5G CAMPUS NETWORKS
Solutions for the smart factory

SUMMARY
In its innovation project Campus 4.0 Deutsche Telekom is trialling ground-breaking solutions in networking and control of objects on an industrial campus. The aim is to increase flexibility in production. Deutsche Telekom is providing an integrated network consisting of LTE and a local server infrastructure known as mobile edge computing. This is used to control robots in real time, meaning they can move around the factory floor autonomously. The data rate, fixed response times in the network, reliability, security and other aspects are guaranteed to the customer.

CURRENT SITUATION
OSRAM is starting autonomous material transport at its factory in Schwabmünchen. Mobile robots called AGVs (Automated Guided Vehicles) will be deployed there from February 2019. Getting driverless transport vehicles to move through a factory autonomously is not rocket science any more. But each vehicle still requires an enormous amount of work. It used to be necessary to supply information to each robot individually, to coordinate it with the collaborating robots, and to correct every error at the vehicle itself. That meant each robot had to learn everything for itself. So OSRAM’s next big step in digitizing the factory was to develop partly central control of the mobile robots – they had to be made easier to manage. To enable successful navigation through the factory, the best solution was an Industry 4.0 compliant, high-performance mobile network that supports edge computing. This meant that navigation could be controlled and computed centrally on the edge – an internal server on factory premises. Massive data flows are now processed, stored on the edge and distributed again in real time. If errors are encountered they only need to be corrected once and not for each vehicle, with robots learning collectively in practical terms. The technology can transfer large volumes of data securely, and the short latency times needed to control mobile robots can be guaranteed. As a result, vendor-neutral fleet management is now possible in the OSRAM factory in Schwabmünchen, with the data remaining securely inside campus premises.

PROJECT DESCRIPTION
The high-tech company OSRAM is taking the potential of autonomous transport systems in a more flexible production environment to the next level. In a joint innovation project, Deutsche Telekom and Osram are testing a separate network infrastructure based on a dual slice campus network. "Dual slice" refers to the combination of public and private LTE networks. Processing takes place in real time. This allows autonomous control of the transport system to take place on company premises.

REFERENCES

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STANDARDIZATION
The experience gained from the trial is analyzed with the participating partners involved and prepared for commercial use. It can be standardized and adapted for the particular business environment. Deutsche Telekom is building something called a dual slice campus network, a combination of public and private LTE networks. The result is a dedicated network exclusively for OSRAM’s industrial applications, although access to the public network remains possible too.