Information Technology Act 2000, New Delhi: DIT, Ministry of Communication and Information Technology, GoI.

[5] Paul Chambers and Director of Public Prosecutions [2012] EWHC 2157 Case No: CO/2350/2011 Date: 27/07/2012.

government and the aspiring younger generation have been put against each other and are threatening to clamp down upon the technology of the Internet. Even the fast modernising Malaysia, Hong Kong, Sri Lanka and China, notwithstanding its fast strides into global markets and Internet industry, have been leading in regressive state policies against the Internet. To deliver the judgement, even the hon'ble judges the Lord Chief Justice of England and Wales Mr. Justice Owen and Mr. Justice Griffith preferred to clarify the understanding on the social media site particularly 'Twitter' which was in question before the court. 'Twitter' enables its users to post messages called 'Tweets' on the 'Twitter' interne and other sites. These are jokes, gossips, opinions, assertions and descriptions which are both good and bad. As in the FB Palghar Case of Mumbai girls or the UK's Paul Chamber's Case, the issue had been one in which the prosecution had failed to interpret the online loose 'comment' in the context of online expressions used on these social media sites. The case came up as an appeal against the Magistrate Court's upholding of the conviction against the 'Twitter user' for sending by a public electronic communication network a message of a 'menacing character' contrary to Section 127(1) (a) and (3) of the Communications Act 2003 (the Act).

The appellant was to fly to Belfast from Doncaster Robin Hood Airport to meet the 'Twitter' friend identified as 'Crazycolours' on 10 January 2010. Due to bad weather conditions, the flights were cancelled. This incited anxiety and anger spurting into remarks such as 'I was thinking that if it does then I had decided to resort to terrorism' and 'I am blowing the airport sky high'. The public prosecutor had placed the message under 'grossly offensive' category, whereas the hon'ble judges laid down a criteria for such a category. The judgement read, 'In short, a message which does not create fear or apprehension in those to whom it is communicated, or who may reasonably be expected to see it, falls outside this provision, for the very simple reason that the message lacks menace'.[6] What is the mens rea[7] for an offence of sending a message of menacing character contrary to Section 127(1)(a)? In particular, (a) Is Section 127(1)(a) (read according to convention canons of construction or with the benefit of Article 10 ECHR[8] and Section 3 of the Human Rights Act 1998) a crime of specific intent? (b) Is the Prosecution required to prove as part of the mens rea of the offence that the person sending the message intended to put another person in fear? (c) If the answer to (b) is no, is it sufficient for the prosecution to prove that the person sending the message realised that his message may or might be taken as menacing, or must the prosecution prove that he realised that it would be taken as menacing by a person of reasonable firmness aware of all the relevant circumstances?

[6] Paul Chambers and Director of Public Prosecutions [2012] EWHC 2157 Case No: CO/2350/2011 Date: 27/07/2012.

[7] Mens rea (or guilty mind) is a Latin term which is used to explain the motive behind the crime, suggesting criminal liability as 'the act is not culpable unless the mind is guilty'. Besides, there must be an 'actus reus' (or guilty act) accompanied by mens rea to constitute the crime. Technically, there is no criminal liability attached to a person who acted without mental rea.

[8] ECHR is European Court of Human Rights.

The best thing which has emerged out of this case is that the Director of Public Prosecutor seem to have become enlightened with the participation in the court discussions crystallising into a judgement. He preferred to issue guidelines on social media cases for prosecutors so that they have a standard set of understanding about the distinction between free speech and criminality.[9]

However, the judicial verdict of the British Court has not influenced the Asia Pacific judicial pronouncements except that of Indian Judiciary. In the Palghar Facebook Case in India, the Court had taken a pro-freedom approach, but this has not been happening around the other Asian countries. It is being witnessed throughout Asia that efforts to control Internet intermediaries with new sets of rules have unnecessarily constrained the performance of Internet service providers (ISPs), online service providers such as Twitter and Google or cyber cafes. In fact the number of cyber cafes is reducing in the suburbs of big cities as the police and other law enforcing agencies have created a scare that they would be responsible for the harmful, obscene, malicious and secessionist content of the user at the café. The state has been strengthening itself against the new found freedom platform which the Internet has given to the world. The Internet intermediaries (ISPs and online service providers like 'Twitter, Facebook and Google') increase the Internet access cost proportionate to the regulations imposed upon them thereby affecting cost of access anywhere outside the home. Yet the intermediaries have also been subjected to the need for 'disclosure of Internet users' personal data'. In Malaysia, the government has brought amendments to the Electronic Commerce Act 2006 to compel online marketplace operators to maintain proper records of their sellers which could be relied upon for the purpose of investigations. Even the Computing Professionals Act 2011 is moving towards restricting Internet freedom.

The ICT Acts in South Asian countries are being amended towards stricter punishments. The Bangladesh ICT Act of 2006 provides legal recognition and security of information. Pakistan released provisions of the Ordinance No. XIV of 2009 for the prevention of electronic crimes such as the criminal access to computer data, its damage or system damage and also cyberterrorism. Malaysian government has also been proactively restricting Internet freedom as Malaysia emerges to become the sixth most vulnerable country to cybercrimes and misuse of the Internet for various cross-border illegal activities such as drugs, human trafficking, financial fraud and money laundering (The Star 16th May, 2013).

6.3 Grassroot Movements for Internet Freedom

Why would people share their personal data if there is little trust left in governments on its misrepresentation and misuse? Even the issue of misinterpretation of content language and the same outdated patriarchal and rent-seeking administration and law

[9] http://www.cps.gov.uk/news/press_statements/dpp_statement_on_tom_daley_case_and_social_media_prosecutions/index.html.

