



PROMOTING DIGITAL CULTURE AS A
SOURCE OF INNOVATION AND PERFORMANCE

The new roles of the IS function

Missions, competences and marketing of the function

July 2014

EDITORIAL

I have had the pleasure of leading the working group on the new roles of the IS (Information System) function with a panel of CIOs from companies from very different business sectors, ranging from *BtoC* to public organisations to industry and services.

The general question of the group was: what contribution does the IS function make to the digital transformation of a company? This question is based on three points:

- The new missions of the function
- The associated competences
- The marketing of the IS function.

The primacy of customer experience

The first point that we considered crucial is the primacy of the customer's experience. In the digital world, the IS is directly visible to the customer. This end customer of the enterprise sees and uses the IS. This places the IS function in a new role, alongside the sales and marketing functions, in establishing the customer relationship. It also puts greater demand on the IS, since now it contributes to the company's image, to its satisfactory operation, and to its revenue generation.

One of the new tasks of the IS function is also the development of the company's digital technology strategy. The IS is a major contributor in the customer relationship; the CIO is naturally positioned to work with his/her colleagues on the company's digital technology strategy.

New kinds of work organisation and management: test-and-learn, multi-speed IT...

The impact of digital transformation on work organisation and management were also discussed in the working group.

The fact that all the staff of a company make daily use of the digital world – the Web, and *smart phones* with the ergonomics available to the general public – places renewed demand on the IS within the company. This is because when staff walk through the doors of a company, they expect to have an IS that is as flexible as they can have at home. This means that the IS function must deliver its users systems that are as simple, functional and practical that they can find on the Internet.

One point that the working group highlighted as a major issue is the positioning of the IT department and the CIO (Chief Information Officer). They no longer operate based on hierarchical authority, or based on a monopoly of technical or functional domains of expertise. Their function is keyed on the value created, and the IS Function develops and positions itself within the company, according to the value that it can provide.

.../...

Digital technology also brings “*test and learn*” approaches that consist in trying initiatives and ideas, implementing them quickly, and assessing the results to see whether they work or not. It is easier to stop a project after spending €100,000, than after having spent 10 million and then realizing that it was wrong.

We are also seeing the emergence of multi-speed IT, ranging from the *front office*, which has to move quickly and change often, and the *middle and back office*, which has to provide extremely robust services. The competences are different, the life cycles are different, and the requirements are different.

The IS, as a technical object, is also impacted by digital technology. We previously lived in a closed world with an IS having a clearly-bounded perimeter. Today, the boundaries and the scope of responsibility are becoming fuzzy. The role of the IT Department in this environment is to manage this fuzziness, and to manage a not-always well-defined scope while succeeding in delivering the required services.

Digital technology requires different and new competences. For example, the system designer role is becoming increasingly important. Security is perceived differently, and is evolving from an image of “guardian of the temple” to one of being a facilitator of *business*.

Marketing the IS function: sharing opportunities in technologies, defining tomorrow’s offering, and promoting IT within the enterprise

With regard to the marketing of the function, we have identified three major realms of action: products and services; customer relationship; and communication. As regards products and services, we told ourselves that we must pre-empt all technological terms – *buzzwords* – and go promote them to the executive committee in the company. The terms and values of digital technology must be shared with pride. So, *BYOD* (“Bring Your Own Device”) is therefore a key issue to be addressed. At the customer relationship level, the prerequisite is the excellence of the foundation platform. We also have to conceal complexity, and/or make it intelligible. Lastly, we must also ensure that the members of the company’s executive committee have a satisfactory level of *digital literacy*, notwithstanding their varying degrees of enthusiasm for and understanding of digital technology, and we must organise means of attaining and maintaining that literacy. Finally, from the communication viewpoint, we mustn’t forget to communicate about the successes and contributions of digital technology and the information system with regard to the company’s performance and innovation.

Christophe LERAY, CIO, PMU,

Lead member of the “New Roles of the IS Function” working group.



The CIGREF “Network for Large Companies” was founded in 1970. It includes more than one hundred French and European major companies and organisations from all business and professional sectors (banking, insurance, energy, retail, industry, services, etc.). CIGREF’s mission is to promote digital culture as a source of innovation and performance.

REPORT TITLE: *The New Roles of the IS Function: Missions, competences and marketing of the function*

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THANKS TO:

Our thanks go to Christophe LERAY, CIO, PMU, who coordinates the working group.

We also thank those who participated in the working group:

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We also thank Frédéric FONTAINE (KEA & Partners), Ludovic CINQUIN and David ALIA (OCTO Technology), and Pierre MATUCHET (Milky Interactive).

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Bounding the scope of reflection

CIGREF began to look at the marketing of the IS Function in 2007, partly to demonstrate that it was a “value provider”, partly because it was evolving towards “customer focus”.

Five years later, the technologies and practices relating to digital technology are leading the CIO to take its place in transformation strategies that involve everyone within the company¹. We are seeing a digitization of *business* that is directly involving the IS – and, therefore, the IS Function – in the value chain, meaning that it is no longer just a support function. The IS function is, moreover, evolving under a dual influence: internal, with an increasing maturity of the users, and externally, with an increased importance of the end customer.

In this context, the initial questions of the “New Roles of the IS Function” working group focused on both the impact of major changes within the IS function on the company as a whole, with particular attention paid to how digital technology is redrawing the concept of added value provided by the IS function, as well as the rise in prominence of the IS function in digital technology transformation within companies, which concerns the marketing of the function, the uptake of new management methods, and the competences necessary for ensuring that the IS function is an effective agent of transformation.

The company’s strategy vis-à-vis the challenges of digital technology

In a changing world marked by the acceleration and speed of communications, and by globalization, new practices are emerging and the company has to adapt. This means that digital technology is presenting challenges that companies must handle, such as: presence within new value creation channels; the uptake of practices emerging on societal levels; agility of organisation and openness of innovation processes; flexibility of the value chain; governance and *leadership*.

All these phenomena also affect many aspects of life in society, and mean that companies have to face an inevitable digital technology transition. These changes can constitute an opportunity for growth and induce rethinking of the company’s strategy and, therefore, its business model.

Ten key trends in digital technology transition have been identified by CIGREF and grouped into three principal characteristic axes for a company:

- customer experience;
- organisation and management;
- resources and flows.

¹ In 2013, working in partnership with the IFA (French Institute of Directors), CIGREF published a guide entitled [“Le Conseil d’administration et la transition numérique de l’entreprise” \[The Board of Directors and Digital Transition within the Enterprise\]](#) to enable enterprise administrators to commence interacting with general management about the issue of digital technology, so as to better tackle the opportunities and risks involved in digital technology:

- The primacy of customer experience, characterized by:
 1. The associated services: from value to customer experience
 2. The customer platform: a central space for promotion of customer experience
 3. The importance of interactive communication with communities of fans, to leverage their influence
- Organisation and management for the co-creation of value:
 4. The adoption of an open innovation approach, to generate new competitive advantages
 5. The development of a management by results for the new generations of employees
 6. Changes in working methods within the company, under the influence of collaborative dynamics
- The management of resources and accelerated flows:
 7. The IS as a service platform for the enterprise
 8. *Big Data*, or how information finally lends meaning to the system
 9. Cloud computing and its impact on the IS function
 10. Mobility management: a challenge to ensure continuous service

The working group examined the evolution of the IS function within the scope of digital technology transformation within large organisations, focusing on the three areas outlined above (primacy of customer experience; organisation and management for the co-creation of value; and management of resources and accelerated flows).

The working group focused on the IS function's contribution to the digital technology transformation of companies, through its new missions, the associated lines of expertise, and the marketing of the IS function, necessary for successfully supporting the digital technology transformation.

Our thinking also gave consideration to the following:

- Digital technology does not belong to the IT function alone; nor can it be reduced to either e-business, or digital marketing and/or the Web client. Digital technology extends across a company, and involves every division (IT, production, supply chain, logistics, sales and marketing, HR, R&D, general management, etc.).
- During our thought process, we looked for elements of convergence that are common to organisations in all sectors, as concerns the new roles of the IS function brought about by digital technology transformation.

The primacy of customer experience

What are the stakes for the IS function?

Some years ago, there was an attitude in companies that had evolved from the product to the customer (*customer first*) with, in terms of organisations, an adoption of matrix-based methods. Today, it seems that it's now the turn of the IS function to undergo the same transformation, with there henceforth being a direct link between the IS and the customer.

But the **primacy of customer experience** as a unifying trend within the digital enterprise goes beyond the "*Customer first*" approach of past years. The concept is based on "experience": experience of the product and/or service; intimacy and personalization.

The client addressed by this is indeed the **end customer**. The primacy of customer experience is not just the concern of *B2C* companies; it takes **different forms, depending on the company's activities** (*B2C, B2B, B2B2C...*). In effect, this primacy of customer experience has stakes of a different nature – financial stakes, image and reputation stakes – depending on the activity and sector of the companies.

The stakes for *B2B*

- Systems integration
This involves making life easier for customers and prospects, by providing them with added-value Web services. This could be a technical configurator in the style of Ubaldi.com, with access to drawings and documentation in the aeronautics realm; or it could be an offer for the transferring of stocks and purchases to be made for distributors, according to their location, in the automotive trade.
- The shift towards the small-customer Web
Although companies implement direct management of relations with their major accounts, and devote special sales forces to them, they can also have an interest, in the case of small customers, in directing them towards the Web so as to offer them a personalized service at optimal cost with, for instance, the deployment of a merchant site for small customers' purchases in the aeronautics field, in which the trend is to conclude ten-year contracts.
- The development of customer intimacy
In the case of *B2B*, it is also necessary to develop the much-talked-about customer intimacy, for the customer's benefit, but also for the company's benefit:
 - It may be achieved by capturing the dispersed market and competition information, by equipping sales and technical support staff with in-the-field applications on mobiles and tablets (*What does my customer use? Where? At what price?*)
 - Or else it may be accomplished by settling his problems more quickly, by providing the sales representative with all the information about their customer (CRM on mobile or tablet, guarantee problems, quality incidents, etc.).

