



Good asset management is essential for reliable, predictable and safe infrastructure

Good asset management is essential for reliable, predictable and safe infrastructure. But that is only possible if you have sufficient object status information, and if it is accurate and up to date. So Movares has teamed up with GeoZICHT and Sobolt to develop QuickBridgeScan (QBS), an innovative method of inspecting structures and processing the resulting data. QBS is an innovative way of acquiring object data safely, quickly and precisely, interpreting it using artificial intelligence and assessing it using specialist knowledge. QBS also makes it a simple matter to monitor the development of any defects. And even if the system is called QuickBridgeScan, it is suitable for use with other types of asset.

How does QBS work?

Inspections

- When inspecting long spans that cross water, hundreds of high-resolution photos are taken using drones. The great advantage of this is that drones can get to places that would be difficult or impossible for human inspectors to reach.
- However, drones are less practical for such common structures as viaducts with one or two spans and structures with restricted headroom, such as cycle tunnels. For these situations, the camera is fixed to a portable stabilizer mounted on a tripod, giving access to both the upper and lower parts of the structure.
- Smaller objects, such as weirs and culverts, are inspected using an even smaller stabilizer/camera setup. This can be operated by one person, either hand-held or with the device mounted on a tripod and controlled remotely.

Examples are needed to train the AI algorithms



Determination of damage by AI algorithms



Making the data available

All images are automatically date-stamped and geotagged. This makes them easy to trace, and allows them to be displayed in context and compared with past and future images of the same structure. The inspection information is presented via a dashboard and is available online, so multiple users can access asset-related information simultaneously from multiple locations.

Data analysis

Special software and photogrammetric techniques transform the images into detailed point clouds and 3D models, creating an interactive image library for the structure. We then use artificial intelligence, plus image recognition algorithms, to produce objective descriptions and classifications of damage and defects.

Diagnosis

A structural maintenance expert evaluates the defects against the risks they pose to the structure. We then use that information to draw up a diagnosis.

Special features

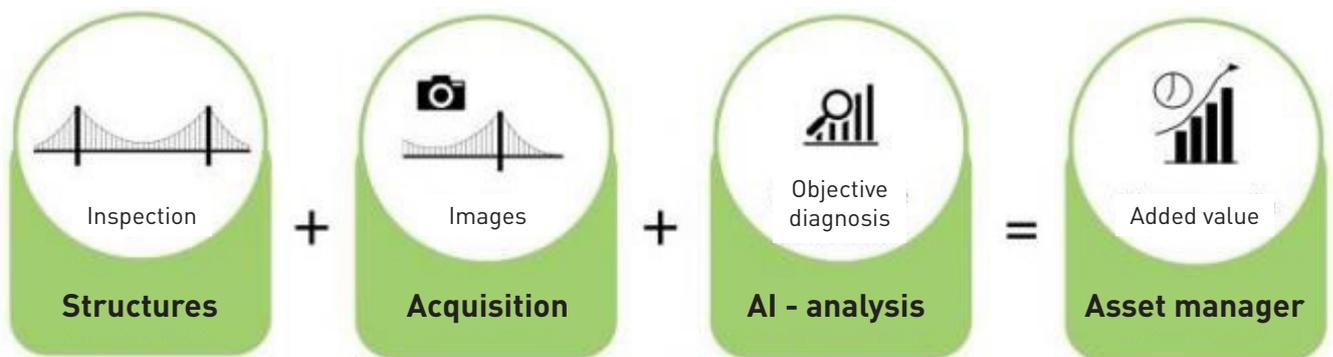
Apart from the use of drones and the production of 3D models, the great breakthrough in QBS is the application of machine learning and artificial intelligence. Image recognition makes it possible to classify important characteristics, such as cracks and corrosion. We work with civil engineering specialists to train the algorithm on the ten most common defects – the more images it analyses, the smarter the artificial intelligence becomes.

The advantages of QuickBridgeScan:

1. **Less labour-intensive** – Reduction in workload for object managers.
2. **Safer** – Reduced risks for inspectors and road-users.
3. **Smarter** – Maintenance is managed on the basis of risk, using objective information.
4. **Better** – Fewer surprises, hold-ups and disruption.
5. **More frequent** – Inspections can be carried out more frequently, allowing more intensive asset monitoring.
6. **Monitoring** – Managers have a clear view of how defects are progressing, and how quickly.
7. **Central database** – New structures can easily be added to a database that covers all infrastructure and enables future-proof object management.
8. **Prioritization and decision-making** – The use of objective, uniform images enhances the quality of decision-making.
9. **Budgeting** – Risk analysis and clear prioritization enable the maintenance budget to be used more effectively.
10. **Less disruption** – Inspections can take place without closing roads.

Our partners

QBS was developed in close cooperation with GeoZICHT and Sobolt. GeoZICHT specializes in data acquisition using drones, for such applications as high-quality 3D geodata, 360-degree aerial photography and the inspection of industrial assets and civil structures. Sobolt has experience in the application of state-of-the-art artificial intelligence algorithms.



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