

CitySight – Street Level

Experimentation of street-level imaging methods

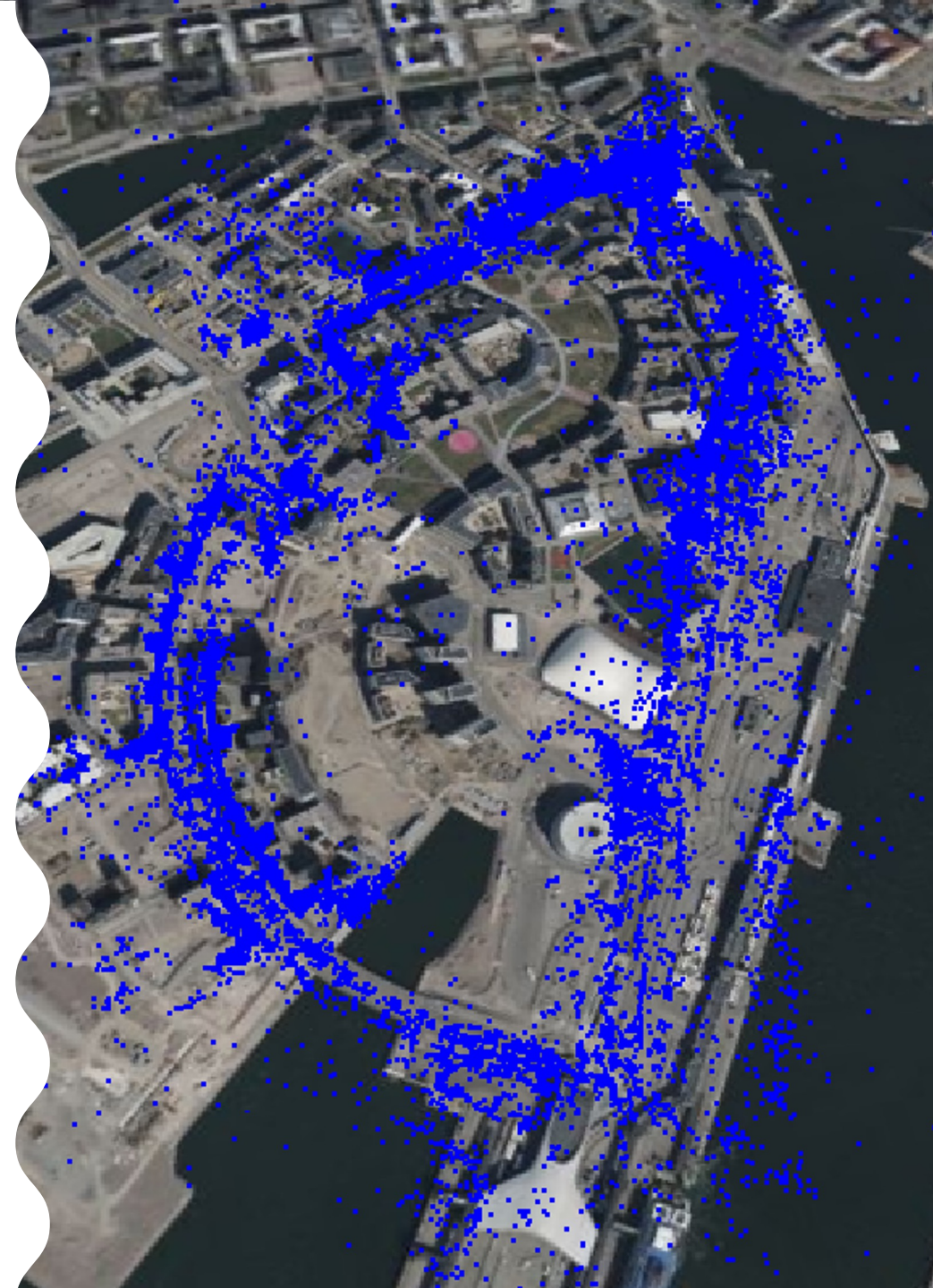
Location: Jätkäsaari / Helsinki

Target users: Cities, real estate, maintenance

Company: Webion Oy

Partners: Black & Blue Incorporated Oy

- The objective was to evaluate algorithms and technologies for generating point cloud measurements from real-world data using readily available off-the-shelf components.
- Multiple cameras and devices captured data, which was subsequently processed to produce 3D measurements.
- We aim to provide data processing services based on these results in the future.



