

# Is the Financial Services Industry ready for the explosion of Internet of Things?

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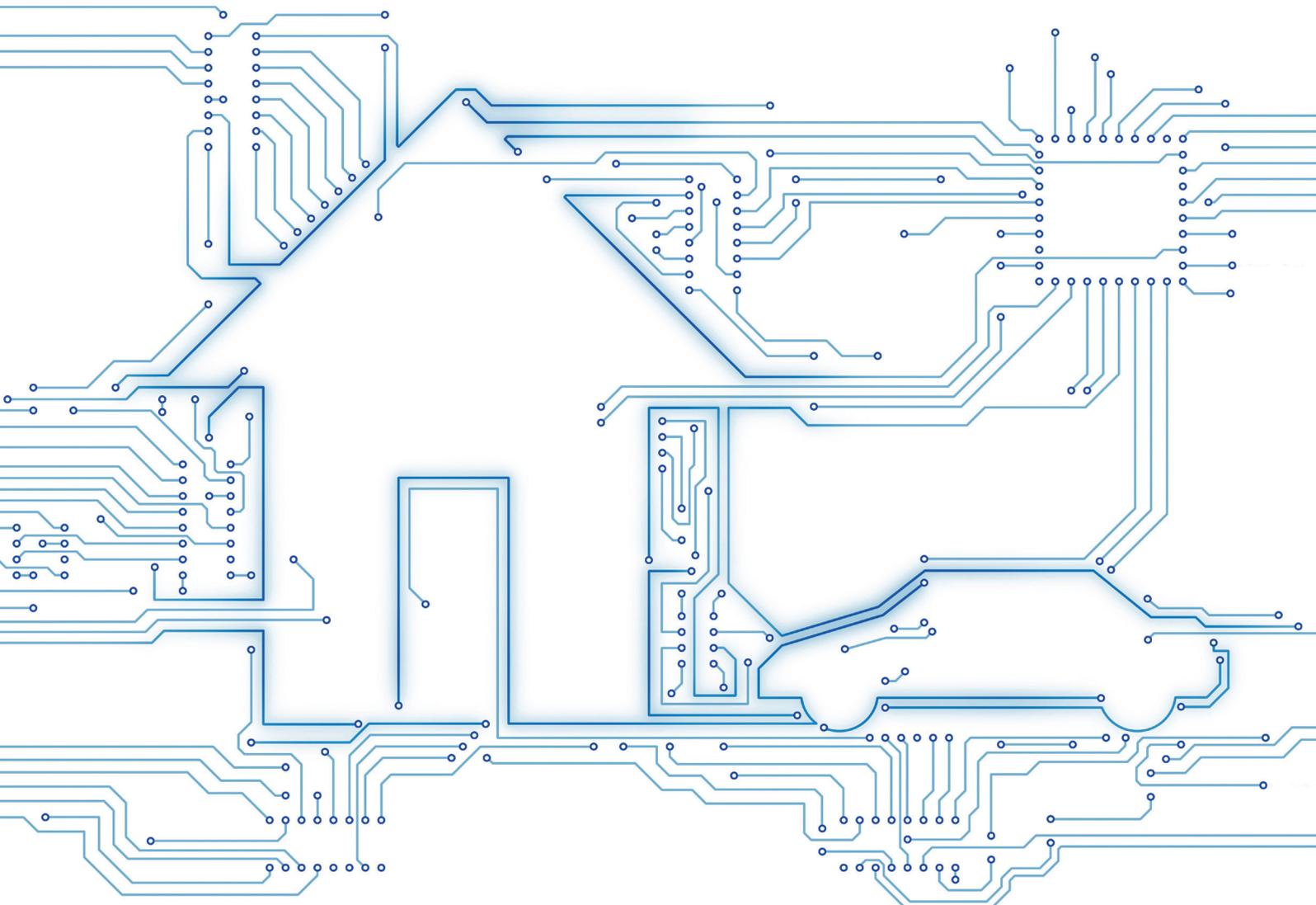
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What is the Internet of Things (IoT) and what impact will it have on your business? The number and diversity of IoT devices is increasing rapidly. These devices provide us with a whole host of data that is extremely important for value generation. There are a lot of challenges ahead, but by making yourself ready and actively participating in the development of IoT, you can stand out from your competitors and provide your clients with innovative services.

