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digital transformation

Babel

INTERVIEW WITH…

Pablo de la Puente

Gestamp Corporate Information Technologies Manager

VISION
IMPLEMENTATION
RELATIONSHIP

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Business adolescence

By **Rafael López Clapés,**
BABEL CEO

BABEL recently turned 15. We feel like we're in mid-adolescence, a time of profound changes where we have to take many decisions that will impact our future.

There are lots of things that we can change and that we are going to change, but always staying true to our essence, the things we have always been clear about and which are the key to BABEL's success.

BABEL · 15 years and 15 keys

01
Strength lies in the **organization,** not individualities.

02
Our business is based on **people.**

03
We sell trust - it takes a long time to earn and can be lost in an Instant.

04
Collaboration and solidarity, **together we can do it all.**

05
Alignment of personal and business **interests.**

06
Focused on talent: **recruitment, training and motivation.**

07
Communication and transparency. We can do it better if we know what has to be done.

08
Technology is what we are all about.

09
Ongoing improvement. There is always a way to do things better.

10
Consistency in our actions.

11
You have to think, but above all **you have to do.**

12
Let's change so that nothing changes. **Permanent evolution.**

13
You have to **be quick.**

14
Let's be ambitious and courageous. Let's dare to do new things.

15
Nothing is done for the sake of it; **everything must have a reason.**

How do we measure digital maturity?

By Alberto Periáñez, BABEL Development Coordinator

We know there is no future without a present, no destination without an origin. And so before we embark on the journey of the Digital Transformation process, we must analyse the starting point. We do this through BDI: the BABEL Digital Index.

All organisations, from a community of neighbours to a large enterprise, coexist in an unprecedented environment today. A liquid environment in which changes occur at a speed greater than our ability to predict them. Unexpected changes, disruptive changes, spontaneous and inadvertent changes. Changes stemming from technology, culture, economics, from the same industry or from completely different sectors, changes that are occurring at speeds we've never seen before. Natural selection is doing its work well in this highly complex environment, and companies that are unable to adapt to the changes will simply disappear.

We can therefore conclude that enterprises need to implement a process to transform their structure, culture, people, business models and business processes to acquire enough adaptive capacity to compete in the most volatile, uncertain, changing and ambiguous environment ever known in business history. It's the so-called Digital Transformation process.

Before planning this process, a company must establish the starting point, i.e., the digital maturity of the corporation.

BABEL Digital Index

Assessing the digital situation in which a company finds itself, fundamental for later defining its transformation strategy, is no piece of cake. A thorough analysis must be implemented, involving various areas. At BABEL we have coined them "The Seven Bases for Assessing Digital Transformation". The upshot of this analysis will be a number of conclusions and insights that will help us understand the degree of digital maturity in which the company finds itself.

However, the conclusions or outcomes are not operational. For example, we can't establish comparisons between the degree of digital maturity of a company and its sector, or between various companies in one industry or another.

BABEL therefore proposes establishing a numerical index allowing comparisons to be made with regard to the sector and/or other organisations in it, in the form of a simple, easy-to-understand and easy-to-work-with indicator, based on the study of the seven bases for assessing digital transformation. We call it BDI: the BABEL Digital Index.

BABEL proposes seven bases for assessing the Digital Transformation of your business

BABEL has harnessed its experience to design a model posited on seven essential aspects to assess an organisation's digital maturity.

The transformation process is usually driven either by the need to leverage a specific, booming technology, considered by the company as an opportunity; by detecting new customer needs that can be met by technological solutions; or by the need to bolster corporate efficiency by applying digitisation and automation to key processes.

This will then impact the way the company is run and its culture, as the new challenge entails a new management model and an overhaul of the leadership, structure, mentality, vision, behaviour, etc. of the entire organisation.

In addition, and taking advantage of this comprehensive internal revamp, the opportunities in the environment will need to be continuously monitored via an observatory, along with the generation of new models to assess and exploit them.

The Seven Bases for Assessing Digital Transformation

- Digital Culture
- Company Governance
- Digitally Modified Processes
- Customer Experience
- Technological Capabilities
- New Business Models
- Observatory

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How do you get the BABEL Digital Index?

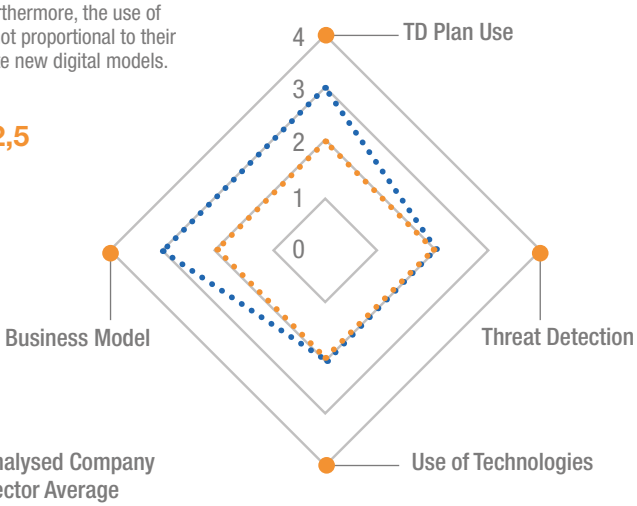
BABEL Digital Index follows a three-step process:

1. **Quantitative research:** A study is carried out using the seven-base assessment model. This establishes the company's digital maturity status, assessing technological capacities, the corporate vision, the business models, processes and culture, among other matters.

   A series of parameters is measured for each base, establishing a score. For example, within the analysis of the axis associated with the Observatory, the following will be assessed on a Likert scale (1 to 4): the ability to detect threats and opportunities in the environment, the ability to generate new adaptive business models, the design of TD plans that provide for these threats or the use of technologies to address them.

We can see a company with an unrealistic strategy, since although it follows a TD plan, it is not based on the real opportunities and threats in the environment. Furthermore, the use of technologies is not proportional to their ability to generate new digital models.

Scoring: 2,5



2. **Sector research:** In addition, the 7 bases are assessed in the business sector of the company under analysis by means of a survey study conducted by a specialist firm to give an analytical vision regarding the environment.

3. **Final score:** Finally, the general conclusions are drawn, giving a weight to each factor and establishing a final score based on a weighted average that indicates the degree of digitisation of the analysed company.

This index is only the starting point and a work plan can then be prepared to cultivate the points that require attention and investment. The journey to digital transformation will have only just begun.

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“The automotive industry used to be a follower in Technology. Now we are leading the way”

Pablo de la Puente Mora-Figueroa

Gestamp Corporate Information Technologies Manager

“Making operations more efficient and bringing value to the plant business.” That is Gestamp’s philosophy as they address what is a fascinating Digital Transformation process in the world of Industry 4.0.

Tell us about Industry 4.0. Why does everyone hope it will mean the next industrial revolution?
We don’t consider it a revolution so much as an evolution. The automotive sector is fairly advanced in many aspects addressed by digitisation. What we are looking to do is to evolve and bring value to the business through operations.

What do we mean when we talk about operations?
We’re taking about plant operations. We have more than 100 production plants worldwide, which process 70 billion pieces of data every day. What we’re looking to do is to convert these masses of data we have, which we were previously unable to process, into useful and valuable information which will add value and achieve the operational excellence that we aspire to at Gestamp.

And what is the aim?
We have three main objectives. To have the capacity for individual traceability of all the information in each plant; the connectivity of things; and the location of all assets housed within them. We use these three fundamental elements to structure all the information and we are currently digitising them. The main objective we have set is to achieve standardisation of our processes.

