10 Trends that will shape 2022

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10 Trends that will shape 2022

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Anticipated Compilation and Nanoservices: Low Code and High Performance

Oscar Sanz Sebastián
Head of Tecnhnology and Innovation
- atSistemas

The adoption of **software solutions using services managed by cloud providers** is now a reality. However, questions arise as to whether the programming languages used are suitable for the implementation of cloud-based computing solutions.

Cloud providers have a service catalogue that allow companies to design, implement or migrate and run most of the applications/ systems that make up the business of many companies con **Cloud Native Solutions.** We understand a solution to be Cloud Native with the concept of building and running applications leveraging distributed computing to exploit the scalability, resilience and flexibility offered by different cloud providers including private cloud or private cloud (on-prem).

The Cloud and its many Applications

Today, Cloud can be exploited in multiple ways, such as **Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS)**, among others. This is possible due to the use and adoption of programming languages by the technology community.

The programming languages most commonly used in the design of this type of solution are those that use **Just-in-Time Compilation (JIT)** in which the source code is compiled to bytecode and the interpreter (virtual machine) processes it at runtime.

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Programming Languages: "Just-In-Time" and "Ahead-of-Time"

In Java we have C1 and C2 as part of the well-known **"OpenJDK"**, which have multiple advantages in the development of **Cloud Native applications**, such as platform independence for its execution. However, we must take into consideration that it implies a disadvantage in the execution of highly scalable solutions, due to the use of resources and execution time with the corresponding economic impact, for instance.

Alternatively, programming languages based on **"Ahead-of-Time" (AOT)** compilation have emerged, which generates an executable file natively for the platform where the software is to be run.

The difference is **that AOT compilation moves the compilation work to native from just-in-time (JIT)** to build time, requiring to analyse many times additional variants to optimise the generated code (e.g. libraries, resources ...).

The advantages provided by AOT vs JIT compilers are:

- Execution time
- Memory usage
- Package size

All the above are decisive in execution of **Cloud Native Solutions**.

AOT Frameworks and Compilers in 2022

During 2022 we will have to pay close attention to the evolution of AOT frameworks and compilers, including:

- Java con GraalVM y Quarkus (Red Hat)
- Golang
- Python (Shed Skin y micropython) Angular AOT compiler

These types of solutions enable at the architectural level a new concept of execution unit known as "Nanoservice".

Nanoservices, Tiny and Highly Scalable Services

Nano-services are mainly characterised by very small services, often a single function, that are highly scalable, designed to be deployed **on serverless platforms** or container-based solutions such as Kubernetes and allow leveraging 100% elastic scaling. The most popular serverless platforms for deploying these services are:

- Azure Cloud Functions
- Amazon Lambda Functions
- Google Cloud Functions

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Use Cases: Micro vs Nano Services

The use cases of microservices vs. nanoservices that we find in the development of Cloud Native solutions are:

- Well-defined Bounded Context (DDD) vs very specific functionality.
- Need for scaling in each Bounded Context vs. very high scalability and availability.
- Differentiated teams (each responsible for their own microservice) vs. deploying high-value functionality with minimal deployment cost (usually considered an anti-pattern in microservice architectures).

Throughout 2022 we will see that solutions based on AOT compilers will be consolidated in the market and adopted by the "techie" community based on the demand of customers to optimise the execution costs of their systems/applications. Specialised technical profiles will become more demanded, which currently are very scarce in a society where technology is evolving at a dizzying pace.

Anticipated Compilation and Nanoservices: Low Code and High Performance

Oscar Sanz Sebastián
Head of Tecnhnology and Innovation - atSistemas

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Multicloud Infraestructure

> **María Luisa Moreno**
> BDM of Cloud & Infrastructure - atSistemas

New technologies and changing business requirements are driving the evolution of cloud computing trends.

Forrester Research estimates that **around 20% of enterprise workloads now run in the public cloud.** A Goldman Sachs survey aligns with that estimate and finds that **23% of workloads are running in the cloud**. In addition, **43% of organisations expect to migrate additional workloads by the end of 2022**. On the other hand, Gartner predicts that **"by 2024, most cloud services platforms will provide at least some distributed cloud services that run wherever they are needed"**.

Initially, many cloud migration initiatives focused on services such as email, collaboration, file sharing and similar applications that do not require much customisation.

Gradually, organisations are beginning to migrate mission-critical workloads such as human resource systems and other back-office applications to the cloud.

However, the reality is that many organisations will need to continue to run their applications in their data centres, and this is due to many reasons, including, their critical applications not being able to be refactored due to a high level of customisation, fear of placing enterprise data in the cloud, cost uncertainties, and new risks in security and compliance.

All this leads to organisations having to manage **hybrid models**. One of the disadvantages of these models is that they do not take full advantage of the cloud provider's capabilities.

These capabilities become absolutely necessary for the management of emerging technologies such as edge computing, IoT and 5G, which demand solutions that reduce latency, efficient data governance and regulatory compliance, leading to what is known as a **distributed cloud**.

Gartner defines it as "the distribution of public cloud services to different physical locations, while the operation, governance, upgrades and evolution of those services are the responsibility of the originating public cloud provider".

In other words, **distributed cloud allows customers to place public cloud resources in the local data centre**.

The key difference between the **distributed cloud** and the **centralised cloud** is that the computing, storage and networking are closer to the end user.

In order to clarify the reasons why **distributed cloud Is becoming a trend**, it is necessary to understand the benefits of distributed cloud.

These benefits include: **low latency** that allows near real-time access to rapidly changing data when operations are closer to those who need the resources, the ability to **manage infrastructure between public and private clouds** in a consistent manner, the **reduction of network** risks as all cloud services can also be on local subnets, operating intermittently, and finally, the increase in the **number of available locations where cloud services can be hosted and consumed**.

It is not easy to predict all the use cases of the distributed cloud, but we can list some of those identified:

Hybrid Enterprise Cloud

Entreprises are looking for elasticity and scalability, but also control over where applications run. A cloud platform can be deployed across on-premises and cloud resources so that applications meet performance, security and compliance requirements.

Content Delivery

To achieve a good consumer experience for video and other content-based services, the delivery infrastructure must become increasingly decentralised. The gaming and streaming market will undoubtedly use the distributed cloud

Regulatory compliance

Regulatory compliance may mean, for example, that data including personal information does not leave the national territory. A decentralised architecture enables regulatory compliance and ensures cost and policy control regarding cloud service providers.

