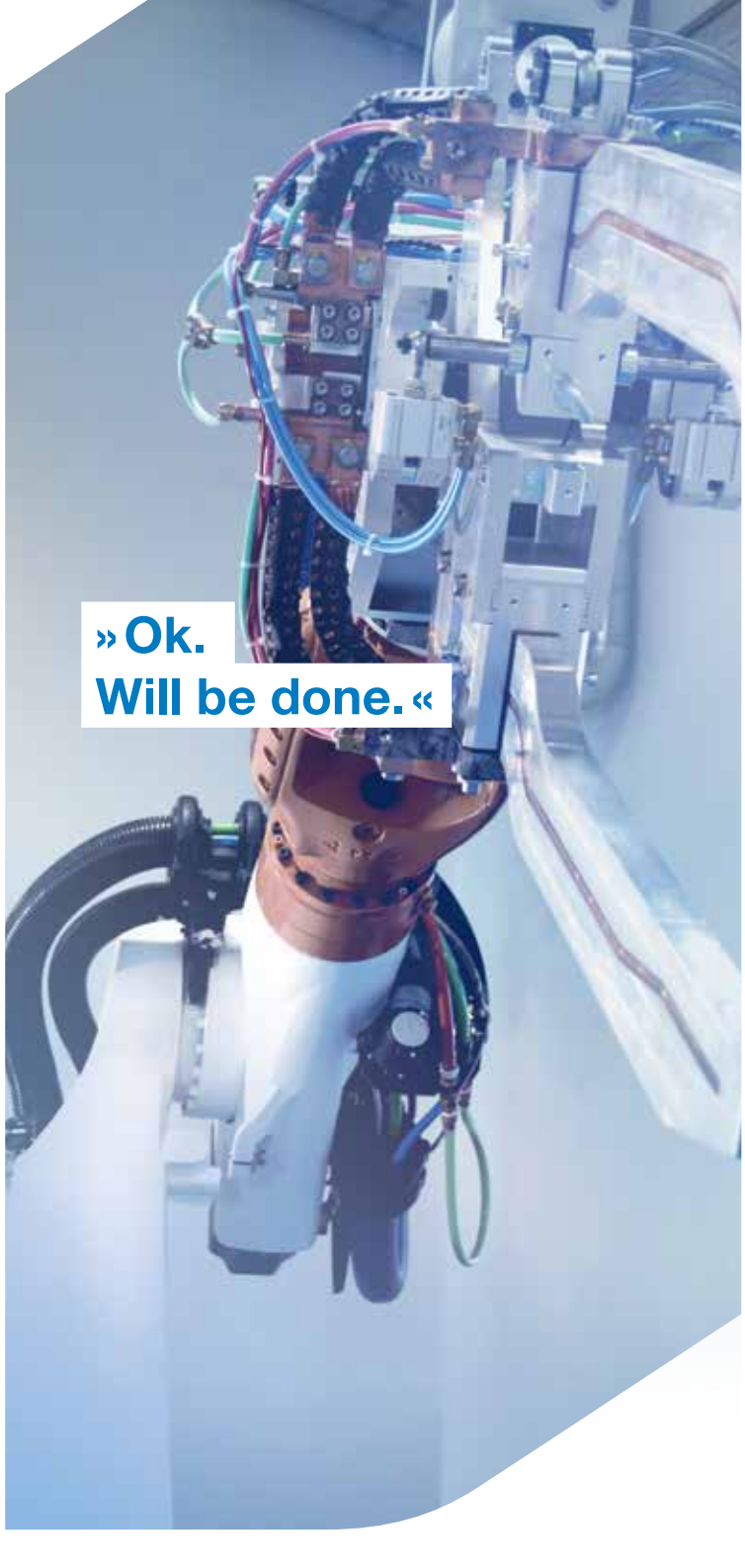
SMC®

Expertise – Passion – Automation

» Azure blue metallic, sunroof, alloy wheels. But quickly. «



» Ok. Will be done. «

» I know. «

#smartfactory4x4

The Industry 4.0 Handling System from Beck IPC, Hirschmann, NXTGN and SMC

4.0 is when everyone communicates

And all things understand each other

Industry 4.0 Handling System. SMC, NXTGN, Hirschmann and Beck IPC have jointly developed a Pick & Place Robot which is remote controlled in real time via a cloud.

