Erich Barnstedt, Principal Software Engineering Lead, Microsoft Azure™ IoT, Jason Zander, Corporate Vice President Microsoft Azure™, and Stefan Hoppe, Global Vice President, OPC Foundation, during the unveiling of the Industrial IoT display (from left to right).

Beckhoff demonstrates comprehensive OPC UA communication and interoperability as an active OPC Foundation partner

Microsoft and OPC Foundation deploy 40 Industrial IoT demo walls worldwide

With 40 Industrial IoT demo walls shipped all over the world, Microsoft is demonstrating how integration between Azure™ Cloud and OPC UA enables bidirectional data communication and visual representation on dashboards – all in line with Industrie 4.0 concepts. The system sends data from the controller to the cloud and back in a transparent manner via the OPC UA publisher/subscriber (pub/sub) model and the MQTT or AMQP protocol, or via client/server tunneling. This not only ensures secure and efficient transmission of telemetry data to the cloud, it also makes it possible to exchange command-and-control data between Azure™ and individual field devices without having to make any changes on these devices. With the company's Azure™ IoT Suite Connected Factory demo walls, Microsoft exhibits its commitment to support OPC UA as a reliable and established interoperability standard for the seamless integration of the production and IT worlds to enable plug-and-produce. The IIoT demo walls are deployed in Microsoft Technology Centers (MTCs) worldwide, including Microsoft's Executive Briefing Center in Redmond, Washington, and the Microsoft IoT Lab in Redmond, as well as other IoT lab locations in Munich, Germany and Shenzhen, China. The new IoT Innovation Center in Taipei, Taiwan, will also receive a demo where Microsoft opened an OPC UA test lab.

These demo walls showcase OPC UA as an established and open standard for communication across a heterogeneous sample factory with components from nine renowned automation technology providers. As one of these partners, Beckhoff has contributed an interactive area on the wall with an Embedded PC from its highly scalable CX series, which in this case functions as an IoT controller with direct OPC UA connectivity to the Azure™ cloud. In addition to the Embedded PC, the application includes EtherCAT Terminals as the I/O system, two push-buttons, a halogen light, a temperature sensor and a fan. The system demonstrates three different communication scenarios:

- Data is transmitted to the cloud as an example of vertical communication. In this case, the data is generated from temperature changes when a light is turned on and a fan is switched on. The operating mode of a blinking light signaled via the EtherCAT Terminals is transmitted as well.
- In reverse, the lamp and fan can be turned on and off, and the blinking mode can be selected within the Azure™ cloud.
- The third scenario involves horizontal data communication. An IoT-capable barcode reader from Leuze Electronics uses PLCopen-based OPC UA client modules to read two different barcodes in order to activate or deactivate the blinking lights in the Beckhoff section of the demo.

For this third scenario, the IoT controller is the only device supporting horizontal OPC UA communication, on the basis of PLCopen OPC UA Client software function blocks that Beckhoff initiated in 2006. As a result, the system features Industrie 4.0 connectivity with a level of security that has been approved by Germany's Federal Office for Information Security (BSI, Bundesamt für Sicherheit in der Informationstechnik). Features like these are evidence of the many years of successful cooperation between Beckhoff and the OPC Foundation, which has resulted in the world's first PLC with integrated OPC UA Server functionality in 2007, in addition to many other solutions.

Further information:
www.opcfoundation.org