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Experimentation of Street-Level Imaging Methods

Pilot presentation 27.3.2024

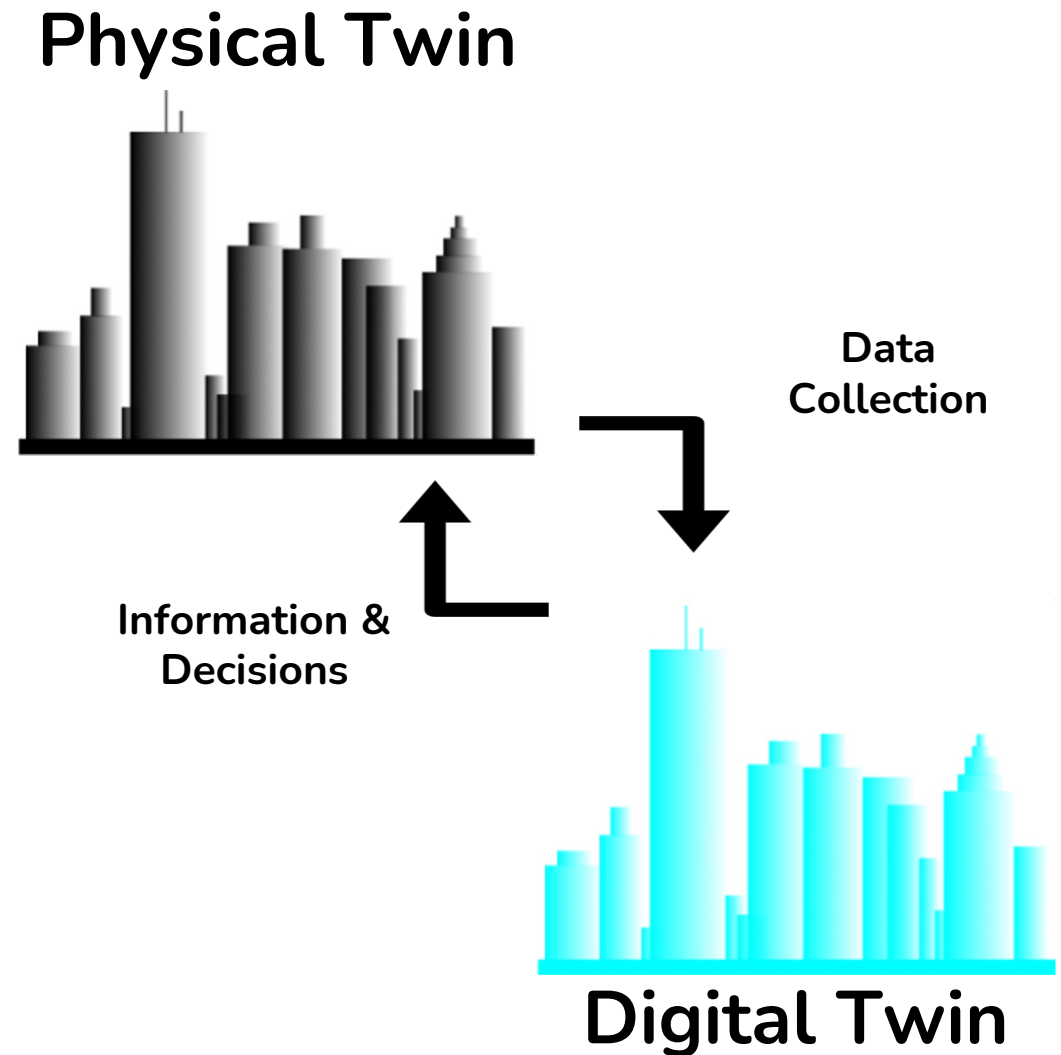
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1. Goal of the pilot

The objective of the pilot was to evaluate algorithms and technologies for generating point cloud measurements from real-world data using readily available off-the-shelf components.