enforcing agencies to attend to such issues may deter people from accessing public services. e-Governance is inspired by freedom and trust which is ironically declining as the studies reveal. In the Philippines and Indonesia, there are grassroot groups emerging for the protection of online freedom. An Indonesian[10] online group Saura Blogger Indonesia (Indonesian Bloggers' Voice) raises awareness about threats to Internet freedom in Southeast Asian countries. Vietnam like Pakistan and China has been arresting and persecuting bloggers in a big way. In the Philippines, Senator Teofisto 'TG' D. Guingona III has placed a bill called 'Crowd Outsourcing Bill' for public comments. The senator is a great supporter of online freedom and, pursuant to this, demands greater public participation in the making of laws since it improves the quality of laws formulated[11] (Sifry 2012). Bangladesh is witnessing a full-fledged movement for the protection of Internet freedom which is growing along with the movement for press freedom or freedom of expression guaranteed by the Article 39 of the Constitution (VOICE 2012. Voices for interactive choice and empowerment, 30 September 2012). Pakistan has been witnessing a slow erosion of Internet freedom, but even in the midst of restrictions, the e-NGO Network for Internet freedom and rights to privacy is becoming active especially in the freedom city of Karachi. Bytes for all and RYSe (Reclaim Your Space) are already much ahead of making their visibility in public spaces as a voice of freedom over the net. Its support is gaining ground as their latest contribution to the movement is their working document released on 6 February 2013, titled 'Freedom of Expression and Net Freedom in the Manifestos of Political Parties in Pakistan: A Review of political parties manifestos for freedom of expression and internet freedom in the country'. This is a commendable movement even though the Pakistan judiciary since 2006 has been directing the government to keep tabs on Internet sites and block them for showing blasphemous content.[12] Barrister Amjad Malik, the applicant filed a petition under Article 184 (3) of the Constitution of Pakistan and prayed to the Chief Justice Iftikhar Muhammad Chaudhry for issuing necessary directives to the Pakistan Telecommunication Authority (PTA), the government and other concerned institutions of the country to block objectionable pages promoting blasphemy in the name of freedom of expression…protect the name of Prophet Mohammad and protect lives and liberties of mainstream Muslim population. The PTA then published requests for proposals for the 'deployment and operation of a national level URL Filtering and Blocking System'.[13] Much of this would follow the pattern of China's use of Golden Shield, the Great Fire Wall of China. This is to generate capacity to block fifty million websites in Pakistan. The Supreme Court imposed a blanket ban on all blogspots many times since 2006. There have been controversies about the YouTube as well which showed a controversial Dutch film *Fitna* and was asked to

[10] Goldman, Lisa (2012) Indonesian Grassroot Group promotes Internet freedom, Techin Asia, October 5.

[11] http://techpresident.com/news/23012/philippines-crowdsourcing-bill-filed-seeks-crowdsourced-improvements.

[12] 'Blogspot ban lifted in Pakistan',,(2006, 6 May) Wikinews.

[13] National ICT R&D Fund (March 2012). 'Request for Proposal'. National ICT R&D Fund.

block the content. When YouTube did not abide by the orders, the site was blocked.[14] Interestingly, this is a very frequent recurrence in Pakistan on the stated directives of the Supreme Court.

6.4 Ranking on Internet Freedom

The *Freedom on the Net 2012: A Global Assessment of Internet and Digital Media*,[15] a US-based research group, has studied selected indicators for ranking countries about their status on the issue of freedom of the Internet. The indicators selected for assessment included many commonly undertaken measures by governments like web blocking, shut down of the net services, pro-government blogging, arrests for anti-government bloggers to the formulation of new regulatory and punishment laws, physical attacks, custodial torture, deaths and disappearance of anti-government e-writers. Of the Asian countries only one country the Philippines was rated to be actually free at a score of 23. The list carries countries from every region, and the best score in freedom of the Internet which is that of Estonia at 10 is substantively far away from China at 85 and Iran at 90.

Out of the 'partly free' category, South Korea tops the list at 34 followed by India (39), Indonesia (42), Malaysia (43) and Sri Lanka (55). Out of the countries being studied in this book, only two countries Pakistan (63) and China (85) fall in the category of 'not free'. Both these 'not free' category countries and some 'partly free' category of countries like South Korea, India and Malaysia have been showing a decline in providing freedom of the Internet since 2011, whereas Indonesia shows improvement. Australia is one of the stable rank countries which comes in the first five best performing countries in the world where the standards on freedom over the Internet has benefitted universities, research institutions and businesses which manage misuse by installing their own local institutional arrangements for security of data. Such arrangements are able to filter locally and prevent cases of hacking.

6.5 Global Politics of the Internet Governance

The world is witnessing growing insecurities on two fronts: first, the USA at the steering wheel of the global Internet and secondly, data security, misuse and propaganda issues which hurt democracies and freedom of individuals. In September 2011, India, Brazil and South Africa held a Global Internet Governance Meet at Rio de Janeiro. They reaffirmed the Geneva Declaration and Tunis Agenda which were yet to be made operational. The need to bridge institutional gaps and fragmentation

[14] 'Pakistan blocks YouTube for "blasphemous" content: officials', (2008, 24 Feb)*Agence France-Presse (AFP)*.

[15] Kelly et al. (eds) (2012).

of policy and increased participation was discussed. They insisted for the constitution of a new regulatory body within the United Nations which would be an independent arbiter in conflicts and crisis. Later at the time of presentation of this proposal in the World Conference on International Telecommunications in Dubai in December 2012, Brazil and South Africa withdrew from the proposal, and more interestingly, India did not sign the communication treaty which was her own initiative.[16] An intense civil society movement erupted against the Indian government for restraining and trying to gain control over people's right to free communication. India succumbed to the demands of internet freedom protestors.

The objection of India and USA to the treaty was due to the fact that it contains a controversial Article 5B which is titled 'Unsolicited Bulk Electronic Communications'. The Article suggests governments' intrusiveness into people's privacy of content and communication:

> Member States should endeavor to take necessary measures to prevent the propagation of unsolicited bulk electronic communications and minimize its impact on international telecommunication services. Member States are encouraged to cooperate in that sense.

This remarkable new world divide is taking place after the demise and now a rebirth of the Cold War on the issue of the Internet. The global Internet freedom has become a battle cry of Google as the Chinese government announced censorship laws. Even the Senate Judiciary Subcommittee discussed the business practices in China with concern.[17] India's proposed UN-Committee for Internet Related Policies (UN-CIRP) was slammed for moving away from multi-stakeholderism and instead opting for government-led regulation.

6.6 Who Governs the Internet?

The governance of Internet has so far been the responsibility and privilege of the USA. In the Universal Declaration of Human Rights in 1948, United Nations had made it amply clear that obstructions to information dissemination are an infringement of human rights. Article 19 of the Declaration is worded appropriately for the borderless world of Internet with an unquenchable thirst for information, even though the technology was nowhere in sight at that time:

> Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.

In view of the above objective and philosophy, the former International Telegraph Union (founded 1869) was changed to the International Telecommunication Union (1950) to work as a specialised agency of the United Nations on ICT.

[16] Bhardwaj, (2013, 17 Jan).

[17] CSPAN (2010, 2 March).

In its Resolution 73[18] adopted at Minneapolis meet of 1998, it resolved to set up a World Summit on Information Society. In 2001, the ITU Council decided to hold the World Summit on the Information Society in two phases, the first phase at Geneva 2003 and the second at Tunis 2005. WSIS further created the Internet Governance Forum to look into the specific needs of the Internet issues. The IGF was created in 2006 as an outcome of the Tunis Agenda of 'Enhanced Cooperation'. It draws its mandate from the Paragraph 72 of the Tunis Agenda which reads as follows:

Para 72. We ask the UN Secretary-General, in an open and inclusive process, to convene, by the second quarter of 2006, a meeting of the new forum for multi-stakeholder policy dialogue—called the Internet Governance Forum (IGF).

IGF is respected and accepted by member countries because it has been able to provide a democratic space for multi-stakeholders dialogue on Internet governance. It is neutral because it is part of the UN body and has been created by the World Summit on Information Society.