What is the biggest challenge faced by a multinational automotive parts company like Gestamp in the digital age?
With everything being so international, one of the biggest challenges is seeking standardisation within our ecosystem. Our plants are highly robotised and, although they may be culturally different depending on the country, they are both globally and digitally homogeneous.

What impact does the international dimension of the company have on this strategy?
We serve our customers’ needs wherever they ask us to be - that’s why we’re present across 22 countries and on every continent. Japan was the latest to join. We are also in North and South America and Europe.

Digitisation in Asia, where the plants are highly focused on mobilising applications- something that BABEL is helping us to carry out within the company- is different to in other countries, where the use of mobile phones is not such a clear and well-established tool in the country’s culture.

How are you addressing the challenge of digital standardisation?
The digital standardisation strategy is being addressed by way of a group within the corporate area, which we structure through projects. We conceptualise, complete a pilot, create a development, and finally, implement across each of the plants. Ultimately it’s about trying to improve the operations of our plants.

When does this strategy start?
We defined a clear strategy in 2015. The company’s CEO, Francisco J. Riberas, was the first to believe in the concept of Industry 4.0, and that has paved the way for us. Secondly, we have also managed to

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"To date, we have saved 15% of our consumption with the energy efficiency project"

bring technology together with business areas. Robotics and traditional technology used to be isolated, but as part of Industry 4.0, we've combined the two concepts. Furthermore, from a safety perspective. Operations can never stop, that is set in stone, and the impact of new processes has to be minimal.

How important is security in this industry, and at this time?
Security is something we must bear in mind at all times. If digitisation permits one things, it's to open or data up to the cloud, and that means we have to be very careful. All our projects boast a high security component and added cyber security, so as not to affect plant operations, on the one hand, and to make sure that our data is well protected on the other.

Big data, robotics, the Internet of Things, artificial intelligence, virtual reality... What do these technologies mean to you?
Big data has revolutionised the concept of digitisation for a few years now, insofar as we are able to process information that was previously impossible to take advantage of. At Gestamp, we are currently collecting all the information from across the lines and performing real-time analysis of more than a million signals a day for each one. That information helps us, for instance, to manufacture more parts in less time. And this allows us to save on costs and accelerate the demands of our clients.

And robotics?
Robotics has had less impact on our digitisation, since we are already in a very robotised

industry, but the concept helps us improve things which our plants were saying would be very difficult to improve on.

The Internet of Things is a very important element within our plants but it is lacking standardisation. The Internet of Things and virtual reality are concepts that are helping us through a complex process of demonstrating our quality and showing our customers how our parts are well made from the start of the process.

What are some of Gestamp's most interesting current projects in this regard?
We have launched twelve global initiatives, in parallel, at different phases. But if we had to highlight specific projects, it would be those based around business processes, because I don't like to talk about technology projects, but rather the value they offer.

For example?
The project related to the efficiency of our plants with a manufacturing process, called hot stamping, in which we are currently world leaders. It's our star technology because we manage to make vehicles lighter, achieving far lower emissions levels and contributing to the development of electric cars. Manufacturers are now looking towards lighter electric vehicles to allow them to insert batteries. So that's why they're demanding that the whole structure weighs less.

What is the present and future of electric cars?
It may advance more quickly or less so, but the electric car is already a reality. Our customers are focusing heavily on the famous "CASE" (connected, autonomous, shared and electric) and that has a hugely positive impact on us because we're developing the new models together with our customers and can provide all of our experience. There's enough cake to be shared out across all the providers.

Another channel is the quality I mentioned earlier...
This is very important and also one of the biggest challenges in the automotive industry is for the quality of safety parts to be 100%. We are developing sensory projects for all the welding lines of our chassis parts, which are crucial to the safety of our vehicles. We're talking about lines that have more than 100 robots and we can ensure, through different technologies (signal review, deep learning, voice recognition...), that these pieces are well made. In the past, you had to check one in every 100 pieces at the end of the line, but now we are proving that every single one is correct.

> "The Internet of Things and virtual reality are concepts that are helping us through a complex process of demonstrating the quality of our products to our customers"

You mentioned efficiency... Could you give us some examples of how technology is helping you to improve as a company?
Yes, we've got a slightly older project, linked to energy efficiency, which has been running for 3 or 4 years and where we have gained

PROFILE

Pablo de la Puente is passionate about technology. It's an area which he has been working in for almost a quarter of a century, originally in the financial sector, as IT Director for Santander Bank, and now for more than a decade as CIO at Gestamp.

De la Puente is quick to acknowledge he finds it fascinating to form part of the human mechanism made up of more than 41,000 people from across 22 countries who constitute this company, which specialises in the design, development and manufacture of components for leading automotive companies. This Spanish business is trusted by the 16 largest automotive groups in the world, which in 2017 resulted in a turnover of more than 8.2 billion euros.

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clear returns. We are saving more than 15% on energy in our plants, with all that means in terms of CO_2 emissions. We started it from scratch with Siemens, and it is now being marketed to other customers.

We have another very important project linked to logistics. Logistics is one of the secrets to the automotive industry. If you're good at logistics, you'll be more efficient in your processes.

What does that initiative consist of?

We have developed a process whereby we can geolocate all the operators in the plant and connect them to our systems in order to prioritise work, therefore avoiding supply problems and generating efficiency. It combines different technologies, which is far from straightforward, because geolocation requires accuracy down to the last centimetre. We have high expectations for the project, which is already working in two of our plants.

How have you tried to get all the employees on board with the change?

Rolling out any technology project is often complicated, but in this case, for a number of reasons, it's been fairly easy. Firstly, because it comes from management. The company's very low average age, of less than 40, has also been a great help. Young people mix with highly skilled professionals, who know the business processes very well, and that makes people eager to try new projects. Every time I go to a plant, one of my meetings revolves around Industry 4.0 and someone always has an idea ready.

What we are doing, is to identify people from our teams who will be involved in the digitisation project. We are digitising internal knowledge. We're aware we can't do it all at once, and all our teams are supported by external teams, but always with business people alongside us.

"Hot stamping is our star technology: we manage to make vehicles lighter, contributing to the development of electric cars"

What impact are new organisational models having on your company?

We have moved to a much more horizontal organisational model. Having people off-site and participating in corporate projects forces you to have a very different structure. Having a more flexible, less hierarchical structure makes people more dynamic and therefore they can work based on their needs and what they can contribute. That undoubtedly contributes to the increased efficiency of projects.

And do you feel you're undertaking a reinvention process yourself?

It's marked a before and after. We've had to get closer to the business, to have a deeper understanding of its complexity, to digitise internal knowledge. Automotive companies used to be a follower in technology, now we are leading the way. I'm enjoying seeing how technology is bringing real value to the business. ●

What you always wanted to know about blockchain

By David Ramos, Manager of BABEL

The new buzzword in the tech world is here to stay over the coming years: blockchain.

We are all familiar with the online revolution of the mid-1990s brought about by the Internet and dotcoms. Then we started talking about Web 2.0, the second digital revolution, where social networks and collaborative environments became predominant. Now the time has come to start the third, with digital transformation and, above all else, the use of a technology like blockchain, which we know through bitcoin.

The simple definition of a blockchain would be that it is a digital accounts ledger (database) that is distributed across multiple locations to ensure global security and ease of access, enabling consumers and suppliers to connect directly, eliminating the need for a third party. It is revolutionary in that the technology can work for almost any type of transaction involving value, including money, assets, and property.

What are the advantages or properties of blockchain?

