



# Open IT Innovation Trends 2019

## Open Source and Free Software trends 2019

---

What do professionals think about  
the future of Open Source and  
Free Software in 2019?

**#OpenExpoTrends19**

20th June 2019 - La Nave (Madrid - SPAIN)

# The Leading Enterprise IT Open Innovation Summit in Europe

VI Annual Fair and Congress on Open IT Innovation will meet on June 20th, 2019 in La Nave (Madrid | SPAIN) to more than 3.500 professionals, European companies in search for business generation.



Assistants  
**+3500**



Companies  
**+400**



Speakers  
**+200**



Conference  
rooms  
**+7**



Business  
interactions  
**+4500**



**2019**  
Open Awards



**Startup**  
Connector &  
Village



European  
Cybersecurity  
Forum



AI & IoT  
Summit



Fintech  
Forum



Open  
CIO  
Summit



Open  
Tech  
Conference

[www. openexpoeurope.com](http://www.openexpoeurope.com)

FOLLOW US:



I want to attend

I want to sponsor

# Let's talk about IT innovation

For the third consecutive year from OpenExpo Europe we want to share the vision on technological trends from the point of view of Open Source and Free Software. In the previous edition of our eBook we saw, from the hand of 80 professionals that **Artificial intelligence, Blockchain and hybrid Cloud solutions** were the leading trends for 2018.

Year after year, this contribution that we carry out **thanks to the collaboration of professionals from around the world** has more importance and relevance within and outside the open technologies sector, therefore, we continue to bet from OpenExpo Europe for this content as many others, as debates, webinars, podcast and endless etcetera.

One of the great challenges of recent times was to consolidate **Open Source** within the business environment, today we are about to go much further and position it as a **model and engine for innovation** in any corporation regardless of its size, highlighting the contribution of Julia Bernal, Country Manager Spain and Portugal in Red Hat that goes in this sense: *“Open Source as a model of development and organization will drive the future of innovation.”*

Thanks to the **Inner Source** model we are managing to transfer the good practices, culture and methodologies applied in the Open Source ecosystem **to the Software development and innovation processes of the organizations**, let's continue on this path and we will talk about open technologies for decades.

By 2019, as an important novelty, we have worked by sector to have a vision directed but do not worry, we have maintained a global vision in which we will see how **IoT, Big Data, AI** and many other technologies will stand out.



**Philippe Lardy**

CEO

OpenExpo Europe



**#OpenExpoTrends19**

# THANK YOU!

This Open IT Innovation Trends 2019 eBook is possible THANKS to the contributions of more than 100 professionals who have generously shared their vision as a valuable reference.

Thanks also to the participants of the round table, media and attendees with whom we have counted for the official presentation of this document.

We also appreciate the support of associations, institutions, communities and companies that continue to spread Open IT innovation.

To those who in one way or another have collaborated with this edition; and you, who are reading it. THANKS! Let's continue writing the future.



# More than 100 professionals have contributed



#OpenExpoTrends19

# Representatives of recognized international organizations & companies





# General Index

Introduction	08
Goals	10
Methodology	11
Professional inputs by sector and topic	12
Conclusions: Main trends 2019	150



# Introduction



**Why is this  
ebook  
important for  
the sector?**

Because it offers a clear route map. Every time we hear more that "open technologies are the future". The future is here, we write it every day, and the use of these technologies opens -literally- an endless range of possibilities to believe (and create) a better world more adapted to the needs of today's citizens: more connected and informed.

Companies of all sizes are increasingly aware of this and are looking for Free and Open source solutions, tailored to their needs and their audiences.

Where are we going now with all that? In this report - those who program the future - will tell it.



# Introduction



## The pros speak

In this publication you will find the **testimonials of 100 professionals** who share their points of view about the use of open technologies in their sector, as well as their vision on the main trends that they foresee very strong for 2019.

In this edition we have made a **classification by sectors and topics** to offer a 360 degree vision, more transversal and specialized, on the use of open technologies in different kind of companies and organizations.

# Goals



## 1. Discover and analyze trends

Discover and analyze the Open Source trends: to know, thanks to professionals of the sector, what are the main trends for 2019 in open technologies. Also analyze these assumptions with regard to the evolution of the sector.



## 2. Obtain multidisciplinary vision

One of the objectives of the study is to achieve a multidisciplinary vision through the participation of professionals from different sectors, which allows us to draw a map on the current situation of Open Source technologies and to glimpse the future of these through a prediction on the trends for 2019.



## 3. Prevision of the professionals

The testimonies of the participants in the study reveal their vision on what is to come and, if we join all the sectors together, we have an interesting and revealing window to the world of the future. They build it every day and they tell us about it.

**#OpenExpoTrends19**

# Methodology



## 1. Information Gathering

After a first phase of search and subsequent contact with the participants, the next step was to collect all the information deposited by the 100 professionals participating in the study, through an open form available for such action.



## 2. Analysis and data exploitation

In a second phase, each response was individually analyzed with the aim of extracting common concepts. Each trend has been treated separately and then to semantically assort those concepts whose frequency was higher in the contributions given by the participants.



## 3. Conclusions

After an exhaustive study of the contributions, some conclusions were drawn giving us a more global vision of the Open Source 2019 trends.

**#OpenExpoTrends19**



# Index by sectors and topics

	Government & Public Sector	13
	Telecommunications Sector	23
	Fintech / Financial Services	33
	Education sector	51
	Healthcare sector	61

	Tourism & Transport Sector	68
	IoT & Smart Cities	74
	Cybersecurity Open Source Software	88
	Open Source & Cloud Computing	101
	Open your Business to Digital Transformation	115
	Future Global Visions of Open Source & Free Software	133



# Government & Public Sector

---

Free and Open Source Software is based on cooperation and transparency; two values that guarantee freedom to users and that, in addition, provide the necessary flexibility that Public Administrations need to adapt to the new needs of today's citizens. Free Software represents an unprecedented opportunity for the development of the information society. In this section, the protagonists tell us about the main challenges and trends in the sector.

# “ Platform governance as Open Source Trend



@jonemikkonen

**Johannes Mikkonen**

Researcher / Project Manager Demos Helsinki



**DEMOS  
HELSINKI**

Sensor technologies turn the whole world into data. We access this data through digital platforms. Platforms are sets of rules that enable two or more groups to interact efficiently, by specifying user behavior, data collection, and the feedback loops between them.

Platforms naturally aim towards monopolistic positions, and because platforms make our life easier, we readily and willingly let them govern our lives. Life on platforms is enticing: Facebook and Google both count their users in the billions.

Living life on platforms leads to the strengthening of the role of platforms as a form of governance. Digital platform companies set the standards and security measures for many services from taxi drives to home-sharing.

In 2019 we need to focus on **developing new instruments for enabling users to have an impact on the rules of the platforms**. Governments and supranational organizations can (and do) use taxation, negotiations over data ownership and control, publicity laws, and a variety of other standard measures for this task. In addition many operators themselves have realized that they can't behave however they like. The platform companies that wish to stay relevant in 2019 should pay attention to the ways their regulations treat users and non-users.

**#OpenExpoTrends19**

# “ 2019: The year of digital sovereignty and collaborative development.

**Miquel Estapé**  
Deputy CEO - Strategy and Innovation

**in** [linkedin.com/in/miquelestape](https://www.linkedin.com/in/miquelestape)



One of the main trends in the public sector for 2019 is **the collaborative development in Open Source communities** to optimize savings and accelerate the development of solutions in a more agile and innovative way. One of the essential government priorities is to provide efficient public services. When we have to decide the best software for a specific need, we must take into account, at least, the criteria about cost, functionalities, implementation time, internal effort, access to the source code, and risk of failure. Based on these, we have the following alternatives: custom software development; using a vendor solution; using a vendor solution with license access to the source code and bet on collaborative development.

The great challenge of the public sector, despite its enormous complexity, is to promote collaborative communities of open software. This means:

- **Digital sovereignty:** the public sector will demand more control of the source code, data, algorithms, and technologies to ensure the common good.
- **Open innovation** by promoting public collaborative communities of open software.
- Software license agreements will include **escrow arrangement** that allows using source code if specific events occur.

**#OpenExpoTrends19**

“ *From the optimization of technological expenditure to investing in people.* ”

**Valentín García**

Head of the Innovation and External Outreach  
division



The three Open Source trends that will transform the public sector in 2019 will be: Blockchain, LoT and Big Data.

**The future of the public sector passes, among other things, by reduction of costs and economic sustainability in its services.** From the point of view of technology, two different lines of action can be used, successfully used in leading companies and applicable in the rest of Governments and Organizations: First, the reduction of legacy proprietary systems; although these systems and their associated code may be deeply rooted in the core business of the Administration for a long time and are difficult to replace in the medium term, they can migrate to a more flexible and economical standard environment through emulation. This eliminates one of the parts that cost the most and brings less value: licenses and the legacy hardware owners.

Secondly, the use of *Open* technologies: **Open Technologies, in their business version, they offer a guarantee and a quality of service that have nothing to envy to other more established or traditional alternatives.** In this way, a significant reduction in costs is achieved.

The optimization of the use of the budgetary items **allows to derive the spending in technological products towards the investment in people**, as the real driver of change and digital transformation in the organizations and in the society in general.

**#OpenExpoTrends19**



# “Challenges of the electronic administration in the middle and long-term.”

José Andrés Jiménez Martín  
ICT Technical Advisor

in [linkedin.com/in/jandresjimenez](https://www.linkedin.com/in/jandresjimenez)



CONGRESO DE LOS DIPUTADOS

The three most important Open Source trends to which the public sector will aim in 2019 will be: **Containers and Microservices; Enterprise Open Source RDBMS; y Progressive Web Apps.**

The Open Source software tools indisputably occupy a special and relevant place in the world of technology and form the fundamental elements on which the current Internet and the Cloud are based. This necessarily compels us to address the problem of the evolution and survival of these in the long term. **The governance of Open Source communities will acquire more and more relevance** so that they can transcend the personalism that, in many cases, have greatly influenced them.

The aforementioned is also applicable to the **growing set of Open Source communities specific to e-Government**, with references as current as the *OpenEurope Initiative*, in which collaboration and coordination at the level of the European Union is essential in platforms such as *Joinup*. Likewise, it will be necessary to keep promoting the linkage of the private sector in the ecosystem of Open Source software for e-Administration. We must make **public-private collaboration** actions efficient, in order to meet the objectives and deadlines established in the laws, also mitigating the impact of budgetary issues that the public sector will have to experience in the short and medium term.

#OpenExpoTrends19

“ *The technological future of public administrations presents exciting challenges.* ”

 [@jormaral](https://twitter.com/jormaral)

 [linkedin.com/in/jormaral](https://www.linkedin.com/in/jormaral)

**Jorge Martín del Álamo**  
Open Source Consultant



In that sense, some of the keys for the public sector in 2019 will be: **Smart Cities & IoT, Open/linked/Big Data, Blockchain, AI, Cloud, Cybersecurity, biometrics, and digital identity.**

Over the years, the need to apply active policies to develop and promote these technologies has come to the background given the capillarity showed by this commitment to technological openness in many layers of the administration. This is only a result of the hard and tireless work carried out over the years by multiple actors of the administrations, at all levels, with the collaboration of the private sector.

In relation to the current initiatives in OSS, in the public sector, I would highlight -among others- advisory services such as those offered by *Red.es* and the General Secretariat of Digital Administration of the Ministry of Finance. **From these integrated initiatives, relevant reuse projects are born.**

Today, at the level of local entities and councils, **Barcelona stands out as a very active city in the use of OS and Open Data technologies**; and, also, the Council Office of **Ciudad Real as a pioneer in the leadership of OSS communities** through tools such as AL SIGM. Regarding Autonomous Communities, **Andalusia distinguishes itself by maintaining an infrastructure based on very notable free technologies.**

**#OpenExpoTrends19**

# “Cooperation, participation, openness for a better public governance.”



@flavia\_Marzano

@cecwitter



[linkedin.com/in/flaviamarzano](https://www.linkedin.com/in/flaviamarzano)

[linkedin.com/in/ceciliacolasanti](https://www.linkedin.com/in/ceciliacolasanti)

**Flavia Marzano and Cecilia Colasanti**

City Councillor for Innovation /Staff Office of City Councillor  
for Innovation



**Improve digital services, manage and invest in the digital skills of citizens and share information assets are the main trends to the Public Administration (PA) in 2019**, and Open Source and Free Software will be enabling factors to perform them.

**Meeting the citizen's expectations is, currently, one of the most interesting challenges for the Government and Public Sector.** A real digital transformation within the Public Administrations (PAs) can represent a turning point to improve the life quality, to stimulate businesses and to enhance human capital.

The complexity of our world makes this process hard to face, but the number of PAs employees that are embracing this trend is growing. Local PAs are particularly involved in designing new processes based on digital innovations. **We are beginning to rethink the services so that they are experienced in a new way, taking into consideration the new individual and social habits.** To carry on this kind of activities, the citizen's cooperation and participation in designing people-centered services are essential. More and more institutions are deciding to support this open process through online and offline tools.

It is a tendency for institutions to open up as much as possible its own information asset, adopt infrastructures and open applications, use Free and Open Software for each new version or to redo old applications. For this transformation it is necessary to establish **open innovation communities** so that people and associations can debate with the Administration and create new digital services together.

**#OpenExpoTrends19**

# “Digital transformation in regional administrations, supported by Free Software.

 @mitinman

 [linkedin.com/in/pjrodriguezgonzalez](https://www.linkedin.com/in/pjrodriguezgonzalez)

**Pedro Jesús Rodríguez**  
Head of Digital Impulse Service



The public sector in Spain is immersed in a path of digital transformation which is fundamental to be up to the demands of citizens. This process involves facing several challenges in which the Free Software is playing a very important role.

Focusing on providing the necessary IT services for this change, the regional administration is evolving its work systems to achieve greater automation in the development of software, which is aimed at **shortening the times of putting into service**. This will continue to be one of the major trends for next year and open platforms are a great option.

The second major trend is the increase in the focus on **government and the analysis of the data**. We already have quite relevant experiences in **Big Data** which will increase for giving a 360 degree view of the relations of the citizenship with the administrations, breaking the silos of information until today. **Platforms based on tools such as Spark or Hadoop** stand out in the public sector from their own competitors. Information exchange platforms and interoperability are also a growth field in the Free Software sector.

And in this process of digital transformation in public administrations, we are going to continue the **migration process to the Cloud**, mostly in private infrastructures, but, hybrid solutions will be gradually positioning. Thus, we also find facilitators in the open field such as OpenStack in the platforms or, Docker, in the containerization.

**#OpenExpoTrends19**



# Conclusions

## Public Sector and Administrations

The public sector and administrations are not behind in the Open Source trends. The citizen of the XXI century increasingly connected poses several demands with a long way to go, but those who work in this sector, come closer to: shorten times in management, analyze data, automatization, Cybersecurity, and transparency.

Citizen demands agree with public administration in the transformation process that leads to optimize its resources. There are more points of agreement between the needs of the public sector, the private sector and society, which demands more collaboration and joint responsibility. In order to connect and derive in smart societies, the use of open technologies will play a leading role next year.

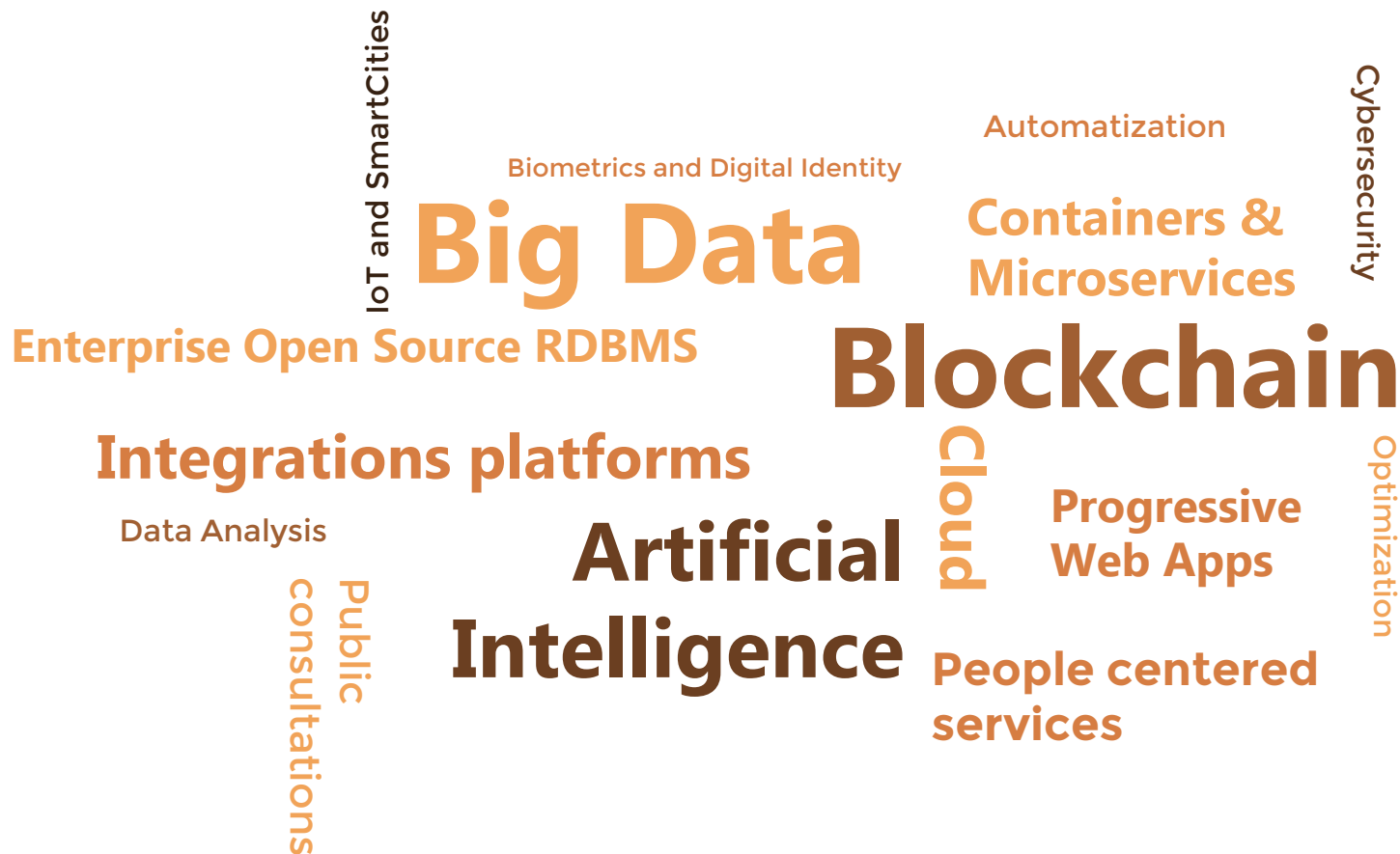
**Big Data, Blockchain, Cloud, Artificial Intelligence, integration platforms, Containers and Microservices, Progressive Web Apps, IoT & Smart Cities, are the most referenced trends within the public sector in 2019 and could also be the year of the expansion in biometrics and digital identity.**

The main challenge of public administrations will be the investment in these technologies to make possible what is today the foundation of 21st-century governance: the digital citizen consultation to achieve a better understanding of social needs.



# Conclusions

## Public Sector and Administrations



#OpenExpoTrends19



# Telecommunications Sector

---

Telecommunications companies, in contrast with other organizations, know the users, their needs, tastes and interests, so they can expand their security services, IoT and many more. But, in its evolution to satisfy those needs, the use of Free Software is fundamental. Open Source solutions help to improve their innovation and productivity processes allowing them to migrate to more flexible and agile schemes. The professionals tell us the main trends in this regard.

# “ 2019: The year of the landing of machine learning and AIOps in the Telco sector.

 @Oscense82

 [linkedin.com/in/antonio-jimenez-ramirez-a12a7924](https://www.linkedin.com/in/antonio-jimenez-ramirez-a12a7924)

**Antonio Jiménez Ramírez**  
Responsible for Automation and Supervision Tools



ANDORRA TELECOM

This year **2019** will be the great landing of *Machine Learning* and tools of AIOps (Artificial Intelligence for IT Operations) in the Telco world.

In the current times, **it is more and more evident how the world of Machine Learning and the predictive use in the telecommunications sector** keep gaining great value to help the day-to-day development of the company and predict their use of communications.

We now have the possibility to develop techniques that allow computers to learn processes in a strategic way. Thanks to this, for example, we can predict when we will fall short in certain capacities and network bandwidths and, thus, have all the systems monitored and automated. That means, detect and react automatically to problems in real time.

All this requires **a change of focus to applications and developers**, a greater pace of innovation and deployment. New technologies and tools are **testing traditional strategies and tools for performance and management**.

Also, **the telco service automation catalog will continue being enlarged and the processes of digital transformation will continue to be promoted**, which will provide great agility at the time to be able to start implementing the arrival of new services.

**#OpenExpoTrends19**

# “ The next television revolution: with Artificial Intelligence.

**Andrés Frías Velázquez**  
Expert in Video Processing

in [linkedin.com/in/andresfrias](https://www.linkedin.com/in/andresfrias)



**TPVISION**

**In the last 20 years, the television sector has experienced a vertiginous evolution** driven by innovation in different technological areas. For example, in the development of ultra-thin panels with millions of pixels, **integrating total interconnectivity under the Internet of Things paradigm, as well as enabling interaction and control through voice recognition.** These advances have turned the television into more than a simple projector of images.

**A forthcoming revolution is approaching with the development of processors that integrate Artificial Intelligence technology to the television.** This type of processor will be a disruptive element that will allow the implementation of sophisticated applications and algorithms. For the user, the benefit will be reflected in a more advanced and fluid human-machine interaction, as well as a superior image quality. In this context, the multiple Open Source projects involved play an important role in different aspects. From the *Android TV* operating system to the programming languages used for the design of *middleware*, **they will converge to adopt and exploit this new type of processing in the coming years.** Without a doubt, all these changes will transform the way we see and interact with television today.

**#OpenExpoTrends19**



“ *Open Source solutions will continue to mark the technological future thanks to Blockchain and Machine Learning.* ”



@Mot\_MA



[linkedin.com/in/emeamartinez](https://www.linkedin.com/in/emeamartinez)

**Miguel Ángel Martínez**  
Director of Customers and Business Development



The solutions based on Open Source and Free Software have gained increasing importance in the current technological ecosystem. In fact, they are the ones that point to a more promising future. We are convinced that it will continue to be this way during 2019. Besides to the growth in the sector, **next year will be marked by the improvement in security and privacy in the Cloud, as well as in the processing and analysis of data through Artificial Intelligence.** All this without forgetting **Blockchain and the universe of possibilities that open up to its potential application** to all kinds of initiatives.

The possibilities are so many that they are overwhelming: **Machine Learning, Deep Learning, the Cloud...** The advantages they offer in terms of costs, the large active communities that form around them or the high standardization they achieve, make up a really powerful cocktail that it cannot do more than **grow and consolidate.** This makes it increasingly necessary to create guides specialized in technology and digital marketing capable of classifying the thousands of existing tools within the framework of the growing interest in Open Source.

We must be able to detect trends (disruptive or not) of the market and be ready to surf its wave. And when Open Source comes into play, the task is considerably simplified.

**#OpenExpoTrends19**

# “ Voice services, very strong in 2019: Will we dare to talk to the appliances?

 @joteo

 [linkedin.com/in/jorge-oteo-garc%C3%ADa-01675319](https://www.linkedin.com/in/jorge-oteo-garc%C3%ADa-01675319)

Jorge Oteo  
CIO



**Especially in Spain voice services will come very strong in 2019: *Alexa, Siri, Google*...** All industries in one way or another will create services to give content and value to this trend. Ask *Alexa* or *Google*, for the news of your community, province, neighborhood is going to be very normal; for services (time, bets, lotteries, traffic ...) also close -or not-; and an endless number of possibilities, will be a very striking trend, of course, if we dare to speak to our speakers, clocks, microwaves, refrigerators, cars...

**Another important trend will be the application in the media of Machine Learning (ML) and Virtual Reality.** On this last one, we can already see information about time or sports, where this technology is being applied with great success. Likewise, the ML will help us to better document our assets, to recognize contexts, situations and, in this way, **to be able to offer a more direct and segmented offer of our contents and advertisers.**

However, it is key to mention two issues: one is the consolidation of the trends that were discussed last year: **IoT, bots, cd/ci, containers, DevOps**, etc ... Already a real fact in our organizations. And, the other, and more worrying, is how Free Software is deflating. We know it is in our lives and it is very good, but it is losing momentum perhaps because of the noise around us, perhaps because of the codes of conduct. We must keep an eye on its evolution in this sector.

