The CIO and the Digital Challenge

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Abstract Digital native organisations are setting new rules and expectations around Information Technology. Not only they are disrupting industries and business models, but also the IT practice itself. Their methods and standards are discontinuing older, established enterprise IT disciplines (like project management, system design, etc.). CIOs and the IT functions, in traditional organisations, are challenged daily by the increased expectations of CEOs and board members. Business leaders are accustomed to consumer technology standards, and want to innovate their business accordingly. Because of it, IT departments sometimes lag behind digital transformation programs. This chapter isolates and analyses five major changes factors impacting the IT practice: (**1**) ***Pull-driven development***; (**2**) ***Higher speed***; (**3**) ***Technology democracy***; (**4**) ***New suppliers ecosystem*** and (**5**) ***Social nature of digital***. These elements push for new vision, behaviour and leadership from CIOs and IT professionals. They also suggest a consequent adaptation of IT practices and strategies to overcome the change. Information Technology traditionally runs enterprise resources and assets, including its wealth of data. The commitment of the IT function is mandatory for succeeding in any meaningful, long term innovation journey. This chapter offers new options and views for those CIOs and IT professionals deciding to undertake a challenging change process.

The views expressed in the paper are those of the author and do not necessarily reflect those of his employer company.

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1 Why Digital Is Disrupting the Traditional IT Practice

The rise of digital is acting as a disrupting economic factor for most business and industries in mature economies worldwide. Digital native organisations (Amazon, Google, Uber, AirBnB etc. being the most common examples) have reshaped a growing number of markets through innovative offers and business models embedding Information Technology at its very core. In facts, Information Technology turns innovative business models into real ones by connecting customers with products and service providers, using computing algorithms, simplifying tasks once considered complex, etc. New digital players expand their business by eroding market shares, customer base and profitability to traditional players. In a growing number of cases, entire sectors such as libraries, bookshops, hotels and public transportation have been reshaped. Digital leaders dominates new markets where Information Technology is promoted as a core competing factor. Now, is this just the "new era" that most CIOs—historically promoting Information Technology as a competing factor within their organisation—have been fighting (and asking for funds) for many years? Are they, and their IT departments, gaining more power across such business technology intensive times? Are they, and their IT organisations, heading the digital transformation within their organisation, helping their business compete from a strengthened position? Although logically consequential, the answer to such inquiries is negative in many cases (Cox 2014). A recent survey by The Economist magazine titled "The disruption of the IT department" concludes that "…current wave of technological innovation has more profound implications for the IT department than any other function".[1] In fact, a closer observation on how established traditional organisations react to the digital challenge shows that, in many cases, digital transformation strategy is often delegated to or executed by newly established Chief Digital Officers, whose background is dominated by Marketing and sales experience.[2] CIOs and IT departments are often not leading such change initiatives. In a more limited number of cases, they do not even play relevant roles in the digital programmes. Only 3% of CEOs consider CIOs as a source of digital and IT-related business ideas, according to Gartner reports.[3] In fact, the digital factor acts as a powerful force by discontinuing the way organisations have historically dealt with Information Technology. Digital moves IT from a hidden role supporting ancillary, back office functions (Administration, payroll, etc.) to a core compelling factor. Digital Technology is more and more bonded with business model and revenue generation. It brokers a growing portion of the customer's experience. It generates and embeds product or service differentiation, sometimes impacting an organisation's survival itself. At a given extent,

[1]See also http://transformingbusiness.economist.com/the-disruption-of-the-it-department/.

[2]See "The 2015 Chief Digital Officer Study" published by PWC, dec 13, 2015, according to which 13% of companies in Europe do have a CDO.

[3]See: "The CEO perspective 2016: how CIO Should respond" by Mark Raskino—Barcellona Gartner Symposium 2016.

Information Technology could be redefined into *Digital* as it moves away from a complementary, technical matter dominated and understood by insiders (and often left to them) into a core factor enabling mass markets competition. Mobile, Cloud, IOT, Social, Analytical and Cognitive are the typical technology set developed to fight into digital markets. In this perspective, Information Technology stands for Digital in the way that car manufacturing stands for Motorsport, where competition is the differentiating factor for both cases. Many CIOs and IT teams are then exposed to new tensions and challenges as digital is escalated into a top priority within their organisations, and technology capabilities need to be incorporated into new products, new services or processes, or it is simply used to understand and attract customers or a competitor's strategies.