When the World Summit on Information Society (WSIS) held its meeting in 2003, the technical parameters of controls started changing to political surveillance, and in 2004 United Nations created a UN Information Commission Task force. In the 2005 Tunis Summit the Internet Governance Forum (IGF) emerged as a multi-stakeholder and amorphous agency of regulating the Internet. At this point the concern, anxieties and the fears of countries were coming to surface. Some countries wanted no regulation but others did demand a formal structure to regulate this meandering, free flowing powerful storm of energy lest the unworthy start harming the others. Control was found to be embedded in the nature of Internet technology which was different from a normal wireless or telephone technology. Being a 'network of networks', ICT passed information in channels called tubes, and if some start clogging these tubes with unsolicited and unwarranted information which leads to slowdown of transmission for others, then the Internet should have a structure of control just as one has it on other issues of governance.

The UN Commission on Science and Technology was allocated the responsibility of catching up with the other two incumbents in the area, i.e. WSIS and the IGF. Their second meeting at Rio de Janeiro in November 2007 kick-started a formal structure of governance for the Internet.

Internet Corporation for Assigned Names and Numbers (ICANN) is a nongovernment organisation based in Los Angeles, California, USA, since 1998. Presently it governs the Internet. Prior to ICANN, the Internet Assigned Numbers Authority

[18] Resolution 73 (Minneapolis, 1998) of the International Telecommunication Union (ITU) resolved to instruct the ITU Secretary-General to place the question of the holding of a World Summit on the Information Society (WSIS) on the agenda of the United Nations Administrative Committee on Coordination (ACC, now the United Nations System Chief Executive Board – CEB) and to report to the ITU governing body, the Council, on the results of that consultation. In his report to the 1999 session of the Council on that consultation, the Secretary-General indicated that the ACC had reacted positively and that a majority of other organisations and agencies had expressed interest in being associated with the preparation and holding of the Summit. It was decided that the Summit would be held under the high patronage of the UN Secretary-General, with ITU taking the lead role in preparations.

with the Department of Defense of the US government controlled the Domain Name Systems over the Internet. The ICANN was created to assume the responsibility under a United States Department of Commerce contract. The US government renewed the contract with ICANN in 2006 for the performance of the IANA functions. As the control of the Internet appeared more to be directed and influenced by the US government, the ICANN's relationship with the US government was clarified on 29 September 2006, when ICANN signed a new MOU with the US Department of Commerce. Thus the Department of Commerce retained the oversight responsibility, while the primary responsibility for policy formation in ICANN was delegated to three supporting organisations: Address Supporting Organization, Domain Name Supporting Organization and Protocol Supporting Organization. The Regional Internet Registries and the Internet Engineering Task Force agreed to serve as Address Supporting and Protocol Supporting Organizations, respectively. ICANN was assigned the DNS policy development besides the oversight and coordination responsibilities. Thus ICANN handles allocation of address blocks to the Regional Internet Registries, assignment of unique protocol numbers and management of DNS root zone files. However, whatever editing ICANN does to the allocation and removal of country code top-level domains or the root zone files have to be approved by the US Department of Commerce, and this includes the removal and addition of country code top-level domains.

As described in the previous chapters the Internet, emerged to spy and control defence establishments, especially during the Cold War era when Pentagon was its only use but currently, internet is the voice of freedom, of opportunities and of coming together. It has now become part of a democratic domain and its demise may destroy the strength and motivation which is strengthening democracy in every part of the world. Interestingly, Internet use initially was limited to serve the needs of the cold war. However, from here, the technology evolved to a potentially worldwide scale and interestingly became the liberator for societies. Now, 'it is a source of tremendous good and potentially dreadful evil, and we are only just beginning to witness its impact on the world stage' (Schmidt and Cohen 2013, p. 3).

There are multiple channels of the transfer of data. Every channel requires some regulatory arrangement. When a message is sent, there are the following channels which suggest regulatory point:

Sender of message > message > a channel > a receiver > a feedback mechanism

The sender is the starting point of Internet Protocol (IP) when addresses are allocated to the computer in use. IP address is an agreement on a standard for setting up packets and the system of address allocations. This is the first point which demands knowledge governance. The email message in digitised form is passed from here to channels where the Internet service providers (ISPs) or companies facilitate content transfer through bandwidths. Bandwidths are a 'battlefield for scarce resources' and have emerged as a sticky field of governance. One can have local access (LAN) through Ethernet local area networks or in the larger network of networks there are multiple tubes as provided by the ISPs such as that of optic fibre,

satellite or cable TV network. As Mathiason sums up in a definition of an Internet which he has given with Milton Mueller and Hans Klein after his insightful academic and practical involvement with a large number of development programmes across the world, 'The internet is the global data communication capability realized by the interconnection of public and private telecom networks using Internet Protocol (IP), Transmission Control Protocol (TCP) and the other protocols required to implement internet protocol networking on a global scale such as the Domain Name System (DNS) and Packet Routing Protocols'. (2009, p. 11). He further says that if government users including governments didn't have to worry about the content of messages or operability of the Internet technology, the management issue would have been much simpler and confined to the contours of operational technology provisions when an agreement on protocols and the network linkages to each other would have sufficed in regulatory arrangements.

From the rush for protocols to the management of networks to ensure a smooth flow of content, the issue need not have deepened into a cutthroat debate as it is going today[19] but for the draft treaty which is now waiting to be signed. From the domain of engineers, the Internet regulation is now in a wider field of international cold war politics[20] as well as a civil society movement which have demonstrated their might beyond what any governmental power can control. From policies which prevent discrimination of use to the telecom regulation, and encryption policy to the management of competition and investments, the field of regulations involving a benign-looking technology of the Internet is more complicated and visibly belligerent as other traditional battles on commercial products are. However there is a difference that the real control is beyond one country or a small group of countries to handle as there is no monopoly in Internet regulations and nations may have to generate and develop multi-stakeholder groups in a decentralised platform of governance where participation and access are open to all. The Google authors in an interview to Leslie D'Monte (Hindustan Times 2013, April 27, p. 25) remark that governments break Internet to stay on in power, and this should be seen in the light of 57% of world population still living under autocracies, or a large number of vulnerable population on the net being driven by religious autocratic cyber union like an Islamic web which suggests that some form of regulation is required but which should not be located with individual governments but should be a top-down international regulatory control.

In the present state of an evolving Internet regulations, the issue is much beyond the capacity of IT engineers to control or the norms of engineering architecture to regulate. It is now in the battle ground of politics and ballistic civil society where predatory and instinctive authority structures are gnawing to capture its control from people.

[19] Google vis-a-vis Indian government and others, Comcast etc.

[20] Nations are divided on two groups of Internet freedom group led by the USA and the Internet controlling group led by Russia and China.