#OpenExpoTrends19

“ *Virtual assistants keep gaining relevance.* ”

 @bupili

 [linkedin.com/in/martaperezgarcia-phd](https://www.linkedin.com/in/martaperezgarcia-phd)

**Marta Pérez García**  
User Researcher at Aura



**2018 was key to the democratization of voice-activated Virtual Assistants (VAs).** In Aura we saw how, as the year was progressing, the number of users of this type of Artificial Intelligence (AI) applications was growing. The multi-channel strategy of many of them has increased their use and adaptation to user needs. **Voice-activated VAs are here to stay and we will see a massive adoption for more complex tasks at all levels and segments.**

In Europe, the launch of smart speakers like Amazon Echo, Google Home or, in our case, Movistar Home (the first native device of our virtual assistant Aura), **is integrating VAs into the users daily habits at home, helping them to build a closer relationship.** This is a great opportunity for the **integration of functionalities with third parties**, increasing the potential of these VAs, providing an extra value for users.

**2019 will also be the year in which the importance of user experience in this field is consolidated**, especially conversational design. The technical and technological aspects are crucial, but without a good user experience, the use and adoption of this type of AI will be truncated. **Companies will have to invest more resources in user research** to explore, evaluate and validate the concepts around these types of products, and enhance the value of conversational design where the personality of these VAs is transmitted.

**#OpenExpoTrends19**

# “Orchestration of Network Functions (NFV-O) and Software Defined Networks (SDN).

**Francisco Javier Ramón Salguero**  
Head of Network Virtualisation Initiative



*Telefonica*

**Network Functions Virtualization (NFV) and Software Defined Networks (SDN) have been consolidated as two key technologies to build new Telecommunications networks**, where network elements and services will be preferably based on software, to be deployed on demand in general-purpose, homogeneous and distributed infrastructure, and where even **connections between elements are created programmatically**.

As it happened in previous years, the development of **MANagement and Orchestration Systems (MANO) and SDN Controllers (SDNC, or SDN Controllers)** based on Open Source is being a central element to build that vision and it has grown as a trend during 2018. **ETSI-OSM and LF-ONAP** continue to stand out as top exponents in orchestration technologies, whereas **OpenDayLight and ONOS** are inevitable references for the control of SDN.

Likewise, **a gradual incorporation of microservice technologies, such as Kubernetes**, in the environment of red is expected, as means to make more flexible and dynamic the layers of control of a new generation of network functions adapted to run natively in cloud environments.

Likewise, **it is expected that along with the new generation of mobile and convergent networks (5G), during the year 2019 important deployments of these new technologies will be seen**, given the tremendous flexibility they provide for facilitating the **creation of new services**.

**#OpenExpoTrends19**

“ *The bearing fruit of Open Source: the shared R&D.* ”

**Jonne Soininen**

Head of Open Source Initiatives

in [linkedin.com/in/soininen](https://www.linkedin.com/in/soininen)



**NOKIA**

**The year 2019 is going to bring stability to the Open Source landscape and start to transfer the open source projects as part of the normal telecom R&D process – *the shared R&D*.** This means the growth and transformation will continue – perhaps even accelerate. The growth will move from the number of organizations to the number of lines of code in the existing projects and the Open Source software will transform to be part of successful products and services in the industry.

**Open Source has transformed the telecommunications industry over the past years.** We have seen the emergence of multiple telecoms oriented open source projects such as the Open Platform for Network Function Virtualization (OPNFV) and the Telecom Infra Project (TIP), and the Open Network Automation Project (ONAP). In addition, many projects that were started off in different industries including *OpenStack* and *Kubernetes* have become indispensable for the telecom industry. This year has brought us even more projects such as the *Acumos AI* project and the *Akraino Edge Stack* project.

***This is an exciting time of transformation and growth!*** For the leading companies in the sector, Open Source is nothing new. We have been using and contributing to Open Source for the past 20 years. We see it as a way in which the industry can innovate as a whole, ensure faster development cycles and ensure the opening of specific solutions.

**#OpenExpoTrends19**



# Conclusions

## Telecommunications sector

In a sector as competitive as Telecommunications, there are several clear trends for 2019: automatization, bots, Cloud, containers, personalized content offers, Deep Learning, Artificial Intelligence, Internet of Things, Machine Learning, Virtual Reality and, of course, voice services, which will continue to be very strong or, rather, in this case, loud and clear.

What are all these technologies for? Undoubtedly, to improve the user experience. These are sectors in which companies try their best to offer outstanding elements, and all of us will benefit from that next year. As it has been said, beyond technologies per se, we will see new uses of these technologies to personalize and improve the service offer.

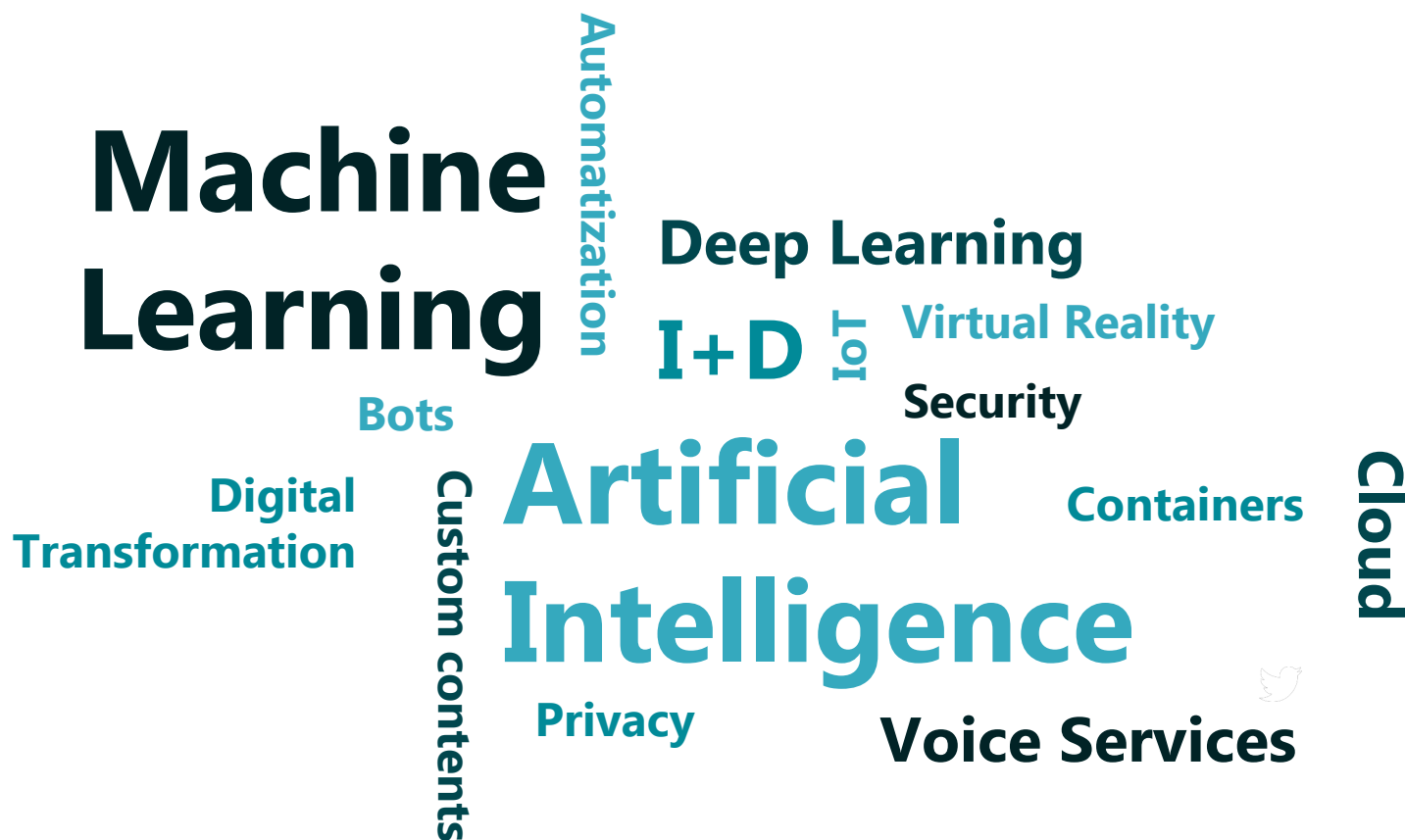
Therefore, another of the key phrases in the mouth of the experts is Research and Development. There, free technologies will also be turned over.

Privacy and security will be the two great challenges in this increasingly connected world. In this sector, the way in which we advance in the interaction with the most commonly used devices will be largely defined.



# Conclusions

## Telecommunications sector



#OpenExpoTrends19



# Fintech / Financial Services

A few years ago the twist of the screw that the economy has had and the way in which we execute daily transactions in our daily life was unthinkable. The Open Source has allowed us to undermine the traditional banking structures and open the money business to models increasingly controlled by people. Free Software has made this change of actors possible: from a banking-centric model to a model focused on people and their needs. Where are we going? 2019 is coming full of news that professionals of the sector tell us.

# “ *New trends in the financial ecosystem.* ”

 [@jori\\_armbruster](https://twitter.com/jori_armbruster)

 [linkedin.com/in/jori-armbruster-4152752a](https://www.linkedin.com/in/jori-armbruster-4152752a)

**Jori Armbruster**  
Coordinator Node and Co-founder



**Internet is making the financial system to evolve.** Fintech 1.0 projects were about using internet to make the financial system more efficient and/or more user friendly, but the real disruption comes with Blockchain, the internet of value. **Blockchain is a replicated and distributed ledger that is not controlled by any central entity but by its own users, eliminating the need of middlemen for the transfer of value.**

The first and clearest use case for this technology is the creation of digital money. The unknown Satoshi Nakamoto invented Blockchain and bitcoin: a decentralized, immutable, transparent and impossible to copy new kind of money. Central Banks have lost the monopoly on the emission of money and now people can choose which currency they trust better: Fiat Currencies (Euro, Dolar, Bolivares, etc.) or Crypto (bitcoin and/or other new cryptocurrencies). Year after year, more people choose bitcoin as the best way to keep (and increase) the value of their savings. I personally believe this tendency will not stop and bitcoin will become the universal reference and store of value.

Blockchain will bring huge impact in almost every sector. Cryptoeconomy and its immutable digital money and Smart Contracts means a whole new model for the financial system. As with dotcoms, a fast growing bubble was created around this new technology that will change the world, preceding the real impact of Blockchain.

Internet really changed the world, and **now Blockchain and AI will change the financial system much faster and deeper than we can imagine.**

**#OpenExpoTrends19**

“ *A new way of doing banking arises and new bankers appear.* ”

in [linkedin.com/in/blascopablo](https://www.linkedin.com/in/blascopablo)

**Pablo Blasco**  
Director



In 2019 *neobanks* and models based on *marketplace banking* are consolidated; cognitive technologies will be applied to the customer experience; we will see the effective implementation of PSD2 and *Open Banking*.

From a few years ago, we have been experiencing **the unbundling of the entire financial and banking industry**, led in recent years by entities that controlled a linear value chain, in which product and distribution were vertically integrated and in which there was hardly any difference in the configuration of products and services. In this new scenario, besides *Fintech* business, new players have appeared: *challenger banks*, *neobanks*, technology, and business software companies.

Simultaneously, **the digital transformation, the focus on the customer and hyperconnectivity are influencing the industry to carry on the transition to a new phase.** These trends highlight the security of the **new bank: in a real-time, modular and open.** It is the beginning of *Open Banking*, which means the understanding of how financial products and services will be produced and distributed through technological standards that allow interconnecting products, channels, customers and data.

To all these movements we must add the emergence of exponential technologies: **Artificial Intelligence focused on measuring financial behavior** (risks, price, fraud, etc.) and adapting the business to the needs; **the APIs, which will allow greater connectivity, and the chatbots, which will guide commercial communication with customers.** These technologies are the three pillars on which the **transition to open and cognitive banking** will be supported. Banks change, the way of doing banking is modified and new bankers appear.

**#OpenExpoTrends19**



# “ 2019: Challenger Banks, Bank as a Platform and Amazon coming out of the closet?”



@JoseMariaCasero



[linkedin.com/in/financiacion-de-empresas](https://www.linkedin.com/in/financiacion-de-empresas)

**José María Casero Camacho**  
Director / Partner Director



**SHERPA** Financiero  **intrendia**

What can we expect from 2019? The inclusion and growth of new disruptive models in banks; the growth of *challenger banks* that will expand products and services to companies and businesses; and one last reflection: Will *Amazon* leave the closet, once and for all, to become a financial operator, as it has already pointed out ways? It will be the question mark of 2019.

New opportunities for transforming business models in the financial sector are penetrating into traditional banks (so far), which are pushing to captivate customers and not customers.

Meanwhile, the Spanish *Fintech* are, for the most part, looking for their particular *Dorado*, surviving more than growing... Lack of ambition, lack of business model, regulatory difficulties? Probably all, although the last one is not the main one.

**Only 20% of the 300 *Fintech* registered in Spain can be considered bank competitors. The rest are complementary or collaborators.**

Alternative ecosystems such as "**Bank as a Platform**", as incipient alternatives of some national banks, such as *BBVA*, selling products of 74 entities through its *App*, **may allow the "traditional" banks to take charge of the development of the financial sector in Spain.** Outside of Spain, there are already **Challenger Banks** that combine ecosystems for individuals and for companies in their business model.

**#OpenExpoTrends19**

# “ Fintech and smart contracts (or how to expand financial transparency).

 [@rcastellanosm](https://twitter.com/rcastellanosm)

 [linkedin.com/in/raulcastellanos](https://www.linkedin.com/in/raulcastellanos)

**Raúl Castellanos**  
Technical Leader



**The future of finance together with the Blockchain looks promising.** To know this, it is enough to look at the different ventures in the area of *Fintechs and smart contracts*. **By 2019, it is expected that the first bank loans will be generated through smart contracts.** A more transparent and direct bank seems to be more and more a reality.

The arrival of Bitcoin (and its backbone, the Blockchain) a decade ago, completely changed the way in which finances were handled until now, but it is not until 2015 when the full potential of these technologies is known in the financial world. **Payments, stocks and trading, KYC (Know Your Customer), digital identity ...** A large number of tools designed with a common goal: to achieve transparent transactions (persisted in the global ledger which is the Blockchain) and very secure (they travel encrypted and signed by private keys).

Only in Argentina, *JPMorgan* is **expanding its staff of "Geeks"** (engineers, computer scientists, analysts, mathematicians) to 400 people, in a clear indicative of where the market is turning. *BBVA, UBS, Credit Suisse* and *Barclays* are on the same path. **The financial companies are getting on the bandwagon.**

This goes much faster than we imagined and for those of us who work in the sector, it could not be more exciting.

**#OpenExpoTrends19**

“ After the digitization, the hour of the disruption arrives with the blockchain.

 [@JacoboFerrando](https://twitter.com/JacoboFerrando)

 [linkedin.com/in/jacoboferrando](https://www.linkedin.com/in/jacoboferrando)

**Jacobo Ferrando Martínez**  
Partner



Let's not forget that the greatest and best purpose of the *Fintech* universe is that it constitutes a real opportunity for financial inclusion. So once the digitalization is finished, the time for disruption arrives. If we combine the possibilities offered by technologies such as the Blockchain and Artificial Intelligence, **we will be able to take the step towards authentic financial planning.**

We almost completed a decade of the incorporation of the word *Fintech* in our vocabulary. So far the so-called innovation has been marked by the digitalization of financial services, the segregation in different platforms of the different services that a bank can offer (unbundling) whose characteristics are the improvement in accessibility, use simplification and lower costs.

Once observed the acceptance by the user of this new way of interacting with their money, **new challenges appear on the horizon.** Many of them driven by the sum of new technologies and the new regulation; and, others, as a consequence of the current **atomization of platforms** that will **drive forth mergers to gain size.**

Regulations such as PSD2 in favor of *Open Banking* linked with the control imposed by MiFID II on the distribution of its own investment funds and the model of collection of third-party commissions, do not leave another possible scenario other than that of betting on having a *Marketplace* in both as *Fintech* solutions as in the digital services of the banks themselves. That is, offering many services again **but including third-party products so that the users have a better service**, more according to their profile and a better experience.

**#OpenExpoTrends19**

“ *A borderless financial world that we may not be able to imagine today.* ”

 [@LapoBlockchain](https://twitter.com/LapoBlockchain)

 [linkedin.com/in/luiisfranceschi](https://www.linkedin.com/in/luiisfranceschi)

**Luiis Franceschi**  
CEO



Thanks to its Open Source nature, the consolidation of **Blockchain's technology will allow to break down barriers and reduce operational complexity** to provide a decentralized ecosystem of exchange of value that everyone can access as equals.

Being a technology that is fuelled by the contributions of the community, **more and more applications** are being created in the financial sector that are opening a world of possibilities to millions of men and women. Anyone with an Internet connection can access the decentralized services that have been developed in the Blockchain and this brings **a level of financial inclusion never seen before**.

Today we have new models such as **credits and remittances without intermediaries** (P2P), thanks to *smart contracts* that arbitrate between the parties involved. You can send and receive digital money (Bitcoin and other cryptocurrencies) from anywhere in the world to any other destination, faster, cheaper (little or no commission) and safer than traditional banking.

We are developing new tools to make cryptocurrencies easy to use and accessible to everyone everywhere (from *online* and *offline* payment systems to debit and credit cards). The Blockchain technology is still in a maturation stage, **new applications in the sector will be released, thanks to the contributions that are made from all over the world** and, will provide endless opportunities that we may not be able to imagine today.

**#OpenExpoTrends19**

# “ *Wealthtech: the digital revolution in wealth management and investment services.* ”

 [@martinhuete](https://twitter.com/martinhuete)

 [linkedin.com/in/martinhuete](https://www.linkedin.com/in/martinhuete)

**Martín Huete**  
VP / WealthTech Partner



A term has gained ground in the realm of financial services: *Fintech*. The convergence between finance and technology is a symbol of the tsunami that the digital revolution causes in the once immovable field of financial services. **The keys of this revolution: Blockchain, AI and Big Data.**

Within the group of *Fintechs*, some sub categories of the same type are emerging: "*Insurtech*"; "*Proptech*"; "*Regtech*"; and, now, "*Wealthtech*", the conflation of "*wealth*" (wealth) and "*tech*" (technology) has come to bring **a new generation of financial technology companies that create digital solutions, and to transform the investment industry and patrimony management.**

They are not just *robo-advisors*. Within this group there are also startups that are dedicated to alternative investments, intermediaries, advisors, investment tools, social investment platforms, *quant advisors*, etc. **The digital revolution sweeps through inefficient and opaque industries**, and the investment sector is one of them; one of the richest in the world, but now has feet of clay. It is already difficult to beat markets, commissions imposed to pay analysts, supposed gurus, managers, bankers, and other "tinsels". Such elements make an efficient management of assets impossible. **The world is noticing that the paradigm of investment management has changed.**

It is no longer a struggle between *startups* and traditional players, between *online* and *offline*, nor between passive and active investments. **It is about enabling collaborative spaces between the old and the new world, so that in the end the great beneficiary will be the final investor.**

**#OpenExpoTrends19**



“ *Transactions will be processed faster and it will be easier to write smart contracts.* ”

 [@ruljaimemaestre](https://twitter.com/ruljaimemaestre)

 [linkedin.com/in/rauljaimemaestre](https://www.linkedin.com/in/rauljaimemaestre)

**Raúl Jaime Maestre**  
Director of the Master of Blockchain and  
Fintech



At the beginning of 2019, **a new token will be established in the Ethereum blockchain**. Being supported by Bitcoin, this token is going to be different. It will be called **"Wrapped Bitcoin" (WBTC)** and will facilitate any *Dapps* that run in the blockchain. It will ease payments made in mobile applications through the Bitcoin network. The same operation that takes minutes today will happen in seconds. With WBTC, standardization to the ERC20 format will be achieved, thus creating intelligent contracts for Bitcoin. Therefore, **the *Ethereum* network will process transactions faster than the Bitcoin network and will make it easier to write intelligent contracts** that integrate Bitcoin transfers.

**In Spain, the token will become a source of financing for many projects**, where this unit of value created by an organization to finance its business model and give more power to its users to interact with its products, also facilitates the distribution and sharing of benefits among all its shareholders.

During 2019 governments will continue to try to regulate and control more the world of cryptocurrencies and ICOs. **The increase in regulatory pressure will make the projects even more decentralized.**

**#OpenExpoTrends19**

# “ Alternative payment methods and Artificial Intelligence, come with force in 2019.



@amarinbg



[linkedin.com/in/amparo-marin-9779b82](https://www.linkedin.com/in/amparo-marin-9779b82)

**Amparo Marín de la Bárcena Grau**

Telecommunication Eng. - Strategy and Financial modeling.



**Payment methods and *crowdfunding*, cryptocurrencies, automation, Artificial Intelligence, and robotics, together with commitment to PaaS and SaaS, are some of the trends that we will see grow in 2019.** The client looks for immediacy, for that, companies only have one option: to understand the change and to adapt, using the technology, but based on the people.

Although there is no single definition for the term “Fintech”, one of the most accepted is: “technology applied to the financial sector”. This concept extends to financial business models based on new market habits.

It is a decade since the beginning of the economic crisis of 2008, which supposed a boom in the creation of technology companies that proposed to improve financial operations focused on a specific segment of the financial value chain and changing user habits with a digital approach oriented to the needs of the client. As examples, we have *Facebook, Gmail, WhatsApp, ETrade, Robinhood and Coinbase* with enormous growth in recent years.

Success will be for those who know how to adequately capitalize **new digital incentive models**, as opposed to traditional manager-based models; ***spinoff* business, agreements with third parties, customer segmentation, and analytics; direct interaction with clients and endow their offer with ubiquity through APIS and geolocation.** The question is to what extent we are prepared for the challenge of regulation, the lack of knowledge and the most important: to gain the credibility and confidence of the client.

**#OpenExpoTrends19**

# “ Openness to the benefits of decentralization and Blockchain.

 @ethicraul

 [linkedin.com/in/raulmart](https://www.linkedin.com/in/raulmart)

Raúl Martínez  
CTO



**The road to the massive adoption of cryptocurrencies involves solving several technical and usability obstacles.** Today, most users do not know what a *wallet* is, they do not have cryptocurrencies, they are afraid of volatility and they have no interest in decentralization and its benefits. Contrarily, users who do meet these requirements do not really use cryptocurrencies as money; they consider them as investments and await the astronomical returns of 2017. It is necessary to build bridges to the first ones so that in 2019 the adoption of these new models is a clear trend.

The world of blockchain and cryptocurrencies was founded by idealists and technologists and it grew exponentially with risk-friendly investors. The bursting of the bubble has depopulated the market, but the benefits of decentralization and blockchain **(open development, sharing of profit and power, security) are still goals to be achieved. Regulators, in Spain and the world, are beginning to pronounce themselves.** This does not have to be an obstacle to a technology whose legitimacy is constantly weakened by media and dishonest projects.

In order for a generalist project to work, **it is necessary to create layers of abstraction and maintenance comparable to the security offered by the current financial system.** For instance, *wallets* that allow *password* recovery, blockchains that scale to a level of transactions and fees comparable to the FIAT world, stable tokens and, above all, FIAT money payment gateways to cryptocurrencies and that do not have prohibitive rates.

#OpenExpoTrends19

“ *Fintech ecosystems focused on people and new business models.* ”

**Rubén Nieto**  
Head of Innovation

in [linkedin.com/in/runieto](https://www.linkedin.com/in/runieto)



In 2019 Artificial Intelligence will be key as a new channel of stable communication with customers. Likewise, the global acceptance of digital *Onboarding*, the efficiency of systems through robots (RPA) and Fintech ecosystems centered on people will increase.

**The *Fintech* ecosystem grows very fast**, and great strength such as the agility to use new technologies to create solutions. Agility that large corporations do not have because their model is designed not to make mistakes. In *Fintechs* and in the world of innovation, mistakes are worth it because they generate knowledge and learning. This makes the difference.

The proliferation of *Fintechs* initially generated a sense of disdain with large financial institutions, which little by little became a concern because of the great impact of many of these companies have but finally, this has turned proactive. **The large financial companies in the world are understanding that collaboration with highly specialized solutions constitutes an added value which will allow them to be more competitive and gain agility.**

Financial institutions must place their customers at the center of their model, which are the engine for the development of cutting-edge solutions, which are only possible by co-creating together. The people are always in the center in the *Copernican Revolution*. It is deciding between being part of the future or just living.

This change, together with the *Fintech* ecosystem, capable of streamlining solutions, is what is really changing entire business models.