Further to this, the accelerated maturation of digital technologies,—primarily the cloud—pushes traditional internal IT practices, such as infrastructure management, towards obsolescence and potential irrelevance. Easy accessibility of 'pay per use' digital services on the consumer market (e.g. Infrastructure "*as a Service*" provided by players like Amazon, Google and others) makes the 'buy' alternative a cheaper, quicker and better option than traditional 'in house' IT infrastructure management (the 'make' option), where scale factor and technology trends make these costs and quality gaps irreversible. Any defensive reaction eventually adopted by IT management would certainly lead to a long term failure.

We have identified five elements driven by digital and consumer technology practice which are redefining Enterprise IT (see Fig. 1).

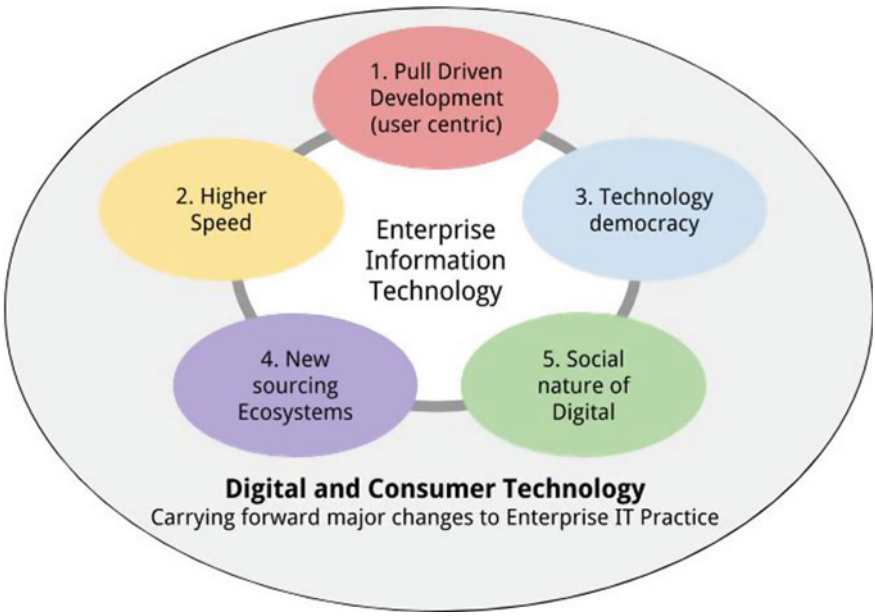

Fig. 1 Digital and consumer technology drivers changing Enterprise IT

1. User Centric design (from Push to Pull driven development)
2. Demand for higher speed
3. Technology democracy
4. A new sourcing ecosystem
5. The social nature of digital.

Each of them will be dealt with in the following paragraphs as a conceptual reference to promote higher awareness both for IT Professionals and Business decision makers, in order to feed views on possible future developments of the IT function into an organisation's strategic asset.

IT leaders and professionals are required to undertake unprecedented changes in those sectors where digital has emerged as a critical competing factor, and the board and senior management are asking for higher speed on technology related matters, so creating new interactions—and professional competition too—around digital technology governance.

But, on the other hand, the availability of Information Technology culture is crucial for organisations in order to:

- Match scalability, operational continuity and security requirements, sooner or later compelling elements of any serious transformation program
- Assure connection between digital innovation projects and core corporate assets and resources, normally run through traditional information systems. This condition reduces risks of creating "digital innovation islands" instead of a true digital transformation
- Fully exploit data, and sustain a data-driven strategy and analytical culture
- Nurture continuous innovation, as deeper understanding of technologies is crucial for upgrading business models, and creating differentiation and sustainability upon it.