The information collected is stored in the cloud and integrates with CRM and ERP processes.

All tasks and functions can be controlled in this way. This includes new orders for various end products and data for service calls. The work process takes place via the robot's Digital Twin. It doesn't matter how far the workstation is from the application.

> **"4.0 is when the engineer says: "I know.""**

Internet of Things (IoT). Systems and machines connect via the Internet and transmit user and metadata. This intelligence is the result of various products and services including the use of artificial intelligence.

Digital Twin. The IoT data (from sensors and actuators) is used to reproduce the state of a system, building, or even an entire factory, in order to recognise, predict, test and improve processes in the virtual twin from anywhere in the world.

TSN. Time-Sensitive Networking forms an important basis for flexible automation. It enables fast and deterministic data transmission with different levels of priority in automation networks. In the near future, many processes will no longer have to be programmed locally on PLC systems; instead, these functions will be distributed decentrally at the field level and in data centres, locally and in the cloud. 5G and TSN are the key technologies used for this.

Industry 4.0 is the solution in factory automation. With its expertise in automation, SMC offers a complete solution for systems and production.

Advantages:

- Guaranteed system availability
- Quality optimisation
- Increased product availability
- Economic efficiency through Predictive Maintenance
- Process transparency

Works in real time:
The Industry 4.0 Handling System
with cloud connection

4.0 means that it works

And this is how:

The 4.0 solution is the first joint project by SMC, NXTGN, Hirschmann and Beck IPC. The project phase of the four partners was completed in ideal fashion: in just four weeks, they developed a functioning industry 4.0 handling system that serves as a blueprint for almost all automation requirements.

Have a look for yourself – on site or by video.
You can see the solution in action any time at SMC Germany's Industrial Application Center. Or watch it on video. Together we develop intelligent automation concepts and carry out the necessary tests and simulations on site.

Solutions for a wide variety of industries.
Our teams of experts work closely with numerous industrial sectors. The findings from these projects help us to better understand and implement current and future automation requirements. Whatever your application, we will find a solution individually tailored to your requirements.