**#OpenExpoTrends19**

# “ The resurgence of the speculative market in a new format.

 [@AlexPreukschat](https://twitter.com/AlexPreukschat)

 [linkedin.com/in/alexpreukschat](https://www.linkedin.com/in/alexpreukschat)

**Alex Preukschat**  
Coordinator Node Blockchain España

[BlockchainEspana.com](https://BlockchainEspana.com) y [AlianzaBlockchain.org](https://AlianzaBlockchain.org)



In 2017 we attended the next iteration of the Blockchain market along with the *Initial Coin Offering* (ICO). The previous bubble (2013) was with the so-called *Altcoins* (*Alternative Coins*). Some people will wonder if with this last bubble the Blockchain market is destined to definitely die, at least on a speculative level. **My personal bet and the one of a part of the sector is that it is not like that. The speculative market will probably reappear, but not necessarily in the same format.**

**The expectation is that we can progressively see the boom of STOs** (*Security Token Offering*) in the coming months. During the ICOs bubble, many of these projects were defined as "*Utility Tokens*" to avoid being cataloged under financial assets regulations. For that reason, the most important regulators, such as the SEC (the US regulator), punished some of the most fraudulent projects by sending a message to the market, but at the same time they avoided killing the Blockchain innovation in the US. by deciding that the Ethereum ICO of 2014 was not a "*Security*". One of the effects of this decision was that part of the sector focused its attention in more open jurisdictions such as Ireland, Malta or Liechtenstein; achieving these to attract the talent and capital of the Blockchain world with "*Security Tokens*" that complied with a custom-made regulation. **This situation may again lead to a bubble of both cryptocurrencies and these new instruments, renewing in this way the interest for the sector.**

#OpenExpoTrends19



“ *Regulation, massive adoption and accelerated innovation in the financial revolution of 2019.* ”

**Alfonso Sainz de Baranda**  
Chief Growth Officer

in [linkedin.com/in/alfonsosbla](https://www.linkedin.com/in/alfonsosbla)



Three fundamental trends for the year that awaits us:

- (1) **Regulation:** The new laws of PSD2 or MiFID2 are going to energize *Fintech* and the entire financial services sector and will oblige banks to really compete with smaller but much more agile companies. This will allow **new products and companies to exist, which substantially improve the financial market** for users. Both in the largest companies in their process of adaptation and competition, as in the smaller ones, which will continue to innovate.
- (2) **Massive Adoption:** The different neobanks, such as *Bnext* or *Revolut*, have gone from being used only by *early adopters* to being used by the "*early majorities*", which will increase the user base and start **a new era of competition**, a similar situation of what happened 10 years ago with telephone companies. It is not a disruptive irruption of technology but its penetration into majorities.
- (3) **Accelerated innovation:** The union of better regulation and mass adoption, as well as technologies such as the Blockchain, will cause much more money to be invested in this sector and new projects, products and companies to emerge with inconceivable speed for the banking industry.

#OpenExpoTrends19

# “ Open Banking: collaboration, automation and transparency as added value.

 [@RickSegoviano](https://twitter.com/RickSegoviano)

 [linkedin.com/in/ricardosegovianoaceituno](https://www.linkedin.com/in/ricardosegovianoaceituno)

**Ricardo Segoviano Aceituno**  
Head of BBVA Open Platform in Spain

[www.bbvaapimarket.com](http://www.bbvaapimarket.com)



In 2019 we will see settle key concepts of the *Fintech* revolution: **collaboration, automation and new ways of generating added value**. The target? Satisfy a client increasingly informed about the possibilities of technologies, which until recently was only available to *early adopters*.

**Collaboration:** European payment regulations have brought opening to a traditionally closed industry and, in 2019, will continue to advance. The scenario moves from the atomization of actors to promote novelties, to another where former and new actors collaborate thanks to the APIs. All this will result in a better experience for the user. **Collaborate more to compete better will be the new mantra of the industry.**

**Automation:** When different innovative technologies intersect, disruption appears, efficiency improves and value is created. In 2019 we will see how new uses of Blockchain technology, *Big Data*, *Machine Learning* and APIs will influence *Open Banking* to create surprising and useful experiences, as in B2B as in B2C.

**Added value:** Open Banking is a good option to face innovation with the limited resources of a company, and the APIs help to reach the necessary integration to drive processes and generate new products and services. The key is to create solutions focused on the user and the APIs come up to achieve it efficiently.

The APIs will accompany companies in their digital transformation towards suppliers and employees. In 2019 the user will benefit from data opening, the RGPD and the development of the Regtech branch. It will be a great moment for companies that go beyond the 'compliance' to offer products and services with an important added value: transparency.

**#OpenExpoTrends19**

“ *Regulatory advances in Blockchain will increase the adoption of cryptocurrency by users and retailers.* ”

 [@luisvae](https://twitter.com/luisvae)

 [linkedin.com/in/luisvaello](https://www.linkedin.com/in/luisvaello)

**Luis Vaello**  
Chief Operations Officer



For 2019 we will see adoption growing in the cryptocurrency space, not only on the speculative side but also in the payments area, with more retailers processing crypto payments. This will increase the necessity of easier tools such as *wallets* so that everybody can embrace this technology.

The actual situation on *Fintech* and Financial Services is that we are starting to see how **cryptocurrencies and blockchain are starting to get traction**. We are seeing regulators across the world starting to debate and **preparing the regulative space for cryptocurrencies and business within the sector**.

During 2018 we have seen this topic reaching mainstream media, majorly by the rise in prices during the last quarter of 2017.

**With regulation finally coming in 2019, financial institutions will embrace Blockchain for cross borders payments** with technology from projects such as *Stellar* or *Ripple*. Banks move forward with cryptocurrencies, Bitcoin trading tables begin to develop and new cryptocurrencies are gaining adoption.

In this context, online fraud continues to grow on the fintech space as it is one of the major problems for any financial institution. **The use of Artificial Intelligence will help to reduce and mitigate fraud**, reducing onboarding costs and simplifying this process for fintech companies.

**#OpenExpoTrends19**

# Conclusiones Sector Fintech



The most commented trend for 2019? Blockchain. Beyond the testimonies, will we see action? After several years of the irruption of the Blockchain, the experts aim at the beginning of their massive adoption mainly in the contracts and intelligent certifications.

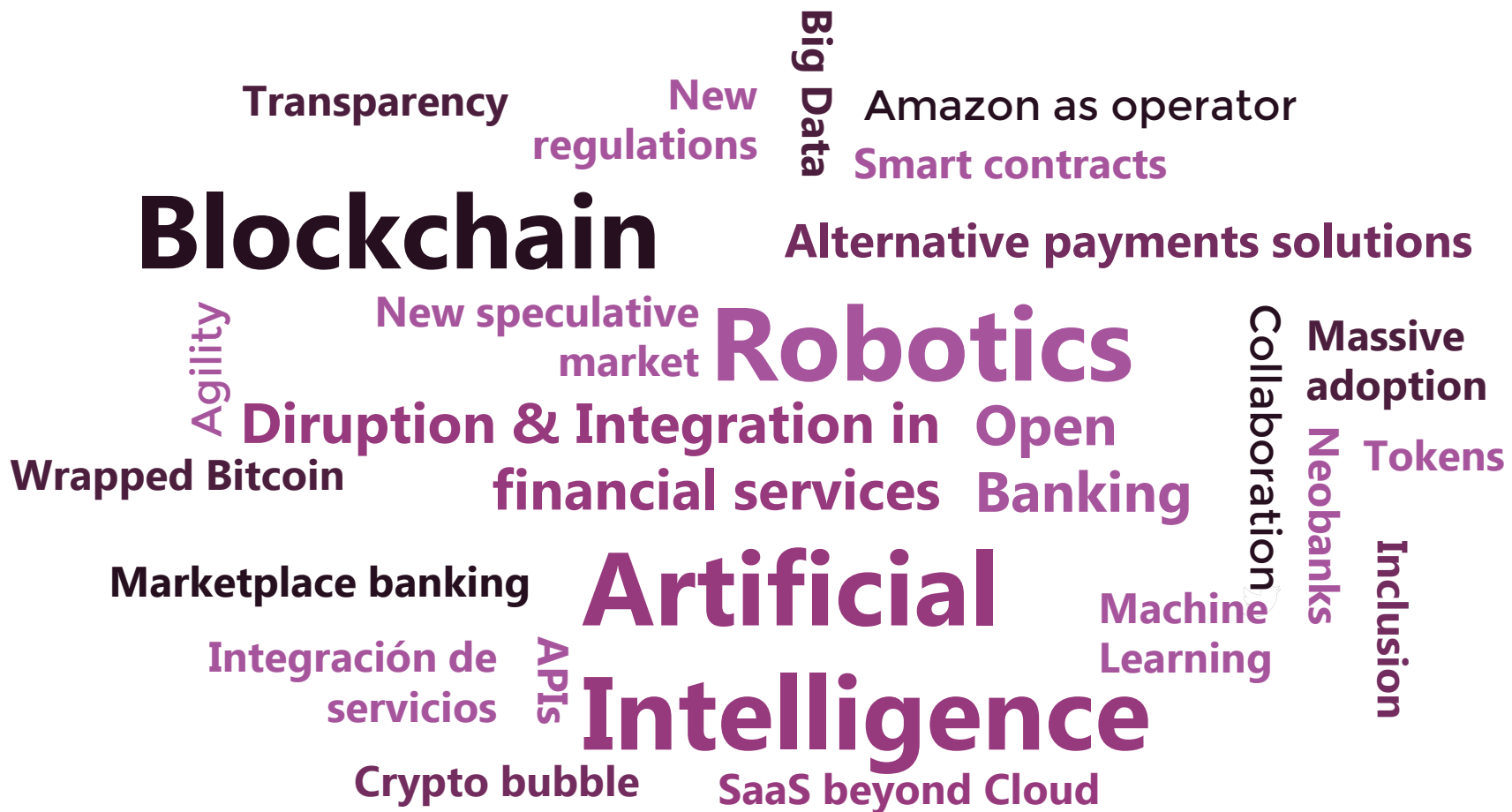
The disruption of the blockchain in the panorama of financial services and its growth is something that nobody wants to miss. That is why big banks continue adding talents to their technology departments. New alliances and collaborations are glimpsed, in addition to the new APIs and platforms that will integrate a variety of financial services from different sources (marketplace banking). Open Banking is among us and this could be the year of its expansion beyond the early adopters.

It will be a consolidation year for: Big Data, Machine Learning, Robotics, and Artificial Intelligence as Fintech tools and the personalization of financial services.

The future is about to be written but the trends are clear: new companies will appear and more collaborative and transparent business models, driven by the demands of millennial clients with a fully digital financial education. A year of unprecedented financial inclusion worldwide is expected, in which person to person transactions will be boosted.

In this sense, new regulations of the Blockchain technology could give a great impulse to the sector that will focus on: new tokens, faster transactions, and alternative payment solutions.

# Conclusiones Sector Fintech



#OpenExpoTrends19





# Education Sector

---

The Open Source is the key tool to build a new educational system, much more adapted to the needs of students; a system capable of helping them adapt and respond to the challenges of the future. The flexibility of the code allows to create personalized learning and evaluation systems that can be adapted to changes. Additionally, the universe of possibilities that can be created - teaching programming - is infinite. Let's take this tour with the professionals of the sector.

“ *Businesses looking for creative, and confident individuals, who can demonstrate "soft skills".*

 [@Tinaallton](https://twitter.com/Tinaallton)

 [linkedin.com/in/tinaallton](https://www.linkedin.com/in/tinaallton)

**Dr Tina Allton**  
Head of International Expansion and CFO  
Empowering a Billion Women by 2020



**EBW 2020**  
ENGAGE, EARN, RETURN.

Educational trends for 2019 are set to include **gamification to teach “soft skills”**. The ability to provide an education without any geographical limitations thanks to *Machine Learning* and AI, results in education as a scalable product, reducing human errors, and giving students an unlimited experience. With so much knowledge available, **more people will become unschooled, ultimately these individuals will possess much higher capabilities when it comes to critical thinking skills, creativity and digital skills.**

**The influence of technology on education changes the way we teach and learn.** Long gone are the days when employability depended on academic excellence, and *gaming* in the educational sphere was boring and minimal. **Businesses are moving away from the traditional skills, and moving towards hunting for creative individuals who can demonstrate “soft skills”** such as teamwork and leadership. This individuals are not created through traditional educational systems. We have to aim to develop a personalized education - with tools such as video games - through which new cognitive structures can improve soft skills as creativity, teamwork, and the ability to think “outside the box”. Better and more successful educational platforms that establish the bases for **learning experiences with gamification for students.**

Assessments routes: With education becoming more and more widely accessible globally, the demand on learners and teachers, and a workload that increases proportionally, **the use of machine learning and AI data and metrics in education means assessments can be submitted effortlessly, and teachers can grade more efficiently and accurately.**

**#OpenExpoTrends19**

# “Blockchain, Artificial Intelligence and Big Data: the 3 main trends in university education.”

 @dcaraban

 [linkedin.com/in/dcaraban](https://www.linkedin.com/in/dcaraban)

**David Carabantes Alarcón**  
Coordinator Manager of the Virtual Campus



From the higher education institutions, great challenges are being assumed in order to adapt to the changing situation that we are experiencing. **To establish a trust model through the decentralization with Blockchain technology is a reality and a necessity.**

We find different utilities and, in the education field, it **allows to ensure the veracity of the conducted studies**, taking a step further in the academic integrity and in the subject of *proctoring* with biometrics. With regard to the **Artificial Intelligence**, we have known in several moments about its development, but we are currently experiencing a decisive moment thanks to the initiatives of Open Source as *Acumos AI* with the support of the *Linux Foundation*. **Big Data also allows us to know better everything around us.** Companies identify our needs by analyzing data that, for example, we generate using social networks, but **we can also use interconnections that are continuously being made to respond to what our students require.** This complements the learning analytics in virtual environments of collaborative teaching/learning such as *Moodle*, which allows the realization of **predictions and alerts of possible dropouts** before they are carried out. These trends in the University are an example of what is happening in higher education, which can be applied to the rest of educational levels, Public Administration institutions and in the private sector.

#OpenExpoTrends19

“ *The integration of technologies: key piece for a more real, immersive and efficient educational experience.* ”

 [@royachang](https://twitter.com/royachang)

 [linkedin.com/in/royachanglee](https://www.linkedin.com/in/royachanglee)

Roya Chang Lee  
CEO



In the next few years, technologies such as 3D printing or Virtual and Augmented Reality will be added with didactic methodologies such as gamification to turn education into **a more real, immersive and efficient experience**. It will highlight the collaborative work and the transversality of technology will be experienced in diverse subjects.

A few years ago it came up the "fashion" of **teaching children programming and robotics** with initiatives such as *The Hour of Code* or *the European Week of Robotics*.

Nowadays, there is an undeniable need to teach to the youngest, not only to make good use of technology but also to discover what is behind it and how to take advantage of it to promote creativity, problem-solving and teamwork. In this exciting scenario, we find several Open Source proposals such as *Scratch*, software developed by *MIT* to learn programming based on block programming; or *Arduino*, a complete ecosystem of software, hardware and the international community.

**The challenge for the sector right now is how to adapt these technologies to a non-technical audience**, whether teachers of the first educational stages or the parents. To do this, initiatives are now being developed in which the main challenge is to produce knowledge and new learning methodologies in which the traditional and the innovative are jointed, through the *STEAM* methodology (*Science, Technology, Engineering, Art, and Mathematics*), and where physical and virtual learning are linked from **classroom management platforms, video games, and online courses**. It is a time of reinvention.

**#OpenExpoTrends19**

“ *The teacher as moderator and the students as leaders of their own learning.* ”

 [@oscarfuente](https://twitter.com/oscarfuente)

 [linkedin.com/in/oscarfuente](https://linkedin.com/in/oscarfuente)

**Óscar Fuente Castrillejo**  
CEO & General Director



The trend is clearly the **outsourcing of online educational platforms to specialized companies under Saas models** and evidently, Moodlerooms, a project of one of the major Blackboard platforms of payment is the proof.

Another trend that we must not lose sight of in 2019 is the use of live communication tools such as Bigbluebutton and the development of Artificial Intelligence, thanks to the Open Source library of Google, which makes the teacher a moderator so that students are the leaders of their own learning promoting critical thinking and entrepreneurial spirit.

Education is the reflection of a society and the basis of itself. The earthquake caused by the digital age has made it seem that school classrooms have become obsolete when we still see the blackboards hanging on the walls and textbooks on paper, but new trends show us the opposite.

Undoubtedly, **the use of Free Software in the education system is a reality**. It is probably one of the sectors where more intensive use is increasingly made. For example, the use of *Google Classroom* in schools as a means of communication with parents and students and, *Moodle*, in universities, this being the LCMS (*Learning Content Management System*) platform with the largest distribution in the world.

**#OpenExpoTrends19**



# “ The future of education: more design and technology in online training.

 [@fablabmadridceu](https://twitter.com/fablabmadridceu)

 [linkedin.com/in/covadonga-lorenzo-cueva-925b5630](https://www.linkedin.com/in/covadonga-lorenzo-cueva-925b5630)

**Covadonga Lorenzo**

Professor / Director of Fab Lab Madrid CEU



**CEU**  
Universidad  
San Pablo

**The future lies in the design of more online training programs that incorporate new technologies:** the use of mobile phones connected to multimedia platforms and mulsemedia; the use of social networks in the educational field; and the incorporation of gamification techniques.

In recent years **the offer of online courses has increased** with the aim of expanding the range of content offered in classroom courses. However, in spite of the advantages offered by this type of training and the interest it generates, the level of satisfaction of the students and the training results obtained do not seem to meet the face-to-face training.

The challenge is to improve programs, involving universities, companies, technology centers, and public entities **to create learning environments that encourage active student participation**. These should be more interactive, adaptive, capable of generating personalized content and incorporating new technologies linked to new teaching methodologies.

The active participation of students in the learning process will facilitate social integration, fight against dropouts, and promote the inclusion of students with special educational needs. On the other hand, **the new e-learning platforms will be constituted as integrating elements of technologies** (multimedia, mulsemedia, gamification, augmented reality and remote access to digital manufacturing laboratories) and will provide its users with the possibility of accessing contents and resources distributed on the network, and sharing theirs with the rest of the community.

**#OpenExpoTrends19**

# “ Open source programming, a key element for educational transformation.

 [@npujades](https://twitter.com/npujades)

 [linkedin.com/in/npujades](https://linkedin.com/in/npujades)

**Natalia Pujades**  
CEO and Founder



The introduction of training in Open Source programming will generate an educational scenario with **less books and more online content. We can offer a more tailor-made follow-up of each student; more curriculums based on awards and recognitions.** In the coming years we will not only see students taking courses to complete the classes, but also to test their abilities, participating in various events: from entrepreneur contests to *hackathons*.

Unfortunately, the subjects that are being taught in schools and institutes are still very far from the labor reality. It is logical that we do not know the jobs of the future, but seeing the direction in which technology has a significant impact on our day-to-day activities, we can imagine what they will be. Besides, nowadays we already have thousands of technical jobs and few profiles prepared for them. It is a pity that we continue to train students in *skills* and subjects of jobs that increasingly have less relevance.

**It is fundamental to understand how computers or machines think.** Many schools are catching up by implementing programming training and giving a more important role to computer science.

**Programming could play a preponderant role for the transformation of the educational sector** if, on the one hand, it promotes the digitalization of the students' academic results, and on the other hand, it obtains metrics to see what skills each student has in order to enhance them.

**#OpenExpoTrends19**

“ *The training in Artificial Intelligence and the extended realities will be key for the educational centers of the future.* ”

 [@LauraRaya5](https://twitter.com/LauraRaya5) Responsible for the Discipline of Virtual Reality and Cybersecurity

 [linkedin.com/in/laura-raya-gonzález](https://www.linkedin.com/in/laura-raya-gonzález)

**Laura Raya**



**The Artificial Intelligence together with the domotic (Alexa, Siri, etc.), the Extended Realities, the Big Data and the absolute control of the actions of the technological citizen, will be tendencies that will change our lives in 2019.**

Training future professionals in these technologies is key to their development and to do it from an Open Source perspective is even more important if we really want to see progress. Between the Extended Realities (virtual, augmented and mixed) **the mixed reality allows the real world and the computer-created world to link into the same experience.** Their union, through artificial vision, allows a virtual avatar to coexist in a physical world, not colliding with any of the real objects and respecting the law of gravity.

Furthermore, Virtual Reality allows creating virtual worlds where the user can abstract and forget the physical world, living a parallel reality adapted to their needs. The creation of content adapted to these new realities will be vital for the technological revolution and, for this, it will be necessary to train students in these new trends. If we do not join, we run the risk of having a. It is necessary that areas such as extended realities are taught in educational centers. If we do not join, we run the risk of having a "programmed obsolescence" in education.

**#OpenExpoTrends19**

# Conclusions Education Sector



Open technologies make possible one of the things that seemed to be a utopia in the past: a customized education, free, personalized and that admits: flexible learning methods. In addition, it can constantly adapt to the new needs of hyperconnected students; as well as new forms of evaluation.

What tools will make this possible? The experts agree on: Big Data, mobile devices, streaming platforms, 3D printing, Artificial Intelligence, Virtual and Augmented Realities, and the use of social media networks in education. To broadcast multimedia and mulsemmedia content that would make education a much more immersive global experience for students.

According to the industry professionals, gamification is and will continue to be one of the star strategies to improve learning to encourage students to develop creativity and soft skills so demanded in today's professional world. To achieve this, many educational companies will use integration and alliances with third parties and outsourcing the management of their online platforms for the development of MOOCs (massive study platforms).

For this year, we will continue advancing in the design of online programs, tailor-made follow-up, and collaborative work, which can lead to new ways of facing work force, increasingly oriented to the digital world.



# Conclusions Education Sector



#OpenExpoTrends19



# Healthcare Sector

---

The possibilities currently offered by Information Technologies are enormous and their use in the healthcare environment is growing. In this sector, Open Source allows us to: create convergent tools to achieve much more powerful solutions; open, flexible and global; accelerate processes and obtain reliable results. Industry professionals certify this by commenting on how these uses will continue to grow in 2019 in both, private and public organizations.

“ *The IoT devices will represent an advance for the management of the health sector.* ”

 [@grumman\\_zc](https://twitter.com/grumman_zc)

 [linkedin.com/in/juanlclemente](https://www.linkedin.com/in/juanlclemente)

**Juan Luis Clemente Martinez**  
Head of Systems



Hospital  
San Francisco de Asís

In 2019 the health sector will be dominated by three main trends: First, the flexibility and lightness of Docker containers or tools such as *Puppet*, *Chef* or *Ansible*. All under the umbrella of *DevOps* that will offer us that **elasticity in the management of rapidly evolving software**.

Secondly, **the IoT devices will represent an important advance for the compression and management of the health sector**. The more information obtained from all the processes -from the management of the center as well as the patients- the more palpable will be the improvement in services and information.

And thirdly, having lots of information without a structure capable of managing and classifying it may be inert. In this sense, **Artificial Intelligence will be the key to manage all that information and create increasingly efficient processes in terms of health and patient management**.

Taking into account that the health sector has a strong component of proprietary software, and the major changes that are being established, with a multitude of different disciplines and distributed services, **Open Source platforms can become levers of change for the sector**.

**Large amounts of data; interconnectivity of suppliers and services; and one scalable infrastructure**, capable of adapting to constant changes, are what will allow Technology departments to offer the sector valuable records, information and fundamental processes for health centers and patients.

**#OpenExpoTrends19**

# “ Open Source for the integration of data in health institutions.

**Javier Luque Navarro**  
Head of the Department of Informatics and Technological  
Innovation



**Unified Cloud, security and integration will be the Open Source trends of the coming years for the health sector. And, undoubtedly, citizens and patients will benefit most.**

More and more companies are joining Open Source, *Microsoft, IBM or HP*, are clear examples of the strength and solidity of this form of technology integration for the expansion and development of tools that unify and connect services and devices.

For example, Cloud services represent an evolution not only **to the storage of files but to the integration of services, control, and management of everything surrounding us.** An evolution in constant growth and that is potentiated by an important community that supports and defends Open Source.

In healthcare environments, a sector in constant updating of regulations, it is becoming the best solution, not only for the reduction of costs but also because of the ease and speed of adaptation offered by Open Source with respect to closed systems.

# “ The health of data processing and its importance in future prevention.

 [@SergioRuizMerin](https://twitter.com/SergioRuizMerin)

 [linkedin.com/in/sergioruizmerino](https://linkedin.com/in/sergioruizmerino)

**Sergio Ruiz Merino**  
IT Director



Every time we have more data of a patient and we must know how to treat this information, structure it and safeguard it in order to avoid any leak, and even use the Artificial Intelligence to prevent and try to avoid future illnesses related to the latest reports and/or clinical results. Unimaginable possibilities just a few years ago.

Open Source tools will play a very important role in the future of health management and **everything will revolve around the individual information of each individual**. We're going to hear a lot about **Blockchain, digital identity, IoT and Artificial Intelligence**.

The constant evolution in the technological sector will impact with great intensity in the transformation of all sectors, and in the health sector, it is necessary to build the foundations in Open Source, which provides us key advantages for this process: adaptability, flexibility and scalability, while allowing the implementation of the tools in any scenario (from small private clinics, to large national public health systems).