6.7 Conclusion

The success of e-governance depends upon the ideal of universal accessibility of the Internet by people of all age groups. When governments provide online services, a large amount of private data of citizens go online and make them vulnerable to attacks both physical and net based. Thus while universal usage is the goal, data security and citizens' privacy is the new government responsibility. The policymakers in the developing countries are just now beginning to see the inherent dangers of Internet misuse when large-scale disruptions in cities and in personal and business lives can be caused by mischievous and hate content passed on emails or on social media sites. Governments have been readying to confront the issue and to enact rules to hold intermediaries responsible for user-generated content that is allegedly obscene, infringing, defamatory or otherwise illegal. Internet governance is becoming a concern for nations and international agencies such as the International Telecom Union (ITU), ICANN and the WSIS which have been occupied since 2003 to find a reasonable solution to the whole complicated problem. Terrestrial and cyber laws would be different. Whatsoever be the structure of such a cyber law, it indicates a paradigm shift in the understanding of the law. Yet by their fundamental fuzziness, 'governance' as well as the 'Internet' seem nowhere close to a standard clarification of 'Internet governance'.

Watergate Scandal in the USA led to the resignation of President Nixon, but it also highlighted that individual privacy had become more vulnerable with the coming of the electronic communication. The debate on control has been exacerbated by many incidents of administrative overstepping in resolving electronic communication conflicts across the world. In India during November 2012, Shaheen Dhada a young college student was arrested by the Mumbai Police for posting a message on Facebook to her friend Rinu Shrinivasan. The two girls were charged under Section 295A for hurting religious sentiments, apart from Section 66(a) of the Information Technology Act 2000. The British Royal Court judgement generates a better understanding of cyber offences in present times. Countries have also been ranked on the basis of selected indicators about their status on the issue of freedom of the Internet. Internet has provoked a new cyber cold war, and Asian countries are likely to play a very active political role in its resolution.

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Chapter 7
Epilogue

7.1 Governance and e-Governance: *Interrogating ICT*

e-Governance is defined as a governance driven through a sophisticated modern technology (ICT) which supplies the information required in formulating public policies. While governance is dependent upon the indispensable need for information, its quality and relevance of information infrastructure define the parameters of its success. The nature of information technology, its sophisticated configuration and perceptive adoption in institutional operations, constructs e-governance which suggests that the territories of governance and e-governance are overlapping and interdependent. However, the last one decade and a half of governance research being undertaken in political science and public administration has focused on institutions of governance, i.e. the legislature, the executive and the judiciary, which have been overshadowing the need for a critical intrusion into the technology domains of governance. This neglect has prevented a more holistic analysis of public policies and in turn enabled the technology determinists to capture and customise citizens' lives to serve a system. These determinists have also risen as experts within their self-created narrow forte of e-governance and have saddled over the political economy of 'Internet' which refers to the global information infrastructure. A need for a wider participation of interdisciplinary experts having socio-psychological understanding about the ability to participate and a subsequent opening up of the ICT to the requirements of the less skilled and differently abled masses has remained a rhetoric rather than a reality. It has been found that from local to global, technology has been centralised as a result of which accountability and transparency are available only under great risk and loss of personal privacy and safety.

The advancement of e-governance is an unavoidable journey but its direction ought to be defined by democratic ideals rather than the state-driven authoritative

A. Singh, *A Critical Impulse to e-Governance in the Asia Pacific*,
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structures which would be counterproductive to the effort. The WikiLeaks[1] and Snowden's Case[2] highlight the machinery of state surveillance and the place of individual safety and privacy. The ICT is turning into a new cold war between information seekers and controllers. The book attempts to study ICT as a foundation of e-governance through a comparative study of Asian countries so that a clearer picture could emerge on many decisions which governments take to upload and disseminate information to citizens through an adoption of a particular technology to act as a medium. The book enables the reader to understand ICT as a technology to improve state capacity in achieving the MDGs and also enhance competitive edge of countries to attain inclusive governance. The book is less concerned about the issue of affordability and accessibility at the micro-level as appropriate macro-level decisions taken on technology adoption may percolate downwards in an unstoppable manner in making systems of governance more inclusive and participatory. On the contrary, a disjunctive micro-macro decision-making may corrupt channels of governance and push strategic performance into political predation of representative democracy. The study focuses upon the micro-macro connectivity to make policies cost-effective and sustainable which could then be translated into economic opportunities and programmes of well-being. During this period, only those countries which have been guided by a visionary leadership, teamwork and strong indigenisation in e-governance would sustain the demands of the next generation governance. No old school political leaders may be required in the coming decades.

7.2 Participation and e-Governance

In the public-sector based e-governance programmes which generally attempt to address the substantive needs and well being of citizens, public participation is the key to achieving the goals of development. Ironically, its been observed that governments focus least on generating participation for the fear of more work, greater transparency and clear accountability. Public sector systems do not suit the participatory capacity of the user, supervisory commitment of administrators and trust of citizens which is better assured when the same system is transferred to an NGO where it suddenly becomes functional. There are successful practices from the TaraHaat programme in Bundelkhand region of India, the TIGERS programme from

[1] Julian Paul Assange is an Australian editor who is the founder of WikiLeaks, a newspaper which exposes classified information obtained from various sources. WikiLeaks has been a whistleblower of many secret programmes of big governments. Assange has been in asylum since 2010 for leaking secret information to press (Gray 2010).

[2] Edward Joseph Snowden a thirty-year-old American technical contractor for the National Security Agency (NSA) and Central Intelligence Agency (CIA) who leaked some intricate policy secrets of US government to expose its mass surveillance programmes. As he leaked secrets to The Guardian (London) and a documentary film-maker involved in such themes, he declared that his 'effort was to inform the public as to that which is done in their name and that which is done against them'. (Gellman et al. 2013; Greenwald et al. 2013; Greenwald and Ball 2013).

the Tasmanian region of Australia, BRAC (Bangladesh Rural Advancement Committee) in Bangladesh, health programmes in Indonesia's Bali, MindaCom Net in Mindanao in the Philippines and PANAH in Pakistan. The performance of Asian NGO Coalition for Agrarian Reform and Rural Development (ANGOC), Japan International Cooperation Agency (JICA), India-based ActionAid International and Sri Lanka's Dharmavijaya Foundation and Red Lotus aims to enhance the capacities of the participants for community development, monitoring and evaluation as well as policy dialogue. One can also witness that the impact of cut-throat competitiveness in the private sector has enhanced capacities of e-governance programmes to attract clients, customers and investors through many innovative strategies. This has pushed outsourcing and offshoring, but with a fuzzy framework of cyber laws available in most Asian countries, the data protection and safeguarding of citizen's privacy continue to be a major deterrent for users. Many such fears have hindered the online public sector performance in comparison to the private sector where substantial investments and leadership have defined the safe parameters of interaction online. A number of indices have been developed by private organisations and statistical agencies which have helped to identify the gaps which have been holding back many countries of Asia in strengthening their decision making for the information infrastructure. The present work develops an argument that a study of comparative capacities of countries in adopting, innovating and indigenising e-governance indicates a possible direction of their progress and sustainable advancement.

