BearingPoint®

CDO alliance Digital Officers

CFO 4.0: Augmented CFO or Uberized CFO?

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Editorial

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We are at the heart of a massive digital revolution that is already transforming life and businesses, the 4th industrial revolution. The 2016 World Economic Forum in Davos made it the theme of their conference.

The speed at which this revolution is occurring is phenomenal: It only took Google 8 years to reach a billion euros in turnover, and the "unicorns", new technology companies that have reached a billion euros in market capitalization in just under ten years, have multiplied to come close to 200 (167 exactly) in 2017.

A few figures to highlight the transformation in progress:

- The latest industrial revolutions have always been accompanied by social and human progress and have created more jobs than they have destroyed. As for this fourth industrial revolution, while it will likely lead to the disappearance of 50%[1] of current jobs within the next 20 years, it will also serve as a formidable vehicle for innovation: 85% of jobs in 2030 do not yet exist[2].
- Digitalization is the main reason why 1 out of every 2 Fortune 500 companies has disappeared since 2000: the dismantling of KODAK or NOKIA, too big and too slow, are two emblematic examples.
- The operator of tomorrow is a robot like HUBO (80 kg) who knows how to drive, carry loads and perform dangerous functions (the Fukushima site uses them). Administrative functions are not spared: digital assistant flourish and continue to absorb administrative activities. Management cannot avoid the use of robots. Some companies in Asia are experimenting a board of directors that counts robots as members.

Within large companies, the Finance Department is at the heart of this wave and no area is spared by the tremendous transformation underway: according to a study conducted by Oxford in 2014, accountants will be the first digital refugees. Big data offers a new field of action in predictive analysis and is about to revolutionize performance management methods.

1 The future of employment: how susceptible are jobs to computerisation?, Carl Benedikt Frey and Michael A. Osborne, September 17, 2013
2 Institut du futur

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Process robotization is already a reality among SSCs, and young millenials working in finance will come to expect new methods and far less linear career paths.

Fundamentally, this boom in new technologies (cloud, AI, blockchain, RPA, big data, etc.) offers CFOs an unparalleled opportunity to reinvent the financial function by becoming the true "architect of value creation," the perfect co-pilot of a company that has become more agile.

Finally, it offers them the possibility of extending their influence well beyond the financial function by setting the tone for a much broader transformation in the company, embracing new, much more innovative and collaborative working methods.

- What changes can "Digital" bring about in the financial function of companies?
- What profiles will be needed to effectively carry out the missions?
- How to support this change?
- What will be the typical profile of the CFO 4.0?

BearingPoint, CDO Alliance and FI+ teamed up and interviewed leaders in the world of finance who were involved in this type of issue to take stock of the current situation, identify real use cases, trends, the best start-ups, and the key factors of successful digital transformation programs.

We wish you a good reading and hope that you will share our enthusiasm for the richness of the testimonies gathered.

Seeking operational excellence

A digitalization of transactional processes already well underway

Until the end of the 20th century, accounting did not undergo any major changes. The 1990s and 2000s marked a real breakthrough in the way transactional flows were approached in companies. The implementation of IFRS, the strengthening of internal control, the generalization of Enterprise Ressource Planning (ERP) and the implementation of new organizational modes (Shared Services Center, outsourcing) have led to a real paradigm shift.

Since the 2008 crisis, companies have been looking for ways to "do more with less" by rationalizing costs and increasing the quality of the services provided. Within this context, digitalization allows for greater efficiency and the chance to achieve operational excellence.

As for automation, the implementation of ERP programs in companies is now behind us and the automated accounting translation of business events is a reality for the majority of large companies. Previously large-scale data entry operators, accountants are gradually refocusing on control activities. However, the 100% analysis oriented accountant is still not up to date.

Accounting has certainly been a pioneer in the field of digital technology, particularly when it comes to the digitization of invoices, which has been available for some twenty years. However, not all companies are in the same position. While some large industrial or distribution groups are achieving digitization rates around 90%, many companies are still using "opportunistic" dematerialization, based mainly on the implementation of EDI flows, rarely exceeding a few dozen suppliers. Semi-digitization, through the sending of PDF invoices by email, has until recently greatly divided companies on their acceptability as tax evidence.

The regulatory context is also changing to become a real catalyst for dematerialization (Chorus Pro in

France, but also the European Directive for all Business to Government - B2G flows, similar context in Latin America and Asia). The emergence of new acquisition channels, such as the possibility of direct entry on the portal or the implementation of ePDF (sending the PDF to a generic address, directly posted on the platform), as well as networked platforms, represents the potential to exceed the glass ceiling in terms of digitalization. The decree of 03/22/2017 in France represents a real paradigm shift, allowing, under certain conditions, to get rid of paper once it has been scanned.

At the organizational level, the accounting activities of certain companies are now mainly shared and operated in Shared Service Centers (internal or external).

This type of organization, always on the lookout for new efficiency levers, is constantly looking for new work methods and productivity tools. Once limited for production activities, Lean Management is gradually becoming increasingly important in CSPs to track down issues, involve teams and propose simple improvement to be implemented. The management of service quality is a major focus of the development of the relationship with internal customers.

"The regulatory environment is changing to become a real catalyst for dematerialization."

New levers at your disposal to aim for zero paper

Collaborative and ecosystem-based B2B platforms

Going digital is not just about the opportunity to digitalize accounting processes and transform paper flow into electronic flows. Through the use of the networked platform model, it gives the opportunity of new services for CFOs in a production mode radically different from the historical model.

On platforms such as Tradeshift, Basware, Coupa or Cegedim, or other professional social networks, customers and suppliers are now interconnected. In the logical way of an extended enterprise, these platforms have the following characteristics:

- they offer configurable business rules to be implemented by the company on the platform (e.g. obligation to enter an purchase order number to post an invoice). Compliance checks are transferred to suppliers before the invoice is submitted, which saves a lot of time in resolving discrepancies or lack of information once the invoice is in the ERP;
- they ensure that all invoices received comply with local regulations. They also guarantee traceability of the invoices' receipt dates, for example in the event of an audit;
- they ensure faster integration of suppliers by eliminating entry fees for suppliers;
- they enable third parties to develop and offer applications and services in the relationship between customers and suppliers (dynamic discounting based on cash positions, financing solutions, flow management solutions, etc.);
- they provide a modern, cloud-based and easy-

to-use user experience for interacting with employees and suppliers.

DYOA (Do Your Own App): tailor-made applications in a few clicks

To strengthen the management and performance of their organizations, CFOs constantly seek control of financial processes. However, in any company, there are so-called "orphan" processes that escape the standard ERP processes and remain mainly processed by mails/ Excel files. Some examples:

- request/modification of supplier master data;
- management of the chart of accounts;
- investment request;
- credit note approval;
- modification of pricing conditions.

Use case: implementation of the Tradeshift solution for a major global logistics player

The customer has historically had a variety of applications worldwide to manage its digitized supplier invoice flows, with interoperability difficulties between these solutions and supplier integration on the platform (only 35% after two years of project). A first objective was to "onboard" 1,500 suppliers for Europe (i.e. integrate them on the platform so that they can file their invoices directly and view their payment status) to cover a majority share of the millions of invoices processed annually. Tradeshift was selected after consultation, in particular for its free access for suppliers, its ability to comply with tax constraints in 37 countries and its ease of onboarding for suppliers (especially for the smallest among them) with a wide variety of formats accepted on the platform (PDF, ePDF, scanned invoices, direct entry on the portal). The possibility of extending the use of the platform to the entire PtoP chain at a later stage was also a decisive advantage.

The new generation of BPM solutions, iBPMS (Intelligent Business Process Management Suite) with solutions like Bonitasoft, combines the functionalities of traditional BPM with new functionalities. Basically, BPM solutions (such as Aris or Mega) allow you to design processes, focusing on their modeling, often at documentation purposes (quality or internal control). iBPMS solutions go further: they aim to guide users and facilitate continuous improvement. Their main characteristics are as follows:

- it is possible to model processes easily and quickly thanks to intuitive modeling, without the need for technical skills;
- iBPMS solutions allow processes to be executed as workflows. Process flows are launched and employees are automatically informed of the tasks to be performed;
- these solutions can easily be connected with other existing information systems (e.g. ERP);
- they make it possible to control more precisely the execution of processes and to measure their performance.

100% digital accounting closing

Made even more significant in a logic of accelerating the timeliness of financial information production, the control of the closing activities is a recurring concern among finance departments. Although all ERP systems have functionalities to describe and track these activities, their actual use remains limited. This has allowed solutions such as Blackline or Trintech to enter this market. Their value proposition:

- Fence control, with a dashboard customized by profile and list of tasks to be performed. This management system allows a CFO to know at any time when closing activities are done, even in the case of shared processing within a SSC.
- They make it possible to digitalize the audit file: each account is subject to justification rules to organize the accounting review work. Each account statement, in any electronic form, may be attached to the audit file and carried over from a closing period to another. The result is a significant reduction in the need for justification work and represents a real gain in archiving. Similarly, the statutory auditors are invited to carry out their audit directly by accessing the platform.
- They provide powerful tools for account reconciliation (especially intercos), at a detailed level.
- They also make it possible to guarantee the traceability of cut-off entries, with the logging of requests and automatic accounting features.

Robots to go further in automation

The emergence and constant expansion of the use of robotization solutions (or RPAs for Robotic Process Automation) observed in recent years represents new opportunities for finance functions to increase their operational efficiency while valuing internal skills. Indeed, RPA can extend to many areas within business processes, from financial closing to validation workflows within ERPs, automating low-value, time-consuming tasks for employees.

According to our study, 1/4 of the companies has already implemented or plans to implement a robotization project in the near future. While large companies seem particularly dynamic in this area, the SMEs are not to be outdone and are also investing.

Robotics: how does it work?

While the term robotization has been very popular for few years, the tools used are much older and for good reason: they are in fact scripting tools, i.e. a super Excel macro that allows you to save mouse clicks and repeat them on demand without any limitations. Immediate advantage: they can be executed at any time, 24/7. Unlike a high level of automation within a tool (ERP for example), these scripts can interact with all the tools available on a workstation: mail, Excel, ERP... To set up a robot, it is enough to essentially create a "day in a life" behind a person who performs a given repetitive process to allow the engineer in charge of robot configuration to record each step of the execution of this task, with all possible variants.

Example of RPA use cases in the finance function

1 Procure to Pay	2 Order to Cash	3 Record to Report	4 Transverse
Invoice compliance checks	Customer solvency analysis	Account reconciliations	Third party repository administration/ accounts
Reminder from missing validations	Scoring and credit limits	Bank reconciliations	Compliance/ Internal control
	Automation of incoming payments	Intercos Reconciliations	Opening/closing of accounting periods
	Handling of customer disputes	Impairment for doubtful receivables	
	Maximizing the impact of customer dumming	Production of financial statements	

These RPA tools, allowing the control and input of information, connection/disconnection to applications (internal and external), or web browsing, ensure partial or complete automation of many accounting and financial processes. These robots, capable of replacing and/or assisting manual action on standardized and repetitive tasks, allow human resources to be assigned to higher value-added functions.

In the event of an exceptional or unparametered situation, the robot will inform the user so that he can manually process the reported case. As a result, manual entries are greatly limited or even eliminated from the process, reducing the risk of errors and helping to strengthen the company's compliance procedures.

Beyond the productivity gains offered by RPA, these solutions make it possible to replace missing interfaces and limit the breakdowns between the various systems involved in the finance function's processes. And the results are there: 92% of the companies surveyed which have already implemented robots in the finance function are satisfied with the results. Nevertheless, these RPA solutions in the form of "super-macros" seem to simply ensure the transition before the emergence of new generation tools with more advanced artificial intelligence.

Is the accountant of tomorrow virtual?

And the robot became intelligent

Beyond RPA tools, new innovative technologies are emerging as opportunities to bring intelligence to the automation of accounting processes in a continuous value creation process.

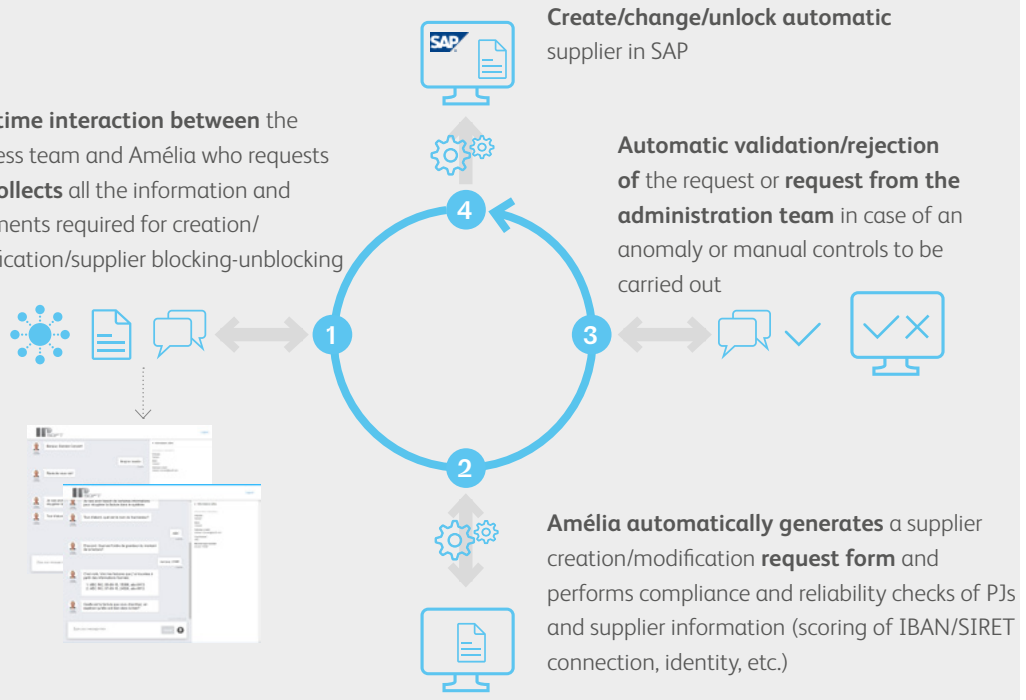
Through contextualized data processing, semantic information analysis and machine learning functionalities provided by artificial intelligence (AI) solutions, these new generation robots have become true virtual assistants capable of understanding, decoding emotions and enriching themselves through events they are confronted with and their interactions with the user. AI makes it possible to extend the scope of RPA, significantly increase the share of eligible processes, increase productivity gains by increasing the speed of task execution and improve data quality by capitalizing on past experience.

Technology is now sufficiently advanced to gradually replace human activities with robots, and accounting positions are highly exposed to the risk of progressive substitution, forcing the financial departments of the future to define the positioning of artificial intelligence within the company's strategy: is AI intended to support, assist or substitute the human resources involved in accounting processes?

Use cases of artificial intelligence in the finance function

1 Procure to Pay	2 Order to Cash	3 Record to Report	4 Transverse
Assistance in entering purchases requests	Assistance in creating a new customer account	Query/spot analysis on a KPI	Assistance in the management of the employees requests
Assistance in the validation flows	Assistance in handling customer complaints		
Take over of suppliers' calls/emails			

Use case of the Amélia solution to support supplier creation requests



Create/change/unlock automatic supplier in SAP

Automatic validation/rejection of the request or **request from the administration team** in case of an anomaly or manual controls to be carried out

Real-time interaction between the business team and Amélia who requests and **collects** all the information and documents required for creation/ modification/supplier blocking-unblocking

Amélia automatically generates a supplier creation/modification **request form** and performs compliance and reliability checks of PJs and supplier information (scoring of IBAN/SIRET connection, identity, etc.)

Towards virtual SSCs?

Technological innovations are leading finance departments to rethink traditional decision-making processes, i.e. optimizing costs, through the implementation of SSCs, or by relying on outsourcing solutions. As low-value activities can be partly operated by robots, CFOs will need to challenge the value of outsourcing or relocating to low-cost countries, in favor of internalized process automation, which generates similar savings while ensuring the sustainability of local jobs.

SSCs have always been designed with a view to specializing and rationalizing tasks. In centralizing data, whether invoices, contracts, or the management of customer files, they facilitate the production of operational tasks in a fast and standardized way, whatever their nature, with the corollary of the need for a physical grouping of the teams in charge of data processing.

Digitization now makes it possible to free oneself from this constraint. The presence of the teams on site is no longer required. All processing and validation flows no longer require this physical proximity constraint since reception, processing and verification can be carried out simultaneously hundreds of kilometres away. The SSC can thus easily be imagined and designed in a completely dematerialized way. The tools available to companies - instant messaging, document digitalization, digital workflows - allow teams to be grouped into a "virtual SSC". This is a major advantage for the implementation of such a system, where low geographical mobility (especially in France) is always a major obstacle.

Digitization also opens the door to mixed SSCs, where some of the major time-consuming activities would be outsourced and where higher value-added expertise tasks would be maintained internally. Real-time monitoring of subcontractors and the introduction of dynamic management to be possible developments in the relationship between the company and its SSC.

The blockchain to guarantee data integrity

The blockchain, traditionally associated with the banking sector, promises to be extended to other areas and appears as a lever for optimizing accounting processes. This technology for storing and transmitting information, which operates without an intermediary acting as a trusted third party (e.g. banks, insurance companies), nevertheless makes it possible to guarantee the transparency and security of the transactions carried out.

The blockchain: how does it work?

If you have never heard of blockchain, you have probably already heard the term Bitcoin, the virtual currency (or cryptocurrency) that is not administered by any central control body. Bitcoin works precisely on the principle of the blockchain: users of this currency can exchange it for free without any intermediary. All transactions on the Bitcoin network are recorded and can be accessed by anyone at any time. A blockchain is a database that contains the history of all exchanges between its users since its creation. This database is secure and distributed: it is shared by its different users, without intermediaries, which allows everyone to check the validity of the chain.

(source: blockchain France)

Thus, it is a mean of digitization the flow of information and transactions between the various stakeholders involved in accounting processes. The emergence of "smart contracts" is a good example: these autonomous programs automatically execute the terms and conditions of a contract, without requiring human intervention, thus reducing the costs of verification, execution, arbitration and fraud.

Other cases of use of the blockchain can be imagined and allow savings of platform for tomorrow's CFOs: for example, as part of supplier referencing, the company could rely on a blockchain system to create and maintain a shared and secure supplier repository, ensuring continuous availability and authentic control of information exchanged with third parties.

What are the consequences for employment and skills?

Between the robotization of the simplest processes, the change of organizational models and as the number of virtual assistants increases, the accounting function will undergo a major change in its positioning within the company. The accountants will increasingly position themselves as true financial experts in the service of other finance functions (controlling, treasury, etc.) and operational departments. Without transactional processing, they will be able to put analysis and optimization at the heart of their business. Information architects and real project managers for the evolution of IS, their competence will be critical in the definition and design of increasingly complex and autonomous Finance IS. Only the accountant's expertise will allow the implementation of systems responding to ever-increasing legal and operational constraints.

As a result of this technological evolution, the accountant will no longer be an doer, but a supervisor of automated processes. While he previously transcribed the past, he will now intervene more upstream in the management of the company. Mapping and scoping the processes to be robotized, monitoring the transfer of manual activities now delegated to robots, controlling processing and managing issues are all new tasks that will become part of his daily life.

Of course, this change in scope and the delegation of time-consuming tasks to robots will have an impact on the workforce, which will see its numbers reduced and its skills evolve.

Less transactional and more analytical, the accountant will have to rely on new expertise. They must develop an appetite for technology and master Lean or Six Sigma management techniques that can be an integral part of the standard training curriculum. In mature organizations, such as SSC, a continuous improvement unit is always set up to manage process performance and carry out optimization projects.

Karine Sirmain CFTO* of the Engie Group

What are the characteristics of your position as Chief Finance Transformation Officer?

I am at this position at Engie Group since September 2017. I perceive these new responsibilities as a time-limited position, which is why I opted for a 30-month assignment. I believe that, beyond that date, the transformation must be driven by each of the employees within the finance function, i.e. 5,000 people across the Group. My leitmotiv for this mission: "to resist to the Chronos to catch the Kairos," in other words, to give another temporality to finance (the Kairos is the time for the appropriate opportunity: it is the right time to act).

What is the general context of this transformation?

This transformation is part of the Group's 2016-2018 plan, which is accompanied by the implementation of two complementary programs, namely the 3D program (for Digital, Decentralization and Decarbonization) at Group level, which should lead Engie to become a Data Driven Company, and the 4E program (for Efficiency, Effectiveness, Enablement, Expansion) for the finance function.

How is your roadmap articulated?

The roadmap is structured around 3 dimensions: People (also called Talents), Processes and Platforms. The transformation of the finance function is also divided into three levels. First, the development of key programs with dedicated teams, such as our Common Finance program with the deployment of SAP S/4 HANA, or the program to extend shared service centers outside Europe and reorganize them in end-to-end macro-process (cross-functions). This transformation must also take the form of local initiatives, where everyone can imagine the future. The important thing in this case is to share feedback so that everyone can benefit from it.

Finally, at the last level, the Finance Lab represents the possibility for the Corporate to help or to finance local initiatives. These initiatives are based on several categories of tools: analytics (which includes datavisualization and real-time data at Engie), which was the subject of the first initiatives, transactional and business intelligence (including the predictive dimension).

*Chief Finance Transformation Officer

How did you define the ambition of your program?

This transformation program is based on 20 quantified objectives for finance in 2020. For the People dimension, for example, we have set a target of 3% of people in the finance function positioned in new professions (robot manager, data scientist, etc.). On the Process side (structured around the major P2P, OTC, RTR macro-processes), the objective for Global Business Services (GBS) is to become the "best in class" for each macro-process. We also want to reduce the time spent on data crunching by 60% and increase the time spent on value-added activities by 50%. Finally, on the Platform dimension, we have drawn up a SAP S4/HANA roadmap for the Common Finance project.

How do you facilitate the transformation?

This transformation requires the commitment of everyone, starting with the top 50 Finance (BU CFOs and Group Process Owners), who all include an item on financial transformation in their annual objectives. Two meetings at level group's finance function are organised each year, with a trophy ceremony rewarding 10 winners (out of 60 applications received for the first promotion). We also use corporate social networks to drive the change, but it takes time and is complex. Many studies reveal that membership in a social network is generally perceived as a sign of disloyalty to management; it is therefore necessary to structure the counter-powers for these networks to be beneficial for the transformation. In addition, a YouTube channel (called NetFi) broadcasts videos on different themes (such as robotization and big data) representative of the diversity of professions and initiatives. Finally, the progress of this transformation is regularly measured. In addition to quantitative reporting of objectives and "Engie & Me" (Group commitment barometer), we launched a specific financial survey to assess the understanding, support and recommendation of the transformation program.

Some concrete illustrations of successful projects...

To date, we have observed a greater maturity in the accounting populations, operational cash flow and tax experts, more willing to change than management control, where the population is more diffuse. The robotization projects initiated in mid-2016 have progressed a lot, we now have a farm with about 40 robots available. Operators are enthusiastic, as these robots are seen as an alternative to outsourcing and allow a review of the processes involved. We have also used blockchain to secure the process for obtaining guarantees (bank or not) in the regulated sector.

What challenges do you face?

Being a CFTO is a real challenge, because I don't have a dedicated team and therefore have very little control over this transition. Identifying change agents is a major challenge: 250 people are currently involved in this change management process, but we need 1,000 of them. Indeed, 20% is enough to change the behaviour of the remaining 80%. In addition, the Engie & Me study shows that the engagement rate in finance is 76%, two points lower than at Engie's overall level, and that a certain heterogeneity exists within the function related to geographical and cultural disparities. This transformation is difficult to conduct because of the strong resilience of the financial populations. Middle management is also a barrier, as these cross-functional initiatives are often perceived as a threat.

What are the key success factors for you for this position?

The legitimacy acquired through my previous positions is a real asset to this mission. A noticable and funny point: it is also necessary to be able to identify and rely on what I would call the "positive deviants", i.e. those who always manage to find the shortest way to achieve the same result. Their profile is quite different from the traditional majority populations in financial functions, which tend to comply scrupulously with the guidelines.

The performance automation management at the time of Analytics

Bystander or actor of the current business models' disruption?

The recent disruption of the business models came from digital platforms which used the data as the new oil of their operational performance. They build an operating model to collect and monetize the data.

Each year, the American magazine Fortune ranks the list of the 500 world's largest companies and the statement is unequivocal: 52% of the companies that were listed in 2000 disappeared from this prestigious ranking. Numerous examples can be found where century-old companies are outperformed by newcomers on a market where barriers to entry still seemed to be insurmountable.

The brand Kodak, leader of its market for about one hundred years, never believed in digital and sticked to silvery photography's development until it died in 2012.

More recently, giants like Toys'R'Us, Nokia or Motorola disappeared for the same reasons: their leadership only focused on their core model. Survival and redeployment strategies are however possible, as was the case for Fujifilm. The company, more flexible by nature, realized it had to develop a new internal expertise in new technologies whereas Kodak seemed to think that its main strength remained its brand and its associate marketing.

The hotel industry is a good illustration of these turmoils. The Marriot group owns about one million rooms. It is valued at $16 billion and has about $1 billion in real estate assets to manage. Airbnb, its digital competitor, is valued at $31 billion for an equivalent service, despite its not owning a single room proposed on its platform. In France, Airbnb is now worth €2 billion, or 15% of hotel accommodation revenue. The companies, too preoccupied with looking for additional revenues, reducing risk, and reaching a critical size, did not see the innovation coming.

The digital companies operating SMAC technologies (Social, Mobile, Analytics & Cloud) had an advantage over the others. As for Marriot and Airbnb, the digital revolution disrupted most of the companies' business models. Facing this disruption, CFOs need to reinvent their management model and to make it evolve in a more agile and flexible way, and in the same time to integrate know-how. To reach this goal, they can take advantage of the available data lake. Stephen Gold, IBM marketing Director, announced in 2011 that 90% of the existing data had been created over the last two years. The volume of the available data is indeed doubled every two years. According to the analyst firm IDC, the dark data, or data coming from the business processes, are not being used and cannot serve an analytical environment. The same firm believes that by the year 2020, the companies that efficiently use their data should achieve a total operational gain of $430 billion.