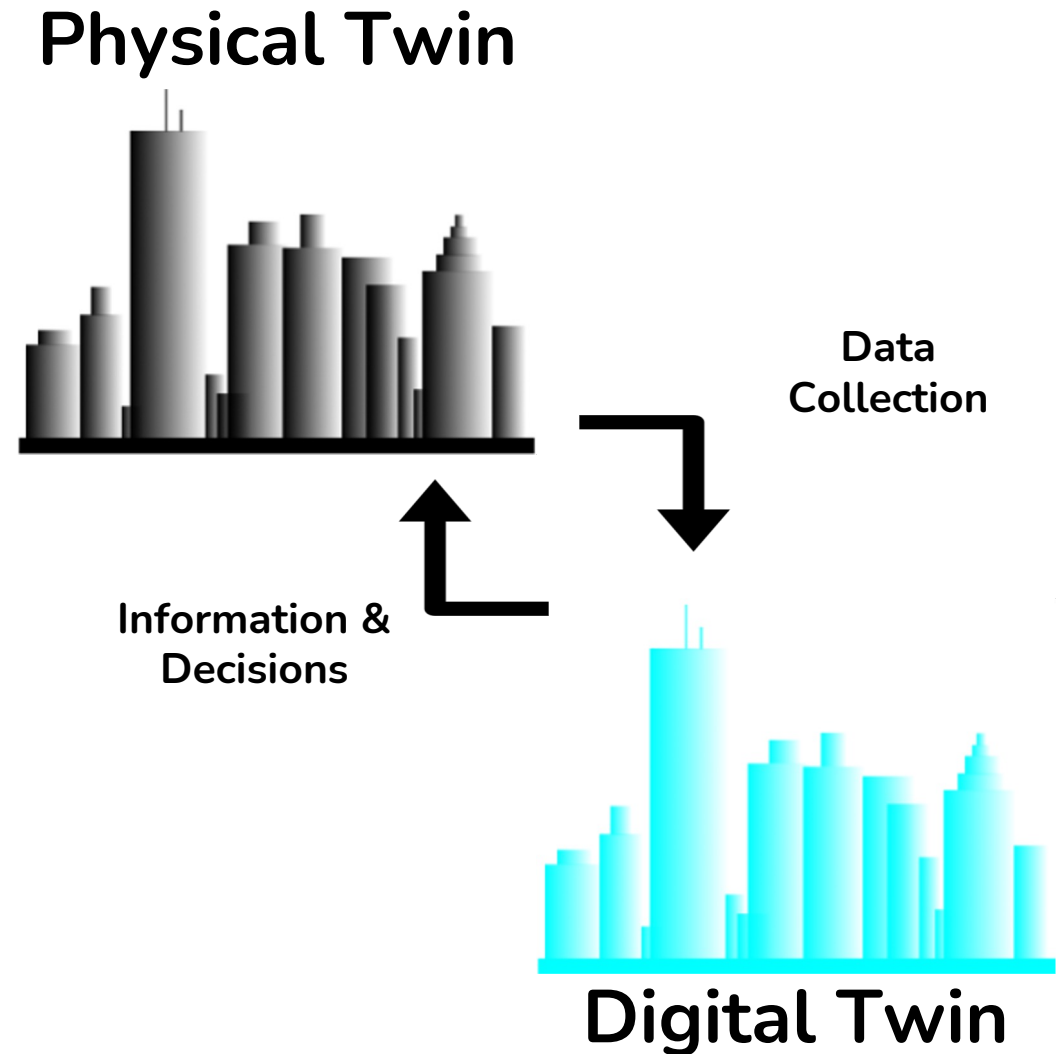
This was done to further the development of data processing for digital twins. Working towards providing faster updates for real world measurements.



1. Goal of the pilot

In detail, we wanted to explore what is possible with currently available code and tools.

