

# The impact of the Internet of things on financial services: The insurance industry

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[special issue of *Réalités Industrielles*, February 2019]

## **Abstract:**

The Internet of things (IoT) has advanced during the last ten years. It now compels recognition as a phenomenon disrupting many a sector. Manufacturers, the first to realize this, were soon joined by financial services. In finance, the majority of IoT projects are being conducted in the insurance industry (in particular: use cases in insurance for automobiles, homes and personal protection). The revolution of connected devices threatens some insurers, since it might substantially reduce the activities to be insured at a time when newcomers are moving into the market. For sure however, the IoT will provide undeniable leverage for growth, since it will orient consumption patterns more toward use than ownership. This will be an opportunity for those players who design offers turned toward more customization and after-sales followup.

The Internet of things (IoT) is penetrating ever faster all branches of industry in France. What about financial services? Among them, the IoT revolution seems to have the biggest impact on insurance. Connected automobiles, connected homes, connected healthware... so many fields where the IoT might be seen as a menace, mainly because the “insurable base” will contract and because, thanks to this technology, newcomers enter the market. In our opinion however, the IoT also bears major opportunities for insurance, both for stimulating growth and changing this industry’s business model.<sup>1</sup>

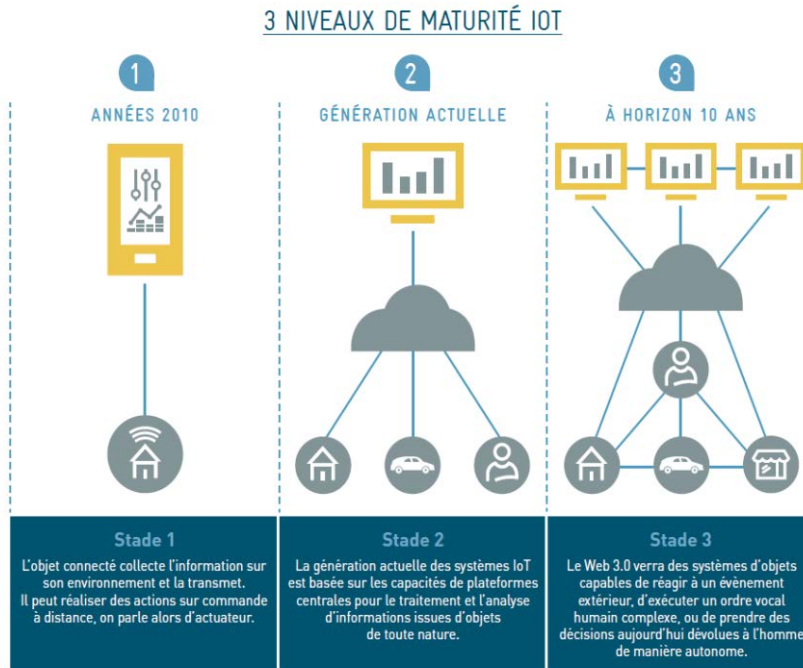
## **Let’s try to define the IoT...**

What characterizes a connected device is that it can collect and transmit data about its immediate environment, and, in some cases, execute on command actions from a distance. The current generation of IoT systems is grounded on the capacities of central platforms for processing and analyzing the information coming from connected devices of any sort. Edge computing, which mainly consists of endowing things with intelligence, with the capacity for analytics and communication with such devices, will realize what is commonly called the Web 3.0. Along with the latter will come systems of connected devices capable of reacting to exterior events, of executing a complicated instruction given by a human voice, or of decision-making, which is now the privilege of human beings. The potential services are numerous, and we can imagine but a tiny part of the changes that will occur. It is probably no longer pure science fiction to imagine a vehicle come to the user or an apartment adapt in real time to life situations.

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<sup>1</sup> This article has been translated from French by Noal Mellott (Omaha Beach, France).

**Figure 1:** IoT: Three levels of maturity: 2010s; current generation; ten years from now  
*Source:* Wavestone.



## The IoT is for now!

IoT-related services — already for real in France — are accelerating.

