DOES THE THOUGHT OF INDUSTRY 4.0 INTIMIDATE YOU?

We Equip You with All You Need for an Ergonomic Transition to the Smart Factory

THE INTERNET OF THINGS (IoT) and the growing number of internet-enabled devices in use offers manufacturers a fantastic opportunity to significantly increase their productivity, quality and flexibility with innovative solutions based on the latest technologies. With Industry 4.0 and the Smart Factory in mind, the challenges are obvious and those concerned may get overwhelmed by the many questions that arise: which state-of-the-art technologies help us to be more successful throughout the entire organization? How can the different systems and devices ideally communicate with each other? Or, to start with the essential, what does a smart factory even look like?

At COPA-DATA, we develop innovative solutions based on the latest technologies in order to enable our customers to continuously improve their processes. Many innovations have already found their way into the zenon Product Family and many others especially pertaining to the smart factory will follow.

MULTI-SITE REAL-TIME DASHBOARDS AND REPORTING

One of the most recent developments is a multi-site architecture using Microsoft Azure, which was developed in close collaboration with our strategic partner Microsoft. This easily-scalable, high-performing and cost-efficient architecture – where machine-generated data is transferred to the cloud in near real-time – allows the analysis of data across organizations and borders, enabling you to make "smarter" and faster decisions. The solution is completed by making the data and reports available on mobile devices such as smartphones and tablets – providing the data anywhere and anytime.

SEAMLESS CONNECTIVITY FROM SENSOR TO ERP

zenon establishes a direct integration from field level data and HMIs to ERP systems. This helps to more closely integrate production and business processes. Information can be processed in real-time and shared with ERP systems. Having real-time transparency to ERP-level business functions such as sales, supply chain management, accounting, and pricing delivers great benefits. Also, communication from the ERP back to the process is possible with zenon. Machine operators, for example, can receive messages from the ERP system directly to their HMIs.

VENDOR-INDEPENDENT INTEGRATION

Thanks to zenon's communication capabilities you can integrate machines and equipment from different vendors into one system. This enables a holistic and transparent control of the entire infrastructure – delivered in an ergonomic way for the operators. Autonomous communication between different production entities is enabled as well.

Besides those features which are already available, there are many new developments in the pipeline which can be expected in the coming months and years. This is made possible through strong partnerships and research projects in conjunction with universities and research facilities. The list of ongoing research projects is long. Over the next few pages, you will find more information about a selection of these projects. Many of the results of these research projects will contribute to the development of zenon and new functions will be available in future zenon releases – stay tuned!

JOHANNES PETROWISCH
PARTNER ACCOUNT MANAGER

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COMBINING TWO PREVIOUSLY SEPARATE WORLDS

Interview with Werner Reuss

PHOTOGRAPHY: BERNHARD MÜLLER

WERNER REUSS, IoT Commercial Lead at Microsoft Germany, is one of the driving forces behind the development of the machine cloud solution based on Microsoft Azure and zenon. In the following interview, he shares Microsoft's perspective on Industry 4.0 and COPA-DATA's innovative contributions to the advances of automation and IT.

From your perspective, what are the biggest challenges when making factories smarter?
WERNER REUSS: Today we see significant differences in the standards of design, implementation and operation between a traditional manufacturing environment and enterprise IT systems. For example, we typically have much longer investment and operation cycles for equipment used in a manufacturing or an industrial environment. Usage cycles of 15 years+ are very common in these scenarios, while a typical IT system has a usage cycle of less than ten years.

We also frequently see that both worlds have been designed and operated more or less independent of each other. This leads, for example, to the situation that necessary infrastructures are not implemented or procedures and processes are not synchronized. Additionally, it is sometimes difficult from an organizational perspective to bring the people together who represent these two worlds in order to implement a complete solution, as the two groups present many different requirements and perspectives.

All that said, we also agree with the view expressed in the final report about Industry 4.0 issued by the working committee of the Industry 4.0 initiative. It clearly outlines the advantages of implementing Industry 4.0 systems across the board, ranging from potential efficiency gains to the opportunities for new business models.

Which technologies and solutions are required in order to be successful in the world of Industry 4.0?
WERNER REUSS: From Microsoft's perspective, we think it makes most sense to start with an assessment of the current situation with regards to devices and services. Based on this knowledge, a user can decide which components (for example, cloud services or machine learning) make the most sense in each particular situation to achieve the largest impact.

Furthermore, it is crucial to use technologies and software products which provide the required connectivity to the device level and can be used at different levels across the entire organization. With this vertical integration and data availability, processes can be optimized accordingly and valuable insights can be created which significantly help the organization to stay competitive in the future.

Which technologies does Microsoft provide in order to support its partners such as COPA-DATA to implement IoT solutions and to make the "Factory of Tomorrow" happen?
WERNER REUSS: We describe ourselves as the productivity and platform company. This holds true in the context of Industry 4.0 or the broader Internet of Things. We enable our partners by providing the services and tools (e.g. Azure Intelligent Systems Service, Azure Machine Learning Services or CRM online) and operating systems targeted for the embedded world (like Windows Embedded 8.1 Industry) to build world-class Industry 4.0 or IoT systems.

What is your opinion on the research and development completed by COPA-DATA in the context of Industry 4.0?
WERNER REUSS: I think a lot of great work has been done by the COPA-DATA team, not only with regards to the "native" Industry 4.0 scenarios, but also in regards to their core business. In the context of Industry 4.0 I want to particularly highlight the machine cloud system that COPA-DATA exhibited during our collaboration at the Hannover Messe trade fair in 2014. It is a perfect showcase of an "Internet Of Your Things" scenario. Essentially, the machine cloud concepts start with the devices already deployed in the field. By consolidating the information coming from such devices in the cloud, combining them with data from ERP systems and allowing a global view on multiple sites,

the machine cloud enables real-time information and multi-site analysis. With this kind of solution, it is now possible to benchmark production sites based on their energy efficiency and other important KPIs, to create valuable insights and learning as well as to optimize certain business processes, such as power consumption.

