

Executive summary

# Digital Industrial Transformation with the Internet of Things

How can European companies benefit from IoT?

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# Digital Industrial Transformation with the Internet of Things

## INTRODUCTION

Europe's industrial companies, pressured by the competitive and fragmented European markets, ongoing economic headwinds and growing operational costs, need to streamline operations and boost their product and service offering should they wish to build momentum and increase their competitive advantage.

Due to the asset-intensive nature of their business, players have traditionally invested more in their operational technology (OT) than in information technology (IT), many of them being hamstrung by decades-old legacy systems and processes. But as new digital technology developments take place, solutions that could integrate the OT and IT worlds are beginning to emerge. This integration could mean unlocking opportunities to make processes more efficient and products more valuable. The Internet of Things (IoT) is one such concept that brings the paradigm of connectivity into the business, and enables the integration of people, assets and processes into a single point of view, paving the way for obtaining valuable business insights for industrial players.

But how serious are industrial companies about moving forward with IoT and what do their IoT roadmaps look like? This study sets out to explore how European industrial companies are approaching IoT initiatives from an investment, implementation and strategy perspective. Based on interviews with 250 senior CXO-level, business and technology decision makers, this report explores the strategies and approaches that process manufacturers and discrete manufacturers are taking in order to embed IoT solutions into the core of their business and enable digital transformation.

The study also outlines specific IoT use cases from industry that companies have recently undertaken, and looks at what they are trying to achieve through this investment.

The study makes vital and interesting reading for senior decision makers at European industrial companies that are looking to better understand the progress their peers are making on the increasingly important topic of IoT.

72% of industrial companies in Europe will increase their IoT spending, but what is the most important priority on their IoT agenda?

# KEY FINDINGS



**72% of the companies will increase their IoT spending in the next three years.**

A solid amount of companies plan to keep this increase between 10% and 30%, while some of them are willing to raise spending by more than 30%.



**60% of the companies are already involved in IoT initiatives.**

More than half of these, however, are still in the early stages of deployment and have some ongoing IoT projects.



**Cost reduction is seen as the biggest driver of moving IoT initiatives forward for 69% of the companies.**

However, the fact that product improvement and development of new business models took second place on the list of drivers shows how IoT investment can be channeled towards driving top line growth rather than just reducing costs.



**Investment decisions for IoT solutions are mostly made within IT departments but line of business executives also have considerable influence.**

This, however, largely depends on the country in question and the scale of the projects under consideration.



**Data security and privacy concerns top the list of challenges that are slowing down IoT adoption for 70% of the companies.**

Apart from fears of cyber attacks, there are also mounting regulatory burdens, especially ahead of the General Data Protection Regulation (GDPR).



**Companies cannot bear the fruits of IoT on their own, and will require assistance along the way.**

More than 50% of them are strongly involved with IT services companies and consulting firms, which is reasonable bearing in mind that successful IoT requires significant expertise both from a solution delivery and business advice perspective.

# KEY TRENDS

## Key trends by industry

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### Automotive and discrete

**63%** have ongoing IoT projects and, apart from being driven by cost reduction, companies think significantly about creating connected products as well as improving customer experience and product quality, with more than **50%** of them seeing these as major drivers of IoT initiatives. **51%** of companies are strongly involved in working with IT services companies on IoT developments.

### Process

**56%** have started their IoT initiatives, which are mostly driven by IT departments (**45%**), but at some companies (**22%**), digital business units have a prevailing influence. **67%** plan to increase their investment in IoT whilst **92%** expect to measure the success of these initiatives in terms of cost reductions. The majority of the companies (**56%**) are strongly involved in collaboration with consulting companies, and the majority of the companies surveyed (**81%**) need the largest amount of assistance in terms of solution design and prototyping.

## Key trends by region

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### France

Apart from cost reduction, French companies see process automation and improvement of product quality as equally strong drivers of IoT adoption. **80%** say they plan to increase IoT spending.

### Germany

**52%** of German companies do not see the development of connected products as a driver for IoT. They are more reluctant to use IoT for connected product applications, as people in Germany are more sensitive to data protection and privacy issues.