The possibilities seem limitless. As for Jack Ma, the emblematic founder of Alibaba, "data is the new oil".

Controlling data – financial or operational – has become one of the major prerogatives of CFOs.

It is likely that Mariott and Airbnb have evolved towards radically different performance analysis frameworks, in order to support a legacy model and a digital platform model respectively. It is also clear that their CFOs have had an instrumental role in transforming their respective businesses.

The best capitalizations require the continuous measurement of relevant business indicators and the ability to add value to abundant data. These two skills are essential for a complete transformation of operations and business models. The implementation of the CEO's strategy and the need for businesses to measure their performance and build a roadmap require a strong ally: the CFO 4.0.

"As for Marriot and AirBnB, the digital revolution disrupted most of the companies' business models."

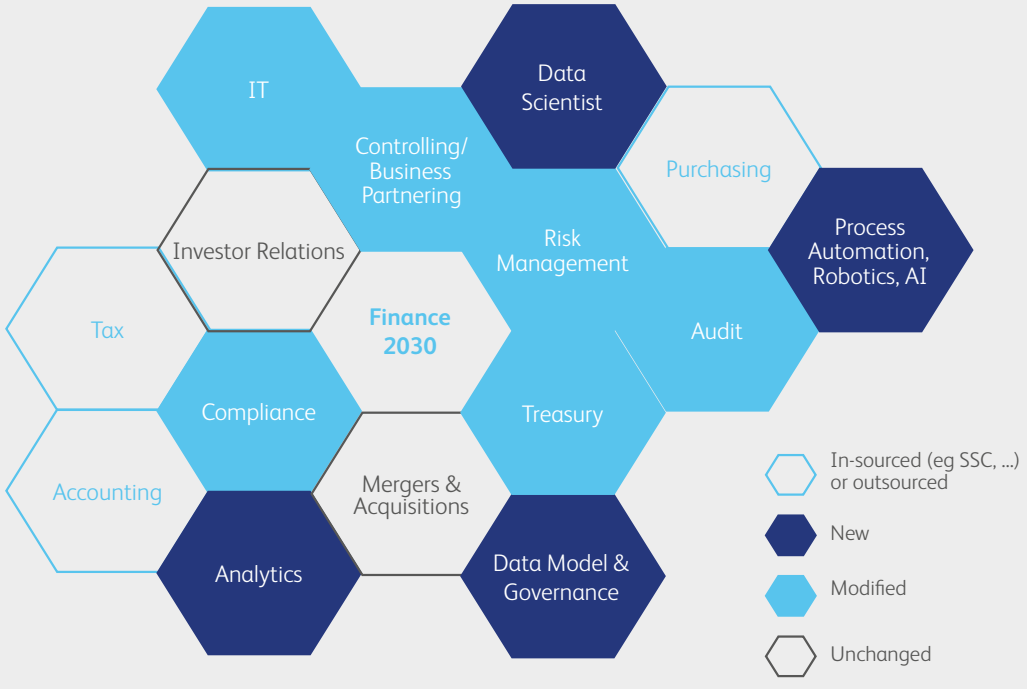
The CFO 4.0 Jedi of data? From dark data to lightning data

The CFO 4.0 must ensure the CEO's strategy and support the business lines in using dark data issued from internal processes. He is the herald of data literacy, which can be defined by the in-depth knowledge of how data are produced and can be used. The CFO must provide his expertise, data, KPIs and best experts to ensure the success of the transformation taking place within the various departments.

It is indeed this evolution of the CFO towards a leader of the company management that Karine Havas, CFO of GEFCO, senses:

> *The CFO is no longer a mere owner of information, but a supplier and a conductor of reliable and certified information. He puts operations and decision-making organs of agile and flexible tools crossing operational and financial data, and allowing a quick strategy's guidance, at disposal. Finance no longer validates: it drives strategy, it is the conductor of management.*

Which evolutions for the Finance function?



Source: BearingPoint Study, 2016

This transformation drives an evolution of the CFO's role towards three main aspects:

- Conductor of the management: He is the engineer of the company's transformation. He is attentive to the global operation and sets up accurate adjustments to improve the performance of the organization's different organs. He integrates new performance indicators in his financial models such as the traffic of a website, the brand value, the informational legacy of the company and the CSR measurements (environmental, social and ethical). He needs to co-drive the transformation in a transversal way, being connected to all of the company's departments because it is impossible for them to cope being left alone;
- a *data evangelist*, not a *data scientist*: He promotes and supports business models' transformation, identifies the projects that create added value in the P&L, sets up new approaches to the financial processes, trust the digital and develops a talent management policy adapted to the aspirations of new generations in search of meaning at work;
- Architect of the performance: He invests in the new technologies, develops data competencies, uses the machine learning algorithms, oversees their learning processes in order to transform its company into a more data-driven one. He develops a strategic vision of the costs' structure and makes them more flexible to improve the working order of the company.

The business transformation is ongoing in most of the big companies, but this statement is also true no matter the size, the activity or the position of the company; the CFO will have to adapt his choices and his priorities according to his constraints.

"The CFO must provide his expertise, data, KPIs and best experts to ensure the success of the transformation taking place within the various departments."

The financial controller, the beginning of a new era?

A third of surveyed companies imagines the disappearance of the financial controller by 2030.

New technologies of big data will deeply transform the financial controller's role. Data will be plethoric, easily available, ready to be digested by algorithms running in an automatic-learning way that will deliver thousands of indicators, dozens of interactive speaking dashboards and millions of real-time decisions. Is the financial controller going to lose his job, as 30% of the companies being asked predict (source: 2017 BearingPoint study)?

The reality will probably be really different. We are convinced that the companies' development relies on their capacity to manage, organize and add value to huge volumes of data.

Different studies state that only 50% of the data available in the ERP are used to make decisions, and that in order to make this decision or establish a KPI, the analyst will need to spend 80% of his time to "refine" the data.

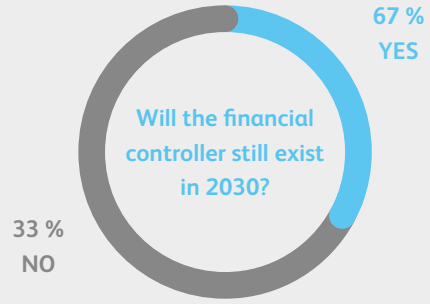
The data transformation work that takes up most of the Controller's time will disappear. The core of its mission will be to transform these data into information. The financial controller is what Peter Drucker called in 1959 a "knowledge worker": he will proceed to cross-reference data to make information more relevant to guide the decision-making.

The financial controller will still exist in 2030 but the nature of the CFO's team will have changed

... transformation will be overall human-oriented

84 % of the companies think they have to improve their teams' competencies to adapt themselves to **new ways of working**

26 % of the companies already have or will integrate profiles of data scientist within the financial controller's teams



Source: Study BearingPoint, 2017

Let's take for instance the turnover, which is a coumpound data.

The turnover can be expressed in thousands of invoices; to compare it over several years determines a tendency, and if a previsional dimension is added, then the information given is no longer descriptive but prospective. If a plan of action is finally proposed, it becomes prescriptive. A piece of information is a data to which a business orientation and an operational objective are added; its value is multiplied if it can be reproduced effortlessly and delivered in a simple way.

New tools such as cloud facilitating the forecast, the reporting and modeling on large volumes of data have become essential to transcend the profession of financial controller such as Tidemark, Anaplan, Power Bi, Qlick, Tableaux, HyperCube and so on. These tools are built with entertaining and intuitive interfaces that ease exploration, simulation and restitution.

The capacity of these tools to connect themselves to different data sources and to propose user-friendly tools for information visualization leads to users becoming more creative; they identify new issues in exploring data, propose new indicators, develop real applications with an accurate business use. It is not ongoing artificial intelligence but carbonaceous intelligence, more multitask. It is important to note that artificial intelligence does not achieve all the tasks related to a creative process. The proposed solutions efficiently complete the perceptive and cognitive activities of

Use case: optimize the forecast and budget for a leader of the global hotel industry

Facing a strong reconfiguration of the industry, a global leader of the hotel industry wanted to digitalize and harmonize the forecasting processes of all its hotels worldwide (scope of 1,000 hotels). It also wished to take advantage of this project to improve the reliability of the monthly forecast and to adopt an approch of innovative project:

The company chose the Anaplan solution (cloud solution of reporting and budget preparation) to support the forecasting processes. To meet the project's objectives, BearingPoint suggested adopting the design thinking method to imagine the scope processes and the expected functionalities of the coming tool. An agile methodology was implemented in order to avoid the tunnel effect and to involve the key users at each step of the implementation (through sprints: short development cycles, iteration and validation with the final users).

The implementation of a MVP (Minimum Viable Product) on a limited number of pilot countries was also chosen to promote the reactivity and the interactions. To ease the users' engagement, sponsors were identified to coach the new tool's handling. After the roll-out, 1,500 users were able to manage their forecasting processes using Anaplan.

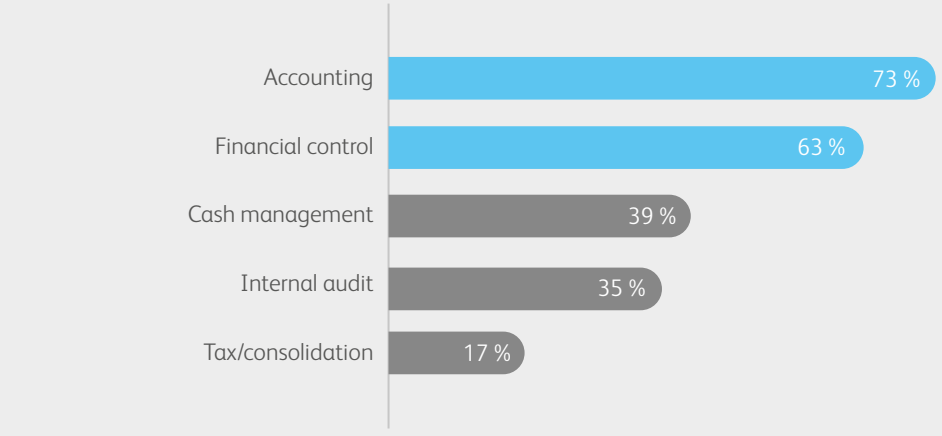
the financial controller. The financial controller 4.0 will reorient his activity towards reseach issues, will convince the internal teams of the importance to solve them and will finally support the implementation of the solutions within the operational teams. Susanne Liepman (CFO Group, ETYPHARM, President FI Plus) states that the other companies' departments have new expectations from her teams. They are being asked to become increasingly involved in this new management, "The financial controller's job will change: less information manipulation and more communication skills. It will be about transversality in the field, and at the same time to gather the business actors and to guide them into their strategy's definition."

Despite the excessive use of the "big data" expression, few traditional companies reached a sufficient maturity level in this field, even if some prototypes have been made. The operational solutions entirely integrated into the company's processes are still very uncommon and will take 5 to 10 years to be spread out. It is also important to consider that machine learning needs a huge amount of data to be efficient, and most of the companies only own a few hundred gigabites.

Algorithms need then to be controlled by business experts to compensate this shortage: it is called supervised learning. It seems indeed logical that a few more years are needed before the big data technologies can be implanted in the companies and be able to support the analytical work of the financial controller.

The study conducted by BearingPoint in 2016 clearly states that the CFO are deeply aware of the new technologies' impact on collaborators and more specificly on the financial control's activities.

Which are according to you the more impacted activities by the big data and the analytics?



Source: BearingPoint Study, 2017

Use case: easing the financial reporting at Carrefour

Toucan Toco is a reporting solution using visualisation to make the data available to everyone and to allow a fast KPI's analysis.

Excel has been the financial reporting's tool for a long time for the Comex and the countries' director of the Carrefour group (15 to 20 people). The figures were consolidated in a PDF not really useful due to its lack of legibility.

For only three months, Toucan Toco implemented an application within the group, putting in a fast and fluent way about 450 pages of reporting at disposal. The data submitted are coherent from the store to the Comex's group.

The CFO 4.0's role is to support his company towards new missions in order to pave the way to ongoing transformation. His short-term roadmap relies on 4 basic principles:

1. Guaranteeing the accuracy of the data sources which will be used:
- Defining the data sources in the "single source of truth" mode;
- Defining the assembly, transformation and data use cases' rules;
- Validating and integrating new rules as they go along.

2. Integrating the technological solutions of the big data/analytics in everyday life:
- Using the processing and data visualisation capacities;
- Implementing predictive models for business activities;
- Permanently watching over new technologies about data processing.

3. Analyzing companies' ecosystems in terms of risks and opportunities:
- Detecting the macro tendencies from the analytics;
- Identifying incoming issues.

4. Giving the business a perspective:
- Developing data visualization solutions addressing the business's expectations;
- To propose and follow up operational plans of action.

The financial controller profession will indeed deeply evolve. As Jacques Ndongué (FP&A Dassault System's Director) says: "The future financial controller will still have to be skilled in reporting or consolidation. He will necessarily have to know how to work from nothing and thus draw from the following competencies: flexibility, project management, IS understanding, data and mathematics understanding statistics."

The reporting factory is dead. Welcome to the data factory!

A few years ago, we saw reporting factory services, mostly dependent on the Finance management. Their goals included giving large volumetrics of reporting standards to operational departments. These reports were mostly sent by email, sometimes a few dozen per day. The tools used were complex and requested a mix of technical and functional skills.

Since then, the data-related initatives have doubled under the marketing and commercial management pressure in order to have a deeper knowledge of their market and clients. The projects lead to CRM implementation, datalake, DMP, which all collect and process heterogeneous data.

Most of the CFOs stood by this smooth ongoing transformation in the companies' information world.

These initiatives did not happen without consequences on current expenses: data purchases, renting technological capacities and new profiles recruitment. Operational indicators' coherence has sometimes suffered from the different systems that processed the data without checking its sources or evaluating its quality. The strategic importance of some projects forced the CFO to involve themselves and to bring their expertise of raw data, action plans, in the unsteering of information systems and the implementation of collaborative projects.

It is time to rationalize!

The advent of new, more mature and more collaborative technologies, has taken part in this transformation and has broken down barriers between the different solutions already in place. It is now possible to have solutions that guarantee the uniqueness and accuracy of the data made available for all the company's application solutions.

Master Data Management projects provide a satisfactory solution to ensure access control and data protection and meet GDPR requirements when it comes to operating them.

Financial gains are often significant because these projects help to reduce acquisition and maintenance costs for data and IT infrastructure. But the most significant gains come from sharing the resulting qualitative information.

A common example includes the purchasing departments, where the ecosystem of partners is rediscovered through spending analysis tools, which allows them to fully apply the price conditions that were negotiated.

What finally remains from the activity managed by the "reporting factory"? Not much perhaps, but its responsibilities will evolve to bring more added value. The reporting factory will now be focused more on sourcing, controlling and guaranteeing data accuracy. It will work as a hub which will allow to share and to fully use the knowledge and the analysis between the different systems. It will meet the expectations of the regulator in terms of data protection and guarantee an enhanced access control to the company.

It is not about putting reports at disposal but mostly some certified data with multiple interpretations. The added value of such systems will remain in their capacity to develop a data operating model which will allow to use at its best the company's data when a decision is made by the business teams. The CFO's teams will be at disposal to support the sources' evaluation and guarantee the KPI. It will then be about data factory!

Organizational structure scope of a finance department in 2030 in Dassault system:

CFO

Data Intelligence
BI/EPM tools functional administration

Other departments
TAx, Reporting/Consolidation and so on

Data analytics
Build prospective scenarios based on information given by the intelligence data unit, and on exogeneous data (markets, clients) to predict the evolution of the undergoing

Performance management
Operate on the prospective scenarios proposed by the data analytics department, aligned with the business and with short and mid-term issues – they will be the business partners of tomorrow

Big data and analytics: new tools at the CFO's disposal

New tools to value the data

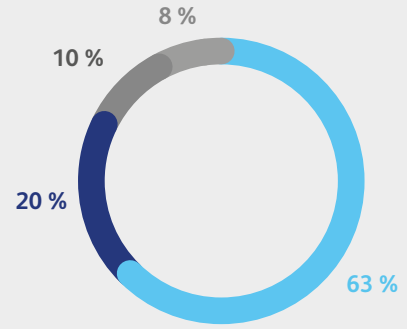
The American company Cisco estimated in 2017 that global Internet traffic exceeded 1 zettaoctect, the equivalent of 150 million years of high definition video production. In a world where the quantity of available data, structured or unstructured, is exponential, BI and decision-making tools adapt themselves by offering solutions which allows the handling of large volumes of data from multiple sources from very heterogeneous media such as e-mail, CRM, ERP, voice, etc. One of the challenges is to provide simple and visual access to this variety of data and to allow the work not to be analyzed but to be explored.

This is perfectly illustrated by this quote from Einstein: "Logic will lead you from point A at a point B, the imagination will take you where you want to go."

Thus, according to the BearingPoint study, nearly two thirds of the companies surveyed see big data and analytics as the main opportunity to optimize reporting produced by the finance department for the benefit of their analysis.

Beyond productivity gains, advanced analytics technologies produce a real leverage effect on the value brought by data mining and analysis. New capabilities for high-volume data processing and access to data science services increase the financial controller's capacity to produce forecasts, and above all to propose and monitor plans of action.

What are, according to you, the main advantages proposed by the big data and analytics to the financial management?



Source: Workshop BearingPoint CFO4.0, 2017

Use case: optimizing network of bank branches' revenue with predictive analysis

A major retail bank (1,300 branches, 6.2 million customers) wanted to improve the performance of its branch network. More specifically, this group sought to identify the most appropriate levers per agency to maximize revenue per client and engaged BearingPoint to do so.

To identify these levers, our teams first collected and processed four years of history covering a wide spectrum of data (catchment area, clients' segment, sales performance, HR data, marketing actions, competition, and so on.) characterizing each of the agencies. We then modelled this data using our HyperCube platform to develop the simulation and recommendation engines. Finally, the whole package was made available to users in a very ergonomic application form.

Put in the hands of the management control teams, this application strengthens the dialogue with branch managers by offering the possibility, in real time, to simulate and interact on the most relevant operational levers to achieve objectives.

A powerful and available technology

Big data technologies became hopefully democratized and are nowadays available for the CFO 4.0:

- The big data, deep learning and artificial intelligence technologies can be bought or rented at very competitive prices due to the competitiveness of Google, Amazon, Facebook, Microsoft and Salesforce;
- The functional/human skills necessary to the success of the integration of those tools are available in consulting firm that are closer to the "business" than the IT integrators;
- A small amount of data is sufficient for a project to succeed, because the company's first need is the internal performance management's continuous improvement;
- The « Agile » project management method that assists those tools integration facilitates the skills transfer to the company's internal teams.

Gathering algorithms and pairing them with statistical methods to test hypotheses is certainly not new, but new capabilities have recently been developed around the concept of artificial intelligence.

These technologies can be summed up by two major advances: understanding and cognition.

The advances in language analysis are spectacular in the comprehension's field. Stanford University measured that the error rate inherent in speech recognition was halved between 2016 and 2017. Who still remembers that in the 2000s, 1 out of every 2 requests processed by interactive voice servers actually involved a human? In the same study, it is stated that this new means of interaction takes 3 times less time than typing on a keyboard. It is likely that virtual assistants, these famous "chatbots", will invade the daily lives of management controllers by facilitating access and processing of information in real time, 24/24 to internal and external customers. Many interactions with accounting SSC are time-consuming and can be handled effectively by bots.

Many questions underline that: “What was the budgeted turnover for this department/business unit for the fiscal year?” Bots’ integration into the data factory could also be used by management controllers in data mining, “Make me a graph of the last 10 years turnover by comparing them with the forecasts”, “What is the sales trend compared to the budget for the quarter? ” and for business lines, “Give me a projection of the stock of our flagship references at the end of next week”, “What are the out of stock products that have been ordered by my 10 biggest customers?”. Questions that chatbots would be able to answer, once connected to the right data sources, to enable finance departments to be more agile and responsive.

In “cognition” or more trivially problem solving, the machines’ ability to use machine learning algorithms made them more effective than experts in highly specialized anomaly or optimization identification tasks. The use case often highlighted by Google is the optimization of the energy consumed by its own data centers, which has been reduced by 15% per machine learning even though experts had carried out an infrastructure’s tuning. The systems are able to analyze very large amounts of data in record time. By using the understanding and cognitive skills of artificial intelligence at the same time, Morgan Stanley saved some 360,000 hours of control over loan files received from agencies.

Other solutions complete the CFO 4.0 toolbox, such as data visualization or war rooms. One of them was associated with Hololens glasses to give users an experience similar to the first scenes of the Minority Report movie. Imagine your next animated business reviews in a 3D environment with a COMEX scattered around the world.

“The machine’s capacity to use machine learning algorithms makes them more effective than experts in very specific identification tasks of anomaly or optimization.”

Which approach to a big data/analytics project within your company?

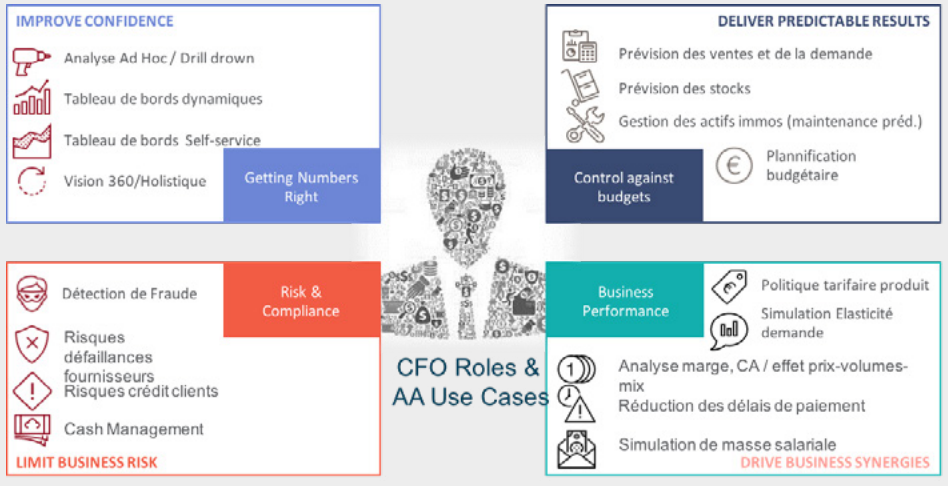
Find the right use case according to your operational levers

Our study and feedbacks allowed us to highlight 5 key success factors for a successful big data project:

1. Identify a real use case that provides immediate operational performance and for which it is possible to calculate a ROI.
2. Limit the project's duration to 3 months, which is the time required to produce an agile pilot, and take some more time if the value induced by the project is demonstrated during the analysis and development phases.
3. Build a project team including your best business experts since they are the ones who will supervise the algorithms by controlling the "experiments": never forget that the best results are obtained by pairing humans with artificial intelligence.
4. Embed IT teams in your project upstream because their role will be to deliver data in compliance with the group's rules and then take over responsibility for the solution's delivery in an industrial mode.
5. Think about the deployment step as soon as the pilot is completed, in order not to disappoint the expectations of the target users with whom you would have started to communicate.

Beyond these 5 key elements of the approach, the first initiatives' pitfall was related to the primacy of technology over neglected uses. The fact that the business lines have taken over the projects did not help to break down the barriers to these initiatives, such as shown in the study conducted by BearingPoint in 2016.

Big data & analytics: Use cases relevant for financial departments



Source: BearingPoint, 2017

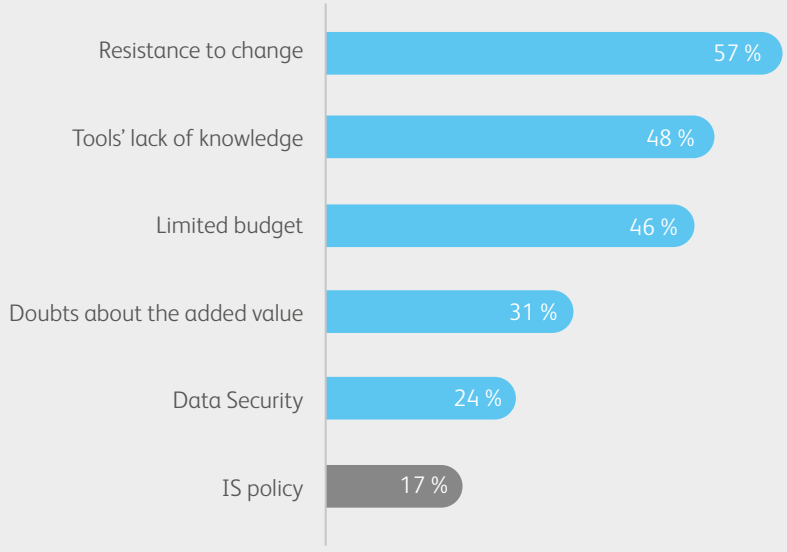
According to our experience, use cases, which represent as many challenges that the CFO 4.0 must face, are structured around 4 key areas:

- reliability of sales, revenue, expense, inventory and cash flow forecasts...
- reduction of fraud risks, default risks, payment delays;
- increase your ability to give reporting to business teams, thanks to the capabilities of new BI and decision-making tools to collect and analyze data within your company;
- strengthening the role of business partners to serve the operational performance by offering your services in price targeting, data repository management;
- our study highlighted 3 essential conditions for the success of these big data approaches;
- "think big, start small". Start with a small area to test your "challenge": target quickly available data;
- "act wise". Don't scatter, stay rigorous: early in your project, challenge its ROI and the ability to industrialize your solution;
- "prove or leave". If your project does not create value, stop it quickly but above all move to another use case because successes are easy to achieve.

