The Positive Way

WAVESTONE

IOT PLATFORMS:
THE CORNERSTONE OF A SUCCESSFUL IOT STRATEGY

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After two lackluster years of launching IoT-related transformation projects, 2019 seems to be the year of fruition. In a market where IoT platforms are overwhelmingly available, the temptation to opt for a single platform may appear to be a rational choice. However, this is often not the most appropriate solution.

IoT projects are seen as growth drivers and technological accelerators for the transformation of companies' lines of business. These lines represent an important diversity of uses that can be adapted to technological needs, security and business models. All of these elements require us not to reconsider the choice of the IoT platform as a single component, but rather to deal with a range of solutions that are consistent with the lines of business.

THE IOT PLATFORM, AN ESSENTIAL COMPONENT OF THE CONNECTED SERVICES VALUE CHAIN

The objectives of IoT platforms can be very different depending on whether you represent IT or business populations. From an IT perspective, an IoT platform can be defined as all the technical services used to control devices, collect and analyze data, and secure exchanges from the device to the information system (see diagram). Meanwhile, from a business perspective, the IoT platform is a vector of innovation through which new services can be offered to customers (internal or external), thereby creating value or improving performance. With its CVMP[1] platform, the automotive manufacturer PSA is able to provide connected navigation, preventative maintenance and concierge services to its customers, thus enabling it to transform and generate new revenues.

In order to meet these challenges, publishers have adopted various strategies. There is a vast array of options to choose from; between highly specialized solutions intended for particular business lines, and more generic solutions that must be customized, the offer is overwhelming and making the right choice can become a real headache.

A DIFFICULT MARKET TO NAVIGATE DUE TO THE ABUNDANCE OF OFFERS

The major IoT challenge for companies remains the choice of a platform. With more than 500 solutions available, it is becoming difficult for uninitiated organizations to find their way around.

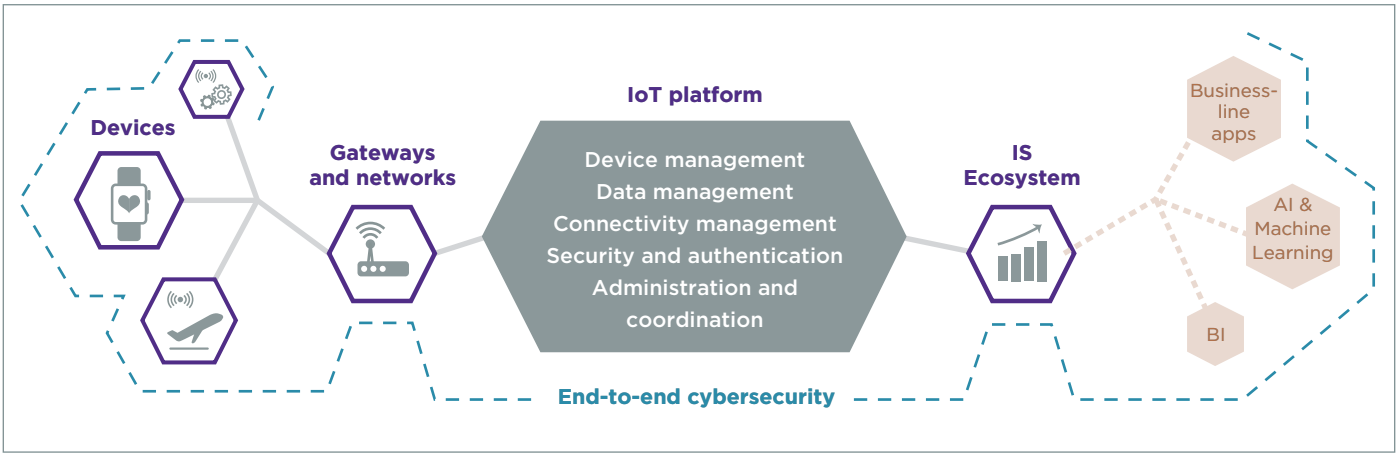
In addition, the IoT platform market has not yet stabilized, with numerous M&A transactions taking place each year. In September 2018, Siemens announced the acquisition of the Mendix[2] low-code platform, which will be integrated into MindSphere, the group's global IoT solution. In the field of home automation, the industrial player Legrand announced last November the acquisition of the French startup Netatmo[3], a specialist in the connected home.