**#OpenExpoTrends19**

“ *The Digital Transformation in the Spanish healthcare sector is no longer just a desire, it is an urgency.* ”

Ángel Luis Sánchez García

Head of Architecture and Standardization Service

in [linkedin.com/in/angel-luis-sanchez-garcia-a8b4a32a](https://www.linkedin.com/in/angel-luis-sanchez-garcia-a8b4a32a)



CONSEJERIA DE SANIDAD  
Y CONSUMO

Comunidad de Madrid



Healthcare Sector

**The trends in the health sector for 2019 will be: the use of Genomic Processing, Big Data and Artificial Intelligence.** Although it will also increase the use of technologies such as *Bot, Hybrid Cloud, Wearables, IoT, Virtual Reality* and / or *Augmented and Open Data*.

**The digital transformation in the Spanish healthcare sector is no longer just a wish, it is an emergency.** It is necessary to advance towards what has been called **Healthcare 3.0** or **Medicine of the 4P: Personalized, Predictive, Preventive and Participatory**, where the new patient is more active and informed.

To ensure that the Spanish public health and social system is sustainable in the long term, Public Administrations must invest a lot in the implementation of new technologies to make digital transformation a reality, in which Open Source plays a fundamental role.

Unfortunately, according to the *SEIS index*, the percentage of ICT spending on public health global investment in 2017 froze and remained almost the same as in 2016 (1.22%), a ridiculous percentage compared to other sectors; which shows that Spanish politicians are not yet aware of this urgency.

#OpenExpoTrends19

# Conclusions

## Healthcare Sector



What will be the future of health in 2019 and what role will open technologies play in it? Experts agree in the use of Artificial Intelligence, the Internet of things and Open Data. Thus, the health sector presents us a panorama of connected devices and data available in open and integrated platforms that allow them to take advantage of it for obtaining constant medical information that serves for the prevention of diseases and a more intelligent, personalized and integral care.

Although it is not about groundbreaking technologies, because they already have a time in development and evolution in the sector, the trend is clearly towards greater penetration and adoption of these tools with a new approach to use in data analysis and its real value for health and assistance..

Other elements mentioned by the experts that could contribute to this idea: Blockchain to share clinical documents, assistant bots, unified Cloud, Docker containers, Wearables for obtaining health data and Virtual and Augmented Realities for simulation. It is exciting to think of a scenario in which these tools can contribute directly to prevention and medical treatments. In its configuration, the integration of services, digital identity, and genomic processing could play a fundamental role.



# Conclusions Healthcare Sector



#OpenExpoTrends19



# Tourism & Transport Sector

By the use of open technologies, the transport and tourism industries have been transformed; they have expanded with the opening of new destinations, travel modalities and new population segments that are incorporated. They multiply their points of contact and their possibilities become much more global and mobile. New solutions and business models have been created to automate processes, reduce costs, diversify the offer and improve the quality of connectivity and infrastructure. With this, the challenges have also been renewed and new trends have emerged. Let's take a trip with these professionals and let's see them.

“ *More technology in cities, more "data centric" business and more mobility with shared electric technology.* ”

 [@pedro\\_anton](https://twitter.com/pedro_anton)

 [linkedin.com/in/pedroanton](https://www.linkedin.com/in/pedroanton)

**Pedro Antón**  
Director



The trends in the tourism sector for 2019 are: more technology in cities (IoT); more *"data centric"* business ; a massive deployment of mobility with shared electric technology and the appearance of new associated business models (service aggregators).

**Never before tourism had been so relevant, neither for economies nor for society.** The irruption of new economies in the tourist consumption market, the increase of the middle class and the so-called collaborative economy, which is as simple as the emergence of new and powerful actors in the market, facilitating the access to the experience of making tourism.

On the other hand, society has changed and tourism is among the highest spending priorities generating a massive influx of tourists in the leading destinations, which can cause even anti-tourism movements. Therefore, sustainability is established as the main axis of tourism development and cities flooded with people are collapsing, with a clear effect on urban mobility and emissions.

**The platforms "eCar sharing" proliferate and become one of the favorite options to contain CO2 emissions in the urban space and sensor technology (IoT) will begin to make sense in the form of services for citizens and tourists, generating huge volumes of information that will allow to provide intelligence to systems.** On the other hand, voice interfaces are gaining more and more ground, in the form of virtual assistants; although let us be honest, the intelligence of mentioned assistants is still to come in a massive way.

**#OpenExpoTrends19**

# “ *Big Data and Artificial Intelligence at the service of personalization in the tourism industry.* ”

 [@alvarocarrillo](https://twitter.com/alvarocarrillo)

 [linkedin.com/in/alvarocarrillodealbornoz](https://www.linkedin.com/in/alvarocarrillodealbornoz)

**Álvaro Carrillo de Albornoz**  
General Director



The tourism sector is currently in a transition in which there is a certain maturity; it is a consolidated sector as an economic engine for Spain, and in that sense, we realize that **we are a reference for other countries**. Technology has been the key to enter this period of maturity, and, thanks to it, a world of growth possibilities has opened up.

The current trend is oriented and based on the management of data that we can have at the market level, customer data, behavior, competition, internal, etc., which is the so-called **Big Data**, where the key is **to apply Artificial Intelligence in order to predict future behaviors and therefore, to be able to customize our service according to this demand**.

AI has evolved so much that it allows us, through sophisticated algorithms, to cross the data provided by Big Data to polish the strategy to be carried out. The technology will allow us the immediacy for personalizing a service according to the needs of a client.

In the present, there are already Big Data and AI solutions that lead us to personalization. The future has to lead us to know how to implement it and take advantage of it because the important thing is not the technology, but the use we make of it.

**#OpenExpoTrends19**

“ *IoT, Analytics or Artificial Intelligence to offer personalized and sustainable mobility services.* ”



@EnriqueDiegoB



[linkedin.com/in/enrique-diego-bernardo-b16b0755](https://www.linkedin.com/in/enrique-diego-bernardo-b16b0755)

**Enrique Diego Bernardo**  
Director of Technology



EMT MADRID

Movements of the population towards the cities constitute a widespread tendency all over the world, allowing the **management of urban mobility to have a fundamental importance.**

In this sense, the Digital Transformation will allow us **to integrate the different modes of transportation (public and private)** and all mobility services, so that citizens will be provided with a door-to-door travel experience and without inconveniences; a ***Mobility as a Service*** (MaaS).

**This type of initiative allows the introduction of variables that improve the efficiency and sustainability of mobility,** contributing to a reduction of the use of private cars or to an increase in the level of occupancy of these. In this regard, technologies such as **IoT, Analytics or Artificial Intelligence will allow, in practice, to offer personalized and optimized travel services to citizens.** Administrations and companies will use the data and information generated to analyze and optimize management, creating a dynamic model of displacement in large cities.

Finally, open data and Open Source technologies will make possible the creation of an ecosystem of data and multiple applications that will guarantee the evolution and continuous improvement of systems and services, generating added value and new business opportunities.

**#OpenExpoTrends19**

# Conclusions

## Tourism & Transport Sector



Tourism and transport operators have multiplied thanks to open technologies. The sector has grown exponentially and the travel experience accompanied by technology is increasingly popular and valued by people. This year 2019, industry experts will seek to correspond to users with a more personalized offer and experiences that generate value.

In this sense, Big Data, Artificial Intelligence and the Internet of Things will be key tools for the development of new solutions. The management of data analysis, the intelligence of the machines and systems of the tour operators will be deepened and there will be an increasingly global and total connection of the travel experience from the beginning to the end.

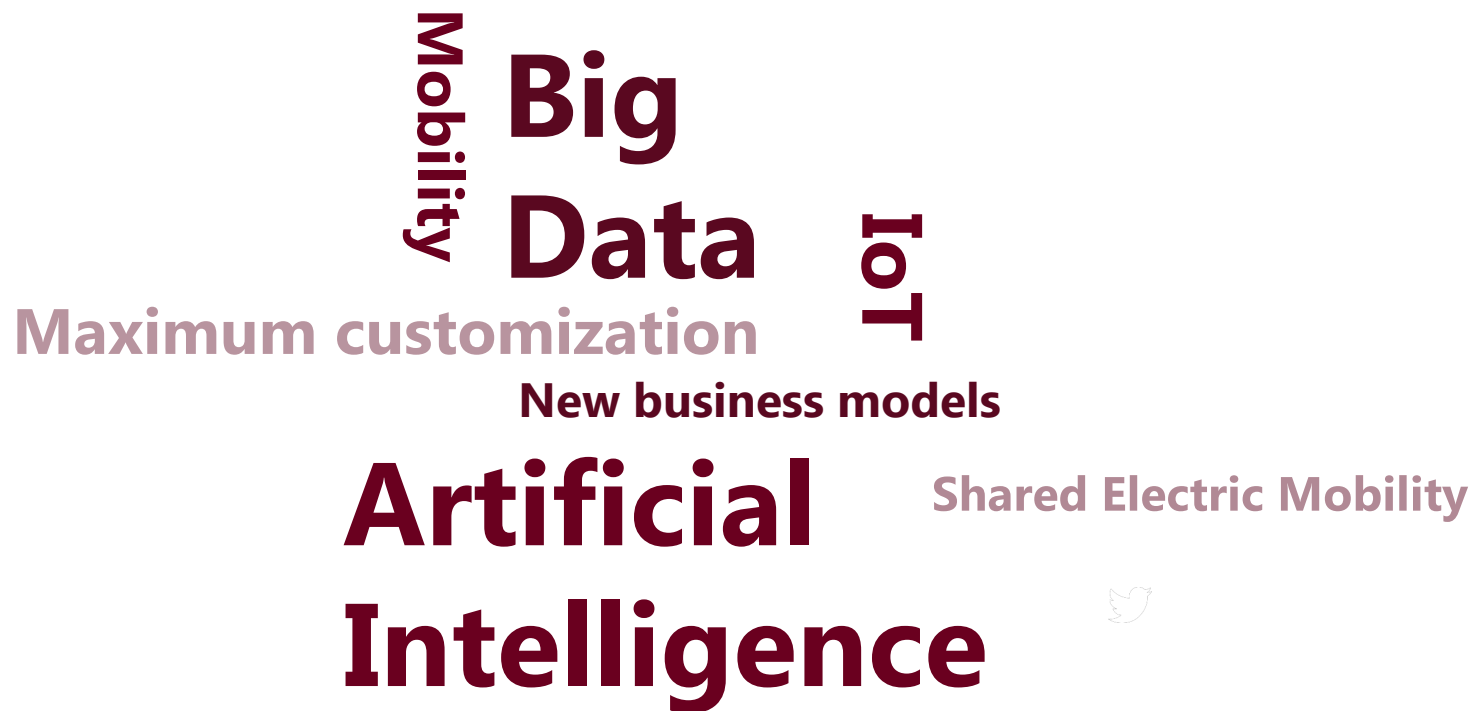
New business models will stand out in the sector's panorama and shared mobility solutions will continue to grow: bicycles, electric cars, etc. Other bets in the sector? More geolocation technologies and Customer Relationship Management (CRM).

On the other hand, the transport sector is in times of change in which burst into the carsharing and API's of mobility that break into the market. This is mainly due to the increasingly common use of technology to facilitate and improve people's life's, with the aim of creating more sustainable and smart cities through different new media and optimized communication systems.



# Conclusions

## Tourism & Transport Sector



#OpenExpoTrends19

# IoT & Smart Cities

Open Source platforms are the basis for the development and growth of smart cities, providing them with services including those based on the Internet of Things and available data. More and more initiatives are emerging in this sector from the public and private spheres to get much more connected cities, homes and people, with a higher life quality. Let's connect with the future of this interesting sector which will impact our lives in the coming years.

“ *Digital is changing our world - Digital will be faster, stronger and cheaper.* ”

 [@AhleFIWARE](https://twitter.com/AhleFIWARE)

 [linkedin.com/in/ahlefiware](https://www.linkedin.com/in/ahlefiware)

**Ulrich Ahle**  
Chief Executive Officer



The future is based on **shared intelligence**, whereby the city platform behaves as a facilitator of advanced governance systems. It hereby also becomes the center of an **innovative ecosystem in which companies can materialize their ideas into applications and services**, reach the market and do business much faster. Therefore the Joint Collaboration Program we started mid of November together with TMForum to define common **data models together with several front-runner cities will create a momentum in 2019.**

These standards will be key to breaking information silos, integrating all vertical systems within the city into **a horizontal platform for integrated city management**. Making a city truly “smart” means turning your city into a platform of growth for innovation, economic development, and well-being. By adopting common standards and information models, cities can achieve this transformation with minimum impact, merging forces to build **an ecosystem where they can connect and collaborate.**

FIWARE, as a platform promoted by the European Union, for the global development of Internet applications of the future, helps cities to avoid vendor lock-in and protect their investment. It provides access to context information describing what is going on in the city in right-time and on a large scale. These platforms integrate components that enable cities to process, analyze and publish historical and current information in order to achieve a better management of municipal services.

The use of these technologies helps companies to develop and test *Smart City* applications in one city, that can then be **easily adapted to other cities, getting more opportunities and lower costs.**

**#OpenExpoTrends19**

# “ The future of the geolocation sector in 2019

 @AlvaroAnguix

 [linkedin.com/in/alvaroanguix](https://www.linkedin.com/in/alvaroanguix)

Álvaro Anguix  
CEO



The future of geolocation will go through (1) **integration**: Geographic information systems are no longer isolated products. The integration of this type of solutions with any computer system is in general terms the trend that will mark the future of the sector.

(2) **The geolocation for everything**: The use of geolocation services is increasingly widespread and can be applied in different areas, both in private companies, in marketing or logistics; as in any level of public administration, having application in sectors such as agriculture, environment, infrastructure, municipal management, security, emergencies, and civil protection, etc. Everything happens at some time and somewhere. Each time we will see **more sectors adopting geomatics solutions in their technological platforms**.

And, (3) **predictive tools**: We will move from analyzing reality to predicting its future. The **combined use of data, techniques, and technologies of Big Data, Machine Learning and Geomatics** will be applied to detect patterns and determine the evolution of information, helping to optimize decision making.

Geomatics is becoming a key piece in any technological solution. The reality is manifested in the territory, so the management of any data will be more efficient if you take into account its geographical component. The rapid evolution of Free Software in the geolocation sector has meant that solutions such as the **gvSIG** suite have become a reference in a very short time in the connection of cities and things.

#OpenExpoTrends19

“ *FOSS so that the community can take advantage of the maximum potential of things.* ”

Darío Arteaga Vargas  
Software Developer

in [linkedin.com/in/dario-arteaga](https://www.linkedin.com/in/dario-arteaga)



Three aspects of Free and Open Source Software (FOSS) that will grow: (1) **Internet of Things** (IoT): The concept of interconnected hardware to streamline and automate tasks is attractive and the only way to achieve efficient integration is for companies to continue to open the transparency provided by Free Software. (2) **Containers**: The best way to ensure that the code runs consistently in different software environments, maximum modularization and performance. (3) **Progressive Web Applications** (AWP): Hybrids between native and web.

FOSS represents the principle that knowledge in its purest expression does not belong to anyone in particular, but to everyone, and that the problems and challenges that a person solves must be solved for all. Only then do new challenges arise and building on what has been learned, new goals are achieved. It is through this transparency that **rapid iterations are achieved, speeding up and distributing knowledge** to minimize learning curves.

Open technologies allow developing platforms that enable users to lend and rent almost anything they do not use every day to reduce the carbon footprint of the planet and **revolutionize the traditional way of using and consuming things**. After all, why is it necessary for a person to have everything when one thing can be used by many? The solution is based on the trends and principles of FOSS: that **the community can take advantage of the maximum potential of things**.

#OpenExpoTrends19

“ *The growth of co-working, co-living, co-housing will continue unstoppable...* ”

 [@nesofsky](https://twitter.com/nesofsky)

 [linkedin.com/in/javier-criado-nesofsky-237862](https://www.linkedin.com/in/javier-criado-nesofsky-237862)

**Javier Criado Nesofsky**  
CEO



In 2019 the growth of "co" will continue and it will accelerate the conceptualization of the value that the digital layer (Big Data, Artificial Intelligence, Virtual and Augmented Reality, etc.) will bring to the way we live, work and consume real estate goods and services. In this context, the opportunity to adapt or develop open source tools will be increasing. Those that best adapt to the needs of the value chain will gain weight progressively. Likewise, open data promoted openly and explicitly by the European Union will play an increasingly relevant role.

In the VUCA world (*Volatility, Uncertainty, Complexity, and Ambiguity*), where the shortening of the cycles will prevail and the prefix "co" and "open" will become relevant in the real estate business.

Since the year 2000 the professors, CK Prahalad and Venkat Ramaswamy, popularized the concept "co-creation" defining it as "the creation of value jointly between the company and the client in an open and bidirectional way". The concept has been extended and a whole series of new markets have emerged, gaining weight against traditional ones in the real estate world such as **co-working, co-living or co-housing**. It is precisely in the **hybridization of business models**, where the development of APIs with open resources have played a fundamental role in generating value and new growth opportunities for the sector.

**#OpenExpoTrends19**



# “ Open Source IoT - From the Cloud to the ground.

in [linkedin.com/in/jankoisorovic](https://www.linkedin.com/in/jankoisorovic)

**Janko Isidorovic**  
CEO and Co-founder



The main trends in 2019 will be interoperable and modular **IoT**; **Advanced analytics and automatic learning at the edge of the IoT**. All the basic components of a system of this type already exist and all are Open Source, what do you expect?

The Internet of Things is complex, it has many layers. Starting with devices, restricted by the CPU, RAM and battery power; then, the connectivity of the network, which is expensive, both in costs and in energy. The following is the edge of the IoT in which all the providers of different devices must be admitted, connection protocols, processors, and to standardize the data, to finally send them to the selected IoT Platform, local or in the Cloud.

Open source platforms can help create efficient IoT solutions. However, good care must be taken when selecting among dozens of open source projects. Support for IoT Edge is a must when creating vertical solutions. **The modular design with the capacity to support existing devices and easily add future protocols and applications to the edge it is something that will differentiate successful projects from the rest.**

Edge analytics emerges as one of the most important features in the IoT as it helps create systems which are more efficient and autonomous. The ability to make decisions on IoT edge even when the device is disconnected is what will keep the IoT moving forward.

But for the IoT to reach its full potential, **security can no longer be just a complement. Blockchain could be your perfect combination.** If used correctly, it could help protect the IoT and allow us to create markets where we can commercialize certified IoT data with knowledge of its origin.

**#OpenExpoTrends19**

“ *More advanced forms of IoT, such as RFID, will continue to grow in the coming years.* ”

 [@amanchenop](https://twitter.com/amanchenop)

 [linkedin.com/in/amanchenoplaza](https://www.linkedin.com/in/amanchenoplaza)

**Alicia Mancheño**  
Country Manager



**ALIZENT**  
ASSET INTERACTIVE

**More mature IoT technologies such as RFID offer a clearer return on investment and will continue to grow steadily in the coming years.** The change to active connections involves the entire organization in transversal projects in which the data extracted from the manufacturing processes, logistics, distribution channel and final consumers are analyzed with a unique vision and opportunities are identified for the different actors. **Only from data analytics and the global vision of the business, we will be able to find a ROI that justifies the massive deployment of IoT in the industry.**

The **NB-IoT** standard has been in the market for more than two years. Many of us expected this to be the trigger for wider uses of this technology due to its technical possibilities (penetration, battery consumption and number of concurrent devices in the same cell).

The consultants predicted an explosion of new driven connections; in addition, due to the low cost of electronics and connection. This year we have received the announcement that at least one network is available in all municipalities with more than 25,000 inhabitants and, finally, we have seen **the first commercial applications for consumption.**

Industrial sectors such as logistics and manufacturing are still waiting for the definite push: the electronics have not dropped enough and, above all, other elements, such as batteries, have not evolved in cost and performance at the same speed.

**#OpenExpoTrends19**

“ *The mobility of the 21st-century will be pay-per-use, digital, tailor-made and collaborative.* ”

 [@ferwakeup](https://twitter.com/ferwakeup)

 [linkedin.com/in/fernandomartinm](https://www.linkedin.com/in/fernandomartinm)

**Fernando Martín**  
Co-founder



The way to consume products and services today is through the prism of digitalization. **A universal digitalization that impacts all of us**, those who create products and services and those who consume them, both companies and the general public.

Be that as it may, **a scenario is created in which everyone can benefit, not only from direct customer feedback but also from their technical knowledge**, by opening parts of their platforms and generating the necessary interest so that users can co-create their own functionalities. In the case of mobility, there are already several platforms of shared mobility and we believe without a doubt that **the world of open APIs will revolutionize the way we have to consume the mobility services of today** and, above all, those that are to come. The software is eating the world and the APIs are eating the software.

The mobility of the 21st-century will be pay-per-use, digital, tailor-made and collaborative. Who better than the large community of people who consume digital products and who want to contribute to a more sustainable mobility, to enrich those APIs that will be the backbone of the mobility platforms of the future.

**#OpenExpoTrends19**

# “ Open Data as a pillar of disruption in the management of our cities.



@carlosolmos\_arq



[linkedin.com/in/carlosolmosarquitecto](https://www.linkedin.com/in/carlosolmosarquitecto)

**Carlos Olmos de Frutos**  
Founder & Managing Director



**The real estate sector as a global market moves 200 billion euros and also provides the space that makes up the daily scenario of our lives.** Today, we are immersed in a context of socio-demographic, technological and economic change, with an unprecedented disruptive potential in inefficient markets such as real estate.

Today, there are companies which are capable of channeling all existing information (**Open Data, Private Data, Web Data**) and act as a noise filter, enabling local knowledge, compared and real-time behavior in the city.

**This technology is already being applied in the most advanced cities of the world, enabling transversal analyzes** that have allowed to quantify the economic, social and urban impacts of the interventions, expediting the alliances of the different *Real Estate players*, allowing to revitalize obsolete and conflicting areas of the city. These cities also have mechanisms aimed at providing flexibility to the use of our land and buildings while respecting the urban balance of their immediate surroundings.

**Without a doubt, the data (Big Data and Open Data) is at the center of this qualitative leap in the management of our cities** and of public-private collaboration where B2B, B2G, and B2C business models interact and enhance each other.

#OpenExpoTrends19

“ *The ideas that will shape the cities of the future will be born from Open Source.* ”

 [@ivanpaezmora](https://twitter.com/ivanpaezmora)

 [linkedin.com/in/ipaez](https://linkedin.com/in/ipaez)

Iván Páez Mora  
Founder y CEO



What's next? Equally as important as the access to hardware and software that will configure the smart cities of tomorrow, is the access to intelligence that the system will have. Today we already see **Open Source platforms with Artificial Intelligence, in which the knowledge trained and acquired in one part of the world can be downloaded and implemented on the other side of the planet in a matter of seconds**, all this is based on open technologies, oriented to democratize access to human knowledge to achieve smarter societies, understanding that this should always be translated into more health, education, quality of life, resilience and longevity.

As in the world of software, Open Source has a fundamental role in the world of IoT & *Smart Cities*. Through this, **barriers to entry are eliminated so that new minds and actors can shape their ideas on how to face today's problems in order to have cities of the future**. To this, we must add the **Open Hardware**, which has a huge potential to enable designs of fundamental devices for the **Internet of Things**, which can be downloaded from anywhere in the world and adapted to local circumstances. These **devices can be printed in 3D**, very fashionable nowadays, and that has allowed democratizing the access to technology. From here, the new ideas that will shape the cities of the future will be born.

#OpenExpoTrends19

# “Sitting on the shoulders of giants.”

 @phpia

 [linkedin.com/in/daniel-pardo-corzo-7114375](https://www.linkedin.com/in/daniel-pardo-corzo-7114375)

**Daniel Pardo**  
CEO



idealista/data

We live very interesting times in the Open Source and Open Data world, **the Open project *Street Maps* will become something great as a source of data and tools for everyone**, it is a very exciting project. In addition, **the release of data from governments and the possibility of 3D visualizations will mark the trends of the real estate tools of the future.**

**“Sitting on the shoulders of giants”** Isaac Newton (1643-1727) wrote this phrase in a letter to Robert Hooke in which he mentioned his predecessors Copernicus, Galileo and Kepler alluding to the shoulders of his giants. The whole sentence was: *“If I have seen further, it is because I am sitting on the shoulders of giants.”*

Companies from the Internet world, such as *Idealista Data*, are built on the shoulders of giants. If it were not for a large amount of quality Free Software shared by the community, the times of product creation and development costs would have been considerably longer and high, perhaps making the continuity of the company unfeasible.

In our case, for example, with the aim of providing *online* tools that help decision making in the real estate sector, we rely on programming languages like Python and R for the analysis of the data; NGINX and PHP for the tools with which our clients interact and databases like Postgres and Clickhouse to manage georeferenced data and the millions of metrics that we manage.

