

DEXA Covering 15 Years of E-Government Research

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Abstract. The term “Electronic Government” became a common label fifteen years ago and since then DEXA has covered the development of E-Government within its Conference Cluster. Such an anniversary offers an opportunity for reflexion. DEXA Aix conference 2002 was the first big international conference dedicated to e-Government R&D and brought together the European community exerting considerable influence on outlining e-Government. First this defining phase is sketched; then reflexion turns to future prospects.

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1 A Suitable Moment for Reflexion

Nineties turning a new century the term “Electronic Government” became a common tag. Having employed that label for fifteen years DEXA Valencia can be regarded as a proper forum to recall the beginning and to reflect perspectives. The sweeping success of e-Government was due to the strong appeal for the use of information technologies in Government. Substantial improvements were achieved in the ways in which Government works and interacts with the addressees of its action. Change became pervasive and Government went through a permanent “e-Transformation”. Entirely new ways became apparent in which public governance can be exercised.

From the very beginning DEXA has covered the development of e-Government within its Conference Cluster, first with workshops and then with founding a particular Conference series dedicated to R&D in e-Government. The first such conference was within DEXA 2002 in Aix-en-Provence [6]. The Aix conference was successful in convening the scientific community and the “Aix Declaration” exerted considerable influence on defining e-Government. One year later the EU promulgated the *Como Vademecum* which was heavily based on the Aix declaration. Aix became the beginning of a line of e-Government conferences within DEXA. The label EGOV was later changed to EGOVIS which accentuates the Information Systems aspect.

2 The Aix Declaration on E-Government

The Aix Conference was more than a convening of the scientific community; it brought in addition a consolidated view on e-Government. So the declaration adopted at the conference is worth to be cited. The following theses were proclaimed to the public:

1. A holistic view: Moving ahead means having an integral view. Clear strategies and perceptions are a prerequisite to facing the challenges and making the best of the opportunities created by technological progress and its intellectual mastery. E-Government is more than a new wave of administrative modernisation, e-Government means a permanent e-transformation that enables governance on a comprehensive scale.
2. Service provision as focus: Citizen portals and service delivery to business, to individual citizens and to communities reflect the viewpoints of individual citizens or of companies, looking at government and administration from outside. So the portal part is of prime concern, yet it should be noted that communicating with agencies is only the tip of an iceberg: the entire scope of administrative action has to be involved.
3. Redefining governmental processes: Thus, a thorough rethinking of the machinery of Government is mandatory. It will reveal many more situations where IT as an enabling force can enhance effectiveness, quality and efficiency of public action as well as its legitimacy. In many respects the legal framework of these processes has to be changed, and new institutions will emerge which fit the new ways of producing and delivering public services.
4. Knowledge enhanced government: A shift of focus from structures and processes towards content reaches the very heart of administrative work: taking decisions. Management of legal/administrative domain knowledge is a decisive driver in governance. In addition, understanding the connections between processes and knowledge will improve design. In the agency of the future human and software expertise become totally interwoven – knowledge enhancement at its best.
5. An engineering approach: A sound engineering approach is indispensable. At bottom level this means a suitable IT infrastructure - unhampered communication and cooperation, availability, security, data protection, etc. At the application level it means smooth cooperation, high usability and a design integrating important perspectives: citizen service, process reorganisation, knowledge enhancement.
6. Reference models and administrative standards: Reference models and pilot projects give an idea about the full extent of the possibilities available. Above all, issues of standards have to be tackled: establishing a common understanding of processes, building on widespread administrative concepts, ensuring interoperable platforms; providing definitions for data interchange.
7. Change Management: Success can only be achieved if a quantum leap in the innovative capacity of the public sector is achieved. Critical success factors include strategic thinking and a farsighted allocation of funds for creating infrastructures and avoiding reinventing the wheel in different places. Best practice and guidelines derived from landmark projects will have to replace the attitude of curious but indiscriminate trying out of different approaches. Competent change management will have to place people first, and an unprecedented qualification offensive is needed to communicate the necessary know-how.

3 DEXA Aix and Defining E-Government

The Aix declaration can be regarded as a culmination in the line of efforts defining e-Government. A precursor part was initiated by the Special Committee on Governmental Informatics of the German Computer Society (GI). So in 1999 a collective volume on e-Government was published on behalf of the GI Committee. Then the year 2000 brought the Memorandum “Electronic Government for Modernizing State and Public Administration” (sustained by GI together with VDE). Concerning citations see [5] respectively [1].

DEXA Aix was the first international e-Government conference with R&D Design and convened the scientific community in a critical mass. No wonder that the Aix declaration exerted heavy influence on defining e-Government. Shaping the EU Como Vademecum 2003 described in next section. Other impact concerned influencing various events. As example the conferences in Schiras and Damascus are quoted [3, 4]. Quite important was an incessant spurring of the internal discussion within the scientific community. Especially, the subsequent DEXA conferences in Zaragoza and Prague were places of a broad discussion (as documented in the proceedings [7, 8]).