It is often essential to call on change management experts with extensive experience in the use of big data technologies. They will help you avoid the pitfalls that reduce to zero the efforts you could produce alone by structuring your project approach, making your team agile and helping you make the right technological choices and to solve 3 essential questions that go along with big data projects:

- how to build internal and external data repositories that can be used by big data technologies and solutions?
- how to carry out a real change management in order to "break" silos within organizations by working on the transversality of the data? As a reminder, 45% of respondents who have already worked on a big data project consider the organizational brake to be more important than technical or skills availability barriers;
- how to bring projects into compliance with governance, security and GDPR rules in an offensive approach to data use?

According to you, what are the hurdles to the implementation of a big data & analytics project within your company?



Which path for the CFO 4.0?

Until now, the CFO has not been really committed in digital because these technologies were initially mainly at the service of the customer experience driven by marketing departments.

However, the challenge today is to intensify the use of big data technologies such as artificial intelligence and process robotics,cognitive computing and the Internet of Things (IoT) to give a new impetus to existing business models.

The best strategy to integrate big data technologies into operational uses is to experiment with them and acquire a good understanding of them by multiplying the use cases and sharing feedbacks. The CFO's knowledge of internal systems and his team's skills give him a key role in transforming the company into a data-driven business model.

The path to CFO 4.0 positioning will not be made in a day. As Clara Silvestri, CFO of Microsoft, illustrates: "The challenge is for the CFO to take over the company's data strategy. He remains the only master on board of the structured data by controlling the 'unique data sources.' He is legitimate in this position because his teams have extensive experience of data accuracy and are able to generate objective and reliable information. They have a natural ability to give an operational sense to improve internal decision-making".

Of course, this robotization and the increasingly strong influence of technologies about big data highlights the fantasy of eradicating the function of the management controller. On our side, we do not believe in the total uberization of the finance function. According to a latest study by Oxford researchers, humorously highlighted by the BBC on its website[1], 35% of jobs will be "robotized", i.e. replaced by big data technologies.

The breakdown of the figures by level of leadership underlines very well the challenges of transforming the finance function in the coming years. According to this Oxford study, the replacement rate for finance functions over the next 20 years is:

- 97% for accounting, financial, cash collector, treasurer functions;
- 51% for the tasks of management controllers, credit-risk;
- 7% for CFO tasks, i.e. as much as for an air traffic controller (see image opposite).

1 The BBC posted the results of the study conducted by two Oxford University researchers Michael Osborne and Carl Frey, who calculated the level of automation of a profession based on nine key skills required to perform it: social perceptiveness, negotiation, persuasion,
assistance and care for others, originality, fine arts, dexterity, manual dexterity and the need to work in
a small workspace. http://www.bbc.com/news/technology-34066941

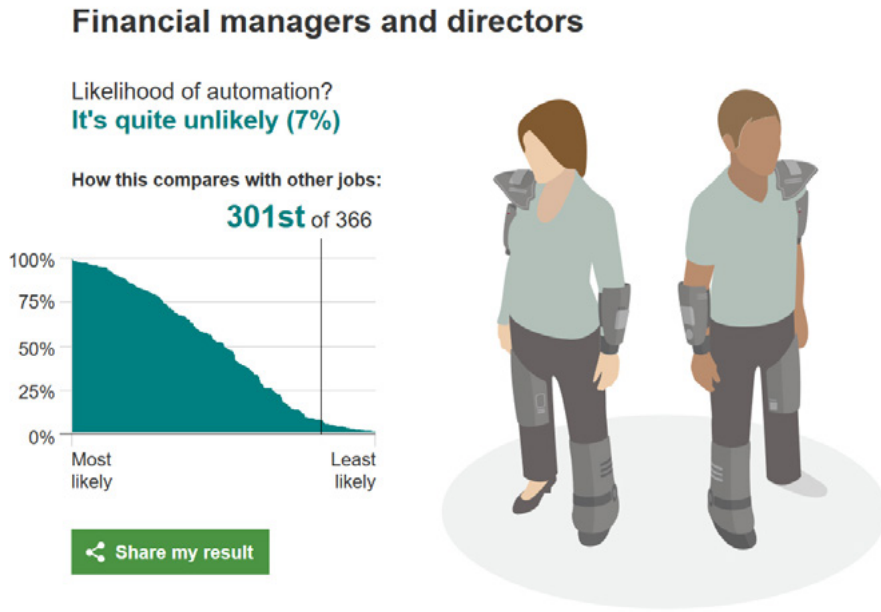
Will a robot take your job?

CFO 4.0 is entering the knowledge economy where expertise will be more important than labor force. Virtual assistants will amplify his team's abilities. However, the CFO will have to be vigilant not to fall into extreme situations and leave business management to robotic assistants who are too confident. It is important, as a recent article by Professor Avner points out Bar-Hen Holder of the Chair of Statistics and Massive Data at the CNAM, to strengthen training and skills in artificial intelligence in order to prevent "humans from becoming more and more stupid".

The very notion of intelligence requires the ability to justify a choice and therefore to be able to challenge it. He recalled that the APB post-bac admission system, strongly criticized for its limitations, is called the Gale-Shapley algorithm and is known for its optimality properties.

The tasks' robotization will spare some time that will be reinvested in the supervision of decision algorithms, in the problems to solve identification, and in anticipating changes in the behaviour of economic actors that will be more and more frequent and undetectable by AIs. To succeed in this transformation, the CFO 4.0 will have to quickly integrate new skills such as analytics, data modeling and data governance. For example, these teams will probably have to decode Python, a new language specific to machine learning to ensure the smooth running of processes and ensure "after-sales service" for decisions taken automatically!

In a nutshell, the AI will not replace the CFOs but the CFOs using the AI will eventually replace those that do not.



Clara Silvestri Microsoft France CFO

"The CFOs are the evangelists of the Digital: it is up to them to drive the digital transformation of their companies!"

According to you, what are the challenges that companies and financial departments will face by 2030?

Four major trends are shaking up companies and the productivity of the Finance function:

- The data boom is clearly the major trend: their volume, diversity and accessibility have changed the paradigm in companies and the world of finance in particular. We are now facing the era of "data democracy": power is no longer in the hands of the person who owns the information, but rather in the hands of the one who knows how to share it in a secure, simple, reliable and easy-to-use way. Storytelling has become a key resource.
- Mobility: employees want to be able to access this data from any location and any site. The need for agility has become a "must-have."
- Artificial intelligence, which disrupts the user experience and significantly increases our predictive capabilities.
- Finally, the cloud, which is the keystone for any digital transformation project. It is indeed the cloud that gives access to confidential data, in a totally secure way and from anywhere and on from any device. It instantly facilitates data use and intensively (Big data, Analytics, bots, AI, etc.), which makes these projects less dependent on IT departments' internal resources and leads to global cost savings.

How do you perceive the maturity of Microsoft's Finance Department in this digital transformation?

We are a "high-tech" company and are actually ahead of most of the major groups in terms of technological innovation. Within Microsoft France, the Finance Department is the one that has really driven and steered the digital transformation.

I myself am relatively new to our organization (it has been about a year) and I believe we have been pioneers in certain areas:

- We have a quite intensive use of new technologies, and I personally believe that CFOs should make the most of them. Their use enables us to be much more productive and encourages collaboration between different departments. As far as social networks are concerned, we use Yammer, in particular, as a kind of "internal" press. All information concerning the arrival of a new team member, an award or a promotion is very quickly spread via this application. For team communications, we use "Teams" extensively. We use our in-house tools, "one Note" for note taking including via smartphone and "Sharepoint or Teams" to share our documents.
- At Microsoft, the "Bots", the famous virtual assistants are already part of our daily lives. We have at our disposal "CORTANA", a digital assistant, based entirely on Microsoft technologies, with whom we can communicate in natural language about our daily problems: "What's my next meeting? etc." Our "bots" also allow us to address requests about our processes or compliance points in record time: Which is our travel policy to go to the US for a given category of employee? What is the amount of unpaid invoices due? What is the amount of work in progress for this customer?... On these issues, machine learning allows us to progress very quickly.
- Finally, for the reporting and analysis of our KPI's, Power BI, our flagship reporting and analysis tool is truly our bible.

Beyond these technological aspects, the transformation is also, in my opinion, if not above all, cultural. It must be embodied in the mindset, corporate culture and behavior of the management teams, and more generally in every individual.

The importance of empathy, collaboration and customer orientation is being rediscovered. I experience this every day at Microsoft, because we are an ongoing transformation company.

In his book "Hit Refresh", Satya Nadella – our CEO –describes this phenomenon very well. We probably live with Artificial Intelligence, Quantum Computing, Virtual and/or augmented Reality, the most disruptive wave of technology that humanity has ever known. In this highly competitive and changing environment, we must constantly challenge ourselves to remain leaders, to renew ourselves, to seek new energies and new ideas, and finally to rediscover the soul of our company.

Finance is not just about figures in tables, it does not avoid the importance of this cultural dimension of the company because its role is transversal, truly 360°.

Our role is also to ensure that each entity and each individual is aligned with the company's vision, objectives and priorities.

What are the key factors for a successful transformation?

A company's ability to transform itself is mainly related to 3 factors:

- leadership of the management team;
- a culture that must be agile and humble enough to accept constant reinvention;
- a positive attitude and the ability to remain vigilant.

Beyond these fundamentals, it is necessary to have available accessible data, based on a common language and a coherent and homogeneous reference framework. It is also essential to have the technological skills needed to use this data (data scientists, digital advisors, and so on), as the latter are not necessarily internal resources. In today's world, we must rely on an ecosystem of partners (publishers, start-ups, etc.) and their innovative capacities. In addition, but needless to say, the data must be available in the cloud. It is also necessary to ensure that these projects benefit from strong sponsorship from decision-makers. Finally, as recent events have shown us, it is essential to anticipate the problems associated with data ethics: social responsibility, transparency, confidentiality, security, etc.

How should the Finance Department renew itself to follow and be part of this transformation?

The most important thing for a Finance Department is to know how to provide easy and efficient access to transparent to business operations. At Microsoft, the CFO of one country can access all financial data from other countries, whether past or future (excluding consolidated data for external communication purposes).

Financial departments still spend far too much time "crunching" and producing data. Companies in general are probably nowadays on a scheme where they spend most of their time producing data, rather than analyzing it. Tomorrow, the Finance Departments will have to operate in the opposite way: devote most of their time to analyzing data rather than producing it, in an 80/20 logic. To achieve this target, we have implemented at Microsoft what we call a "discipline at the core", i.e. a coherent taxonomy, a unique data source and fully standardized corporate reporting. Of course, the technology via Power BI, has been a key lever for adoption.

In addition, I expect a higher rate of outsourcing of low value-added activities of the Finance Departments. The latter will then be able to refocus on activities that require analysis and hindsight, which will enable it to position itself as a true business partner.

I am convinced that this digital revolution will have a significant impact on the controllers' profiles and more generally on that of CFOs. Expertise is no longer the key. Critical skills will include understanding new technologies because it is through them that we will bring intelligence and added value to the company in the future. Skills focused on management, leadership, communication and project management are of considerable importance. The development of an strong business sensitivity is also essential. I also see this as an opportunity to see oncoming CFOs from the business rather than from the Finance sector, which is still quite exceptional today.

Controllers will evolve from the role of figure inspector to that of data conductor.

As for the CFOs, they should be less "risk adverse" while mastering the technological and digital challenges and knowing how to invent use cases that will have a key added value for the business.

In this case, how do you see the financial teams evolving over the next 5 years?

Increased globalization and the development of digital technologies will necessarily have an impact on our tools and operating methods.

Tomorrow's teams will be a mix of "robots", "AI" and management controllers with a very strong business orientation, using new technologies as much as possible to eliminate non-value-added tasks.

I imagine "enhanced" collaborators by these new technologies, allowing them to have a more important business orientation than today. It is not a question of operating with fewer employees, but with more efficient employees who are able to make the most of new technologies.

To succeed in this transformation at the team level, it is very important to give the meaning of these evolutions, to explain the target vision and be very clear about the actions to be implemented.

What initiatives have been taken specifically on big data and analytics at MS?

We have implemented a Machine Learning tool used in all countries to improve our forecasting process. This tool is based on learning algorithms using machine learning, which allows us to refine the results obtained each quarter.

Nevertheless, we continue to use a traditional approach for our countries' forecasts in parallel, allowing us to compare the results with those obtained

via the “AI”. The results are surprising: we have indeed gained 3 points in terms of accuracy. The machine therefore produces more reliable and accurate results than our traditional process, as it is free of human tactical bias.

But let us not fool ourselves either. If the “machine” has improved the accuracy of our Forecast, the budget remains a manual process that needs to be co-constructed with the business. The tool has many advantages but the business at the finest level will have a more accurate vision of the expected result and its contribution remains essential for the budget and annual objectives planning. Finally, it is also a question of adoption: the results of a tool could be called into question while those collectively defined and reported by the business will be accepted by everyone..

In one sentence, how would you describe the CFO of tomorrow?

The CFO 4.0 must be the spearhead of the digital transformation of companies: we are the “digital evangelists!”

Internal control in the digital era: risks and opportunities

The digital revolution is deeply transforming the organizational environment. Beyond the technology itself, it leads to new organizations, processes and stakeholders that represent a real challenge for internal control.

Companies are playing in a more open ecosystem (with more information shared with partners, for example via open innovation, or the use of social networks at the border between the professional and personal spheres), more agile (with new emerging competitors thanks to paradigm shifts induced by digital technology, such as Uber regarding taxis or AirBnB regarding the hotel industry), more integrated (with joint liabilities between customers and suppliers for the protection of personal data or the fight against fraud), but also more fragmented (e.g. with the explosion of "IT Tools", delivery of services integrating applications that are complexifying the company's extended IT landscape).

Isaac Getz's concept of "freed-up companies" also illustrates how management practices "command and control" can evolve toward further initiatives left to employees for greater well-being and collective efficiency. Dematerialization and communication technologies facilitate exchanges and increase the possibilities for everyone to contribute, as long as one relies on people's responsibility and trust them. But does trust exclude control?

Indeed, in addition to its complexity, the digital era also brings its share of threats. Thus, not a week goes by without issues related to the cybersecurity of organizations, the use of personal data (even key players like Facebook are weakened) and the development of artificial intelligence or "blockchain" emerging in the news.

In fact, the digital revolution has considerably disrupted internal control, as a managerial process aimed at controlling the risks faced by companies. The digital transformation induces new risks and encourages the risk management function to adapt and rethink its positioning. Nevertheless, new technologies offer new opportunities to improve business control and limit the potential negative impacts of this new high-risk universe.

Our quantitative analysis revealed high expectations of the first-level operational controls automation, continuous monitoring and risk identification. The same panel considers that, at this stage, the factors limiting the use of these digital technologies are a poor knowledge of digital risk management tools and the inadequacy of employees' skills.

The following pages explore three key issues for internal control:

1. Becoming aware of emerging risks.
2. Further integrating the lines of defence against risks.
3. Adopting new tools and developing new skills.

Becoming aware of emerging risks

While digitalization creates opportunities for transformation and development, it also creates new vulnerabilities. The main families of risks are not changing, but are becoming more diverse, while cyber risk is becoming more ubiquitous and regulations are being structured around data issues (GDPR) or the Internet universe (e-privacy).

Digital technology is deeply changing the world of traditional risks

The digital transformation of companies is a source of productivity gains and efficiency, but it creates new forms of fragility and dependency in terms of operational efficiency. The organization evolves within a complex ecosystem of interconnected partners, customers and suppliers. Many processes or functions are outsourced using new technologies, with the risk of losing know-how and the related workforces. For instance, logistics providers can be involved in inventory planning or supply management from shared platforms (e.g. certain logistics functions or flows, such as transport, warehouse management, co-packing or

the transport of the "last miles"). The use of cloud solutions, often in SaaS mode, increases dependency and risks in the event of failure of certain providers: the loss of competencies, confidentiality or, in the worst case, the denial of the service, even temporarily or partially (for instance, the payroll purposes).

Contractual (reversibility clauses, data protection commitments and quality of service) and technical measures contribute to controlling the processes and data processed by third parties. The identification of these vulnerabilities should enable the anticipation of effective bypass solutions: capitalization and management of the service provider's activities to anticipate a failure, service recovery process with internal skills.

Fraud and corruption remain significant risks, but their nature is changing due to the misuse of new technologies: President's fraud takes advantage of the "Social intelligence" to make identity theft even more credible. The anti-fraud system must adapt and raise the awareness of the weakest link, which will always remain the human being.

The risk of image and e-reputation is increasing. Social networks make information available in near-real time, via channels that the organization does not control. The speed of dissemination of "fake news" or confidential information made possible by the Internet is also a challenge. This situation generates a multitude of nuisances capacities: the dissemination of information that has a negative impact on the image and reputation of the organization is beyond its control, regardless if it is accurate, distorted or even entirely wrong information.

To tackle these risks, agile and responsive crisis management systems are needed in order to swiftly manage the communication and limit the negative impacts caused.

Cybersecurity: a must in a digital environment

Cybersecurity incidents are becoming, with the development of digital technology, one of the most significant threats to organizations. There is a professionalization of cyber-attacks, in which the perpetrators make significant investments, have more and more dedicated resources and are closer to very agile start-ups. Cybersecurity is rightly becoming a major concern for senior management (accountable and highly exposed in the event of an incident) and audit committees, and this issue is becoming increasingly important in the activities of internal audit departments.

The use of integrated and connected information systems makes companies vulnerable to deliberate attacks, accidents, natural disasters or incidents in the use of computers and communication resources. There is a significant increase in the area of exposure to cyber risks (exponential increase in data, terminals and applications) while the resources available to deal with them are stagnating or decreasing (scarcity of skills, limited budgets). Take overs can be a source of new vulnerability or even contamination, as their level of security is not always at the level of the acquirer. It is no longer uncommon that cyber security/privacy impact the acquisition value due diligence audits on.

The threats associated with cyber-attacks cover several aspects: data breach (disclosure of information to third parties, data integrity violations, spying, etc.), network failure and denial of service due to inaccessibility to platforms, up to potential business interruption. The fragmentation of the organizational environment and the fast pace of solutions implementation not supervised by the IT Department increase this risk and make it more difficult to identify vulnerabilities.

"WannaCry" and "Petya" are recent examples of ransomware attacks that have resulted in significant financial losses for many companies. "Mirai", the largest Distributed Denial of service (DDoS) attack on service sites and Internet platforms in Europe and North America, highlighted the risk of dependence on network infrastructure and Internet service providers at the end of 2016. This is especially true since attacks or failures can affect different actors in the company's ecosystem (customers, partners, service providers), and a growing proportion of the activity depends directly or indirectly on the Internet.

The emergence of IoT further extends the challenges of cybersecurity. In addition to smartphones that can track an individual, links with social networks, relatives and movements and become perfect spying tools, the presence of connected objects is increasing in organizations. When they are used to perform operational tasks in workshops (storage or replenishment in a warehouse, dosage of a formula in a factory, biometric access control, refrigeration, etc.), the risk of an outside individual taking control is significant and the damage caused (inactivity or performing operations dangerous to the activity) can become significant. What about hospitals, infrastructure operators or hazardous materials operators... Hence the identification, in France, of Operators of Vital Importance, assisted by ANSSI in the protection of their information systems, within the framework of the Act on Military Programming.

The regulation on data processing is strengthened with the General Data Protection Regulation (GDPR)

In response to the increasing digitalization and complexity of the environment, the regulator intends to protect individuals and organizations. The objective is also to prevent systemic risks in a globalized world.

To respond to this complex environment, the legislator promoting more stringent regulations and increasing the accountability of organizations.

A current example is the General Data Protection Regulation (GDPR), effective since the 25 May 2018, which standardizes the protection and management of personal data at European level.
This new set of rules, which strengthens the rights of individuals without restricting or prohibiting the free flow of data within the EU, gives credibility to the action of regulators and makes all actors accountable.

The Regulation reinforces some existing principles...

Directive 1995

- Principle of lawfulness and purpose of processing
- Principle of data proportionality
- Principle of limiting data retention
- Principle of data security, integrity and confidentiality

STRENGTHENING

... and creates new ones

CREATING

GDPR 2016

- Right of access, rectification, opposition and omission (30 days for the entity to respond to a request)
- Increased information duty
- Minimization of data collection
- Clear and explicit consent
- Compulsory data security
- Privacy impact assessments of individuals

- Single point of contact (concept of lead authority)
- New rights for individuals:
  - Data portability
  - Limitation of processing
  - Refusal of automated processing
- Obligations of organizations:
  - DPO and dedicated resources
  - Notification of violation within 72 hours
  - Protection of minors
- Joint liability with the data processor

In the long term, the regulation will fasten opportunities for organizations that will be able to optimize the management and the quality of the data collected, and in particular to obtain the consent of their customers, in order to use this data legally and efficiently for commercial purposes. A pro-active compliance approach is a plus in terms of image and trust, and will help to limit risks related to data leaks or illicite or even unfair exploitation. The Facebook-Cambridge Analytica scandal, which broke out at the beginning of 2018, perfectly illustrates the societal, ethical, political and economic issues related to the use of personal data as well as the consequences of a lack of control over these data: the impact of image and trust (e.g. account closure by personalities, such as Elon Musk or Steve Wozniak; 1 in 4 French users plans on closing their Facebook account - Ifop 13 April 2018); stock market devaluation (between 19 and 28 March 2018, Facebook's market capitalization fell by $93 billion... more than the valuation of BNP Paribas); complexity of remedial measures (Facebook estimates that it will take several years to set up organizational and technical controls to ensure proper control of personal data); questioning of the American regulations on data processing (Marc Zuckerberg's hearing in the US Congress).

However, today, the risk of non-compliance is high for most organizations. The implementation period is short, the law is complex and involves significant transformations for companies in terms training and awareness, inventory of data processing, change of collection and management processes, as well as implementation of data security. Companies must therefore not only face changes and risks resulting from the digitalization of their environment, but also to learn to control the risk of non-compliance with the legislation in force.

Beyond the GDPR, the digital age is driving an increased demand for transparency under pressure from tax authorities, consumers, investors and partners of the organization. The GDPR, the anti-bribery and Ethics laws or regular updates of the regulations relating to the banking and insurance sectors require long and complex compliance roadmaps that must lead to sustainable mechanisms (organizational, legal and technical).

Sapin 2 regulation focus

The law requires companies to have a corruption prevention program. Expectations are in line with the main comparable international standards (FCPA in the United States, UKBA in the United Kingdom). The law mentions traditional tools such as a code of conduct, trainings or an internal alert system. The law also requires due diligence for first-tier suppliers and for intermediaries according to risk mapping.

Further integrating risk control lines

Internal control in a new, more collaborative ecosystem

In this digital environment, the involvement of all risk management stakeholders remains essential and the traditional system of the 3 lines of defence is more relevant than ever:

- the first line of defence remains made up of operational managers who carry out tasks and controls necessary for the efficiency and safety of their activities, as well as for compliance with regulation;
- internal control and risk management are positioned on the second line of defence with transversal functions (including departments

responsible for areas of expertise: HR, management control, IS, etc.). These actors contribute to defining, leading and controlling risk management and compliance procedures within their scope;

- finally, internal audit acts as a third line of defence to provide independent guarantee on the efficiency of the overall system.

However, the second line of defence is faced with the rise of new players beyond the "traditional" risk management, internal control, quality or legal functions:

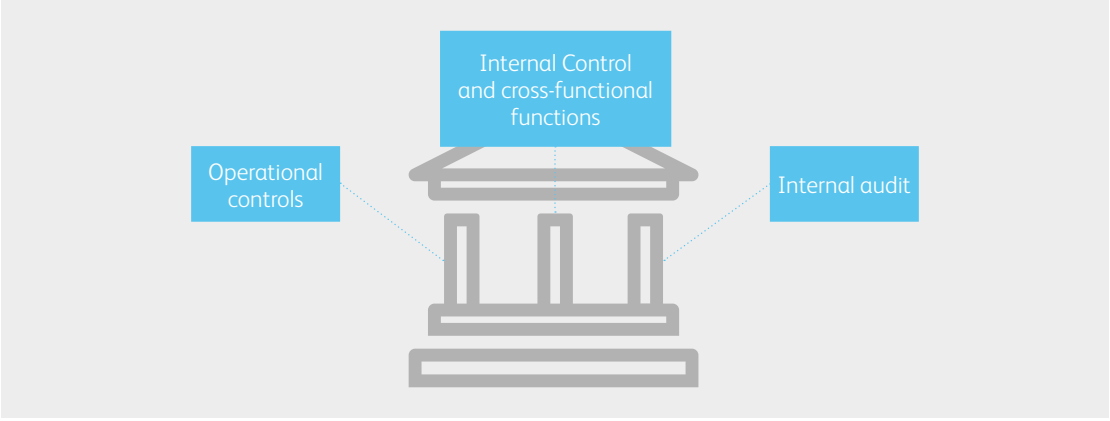
- Chief Compliance Officer, in charge of Sapin 2 compliance in particular;
- Data Protection Officer, responsible for GDPR compliance;
- Officer in charge of Information Systems Security, in charge of cyber security, but also of credit cards security (PCI DSS regulations);
- Communication department, which can manage the risk of image and reputation;
- Officer in charge of sustainable development and social and environmental performance.

A system involving so many stakeholders requires greater coordination and a search for efficiency. The aim is to avoid the collection, exploitation and dissemination of information in silos, a multiplicity of repositories and tools, the decorrelation of recommendations and respective action plans, the redundancy of thematic, related, but often disconnected control mechanisms that represent a crippling workload for operational staff...

This need for optimization and synergies becomes more important as the resources allocated to these transversal functions are limited. Thus, the control mechanisms and approaches for evaluating the effectiveness of information system security (via general computer controls or cyber-security resources) interest the internal accounting and financial control departmentst (e.g. in the context of Sarbanes-Oxley), as well as the CISO (e.g. in the context of the PCI DSS) or the DPO (in the context of the GDPR).

