

Technology and applications of virtual 3D models using mobile mapping and 3D games engines

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Process, what is new?

- Accurate photorealistic 3D model created with mobile mapping, semi-automatic processing, and put into 3D game engine
 - Construction of the ROAMER
 - Processing of the accurate photorealistic 3D model
 - Implementation in 3D game engine
 - Development of applications: integration of virtual and physical worlds
- Very close to what Navteq/Google/Microsoft can do in a large scale



What is possible?



One man doing the whole process



FGI ROAMER

Characteristics

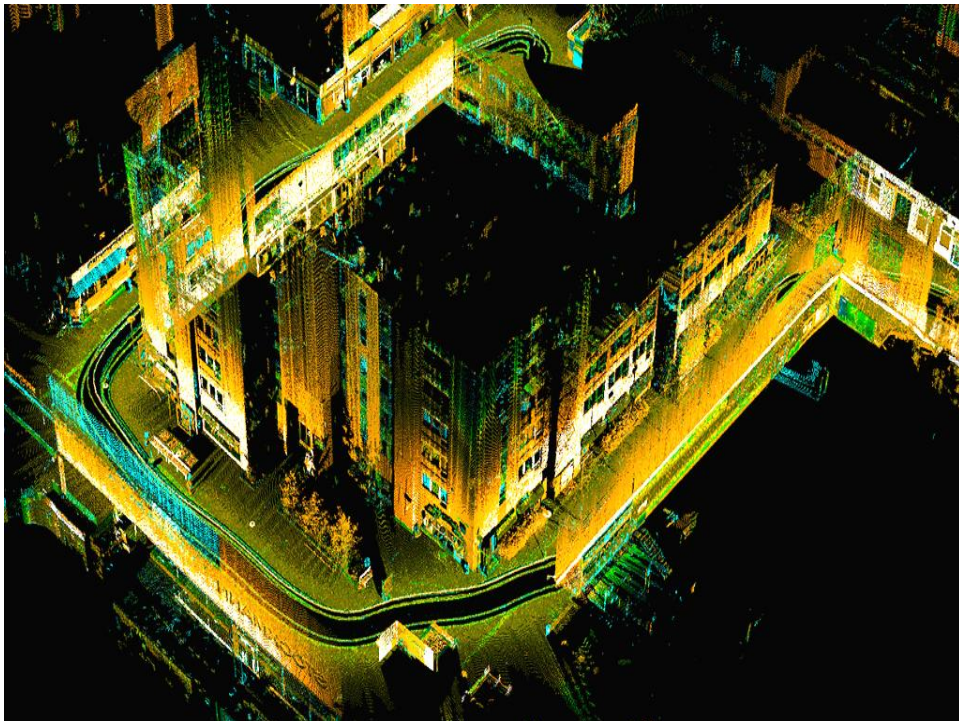
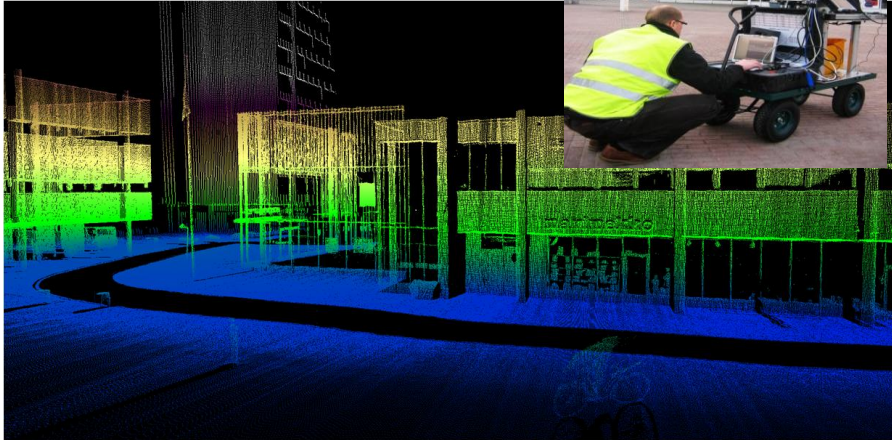
- Navigation solution 100 Hz
- Bi-trigger synchronization – laser and images
- 120-976 000 points / second
- 3-61 profiles/second
- 150 m corridor width
- Multiple scanner positions
- Multi-platform capability



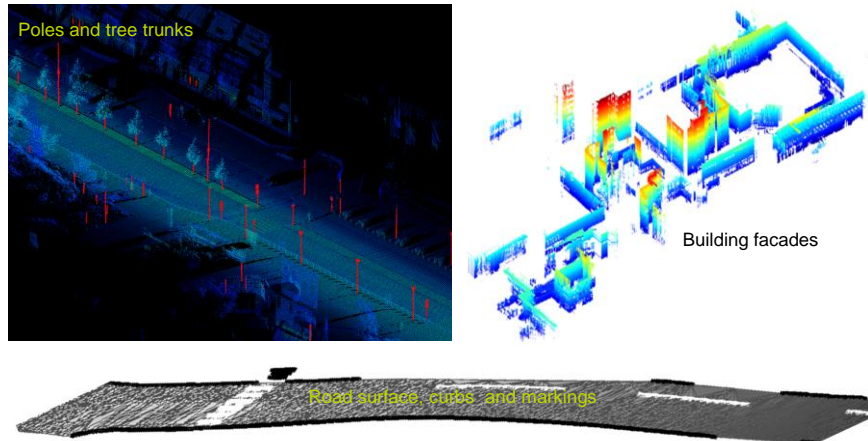
Kukko, A., Andrei, C.-O., Salminen, V.-M., Kaartinen, H., Chen, Y., Rönholm, P., Hyypä, H., Hyypä, J., Chen, R., Haggrén, H., Kosonen, I. and K. Čapek, 2007. Road environment mapping system of the Finnish Geodetic Institute - FGI ROAMER. In: *International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences* 36, Part 3/W52
 Kaasalainen, S., Kaartinen, H., Kukko, A., Anttila, K. and A. Krooks, 2010. Brief Communication: Application of Mobile Laser Scanning in Snow Cover Profiling. *The Cryosphere* 5: 135–138
 Aho, P., Kukko, A., Hyypä, H., Kaartinen, H., Hyypä, J. and A. Jaakkola, 2009. Application of boat-based laser scanning for river survey. *Earth Surface Processes and Landforms* 34: 1831-1838



Data Acquisition



Automatic processing of MLS data



GEODEETTINEN
LAITOS

Jaakkola, A., Hyypä, J., Hyypä, H. and A. Kukko, 2008. Retrieval Algorithms for Road Surface Modelling Using Laser-Based Mobile Mapping. *Sensors* 2008, 8: 5238-5249
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Photorealistic 3D Model



Low data amount – Details visible



Game Engine Interface

