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Bosch heads up research project **IT solutions to stabilize connected logistics systems** Using real time data from production and logistics to aid decision making

- ▶ ProvelT project receives funding from German Federal Ministry for Economic Affairs and Energy
- ▶ Focus on developing a software platform for informed manual interventions in connected logistics systems
- ▶ Aim: cost-effective and reliable supply chains

Stuttgart – Industry and commerce now depend more than ever on reliable logistics. In practice, however, supply chains face numerous challenges from disruptions such as traffic jams, technical issues, missing goods, and any number of other unforeseeable circumstances. This then calls for manual correction. In the ProvelT project (production plan based recovery of vehicle routing plans within integrated transport networks), researchers are now developing an IT platform that will give dispatchers the tools they need to make objectively assessed and dependable interventions in connected logistics systems. The aim is to build up reliable, cost-effective supply chains that are not disrupted due to misguided reactions and interventions. Following approval by the German parliament, the research project is receiving funding of 2.8 million euros from the German Federal Ministry for Economic Affairs and Energy. Robert Bosch GmbH is acting as the lead partner.

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Logistics chains and the butterfly effect

The logistics sector still lacks this sort of decision aid. As supply chains become more and more complex, covering large areas and running according to tight schedules, any disruption – as well as any reaction to a disruption – has a knock-on effect on the entire logistics network. Without access to a reliable set of data and a high-performance IT platform, it is extremely difficult for logistics employees to assess what corrective action makes sense in any given situation. The ProvelT platform will supply dispatchers with the information they need to respond correctly to disruptions. It is also designed to restore disrupted transport networks to their normal operational state quickly. Reliable logistics networks are also a core component of connected industry (industry 4.0).

Incorporating production data

The project team is drawing on a range of familiar technologies, including vehicle tracking using GPS and software for transport planning. What's new is that production information is also incorporated into the decision making process. How urgently does the auto plant, say, need the materials it ordered? Is it a case of topping up supplies, or will production break down if the materials are not delivered promptly? Big data relating to unit sales of products and the traffic situation can also be incorporated into the platform, which will pool all this information and provide users – both companies and logistics service providers – with a range of services for planning and managing logistical processes. For instance, if actual data begin to depart from target data, the platform will warn users and display appropriate responses. The responses offered will take into account the implications for the whole transport network, considering actions holistically rather than in isolation. To enable the platform to factor in real-time data such as vehicle position or delivery status, the project partners are also developing an application that truck drivers can use on their mobile devices.

Bringing together partners from industry, IT development, and research

Together, the members of the project consortium possess all the expertise needed to develop and run the ProvelT platform. Robert Bosch GmbH is heading the project and, like ZF Friedrichshafen AG, is an industrial user of the platform. The logistics service provider Geis has assumed responsibility for the planning of transport operations and operational implementation. The IT providers LOCOM and PTV are developing system solutions for transport planning and management, while the Research Center for Information Technology (FZI) at the Karlsruhe Institute of Technology (KIT) is overseeing the components used to manage irregularities and disruptions. Responsibility for the global concept and scientific approach lies with the Institute for Materials Handling and Logistics (IFL)

at the KIT. In the first phase of the project, the consortium will build up a common system architecture, which will then be tested and refined in pilot operation.

More efficient logistics

ProveIT won't just benefit industry and its suppliers; commerce and transport companies stand to gain as well. The project provides improved tactical support by stabilizing logistics systems in the event of disruption and bringing them back on schedule. This makes supply chains more cost-effective – the project partners anticipate that ProveIT will be able to reduce total mileage by 5 percent for a given transport volume, with all the savings that brings in terms of energy, costs, and CO₂ emissions. The project is due to run until fall 2016.

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Project partners:

[Robert Bosch GmbH](#)

[ZF Friedrichshafen AG](#)

[Geis Transport und Logistik GmbH](#)

[LOCOM Software GmbH](#)

[PTV Planung Transport Verkehr AG](#)

[Research Center for Information Technology \(FZI\) at the Karlsruhe Institute of Technology \(KIT\)](#)

[Institute for Material Handling and Logistics \(IFL\) at the Karlsruhe Institute of Technology \(KIT\)](#)

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The Bosch Group is a leading global supplier of technology and services. In 2013, its roughly 281,000 associates generated sales of 46.1 billion euros. (NB: Due to a change in accounting policies, the 2013 figures can only be compared to a limited extent with the 2012 figures). Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. The Bosch Group comprises Robert Bosch GmbH and its roughly 360 subsidiaries and regional companies in some 50 countries. If its sales and service partners are included, then Bosch is represented in roughly 150 countries. This worldwide development, manufacturing, and sales network is the foundation for further growth. In 2013, the Bosch Group invested some 4.5 billion euros in research and development and applied for some 5,000 patents. This is an average of 20 patents per day. The Bosch Group's products and services are designed to fascinate, and to improve the quality of life by providing solutions which are both innovative and beneficial. In this way, the company offers technology worldwide that is "Invented for life."

The company was set up in Stuttgart in 1886 by Robert Bosch (1861-1942) as “Workshop for Precision Mechanics and Electrical Engineering.” The special ownership structure of Robert Bosch GmbH guarantees the entrepreneurial freedom of the Bosch Group, making it possible for the company to plan over the long term and to undertake significant up-front investments in the safeguarding of its future. 92 percent of the share capital of Robert Bosch GmbH is held by Robert Bosch Stiftung GmbH, a charitable foundation. The majority of voting rights are held by Robert Bosch Industrietreuhand KG, an industrial trust. The entrepreneurial ownership functions are carried out by the trust. The remaining shares are held by the Bosch family and by Robert Bosch GmbH.

Additional information is available online at www.bosch.com, www.bosch-press.com and <http://twitter.com/BoschPresse>