In these examples, the need to demonstrate the effectiveness of the internal control requires to document the internal control activities, their evaluations and the remediation/improvement of their actions, in a logic of quality cycle.

GRC platforms (e.g. Enablon, Efront, Teammate, Bwise - see section 3) stand out as solutions to meet these needs, with interface functionalities with the company's management systems, as well as data analysis and analysis visualization modules, facilitating transversal risk management.



Faced with a fragmentation and agile the risk universe, a better integration with the 1st line of risk management is a must

The digital age is characterized by a more complex, fragmented and agile risk universe, coupled with increased pressure for accountability. Therefore, beyond a better coordination of the actors of the 2nd line of defence, internal control systems must evolve from a reactive model within the headquarters sphere to a proactive model rooted in the business lines. The functions of the 2nd line of defence therefore play the role of facilitators and not censors, empowering operational staff. This paradigm shift is illustrated, for example, in the field of personal data protection, where the "former data privacy referent", an expert in regulations occasionally sollicited by the business, must become the Data Protection Officer, a true business partner with the other departments with which it must be in constant interaction, throughout the data processing life cycle.

Finally, it is a "return to basics" of internal control which is the "managerial process implemented at all levels of the company and intended to provide reasonable assurance on the effectiveness of operations, the reliability of reporting and compliance to laws and regulations", not a department of the headquarters.

The operational staff and the line managers (line defence) are thus at the core of the system which, without them, is ineffective and inefficient.

Ineffective, because if this 1st line of control, made up of tens of thousands, even hundred of thousands of people, is not aware of its responsibilities, it is not the 2nd and 3rd lines of defence, with reduced manpower and punctual interventions in processes, that can ensure control over their processes. They are thus the starting point for risk management approaches: they are the ones who can identify and report new data processing operations (in particular those carried out via third parties, outside the company's information systems), or participate in the alert on situations at risk regarding corruption.

Inefficient, because this 1st line of control is as close as possible to the occurrence of incidents and can react more quickly to implement responses and limit the spread of the consequences of these incidents. The quality of the information and the speed of its communication to the 2nd and 3rd lines of defence also allow them to act a complementary way to the 1st line, rather than in redundancy.

Besides to GRC information systems, operational applications can facilitate collaboration between the three control lines that previously operated in silos. For example, the AP Forensics solution for the purchase flow from order to invoice payment, interfaced with the Purchasing, Accounting and Treasury systems, can provide:

- the operational staff of the Invoice Processing Center, with real-time checks on duplicate invoices, or to analyse large volumes of low-value transactions using big data an operation that cannot be carried out manually;
- the 2nd and 3rd lines of defence, with a multi-criteria identification of suspicious situations with regard to the most recent fraud schemes and on an comprehensive basis.

The rapid development of collaborative tools in companies is an effective way to break down silos (e.g. MS Teams, Slack, etc.). However, experience shows that a commitment from the General Management and an empowerment of the actors are essential to generate a real dynamic of integration of the 3 lines of defence. In practice, it can take the form of:

- the implementation during Internal Control or Internal Audit missions of new approaches to monitoring operational activities (e.g. data analysis tools such as AP Forensics on the supplier cycle), which can provide operational staff with a fresh look on their operating methods and a kind of "Proof of Concept" (POC);
- a stronger involvement of the second line of defence with operational staff, to build a "staffcentric" risk management approach (taking

into account their operational constraints and the rising administrative tasks).

Adopt new tools and develop new skills

Risk and complexity factors as they may be, new technologies and solutions also enable a more proactive and dynamic approach to risk management, audit and internal control. Basically, the use of big data also means a real change in pace and philosophy: the “ex post” and sample bases assessment gives way to real time, even predictive analysis, as well as the possibility of a comprehensive review of transaction.

More intuitive digital interfaces also to adapt of these innovative solutions helps operational and management staff.

However, all these changes affecting risks and governance as well as the complexity of these new tools raise the question of the new skills needed for the internal control function.

Integrated GRC platforms have been updated to integrate digital needs

When properly used, generalist integrated GRC platforms have contributed significantly to break down silos and develop collaboration between operational, risk management, control and internal audit. These tools allow information sharing (in particular policies and procedures) between the various actors, management ofcontrol activities, consistency in risk management approaches, and monitoring of anomalies/recommendations and remediation plans in a common tool.

These tools continue to evolve to adapt to this more digital environment and optimize their operational added value. The main innovations include:

- an architecture allowing interfaces and data transfers from financial and operational systems;
- the ability to implement continuous monitoring and data analysis capabilities;
- advanced reporting and data visualization features, which facilitate the identification and understanding of abnormal situations via dynamic browsers;
- the integration of “standard” control frames works based on best practices or enabling the documentation and monitoring of compliance with the latest developments in the regulations framework.

These platforms reduce the administrative burden of continuous improvement processes by facilitating the identification and inventory of optimization opportunities, and the follow-up of the corresponding plans action. They also contribute to the documentation of the work carried out, for traceability purposes regarding regulators.

Use Case: Nasdaq BWise 5.0 - An integrated GRC platform optimized for a digital environment

The suite benefits from an increasingly open architecture to facilitate connection and data flows with the other components of the application environment.

The tool has the ability to natively implement continuous monitoring and data analysis capabilities:

- *Analysis of the completeness of transactions rather than samples as part of the internal audit work, based on predefined management rules (suspicions of double regulations...);*
- *Identification of risk situations (e.g. : increase in average payment terms on a customer...) with the possibility of assigning a control action to another part of the organization through a workflow;*
- *Replacement of manual tests by automated tests to limit the efforts required for periodic efficiency evaluation (SOX for example)... The related dashboards are automatically populate..*

This well-known integrated GRC suite is evolving to optimize its operation and adapt to the new digital environment. Technologies associated with data analytics and the Governance, Risk Management platform (GRC) significantly improve the quality of work and performance of internal control and risk professionals, compliance, audit and security of information systems.

In parallel, the suite has been upstreamed on 2 fundamental aspects to better integrate into a collaborative universe and to the importance of the volume of data used:

- *the interface is optimized and oriented towards the user experience, with a customization of screens to facilitate access to information and appropriation of the tool by the various actors;*
- *advanced reporting and data visualization functionalities (dashboards), in order to highlight key information, major trends, and to facilitate the communication of messages to management and the 3 lines of defence.*

Finally, the latest version of the suite allows the integration of pre-configured "standard" internal control procedures, based on best practices or allowing compliance with the latest developments in the regulatory framework to be monitored and documented. In addition to traditional modules (audit, internal control, risk management, compliance, etc.), new initiatives make it possible to quickly implement measures covering requirements in particular:

- *the General Data Protection Regulations (GDPR);*
- *the French anti-bribery law (Sapin 2) (e.g. the open architecture of the tool allows "Third Party Screening" through external databases).*

Technological advances foster the emergence of an ecosystem of innovative solutions

Data analysis technologies are the basis of most of the innovative "business-oriented" solutions currently available to meet the needs of operational staff. These solutions often make it possible to optimize collaboration between the 3 lines of defence within a business perimeter (Purchase to pay, Order to cash, etc.) through:

- the implementation of continuous automated internal control by operational staff to ensure the reliability of day-to-day transactions;
- more effective supervision by the second line of defence through a comprehensive analysis of transactions, and the support to operational staff in the design of relevant control activities;
- an analysis of the results of controls by risk functions/internal control/quality/and compliance departments as part of an integrated approach to risk management and continuous improvement;
- the use of reporting and the use of these very tools for specific investigations by internal audit.

Other solutions are more specifically used to support the second line of defence:

- compliance mechanisms (real-time detection of cases of market abuse, internal threats, collusion, reckless or inappropriate behaviour in relation to standards, etc.);
- anti-fraud measures as HyperCube, the big data analysis solution developed by BearingPoint, or IBM Watson, have demonstrated on several occasions. Combined with human expertise, machine learning techniques applied to big data are able to automatically detect profiles of potential fraudsters within a population, identify suspicious files or payments, and assign and manage the controls activities to be carried out, according to criteria focused on the most at-risk areas.

"As risk and complexity factors, new technologies and solutions also enable a more proactive and dynamic approach to risk management, audit and internal control."

Use case: Fiscal Technologies/AP Forensic: towards real-time security of supplier transactions

This solution addresses the development of errors and fraud: increase of the volume of transactions, rin a context of more stringent payment terms, resource reduction, outsourcing and automation of processes, reliance on ex-post controls and audits...

AP Forensic, deployed in companies in various industries (BAE Systems, Airbus, Veolis, etc.) and connected to the ERP system, enables the implementation of automated continuous internal control designed to make transactions more reliable on a daily basis. The tool uses a big data analysis technology, applying pre-configured management rules to the content and the modifications of the supplier master data and transactions.

Traditional fraud and error structures (duplicates, suspicious transfers to a third party account, substitution of a supplier bank detail, etc.) are identified and highlighted in real time and through advanced reporting and data visualization tools.

The richness of pre-configured management rules and ergonomics designed for the user allow a rapid buy-in by operational staff the first line of defence, but also by internal control or internal audit to better identify risks and ways to optimize business processes and controls. The mere presence of the solution makes fraud more complex and is a deterrent to internal or external fraud.

At the same time, there is an accelerated development of innovative solutions to address the growing cyber risk. While these solutions are generally supervised by the CISO, their implementation contributes directly to the adaptation of organizations to the new digital environment.

Certain functionalities can thus meet the cross-functional challenges of internal control regarding security of operations. These include, in particular:

- software analysis solutions that guarantee the security and reliability of software code;
- applications to ensure business continuity in the context of data loss or data integrity breach, whether accidental or criminal;
- advanced network and data protection tools, which benefit from the progress of Artificial Intelligence. Indeed increasing network protection against external attacks will never be 100% effective, either against ransomwares or the deviant behaviour of malicious employees.

Use case: Darktrace: AI and machine learning mobilised for cyber-resilience

Darktrace is a world leader in self-learning in cyber security.

This solution uses artificial intelligence algorithms that mimic the human immune system to defend corporate networks of all types and sizes. The company has experienced accelerated growth and counts among its customers large groups such as Allianz, Le Monde, Ebay and AccorHotels.

Once installed, the solution observes and learns the "normal" behaviour of the users present on the network, identified by their IP address. It highlights unusual or disruptive behaviours. Significant data leaks to the outside. Ransomwares' activity such as "WannaCry" and "Petya", the spread of viruses through the generation of automatic emails and the contagion of user workstations can be detected quickly enough to allow an appropriate reaction.

- *Only the riskier alerts are displayed in real time to the Chief Information Systems Security Officer.*
- *Daily reports provide visibility and in-depth analysis of potentially suspicious activities.*

The activation of the "immunization" module allows the system to react automatically to threats detected and configured as extremely sensitive, for example:

- *quarantine of one or more user workstations in case of suspicion of a ransomware;*
- *blocking of attempts of access or traffic on the compromised perimeter.*

The intervention can be temporary and gives the CISO time to analyse the threat and react.

If the priority of this security suite is to detect the threat, or even to block it as the immune system of a human body, it can help to understand the nature and scope of attacks in order to implement the business continuity plan in a relevant way. Within the framework of the GDPR regulation and in support of the DPO, the solution makes it possible to quickly identify the nature of personal data leaks, and thus to respect the 72-hour deadline for notifying the supervisory authority.

What are the impacts on the skills of employees?

To adapt to the digital revolution and seize the opportunities offered by innovative technologies, internal control is required to develop new skills and rethink its positioning. In addition to mastering the fundamentals of internal control, there are three main areas of expertise: IT security ; data analytics ; coding.

Internal control is becoming a cross-functional function of the company. As such, it is increasingly acting as a business partner, supporting the various operational functions and organizational support, but also at the service of the top management. Securing large scale processing has become a common expectation. This positioning requires a strong general culture, an ability to communicate with various stakeholders to understand the business, translate the operational needs of functional experts into management rules for data analysis tools, and design appropriate control approaches. Mastering of project management, managerial skills and the behavioral skills are the new assets to undertake this role as a catalyst for risk management and continuous improvement.

Without encroaching on the role of the CISO, internal control is at the heart of the organization's cyber-resilience approach. A good information systems culture is necessary to understand the challenges related to cybersecurity and ensure consistency of approach and coordination of the various stakeholders. The internal control function must be able to understand the risks and opportunities related to the use of complex information systems, the cloud, networks and servers, modelling, advanced data storage and processing. It also contributes to spreading a culture of IT security within the organization and ensures that the Information Systems Department and the business line are properly prepared to work in deteriorated mode if necessary, and then to restore the organization's nominal functioning within a reasonable period of time.

Finally, Tech & data scientist/analyst competence is becoming essential to develop a quality Data Analytics approach and build a sustainable control system based on automation and rationalization of controls. In particular, solid technical expertise is required to set up the data analysis capabilities of a GRC suite, but also to understand and challenge data, and make the most of innovative solutions.

Internal control will quickly have to integrate an ability to control the quality of codes, identify flaws in the functioning of the algorithms on which business applications or automatic controls are relying, and challenge the proper functioning of robots driven by increasingly advanced forms of artificial intelligence.

These latter skills require specialized engineer profiles, which are not always conducive to business partners postures. The need thus seems to be moving towards a complementarity of generalist profiles, but with a more advanced culture of information systems, supported by real experts in data analysis and artificial intelligence technologies.

Thinking about tomorrow's internal control

The central positioning of internal control, in the form of a "Business Control Department", can turn it into the coordinator and catalyst for responding to the emergence of new digital risks. This function remains in the best position to develop a global vision of the challenges, to aggregate the skills of the various functions (IS, compliance, quality, data protection, etc.) within integrated and complementary thematic mechanisms.

This is particularly true for the development of a truly global approach to cyber-resilience and the associated crisis management system. The latter is based on organizational components (processes), individuals (hence the need for appropriate skills development), but also innovative technical solutions.

And this is probably only the beginning. New challenges are emerging with ever more powerful artificial intelligence, blockchain technology and massive robotization of organizational processes. This positioning combined withinformation systems culture and pivotal project management skills should help structuring cross-functional systems will enable all lines of defence to contribute to securing the use of these new technologies.

"New challenges are emerging with ever more powerful artificial intelligence, blockchain technology and massive robotization of organizational processes."

Testimony on the opportunities offered by the development of digital technology (BAE Systems - Steve Walsh Head of Projects and Business Management - Shared Services)
How does BAE reduce fraud through the opportunities offered by digital?

What was the context of the project?

BAE Systems is a complex structure, with multiple business units and ERP, and an extensive network of international subsidiaries. However, visibility of fraud, errors and duplication in financial processes, is essential. There is also an increasing demand to minimize risk, be proactive, and introduce a preventative approach to risk management in operational activities.

It is in this context, with Brian Ierland (Group Finance Director) as a sponsor, that a project has been launched to define the areas for improvement in the P2P process. The team highlighted the need to be able to process large quantities of data in order to:

- *proactively identify fraud and errors;*
- *have reports to investigate possible irregularities.*

The solution had to be easily implemented at different business levels and offer additional functionalities to meet future needs.

Why the Fiscal Technologies solution?

FISCAL Technologies met the main criteria we had defined:

- *the ability to import large volumes of data, analyse them and present the results effectively;*
- *a competitive price;*
- *an intuitive and pleasant interface of the AP Forensics® software;*
- *the ease and simplicity of the user interface;*
- *the ability to meet implementation deadlines and speed of deployment (including team training).*

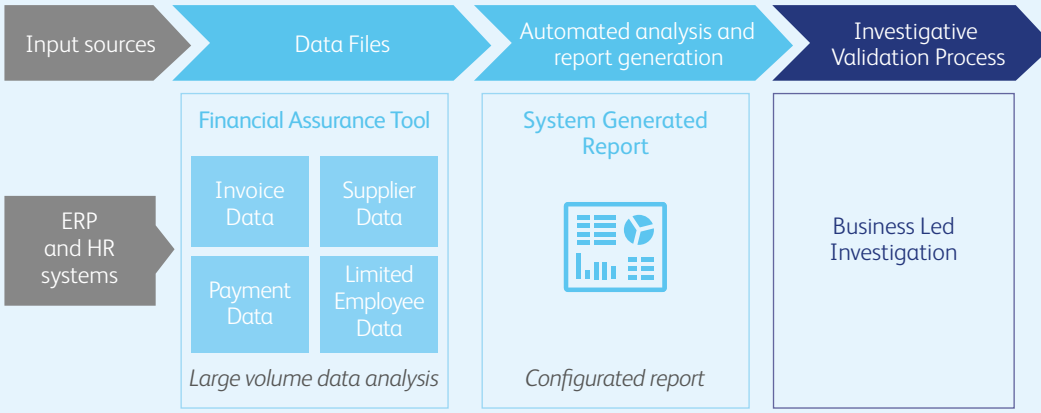
Can you tell us more concretely about the implementation of the project and the challenges encountered?

The project aimed to deploy a shared service in charge of detecting irregularities with invoices and payments, to integrate existing duplicate detection capabilities into the market tool, and to highlight anomalies and risk areas so that business units could conduct the necessary investigations.

We have had to deal with significant volumes of data from various sources (8 types of ERP, with different versions and standards), and the need to present the data and then analyse it in a sufficiently clear and intuitive manner to facilitate the identification and investigation of potentially fraudulent transactions. Particular care has been taken to ensure the use of employees' personal data.

Looking back, what is the level of added value of the tool?

The implementation of this real-time data analysis and control solution has made it possible to secure P2P flows over a wide area with the reduction of fraud opportunities (due to a visible deterrent: employees and suppliers know they are being monitored), duplicate invoices and double payments. In addition, there are other operational benefits:



- *the identification of opportunities to improve business processes and behaviours, as well as the controls in place to mitigate risks, in a logic of continuous improvement;*
- *improved communication between finance and business units;*
- *the possibility of analysing the behaviour of suppliers and determining the most effective payment methods;*
- *the ability to analyse and manage supplier data more easily;*
- *a simplified production of KPIs on the P2P cycle, which eliminates the need for cumbersome processing based on Excel sheets.*

It is clear that we would not have been able to achieve the same results without these data analysis technologies that support our employees, and the control and awareness measures. The return on investment has been rapid, thanks in particular to the significant reduction in double payments.

Jean-Luc Meurisse Risk Director of the Sonepar group

Jean-Luc, you are the Risk Director of a group with a strong international exposure through its subsidiaries. What significant developments caused by digital technology are you observing in your organization?

We are seeing an acceleration in the pace of operations that is changing the way we work. This new hyper-connected environment implies a permanent sharing of information and stronger integration with our partners (subcontractors, suppliers, customers) that increases the efficiency and complexity of activities, but increases vulnerabilities. A lot of data is stored in the cloud, and some processes are outsourced.

In addition, there has been a sharp increase in the level of demands made by the actors in our organization and by third parties, in terms of quality, reduction of deadlines and transparency, which has increased the pressure on the operational as well as on support functions. A good example is logistics, which has moved from a sequential logic by batch to a just-in-time approach to order processing and shipping. The customer is informed precisely of the status of his order and benefits from a personalized logistics with the possibility of choosing the most suitable delivery options during the process.

As a risk management professional, what are the most significant impacts of digital technology on the risk universe for you?

Basically, the major risk families do not change, but some issues are becoming more intense. I am thinking of reputation aspects, insofar as any event or incident that negatively impacts a group's image is very widely and quickly disseminated via the media and social networks without any possible control. An effective crisis management system makes it possible to anticipate a response adapted to each event and to limit the damage caused.

Cyber risk is also becoming a major concern, as the financial and operational impacts can be catastrophic. The corresponding prevention and protection system must cover the IT architecture in general, but also more specifically protect the applications and databases identified as the most sensitive. However, no device is 100% safe, which requires being able to quickly detect incidents and accurately identify the scope of impact. This is another essential aspect of a good crisis management system!

A final risk factor that I think is increasing sharply is compliance, with more complex and competing regulatory environments (e.g. China vs. EU vs. USA on personal data). Compliance projects are subject to risk/opportunity approaches: for example, in China, the implementation of the complex alert line may be delayed due to local regulations, but to enable global talent management, preference will be given to obtaining the individual consent of each employee to process their personal data.

How to adapt to this new environment?

Each organization is different, but the implementation of an integrated GRC platform generally allows for the standardization and deployment of best practices within the group and to improve communication between the actors. The key controls activities (on margins, discounts, stocks, etc.) owned by the business lines enable an effective first line of defence in the hands of operational managers. The second line of defence obtains in return visibility on the results of controls within the group, allowing the identification of situations at risks and the proposal of remedial actions.

These tools, as well as other more specific business-oriented tools, are based on data analysis technologies. The role of Data Quality Manager is expanding, to ensure data quality and optimize its use. Regarding internal control, these tools make it possible to carry out comprehensive continuous monitoring of significant volumes of transactions, and to carry out cross-checks and analyses in order to highlight anomalies or cases of fraud.

Finally, and more specifically to address Cyber risk, network monitoring tools seem to be reaching a good level of maturity. These big data-based solutions allow to map the applications, databases and machines registered on the network, and then detect suspicious activities or flows to prevent data leaks. This is all the more interesting with the development of "shadow IT" (online applications, mobiles, etc. not covered by the CIO), and the frequency of changes in scope (acquisitions, new businesses).

Is the implementation of new technologies for internal control a sufficient response to new risks for you?

Absolutely not! These tools provide a partial answer to adapt to the digital context, but the human factor should not be underestimated. Training and awareness are key elements of risk control, as behaviours or attitudes will remain the main risk factors.

As such, business positioning becomes essential. Constraint and hierarchy are no longer enough. To encourage and motivate our employees, we explain that by respecting processes, everyone contributes to the quality of service provided to the customer. Internal control develops communication and proximity with operational staff to maintain the flexibility of the risk management system and encourage best practices. This requires on-site observations and exchanges with employees; in fact, from experience, systems that are too rigid are seen as constraints and obstacles to activity. They often encourage bypass behaviour that ultimately encourages fraud, damages service quality and threatens the company's image.

What are the challenges for you in thinking about tomorrow's internal control?

The first challenge is the one, already mentioned, to involve operational staff in the risk management process. This requires the spread of a compliance culture, transparency and ethics that attracts young talent and meets the expectations of our partners, customers and suppliers. A second significant challenge would be to coordinate, lead, prepare and train teams in crisis management and resilience, through regular exercises that are realistic enough and awareness-raising among stakeholders. Finally, an increased cooperation with the CIO is essential to better control the Cyber risk. The development of Chief Information Security Officers is a good example of this need for close coordination, as they are generally postionned with a dual reporting line to the Chief Risk Officer and the Chief IT Officer.

The ERP ongoing digital revolution

The end of a myth

ERPs have overwhelmingly dominated the enterprise application landscape for more than 20 years and two major players (Oracle and SAP) share more than 40% of the global market.

ERPs have therefore established themselves as optimal management solutions and as the foundation of the enterprise application landscape. However, the term now has an almost negative connotation. Indeed, ERPs have raised high expectations, in terms of efficiency and automation, which should ultimately generate savings. However, it must be noted that many ERP programs have not met expectations. Studies have shown that 1/4 of projects have been aborted, 50% have been completed, but at significant price and only 1/4 of them have been successful. In fact, the term ERP is often associated with complex, costly projects, the implementation of which is often extremely time-consuming and whose maintenance is not very flexible. The reasons of those difficulties are multiple, but they are linked in particular to the human factor (in 62% of cases), and to a lesser extent to technology and difficult process alignment between entities among the same group, 12% and 16% of the time respectively.

Generally designed around an accounting and financial core, their functionalities have gradually been extended to the whole company - like a Swiss Army knife. And, as is well known “who grasps at too much loses everything”, these functionalities are sometimes less rich than some “best of breed” application bricks, specialized and therefore more adequate to meet the needs of companies (e-commerce, maintenance, operational project management, CRM, etc.). This is also true in the field of finance, where ERP is almost never the only brick that covers the full scope. We very often see specialized applications gravitate around the ERP (on the model of the daisy) in cash flow, expense reports, credit management/recovery, non-production purchases, invoicing...

Regarding international groups, they also have a wide variety of ERPs to cover all their sites, often inherited from the past through mergers and acquisitions that have marked their growth. So that the unique core model, even if limited to “financial” aspects, remains a myth.

In response to these difficulties, companies have considered other alternatives:

- the virtual core model, with common processes and management rules (e.g.: single account plan, shared repositories, etc.), but supported by different systems;
- a tier 1/ tier 2 approach with ERP for large subsidiaries and lighter solutions for small subsidiaries.

But, beyond the various possible strategies in terms of tools, it is mostly a question of responding to the new challenges facing the finance function:

- the need for greater flexibility: facing the inevitable and very rapid evolution of business models (e.g. the hotel sector with AirBnB, transport sector/mobility services with Uber...), and organizational changes (changes in managerial organization, mergers, acquisitions, disposals...), no company can nowadays take the risk of depending on an application landscape that is too complex or too rigid;
- increased pressure on costs and deadlines: in an uncertain environment, companies are always looking to optimize and make structural costs more variable. Often strong arm of the Management to drive the savings plans, the finance function must be exemplary and strive to rationalize its operating costs;
- a need to strengthen the attractiveness of the finance function: like other corporate functions, finance will be confronted with the massive arrival of "millennials" in its teams. However, they expect the same "customer experience" in the use of their professional applications as those of their daily applications and it is a fact that ergonomics was not the strong point of historical ERPs.

The challenge now facing companies is to choose the most flexible scenario to adapt to future developments (acquisitions, carve-outs, regulatory changes, etc.), with new approaches to deliver projects in a much shorter time frame. The rise of SaaS/cloud applications (see definitions below) and new players (e.g. Workday, Netsuite, etc.) makes it possible to imagine a paradigm shift and open up new opportunities for ERPs.