### Nordics

Nordics is the most advanced region in terms of IoT adoption where **83%** of companies are already running their IoT initiatives. Cost reduction is seen as equally important as developing new connected products.

### Italy

Companies show that their biggest drivers – apart from cost reduction – are improving asset servitization and the improvement of supply chain management.

### UK

**88%** need assistance in terms of solution design and prototyping but are less involved in collaboration with third parties than peers in other countries.

### Benelux

Companies show the least amount of willingness to increase their investments in IoT compared to other regions.

### Austria & Switzerland

**77%** are strongly involved in collaboration with IT services companies and mostly need solution design and prototyping services.



## DIGITAL READINESS AND APPETITE FOR IOT

At the heart of the digital transformation of asset-intensive industries, such as manufacturing, is the leveraging of emerging technology to streamline decade-old processes and operations, improve existing products and launch new ones, create new channels to the customers and develop new business models. As a result of this transformation, industrial companies should be able to increase their value in the value chain by becoming organizations that are more agile and lean and that know more about their customers' needs and can tailor their products accordingly.

Implementing IoT-based digital solutions at any part of the enterprise, from the shop floor to the back office, brings an opportunity to trim costs and increase revenues and, as such, IoT should be at the top of their digital agenda.

There are many examples of companies which, by incorporating a digital mindset and adopting IoT solutions, are one way or another bearing the fruits of their investments, either by boosting their products or cutting operational costs.

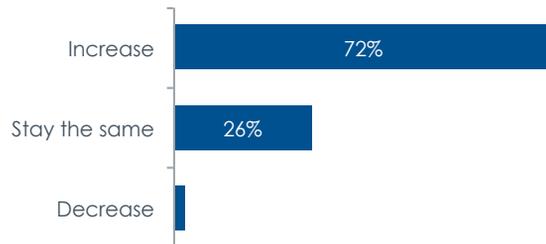
72% of industrial companies in Europe plan to increase their IoT spending in the next three years

**But are these examples indicative of wider progress and success, and to what extent are European industrial companies responding to IoT?**

This study sets out to understand what is the existing appetite of European industrial companies for IoT solutions going beyond Industry 4.0 concepts that focus on the internal silos "production & logistics" to more holistic and externally-oriented IoT applications within an enterprise, such as development of connected products and new services. We also evaluate what are the major concerns standing in the way of faster IoT adoption.

These findings are based on interviews with 250 senior business and IT decision makers at large and medium-sized manufacturing companies in both process and discrete manufacturing – a more detailed breakdown of the sample is available at the end of this document.

**One of the first key questions to set the scene for the rest of the analysis is do European industrial companies plan to increase their investments in IoT in the next three years?**



n = 253

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Fig. 1: Will your IoT investment increase, stay the same or decrease in the next 3 years?

The answer consolidating the responses from all European regions reveals the trend that the majority of the companies have a willingness to invest in IoT solutions in the short term, regardless of the particular local market, the type of manufacturing company and its size. Nevertheless, some companies in some regions such as Germany, France and Italy are more eager to invest than companies in other regions.

**But are these claims backed up in terms of current IoT activities and at what stages are existing IoT developments of industrial companies?**

The results show that IoT adoption is considerable, with **60%** of the companies being beyond the planning and evaluation stage, indicating that manufacturers are well aware of IoT, and the majority of them having live IoT projects of different scales. It is also clear that large-scale projects are still limited as less than **10%** of the companies have reached an advanced stage of IoT adoption, with the majority being at the PoC (proof-of-concept) stage. This is completely aligned with what PAC sees in the market on the vendor side: a large number of vendors have many IoT PoC projects but the number of those large-scale IoT projects addressing more than one problem is still very limited.

**IoT in action: ESAB**

This Swedish manufacturer of welding and cutting equipment deployed IoT solutions to transform its global operations. Its machines and equipment were not connected and their data was collected manually and no central overview of the equipment's performance existed. As part of the transformation process, the company implemented various connectivity technologies and integrated data collected into its cloud platform. This initiative resulted in improved operations and productivity, and time to market was reduced by 40%. On top of cutting the time to market, the initiative will also bring a significant competitive advantage to ESAB.