### The light changes to green

At the start of the 2010s, the IoT emerged in France with a first generation of devices, including the still emblematic connected bracelet. By early 2018 however, the number of IoT-related industrial services rolled out in the mass market is, we are forced to admit, but a few dozen, all sectors taken together. Two main reasons account for this:

- the difficulty of solving such a project's financial equation, in which the major term is often the still high cost of sensors.
- firms' wariness of a technology with levels of reliability and security that are deemed insufficient.

Nevertheless, France became the leading destination in Europe of IoT investments for the first time in 2017, with a steep increase during the second semester.<sup>2</sup> After all, the top world talents in "deep technology" are French for 94% of investors.<sup>3</sup> French firms are preparing for this trend to accelerate. Many of them have integrated the IoT in their development strategies (IoT programs, IoT devices, etc.) in an effort to move beyond the phase of experimentation.

<sup>2</sup> According to Dealroom.co (2017).

<sup>3</sup> According to Wavestone.com (2017).

Given the inevitability of IoT's diffusion in tomorrow's financial services, massive orders will eventually be passed with the manufacturers of connected devices; and this will trigger a significant reduction of costs.

## The IoT has already added value in operational performance and customer services

The value added by IoT is being already demonstrated. Rapid gains are possible in both operational performance and offers to customers/users (new services, the customer experience). For the first, the IoT provides a lever to manufacturers for creating value through the performance of maintenance operations and operational management. With regard to customer/user services, significant advances have been made in health, in particular ambulatory patient services and the followup on chronic illnesses. These innovations have reached an advanced phase of maturity in a real environment. Their proliferation is evidence that they are taking off in France.

The acceleration of IoT's development in France is undeniable. The businesses that do not take account of the IoT in their strategies risk lagging behind and eventually hampering their own development.

## **The IoT breaks up value chains and whets appetites for controlling connected environments**

Understanding users' needs, managing customer relations, and federating and orchestrating services all along the chain are decisive for developing new B2C and B2B2C services.

### At stake for the digital giants: An ever more granular knowledge of lifestyles

In this combat zone, the giants in the digital realm will be daunting foes. They are engaged a bitter battle to control these communicating environments and the related data (smartphones, smart cars, smart homes...). The battle between Google, Apple, Facebook and Amazon (GAFA) now raging over smart speakers clearly illustrates this competition for control over connected environments.

Several highly lucrative markets, such as digital advertising and sales (of products, services and the collected data) motivate this quest for control over communicating environments and, therefore, over relations with customers/clients/users as well as over their connected devices and personal data. For this reason, the digital giants are ready to invest massively to reach out into our means of transit, public or private, our housing and our health-care systems.

Traditional players are staking out positions to remain leaders in their markets or even win new markets

Facing the global giants of the digital realm, French businesses with established positions in “mobility” (transportation), the building industry, housing and health have been busy. They are undertaking initiatives and forming partnerships, not just with each other but also with startups. Compartments in the mobility market are being torn down; and the players there, pushed into partnerships with the goal of developing tomorrow’s connected services. As for housing, complicated games of alliances or clashes are being played to make offers of IoT services on market segments for comfort, energy, security, leisure and, too, centralized home automation systems. In the field of health, the number of newcomers is impressive. The IoT has midwived a new health market for the general public, namely wearables.

Looking beyond this phase of proliferation, strategic questions crop up. What trends will prevail? Does “intermediation” inevitably mean a profit-earning capacity?

## The IoT menaces the insurance industry

The IoT has provided strong leverage for development in several industries. Connected devices are vectors of change for financial services. The strongest impact will be felt on the insurance industry, especially on car, home and health insurance.

Figure 2: Toward the driverless vehicle  
Source: Wavestone.



## A shrinking insurable base

With regard to motor vehicle insurance, the IoT's development will probably reduce the insurable base, *i.e.*, what can be insured. The gradual adoption of connected vehicles and their increasing autonomy will, thanks to effective systems of assisted driving, improve safety for drivers.