CIOs and IT people can play relevant roles in those contexts where these requirements become clear, by redefining their value proposition accordingly. Modelling and systemic approach, design attitude, passion in technology, project culture, operational and security professionalism, as well as process knowledge are still valuable ingredients and typical skill assets of IT people. But CIOs and IT People also need to send new, clear messages to their organisations; leave old positions which are no longer sustainable, like a monopolistic approach over technology choices or conservative reactions to make-or-buy challenges—e.g. Infrastructure delivery or service management. Focus on true organisation priorities and consider technology as a means, not as its goal. Finally, obtain inspiration from successful digital start-uppers, who never seem to lack three conditions.

– Be obsessed by sustainability, by putting the business case at the center of any project
– Stay risk oriented
– Be intimate with software.

2 From Push to Pull Driven Development: Straight Towards a User Centric Design

The digital era has largely redefined market rules by shifting power in the hands of individuals. Access to a broad range of information, products, education, social relations is by now a vested option for million of connected people who can access the internet through their personal devices and apps, evaluate alternatives and expect to make their free choices in an open, virtual space, far beyond their formerly established constraints. Booking flights through one or more booking platforms, aggregating thousands of offers, options and prices is just one example of market pull approach, which also shows how the digital paradigm used by low cost airlines as they entered the market, and later on by web booking platforms has worked by focusing on travellers, handing over booking operations straight to them, while cutting old brokers (travel agencies) out of the game. New entrants have considered final users as the most powerful driving force of change, and they have used digital technology to focus on their needs (convenience, low prices, simplification of travel planning) delivering powerful and exciting customer interfaces, a better experience and, finally, lower prices (Ismail et al. 2014). There are more, less visible digital technologies increasingly being used now by airlines to optimise airplane load factor, pricing, and other key business parameters too, in a context of still complex, physical operations and capacity-driven industry structure. Nevertheless new, pure digital players (Expedia, eDreams, Kayak, among others) who use technology to support customer centric strategy have gained strategic market niches within a complex global industry. By doing that, they also set new, higher standards of direct interaction with customers and new higher expectations which are now spread across the whole industry.

In general, more free choices made by a large mass of individual users have determined the growth of most of digital and consumer technology markets, from gaming to smartphones, up to the web space. Success was, in fact, achieved by organizations resolutely determined to gain customers' attention and complicity through their own technologies embedding and developing value propositions (and finally their business models too).

A search on the internet, as well as the download of an app to play personal favourite music on a smartphone are gestures deliberately decided by individuals who feel their needs paid out by a grateful end to end experience; just by doing this, they are determining the success of its creators. The use of information Technology has consequently overtaken its previous limits—just consider the capacity to treat, store and retrieve huge volumes of unstructured data as example—right in the digital space, because of its "Pull" drive. It's no surprise if recent, amazing steps ahead in computer human interfaces have been mostly driven by consumer technology companies like Apple, Google or even by much smaller firms like Instagram, Splice or Pandora, instead of established players operating in the B2B Information Technology market. Higher intimacy with customers is still piloting computer applications far beyond the old borders of personal privacy when

considering fitness and health app providers, who treat sensitive personal data with the full consent and collaboration of millions of individuals, whose life is under tracking by someone else.

Enterprise Information Technology instead, has historically selected and funded its projects through a top-down approach. It has delivered cost and control improvements through the massive automation and standardisation of repeatable processes like payroll, administration and cash operations. The differentiation of processes, proliferation and personalisation of use cases has been treated as a driver of inefficiency and cost increase. Exceptions to standardisation have been reduced up to the optimal trade-off and—still more relevant—the user's adoption has been achieved through hierarchical levers (the adoption of a new stock management procedure has never been a choice for warehouse clerks). Marginal investments over more "user friendly" interfaces have been developed as a complimentary lever to reduce change attrition, being sometimes considered as a "tax to technical ignorance" to evade wherever possible.

Information Technology professionals need to be aware of their cultural legacy. They must open to a different, much more radical User Centric approach. Digital technology democracy is moving power into the hands of technology users; this is happening within enterprises and institutions too. IT people need to realise that the choices and behaviour of individual users will decide who will survive in the market, and who will not.