#### Introduction—What is IoT?

Everybody is familiar with the internet. But what exactly is this emerging trend called the Internet of Things (IoT), sometimes referred to as the “Internet of Everything” (IoE)? Interest in this topic is growing daily. This is a vast subject with many layers of complexity but the key concept behind it is actually pretty simple. IoT is the network of any physical object with embedded technology that allows the device to gather data and transfer it over the internet or to another device.

A lot of devices already fall under the vast umbrella of IoT, ranging from a single-purpose thermal sensor with reporting capabilities to complex systems providing “upgraded” versions of objects from our daily life under the label of smart devices, which feature automation or remote control functions (e.g., smart homes). Today, the public is becoming increasingly familiar with IoT and interest in smart devices is growing thanks to the rise

of wearables. What does this term mean? Wearables—short for “Wearable Technology” or “Wearable Devices”—is in fact a subset of IoT. It refers to all smart devices that are integrated into clothing or accessories that can be worn, such as smart watches

All of these devices can collect and/or display data. The range of devices will continue to be diversified and they will form an ever-increasing part of our lives. Depending on the analyst, IoT is expected to consist of 26 to 50 billion objects in 2020<sup>1</sup>. Consequently, the quantity and diversity of data will create new challenges in terms of storage and security but also, and more importantly, new opportunities for business and economic models. Preparing for the future is good; actively developing it is better. Proactive players will be able to stand out from the crowd and create value to differentiate themselves from their competitors.

#### The pillars of Internet of Things

##### Things

Physical devices and objects intelligently connected



##### Data

Leveraging data into more useful information for decision making



##### Process

Delivering the right information to the right place at the right time

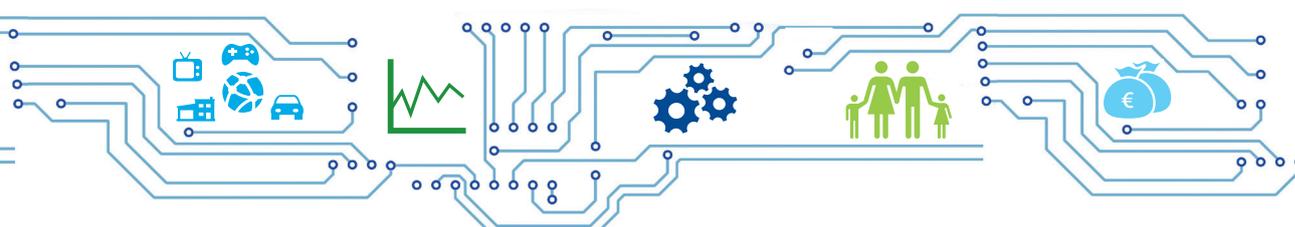


##### People

Connecting people in more relevant and valuable ways



Value



<sup>1</sup> <http://www.cisco.com/web/solutions/trends/iot/portfolio.html>

### Why should the Financial Services Industry care?

With the explosion of IoT, the world of financial services is entering a new era. FinTech, a new branch in the economic industry, is emerging. FinTech actually describes companies that use technology to innovate in the financial services ecosystem. With the high degree of risk related to the security of user information, traditional banking and insurance companies tend to be more conservative. On the other hand, many start-ups, and also major IT companies, attempt to propose innovative financial services and solutions by leveraging the capabilities offered by new technologies. As an example, many IT companies already propose their own mobile payment solutions.