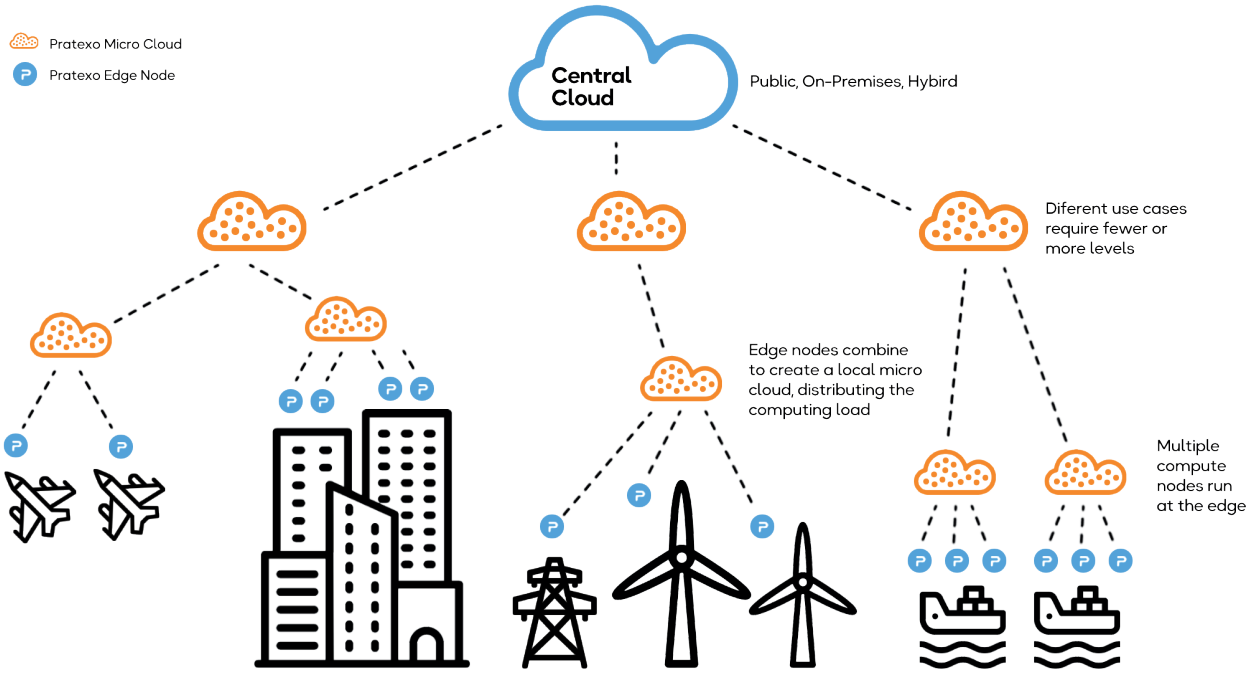
IoT and AI platforms:

From autonomous cars to industrial automation, new AI and IoT trends benefit from cloud computing due to low latency.

Machine Learning

Machine learning models are often decomposed into layers, where common parts can be centralised and contextual parts can be placed closer to where they are used. The data behind the machine learning model can also be distributed across multiple geographic sites. The main benefits of a decentralised architecture is better response times for data processing.

To conclude, the distributed cloud will enable a true multi-cloud model, with the possibility of distributing workloads across multiple locations and a single environment management.



Multicloud Infraestructurae | **María Luisa Moreno**
BDM of of Cloud & Infrastructure - atSistemas

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Zero Trust Security

Iñigo Chaso
BDM of Software Industrialization - atSistemas

"Security is about reducing risk to acceptable levels, because risk is inherent in any activity and can never be eliminated", Wikipedia. This quote should make us think and work to find the balance that allows us to act as confidently as possible and stay away from paranoid situations.

In 2010 Forrester made the first definition of Zero Trust, as an applied security model based on the principle of "always authenticate, never trust" and from which Google launched the BeyondCorp project in 2015, whereby they began to manage their internal network as they would within the insecurity of the Internet.

Until then, and in a similar way to how it could be seen from a military point of view, the implementation of a security model was based on securing the perimeters under the premise of trusting and verifying access, as we cannot close the perimeter and neither should we excessively hinder the development of the business to the outside.

This perimeter securing (similar to the walls of a castle) assumes by default that any element within this perimeter is an element that can be trusted. Perimeter defence is based on IPs (internal or external) and Firewalls, and with the growth of these perimeters, in some organisations additional network segmentation models were implemented as an additional protection measure against unauthorised access. This segmentation limits horizontal movement (with other elements within the castle or within the castle segment) but does not solve the basic problem.

3 Zero Trust Security

How could we defend against unauthorised access situations? What if we could remove the word Trust from the equation, so that only transactions between elements that recognise each other and are authorised to interact no matter where they are located, were allowed? Can we operate securely on the premise that the intruder is already on your network?

The Zero Trust model provides solutions and evolves the current perimeter models based on:

- Authentication
- Authorisation
- Operation
- Audit
- Observability

It all starts with the ability to determine with certainty that someone/something is who they say they are through the Authentication procedure, and we must be able to authenticate both People and Machines/Applications. Once authenticated, we can apply for Authorisation to Operate.

Because we do not trust anything inside or outside what we used to call "the perimeter", it is essential to be able to have the detail about:

- What is happening between the People and Machines/Applications in our organisation.
- What elements internal / external to the organisation are operating with and how they are interoperating.
- What information is being shared and how it is being shared.

If we review the Authentication process in more detail, we realise that it should also be able to cover the access of devices (also known as endpoints) to ensure that they comply with the security requirements that are established (such as our laptops, which we use on a daily basis and which should have been previously registered and validated in order to comply with the security requirements and configuration or patching updates). In addition, it must be able to integrate mechanisms such as 2FA (Two-Factor Authentication) or MFA (Multi Factor Authorisation) or be open to integrate new mechanisms that may be created.

From the physical point of view, these identities take shape through Digital Certificates, Tokens, etc., which facilitate and speed up subsequent actions between devices. These identification elements must be temporary, for instance, and they must have a limited period of validity in time, so that we can ensure that in the event of a leakage of secrets, this leakage will be a temporary threat.

3 Zero Trust Security

People authentication is usually integrated through **SSO (Single Sign On)** to facilitate subsequent interactions with other applications.