7.3 Realising the Potential of ICT

Public policy which is driven by the 'information and communication technology' (ICT) has been referred to as 'e-governance'. ICTs encompass all those technologies that enable the handling of information and facilitate different forms of communication amongst human actors, between human beings and electronic systems and amongst electronic systems. These technologies can be subdivided into capturing technologies, storage technologies, processing technologies, communication technologies and display technologies (Hamelink 2001, p. 2). This technology is different from the erstwhile computer and even the present-day telephone technology. It encompasses a linear mechanism of transfer and forms a complex network of billions of nodes which become the transmission zones for information into many different directions.

Currently, ICT is playing a larger role in governance than all previous forms of technologies such as electricity, steam engine, automobiles, wireless and telephones. It goes beyond the dyadic structures of communication to function upon a 'network of networks'.[3] It touches every section of society, every department, every organisation

[3] Dyadic structures define relationships between two actors, whereas networks involve many actors with multiple forms of relationships. Lazer and Binz-Scharf (2007) have titled their chapter as 'It takes a Network to Build a Network'.

and every generation. It is unstoppable and governance different from the erstwhile factory-labour-capital-based system is nevertheless reaching the same destination as the previous one, which is that of an economic divide unless it is more holistically managed and able to bring one of the deepest dividing line between the old and the new form of administration. Whatever the obstructions against this change, the outcome is definite that no amount of opposition from vested interests can prevent the coming of the ICT-based governance. Barret (1979, p. 229) summarises the situation in the following words:

> it would be silly for anyone to announce that he is 'against' technology, whatever that might mean. We should have to be against ourselves in our present historical existence. We have now become dependent upon the increasingly complex and interlocking network of production for our barest necessities.

ICTs have given rise to a new form of lifestyle of 'splurge' due to rising consumerism intensified through ATMs, online payments through credit and debit cards and an ever-rising 'e-commerce'. It has also been deepening 'alienation' by obstructing the traditional contours of participation, markets and commerce. The digital divide created through an uneven access to technology amongst people as well as nations has become a defining feature for the distribution of economic opportunities.[4]

The early breed of governance specialists was sceptical about e-governance, while the ones who followed looked at it with distrust as in the mid-1990s the 'e' was not just unsteady and less confident little David challenging the mighty Goliath of governance. As Margetts (2010, p. 115) comments, 'Until the 2000s, academic visions of e-government tended to range from the highly utopian to the severely dystopian, with a lack of empirical research filling the middle of the spectrum'. Margetts could comfortably label them as 'Hypermodernists' (1999) as there was a strong parallel found with the Weber's notion of bureaucracy as a machine which would lead towards greater efficiency and rationality. In the post-2006 era, the Asia Pacific literature on governance had a number of writings on e-governance which had been localised and confined to best practices studies with affordability and accessibility as indicators of its success. Much of the governance literature dealt with the new public management studies and critiques which occupy this phase in public administration writings. A more holistic set of empirical analysis comes from Australia which has been used substantially in the writing of this book. One such analyst, Carol Johnson has contributed an Australian case study through a more holistically designed social sciences methodology in public policy. Much of the e-governance writings focused upon the impact of e-governance on citizens, public sector programmes or local initiatives rather than questioning the technology itself (Kulchitsky 2004; Torres et al. 2006; Jho 2007; Christou and Simpson 2009; Myeong and Choi 2010; Ahn and Bretschneider 2011; D'Agostino and Kloby 2011; Chadwick 2011; Zysman and Breznitz 2011; Mossberger et al. 2012). Some empirical studies on

[4] Herbert Marcuse has written passionately on technological rationality leading to some or the other form of enslavement of human beings in society: 'In a world where haves and have-nots exist side-by-side, and where the "free" enjoy their freedom off the backs of those that remain captured, freedom is merely an illusion' (Vieta 2006, p. 10).

e-governance (Wescott 2001, 2007a, b, 2010) and Paul Starr (2010) and Chadwick (2003) have taken a wider view of transcending programme-based evaluation of e-governance policies to capture the global currents which enable the flow of e-governance in non-Western regions. To quote two examples where this neglect is quite evident, the first is the Special Issue of Public Administration Review on the 'Future of Public Administration in 2020' edited by Rosemary O'Leary and David M. Van Slyke (2010). The issue has one article mentioning a borderless future of administration in 'Administration Without Borders' by Koppell. On further reading it suggests three entirely different key developments in public administration as 'the rise of mixed and nongovernmental institutions in public policy, the increasing importance of market mechanisms, and the assertion of meaningful global regulation'. Similarly, in a recent volume *Oxford Handbook of Governance* published by the Oxford University Press (Levi-Faur 2012), e-governance is featured only in two chapters out of the total fifty-two chapters. The first one by B. Guy Peters (pp. 113–128) 'Cybernetic Models of Governance' and the second by Eran Fisher (pp. 569–583) 'e-Governance and e-Democracy: Questioning Technology Centred Categories'. These chapters have again focused on the 'impact-outcome approach', i.e. studying the impact of e-governance on governance models, democratic institutions and administration rather than addressing the state directly on the choice and processes for the adoption of technology. This has enabled the state to go scot-free in deciding upon the nature of technology including its purchase, adoption strategies and role allocation. The gulf between the understanding of social scientists and technologists has further enabled technology to be adopted within the requirements of state politics. This suggests that countries with better governance systems would be adopting more relevant technologies as compared to authoritarian and corrupt governments. So the understanding about e-governance as one which facilitates transparency, accountability and democratisation of decision making institutions may not be a standard norm associated with its promotion and marketing. The present book has attempted to go beyond the 'impact-outcome approach' and make a critical survey of the manner and strategies which governments adopt towards Big Data, IPv6 transition, Cloud Computing and strengthening data security systems. This would define government's intention towards generating a strong well-connected and interactive society which could trust their governments as they put their personal data on e-governance transactions.

7.4 e-Governance as Inherently Decentralising

By the twenty-first century, e-governance had rapidly influenced and captured the architecture of governance. While the origin of governance goes deep into the constitutional and political discourse about state capacity, e-governance originates in a technological regime designed to facilitate business in a neo-liberal market model. This is elaborated through a case study from Australia by Carol Johnson in the fifth chapter of this book.

As the Internet history reveals, the fundamentals of e-governance were formulated and controlled by the mega information technology labs in the USA, supplied by data generated in the leading data analytic labs and statistical companies headquartered in New York, Washington, Chicago or Los Angeles. All institutions of ICT, which is the basic technology for e-governance, originate from or are Siamese twins of America's ICANN, IANA, WSIS or ITU. The country has an unending source of data on electronic information and communication knowledge that its sustenance would never be a problem even during the worst economic odds that derail its reputation for short durations. This data storage ability emerging as Cloud Computing and Hadoop in the intensive debate surrounding Big Data is becoming a concern as well as a challenge for the Asia Pacific countries. The next five years would decide the direction towards autonomy, decentralisation or the UN control over the ICT technology as highlighted through the proceedings of the recently concluded World Conference on International Telecommunication at Dubai in December 2012. It is interesting to note that less than half the ITU members signed the treaty which revised ITU regulations to bring in the government control over the Internet. It is interesting as it reveals the politics behind the governance of technology.