Currently, there are mainly micro-services with limited interactions with each other but, with time, they will strengthen their positions and drive a revolution within financial industries. Even though the entry-level in the market is getting easier, traditional banking and insurance companies are still leagues ahead of most newcomers. Indeed, when dealing with sensitive client data, bank and insurance companies benefit from a wealth of experience and the client trust they have already earned.

### How can IoT enhance client value?

The benefits of IoT may not be so obvious for financial services companies. Nevertheless, IoT offers real potential for banks and insurance companies.

On the banking side, mobile payment has increased in popularity over the past few years. But payments are not the only benefit IoT has to offer banks. Despite all the effort put into detecting fraudulent payment and identity theft, instances still occur. Biometric sensors, for example, can help to increase the security of services by adding a strong authentication layer on top of the services provided. Also, data aggregated from multiple sources can help to better evaluate the risks

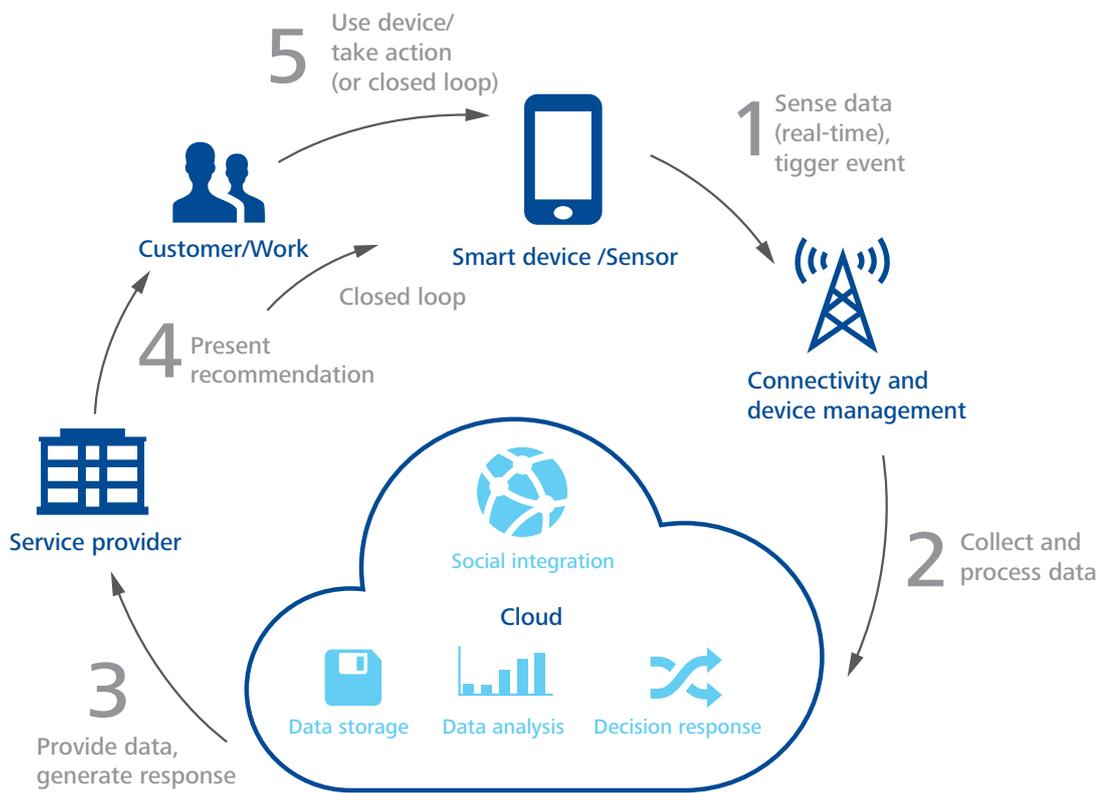
incurred when accepting a loan for a particular client, by determining a more accurate client profile.