In that way additional topics came in the limelight. Quite important was the focus on public governance. This meant considering the whole governance cycle which includes many activities: democratic deliberation, policy formulation, citizen involvement, law making, execution of policies, evaluation etc. It is worth noting that herewith some old ideas formulated in the Sixties as “political cybernetics” by Luhmann were recalled. Ten years ago the definition phase came to a provisional close and so we cite the official EU definition: “e-Government is the use of information and communication technologies in public administrations - combined with organisational change and new skills - to improve public services and democratic processes and to strengthen support to public policies.”

4 Impact for the EU: Shaping the Como Vademecum

The Aix declaration drew a lot of visibility and subsequently Klaus Lenk and I were both invited by the EU to join a small drafting team for a Vademecum to be presented at the EU Ministerial Conference on e-Government in Como 2003 [3]. Under the management of EIPA (Cristine Leitner) such a “Vademecum” was created and the content was heavily shaped by the ideas and concepts discussed in the sections before. The title was “eGovernment in Europe: State of affaires”. These endeavours have to be seen in the perspective of the European Commission intending to influence the course of e-Government. Although from a legal point of view the EC has no direct influence on the administrations of the Member States, in an indirect way considerable influence is exerted. For the most part, the EC finances a lot of multinational projects within the Research Framework Programmes.

The explicit goal of the Como Vademecum was giving an overview of the vision and reality of e-Government in order to help decision makers in the conceptualisation and implementation phases of e-Government projects. The Como Conference was quite big and promulgated also a portfolio of project cases and three winners honoured by the

biennial “eEurope Award”. In the awards competition projects were sought that would be declared as model cases. Such projects have to provide a valuable and sufficiently detailed list of advice which can be given to others in e-Government. By the way, one of the 2003 Como winners was an Austrian project, namely Help.gv.at. All in all, the Como event brought high attention.

5 E-Government as Permanent Transformation: A Vision and a Construction Site

Como was also quite successful in building a general awareness what e-Government is. The idea of good governance leads to the concept good government. The following demands are key marks: citizen-centric in attitude; cooperative in nature; seamless and joined up seen from the clients; multilevel and polycentric in composition. Simultaneously basic qualities are enhanced, so the effectiveness and efficiency of public actions. Thus, e-Government is closely linked to permanent change; it is a persistent process of transforming public governance and administration. On the whole, it is both, a vision and a construction site.

Progress is no easy grasp as in Government we deal with a rather complex system. Regarded in a systemic view we consider several subsystems. Basic is the governmental arrangement: public authorities, public services, political decision making, legislation, jurisdiction and executive bodies. Next view concerns the surrounding conditions such as society, economy, environment and culture. Then the focus shifts to technological and political drivers, just as to mention societal needs, political decisions, ICT innovations. All this has to be directed by particular goal functions such as efficiency, effectiveness, economic and public value.

Transformation starts with a thorough rethinking of the machinery of Government. This leads to fundamentally redefining the production processes. Thereby the entire range of relationships of public bodies to clients and partners is transformed. E-Transformation takes place in many domains and the core patterns are alike in their basic composition. Principal feature is using telecooperation as prime mode of work. Set off is creating appropriate activity/business models and integrating flows of information. Fundamental needs have to be met such as providing a protected and trustworthy environment and safeguarding secure and legally binding transactions. Concerning the governmental domain, transformation has three main goals:

1. Striving to improve public services
2. Aiding democratic processes
3. Strengthening the support to public policies.

Reflexion means both, analysing the roots and deliberating the future. Progress builds on solid trends that already now can be observed emerging. Here some relevant issues are sketched.

6 Proactive and Borderless Government

Key for progress is proactive Government which means providing additional services to citizens. Data collected for several purposes could be merged and utilized to build additional systems. For example, public administration is already helping citizen access data from banks, employers, and pension funds to make their tax declarations easier. In the same way, local government may inform citizens on entitlements or possible fee reductions etc.

Another important point is having services crossing borders. For example, a classical case is encountered when a European citizen works in multiple European states throughout his career, and ultimately retires in and asks for his pension from yet another state. In this situation, which is faced by an increasing number of European citizens, the pension organisations from the various states must cooperate.

7 Enhanced Usability

For e-Government achieving a high up take is central. Thus, a major concern has to be directed towards enhancement of the user-interface. General deficiencies occur quite often: a lack in targeting the audience; an inadequate and inconsistent design; lacking of comments and adequate examples; sloppiness in maintenance with outdated pieces of information. Improvements go several ways and even plain rules will contribute to usability such as “Less is more” and “Keep it straight and simple”. More complicated interaction processes need a deeper analysis. Essential enhancements comprise both static and dynamic help. A static support may include describing clearer scenarios or having better help-functions. Instruments for dynamic help are software agents.

Administrative applications can often be improved through the addition of knowledge-based components, which increase the capacity to understand the meaning of queries. In particular, semantic-based technologies show great promise. Ontologies are standardized representation of knowledge as a set of concepts within a domain, and the relationships between those concepts. A particular ontology provides a shared vocabulary and taxonomy. So a domain can be modelled by defining objects and their properties and relations. For intelligent modules process knowledge is collected based on expert experience from different cases.