"According to Oracle, 80% of application production will be in SaaS mode by 2025."

Key concepts to know to find your way around

The "cloud" is a term associated with application hosting: it consists of having the remote data centers allowing you to host your IT in a "public" way (resources and services are shared and accessible to all) or "private" (resources and services are operated by only one owner) or "hybrid"

The cloud strategy, on the other hand, can be divided into 4 very distinct areas:

- *Infrastructure as a Service ("IaaS"): in this case, the infrastructure relating to a given application is hosted by a third party (e.g. SAP at Microsoft Azur, ARIBA at Oracle, etc.).*
- *Software as a Service ("SaaS") refers to a software distribution model in which a third-party provider hosts the applications and makes them available to its customers via the Internet. Generally, the SaaS solution is a monthly subscription whose rate is proportional to the use, unlike the historical "on-premise" solutions which consists of acquiring licenses (recognized in the balance sheet as an intangible asset and amortized over the long term) and then to install the IT tools internally on the company's servers.*
- *SaaS itself can therefore operate according to several models, mainly the public or private cloud. In the first case, the company will share software, updates and data storage with many customers. In the other case, the model is based on ad hoc servers.*
- *Two other less well-known models are developing:*
  - *the platform as a service (PaaS);*
  - *data as a service (DaaS). Examples include the purchase of cookies to personalize customer relations, the analysis of scientific data, etc.*

SaaS ERP: THE solution?

A promise of speed, simplicity and agility

Historically, SaaS solutions have first established them in Human Capital Management (HCM) and CRM solutions with resounding success. On the strength of these advances, SaaS solution then developed into the world of Finance. Initially, the SaaS model was rather the prerogative of light peripheral solutions such as expense reports, data visualization or e-procurement. It has now become the standard for the new generation of ERP. According to Oracle, 80% of application production will be in SaaS mode by 2025.

These new-generation ERP systems are based on the following features:

- a new user experience: with a completely redesigned ergonomics, which is strongly inspired by the ergonomics and simplicity of the BtoC world (ex.: Amazon);
- tenfold analysis and restitution capabilities: instant calculation capabilities thanks to "in memory" technologies that allow analyses to be carried out directly in the ERP, without going through a layer of decision-making tools have been embedded in the new ERPs;
- embedded mobility: applications available on all media, from any terminal;

- collaborative functions "by design": these tools integrate collaborative functions, such as instant messaging;
- standard processes: unlike historical projects, where the possibilities of adapting the software by means of specific developments were infinite, the philosophy of the new ERP is to adopt the software package and the standard processes around which it has been built. However, the possibilities of personalization remain thanks to the platform concept (see below);
- an open platform: this concept, adopted by all publishers, allows the ERP to be opened up to a whole ecosystem of partners (start-up type) to develop "apps", which offer additional content or functionalities;
- regular updates (usually on a quarterly basis): there is no longer any notion of versions, but updates made available on a permanent basis, which allow customers to benefit from the latest innovations;
- a business model based on usage and a subscription principle: this principle (OPEX only) allows the customer to better manage his budget with perfectly predictable costs. The evolution costs are the responsibility of the software suppliers
- SaaS solutions, with a principle of programmed evolution, allowing continuous improvement for customers.

In a very concrete way, the direct benefits for the financial functions of this new generation of ERP are proven and explain the dynamics observed in the implementation of financial ERP after a few years of relative lethargy:

- a new way of conducting projects, for a more agile and rapid implementation. No more months of design, long live the agile approaches! The "sprint" operation avoids the "tunnel effect" and gives to key users the possibility to visualize the solution from the very first days of the project. It therefore represents a major step forward in the appropriation of the solution. However, the traditional phases associated with this type of program cannot be completely avoided;
- highly standardized processes: these new ERP systems, by providing a stricter and more normative framework, offer a solid basis for harmonised processes for their mutualisation, optimization and automation at group level;
- a reduced Time To Market, which optimizes the TCO (Total Cost of Ownership) of projects in the early years. The "Fit to standard" approach of SaaS solutions makes it possible to accelerate the deployment of these tools, but requires in return a more important change management, because users must be supported in the adoption of new practices. Implementation therefore requires less integration costs (specific settings and developments) than a traditional project, but a more significant investment in change management;
- increased agility and scalability: in addition to technological aspects, SaaS solutions have the advantage of guaranteeing the application of the latest regulations and the latest evolutions of the editor (new processes, new functionalities) via regular updates. Nevertheless, the adoption of these new features made available on a regular basis remains a challenge for companies. It will be a matter of keeping them on watch to make the most of these new uses at the company level (e.g. virtual assistant, voice recognition, etc.).

After a slower start in Europe and particularly in France, the market is expanding rapidly and has caught up with the initial lag behind the Anglo-Saxon countries. The initial obstacle linked in particular to security concerns (development of data centers within the European Union, considerable resources implemented by service providers in terms of protection against intrusions) has been lifted.

"The implementation of a SaaS solution can be more constraining in terms of change management."

Even if this subject now seems outdated, there are still some pitfalls to consider before going for this type of project.

The "dark" side of SaaS

Let's not be naive, the adoption of SaaS solutions in the cloud, while having many advantages, is not or at least not yet a panacea for all the difficulties faced by CIOs and CFOs.

First, the functional coverage of SaaS ERPs is still less extensive than what "traditional" ERPs can offer after more than 40 years of existence. Indeed, some domains remain the prerogative of ERP and are not covered by any cloud solution, often due to issues related to the integration and complexity of the domain: many processes around production and supply chain, customer invoicing related to the physical availability of products in stocks (in particular with "ATP" - Available to Promise - which remains a complex subject and a major element of customer experience). Similarly, in terms of localization, i.e. the ability of ERPs to embed the accounting and tax regulatory constraints of different countries, SaaS applications do not (yet) have the wealth of their on-premise elders.

For example, S/4HANA Finance promises "finance" coverage in 63 countries, compared to 25 for the same cloud solution.

In fact, Groups with broad functional coverage, covered by both SaaS and on-premise applications, are confronted with the management of complex integration issues, sometimes leading to a regression compared to a native integration of an on-premise solution (in a practical way, this can result in file extractions from a SaaS solution dropped in a folder of an "on-premises" solution: one can expect better in terms of efficiency and data security). Similarly, the problem of user authentication, particularly through Single Sign-On (SSO) is still a challenge to consider in hybrid SaaS/on-premise environments.

In addition, the location of data may present difficulties in the context of some particularly restrictive local legislation: let us mention Russia, which requires personal data to be hosted in Russia (as part of personal data protection), or to a lesser extent China, with the "Chinese wall" of Internet traffic.

The implementation of a SaaS solution can be more constraining in terms of change management. While the design logic forces the adoption of a standard, the costs of change management, which are often less visible, may be higher. It should be noted, however, that the situation regarding personalization is not as binary.

The main publishers offer the possibility, via their platforms, to develop specific functionalities or to reuse "apps" available in the marketplace (equivalent to Apple's AppStore or Google Play), but the possibilities of sophistication of the solution remain ultimately richless than in "on-premises" mode.

The change will also take place mechanically within the IT departments: with functional managers more involved in setting up and managing the change and specific reduced developments, the "technical" part in the maintenance of these applications is mechanically reduced. On the other hand, the Information Systems Departments will have to set up or strengthen their departments in charge of supervising flows and managing contracts.

Version management is another area of focus. Indeed, SaaS solutions do not allow to avoid non-regression tests and the need for resources for application maintenance. Generally, in order to allow its customers to anticipate, publishers communicate update periods well in advance. Nevertheless, the induced load remains significant. With regard to application maintenance, if the publisher takes on providing new functions or enhancing localization (coverage of regulatory needs by country), it is nevertheless necessary to have a

team dedicated to the management of the company's evolution, such as the creation of a new legal entity.

Cost remains a subject of debate. Indeed, there is a consensus that the TCO of a SaaS solution is lower than that of an on-premise solution in the first years, then higher after about 5 years. This is due to the end of infrastructure cost amortization in the case of on-premises, while subscription costs continue to be charged in the case of a SaaS solution. On the other hand, the induced network traffic is sometimes extremely expensive, given the volume of data involved.

Finally, regarding convergence between the transactional and decision-making worlds, if the tools embedded in the ERP make it possible to cover the needs for instant analysis of ERP data, the creation of an equivalent of "classic" data warehouses will have to be studied to cover the cross-referencing of this information with data from non-ERP applications (e.g. invoicing, HR, etc.). These new "cubes" will certainly be hosted on the platform provided by the ERP publisher, but the difference with the old world remains tenuous.

At the end of the day, ignoring or underestimating these topics can lead to hidden costs that will directly impact the daily management of the future solution. Be careful also to take into account the maturity of your companies' IT departments and the impact on system governance: while some of them will be happy to outsource a large part of ERP maintenance, others on the contrary will take a negative view of this profound transformation of their model and reduction in their scope of intervention.

Smart ERP is now!

Augmented ERP

The digital revolution has shaken the concept of traditional ERP, which historically was limited to the simple execution of internal transactional processes, but making them much more powerful.

This evolution towards augmented ERP is materialized by several aspects:

- the native integration of virtual assistants or chatbots, or even machine learning, already implemented for basic functions (entry of a purchase request, an order, etc.);
- the addition of collaborative functions (chats, workflows themselves driven by chatbots!) facilitating communication between increasingly geographically distant actors;
- an extension of ERP functions outside the company (customers and suppliers in particular) allowing the optimization of a real extended "financial supply chain";
- an ability to rely on the IoT ("Internet of Things"), especially in the management of assets or maintenance projects;
- proven decision-making skills (reporting, simulations, embedded dashboards), historically the prerogative of EPM tools;
- finally, the multiplication of "smart alerts" functionalities in transactional processes (e.g. insufficient cash level, alert level on an invoice backlog, etc.)..

"The digital revolution has shaken the concept of traditional ERPs."

Accelerating data processing and supporting decision-making with cognitive technologies are at the heart of the innovations and R&D of ERP publishers. These innovations began with the integration of advanced automation (or robotization) of simple repetitive processes. Among these processes are the following: reconciliation or lettering activities, such as bank reconciliations, customer receipts or inter-company reconciliations. The machine learning, or the learning capacity of the solution, makes it possible to ensure an ever more efficient automation of lettering thanks to the learning of the different criteria used in the past. The automation of closing tasks (accounting, but also activities related to management control) is also a major focus for reducing time-consuming tasks and to reduce the time required to make financial information available.

Embedding OCR (Optical Character Recognition) technologies, the new platforms now support the scanning and automated recording of supplier invoices. So much so that one may wonder whether these solutions will not phagocyte the existing ad hoc solutions on the market to process the flows of dematerialized invoices. Like these P2P chain specialists, Oracle offers, for example, an innovative "Supplier Discount Recommendation" solution: based on internal (e.g. cash flow level) and external (e.g. company financial health) financial information, the application offers to the supplier advance payments at discounts.

The integration of external data into the ERP will also make decision support processes embedded in the ERP more efficient. For example, the integration of customer scoring makes it possible to run a more appropriate credit management process, enabling to submit informed arbitration decisions. In B2B companies in particular, where the implementation of a credit risk management policy is a major challenge, the efficiency of the granting process depends on its automation in order to deliver the agreement in real time, to homogenize the decision, to systematize credit risk assessment, to make the process more reliable and to ensure its traceability.

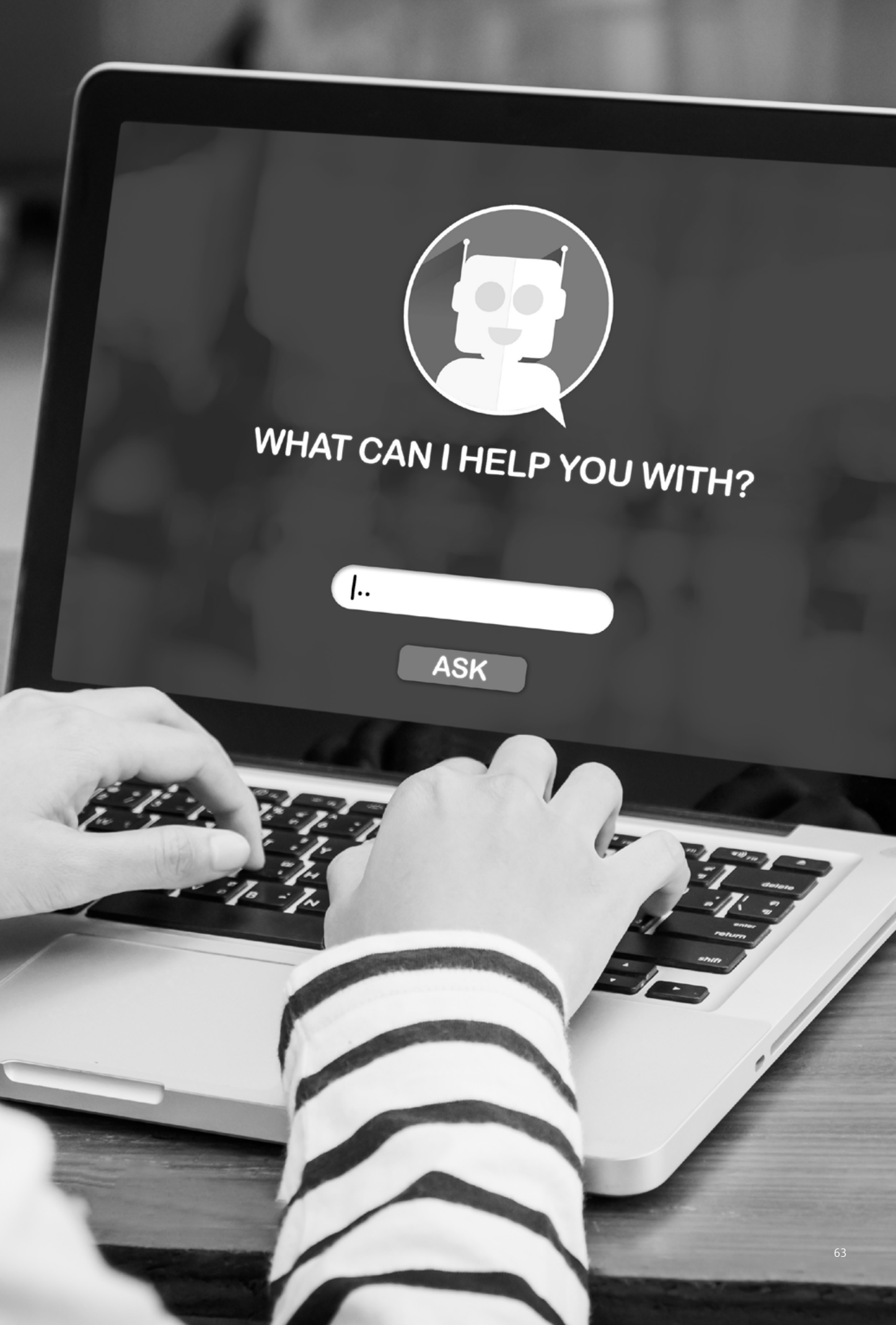
Still in this capacity to process external data, the ERP will be able to rely on the mass of data offered by the explosion of connected objects (also called "Internet of Things" or IoT). Very concrete applications are emerging, particularly in asset management and maintenance. Imagine instant reconciliation processes between the asset register and the technical asset databases or a triggering of depreciation on the basis of actual consumption or use of the machines. Beyond finance (but with obvious financial consequences), in the field of maintenance, the ability to have real-time information (e.g. flight hours in air transport) will make it possible to fine-tune the maintenance plan as precisely as possible and to find the right balance between preventive and corrective maintenance.

The new platforms will enable the extension and automation of internal control and compliance processes. The auditors will benefit from a a single platform to access, control or even suspend a transaction in real time thanks to targeted alerts when a risk occurs (e.g. during a settlement campaign using recently modified bank data). The machine learning will make it possible to be more and more precise in these alerts and in particular to detect "false positives", i.e. cases considered at first sight to be abnormal, but which correspond to a classic case for the company.

A virtual assistant to place orders!

Oracle is working on functionalities for placing purchase requests directly from its smartphone.

The user launches the application (like Apple's Siri) and an assistant is instantly at his service. In natural language (i.e., in an unstructured manner), the user describes his or her request, the availability of a computer for example. The wizard automatically recognizes the requested information and submits a list of authorized computers according to the user's profile. He or she only has to select one of them so that his request is submitted to the validation provided for by the company's purchasing rules.


WHAT CAN I HELP YOU WITH?
ASK

Another use case that will soon be found in ERP is the virtual assistant. This user interface, available on all media (PC, tablet, telephone), combining artificial intelligence and voice recognition, allows users to communicate by voice with the tool to express a need. It would clearly be used by occasional users on simple processes, for which forms, even if oversimplified, can be a real obstacle to process compliance.

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Big data ERP

The ERP was developed to manage transactional processes and was not initially designed to analyse and explore the processed data, which is available in volume within the solution. To such an extent that BI data warehouse projects have emerged after the fact to allow for the query and cross-referencing of information across processes. The advent of new digital ERPs offers a new model: BI is now natively integrated into ERP, and this fusion of the two worlds gives back the hand to users.

Fixed reporting using data traditionally replicated on D-1 in another tool allows for "self-service" analysis possibilities: everyone can flexibly manage their dimensions and their indicators and navigate from the retail aggregate to the detail of transactional data in real time from its ERP.

Drawing is winning!

SAP, like many startups that are investing in this niche, is working on an innovative initiative to revolutionize the way people are asked about data. Rather than running pre-formatted reports, SAP researchers let you the user must write his request directly in natural language using a pen on a tablet. The tool decrypts his handwriting, decodes his need and displays the corresponding data table directly. The user can then use this table by framing the data for which he or she wants the detail or by drawing an arrow pointing to the data and writing a simple sentence such as "draw graphically".

Data is now becoming the key topic for ERP solution providers: they have put data at the heart of their strategy. This takes the form of a new service offer for companies, data as a Service (or DaaS). Given that 90% of the available data has been created in the last two years and that 88% of it has not yet been analysed, data exploitation is a key theme that companies must take up to drive their business processes and better collaborate with their partners.

Widespread in the BtoC world of digital marketing to identify consumer insights and refine CRM targets, the use of their customers' data allows ERP vendors to build benchmarks by community: thus, at SAP or Workday, ERP cloud customers who make their (anonymized) data available will be able to benefit from comparison services with their peers.

The ERP store: a platform open to its ecosystem

Each SaaS ERP solution provider now offers to collect user feedback directly, in a collaborative way. Federated as a "user club", key users from different corporate customers post their wishes for features online while each member of the community can vote to recommend these changes. The balance of power is therefore being reversed: the publishers' R&D departments are no longer necessarily in the process of defining the product roadmap, but users are at the heart of product development and point the way forward.

Major ERP vendors are now offering their customers and partners the opportunity to develop complementary functionalities on their open development platform: it is the PaaS, or Platform as a Service. This cloud service will enable the development and hosting of specific applications in conjunction with the standard ERP core. Workday, SAP and Oracle each offer the use of their own cloud platforms. These platforms, open to partners developers, have made it possible to offer several hundred applications found in the publishers' various marketplaces. With their program "Oracle start-up cloud accelerator" and "SAP start-up focus", the major ERP vendors are confirming their desire to facilitate the emergence of start-ups to leverage innovations within their platform.

"Data is now becoming the key issue for ERP solution providers as they turn their focus to strategy."

Towards an uberization of ERP?

From ERP fragmentation to extended ERP

The implementation of traditional ERPs has generally simplified the application portfolio managed by the IT Department, by rationalizing heterogeneous "best of breed" tools that communicated more or less easily. To meet the demand of companies, ERPs offered very broad functionalities to manage the "extended" company.

However, as mentioned in the introduction, few companies have only one ERP to manage all functions and sites. In recent years, many ad hoc SasS solutions have been developed, generally more efficient than ERP on peripheral functions: we can mention credit management or P2P processing for example.

So many so that it is legitimate to ask the question of the "dis-ERPization" of companies, where the new optimum would have been to reduce the ERP to its simplest expression (backbone finance for example), surrounded by a collection of "best of breed" tools, like a daisy.

With new-generation ERPs, the approach to functional coverage is more modular than ever: the add-ons and application building blocks that complete the ERP core have been multiplied by publishers and cover all the company's functions: sales, purchasing, logistics, finance, human resources. Now better integrated into the ERP core within the platform, these editor tools allow companies to better customize solutions to cover their process with unified ergonomics (these modules obviously require an additional service subscription). The platform approach also makes it possible to come and do "tailor-made" work, for example for business issues specific to the company, always with an integrated approach, i.e with the same ergonomics and technological heritage as the ERP core.

New competitors on the horizon

As with other technological blocks, we can ask ourselves the question of the advent of Open Source in ERP systems. Through Open Source, it is the intellectual property of the code that is at stake. In an increasingly communitarian world, based on the economy of sharing, free software is a reality. In the world of e-commerce, solutions such as Akéneo, for example, developed in Open Source, are credible against market giants.

However, traditional solution vendors do not consider Open Source ERPs as an alternative to serious threat to their business, in particular for financial reasons. Developing an ERP requires a lot of investment (for example, Workday raised $300 million for the first version of its ERP). The cloud/SaaS market will also push for consolidation of industry players, as critical size will be required to survive. It will therefore be difficult for niche operators to break into this market.

Nevertheless, like Salesforce, other players with sufficient financial resources could enter this much coveted market. One thinks of the GAFAM, and in particular Microsoft, which could be tempted by a new strategy in this field, given the data market it covers.

The traditional ERP is dead, long live the new generation ERP!

After 20 years of sleep, the technological revolution in ERP is ongoing: it is creating a revolution in usage, highlighting the significance of exploiting data assets for companies and is now accompanied by process automation coupled with autonomous learning capabilities.

Far from disappearing, the ERP has become a digital core, fully affirming its position as the financial backbone on which are grafted “best of breed” solutions developed in unified ways. As a result, ERP extends its network over the entire application chain and controls the flow from end to end.

But while the possibilities offered by these new tools have been increased, their implementation is not as smooth and easy as some studies would have us believe. The integration of these solutions into the existing application landscape remains a major issue, especially the ability to handle the hybrid on-premise/cloud environment.

The challenge for companies in the future lies in their ability to exploit the opportunities offered by new features and keep pace with the rapid pace of innovation.

It is also a human challenge since these new ERP systems, integrating robots and sculpts, revolutionize the traditional role of the accountant. Media have taken over the subject often in a very pessimistic way, by highlighting a hypothetical war between accountants and robots. More likely, this digital revolution proposed by ERP will also have undeniable human benefits: in particular, the movement of offshoring and outsourcing undertaken in the last 20 years becomes less relevant and should help to relocate these jobs to our Western economies. It will also give rise to a new profile of accountant, with higher added value: a real flow pilot, with a perfect mastering of end-to-end processes and guarantor of the company’s own management and internal control rules, while having real technological skills. In short, a new role as “data and process accounting architect”?

“Far from disappearing, the ERP has become a digital core, fully affirming its position as the financial backbone on which are grafted “best of breed” solutions developed in unified ways.”

Cross-references with SAP and Oracle editors

Alexis SAINTE-BEUVE,
SAP Finance Solution Sales Manager

"The adoption of a digital ERP such as S/4HANA is a mandatory part of any roadmap for digitalization. But to take full advantage of this investment, it is recommended not to approach it as a simple technical migration, but on the contrary as a unique opportunity to simplify finance, all disciplines combined."

Guillaume ROCHER,
Oracle ERP Sales Director

"Oracle's ERP cloud through its native functions (SaaS, real-time analyses, corporate social network etc.), but also its embedded innovations such as AI or blockchain, illustrates our concept of increased CFO."

What major changes have you made to your portfolio?

Alexis SAINTE-BEUVE, SAP
The technological breakthroughs of recent years have been a tremendous opportunity for SAP to imagine S/4HANA, a new-generation ERP platform that is simpler, more flexible, easier to implement and use, while capitalizing on what has made SAP ERP successful. The redesign of our ERP system was based on HANA technology, allowing us to dramatically simplify data architecture, and process larger volumes of data in real time. We also took the opportunity to launch a public cloud version to meet the demands of our customers. We have chosen to reverse the development priority and bring the latest innovations first through our S/4HANA cloud ERP, and then to the S/4HANA on-premises ERP.

The simplified architecture of S/4HANA is also a great opportunity to promote the adoption of innovations related to artificial intelligence, blockchain etc. With this in mind, SAP has chosen to extend its S/4HANA offering with a cloud development platform (SAP Cloud Platform), enabling our customers and our ecosystem to develop applications and extensions around the S/4HANA core.

Guillaume ROCHER, Oracle
In addition to our existing ERPs (Oracle, PeopleSoft, JDE), we have launched our new Oracle ERP only in cloud mode by conviction! We have been thinking for a few years now that only SaaS is the model that can meet the challenges of today's and tomorrow's financial management (need for agility, modernity, always up to date, taking advantage of innovations that come along the way: AI, machine learning...).

We also acquired Netsuite in 2016, a pioneer in Cloud ERP, because we now consider that to target medium-sized companies (up to €200 million in revenue) we need all-in-one solutions with a much larger, but less deep functional scope (embedded CRM, manufacturing, invoicing, automation service...). Our Oracle Cloud ERP is rather tailored for the largest companies (from a few hundred million euros to tens of billions); moreover, this ERP is also available in private SaaS (advantages of SaaS but in a data center chosen by the customer) for customers who want to keep hosting their data (in the Defense sector for example).

What are the concrete benefits for finance departments?

Alexis SAINTE-BEUVE, SAP
The benefits are both quantitative (deadlines, productivity, costs) and qualitative (agility, collaboration, risk management):

- Simplified data management: by managing data in a unified and intelligent way, we have been able to simplify and accelerate business processes. For example, the blurring of the line between transactional and decision-making makes it possible to consider greater agility in performance and risk management, facilitating data dissemination, simulations, internal control automation, anomaly and fraud prevention.