In a market that may seem overwhelming at first glance, players can in fact be grouped into five distinct categories (see table).

While these categories make it possible to classify players, it's important not to start the process of choosing a player and platform without having first identified the distinguishing criteria, in particular, the most important of them: the support of business use cases.

USE CASES, A KEY FACTOR WHEN CHOOSING AN IOT PLATFORM

Before embarking on the choice of a solution, it is essential to define the use cases that will be implemented as connec-



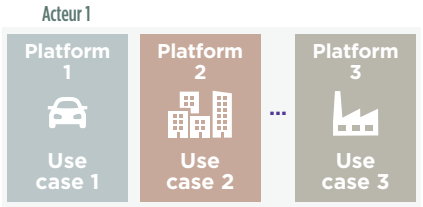
CLOUD PLAYERS	INDUSTRIAL SPECIALISTS	IOT PURE PLAYERS	TRADITIONAL IT PLAYERS	OPÉRATEURS TÉLÉCOMS
AWS | Google IBM | Azure	Siemens | Bosch Schneider Electric	Telit | Netatmo ThingWorx | Ubiant	Capgemini | SAP Oracle | Accenture	Live Objects | AT&T Objenious | T-mobile
Thanks to IoT platforms that can adapt to a wide range of use cases and established technological expertise, cloud giants are leading the IoT platform market with the most comprehensive functionalities.	As device manufacturers, more and more are adopting a service-oriented approach and are offering «turnkey» IoT solutions that enable them to position themselves throughout the IoT value chain.	Vertical platforms that cover specific use cases (SmartHome, Industry, Automotive sectors, etc.). Their strength lies in their sectorial expertise, which makes them real time-to-market accelerators.	Undoubtedly the least present category of players on the market. Their technological strength allows them to offer customized IoT platforms and support for all project phases (design, deployment, run, etc.).	By capitalizing on their core business, telecom operators have developed IoT solutions with comprehensive connectivity building blocks and high interoperability capabilities.

1. https://media.groupe-psa.com/fr/le-groupe-psa-et-huawei-devoilent-leur-1er-vehicule-connecte
2. https://www.mendix.com/blog/siemens-to-acquire-mendix/
3. https://www.legrand.com/fr/actualites/acquisition-de-netatmo-leader-francais-de-la-maison-intelligente

ted services. These use cases provide an essential constraint to better target market players during the consultation phase, by considering both generalist and specialized platforms.

In addition, the use cases identified are often spread over several domains (e.g. fleet management, industry, smart building, etc.), yet there is currently no IoT platform covering all requirements. To address this issue, companies can choose between two scenarios:

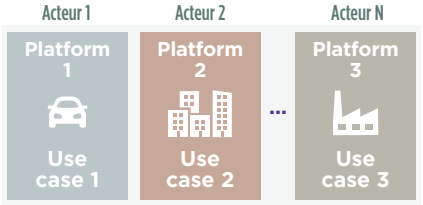
Scenario 1: ONE FOR ALL



Choose a generalist platform and then develop business rules that will **cover all use cases** (data enhancement, rule engines, alert thresholds, etc.).

VS

Scenario 2: BEST OF BREED



Combine several IoT platforms by acquiring a platform for each use case, thus **reducing Time-To-Market.**

Recently, several publishers have been enriching their vertical offerings with specialized solutions, making the "One For All" scenario increasingly accessible. This can be seen in the case of Microsoft who have a platform dedicated to the automotive sector and the launch of a new Azure Twins platform for Smart Building. Amazon has also taken the plunge and now offers two sector-specific IoT platforms around industry 4.0 and connected buildings.

