

### 9th COST TU 1402 Workshop

Case studies "Digitales Testfeld Autobahn" and "duraBASt"

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## "Smart Bridge"

- The case studies "Digital Testfeld Autobahn" and "duraBASt" are part of the project cluster "Smart Bridge".
- In the project cluster "Smart Bridge" an adaptive system for information and holistic evaluation in real time is developed.
- The main benefit of the Smart Bridge are economic and safety improvements.

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### "Smart Bridge"

#### Smart Sensor Technology

Intelligent sensor networks, innovative sensors, power supply, data processing, data fusion

# Smart Assessment Methods

Bridge modeling, deterioration modeling, considering data, reliability-based assessment

#### Smart Maintenance Management

Conjunction bridge database information + results of visual inspections with measurments and evaluations, Probabilistic Approaches



### "Digitales Testfeld Autobahn"

- New built concrete bridge in the highway interchange Nuremberg A3/A8.
- The bridge is equipped with different sensors for the detection of:
  - impacts of traffic loads
  - climatic influences
  - reactions of the components with regard to the functionality of individual bridge components.
- Aim: By using analytical bridge models and evaluation methods the condition and reliability of the bridge construction and its components can be determined.

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### "Digitales Testfeld Autobahn"







Source: BASt 2016



#### "duraBASt"

- A completely overhauled bridge located at the interchange "Köln-Ost" (A4).
- The bridge is equipped with different sensors for the detection of:
  - durability
  - structural safety parameters
- Aim of this study is the integration and partial implementation of the aspects: data collection with sensors, data processing and model development for condition assessment of the bridge.

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# "duraBASt"







Source: BASt 2016





## Approach for implementing formal Vol analysis

- "Digitales Testfeld Autobahn"
  - Optimized maintenance planning in relation to the reliability index
- "duraBAST"
  - **—** ?



#### **Current state**

- "Digitales Testfeld Autobahn"
  - Sensors are installed at the bridge
  - First data are collected
  - Next step: automatically merger and evaluation of the data
- "duraBASt"
  - Sensors are installed at the bridge
  - Data are collected and analyzed
  - Next step: determination of the weaknesses of the bridge and experimental determination of the loadbearing capacity of the bridge

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#### Thank you for your kind attention!

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