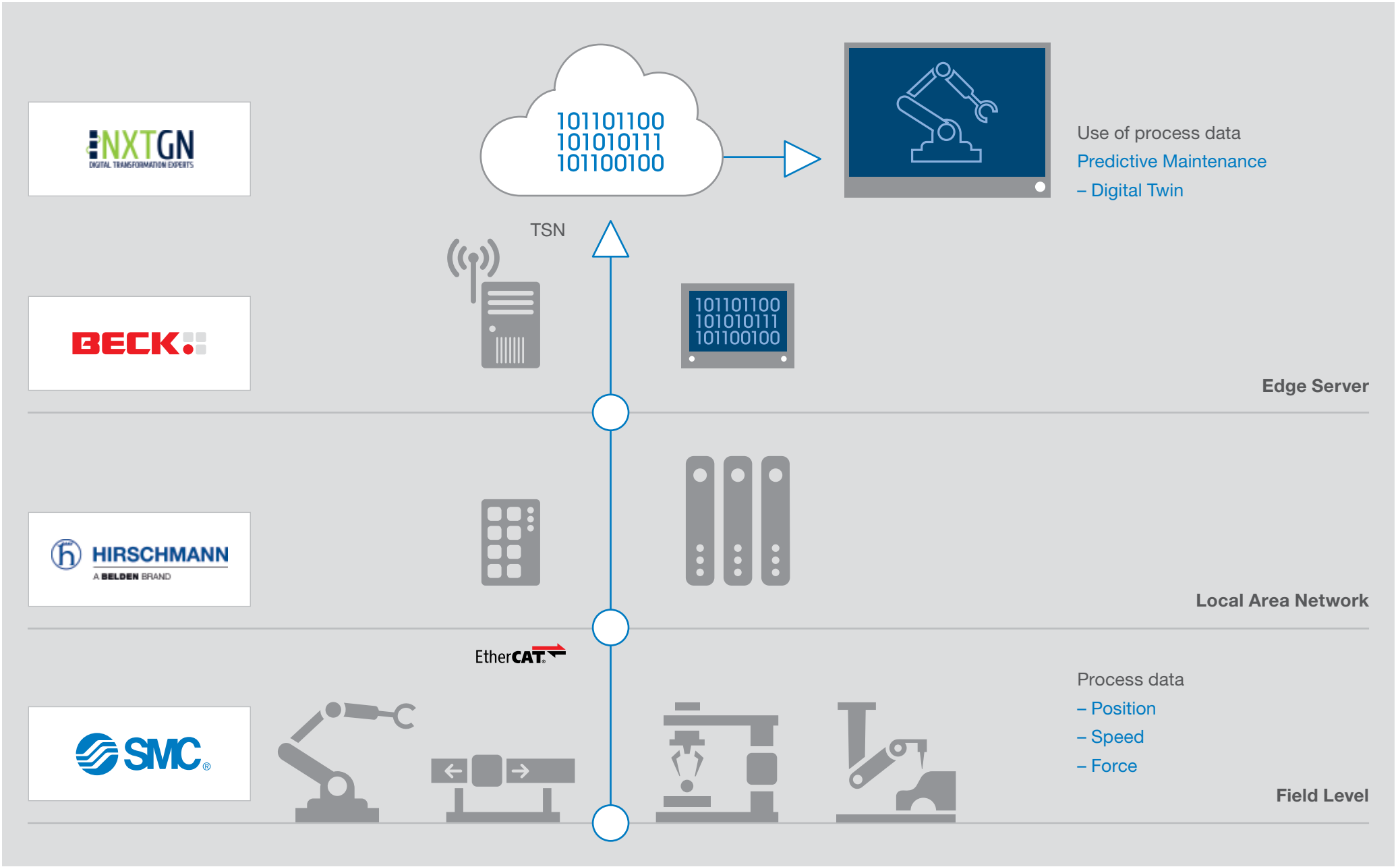
The 4.0 Handling System in detail.
SMC, with its automation platform and drive solutions, offers the perfect Operational Technology environment (OT). The drive systems that communicate with the cloud services are already equipped with the appropriate communication protocols and can easily be put into operation.

Beck IPC has developed cloud technology that enables Sensor to Cloud and machine control via smartphone sensors using the Kolibri protocol in real-time.

For the joint project, **Hirschmann** designed the infrastructure solution in which TSN technology is used to securely transmit data with different priorities and with different protocols without mutual interference. This platform enables the simultaneous use of a network through video technology and control technology, such as the EtherCAT protocol.

The **NXTGN** components prepare the data delivered to the cloud to provide services such as Digital Twin and integration with CRM and ERP service processes with access to real-time IoT data.

Thanks to Predictive Maintenance algorithms production orders and service assignments can automatically be derived. With the help of Microsoft's business analytics solution Power BI, meaningful analyses of past machine data as well as forecasts from Machine Learning algorithms can be visually displayed.


NXTGN
DIGITAL TRANSFORMATION EXPERTS
101101100
101010111
101100100
Use of process data
Predictive Maintenance
– Digital Twin
TSN
BECK
101101100
101010111
101100100
Edge Server
HIRSCHMANN
A BELDEN BRAND
Local Area Network
EtherCAT
SMC
Process data
– Position
– Speed
– Force
Field Level

4.0 means Zero Downtime

Know what's going on

Predictive Maintenance and Performance Monitoring: The system uses self-learning algorithms based on context-sensitive data transmission to detect and prevent weak points early on. This avoids unintentio-nal machine downtime This prediction becomes even more accurate when combined with several other systems. Continuous monitoring using MES data ensures an increase in productivity.

The Digital Twin combined with real-time IoT makes it possible to operate such systems decentrally and still offer optimum service. Thanks to optional video integration, the system can even be remotely controlled from anywhere in the world.

Reporting

Reporting provides a picture of what's happened. The reporting tools used for this depend on the requirements.

Analysis

Storing data in the cloud and scaling the amount of data (Big Data) create a database that provides a lot of detailed knowledge with expert insights.

Monitoring

Access real-time information regardless of device or location. Dashboards allow KPIs and analysis results to be displayed visualised. Alarm functions also allow you to be notified by the system in critical situations.