Once the authentication process has been passed, it must be possible to obtain the authorisations to operate. This process can be managed by another solution separate from the one that Authenticates, so that there is integration between the two, and therefore, upon receiving any request for authorisation, it must be possible to validate that the person requesting has been previously authenticated and that this authentication has not expired. Failure to comply with any of the requirements would result in any authorisation being denied.

The identities to be authorised can come either from running Machines/Applications or from People. These authorisations have to be done on the principle of least privilege or, in other words, authorised on the basis of the minimum access levels necessary to perform the desired function. Of course, the use of administrator privileges or "privilege stacking" situations is avoided as it facilitates the security breach related to excessive administrative rights and makes us more vulnerable to threats.

Zero Trust faces significant challenges when it comes to machine-to-machine communication in environments where machines are created in an automated way, solving:

- Auto-discovery of the new elements created, as we don't need to know where they are and we need the capacity to interconnect them.
- Creation of automated identities, as well as the distribution of certificates that allow subsequent authentication (and integration with digital signature entities).
- We need to be able to automate configurations with elements such as firewalls to allow the newly created elements to operate.
- Establishment of minimum authorisations to be able to operate.

In this sense, it is also necessary to have services that allow the information that is shared to be encrypted in order to add an extra level of security. Ideally, this should cover the information exchanged between services that we store in databases and logs, for example, and is a way of guaranteeing that no loss of information occurs within our **Data Loss Prevention (DLP) model**.

DLP models need to have Audit information on who is sharing what and with whom, so that if a breach happens, we can quickly identify the origin point of the breach, machines or people involved, and apply procedures to fix the problem.

Additionally, the existing Observability model must ensure that we have full transparency on everything that is

happening whilst being able to detect elements that are not from our organisation or anomalous behaviours for which we will probably have to rely on AI support to acquire additional capabilities to identify those anomalous behaviours from those that are not, even if these anomalies have not been identified previously because they were unknown until now.

Zero Trust Security

Iñigo Chaso
BDM of Software Industrialization - atSistemas

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AI Industrialisation Platforms

Xan Carlos Fernández Echezuria
BDM of Data & Business - atSistemas

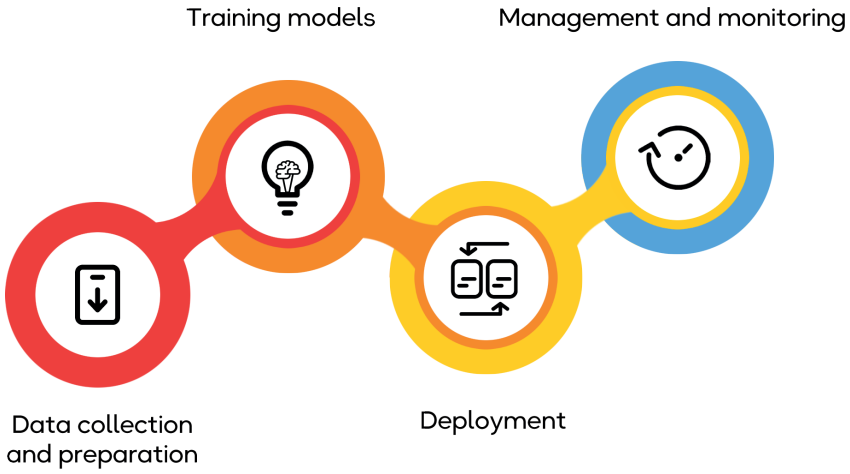
The adoption of **Artificial Intelligence (AI)** is growing rapidly together with the global AI market expected to be worth $267 billion by 2027.
We can assert that AI is already a mature technology and, as such, faces the expected challenges from such growth:

- Data quality
- Diversity of algorithms
- Dependence on Technical capabilties
- Ability to cover the implementation cycle
- Monitor the results

Despite the current boom in AI, we still find that the vast majority of models never reach the production stage.

Carefully elaborated algorithms remain in the initial testing phase, without being produced on a large scale, as the effort to do so is sometimes much greater than the development of the algorithms themselves.

This is largely because, while AI is intended to achieve business objectives, it is also, albeit less obviously, the means by which work is done to optimise the data flows required, during both development and execution of business processes.



4 AI Industrialisation Platforms

This is why the **Industrialisation of AI** is of vital importance, and there are three key methods to achieve this, which are associated with the way information is shared, the way the different actors interact and finally the efficiency of the operations.

Sharing Information

The results obtained by AI, and, in general, any discipline associated with data, are directly related to the quality of the data. This is why, if an organisation is thinking of industrialising its AI, the first step must focus on is its data sources.

Data is often scattered and even siloed, which makes it difficult to use for large-scale AI modelling. This is because if the team only has access to a subset of the data, it will never be able to generate models that truly reflect the reality of the organisation.

Because of this, the goal should be generate data products with greater access, quality, and availability for the operation, in order to avoid each of the areas seek to create its own copy to meet its specific needs and thus generate duplication.

Once the information has been centralised, it will be essential to guarantee the quality of the data, both from a **structural and business perspectives**, whilst being correctly filled in, the data must be coherent and provide value.

Multidisciplinary Interaction

AI is directly associated with innovation, and the key to innovation is to be able to bring together different perspectives on the same topic, so that they enrich each other and provide a more complete vision. This is why the more groups that work together, the better the results.

Thus, in order to achieve greater success in the industrialisation of AI, the global contribution and collaboration of the different teams involved will be necessary. Without this cooperation, it will be very difficult to build models that bring added value to the organisation as a whole, and we could make the mistake of generating isolated ecosystems.

It is very important to foster the collaboration of the work teams throughout the entire cycle, from data ingestion to the implementation of analytics, working in a synchronised manner so that the data is available in the shortest possible time, with the highest quality and ease of access.

