

# DIGITIZATION MADE SIMPLE WORKING WITH THE CLOUD OF THINGS



LIFE IS FOR SHARING.

# CHANGING THE ECONOMY

The next level of digitization of the economy is underway. For years, this phenomenon has streamlined administrative tasks from ordering to billing. But now digitization is also directly affecting industrial manufacturing, machinery and other equipment such as vehicles. These dramatic changes are flipping the competitive landscape upside down: rivals are becoming partners and start-ups are turning into global players.

The question of digitization is also simultaneously a question of how competitive Europe's economy will remain in the future. Digital change presents traditional firms with the biggest challenges. But at the same time, it's also an opportunity to ensure a company can keep pace with the global competition: for example, by accelerating certain tasks or fulfilling growing customer demands. What's most important is taking the first step. Digitizing just one thing can have an outsize impact – perhaps by improving the customer experience will greatly increase sales.

**Companies must prepare for digital change by upending their business models and rethinking their products.**

This isn't always an easy thing to do. After all, many firms have built up their business and products over several years. But it's the only way to find new opportunities that help secure a firm's future. Digitization is already all around us. Cars use it to find free parking spots automatically, logistics companies locate containers carrying specific goods, and service technicians avoid unnecessary maintenance trips – machines nowadays simply report when they're low on oil. Vehicles, products and machines are being fitted with sensors,

actuators and small computers so they can connect to the cloud using machine-to-machine (M2M) communication. These objects collect data about themselves and their surroundings, and send it to the cloud. Once the information is there, software systems analyze, link and exchange it automatically, as well as manage and control the objects.

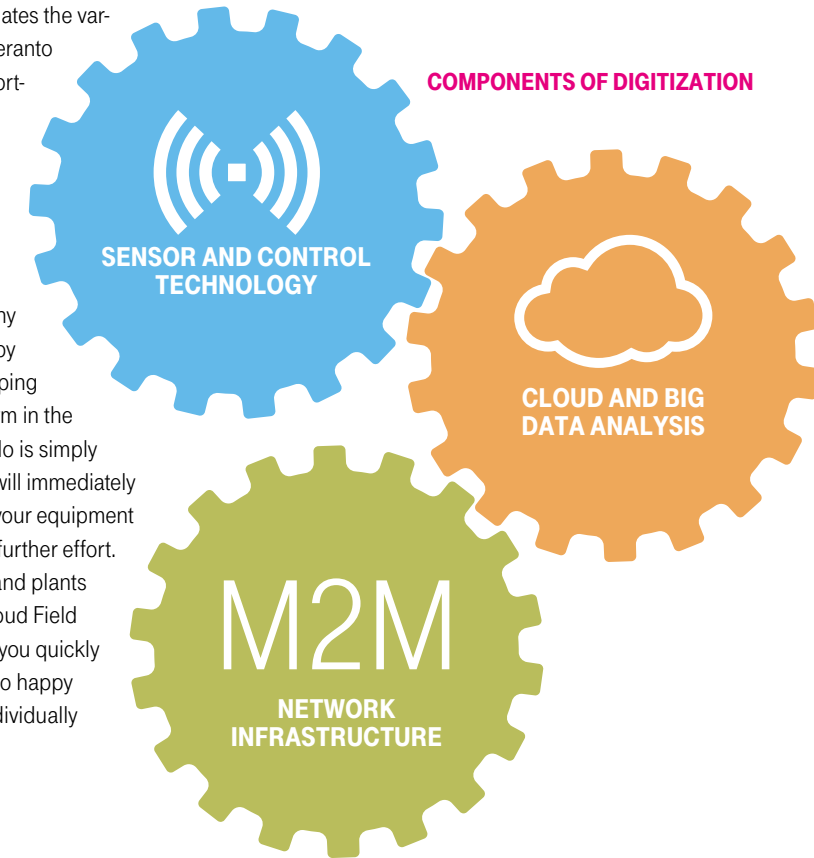
## MEETING THE CHALLENGES OF DIGITIZATION

At the same time, digitization presents an array of challenges for companies. Devices and machinery can speak totally different languages depending on their manufacturer, age and regional origins. And having more devices connected to a network increases the administrative effort and the demands on a firm's IT department. Of course, the collected data also has to be transferred and stored securely and reliably. Anyone hoping to maximize the potential of digitization has to connect the data of different devices, integrate it into the firm's current IT architecture and business operations, and then be able to analyze it all. They also have to calculate the financial risks and sift through a seemingly limitless number of various offers.