The telematics market is emerging as a useful tool for insurance companies. Insurance companies use complex calculations to determine the risk associated with a client and define the price for their services based on the client's profile. However, they usually need to make many assumptions about the real behavior of the client. Using geo-localization technology, telematics can give precious information regarding a driver's habits and allow uncertainty to be dispelled in calculations and a more accurate risk rating to be attributed to each client. This way, services can be tailored to fit the client better and also make him or her more responsible by rewarding good driving practices with innovative plans, like Pay-as-you-Drive.

Another trend emerging for insurance companies is the use of health band data to provide more adapted services to clients, as well as providing emergency assistance by making use of monitoring and analytics technologies on the data collected.

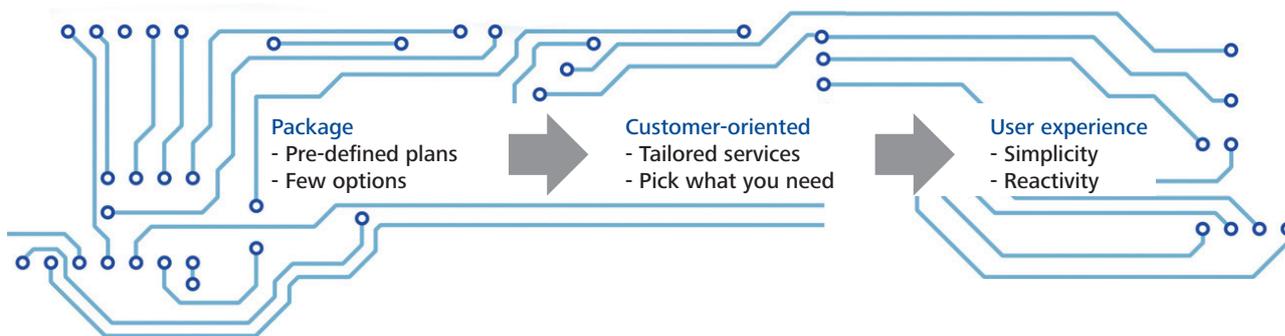
Telematics and health are not the only use cases of IoT for insurance. There are a range of sensors that can be installed in a variety of places to protect clients' properties. It is now possible to detect water-pipe leakage in homes so that repairs can be made before the cost of damages spirals out of control. On top of that, data collected can help to identify and prevent fraudulent claims.

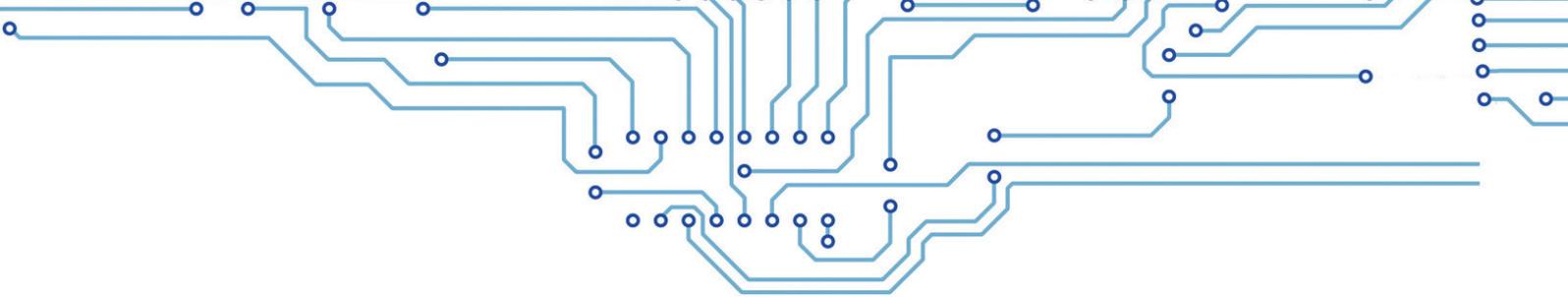
There are two driving forces in this adventure: clients and data. Putting the two of them at the center of the business can lead to a virtuous circle; knowing clients helps to create a proximity relationship and determine their needs, while collecting data is facilitated by the trust the client has in the company. In turn, the new data will allow the company to know the client better.