4 AI Industrialisation Platforms

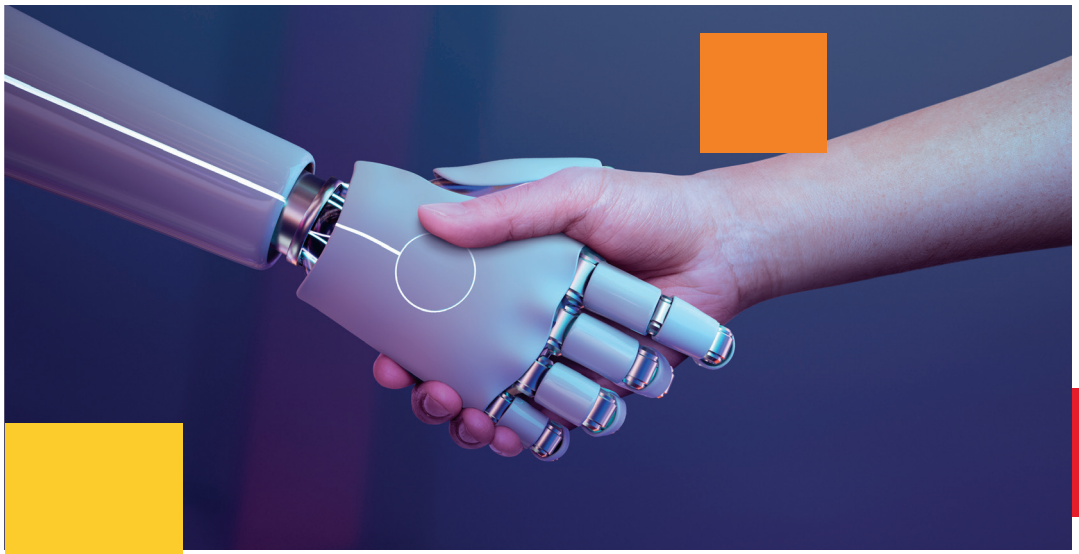
Operational Environments

The only way to achieve **large-scale implementation of AI** is to be prepared to **integrate AI-based solutions** into the operational framework of the business. This requires a clearly defined strategy.

It is necessary to identify which of the operations that are currently being carried out must be modified to allow the adoption of new technologies, and above all, establish standards for the creation, testing and deployment of new AI models. In this way, it will be much easier to replicate and scale up new models as they are created.

We can rely on **DataOps**, which is totally focused on achieving automation whilst improving the speed and accuracy of data processing, democratisation of access, integration and, of course, quality assurance. And **complement it with MLOps**, which pursues the deployment of models in production, where other software systems or applications can supply them with data to obtain predictions, which in turn can be used as inputs for other applications.

This strategy also involves establishing where the selection of the algorithms and the development of the models will reside, in the technical or functional teams, and provide them with resources to achieve greater autonomy without losing control over the developments. For this purpose, **AutoML will be extremely useful**, as it will allow us to minimise the need for knowledge of the algorithms for their implementation, autonomously carrying out their selection and parameterisation, and leaving the analysis of the results to the users.



AI Industrialisation Platforms | **Xan Carlos Fernández Echezuria**
BDM of Data & Business - atSistemas

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The Challenge of Low-code

“ **Ignacio Montero**
BDM of Arquitecture & Development - atSistemas

The pressure continues growing. If a company wants to remain competitive, it needs to meet the challenges of digitising its business processes, and its new applications need to simplify and organise work more efficiently. But can this be done immediately, clearly and in a way that serves as a basis for new requirements? The **implementation of a Low-Code development platform will allow us to accelerate and simplify the creation of applications** whilst aligning the IT and business departments in terms of time and objectives.

The Challenge

Increasingly, we transfer money from the sofa, buy a holiday package after dinner, hire a car to get around when we need to, all at no extra cost and with free delivery. Digitalisation allows us to extend competitive advantages to the end consumer in almost the same way as it increases the pressure on companies.

Customers want the product at the best price and without waiting. There is not a single industry that is not affected by digitisation in one way or another, resulting in increasing demand for specialised and customised business applications. Companies want to simplify and optimise work processes, provide better services and increase their profitability. The race for digitised business processes collides with traditional approaches to development that cannot keep up with the day-to-day delivery of business-defined applications at an ever-increasing pace. The boom in low-code development platforms responds to this need of more applications sooner.

5 The Challenge of Low-code

Why Now?

The desire to speed up software development has been around for decades, with concepts such as **"Rapid Application Development" (RAD)** being coined in the 1980s. Low-code development platforms have been evolving to an unprecedented degree of maturity, but it is also becoming increasingly difficult for companies to find suitably qualified IT staff. Due to the lack of qualified staff, IT departments are often undersized.

In addition, user demands are more pressing than ever. This is no other thing but "digital impatience", the immediacy of society's request to be satisfied immediately. This is evident in the new generations where Amazon is the neighbourhood shop, Spotify is the record shop and Netflix is the video store.

This is precisely where low-code development platforms are positioning themselves. They promise a substantial acceleration in the development of applications in a simple, fast and adaptable way.

Why Low-code?

These are cloud-based products or services for application development that use graphical and declarative technologies instead of programming. In other words, low-code development platforms make it easy to create business applications without having to reinvent the wheel every time we need a new application. Programming effort is minimised by keeping work on source code to a minimum. Graphical development tools and components such as flowcharts, processes and tables are at the core. Business logic, database model and user interface are modelled rather than programmed.

Furthermore, based on BPM (business process management), processes are designed, implemented, managed and optimised. Even critical and complex processes can be automated with business process management functions that are integrated into business applications. Manual and non-transparent processes, which can lead to high costs, are becoming a distinctive of past times. Applications live by exchanging data with other services. Plug & play connectors and interfaces interconnect data from different systems. Everything to deliver it to any channel or device.

The main benefits of low-code development are:

1- Speed for your software development life cycle (SDLC):

- Applications are created in a few hours or days, not months.
- They meet the demands of specific departments, customers and suppliers more easily and quickly.
- They can be deployed and delivered quickly.
- Faster development means greater resources efficiency.

2- Process simplicity:

- Drag and drop modelling instead of programming.
- Less manual coding of applications make them easier to create and maintain.
- Much easier maintenance resulting in room for innovation.
- Disolving barriers between IT and other departments with collaboration and continuous improvement.
- Shadow IT is reduced because applications requested by employees can be created easily and quickly.
- Seamless integration of available data and applications thanks to ready-to-use connectors and interfaces.

3- Business adaptability:

Applications adapt easily to new market requirements and new demands from your employees.

- You can start quickly with basic functions and then evolve applications on demand.
- Ideas become powerful, tailor-made applications.
- Close work between IT and specific departments ensures that applications are better adapted to real business needs.