**2019 is presented open and full of possibilities.**

**#OpenExpoTrends19**



# “ Development of Ecosystems with intelligent and reliable economic models.

 @NeloPG

 [linkedin.com/in/nelopuchades](https://www.linkedin.com/in/nelopuchades)

**Nelo Puchades Gascón**  
Solutions Architect



**The IoT forecast for the next few years continues to rise.** And, with the growth of *smart devices*, autonomous cars, the expansion of *SmartCities*, etc., the Open Source community and the Cloud will continue to be clear protagonists.

Since *Google* acquired *Nest* in 2014 until today, **the term IoT has been consolidated in companies, opening the door to innovation and new opportunities**, thanks to the ingestion of data from sensors and devices. This consolidation is reflected in the 2 major indicators of technological trends: Open Source and the Cloud. **Open Source projects around IoT grow continuously**, which allows fast connectivity with devices, also for professional or personal use. The main Cloud providers have enriched its services by incorporating IoT solutions, some of them supported by Open Source projects.

The next steps in the IoT will focus on the **security and Artificial Intelligence adoption**, to improve prevention and actions automation in a secure environment. The Open Source community will continue to help the *startups* creation, defining standards and influencing technological trends. Cloud providers will expand their services, empowering security and artificial intelligence.

Thanks to this new step we could automate actions smartly, and create *hubs* where “things” will request to be repaired or replaced, companies will be able to define their network of trust suppliers and service providers will be able to automatically answer calls from “things”. As a result, **IoT, the Open Source community and the Cloud will help evolve the ecosystem towards new smart and reliable economic models.**

**#OpenExpoTrends19**

# Conclusions

## IoT & Smart Cities

Big Data, Artificial Intelligence, Internet of Things and new models of ownership and shared use are the elements that -for the experts of the sector- will configure the smart cities of the future.

They expect in the panorama: service aggregators, APIs, Progressive Web Apps, containers, more geolocation tools, geomatics, Machine Learning, Virtual and Augmented Realities, 3D technology and a combined use of data to provide new solutions that will allow us to enjoy the spaces in another way, both inside and outside the home. From the intimate space to the urban, without ignoring an important push also in the industrial sector of these trends.

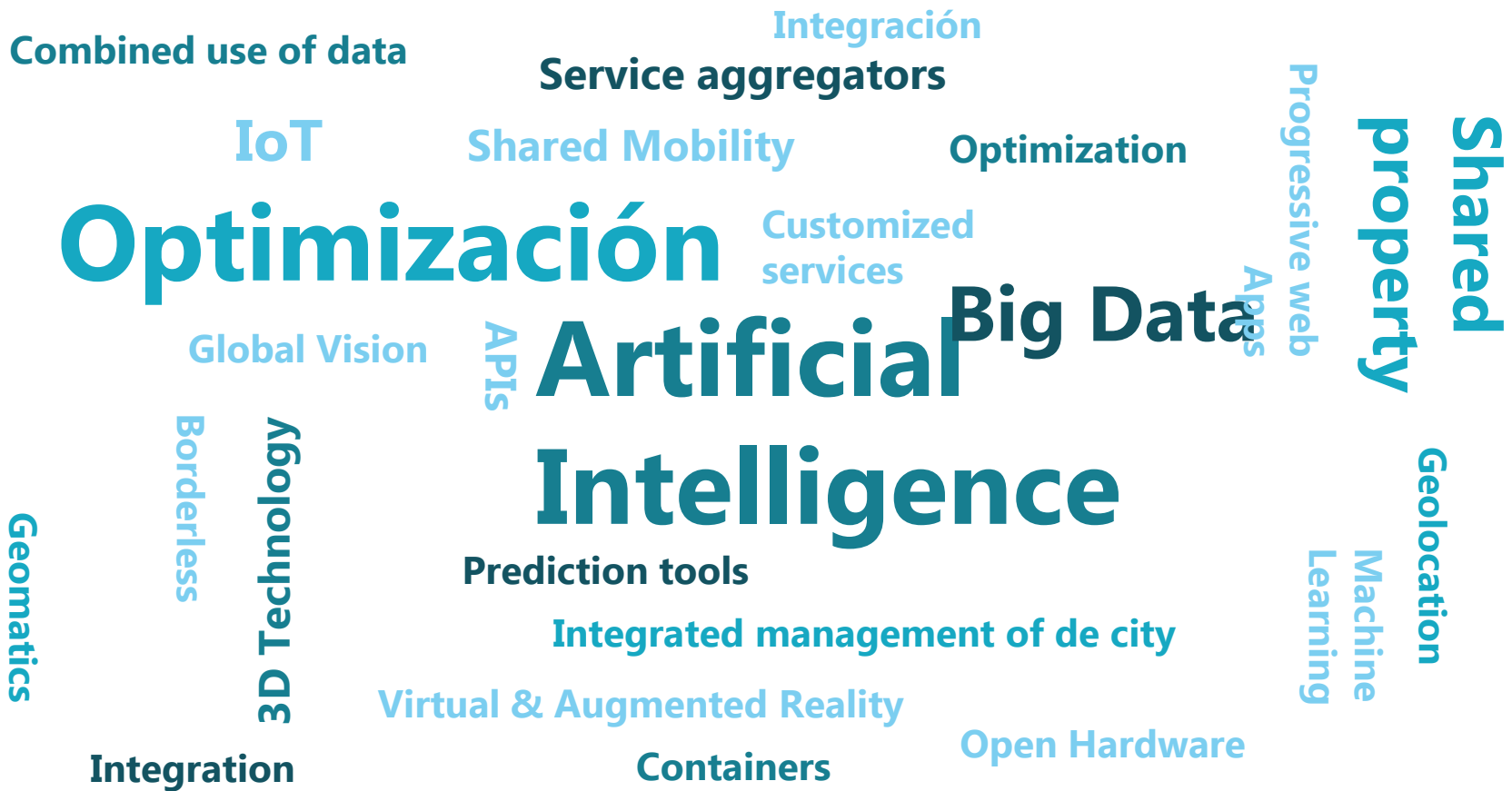
What is expected to achieve with this? On the one hand, provide tailored, personalized services for people; and, on the other, an integrated and much more global management of cities. The development of local applications and systems could provide global solutions ready to export and share with the world, which could be reused and help optimize resources.

Where will we see these trends concretely? Prediction tools, Open Hardware and new forms of ownership and sharing. The shared and connected mobility has reached the cities to stay hand in hand with co-housing, co-living, and apps to share the use of any kind of appliances.



# Conclusions

## IoT & Smart Cities



#OpenExpoTrends19

# Cybersecurity Open Source Software

---

We are increasingly connected and therefore we share more data to the world. In times when we are more vulnerable and targeted attacks increase, free and open software has a lot to say. It is the only open and flexible technology capable of: reacting effectively to computer risks; manage huge amounts of data at a lower cost; and to help us to design less corruptible systems. Let's see what will trending in this area.

# “ Proliferation of solutions that use complex algorithms directly from the Open Source code repositories in the cloud



@chemaalonso

**Chema Alonso**  
Miembro del Consejo Ejecutivo de Telefónica, hacker y  
experto en ciberseguridad



*Telefonica*

The distribution of **Free software & Open Source tools, which objective is to improve the cybersecurity of companies and the Internet, highlights the benefits of public contributions.** ElevenPaths has a philosophy open to innovation, sharing and collaboration among users with the aim of improving the security of systems, networks and applications today.

During the last years FOCA Open Source (<https://github.com/ElevenPaths/FOCA>) has positioned itself as a Footprinting and Fingerprinting tool that allows to collect and process a large amount of public information and detect leaks of information on the Internet due to the configurations and publications that are made from the companies themselves. FOCA is an Open Source tool that any user can use or improve thanks to a plugin system.

In ELevePaths in addition, we have made other Open Source tools with a more oriented approach to internal networks and pentesting. Tools such as UAC-A- Mola or iBombShell make the detection, investigation and mitigation part better due to their modern attack and detection techniques.

UAC-A-Mola is a framework (<https://github.com/ElevenPaths/uac-a-mola>) that allows security researches to investigate new UAC

iBombShell (<https://github.com/ElevenPaths/ibombshell>) is a dynamic pentesting Shell. It offers pentesting features anywhere, even when tools are not available on the computer, thanks to the use of Powershell. **As in the previous cases, we have the possibility for any user to collaborate with knowledge by adding functions through its Github repository.**

**It is in our DNA and we firmly believe that cybersecurity must rely on the tools, techniques and evolutions that are carried out in the Open Source Free Software world.**

**#OpenExpoTrends19**

# “ The challenge of cybersecurity: protecting IoT devices.

 [@josepalbors](https://twitter.com/josepalbors)

 [linkedin.com/in/josepalborsgimenez](https://www.linkedin.com/in/josepalborsgimenez)

**Josep Albors**  
Head of Research and Awareness



Review the Open Source systems to find possible security flaws and correct them becomes relevant. Researchers and hackers strive every day to make the Internet and these devices a safer place, but companies must also be forced to comply with minimum security standards. If we disregard the warnings, **2019 will again be plagued by attacks on IoT devices that nobody cares to protect**, and we will see again how attack vectors, which began to be used more than a decade ago, are still effective due to the lack of awareness of the users.

**The cybersecurity landscape has been constantly facing new challenges and the future in the short and medium term is no exception.** Currently, billions of devices are exposed to attacks that take advantage of some of their multiple vulnerabilities. However, we have time to mitigate the scope of most of these attacks if we get that some basic security measures are applied.

The geopolitical interests of several nations will make us observe threats with very specific objectives and that can cause a lot of damage with little effort; something within reach of any country or organization with the possibility of investing in the development of these threats. **Attacks aimed at obtaining geopolitical advantages or causing damage to critical infrastructures do not seem to stop happening.**

**The unauthorized mining of cryptocurrencies has turned out to be a vein for criminals and will continue to be a trend next year as well.**

**#OpenExpoTrends19**



# “ Open Source, a faithful ally of cybersecurity on the road to Digital Transformation .

Patricia Arias Melero  
ITC Security Coordinator



Some of the cyber threats that may have special relevance throughout 2019 are:

- **"Human Kits"**: No matter how much organizations maintain an optimum level of maturity in terms of cybersecurity, the human factor will always be the weaker "link" in companies. An adequate level of training, awareness, and control is fundamental to reduce the level of risk in case of potential incidents.
- **Ransomware and DDOs**: The sophistication and the impact that this type of *Malware* can produce means that, predictably, there will be **an increase in attacks directed against specific targets**.
- **IoT and Artificial Intelligence**: The availability of attack tools to devices connected to the Internet will encourage companies to **adopt the usage of automation** to combat them.

The process of digital transformation, in which organizations are immersed to reach more customers and provide new and better services, implies a sense of loss of control in what confidential information protection is concerned, and the potential threats that may accompany this process of evolution. The contribution offered by Open Source in the field of Cybersecurity is particularly relevant when it comes to generating **a collaboration and a real and active trust between the organizations that really want to face in an effective way the threats to which they are exposed in the present time**. The usefulness and effectiveness of Open Source tools allow that, although the risk does not disappear, it can be fought as a common enemy.

#OpenExpoTrends19

# “ A need in the sector: Open Source vulnerability detection applications.

**Javier Blanco Rubio**  
Academic Officer

in [linkedin.com/in/javierblancosoy](https://www.linkedin.com/in/javierblancosoy)



The world of Cybersecurity grows daily. Thanks to Open Source, thousands of future professionals can be trained with the high capacities required by this sector of enormous growth.

While it is true that proprietary applications increasingly limit the growth that this field requires; according to statistics, **the number of experts and amateurs is increasing which provide great value through Free solutions**, without them this sector would be dead, affecting the security and integrity of the rest of business sectors.

Being totally understandable that the brands are remunerated for the support to companies, these, if they continue down the road of producing limited trial versions are bound to become extinct. All the great pentesters at present, use Open Source applications such as the *framework* of *MetaSploit* for exploitation or *NMAP* to scan ports, that at this moment they do not have a rival due to their enormous power and adaptability, as it is happening in this field with different Linux distributions adapted to the sector. But, undoubtedly, the greater lack is also a great need, so I hope it is a trend for 2019 in the sector: **more competitive open source vulnerability detection applications.**

There is no training where you do not see how the students marvel at the power and ease of the use of open applications. Seeing the trend of the future technicians is very clear that proprietary applications must adapt to the changes and trends of the current times or they will eventually disappear.

**#OpenExpoTrends19**

“ *Do not look at technology with suspicion and educate users about digital security.* ”

 [@yocomu](https://twitter.com/yocomu)

 [linkedin.com/in/yolandacorrallm](https://www.linkedin.com/in/yolandacorrallm)

**Yolanda Corral**  
Journalist and Educator



**We are experiencing the turning point for the majority implementation of open technologies and the trident Internet of Things (IoT), Artificial Intelligence (AI) and Big Data will continue to be targeted.** And if we talk about Cybersecurity; *ransomware, crypto jacking*, and sextortion will remain in the focus of cybercriminals in 2019 as some of the biggest threats.

We are living through a period of constant changes in which technology advances every day. To bet on advancing by your side is a necessity. IoT, AI, Robotics, Big Data ... gather strength every day and require for our part a strong capacity to adapt to change, preparation for constant learning throughout life, have a predisposition for collaborative, multidisciplinary work and by projects and, of course, do not look at technology with suspicion, but as an opportunity for evolution. Here the **Open Source can be the key to facilitate open solutions endorsed by a large community.**

If there is a common link to all these trends, it is that **Cybersecurity should be present from the design** to avoid greater evils. Security threats and attacks computer systems are impossible to eradicate because 100% security does not exist, but if they do things in the right way from the start, many of these evils could be mitigated. The Cybersecurity is everyone's issue, thus it is important to insist on **the necessary education in the digital security of the users** as something essential.

**#OpenExpoTrends19**

# “ Open Source: the key to solving digital analysis.

**Marina Egea**

Director of the Indra's Master in Cybersecurity



New trends like **Digital Forensics as-a-Service (DFaaS)** are promising. DFaaS applies to Cloud computing to empower digital forensics, centralizing storage and processing, balancing the sharing of resources and allowing **controlled access to evidence from any location**. Open Source digital forensics distributions have the opportunity to play a key role in this approach making digital forensics affordable to a higher number of companies in the market, e.g., SMEs.

Digital Forensics can be defined as the collection of techniques and tools used to identify, gather and analyze digital evidence, whose integrity must also be preserved. This definition originally applied only to computer artifacts, but more recently, the heterogeneity of systems and forensics techniques required has caused the discipline to break down into five different main branches: computer, database, network, mobile, and live forensics.

Since 2011 new types of systems as the Cloud and Big Data, are challenging digital forensics analysts' skills and toolsets. These are cloud computing and Big Data systems holding distributedly, massive data amounts for which standardized methods of analysis are not established; smart devices at the beginning of the IoT era (smart homes, smart cars, etc.); or popularization of drones which usually store information in SD cards using proprietary formats (e.g., location history, flight's route, owner's name, sensors data, images, and videos, etc.)

In this setting, the main problems are complexity and volume; both caused by the growing size of digital evidence which requires bigger and more powerful processing and storage systems. More concretely, complexity refers to the problem caused by large raw data size at acquisition and storage time (e.g., imaging a MacMini may take a weekend using a standard featured laptop). Volume refers to the lack of resources when processing large images at the analysis phase (e.g., acquire and store a server image when the hypothesis to investigate is not clear).

**#OpenExpoTrends19**

# “ Training in security, validations and independent audits: great challenges of the cybersecurity sector.

 @ylevalle

 [linkedin.com/in/ylevalle](https://www.linkedin.com/in/ylevalle)

**Yamila Levalle**  
Security Researcher



**The stronger trends for 2019 are: *Cryptojacking and Ransomware*; breaches related to misconfigured Cloud instances; *HTTPS Phishing*.**

Security of Information is an area in constant evolution and with many branches of specialization, which usually requires a large number of tools to meet the tasks and needs of the sector. For this reason, the specialized *Infosec* community is very active in the Open Source world, developing softwares generally dedicated to specific market niches such as professionals and security enthusiasts. Currently, there is an almost innumerable amount of tools specifically designed to face the security challenges we confront, categorized by area of action: Scanning of Ports and Vulnerabilities, Sniffing and Spoofing, Exploitation of Vulnerabilities, IDS, File Encryption, VPN, Forensic Analysis, Linux Distributions for Forensic Analysis, Linux Distributions of Security and Privacy, Password Attacks, SIEMS and Log Analyzers.

A common question arises about the issue of security, when talking about Open Source: Is it safer than its counterpart, the proprietary software? **The level of security offered by software does not depend on whether the software is closed or open.** There are different factors involved that must be considered, such as the inclusion of security throughout the SDLC (*Software Development Life Cycle*), security training for developers, methodologies and standards used, inclusion of security checks and validations which are appropriate in the implementation of the *software*, revisions of code and independent third-party audit.

**#OpenExpoTrends19**

# “ More investment in Cybersecurity by design: more awareness and training...”

 [@EduvigisOrtiz](https://twitter.com/EduvigisOrtiz)

 [linkedin.com/in/eduvigisortizmoronta](https://www.linkedin.com/in/eduvigisortizmoronta)

**Eduvigis Ortiz Moronta**  
Sales, Alliances & Marketing Director



**In 2019 the necessity for the companies to count on a solid Cybersecurity strategy will keep growing.** The economic consequences and reputational issues associated with cyber risk are growing exponentially. The digital transformation we face in personal life and in business expedites this need. The concept of Cybersecurity by design in organizations has not been widespread yet, and it is still not clear that betting on innovation and quality means betting on it.

Numerous studies indicate that the companies are increasing their spending on Cybersecurity year by year, although not at the same rate as vulnerabilities are growing. The investment is allocated more to solve cybersecurity incidents than to prevent them. **The trend is to focus on developing a Cybersecurity by design culture. Where Cybersecurity policies are present from the very beginning of the design and conception of services, applications and software development, and not as a later addition.**

**It will be very relevant for organizations to implement secure development and threat modelling, before starting the development of any application or service.** Also, it is key to reinforce Cloud security in order to protect and to control the access to services, applications and data. It is important not to delegate our own responsibility on our Cloud services provider, knowing that Cybersecurity is a share responsibility with them, we should work together.

Security Analytics services are also a clear trend, where organizations will combine the elements of Cybersecurity and IoT by using all available technologies (*Machine Learning, AI, Threat Intelligence*), and in that way to have **a global vision predicting and facing cyber risks in a better way.** All this must be done without ignoring the importance of raising awareness among employees, in that way they do not continue to be the weakest link in the cybersecurity efforts to protect the organizations.

#OpenExpoTrends19



# “ *Crime as a service, risk management and robotics: three key trends in 2019.* ”

**Alberto Sobrino**

Senior Consultant in Cybersecurity

**in** [linkedin.com/in/alberto-sobrino-alfonso-760180b8](https://www.linkedin.com/in/alberto-sobrino-alfonso-760180b8)



Each year cybersecurity measures increase and the awareness of the companies and citizens is greater each day. In this sense, I believe **cyber-criminality tendencies will increase, and with new techniques, tools, and modes of action**, cyber-aggressors are being more cautious when they establish their modus operandi and are more precise achieving their objectives.

The analysis of the minds and behaviors of cybercriminals will gain a very important relevance, understanding the reasons that lead criminals to carry out such acts, and reaching one more step in the continuous evolution of Cybersecurity. Therefore, **new roles will emerge in companies that manage to analyze cybercriminals, allowing companies and organizations to anticipate future cyber-attacks.**

**This will allow companies and organizations to have a greater connection and communication between them to face any cyber-attack.** However, the great challenge continues to be the improvement, solidity, and robustness of cybersecurity, based on the establishment of social awareness, improving in this way the security of all. A gradual incorporation of these new roles in the sector will help to develop and consolidate, little by little, better cybersecurity strategies, as well as the evolution of it.

**#OpenExpoTrends19**

# “ New business models and companies; and new security problems.

 @jtseces

 [linkedin.com/in/javitallon](https://www.linkedin.com/in/javitallon)

**Javier Tallón**  
Chief Operations Officer & Co-Founder



**We will see in 2019: The Cybersecurity certification as an agent of economic change; greater control of the supply chain and package managers; formal contribution to Open Source projects through vulnerability analysis and code review.**

Contrary to what many people predicted years ago, the development of Open Source is assuming **an unprecedented change for the global economy**, allowing the creation of companies and products based on Free Software.

In the field of Cybersecurity certification, it is noteworthy how the FIPS 140-2 certification of the *OpenSSL* cryptographic suite has allowed **the creation of multiple proprietary products that have been certified under a rebranding scenario**. This effort of the FLOSS community has made possible the creation of new business models and companies.

On the other hand, **new security problems are emerging**, including: First, the derivatives of trust in the supply chain, the increasingly widespread use of package managers by developers, where third-party components (more than 90% of the code in a modern *App*) are updated from unverified sources, allowing the introduction of bugs simultaneously in millions of developments. And, on the other hand, the evidence that Open Source does not mean revised security. Vulnerabilities that have remained unnoticed for more than 25 years such as *ShellShock* have completely dismantled the myth "*given enough eyeballs, all bugs are shallow*". **We need independent (and reliable) teams that review the code** of each significant project and control the code distributed by the package managers.

**#OpenExpoTrends19**

# Conclusions Cybersecurity

The tendency to hyperconnectivity, as expected, creates new fronts in the world of cybersecurity. While many professionals talk about cyberwar, geopolitical attacks, new attacks oriented to the Internet of Things, insecurity, others see a great opportunity in the sector for prevention and even to improve the security of society.

It is not the moment to ignore the threats but perhaps to stop reacting a posteriori and to approach them in a much more proactive way from the beginning. Those who defend computer security, see these risks as challenges and bet to promote a counter-trend (or a counterattack): Cybersecurity from the design. At the business and institutional level, incorporating into the design thinking of new products/services the possible security risks of a system before its creation, making the necessary tests and having a broad support community to do so, these are key pieces to prevent any attack.

On the other hand, although the use of artificial intelligence is increasing in this area, experts see that it is difficult, in the short term, that machines can replace the ability to discriminate and interpret certain data which even human intelligence knows how best to manage in order to avoid errors in Cybersecurity.

In 2019 the panorama promises innovations related to Big Data, automatization, new certifications, Artificial Intelligence, IoT, robotics, security analytics; and all about two fundamental pillars: a global vision of risk and the awareness of users so they can make a more secure management of programs, applications, and devices.



# Conclusions Cybersecurity



#OpenExpoTrends19



# Open Source & Cloud Computing

---

We need to access applications at any time, from any place and device, in a reliable and secure way. The answer for this is Cloud Computing. The combination between Open Source and the Cloud offers the winner formula for the deployment of technological solutions and open and flexible platforms because, for its part, Open Source allows companies to deploy and customize developments. Open Source is being decisive in the migration of companies to new management models and services. Let's see the trends of the sector.

# “ Open Source in the digitalisation of today's society.



[twitter.com/arsys](https://twitter.com/arsys)



[linkedin.com/company/arsys-internet/](https://linkedin.com/company/arsys-internet/)

**José María Baquero**  
Desarrollador Web de Arsys



Nobody can deny the importance of **the role that Open Source plays in the digitalisation of today's society.**

To give just one example, **67% of the sites on the Web use an Open Source content manager...** And this trend will unstopably continue in 2019. Although it is true that free software **still have room for improvement in three closely related directions: User Experience, Lightness and Robustness.**

The best example of this is the new version of WordPress. Although not everyone is happy, the most widespread and used content manager for any type of web project has worked on these three fronts and, if it continues, will gain ground against its competitors.

In parallel, this new year is approaching trends where Open Source still has a lot to say: **Progressive Web Apps and Web Components will continue to consolidate; Microservices architecture will be the key that opens the door to the implementation of DevOps in organizations and Open Source languages and frameworks such as Laravel and NodeJS will continue to emerge in the developers' toolbox.**

Lastly, another trend that we will see much in 2019 and in **which Open Source has a lot to contribute: the generation of static sites.** Although it sounds old-fashioned, the number of pages built on the concept of static files is increasing notably but they take 100% advantage of current technologies to be faster and more robust than the platforms based on BBDD. That is to say: **more secure, lighter and with better usability.**

**#OpenExpoTrends19**



# “ Open Source will continue to drive the cloud.”

 [@IgnasiBarrera](https://twitter.com/IgnasiBarrera)

 [linkedin.com/in/ignasibarrera](https://www.linkedin.com/in/ignasibarrera)

**Ignasi Barrera**  
Senior Cloud Engineer



**In the last 10 years, cloud computing has revolutionized the way we manage and use infrastructure.** With the increase of new ways of consuming software, such as social networks, which require a great capacity for data processing, streaming music and video platforms that pushed the boundaries of what we call "web scale", or simply the massive use of smartphones and tablets, we have seen it evolve rapidly.