Where do you see the biggest contributions from COPA-DATA to smarter factories?

WERNER REUSS: The COPA-DATA team is bringing a lot of experience in the space of integrated PLC systems, embedded HMI, SCADA and production reporting to the discussion. In particular, the native connectivity to almost any industrial hardware in the field is an important point, giving the end customer the required flexibility to access the data, to analyze it, to improve specific processes and to be successful.

I also see that COPA-DATA is highly committed to improve the ease of use and effectiveness of these systems. Along with its background in Industry 4.0 and its deep industry knowledge, I see it as a perfect partner to work with on the concept of smart factories.

Thank you for your comments.

THE INTERVIEW WAS CONDUCTED BY JOHANNES PETROWISCH, PARTNER ACCOUNT MANAGER AT COPA-DATA.

ABOUT WERNER REUSS

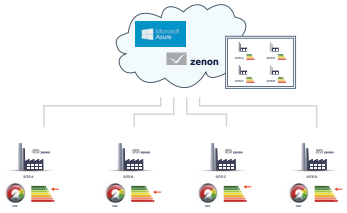
Werner Reuss is the IoT Commercial Lead at Microsoft Germany and leads the Go To Market of Microsoft in the Internet of Things space. Prior to this appointment, he was the Director of Windows Embedded in Germany and Central and Eastern Europe regions, focused on helping users build intelligent systems that unlock the power of data and translate it into insights and action. Prior to this role, he was responsible for the Server and Tools Business in CEE Multi-Country, overseeing 22 small and emerging markets. He joined Microsoft in 2000. Prior to Microsoft, Werner Reuss held various leadership position in sales, marketing and services in Compaq Computer and Digital Equipment.

For the development of innovative IoT solutions, the strategic partnership with Microsoft is key for COPA-DATA. Learn more about Microsoft's approach and the Internet of (Your) Things at

www.microsoft.com/internetofyourthings

COPA-DATA R&D PROJECTS SUPPORTING THE SMART FACTORY

At COPA-DATA, we are continuously working on innovative solutions together with our strategic partners, educational institutions and research facilities in order to provide our customers with everything that is needed to make businesses and production facilities smarter. In this *IU* issue, we would like to give you insights into three innovative projects: the already available machine cloud solution developed together with Microsoft and the two ongoing research projects 'prOnto' and 'zenon Smart Interfaces'.



ZENON CLOUD SOLUTION

Multi-site Analysis and (Near) Real-time Information for Higher Productivity

The strong collaboration with our strategic partner Microsoft has led to a recent innovation: COPA-DATA's machine cloud solution. The Microsoft-Azure-based machine cloud by COPA-DATA allows multi-site analysis of any data from the field level around the world in one place.

This solution enables users to bring production sites into a single system for benchmarking and creating cross-site KPIs. Company-wide energy management, quality management or performance optimization are possible areas of application. The solution can be completed with mobile terminal Windows Phone and Windows 8.1 Apps, iOS or Android Apps to show near real-time consumption and performance data on the mobile device – having everything under control on the move.

Benefits at a glance:
- Company-wide analysis and reporting
- Benchmarking of multiple production sites
- Company-wide consumption management

http://kaywa.me/SzBp0

Discover more about the zenon Cloud Solution

PRONTO

Advanced Process Automation Based on Ontology-Driven Agents

The research project 'prOnto' is dealing with dynamic fluid routing in complex pipe systems. It is being undertaken by COPA-DATA together with the Vienna University of Technology (Automation and Control Institute) and supported by the Austrian Research Promotion Agency.

The scientific approach based on ontology-driven agents is creating the next generation of process automation; introducing semantics into automation systems. The structure of the equipment used for liquid transfers is modeled within the ontology and this model represents the knowledge base for the application of sophisticated routing algorithms in a functional module called prOnto. During the equipment operation (automatic or manual), the prOnto module is responsible for identifying available transfer routes dynamically by taking various aspects into consideration, such as: current status of the equipment, damaged components, material compatibility or hygiene status. If the equipment configuration is changed, or in the case of damaged or blocked components, the ontology is quickly updated and the routing algorithms continue working properly without the need for complex engineering work.

Benefits at a glance:
- Safe processes and a high level of hygiene
- Increased speed of operator decisions and process operations
- High production equipment availability
- Dramatic reduction of system integration and update costs

http://kaywa.me/UdHa4

Discover more about the prOnto research project

ZENON SMART INTERFACES

Better User Experience in the Professional Environment

Within the framework of the research project "zenon Smart Interfaces" in collaboration with the University of Applied Sciences Salzburg, COPA-DATA is addressing new market demands for use of tablets and smart phones and thereby extending its range of automation solutions for mobile devices. The research project is focused, on the one hand, on intelligent user interfaces which can adapt to the particular situation and to the user and, on the other hand, to the associated interaction concepts which surpass common operating design. The aim is, amongst other things, for an automation system to independently detect the hardware on which it is running and automatically adapt for optimum operability on that particular device. The solution resulting from the research should feature the following four innovations:

1. new operating/interaction concepts
2. intelligent control elements (user interface)
3. adaptions for use on mobile devices and
4. support during engineering and application design.

Benefits at a glance:
- Efficient engineering of smart interfaces
- Adaptive interfaces
- More ergonomics for the end user

http://kaywa.me/271rM

Discover more about the zenon Smart Interfaces research project