At atSistemas we understand that the demands of digitalisation will constantly grow which means that the organisations also need to continuously develop and deploy new applications. However, the more business processes your company transform, the more complex your architecture will be. Low-code development accelerates digitalisation without overwhelming the development department in the process.

Low-code development platforms transform ideas into innovations, align IT and business and promote fast, simple, adaptable, high-performance business applications development.

The Challenge of Low-code

Ignacio Montero
BDM of Arquitecture & Development - atSistemas

6

Digital OnBoarding: The Importance of Contextual Training for Hiring Talent

Daniel Hidalgo
Head of DEXS

Knowledge management and onboarding plans are becoming more and more important in organisations, as well as accentuating the paradigm shift of increasing remote working. It is therefore advisable to design and have a knowledge management and talent onboarding system in place.

The Digitalisation of the Onboarding Process

Faced with the challenge of incorporating talent and its underlying knowledge management, we identify a best practice as a trend that makes it possible to digitalise the onboarding process and the knowledge management of all the employees of a company.

Thus, planning is a solution that integrates an application and a layer of services oriented towards the design and management of onboarding processes, the incorporation of new talent and the continuous management of knowledge within companies in order to align needs with current and future capabilities.

We are also at a juncture where we must address this process, as Lever points out: "68% of HR professionals say their strategies will change as a result of Covid-19" (Fuiati 2021) and of the 5 groups of trends for 2021, digital onboarding and technology as an HR tool stand out, which is the subject of this business project.

6 Digital OnBoarding: The Importance of Contextual Training for Hiring Talent

Digital OnBoarding, the Solution to Onboarding and Knowledge Management

Digital OnBoarding proposes to respond to the need, on the one hand, to digitalise the onboarding process for the incorporation of talent in companies and, on the other, to manage the company's knowledge, aligned with the company's culture, development needs and the roadmap for the employee knowledge.

Digital OnBoarding supports the pre-onboarding, onboarding and continuous onboarding processes that constitutes the companies' internal training plan.

Pre-onboarding Process

Comprising the set of activities and actions from the formalisation of the incorporation to the company and prior to it. It is the process that prepares all those involved in the first days of incorporation of a new profile.

Onboarding Process

Comprising the activities and accompaniment of a new employee from the first day in the company. This phase has the mission of providing the new collaborator with knowledge of both the company, corporate training, and the department to which he/she will belong, distinguishing between functional training that specifies the specific objectives and technical training that includes the necessary training for the development of the functions to be carried out.

6 Digital OnBoarding: The Importance of Contextual Training for Hiring Talent

Continuous Training

It is necessary to contribute to the growth of employees and to align the needs of the company with their capabilities. This phase includes upskilling and reskilling processes for employees.

- Upskilling refers to the optimisation of work by teaching employees the new skills that complement their current position.
- Reskilling refers to the training of employees to adapt them to new jobs. Due to the digital revolution, some jobs will become "obsolete", eventually resulting in their disappearance. This technique trains and relocates the employee in a new area in anticipation of the disappearance. Therefore, employees will be motivated and offered to continue training and acquiring new skills and knowledge.

Advantages of Digital OnBoarding

It is vitally important to design an Onboarding plan, as it produces the following effects or benefits for the company and the new employees:

1- Increase the sense of belonging of the person who joins or is assigned to a new project. A report published by Glassdoor (2015) reveals that companies with a strong onboarding process achieve an 82% improvement in new hire loyalty.

2- Accelerate the onboarding process, which allows us to gain productive capacity and improves profitability. The Glassdoor report (2015) indicates that the improvement is more than 70% in productivity.

3- Reduce costs related to training, optimisation and dedication of the people involved.

4- Reduce turnover, the 'State of the American Workplace' report (2020) shows that only 12% of professionals indicate that they 'totally agree' about the company's talent recruitment plan, which represents a significant loss of reputation in the eyes of internal and external talent.

The innovative aspects of the Speed Up Academy solution allow us, through the integration of technology, people and processes, to improve the life cycle of employees in companies.

Digital OnBoarding: The Importance of Contextual Training for Hiring Talent

Daniel Hidalgo
Head of DEXS

7

Predictive Observability

Iñigo Chaso
BDM of Software Industrialization - atSistemas

There is a commonly accepted principle that underlines "what cannot be measured cannot be improved". Therefore, Observability is an important fundament of an efficient system, as we will only know the internal state of the system through its external outputs, which we must be able to analyse through its different sources (LOGS, METRICS, TRACES, or standards such as OPenTelemetry).

Observability evolves from reactive beginnings (we have to control all the information output points), towards proactivity (we control in an automated way any information output point and we are also capable of carrying out more complex actions on them) to be able to predict the future from there, when we can guess what is going to happen, we are able to establish response mechanisms that automate preventive actions in the face of certain events.

Predictive Observability is that state of maturity (Nirvana) that we all desire, whereby we have the capacity to be able to determine in advance what is going to happen, by examining the system in real time and while it is in full operation. This state of maturity would allow us to:

- Have the capability to detect, isolate and provide early warning of events or incidents that have been categorised as critical.
- Have facilities to accurately investigate the root cause of the incident by being able to track or trace what happened through the different elements of the system involved.
- Resolve incidents faster whilst reporting in real time on all remediation actions.
- Obtain better accuracy in post-mortems analysis.
- Understand the incident and its evolution (as a history) to prevent future reoccurrences.
- Apply continuous improvement principles to the models applied and their evolution.

7 Predictive Observability

Almost all manufacturers of solutions in the field of Observability already have elements that use Artificial Intelligence to be able to implement mechanisms that help us to determine anomalous behaviour sufficiently in advance.

Logically, **we must have a complete Observability model**, based on an integrated solution, through which we have coverage of all the elements of the architecture, otherwise we would be in scenarios in which we would receive partial information or directly noise that would directly affect these predictions. It is also necessary to have a total information ingestion capacity that allows us to work within the needs of AI in terms of the volume and relevance of information to be processed, which will also mean being able to correlate data from different sources and in a dynamic way.

We will have to get used to an operating model in which we will prioritise automation in responses to threats that will result in a change in the state of the system, and we will have to assume that additional post-mortem analyses will have to be carried out in order to return the system to its original state.

We must not forget that we should also be able to predict the future performance of the system, this being one of the aspects that goes beyond the location of a specific point of failure, as in many cases we are in complex scenarios not only because of their configuration, but also because of their dimension, which will be of particular concern at the performance level. One of the last feature being added to this predictive observability models is the ability to estimate the cost of the system in future scenarios.

