IoT breakthrough

Is the industry ready for commercial success?

On September 27th, Arthur D. Little brought together international Internet of Things (IoT) experts and executives to discuss the current state of the IoT for the fourth consecutive year. More than 60 executives from over 10 countries accepted the invitation to spend a day uncovering this year's theme, "IoT breakthrough – Is the industry ready for commercial success?"

Introduction

This year's participants represented the manufacturing industry, start-ups, tech companies, telco providers and investors. This clearly indicates that the IoT has become a relevant topic across industries.

The agenda focused on presentation and discussion of use cases, prerequisites for commercial success, and ecosystems. Based on these discussions, it is evident that the IoT has moved beyond the hype to create commercial value across industries, use cases and functions. For the keynote presentation, Agron Lasku, Partner at Arthur D. Little Sweden, summarized the findings of a recent study that highlighted accelerated deployment of the IoT in operational processes. "Seventy-five percent of companies are going to deploy IoT in commercial processes by 2022," Lasku said. "Moreover, the study found that early adopters are benefiting from EBIT margin advantages of more than 40 percent."

Use cases – Tech companies, industry giants and telco service providers engage in a variety of IoT applications

Arthur D. Little tracks IoT use cases in six groups: (1) automation, (2) condition monitoring, (3) digital operations, (4) performance monitoring, (5) track & trace, and (6) immersive data. These groups were reflected in the individual use cases the speakers presented – all of them demonstrating that the industry was ready for the IoT:

Along its journey to becoming a digital factory, Osram has established a campus network that supports a broad range of use cases. At the core is a ticket manager that ensures higher availability and thus higher productivity from employees. The most prominent IoT use case at Airbus is its connected aircraft ("Skywise"), with the validated value proposition to improve maintenance repair and operational safety. Tele2 supports an e-scooter provider in collecting data that forms a base on which air quality can be measured and heat maps can be plotted to show where people are moving and when. BMW is saving development costs through the IoT and entering new business models, such as providing relevant data to third parties. Supported by an ecosystem of partners, Cisco has digitalized the port of Rotterdam and transformed it into a system of instant information; it thereby achieved return on investment within only three months. These are only a few examples of IoT use cases.

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Implementation – The IoT has been approached in different ways, but 5G is necessary for the base infrastructure

Key requirements for IoT use cases in production and operation environments are low latency, high availability and high reliability. Campus networks are emerging as preferred local networks, and enterprises are expecting another boost in real-time communication from 5G. Ingo Hild, Osram Plant Manager Schwabmünchen, described the holistic IoT transformation of his plant. The initiative meant processes needed to be adjusted and legacy machines retrofitted, and data collection had to be advanced and big data analytics implemented. Therefore, it was obvious that "connectivity and mobile communication is a key requirement". Today, cellular connectivity and Wi-Fi support use cases, and it is hoped that 5G will become a universal solution.
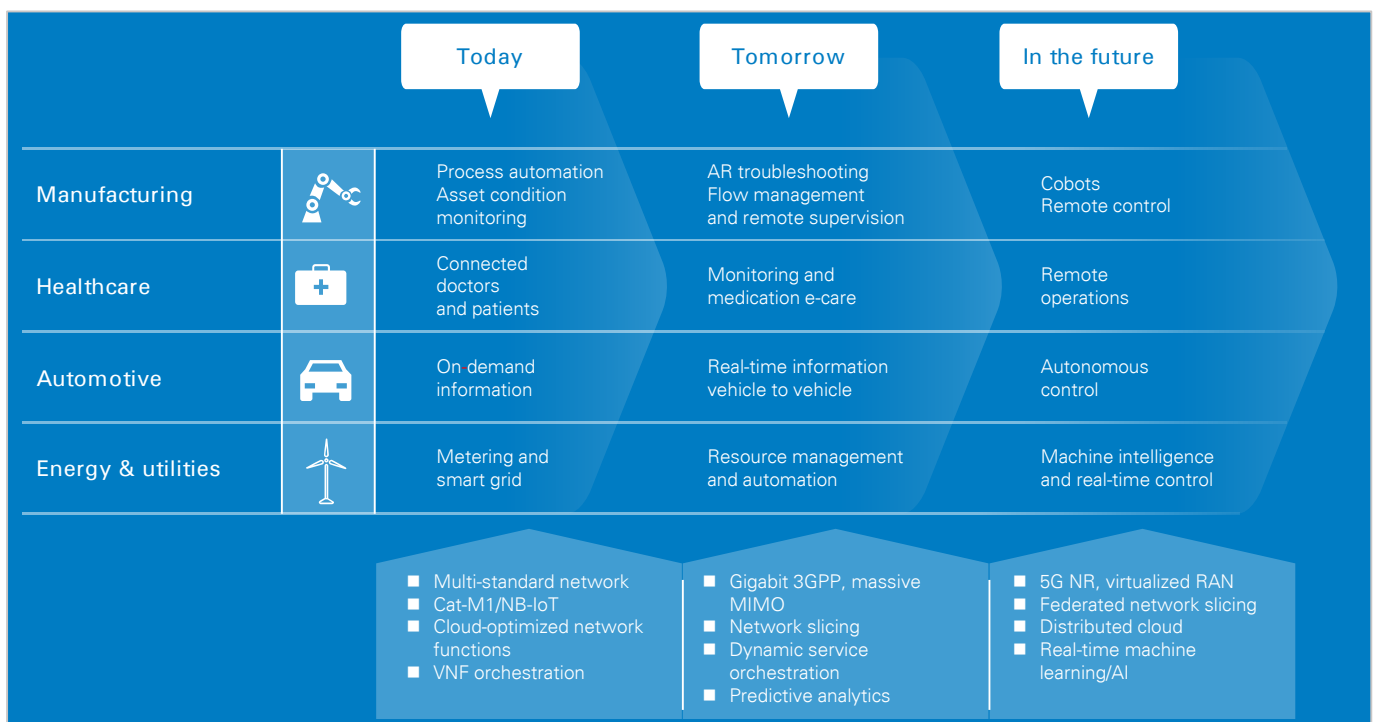
Javier Garcia-Norro from Ericsson pointed out, "Simplicity to adopt the infrastructure is key for scale." This is true for new devices, as well as for retrofitting legacy equipment.