Looking into the nature and origin of the Internet, one gets an idea that this technology is rooted into a number of other subsidiary technologies which demonstrate an inherent decentralising tendency of the Internet. e-Governance combined with innovation can resolve a number of issues which delay or diffuse programmes in poverty reduction and well-being. However, this is possible only when nations are more forthcoming to collaborate, form partnerships and seek mutual sharing of successful practices as mentioned in the MDG 8 both within their country as well as with other countries in the neighbourhood. A large number of e-governance projects have been failing, bringing a huge loss to public exchequer and the tax payers' money. The government is expected to make efforts to fulfil preconditions of e-governance implementation, the most important of which is to implement inclusive governance reforms. It is time that the fifteen Administrative Reforms Commission Reports be brought out and implemented. It is widely seen that the success stories of e-governance are rooted into partnerships, collaborations, mutual learning and a wide-ranging experience and multicultural exposure of the decision maker. Ironically, when technological systems are decided for, this is by and large reduced to technological bureaucracy.

7.5 Exploring Epistemological Foundations

Epistemology of e-governance is rooted into the processes of governance and its increasing proximity to the Internet technology. The 'e' in technology represents a complicated network for the transmission of knowledge and controls and not just a sequential chain of mechanics based upon linear relationships. These networks also generate a hybrid of public (government at the core) and private (vendors and donors) institutions to deliver many core services to people to facilitate development.

A search for epistemology is an attempt to clear some errors in treating e-governance in isolation of the nature of ICT. Theory helps to generate an understanding on epistemological directions of e-governance projects and may help take a cautious view before venturing into *a megaproject which is* capital as well as risk intensive. Analysis undertaken in this section endorses a critique of positivism and social constructionist view which are distinguished by their propinquity to attain controls over technology. This section also discusses the nature of technological determinism which defines e-governance policies. Carrying on the critique of post-modernist and post-structuralist against state authority and highlighting the Gilles Deleuze and Felix Guattari's (1988) notion of cyberspace as 'rhizomatic' or 'nomadic', the theoretical expressions also bring in the understanding of Marcuse and Foucault on state authority and controls. The chapter has particularly attempted to bridge the micro- and the macro-level decision making on ICT, the distancing of which has been a major drawback of e-governance policies. The analysis of interactiveness in society as done by the sociologist Goffman (1967) has been particularly meaningful. His micro-level behavioural studies in sociological research are quite appropriate to understand human emotions and behaviour which work in their most pristine manner when human beings interact directly or 'face to face'. This chapter also discusses the historical and cultural context of ICT to demonstrate how certain religious cultures draw boundaries around the use of Internet, but the economic opportunities attract people and empower them to *break through* these limitations and realise the full potential of this new technology. However, neither the state controls nor the religious persecution has deterred people from navigating over the social media sites and forming ideological and professional networks.

7.6 New Networks to Study Networks

Networked governance is an expression used for modern-day governance where administrative agencies work in partnerships and in communication with many other governmental and non-governmental agencies for political, informational and social reasons.

A new vocabulary has emerged through the e-governance platform. The e-readiness, networked e-readiness and e-government readiness indicate inbuilt partnerships and collaborative activities. The challenge of development is more about managing networks and this has been sufficiently highlighted as the eighth MDG. The other seven goals are dependent upon the achievement of this last goal notwithstanding the miserable performance of nations on the achievement of this goal as the 2012 MDG Task Force Report suggests. ICT facilitates the networking process by making coordination and communication much simpler; the technological network has a human network behind itself which creates conditions for the use of technology. The Asia Pacific countries barring a few like Sri Lanka and Malaysia lack a committed leadership and strategic planning for the adoption of technology and strengthening institutions which govern technology.

Development and ICTs are related and nothing proves it better than the rising GDP of countries as the score on 'Networked Readiness Index' (NRI) goes up. NRI is propensity of countries to exploit opportunities for bringing development. This depends to a sufficient extent upon the granularity of metadata available in the country's systems. Most countries have been making serious efforts on refining their granular data obtainable from the grassroot level which serves as a design for the purpose of studying e-governance in different countries. This data has become finer over the last decade and requires new structures to manage it. Governments should be innovating structures to fulfil the requirements of data management and data analysis. From the 2003 UN Survey woven around the minimum threshold level of technological infrastructure, human capital and e-connectivity have now deepened to a complicated set of diverse data. e-Government Readiness Index (EGRI) is composed of three indices Web Measure Index, Technology Infrastructure Index and Human Capital Index. Websites are the first measure of e-government readiness as any further connectivity and interaction is generated through this. The availability and management of infrastructure along with the human capital to sustain it is a challenge for advancing on the scale of EGRI.

7.7 What Governments Could Do?

This book is primarily a study of the technology of e-governance and the policies which are formulated by governments to improve and sustain their adoption. Many such issues which appear as major challenges to e-governance such as the access, affordability and indigenisation of ICT have been treated as a natural outcome of government's application of appropriate technology through appropriate governance structures. e-Governance configures various departments, facilitates intra-agency coordination, generates specialised partnerships and creates knowledge networks and a well-structured road map for e-governance. The rapid increase in Internet, e-commerce and social media site users along with an overwhelming accumulation of data every minute is bringing new challenges for e-governance. This is leading governments to new concerns of managing Big Data analytics as a major source of knowledge power in improving governance and working of institutions. Governments have to urgently create task forces to monitor and manage processes of transition from a limited capacity IPv4 to IPv6 and to generate storage spaces through Cloud Computing. Much of the existing e-governance discussion bypasses the need for disseminating broadband to increase bandwidth and increase IP addresses, Big Data and Cloud Computing as fundamental technologies which kick-start sustainable e-governance projects and also prevent any e-catastrophe in contingent times. Many such efforts by governments also strengthen institutional memory and prevent personality-driven governance reforms which have become a bane of development and transparency in governance.