3 From "Getting It Right" to "Failing Fast": Managing Innovation Through Technology Speed

Digital experience is normally coupled with a dramatic acceleration of IT artefact production times, when compared with equivalent processes of traditional enterprise IT practices. Consider as an example the average frequency of version upgrade of apps on mobile stores, often delivering two or more releases per month, where more traditional enterprise IT Systems normally undergo the same frequencies of changes in a year. Similar examples take place in the web space too, where popular portals supporting complex information services like Google or Facebook are subject to almost continuous releases (Beta permanent versioning).

Speed increases not only apply to software change management processes. The elapsed time required to release a new digital product version from business requirements to first product availability is constrained "by design" into typically 1–4 weeks within Scrum sprint frameworks (Sutherland 2014), while more traditional, "waterfall" enterprise IT projects could last months or years. Compression of time is achieved by reducing business analysis through highly interactive and focused sessions, freezing versions until the next release, fast availability of prototypes which anticipate customer interaction impacts (e.g. by using design prototyping public platforms like InVision), implementation through web pay-per-use

infrastructure and software components, high reuse of software and public APIs, reviewed testing policies supported by automation and external sourcing. The growing spread of Agile and Devops disciplines support such changes on a methodological perspective, while an increasing number of available public platforms (e.g. Github or Amazon AWS) offer easy, wide and democratic access to productivity and speed improvements. More interestingly, such speed improvements are not associated with any quality compromises; on the contrary, they seem to offer a new, effective way to control risk for those investments exposed to highly volatile and uncertain environments (e.g. products innovating customer's experience), by reducing time and cost required to check out project assumptions and consequently drive and adjust further developments and investments. The alternative going for higher investments and longer time spent in the analysis and design phases—typical of waterfall methods, used in many IT Projects—may turn into a late and expensive discovery of discrepancies between hypothesis and reality. Deep business implications of such relationships between speed and frequency of artefact development cycles and successful investment management, mostly in the field of digital products development, have been widely described by Eric Ries in "The Lean Startup" (Ries 2011).

CIOs are now facing the challenge of re-adapting the governance of technology investments accordingly. IT investment decision making in the '90s and early 2000, was crafted around a deterministic, predictable approach in many IT Departments. The past era of technology standardization (i.e. erp, scm implementation) requested a top-down governance approach to select investments and drive change downwards, focusing the whole organization on specific and predetermined KPI improvement goals. IT Project methodology was based on best practices (e.g. PMI, PRINCE2) mostly adopting a sequential and deterministic paradigm. Technology itself was not even ready to offer ways to cut implementation times or reduce project cost thresholds (e.g. by providing ready to use resources on the cloud). But a much wider availability of ready-to-use digital resources is now driving IT into new governance paradigms, where a traditional approach must be integrated with a more empirical and experimental one. Improving the speed and the number of available options (flexibility) within a project reveals it to be a much a more effective strategy than asking for time to take a single "silver bullet" shooting option. Project strategy dynamically emerges as a result of a number of reiterated propositions, when prototype outcomes are analysed, interpreted and adjusted in strict conjunction with project objectives. A growing availability of contextual data showing relationships between the digital artefacts and their users (e.g. think about transaction logs, in store camera shootings, store wifi reports when developing a self service digital kiosk within a restaurant), together with a frequent collection of user insights shortens feedback loops and controls project risks. However an "engineering" and sequential mindset of some IT people may sometimes act as a barrier to this shift, when IT people expect completeness of requirements and clarity of directions in contexts where clarity may only be around goals, expected outcomes and constraints (speed being among these).