According to statistics in 2014, 93% of automobile accidents resulted from human errors; and human error alone accounted for 57% of them. Connected vehicles will spare us the large majority of accidents. These vehicles, equipped with sensors, analyze their environment in real time and react nearly instantaneously to risky situations. Given the coming democratization of driverless vehicles, the number of accidents is predicted to be halved by 2030. Although the autonomy of motor vehicles is still low (two on a scale of five), the number of accidents has already started falling. The partially autonomous vehicles now in use have reduced the risks of collision from 7% to 15% in comparison with older vehicles.<sup>4</sup> This decrease in the number of accidents has just started and will be gradual given both the slow rate of adoption of highly autonomous vehicles and the time it takes for a full turnover of the existing fleet of motor vehicles.

For sure, underwriters are worrying about this contraction of the insurance base. Halving the number of accidents by 2030 would amount to an equivalent loss in sales of motor vehicle insurance. This shrinking volume of accidents is very likely, but the impact on the cost of accidents is still unknown. An increase of the average cost of material claims can be expected owing to the higher cost of repairing a connected vehicle with its embedded technological equipment. For claims in cases of bodily harm however, this technology should reduce the seriousness of accidents. As a consequence, insurers will probably have to redesign their business models in order to adapt to these trends.

## Newcomers in the market

As mentioned, the IoT promises to reshuffle competition. It might open the market to newcomers, mostly from digital high tech. Since access to data is decisive, whoever manages to control the data will have the opportunity to upend current business models. The GAFA firms are already trying to penetrate this market from both ends of the value chain. AT the one end, they are trying to form partnerships with automakers in order to have their voice interfaces (Google Assistant, Siri, Alexa...) embedded on board cars. This would place them in a key position for freely offering their own services to users. At the other end, these firms, by staking out positions as pioneers in the production of driverless vehicles, are moving toward a vertical integration of the "mobility market".

Thanks to their voice assistants and driverless vehicles, GAFA could profit from a preferential access to data. This menace is serious, since these firms could then use their own capacity for analyzing data and uses and then offering services — including car insurance. The introduction of their voice assistants in homes is spurring a similar trend in the home insurance business.

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<sup>4</sup> According to David Zubay, vice-president of the Insurance Institute for Highway Safety.

## **Major opportunities for financial services**

Though undeniably a risk factor for the insurance industry given their potential loss in sales, connected devices might also be a source of opportunities for those firms that adapt by adopting new business models.

### **From ownership to use**

The technological trends borne by the IoT affect uses and consumption patterns. A good example is the upsurge in the “sharing economy” symbolized by “car-sharing”, a market that firms like Blablacar or Drivy soon dominated. This new consumption pattern first turned up in the use of cars and then gradually spread to other forms of mobility: bicycles (Ofo and Mobike) and, more recently, scooters (Lime and Bird). The whole mobility sector is moving from an economics of ownership toward an economics of use. This radical change forces insurers to reconsider business models and thus opens several opportunities.

One opportunity is to develop B2B2C offers for users on “car-sharing” platforms. A second opportunity is to modify the B2C insurance policies being offered so that subscribers can take them out for specific uses: the insured would thus be covered during their periods of “mobility” whatever the transit service they use. Insurance information systems are usually top-heavy, and this is a handicap. To move ahead, it is probably necessary to work with startups. Some “InsurTechs” (*e.g.*, Trov and Leocare) are proposing policies to which users can subscribe in a few minutes and then activate or deactivate depending on their needs.

### **From the standard to an individualized contract**

A historical pillar of the insurance industry is the pooling of risks, but the use of connected devices is upending this principle. By processing the volume of data collected by these devices, insurers can gain knowledge about a client’s individual behavior patterns in nearly real time.