From on-premise environments to infrastructure as a service (IaaS), software-defined networking (SDN), and platform as a service (PaaS), it seems that nowadays the hype train is driven by serverless and service mesh technologies.

Each of these steps tries to abstract the complexity of the lower level layers so that developers and administrators can concentrate on creating applications, operating services, and adding value. But this evolution would not have been possible in such a short time without Open Source being at its core.

Large companies began publishing articles on internal technology, open sourcing projects, and collaborating with other actors. Even when they compete in the same space, it is now common to see them contribute to shared Open Source projects and become part of their communities, because they have realized that working together is the best way to create the technology of tomorrow. **The Open Source movement strives to achieve a collaborative world, and we will continue to see that more and more companies understand it and consider it as one of the fundamental values of their culture.**

**#OpenExpoTrends19**

“ *Benefits of the Cloud: New business, new capabilities, and the same financial resources.* ”

 @scantala

 [linkedin.com/in/santiagocantalapiedra](https://www.linkedin.com/in/santiagocantalapiedra)

**Santiago Cantalapiedra Alcoceba**  
Entrepreneur in series. Mentor of new businesses



Every second appears a news *startups* based in new technologies like IoT, Blockchain or Cybersecurity process or similar. Many of them use open source in their new services. If we look back in the past, startups started to use SaaS but now, they tend to configure their own infrastructure using IaaS or PaaS. This growth is possible because **is cheaper, easier and is more comfortable to use this infrastructure using cloud computing.**

Main tendencies in this process are: **Partners are slashing the price in order to add new types of customers.** When Cloud computing platforms started to be known by new customers, they had to plan how to solve doubts or problems that customers found during the first steps. Once these platforms validated this process, they started testing to expand these functionalities until *startups* and new business have found these possibilities to deploy complex systems which require many productive capacities. At the same time, there is an **increase in processing capabilities while keeping the same contract and same price.** If we continue applying the famous *Moore law*, we can use new capabilities using the same financial resources.

This process will continue for many more years. There are many pre-built components which reduce time-to-market, development and allow delegate complex process. **Infrastructures in the Cloud began to implement this type of tools and will continue to do so because their customers appreciate them.**

#OpenExpoTrends19

“ *We live a 'sweet' moment in the expansion of CRM in Spanish companies.* ”

 @jcconde

 [linkedin.com/in/jcconde](https://www.linkedin.com/in/jcconde)

**Juan Carlos Conde**  
Project Manager CRM



UNIVERSIDAD  
INTERNACIONAL  
DE LA RIOJA **unir**

We currently live a **'sweet' moment in the expansion of CRM in Spanish companies**. We have reached that point of acceptance of a reality: 'If you want to reach your customers, you must know them and you must put the means to reach them'.

In parallel, we live a confluence of technologies that, although they have not yet come together and interact, I think that during this next year 2019 we will see how they approach and these are:

- **Artificial intelligence.**
- **Big Data**
- **IoT**

While it is true that the first two are already a reality, **we must not lose sight of what a CRM that integrates these three trends could be able to do**. However, there is another trend that also (finally!) appears little by little: The customer experience cannot be the same for everyone, **you have to personalize it**, and the above-mentioned technologies are the key to it. It has already been assumed that CRM is a strategy, now it is necessary to assume that on the other side of the product and the CRM strategy is the most important part: THE CLIENT.

And that's where the FOSS sector is still somewhat outdated, that's the 'gap of the niche' that different projects must fill, especially the three most powerful: *suiteCRM*, *vTiger*, and *Odoo*. There is nothing done, everything is still to be done. Cheer up!

**#OpenExpoTrends19**

“ *The IT and Cloud worlds are destined to meet, but this meeting will not be possible without security.* ”

 [@security\\_inside](https://twitter.com/@security_inside)

 [linkedin.com/in/tobal](https://www.linkedin.com/in/tobal)

**Cristóbal Espinosa Morente**  
Cloud & Security Manager



The Open Source projects are representing (and everything indicates that they will continue to do so) **a more than important change in the IT world and, increasingly, in the Cloud and Security environments.**

Certain Open Source projects allow to cut development, production or commercialization times, at the same time that they can lower costs in licenses. The existence of open projects of proven quality with fabulous functionalities and the freedom offered by the ability to modify them to measure **opens a range of possibilities in the business world.**

This does not mean that all Open Source projects, simply because they are, meet the quality and security needs that are required. In a world that is inevitably aimed to the Cloud, and that will need the best of our security efforts in the face of the relentless rise of attacks over the Internet, **any software element that is used in our environment, must inevitably pass through certain security processes.**

In that sense, it is important to conveniently choose the Open Source project with which you work. Examining who and how it has been made, as well as the support you may have or the ability we have to give it to you, will be essential to get it right. There are more and more interesting projects in the Cloud & Security world, above all, those that allow automating **tasks.** With respect to 2019, we will have to see what lies ahead in the **consolidation of three current areas: Cloud, Security and also the unstoppable IoT.**

**#OpenExpoTrends19**

# “ The road to a paperless office.

 @jhierrot

 [linkedin.com/in/joaquín-hierro-b2378ab/?originalSubdomain=es](https://www.linkedin.com/in/joaquín-hierro-b2378ab/?originalSubdomain=es)

**Joaquín Hierro**

Technical Architect in Document Management



Nowadays, the world of the ECM continues to be maintained with a slow expansion. It seems that the goal of the "paperless office" is still far away, although **more and more entities realize that keeping documents on paper or in a folder (either in the network or in the Cloud) is very expensive and slows down operations.**

In the field of Open Source DMS, this year there is a certain Alfresco standstill, offset by a reinforcement of other products, especially *Nuxeo*, as well as, to a lesser extent, *OpenKM* and *OpenProdoc*.

Although it is always very difficult to make forecasts, for the next year **it is possible that will appear some product that uses as *Record Manager* technology some variant of Blockchain.** Albeit for a while, it has been considered using this technology to formalize operations and ensure its inviolability, it is not yet "industrialized".

**It is also possible that the automatic classification of unstructured documents based on various technologies in the field of AI and *Machine Learning* will begin to spread.** There are already solutions based on various technologies, such as *Athento* or, in a limited way for structured documents (forms), in *OpenKM*. However, both this need and **the use of various AI techniques are becoming a function that is beginning to be considered "standard"**, which is why it is likely to gradually include more and more products. Finally, there is an expansion of the use of document managers in *Docker*.

**#OpenExpoTrends19**

“ *Free and Open Software is the engine of the Cloud. The road will be decided by us.* ”

**Jorge Hidalgo**  
Senior Technology Architect

in [linkedin.com/in/deors](https://www.linkedin.com/in/deors)



Innovation is open, and we see that models based on Free Software are feeding back and are accelerators of progress. **How will the Cloud be in 2019 ... or within 10 years? I would only dare to say: open and free. The rest, we will decide.**

The success of Cloud computing models lies in three different aspects and trends: (1) **The democratization of access to the best computer systems**; (2) **the ease of access and use**; and (3) **the use of Free and Open Software**.

We no longer speak of the Cloud as something of the future, but we have assumed it as a palpable reality for materializing the needs of businesses and people. And, here, it is necessary to highlight the use of Free and Open Software. The Cloud would not be as it is: accessible, easy and open; if it were not based on open sources such as *Linux*, as well as on the tools and libraries that make our lives easier by developing and operating Cloud systems.

All this is not in any way incompatible with private investment, which has been fundamental in this development. **There is a growing trend that connects private investment and the development of Free Software and its use in services and products of investors.** IBM, Red Hat, Oracle or Intel, among many others, contribute to the *Linux kernel*; *Google* releasing *Kubernetes*; *Microsoft* acquiring *GitHub* or very recently *IBM* acquiring *Red Hat*, and even independent technology companies such as *Accenture* with Open Source projects such as *RIG* or *ADOP*, accessible to all, are setting the standard.

#OpenExpoTrends19



# “ Open technologies and the consolidation of fundamental elements for infrastructure services.

 @cletomartin

 [linkedin.com/in/cleto](https://www.linkedin.com/in/cleto)

**Cleto Martín Angelina**  
Infrastructure Engineer / Debian Developer



Free Software and Open Source technologies have been key to the development of the infrastructure that supports a large part of the current Cloud platforms. The fact of having to deploy and maintain services that offer 24/7 functionality with high availability on a large scale is a very complex problem. Besides, it is necessary to take into account aspects such as **the security of the infrastructure, which is critical if the nodes form a public Cloud, and services for monitoring logs, metrics, alerts, etc.**

Free Software and Open Source communities have produced key components in recent years that provide solutions to each of the challenges posed by these systems, and that **will be consolidated next year as fundamental elements for infrastructure services.** Infrastructure as a code (IaC), with tools such as *Ansible*, *Chef*, or *Terraform*, which is crucial for the automation of the deployment and securitization of infrastructure nodes. At a higher level, the deployment of applications using Docker and Kubernetes that allow such high availability required by many services. And, to monitor and analyze the behavior of the infrastructure *ElasticSearch*, *Logstash*, and *Kibana* (ELK stack), or *SysDig* at the container level, or use *Consul* for coordination and monitoring of node status.

These are just a few of the possible alternatives that exist today for problems that arise in the field of infrastructure. In addition to the ethical component, solutions based on **Free Software allow us to adapt more quickly to changes, apply specific solutions to our problems and at the same time collaborate with more people to continuously improve.**

**#OpenExpoTrends19**

# “ The freedom to choose an alternative Cloud.

 [@antonio\\_pizarro](https://twitter.com/antonio_pizarro)

 [linkedin.com/in/antoniopizarroovh](https://www.linkedin.com/in/antoniopizarroovh)

**Antonio Pizarro**  
Head of Cloud Sales EMEA



Cloud Computing is the foundation on which the future and present of businesses is built. The Cloud infrastructure is the one that gives both technological and security support to the companies and allow them to innovate and maximize the use of technologies such as **Big Data, Artificial Intelligence or Machine Learning**.

Companies are free to choose **what kind of Cloud they want: public, private or hybrid**. Cloud providers should respect and make businesses' choices easier, without forcing them to work in closed proprietary systems.

As Octave Klaba, founder of OVH, points out, *"freedom is a treasure"* and we are convinced that we must protect and defend it.

Freedom, moreover, is intimately linked to **data, which are changing companies and society**. They are the great revolution of our century and they reside in this environment of Cloud, the platform that allows companies to analyze, manage and save all this information for later use. Therefore, the Cloud has to offer itself **without any ties, with reversible and interoperable solutions, and at clear, affordable and totally predictable prices**.

That is the objective of open platforms: to liberate. A philosophy that should be applied in all the areas over the technology innovation, so the principle «Innovation for Freedom» can be fulfilled.

**#OpenExpoTrends19**

“ *Open Source CRM solutions continue to grow and expand their functions.* ”

Ángel Ríos Salmerón  
Director of Technology and Systems

in [linkedin.com/in/ángel-rios-salmerón-176800b](https://www.linkedin.com/in/ángel-rios-salmerón-176800b)



In 2019: CRM (*Customer Relationship Management*) solutions **extend functionalities towards emotional intelligence and purchase analysis**; not only CRMs manage sales, **but the range of possibilities is also extended to new projects, Big Data, and heatmaps and active listening will give the right time to launch the sales campaigns.**

CRMs have grown considerably in recent years and adapt to any type of company, independently by sectors and their peculiarities.

There are two main modalities in this type of solutions: payment and Open Source. The payment method involves a fundamental problem: the cost, very high for SMEs.

The functionalities of Open Source CRM can be easily adapted to the needs. Also, being a web, they work on any platform. However, optimize its functioning and performance, requires some investment: avoid the inconvenience of shared *hosting*, maintenance costs, among others. The investment to be made must be affordable for SMEs, without losing professional features. An optimal SME needs certain tools, which, although usually reserved for paid versions, are present in some Open Source CRMs. Among them, such basic characteristics as the **creation of reports, customer portal, business analysis, interaction with the client.** An Open Source CRM, despite its low cost, is not necessarily worse than a paid one. The challenge is to make a good choice.

#OpenExpoTrends19

“ *The Cloud will continue to be the preferred location for lodging new technological solutions.* ”

**Eduardo Sojo Tovar**  
Consultor Senior

in [linkedin.com/in/eduso](https://www.linkedin.com/in/eduso)



The financial sector, with the continuous support of technology, has been evolving rapidly and constantly, allowing the transformation of traditional processes to **new forms of information management and consumption**. This transformation goes hand in hand with Open Source standards and technologies that promote collaborative work and promotion of components, processes and proven frameworks that have changed the way in which this sector operates. **Some trends that will continue to mark this transformation are the Blockchain, initiatives that integrate technologies and technological standards of the sector and native solutions of the Cloud.**

Blockchain has become a technological base that has changed the paradigm of use, consumption, and effectiveness of information. Because of its concept, the Cloud will continue to provide **tools for these new business models and the evolution of digital financial operations.**

Initiatives such as *The Fintech Open Source Foundation* will continue to gain ground, facilitating the growth of new financial platforms based on open standards and collaborative programs that will set trends in areas such as **communication protocols, systems interoperability, standardized workflows, among others.**

Based on the needs for flexible growth and adjusted to the pace of operations, **the Cloud will continue to be the preferred location for lodging new technological solutions.**

**#OpenExpoTrends19**

# Conclusions Cloud Computing



The possibility of offering computer services through a network will continue to mature and consolidate in more and more public and private organizations. Experts agree that the bet this year is aimed at the hybrid cloud, capable of combining security and control of the private, with the flexibility and scalability of the public sector.

We will see more "Platform as a Service" and containers. Last year, a report from Infoholic showed that, by then, almost 82% of companies already had a hybrid cloud strategy and more than 60% wanted to implement it before 2020. The year 2019 will undoubtedly be a year of consolidation, driven by the urgent need to offer open infrastructures for constant improvement and changes generated from inside and from outside the company.

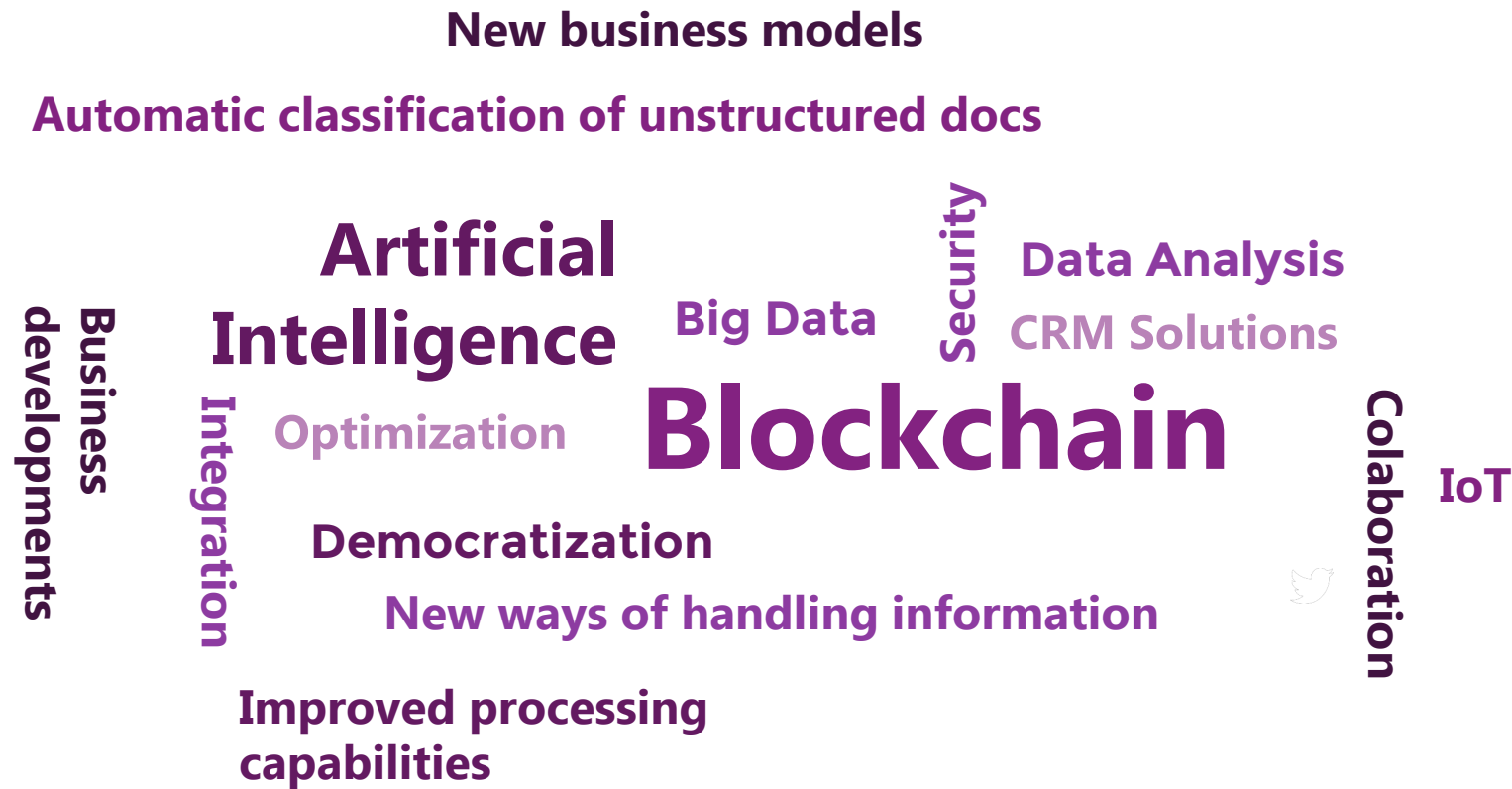
With the idea of offering better experiences and attention to the needs of users and consumers, the incorporation of Blockchain, IoT, Big Data and Artificial Intelligence will continue to be very present in the near future of professionals in the sector.

Advances in the analysis of data from the cloud, the incorporation of new ways of handling information and new business models for business development, continuous integration, and collaboration, as well as more CRM solutions, will undoubtedly mark the trend of the sector towards customer-oriented Cloud products and services.



# Conclusions

## Cloud Computing



#OpenExpoTrends19





# Open your Business to Digital Transformation

Openness, flexibility and adaptability; Internet of Things; new models of financial services and communication; innovations in transportation and logistics; management of large amounts of data; huge storage and processing capabilities; cybersecurity ... All these processes - transversal in today's companies- cross business models, boosting their Digital Transformation and the answers are Open Source written. Let's see what professionals have to say about it.

“ *Open Source as a model of development and organization will drive the future of innovation.* ”

 [@juliaberp\\_julia](https://twitter.com/juliaberp_julia)

 [linkedin.com/in/julia-bernal-p%C3%A9rez-974721](https://www.linkedin.com/in/julia-bernal-p%C3%A9rez-974721)

**Julia Bernal**  
Country Manager Spain & Portugal



The application of Open Source technologies in the processes of Digital Transformation of companies implies a **change of paradigm** that must affect all levels of the company, from the most technological to the most cultural. The philosophy and spirit associated with Open Source encourage open and collaborative methodologies to facilitate technological developments based on integration, innovation, and agility. As pioneers in this model we have developed the capacity to help our customers reaching their own innovations and services, as well as knowledge, leadership, and influence in the development communities, and that reflect the value that is possible to provide to the clients.

This **collaborative perspective** is applicable to any sector. **98% of companies worldwide already have Open Source Software, as well as 8 out of 10 companies in Spain, including the most important listed companies of Ibex 35.**

We strongly believe that **combination of Open Source as a development and organizational model will really boost the future of the innovation**, thanks to technologies still for coming. As industry, we use this model for creating new technologies, in varied sectors, combining a widespread of needs and requirements, in **software projects which are deeply changing the world.**

**#OpenExpoTrends19**

# “ Why do they call it Digital Transformation when they mean the transformation of people and businesses?

 @jcantom

 [linkedin.com/in/jcantom](https://www.linkedin.com/in/jcantom)

**Juan Carlos Cantó Martínez-Falero**

Digital Business & Customer Experience.

Trainer, advisor and speaker. Managing Director of Bilib



The Digital Transformation (DT) is built on three pillars: people, processes, and technology. Thus, the main trends for 2019 would be: in people, **adoption of a digital culture and skills; increasingly flexible, innovative and automated processes; technology, with open solutions oriented to Big Data, IoT and AI.**

DT is key to the survival of organizations and FLOSS is the strategic weapon of this transformation. Companies have to reinvent themselves to remain in an increasingly competitive market and, in this context, the first thing they think about is technological modernization, hence the fashionable term: DT. And usually associated to fill the technology company. Digital Transformation is not just about technology. It is, above all, cultural transformation whose main pillar is based on putting the customer in the center.

To make this cultural change you need to: **redesign processes, focus them to create value, cover the Customer Journey map; redesign channels; and define innovation processes.**

With people and customer-oriented processes, focused on continuous improvement, and reacting quickly to changes, is when a strategy of technological modernization makes sense. Technology in itself is no longer a differentiating element, it is its use in innovative processes that makes it different in our businesses. **Open technologies are the ones that can most favor this change.** They facilitate processes of technification: use of code, adaptations, cost, and technological independence. And, above all, they are based on a collaboration model, compatible with current collaborative business models.

**#OpenExpoTrends19**

# “Blockchain and smart contracts: keys to Digital Transformation beyond the financial sector.”



@territoriobtc



[linkedin.com/in/oscdominguez](https://www.linkedin.com/in/oscdominguez)

Óscar Domínguez  
CEO



territorio  bitcoin

Without a doubt, **Blockchain, smart contracts and new developments combining both technologies will be key pieces in 2019**, in the Digital Transformation of public and private organizations.

These technologies play a fundamental role in this digital revolution. Both concepts go hand in hand since the **Blockchain technology and the development of distributed database applications** allow that once a data is published it can not be modified. This data together with the indelible time stamp and the **transmission of data through person-to-person (P2P)** systems help companies and institutions, for example, **digital identity or the certification of documents and agreements.**

Blockchain is a totally new technology that needs a massive adoption by users, companies, and institutions. It has a long way to go to show that it will be useful in many processes. Today and since 2009, the date on which it was denominated as an open accounting book by Satoshi Nakamoto implementing the Bitcoin code **has shown that it works in the financial sector.**

Subsequently, other developments based on Blockchain are allowing *smart contracts* agreements to be closed and actions are taken when these agreements are met. **As well as turnkey solutions that allow companies to develop their own Blockchain, both public and private. Now its use will begin to be seen in other sectors as well.**

#OpenExpoTrends19

“ *New trend: Improve the quality of information through the management of feeds.* ”

 [@Channable\\_es](https://twitter.com/Channable_es)

 [linkedin.com/showcase/channable-spain](https://www.linkedin.com/showcase/channable-spain)

**Judit Escudero Perez**  
Sales & Marketing Spain



**2019 will be a turning point, and the term *Feed management*, as well as other open technologies, will be more recognized for the benefits they offer.** Companies have to migrate towards more efficient ways to work.

Nowadays even the smallest companies want to take advantage of the great potential that the Internet can offer them. Lack of experience and lack of knowledge can mean a great barrier, that is why **Open Source tools make Digital Transformation more affordable and equal.**

While in North Europe feed management tools are absolutely useful, in Spain this is an unknown topic yet. **The management of feeds allows optimizing the information of the catalog of products and services of a company in order to adapt it to the requirements of the different online sales channels**, increasing visibility and improving sales. Automating the *online* sales process can place products in thousands of channels at the same time, it helps save time and money.

*Feeds* management tools are widely used globally and **2019 could be its year of consolidation in Spain.** In countries such as the Netherlands, it is unthinkable that major brands carry out these processes manually. These tools democratize the *e-commerce* world, allowing smaller companies to compete with large ones in the network.

**#OpenExpoTrends19**



“ *A project from the past that talks about the future and that anticipated the main tendencies of today's retail.* ”

**Giovanni Flore**  
Digital Signage Manager

in [it.linkedin.com/in/giovanni-flore-34239624](https://it.linkedin.com/in/giovanni-flore-34239624)



*Benetton Live Windows* was a pioneering project at the **intersection of digital signage, interactivity, and a poetic code that integrated and allowed a number of experiences.**

When we launched in 2010, we wanted not only to play videos but go further and allow the passers by to use those screens for their leisure on the street.

After testing major market solution for digital signage, we rejected them. If an off-the-shelf CMS solution doesn't fit your demands in delivering the framework for the human experience you have in your mind, you better **create your own one**. We used *OpenCV* to design an evolutive solution able to manage and integrate sensors for interactivity and allow different playlist consisting of videos, interactive experiences, and user generated content (UGC). The outcome, both in participation and sales has been excellent. But what is more relevant, for this project from the past is seeing how it anticipated **today's retail major trends**: the demand for **dispersed intelligence onto spaces and objects**, and thus the necessity of integrating them in management systems in IOT perspective; **the role for the customer as a content producer**, and then the necessity for tools able to turn the customer into UGC – in a “*society of the spectacle*” perspective); and the relevance for **new code poems, able to hacker or to reconsider existing technologies to deliver a memorable experience** – what big brands are searching in start-ups.