60% of industrial companies are already running IoT initiatives and have live IoT projects, 45% of which are generating business impacts.



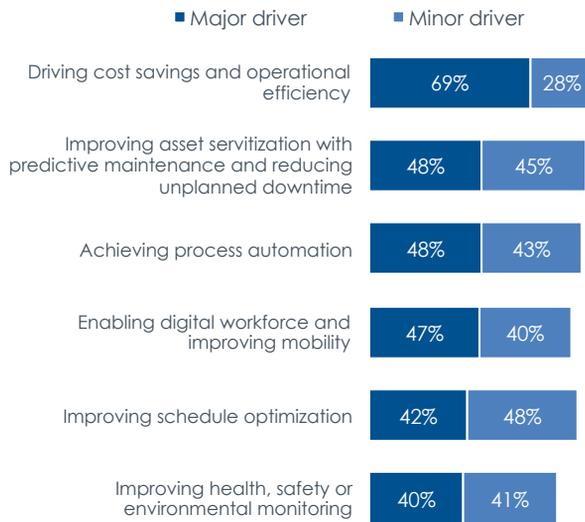
## IOT OPPORTUNITIES VS CHALLENGES

IoT solutions can come in various shapes and sizes and can be applied across an entire enterprise, helping companies to reach their digital momentum. These include using IoT to improve internal performance such as on the shop floor, empowering the workforce and improving their performance, as well as transforming back-office operations with IoT-enabled enterprise mobility solutions. On the other hand, it can be used on the more customer-facing side of the business, such as embedding the IoT in products that can provide better service to customers and collect valuable customer data.

But which of these IoT applications have raised interest from companies in Europe, in which direction are their IoT investments channeled, and what benefits are they looking to achieve with IoT?

IoT applications can be roughly divided into two categories: the first one aims at improving a company's internal capabilities while the second one aims at making their external customer-facing capabilities better.

Almost 70% of companies see cost reduction as a main driver while the second place goes to product improvement



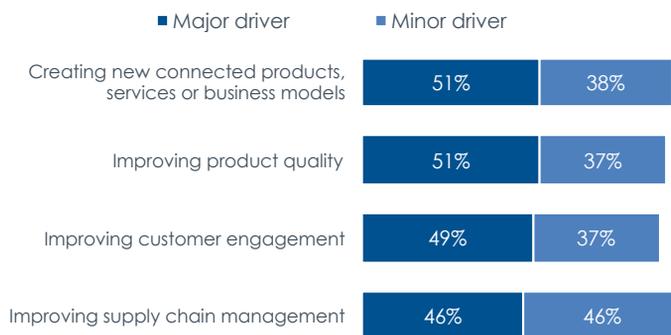
"Not a driver" not shown  
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Fig. 2: With respect to internal capabilities, will the following aspects be a major, minor or not a driver (goal) of your IoT initiatives in the next 3 years?

In the former category, the majority of European companies (almost **70%** of them) see the IoT as a tool for driving their operational costs down, which could enable them to unlock cost savings and improve operational efficiency. This finding does not come as a surprise as these companies mostly have tight margins and operate expensive industrial machines and systems integrated into complex production processes and production lines.

On the other side, a glance at the IoT drivers that could improve the external capabilities of an industrial company shows that they are mostly geared to boosting their products, which could enable the development of new services and business models. Such IoT applications have the potential to shift the paradigm of manufacturers and turn them into service providers – these applications are especially appealing to companies that directly interact with consumers.



"Not a driver" not shown  
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Fig. 3: With respect to external capabilities, will the following aspects be a major, minor or not a driver (goal) of your IoT initiatives in the next 3 years?

