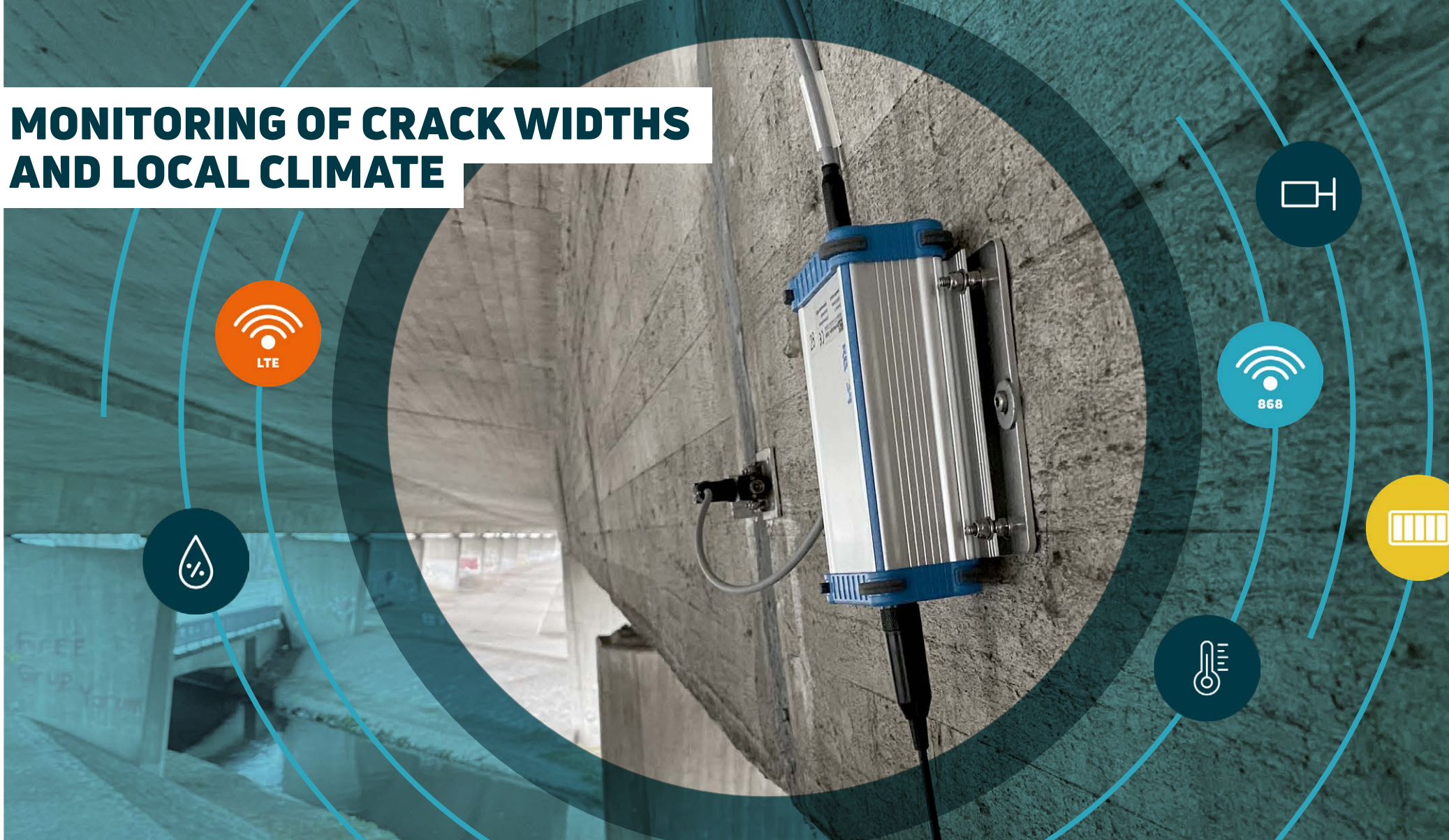


MONITORING OF CRACK WIDTHS AND LOCAL CLIMATE



www.nemi.one

www.i4m-tech.de

- OBJECTIVE**
- Monitoring of crack widths or crack movements and local climate on up to 500 m long motorway bridges in Germany
 - Increasing sustainability by extending the service life of the motorway bridge

- PERIOD**
- In operation since 2019

- CHALLENGES**
- Poor accessibility of crack locations
 - Years of battery life
 - Weather conditions
 - Long radio ranges necessary due to large distances between measurement points

- REALIZATION**
- nemi WAMS (Wide Area Monitoring System) based on a local wireless network with up to 30 battery-powered sensor modules nemi WAMS Node and a battery-powered gateway nemi WAMS Bridge
 - Detection of temperature, humidity and crack width in each nemi WAMS Node
 - Long battery life of 7 years (at one reading per 20 minutes) due to ultra high efficiency radio technology in the 868 MHz frequency band nemi Link 868
 - IP 67 weatherproof housing and position sensors
 - provision of data via MQTT connection over mobile network to nemione server
 - possibility of alarming by e-mail and SMS when limit values are exceeded

