

## Smart Bridge

### Initial Situation / Motivation

Traffic on German roads is steadily increasing. The challenges to the aging infrastructure are thus rising continuously.

At present, maintenance management of infrastructure is primarily based on regular building inspections.

With this reactive variant of maintenance management, damages on bridges are often only discovered when they are apparent.

### Measure Goal

The aim of this measure is the demonstration of the proper functioning of a system consisting of relevant building blocks of the Smart Bridge and its further development. The goal of the Smart Bridge in general is the development of an adaptive system for the provision of relevant information and for a holistic evaluation of a bridge structure.

### Measure Implementation

Four measuring systems were installed at the new bridge structure at the Nuremberg motorway junction:

- Instrumented roadway transition constructions
- Instrumented bridge bearings
- Wireless sensor network
- System for recording impacts on and the reactions of the structure



Source: <http://www.intelligentebruecke.de>

The various measuring systems are used to record traffic loads, climate data and important parameters at the transition between the road and the bridge roadway, bearings and the bridge in order to assess the condition of the structure.

### Current Status

The "Smart Bridge" was opened to traffic in October 2016.

Currently the research project "Investigation Program" is being carried out to analyze and demonstrate the functionality of the overall system and the components. The three other projects "Synchronization of sensor technology and automated evaluation of measurement data", "Metrological acquisition of traffic data on the basis of instrumented roadway crossings" and "Data acquisition strategies and data analysis for intelligent spherical plain bearings" were successfully completed.

The project, which is still ongoing, is scheduled for completion at the end of 2021.



Source: Bavarian Street Information System (BAYSIS)

### Location

Operating Kilometre 372,8  
Nuremberg motorway junction – connecting ramp between A3 and A9

### More Information:

[www.intelligentebruecke.de](http://www.intelligentebruecke.de)



**Contact: Federal Highway Research Institute; Email: [DTA-infrastruktur@bast.de](mailto:DTA-infrastruktur@bast.de)**