The stakes for B2C

Today, the IT Department has **direct customer feedback**: customer has changed, expresses its needs/expectations directly, or does co-design. With the rise of e-business and social networks – that is to say, links between the company and the customer via digital means – the technical objects that the IT Department provides become directly visible to the customer. The IS thus becomes a direct player in the customer relationship; it does intermediation with the customer. This places a new requirement of the IS function along the customer path: ergonomics and quality of service.

Furthermore, the IS/customer relationship is almost real time, catering to the requirement of **instantaneous** customer experience, via multiple channels, and meeting the requirement of **continuity** of customer experience.

Beyond the requirements set out above, the primacy of customer experience leads to **accessibility of information and the effective use of customer data**, which reshapes the missions of the IS function.

Accor case

In a service company, whether digital or not, the primacy of customer experience is paramount. The new digital deal involves, for the hotel and catering sector, a change of intermediary (and greater intermediation) – from the hotel to travel agencies and, now, online agencies – and the personalization of services provided to customers. In fact, the digital customer is primarily a customer who doesn't want to be a number! He wants above all to be recognized throughout the chain, from before his reservation until the end of his stay in the hotel.

At Accor, one of the first steps was to create a digital technology committee, chaired by the General Manager, with Marketing, Operations and IT, to define the strategy for the entire customer experience (reservations, overnight stays, and loyalty-building). A second step was taken in early 2014, with the entry of an Executive Vice President onto the executive committee, to be in charge of Marketing, Digital Technology, Distribution and Information Systems.

In addition, today's customer is also a "*multi-device*" customer: he has a smart phone, a tablet, and a computer. So we need to ensure both consistency with the device (iOS, Android, Windows...) and consistency with the brand image, so that there is no breach in customer experience.

Laurent Idrac, Accor CIO

The evolution of the missions of the IS function in view of primacy of customer experience

The impacts of the primacy of customer experience discussed above have brought the emergence of new missions for the IS function:

- **Contribute to the consistency of customer experience** – that is to say, the continuity of his experience from channel to channel or cross-channel – in partnership with other businesses. The

requirements for the IS function is to be able to provide consistent information on each channel, and to implement tracking of customer experience that will ensure its consistency. In a *B2C* business, it is the possibility for a customer to look at a product on the Internet, see the comments of other consumers, then go see it in the store and finally buy it on the Internet... while being recognized by the company in each of these channels.

- **Contribute to the development of digital strategy and marketing of the company in partnership with lines of business, and put digital technology into the offering** – that is to say, directly intervene in the offering of products and services to end customers. When IT is in the position of product manufacturing, it not only brings potentials that can boost the company's strategy, it also raises the question of feasibility. It transforms a *market* idea into a possible path. One can draw an analogy here between the role that IT plays in strategy in this digital world, with what the design offices do, the manufacturing, or the R&D in industrial sectors. Digital technology builds a bridge between marketing and IT.
- **Create value from information.** Value creation becomes possible through the new positioning of the IS function. It finds itself having to go beyond its traditional role of project management – designing solutions that enable it to manage the container – to become more and more involved in the data processing, which enables it to have a better understanding of the nature of the data (content management).

In addition, the IS function has a cross-functional vision that is unique within the company, of the different data streams that pass through the IS (the repositories and different steps of transformation and/or enhancement of the data) but also, and especially, links can be created between the data items. The conjunction of these two factors (content management and cross-functional vision, with understanding of links) allows IS function to be a source of proposals to businesses, to facilitate the implementation of relevant and effective ways to enable businesses to enhance their data and the information pertaining to their field.

An e-business player that had implemented a digital strongbox, initially for regulatory reasons (tracking of financial transactions performed by the customer), started progressively using it as a decision-taking-assistance system that enabled it to track all customer usage (analysis of customer behaviour, fraud prevention, etc.).

- **Implement and report on metrics** - that is to say, make the most of the information to improve customer experience. This mission relates back to the culture of measurement and feedback requirements².
- **Assist with the B2B marketing of products and services** for example, by developing technical sales profiles for the IT Department, which will be intended to assist sales representatives in their sales prospection work.

² Read the OCTO publication, [Les géants du Web – Culture – Pratiques – Architecture](#), 2012.

- **Manage anonymous “customers”** Trust becomes a central value in the customer relationship, for ensuring the confidentiality of their information³. It must be handled carefully when it comes, for example, to reconciling customers’ identities (digital, physical) in order to manage their claims, analyse their opinions, etc.
- **Provide good-quality service.** While the IT Department is already used to ensuring continuity of services 24/7 for internal use, digital technology brings an increased requirement for continuity of service for external use, imposed by the company’s end customers. The quality of service provided by the IT Department will therefore contribute directly to the company’s image with its customers, and to generating sales turnover.

³ Read the CIGREF publication, [Entreprises et culture numérique](#), 2013.

Organisation and management for the co-creation of value

The impact of these new ways of working, on the IS function

The IS function: co-partner of business units

Projects are undertaken with business units/IS **co-management**, or even third-party co-management in some companies.

Club Med case

To handle BtoC projects, we set up combined teams of IT people (in-house or outside) and lines of business people (in-house or creative integration agencies), or even people from Purchasing and Legal, depending on the issues. One of the components of success is geographical proximity and the methodological sharing of an agile method. We group teams working on a major project in the same place, which promotes interaction, timeliness of execution (short circuit), and fewer misunderstandings (developer questioning a point in the specifications, or proposals for potential simplifications); this is done with interaction and direct collaboration. It also contributes to shifting mindsets towards greater solidarity and commitment to the same goals, as the organisation is a composed team.

Stéphane Kersulec, Club Med CIO

The end of the project owner/project manager approach

Under the combined pressure of time-to-market and the quest for efficiency, this demise followed on from a natural evolution towards a more-intertwined interaction between the parties, because of their degree of maturity. The traditional project owner/project manager model can be replaced by the new “social” project owner concept, i.e. a shared project ownership that takes advantage of the technological maturity of the project workers (from usage through to implementation) to promote innovation.

ONF (Office National des Forêts) case

Example A

In the case of the ONF, to foster creativity and not delay the implementation of a (potentially) good idea, it is possible for any staff member to implement an application development (thus outside the IT Department) under three conditions:

- Check that a locally-expressed need is not potentially a nationwide one; if the additional cost of implementation to broaden the development work to cover other national needs does not exceed 20%, then it must be taken into account (otherwise, it’s another project).
- Development work should be done with the central tools (e.g., development language), so as to potentially allow re-working by the IT Department if the application proves to be advantageous for the entire company and is taken up nationally (technical longevity of the application).
- Technical and functional documentation must be produced, to enable application support even if the developer changes job (functional longevity of the application).

Example B

When it is not possible to appoint a project owner (due to lack of available appropriately-skilled resources, especially in contexts of staff reduction), or when it is not desirable to appoint one single person to take-on the project owner role (such as for an application that is essentially a field tool that will be used ubiquitously, by different professions), one can assign the job to a group. You can then speak of “social project ownership” or “project ownership 2.0”. This is because when a group of project workers can be identified, with common expertise and a shared commitment to teamwork, and representing all geographic factors and professions, that group can perfectly well replace an “individual” project owner. Such a group can be composed of 5 to 10 profession representatives who devote only 10 to 20% of their time to the project, so there is an FTE⁴ availability within the group of one worker on average, with everyone contributing at their own rhythm, according to their availabilities. This group will meet on a quarterly basis, under the guidance of a “coordinating project owner”, notably to discuss the design phases. Plus, over time, there will always be an “active project owner”, whether to take part in tests or produce development components, so that the project moves forward, and so that a support or changes management phase is conducted properly.

François Subrenat, ONF CIO

Agility

One of the major components of this transformation in working methods is **agility**. The evolution towards primacy of customer experience requires new working methods, of agile methods type. Additionally, **young employees are more naturally inclined to work in partnership/co-design** (working within a network, seeking information from peers, etc.). However, agility requires **maturity from the two parties**, the IS and the line of business. If either party is not mature enough, then the use of such methods is risky, or even destructive of value.

Focus on agility

The best way to understand the agile approach and understand how it differs from more traditional approaches (V-form, cascade...) is certainly to leave the 12 underlying principles of the Agile Manifesto⁵.

“Our highest priority is to satisfy the customer through early and continuous delivery of high added value software”

With a given application, not all the features provide the same value to the company; prioritization of tasks (*backlog*) is essential, and should help deliver a product – even one that is only partially finished, but one that

⁴ Full-Time Equivalent

⁵ The Agile Manifesto was written in 2001 by 17 US IT experts. It is now considered the reference definition of agile development and its underlying principles.

<http://agilemanifesto.org/iso/fr/principles.html>

immediately generates business value. So preference should be given to iterative approaches such as Lean Start-up or Scrum.

“Welcome changing requirements, even late in development. Agile processes harness change for the customer’s competitive advantage”

Still keeping the focus on added value for the company and reducing the *time-to-market*, changing needs and, notably, priorities are kept possible by iterative construction of the product. So whereas in a classical cycle, you try to specify everything upstream, and any subsequent changes in need are often covered by an addendum, the iterative approach lets you evolve the software while it is still under construction. These changes can also be brought about subsequent to user feedback, to which it may be urgent to cater so as to be more competitive; feedback is sometimes incited and organised through beta versions.

“Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale”

Even if development cycles are very short (*sprints* lasting from 1 to 4 weeks, in *scrums*, for instance), they must always result in software that works; any new feature added will thus be developed from end to end, and will improve the previous version. At any one time, the product will be “presentable”, which prevents the tunnel effect inherent to classical approaches. These iterations give the possibility of reorienting, or, if necessary, even halting the project without spending the entire budget.

“Business people and developers must work together daily throughout the project”

It is essential to have the business teams and developers working on the same platform: the resulting interactions and regular validations of the developed software ensure that the software meets the user’s expectations.

“Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done”

The company must ensure that the developers are working under the best conditions; an important role in *Scrum* is the *Scrum Master*, who is supposed to eliminate any source of “noise”, to promote maximum concentration on the design and implementation of the software.

“The most efficient and effective method of conveying information to and within a development team is face-to-face conversation”

Projects often generate an impressive amount of material that is rarely up-to-date, not always shared and often misinterpreted. So Agile methodology forbids unnecessary documentation (although that does not mean that there should be no documentation at all). Importance is placed on face-to-face communication (between developers and system designers, between developers and users, etc.) to avoid any misunderstanding; these interactions often give rise to a solution more quickly, and can even result in devising simpler answers to the needs expressed.

“Working software is the primary measure of progress”

The advantage of proceeding in iterative cycles that always result in operational software is that it is demonstrable at the end of each cycle. Therefore, progress is easily measurable; a direction can decide upon at the end of each cycle, so as to deliver the production version or decide that it needs augmenting with additional functionalities.

“Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely”

Too often, we tend to “put pressure” on teams to produce faster; not only it is sustainable solely for a short time, it also usually results in poor-quality software, demotivated personnel and, ultimately, a lack of gain for the company. Preferring a tenable rhythm of development instead enables you to maintain a good capability for concentration, and to better predict the “productivity” to which the team can undertake a long-term commitment.

“Continuous attention to technical excellence and good design enhances agility”

Quickly delivering new features with high added value for the company requires having built a scalable and robust solution. Agile teams often adopt good practices advocated by *XP (eXtreme Programming)* such as *Pair Programming*, to ensure good quality of the solution.

“Simplicity - the art of minimising the quantity of useless work - is essential”

Still with a view to rapidly delivering new functionality with high ROI⁶, the simplest solution is sought; this simplicity is also a guarantee of quality of service in production, and of a lower maintenance cost. However, this simplicity should not compromise the open-endedness of the software.

“The best architectures, requirements, and designs emerge from self-organising teams”

Natural interactions within self-organised teams allow the emergence of often-original and reliable solutions, because the entire team is committed to the success of the project. Particular care must be taken with the composition of the teams, so that the skills and the personalities are as complementary as possible.

“At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behaviour accordingly”

Working in short cycles allows the work to be paced, and provides the opportunity to regularly improve the working methods. The idea is not to revolutionize everything all at once, but to make commitments to improving collectively. By regularly improving its interactions and its environment, the team will become increasingly efficient.

Even if it is clear that an agile approach is more suited to the creation of a new website than an ERP upgrade project, any use of a best practice recommended by an agile method can only be beneficial, regardless of the context. Thus, if you are organising a daily *stand-up meeting* in a V-cycle project. making sure that all stakeholders talk every day for a quarter of an hour about the progress of the project can only be good for the project’s progress. Even though *Scrum* purists talk about “*Scrum goals*”, there is no reason why you shouldn’t

⁶ Return On Investment

adopt best practices from agile methods in a conventional cycle: agile methods often simply re-use and re-organise previously-existing best practices...

It would also be unrealistic to think that, for a given perimeter, you will develop faster using agile methods than in a classical manner; however, an agile approach will deliver high-added-value features for the company as early as possible, provided that the business needs have been properly prioritized. Beyond new practices, Agile methods primarily involve a new approach to projects.

Christophe Harster, Head of Web Development, PMU

Security

Obviously, security is not an emerging mission of the IS function; however, it takes on added importance in the light of digital technology risks. The ways to approach and deal with it are different. It is no longer a question of talking about perimeter security or addressing security as a constraint; now it's a matter of **promoting security as a "business enabler"**.

Focus on the security function as a creator of value for the company

In the early 2000s, the strong growth in uptake of the Internet in companies, and the advent of the first devastating viruses (Melissa, *I Love You*...) drove companies to implement a security function within their IT Departments. This highly-technical function, which is often in close proximity to the networks and telecoms staff, has acquired supplementary power to cope with virus attacks, of which there have been an increasingly large number. Now, the security function has steadily evolved into a *barrier*, with great caution being preached and everything being forbidden that, in its view, presents a potential risk for the company's Information system. Measures include precautions such as filtering attachments in mail messages, disabling USB ports, preventing browsing of a large number of sites, and bans on using *Wi-Fi* or *Bluetooth*.

The result is that IT users (especially business application users) were subjected to bans they did not understand, and have found workarounds that risk enabling serious incidents, because of their ignorance of the justified merits of these prohibitions. This situation could have persisted if the corporate world had not quickly transformed as a result of globalization. Gone are the physical boundaries of a company, which have now become virtual and/or have totally disappeared. In this context, perimeter defence models have fast become ineffective. Worse still, they have become incompatible with the new organisation of *business*, which is no longer constrained by geographical or time limitations. Faced with this unforeseen revolution, many security functions isolated themselves from the *business* and users, because they focused on their historic competencies, namely technical expertise. Their language has become totally incomprehensible, even for colleagues in the IT Department.

Some security managers who are more attentive to user feedback have begun to change models by implementing an approach based on the assessment of security risks compared with the *business* risks and opportunities, so as to strike the right balance. This balance is supposed to enable a company to develop while protecting its digital assets. The work of these pioneers has often been laborious, as minds have been marked or even traumatized by years of prohibition and lack of communication.

While the ISS function⁷ has slowly transformed companies, companies themselves have changed at unbelievable speed. Globalization and increased competition have forced firms to work faster and more efficiently, and to constantly strive to increase their productivity and reduce their *times-to-market (TTM)*. They have accomplished this by developing partnerships, information sharing, collaborative working, and mobility and by transforming their business processes. To cater to these changes, their IS's have extended to reach out to their partners, suppliers, employees and customers, giving rise to yet another review of their security models, which were totally unsuited to the *Cloud*, to *"Bring Your Own Device" (BYOD)*, and even to mobile applications. Being unprepared and a little in the position of being a "Doctor No", the security function has returned to its old vices and acquired a role of Cassandra with respect to these new technologies and usages. You will certainly be familiar with reactions such as, *"Cloud computing? Don't even think about it!"*, or *"BYOD has to be absolutely forbidden!"*, or *"There's no question of allowing use of the social networks here!"* The result is that there has been another "divorce" between business and security, with the added factor that the IT Department has been no better prepared for the emergence of these new services and usages, or for the fact that technological cycles are becoming ever shorter.

We have arrived at a point of no return, and are faced with a choice: either the security function has to shift paradigm and move definitively from a prohibition posture to a role of being a contributor that facilitates value creation while maintaining a high level of protection, or else it will meet its demise. The answer should be obvious, as the needs and expectations are vast.

Companies are perpetually seeking innovation and better performance, taking advantage of new technologies and new habits. They need to move faster than the competition, using all the available means. This is no longer possible without resorting to the new services available on the market, such as the *Cloud*, for example. The *Cloud* gives you one-click access to unlimited computing resources, and enables you to organise a video conference with multiple parties working on the same document; it permits you to work at any time and in any place; it enables you to entrust part of a business process to a pure player; it lets you implement interactive services that allow your customers become contributors and participants, just as they have been wanting.

All this is possible, but not just anyhow, because not all the possibilities are necessarily mature or perennial. To avoid potential setbacks, anticipation and analysis is required. This is where the security function can make a contribution and create value by enabling businesses to maximize safe use of these new services. In the security realm, innovation cannot be rejected; there has to be anticipation, and security has to be properly managed so as to support lines of business more effectively. To achieve this objective, security organisation must become transversal, and must rely on multiple skills, ranging from knowledge of business processes to mastery of new technologies and usages, with continual monitoring of developments that are transforming the digital ecosystem.

The creation of value for the security function requires innovation and trust. To be innovative and, especially, more innovative than your competitors, you have to use all the available means, whether they be internal or external. The *Cloud* is becoming a must for a company, and can help boost its performance and reduce its *TTM*. This is not to say that all of a company's IS is going to migrate to the *Cloud*, but one has to define the right balance between taking advantage of the *Cloud* and keeping things in-house where more appropriate. The security function can play a key role here, by helping the company to identify which assets and processes

⁷ Information systems security

are critical and which are less critical, and by evaluating the robustness and reliability of the various services on the market. By adopting this approach, and by anticipating these changes, the security function will add value to the business, while optimizing its costs and allowing it to accelerate its development. BYOD is another example where an improperly-managed deployment could ultimately be costly to the company (because of loss of control over the IS, data leakage, interoperability problems, and so on). Yet, refusing to allow it could penalize the company vis-à-vis its competitors, which could look more attractive to Generation Y and new talent. Once again, an analysis in terms of risk, together with an analysis of business processes, usages and technologies, will enable a company to take advantage of BYOD without unnecessarily exposing its IS and information assets.

Regarding trust, we are talking specifically about the trust that customers have in the brand and the company's products. Robust applications, audit processes and on-going checks, and duly-controlled and tracked access to personal information are all things that the security function can contribute to earning customers' trust.