Which services do you want to develop? Or rather, how do you determine which services you should develop?

Evolution of financial services from yesterday to tomorrow





Over recent years, banks and insurance companies have been getting closer to their clients in order to adapt services to their clients' actual needs and give them an offer tailored to fit their needs with a personal touch. This is a great move, as proximity with clients is critical to having the necessary insight to understand their actual needs. Financial industries not doing this already are probably lagging behind their competitors and most likely not ready to take the next step.

Entering the world of IoT, the increase in information sources creates a situation where financial services can enhance the level of personalization they offer, thanks to progress made in the field of analytics. From simple analytics cases to real-time analytics, or exploring machine learning solutions, there are many ways to improve understanding of data and they can be a real asset for developing innovative services.

On the other hand, we are also entering an era where people are concerned about their privacy. Professionals dealing with sensitive client data are responsible for ensuring the security of such data so that no malicious third parties can access it. Client data is just as precious to a business as the clients themselves.

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Securing the data is the bare minimum, but from a client perspective, it merely scratches the surface. Should they blindly put their trust in any company providing financial services? The answer is a resounding "No". Each financial services provider has a duty to demonstrate why their clients can trust them. So how can such providers dispel their clients' fears regarding

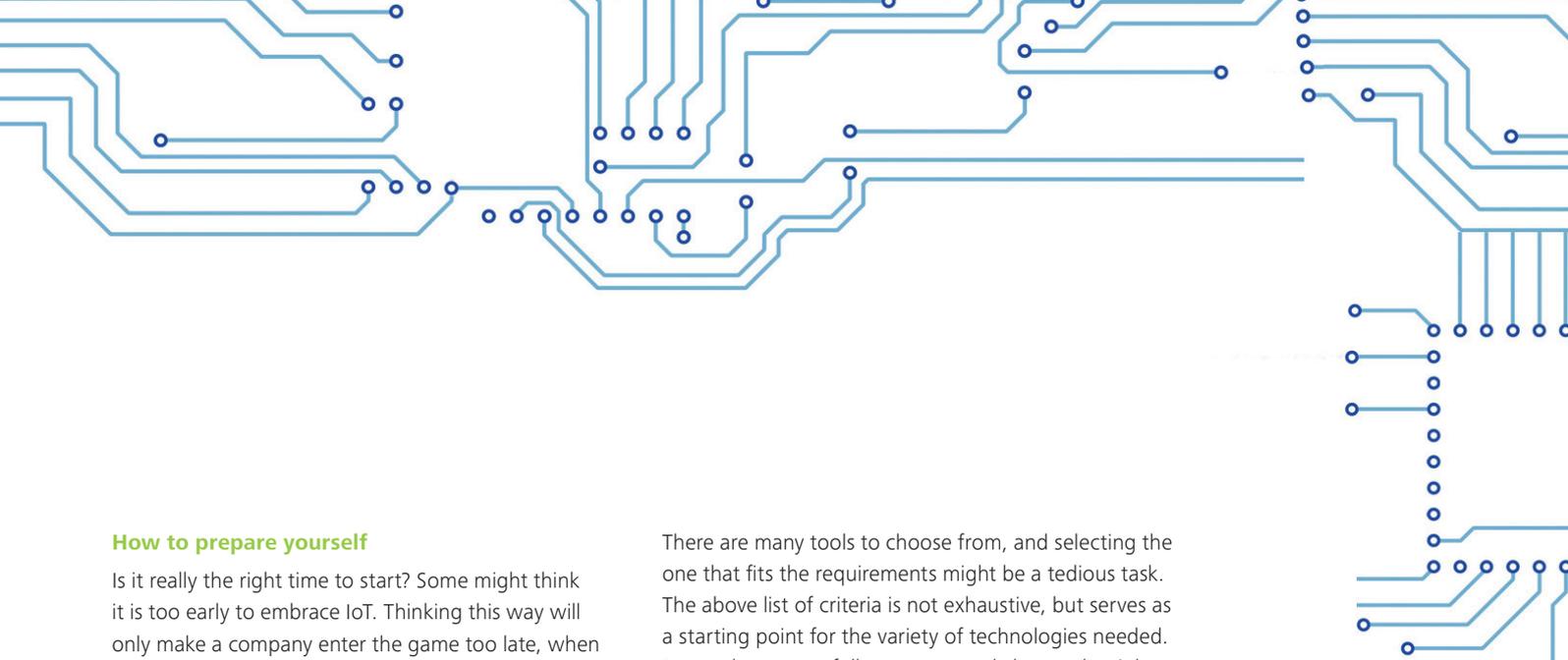
privacy? This is a very sensitive topic; most people do not like the thought of having other people accessing their personal data. A black-box model here would be the worst answer.

