

# UAV Photogrammetry and Lidar Data in Inventory and Management of Civil Infrastructure Facilities Using Digital Twin

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## SUMMARY

Dynamic development of Unmanned aerial vehicles (UAV) and remote sensing sensors has been supported by the development of artificial intelligence (AI) data processing techniques. Such achievements provide us automation in geospatial data processing, providing end-users databases with 3D models (mesh or even solid) with attributes allowing us to implement BIM standards elements. At the same time, we can see the development of various technologies for creating digital twins, which give the opportunity to support the management of a facility, which can be either an entire city or a single engineering structure.

The presentation will show examples of using UAV data based on digital photos and laser scanning, creating 3D models, and machine learning results with the use of neural networks automatically inventorying buildings and telecommunications infrastructure facilities. Examples of complicated objects and buildings of interest will be shown with the quality control results showing state-of-the-art in low-altitude photogrammetry and unmanned laser scanning (ULS). The inventory achievements using AI will be presented in implementing 3D data and BIM structures into the digital twin. Different working environments and various functionalities related to the selected software will be discussed, showing the example functionality.

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