



# Bauhaus.MobilityLab – AI in the Big City Experiment



© Bauhaus.MobilityLab

*With the help of AI, innovative solutions are being developed in the areas of mobility, logistics and energy are being developed and tested under real conditions in the Brühl urban district in Erfurt.*

In Erfurt, interdisciplinary innovation becomes reality in the Bauhaus.MobilityLab: A digital laboratory platform and experiments in the living lab contribute to the development of AI-based solutions. Mobility, logistics and energy are being rethought for urban planning. Our institute supports with expertise and AI methods.

The project “Bauhaus.MobilityLab – Innovation by Experiment” develops and realizes sustainable and intelligent solutions in the living lab in Erfurt, more precisely in the Brühl urban district. The experimental ideas workshop is in the spirit of the open Weimar Bauhaus tradition, hence the name. The consortium is made up of a cross-domain association of research institutes, large, small and medium-sized companies as well as universities and the state capital Erfurt.

As part of the project, the researchers are looking at a wide variety of challenges in urban space. In cooperation with the TU Kaiserslautern, the ITWM researchers are modeling problems mathematically and developing new approaches to solutions that make use of both AI and data science. This means new optimization potential in urban life in many places.

methods. A current use case is the prediction of nitrogen dioxide levels, which say a lot about the city’s air quality.” Another example is the combined route planning for delivery trucks and cargo bikes in the last mile of parcel delivery. As a result, there mathematical optimization means lower traffic congestion and higher environmental friendliness.

But the prediction of parking space utilization also supports urban planning in the real lab. “Our results contribute to the development of a livable city center. Currently, we are also working in the consortium on a Bauhaus.MobilityLab app, which will facilitate participation in our in our experiment more easily,” says Grimm. Another major component of the project is “federated learning”, a new type of machine learning method. machine learning method. Here all training data is stored exclusively on local devices or clients, and model training is training is decentralized.

## Contact

Dr. Stefanie Grimm  
Research Coordinator “Data Science”  
Department “Financial Mathematics”  
Phone +49 631 31600-4040  
stefanie.grimm@itwm.fraunhofer.de



## Testing New Innovations With AI and Mathematics

“Our team is involved in various work packages in the Lab – of course, mathematics and algorithms are everywhere,” says Stefanie Grimm, responsible for the project at the Fraunhofer ITWM. “Our main task: we lead the work package ‘AI methods’ and thus develop the machine learning core of the platform. In application practice this also means that we provide concrete support with prediction

## Data Science for the Smart City of the Future

To date, the applications have been developed and deployed on a cloud platform, which brings together data from different areas such as transport, logistics and energy. The project will run for three years and is funded by the German Federal Ministry for Economic Affairs and Climate Protection BMWK.



[www.itwm.fraunhofer.de/bauhausmobilitylab\\_en](http://www.itwm.fraunhofer.de/bauhausmobilitylab_en)