- Simplification of the user experience: self-service logic, easy and multi-device access to information, user assistance... the aim being to encourage user acceptance, to facilitate change management, and ultimately to improve productivity.

Guillaume ROCHER, Oracle
The main business benefits are increased agility and increased automation throughout the finance chain with very high scalability due to the SaaS model. This is the notion of increased CFO. This will evolve even faster thanks to the upcoming innovations: automation, AI, deep learning... which can be activated quickly thanks to cloud technology.

How are the new methods and deadlines for implementing your new ERP systems characterized?

Alexis SAINTE-BEUVE, SAP
Our first advice is to try to think "out of the box", i.e. to take a step back.

It is not about ignoring the existing system, but about avoiding projecting oneself into a constant structure technical migration by default. The potential for simplification and optimization is so significant that it would be a pity not to consider slightly broader and more ambitious transformation plans for Finance. We therefore suggest taking into consideration all the different areas of the finance function (accounting, controlling, cash and treasury management, internal control, taxation...), because there is an interest in revisiting all these subjects, from the perspective of simplification, agility, real-time, and of the new features offered through S/4HANA and the platform.

And just as we have functionally enhanced our suite by leveraging the technological capabilities of our platform, we also have introduced new, more innovative and less disruptive deployment and adoption methods, making it possible to direct projects towards a logic of "quick wins" in agile mode, targeting certain benefits. These new approaches are less binding regarding prerequisites, and yet allow us to accelerate the adoption of our innovations. For example, it is possible to capture the benefits of centralizing certain financial processes without having to migrate the entire existing ERP landscape to S/4HANA.

Guillaume ROCHER, Oracle
The Oracle ERP Cloud tool has been entirely designed as a digital ERP in SaaS mode, which implies a different project approach than traditional ERP. We no longer say "what I used to do before and how I put it in the system" but "what I have access to and what can I do with it", and this is a fundamental question to avoid repeating the mistakes of the past. This means that a number of our clients have told us "we have gone from a certain number of specifics to zero". All these customers have set up this ERP in 6 (or 4 depending on the size of the company) or 12 months (also depending on the geographical scope of the project) while their previous experiences were about twice as long and twice as expensive, regardless of the brand. It is the agile methodological approach that makes the difference. These impacts in terms of project are also "quick-wins" that as the deployment progresses bring visible things and therefore involve all users in this transformation. The TCO at the end of this solution is much less than what we had before. Soon we will no longer talk about the large "on-premises" ERPs which, in my opinion, will disappear, especially for the finance function.

What are the innovations to come?

Alexis SAINTE-BEUVE, SAP
Artificial intelligence and new digital technologies are at the heart of our roadmap. In various forms, these technologies enable to improve the user experience, productivity, accelerate and robotize financial processes, facilitate analyses and projections...

We work on highly targeted use cases, in addition to existing solutions or through new solutions. Automation of reconciliation tasks, assistance in correcting errors (e.g. in the field of indirect taxes), predictive analyses applied to the closing or management control process... all these scenarios that imply the enrichment of existing solutions, or the availability of new cloud offers. We are also working to enhance S/4HANA with new functionalities in areas such as direct and indirect taxation, financial consolidation... without forgetting the consideration of regulatory requirements (IFRS, RGPD, Sapin 2...). In parallel, we are developing tomorrow's user interfaces, real digital assistants combining voice recognition, writing, predictive algorithms, advanced visualizations... the purpose being to make life easier for users, and to encourage new ways of collaboration. The Digital Board Room epitomizes this type of digitalized user experience. Also, industry verticals are an integral part of our S/4HANA Cloud roadmap, with an ambitious delivery schedule in the coming months.

Finally, by making our SCP innovation platform available to our customers and our ecosystem, we also offer them the opportunity to innovate and

to define their own roadmap. Machine learning, predictive, chatbots, advanced visualizations, mobility, blockchain... are all ingredients available to imagine new uses, especially in the form of extensions of the S/4HANA digital core.

Guillaume ROCHER, Oracle
Innovation is booming because we benefit from the Oracle platform, also known for its technology (19 of the first 20 SaaS suppliers run on Oracle technologies), with for example chatbots, blockchain (useful in fields where we have external partners interaction, with perfect traceability of transactions...), or artificial intelligence and machine learning. Also, having our customers' data will allow us to accurately identify our users and adapt the user interface to make their experience even easier.

A complementary point, and which is also a strength of the Oracle platform, is the ability to embed start-ups to enable digital transformation of companies: this allows us to offer more agility to our customers and to customize their ERP, based on a robust system. The program "We love Start-up" enables to boost the vision of ERP, to bring innovation and to address very broad themes (drones, supply chain, IoT, finance, training...).

The final word

Alexis SAINTE-BEUVE, SAP
The digitalization of the economy requires an in-depth transformation of the Finance function, in order to anticipate business model evolutions, to open up ever more to internal and external ecosystems, to gain in efficiency, agility, to prevent risks etc.

In our opinion, implementing a digital ERP such as S/4HANA is an essential part of any digitalization roadmap. But to take full advantage of this investment, it should not be seen as a simple technical migration, but rather as a unique opportunity to simplify finance, all fields included. A more demanding approach, because it requires us to think out of the box, but probably more value-creating.

Guillaume ROCHER, Oracle
To go for the implementation of a 100% digital and SaaS ERP like Oracle ERP Cloud, you must be open to change, question the past and involve the finance function at the heart of the project over time, without forgetting the IT department, which always has a role to play due to the centralizing function of the ERP. Finally, sharing past experiences of similar programs with other customers helps to prepare for the digital disruptions brought by the Oracle ERP Cloud.

New ways of working for the digital finance function

Introduction

The digitalization of the financial departments is in progress. What seemed to be a fad a few years ago is now a reality. The growth of new technologies (RPA, cloud, blockchain, AI, etc.) has a major impact on the working methods of the financial departments.

These changes in "ways of working" are also rooted in society and in the profound transformation of the working population. In recent years, the Millennials have made a significant impact on organizations and their integration represents a real challenge for companies and financial departments. By 2020, they will represent 50% of the world's working population, reversing traditional patterns of organization towards greater horizontality. These "digital natives" were born and raised on a smartphone, a computer, used social networks at a very young age and were used to direct and immediate access to information. Almost 80% of students use Facebook!

The challenges of this digital transformation for financial departments are multiple:

- Integrating these digital natives requires a deeper understanding of "employer branding": it is about being a modern and innovative financial management, capable of attracting and retaining the best talents of generation Y and soon Z;
- It is also a response to the increasingly collaborative way of working within more and more virtual and global organizations and to the advent of operating modes based on different types of project logic (implementation of new business models, new information systems, reengineering and process robotization, redesign of management models, taking into account compliance issues – SOX, RGPD, IFRS etc.) that take precedence over day-to-day management;
- It is also a question of operational efficiency. Because of their strategic and transversal position at the heart of the company, the financial departments must be exemplary in terms of operational excellence. How else can we be credible in the challenge faced by the company's other functions?

Our research, conducted with dozens of start-ups and innovative financial departments, has highlighted 4 major levers of this Financial departments' digitalization: the financial departments of tomorrow will be "smart" and "SMAC" or they will not be!

- The first pillar we have identified relates to "Social", i.e. the widespread use of social networks in the organization.
- The second pillar is related to Mobility and the possibilities offered to employees to work in "ATAWAD" mode (anytime, anywhere, any device).
- The third pillar refers to Analytics, i.e. the use of financial or non-financial "data", whose control has become a strategic issue.
- Finally, the fourth and final pillar, the "cloud", is the one that technically allows everything else and offers unprecedented security, standardization and performance possibilities.

The financial department of the future will undoubtedly be ultra-connected and robotized.

The human impacts of this digitalization of the finance function do not spare any of the finance professions and will radically change the standard profile of the CFO, and it is now clear that the standard profile of the CFO 4.0 will have to be based on these 4 pillars.

> *It is no longer a question of a CFO owning the information, but of sharing it quickly and efficiently with all employees." – Carla Silvestri, CFO of Microsoft France*

Financial departments in the face of the use of social networks

Social networks: from the private sphere to the company

Let us not be naive: the advent of social networks is not yet the prerogative of a majority of financial departments. For Karine Sirmain, Director of Financial Transformation of the Engie Group, the effectiveness of social networks in a financial transformation program has not been proven: "Many studies show that participation in a social network is synonymous with disloyalty towards management." This is also due to generational barriers, as some employees have a greater appetite for a direct relationship with their managers.

However, social networks and collaborative platforms (Microsoft MS Teams, Workplace by Facebook, IBM Watson Work or the G Suite of Google) are now fully integrated into the daily lives of the most innovative financial departments, such as those of technology companies. This is of course the case at Microsoft where the MS Teams collaborative digital platform is at the heart of the financier's digital suite.

For Carla Silvestri, CFO of Microsoft France, "it is no longer a question of a CFO owning the information, but of sharing it quickly and efficiently with all employees." Today's CFO is definitely a manager at Microsoft inclusive. "*We are in an era of information sharing, of collaborative work; the culture of the collective has supplanted that of the hero*," insists Carla Silvestri.

From consumer experience to employee experience

The explosion of social networks in companies and financial departments seems inevitable, and Facebook has anchored this trend in its strategy. With a penetration rate of more than 90%[1] among the Millennials, the Californian group's objective is now to invest in companies.

This change is strongly encouraged by the employees themselves, as they are campaigning to find their favourite tools in their company, as employees, as private users. Social platforms such as Facebook or WhatsApp are well known and are taking an increasingly prominent place in the way people work. 80% of employees would use shadow IT, believing that their IT management does not offer an alternative as effective as our everyday tools.

That's when Workplace was born in 2016. The ergonomics of the platform, already mastered in personal life, guarantees its success. Facebook can proudly boast an average Workplace registration rate of 80% from the first week of its implementation in a company. And this, without prior training, *"since only a day of 'kick-off' is enough,"* says Nicolas Farin, Workplace Development Manager France.

Facebook has transformed an initial need of its employees (teamwork) into a great opportunity to share information, spread knowledge and corporate culture. Every week, Workplace relays Marc Zuckerberg's live interview from Silicon Valley to all its employees around the world. And the interaction goes both ways, since it is also on Workplace that everyone can vote for the questions they would like to ask their boss.

These are all assets that could be useful to finance departments, according to Mathilde Bluteau. The CFO

"Simplicity leads to efficiency, and the implementation of processes and tools that everyone can understand is a real guarantee of productivity and profitability."

It is from this observation that Facebook Workplace, the fatal weapon brandished by the Californian giant, was born to conquer the business world.

Workplace was born from a simple observation: not having a tool that meets their teamwork needs, Facebook employees used to use their personal Facebook accounts to create workgroups. Hence the simple and pragmatic idea of creating a Facebook for professionals.

of Geodis' Freight Forwarding division, and former Oracle, Apple and Microsoft, believes in the benefits of new technologies, because "they are a decision-making aid and a source of improved profitability." Workplace, by focusing on simplicity, information sharing, and the dissemination of a "worldwide" culture and its best practices, is a step in this direction. According to Mathilde Bluteau, *"simplicity leads to efficiency, and the implementation of processes and tools that everyone can understand is a real guarantee of productivity and profitability."*

Beyond their obvious advantages in terms of operational efficiency, these tools are a key differentiator in an increasingly sharp talent hunt in

1 90.2% of Millennials used Facebook in 2016 according to a Comscore study: https://www.comscore.com/Insights/Infographics/Facebook-retains-Social-Media-crown-for-UK-Millennial

financial management, as they correspond to the ways of thinking with which the Millennials have grown. However, the latter will represent 50% of employees on average in 2020[2].

Sharing, transparency and agility are indeed founding elements of the DNA of the younger generations. At first glance, they may seem contradictory to the historical values of the financial departments, sometimes rooted in a cult of secrecy exacerbated by a fierce attachment to the confidentiality of information and compliance with internal control rules. With the tsunami brought by the Millennials, they will have to transform and become more flexible in this area and make these tools and the opportunities they offer in terms of information sharing within and outside the management financial, performance drivers, collaboration with other functions and attractiveness.

However, it is important not to misunderstand. The implementation of these new uses is not the prerogative of startups, nor linked to the age of the company, but rather to a managerial impulse.

Thus, within Pernod Ricard's finance department, whose foundations date back more than 200 years (Pernod was created in 1805), social networks and collaborative platforms are rooted in daily use. *"This began with the launch of Chatter®, which greatly accelerated and fluidized the exchanges between countries and international teams. This operating mode, which is very relevant for real-time sharing of marketing events or new ideas, has however proved less suitable for more structured exchanges between finance teams (particularly for document storage). In addition, I now use Microsoft Teams for collaboration: this approach combines efficient document storage (simple, multi-device and secure), with a modern and structured discussion mode, and therefore able to replace e-mails about a project or process. We are in the learning phase, with first successes and first "lessons learnt!"* says Marie Boedec, Group Financial Control Director.

The DAF released?

Collaborative tools are also an opportunity for companies to free up the speech and capture the "voice" of their employees, and to implement close management actions quickly in the event of dissonance.

Some companies go further in this approach by wanting to act in a predictive way with regard to their employees' expectations. Tools such as Jubiwee (see insert below) are leaders in the new people analytics market and enable local managers to act quickly on issues raised by employees. The principle of Jubiwee consists in setting up an information flow between the manager and his employees, analyzing the information and reporting to managers and HR on the points of attention on which they can act in order to improve the work experience in their teams with great reactivity.

Today, this issue is at the heart of companies' concerns; according to the AEF study conducted in 2017, 2 employees out of 3 plan to change jobs and the cost of employee disengagement is estimated at €12k per year per employee.

2 Study: Les Millennials Myth and Realities, CBRE, 2016.

Jubiwee is a solution that, via a survey system, captures employee satisfaction and thus gives management the opportunity to regularly monitor the evolution of their teams' climate.

Use case: supporting organizational changes with employees

Thanks to Jubiwee, the company monitored the adoption of organizational changes by employees and their impact on their engagement and quality of work life over a one-year period. Campaigns were sent by email every two weeks, other options such as receiving by SMS are possible.

The benefits have been visible for every part of the organization. At each stage of the transformation, management was able to monitor team feedback in real-time and quickly identify obstacles and drivers of change. Employees report that they feel listened and that the dialogue between employees and managers is more fluid than before. They appreciate being able to express themselves on certain subjects anonymously. Finally, managers and/or HR receive reports on the differences between the types of profiles (according to areas of analysis such as job, seniority, managerial responsibilities etc.), which allows them to adapt their communication campaigns and be more effective for future projects.

For example, by noting that the employees with the most seniority have less favorable responses, the project team was able to explore the subject further and then adapt communication and initiatives for this target group.

Learn more about Jubiwee on p. 97

Beyond the collaborative platforms themselves, collaborative functions are increasingly present and embedded natively in the digital continuation of the CFO: in new generation ERPs of course, but also in EPM, BI and/or datavizualization tools.

The first candidates for these collaborative operating modes are not surprisingly the budget and simulation processes, and reporting. In the most mature companies such as Microsoft or Air Liquide, dashboards become interactive and integrated chat features allow you to quickly find answers to specific questions. Exchanges are more fluid, less tense and more efficient because they allow to avoid unnecessary meetings or conference calls in order to have clear and precise answers to the questions asked.

Similarly, budget processes are becoming much more fluid: instructions, as well as questions and answers exchanged are visible to all, significantly reducing the risk of information loss and errors related to a lack of communication.

The oral tradition gives way to processes and standards that are updated and communicated as they happen, and the efficiency and consistency of the process are greatly optimized.

This generates an upheaval in the financial departments traditionally made up of experts, but is also a tremendous opportunity to widely spread a common financial culture throughout the organization. This sharing of information is the essential characteristic of released financial departments, i.e. open to all the company's employees, more confident and committed to cooperation.

Collaboration: from digital to workspaces

Before being digital, it should be stressed that the transformation of working methods towards more than collaboration has also been embodied in the evolution of workspaces and few large groups, even the most traditional ones, are nowadays exempt from open space and/or co-working spaces.

Many companies have developed in this field, such as Multiburo or Upgrade. The CFO himself cannot always preserve a closed office.

The Engie Group has recently reorganized its workspaces with two main objectives: reducing costs, but also improving the workspace. This is now a success, with 80% of head office employees feeling satisfied with these new facilities. A strong sponsorship, but also a co-construction of the workspaces with the employees was necessary to make this transformation a success. When will we see nap rooms in our good old financial departments? If they flourish in startups, we must admit that we have not (yet) found them in the financial departments of major groups...

"More than 50% of the world's organizations are affected by globalization."

Towards the ultra-mobility of the financiers: increasingly nomadic CFO?

Mobile and social are basically the same reality: teams must be able to work remotely without losing interactions.

Increasingly virtualized financial organizations

It is now common for companies to operate within virtual organizations, i.e. spread over several sites, or even countries or continents. Today, more than 50% of the world's organizations are affected by globalization[3]. This reality leads organizations to equip themselves with tools that allow them to work from any site on a daily basis while remaining efficient.

In the digital age, companies and their financial departments are by definition global and global.

As Loic Saluden, Consultant in the Executive Search department of Lincoln HR Group, points out, "Digitalization is both a cause and a consequence of these new virtual organizations, whether it is initiated by a reality intrinsic to certain professions, activities or companies or to meet the new requirements of employees, in particular on work-life balance".

3 In Study Learning & development function globalization and challenges - Cegos: Already in 2012, 50% of companies are affected by globalization.

Highly connected financiers

Mobility is often the simplest and fastest step in a digital transformation, and the one that is preliminarily engaged in heavier projects. It does not lead to disruption in the company's processes or data model, but simply consists of easy access to information on any support/device and from any location.

The new tools make it possible to meet the needs of financial departments to access the same information and share the same document, regardless of where they work. The possibilities of real-time communication and sharing have become absolute "musts".

Financiers are increasingly using mobile media (smartphones, tablets, etc.) and using these tools to perform approval tasks (invoices, transfers, etc.) or daily management control tasks such as monitoring reporting and financial and operational indicators.

In particular, the ability of tools to provide access to information not only online, but also "Offline" has become a "convenience" while this service remained relatively innovative a few years ago.

This ultra-connection linked to mobility is not without its counterpart. "The Millennials think they can do several things at once: work and play Candy Crush! We have entered a real war of attention...," says Alain Goudey, CDO of Neoma.

> **"The Millennials think they can do several things at the same time: work and play Candy Crush! We have entered a real war of the attention..."**

Mobility and well-being at work: an antinomic couple?

"Coupled with mobility, having all their data accessible in a single click from their tablet and smartphone allows employees to better balance their time between professional and private life," says Mathilde Bluteau.

"It is also a powerful lever of attractiveness for the talents of digital natives, for whom some financial departments seemed to be aging." By offering them this connectivity, we are already meeting some of their aspirations," Mathilde insists.

Other positive side effects are more unexpected, such as the development of women managers within the financial departments. In large Anglo-Saxon groups in particular, diversity and gender mix are key elements of the HR strategy and mobility is a powerful lever for action.

At Microsoft France, we are fortunate to have 44% of "non-French natives" and as many women in the Finance Department," says Clara Silvestri.

These developments also serve the international mobility HR strategies of major groups, particularly in terms of impatriation and expatriation, as they facilitate the visibility and identification of talent on a global scale.

Nevertheless, this ultra-connection raises the question of well-being at work for employees.

The legislator has already taken up the subject with texts on the "right to disconnect". More surprisingly, some start-ups have emerged with a mission focused on the well-being of employees based on the Internet of Things. One example is Skillsolutions software, which measures the employee's attention on his or her PC and recommends breaks when he or she considers it necessary.

It can also challenge the traditional postures of certain managers or employees, who need to be supported in their own transformation.

The increased financier for an increased function?

The digital ocean in which companies operate today has repositioned data and analytics in general at the heart of financial management. Thus Jack Ma, the emblematic boss of the Alibaba group, stipulates that data is the new black gold for companies." ("Data is the new oil").

90% of the world's data were created between 2014 and 2016[4] and by the end of 2017, 53% of companies had adopted data analytics compared to 17% in 2015[5]. In less than ten years, the total volume of data to be analyzed is expected to increase more than eightfold to 163 Zettabytes (163 billion Terabytes)[6].

This ocean of data is also a huge opportunity for financiers to increase their added value when we know that 88% of the available data is not analyzed. "The corporate financier can no longer be satisfied with just producing figures, without providing the analysis that goes with it," says Mathilde Bluteau. "However, thanks to digital technology, this added value is much easier to obtain."

Analytics is therefore a major challenge for Finance Departments, because its success depends on the ability of the CFO to strengthen its position as an advisor and "business partner" within the company. This aspect of the business is also a lever of attractiveness for young talents, many of whom wish to work in strategic functions and have a clear vision of their contribution to the company's value.

Big data and analytics significantly modify and strengthen the strategic role of financial departments towards a much broader function, at 360° within the company. CFOs have now realized that to be more relevant in their new role, they must take on the role of Chief Data Officer and move away from an approach that is often too analytical and financial. In many sectors, the vision of information management and analysis needs to be reinvented.

This observation is also shared in the field of prediction. In technology companies such as SAP or Microsoft, two forecasting models still coexist today, the classic "bottom up" model established country by country and a purely algorithmic model. Both groups now consider that the latter gives more reliable results, as it is free of the tactical and emotional contingencies that interfere with traditional budgetary processes.

It is therefore likely that artificial intelligence will be the only tool for forecasting processes in the next 5 years in the most advanced societies and will have a significant impact on "uberized" the role of the management controller in this regard.

The augmented financier

The deployment of more sophisticated robots or virtual assistants in financial departments is no longer a science fiction issue. According to a BCG study, about 50% of existing jobs are "likely to evolve significantly to very significantly" (COE) with artificial intelligence and will bring out the "augmented collaborator."[7].

At Microsoft, the financier is increased by virtual assistants for multiple uses:

- It is a chatbot that acts as a virtual assistant and can be questioned at any time to know the time of its next meeting or the available rooms;
- It is also a virtual assistant who is questioned, in natural language, for practical questions related to processes: what are the invoices in dispute for example for a particular customer?
- It is undoubtedly in the field of management control and BI that the financier is against all expectations the most "increased" by these sculpins. Power BI, Microsoft's suite, offers a wide

4 http://www-01.ibm.com/software/fr/data/bigdata/
5 https://www.forbes.com/sites/louiscolumbus/2017/12/24/53-of-companies-are-adopting-big-data-analytics/#352bc4839a19
6) https://www.seagate.com/files/www-content/our-story/trends/files/Seagate-WP-DataAge2025-March-2017.pdf

7 http://media-publications.bcg.com/Intelligence-artificielle-et-capital-humain.pdf

Use case: artificial intelligence to accelerate Procure to pay and Cash Collection processes at Axa

Zelros uses artificial intelligence to help employees in their decision-making and in performance management.

In concrete terms, Zelros sets up conversational agents (chatbots) connected to company systems to answer employees' questions and advise next best actions based on scores and predictions from machine learning algorithms.

For each process, here is an example of questions that the chatbot can answer in a few seconds, by searching for the answer in the systems to which it is connected:

Improve the Procure to Pay process

What is the status of PO No. XXX? What are the POs waiting for this provider? Who should I contact to validate this PO? Is invoice No. XXX paid? What are the validations pending to pay this invoice?

Improve recovery

What is the status of payments? How many unpaid invoices in £? Which invoices are at risk? What is the average payment term for my 10 most important customers? How much does this customer owe us?

The employee no longer needs to connect to the ERP; he can simply access precise information from his smartphone and act accordingly. The chatbot displays a answer to the question, but also proposes the "next steps" depending on the response, such as sending a reminder email.

Management processes are thus made more fluid and finance has more time to develop its business partner relationship with operational functions.

range of services when analyzing dashboards:

- Smart alerts" in the event of data considered abnormal or in significant deviation from a forecast;

- Quick insights" which are key analysis points automatically delivered by the virtual assistant when the information appears on the screen;

- A so-called "smart narrative" application integrated natively into the software writes high-quality comments on the results without human intervention;

- Data is dynamically updated in powerpoint slides and shared in project databases via MS Teams;

- Of course, all the collaborative suites are also embedded in the BI and allow you to trigger a chat or Skype with a collaborator at any time for additional information on request.

In this respect, the gap in practices between financial departments according to their maturity is immense. To be convinced, it is enough to recall the results of the 2014 DFCG Observatory. In particular, they indicate that Excel was still the only management tool for financiers for the majority of companies in 2014 (54%).

The use of the augmented reality in the financial departments

Many sectors and functions are becoming aware of the benefits that virtual reality can bring and financial departments are not immune to this trend.

Some startups like Manzalab use different technologies to serve what is known as "the experience" such as 2D screens, virtual reality and even collaborative virtual reality that offer a new way to experience reality in 4.0!

Virtual reality, which allows users to be completely immersed in a fictional world, but not necessarily unrealistic, is most often presented in the form of a blackout helmet to cover the entire field of vision with a panoramic display as close to the eyes as possible. Applied to financial departments, this technology can, for example, be used to train teams to new processes and support change in a more fun and innovative way.

Manzalab designs tailor-made or off-the-shelf products for companies based on the principle of learning from experience.

Use case: train CCASIEG staff in a new general and cost accounting tool via a "serious game".

Manzalab has developed a Serious Game called "Oser Share! "to train 900 permanent and occasional employees in SHARE, a new general and cost accounting tool. The challenge is to raise awareness, encourage commitment and accountability with regard to the tool and budget management.

Thanks to a role-playing game, employees can simulate the handling of SHARE in 3 different situations: you play a management assistant hosting a new territory manager for her new position. She discovers SHARE; you play a territory manager confronted with an overtaking announcement. With SHARE, you manage the situation; you play a supplier who faces an order without commitment and another outside the national market. With SHARE, employees are educated and trained to make the right decisions.

Find more information about Manzalab

Virtual reality should not be confused with augmented reality, which consists of an interaction between virtual and real elements.

