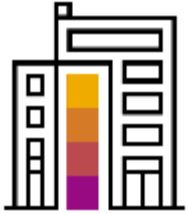




SAP® Innovation Awards 2020 Entry Pitch Deck

Quickly Connect Shop Floor to Cloud via WAGO IoT Box and the Carrier-Independent SAP SIM Card





Company Information

| | |
|---------------------|---|
| Headquarters | Germany |
| Industry | Electrical Engineering |
| Web site | https://www.wago.com/ |

The WAGO Group is an international, standard-setting supplier of electrical interconnection and automation products and interface electronics. The family-run company is the world market leader in spring pressure connection technology. WAGO has continued to grow since being founded in 1951, with a current worldwide workforce of more than 8,500, with more than 3,900 of these in Germany at its headquarters in Minden (North Rhine-Westphalia) and in Sondershausen (Thuringia). The company achieved sales of EUR 932 million in 2018.

WAGO products are used globally in power and process technology, building automation, machinery and equipment, as well as industrial and transportation applications. They are trusted anywhere electrical conductors must be connected to each other or where complex automation systems must be controlled. Here they have continuously been proven to contribute to safety and the reliable operation of devices and complete installations.

Our Motto

"Whether it has to do with wires, people or thinking, it's all about making a connection."

Dipl.-Ing. Wolfgang Hohorst

WAGO IoT Box + SAP IoT Connect 365 SIM card = IIoT Freedom

WAGO Kontakttechnik GmbH & Co. KG



Our approach accelerates IIoT projects by using SAP digital-interconnect (SAP SIM card) to connect assets like machinery, facilities and much more to the SCP, while supporting cloud provider independency.

Our customer's ROI is quickly achieved because of the ease of implementation and flexibility of provider.

Rainer Schmutte

Head of business Development
INDUSTRY

Challenge

Some estimate that 90 percent of factory and facility devices are not connected to a network, stranding information within islands of automation. If it were easy and affordable to connect assets, the potential to increase efficiency and performance would be huge. If assets stay unconnected no digital transformation concerning to industrial production is possible at all. Neither production optimization is possible nor new business models including production matters

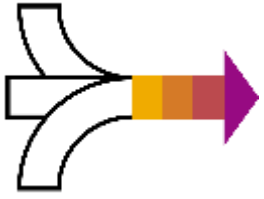
Solution

The preconfigured and customizable WAGO IoT-Box (<https://www.wago.com/de/iot-box>) collects sensor signals and data from PLCs and connects to the SAP Cloud Platform via SAP IoT Connect 365's Multi-IMSI SIM card.

Outcome

Shop floor connectivity to SAP ERP systems or SAP Cloud Platform is realized quickly using a scalable, reliable and configurable connection, expediting ROI and the benefits of IIoT. The connectivity is the basic requirement for digital transformation. With the WAGO solution, this can be done with up to 90% of industrial assets – especially in brownfield – independent of installed PLC- or fieldbus technology.





Business Challenges and Objectives

CWS 700 (total): Business challenges – Please provide a brief overview of the challenges your business was facing:

WAGO offers several IoT solutions (hardware / gateways), but selling these solutions is a challenge due to the multiple domain stakeholders typically involved in IIoT projects – especially if operational technology (OT) like sensors, actuators, fieldbuses and PLCs are involved. Though both OT and IT desire a quick proof of concept and rapid deployment, the organizational structure of the customer tends to slow both the decision and the implementation.

CWS 700 (total): Project objectives – Please describe the key objectives of your project.

#openandeasy is our goal, as the customer is looking for solutions that are not proprietary and simple to install and maintain. Acceleration of IIoT projects is possible since no OT or IT experts are required for implementation and no detailed control cabinet planning is needed. Data collection into the SAP Cloud Platform is facilitated by the WAGO IoT box and the SAP IoT Connect 365 SIM card:

<https://www.sap.com/services/cloud/digital-interconnect.html>





Project or Use Case Details

Any IIoT project can be implemented quickly by installing the preconfigured and customizable WAGO IoT-Box (<https://www.wago.com/de/iot-box>) with the SAP IoT Connect 365 SIM card. The WAGO IoT Box mounts magnetically to any steel enclosure or equipment and collects sensor signals and control actuations, sending them to the SAP Cloud Platform for use in SAP applications and storage in data repositories. The SAP IoT Connect 365 SIM card is carrier-independent, making international and roaming installations easy and configurable.