8 Decision Making and Meeting Support

A broad range of methods and tools are available to support decision-making, so analytical models, information retrieval, simulation and knowledge-based systems. Decision models have to be regarded with a grain of salt. Usually information is oriented to a special and restricted purpose and must be tuned with respect to user and aim. Therefore, decision models are in some way restricted. Another problem is that decision models combine diverse categories of data which makes data integration central. The collections of data comprise data of diverse type format originated from different sources, so files, databases, legacy system etc. Another critical point is getting

key numbers as output and having data visualised. Usually information gets abstracted in some schematic form. Focus is put on getting results which flow into the actual decisions of an enterprise. In consequence, proper abstraction turns out to be a central question in decision making: “Which data to take and which data to neglect”.

Meeting support can be useful in negotiations and mediation procedures as well as in policy formulation. Such support systems aid the meeting process itself as well as various sub tasks, including agenda setting, problem structuring, evaluation of solutions and assisting mediation. Additional auxiliary functions concern facilitating brainstorming and guiding argumentation. Argumentation systems (IBIS as precursor) structure arguments in establishing and connecting issues, positions, pro- and contra-arguments.

9 Handling Legal Information

Legal drafting needs instruments, so tools for modelling norms and information retrieval. There exists a long history of modelling norms. Sixties was the time of the precursors with cybernetic thinking en vogue. In the Seventies legal databases and information retrieval blossomed and first applications of artificial intelligence came in. Nineties have brought a sound methodological basis including essential work on ontologies and building tools.

Information retrieval has not changed since decades and is still keyword-oriented. Urgently needed are devices for case based retrieval. There are research systems using deontic logic, probabilistic measures and neuronal nets; yet they have not matured to praxis. Another point is handling the information flow between stakeholders from the beginning to the authentic publication. Stakeholders are ministries, parliaments, political parties and consulting bodies.

Some problems appear in cross border usage needing equivalent legal terms in different languages. It is difficult to find an adequate meaning as legal terms are often left vague on purpose. Hence the nature of the administrative process allows some openness and discretionary power of street level bureaucrats. This is a common feature found in domains such as intellectual property, licensing, certificates and academic degrees. To improve the situation the EU started “openlaws activities” aiming at obtaining legal information more easily. This comprises in concrete several efforts, namely creating a network of legislation, case law, legal literature and legal experts, as well on a national and a European level.

10 Knowledge Management

Competition is growing everywhere among countries, companies and people. With increased pressure from competition knowledge is seen as panacea or at least as part of a remedy. The role of knowledge in institutions is vast so as intellectual capital, as productive resource or as instrument of power. Even when knowledge eludes clear cut definitions, in an constructive approach knowledge can be comprehended as “arranging pieces of information and offering correlated interpretations”. According to such

interpretations knowledge is an abstract issue which is goal-oriented, context-related and subject-relevant. In design knowledge is converted, so in analysis from implicit to explicit and in constructing from explicit to explicit.

Technical handling of knowledge requires storability. Formalisation is the basis for storage, transfer (and if applicable automatic processing). For being formalized knowledge has to be made explicit. The range of formalization is broad reaching from simple structures and hypertext to rules in expert systems and software agents. Knowledge Management Systems (KMS) contain several components so repositories, ontologies, instruments for data integration as well as functions for collecting and dissemination. KMS emerged as a scientific discipline in the earlier Nineties. Many systems are techno-centric quasi built around a tool and focussed on improving knowledge sharing.

11 Open Government

Origin of the concept goes back to the American and French Revolution when Freedom of Press was proclaimed. Goals are quite diverse yet the universal focus is public value which is linked to several individual and societal interests. The range of objectives goes from improving transparency and using Open Software unto making public value from governmental data and heightening the quality of life by useful applications.

Open Source governance is a political philosophy with focus on decision-making methods that better cover public interest (more open, less antagonistic). Open Source software should enable any interested citizen to add to the creation of policy. A prevalent issue is Open Government Data. The fan of Open Government Data is broad: micro-census, geographical data, regulations, traffic data. A number of institutions provide open data creating an e-Government demand pull. Successful applications are created in cooperation of agencies with private enterprises.

12 Mobile Government

The widespread use of mobile devices makes access to the Internet quasi-ubiquitous. The fact that such a large proportion of citizens use mobile devices such as smartphones and tablets to access the Internet has serious consequences. Mobile devices support keeping in touch, prolong availability and change patterns of communication. Additional impact is enforced via synergies, so location functions bring quite useful services.

Especially, Mobile Government and social media reinforce each other in a co-evolutionary manner. The general administrative realm is improved by obtaining feedback from citizens, an increased contact with the public and a better cross agency cooperation. Quite substantial is the impact on participation aiding democratic deliberation, advising of other citizens, assisting monitoring and law enforcement. Thus citizen involvement achieves the aim of improving public responsiveness and reconnecting voters with politics and policy making.

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