In general, clients need companies to be as transparent as possible regarding their use of private data. And this is even truer for banks and insurance companies, which have access to extremely sensitive information about their clients. Even though more and more people are becoming aware of the importance of data security and privacy, there are still many that are not aware or not paying enough attention to it. For this reason, regulators are a step ahead to prevent misuse of personal data. This is the case of the current reform of the European framework of data protection. In the context of industry, and especially for financial services, clear policies must be defined in terms of privacy and security and it should be easy for clients to find and understand what data is collected and how this data is helping to provide them with a better quality of service. The aforementioned step of getting closer to clients will show its value here. Proximity relationships are a real asset to building trust.

From a business perspective, informing clients is good, but involving them is better. What devices are they willing to use? Are they comfortable with letting a company collect specific data? No companies want to develop a service that their clients are not willing to use.

In short, answering the following questions with a focus on clients can be a starting point:

- What are the clients' needs? What are their expectations?
- What IoT devices/wearables are they willing to use?
- How can clients be reassured about their privacy and security concerns?
- What can be done to improve transparency regarding the use of client data?
- How can the privacy policy be made clear and understandable for clients?



## How to prepare yourself

Is it really the right time to start? Some might think it is too early to embrace IoT. Thinking this way will only make a company enter the game too late, when competitors have already released their own solutions. For those who are yet to start, they might want to initiate their project today, as it is a large-scale project and doing it right is going to take time.

To be successful in the digital world, it is necessary to support two speeds of IT. The first is the classic cycle needed to lay the foundations. The second is composed of fast cycles dedicated to client-facing operations. Indeed, as client expectations are changing, a shorter time to market is required.

Then, what should you start with? Having solid foundations on top of which services can be developed is vital. Here, we have a long cycle that will ensure the reliability of the underlying infrastructure for storing the data and securing access to it.

Next comes the determination of the short cycles. From a business point of view, what actually matters for financial industries is the data itself rather than the way in which it is collected. As we have seen before, the client is the core of your business, so the key to developing useful and successful services is to understand clients' needs and expectations. Then, the data needed will be determined by establishing the requirements for developing the service.

In most cases, dealing with IoT involves working in a context of Big Data. So, before going any further it is essential to make sure that the infrastructure is ready to handle the huge amount of data that it will have to process. Reviewing needs and constraints is a very large and complex task but here are a few key starting points:

- Storage & Query (SQL, MongoDB, Hadoop, Elasticsearch, Graphs, etc.)
- Replication (depending on the storage)
- Security (user access, encryption, firewall, etc.)
- Availability (failure recovery, real-time, etc.)
- Scalability
- Aggregation
- Analytics

There are many tools to choose from, and selecting the one that fits the requirements might be a tedious task. The above list of criteria is not exhaustive, but serves as a starting point for the variety of technologies needed. Remember to carefully compare and choose the right tools, as migration of data is always a delicate matter.

