

## PRESS RELEASE

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# WZL cooperates for Hannover Messe 2017 with BCG Digital Ventures, Amazon Web Services and Kuka

## Cooperation reveals new system architecture for "Internet of Things"

Werkzeugmaschinenlabor WZL der  
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So far, production technology systems have been organized hierarchically according to the established automation pyramid. In the future, however, industrial companies will only be able to exploit the full potential of the Internet of Things and services if assets of all layers are digitally networked according to the approach of cyber-physical (production) systems. The use of cloud technologies promises special potential for many application areas such as planning and control in production or applications such as predictive maintenance. However, this potential cannot yet be realized due to a lack of IoT-technologies for industry, existing delays in data transmission between the workshop level and the cloud, and excessive data volumes. Edge computing is a new key technology for combining the powerful cloud with distributed local edge devices. For example, while the cloud performs analysis and optimization tasks, local events can be responded to in real time. Cloud and edge device are in continuous data exchange.

In the collaborative demonstrator, the new AWS "Greengrass" technology is being used for the first time to control industrial hardware in real time, thus demonstrating the potential of Edge-Powered Industrial Control (EPIC). Two KUKA robots play "ping-pong" linked via a conveyor belt. The robots are each controlled by an AWS greengrass edge device, which uses laser sensors to determine the position of the object, predicts the trajectory of the object and transmits control commands to the robot in real time. On the one hand, industrial components such as robots, grippers or conveyor belts can easily be connected to the cloud - using integrated safety functions. On the other hand, the cloud can have a direct influence on the production process.

"It is to be expected that there will be a shift in planning and control functionality from today's high-performance, expensive, hard-to-maintain local hardware to high-performance cloud services in combination with lean local hardware. In the long term, this will lead to completely new business models such as "PPaaS - Path planning as a Service". At the WZL, we forecast the "Internet of Production". We assume that in future all participating companies - both manufacturers and end users - will offer and consume high-performance production services. In particular, they will combine the established analytical modelling methods of production engineering with the new data-based analysis to open up a completely new era. Edge computing is an essential link in realizing this vision, says Markus Obdenbusch, Head of Automation and Control Technology at Laboratory for Machine Tools and Production Engineering (WZL).

### Laboratory for Machine Tools and Production Engineering (WZL)

The Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen University has stood worldwide for more than 100 years for future-oriented research and successful innovations in the field of production technology.

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Under the leadership of four professors Christian Brecher, Fritz Klocke, Robert Schmitt und Günther Schuh, the WZL is conducting research in six areas - production technology, machine tools, production systems, transmission technology, production metrology and quality management - on the future-oriented design of production in high-wage countries. Together with industry partners from various sectors, the WZL develops solutions for a wide variety of production scenarios in both publicly funded and bilateral projects. These activities are being consolidated on the RWTH Aachen Campus in the Cluster Production Engineering.

### Attachment



Edge-Powered Industrial Control (EPIC)

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