The OPCua server in the WAGO IoT Box and the SAP Plant Connectivity OPC client enable bi-directional connectivity between SAP Manufacturing Integration & Intelligence (SAP MII), SAP Manufacturing Execution, SAP Extended Warehouse Management (SAP EWM), SAP HANA, SAP Enterprise Resource Planning (SAP ERP), SAP Event Stream Processing (SAP ESP) as well as providing an IoT-Gateway for data from the heterogeneous world of PLCs.

The WAGO IoT Box contains preinstalled temperature and electrical energy measurement system where typical MES signals like running, error, adjustment, and cycle can be wired easily and configurable signals are available for OT fieldbuses and protocols.



Benefits and Outcomes

Business or Social

SmartFactory is a primary driver of industrial digitalization and IIoT, yet most industrial assets are not connected at all because the cost and complexity are prohibitive.

The combination of the WAGO IoT Box and the SAP IoT Connect 365 SIM card enable connectivity in less than half of the traditional time—less than 1 day to connect an asset, with a connection that doesn't tie them into a single vendor.

Since the connection is not hard wired, it often eliminates any socio-political conflicts between IT and OT.

IT

Reliability is important to IT, and the IoT Box/SAP Cloud Platform solution achieves it not only with the cellular data interface, but also with redundancy, because it is possible to use a LAN connection in addition to the cellular connection.

The WAGO/SAP IoT Box solution provides a high level of IT security through its support of IPsec and OpenVPN and, for rule-based access, LDAP.

Human Empowerment

The solution empowers production management as well as the maintenance department with live data from the assets.

IoT Box gives the machine operator a high degree of transparency over the machine and its process data. Based on this information, e.g. users can create targeted KPIs, record and compare energy consumption, plan maintenance intervals and optimize them for the processes. By linking the IoT-Box and the SAP Cloud Platform, customers can fully exploit the potential of the machine, make it more efficient, and save costs.



Deployment

Deployment status Live

Date

Number of users

SAP® technologies used:

| SAP product | Deployment status (live or proof of concept [POC]) | Contribution to project |
|---------------------------------|---|------------------------------------|
| 1 SAP Cloud Platform | SAP® Certified Built on SAP Cloud Platform | Target System for IIOT |
| 2 SAP Plant Connectivity | Running@several customer projects | Target System for Private / onPrem |
| 3 SAP Digital Interconnect | PoC | Accelerator for IIoT |
| 4 | | |

5

If you have used one of SAP's services or support offerings from SAP Digital Business Services during the implementation or deployment phase, please select with ☒ one or more of the following offerings:

- | | | |
|--|---|--|
| <input type="checkbox"/> SAP MaxAttention | <input type="checkbox"/> SAP Active Attention | <input type="checkbox"/> SAP Advanced Deployment |
| <input type="checkbox"/> SAP Value Assurance | <input type="checkbox"/> SAP Model Company | <input type="checkbox"/> Others: |

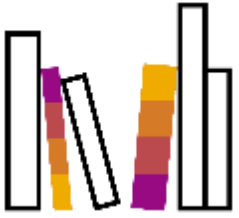


Advanced Technologies



The following **advanced technologies** were part of the project.

| | Technology or use case | Yes or No | Contribution to project |
|---|----------------------------|-----------|-------------------------|
| 1 | 3D printing | no | |
| 2 | Blockchain | no | |
| 3 | Internet of Things (IoT) | yes | 100% |
| 4 | Machine learning or AI | no | Next Step |
| 5 | Conversational AI | no | |
| 6 | Robotic process automation | no | |
| 7 | Data anonymization | no | |
| 8 | Augmented analytics | no | |



Additional Information



The quantity of telemetry data, and resulting latency, are frequently issues in industrial/shopfloor application. WAGO plans to utilize SAP machine learning capabilities (a PoC in conjunction with SAP EDGE) in the next releases of the physical IoT Box near the operator terminal to minimize the amount of data that needs to be transmitted, thus shortening transmission times.