4 The Era of Technology Democracy: Rise and Establishment of the Digital Connected Community

The advent of Salesforces.com in the early 2000s, and its fast-growing dominance[4] in the Enterprise CRM Software market achieved in less than a decade to the detriment of giant enterprise software incumbents is probably one of the most disrupting events in Enterprise IT practice in recent times, as well as a didactic case of the direct impact of Digital on Enterprise Information Systems. The CRM software market before Salesforce was characterized by licensed products run on customer's premises. Its selection and availability for use required projects involving IT professionals involved in technical activities, supporting Sales and Marketing departments often through third party system integrators, finally delivering customised single instances of the product. Salesforces entrance into the market has marked a different—and much simpler technology adoption pattern. Software is supplied as a service available for use through a powerful public cloud platform, simply accessible through the internet. Infrastructural IT activities required to run it are then limited to modest network security access configurations. The success of the platform was consequently decreed by its users community driving its selection process—Sales and Marketing professionals—appreciating the direct focus on customer engagement and marketing targets results, attractive interface, users self configuration capabilities, open connections to social networks, a wide offer of built-in apps and a rich software marketplace fed by independent third parties, and many more elements, normally associated with a digital consumer's experience. The whole of it, built upon a strong and solid technology core. Out of the Salesforces example, similar cases have marked the course of more and more enterprise software segments like HR Performance Management, Purchasing market platforms and others. Sometimes, such adoptions have taken place as a hidden process to IT organisations, being originally classified as "shadow IT". Such closed loops between users (consumers) and technology providers, lead to the disintermediation of IT organisations and create new tensions and challenges on the ability of IT to contribute to business technology design and value generation. More in general, the availability of cloud applications and pay-per-use technologies is shifting technology choices in the hands of final users out of deputed technical organisations. This trend reverts traditional enterprise top-down technology governance into a bottom-up process (see Fig. 2). Similar patterns have already emerged with enterprise personal devices, where company provisioned PCs and mobile phones have mostly given way to "Bring Your Own Device" policies driven by users' ambitions to decide on their technology by themselves, or in the area of customer care and support, where people are addressing their complaints or sharing their request for support on their preferred

[4]Salesforce Leads the Worldwide Enterprise CRM 2015 market revenue share with 19,7%, ahead of SAP (10, 2%) Oracle (7, 8) and Microsoft (4, 3),—See Gartner's "Market Share Analysis: Customer Relationship Management Software, Worldwide, 2015—Published 12 may, 2016.

social networks like Twitter, Facebook or others, instead of queuing their complaints within an official and often frustrating IVR Call Center. Security itself is evolving accordingly, moving away from pure perimetral to logical access control, integrated by big data, real time analytics and other technologies, integrating social login credentials and authentications across different platforms, enabling more open architectures, where private networks and on premise datacenters are no longer the center of the universe. The interpretation of these trends, trade-offs and side effects on security, scalability and integration is generating different answers from different CIOs, depending on Industry characteristics, company culture and CIOs personal attitudes. Nevertheless, even within less exposed environments—e.g. sectors where security is predominant—It is becoming clear that CIO's full monopoly over technology is no longer sustainable, and some degree of opening to technology democracy must be found. By giving up constraints, past CIO's gatekeeper's power shifts away (the keys of its data center are no longer a source of power) and the battle for business relevancy must be fought on different fields. Integrating technology components and external services within a consistent business model as well as making information available and accessible across the different stages of business processes are still complex tasks which IT people should take care to design and develop, out of technology monopolies in a new relationship with their peers, looking for the right balance between challenge and collaboration (Fig. 2).