### Innovation in action: Krone

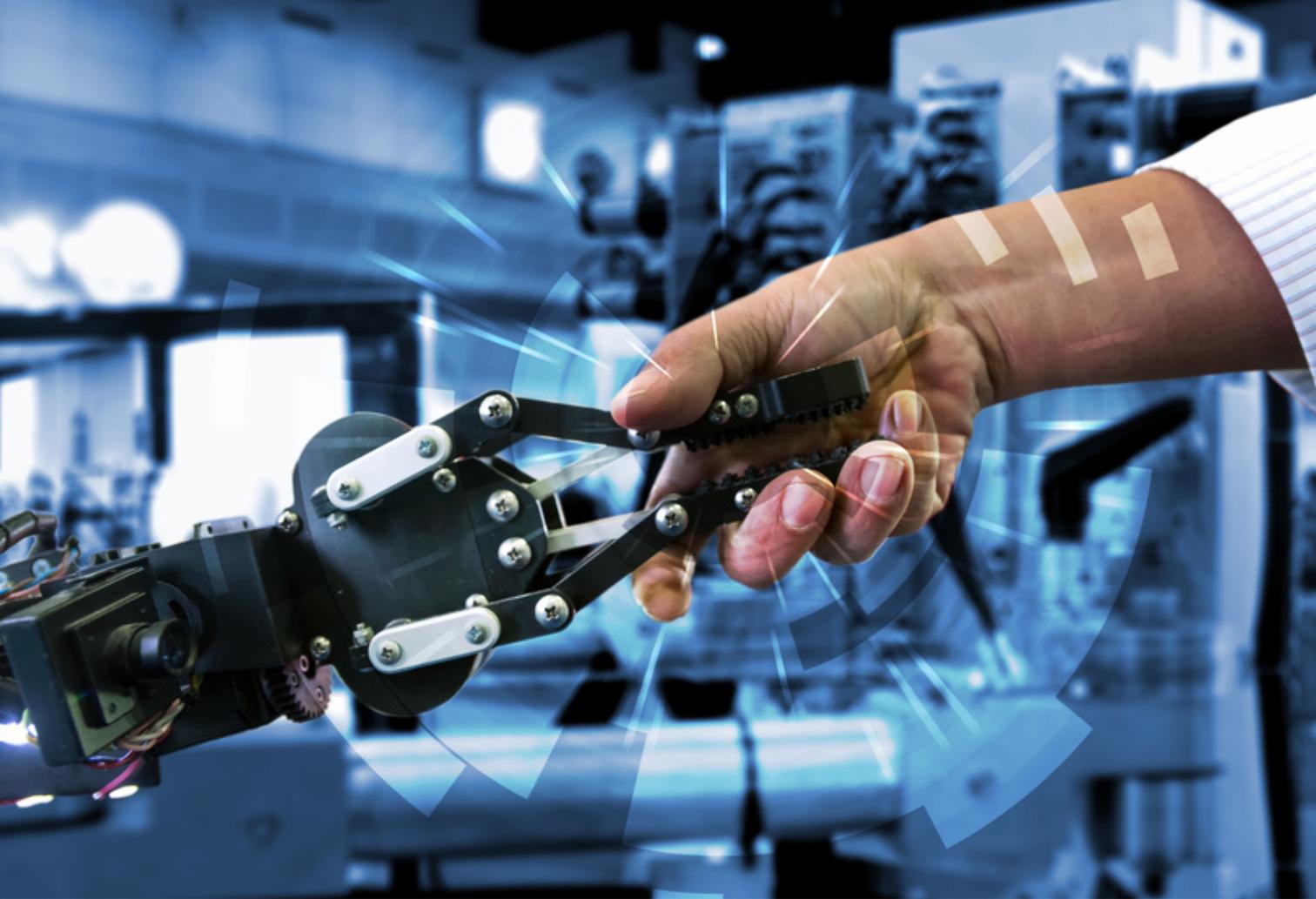
More than a century old, this German manufacturer of farming machinery and equipment adopted IoT technologies to transform its machinery. Its machinery is now equipped with sensors that collect real-time data during the farming process. With additional sensors placed at the farms, all the data collected is sent to the cloud where it is processed and made available to the farmers. They can get an insight into the quality of their crops, adjust the nutritive values of the food given to dairy cows, as well as adjust and plan the usage of fertilizers. This is a best practice example that shows how the adoption of IoT increases the value of the product.

