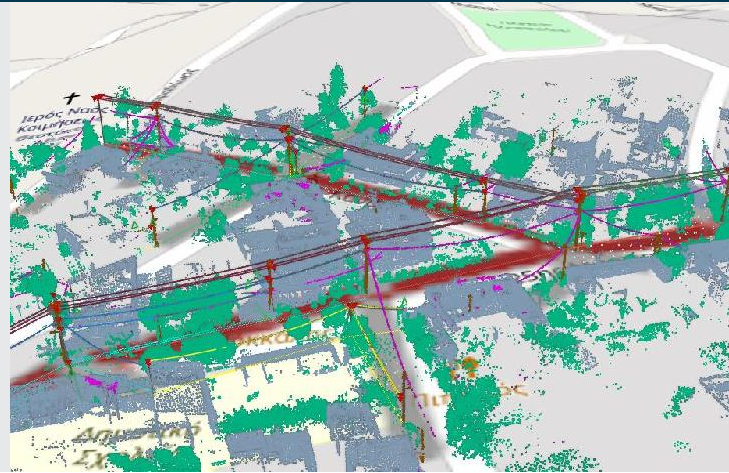**SUCCESS CASE 1.2024**

3D Digital Model of HEDNO's Distribution Network

USING LIDAR DATA, FOR GIS DIGITIZATION & VEGETATION MANAGEMENT OF OVERHEAD NETWORK

THE CHALLENGE

Developing a network 3D model using LiDAR data.

New technology trends and climate change are pushing organisations to reshape traditional business models. HEDNO is seeking new ways to both effectively **drive its energy transition** and meet its high-priority **digital transformation needs**.

HEDNO collects vast amounts of LiDAR data on a daily basis, with the use of mobile mappers and drones, for the purposes of the digitisation of the network in its Geographic Information System (GIS). A single platform for the visualisation of those data was needed. The aim was to:

- Leverage LiDAR data classification by extracting key features (e.g., for poles, conductors, ground, vegetation, buildings) to accelerate the digitisation in the GIS.
- Create a network model to support HEDNO's GIS reconciliation project, supporting vegetation risk identification, reporting and clearance to ground analysis.

THE SOLUTION

HEDNO facilitated the creation of an artificial intelligence (AI) platform tailored to digest and utilise all the available data, such as LiDAR captures, HEDNO's GIS asset records and engineering data, to build a full 3D digital model of their distribution network. The approach involved the following steps:

- Building a network model for a pilot area, using LiDAR data and following HEDNO business rules.
- Classifying LiDAR data by key classes (e.g., poles, conductors, ground, vegetation, buildings).
- Creating a network model with the location/coordinates of identified poles and conductors.
- Designing a platform customised according to HEDNO's business rules for vegetation clearance and conductor clearance to the ground.
- Identifying and reporting vegetation risk, giving clearance to ground analysis.

MAIN ACHIEVEMENTS

The 3D digital network model allows visualising the network and enables:

- **Automated LiDAR Classification.** The platform can ingest and automatically classify captured LiDAR survey data of the assessed network.
- **Unification of GIS, LiDAR, asset data, inspection data and other relevant datasets** to create a 3D digital model of the network.
- Accelerating the **network digitisation**.
- Performing vegetation and clearance management.
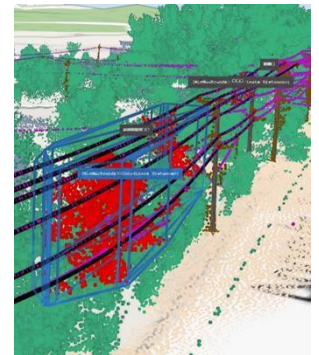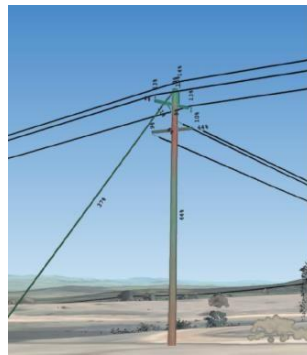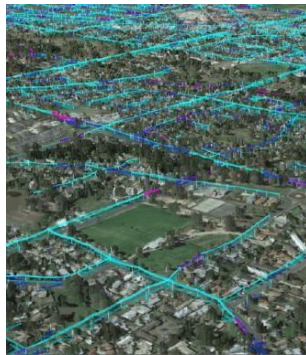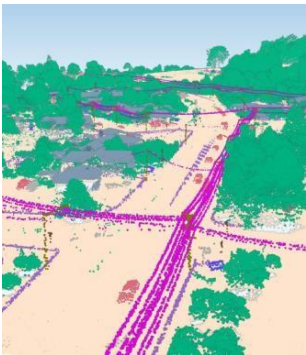
KEY SUCCESS FACTORS

- Ability to engage various teams from different HEDNO departments ensuring **proper data governance** across design and maintenance workflows.
- **Cloud integration and scalability**.
- **Usability and user experience**. The platform is scalable and flexible, capable of handling an increase in the number of users and adapting to future needs.
- Efficient **integration of emerging technologies.** Continuously integrating emerging technologies such as AI and advanced data analytics enhances incident detection and keeps the platform technologically innovative.
- **Optimal decision-making and actuation** based on real data.

WAY FORWARD

The next planned steps include:

- **GIS normalisation**: achieve a high-accuracy network model that can correct even the most uncertain GIS records.
- Deliver and execute intelligent maintenance operations.
- Perform predictive vegetation management.
- **Simulate** how all network components will react under **severe weather conditions and wildfires** and identify assets likely to suffer damage or ignite.