

# When IT infrastructure is left behind

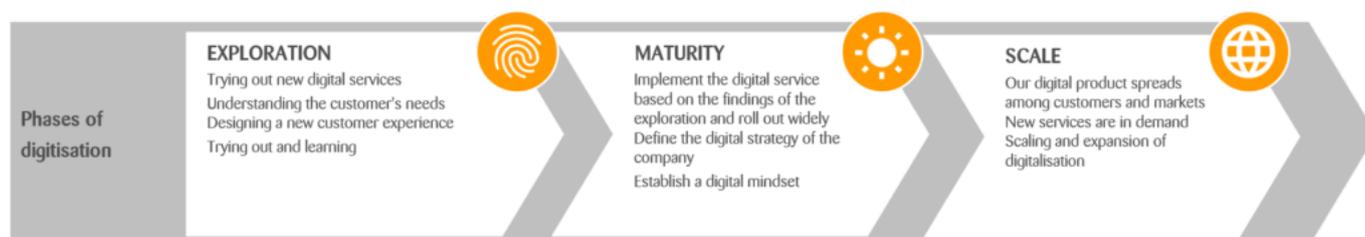
26 March 2019 | **Digital Transformation** | [Regina Dietiker](#), [Mario Schmuziger](#)

**Reading time:** 6 minutes

**The development of intelligently networked IoT solutions is progressing at a rapid pace in the industrial sector, offering machine and plant manufacturers the opportunity to open up new fields of business. What all too often lags behind and prevents companies from successfully innovating is the connection to existing IT systems and the necessary modernisation of these systems.**

The first step is made. An industrial company has [connected one of its products to the digital world via Internet of Things](#).

On its journey into digitalisation, the company has completed the exploration phase, identified the needs of its customers and is now in the maturity phase – the moment when the first digital services are rolled out. The goals have been set and the first successes are being achieved in the market through successful networking: the innovation is taking off and customers appreciate the added value that the new services offer them.



Transition from exploration to maturity with a clear digital performance promise

But the project is being held back due to one aspect: the outdated IT systems cannot keep up with the new IoT solution. The IT infrastructure is not designed to capture and process the amount of data generated by networking. The interfaces to the networked devices do not operate smoothly and synchronisation with the cloud-based data platform is difficult. Possible fatal consequences of this are long downtimes, production stoppages and customer churn, especially in the industrial sector. One thing is clear: with the advent of smartphones and mobile applications, users are rightly becoming increasingly demanding in their expectations of digital services and much less tolerant of outages, inadequate benefits and outdated user interfaces. The customer journey is all-important.

An outdated IT structure acts as a permanent brake, threatening the success of the innovation project and thus the competitiveness of the company. This is because IoT projects – whether still in planning or already implemented – can only be successful in the long term **if**

[the IT infrastructure meets the modern standards of our time](#). So how can companies ensure that they do not become victims of their own success?

### **The IT structure must be able to cope with scaling**

Particularly when developing IoT solutions, scalability, which is crucial for the long-term success of a digital service, is a challenge that should not be underestimated. In an IoT project, the number of devices to be connected increases more or less linearly. However, it quickly reaches quantities that were not expected initially and that the organically developed backend infrastructure can no longer handle. As soon as the business decision has been made to connect each delivered device to the Internet by default instead of optionally, the number of networked devices can quickly rise to several thousand. Then provisioning, updates and other processes in the lifecycle become greater challenges.

If, in the course of developing the solution, the size assumptions are no longer correct, new technologies suddenly appear on the horizon, or data volumes change due to shorter exchange frequencies, the architecture quickly becomes outdated and no longer meets the requirements. Especially in the early stages of exploration, technical debts accumulate due to the often tight budget and the lack of know-how in the company, which must be reduced before the scaling phase. Essentially, once a solution is on the market and starts attracting customers, it must be stable enough to deliver added value continuously and with high availability.

### **Using data correctly**

The second challenge posed by scaling a solution is the amount of data to be processed and stored. [In order to take advantage of the much-vaunted benefits of predictive maintenance](#) or other machine learning solutions in mechanical engineering, a statistically relevant amount of raw data is required (aggregated data is not usually helpful here). With a linear increase in the number of connected end devices and a growing need for usable data, you are soon dealing with exponential growth.

It is therefore necessary to ensure that modern cloud architectures are developed on the basis of microservices and decoupled functional units and kept up to date by means of continuous integration, delivery and deployment pipelines. The selection of a database technology or a specific product can quickly determine success or failure not only on a technological level, but also on the cost side.

### **Taking small steps to make significant changes**

The life cycle of applications and IT landscapes is characterised by a relatively short phase during which the application is built according to the current requirements and the known,

appropriate technologies. It is then put into operation and continuously further developed, whereby new insights into the advantages and disadvantages of the selected architecture and technologies become evident.

It is often at exactly this point that the architecture has to be changed accordingly and the technologies replaced. Due to the associated costs and the time involved, many companies turn a blind eye to this fact. Especially if not enough is invested in the maintenance of the existing solution, technical debts accumulate, which are more and more difficult and expensive to update. The software will soon no longer be able to react quickly to new needs and, in the worst case, prevents the company from being able to innovate. This can be counteracted with a structured approach and the outdated software, which has often been developed with a large amount of investment, can be brought back to the state of the art with a few manageable steps.

First and foremost, it is a question of deciding whether the existing software – or parts of it – should be retained and revitalised so that it can be maintained, modified and scaled according to requirements. Otherwise, the question arises as to whether new software needs to be built to completely replace the old one. To make the right decision, [the following procedure is recommended](#):

1. Vitality check: Analysis of the status of the application landscape as well as the development and operational organisation: what needs are covered, where are there gaps?
2. Fitness plan: Visioning workshop, development of migration scenarios and roadmap, creation of the business case
3. Transformation or revitalisation: Renewal, modernisation and migration of legacy systems, optional adoption of legacy systems
4. Optimisation: Continuous further development, support and operation of the systems with the support of a strategic and technically experienced partner.

For long-term success in the Industrial Internet of Things, however, it is not only the IT infrastructure that must meet the requirements of scaling. The establishment of dedicated units within the company must also be driven forward in a longer-term process in the form of an agile transformation so that further development and monitoring of performance can be ensured. Once these foundations have been laid, industrial companies can develop into the flexible and agile organisations that will be needed in the future to deal with increasingly rapid market changes.

More from the “Future of Industry” series:

- [Maintenance must be smart](#)

- A connected world is more than just IoT
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- Is “solid” a discontinued model?