It's exactly these sorts of challenges that Telekom's Cloud of Things handles. The platform helps you manage your networked objects and with the integration of your machine data. If you've already tried to integrate a new machine with your older equipment, you're aware of the problem: the machines often work side by side, but rarely hand in hand. Older and newer machines simply don't "understand" each other. The Cloud of Things translates the various languages of different systems in a kind of Esperanto for machinery. This enables equipment to speak effortlessly with the assembly line, while the warehouse is talking to a delivery vehicle.

## CERTIFICATION MAKES CONNECTING EASY

To ensure a successful translation, the platform has to understand all of the various languages. That's why Telekom offers certified devices already supported by the platform. These include both systems for developing prototypes and professional hardware built to perform in the roughest production environments. All you have to do is simply register the devices in the Cloud of Things and they will immediately begin communicating with each other. Ideally, all of your equipment can be integrated into the platform this way without further effort. Telekom even has a special solution for machinery and plants using the Modbus transmission control protocol. Cloud Field Bus is a bundle of hardware and software that helps you quickly and easily connect this type of equipment. We're also happy to help you integrate more exotic devices with an individually tailored interface.



The Cloud of Things is also your digitization cockpit. As soon as your machinery is connected, you can control it using a web portal that also provides you with operational data. You can manage the status of your networked devices in real-time, update firmware and software, as well as create data visualizations. You can even pick whom the system alerts in specific situations. For example, should a production facility go offline, the Cloud of Things determines which service technician is closest to its location.

**NEW INSIGHTS FOR YOUR BUSINESS**

The Cloud of Things also enables you to connect your machinery with your IT architecture, allowing you to streamline and accelerate your operations. The defect production facility informs your ERP system, which replacement parts the service technician needs for the repairs.

The next step harvests a bounty of information from your machinery. Analyzing this collected data is considered a great way to pursue optimization. When firms constantly monitor and analyze operating parameters, they have an entirely new decision-making basis for setting operational criteria and getting the most out of their machinery. Data analytics for the Cloud of Things allow you to connect information from your devices logically, and analyze it in real-time. The analysis of operational data from a production facility shows, for example, exactly which components need to be replaced. Technicians can use this for preventative maintenance that minimizes production downtime.

In order to test the potential of digitization, it's good to start with a pilot project using a solution that fits your company's business. Avoid at first the installation of sensors, actuators and small computers, as well as individual connectivity and cloud services. Instead, go for a comprehensive turnkey solution. This will save you the extra effort of coordinating your suppliers to ensure all components operate together smoothly. You should also keep scalability in mind. If the number of devices, data and users varies, it shouldn't adversely affect the system's performance.

**PILOT PROJECTS SHOW THE WAY**

Telekom and its highly specialized partners offer you comprehensive turnkey solutions, so you can avoid unnecessary expenditures and costly investments. You can even purchase them at a fixed price per machine. These solutions are based on Telekom's extensive network infrastructure. This affords the highest quality of service essential for business-critical applications, and relies on extremely secure ISO-certified data centers in Germany. Telekom also provides additional security features to ensure your machine data doesn't fall into the hands of your competitors.

**FROM DATA TO CRUCIAL COMPANY INTELLIGENCE: PROFIT FROM DIGITIZATION STEP BY STEP**

INTELLIGENCE



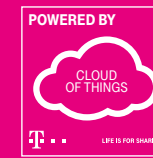
ANALYSIS



TRANSPORT



DATA



CERTUSS, Definitiv, Deutsche Afrika Linien, Dürkopp Adler, Hubtex and Pfannenberg are just a few of the companies we've already accompanied during a digital transformation. Read on the following pages why they chose to digitize their businesses and how they are now profiting from it.