While use cases are necessary when choosing a platform and defining an initial strategy, they alone are not sufficient and must be supplemented by criteria from the IT department, security and even legal teams, in order to avoid any mistakes.

BEYOND BUSINESS USE CASES, WHAT CRITERIA SHOULD BE TAKEN INTO ACCOUNT TO GUIDE DECISION-MAKING?

It is difficult to establish a generic list of criteria for choosing an IoT platform that would be applicable in all contexts and for all organizations. Nevertheless, our various support projects on platform selection processes have allowed us to highlight four main areas of reflection to be taken into account when defining the criteria.

The technological context

The choice of a platform is a part of a more general technological constraint. It is important to avoid the trap of simply choosing a state-of-the-art solution, and instead aim for consistency and homogenization of technologies at the company level. The main objectives for IT teams will be to:

- Facilitate the integration and interfacing of the platform with existing information systems (ERP, CRM, business applications, etc.);
- Ensure the sustainability of the deployment and a simplified reversibility through the use of standards;
- Make sure that the relevant people and skills are promptly available (both internally and externally) to deploy and operate the platform.

If the first point is an accelerator for implementation, the next two are essential to ensure that the platform is maintained over time. Moreover, since IoT solutions are mainly hosted in the cloud outside of France, it is also necessary to ensure that the chosen platform complies with the requirements imposed by legal frameworks in terms of data localization (GDPR, French Military Programming Law, etc.).

The business model

On the one hand, the choice of a solution must be made in accordance with the business model of the connected service. It is inseparable from the ROI and allows to avoid pitfalls that can cause the explosion of the cost of service, per device. On the other hand, the pricing models of IoT platforms may initially seem complex and unreadable, yet it is often possible to simplify the cost model based on the following elements:

- A target number of connected devices;
- An average amount of data exchanged per device;
- A fixed cost for the run of the platform.

These variables allow a target cost to be calculated based on the following formula:

> (Number of devices) * [(Cost of a device / year) + (Quantity of data exchanged per device / year) * (Unit cost of the data)]
> + Run cost = Total annual cost

Although this cost remains an approximation, it enables the comparison of offers by simplifying the financial model presented by the publishers. This cost can then be used to validate a ROI related to the platform.

Cyber risk management

At the end of 2016, the botnet (network of zombie machines) "Mirai" was making headlines by causing significant losses of services on global infrastructures (OVH, DynDNS). The concept of the botnet was not new, but its scope certainly was, due to the emergence of a fleet of numerous vulnerable resources: connected devices. At the beginning of 2019, Mirai's legacy is still very much alive. New compromise methodologies[4], new tools for discovering vulnerable IoT fleets, as well as new sleeping botnets, are constantly being discovered[5].

In the current technological environment, the threat of unintentionally becoming an accomplice to an act of cyber vandalism must be taken into consideration, along with traditional cyber threats, as these can have a direct impact on business. There are multiple risks associated with these threats: technological risks (partial or total unavailability of an industrial ecosystem, negative impact on the physical world, etc.), business risks (loss of image or intellectual property), legal and financial risks (proceedings initiated following non-compliance with regulations, etc.).

These threats are now leading to a collective awareness of IoT's cyber security issues. To frame the growing use of