But, how accurate are we in anticipating the future through these predictions? Do we have guarantee that we will not jeopardise security and computational efficiency with this predictive capacity?

In the initial stages of implementation of these predictive models, it will be necessary to take into account the fact that errors will occur during the estimations prior to the generation of the prediction, and that they will probably have unexpected consequences.

This is where the learning capability of these models comes into play. The depth of learning and the accuracy of analytical predictions depend on the granularity of the data and the context. The dataset needs to be enriched as a key ingredient that leads to more effective learning and more accurate predictions:

7 Predictive Observability

- Identify potential problems based on trend conditions and lessons learned for best recommendations.
- Identify best actions most likely to solve and/or resolve any problems for most effective conclusions
- Minimise human effort required to maintain optimal systems performance

Finally, we have to consider new trends and capabilities within Predictive Observability solutions to have clear alternatives when it comes to automated mapping between the problem being predicted (or occurring) and the code that could be generating it, which includes both application code and the code used for automation in the creation and configuration of the infrastructure and platform. This aspect is important as it aligns with current practices of "everything as code" (XaaC) and establishes the point of remediation in the code itself, moving far away from consoles or remote access to machines to intervene from the Operating System.

Predictive Observability

Iñigo Chaso
BDM of Software Industrialization - atSistemas

8

DesignOps, the Ideal Operational of UX

David Úbeda
BDM of Digital Design & UX - atSistemas

Let's be aware, we are living through the third industrial revolution and it is directly related to the use of technology. We can visualise the consequences in the way we work and how companies are organised, the philosophies and the more or less agile approaches they adopt. Operationalising creative work is a constant. And the time has come for designing.

From an economic perspective, we understand production as the activity that provides added value through the creation and supply of goods and services. This does not only refer to the manufacture of physical objects but it is also associated with the provision of services (healthcare, education, entertainment, restaurants, etc.). These services constitute the largest share of total production in industrialised countries.

Design teams are the ones that will decide the future of products and services, especially digital ones.

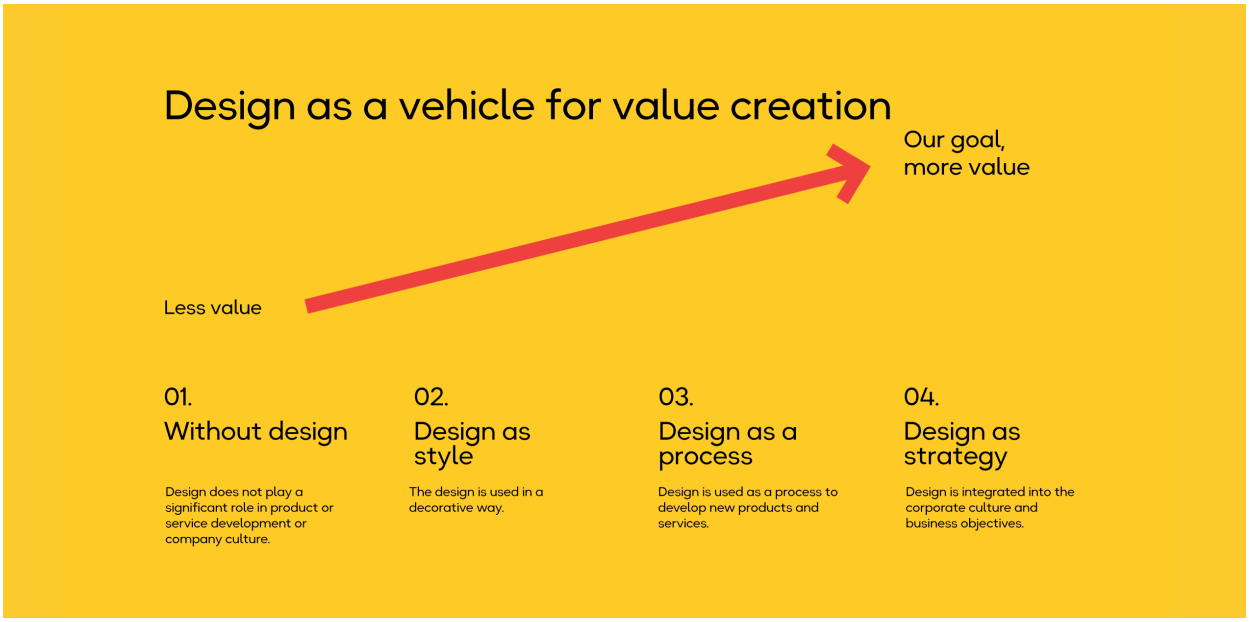
Let's give them a powerful framework to maximise the quality and impact of their work.

8 DesignOps, the Ideal Operational of UX

Content Development

In a paradigm where design teams are continually growing in size, design work is highly demanded and the complexity of our design processes is skyrocketing. It could be said that, in this context, DesignOps comes late, and it is time to adopt it urgently as an articulating axis of organisational change.

First of all. Let's look at a scale on the value of design within companies:



Do you recognise yourselves? I'm sure you do. DesignOps is the tool that will allow us **to deliver the maximum value and quality of our work**, propelling us directly to the final stage. We will be a key piece in the business strategy.

What is DesignOps?

NNGroup defines the concept of DesignOps as:

"The practice of design operations focuses on processes and measures that support designers in creating consistent, quality designs".

DesignOps basically designates the set of operational processes of a design team, department or service that answers 3 basic questions:

- How we work together?
- How we get our work done?
- How our work creates impact?

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How we work together?

It answers and designates what the collaborative space is like and how relationships are produced in order to improve the quality and impact of our designs.

It defines how we organise ourselves at team level, establishes how collaborations are and very importantly, and does not forget the human aspects of the team.

How we do our work?

It answers and designates what the design team's **productive space** looks like. From aspirational aspects and design values of the team to the definition of internal workflows and, of course, not forgetting the artefacts that help us harmonise work, digital assets and design systems.

How our work creates impact?

It defines how we measure the impact and quality of our work and establishes mechanisms to evangelise others about the role and value of design in the organisation by enabling understanding and participation in design activities.

Embracing DesignOps

It is impossible for one person or team to focus on all these components simultaneously. DesignOps teams and champions/adopters define and focus on critical sections to build an overall solution driven by solving the key pains.