- **P2P (peer-to-peer) replication:** the data is the same at the same time on all computers forming part of the network.
- **Decentralisation,** since there is no central body controlling data traffic in the network.
- **Irreversibility and immutability,** because a transaction cannot be undone, unless the other participants agree to do so.
- **Cryptography and security:** the network can verify that a transaction was sent by the person holding the private key without revealing their identity.
- **It is public,** since transactions and block validations can be viewed by each and every network participant.
- **Privacy and transparency,** as a blockchain provides public verifiability of its general state without leaking information about the status of each individual participant.

Coding a blockchain

Now, how do you code all this? In what environment? How to test it? How to integrate blockchains with other platforms? Blockchain developers are in demand for projects like Golem, Waves, Steemit and Golos. Most blockchains - Bitcoin, Ethereum, Stellar, Ripple, Hyperledger - are written in C++ or similar languages. Geth, the official Ethereum client, is coded in GoLang. Hyperledger Fabric and Hyperledger Burrow are also in Go, while Hyperledger Sawtoothlake is in Python. Developers can gain an edge by mastering languages that are especially adaptable to the requirements of blockchains: Java, Golang, Rust, Scala, Haskell, Erlang, Python, C, C#...

Smart contracts

Besides forming the basis for cryptocurrencies, blockchains are already being used to create smart contracts, leveraging the

original functionality of pinpointing a person's online identity.

A smart contract is a computer code that is not installed in any given location: the code is written in a blockchain, so that it cannot be deleted or edited. The terms of the transaction are written into code located in a blockchain and signed cryptographically by the parties involved. The contract is performed when the envisaged conditions are met. This allows dealings and transactions with strangers without the need for a third party to act as a trusted broker or validator.

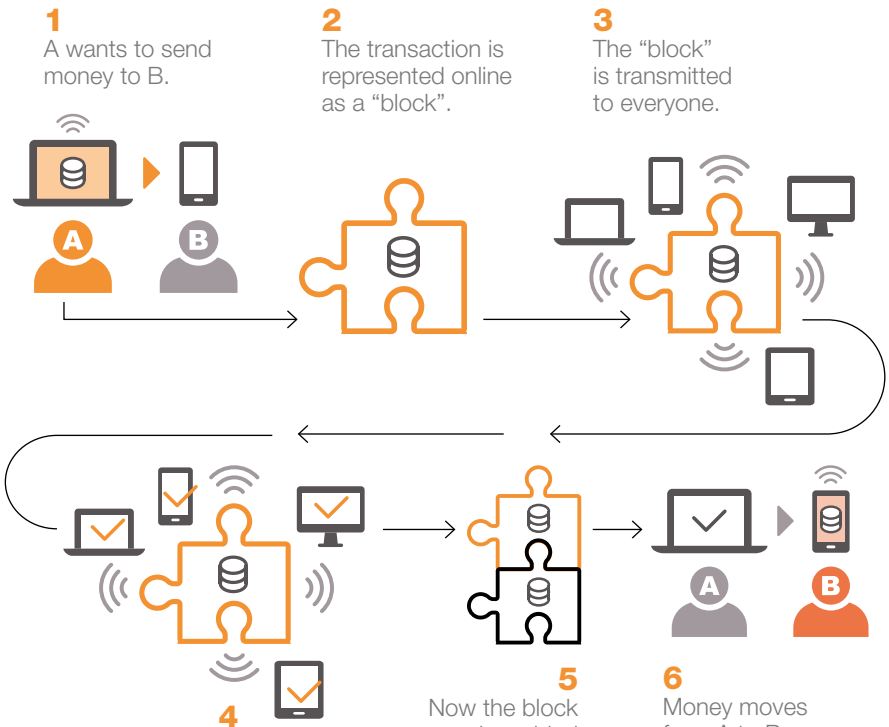
All parties handle the same information at the same time, minimising paperwork, speeding up the process and eliminating almost 100% of the risk of fraud or misunderstanding. Interestingly, smart contracts are often in the form of conditional judgements, where action is taken when triggered by a given cause: in the digital world this implies a myriad of possibilities.

Online identity

An online identity is the online version of a person's physical identity. It is made up of a wealth of data we provide on the network, beyond our email and address: our photos, bank data, preferences, etc. In addition, this information is not uniform and is distributed across different platforms such as LinkedIn, Instagram, Facebook, Spotify, etc.

In today's world, the ability to prove the online identity of individuals and businesses is crucial to economic, financial, and social development.
Therefore, valid identity solutions are needed for a wide range of services, markets, standards and technologies. Private companies, governments and regulators are already looking for comprehensive solutions that enable customers and citizens to identify themselves online, based on DLT (Distributed Ledger Technology (like blockchain)), artificial intelligence, or biometrics.

How blockchain works to make payments



SOURCE: Miethereum.com / Author's own.

There are many more uses for blockchains, such as:

- **At the health level,** insurers, patients, physicians and hospitals can share and monitor private medical records to reduce fraud.
- **On the way to the so-called Industry 4.0,** driven by other technologies such as IoT, M2M, cloud or big data, blockchain can be the technology that serves to bolster confidence in the time and data integrity marks of sensors.
- **In a collaborative economy,** by enabling peer payments, the door opens to direct interaction between the parties, obtaining a truly decentralized sharing economy.
- **For crowdfunding initiatives,** blockchain tech may enable people to have a direct voice in product development by supporting the creation of venture capital funds based on multiple sources.
- **In government,** by making results fully transparent and publicly accessible, distributed database technology could provide full transparency to elections or any other kind of survey.

And there are any number of potential uses in cross-border payments, retail, transport, etc.

The future of blockchain is to solve inefficiencies in current processes, enable interaction with other companies without the need for intermediaries, and generate smart contracts, while suitably managing people's online identities. •

ENEL - successful deployment of Smart Grids around the world

By Antonio Marín, Director of BABEL

Through the intensive use of information technologies, smart power grids enable the implementation of a sustainable and economically efficient global electrical grid. ENEL is a leader in this area.

The electrical power distribution board has changed. Smart Grids are now a reality and that changes everything (almost) because, thanks to them, the classic model of one-way energy distribution from generator to consumer is evolving into a scenario of a multilateral exchange of business and energy information among the multiple and diverse players involved.

Through the intensive use of information technologies, the grids serve to optimise the power production, storage, distribution and marketing processes to thereby run supply and demand in real time and ultimately implement a global, sustainable and economically efficient power supply system with low losses and high levels of quality and safety.

There are three processes that form the basis of smart grids: Remote management of consumption points (smart metering), control and automation of grid infrastructure (grid intelligence) and smart data use by active agents (utility IT).

At the technological level, the first is based on the deployment of two new smart-grid-specific network elements: smart meters and concentrators. These are the devices that really allow the implementation of new smart grid services (dynamic demand management, fraud detection and other non-technical losses, adaptation to regulatory changes, etc.).

The case of ENEL

ENEL is a large European multinational and one of the leading integrated operators in the energy sector, with a global presence in 34 countries across the 5 continents. Its power plants produce a combined power capacity exceeding 88 GW, serving nearly 72 million final consumers worldwide. As a benchmark energy company, ENEL has been successfully leading the implementation of smart grids in Europe and beyond.

Within this future strategy, the mass deployment of concentrators and smart meters that ENEL has been developing over recent years plays a key role, making its telemanagement network one of the most advanced in the world both in terms of its reach and the technical quality of its devices (proprietary manufacturing), as well as the communication protocol used (Meters and More, a highly reliable and safe open protocol).

In our geographical area, and through ENDESA, its subsidiary in Spain, ENEL already has more than 11.2 million smart meters up and running in a network, together with their corresponding associated concentrators at transformer centres. ENDESA's total investment in its telemanagement network is close to €600 million, giving an idea of its strategic importance to the company.

ENEL is also leading the progressive mass rollout of new smart metering networks across many Latin American countries including Brazil, Colombia, Peru, Argentina and Chile.