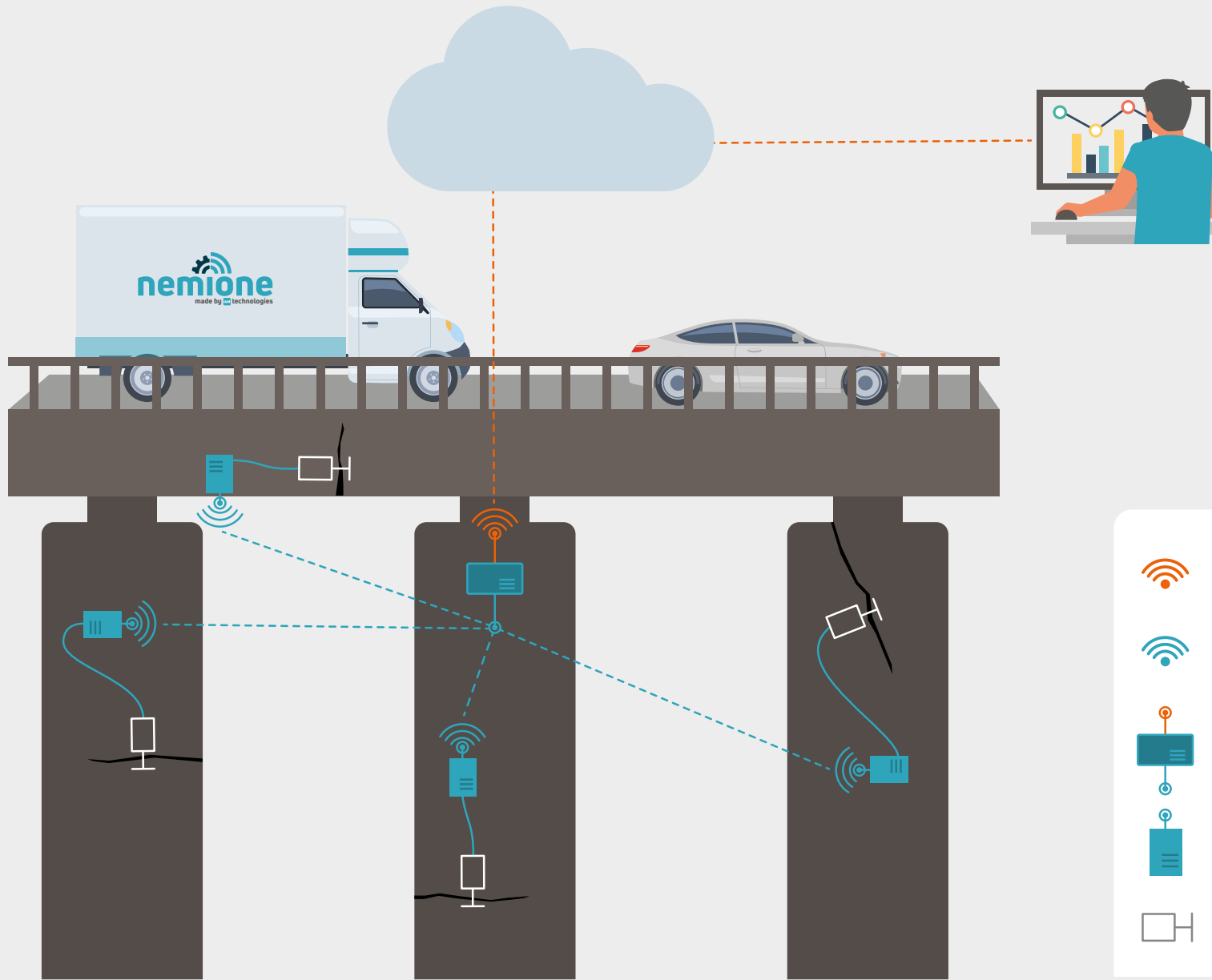
- ADVANTAGES**
- Simple installation due to omission of cabling on large structures
 - Self-sufficient solution without additional mains power supply
 - Automatic customized report generation and display of live measurement data in online dashboard
 - Safe use of bridges can be extended for many years in the event of borderline static loadings






- DEPLOYED**
- up to 30x nemi WAMS Node
- nemione® PRODUCTS**
- 1x nemi WAMS Bridge



„Thanks to wireless data transmission, the nemione crack monitoring system enables us to facilitate installation even in poorly accessible locations. In addition, the efficient i4M wireless technology can realize years of service life and permanent, low-maintenance monitoring of cracks on highway bridges. As a result, the bridges can continue to be used safely for years even in the event of critical or limited utilization in terms of static reserves.“

Dr.-Ing. Marc Kosalla
Project Manager Structural Diagnostics/
Concrete Maintenance Department
Kempen Krause Ingenieure GmbH



-  4G cellular connection
NB-IoT
-  nemio Link 868
i4M's radio technology in the 868 MHz frequency band, Range up to 1000 m
-  nemio WAMS Bridge
4G-Gateway
-  nemio WAMS Node
Sensor node for connecting the crack sensor
-  Crack sensor