# DÜRKOPP ADLER REDUCED DOWNTIME

## CHALLENGE

Dürkopp Adler is a leading manufacturer of industrial sewing machines, and its products are used around the world. In order to service, repair and upgrade customer machines, maintenance teams were frequently required to make long trips before production was once again running seamlessly. So the company sought a solution that would enable access to machines worldwide from its headquarters in the German city of Bielefeld.

## SOLUTION

The sewing machines are connected to the Cloud of Things. Dürkopp Adler now uses a regular web browser to monitor and manage the parameters of its equipment from a dashboard. Employees see all important information regarding the status of the sewing machines – including the software version they’re using, the hours they’re operating and even the size of the stitching they’re doing.



” The Cloud of Things warns us before the sewing machines of our customers break down.”  
Dietrich Eickhoff, CEO



## BENEFITS

In the event of a malfunction, Dürkopp Adler can access a sewing machine remotely and often resolve the problem from Bielefeld. On-site service is now required less frequently. The increased transparency saves Dürkopp Adler and its customers time and money. Additionally, software updates and operational fine-tuning of the machines can be done remotely.

# PFANNENBERG COOLING 4.0

## CHALLENGE

Pfannenberg develops and manufactures cooling solutions for industrial facilities around the world. In order to accompany its customers as they pursue greater digitization, the company sought a networking solution with high availability and that would not require extensive integration into the IT architecture of its customers.

## SOLUTION

The eCool X series by Pfannenberg sends device readings – such as the inner temperature of a control cabinet or the speed of a fan – via wireless connection to the Cloud of Things. This allows technicians to monitor how individual devices are running, and to determine, for example, whether they’re overheating in an automated and timely matter from anywhere.

## BENEFITS

The M2M solution reliably warns of overheating at all times, protecting Pfannenberg’s customers from expensive production downtime. The facilities can also be maintained remotely, which lowers service costs. And thanks to the wireless networking with the Cloud of Things, it operates independently of customer IT architecture.



” The machines are well-protected and highly available, while the maintenance effort has been reduced considerably.”  
Nils-Peter Halm, CTO





# HUBTEX FORKLIFT VISION

## CHALLENGE

Hubtex is the leading maker of specialty forklifts used primarily for moving extra long and heavy goods. Hubtex wanted to access vehicle data remotely in order to ensure its customers' forklifts were repaired as quickly as possible following a malfunction, as well as for preventative maintenance and to improve its own service operations.

## SOLUTION

Connected to the Cloud of Things, the special forklifts now send data like operational hours, battery charge and error codes into the cloud. Hubtex also has its vehicles constantly under supervision. The data shows when each forklift needs to be serviced by technicians.

## BENEFITS

Before Hubtex technicians make a maintenance call for a customer's vehicle, they know what replacement parts and tools they'll need. The data in the cloud also allows Hubtex to develop individually tailored service offerings for its customers and maintenance plans for forklifts according to how much they're actually used. And parts subject to wear and tear can be replaced before they cause a malfunction.

“Downtime and service costs have been minimized, and based on the data forklift, production can be continuously improved.”  
**Carsten Schreiner, Service Director**



# CERTUSS INTO THE STEAM CLOUD

## CHALLENGE

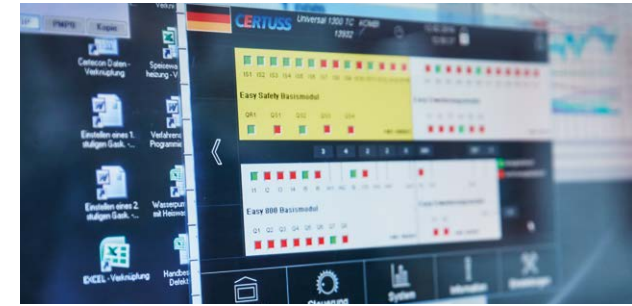
Steam from CERTUSS devices sterilizes a surgeon's instruments before an operation, cooks sausages, and moistens plastics for manufacturing. Often these steam generators operate behind the scenes: they're down in the basement and are not easily accessible. The task facing CERTUSS was how to maintain these devices efficiently and help avoid unnecessary downtime without constantly monitoring them manually.