Partners

As ENEL's technology partner, BABEL works closely with this global smart grid strategy, supporting the deployment, maintenance and management of the smart metering network throughout Spain and Latin America. To this end, BABEL has a highly qualified and specialised work team providing the following services:

1. **Level 2 technical support for network devices:** This service comprises individualised incident management, analysis and resolution concerning devices deployed in the network (mainly concentrators and smart meters).

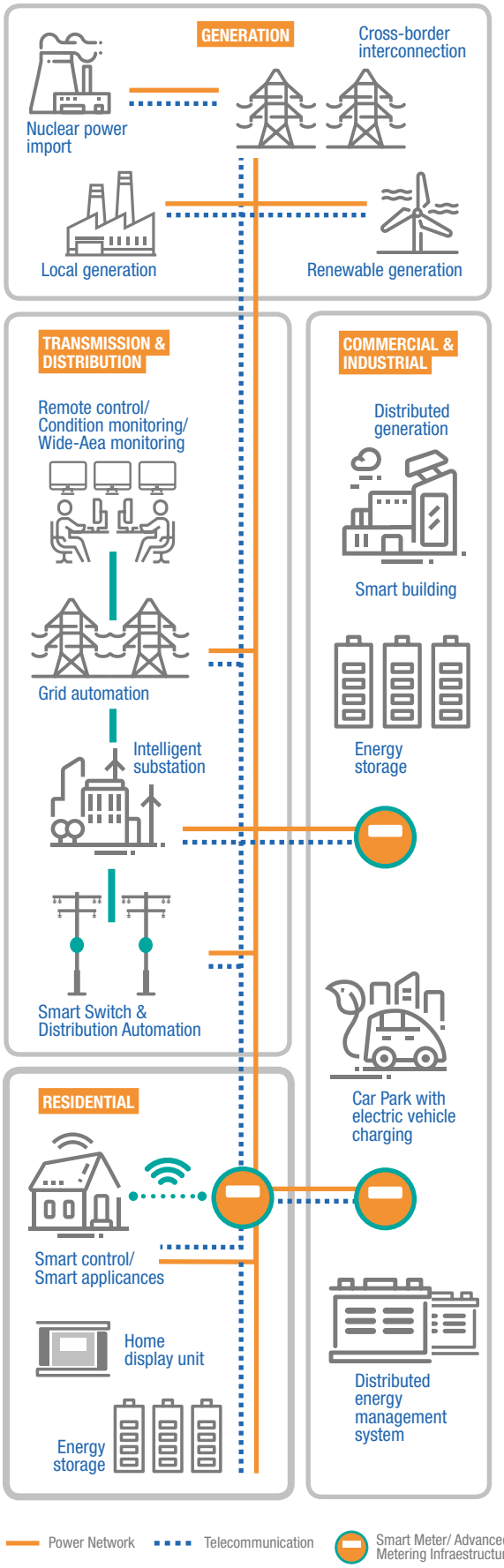
2. **Support for ongoing network operation and improvement:** This service includes actions to optimise and improve overall network functioning, including the identification of recurring error patterns and the ongoing improvement of the association of meters and concentrators.

3. **Checking regulatory compliance and network device quality:** As part of this service, continuous testing of hardware and firmware validation and acceptance is done for the devices deployed in the network and the drafting of functional and technical requirements for new firmware versions is supported.

4. **Development of laboratory software for network control, support and ongoing improvement:** This crosscutting service comprises software development and maintenance activities (analysis, design, construction, testing and deployment) with regard to the laboratory systems that support all the other activities.

5. **Implementation and management of value-added network functions:** Lastly, this service includes other high-value miscellaneous actions such as non-technical loss detection and the implementation of singular projects related to the smart metering network.

How does a Smart Grid work?



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Citizen developers and the end of shadow IT

By Leopoldo Colorado, Manager of BABEL

Expectations are growing about the citizen developer concept. While there is no strict definition of the term, it describes a business person or team capable of developing their own applications with or without the support of their IT partners.

The concept has emerged as a result of the urgency of business to meet needs not addressed when required by areas of IT. Thus far, these needs have been met with the creation of small office applications or by hiring, at their own liability and cost, specialist companies to develop them. The new generation of citizen developers will be more autonomous because other factors come into play that favour this development:

Keys to evolution

Firstly, the new generations of professionals incorporate technical skills into their skillset or studies. They have had the chance to learn some form of programming language or tool for building things. They talk naturally about technology and have no fear of software and hardware.

Secondly, there has been an increase in available resources and solutions in the form of services (APIs) allowing for the easier building of new applications by combining these parts. The economy generated around products as services has led to a proliferation of solutions, creating an ecosystem of tools that favour innovation by allowing the construction of ideas in a short space of time and controlled investments in the short term. For example, it is now possible to translate voice to text without the need for an artificial intelligence expert or to integrate video calls without deploying a communications infrastructure.

Lastly, the way in which applications are developed is also rapidly changing due to the democratisation of their construction, thus far reserved for software engineers. A small business without much technical

knowledge can now create its own e-commerce web portal with a chatbot to answer frequent questions. The development of applications and the tools for their construction are in the process of evolution: we have progressed from building applications manually (writing code and building pieces of software by combining multiple unrelated tools) to using self-sufficient platforms to visually build web or mobile applications, (such as low-code platforms) that dramatically speed up the cycle of construction. Nonetheless, the real disruption to software construction has yet to come when artificial intelligence is applied to these tools. We will see it used in areas such as user interface design, which will literally be drawn as a draft (wireframe) and automatically come to life, creating attractive visual lines aligned with the corporate image. It will allow the creation of different user interface versions and the application of A/B testing techniques to improve them without designer involvement. On the data side, citizen developers will be able to make decisions progressively about the information structure almost right up to the end of the project, with the platform managing the adjustment of the model that best supports the new definitions. Business logic will again be centred around logic based on business rules, this time written in natural language – the same one allowing the description of user stories, which will favour test automation and the reduction of testing costs.

Based on all the above, the citizen developer concept will gain relevance in organisations as drivers of change, but they must have partners in their ranks. One of the big issues that companies need to resolve is the coexistence of areas of business and technology because this independence will bring the shadow IT concept (applications developed outside of IT) to a new level. Such practices are currently persecuted but we will increasingly need to strike a balance and redefine the roles of each in the organisation because it is inevitable.

New paradigm

Areas of IT must find a way to co-exist with shadow IT, not through control but through association for mutual benefit, fostering a diverse ecosystem in which these applications can slot in naturally. They must define services to offer their internal client value-added that only somebody inside the organisation can give. Such services may come in the form of specialised support, team reinforcements with staff experienced in organisation, application security, quality enhancements, or integration with the corporate services hub, for example. Citizen developer applications will need to be more stringent with their results: they will need to deliver a good user experience, be fully integrated with the organisation's other processes and access consistent information in real time. This means that they must improve their quality levels by turning to other corporate services that may be governed and managed by IT. Technology areas will provide the ecosystem of services and development platforms for citizen developers to work in the best possible conditions without compromising security, privacy, quality or brand image.

In short, business areas in the near future will be gaining in relevance and resources for the development of applications and 'citizen developer' profiles will find a good breeding ground here. However, these professionals cannot do it alone. They will need support from corporate technical areas to ensure security, information integrity, scalability and the appropriate dissemination to maximise ROI. IT will be so deeply rooted in business that there will be no mention of the shadow-IT concept, just as innovation cannot be framed within a single group of an organisation. ●

The citizen developer concept will gain relevance in organisations as drivers of change, but they must have partners in their ranks

Low-code platforms:

How can low-code platforms help to drive this citizen developer concept and greater IT-Business symbiosis? The differential benefits offered by leading low-code platforms (in this case OutSystems) include:

- Development (presentation, logic, data) through graphic interfaces (without the need to write code).
- Automatic creation of registration forms and database modification.
- Integrity/syntax control for switching from one environment to another.
- Integration of user feedback in the tool during the test cycle.
- Cloud solution, allowing for immediate implementation (development from day one).