To conclude, companies have never been looking so hard for higher productivity, innovation and value creation. What's more, in most business sectors, companies are becoming entirely digital and, therefore, completely dependent on their information systems, which are totally changing. In this context, the security function, by its whole definition, has a tremendous opportunity to transform its position, moving ahead from its historic role as a support function to become a part of the company's value chain. For the CISO⁸, this requires the acquisition of new business process and *business management* skills, but the rewards are worth it because, afterwards, the "Doctor No" will have become a true *business partner*, empowering the company to achieve its digital technology transformation, and to make it a factor of competitiveness and distinction.

Pascal Basset, CISO, PMU

In the end, we are seeing an evolution from an IT Department that claims authority to an IS function that earns its legitimacy from the added value it gives back to the company. However, the IS function must continue to ensure systems integration. There is a big challenge of being a pipeline for and a builder of trust. The CIO is the conductor ensuring that the music is harmonious.

The primacy of customer experience, as well as consumerization are also breaking the IS Functions' monopoly: *"Customer primacy is the main thing, and as such the services and products have to come out, whoever puts them out. We must avoid a corporate-centric approach, since the important thing is the end customer"* (CIO, working group participant)

⁸ Chief Information Security Officer

The new missions of the IT Function in view of the organisation and management linked to the co-creation of value

- **Providing an advisory role for the lines of business:** promoting understanding within the lines of business on the functionalities offered by digital technology, as well as their legal and security stakes. In the case of new offers having to be put together in relation with digital technology, the lines of business are increasingly turning to the IT Department and asking it to adopt business line positions, which requires better business line understanding amongst the IT Department employees.
- **Encouraging the *KISS (keep it simple, stupid)* notion,** meaning a simple output, getting to it and getting quickly organised in order to apply it.
- **Deploying the initiatives “*test and learn*”, *AB testing*, *test fast, fail fast, and learn fast*.** Everyone agrees with the idea, but the main difficulty is especially in implementing it.
- **Contributing to operational excellence by including digital technology in the processes.** One might think that this mission isn’t new, but the benefits of digital technology will make it possible to go further than is possible with textual information, and move into multimedia. With the functionalities provided by digital technology, it’s possible to do many more things than in the past. In the context of a *B2C* company and member of the working group, digital technology has made it possible, when setting up a point-of-sale, to simultaneously send visual *guidelines* for organising the point-of-sale and obtaining feedback with photos that will allow for an immediate verification of the compliance. This is certainly not a breakthrough innovation, but rather an additional step in the digitization of the processes.
- **Proposing a catalogue of services at several speeds:** from a very quickly prepared solution with no guarantee, through to a *back office* system that requires sturdiness. There is no right or wrong method, there’s a method that suits the challenge that includes new demands outside of the framework of the traditional IT Department way of thinking. This mission also isn’t really new, but against the backdrop of consumerization, the pressure to fulfill this mission is increasing.
- **Organising the *need-run* cycle while insisting on the dimensions of agility and *lean time***
- **Providing data governance:** Imagining the metrics, the uses, the identification (example: the principle of *open data* refers to different ways of exploiting the potential of the available data) and the consistency of such data.
- **Increasing the ergonomics of the internal tools, similar to what’s available on the web.** It’s also moving in the direction of “zero training” when setting up a system. The consumerization of tools and the development of mobility are resulting in permeability between professional and personal uses, as well as increasing maturity in the digital usages of the employees. For the IS Function, this will involve equipping users with the same level of tools and functionalities as it is the case for customers.

Management of resources and accelerated flows

In what way is the IS, as a technical object, impacted by digital technology?

Blurrier frontiers for an increasingly complex technical object

The IS outline has completely changed in the last 10 years. We've moved from an outline of an IS with frontiers and a clear perimeter, to an **IS with blurrier and more elastic frontiers**, and an **evolution of the perimeter of responsibilities**.

The IS has become an **increasingly complex technical object**, accompanied by greater complexity in the relations between all players. For example, the intercultural dimension and the plethora of players (and including the diversity of the *sourcing*) are adding to the complexity of the IS.

Finally, the issue of **the integration of various systems and interfaces** continues to be a component of this complexity.

A multi-speed IT

The digital transformation is also promoting the emergence of a multi-speed IT, with:

- a **“front office” digital team** that has to deliver solutions quickly (monthly, weekly, daily) and therefore has to be as autonomous as possible
- a core of **middle and back office** services, working on the basis of more traditional project cycles, and having to deliver sturdy solutions over the course of 6-12 months.
- a **“light cavalry”** having to provide quick solutions at the right cost without being burdened by service quality commitments.

There are many consequences for the IS Function. They relate to the diversity of the services having to be provided, the managerial principles and the *sourcing* modes suited to each speed. Moreover, the CIO must strive to facilitate the mobility of the employees between these various worlds.

If haziness and ambiguity spread throughout the company, **how will it then be possible to ensure the continuity of services?** There is a considerable impact on the competences here, since this includes knowing how to simultaneously manage (depending on stakeholders), differing rules of the game: haziness and ambiguity as opposed to orderliness and clearly defined (responsibility for the security, reliability, business continuity...).

The work is then organised around common objectives, **shared between the business line and IT, and resulting from the company strategy**. This is all the more important since employees from the Y generation, who figure very largely in IT teams, are very focused on shared objectives.

Evolution of the IS Function's missions

The emerging missions generated by *Cloud computing*

The *Cloud* allows companies to **free themselves from technical constraint for the benefit of agility and the service's adaptation to the needs of the Business lines.**

The challenge for the IS Function is now the **cohabitation of solutions**, whether external and internal, open or private. Within this patchwork of solutions, the IS Function's added value is that it **brings consistency**, while **structuring the services** and **guaranteeing a constant and equivalent service quality**, both externally and internally.

For the IS Function, this also means increasing the competence level regarding the Business line's knowledge.

With logical virtualization of services, disintermediation of the IS Function, data reversibility... the *Cloud* presents a certain number of challenges, not only for the IS Function, but also for the company's other business lines, resulting in a redefinition of the tasks and a demand for new competences.

- Impact on the IS Function's strategic orientation: opportunity to redirect the CIO's missions towards functions that are more application / business line oriented than technical
 - The IS Function retains an educational and facilitating role, with skills in the management of partnerships.
- **Integration and architecture** technical impacts (architect-buyer missions)
 - Related to the interoperability of the *Clouds* and to their integration within the IS (internally or externally)
 - Some people wonder about the need to create "*Cloud administrators*".
- Legal impacts relative to **data protection** and to the **contracts of *Cloud operators*** (missions of the managers of the contract modes).

The emerging missions generated by mobility

Indicative of the disappearance of the company's frontiers, mobility initiatives or situations are often implemented in response to specific issues having to do with business lines 'performances. For the company, they imply having to take into account **issues related to the linkage between private life and professional life, or to a remodelling of the management, or to the tools, or to any possible discrimination, and to the legal regulations**, particularly in France.

- Mobility initiatives result in **new ways of working** (autonomy, self-regulation, accountability), and therefore **new ways of managing**. The following tasks can be included:
 - remote management: oversight, follow-up, dialogue;
 - a functional and security authority;
 - co-ordination of a team of telecommuters.

The new roles of the IS function

- The monitoring and awareness-raising of the IT populations relative to the newly emerging uses related to mobile technologies.
- The ergonomics of mobile applications, of MMIs (Man Machine Interfaces), their accessibility.

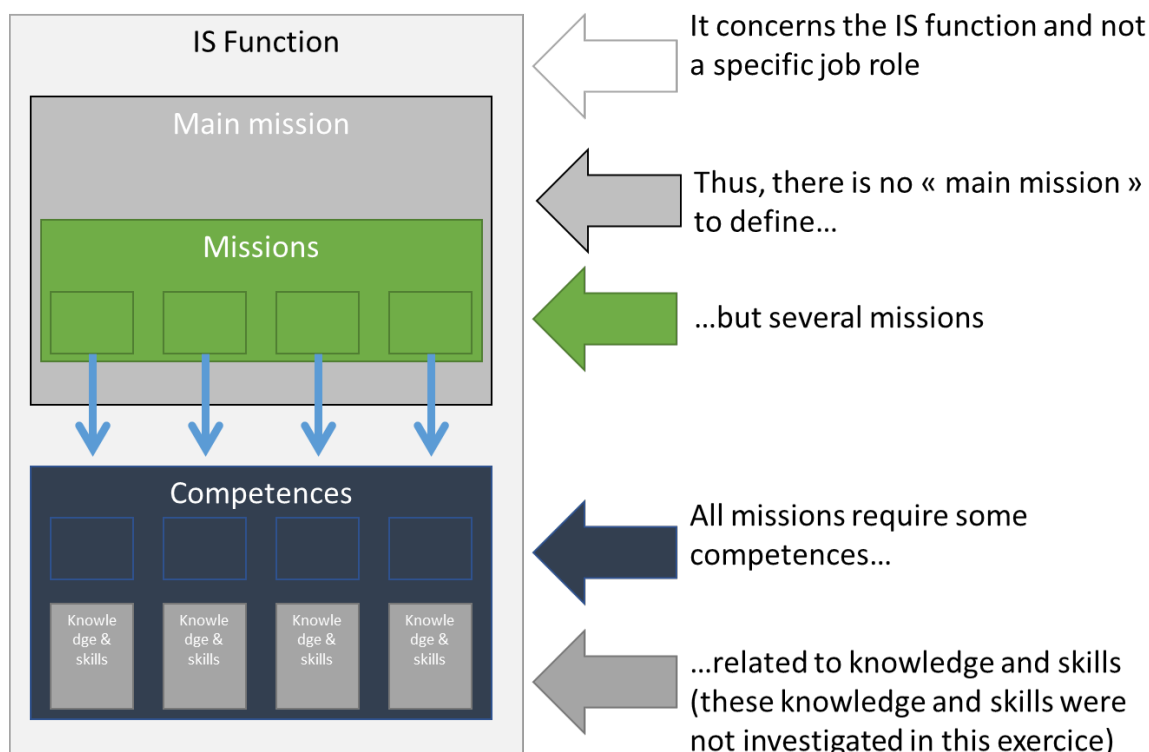
The competences associated with the newly emerging missions of the IS Function

After having identified the impacts of the digital transformation on the IS Function, the study group worked on the competences needed to carry out the new previously described missions, on the basis of the CIGREF jobs nomenclature and the European e-Competence Framework.

