

„INTELLIGENT TRAFFIC MANAGEMENT IN REAL TIME THAT PROTECTS THE ENVIRONMENT AND CONSERVES RESOURCES.“



The city of Erfurt adds PTV Optima software to its traffic management system. The objective is to optimise the flow of traffic in the narrow streets of the Thuringian state capital and to demonstrably reduce environmental damage with the help of real-time forecasting.

Erfurt has a problem: the city is simply too beautiful. Due to the historic structure of the city, the capital of the state of Thuringia is unable to adequately adapt its roads to meet increasing demand. This special situation means that the city's traffic planners face a difficult task. They need to manage traffic on these confined roads in such a way that the city meets the increasingly strict requirements of environmental protection laws and regulations. „That almost puts us in a dilemma,“ summarises Frank Helbing of Erfurt's Department for Civil Engineering and Traffic. Helbing is the man on the monitors, and has a particularly close understanding of Erfurt's mobility

situation. The centre is densely built-up, and lies in a basin surrounded by two inner ring roads and a third outer orbital motorway. Nine roads act as radial axes, bringing traffic into and out of the city, and the city authorities are responsible for around 800 km of road network.

POPULATION GROWTH AND ENVIRONMENTAL PROTECTION

One plus point for Erfurt's traffic situation is that it has an extensive local public transport network. Public transport passenger numbers are falling slightly, but more and more journeys are being made by bike instead of motorised transport. Currently around 40% of jour-

neys are made in motor vehicles, while 60% take place on foot, bike or public transport.

The population is growing, and plans are in place to increase the housing density instead of expanding onto greenfield sites. It's therefore no easy task to manage traffic in a way that protects the environment and conserves resources, to reduce emissions of particulates and nitrogen oxide in accordance with the law, and to achieve ambitious climate protection objectives by significantly reducing carbon dioxide emissions.



PROJECT OVERVIEW

Project title:	Real-time forecasting in Erfurt
Customer:	The city of Erfurt
PTV Group's role:	Provision of software and support during installation and configuration
Project duration:	09/2014 - 05/2015, Update 07/2016 - 09/2016

The solution: an intelligent mobility management system to assess and provide up-to-date information on the traffic situation. „We have been working on this topic for many years now,“ explains Helbing. „We were able to introduce an initial solution as a result of the project ‚Smart Mobility in Thuringia‘. A total of ten partners took part in this project funded by the Federal Ministry of Economics - including the Bauhaus-Universität Weimar and Thomas Kraus from pwp-systems, who are specialists in implementing intelligent traffic systems.“ During the course of this research and development project, it became clear that up-to-date traffic data are not only essential for the success of electric cars, but that all road users can benefit from dynamic information in order to plan efficient routes.

REAL-TIME FORECASTING FOR UP TO 60 MINUTES

Erfurt was already using another PTV product for its medium to long-term traffic planning: PTV Visum. It therefore made sense to adopt PTV Optima in order to take the next step and begin dynamically forecasting the traffic situation in real time. Torben Hilgers works as a Real-Time Expert at PTV, helping to market PTV Optima, and he knows the product to be a sensible and affordable solution for towns and cities of all sizes: „Optima is particularly suitable for use in smaller cities as a tool for forecasting the traffic situation in real time. The web-based system takes existing traffic

models and makes them dynamic, while standardised interfaces enable easy integration into existing system environments.“ And so, after being introduced and updated, Optima now runs based on the following live data: traffic levels (from detector information), the parking situation, traffic restrictions (such as construction sites, events, diversions, etc.) and real-time information from Erfurt's local public transport network. The results from PTV Optima are combined with environmental and other data in the pwp Traffic Management Platform for the purposes of data management, monitoring and analysis.

MANAGING THE FLOW OF TRAFFIC AUTOMATICALLY

Optima provides traffic forecasting for various time slots ranging from five minutes to one hour. On this basis, the traffic management system can then intervene in multiple places to manage the flow of traffic.

Example 1: Communication with local road users via dynamic display panels. When there is excess demand on inner-city parking facilities, these displays point users towards the nearest park-and-ride car park and advise them to use public transport.

Example 2: In order to manage traffic in the centre, traffic lights on radial roads can be timed so that fewer vehicles drive into than out of the city.

Example 3: Traffic can also be diverted through the city in the event of accidents on the orbital motorway. When that happens, the traffic management system will adapt the traffic light signals to ensure that traffic flows smoothly along the route of the diversion.

BREAKING NEW GROUND IN ENVIRONMENTAL PROTECTION WITH OPTIMA

„The introduction of Optima went extremely well, and I already know PTV to be a highly professional company,“ says Frank Helbing. And Optima also offers additional application options for the future. The forecasting data can be made available to the public via an app or an information portal, for example. Looking ahead, the traffic expert adds: „In our use of real-time data we have definitely broken new ground - including when it comes to environmental protection. We now want to go further and establish the basis for an even more environmentally oriented traffic management system. We are already looking at meteorological data and information from environmental monitoring stations in Erfurt as additional data sources. That way, we can even react in real time to increasing levels of pollutants.“