INTERVIEW

> Fraunhofer IPM has developed special mobile mapping survey vehicles, known as T-Cars, that automatically collect the planning data needed for expanding fiber-optic networks.

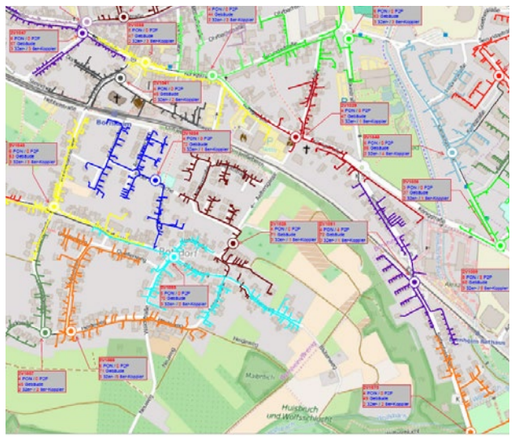
>> Niko Gitzen, project leader at Deutsche Telekom Technik GmbH: "With the support of Fraunhofer IPM, we have managed to reduce our planning times for grid expansion works by up to 75 percent."

"We both firmly believed that we would succeed"

"Faster expansion of fiber-optic networks thanks to fully automated route planning" – this is how Niko Gitzen describes the objective of the collaborative project between Deutsche Telekom Technik GmbH and Fraunhofer IPM. To achieve this goal, the project team has not only developed and assembled road assessment vehicles, but also created a revolutionary planning tool. Together, these advancements lay the foundation for automated route planning, something which has not yet been achieved anywhere else in the world. The process is based on highly exact 3D data which are automatically classified using artificial intelligence (AI). Niko Gitzen is responsible for developing mobile mapping activities at Deutsche Telekom Technik GmbH.

Deutsche Telekom Technik GmbH (DT Technik) is a subsidiary of Telekom Deutschland GmbH. It is responsible for planning, constructing and operating the fixed-line and mobile telecommunications network infrastructure of Deutsche Telekom within Germany. DT Technik also provides information regarding the location of technical facilities to authorities, civil engineers and utility companies. The company is based in Bonn, Germany.

How did you come to work with Fraunhofer IPM?
Gitzen: Following a market analysis in 2017, we quickly realized that not many providers on the market are able to carry out automated surface detection – and certainly not at the high level we need for our route planning activities.



"Digital planning maps speed up the route expansion process," says Niko Gitzen. "What used to be a manual process is now automated – all thanks to Fraunhofer IPM."

Why did you not develop the survey vehicles or digital process chain by yourselves?
DT Technik has the skills to build and operate networks and to suppress interference within them. Our outstanding networks ensure the best possible customer experience, regardless of whether connections are wireless or via cables. But at the time, we simply did not have the expertise needed for mobile mapping. This expertise is something we have built up since then over time.

Which role does the technology we have developed play in the success of expanding broadband in Germany?
In the past, our planners generally had to attend to every single issue in person and conduct their inspections on site, clipboard under arm and camera in hand. Now, this is all done by T-Cars and the neural network – both of which will play a key role in the broadband roll-out. This means that planners no longer need to draw up planning maps; instead, they can evaluate and optimize automatically generated ones, which is why the value added has increased substantially.

What were your expectations of the project?
Initially, there was a lot of uncertainty from both sides, but we both firmly believed that we would succeed. The schedule was very ambitious from the outset – and this pressure was intensified by our managers announcing that they wanted to supply fiber-optic connections to up to two million households each year. It was clear that both parties – Fraunhofer IPM and Telekom – needed to get it right. We expected to complete the project by the agreed deadline, with functioning, highly reliable hardware and software. And so we were especially pleased to see everything up and running by the time the project came to a close.

What needs to happen for a development project to succeed?
Regular, open communication is absolutely crucial. We were regularly in touch with one another to discuss even the smallest details and made sure to thoroughly explain to the scientists how our planning processes conventionally work. We could have just said, "This is the contract; all of the details are in there." But that's not how it works. Our goal was always to communicate on a regular basis to ensure we are all on the same page.

Has the investment paid off for Telekom?
High-speed, reliable broadband connections are more important than ever, be they for working from home, home-schooling activities or connecting companies. Demand for connectivity is increasing continuously. By automating our planning processes, we have managed to reduce our planning times for grid expansion works by up to 75 percent. This means that we can work much more quickly, and that saves us money. In addition, we strive to reduce approval times for cities and municipalities through our digital processes. This also results in lower CO_2 emissions, as we are now able to do a lot of our work from our desks.

What technological challenges is telecommunications currently facing?
The telecommunications industry is constantly being reshaped by new technologies – and increasingly by AI. For example, in grid management we use AI algorithms which autonomously recognize when peak loads could occur or technology could fail – before the customer does.

Our joint project has received a number of awards – the 2019 Fraunhofer Prize and the Telekom 2020 Lead-to-Win Award. What does this mean to you and your team?
The Lead-to-Win Award is presented to international project teams in various categories. We won first place in the innovation category, meaning we were the most innovative project across the entirety of Deutsche Telekom! This signals to us that our work is held in very high esteem, but it also increases the pressure we feel to achieve even greater success. But together with partners such as Fraunhofer IPM, we are on the right track.

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