It should be recalled here that this competency framework primarily describes a traditional and classic organisation, even though the digital transformations are strongly influencing these competences. The CIOs in the working group therefore strove to answer the question “How will digital technology modify the existing framework?” They notably commented on the competences along two axes:

- Will this competence become more important within the context of a digital company?
- How will this competence be impacted (in its form and practices)? with the following rating:
 - 0: no impact
 - 2: average impact
 - 1: limited impact
 - 3: strong impact

The description of a **job** is generic, it isn't related to a specific position occupied. A job role has an associated main **mission**, performed by many **activities** related to the organisation's processes. All of the activities require a certain number of **competences** associated with a body of **knowledge** and **skills**. In our working group, we felt that:



It concerns the IS function and not a specific job role

Thus, there is no « main mission » to define...

...but several missions

All missions require some competences...

...related to knowledge and skills (these knowledge and skills were not investigated in this exercise)

For the working group, a certain number of competences described in the framework are becoming crucial:

- Architecture design
- Application design
- Technology trend monitoring
- Information security strategy development
- Risk management
- IT quality strategy development
- Information and knowledge management
- IS Governance.

Beyond the degree of importance, the group also wondered about the intensity of the impact of the digital transformation on the IS Function's competences.

- The competence "IT and Business strategy alignment" is the first competence impacted by the digital transformation (IT / business line acceleration and intricacy are modifying the competence). We plan less and experiment more and more; the speed is also changing (more *A/B testing*, more *test & learn ...*). The word alignment would deserve to be questioned.
- Product/Service planning: agile methods and experimentation are now given preference over planning.
- Application design has been heavily impacted by the digital transformation and notably as a result of the consumerization, acceleration and intricacy of the players. The ergonomics of applications is becoming fundamental.
- The market intelligence no longer consists only of a technology watch, but must include spotting of the new business models related to digital technology, and accordingly of the development of the players, newcomers and future competitors. In order to have a dialogue with the General management that is not purely an operator's dialogue, it is essential to integrate strategic and economic competences within the IS Function.
- The impact is considerable for all competences related to development. Digital transformations are bringing together the competences having to do with systems design, integration, test and deployment. The production of documentation should no longer, for its part, have a reason to exist provided that the product, as a result of its ergonomics, is self-supporting.
- There is also a considerable impact on the competences related to security and risk management. Security must be considered in a different mindset. This involves moving from a position of "Doctor No" to a position as a "*business partner*".
- Purchasing-related competences: acceleration is resulting in the technological implementation timeframes and the purchasing timeframes being out-of-sync. One must therefore know how to *source* and gather competences, and to diversify one's suppliers (which notably means bringing on board small structures that have the technological know-how).

Recap⁹

Domain	COMPETENCES	Future importance within the company	Intensity of the impact
A Plan	A1. IS and business strategy alignment	↗	●●●
	A2. Service level management	→	●
	A3. Business Plan Development	→	●
	A4. Product/service Planning	→	●●●
	A5. Architecture design	↗	●
	A6. Application design	↗	●●●
	A7. Technology trend monitoring	↗	●●
	A8. Sustainable Development	↗	●
B Build	B1. Application Development	→	●●●
	B2. Component integration	↗	●●●
	B3. Testing	→	●●●
	B4. Solution deployment	→	●●●
	B5. Documentation Production	→	●●●
C Run	C1. User support	→	●
	C2. Change support	→	●●●
	C3. Service Delivery	→	●
	C4. Problem management	→	-
D Enable	D1. Information security strategy development	↗	●●●
	D2. ICT quality strategy development	↗	●
	D3. Education and training services	→	●
	D4. Purchasing	→	●●●
	D5. Sales proposal Development	NA	NA
	D6. Channel management	NA	NA
	D7. Sales management	NA	NA
	D8. Contract management	→	●●
	D9. Personnel development	↗	●
	D10. Information and knowledge management	↗	●●●

⁹ The details of the working group’s analysis of the competences in the CIGREF jobs nomenclature are presented in the appendices to this report.

R Y Manage	E1. Forecast development	↗	● ●
	E2. Project and portfolio management	→	● ● (●)
	E3. Risk management	↗	● ● ●
	E4. Relationship management	→	● ● ●
	E5. Process improvement	→	●
	E6. ICT quality management	→	●
	E7. Business Change management	→	●
	E8. Information security management	↗	●
	E9. IS Governance	↗	● ● ●

Beyond this inventory, the group agreed to highlight the leadership of the IS Function. The CIO, its managers and even all of its employees must promote the added value that they create for the company. This notably requires permanent marketing.

Marketing of the IS Function.

The primary objectives of the marketing of the IS Function

The working group identified three priority objectives for the marketing of the IS Function, namely:

- Identifying and being familiar with the targets, their expectations whether expressed or not, as well as the delivered value proposal. To this end, monitoring of the competition from external actors is crucial.
- Sharing the opportunities surrounding technologies as levers for *business* development, and not simply as a support.
- Promoting the IT department as part of the company's digital transformation and establishing the right posture for the IS Function.

The convictions

Shifting from a posture of expertise to a commercial and advisory position

Digital technology is a major opportunity for everyone involved in IS. The added value of the IS Function is also to encourage understanding amongst the business lines and General management, regarding the opportunities offered by digital technology.

Digital technology has also shifted the organisation's frontiers, with networking now being an essential organisational mode. As such, discussing with the business lines in order to determine, with them, how their business model is going to change as a result of digital technology, is an integral part of the marketing of the IS Function. It must be an engine for proposals and at the heart of innovation, whether technological or not. The CIO is becoming one of the orchestra leaders of the digital implementation.

Making IT accessible to all of the company's functions

Valuing, communicating, evangelizing... These are the keywords for the marketing of the IS Function, in order to make technology accessible to everyone within the company. It is necessary to avoid any IT-related misunderstanding on the part of business lines, while also ensuring that the IT teams are not too focused on themselves and the technologies. In this context, IT consumerization is a major lever for facilitating the understanding of technology by the decision-makers and employees.

Deriving legitimacy from the added value provided to the company

Digital technology can transform the IS Function into a value centre, which will then be perceived as a *business* player rather than a support service and cost centre. To this end, it must have a strong service orientation and demonstrate a strong desire to meet customer expectations. To position itself as a function like the others within the company, it must also provide itself with indicators that are as simple as the ones used elsewhere in the company.

Playing a unifying and structural role: the prerogative functions of the IS Function

The IS Function must bridge the gap between “innovation in the clouds” and the *delivery* of its prerogative functions. The IS Function faces a reality check, it does not focus only on sales and promotion, but also on “fragile” *delivery*. As such, it is necessary to know how to remain humble in order to respond to meet the obligations of expertise (technological knowledge), safety, and as guarantor of the security, integration and operability.

Three essential dimensions for the necessary actions

The group has listed a series of actions to be carried out within 3 dimensions that have become essential for a digital company.

Products and services

- Taking a position with technologies, and notably pre-empting the *buzzwords* in order to provide the desired content: *“Talk about Big Data to the Executive Committee, before your GM or your Marketing Director!”*
- Having a common line within the IS Function that all employees must share: *“All ambassadors!”*
- Conveying and sharing the words and values of digital technology with pride: *“Digital and proud of it!”*, *“I am not a geek, I am your future boss”*.
- Implementing *BYOD*, whether there’s an actual demand or not: *“Surprising by doing something cool!”*
- Cooperatively constructing the external offer using a “prototype” approach: *“You have an idea? Come see us!”*
- Anticipating the demand: developing and conveying the company’s digital vision by means of products and services that must already be proposed, even if there is no demand.
- Communicating about the areas where the IS Function has been able to get out in advance.

Customer relations

- Hiding the complexity or making it intelligible to customers and users.
- Setting up a model of IT “embedded” within the business lines.
- Using humour to put together training scenarios.
- Organising the digital literacy of General Managers.
- Proudly exemplifying the values of digital technology.

Communications

- Providing fortnightly communication (regarding projects, key figures, business lines...)
- Using new media (blogs, video) in order to communicate: user guide (video), support (blog, chat).
- Simplifying and demystifying technical language and new technologies.
- Educating one’s own teams about the marketing of the IS Function.

- Creating the company's IT brand
- Communicating about the successes: what's available, what has been done.

Prospects

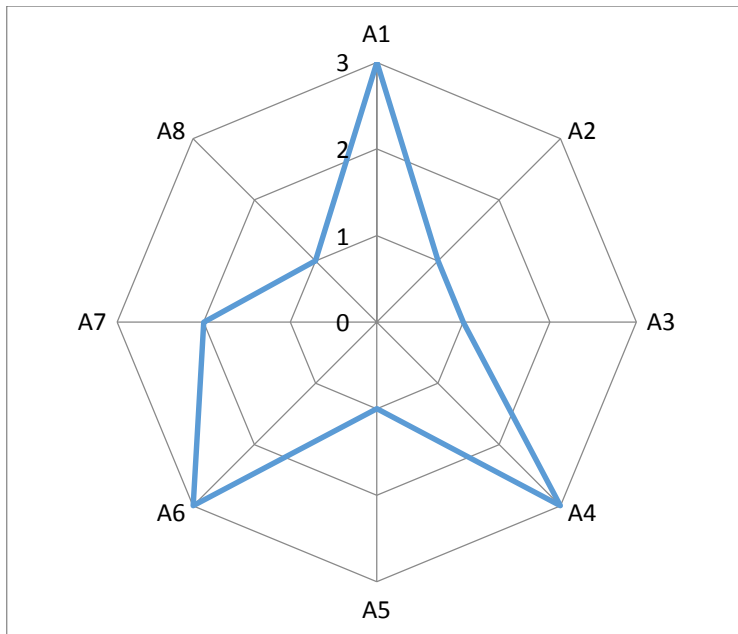
Digital technology does not belong only to IT, but digital technology can also not be reduced to *e-business*, nor to digital marketing and/or the digital customer. Digital technology spans across the company and involves all departments, whether support services or business lines. The question of digital governance is fundamental.