Microsoft Hololens headsets based on this technology are able to mix real and virtual, using a system of holograms projected on tinted glasses. For example, they can be used to make presentations of dashboards and key data can be surrounded in real time, data can be filtered with the fingers, or the various graphs can be moved.

These new tools also make it possible to combine new technologies and video games. They make it possible to bring a refreshing "gamification" to working methods, to make complex content easier to use and to update and make accessible subjects that are sometimes considered arid.

This is a real challenge for the finance function, which sometimes suffers from a rigid and outdated image compared to sales or marketing functions for example and which, with the arrival of the millennials, will have to offer more suitable working environments by transforming figures into visual, entertaining and engaging data.

"The finance function, with the arrival of the millennials, will have to offer more appropriate working environments by transforming figures into visual, entertaining and engaging data"

The cloud to facilitate digital transformation

The CFO, a digital transformation beta tester?

Innovations and advances in computer technology are constant and will not stop any time soon. Every day, new services are being launched, especially with the advent of cloud and SaaS-based software. What the hell is this about? And how do they facilitate digital transformation in financial departments?

Cloud Computing is a technology that allows access to data or infrastructure via a simple Internet connection. This data is managed by remote servers, which does not require installation or configuration. SaaS or Software as a Service provides the software or application.

After a later adoption than in the US due to data security concerns and the initial lack of data centers in Europe, the cloud suffered from a later adoption in France than in the Anglo-Saxon countries. The cloud, which accelerates the deployment of standardized processes and solutions, is now spreading rapidly. It first spread within the financial departments on peripheral subjects (expense reports, Procure to pay, datavizualisation) and is now developing strongly in critical financial suites (ERP Finance, EPM, BI). Today, ERP clouds are growing rapidly, especially in purely financial areas, with 36% of the total of companies with a project according to a BearingPoint study (2017).

The cloud has profoundly changed the project culture with the implementation of standard processes, offering less space for personalization. It allows shorter, more agile projects to be leaded and carried out – a revolution in the financial functions that had been at the heart of the heavy, endless ERP programs of the 1990s and 2000s.

This agile culture fostered by the cloud now allows CFOs to be more autonomous, less dependent on the IT department to lead innovative approaches, and to be in a test and learn logic.

Robot farms and virtual assistants are flourishing and show that innovation in financial management is a reality and that they are becoming beta testers of their own digital transformation.

A key role to support the digital transformation of other departments

Thanks to the success of the SaaS projects carried out within the company and its positioning within the company, the most mature financial departments are in a privileged position to support the digital transformation of the other functions. In fact, more and more companies are relying on the financial function to digitize certain activities or processes. This is particularly the case for transversal forecasting processes: Sales & Operation Planning (S&OP), Industrial and Commercial Plan/Production Plan (PIC/PDP) in industry or Merchandise Assortment Planning (MAP) in retail, for example.

Thanks to the cloud, the role of financiers in the digital transformation of companies should accelerate and become a more significant part of the function.

Towards an "uberization" of the finance function's professions?

Accountants: the first digital refugees?

New technologies are bringing about real changes in the way companies are organized.

Indeed, 47% of jobs could be automated within 20 years according to an Oxford study[8]. According to the Institute of the Future, 85% of the trades in 2030 do not yet exist today.

Many professions are therefore expected to evolve and financial departments are not spared.

Not surprisingly, the most affected trades will be those with many repetitive tasks, respecting a standard procedure. According to the same study, accountants will be the first to be impacted by digital technology, all functions combined, with no less than 95% of their activities affected by this robotization.

As surprising as it may seem, the accountant is not the only profession in the process of being ubiquitous. The management controller himself seems to be at risk, at least in his reporting and financial control dimension. The most ambitious predictions are based on a total uberizsation of the function. According to a 2017 BearingPoint study, 30% of the companies surveyed foresee the end of the management controller profession.

The management controller must therefore reinvent himself and develop his skills. It will increasingly have to evolve towards a hybrid profile that is half-financial and half-data scientist. If data are available in abundance, processing and analysis of the data is essential.

Giving meaning to this information will be its key mission in the coming years. This change in the profession has already been assimilated by the main stakeholders, since 73% of them declared by 2016 that improving their analytical capacity was their priority[9].

In general, the automation of tasks with lower added value will move the management controller function towards a real role as a business partner with higher added value. This prediction has been on the table for many years, but technology now makes it possible to make it truly feasible and realistic.

In the end, according to Alain Goudey, CDO of Neoma, it is difficult "to assess whether the employment balance will be negative, neutral or positive. The real issue is above all to bring today's populations into tomorrow's professions."

An awareness to be reinforced?

The impact of the digitalization of the finance function is perceived in a heterogeneous way according to the business lines. According to a study by BearingPoint[10], if the accounting and control of 72% and 64% of management feel respectively concerned by the digitalization of the function, this awareness has not yet been proven in professions where the expertise dimension is significant.

Indeed, functions such as treasury, internal control, taxation & consolidation are perceived to be immune to the impact of the digitalization of the function. Indeed, only 42, 36 and 18% of respondents respectively validate an impact of digital transformation on their respective functions.

8 The future of employment: how susceptible are jobs to computerisation?, Carl Benedikt Frey and Michael A. Osborne, September 17, 2013.

9 International Management Control Observatory Survey, 2016.

10 Study BearingPoint 2017

The digitalization of the finance function will also have an impact on the relationships and operating methods between the finance department and its partners. Indeed, technologies are accelerating the decompartmentalization of skills between businesses and reinforcing the need for a deeper understanding of the business and other operational departments. In fact, cross-functional bridges between business lines will become more natural and it is less and less rare today to find former operational staff in management control functions.

“30% of the companies surveyed have a feeling that this is the end of the management controller profession.”

Four questions to Loic Saluden, executive search consultant at Lincoln HR group.

What is your perception of the candidates of gen Y-Z?

It's a generation of zappers, they come with certain aspirations and if they don't find what they're looking for, they don't have to worry about changing at all: they can go from a big company, to a startup, to an NGO for example. Their motivations are sometimes difficult to identify.

They feel less accountable to organizations, but are not less involved as long as they believe in what they do. We also notice their interest for companies on a human scale, and using new media.

How do you perceive the attractiveness of the finance function in 2017? Is it homogeneous between the different trades?

It is true that some segments are less attractive than before, such as auditing, which was a major trend in the 2000s. On the other hand, transaction services, management control and taxation are still very attractive, as they are closer to business activities.

Overall, the function remains attractive and there is a strong interest in startups and companies that do digital.

On which function(s) in particular do you perceive a change in the expected skills? What are they of what nature?

We are recruiting more and more finance business partners who are asked to work less and less locked in an office, to have an interest in the activity and an understanding of the levers. The place of relationships is decisive, because it is necessary to know how to work with all the divisions of the company and to know how to make teams work, sometimes geographically dispersed. The Recruiters are looking for candidates who have many technical and practical skills such as management for example. It is also essential that candidates have a good understanding of IS. A candidate for a management position must have already managed an IT transformation project during his or her career.

We also note that for fear of downgrading, many managers are doing an MBA to upgrade their skills. Many of them candidates show an interest in digital and MOOCs flourish on CVs even for senior executives. The MOOC HEC Pascal Thierry, project management has become a sought-after skill for example.

The final word...

CFOs are being digitalized even if the implementation has been slow. There is a real interest in the subject and initiatives are gradually multiplying. The transformation and digitalization of financial functions is manifested in particular through the creation of the position of Financial Transformation Officer, a position that did not exist 10 years ago. We are therefore witnessing a real awareness of many organizations on this subject.

A massive change management to drive

Facing the scale of this digital transformation, pioneering companies have implemented appropriate change management and the number of financial transformation directorships has increased in large groups.

The success of this digital transformation requires a significant investment in change management. Among the actions that we find on a recurrent basis are:

- The implementation of a very broad communication plan to "break the fear" of digital and to make employees perceive changes in a positive way;
- The implementation of a real 5-year GPEC plan so that everyone can find their place and benefit from an adapted training plan. The establishment of infrastructures for new training courses is a "must" to enable employees to evolve and can take different forms: many MOOCs flourish on the subject, and are increasingly highlighted on the CVs of financiers; they are sometimes supplemented by real diploma courses on the Digital. For example, SAP's Finance Department has set up a new path based on a partnership with ESSEC on finance, a technical component in collaboration with the École Polytechnique and a Global Finance Academy internal to SAP and common to all subsidiaries;
- The adoption of new, more transversal management methods, which can take several forms:

  - The evolution of performance evaluation systems that are more collaborative and less focused on individual objectives.
    Thus at SAP France, Emmanuelle Brun, Chief Financial Officer, explains that two performance measurement indicators have become instrumental in assessing the performance of executives, the "leadership trust", i.e. the trust of teams in their managers and the "employee engagement index",
  - The implementation of Corporate Hacking approaches. This is the idea of allowing employees to go beyond their functions, to move the lines beyond their mission stricto sensu, in the service of the transformation of their company. In practice, it is a question of allowing employees to take initiatives and test them, sometimes in a "border line" logic with the rules defined by the organizations, provided that they work, in the collective, to improve the company.

> ***What is a Corporate hacker?***
> *"It is an employee whose commitment to his or her missions is expressed by an ability to work beyond them, with others, always keeping in mind not the respect for the status or role of a particular person, or for the existing organizational structure, but the interest and meaning, the raison d'être, of the collective human enterprise in which he or she participates."*

In a way, the deployment of cross-functional working groups chosen and led by employees contributes to these "corporate hacking" approaches. This approach has been successfully experienced by the finance department of SAP, a digital company if ever there was one. Indeed, work groups self-directed by employees have been implemented as part of the transformation of the finance function. In this logic, the senior manager is only involved if the group so wishes at certain specific times, if the need for "guidance" is felt. These groups, in contrast to the traditional hierarchical authority leadership model, have worked very well. "People move forward by envy, not by coercion," says Emmanuelle Brun, CFO of SAP.

- Management by envy or management by trust: most studies converge to strongly link employee performance and job satisfaction. Indeed, happy employees would be on average 30% more committed and efficient in their work than the average. Based on this observation, MAIF has successfully implemented the concept of management by envy in its call centers. Employees specify the types of contracts/incidents/calls with which they feel they are in more palatable contact, and calls are redirected according to the choices of employees. It is possible to plan a comparable operation with the accounting CSPs, where employees would indicate, for example, the types of invoices they would like to prefer.
  This notion of pleasure, of "fun", is increasingly reflected in the fundamentals desired by companies. She is one of the 4 founding values on which SAP has built the transformation of its finance function.

The support of this digital transformation is also naturally done with platforms change management themselves digital, like InsideBoard.

InsideBoard is a digital change management platform that measures and ensures the commitment of employees in transformation projects to ensure their success.

Use case: leading the implementation of the strategic plan and steering system of a French bank

Among the customer cases that InsideBoard has been able to address are tool deployments (ERP, CRM, Service Management, Dematerialization...), new process deployments or strategic plans.

For example, InsideBoard participated in the animation of the strategic plan of a French bank. The Chief Executive Officer structured the plan around 5 major branches (operational excellence, financial performance, etc.). InsideBoard has been set up to identify and lead the ambassadors of each branch, and give all employees the opportunity to participate in the development of the plan. InsideBoard will then be used to facilitate the definition and reporting of operational indicators by employees for each branch of the plan.

Find more information about InsideBoard on p. 104

Conclusion

The CFO 4.0: an inclusive, innovative, data driven and ultra-connected manager!

Faced with these observations, we have endeavoured to paint a typical portrait of the CFO 4.0. It reveals 3 to 4 characteristics:

- "An inclusive and positive leader": inclusive and positive, the CFO of tomorrow must, above all, be armed with strong leadership qualities and charisma. The latter have, in fact, taken precedence over expertise, which was one of the fundamental principles of the CFO of the 1980s and 1990s. CFO 4.0 is no longer just an expert. His career path, less linear than before, has given him the ability to understand the challenges of other businesses, by being more and more focused on operational staff. The CFO 4.0 is an inspirational profile, able to engage employees, to assert itself as a leader in digital transformation within and outside the company of his organization. Today, companies want above all a communicating manager armed with solid "soft skills" in order to federate and to animate its employees and other functions. This evolution of the posture makes it possible to envisage easier transversal evolutions. Why not see more CFOs emerging from other core business functions in the coming years?
- "Data driven": the CFO of tomorrow has an appetite for multiple and heterogeneous data, for the analysis of a large number of data, for the simplification of complex problems, thus enabling him to make decisions quickly by relying on them. It is now the priority of the finance departments: 34% of the CFOs already surveyed have a data project to improve in particular planning processes and forecasting.

"One area where I think we are especially distinctive is failure. I believe we are the best place in the world to fail (we have plenty of practice !), and failure and invention are inseparable twins."

- "Connected" and "Innovation Promoter": the appetite and understanding of new technologies become a "must have" of the CFO. The CFO of tomorrow must understand the challenges inherent in new technologies and what they can bring to the company. As a promoter of innovations, he accepts failure even if it may appear unnatural for a financier. It supports business and companies in experiments. However, they are a major source of innovation for companies. As Jeff Bezos, Amazon CEO, points out in his 2016 letter to shareholders, Amazon's first strength is the acceptance of failure: "One area where I think we are especially distinctive is failure. I believe we are the best place in the world to fail (we have plenty of practice!), and failure and invention are inseparable twins." No more caricature of the CFO risk adverse!

The CFO 4.0, a profitable growth incubator and a potential CEO

An amazing human challenge

Overall, the digital transformation of financial departments is far from being limited to a technological issue. Otherwise, it is also and above all a great human challenge with a drastic upheaval in the skills and operating methods of financial departments, revolutionizing up to the standard profile of tomorrow's CFO.

The main characteristics of this new hybrid animal?

- An entrepreneur, a true incubator of ideas, innovations and new technologies within his own department and at the service of other operational departments.
- A perfect command and understanding of the company's intrinsic and exogenous data, enabling it to effectively influence the strategy and management of its group.
- A charismatic leader for his teams.

This strengthened posture is more than ever a launching platform to take over the reins of your company and one day become a CEO 4.0.

34% of the CFOs surveyed already have a data project to improve planning processes and forecasting in particular

Emmanuelle Brun Neckebrock, CFO of SAP France

"The CFO 4.0 is the one who will be able to determine the strategy and performance of tomorrow's company based on today's decisions."

Emmanuelle, you are CFO of a world leader in digital. How did you manage the digital transformation of the Finance function?

By the nature of our activities, digital transformation is part of our DNA. With regard to the Finance function in particular, it was initiated in the mid-2000s and took place in three waves:

- The first phase consisted in setting up the infrastructure. We have truly globalized the function and modified the reporting lines accordingly. The CFOs of the various countries were directly attached to the Group CFO, in order to be independent of country bosses, which has given everyone greater freedom of action within their own borders.
- We have also set up Shared Service Centers, around 4 main locations: Prague for Europe, Singapore for Asia, Buenos Aires for the Americas, with a fourth site in Manila for low added value tasks. Today, more than 40% of the financial function has been transferred to our SSCs. The benefits of this model are widely known and shared: improved operational efficiency, reduced costs and risks.
- The second wave enabled us to embark on an even more profound transformation: strengthening the penetration rate of our SSCs with general accounting and part of the management control, improvement of the model's economy, reinforcement of local business support.

  - However, we have maintained a country accountant: production in the SSCs does not exclude the responsibility and control of the country's CFO (obligation of "completeness" vs. "correctness"). It is nevertheless true that the role of the CFO has been drastically changed: we have lost a large part of our teams and our role has changed significantly to focus on activities with higher added value: support to sales teams, particularly for pricing and part of controlling, and decision support and planning/forecasting activities.

- With the financial infrastructure and processes now stabilized, we have entered the third wave, that of automation and in-depth work on skills,

which should enable us to take full advantage of technological breakthroughs.

What major changes has the digitalization of the finance function brought about in the different functions?

The financial function has been restructured around 3 main pillars: regulatory compliance, operational excellence and agility (in the sense of participation in the company's growth and business model change).

In general, the idea of digital is to make processes intelligent from start to finish. Thanks to S/4HANA - we are beta testers of our own solutions - we now estimate that more than 70% of the tasks related to our processes can be automated, including:

- 60% will be delivered intrinsically via our ERP (S/4HANA);
- 25% will be done through machine learning;
- the remaining 2% through robotization.

On this aspect of operational excellence, we have, so far, focused on the PTP and OTC processes.

We are also benefiting from considerable progress in controlling: our tools will soon be able to alert our controllers in the event of a deviation from our forecasts, via what we call smart alerts". In terms of prediction, the group has developed its own forecast algorithm based on a mathematical model leaned on an extrapolation of historical data and the pipe.

This model is so successful that the group says it is more accurate than the classical "bottom up" budget model ("verbal forecast") which we continue to run country by country, since it is free from the tactical and emotional contingencies inherent in each country.

The group has not wished to put an end to the traditional forecasting process for the time being, but there is no doubt that this is a possible, if not probable, development in the near future.

Finally, in terms of group management, we have set up a "digital board room" for our Board. It allows us to have, in real-time, a precise vision of all our KPI's everywhere in the world, and to simulate evolutions on demand.

How did you support these changes?

Our digital transformation has had a very significant impact on the organization of the finance function. We rely on a multi-level distributed organizational model:

- A global organization on standardized tasks (SSCs);
- One local organization per country for business support and pricing activities;
- An intermediary organization based on centers of excellence for high value-added expertise functions. We have about ten centers of excellence in controlling, which master complex subjects such as project management control, social management control (headcounts reporting). Around 23 centers of excellence complete this system on accounting on subjects such as "stock based compensation" or derivatives for example.

For these centers of excellence, we have adopted an interesting bias that has facilitated change. Indeed, we did not necessarily try to bring people from the same center of excellence together on a single site, but we did give them the opportunity to stay in their country of origin, which has had a double virtuous effect: allowing our employees to remain in their country of origin, and offering interesting relocations without having to relocate.

Beyond this posture on the organization, we have set up a change management and strong training structure to support the transformation by considering that the real differentiating factor was the human being as a complement to technology.

Our distributed organization has allowed us to develop inclusive managers with a common cause and to align our employees. Today, our financial manager profiles are much more communicators than technical experts. This has enabled us to stimulate a dynamic with our teams, which are no longer limited to the strict application of a job description. Today, the

requirements of agility and collaboration are such that it would be illusory to claim to formalize exhaustive job descriptions, with no gaps to fill!

After several years of practice, our organization dedicated to change management has disappeared because it is now embedded in our culture and the mindset of our teams.

Nevertheless, we have at our disposal a real path leading to a diploma in digital technology, which includes pillars:

- A corporate section on Finance in partnership with ESSEC[1], based on the use of the FONGECIF[2];
- A technical component in partnership with the École Polytechnique;
- A "Global Finance Academy" internal to SAP and global.

Have you integrated many Y/Z generations into the labor market? What are the impacts?

Like many large groups that have undergone major transformations, our recruitment process for support functions remains very selective. It was difficult for us, in this context, to rejuvenate the teams and attract new talent.

We are now convinced that the attractiveness for new talent requires that we truly register as a "learning place" and we have considerably expanded our training offerings. This is one of our 4 strategic priorities for the Finance function:

1. Training in the broad sense, whether it is "hard skills" or "soft skills".
2. Innovation: it is essential that our young talents are able to grasp the capacity and power of innovation at SAP, including in the Finance function, that we make them dream and do not give them the impression that we are the dusty part of our organization!
3. Simplification, the search for "lean management" in our processes.
4. The very important notion in our eyes of "People have fun", i. e. to work in a convivial atmosphere.

In a practical way, we have also set up self-managed groups by our employees to manage our various projects (innovation, fun...). We only participate as a senior executive if they explicitly ask us to do so. It worked very well, and I really think the hierarchical-authoritarian model has worked. People move forward by envy and not by coercion!

At the managerial level, we have also revolutionized our performance appraisal system. We have limited individual performance metrics and have instituted 2 central KPIs that are linked to the managerial capacities of our teams:

- The "leadership trust" measured via a "net promoter score" of the employees;
- The "employee engagement index".

Since these measures, the NPS[3] of our managers has more than doubled!

At the moment, a manager whose team has an employee engagement index of less than 50 is concerned about being in our organization. Leadership and human, and managerial qualities have become a "must", much more than expertise.

What major innovations do you see in the near future in Finance?

The next revolution is, undoubtedly, that of the digital assistant and interactions in natural language. While the ergonomics of ERP systems have improved considerably, a new way of doing things is to interaction with software via virtual assistants ("chatbots") either in natural language or by voice remains a much more attractive and efficient option.

1 ESSEC Business School
2 FONGECIF: Individual training leave management form
3 NPS: Net Promotes Score

Today, we have integrated into our solutions a digital assistant, the "co-pilot", which allows us to ask the questions we want to ask the machine, whatever the application concerned. Thanks to "machine learning", the assistant is able to have a first level of response, with ever-increasing sophistication as data is acquired.

Our teams have already worked on many use cases: creation or validation of shopping baskets, email analysis and emergency filtering (e.g. leave requests awaiting approval), answering questions about KPI's (Ex: How many S/4HANAs were sold on Q4 in China?).

Our scenarios are already quite sophisticated: we can explain to our co-pilot that we are going on a trip – to Sapphire for example and qualify our need (a helmet for example). The assistant will immediately propose the available headset models, and answer the user's questions (how much is it worth? is it in compliance with group rules? etc.). When the user makes a final choice, the machine creates and releases the corresponding purchase requisition.

The use cases are infinite and will become more and more elaborate. For example, at the next Sapphire, we will present a virtual assistant, the "Contract Comparator" which allows, in the event of contractual exchanges between a customer and a supplier, to highlight all clause changes, and to deal with gaps in an increasingly sophisticated way through machine learning. The machine is self-learning and knows how to analyze what it can approve or not.

In any case, the machine does not replace the human, it simplifies the process, acts as a facilitator, but does not decide for him.

What do you think is the profile of the CFO of tomorrow?

The CFO 4.0 is the one who will be able to determine the strategy and performance of tomorrow's company based on today's decisions. It must participate in the evolution of the business model to capture all growth opportunities, and thus detach itself from operational activities in order to free up time and implement performance actions that are sustainable.

Modern CFOs will therefore have a greater focus on strategic issues, a necessary appetite for technology, but also a genuine interest in developing the skills of their teams.

They will have to exploit current and future technological breakthroughs to go as far as possible in terms of automation and simplification, while knowing how to surround themselves with the right profiles.

More than technicians, the CFOs of tomorrow will be men and women with inclusive leadership qualities who will undoubtedly be able to instill confidence in the contribution of new technologies to their teams!

Start-ups that are waking up Finance

Thibaud Martin, Co-Founder & CEO at Jubiwee

How did the concept come about?

I was working as a Data Analyst at 55, a big data consulting firm started by Google alumni. The main customers, large groups, called on it to better know and address their users. From this came a question, then a revolt: more and more talents are deserting large groups, so why not try harder to understand employees' needs? Why do companies know their customers better than their employees?

I met Antoine and Victor during a hackathon and we decided together to create Jubiwee.

Why is your name Jubiwee?

We were looking for a name that represents positivism and the collective way of working. Jubi implies "jubilation," or an intense, often inner joy. "We" represents the collective in English.

Has the concept evolved since it was created?

At the beginning, Jubiwee was a tool like many others: simple questionnaires to allow employees to periodically share their feelings, in a non-intrusive way, so that HR could "take the pulse" of their team in real time.

Then, through trial and error, research and new customer requests, the solution turned to a "smart wall", a flow of relevant information for managers.

Growth is booming. With a keen understanding of team dynamics, Jubiwee quickly becomes the tool that triggers talks and actions around the topics that matter.

What is your core target?

Our mission is to enable managers to build extraordinary teams through a better understanding of their employees. We are now working more closely with large companies, as the volumes of data collected allow us to better predict development opportunities for managers. Our solution can be used in many cases, such as the transformation of management, specific way of working, as a support for moves, monitoring the integration of new employees or trainees and alternates.

Why does it work?

Our main innovation remains in our ability to analyze et contextualize our data.

We allow people to ask the right question, at the right time, and to inform the right person. In contrast to most of the solutions on the market, Jubiwee prioritizes the strengths and attention points of employees not only to HR teams, but also to managers to enable them to adapt the work experience in their teams with great reactivity. Our second strength is an interface designed for managers and collaborators and not for HR-expert analysts. This allows us to achieve very high response and utilization rates. Beyond the power of data analysis and contextualization by our tool, our People Insights Managers support managers to enable them to make optimal use of Jubiwee and to share relevant advices.

Any significant anecdotes?

One day, a manager told us that he would not use Jubiwee because he did not know what to do of collected data from his team such as "I don't like the lunchroom."

Our first reaction was: Noooooooo!

But then: What a chance to explain our difference!

It is counter-intuitive to believe that local managers cannot influence the work experience of their teams. Some of the topics reported by employees are related to HR or to the executive management, but Jubiwee's strength is to contextualize, i.e. provide the right information to the right person at the right time. Jubiwee will only provide managers with insights from which they can act, and HR will receive the insights for which their involvement is necessary. Targeted and relevant notifications are our added value.

Some key figures?

In less than 9 months, thousands of employees of Allianz, Mazars, Dassault Systèmes and Crédit du Nord have adopted Jubiwee, which has become one of the leaders in the "People Analytics" market. Jubiwee is

growing strongly and we have just raised €700,000 to accelerate our development.

Who are your main clients?

We work in particular with Mazars, Allianz, Crédit du Nord, Sopra Steria, Engie, Dailymotion...

What are your prospects for development?

Today, 2 out of 3 employees want to change jobs (study AEF 2017). Employee disengagement costs companies €12,000 per year per highly disengaged employee (a type of employee that represents about 20% of the wage bill).

To meet this need, we plan to continue our development both in terms of product development and customer support.

