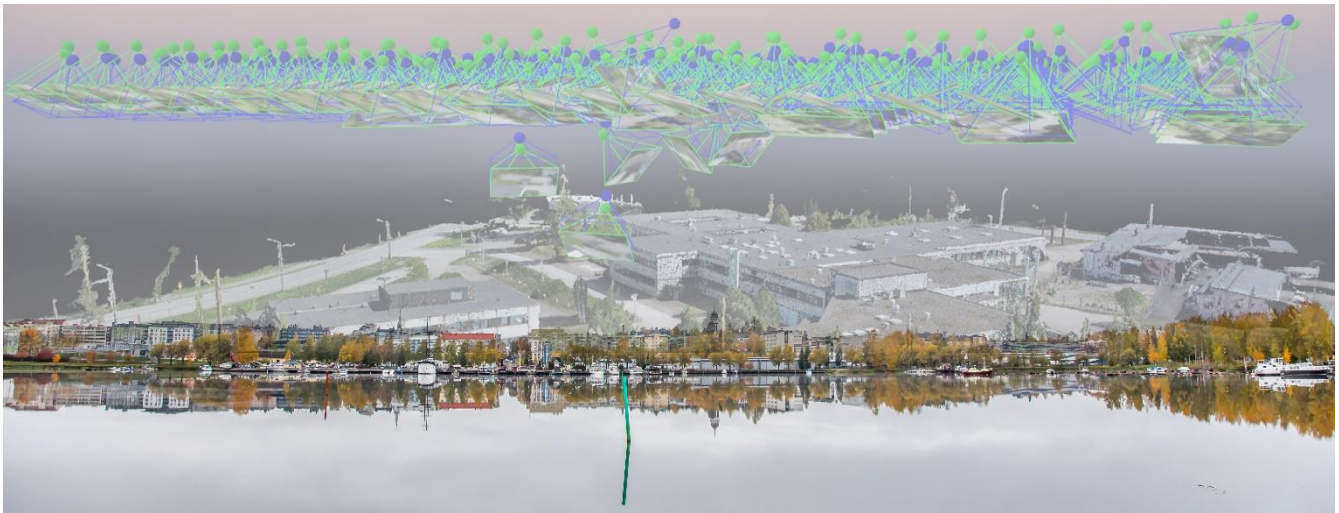


3D Tool for Tracking CDW On-Site

CDW



Description

This tool uses a camera drone with a photogrammetry software to model and to monitor demolition sites by image-based scanning. The tool produces point clouds to be used for 3D visualizations and 3D calculations of buildings and material quantities, as well maps and other GIS data about the site. A similar methodology is used e.g. in the extractive and AEC industries. Using progressive scans of the same site, the movement of different materials can be tracked as well the other changes on the site. The collected GIS data and calculated material quantities can be stored into a databank and further delivered to a digital marketplace. A report documents the process and provides an operations model for how the tool is used.

Keywords:

- #Demolition; #Renovation
- #Handling CDW
- #Flow tracking
- #Data visualization; #Mapping; #Surveying; #Drone-imaging

Complementary tools:

- Databank and digital marketplace for recovered materials, Selective demolition procedure

Target users:

- Local governments (e.g. departments of buildings & infrastructure, urban development and environment), civil engineers, demolition constructors and research institutions.

Format:

- Report explaining the methodology and the operations model - in English



- Drone and software tool in use in Mikkeli.

Development

- The tool was developed by gathering information about drone-based solutions, which are already in use e.g. in the mining sector and on construction sites. Drone-imaging and software calculations were tested in smaller scale using similar kinds of sites and material flows.

Barriers:

- During the development of the tool, there were very limited possibilities to get input from demolition constructors. Solutions are mostly based on literature and case studies, and they will be specified and reviewed in demonstrations.
- Organising and synchronizing on-site daily activities and timings with the operations of the demolition constructor needs to be set up properly in order to get all materials tracked. Unsuitable weather conditions as well the regulations for drone-operations may prevent flights or cause delays; these issues may be solved by flying at lower altitude, but not always.

Deployment

- In CityLoops, [Mikkeli](#) will demolish 2 public buildings and uses this tool to scan the sites to track, identify and characterise salvageable construction materials. All site scan data and extracted information about the CDW materials from this tool will then be stored into the material databank. Quantitative material information from the databank can be delivered to digital marketplace. The adoption of the method for future use may rely on experiences gathered during demonstrations.

Replication

- Other cities can study the reported operations model and use the same or similar workflow, fully or partly. The solution can be accomplished using a consumer-grade drone. There is no need for the use of the exactly same equipment (hardware or software).
- It is noteworthy to be aware of the regulations and legislation of drone-operations.

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