If digital technology is not only a technology issue, but also includes transformations in the working and management methods, then the management and usage of IT within organisations provide a good opportunity to implement new practices. First and foremost, IT and the business lines must work together on digital technology. Collaboration and the network have to be organised, while developing partnerships.

The fundamental issue for the IS Function is the speed of the response and of the solutions to be created with the business lines, as well as adapting competences to these new challenges. How to develop *fast IT* within a traditional IT system? How to work with the business lines in an integrated manner? In 2014, the working group “New roles of the IS Function” chose to continue these reflections while paying particular attention to the digital technology governance methods and, more specifically, how the company’s digital transformation can be implemented and deployed in concert with the Business lines.

Appendices

A – Plan

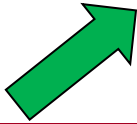


- A1. IS and business strategy alignment
- A2. Service level Management
- A3. Business Plan Development
- A4. Product/service Planning
- A5. Architecture design
- A6. Application design
- A7. Technology trend monitoring
- A8. Sustainable Development

Figure 1: Impact of the digital transformation on the IS Function’s “Plan” competences

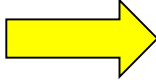
A1. IS and business strategy alignment

Anticipates the long-term business needs and determines the IS model in line with the organisation policy. With regard to IS, makes the strategic orientation decisions for the company, including the procurement strategies.

Importance of the competence	
Impact	3
Comments	<ul style="list-style-type: none"> • This is the first competence impacted by the digital transformation (IT / business acceleration and intricacy are modifying the competence) • We plan less and less and experiment more and more • There has been a change in the relation with the <i>business owners</i> • The “matter” is no longer the same • The word alignment must be questioned • The speed is also changing: more <i>A/B testing, test & learn, measurement culture</i>

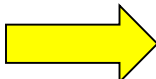
A2. Service level management

Defines, validates and applies the service level agreements (SLA) and the subcontracting contracts for the proposed services. Negotiates the service performance levels on the basis of the needs and capacity of the customers and the company.

Importance of the competence	
Impact	1
Comments	<ul style="list-style-type: none"> • The service levels will be different • The impact relates to the end of a model where SLAs have been used everywhere • The values could be lower

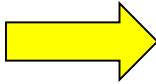
A3. Business Plan Development

Relates to the design and structure of an activity plan or the scheduling of the products, including the identification of alternative approaches and proposals regarding the return on investment. Considers the potential and applicable procurement models. Presents the cost-benefit analysis and the justified arguments in support of the adopted strategy. Guarantees compliance with the company and technology strategies. Conveys and sells the activity plan to the stakeholders in question, and deals with any political, financial and organisational interests, including the SWOT analysis. (Strengths, Weaknesses, Opportunities and Threats – in French: FFPM, i.e. Force, Faiblesses, Possibilités et Menaces)

Importance of the competence	
Impact	1
Comments	<ul style="list-style-type: none"> • The impact relates to a temporal horizon that will be shorter.

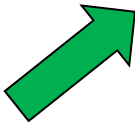
A4. Product/Service Planning

Analyses and defines the current state and the targeted state. Assesses the profitability, the risk factors, the possibilities, strengths and weaknesses, with a critical approach. Prepares structural plans; prepares calendars and milestones. Manages change requests. Defines the delivery volume and gives an overview of the additional documentary requirements. Defines the usage constraints of the products.

Importance of the competence	
Impact	3
Comments	<ul style="list-style-type: none"> • The digital transformation has a strong impact on this competence • Agile methods and experimentation are now given preference over planning

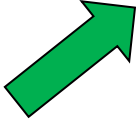
A5. Architecture design

Specifies, describes in detail, updates and sets up a formal approach for the implementation of the solutions needed for the development and usage of the IT architecture. Manages the relation with the company's executives in order to guarantee that the architecture is compliant with the business line requirements. Identifies the needs for change and the components involved: hardware, software, applications, processes, IT platform. Guarantees that all aspects take into account the notions of interoperability, scalability, usefulness and security.

Importance of the competence	
Impact	1
Comments	<ul style="list-style-type: none"> • The form of the competence is not changing, but it is becoming vital • The information system's overall architecture is vital, irrespective of its implementation (internal, external...)


A6. Application design

Defines the IT solutions best suited to the general IT policy and to the needs of the users / customers. Accurately assesses the costs for the development, installation and maintenance of the applications. Selects the appropriate technical possibilities as part of the design of solutions, while optimising the balance between cost and quality. Identifies a common reference framework that can be used to validate the models with representative users.

Importance of the competence	
Impact	3
Comments	<ul style="list-style-type: none"> • The digital transformation has a strong impact on this competence, notably the consequences of the consumerization, acceleration and intricacy of the players. • Ergonomics is becoming fundamental

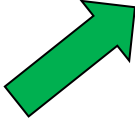
A7. Technology trend monitoring

Analyses the most recent technological developments, so as to be able to understand innovative technologies. Seeks out innovative solutions for the integration of a new technology within the existing products, applications or services, or for the creation of new solutions.

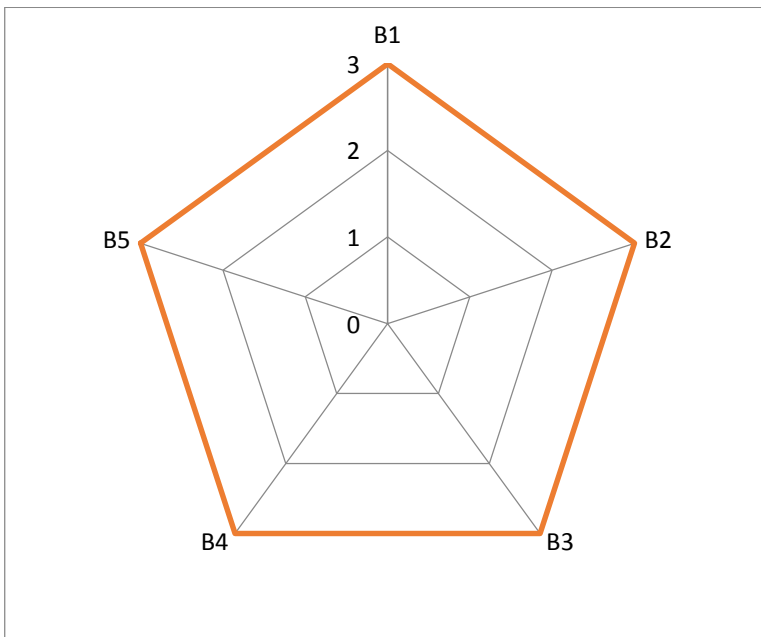
Importance of the competence	
Impact	2
Comments	<ul style="list-style-type: none"> • The competence is becoming vital in a digital world • “True” monitoring must especially be carried out with a spirit of innovation. Here, the know-how involved is openness; this involves more than just listening to the marketing skills of the sellers, but rather truly monitoring the various actors, competitors, other sectors... • Monitoring the technologies and uses is indispensable: “a good geek is more than a technology freak”

A8. Sustainable Development

Assesses the impact of the IT solutions in terms of ecological responsibilities, including energy consumption. Advises the company and the organisations concerned with IT in terms of lasting alternative solutions that comply with the company’s strategy. Applies a purchasing and sales policy for eco-responsible IT products.

Importance of the competence	
Impact	1
Comments	<ul style="list-style-type: none"> • The forms of the competence are not changing, but its importance is increasing

B – Build

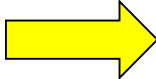


- B1. Application development
- B2. Component integration
- B3. Testing
- B4. Solution deployment
- B5. Documentation production

Figure 2: Impact of the digital transformation on the IS Function’s “Build” competences

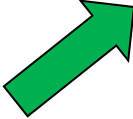
B1. Application development

Designs and develops hardware and/or software components that comply with the required specifications, including questions related to energy efficiency. Follows a systematic methodology for the analysis and construction of the required components and interfaces. Performs unit and system tests in order to guarantee that the requirements are met.

Importance of the competence	
Impact	3
Comments	<ul style="list-style-type: none"> • The impact is considerable for all competences related to development (B) • The digital transformations include the three competences B1, B2 and B3 • The intricacy relates to B1, notably the working methods with the business lines; the needs are no longer expressed in the same manner (encouraging face-to-face, oral expression over written => Agile manifesto, principle 6) • Importance of the iteration of the co-construction mindset • The ergonomic aspect is becoming fundamental


B2. Component integration

Installs hardware components, software components or additional sub-systems within an existing system or one that is being developed. Adheres to the established processes and procedures (for example, configuration management), while taking into account the specifications, capacity and compatibility of the existing modules and the new modules, in order to guarantee integrity and interoperability. Verifies the system’s performance and guarantees the formal approval and documentation of a successful integration.