This will increase productivity (by up to 50% compared to a development with a traditional architecture) and deliver value to the end user in far less time.

The 4th Industrial Revolution

By Antonio Marín, Director of BABEL

Hannover, April 2011. At the world's largest industrial fair, the German Federal Government presents its High Tech Strategy, a state plan seeking to give a definitive push to the development of a new generation of smart factories across the country. The plan outlines a new industrial manufacturing paradigm in which all products and machines are digitally interconnected and coins a new term: Industry 4.0.

World industry is at a turning point, at the dawn of what might be called the Fourth Industrial Revolution, a new stage of human industrial development characterised by the emergence of smart factories: highly efficient, fully digitised and hyper-connected autonomous production units.

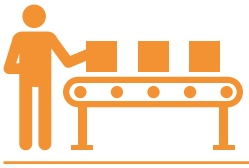
When we talk about Industry 4.0, we are referring to the change in production model experienced by industry over the past decade, advancing towards the mass digitisation of production systems and the continuous exchange of information between elements of the production environment, both with one another and externally.

In short, it is the manifestation of the global phenomenon of the Digital Transformation applied to the production industry. That's why the transition to Industry 4.0 is a process of transformation that must permeate every area of the organisation, simultaneously and progressively being rolled out across nine key areas of transformation.

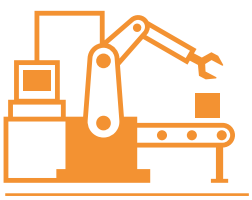
Towards Industry 4.0

FIRST Industrial Revolution
based on the introduction of water- and steam-driven mechanical production equipment.

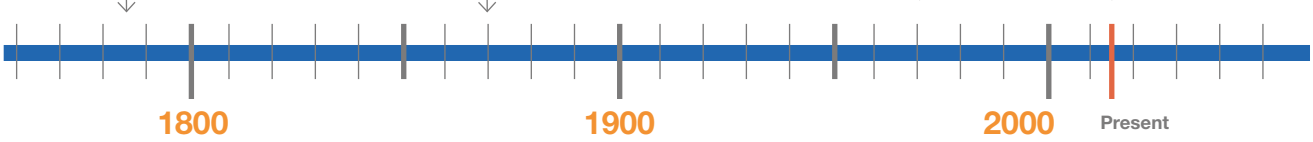
SECOND Industrial Revolution
based on mass production through the division of work and use of electrical energy.



THIRD Industrial Revolution
based on the use of electronics and computing for automated production.



FOURTH Industrial Revolution
based on the use of cyber physical systems (CPS).



Cogs for Industry 4.0

01 Big Data

The mass sensoring of factories, the use of external (particularly unstructured) data sources and the need to process information quickly for real-time decision-making require the use of Big Data tools and analytics.

02 Autonomous Robots

In smart factories, traditional robots are being gradually replaced by cobots, a new generation of far more autonomous and flexible robots that are, above all, cooperative (hence the name), capable of adapting to production conditions and working safely with humans, collaborating with and learning from them.

03 Simulation

The development of “digital twins” (detailed and dynamic virtual representations of physical environments, in this case, of smart factory elements) allows the simulation of multiple conditions in production lines to identify the optimal operating points of each machine or system.

04 Process integration

The multilateral information exchange characterising Industry 4.0 allows real integration in production processes, both inside the production plant and between the different departments of the organisation, and even outside it, integrating suppliers and customers to yield a fully automated and integrated value chain.

05 The Internet of Things

This is the base technology that allows the interconnection of all systems, machines and other production elements in plants; in a smart factory, however, even products – during the manufacturing process – have the ability to connect and exchange useful information with the device ecosystem.

06 Cybersecurity

The hyperconnectivity of elements in smart factories, both with each other and especially outside, multiplies the security risks and threats to which these ecosystems are exposed, so cyber security investment is key to the sustainability of Industry 4.0.

07 Cloud Computing

The geographical dispersal of information sources and the enormous power of calculation required to combine and manage all information flows in real time demand the use of all forms of Cloud Computing in the new smart industry setting.

08 Additive Manufacturing

New additive manufacturing techniques (such as 3D printing), when used massively and in a decentralised way, can introduce substantial competitive advantages into the production chain. These include product customisation and reductions in material transportation and required stock.

09 Augmented Reality

The progressive incorporation of this technology into production processes will optimise the interaction between people and systems, providing relevant real-time information for decision-making and reducing error when following procedures. It also allows for the automated capture of useful information through “wearables”.

10 People

There is a tenth axis, one that’s even more important than all the previous ones: the axis of people. The big challenge for Industry 4.0 is not the technology, which is sufficiently mature and making progress in leaps and bounds, but in the ability of people and organisations to assimilate the changes ushered in by this new paradigm. Organisations that can ride this transition with a committed and motivated team, aware of the need to evolve to stay ahead, will undoubtedly have a differential competitive advantage on the new global Industry 4.0 stage.

The augmented employee

By Leopoldo Colorado, Manager of BABEL

Integrated app assistants, information search tools, digitisation... These are elements that have stepped up productivity at this law firm which has created a true data culture.

Today was a gruelling day at work, somewhat chaotic but still productive. We made good headway in two complex cases that had us scratching our heads. My work has changed so much over the past few years. It never ceases to amaze me how inefficiently we used to work.

It seems like only yesterday that I would come to work each morning with so many plans in my head only to be left wondering where the day had gone by the end of it. That feeling of not getting anything done.

All this started to change with the arrival of the first assistants. They weren't sensational by any means, but the few things they did, they did well. The key was in the immediacy. We already had other tools that did what they offered, but it made life far easier to have them so close to hand in our chat. Now they're everywhere, integrated into our applications.

If we have a question about internal procedures or how to contact a client, or we simply want to book a room, we just have to let them know, wherever we are. But the real breakthrough came when they started helping us to prepare cases. This is when I realised their potential and the role that we would each end up playing. I just have to say "C-3PO," (that's what I call mine) "find a space in my diary to analyse a case with Gustavo" and he arranges it all. I don't even have to tell him which case it's about because he already knows which one we're working on. Best of all, though, he can read case documentation and create a summary of it for us, categorise it, and search for documentation on similar cases. By the time we get down to work, we've already got a lot of road covered. This has changed things tremendously. We don't spend as much time collecting information as we used to; the new tools allow us to find what we are looking for (and sometimes even a surprise or two) in our database and in that of the judiciary.

These assistants are connected to the other tools, so we can quickly jump from one to the other without losing our thread. This has meant another breakthrough in productivity. The technicians call it Data Spirit and it's like a global consciousness for the transfer of knowledge between our applications. Now, when we are reviewing a judgement and open our search application, or even e-mail, it suggests phrases related to that judgement. The fact that the Public Administration has been modernised through the Judicial Office has also been a great help.