Prediction

What is likely to happen next? What is the ideal situation? Predictive Analytics models are used based on the results of self-learning algorithms (Machine Learning).

»Three more days
and I'll be busted.
Any spare parts?«

»On the way.«

»I know.«
SMC®

4.0 is teamwork

The result speaks for itself

Four partners, four areas of expertise. Whether you're interested in a complete solution or in the individual components: these four experts are always happy to help and put their extensive experience at your service Talk to us, we'll solve your problem.

> **"Our cooperation is exactly as it should be. Goal-oriented, hand in hand, unassuming, and focussed solely on the end result."**

Michael Losert
Industrial Application Center Coordinator at SMC

Beck IPC

Beck IPC has been a specialist in the Industrial Internet for 18 years. The com.tom system offers a seamless solution based on IIoT and Industry 4.0 for effectively transferring data from the field to IT applications.

With embedded technologies such as the IoT@chip, countless gateway options for connecting to a wide variety of controllers, a highly effective cloud solution and cloud-based apps – such as dashboards, alarms, reporting and visualisation – you get today's most powerful platform for your applications.

The most important goal is to meet your time and cost requirements with the highest quality in a dynamic market. Because Time-to-Confidence is crucial for a successful product.

www.beck-ipc.com/en/

Hirschmann – A Belden Brand

Belden is a leading global provider of signal transmission solutions for industrial, infrastructure, enterprise (data centre) and entertainment applications. Our diverse product portfolio for effective signal transmission includes data cables, connectors, I/O modules and industrial network components.

Global product brands include Belden, Wire and Cable, as well as GarrettCom, Lumberg Automation, Tofino Security and Hirschmann. Thanks to this cooperation, we are able to offer complete network solutions from a single source with global market access and delivery service.

www.hirschmann.de/en

NXTGN Solutions

NXTGN Solutions in Neumarkt, Bavaria, was founded in 2016 to help companies with digitisation.

We support digital transformation – for challenges on both the process and software sides. We also provide assistance for digitisation initiatives, optimise business models and establish new processes.

Digital transformation and the Internet of Things can only succeed if the evaluation, implementation, adaptation and integration of business applications is addressed. The tasks have shifted away from customisation towards smarter integration. This is the only way to optimise individual business processes for the benefit of the holistic process chain at companies.

www.nxtgn.de

SMC

SMC is the leading manufacturer, partner and solution provider for pneumatic and electric automation technology. The product groups, of which there are more than 12,000, include products for air treatment, valves and throttles, actuators (pneumatic and electric), fittings and tubings as well as vacuum and instrumentation components. In addition to individual applications, we provide our customers with products for the entire automation technology in a wide variety of industrial sectors. SMC currently has a market share of 36 % globally and 60 % of the Japanese market.

SMC Deutschland GmbH is part of the SMC Corporation, which can be found in 83 countries worldwide with over 31 production locations. 8,300 sales representatives around the world are available to provide the best possible advice and support for our customers' diverse challenges.

www.smc.eu

The 4x4 project is a role model

What can we do for you?

Suppose you are faced with an extraordinary task that has to be solved in a completely unrealistic time frame. Instead of trying to do everything yourself, look for partners. And start a competition. Beck IPC, Hirschmann, NXTGN and SMC approached this project in exactly this way.

We created four teams of specialists who are committed to the overall solution. And as it turns out, these four teams solved the task in four weeks. Something that had never previously existed was created in an incredibly short time: an Industry 4.0 Handling System that can be remotely controlled via a cloud. It works from A to Z, works with self-learning algorithms, and enables predictive, automatic maintenance. The cooperation between the four partners set the stage for the Smart Factory.

Take a look at the 4.0 solution at SMC in Egelsbach and visit the Industrial Application Center (IAC).