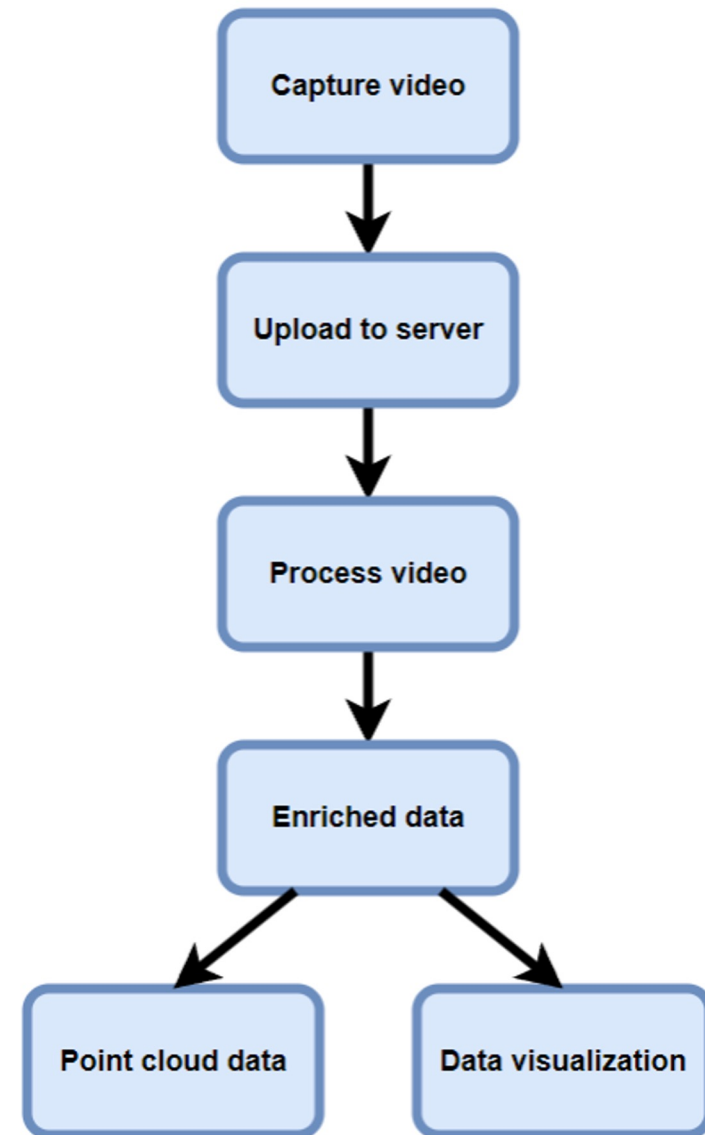
We focused on testing research algorithms and mapping how much development it would take to refine this into a production system.



2. Description of the solution

We applied multiple methods to generate point cloud measurements from image data, aiming to explore cost-effective approaches for enhancing digital twin data for urban environments.

Initially, a variety of software tools were utilized to produce the initial results, albeit not optimally.