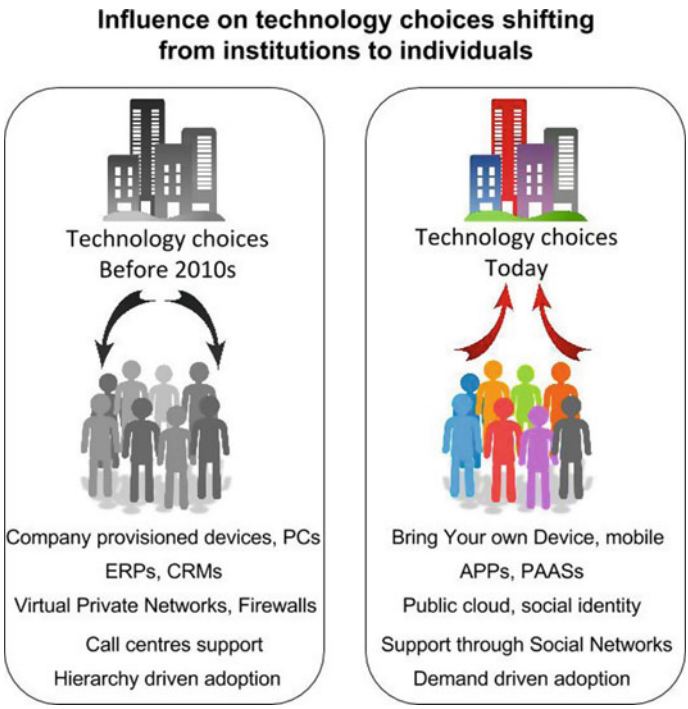

Fig. 2 Influence on technology choices

5 New Technology Ecosystems: Emerging Players Redefine Enterprise IT Sourcing Practices

The industry of Information Technology has generated a rich offspring of market champions across its relatively short history in the second half of 20th century. Corporations like At&T, IBM, HP or Microsoft have not only dominated their own markets, but also covered absolutely the top positions of global financial ranks during the early 2000s. They formed the peak of the IT suppliers pyramid, ranging from large and global to small and local firms, supplying Hardware, Software, Technology services and Telecommunications to companies and institutions using those building blocks as components of their information systems. Information Technology departments and CIOs were part of this ecosystem as top buyers and business integrators for years.

The following digital outbreak across the 2000s did not actually discontinue main core computing and network technologies, still feeding lower lever technology manufacturers like Cisco and Intel with new growth opportunities. However, the outburst of digital economy was written and driven by different subjects. In most cases it concerned new start-ups who were able to generate innovating offers designed for consumer driven markets. They run capitally intensive and easily scalable business models, mostly funded by venture capitals. With a few exceptions (Apple *in primis*) a new born generation of subjects like Google, Amazon or Facebook dominate today's digital markets. These new players have not just sold technology. Instead, they have monetised its potentials by creating innovative business models run through technology. They have invented platform economies by connecting consumers and providers in a wider ecosystem of different stakeholders, each of them contributing to enriching the customer experience and improving the platform value itself. Their revenue models have shifted from sales of technology components (e.g. hardware or software licenses) to the monetisation of their big transactions volumes (e.g. marketing personal advertisements or e-commerce transaction markups). Although their original business model focus was set far away from Enterprise IT, nevertheless some of their innovating technologies (e.g. Amazon Web Services, Google for work, or Facebook's CRM APIs) have been adopted by a growing number of enterprises and institutions as part of their information system architecture. These new offers, often cheaper and easier than the traditional enterprise IT alternatives, have brought massive disruption to the enterprise B2B IT market and to traditional IT providers.

The new wave of digital players is now heading global financial ranks of market capitalisation, in some cases replacing older technology corporations; and similarly to the pre digital age, a much larger number of small to medium size companies is breaking into a highly dynamic and volatile market ranging from bio to fintech, industrial IOT, education, gaming, food, automotive and much more. It represents a growing segment of economy highly appetizing to capital markets, but also attractive to traditional businesses and established institutions who consider them as a powerful and credited source of innovation and an opportunity to transform their

organisations into a digitally connected business environment. However, differently from pre digital tech companies, IT departments are no longer "natural buyers" of such players, who deal with consumers or business decision makers. Conversely, even more traditional IT players are modifying their products and market strategy, consequently targeting the same business interlocutors instead of, or in addition to CIOs. This change is nothing but the further evidence of a new and more connected framework of relationships between technology, business and institutions.

The ecosystem of digital suppliers is then discontinuing the traditional IT sourcing framework and work relationship context, creating new tensions and challenges to the IT function. CIOs need to understand and adapt to such a changed environment, moving beyond controlled sourcing relationships purely focused on technology, towards broader collaboration contexts made of business connected supply agents, thus maintaining a direct, external key source of innovation and personal development. Process design, sustainability and scalability of digital business is still dependent on technology, and a higher knowledge around its domains is required when making technology acquisition choices.

CIOs also need to develop a new language and value proposition to interact with new subjects; build different sourcing opportunities in a much more turbulent supply environment, through continuous scouting of new players; set strong collaboration protocols with business functions, in order to avoid overlaps and boost a multidisciplinary approach across sourcing processes; practice new unusual recruiting channels in order to make new technology resources and opportunities available to their organisation community instead of just waiting for the natural, digital evolution of their old and trusted delivery partners.