Once the infrastructure stack is ready, it is time to feed it with data. First, the data sources should be defined as well as the interaction with them. A good entry point here could be the design of APIs. Indeed, APIs may act as the centerpiece of your applications and services. Data collected by sensors can be sent to the API, which will deal with underlying storage. On the other side, application layers can retrieve data from APIs for user display. APIs can be considered as micro-services on top of which you will build your applications (macro-services).

Not only will this make the global architecture cleaner, but it will also make it easier to extend and enhance functionalities as the infrastructure grows. Integration with new tools or alternate data sources will be simpler with a clear understanding of what data is available and how to access it. It is also good to keep in mind that the more entry points are added into an architecture, the greater potential for a security breach there is.

We should now look at the process of selecting your data sources. First of all, a review of the different devices available will allow us to identify those that can potentially collect and provide the data needed. It might not always be possible, but the best way to balance the pros and cons of a device is to experiment with it.

There is no need for financial companies to restrict themselves to a single kind of device as their data source. Actually, one of the strengths of IoT is the variety of data available, and it is the ability to aggregate and analyze data from different sources that will make a difference in the long run.

Of course, it may be tempting to collect as much information as possible from various sources so that the data will be at hand when required. But the transparency commitment toward the client is more important. How is it possible to justify the collection of data when there is no actual need for it?

The following list summarizes all the aspects you should consider before selecting one or more IoT devices as a data source:

- Data collected by the device: does it match the requirements?
- Connectivity of the device: how can the data collected be retrieved?
- Quality and reliability of data: can the user alter the data?
- Upgradability: how easy will it be to add new features?
- Cost: how much does the device cost? Will the company or its clients bear the cost?
- Lifecycle: how often does the device need to be renewed?

As a side note, financial services companies may or may not have all the resources required to deal with each aspect of their project. This does not, however, justify not going forward with the project. Partnerships with specialized companies can be a solution. For example, some companies might not be comfortable with the embedded programming needed for some devices, while others may specialize in that. The same goes for the data infrastructure; some providers may have appliances with the tools already installed for companies that do not have their own datacenter. Remember that it is better to delegate rather than having hazardous support internally. On the other hand, choosing partners must be done very carefully, as it can affect the privacy and security policies. Also, there may be promising FinTech start-ups with similar projects, in which case acquiring them might be an option. Indeed, their technological background may also bring value to the product thanks to the different way in which they approach the problem.