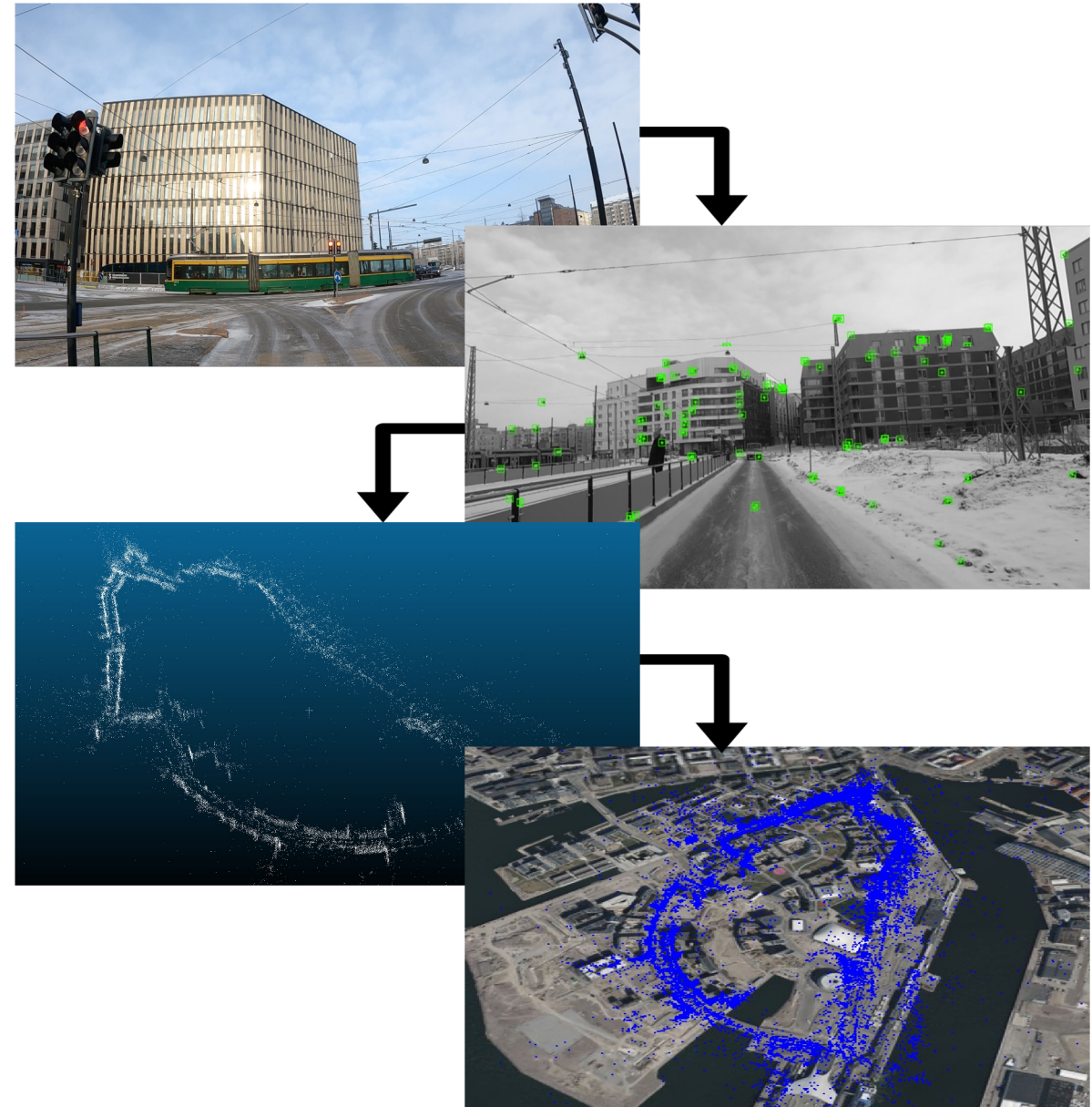


3. Implementation

Mid-range priced cameras, GPU computing, and neural network-based technology were utilized in data processing.

Data was recorded with multiple cameras and devices and then processed in several stages, using various different methods to produce 3D measurements.

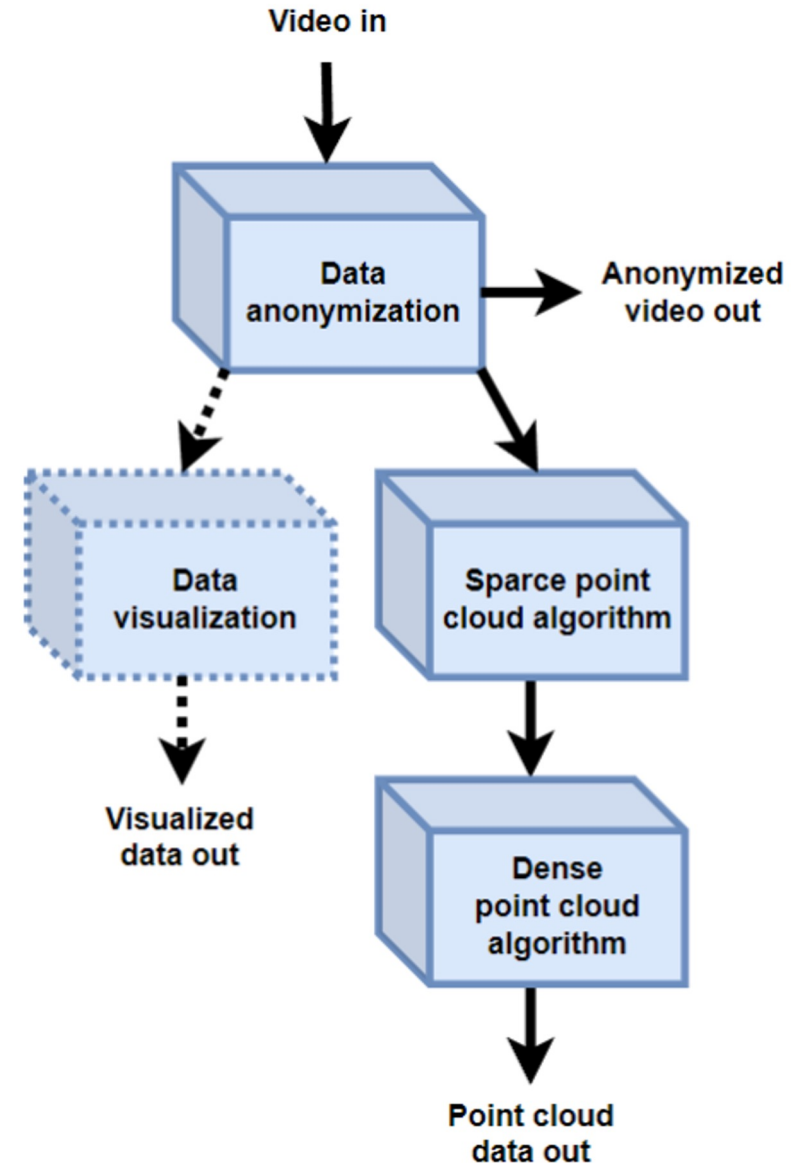
The pilot workflow required filming video, manually running code, and harmonising/cleaning the results.