## SOLUTION

Connecting the steam generators with the Cloud of Things makes them visible: sensors measure a total of 60 parameters such as pressure, temperature, combustion conditions and water levels. With data stored and analyzed by Cloud of Things Data Analytics, software warns CERTUSS when there's a malfunction and even before a device breaks down. Over the long-term, this shows how malfunctions develop in the first place.

## BENEFITS

Going by the motto "Thinking about Tomorrow", technicians remotely monitor and maintain the devices preventatively. Defects are quickly fixed and the generators highly available. The analyzed data enable the firm to program the devices to produce exactly the amount of steam required by a customer. That saves fuel and over the long-term money. It also increases customer loyalty at CERTUSS.



“CERTUSS uses Data Analytics to look for clues and maintain the devices in a preventative fashion by using the interpreted data.”  
**Thomas Hamacher, CTO**



## DEUTSCHE AFRIKA LINIEN SMART CONTAINERS

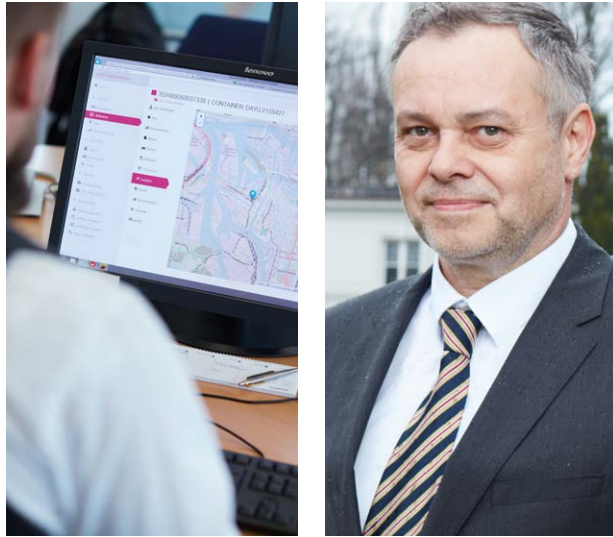
### CHALLENGE

Deutsche Afrika Linien (DAL) is a shipping company for container and general cargo based in Hamburg. DAL wanted to know where and in what condition its containers were. The company's customers need to know their goods will be safely delivered on time – no matter where the containers might currently be.

### SOLUTION

Thanks to the robust "Smart Container Device", DAL is now informed several times a day as to where its containers are and their current status. Besides tracking the containers via GPS, the solution also measures parameters, such as the opening of doors, shock, angle of list, external temperature and battery voltage, and sends them all into the Cloud of Things.

„The Cloud of Things allows us to give our customers peace of mind when it comes to the supply chain.“  
Ralf Stüwe, Manager Operations Liner Services



### BENEFITS

The shipping company is profiting from the new transparency: It manages its containers more efficiently, saving both time and money. Since it now knows, for example, if a container has been opened without authorization or damaged, it can quickly inform customers about the position and condition of their goods. Should there be any damage, it can be precisely documented for insurance purposes.

## DEFINITIV MOBILE TELEMEDICINE

### CHALLENGE

Some types of medicine have to be cooled constantly, otherwise they lose their potency. This, in turn, keeps many chronically ill people stuck at home. Definitiv developed a mobile cooler allowing patients bring their medicine with them when they go out. It also reminds them to take it.

### SOLUTION

The mobile cooler uses an M2M solution with sensors monitoring the inner and outer temperatures, as well as if the box was opened. The Cloud of Things measures and records this data. Information about the patient and the medicine are saved separately and encrypted on an SD memory card. The user can access all information via the device.

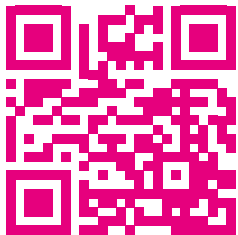
### BENEFITS

Chronically ill people are mobile again. The cooler holds the chosen temperature for over eight hours, so the medicine inside retains its potency. The parameters and the saved patient data turn the cooler into a mobile medicine manager. Should it be lost, the cooler can be found using GPS. The data is simultaneously always available and secure.



„The intelligent cooler helps chronically ill people store and take their medicine properly.“  
Peter Lüpkes, Board Member for Technology





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