Regarding our solution, we continue to develop increasingly intelligent algorithms to allow us to ask the right question at the right time to the right person.

We expect that the questions can be automatically adapted according to the answers previously given by the user thanks to artificial intelligence. On the manager side, Jubiwee will strengthen its predictive capacity to allow managers to deal with attention points before they appear.

Concerning the support of our clients, we facilitate the exchange of best practices between them by setting up a large community of managers. On an individual level, our People insights Managers support managers using Jubiwee to enable them to make the most of the solution's potential and share relevant advice with them.

In what ways are you innovative in terms of New Ways of Working?

To meet a growing need for agility and innovation, more and more companies want to see the role of their managers not only from a hierarchical point of view, but above all as innovation facilitators, as coaches that allow their teams to develop personally and professionally.

Managers cannot successfully assume these roles without appropriate tools. Jubiwee enables them to better understand their teams by translating their employees' feelings into strengths and development opportunities to offer the most optimal and personalized work experience.

We are changing the way we work in four ways:

- Jubiwee breaks the codes of communication between employees, managers and HR by moving from annual to continuous communication;
- Jubiwee enables companies to decentralize their decisions by providing managers with the information they need to act;
- the collaborative experience should not be uniform, but personalized. Jubiwee makes it possible to find the right solution for every situation: for sales representatives, for the integration of newcomers, etc.;
- we encourage dialogue among teams. Through short, engaging and anonymous questions, we create a link between the manager and his team and then allow him to focus on the subjects that really matter.

Baptiste Jourdan, Partner at Toucan Toco

How did the concept come about?

The concept was born in 2014. With the other three founders, we have always had a taste for pedagogy. We wanted complex things to appear simple. It is on this basis that we started with data journalism, which simplified the understanding of complex data through animated graphics, including an app to analyze France's economics and social performance for the French employer federation Medef. Today, our applications put forward a clear message, allow us to make the data speak through stories that are understandable to everyone.

Where does the name Toucan Toco come from?

Nowadays, employees increasingly use tools and applications in their professional lives that are similar in use and design to those of everyday life. We are one of those users. We wanted a mascot warm and elegant for a colorful product with characteristic shapes that are not to be forgotten.

The animal is a "classic" type of mascot, easier than creating a new character from scratch. We chose a bird because it flies, is agile, sees from afar, and grows taller.

Then we chose an exotic animal to break the cold and boring codes of BI, a characteristic, shimmering colored animal.

So we ended up with Toucan, which has a very positive image in the collective imagination (there is even a cartoon by Toco the Toucan). The animal is also reminiscent of Brazil, Mexico... countries synonymous with holidays in the sun that reflect a warm image.

Has the concept evolved since its creation?

The vision has not changed. We want to allow everyone in the company to access the information so that they can make decisions notified more quickly. "We want to make people successful in their company". Our job is to write stories with company information that can be understood by each of our employees.

It is the tool that has evolved towards vision. Toucan Toco is like a media in the company that realigns everyone like a one stop platform; when an employee looks for information, he goes into the application. Toucan Toco is the last mile of data, a simple and easy-to-use collaborative tool that allows both management and employees to visualize the data.

What is your core target?

All the professions in complex organizations and the CAC 40 who suffer from the multitude of tools sold over the past 50 years and are still trying to make sense of all this.

Why is it working?

For several reasons. The first one, because it's very quick to implement, in 15 days you can have a first version of the application and we need three months to release a big project. At one of our customers' premises, we installed the on-premises solution in 4 hours at very high security levels. The implementation is done in agile mode and the solution is very IT friendly, it is a neutral layer that interfaces with any tool.

Secondly, our agile dashboards can evolve according to new uses. The tool is very easy to understand and use and meets a need to access information anywhere and anytime.

Finally, there is a real momentum in the market. There are lots of BI tools, but we stand out by doing data storytelling.

A significant anecdote?

Toucan Toco is self-financed. In other words, we have not raised any funds. It is a great source of pride and luck to have been able to reach this size with an initial capital of €20,000. We achieved to find quickly a profitable business model with full alignment with market needs.

What are your prospects for development?

We would like to be the European leaders in Reporting. We will soon open offices in London, Amsterdam, Milan and Barcelona. And, starting from next year, an office in the US.

We are also constantly evolving our product and we will have voice-activated dashboards within a year.

Some key figures?

Turnover between €5M and €10M, more than 50 employees.

Average cost of the solution €50 to €80/month/person.

Who are your main clients?

Carrefour, Renault, Natixis, BNP, LVMH, PSA, Laval group, Accor, SNCF.

In what ways are you innovative in terms of New Ways of Working?

Our working methods come from the developers. We work with tools like Slack or Trello for example, which allow us to avoid interruptions and work according to the values of agile methods. We are a benevolent company. We have flexible working hours and holidays, we have rooms for naps and meditation to increase everyone's working comfort. Our credo: work in a simple and healthy atmosphere.

Our values are defined every year in consultation with employees and are true living values. We advocate responsible autonomy for all employees and horizontality with distinct areas of responsibility based on the company's needs. We are also all driven by OKR, an organizational method that allows the team to set its own objectives based on the company's vision.

Damien Philippon, Cofounder and COO at Zelros

How did the concept come about?

The concept was born in 2016 from the meeting of three partners: Damien Philippon who manages the business/operations part, Fabien Vauchelles the R&D part on software and Christophe Bourguignat who is the data scientist.

We started from the observation that companies often spend millions of euros on big data projects with almost no ROI; scores and predictions that remain on the shelf, never used by employees. We wanted to democratize the use of machine learning in companies and deliver intelligent, ready-to-use software, machine learning embedded in software with end users who can use the data. We then noted the explosion in use in the last few years instant messaging (WhatsApp, Snapshat, WeChat, Facebook Messenger, etc.) and we understood that this is the best way to consume AI, through natural language via intelligent assistants doped with machine learning.

When we launch a project, we qualify the ROI with the customers and then we look at the data. Finally, we decided to focus on the internal functioning of the company rather than on chatbots for end customers, because the experience is generally too disappointing in BtoC. The internal functioning of the company is more defined, which ensures a better quality of responses.

Why is your name Zelros?

We trained an AI (neural network) to recognize Californian Tech company names and then asked it to generate new names. Zelros was the first name that came out.

Has the concept evolved since its creation?

We believe that soon, all employees in the professional world will be assisted by one or more AIs and that the AI will be more and more omniscient. In 5 years' time, the AI may be able to operate pieces of processes instead of human collaborators. A well-trained AI or auxiliary intelligence can discover the process flow of employees. What is difficult is the unstructured data "give me the procedure to apply in this case". We want to be able to do machine learning for all the company's processes. Our vision has not changed, we want to simplify the lives of employees by turning them into "augmented employees".

On the other hand, the tool is evolving towards intelligent assistance and since the end of November 2017, we have decided to completely verticalize our business in the Insurance sector. We want to be the Insurer's AI.

Why does it work?

For several reasons. First, because Zelros simplifies the lives of employees who do not feel threatened by the tool. The Bengie assistants at Engie or AiCo (Advisor Assistance) at MAIF save time. At Natixis, Anna allows to divide the processing time by 6 on recurring questions thanks to the crossover of the repetitiveness factor of questions vs population. The solution currently works in French, English and Dutch and voice command is under development.

Secondly, the scope of skills is infinite, because we can interrogate SAP and other systems and the digital transformation of companies creates a real need for such a tool. The solution is also very quick to implement, between 6 and 10 weeks.

Finally, it also works because the solution is not very intrusive; there is no need for change management (or little). It can be integrated into instant messaging from companies such as Skype for Business for example. Our assistants are called "Rapunzel", "Billy"... for customers, it's like a new employee.

A significant anecdote?

We are the first to have sold via our Enhanced Collaborator solution a cloud platform in the most emblematic financial institution in France (for a POC), "we have cracked the fear of the cloud and machine learning."

Some key figures?

The company is self-financed and profitable. We made more than €400,000 of turnover in 2016, more than €800k in 2017, and more than €1.5M of turnover is expected in 2018. Subscription to the platform costs €10,000 per month and implementation costs between €100k and €200k.

The company has grown from 3 to 11 people between 2016 and today with 50% of the workforce being data scientists.

Who are your main clients?

Axa, CNP Assurances, Natixis Assurances, MAIF

What are your prospects for development?

We will raise funds to accelerate our R&D and we will soon be moving into Station F's offices. We have a lot of competition in machine learning, but it is still in its infancy, hence our verticalization strategy.

Michaël Bentolila, Co-Founder & CEO at Insideboard

How did the concept come about?

Michaël, Co-Founder & CEO of the company, is a recognized expert in change management consulting. His fifteen years of experience in major consulting firms such as BearingPoint or Deloitte, led him to InsideBoard's founding observation: most transformation projects fail in companies due to a lack of employee commitment and long-term support.

From his frustration, a conviction was born: "Employees must not undergo the transformation project but want it." First, Michaël focused on creating a methodology: project marketing. It consists in considering a transformation project as an innovative product to launch on a market using the same tools as B2C marketing for its project.

Following the success of this approach, he created InsideBoard, the first IA change management platform dedicated to continuously facilitating team adoption and performance. InsideBoard offers a revolutionary approach to change management with a global solution developed on a big data technology based on unique artificial intelligence algorithms.

Why is your name InsideBoard?

The company is named after the solution to establish its position as a publisher.

The Butterfly logo represents transformation but is made of origami to signify that it is eternal and robust.

One of the wings represents the philosophy of project marketing, the other wing represents the Digital Platform.

Has the concept evolved since its creation?

No, we have been positioned as a publisher since our creation with a strong desire to integrate with the main business software on the market (Salesforce, Microsoft, Oracle, SAP, ServiceNow...), and to work in partnership with recognized consulting and integration players. Since our creation, InsideBoard has involved

all the stakeholders involved in the transformation of a company: end users, ambassadors, local managers and top management.

What is your core target?

We initially addressed key accounts such as PSA, or Audi, which accompanied us and contributed to the development of the platform. Today we address all sectors of activity and all types of transformation (business, process, tools, strategy...). Our priority targets are mainly key accounts, SMEs and large public administrations.

Why does it work?

The platform brings together all the components of the success of transformation projects, the first essential value proposition of the platform being its ability to measure and objectify the transformation at all levels of the company through success indicators shared by all employees.

InsideBoard objectifies each phase of the transformation, starting with the support of employees, then their skill acquisition in order to adopt the new practices and tools. Finally, the platform animates the performance objectives of the employees to manage the ROI of the project. These indicators make it possible to animate the transformation plan and define a project management strategy that will be transcribed into all the platform's functions:

- Communication is based on a news feed that lists all the content (training, success stories, best practices, marketing, etc.) and makes it possible to segment the different populations.
- Gamification allows to have a continuous animation punctuated by challenges
- Artificial intelligence that allows relevant and individualized recommendations to be made for each employee according to their level of adoption, and which also makes it possible to detect the project's natural ambassadors.
- Training certification, which will be segmented by profile, occupation and level of adoption.

Some key figures?

50 employees, €5M raised in November 2017, 50,000 users.

Who are your main clients?

Adecco, Audi, Banque Populaire Alsace Lorraine Champagne, Citroën, Crédit Agricole, Deloitte, Nexans, PSA.

What are your prospects for development?

We have a very complete technical roadmap until the end of the year, with in particular the continuous improvement of our algorithms (recommendation, ambassador detection). We develop standard connectors for Salesforce, Oracle and ServiceNow that are available on these vendors' stores. And we also work closely with SAP and Microsoft.

Finally, we are accelerating our presence in the United States.

In what ways are you innovative in terms of New Ways of Working?

We offer employees a unique and fun experience of transformation including collaborative practices, gaming and personalized support using artificial intelligence engines. Insideboard allows each user to experience his transformation in a more fulfilling way by being an actor of his own change.

Julien Caporal, Partner Manzalab Group

How did the concept come about?

The founders' idea was to bring video games, their technology and resources into the business world. Manzalab was created in 2010 when surveys showed that 50% of the players are female, on average 42 years old and spending 1 hour a day playing. We knew then that the company was ready to welcome the game even if we prefer to talk about experiential, slice of life, simulators.

Why are you called ManzaLab?

Manzalab is the fusion between two notions that are dear to us. Manza[na], the apple in Spanish, or in other words the fruit of knowledge, of transgression, but above all of pleasure, that of learning and sharing. And Lab, because if our immersive experiences stand out from the others, it is above all thanks to the R&D work provided by our teams. Today, approximately 30% of our turnover is reinvested in this field and allows us to offer the best of new technologies.

Has the concept evolved since its creation?

Originally, Manzalab focused on the development of Serious Game, video games with a purpose other than entertainment, that of training through simulation, emphasizing the pedagogical value provided by gaming and competition.

Today, Manzalab has become the Manzalab

Group: a complete ecosystem with six entities, six poles of excellence working in symbiosis to create digital experiences for all uses. We have Manzalab for the Serious Game, but also Manzavision for communication and immersive technologies (VR/AR/MR), Akenomy for design management, Perfect Industry in industry 4.0, Cyberzen for cybersecurity and Longue-Vue in Motion Design.

What is your core target?

Our core target group mainly includes managers and leaders of large groups such as those of the CAC 40, but also their employees or customers. We therefore rely on B2B and B2B2C transactions by developing tailor-made experiences, and recently off-the-shelf products that are easier to deploy.

Why does it work?

Thanks to the perfect marriage between cognitive neuroscience (how our brain learns), inductive pedagogy (learning through experimentation) and immersive technologies (providing an environment conducive to immediate attention and feedback).

A significant anecdote?

In 2016, VIVE X, the international accelerator specializing in virtual reality, analyzed more than 1,200 start-ups worldwide and selected only twenty of them, including only one in Europe: Manzalab. This partnership has not only enabled us to benefit from investments and knowledge transfers, but also to promote and develop the global VR ecosystem. The Teemew project was born: a virtual reality tool reinventing the concept of remote professional meetings.

Some key figures?

Manzalab Group c'est :

- 50% of turnover generated by virtual and augmented reality;
- 70 employees for as many different and complementary jobs;
- 347 years of experience accumulated by shareholders in these fields;
- 3 innovation clusters based in Paris, Aix-en-Provence and Singapore.

Who are your main clients?

Manzalab Group has a prestigious and loyal client base: BNP Paribas, Crédit Agricole, Natixis, AXA, MAIF, MGEN, AFPA, Spotify, Orange, the Ministry of Defence, the Ministry of Education, research laboratories...

What are your prospects for development?

- Promote our solutions in virtual reality (immersion in a virtual universe), augmented reality (superposition of virtual elements in the real world) and mixed reality (superposition of real elements in the virtual world).
- Develop our list of off-the-shelf products that can satisfy as many people as possible.
- Continue our internationalization process, particularly in Asia-Pacific and North America.

In what ways are you innovative in terms of New Ways of Working?

In addition to providing reliable scientific bases for our creations, all in a playful and immersive context, we are the precursors of the Collaborative VR, an innovative technology that brings together several individuals within the same virtual reality so that they can collaborate without geographical barriers, using a myriad of integrated tools. This saves time, money and resources, of course, in a globalized and digital world.

Nicolas Farin, Head of Development France at Workplace by Facebook

How did the concept come about?

Workplace was born in 2016 in London from a need identified within Facebook itself. Some collaborators had created a working group from their personal Facebook accounts. Workplace was therefore created to give employees in any company the opportunity to work together in the most fluid way possible, i.e. by using the tools used in their personal lives.

Why is your name workplace?

Workplace is intended to be at the center of employees' work, like a "hub". The place where you exchange information, where you discuss with your colleagues, is the company's sharing center.

Has the concept evolved since its creation?

While the idea came from a working group created on Facebook, Workplace quickly proved to offer much more than reducing the distance between employees. Workplace is also an opportunity for companies to capture the voice of their employees and spread the company's culture.

Technically, the tool itself is constantly improving:

The first version appeared in October 2016, but we are constantly evolving it thanks to feedback from our customers and new needs identified. For example, our London team is developing more and more metrics to track the use of Workplace and ensure its adoption by all employees. This allows a company to track not only the number of profiles created, but also the frequency of connections, average time spent on Workplace, etc.

Algorithms are also constantly being improved. Workplace aims to facilitate communication between employees. But in a company of more than 20,000 people, such as Facebook, information must be sorted and everyone must receive the information that is

relevant to them. Continuous improvement aims at the finest possible personalization of each person's news feeds.

What is your core target?

Workplace's objective is to reduce the distances between employees. All companies and sectors are therefore concerned. Workplace's interest is perhaps even more obvious for large companies, or multi-site companies in sectors such as retail. But today, we have customers of all profiles.

Why does it work?

Several factors can explain the success of Workplace, but first, I would say that it is explained by the fact that Workplace directly responds to a need of its users. In a way, Workplace was designed by its users.

The ergonomics of the platform is also a key factor for success, ensuring that the tool is immediately ready to use and that it is adopted more than 80% of the time from its launch.

Our model is based on this conviction, since we charge our customers on a "pay as you use" basis.

A significant anecdote?

When we implemented Workplace at Royal Bank of Scotland, a company with a majority public shareholding, we felt it was a real victory. This event confirmed our conviction that Workplace is not only a tool for companies with a startup culture, but a platform that can bring change where innovation is, at first glance, the least present.

Some key figures?

After one year, Workplace is used by more than 30,000 organizations.

It takes 5 weeks to implement the project from start to finish in a company.

Who are your main clients?

We launched Workplace at Royal Bank of Scotland, Starbucks, Air Asia, Telenor...

What are your prospects for development?

We will continue to work on the algorithms of the "newsfeed" so that the information is more and more relevant for each collaborator; and we have the ambition to integrate document management into the platform.

In what ways are you innovative in terms of New Ways of Working?

Workplace's ambition is only in response to a trend that is beginning to emerge in companies, which consists in integrating all our work tools into a single platform. Tomorrow, the employee returning from vacation would not need to consult all these tools (emails, Skype, Teams...), but could simply connect to Workplace to quickly access all the important information he would have missed during his absence. This trend is present, but today very few platforms exist to respond to it.

The real innovation, and what makes Workplace unique, is the Facebook culture (also called the "Facebook Effect"). In our company, the collaboration platform is not the driving force of change, it is only a lever used by management to bring about change, to spread it among its 20,000 employees and to ensure that the corporate culture is not an empty slogan. A concrete example: transparency and sharing are at the heart of our values. Workplace is the tool that allows sharing, via posts, and every week, announcements from the management itself are relayed.

Glossary of terms

(Advanced) Data analytics: These are methods and tools that aim to exploit, make visible, intelligible, even intelligent data masses. The term analytics was already used for business intelligence systems. The addition of the term advanced refers to the transition to big data (the "3V" of volume, speed, and variety) and includes the techniques of extrapolation (the predictif).

BI: Business Intelligence, or "business intelligence": technologies that enable companies to analyze and present information in a usable way to improve decision-making, for example in the form of dashboards or multi-dimensional data analysis.

Big data: Massive volumes of structured and unstructured data (images, videos, tweets and emails are examples of unstructured data), from various sources (companies, customers, connected objects, sensors, statistical databases etc.), which exceed the analytical capacity of traditional IT tools.

Blockchain: Peer-to-peer technology to record transactions or data in distributed registers updated on a computer network, whose integrity is no longer guaranteed by a central authority but by consensus between the different nodes of the network. This technology underlies more and more disintermediated models in asset and cryptomone transfers (such as Bitcoin), asset traceability, the signing of contracts and notarial deeds, civil status records...

BPM: Business Process Management: modeling, automation and optimization of workflows and processes.

Business partner: Posture of individuals in support functions (finance, HR, etc.) which requires a perfect understanding of business strategy and the challenges faced by operational managers, thus making it possible to better assist them in their thinking and decision-making through, in particular, a more qualitative analysis of figures.

Cloud: An outsourced IT infrastructure model that allows data to be stored and applications to run remotely. The cloud model is widely used by companies and individuals alike because of its many advantages: agility (pay-per-use and therefore on-demand, interconnection of platforms), savings (sharing of hardware and software resources in data centers), security and availability. Cloud applications are generally used in SaaS (Software as a Service) mode, unlike on-premises mode (see below).

Cognitive computing: Exploration, data mining, data mining or knowledge extraction: aims to extract knowledge or knowledge from large volumes of data, by automatic or semi-automatic methods using a set of algorithmic techniques.

Data centric: An attitude or approach that puts data at the heart of the business model by considering it key to value creation.

Data discovery: Exploration, data mining, data mining or knowledge extraction: aims to extract knowledge or knowledge from large volumes of data, by automatic or semi-automatic methods using a set of algorithmic techniques.

Data exploration: Exploration, data mining, data mining or knowledge extraction: aims to extract knowledge or knowledge from large volumes of data, by automatic or semi-automatic methods using a set of algorithmic techniques.

Data scientist: Expert in data science and advanced data analytics. It is a profile with multiple skills: business, statistics and IT. He is able to apply AI techniques to concrete problems in companies.

Data vizualitation: It is the science or art of visually representing massive data in a way that makes analysis, comparison, knowledge transfer, decision-making, or convincing possible and effective. This can take the form of graphs, diagrams, maps... possibly animated.

Data lab: This is one of the possible organizations to develop and implement relevant use case data in a large group. It is based on the idea that the transformation to data centric models must come from the COMEX, and that scarce resources such as data scientists must be shared. There are other alternatives that are more decentralized and closer to the field or trades.

Data lake: Literally "data lake", it is the set of data necessary to build AI models from various sources, internal to the company or external. Within the company, they are often stored on separate systems (ERP, CRM...). The challenge is to gather all the data necessary for machine learning algorithms in a single place: the data lake. At this stage they keep their original formats and remain raw.

Ddos: Denial-of-service: A computer attack that aims to make a service unavailable by saturating the bandwidth with the capacity of a server that can no longer respond to legitimate users

Deep learning: Literally "deep learning", or "learning by deep neural network": this is a particular technique of automatic learning by a machine. It uses simple components called "neurons" (used by statisticians' logistic regression since the 1950s to make classification), but used in a network (some people's outputs are injected into others' inputs) that is deep (i.e. with a large number of layers). This technique gives excellent results for treating certain complex problems, for example in image processing. On the other hand, it requires a very large number of learning examples.

DPO: Data Protection Officer, or "Délégué à la Protection des Données. Successor to the CIL (Correspondent Informatique et Liberté), the DPO, whose appointment has been made mandatory in many cases, is in charge of bringing the company into compliance with the General Data Protection Regulations that came into force in France on 25 May 2018.

DYOA: Do Your Own Apps, or "make your own applications": the user's ability to develop his own applications without the need for a developer.

ePDF: PDF format optimized for on-screen display and enhanced with interactive features, as opposed to the traditional print-optimized PDF format.

AI: Artificial Intelligence (AI) is the implementation of a number of techniques that allow machines to perform tasks and solve problems that have so far only been achievable by humans (as defined by Yann LeCun in his inaugural lesson at the Collège de France in 2015). Today, when we talk about AI, we often refer to machine learning techniques, which are one of the most effective and promising sub-systems.

In memory: Storing information in the RAM rather than on the hard disk. Allows to considerably reduce the computation time of machine learning algorithms. The access time to information stored in memory is considerably shorter than the access time to the same data stored on a hard disk.

IoT: Internet of Things, or "Internet of (connected) objects". Objects equipped with sensors and a network connection, which link the digital and physical worlds. IoT is increasingly used in industry, e-health, home automation and agriculture.

Lean management: All the management methods initially introduced by Toyota which aim in a quality approach to reduce or even eliminate all forms of avoidable losses by using the methods (including Six Sigma), techniques and practices available.

Machine learning: "Automatic learning" or "statistical learning". It is a subcategory of artificial intelligence. These are algorithms that extract models or laws from a set of examples from real observations called learning bases. This is called machine learning.

On-premises: Means "On site". Software solution installed on an IT infrastructure physically internalized at the customer's premises, as opposed to SaaS mode in the cloud (see these terms).

Ransomware: Malicious software that locks access to a computer's data and offers its owner to unlock it in exchange for a ransom.

RPA: Robotic Process Automation: software that replaces and/or supports a user's manual action on standardized and repeated tasks.

SaaS: Software as a Service, or "software as a service": a delivery model in which applications are not only hosted and managed in a service provider's processing center, but also shared by all customers. Payment is made on the basis of the use of the software. Beyond the changes in the profit equation and the business model that this entails for the publisher, this model simplifies maintenance and version evolution operations.

Six Sigma: A management method formalized by Motorola and popularized by General Electrics used in efforts to reduce process variability (production or other). It is based on reliable indicator measures and aims to improve the overall quality of the product and services.

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CDO Alliance is an accelerator of digital transformation by sharing successful and inspiring international examples of real-life digital transformations, directly actionable content and a business orientation that is more than just technological.

CDO Alliance is an association whose mission is to help its Member Companies succeed in their digital transformation and become digital leaders in their ecosystem by bringing together in circles of trust all those in charge of digital transformation in their companies or organizations.

In an operational way, CDO Alliance operates through sector "colleges" (Retail, Automotive/Transport, Health...) and business lines (HR, IT, Purchasing...), each with a manager who leads the group's life and coordinates the work.

www.cdoalliance.org

www.fi-plus.com

FI+, created in 2011, is the network of Corporate Finance networks.

It currently groups together clubs that finance alumni associations from 13 organizations, grandes écoles and universities, representing 21,000 members: Arts&Métiers, Audencia, CentraleSupélec, Dauphine, EDHEC, EM Lyon, ESCP, HEC, IAE, INSEAD, ISG, NEOMA, and the DFCG.

Its credo is to “federate and energize”.

He has given himself 4 missions:

1. Federating the Corporate Finance networks to become a recognized, essential and influential player.
2. Facilitate their members’ access to a maximum of resources and opportunities.
3. Promote Corporate Finance, the diversity of its businesses and best practices.
4. Support and be an actor in the changes in the Corporate Finance business lines.

This network has organized and relayed more than 150 events since its creation.

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