This understanding of risks in relation to individuals is giving rise to a new risk management and a new generation of insurance products. Behavior-based insurance policies are now being offered for connected vehicles, based on the principles of “Pay as you drive” or “Pay how you drive”. The premium is specific to each subscriber, determined as a function not of the subscriber’s profile but of an analysis of the distance to be driven or of the driver’s behavior behind the steering wheel. Insurers claim that the risk by driver can be calculated within a 9-month period by using the driving data collected and transmitted by the driver’s vehicle. At present, this is done by installing a telematic box on board, but insurers have imagined that this expensive box installation can be taken out of the car after the period is up. With a step of the imagination, we can even predict that the current bonus-malus system will be overhauled. When a client switches insurers, the new insurer would have access to the full history of the client’s driving behavior.

The IoT offers the insurance industry the possibility for proposing new services. An insurer’s success will depend on having these new sources of data processed and detecting new consumption patterns. It will also depend on the user accepting new services that lie outside the insurance company’s core activities, such as advice on driving or on hygiene. Will clients see insurance companies as legitimate for offering these new services?

## From indemnification to support

Insurers can use the IoT to better understand the insured — their behaviors and risk-taking. This improved knowledge is an opportunity for insurers to increase their contacts with clients. These contacts now occur mostly during subscription and indemnification. Connected devices open toward customer support and followup programs for offering new services.

In the case of connected vehicles for example, insurers provide feedback to their subscribers about how to improve their driving and, as a consequence, lower the risks they take. They (*e.g.*, YouDrive at Direct Assurance) usually offer to score the driver and provide advice for improving the score.

In the field of health, Aetna, an insurance leader in the United States, has set an outstanding example. It offers its employees and clients Apple watches as an incentive for them to look better after their health. This is emblematic of the programs proposed by insurers (*e.g.*, Generali Vitality): connected devices enable users to monitor their health and physical activities or even the quality of their sleep, and thus reduce risks — with a measured effect on the state of health and life expectancy of those who diligently follow the program. Apart from prevention work, the use cases for insurers might include: the followup on clients after hospitalization in order to stabilize their state of health; remote control of the client's health in order to reduce the period of hospitalization (for insurers who run clinics); the reduction of everyday risks, even minimal ones (for insurers who, under French Social Security Health Insurance, are allowed to reimburse fees for care from the first euro paid, *e.g.*, the MGEN); and in-home care for the aged. Connected devices can easily detect a modification of an elderly person's habits and routine.

The IoT thus turns out to be a technological opportunity for improving health care and making it more fluid. The French demand for e-health is strong: 43% declare that they use on their smartphone an application related to health or well-being, but a connected device's average period of use was only a few months in 2015.<sup>5</sup> Furthermore, the average score of applications was but 4.7 on a 10-point scale.<sup>6</sup> It is, therefore, important to identify how this new technology is put to use and to place it at the service of a patient's channel of treatment, including both care and prevention.

## Conclusion

The insurance industry and, more broadly, financial services are ideally positioned to tap the IoT's potential. Insurers have developed an expertise for risk assessments and a relationship of confidence with their clients. They can broaden their position thanks to their clients. The right approach to success is probably experimentation. By testing new business models, insurers will come to understand the difficulties of processing the data from connected devices, of earning consumer confidence so that users accept to share their data, and of fitting as best possible into a complex ecosystem so as to obtain access to these data and propose attractive services.

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<sup>5</sup> P. 36 in PIPAME (2016) *E-santé: faire émerger l'offre française en répondant aux besoins présents et futurs des acteurs de santé*, rapport final (Paris: Pôle Interministériel de Prospective et d'Anticipation des Mutations Économiques) 120p, available via [https://www.entreprises.gouv.fr/files/files/directions\\_services/etudes-et-statistiques/prospective/Numerique/2016-02-Pipame-e-sante.pdf](https://www.entreprises.gouv.fr/files/files/directions_services/etudes-et-statistiques/prospective/Numerique/2016-02-Pipame-e-sante.pdf).

<sup>6</sup> IPSOS survey (2016) for AG2R La Mondiale & MedAppCare.