#OpenExpoTrends19



“ *Open companies: The data benefits both the company and the final consumer.* ”

**Héctor González**  
Logistics Manager

in [linkedin.com/in/hectorgonzalezgarcia](https://www.linkedin.com/in/hectorgonzalezgarcia)



**YVES ROCHER**

Three trends that will mark companies next year will be: **hyperconnectivity in the flow of information; the use of Big Data to analyze the consumer** so that the company can offer **personalized answers** that meet their needs; and **fluid systems in which people and technology are much more integrated.**

The system of today's companies must be completely fluid and, with the use of new technologies, we can achieve that (**Internet of Things, robotics**, among others). Additionally, with this intelligent use of open tools, we will have **real-time reports that interconnected, can guide more assertive decision-making.**

It is important to use omnichannel approach since hyperconnectivity marks the present. And most important of all, behind all these technologies, the fundamental thing is to know the consumer. This is the key to making the purchase cycle and its repetition more frequent and probable.

Companies immersed in this information age must understand that **the data we obtain through the total interconnection of all processes, benefits both the company and the final consumer.** It is important to make use of the data to analyze the consumer and to give it a 100% personalized attention.

**#OpenExpoTrends19**

“ *Open Source in the automotive industry: flexibility, profitability and open possibilities.* ”

**Francisco Gutierrez**  
Software Architect

in [linkedin.com/in/franciscogutierrez](https://www.linkedin.com/in/franciscogutierrez)



**alTRAN**

Open Source will continue to grow in the automotive industry because it opens an infinite world of possibilities. Today, the leading Automotive companies use some sort of Open Source, today there are alliances between manufacturers that **will strengthen the use of Open Source. Companies will continue to be formed to provide industry-based advances in FOSS.**

One of my favorite projects is that of George Hotz, with his company *Comma AI*, creating an autonomous driving system (other of the great trends to come), with the aim of selling it on *Amazon Prime* for \$ 1,000.

Do you know how many lines of code it takes for a modern car to run? *The F-22 Raptor Fighter Jet*, approximately 2 million; the *Boeing 787*, 14 million; *Facebook*, about 63 million. A modern car with all its characteristics contains approximately 100 million and will probably increase to 300 -or more- with the *ADAS (Advanced Driver Assistance Systems)*.

Today we witness **the new age of the automobile**, with accessible computing power. Now you can get **a very powerful processor** with four cores, *DSP (Digital Signal Processor)* and *GPU (Graphical Processing Unit)* that work at 2.1 GHz, **all this connected to the Cloud.**

A line of code costs approximately \$40 you should quickly go and calculate the cost of software for vehicles. Open Source is free and reusable, meaning you do not have to reinvent the wheel (no pun intended). This enables the reuse of already written and tested components. In addition, there is a large community of experts who can collaborate, a large number of tools for development, and consultants that can be hired.

**#OpenExpoTrends19**

“ *The Open Source is allowing to pay the biggest debt of the fashion: to know the client.* ”

**Mario Hernández**  
Head of Data & Business Controlling

in [linkedin.com/in/mario-hernandez-lpez-06182841](https://www.linkedin.com/in/mario-hernandez-lpez-06182841)



Undoubtedly, the big revolution in retail will be provided by **Data Management: Big Data, Machine Learning and Artificial Intelligence**, in the way that these elements will contribute to marketing, sales and Supply Chain. These new technologies will allow companies to know their clients in depth, establishing a one-to-one relationship with them and being able to predict or even modify their behaviors.

Customer knowledge is the great pending issue in fashion. Historically, the focus has been on the product and not so much on the development and management of clients. Now, thanks to Open Source technologies in data integration, it is possible to improve this knowledge: knowing why they buy, what they think and expect from a brand and what they will buy according to their behavior in all the channels through which they are related to the *retailer* (physical store, *online*, social networks, etc.).

We are currently developing a new **reporting system** by adding other external data to the transactional information of the company, with *Microsoft* Open Source resources. They have a whole community behind and offer new content and ways to visualize information.

**Being able to mix structured and unstructured data to improve customer knowledge is essential** to maximize marketing actions, mobilize stocks, etc. This step from DWH to *Data Lake* will be a big trend in the retail industry.

#OpenExpoTrends19

“ *Technology companies have understood the value of putting people at the center of their strategy.* ”

 [@claudiolobos](https://twitter.com/claudiolobos)

 [linkedin.com/in/claudiolobos/](https://www.linkedin.com/in/claudiolobos/)

**Claudio Lobos**  
Chief Design Officer



The design is everywhere. Everything that is not proper to nature has been imagined, devised, perfected and designed by someone. The design is focused on offering solutions to people's problems. At present, **many technology companies have understood the value of putting people at the center of their strategy** and have adopted the design processes for the conceptualization of products and services, in order **to provide an agile and people-centered methodological framework**.

The design is found in all interfaces with which we interact. At present, we are still working with applications that are far from the Open Source world, but this will tend to change, mainly because the future shows us:

1. **Growing diversity of platforms and interfaces:** an increasing volume of digital points of contact between users and services or products; every day more interfaces in, watches, mobiles, touch panels, Virtual Reality, voice interfaces, etc. More and more different platforms that should be open since they require systems that talk to each other.
2. **The simplification of interactions and the maximization of experiences.** Easy, intuitive, in which value is given to the user, trying to become memorable experiences.
3. **The redesign of everything.** To use the design as a starting point to improve everything. A deformation of the design, leads it to be used as a starting point, to improve everything that surrounds us; systems, relationship models, politics, the architecture of cities, etc. The impact of design, as an approach, will be even greater.

**#OpenExpoTrends19**

# “ The challenge of Digital Transformation in 2019? Give structure to the data.

**Miguel Ángel Miguel**  
General Director of Technology, Digital, and  
Logistic Services

in [linkedin.com/in/miguel-angel-miguel-martin-a8a4941a](https://www.linkedin.com/in/miguel-angel-miguel-martin-a8a4941a)



You can talk about Digital Transformation through the analogy of ninjas vs samurais. In the past, the samurai stood out because of his experience. **In today's companies, ninjas are preferred, flexible and creative**, over others with too rigid structures. This trend also applies to the world of software.

In today's world, it is really important **to listen to the insights that come from the market** and, then, adapt to those consumer needs. The challenge is that all the information of the machines coexists in real time, how do we take advantage of it? ... Structuring the information. **The data provides by the algorithms, Artificial Intelligence, Internet of Things, etc... Gives us key consumption and market behavior results for decision making.**

It is and will continue to be relevant for companies to obtain data of their processes but, more importantly, after having that data, give them structure. It is necessary to ask what they are for and what problem they can solve. For the use of new technologies in these processes to be effective, it is necessary for employees to change their mentality and understand its usefulness.

Ten years ago it was thought, for example, that the Amazon delivery model was not going to affect the Spanish market and today we are making decisions based on their practices because they have really impacted us. Open technologies allow us the flexibility that these processes need. On the other hand, **the collaboration will always add to and help companies' innovation processes.**

#OpenExpoTrends19

# “ Artificial Intelligence and advanced analytics applied to business processes.

**Javier Orús Lacort**  
CEO & Co-Founder

in [linkedin.com/in/javieroruslacort/?locale=en\\_US](https://www.linkedin.com/in/javieroruslacort/?locale=en_US)



More and more companies in any sector are already applying **Artificial Intelligence and advanced data analytics to their business processes**, be they simple or complex, in order to improve their decision making. In the medium, to long-term, **this application will be extended to all sectors.**

**There will be more and more interaction between devices, using IoT technologies**, with which **Prescriptive Data Analytics** can be applied to many processes and gadgets. This will allow you to automate the decision and the action to be taken by the artifacts depending on what happens with others around them that they are connected to. This will happen both at the business level (factories, warehouses, etc.), and at the social level (home, vehicles, among others).

They are already a reality: **Cloud technologies and Cloud computing**. In the medium-long term, the *"on-premise"* servers will tend to disappear, becoming the vast majority **"on demand"**, fully scalable together with variable costs.

Open technologies have played, play and will play a key role because, for example, with open software such as *Python*, **we can apply the most modern and efficient versions of the Predictive Algorithms that the Scientific Community is developing**, with absolute immediacy.

On the other hand, in general, the fact that free and open technologies have such a large community of developers behind makes the evolution of these technologies very fast, an aspect that is absolutely necessary nowadays to be able to get adapted to the technological maelstrom where we are immersed.

**#OpenExpoTrends19**



“ *Supply Chain and Digital Transformation based on the real understanding of the data.* ”

**Guillermo Pérez Morales**  
Technical Director Auxiliary Services

in [linkedin.com/in/guillermo-pérez-morales-b1654214](https://www.linkedin.com/in/guillermo-pérez-morales-b1654214)



In the Digital Transformation of the supply chain of today's companies, there are three fundamental challenges that will also be a trend in the coming years: Big Data and the **real understanding of the data; its standardization** to optimize resources; and, finally, **transparency**.

The reality in the panorama: We need cases that yield data important enough to be able to standardize them; and, then, it is very important in these processes to be able **to apply the technology after studying the data and not the other way around**. First, focus on a more real and deep analysis, focused on people, then, once identified the needs, go find these data as answers. The transparency of the data is fundamental in this process. **All information that is clear, open and collaborative will add up in all the stages, from the beginning to the end.**

The process towards the Digital Transformation of the supply chain of today's companies must integrate all the elements that comprise it: people, processes, and technologies present in each link of the distribution chain.

It is very important **to know the needs of the entire process well so that the technology really works and is applied in order to solve the problems that may exist**. These needs will be discovered through the study of the data found in the processes. Here the Big Data and the analysis of the data play a fundamental role.

**#OpenExpoTrends19**

# “ Networking and Cloud; APIs; DevOps; and Big Data: key open technologies for Digital Transformation in 2019.



@feliun



[linkedin.com/in/feliun](https://www.linkedin.com/in/feliun)

**Felipe Polo Ruiz**  
Managing Director



The open technologies are key in the Digital Transformation in which we are immersed. They allow building more and better software in less time. Therefore, there are four basic aspects in which any current platform must focus on to remain competitive and that -certainly- will be a trend in 2019:

**Networking and Cloud:** With consolidated projects such as Docker, the use of containers is highly adopted to deploy software. The use of Cloud services is increasingly common and recommended. And, for those companies that still want to manage their servers, there are hybrid cloud projects. However, the leading container orchestration tool is still the *Kubernetes*, seamlessly integrated with the main Cloud providers.

**APIs:** The integration of processes is increasingly common and expected. Interconnecting data, amplifying information and customizing processes by reusing systems is possible thanks to the APIs. These services will continue to grow in the coming years with the help of Open Source specifications such as Open API and implementations such as *swagger* or *GraphQL*.

**DevOps:** To be competitive, an organization must be agile. This can not be achieved only at a structural level, we must have the technology and agile processes. The DevOps methodology collaborates to make this happen, unifying the development process with its own operation. *Jenkins*, *Prometheus*, *Ansible*, *Graylog*, *Ganglia* ... are some of the Open Source projects that help us build, deploy and operate our software.

**Big Data:** These technologies help us to decipher the hidden knowledge behind the individual data, offering real and immediate value. **Without data, companies would only have opinions.** The Open Source-Big Data projects collaborate to democratize the value of the data. *Cassandra*, *Apache Spark*, *Apache Storm*, *TensorFlow* are some of the most used in the war to extract knowledge.

**#OpenExpoTrends19**

“ *Simulate before transforming to validate the new processes of Digital Transformation.* ”

**Marcello Rosadini**  
Country Manager

**in** [linkedin.com/in/marcello-rosadini-8363a580](https://www.linkedin.com/in/marcello-rosadini-8363a580)



One of the most relevant trends among all avant-garde companies that seek to get on the wave of Digital Transformation is the **use of simulation software to validate new processes** in their adaptation to the digital world.

The simulation software allows to measure the impact of the transformations and, at the same time, the resizing according to the needs of each industry. Traditionally, the automotive, aerospace and logistics sectors have been the most open to the use of simulation platforms, but **we predict that in the coming years more sectors will enter this trend.**

The development of this type of software from an open perspective in which libraries and resources can be shared so that each client can develop their own models or complementary products **to measure the impact of the changes in their Digital Transformation process** will undoubtedly be a trend for the coming years.

**#OpenExpoTrends19**

“ *The role of Free Software will be consolidated in the management of the 21st-century company.* ”

 [@eugenivives](https://twitter.com/eugenivives)

 [linkedin.com/in/eugenivives](https://www.linkedin.com/in/eugenivives)

**Eugeni Vives**  
Academic Director of the Master in Management Software / COO



**IEBS** Business School **PRECognis** YOUR TECHNOLOGY PARTNER

During 2019 we will assist in the **consolidation of a new range of Open Source applications for business management**, supported by its lower TCO (*Total Cost of Ownership*), but also in **better interoperability, independence of the vendor, higher quality and great flexibility to make modifications**. As it happened with the traditional software management companies, the vertical and sector specialization of the same will be deepened and we will see the first mergers and/or acquisitions of projects and editors of **Enterprise Applications Open Source**.

Free Software is one of the phenomena with more influence in recent years in the technology industry in general and in the software industry in particular.

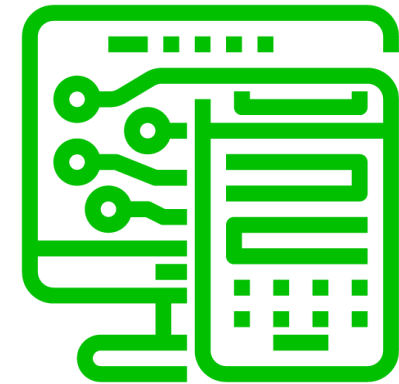
**The adoption of Free Software by all types and sizes of public and private organizations grows**, year after year, in all types of software (operating systems, databases, security, office automation, etc.).

However, until a few years ago, the presence of business management applications in Free Software in the business world was merely testimonial. The **emergence of new and innovative commercial Free Software projects in all categories of business applications** (ERP, CRM, eCommerce, ECM, BI, etc.), such as *Openbravo*, *Odoo*, *PrestaShop*, *Magento*, *Alfresco*, *Magnolia*, *Pentaho*, etc. , competing with its own equals, is assuming an authentic revolution that changes the dynamics of evaluation, selection, implementation and consumption in the *Enterprise Applications* segment.

**#OpenExpoTrends19**

# Conclusions

## Digital Transformation



Without any doubt, organizations are transiting the road to the so-called "Digital Transformation" but, what role do open technologies play in these processes and what are the main trends that we will see in 2019?

Experts see the light in Free and Open Software; an open community willing to collaborate, shorter learning curves and a high capacity to adjust to the changes that today's organizations constantly face from outside and inside.

What are the three clear tools in which this process supports? Advanced analytics, Internet of Things and collaborative business models. In 2019 we will see an advance in the management of technologies and their settlement in Digital Transformation. It has been understood that the concept is built, more than on technology, on people and processes. The integration of these three pillars will mark the future.

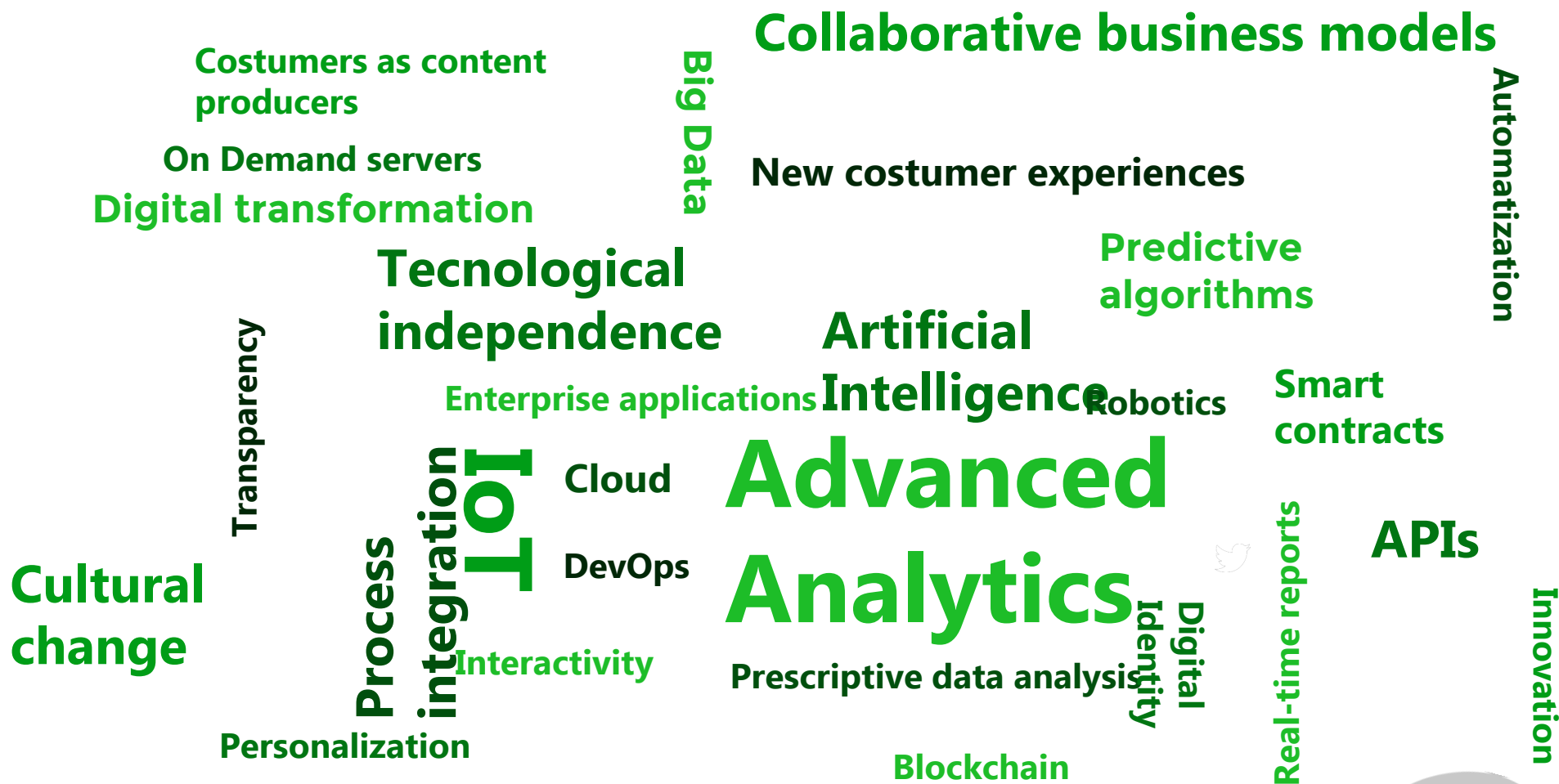
Predictive algorithms, APIs, automation, Big Data, Blockchain, certification of agreements and documents, Cloud, DevOps, digital identity, Artificial Intelligence, real-time reports, robotics, digital signage, servers on demand and smart contracts will be in the scenario.

Open Source will continue to bring organizations the technological independence they need to develop cross-cutting solutions that can respond with the necessary speed to the needs of their business and audiences: more personalized, innovative, integrated, interactive, collaborative, trained to manage communication with a consumer who is also a content creator and provide new experiences.

**#OpenExpoTrends19**

# Conclusions

## Digital Transformation



## #OpenExpoTrends19





# Future Global Visions of Open Source & Free Software

---

More and more companies and organizations are betting on integrating open technologies to streamline decision making or take full advantage of data analysis to obtain and generate value in the social systems in which they are located. In that sense, free software is a great opportunity. Listen to the voices of the future: testimonies and global visions of how it will evolve next year, in a world that is increasingly people centered.

“ *Free Software is today the mainstream of innovation and the gateway to new talent.* ”

**Rafael Cabanillas and Ignacio Arriaga**  
Founders



@acumbamail



[linkedin.com/in/ignacioarriaga](https://www.linkedin.com/in/ignacioarriaga)

[linkedin.com/in/rafael-cabanillas-carrillo](https://www.linkedin.com/in/rafael-cabanillas-carrillo)



**Acumbamail** 

Free Software is one of the main tools to promote innovation and **the creation of technology companies and new business models with low budgets**. In addition, contrary to what some may think, **open technologies are much easier to audit, analyze and secure than closed-source technologies**, since the tests that are performed on it do not have to be an only black box. Undoubtedly, Open Source makes the creation of technological products democratized and allows access to technology to people and companies whose resources are -or had been- more limited so that talented people are not left without exploiting abilities due to economic reasons. **We are facing the appearance of new leadership, new skills and new emerging talents, increasingly demanded in all sectors.**

In recent years there is a strong tendency to create successful companies around Open Source products or directly free products, such as *MongoDB* or *Docker*, in the international scene; o *CARTO*, in the national, getting large communities of users to use their Free Software products and, generating income with the complementary services they provide around; benefitting both the Free Software community and its own company. Free Software is becoming *mainstream* and is penetrating more and more strongly in all types of companies, even in large corporations.

**#OpenExpoTrends19**

“ *The future will be free and open or it will be very dark.* ”

 [@pablocampogomez](https://twitter.com/pablocampogomez)

 [linkedin.com/in/pablocampogomez](https://www.linkedin.com/in/pablocampogomez)

**Pablo Campo Gómez**  
IT Director



Relevant global trends in 2019: (1) **Internet of Things**: With the arrival of 5G, the connectivity of almost all our electronic devices will increase. (2) **Cybersecurity and Cyberwar**: That connectivity will expose us to sophisticated attacks and hacking, so the investment in Cybersecurity should grow in all organizations. (3) **Blockchain**: Besides the irruption of cryptocurrencies, new applications such as **smart contracts** or **Blockchain interactions with Machine Learning, Big Data and IoT** will also take off.

Amnesty's work is based on the Universal *Declaration of Human Rights* established in a Europe devastated after the Second World War. Now we are again faced with hate speech and intolerant policies that divide humanity. In this panorama, Free Software emerges as a cry of indignation and demand for empowerment in order to establish our own technological sovereignty, just what we need to face the great challenges proposed by the future.

How to control the excesses of certain governments and other suspicious organizations but is through the full knowledge and transparency that Free and Open Software guarantees?

How will we be sure about the programming of Artificial Intelligences if your code is closed? Can we guarantee what happens with genetic engineering if its sources are not accessible? Free Software is essential to achieve a future different from an increasingly recognizable episode of *Black Mirror*. **The future will be free and open or it will be very dark.**

**#OpenExpoTrends19**

# “ Who will dare to steer the data ship to make more assertive decisions?”

 [@cavicosta](https://twitter.com/cavicosta)

 [linkedin.com/in/carlosvictorcosta](https://www.linkedin.com/in/carlosvictorcosta)

**Carlos Víctor Costa, PhD**  
Director of Postgraduate Studies



Open Source, as technology and as a philosophy, continues to attract some of the most brilliant minds in the world who want to use their talent for the greater good, collaboratively. **Open Source Intelligence**, which is the collection of data from publicly available sources and their combination with diverse sources and databases and, in particular, the measurement and prediction of social behaviors, is **a clear trend in 2019**.

For authors like Jorn Lyseggen, author of the book *Outside Insight*, these data that are not found inside the company, but outside, and when it is intelligently combined with other data, can indicate patterns and trends, to the point of generating an advantage over the competitors.

The leading companies of an increasingly Open Source world will be those organizations that accept this paradigm in the field of business intelligence, taking advantage of the availability of the footprint left by individuals and that look more to the data that exists outside the company and not just its internal indicators. **These companies will be those that will pilot a great transformation in the field of decision making and strategy, powered by machine learning and Artificial Intelligence.**

**Who will dare?**

**#OpenExpoTrends19**

# “ Open Source and Open Data are key elements for Data Science.

 [@piperlab\\_es](https://twitter.com/piperlab_es)

 [linkedin.com/company/piperlab-s-l-](https://linkedin.com/company/piperlab-s-l-)

**Javier Di Deco Sampedro**  
Co-founder and Data Scientist



PIPER LAB

In 2019, some of the main Open Source trends for the *Data Science* sector are a consolidation of what was already taking place: **increasingly wide use of the R and *Python* languages; Container technologies such as Docker**, which simplify the configuration and deployment of applications; **and the integration – more and more frequent - with public data sources (*Open Data*)**.

The commitment to Open Source technologies is more relevant than ever, since, together with the availability of Open Data to enrich the internal data of organizations, they allow us to carry out our main task, which is to extract value from data by means of techniques such as **Big Data and *Data Science*, in order to improve decision making**. Meteorological, socioeconomic, population data, etc, give context and provide an enormous added value to **fine-tune the accuracy of analysis in all sectors**.