Data security and privacy concerns are seen as the most challenging issues in IoT initiatives and strategies

### **What are the main challenges making companies hesitate with their IoT investments?**

Understandably, data security and privacy is perceived as the major challenge by more than **70%** of companies. This fear is certainly justified due to a general growing number of cyber attacks but also the fact that IoT significantly increases the number of potential entry points into the network. With IoT, every connected machine or asset becomes an endpoint that could potentially be breached if not properly secured. On top of cyber attacks, mounting compliance and regulatory burdens in some of countries like Germany or the upcoming General Data Protection Regulation (GDPR) can also raise concerns and slow down the pace of adoption.

Other evaluated concerns were not flagged as major ones by the majority of companies, at least when the results of the analysis are consolidated on a European level. Cost-related challenges are not considered as a major concern, which indicates the certain amount of readiness to invest in the IoT. Concerns related to internal capabilities are also more considered as minor than major ones, which outlines the certain level of confidence companies have when it comes to IoT initiatives and strategy.



## MOVING FORWARD WITH IOT

Despite showing a certain level of confidence in internal capabilities with regards to deployment of IoT and the required transformation, industrial companies are working very closely with the third-party providers. These include the likes of technology players in the software and IT services space, as well as other emerging players entering the IoT market such as digital agencies, hardware companies and industrial companies that have reinvented themselves to offer various IoT value propositions.

The question remains which of these players are the most involved in helping industrial companies transform themselves with IoT and what types of engagement are industrial companies after?

The overall European results show that industrial players are mostly taking the hand of IT services providers and consulting companies. This doesn't come as a surprise as the former are those with already built PoC's and have already deployed these solutions for their clients. They also take care of end-to-end solution design, delivery and management, which is favorable for those industrial players wanting to stay focused on their products and be more agile in operations. The latter, on the other hand, comes from the need to justify an IoT solution with a business case and make the most use of the gathered IoT data, which is where consulting firms take the lead.

Italian companies mostly collaborate with consulting firms, German companies mostly collaborate with hardware companies while French companies collaborate with IT services players the most.

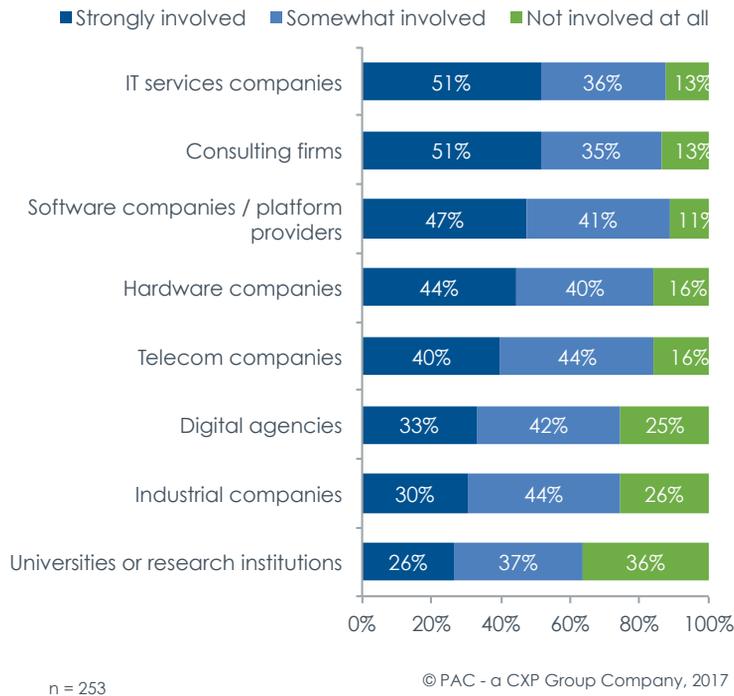


Fig. 4: Are the following third parties strongly, somewhat or not involved in developing your IoT strategy and initiatives?

A bit less involvement can be seen from software companies, platforms providers, hardware companies and telcos. This is probably because these types of players grow mostly through the channels and partnerships network, hence their smaller involvement in IoT initiatives.