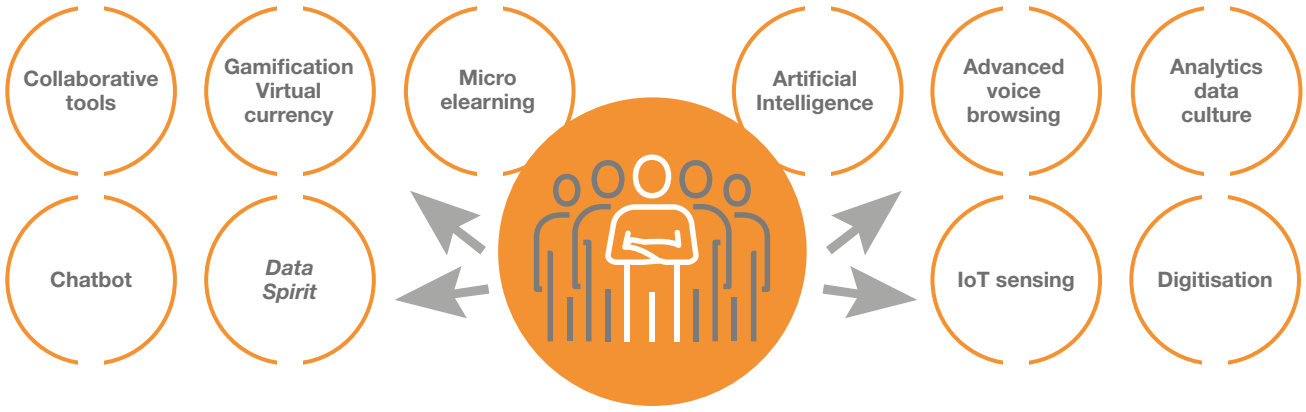
We are now fully digital and all our activity is supported by some application or other, so absolutely everything is recorded, even the office temperature. In order to take measurements, we not only had to digitise all of our processes but also sensorise our entire setting (places, workstations, communications, etc). For a law firm like ours, this has posed a legal challenge that has given us the experience to understand our clients. We are now the leaders in law applied to technology.

This has led to the creation of a true data culture, which means that everything we decide must be endorsed by information. We even have a department specifically to assist us with any corporate information needs, and all employees can access our analytical tool and query any information about the company.

It has made us more aware of how we can improve. Now when we spot inefficiencies, we get together to analyse them using our collaborative tool with which we discuss the problem and, if there is a quorum, set up a working group to propose solutions. If the group manages to introduce an improvement to the company, then we all benefit. Given that everything is measured, artificial intelligence allows us to gauge the impact of a new measure on the organisation through economic indicators. And if it is positive, the benefits are shared in the form of savings for the company and gratification for the team with our virtual currency: the peseta (yes, we've brought it back).

As a closed virtual currency, it can only be used by members of the firm but we have enough internal services to circulate this capital.

Tools that multiply



Our sector has also changed somewhat in recent years, forcing us to take an active role and keep up to date. Even here we can observe changes. Training is a right and a duty of our members and part of our daily routine – we learn something new on a daily basis through the everyday learning system. Some of our services are already resolved semi-automatically, meaning that a 'bot' actually does the work and we then supervise it. We have been testing these algorithms for some time and are convinced that the launch of these new services will turn our industry on its head.

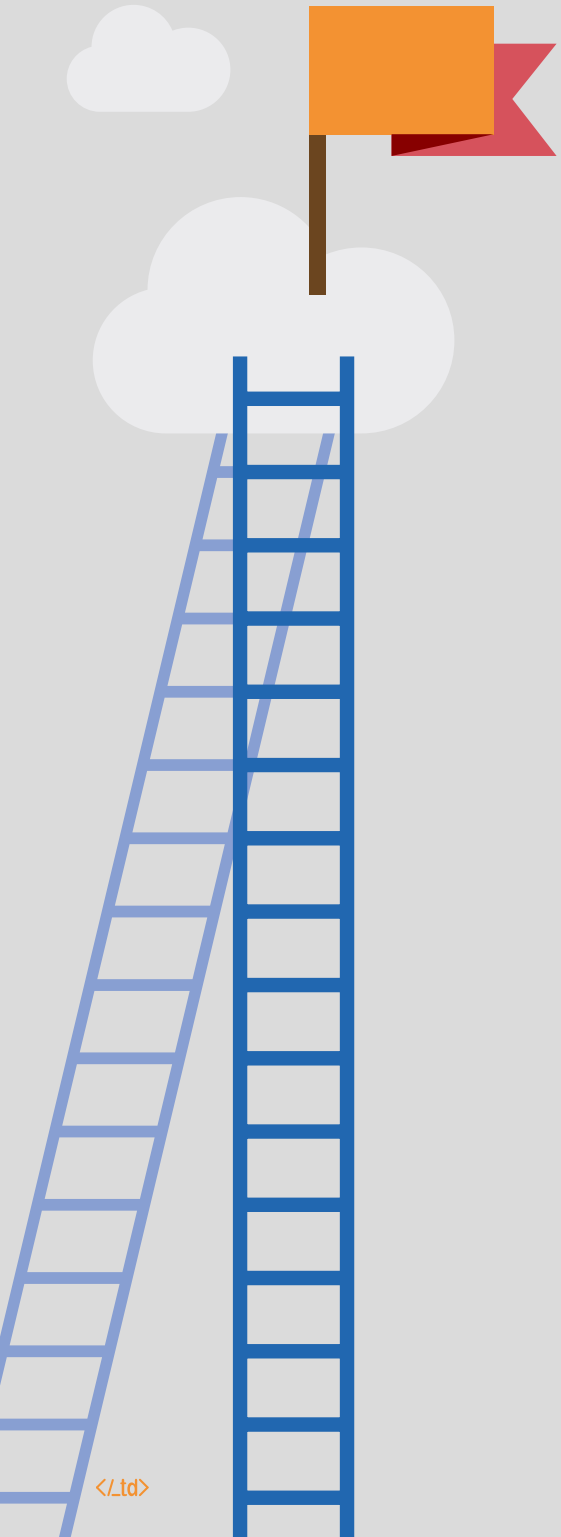
I am lucky to work at a site that knows how to harness the opportunities afforded by these technologies and knowledge. ●

"We are now fully digital and all our activity is supported by some application or other"

Agile scaling in an organisation

By Juan Fernández Castillo, Manager of BABEL

Agile or the application of agile methodologies has been introduced into all the processes in our organisations. Not just in enterprises that work in software development, which was its first approximation to the business world, it is also being taken up in other areas and departments of the organisation, such as finance and human resource management.



Most business executives agree that agile is critical to the success of digital transformation and have got fully behind the philosophy, making it no longer just a fad but something that is taking a firm hold in work procedures. The ability to continuously adjust strategies and respond to market ambiguity quickly and flexibly are characteristics that define not only software development but business models and financial operations, among other matters, too, hence the interest in getting agile up and running across all areas of our companies.

In the 2007 State of Agile Survey report, the main concern of project managers was to get teams with enough experience in agile environments, while the second was general organisation resistance to change. By the time of the latest report, published in early 2018, more than half the respondents had listed an organisational culture at odds with agile values as their main challenge, while resistance to change continued to occupy second place.

There are more than 10 years between the reports and in this time problems such as raising the number of experienced professionals have been solved thanks to the involvement of the PMI Agile Coach Practitioner (PMI-ACP). We have also moved from the difficulty of creating a simple agile team to the complication of managing and relating a large number of work teams. This has been achieved using various approaches, such as the Scaled Agile Framework (SAFe®), the first version of which, released in 2011, entailed a standardisation or solution for agile scaling within enterprises.

