



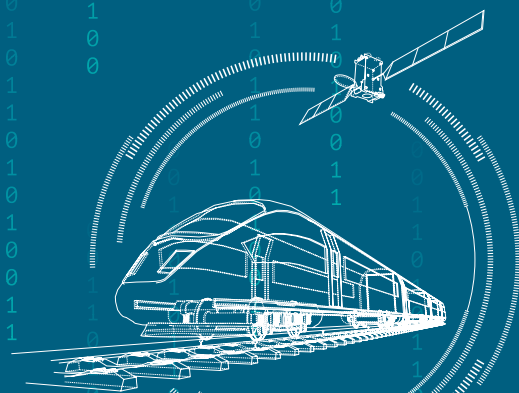
Instantaneous Infrastructure Monitoring by Earth Observation



OH B Digital Connect GmbH
Manfred-Fuchs-Platz 2-4
28359 Bremen
Germany
Email: iimeo.coordinator@ohb.de
<https://www.iimeo.eu/>



The IIMEO project has received funding from the European Union's Horizon Europe research and innovation program under grant agreement No. 101082410.



Why monitoring of infrastructure?

Energy supply, communications, transportation – our globalised society is highly dependent on functioning infrastructures. Typical examples are roads and railway lines, but also water pipelines, data cables and power lines. Just how critical these infrastructures are for daily life becomes particularly apparent when disruptions occur. These can be caused by natural disasters, extreme weather events or deliberate manipulation. In order to be able to restore the functionality of critical systems promptly after an incident, it is important to quickly gain an overview of the overall situation. This is why IIMEO is about detecting infrastructure malfunctions automatically, across large areas and in near real time, regardless of local weather and lighting conditions.



Towards a state-of-the-art satellite system

The innovation action IIMEO provides an on-board data processor under the principles of New Space. It prepares new satellite constellations in low earth orbit with a global coverage and revisit times of less than one hour. Synthetic Aperture Radar (SAR) imaging radar instruments are to be used as payloads, which will be supplemented by sensors for the wavelength range of visible light (VIS). This will enable high-resolution images to be generated even at night and under heavy cloud cover.

Another focus of the project is the development of algorithms. Since continuous global monitoring of infrastructure with SAR and VIS sensors produces gigantic amounts of data, it is necessary that these are already processed on board the satellites. This is to avoid the data downlink being a bottleneck in the system. Davide Di Domizio, Research Programme Administrator at the European Health and Digital Executive Agency (HaDEA) and in charge of IIMEO, explains:

“In 2022, the Horizon Europe work programme set the ambitious goal of demonstrating the performance of key technologies for future Earth observation systems by 2028. With the development of the planned on-board data processor, IIMEO is well positioned to make an important contribution to this mission.”

Beyond theory: Airborne technology demonstrator

Upon completing development, key technologies will form an airborne demonstrator. In 2025, a flight campaign will demonstrate the end-to-end prototype, showcasing onboard data processing for automated railway track obstacle detection. IIMEO partnered with Serbia's railway infrastructure management for this project.