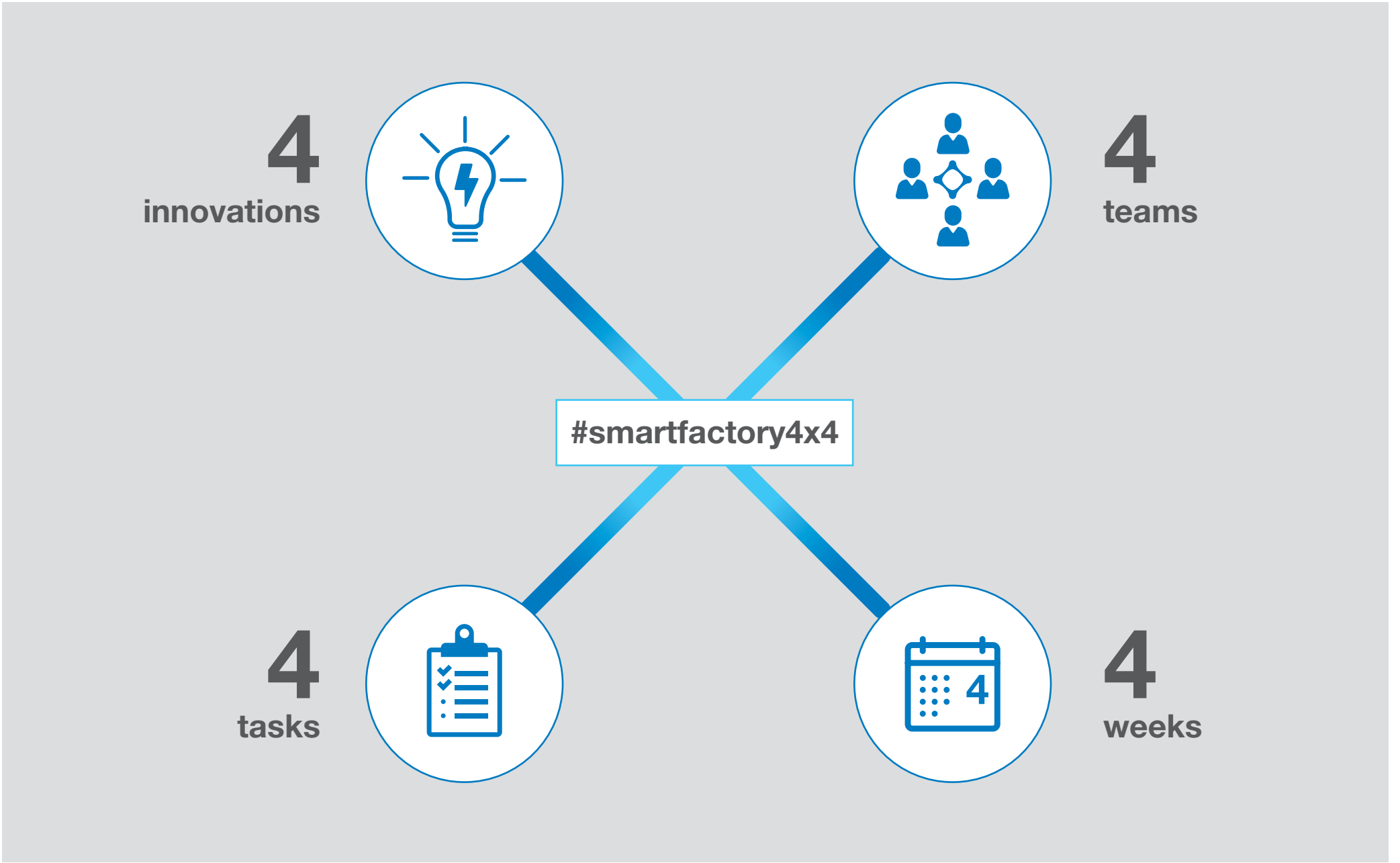
Use the IAC for a specialist seminar, a training course or an event. We offer you the appropriate conditions: suitable facilities and the extensive know-how of our five units Energy Efficiency, Industry 4.0, Ergonomic Handling, Safety and Individual Applications. Of course, our technical equipment is also at your disposal. As well, we are very happy to collaborate with the relevant professional associations when it comes to training your employees, too.

Exchange ideas and visit the IAC together with other companies. We offer interdisciplinary seminars and lectures – optimally tailored to your industry.

Together we can achieve decisive competitive advantages:

- Shorter design times
- Greater product functionality for the same costs
- Faster Time-to-Market

> **“An unusual path has led to an exceptional result.”**


4
innovations
4
teams
#smartfactory4x4
4
tasks
4
4
weeks

Expertise – Passion – Automation

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