3. Implementation

Data processing and pipelines were built on docker containers for flexibility and to accommodate the various dependency requirements.

Data was mostly post-processed at the office. Some devices were able to produce high quality mappings on a limited scale on location.



4. Results

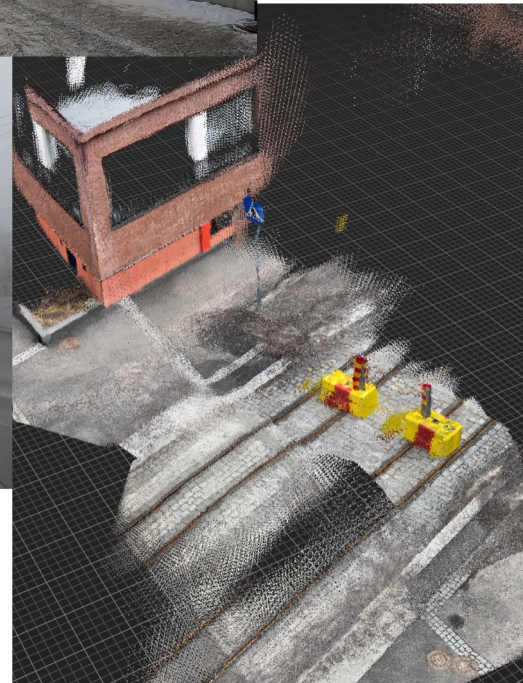
We identified multiple promising technologies for mapping streets.

We got both high and low quality results with the tested systems.

We produced video footage of the street level testing various weather conditions.

We developed a system to blur personal information from videos.

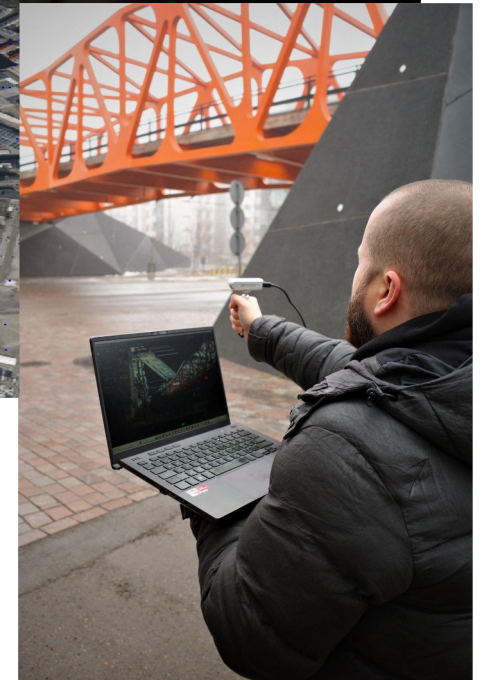
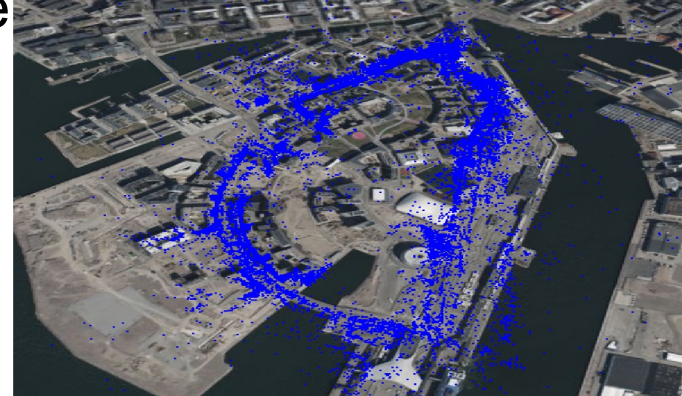
Potential for development was also found for a different type of AI analysis of street-level videos.