Before adopting DesignOps, plan the internal research (e.g. active listening, stakeholder interviews and surveys) to detect the biggest pain points and areas with the highest potential ROI, and start from there.

Who can carry our DesignOps?

Anybody. There are two approaches that help us determine how to approach it: 'Role' or 'Mindset'.

Role

One person or group is responsible for ensuring that the team has the necessary support to focus on design.

- Product design managers.
- Team managers
- Research managers

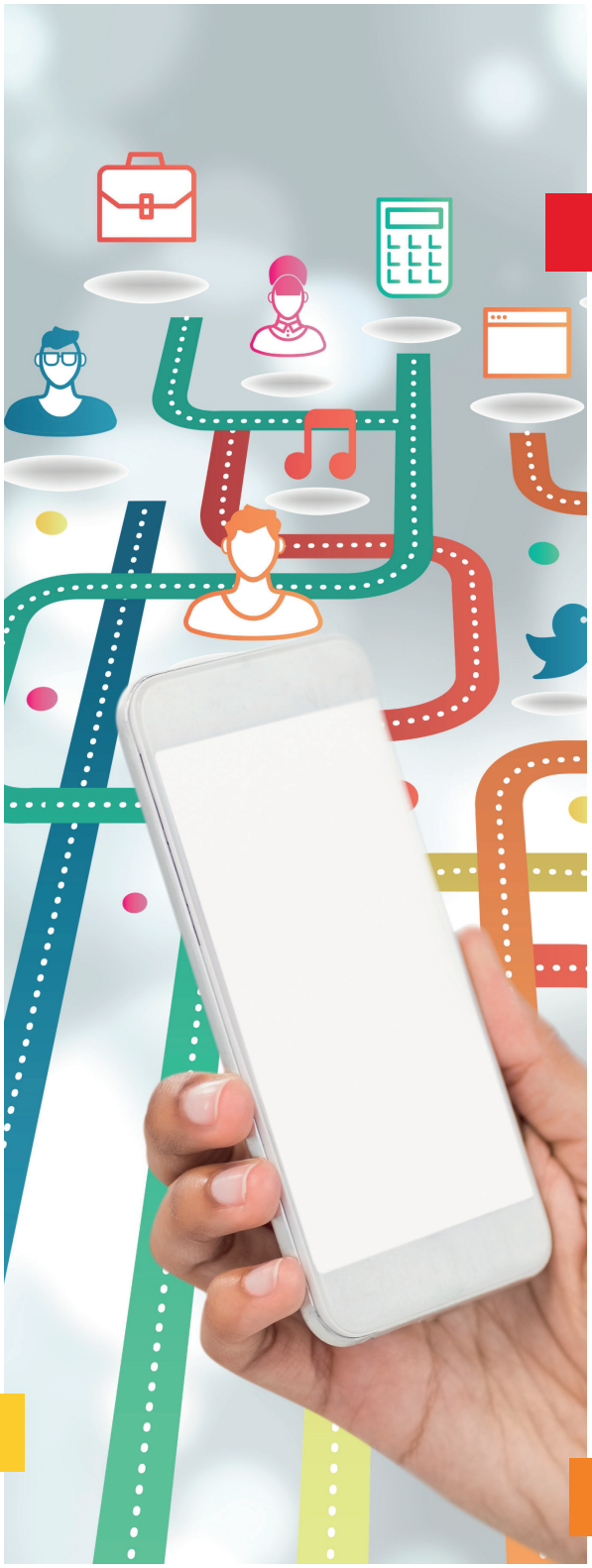
8 DesignOps, the Ideal Operational of UX

Mindset

It simply means recognising the need and implementing an ecosystem or set of standardised processes, methods and tools that support and enable design to scale efficiently. No explicit DesignOps role is required to look at current processes to increase efficiency and improve outcomes.

More Effectiveness, Greater Brand Value. That's DesignOps

The main objective of DesignOps is to establish a highly efficient design process that generates high quality results. Finally, let's remember that DesignOps generates benefits for all the people involved in the projects, not only for the designers.



DesignOps, the Ideal Operational of UX

David Úbeda
BDM of Digital Design & UX - atSistemas

9

Hyper-automation, Improving Operational Efficiency

Jaime Coll
Head of Digital Wolves

The business world is progressing at supersonic speed: technological advances, new ways of organising projects and improved processes are shaping modern businesses. All are able to respond almost immediately to changes in the ecosystem, such as the emergence of new competitors, changes in consumer behaviour patterns, or increasingly stringent data protection or security requirements.

A modern business no longer focuses solely on increasing sales, but also looks inwards to optimise the way it works, constantly improving operational efficiency, so that by reducing operating costs, we directly impact the bottom line.

Optimising Operational Efficiency

Optimising the **operational efficiency of our business** involves looking at three factors at the same time:

- **Take advantage of new technologies** to build the business.
- **Adopt new ways of working** that lead to optimal management of people, with mixed methodologies that foster talent and a sense of belonging to the company.
- **Optimise and automate processes** to improve the speed of operation while reducing the margin of error.

9 Hyper-automation, Improving Operational Efficiency

Optimising processes allows us to change the way the company operates and involves a constant cycle of observation, analysis, and improvement by automating and reformulating their sequence.

For observation and analysis we have tools such as process mining and **BPM (business process modelling)**, which will provide insights for optimisation through automation.

Automation is neither science fiction nor a novelty. For example, since 1993 Microsoft Excel incorporated the possibility of creating macros that replicated repetitive actions that we used to do by hand. We have been surrounded by automation for almost three decades!

But nowadays, when we talk about process automation, we usually associate it with **RPA (Robotic Process Automation)**. Thanks to RPA solutions, we can reproduce actions that a person would do, always in the same order, without error and with greater speed.

Automation Aplications

There are several scenarios in which we can apply automation:

- Volume: they require the intervention of many human resources.
- Errors: their objective is to increase reliability and reduce manual errors.
- Time: they require a lot of time or steps for their complete execution.
- Dispersion: it is necessary to access multiple systems to complete the process.

What sometimes happens is that the operator has to make some kind of decision during the process so that the robot can continue, causing bottlenecks or stoppages in the execution.

Where Artificial Intelligence Comes into Play

To solve these cases, we have started to incorporate artificial intelligence, which can make decisions autonomously to avoid operator interruptions. We call this hyper-automation.