It should be highlighted that the swing towards some of these categories also largely depends on which sector the industrial company operates in and what is its final product. For example, manufacturers of home appliances are more likely to collaborate with hardware companies that provide embedded technologies that can gather and process device data. Whereas manufacturers in the mining industry are more likely to work with IT services providers, as they require a partner with strong delivery capabilities on a global scale. Additionally, PAC acknowledges the importance of industrial companies for the IoT ecosystem because some of them have recently entered the IoT market as vendors, offering IoT solutions and platforms to other industrial companies. As such, they have optimized their own operations and developed IoT platforms, solutions and services along the way, and PAC expects their influence on IoT adoption to increase.

### Innovation in action: Piaggio

The Italian motorbike manufacturer is using IoT and other digital technologies such as predictive analytics to drive sales of its vehicles by improving the customer experience and enabling personalization. Users will benefit from the mobile application via which they can remotely locate and manage their vehicles as well as enjoy a personalized customer experience. The entire solution is integrated into Piaggio's existing IT systems, which allows the performance of advanced analytics on gathered customer and vehicle data. This use case outlines the application of IoT for improvement of customer experience and personalization, as well as a good practice of integration, which provides an opportunity to derive maximum value from the data.

# CONCLUSIONS



Innovation has become an imperative for European industrial companies. Dealing with cost pressure tops the priority list for companies and technologies under the IoT umbrella can be powerful tools for addressing the major challenges in their internal operational performance. Companies are aware of this and the vast majority are planning to increase spending in this area.



Apart from improving operational efficiency, IoT solutions open the gates for innovation and put companies in a position to move up their value chains by offering better and connected products, and new services based on them, as well as to gather valuable customer data that can be monetized.



The majority of companies are already running IoT initiatives in different phases of deployment, maturity and scale, which confirms that the IoT is perceived as a potential solution of multiple issues and as the key to unlocking the doors of wider digital transformation of both operational technology and information technology systems. This is why IoT gets a significant amount of the overall digital transformation budget.



On the road to innovation, IoT companies are usually guided by third parties and are engaged with a range of stakeholders, the most prominent of which are IT services companies and consulting firms.



The pace of IoT adoption will depend on the internal organizations and decision-making rights in terms of IoT investments. Despite the fact that most companies make these decisions within the IT department, there is a significant amount of diversity as some companies lead initiatives from the lines of business or the boardroom. Integrating these departments and fostering collaboration will improve the chances of deployment of enterprise-wide solutions that could maximize the benefits to the business.



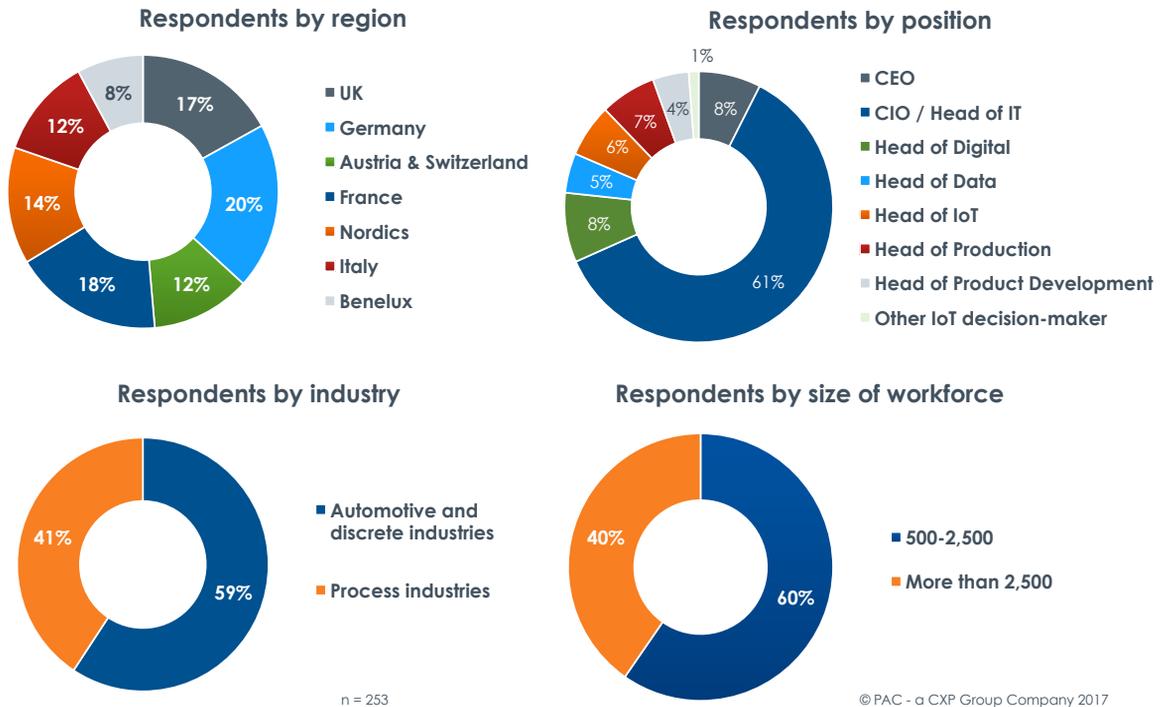
A major concern of most companies comes from a data security and privacy perspective which, due to growing cyber threats and burdening regulations, could slow down the overall adoption of IoT solutions.