Importance of the competence	
Impact	3
Comments	<ul style="list-style-type: none"> • The impact is considerable for all competences related to development (B) • The digital transformations include the three competences B1, B2 and B3 • Like architecture, this competence is increasingly important, “integration is architecture in practice”

B3. Testing

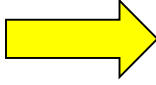
Prepares and carries out systematic test procedures for the IT systems or the usability requirements, in order to guarantee compliance with the design specifications. Guarantees that the new or updated components / systems operate as expected. Guarantees compliance with the internal, external, national and international standards, including for health and safety, usability, performance, reliability and compatibility. Produces documents and reports in order to confirm the certification requirements.

Importance of the competence	
Impact	3
Comments	<ul style="list-style-type: none"> • The impact is considerable for all competences related to development (B) • The digital transformations include the three competences B1, B2 and B3

B4. Solution deployment

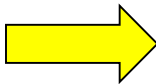
Carries out, on the basis of general best practices, the programmed actions that are needed in order to implement the solution, including the installation, update or decommissioning. Configures the hardware,

software or network in order to ensure the interoperability of the system’s components, and corrects all related anomalies or incompatibilities. Arranges for additional specialised resources, if necessary, such as network suppliers. Formally delivers an entirely operational solution to the user and completes the documentation with the relevant information, including the hardware characteristics, as well as the configuration settings and the performance-related data.

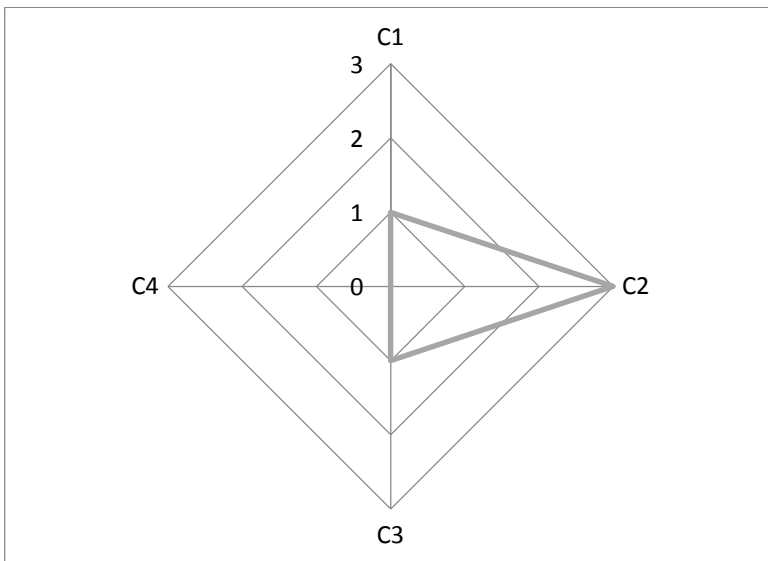
Importance of the competence	
Impact	3
Comments	<ul style="list-style-type: none"> • The impact is considerable for all competences relating to development (B) • The digital transformations include <i>at least</i> the three competences B1, B2 and B3 but also B4 and B5 depending on their maturity.

B5. Documentation production

Produces documents that describe the products, services, components or applications in order to establish their compliance with the appropriate documentary needs. Selects the style and appropriate resources for the presentation media. Creates models for the document management systems. Guarantees that the functions and characteristics are appropriately documented. Guarantees the validity and updating of the existing documents.

Importance of the competence	
Impact	3
Comments	<ul style="list-style-type: none"> • The impact is considerable for all competences related to development (B) • B5 is included in the other competences: the product, as a result of its ergonomics, is self-supporting and no longer needs to be documented • The ergonomic aspect is becoming fundamental

C – Run

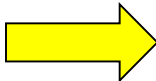


- C1. User support
- C2. Change support
- C3. Service delivery
- C4. Problem management

Figure 3: Impact of the digital transformation on the IS Function’s “Run” competences

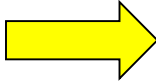
C1. User support

Responds to the requests and questions from users; gathers all useful information. Resolves or escalates all incidents that have occurred, and optimises the system’s performances. Verifies the outcome of the proposed solution and the resulting customer satisfaction.

Importance of the competence	
Impact	1
Comments	<ul style="list-style-type: none"> • The label remains the same, but the forms and practices will be modified. • This is all part of a growing appropriation of digital technology by users. We put forward the following hypothesis: support requests should decrease as this appropriation grows over time • The question will arise as to a one-stop shopping or the transfer of the support to the user him/herself

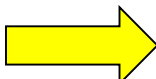
C2. Change support

Implements and provides recommendations for the evolution of an IT solution. Verifies and efficiently schedules any hardware or software modifications in order to avoid an excessive number of upgrades that could produce unforeseeable results. Insofar as possible, reduces the service interruptions after IT modifications and complies with the defined service contract (SLA).

Importance of the competence	
Impact	3
Comments	<ul style="list-style-type: none"> • The impact is strong, as this involves a total change of approach • Today, the exact opposite must be done • As defined here, the title is misleading, this involves more of a verification than support. We must move from verification to genuine support. • Better to use the expression "Support for permanent change"

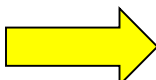
C3. Service Delivery

Takes preventive measures to guarantee that the applications and IT infrastructure are stable and secure. Updates the database of operational documents and records all events in a log. Provides the maintenance of the control and management tools (i.e. scripts, procedures...).

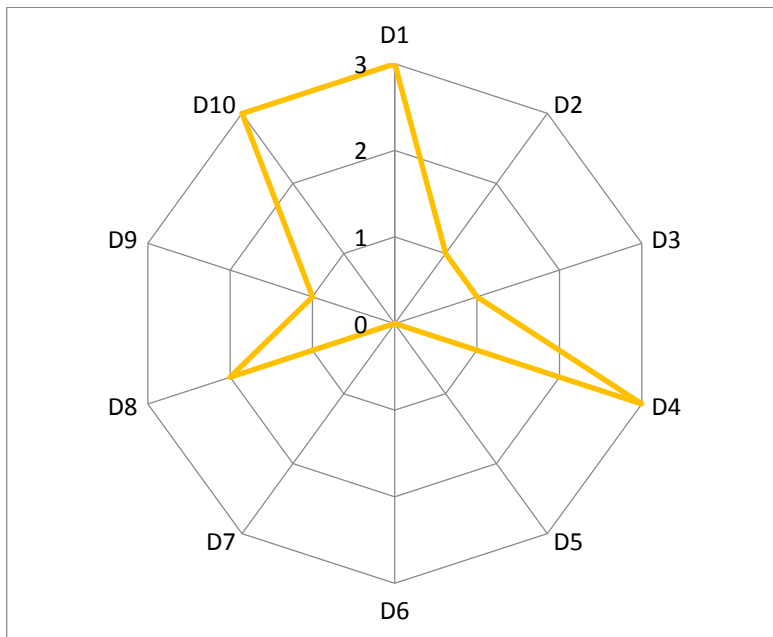
Importance of the competence	
Impact	1
Comments	<ul style="list-style-type: none"> • The changes will involve the speed of execution

C4. Problem management

Identifies and resolves the initial cause of any incidents. Anticipates the underlying causes of IT problems. Implements a knowledge management system based on the recurrence of current errors.

Importance of the competence	
Impact	0

D – Enable




- D1. Information security strategy development
- D2. IT quality strategy development
- D3. Education and Training services
- D4. Purchasing
- D5. Sales proposal development
- D6. Channel management
- D7. Sales management
- D8. Contract management
- D9. Personnel development
- D10. Information and knowledge management

Figure 3 3: Impact of the digital transformation on the IS Function’s “Enable” competences


D1. Information security strategy development

Designs and arranges for the application of an official strategy for maintaining the information security and integrity, while indicating its scope and establishing a culture. Defines the rules for the information security management system, including the identification of the roles and responsibilities (see D.2). Uses standards in order to set data integrity, availability and confidentiality objectives that are specific to the company.

Importance of the competence	
Impact	3
Comments	<ul style="list-style-type: none"> • This competence is becoming vital in an open world • The change has to do with the posture and spirit in which security is applied (Moving from <i>Dr. No</i> to a <i>business partner</i>)

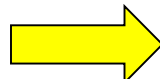
D2. IT quality strategy development

Defines, improves and clarifies an official strategy for satisfying customer expectations and improving the performance of the company's activities (compromise between costs and risks). Identifies the critical processes that affect the supply of the services and performance of the products, in order to define them in the IT quality management system (see D.4). Uses standards to prepare objectives for managing the quality of the service, product and process. Identifies the IT quality management responsibilities.

Importance of the competence	
Impact	1
Comments	<ul style="list-style-type: none"> • The competence remains fundamental • The background trends (acceleration...) are appreciably altering the attention paid to quality. Indeed, non-quality is one of the risks of acceleration

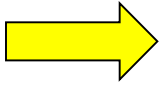
D3. Education and training services

Defines and implements an IT training policy in order to meet the needs for developing competences and to make up for any shortcomings in the organisation. Structures, organises and plans the training programmes, assesses the training quality using a feedback process, while implementing a continuous improvement process. Adapts the training programmes in response to the demand for change.

Importance of the competence	
Impact	1
Comments	<ul style="list-style-type: none"> • The more the IS Function produces <i>user friendly</i> applications, the more the “natural” trend will be for a reduced need for training

D4. Purchasing

Applies a coherent procurement policy, including the implementation of the following sub-processes: definition of the requirements, identification of the suppliers, analysis of the proposals, assessment of the energy efficiency and of the environmental compliance of the products, assessment of suppliers and their processes, negotiation of contracts, choice of suppliers and signing of contracts. Ensures that the complete purchasing process is suited to the objective and provides the organisation with added value.