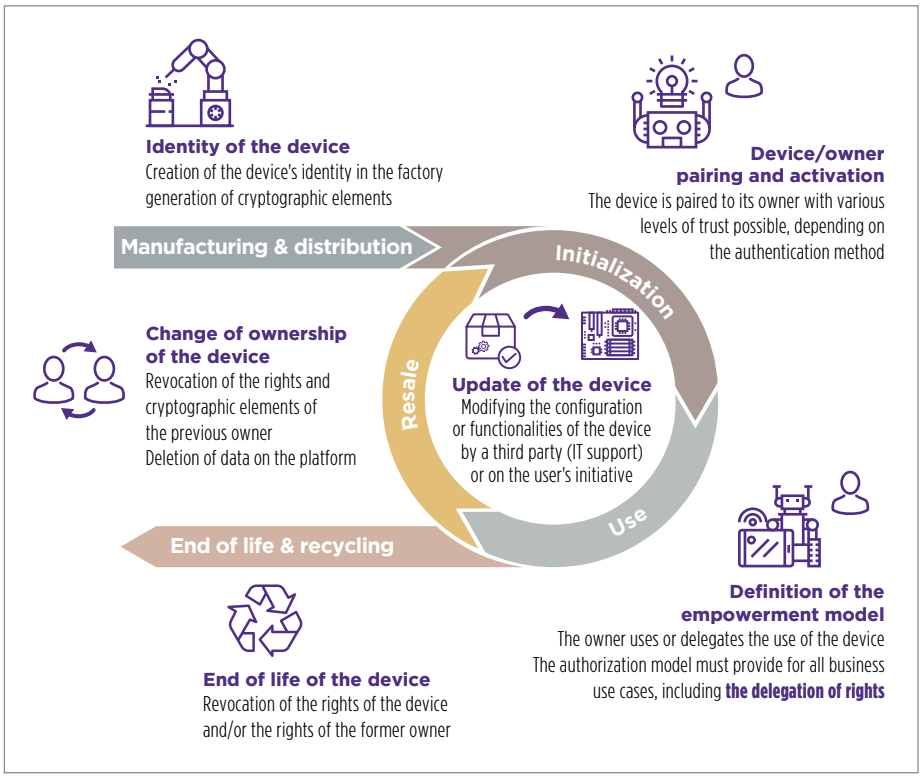
4. https://unit42.paloaltonetworks.com/new-mirai-variant-targets-enterprise-wireless-presentation-display-systems/
5. https://blog.avast.com/new-torii-botnet-threat-research

these issues, numerous regulations are emerging worldwide ("IoT Cybersecurity Improvement Act" in the United States, "EU Cybersecurity Act" in Europe, etc.). These will complete the legislative framework under construction around the issues of personal data protection. The disparity of the texts and their scope of application will require an in-depth study of the geographical scope of business use case deployment and its legislative constraints.

The life cycle of devices

A platform's functionalities must meet the needs associated with the life cycle of the devices it will manage. How and when is the device identity created within the platform? How will user pairing be implemented? Should we allow for and anticipate the resale of the device between private individuals? What actions should be taken at the end of the device's life or when it is recycled? These questions must be addressed in the project design phase in order to avoid unpleasant surprises after deployment.

A methodology organized around the device's life cycle makes it possible to anticipate all business use cases. In each of these steps, it is crucial to pay close attention to managing the identity of the device, its owner and its users (end customers or company employees), in order to anticipate the implementation of the role and delegation model within the platform. This will involve interfaces between the company IAM, Customer IAM and IAM of Things, which will have to evolve throughout the life of the device.



CONCLUSION

We have seen that the choice of an IoT platform should not be limited to a purely technical decision. Business use cases, security needs and business models have such an impact that it becomes impossible to factor all these elements through one platform. While the choice of a single player that allows for the diversification of platforms might seem facilitative, it is important to bear in mind that this will make the implementation of use cases more complex and will therefore require a deep appropriation of the platform. In contrast, other players have chosen specialization through the integration of advanced off-the-shelf business functions based on artificial intelligence. These new functions will be important differentiators.

Publishers have well understood that it is crucial to appeal to the different business lines, as the choice of platform and the success of IoT projects cannot be done without them.

The Positive Way

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In a world where knowing how to drive transformation is the key to success, Wavestone's mission is to inform and guide large companies and organizations in their most critical transformations, with the ambition of a positive outcome for all stakeholders.

That's what we call "The Positive Way."

Wavestone draws on some 2,800 employees across 8 countries. It is a leading independent player