Challenges – Some challenges of the IoT have already been overcome, but others still need to be tackled

With the increasing amount of use cases, many challenges related to the IoT are overcome by trial and error. David O'Hara, Partners and Alliances Lead at Cisco IoT, pointed out, "Only 26 percent of IoT projects get past the proof-of-concept stage because they are often not designed to solve the right problem." Werner Reuss, Head of Industry 4.0 International Business at Orange Business Service, had also experienced this: "With one of our clients, we have learned that the connectivity of the product was not a use case for the end customer, but for the service provider doing the maintenance of the product. So it is not only about the technology, but you always need to analyze what is useful for which customers and what they are willing to pay for." At Arthur D. Little, we refer to this phenomenon as "stuck in the proof-of-concept loop". Only a well-designed, -communicated and -managed funnel process for trying out new use cases and technologies ensures commercially successful use cases are put into practice.

Security is one challenge for which investment and innovation will be key in the coming year. However, with security by design, the evolving IoT landscape can be secured with due caution.

More value is unleashed as use cases evolve

		Today	Tomorrow	In the future
Manufacturing		Process automation Asset condition monitoring	AR troubleshooting Flow management and remote supervision	Cobots Remote control
Healthcare		Connected doctors and patients	Monitoring and medication e-care	Remote operations
Automotive		On-demand information	Real-time information vehicle to vehicle	Autonomous control
Energy & utilities		Metering and smart grid	Resource management and automation	Machine intelligence and real-time control
		■ Multi-standard network ■ Cat-M1/NB-IoT ■ Cloud-optimized network functions ■ VNF orchestration	■ Gigabit 3GPP, massive MIMO ■ Network slicing ■ Dynamic service orchestration ■ Predictive analytics	■ 5G NR, virtualized RAN ■ Federated network slicing ■ Distributed cloud ■ Real-time machine learning/AI

Source: Arthur D. Little analysis

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Shifting roles – The IoT provides new opportunities and roles for established players

A commercially successful Internet of Things will change classical value chains radically. Existing steps will be obsolete and new processes will emerge – but they will be automated from the start. This will create the opportunity for new roles or evolution of traditional plays. This is what Werner Reuss from Orange Business Service describes as "classic value chains turning into highly connected service webs where the different players can have multiple roles".