Going back to the main problem, in order to align a business culture with agile practices we need to take a holistic approach at management level and move beyond mere activities that are in many cases circumstantial or based on whatever is the agile go-to stance in vogue. The corporate strategy must cover the entire organisation and have a medium- to long-term focus from the outset. In principle there could well be departments that don't appear to be impacted by transformation but which have to be included in the whole of the process, because you can be sure that sooner or later they will be directly or indirectly affected by this new work approach. First of all, we should identify the

An Agile Change Management Office will be critical

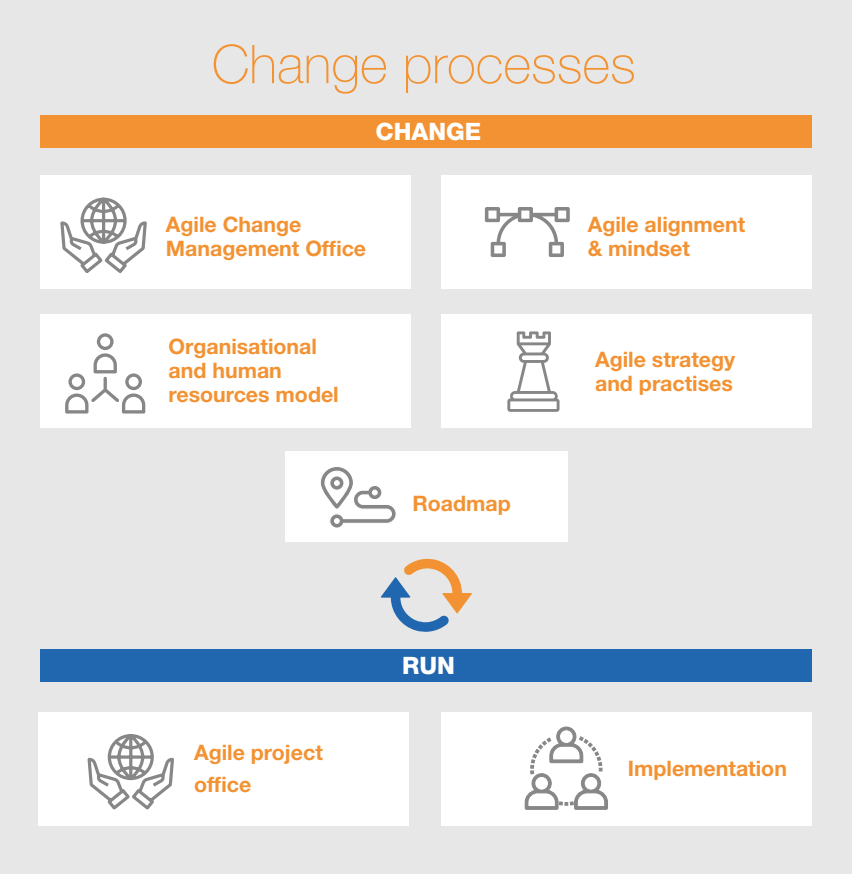
processes that will be affected by our transformation and consider their implications for our strategy.

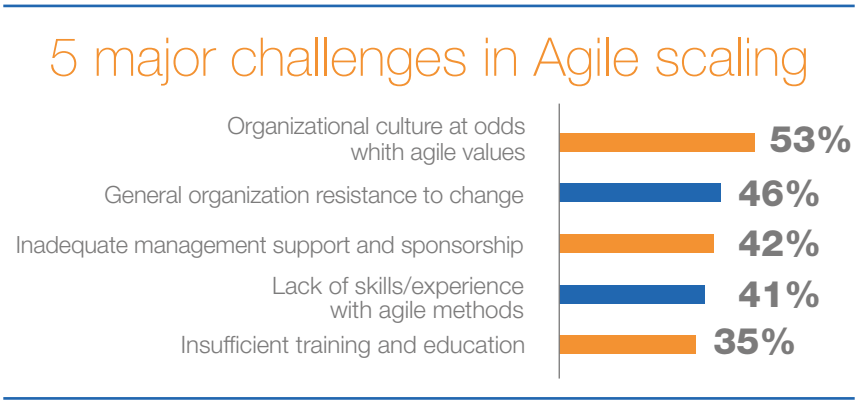
Within the agile processes in an organisation we can consider that there are two main groups: one related to implementation and the other covering everything related to change. In the former we have the best-known activities linked to production and techniques within agile teams, together with agile project management offices where the relationship between teams is coordinated and facilitated. These implementation processes are mature enough to need no further explanation as they have been the spearhead of agile since its inception. The second group, related to changes within the organisation, has been taken into account less so far and used solely to underpin crosscutting project implementation.

To lead all of these inhouse organisation change processes and ensure that agile permeates all company layers, it will be essential to have an Agile Change Management Office (CMO) that includes management and will be the first line of impetus inside the company. The CMO will be tasked with coordinating and supervising all global aspects of agile implementation. It will also be responsible for ensuring that rejection within the organisation is minimised to agile practices. To that end it will be necessary to define the agile message and mindset to meet this challenge. Based on this proposed mindset, a training plan targeted at new agile capacity-building in work teams must be undertaken, covering everything from hands-on training workshops to the creation of agile schools of excellence when the plan is further developed.

Simply maintaining the traditional organisational structure won't deliver on these changes. Evolution will also affect the definition of new roles and the structure and model of relationships between people and departments. The hierarchy should give way to flatter structures that foster collaboration and communication between different areas and people. Adapting best agile practices to our organisation will be a recurrent process and will require being active throughout the life cycle of the initiative. Implementing standard methods will be of no use; rather, we will have to adapt and qualify the strong points for our business. Finally, the creation of an implementation roadmap and outreach processes around it will be key to getting the whole company onboard with our objectives. Transparency and clarity in the tasks we will undertake will be crucial to helping employees own the success of our progress. This outreach work will be one of the objectives of the CMO, as will all the aspects indicated up to now.

Agile is here to stay in our enterprises, but if we want our adaptation to be a corporate success we must step up to it as a global challenge, assuming that it will impact all areas of the organisation and that our holistic vision is what will determine the success of our work. ●





SOURCE: "12th annual state of *agile*tm report".

VI ICT DIRECTOR EVENT MADRID

Agile methodologies: a new opportunity in enterprises

Markets are in flux and the pace at which technologies, trends and new working methodologies are moving forward is changing everything. The challenge for organisations is to respond to these changes quickly and efficiently.

At this sixth ICT Executives meeting organised by BABEL, we got first-hand insight into the value of the agile model extended across companies. The setting chosen on this occasion was the Luchana Theatre in the heart of Madrid. A warm scene welcomed us, with low lighting, comfy armchairs and ambient music. BABEL had assembled key IT leaders and executives from public institutions and major corporations across different sectors with a single goal: to discuss, in a down-home, family-style gathering, the transformation that the across-the-board corporate use of agile methodologies represents for organisations.

71% of companies worldwide are already using agile methodologies, according to the Project Management Institute's Pulse

"Agile is essential in a model like ours, although the main challenge is IT budgets"

José Carlos Rodríguez, Banco Santander

"Following the first results in the ICT field, our main challenge is how to incorporate it into the whole of the organisation and maintain the culture"

Adolfo Fernández-Valmayor, Quirón Salud

"We promoted agile in the past and now we need to know how to grow it. We've got the right teams and speed, but we're finding it hard to expand"

Manuel Blanco, Caser

"Transforming organisations from the IT department is tricky; change has to come from above. Strong leadership is needed to pursue expansion"

Raúl Rivero, Acciona

"IT adapts very quickly to agile and other departments do too when they get to know it and see the positive outcomes it can have"

Pablo de la Puente, Gestamp

of the Profession report, which found that these firms have seen their revenues grow 37% faster, generating 30% more profit than those that do not use agile systems. Seen in this light, the advantages seem obvious.