Importance of the competence	
Impact	3
Comments	<ul style="list-style-type: none"> • Acceleration is resulting in a desynchronization between the technological implementation timeframes and the purchasing timeframes • New competences relative to purchasing: knowing how to <i>source</i> and gather competences; knowing how to diversify the suppliers (while involving small structures that have technological know-how, after 10 years of the cult of software packages and major integrators)

D5. Sales proposal development

Develops technical proposals in response to customer needs and provides the sales personnel with a competitive offer. Highlights the energy efficiency and a proposal’s impact on the environment. Works with his/her colleagues in order to adjust the proposed solution (service or product) to the organisation’s capacities.

Importance of the competence	N/A
Impact	N/A → does not apply to Corporate IT

D6. Channel management

Develops a management strategy for third party points of sale. Guarantees the optimal commercial performance of the sales network of the value added retailers (VAR), thanks to a coherent company and marketing strategy. Defines the objectives in terms of volume, geographical coverage and industrial sector for the commitments relative to the VARs, and puts together incentive programmes intended to encourage high sales performances.

Importance of the competence	N/A
Impact	N/A → does not apply to Corporate IT


D7. Sales management

Oversees the fulfilment of the sales results by means of implementing a sales strategy. Demonstrates the added value of the organisation’s products and services to new or existing customers, and to prospects. Sets up a sales support procedure that ensures efficient response to sales-related inquiries, in compliance with the company’s strategy and policy. Prepares a systematic approach to the overall sales process that includes an understanding of customer needs, forecasting, assessing prospects, negotiation tactics and closing the sale.

Importance of the competence	N/A
Impact	N/A → does not apply to Corporate IT


D8. Contract management

Brings in and negotiates contracts in compliance with the organisation’s processes. Ensures that the products from suppliers are delivered within the deadlines, meet the quality standards and are compliant with the agreed service levels. Deals with non-compliances, escalates significant problems, directs the recovery plans and modifies the contracts, if necessary. Maintains the budget’s integrity. Assesses and manages the compliance of suppliers with the legal, health, safety and security standards. Maintains active and regular communications with suppliers.

Importance of the competence	
Impact	2
Comments	<ul style="list-style-type: none"> • The impact is average • The contractualization timeframe and the production timeframes are out of sync • The produced objects are increasingly vague and flexible, this must modify the spirit of the contract.


D9. Personnel development

Prepares an appraisal of the individual and collective competences, by identification of the needs and shortcomings. Studies the training and improvement possibilities and selects the appropriate method, while considering the needs of the individual and of the company. Advises and/or guides individuals and teams in order to meet the training-related needs.

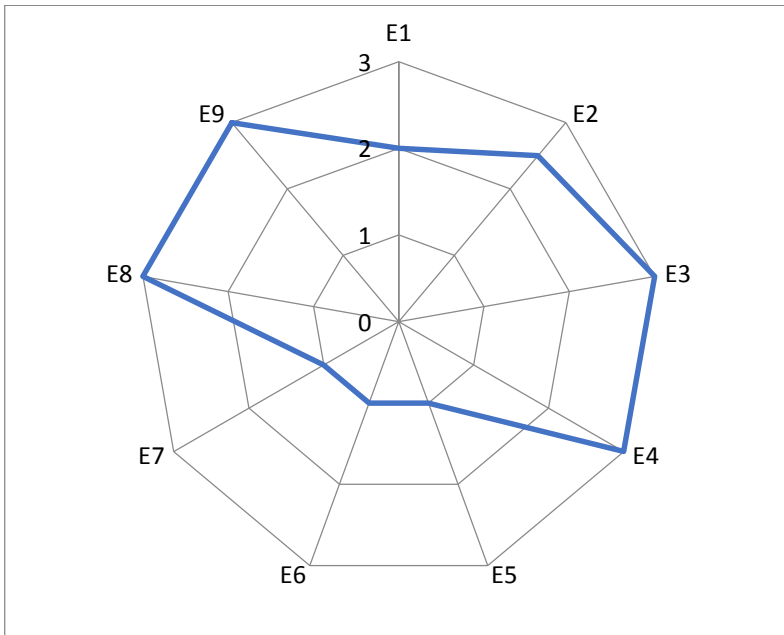
Importance of the competence	
Impact	1

D10. Information and knowledge management

Identifies and manages the structured and non-structured information and studies the information dissemination policies. Creates an information structure for the purposes of the usage and optimisation of the information, in order to improve the company’s activity. Verifies the tools having to be implemented in order to produce, extract, maintain, renew and spread activity-related knowledge so as to capitalise on the information.

Importance of the competence	
Impact	3
Comments	<ul style="list-style-type: none"> • The competence is becoming fundamental • The term “proficiency” in the definition is becoming increasingly ethereal. We are moving from a world of control and proficiency to a world of open experimentation • Appearance of <i>Data Scientists</i>

E – Manage



- E1. Forecast development
- E2. Project and portfolio management
- E3. Risk management
- E4. Relationship management
- E5. Process improvement
- E6. ICT quality management
- E7. Business change management
- E8. Information security management
- E9. IS Governance

Figure 4: Impact of the digital transformation on the IS Function’s “Manage” competences

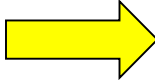
E1. Forecast development

Interprets the market’s needs and assesses its acceptance of the products or services. Assesses the organisation’s possibilities in order to respond to future production and quality requirements. Uses an efficient measurement system in order to provide the right guidelines to the production, marketing, sales and distribution functions.

Importance of the competence	
Impact	2
Comments	<ul style="list-style-type: none"> • Forecasts of the future by measuring what already exists: Strengthening of the measurements => measurement culture (cf. OCTO); this is the measurement for creating value, and for making <i>information-based decisions</i>

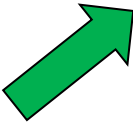
E2. Project and portfolio management

Implements an action plan for a change programme. Plans and carries out a project or portfolio of IT projects while looking after the coordination and interdependencies. Orchestrates the projects such as to develop or implement new internal or external processes for the purposes of responding to the company's identified needs. Defines the activities, responsibilities, critical control points, resources, needs for competences, interfaces and the budget. Prepares plans for dealing with unforeseen problems during the implementation. Carries out the project within the allotted time and budget, and in compliance with the original requirements. Produces and maintains the documents needed to facilitate the monitoring of the project's progress.

Importance of the competence	
Impact	2/3
Comments	<ul style="list-style-type: none"> • The function remains necessary but the practices are changing • The orchestration is increasingly complex

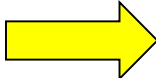
E3. Risk management

Implements the risk management in the information systems by applying the risk management policy and procedures defined by the company. Assesses the risks for the organisation's activity and documents the possible risks and the action plans for verifying them.

Importance of the competence	
Impact	3
Comments	<ul style="list-style-type: none"> • This competence is becoming vital in an open world • The change has to do with the posture and spirit in which security is applied (Moving from <i>Dr. No</i> to a <i>business partner</i>) • We speak more about risk management than security management

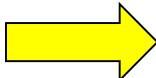
E4. Relationship management

Establishes and maintains positive commercial relations between the customer and the service provider (internal or external), in compliance with the organisational processes. Maintains regular communications with customers / partners / suppliers, and conveys the needs while taking into account their environment and how they manage their affairs. Guarantees, relative to customers / partners / suppliers, that the needs, concerns or complaints have been properly understood and are being dealt with in compliance with the policy of the organisation / institution.

Importance of the competence	
Impact	3
Comments	<ul style="list-style-type: none"> • Acceleration is resulting in a desynchronization between the technological implementation timeframes and the purchasing timeframes • New competences relative to the management of customer-supplier relations: knowing how to <i>source</i> and gather competences; knowing how to diversify the suppliers (while involving small structures that have technological know-how, after 10 years of the cult of software packages and major integrators)

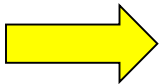
E5. Process improvement

Measures the efficiency of the existing IT process. Researches and assesses the design of the IT processes on the basis of various news sources. By modifying a process or technology in order to come up with a measurable business improvement, follows a systematic assessment, design and implementation methodology. Assesses the possible negative consequences of a process modification.

Importance of the competence	
Impact	1
Comments	<ul style="list-style-type: none"> • The competence remains fundamental • The background trends (acceleration...) are appreciably altering the attention paid to process improvement


E6. ICT quality management

Implements an IT quality policy intended to maintain and strengthen the service providing and the delivery of the products. Schedules and defines quality management indicators in view of the IT strategy. Reviews the quality performance indicators and puts forward recommendations with the aim of continuous quality improvement.

Importance of the competence	
Impact	1
Comments	<ul style="list-style-type: none"> • The competence remains fundamental • The background trends (acceleration...) are appreciably altering the attention paid to quality. Indeed, non-quality is one of the risks of acceleration


E7. Business change management

Assesses the implications of the new IT solutions. Defines the needs and quantifies the business-related benefits. Manages the implementation of the change while considering the structural and cultural difficulties. Maintains the continuity of the activity and processes during changes, verifies the impact of these changes and adopts any necessary corrective action and adjustments.

Importance of the competence	
Impact	1
Comments	<ul style="list-style-type: none"> • The more the IS Function produces <i>user friendly</i> applications, the more the “natural” trend will be for a reduced need for training


E8. Information security management

Prepares the information security policy. Controls and take measures against intrusions, fraud, violations or security-related leaks. Guarantees the risk analysis and management relative to the security of the company’s data and information. Reviews any security incidents and puts forward recommendations for the continuous improvement of the security.

Importance of the competence	
Impact	1

E9. IS Governance

Defines, implements and controls the management of the information systems in line with the company’s ambitions. Takes into account all internal and external parameters such as a compliance with legal and industrial standards, in order to direct the risk management and roll-out of resources in such a manner as to provide the company with the right service level.

Importance of the competence	
Impact	3



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