7.8 Australian e-Governance as a Case Study

The book also contains a detailed case study of ICT adoption in Australia in tune with the theoretical position taken in Chap. 2. This chapter has been a special contribution to the book by Prof. Carol Johnson who is one of the earlier authors in Australia who delved upon a more holistic understanding about the political-technology nexus of development and democratisation efforts. This case study is not just relevant to the discussions of the practical relationship between governance and ICT provision that has been discussed earlier in this book, it is also highly relevant to the theoretical engagement of how discourse around ICT is implicated in a rethinking of the nature and scope of both governance and the economy. *The case study also raises questions about how an attempted democratisation of ICT provision, in terms of extending government subsidised provision, is still constrained by the role of the private sector and market economics.* The analysis of the intersections between ideology, discourse and the legitimation of policy which is undertaken in the chapter also gives new force to Marcuse's (1964, pp. xv–xvi) observation that 'culture, politics, and the economy merge into an omnipresent system which swallows up or repulses all alternatives. … Technological rationality has become political rationality'. Similarly, Habermas's later observation that science and technology were now performing 'the function of legitimating political power' also has force, although Habermas arguably did not anticipate how that influence would continue during both Keynesian and neo-liberal periods of governance (Habermas 2001, pp. 96–101; Johnson 2000, pp. 123–144). The author discusses the ideological struggles to illustrate Donna Haraway's (1997, p. 270) point that 'technoscience' is itself a site of political contestation. The study ranges across political spectrum to interrogate Australian government's highly rated e-governance programme on the issue of 'usability of provided online information and services' and the impact of the digital divide on the ability of all groups in Australian society to access that information equally. Thus a larger part of ICT debate in Australia has therefore taken place in the context of the role of government in facilitating the development of technology infrastructure that is necessary for the provision of both public and private sector services in areas ranging from health to education, as well as the provision of ICT infrastructure that enables Australian businesses to develop and to compete in the world market. It is the development and outcomes of that debate which form the core of the chapter. Prior to the introduction of the Internet, the major focus of Labor policy had been on developing technology in Australian manufacturing industry. That focus had continued during the early years of the Hawke Labor government (Hawke 1983). However, Hawke's successor, Keating, focused more on ICT, emphasising its compatibility with the government's broader political agenda, including its commitment to globalisation and trade liberalisation. Developments in ICT also confirmed that older-style social democratic policies of nationalising 'physical capital' (never pursued extensively in Australia anyway for constitutional and ideological reasons) were outdated and inappropriate (*Sydney Morning Herald*, 13 May 1995).

Keating envisaged an Australia striding the global information superhighway, using the language and cultural skills of its multicultural population to engage with, and export to, the world. John Howard never embraced new information technology as enthusiastically as Paul Keating did. Visions of a cosmopolitan Australia celebrating diversity did not fit well with Howard's socially conservative picture of a society in which difference was ideally to be 'integrated' into the values of traditional Anglo-Celtic Australia (Johnson 2007). Nor did exciting visions of technological change gel with Howard's social conservatism generally. Labor argued that government needed to ensure that children from poorer families had good access to information technology and could develop the relevant skills, buy computers and help 'bridge the digital divide' (*Weekend Australian*, 20–21 October 2007). For Rudd Labor, as for Keating Labor, ICT was not just a technology, it was a particularly meaningful sign – and, in Rudd's case – one that arguably played a role in his defeat of the Howard government (see further Johnson 2010). The author concludes by saying that while the Australian government does not utilise the Internet in as authoritarian a way as its Chinese counterpart, it is also far from clear that the Australian government's involvement in the provision of the National Broadband Network revolves around a belief in e-governance as a constituent of democratisation processes. This becomes all the more obvious as the Australian government decided to step in to play such a central role in establishing a National Broadband Network mainly because the private sector had failed to do so.

7.9 Internet Freedom and the Law

The last section of this book deals with the activism that lies between the issues of privacy and freedom of expression on one hand and citizens' safety and state power on the other. Many issues which emerge as a terrestrial law is translated into the cyber world have been mentioned and explained. Countries have brought out their own designs of cyber laws for ensuring data security and preventing cyber crimes, but in the midst of this effort, the much required voices of the people are suppressed. Any restraint upon Internet freedom may block the diffusion of e-governance as it has happened in the last 2–3 years. Whatsoever be the structure of such a cyber law, it indicates a paradigm shift in the understanding of law. The gist of the paper by Johnson and Post (1996) suggests that the Internet should be self-governed rather than being governed by one particular state. Similarly the Google Executive Chairman Eric Schmidt and the Google Ideas Director Jared Cohen in their new book (2013) discuss the need for the governability of Internet in a manner that the emerging digital platform which unites people does not get mutilated.

The debate on control has been exacerbated by many incidents of administrative overstepping in resolving electronic communication conflicts across the world. In India the Palghar Facebook Case and a follow-up PIL against Section 66A of the IT Act have led to a phenomenal uprising of the young and a Facebook movement against authorities. This has also highlighted the British lineage of the IT Act

especially with Section 127 of the UK's Communication Act 2003. This section should be read in line with the famous House of Lords verdict[5] which read, 'The test is whether a message is couched in terms liable to cause gross offence to those to whom it relates'. It has also added the need to ascertain mens rea[6] for an offence of sending a message of menacing character or the innocent may largely get persecuted and implicated.

The *Freedom on the Net 2012: A Global Assessment of Internet and Digital Media,*[7] a US-based research group, has studied selected indicators for ranking countries about their status on the issue of freedom of the Internet. The indicators selected for assessment included many commonly undertaken measures by governments like web blocking, shut down of the net services, pro-government blogging, arrests for anti-government bloggers to the formulation of new regulatory and punishment laws, physical attacks, custodial torture, deaths and disappearance of anti-government e-writers. Of the Asian countries, only one country Philippines was rated to be actually free at a score of 23.

India has passed through a much avoidable situation in the context of its stand on Internet governance in the World Conference on International Telecommunications in Dubai in December 2012. While a proposal was prepared jointly with Brazil and South Africa, India was standing alone at the conference with its proposal and in the end even India did not sign the communication treaty which was her own initiative.[8] The objection of India and USA to the treaty was due to the fact that it contains a controversial Article 5B which is titled 'Unsolicited Bulk Electronic Communications'.

This concern of Internet freedom with civil liberties and grassroot movements has been brought out with two contrasting stories depicting the attitudes and understanding of the Supreme Court of Pakistan and that of the Philippines.

The study observes that e-governance research, which was understood just a few years ago as being 'highly utopian to severely dystopian' (Margetts 2010), is moving towards greater empiricism and institutional stability. This may not always be there as state power may design well-guarded panoptics of security against movements which expand the territories of freedom. Thus Internet governance requires a strong peoples' movement to deterritorialise the use of Internet, online interaction and people to people contact on policy issues. From outside it requires support from the universities and academic institutions to sustain this direction of freedom whenever the state power is overshadowed with the need for security from militancy and terrorism. The *success of e-governance is entrenched into the need for an ever-growing number of people* continuously going online and staying there for

[5] Paul Chambers and Director of Public Prosecutions (2012).

[6] Mens rea (or guilty mind) is a Latin term which is used to explain the motive behind the crime, suggesting criminal liability as 'the act is not culpable unless the mind is guilty'. Besides, there must be an 'actus reus' (or guilty act) accompanied by mens rea to constitute the crime. Technically, there is no criminal liability attached to a person who acted without mental rea.

[7] Kelly et al. (2012).

