



3D GIS: ECONOMY AND TECHNOLOGY OF A GLOBAL PEER PRODUCED 3D GEOGRAPHICAL INFORMATION SYSTEM IN BUILT ENVIRONMENT

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Every day millions of people use different kinds of geographical information system (GIS) applications: car navigators, local collective traffic information systems and even 3D information browsers such as Google Earth. These applications are becoming a part of our everyday lives and their services more and more ubiquitous. The current level of mobile technology offers fascinating possibilities, where the environment no longer needs to be represented as an abstracted 2D map, and where information is becoming dynamic.

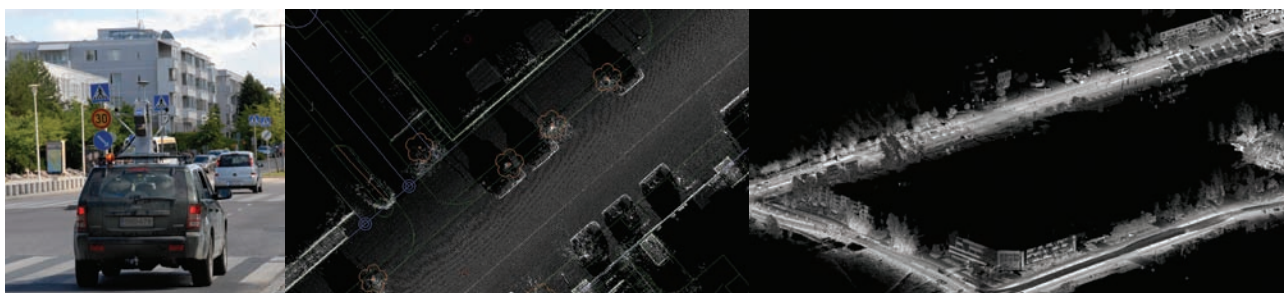
All current GIS applications depend on detailed geographical information system databases. In the past the data was mainly collected, stored, and used by national public agencies (e.g. National Land Survey of Finland). In the recent years, as the applications have become ubiquitous and need to get personalized data has increased, thus, the service related to geographical information has ex-

panded. Major producers now include Blom As (Norway), Pasco (Japan) and TeleAtlas in Europe and Japan and international technology companies such as Microsoft, Google and Nokia.

The business trend has implied that the production of geographical information has also become centralized and proprietary. The challenge of the proposed research project would be to study how an alternative peer produced (user-generated, community-created) economy could be built to complement the current one, and encourage the creation of new innovative ubiquitous technologies, services and applications by small innovative groups, not bound by the corporate or public systems, but allowing their integration. We already have the basic components (millions of mobile devices with Internet-connection, GPS or other location technology, and a digital camera) to ignite a global peer produced global information

system that could be the future platform for many yet unknown applications.

The sub-objectives of the project includes: 1) social aspects and economy of peer-produced 3D GIS - on what grounds would a global peer produced project succeed or fail in the geographical information domain, 2) ubiquitous data acquisition - is it technologically feasible to map changes of the surrounding using ubiquitous personal systems and how to communicate with such as data with peer produced 3D GIS system, 3) definitions of peer-produced 3D GIS system - how the prototype peer-produced 3D GIS system and repository should be developed?, 4) ubiquitous updating of 3D GIS - to study and develop an ubiquitous map updating system, in which ordinary mobile phone users are able to verify the deficiencies in map data and directly notify the mapping authority of these errors.



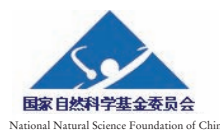
KEY PUBLICATIONS TO DATE:

- Björk B.-C., Hedlund T.: *Two Scenarios for How Scholarly Publishers Could Change Their Business Model to Open Access*. *Journal of Electronic Publishing* vol 12 (1) 2009.
- Nurminen, A., *Mobile 3D city maps*, Dr. Sc. Thesis, December 2009, TKK/HIIT.
- Rönholm, P., Hyyppä, H., Hyyppä, J., and Haggrén, H., 2009. *Orientation of airborne laser scanning point clouds with multi-view, multi-scale image blocks*. *Sensors*, 9, pp. 6008-6027. <http://www.mdpi.com/1424-8220/9/8/6008/pdf>
- Jaakkola, A., Hyyppä, J., Kukko, A., Yu, X., Lin, Y., Kaartinen, H., Lehtomäki, M., 2010. *A low-cost multi-sensoral vehicle-based mobile mapping system*, Candidate paper (invited) to *ISPRS Journal of Photogrammetry and Remote Sensing: 100 years special issue*.

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