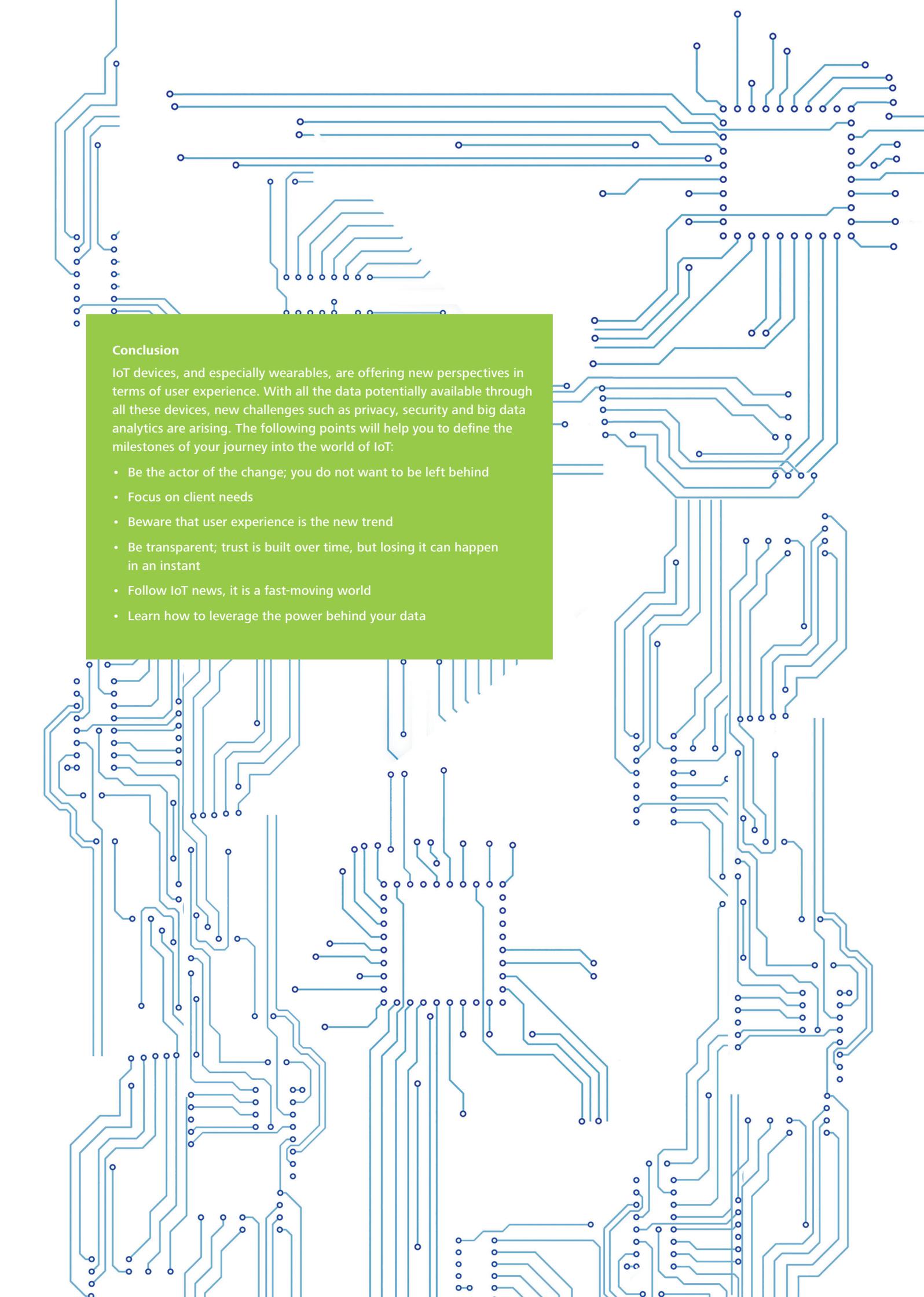
To summarize, depending on the situation, there are several solutions:

- Developing internal resources
- Finding the right partner
- Investing in promising start-ups

Finally, each layer of the infrastructure and services should be tested. Indeed, the world of IoT is evolving fast and keeping up with the pace might prove challenging. In this kind of scenario, it is easy to break compatibility as new features are released or old ones updated. Some principles of agile methodologies, such as Continuous Integration or Test Driven Development, are particularly adapted here, but Agile is not the only approach possible. What matters is to be comfortable with the tools and methodologies and get started.

In short, focus on your data and have the global picture in mind:

- Is the infrastructure ready? What changes are required?
- What data is needed?
- Is the service architecture well defined (micro vs macro services)?
- What sources will be used to collect data?
- Are all the resources available to handle the project internally?
- Is the global test coverage strong enough?



## Conclusion

IoT devices, and especially wearables, are offering new perspectives in terms of user experience. With all the data potentially available through all these devices, new challenges such as privacy, security and big data analytics are arising. The following points will help you to define the milestones of your journey into the world of IoT:

- Be the actor of the change; you do not want to be left behind
- Focus on client needs
- Beware that user experience is the new trend
- Be transparent; trust is built over time, but losing it can happen in an instant
- Follow IoT news, it is a fast-moving world
- Learn how to leverage the power behind your data