



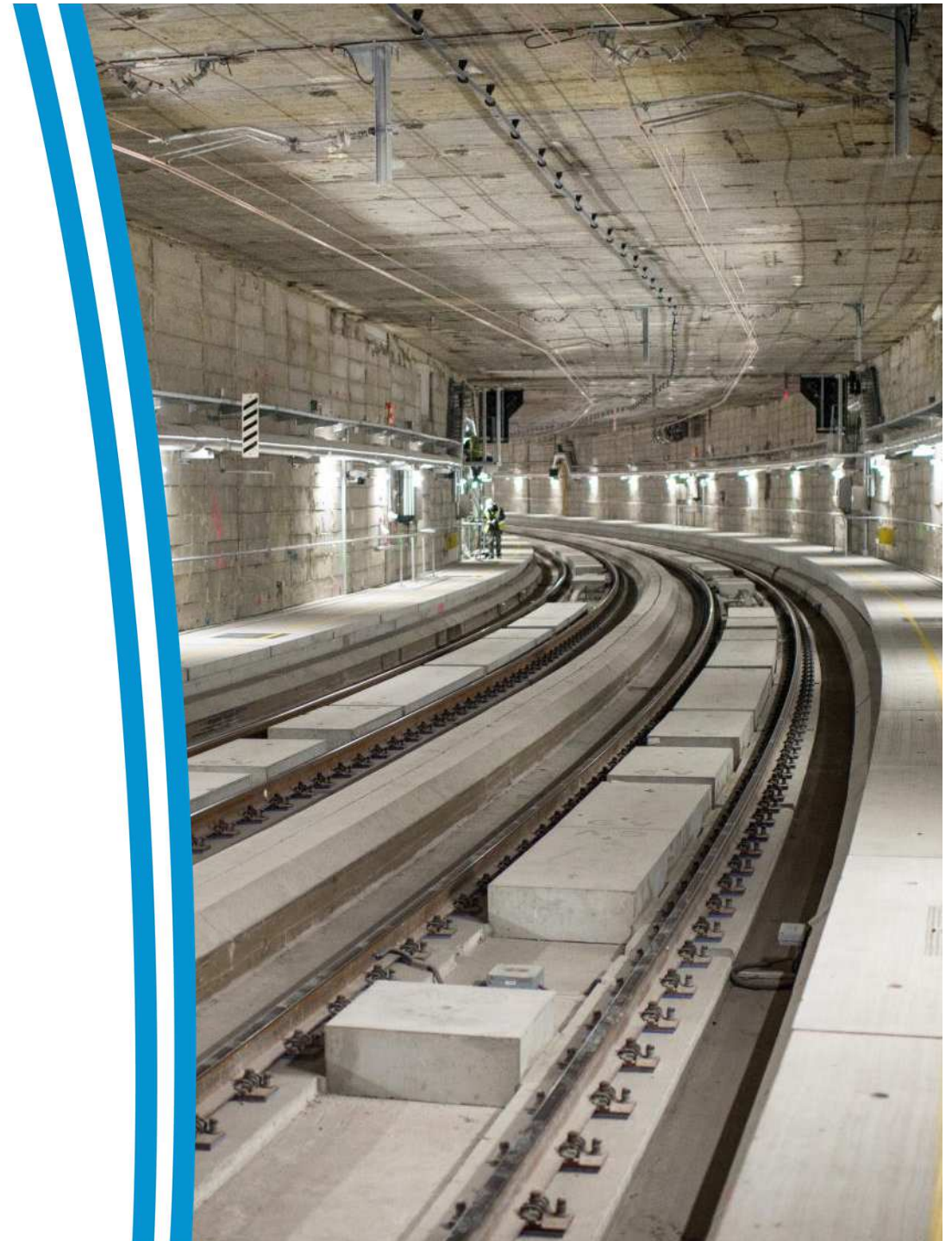
INFRABEL
Right On Track

Structural Health Monitoring

IoT sensors

Paul Tobback - Electrification

10/12/2109





Structural Health Monitoring – IoT sensors



- **INFRABEL** – Belgian Railways Infrastructure Manager – public company
- **TUC RAIL** – Railway Engineering & Project Management – private company, 100% subsidiary of INFRABEL

- Departments involved: INFRABEL Asset Management (I-AM) & ICT

- Jurgen Sohier → Overhead Contact Lines
- Koen De Gussemé → Power Distribution & Substations
- Ken Yoshimi → Tracks
- Didier Vandeveldel → Bridges

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The project



- **Test bed installation** of multiple sensors on one pilot spot (Mechelen)

R&D activities

- Bridges → monitoring of integral bridges
 - Track → rail-bridge interaction on bridges without sleepers
 - Overhead Contact System → monitoring of mechanical and electrical behaviour
 - Substations → monitoring of switches and protective devices
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- End-to-end → build & operation
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- By means of a railway testbed and research activities together with partners from academia, start-ups and/or engineering firms, we want to investigate which emerging Internet-of-Things technologies and Artificial Intelligence algorithms can help us to enhance our maintenance and asset management processes.
Through these activities we want to gain new insights in structural health monitoring. We want to discover which set of physical/electrical/chemical/structural/... phenomena, which types and combinations of sensors, and which deep learning algorithms can help **us to propose a cost effective structural health monitoring strategy that can benefit our entire rail network.**



Profile & Role of the partners



- No consortium
- Profile of the partners sought:
 - Universities
 - Start ups within the field of data analytics, artificial intelligence and asset monitoring
 - Engineering firms
- Role of the partners sought:
 - Realize a **cost efficient tendering and installation**
 - Guidance on defining the most appropriate sensors for the observed railway phenomena
 - Analysing measurement data
 - Define alerts levels and predict failure & future maintenance
 - Gain new insights in structural behaviour by correlating data previously not linked
 - Scale up the pilot and industrialize solutions



Structural Health Monitoring



- Integration with our enterprise systems and our workflows
- Using open standards while guaranteeing data security & confidentiality

ALL IDEAS WELCOME !