4. Results

With reasonably priced devices at minimum, it is possible to obtain very high-quality data in the future and it is entirely possible to create a competitive alternative to LIDAR technology.

In the best case scenario, consumer-grade cameras can provide sufficiently good data that can also be used in more demanding and finely tuned urban maintenance issues.

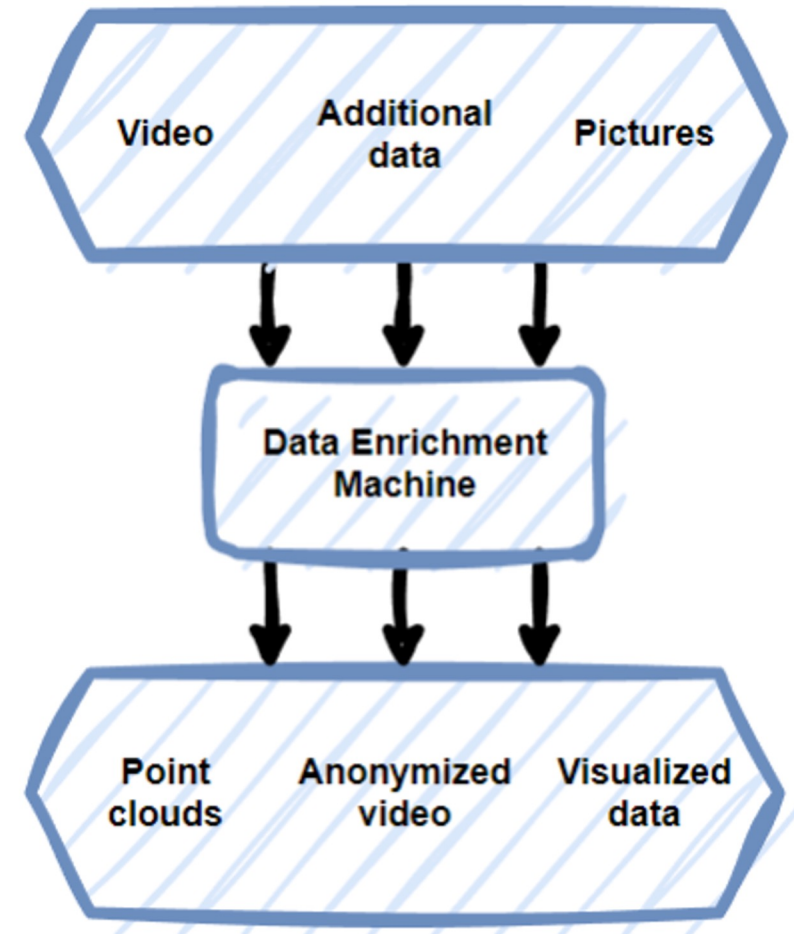


5. Key findings

None of the advanced solutions work directly as-is and further efforts are required.

The process involved many quirks and issues, which were overcome this time with technical expertise and manual work.

The idea and goal for the future is to create a system where material from different sources can be brought together to centrally generate enriched data in a harmonized data format.



6. Contacts

WEB•ION

Webion Oy

- Peter Tapio
- peter.tapio@webion.fi



Black & Blue Incorporated Oy

- Jani Kalasniemi
- jani@bbinc.fi

Mobility Lab Helsinki

- Name
- Email
- Phone (optional)

MOBILITY LAB
MOBILITY LAB HI
MOBILITY LAE
ITY LAB HELSIN
BILITY LAB HEI
LITY LAB HELS
MOBILITY LAB F
I MOBILITY LAE
OBILITY LAB HE

Juho Kostainen

Project Manager

City of Helsinki

Juho.Kostainen@hel.fi

+358 9 310 365 35



Jussi Tuurnala

Project Manager

Forum Virium Helsinki

jussi.tuurnala@forumvirium.fi

+358 50 588 0352

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VIRIUM
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