Supporting IoT initiatives requires investment not only in IoT solutions but also in the underlying infrastructure such as IoT and analytics platforms, which need to be integrated into companies' IT systems. Results show that there is a solid number of companies making steps in this direction.

# METHODOLOGY

This study is based on interviews with senior business and IT decision-makers with responsibility for driving innovation strategies at 250 large European manufacturing companies. The study was completed during the first quarter of 2017. Here is a more detailed breakdown of the participants in the study:



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With a footprint in more than 20 countries and external revenues of 6.5 billion EUR (2016), T-Systems is one of the global information and communications technology (ICT) leaders. T-Systems offers a range of integrated solutions for business customers, including the secure operations of legacy systems and traditional ICT services, the transformation to cloud-based services (including tailored infrastructure, platforms and software) as well as new business models and innovation projects for the business fields of the future, such as data analytics, the Internet of Things, machine-to-machine (M2M) communications and Industrie 4.0. These offerings are based on the provider's global reach in fixed-network and mobile communications, its highly secure data centers, a comprehensive cloud ecosystem built around standardized platforms and global partnerships, and the ability to ensure highest levels of security.

IoT and cloud are strategic growth topics of Deutsche Telekom and since January 2015, they have been bundled in T-Systems' Digital Division. A team of around 1,200 experts supports companies to help them implement their digitization strategies and develops highly scalable, platform-based and standardized IoT/M2M and Industrie 4.0 products and data analytics solutions. This unit also provides industry-specific connected-car and e-health solutions.

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Deutsche Telekom is one of the world's leading integrated telecommunications companies. The group provides fixed-network/broadband, mobile communications, Internet, and IPTV products and services for consumers, and information and communication technology (ICT) solutions for business and corporate customers. Deutsche Telekom is present in more than 50 countries and has about 218,300 employees worldwide. In business year 2016, the company generated revenues of 73.1 billion EUR, about 66,3 percent of it outside Germany. For Deutsche Telekom, the business customer segment in Europe is a strategic area of growth. Together with T-Systems, Deutsche Telekom's daughter company for the large accounts segment, Deutsche Telekom provides small and medium businesses as well as multinational corporations ICT solutions for an increasingly complex digital world. The core offering comprises cloud-based services, M2M and security solutions, complementary mobile and fixed-line communications products, solutions for virtual collaboration and IT platforms, which serve as basis for customers' digital business models.

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Founded in 1976, Pierre Audoin Consultants (PAC) is part of CXP Group, the leading independent European research and consulting firm for the software, IT services and digital transformation industry.

CXP Group offers its customers comprehensive support services for the evaluation, selection and optimization of their software solutions and for the evaluation and selection of IT services providers, and accompanies them in optimizing their sourcing and investment strategies. As such, CXP Group supports ICT decision makers in their digital transformation journey.

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