Hyper-automation combines solutions based on RPA, virtual assistants, artificial intelligence, machine learning, deep learning, etc. that make it possible to automate and improve the speed, effectiveness and efficiency of processes in all industrial and commercial sectors.

It takes advantage of some artificial intelligence models that make it possible

- Understand or analyse language, to be able to answer questions, summarise texts, identify feelings or translate.
- Understand documents, to extract information needed to complete a process, such as extracting the elements of a delivery note or the tax breakdown of an invoice.

9 Hyper-automation, Improving Operational Efficiency

Hyper-automation brings us closer to the generation of **Digital Twins of an Organisation (DTO - digital twin of an organisation)**, which are a virtual and automated representation of all the processes of a company. In this DTO, we can simulate changes in procedures, analyse their impact and, once their effectiveness has been verified, adopt them in the real world. For example, when faced with a regulatory change, we can make the changes in a virtual environment, analyse the impact on the organisation, before applying the modifications in the real world, and thus allowing optimal and predictable management of the change.

A very clear and extreme example of hyper-automation is the new virtual manufacturing plants, where a combination of artificial reality and automated processes can be used to simulate changes in a plant before applying the changes.

Hyper-automation is real

We have the technology, processes and methods for almost immediate adoption. If we consider again the optimisation cycle (observe, analyse and improve) the combination of automation with artificial intelligence is going to be a key element in the evolution of our company.

Hyper-automation, Improving Operational Efficiency | **Jaime Coll**
Head of Digital Wolves

10

Internet of Behaviours

Xan Carlos Fernández
BDM of Data & Business - atSistemas

Just because you have not yet heard the term Internet of Behaviour (IoB) does not mean that you are a stranger to it, as it is probably part of your life and you owe this to a large extent to the **Internet of Things (IoT)**.

The Internet of Things, which is a concept born out of connected and so-called "smart" devices, is part of our daily lives and in many cases without us even being aware of it. What used to be a TV is now a Smart TV. The main difference is that this new television is capable of connecting to the Internet, something that also happens or could happen with many of the elements that surround us, for example: cars, household appliances, light bulbs, bicycles or even, why not, the dog's collar. There are practically no limits.

This new **"connected" reality** is giving rise to a collection of data never seen before, as each connected device is designed to generate information, store it, classify it and extract from it the states, usage patterns and behaviours that make it "intelligent". For example, at what time you turn on the light in your room, and how long you keep it on each day. Or when you run the washing machine, when you open the fridge (and what food you use). Also, when you drive your car, where you are going and even who you are accompanied by. These info conform patterns of behaviour, and that is where the **Internet of Behaviours** comes from.

10 Internet of Behaviours

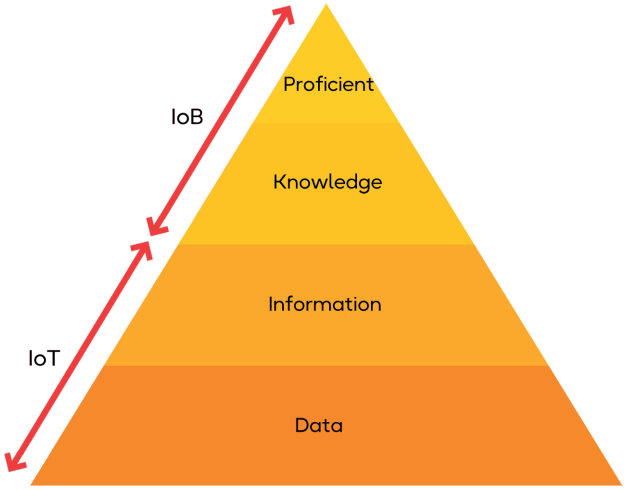
IoB and Data Collection

As companies gather more information about us (IoT), they increase their ability to understand and affect our behaviours (IoB). For example, using a health app in which a smartphone tracks our diet, sleep patterns, heart rate or blood sugar levels, it can alert us to adverse situations and suggest behavioural modifications towards a more positive outcome.

Hence, the **Internet of Behaviours** can be defined as:

The collection of data from IoT devices about their use and interactions with them, which provide valuable information about users' behaviours, interests and preferences, and the ability they offer to generate fully personalised experiences that influence users' decisions.

These experiences are generating numerous opportunities in businesses around personal finance, the workplace and beyond, and are expected to directly influence over 3 billion people by 2023 and 50% of the world's population by 2025.



Although the possibilities are endless, the background is always the same: to be able to know **"what people's behaviour is"** on a mass or individualised basis, because if we know their behaviour we can also influence their decisions. From modifying the route, they usually follow to get to work (thanks to information from their Smartphone), to offering them advertising by recommending a new product on sale a couple of days before they are going to make the purchase. The trick is being able to derive behaviours that can be actionable so you can influence them.

The Internet of Behaviours can influence consumer choice, but more importantly, it can influence the redesign of the business value chain. While some users are wary of providing their data, many others are happy to do so as long as it adds value, data-driven value. For companies, this opens up a wide range of opportunities in terms of improving their image, marketing their products more effectively and, above all, improving the Customer Experience of their products or services.

Multiple existing technologies which are directly focused on individuals can be combined for the implementation of the Internet of Behaviours, such as facial recognition and location tracking, and connect the resulting data with associated behavioural events, such as purchases or device usage, but the most relevant factor of the whole process is to identify people's behaviours. Therefore, the IoB can be seen as a combination of three fields:

- Technology.
- Data analytics.
- Behavioural science.

For now, companies have focused the use of IoT and IoB on observing their customers and trying to change their customers' behaviour to achieve their sales targets.

However, marketers and behavioural scientists tend to agree that their use should be more geared towards personalising services to improve their efficiency and thus the value proposition.

The more efficient the services are, the more the customer will interact with them, and even alter their behaviour themselves!

Internet of behaviours

Xan Fernández
BDM of Data & Business - atSistemas

10 Trends that will shape **2022**

atsistemas DIGITAL WOLVES DEXS DIGITAL EXPERIENCE SCHOOL

Thank you!

Spain: (+34) 634 888 000 - marketing.en@atsistemas.com

Italy: (+ 39) 0267739110 - marketing.en@atsistemas.it

Portugal: (+351) 211582182 - marketing.en@atsistemas.pt

Uruguay: (+ 598) 26236586 - marketing.en@atsistemas.com

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