[8] Bhardwaj (2013).

rather longer durations to understand and benefit from the opportunities which are available online. Governments which restrict or discourage Internet use may also not encourage policy discourses and consequently decentralise governance which is offered through e-governance. e-Governance is ultimately a policy of converting real-life networks (hard networks) into virtual networks (soft networks) so that people are able to transcend the restrictions of geography, physical disability and time. Appropriately planned e-governance is truly an ascent of deliberativeness amongst people.

7.10 Recommendations

The e-governance discourse and its embeddedness in the politics of the Internet is now a concern of social sciences as much as that of the technologists. It is a welcome sign that social scientists are now finding reason to debate the ICT and its role in societies aspiring for development. However, it has failed to make effective inroads into public administration research especially the issues of coordination, partnerships and information dissemination on assets, policies and proper channels in governance. It continues to be used as a service delivery facilitator resulting into larger number of research studies dealing with case studies of e-governance programmes. Studies which attempt to link the macro-level with the micro-level governance and enhance understanding about the adoption of technology, policies and laws at these levels have been few, and as a result many institutional gaps and inactivity areas have still not been identified in the mainstream public administration research. The present work identifies certain gaps in the adoption and implementation of e-governance in the Asia Pacific which are demanding as well as decisive about the future of democracy in this region:

- There is need for a wider dispersal of broadband services which includes every other form of high-speed fixed (wired) access to an Internet speed of 256 kb or more through cable modem, DSL, fibre optics or fixed wired broadband. The ITU Report (2011) suggests that while the news about broadband access between 2007 and 2013 has not been very heartening for the Asia Pacific (increased from 3.2 % to 7.6 %) when compared to USA (increased from 10.9 % to 17.1 %) or Europe (increased from 18.4 % to 27 %), yet an overall picture remains relatively dull and slow. The focus of governments has not been towards a holistic public sector based e-governance systems despite the fact that *affordable* high-speed Internet not only brings more people together but also helps in accessing bigger sites and downloading more data to obtain economic opportunities as well as academic and market research. It is this convenience of access which has now become a key to economic growth and job creation in the Asia Pacific. There are several studies as well as reports from international funding agencies such as the World Bank and UNDP which have shown that the increase in Internet users demands faster access and greater data downloading. Much has been written on the relationship between the internet and development when governance is steered through by more insightful policies and

administrative leadership. There has been a surge of literature on the connection of internet to the GDP growth. A recently prepared Broadband Toolkit by *InfoDev* (http://broadbandtoolkit.org/1.3) and the International Telecom Union (ITU) Report (2013) suggest that a ten percent increase in broadband access results in 1.4 % growth in GDP and every 1,000 new subscribers of broadband Internet result in the creation of eighty new jobs. Governments have to play a key role in formulating policies and offering incentives so that private companies are encouraged to participate in providing broadband services alongside the extended employment base which emerges for skilled and semi-skilled young people in the local subsidiary industries spread around the broadband.

- Convert hard networks (social groups such as professional ,occupational, resident welfare, cultural, geographical, ideological, charitable, labour and voluntary unions) into soft networks (virtual unions or online chat groups). This effort may require skill building, training and capacity enhancement programmes to make human interaction more apt, meaningful and inspiring. Local agencies should be identified to generate skills and entrepreneurial development within such groups so that citizens are able to overcome their handicaps in learning and seeking economic and other opportunities.
- Attend to the deepening digital divide in each country as the social divisions get seated and cemented in e-governance systems. Women and girl children are the most affected lot in this technological centrifugal chuck as they are already sitting at the periphery of social recognition. Even boys may not benefit as expected since economic, geographic, community and caste structures dominate scenes in every Asia Pacific country. Any inaction on this front may reinforce Castell's premise that 'the rise of informationalism in this end of the millennium is interwoven with rising inequality and social exclusion throughout the world' (1998, p. 70). While this would create gulfs between the haves and have-nots in the world, it may not spare even some of the achievers in human development like Australia to come clean on racial and gender deficits of technology diffusion. Asia can experiment with the targeted family-based policies to help marginalised children come out of their social cocoon in technology empowerment. Just as the family planning successes in South Asia were related to a personalised family-oriented health volunteers, one can think around ICT volunteers at the grassroot level. Decision makers need to invigorate
- Regular supervision and area-wise data build-up by IT professionals should document the comparative speed and advancement of citizens in seeking e-readiness. District-level efforts in collaboration with local schools and private companies should assist in monitoring and supervision of skill development efforts. The cost of infrastructure requirements should be embedded into the contracts signed with the developers and colonisers seeking change of land use for infrastructural growth. Part of such land should be earmarked for such e-readiness programmes. The free distribution of laptops should follow after the human, infrastructure and supervisory requirements for providing training are met, without which this exercise is an incentive to convert laptops into cash and seek political support. Accountability of local skill building units (public or private) needs to be documented for records.

- e-Governance is no substitute for regular governance; henceforth the pace of administrative reforms need not be slowed or stopped on the arrival of e-governance alternatives. In fact there is no alternative to regular governance because only a well-functioning office can manage e-governance appropriately. A good e-governance system would have a right technology at the right place. Most of the ill-governed states would never move any further to the organisational portal as it involves interactiveness and policy dialogue besides the information being uploaded over it. Some offices move further and are applying technology-based solutions to governance problems, such as file movement, online grievance registering and application submission, demanding any government welfare fund, disaster relief and market information. If the service is not responded in time, then the citizen may be left with the same outmoded administrative system. If some of these technology gaps are filled with technologies such as statewide area network, IVRS, video conferencing and e-distribution of information, then e-governance would convert into an unstoppable force. For bridging these gaps, unwilling and weak governments would prefer to hire a consultant or an NGO to do the job for them.
- Convergence, interoperability and diffusion should be integrated into the design of ICT technology. Asia Pacific countries have rapidly crossed the expected number of Internet and mobile users in the last three years, which suggests that further tapping this potential into governance needs urgent attention. While this needs to be pushed further through inexpensive handsets and affordable and even free Internet broadband services in some areas, the uploaded content should be made relevant to the requirements of users. Thus monolithic ICT programmes should be decentralised both technologically and institutionally so that underprivileged users are able to seek appropriate information and economic opportunities for development.
- Efforts towards increasing the number of data analysts in government and larger governance areas need specific promotional policy. A sincere commitment towards the adoption and understanding of Big Data can become a source of national power. For example, all schools could be linked, and their segregated data on teachers' abilities; student-teacher ratio; time spent on each chapter-wise teaching; time spent by each student in classroom, per subject and in extra- and cocurriculars; students with disabilities and attention given to differently abled requirements; transport to schools; medical attention per week/per student; stability of teacher's tenure; and gender attitudes can be an unending comparative picture about school education in this country. Educational policies thus designed not only could bring a well-monitored governance of education but also reduce politics behind many populist structures which prevent the advancement of certain geographic areas and certain class of children. However, this could be possible if countries are able to generate a band of socio-technical leaders to lead this effort with discipline and understanding. This suggests the close connection between achieving MDGs in a cost-effective and timely manner through the adoption of much required data storage and analytics demanded within e-governance structures.

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