In fact, all the participants in the discussion said they were well aware of the benefits of the agile model. Enrique Ávila from ING, Manuel Blanco from Caser, Alfonso Castro from the Spanish Tax Office, Pablo de la Puente of Gestamp, Nicolás Elías from Enagás, Ricardo Gómez of WiZink, Raúl Rivero from Acciona, Óscar Robledo from the Spanish Ministry of Finance, José Carlos Rodríguez from Banco Santander and Adolfo Fernández-Valmayor from Quirón Salud agreed that agile working will come to be the dominant trend in most enterprises.

From complexity to added value

Applying agile methodologies is no easy task, but it can create endless opportunities for a corporation. Overall, the value provision is enormous because agile prioritises business functionalities ahead of non-core areas, assists in adapting to digital transformation, enables frequent feedback in a planned manner and permits constant and sustained value delivery.

As highlighted in the discussion, there are certain problems in applying this methodology to the IT field. Published studies have shown that a very significant part of the software generated is never used in production; on the other hand, if a long time goes by from specification to implementation, it is very likely that when it finally does go into production the need is no longer the same. The pace of change is so dizzying it's hard to keep track.

When the idea is to extend the agile model right across a company, some of the most common contingencies at the corporate level are business areas failing to keep actively engaged as the initiative progresses; getting sponsorship, no mean feat in large organisations; the fact that procurement models have an overly defined scope; and even, in extreme cases, that agile is not a good fit with all kinds of projects.

The meeting found that all the companies represented had deployed agile methodologies in their organisations. For them, the benefits and challenges involved with full implementation are clear and they are confident they will eventually deliver on their targets.

Conclusions

The first conclusion is that agile is not an end in itself, but a means. Specifically, it is the means to reaching other, higher-level goals. Five key takeaways from the executives meeting are that we must:

- **Reduce time-to-market** by applying an end-to-end vision from identification of the need through to its implementation, aligning the interests and efforts of the different areas.
- **Boost links between professionals**, generating enthusiasm among teams.
- **Improve the customer experience**, fostering satisfaction and loyalty.
- **Minimise impediments and transfers** so that operations run more smoothly.
- **Reinforce the necessary and mandatory culture change** that must take place across all areas of the company.

Finally, it was concluded that across-the-board implementation of agile methodologies entails a willingness to renounce aspects such as power areas, traditional hierarchies, detailed hyper-planning at very early stages and follow-up meetings. A new wave of change is coming and ICT executives will play an essential role in ensuring that organisations leverage the new model. IT managers were the first to implement agile and are the logical choice to spearhead change in their organisations. ●

"It's not an agile culture that transforms an organisation – it has to be the organisation that changes to adapt to the new culture"

Ricardo Gómez, Wizink

"Its greatest value is reducing frustration in the business and IT areas. Agile helps us understand each other, and that alone makes it worthwhile"

Alfonso Castro, Spanish Tax Office

"Agile systems work well in IT, but in other departments there is some resistance related to a change of culture"

Óscar Robledo, Spanish Ministry of Finance

"We implement agile without knowing what the real benefits will be, but the focus is so people-oriented that it's positive, because we are able to raise their motivation"

Nicolás Elías, Enagás

"After four years we're still learning, but it's a means to achieving three goals: more efficiency, better customer experience and greater engagement by and appeal to employees, as the talent is calling out for it"

Enrique Ávila, ING

I ICT DIRECTOR EVENT BARCELONA

Agile, DevOps and LowCode – How do they impact our organisations?

The first annual meeting with ICT executives in Barcelona took place on 4 October, organised by BABEL. The event was held in an exceptional setting: on the beachfront at La Barceloneta, in the Pez Vela restaurant.

Following on from the success of previous editions of the meeting in Madrid, BABEL recently held the first such get-together in Barcelona. On this occasion, we assembled ICT executives from some of the most important organisations on the Catalan market: Xavier Barrufet from Roche Diagnostics, Cristina Bellmunt of Nedgia-Grupo Naturgy, Pascual Boil from CuatreCasas, Llorenç Franco of CTTI Generalitat de Catalunya, David García from Naturgy, Carlos Muiño from Aura Seguros, Marisa Retamosa from CaixaBank and Daniel Solé of Grupo Selenta met up with the following BABEL experts: Juan Ramón Cabrera (DevOps), Leopoldo Colorado (LowCode), Carles Pérez (LowCode), Guillermo Ruiz (agile) and Ferran Yañez, as Director of BABEL Barcelona.

After a great breakfast with sea views, the session started by sharing opinions on how agile initiatives are being incorporated into organisations. Overall, participants agreed on the benefits of this work model and culture when initiatives are linked to new areas of activity, e.g. innovation.

The three trends

With regards **agile**, participants came to a number of conclusions when firms try to expand its application: it sometimes creates a conflict because of the significant impact of changes in established processes or long-held structures such as budgetary and IT service procurement models. In addition, organisational models based on reporting lines and belonging to a department can act as a brake on agile implementation, as can career patterns based on promoting staff up through the hierarchy.

In the **DevOps** field, participants also agreed that there are clear benefits, although in this case the impact is easier to quantify, especially in terms of reducing operating times. The discussion in this regard focused on how to strike a balance between speed and security in organisations that put hundreds or thousands of ICT applications and services into production every year.

Finally we arrived at the last item to discuss, i.e., LowCode, where participants agreed that currently it only applies to certain departmental areas such as data entry applications. The attendees shared a number of initiatives where **LowCode** architectures are already being incorporated into core business application development, so once they are finished, information about their success will be available.

In short, we may not yet be ready to incorporate the possibilities of “semi-autonomous software development” into our daily work, perhaps it will be similar to driverless cars and creep us on us bit by bit. ●

IT areas must play a facilitatory and orchestrational role through technology

The city stirs in the morning mist. Seville is gearing up to a new day and we to celebrating a very special event. One year ago, the Giralda Bell Tower was a privileged witness to the first ICT Executives Meeting of Andalusia and Extremadura. Now, at the second edition, it is us who look down on it from above.

As we take in the stunning views, participants arrive at the Chamber of Commerce's Corporate and Business Club, ready to swap insights and experiences on "The Role of IT Departments as a Business Lever in Organisations".

"IT is a business service supplier"

"It is our work to improve the company processes"

To that end we have brought together Pablo Borondo (Government of Extremadura), Pedro Cano (Herba Ricemills), Francisco Leal (Seville Chamber of Commerce), Óscar Lozano (Acesur), María Pérez (Government of Andalusia), Lorenzo Rico (Alestis) and Miguel Ángel Ripalda (Guadalquivir Hydrographic Confederation). They all agree that IT departments should have business rather than technology objectives. IT areas must play a facilitatory and orchestrational role through technology, but must be aligned with the company's strategy and operation.

When determining how to structure an IT department's value contribution to the business, different governance and budgetary control models are contrasted, but it is concluded that they are all valid if they aim to incentivize innovation, the progressive improvement of organisational efficiency and ongoing alignment with the business. The fundamental concern is the way to deliver optimum alignment with the business, underscoring the importance of having multidisciplinary teams in IT departments and the need for people with functional expertise to establish effective day-to-day engagement with the business

"I want use cases, not technology"

"Technology is a means, not an end"

areas. Ensuring that these people can work side by side with them is a

"Resistance to change must be overcome"

"The important thing is to achieve a common language between IT and business"

key driver in this regard.

Finally, a number of participants share their personal experience in working their way up through their organisations to join the steering committee, providing very interesting testimonials on clinching a higher level of influence and leadership for ICT professionals in enterprises. What is the recipe for success? To bring real value to the business, always place the customer at the heart of decisions, contribute to ongoing process improvement, train, accompany and "evangelise" business areas, demonstrate persistence and assertiveness and, above all, always act professionally for overall company benefit. ●

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