Telecommunication providers such as Tele2 are working to simplify their offerings, going beyond their original status of telco service providers. "We need to manage a lot of different and complex criteria, but we should deliver them in a way that is easy and simple for the customer to implement. That includes access to spectrum, provision of SIM cards, quality of service, secure transfer of data, regulatory and legal intermediary, etc.," summarized Greg Lensch, CEO of Tele2 IoT. In addition, large industrial manufacturing companies such as Siemens are changing their focus. Matthias Lutz, Head of Pre-Sales and Solution Design for industrial IoT at Siemens, made a revealing statement: "We are moving from a hardware company to a software company. We have invested EUR 11 bn within the last decade into acquisition of software competence, merging the virtual and real worlds in software, hardware, design and manufacturing".

> *"The closer you are to the customer, the better: Nearly 70 percent of the value in the value chain is near the customer, thus players are increasingly trying to evolve and defend their positions"*
>
> Agron Lasku, Partner at Arthur D. Little

New solutions – Start-ups are tapping into the fields that have remained "black boxes" for a long time

Beyond the evolving roles for established players, a multitude of start-ups are leveraging the IoT to create a new business model and domain for business. Philipp Kirschenhofer and Michael Schwarz of Stratos Ventures have developed software for edge-data trading, which thereby monetizes the data. Devices in public spaces including cars can therefore interact and acquire relevant data. For example, cars are enabled to autonomously search for available parking sports and pay the provider in accordance to the usage.

Another impactful example was shared by Sebastian Becker from Riddle & Code from Vienna. He showed how self-auditing infrastructure can be built based on blockchain technology: the company offers in-house designed blockchain hardware modules for securing critical IoT functions and giving tamper-proof digital identities to machines or vehicles. Their solutions portfolio includes car wallets, smart meter wallets for vehicle charging and energy trading as well as crypto custody wallets for the financial industry.

Ecosystems – A major driver of IoT success

One key takeaway from this year's event was to remember that the most successful IoT use cases would not be implemented by single players alone, but with agreed roles together in partner ecosystems. Mark Schönfeld, Head of UKCC IoT, Global IoT Business Development at Huawei, provided insight regarding how to establish an IoT ecosystem: "Most successful ecosystems have about 40 partners, and they involve participants from more than five countries. You need to be open and invite all stakeholders to discuss new frameworks for IoT." Therefore, the following key aspects needs to be considered:

- Focusing on commercial ecosystems to enable the financial side: Who is paying for what? Consider cost compensation, investment and revenue share.

- Innovations by ecosystems: innovation takes place between verticals and beyond company borders.

- Governance and trust: it is not the classical supplier relationship which drives the ecosystem, most important is to create common sense on how to achieve goals and to create win-win situations.

- Ensuring patience: Give ecosystems time to develop and succeed.

David O'Hara from Cisco elaborated on what needed to be considered when building an ecosystem: "Be clear on the roles in an ecosystem. Clearly decide which partners add value to the customer and get complementary know-how from partners. Furthermore, building up trust is important."

Financing and investing in the IoT – Current focus

With the continuous emergence of new use cases and technology upgrades, financing of new initiatives is key. Investors and corporates alike need to look at similar evaluation criteria when investing in or deciding to implement IoT use cases. Marie-Helene Ametsreiter, Partner at Speedinvest, explained: "The more focused the venture, the better. This ensures a deep understanding of the topic and a faster rollout. Often, we see the actual value coming from the data

processing which is the prerequisite for the analytics." Gerald Merz, a Managing Director, Corporate & Investment Banking at UniCredit Bank, focuses on productivity improvement regarding the IoT: "The productivity improvement aspect of IoT use cases is most interesting for us since this is where EBITDA increases are coming from." In the hardware vs. software discussion, Falk Müller Veerse, Managing Partner at Bryan, Garnier & Co, positioned himself in favor of software saying: "The value is in the software, not in the hardware – the hardware is the enabler, but the software is the value creator ensuring scalability."

Closing statement

The discussion around implementation approaches, use cases, lessons learned and newly developing ecosystems shows that the IoT has made the leap to the next level. In particular, the presented case studies have proven that the IoT is commercially successful.

And as in the past years, the event concluded at the Oktoberfest Munich, with a networking event and further discussions on digital and analog topics.

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Arthur D. Little

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