At a technological level, Open Source tools are valid and used in all stages of projects. In the infrastructure phase: Docker, Hadoop, *Elastic Search*, *Mongo DB*, *CKAN*, *MySQL* and *Apache*. In the analysis phase: *R*, *Python*, and *Spark*. And, finally, in the visualization stage, mainly: *Shiny*, *Superset*, and *Pentaho*. **Global tools for global solutions**.

**#OpenExpoTrends19**



“ *Open Technologies to write a future of more ethical and responsible advances.* ”

 [@Aldamaspuebla](https://twitter.com/Aldamaspuebla)

 [linkedin.com/in/fatimagordillosantiago](https://www.linkedin.com/in/fatimagordillosantiago)

**Fátima Gordillo**  
Editor



My foresight for the future is that **open technologies focused on people, with the necessary agility to adapt quickly to new human needs**, bring us closer to more human developments that open the way for **advances that go hand in hand with ethics**.

Development is always accompanied by questions about its implications for human beings. We advance quickly in the knowledge of new materials, **Artificial Intelligence (AI), autonomous vehicles or connected robots**, but we do not advance in parallel in the knowledge of the human being. Thus, **we have reached the point of having to teach machines to make decisions**, but, how to do it?

An example of this is the autonomous car. What happens if the vehicle has to choose between saving the life of a passenger or a pedestrian? Open technologies let the vehicle know what to do and modify it when necessary. It is an interesting time, and **technology is at an ethical crossroads**: it can continue advancing and justifying the decisions that are made in favor of positive figures in company balance sheets; or it may stop to dig deeper into ethics, real need, social, environmental and human repercussions, to solve the problem of AI bias, or to give priority to not doing harm before focusing on avoiding the problems that it will cause. **If you do the latter, you can continue advancing knowing that what you believe now it will be more durable, conscious, secure, supportive, stable and humane.**

**#OpenExpoTrends19**



# “*Raise your voice*”

 [@pacoestrada77](https://twitter.com/pacoestrada77)

 <https://www.linkedin.com/in/paco-estrada-44628b148/>

**Paco Estrada**  
Director/Editor



Free and open software have come to mean a second revolution in terms of how to develop technologies and culture. The possibilities granted by its licenses for its distribution, improvement and agile development imply **new competitive advantages** in the business and new forms of relationship within and between companies. 2019 points to one more year of consolidation than a year of disruptive innovations

It is a year in which undoubtedly, from all areas and all agents involved, will "**raise their voice**" at the end of the decade. Voice that will not only come from the prominence that virtual assistants will take from the point of view of the infrastructure, but also from the point of view of the service and the contents added to **the voice**.

This role of **The Voice**, will bring your hero, **the audio**, in a generic way.

**The podcast**, entering fully in my field, will have special relevance in 2019. An explosion that is already experienced in the US, hand in hand with the versatility of the medium, which allows the consumption of content with the ubiquity of Internet access offered by mobile devices and with the possibility of consuming content without stopping the day day, nor monopolize the total attention.

The software and open and free licenses are also positioned, in 2019, in these new **contents supported by The Voice** and reinforced by the boom of **AVs**.

**#OpenExpoTrends19**

# “ The integrations and technology of the platforms in 2019 to create value.

 [@adrianhontoria](https://twitter.com/adrianhontoria)

 [linkedin.com/in/adrianhontoria](https://linkedin.com/in/adrianhontoria)

**Adrián Hontoria Sánchez**  
Fundador & CTO



The open source software is the future, there is no doubt. In fact, I would dare to say that it is the present. It is enough to observe the trends that big technology companies are taking, **escaping from proprietary technology to enter the Open Source world.**

The availability of own technology is no longer enough, no matter how good it is. We have reached a point where even **the most basic of users use multiple technology platforms on a daily basis. And all technology companies will want to integrate their star system with most of the platforms that users already use.** The more integrations, the better reception of your platform: the integrations increase their value.

With this reflection, we have reached a clear trend of 2019: **platform technology.** To have only one application is scarce. Now the applications must be completed with the rest of the existing platforms and, therefore, we return to the need for **integration.** Would you imagine how a world without an Open Source would look like in which a constant struggle to buy and sell licenses with its respective direct impact over time would mean? It would be unrealizable.

Open Source provides the necessary freedom to companies and developers to relate their software to each other and form a large cloud of interconnected technology, with the advantages that this implies for users.

**#OpenExpoTrends19**

“ 2019 will not only be the Blockchain year, it will be - above all - the year of the open Blockchain.

 @jimjag

 [linkedin.com/in/jimjag](https://www.linkedin.com/in/jimjag)

**Jim Jagielski**  
Open Source Chief / Co-Founder and Emeritus  
Chairman-Director



When people mention “blockchain”, we usually think of cryptocurrencies, such as Bitcoin or even *Ether*. But Blockchain itself is so much more than that. The cryptocurrencies are only a small possible use of this technology, but **its potential in itself is unlimited**. It would be like matching the emergence of websites with a website... Potential and reality are confused with hyperbole.

In its essence, Blockchain is about creating technological bases and an infrastructure that not only **facilitates decentralization** (and will be seen next year) but, in fact, codifies it as a main requirement.

We have seen recently how the web (and the Internet in general) has been co-opted from being a level playing field for all entities to, instead, a space where a handful of powerful corporations make the rules and hold all the cards. **The Blockchain movement is a drive to “take back the web” and return it to its roots.**

One crucial way of doing this is by **cooperation and involvement** with the Open Source and Free Software movement. The early days of the Web clearly showed how having reference implementations, production, and enterprise-ready, available as Open Source was a key driver in making the Web ubiquitous. The Blockchain is no different. As an early pioneer and visionary in both the Web and Open Source, being involved in this latest revolution is a fantastic opportunity.

**#OpenExpoTrends19**

# “ Trends for Open Source Software in Business for 2019.

 @KAMcGrail

 [linkedin.com/in/kmcgrail](https://www.linkedin.com/in/kmcgrail)

**Kevin A. McGrail**  
Director of Business Growth & VP of Fundraising



For 2019, I predict three trends for Open Source Software (OSS): **More use of OSS in Business; More care in selecting OSS licensing; and More acquisitions for firms founded on Open Source Software.**

2018 has been a great year for OSS: The Apache Software Foundation (ASF) is almost at its 200 Top Level Project (<https://projects.apache.org/>); the District of Columbia is using open source tools to maintain laws and regulations (<https://s.apache.org/dcregs>); and IBM's acquisition of Red Hat for \$34B USD completely validates OSS as a business method (<https://s.apache.org/ibmrh>) with the largest software acquisition to date.

When talking about business and OSS, companies should consider if a license is “pro-business”. The Apache Software License (ASL) *is* absolutely pro-business because we produce open source software for the public good at no charge. Use our software, start a billion dollar company and you owe us nothing.

Red Hat understands our approach. Much of their work outside of the kernel uses the Apache License. However, **2018 brought a new threat to open source software called the “Commons Clause”** which limits commercial use. This **“Commons Clause” has nothing do with Apache** other than improperly leveraging our name to give it undue credibility. In my opinion, it's a short-sighted idea that protects only investors, not the public. I hope people see through this charade and recognize that being open includes being open to businesses.

What are your thoughts?

**#OpenExpoTrends19**

# “ Work on FLOSS projects: From outsider attitude to a mainstream trend.

 [@agileando](https://twitter.com/agileando)

 [linkedin.com/in/rubenorta](https://linkedin.com/in/rubenorta)

**Rubén Orta**  
CTO at Antevenio



If more than 20 years ago, when I was browsing through the \*nix labs of my university, they tell me that I would be writing this article with a Microsoft advertising shirt, I would have broken into a smile. If they also tell me that on my shirt the letters Open Source would appear, I would have directly called the psychiatric hospital.

But here we are, with one of the technological giants most reluctant to the community, embracing the Open Source culture and declaring their love to the programmers. Only in the last few weeks, **Microsoft has ceded more than 60,000 patents as part of the Open Innovation Network** to support Linux and protect the community from possible intellectual protection claims.

**Working on FLOSS projects, previously considered as an *outsider* attitude, has become a *mainstream* trend.** Large corporations use it, not only as technological tools but as an element of Public Relations to attract talent and improve the perception that developers have of them. If the big technology companies take advantage of and monetize the FLOSS world on multiple fronts, in the areas where more innovation is being produced and will be produced in the coming years, the NO use of Open Source technologies, for the other sectors, It is inconceivable. If you notice areas like **Machine / Deep learning**, *TensorFlow* or *Keras*, they are practically already standard. If we jump to the ecosystem that has been generated around the concept of **the Blockchain and crypto world**, another approach is practically inconceivable, and its nature is open. As it was said years ago when talking about the Internet, Open Source has come to stay. By the way, what a cool shirt.

**#OpenExpoTrends19**

“ Thanks to Open Source, the web has become more omnipresent, open and transparent.

 [@jmperezperez](https://twitter.com/jmperezperez)

 [linkedin.com/in/jmperezperez](https://linkedin.com/in/jmperezperez)

**José Manuel Pérez Pérez**  
Senior Software Engineer



**The web will be made more omnipresent thanks to Web Assembly, Web VR and better integration with hardware.** We have to thank organizations such as W3C and the companies that develop the browsers, which work in an open and transparent way of implementing APIs and tools, with *feedback* from many developers and users.

As a web engineer, I have always had the benefit of learning about the Javascript code that developers wrote and ran in my browser. The developer tools have opened a whole world in front of us and we have also learned to contribute back through open source.

**The recent report on the status of Javascript is a clear example of the good health of Open Source on the web.** It shows how developers use open solutions to build their sites. React, Vue.js, Redux or GraphQL would not have been as successful without an ecosystem of tools and documentation which have been created by thousands of developers.

Companies have no incentive to create their own tools. Instead of a competitive advantage, it is often a problem, while using Open Source projects as a base has many benefits. **On the one hand, it improves security, given that the most used tools have been tested and the community is able to correct errors in record time.** On the other hand, it **makes it easier to find talent** since many candidates are familiar with these projects. Finally, it allows companies to contribute to the community by implementing functionality, solving problems, and even documenting how they use these tools in real projects.

**#OpenExpoTrends19**



“ Greater integration of open technologies, greater penetration and more real uses.

**Mario Rozalén Guzmán**  
Digital Solution Designer

in [linkedin.com/in/mariorozalen](https://www.linkedin.com/in/mariorozalen)



accenturedigital

With 2019 in mind, the main trends in Open Source technologies will be related to:

**The development of applications with customized user interfaces**, integrating content and services from different platforms, using frameworks such as *Angular, React or VUE*, such as -for example- for the creation of data visualization *dashboards* from Big Data platforms such as *Spark*.

Then, **Artificial Intelligence and Machine Learning** applications using *TensorFlow, Keras, and DeepSpeech*. The new **WordPress 5.0 Gutenberg** is going to be a major change, not only for blog managers but also for developers, both *freelancers*, and corporations. A new revolution in content creation is approaching.

On the other hand, **the use of containers, Docker and Kubernetes for the development and deployment of Cloud solutions** will also be strong in the coming year; along with **mobile application development frameworks** such as *React Native, Vue Native, Ionic*. The **Blockchain will stand out as a solution to more real** and less abstract problems. **The LOW CODE - NO CODE solutions will stand out** and that will allow the creation and implementation of software solutions quickly and at low cost, without having advanced knowledge of technology and development. The reality is that, although many of them were already present in 2018, they will continue to gain importance in 2019 with greater penetration and more established uses.

#OpenExpoTrends19

# “ We attend the Digital Transformation of Logistics and Industry.

Manuel Serrano  
President

in [linkedin.com/in/manuelserranoortega](https://www.linkedin.com/in/manuelserranoortega)



COOL  
HUNTING

We live a new process of Industrial Transformation with short, medium and long-term consequences. Eight blocks of this revolution are foreseen in 2019:

- (1) **The Increased Worker**, with Augmented Reality, *wearables*, and exoskeletons, which increase human capabilities.
- (2) **Innovation in resource management**, which respond to the growing needs of the market.
- (3) **R + D + I**: Augmented and Virtual Realities, 3D printing and robotics, will revolutionize the design and development of products; Software innovations will increase the scope of talent management; and, Artificial Intelligence, is allowing new scientific discoveries.
- (4) **Robotization**: Warehouses without lights, in which only robots work, can arrive even before the factories without lights.
- (5) **Operations technology**: with *edge intelligence*, the computation made closer to the sensor is a new trend within the architecture of IIoT (Industrial Internet of Things); Predictive digitalization and Cybersecurity will also be a priority in this context.
- (6) **Customization and automation in production**, thanks also to 3D printing; new uses of robotic automation with *cobots* (collaborative robots); and modular production, which can make factories more flexible.
- (7) **The growth of platforms and systems to respond to the challenges of e-commerce and Blockchain**. The IoT and shipping software will grow importantly as supply chains decentralize and automate. *Tesla* has plans for autonomous semi-trailers, and *Starsky Robotics* recently raised nearly \$ 20 million for long distance transportation.
- (8) **New security and quality processes** driven by: Blockchain and artificial vision, to look for imperfections that the human eye can not appreciate.

#OpenExpoTrends19

# “ 2019: Year of consolidation for new models and business alliances with Open Source.

 [@italovignoli](https://twitter.com/italovignoli)

 [linkedin.com/in/italovignoli](https://linkedin.com/in/italovignoli)

**Italo Vignoli**  
Director



Free and Open Software will continue to grow in 2019 thanks to the increasing importance of the Cloud for IT infrastructures of enterprises. The acquisition of *Red Hat* by *IBM* is just a confirmation of this trend and we hope it will teach IBM how to deal with FOSS communities in a sensible way. Open technologies need to increase, but growth cannot happen without communities. So, **large corporations must learn to work hand in hand with communities**, even if they are not used to deal with fluid organizations with a horizontal structure in which everyone works without a manager, but do it better than in the traditional corporate pyramid structure.

In 2019, there will be a growing trend towards **monetization of FOSS**, especially when Open Source is consumed by large corporations that do not return (as in many Cloud environments). Fortunately, the parallel trend of "patenting" FOSS through the addition of clauses to open proprietary licenses will stop, and both parties will sit around a table to find beneficial solutions for all.

The second trend will be over standard formats, as **users will begin to understand their unique advantages in terms of interoperability, long-term availability of their own documents and a significant reduction of hidden costs**. Standard formats are one of the strongest assets of Open Source software.

The third trend will be about the **development of a large ecosystem of companies** capable of providing value-added services in addition to FOSS, to support enterprise customers of Open Source solutions.

**#OpenExpoTrends19**

# Conclusions

## The future of Open Source

The future is open. What is the global vision of organizations and companies in the Open Source world? Among the main general trends stand out: Blockchain, Big Data, and Artificial Intelligence. Technologies capable of changing the way we certify documents and content, manage our money, make value transactions; we manage the data, and we extend human intelligence.

In what concrete things are we going to see them? In the development of APIs, automation, Cloud, containers, Data Science, Machine Learning, Open Data, increasingly connected devices (IoT), smart vehicles and more developments in its industrial implementation, as the autonomous worker, applied to operations, production and quality controls.

In 2019 we could see a greater penetration of these technologies in the industry, the company and all aspects of our daily lives. This means that we are laying the foundations of the business and the social paradigm shift that we have been witnessing since the last few years where the rules of the game at all levels continue to change. In what new values will they be reflected? Agility; greater collaboration; decentralization of technologies and processes; flexibility; innovation; transparency; technological sovereignty; and, in short, a motivation for people centered developments.

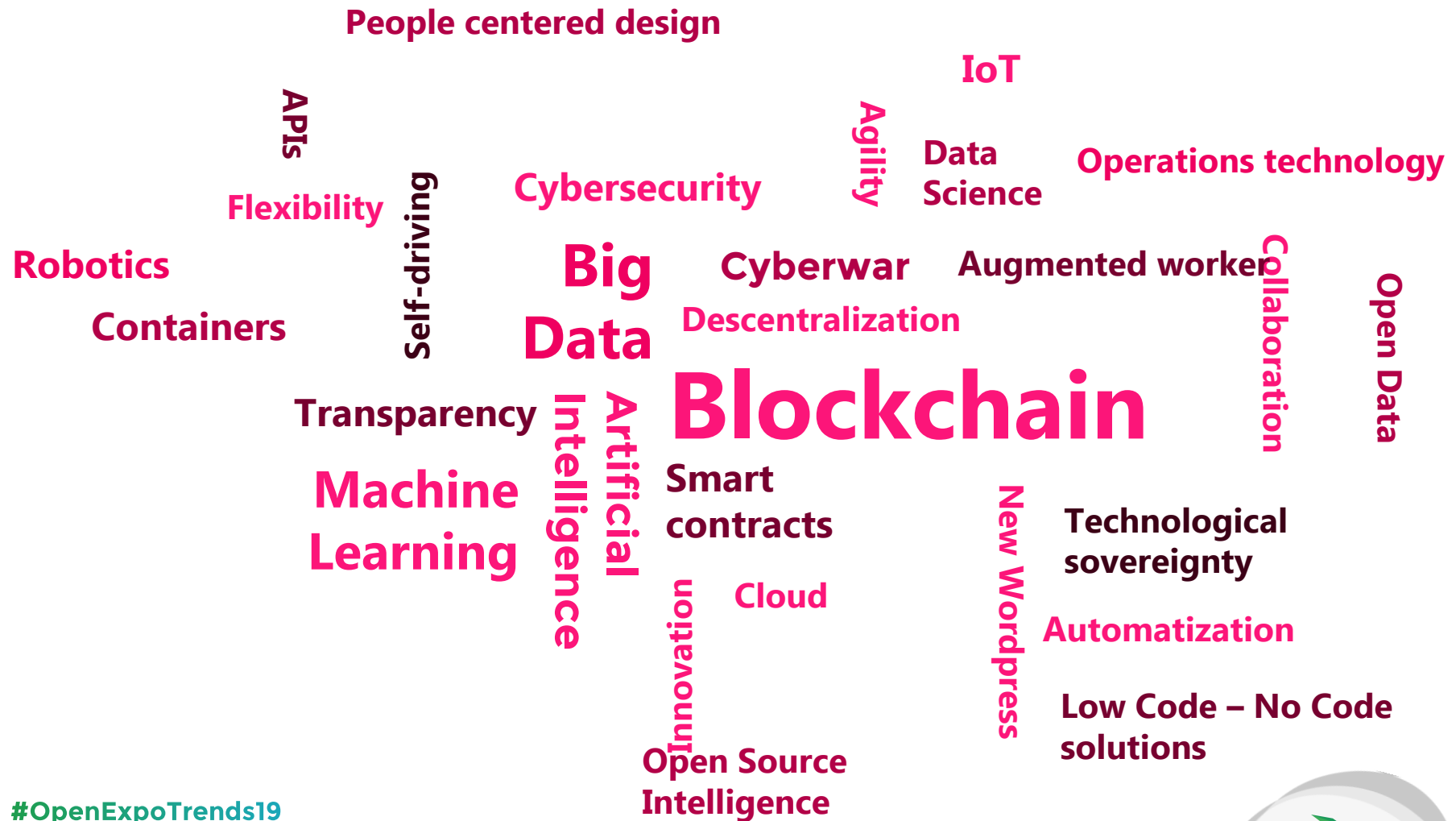
What was previously owned by few will be shared by many even through low code - no code solutions. The present and the future are open and we are all called to build it. It is a great opportunity.



#OpenExpoTrends19

# Conclusions

## The future of Open Source



#OpenExpoTrends19

# Conclusions: Main trends 2019



## Conclusions



### Big Data

Deepening the analysis and real value of the data



### Inteligencia Artificial

Applied to all sectors



### Internet de las cosas

Deepening in the global connection

The three trends that experts of the Open Source world bet for 2019 show us an increasingly intelligent and connected future in which the analysis of the real utility of the data and its capacity to respond to the people and business needs will gain more value.

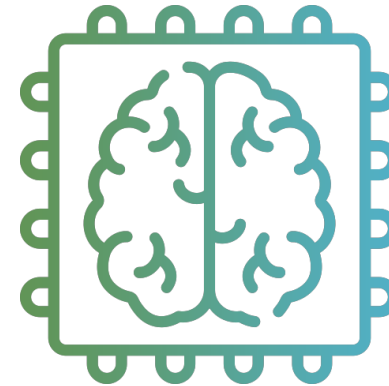
#OpenExpoTrends19



# Conclusions: Main trends 2019

Every day (either we are aware or not), we are in contact with open technologies and these tools are **increasingly present in the different areas of our lives**. The trends of the sector converge in a paradigm shift in the way we handle fundamental aspects of our lives and the way we relate in different areas: education, government, work, production, private life, property, money, mobility, travel, etc.

The demands of web users related to: technological sovereignty, inclusion, democratization, integration, access, participation, and transparency, **could be answered with Open Source in the near future** that the professionals in the sector - convinced of their work - are building every day.

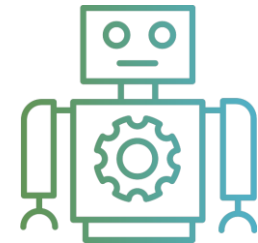


In the companies, to date, they had been allies in the generation of added value, that possibility of innovating with greater agility and responding to the speed required by the market. But, they have already become a key part of the future of any company or business. In addition to the large niche of startups that have driven, also within the large companies forced to go adapting to the constant changes in the environment. This is a reality in technological and non-technological companies. **Organizations of all kinds demand more new solutions to satisfy the market and optimize business models and production.**

# Conclusions: Main trends 2019

## What will we see in 2019?

- **IA, intelligent machines and systems.** Voice services such as Google Home, Alexa, among others, gain great strength.
- **IoT.** on the way to post-modern cities where we will find more and more intelligent urban objects that help people and companies to optimize their routines.
- **Blockchain.** That, although it has been famous for all cryptocurrency issues, is much more than that and this will begin to be seen in 2019 with person-to-person transactions and smart contracts, for example. These technologies are bases that allow to innovate.
- **Big Data.** Within an exercise of transparency of both public and private data, with the objective of taking more advantage of it. And, besides, can be shared to create value and improve our lives.
- **Cibersecurity.** There is a very strong companies awareness to invest in cybersecurity. A computer security problem can cause, no matter how big is the company, to falter. Cybersecurity by design will be stronger.



This open and flexible future, with new models of collaboration and management, shares values with the philosophy of open technologies. As well, professionals in this sector are also, in turn, citizens of that new world. From there new models and ventures will emerge.

**The future is open to creation and constant improvement.** When the synergy between people, processes, and technology is perfect, it will be unstoppable. The good news is that these pillars of transformation are getting closer and this will be increasingly evident in our lives in 2019.

# Evolution of trends



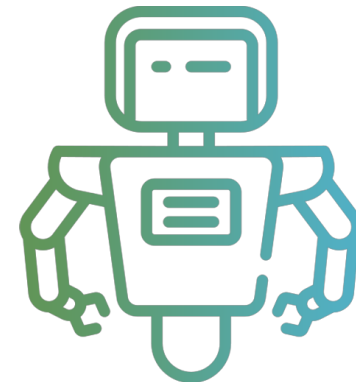
What we see now is an evolution of the trends we have been seeing for several years in the panorama, not only of the Open Source world but also of technology, in general.

- **In 2017**, Open Data, IoT and cybersecurity in companies stood out as key points.
- **2018** was marked by AI, Blockchain and hybrid cloud solutions.
- **In 2019** we continue in this line. We are not facing a disruptive trend but rather to key issues that are becoming entrenched in its interest and growth curve. Trends that are consolidated in organizations but, above all, stand out because -in general- they are changing our way of thinking, feeling and doing things.

The real revolution will be in:

- The increase of penetration and uses of existing tools.
- The adoption of these technologies by the connected majorities.
- The consolidation of its use in all sectors and its application in the corporate, industrial and private sphere.
- Innovation and new forms of application.

Is evident a certain maturity in the handling of the data and in people-centered perspective that could offer users and consumers more and more groundbreaking experiences adjusted to their needs.



**#OpenExpoTrends19**

And soon...

# OpenExpo Europe 2019

## 20th June in Madrid - SPAIN

VI Annual Fair and Congress on Open IT Innovation that brings together in Madrid/SPAIN more than 3500 personalities of the sector, professionals and companies in search of business generation.

The objective of OpenExpo Europe is to disseminate, present, discover and evaluate the solutions and trends of the industry offered by Open IT Innovation

### An event focused on ROI

1 day, 7 Conference rooms, **+200** papers , **+400** participant enterprises, **+3.500** professionals, **+5.900** m2

[www. openexpoeurope.com](http://www.openexpoeurope.com)

FOLLOW US:



# If you enjoyed it, do not hesitate to share it!



Post it



[Share it](#)



[Tweet it](#)

Do you have any suggestion about the eBook conclusions?

Would you like to add another trend?

Do you want to share your opinion about it?

**Send us your comments throught our social networks or via mail!**

Follow us



Contact us



**#OpenExpoTrends19**