

Head of Communications:
Dr. Maartje Koschorreck
Phone: 0621 181 - 1080
koschorreck@uni-mannheim.de
www.uni-mannheim.de

Press Release

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Drones Delivering Lab Samples Offer Much Potential for City Logistics

After three years, researchers of the Institute for Enterprise Systems (InES) of the University of Mannheim and six other project partners have successfully completed the “mobil-e-Hub” project. At the closing event, which took place in Heidelberg last week, they showed how a drone can automatically deliver a parcel. The goal of the project, funded by the Federal Ministry for Economic Affairs and Climate Action, is to make city logistics more efficient and sustainable.

Hospitals often send blood or tissue samples to laboratories multiple times a day. The deliveries are often time sensitive. Last week in Heidelberg, researchers of the University of Mannheim and project partners from six other companies and institutes showed how such a process can be optimized using artificial intelligence: A drone picked up samples from the hospital St. Joseph in Heidelberg, put it down on the top of an electric bus, down to a millimeter, and the bus delivered it automatically to the laboratory.

“Artificial intelligence is playing a very important role in modern delivery systems,” the managing director of the Institute for Enterprise Systems, Dr. Christian Bartelt, explains. His research group “AI Systems Engineering” had the goal to integrate the parcel logistics of autonomous delivery drones dynamically into existing public transport. What is the best way to navigate parcels within existing public transport systems? And how can the individual, independent transport users be coordinated? To answer the questions, the researchers of the Institute for Enterprise Systems developed AI algorithms which can predict the routes public transport vehicles take at certain times at certain days of the week. The developed drone can then put parcels on the roof of public transport vehicles.

For the project, the system’s autonomy was crucial: It is no longer the driver of an electric vehicle who decides how the parcel is delivered from A to B but the parcel itself searches for the best way. The parcel will then order the next vehicle and a drone to get picked up. In addition to the vehicles’ navigation and drones of independent mobility companies, the functional security of the autonomous drones was a second research focus of the research team at the University of Mannheim.

Now that the project has been completed, the researchers are thinking of ways to put the research results into practice. From a technical point of view, the system is ready, but the

policy framework is still missing. Furthermore, as many potential users as possible must be convinced to equip their vehicles and buildings with the new system.

In addition to the Institute for Enterprise Systems, bridgingIT, doks, insensiv, ciconia, Overath and TU Clausthal are partners of the “mobil-e-Hub” project. The Federal Ministry for Economic Affairs and Climate Action funded the project with approx. 3.5 million euros in total. The Institute for Enterprise Systems received more than 683,000 euros.

Click [here](#) to see a video of the subproject (in German).

Contact:

Dr. Christian Bartelt
Managing director of the Institute for Enterprise Systems (InES)
University of Mannheim
e-mail: christian.bartelt@uni-mannheim.de

Yvonne Kaul
Research communication
University of Mannheim
e-mail: kaul@uni-mannheim.de