6 The Social Nature of Digital: The Information Control Leaves Way to the "Sharing Economy"

Digital and Social are keywords which have been strongly paired since the mid 2000s, when social networks were established amongst the most pervading innovations generated in the digital era. By the time startups like MySpace or Flickr, and then Facebook had launched their revolutionary social interactive web services, social capabilities of digital artifacts have grown intensively and pervasively. Today, some degree of social interaction is part of the experience of almost any digital service, from music to design, from ecommerce to car sharing. The social applications of digital, enabled by cheap access to the internet and innovating applications have already changed the patterns of interaction of individuals and groups of modern societies not only at a business level, but also in politics, private relations, personal and medical care, no-profit associations and more. Gartner has included Social as one of the four convergent, disruptive drivers of the Nexus of Forces, characterising the digital age. Digital social capabilities are providing individuals with unprecedented chances to share ideas, contents and freely interact

with a potentially infinite number of other people, but they also bring new challenges both to privacy rights and organisational models in public and private sectors where availability, access and the spread of information configures power balances. They also bring extensive impacts and opportunities to CIOs and IT Organisations at three different levels:

- **Technology**—Until the mid 2000s structured data and relational databases were the most, if not the only technology available to organise information within an organisation's IT. At the times of ERPs, IT people dealt with SQL as the standard language to treat transactional data, just like businessmen did with English for business. So, to make information consumable, IT worked to transform unstructured information into structured data, by creating transactional interactions where information was constrained into data organised into relational databases. Social digital instead, has promoted unstructured data (texts, photos, videos, etc.) as the new information standard, as it is the natural content of human interactions. Technologies like NoSQL databases and CMS were further created to store, retrieve and treat unstructured data, barely usable before. These technologies are now part of a much larger tech set, ranging from voice recognition to digital assistants from video analytics to text semantics from chatbots to cognitive computing. Although generated in the social digital space, far away from enterprise IT culture,[5] these digital social technologies now knock back on Enterprise and CIO's doors, promising powerful applications and broad improvements in many fields.
- **Organisation**—The social capabilities of digital have created innovative opportunities also in the Business to Business segment, by leveraging on large communities of individuals to perform complex tasks historically assigned to trusted and credited subjects instead. The word *Crowd* has become a prefix to other words like *Crowdsourcing* or *Crowdfunding*, all of them suggesting alternative, network-centric relationships to outsource critical goals. Significant social innovations have more specifically affected also the processes and the organisation of Information Technology. Starting from software development, well before the digital era—and mostly out of IT departments—the Open Source communities have demonstrated the ability to develop quality software through a collaborative process committed to network-based virtual groups. More recently, several software related processes—such as testing (crowdtesting) or quality control—can be outsourced to network-based communities, where external developers or testers interact on assigned projects on platforms like Github or Testbirds. The effective use of such innovating outsourcing models requires changes in the organisational context of many Information Technology departments and redesign of the IT delivery value chain in a more open organisation framework.

[5]Even IBM's Watson cognitive answering system, whose applications range from healthcare to weather forecasts, gained its popularity by competing against humans in the US Television quiz show *Jeopardy!* in 2011.

- **Culture and behavior**—Huge opportunities enabled by digital social networking have encouraged behavioral and cultural changes on highly controversial topics like personal privacy and information control. In more and more cases, the perceived value of sharing information has overtaken concerns of doing it.[6] Beyond demographic and geographic differences, the attitude towards information sharing is subject to continuous challenges in the digital space. This is made evident by many social networks configuration settings, where public sharing is the default, and restrictions are an option—instead of the other way round. Wide access to information not only feeds concerns about personal privacy, but can also promote more democratic access to knowledge and information resources. Innovating companies like Google encourage their staff to a wider sharing of information. This behaviour can promote organizational transition from a hierarchical model to a more participatory, boosting creativity and growth. However, Information Technology departments and their CIOs have traditionally operated as information security agents within hierarchical organisations. They have historically operated perimetral security around Company information assets and personal privacy, protecting them all from theft or external attacks. Today, as cyber threats still require growing attention, more opportunities outside the company digital borders ask CIOs and their staff for a new balance between risk and opportunity management. Better trade-offs between growth and control require more selective policies and approaches (e.g. Improving information security by strengthening access instead of perimetral control). But also a cultural shift from IT People, who need to realise they can obtain opportunities, not only risks, from outsiders.

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