# Effectiveness of National Topographic Data

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LAND SURVEY
OF FINLAND

# Backround information

- Finnish Topographic Database (TDB) was defined early 1990's
  - Data modelling, quality model, process, ….
- Finland was covered 100% in 1999 (Quality levels A and B)
- 2007 all data was of equal data quality (A) according to the Quality Model
- Data were opened in May 2013 (free of charge for any purpose)
- Free data includes:
  - TDB, topographic maps in vector and raster formats, DEM's, geographical names, aerial imagery, ALS data
- Most of data is downloaded by users using NLS file service

https://tiedostopalvelu.maanmittauslaitos.fi/tp/kartta?lang=en

- Users have been reasonably happy with the data and its quality
- Use is active and has inreased a lot since May 2013 (2014)
- Data is updated on regular basis

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# What to develop next?

- What are the impacts of open topographic data?
- What purposes data is used for?
- Is Topographic Data (TD) useful and worth the (governmental budget) money?

- NLS funded a research project from Aalto University, Helsinki

- The research was carried out by Dr. Jaana Mäkelä, Dr. Paula Ahonen-Rainio and prof. Kirsi Virrantaus.
- Results were published 30.4.2014.

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# TD to be studied

- Topographic Database

  traffic network, roads with addresses, buildings, electric cables, administrative boundaries, acriculture fields, swamps, rocks, waters, elevation contours

- Elevation data

  ALS data, DEM 2 m, 5m, 25 m, 200 m grids

- Aerial imagery

  orthophotos, aerial stereo images / models

- Vector maps

  1:100 000, 1:250 000, 1:1 M, 1:4,5 M

- Raster maps

  1:25 000, 1:50 000. 1:100 000, 1:250 000, 1:1 M, 1:4,5 M

- Geographical names

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# Research: Modelling the impacts of TD



- Economical impacts
- Social impacts
- Environmental impacts

- Future trends
- How the use of the data is changing
- What kind of data is needed
- Who are the (potential) users?

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# Research Data

Was based on

1 . Web survey, 3711 users of NLS open data

2. Web questionnaires and Interviews of Representatives of 20 major user organizations

3. Expert panel : 18 participants, eDelfoi-panel +1 day workshop + one web questionnaire,

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# Results

- Web survey, users of NLS open data
  - New ways of use had emerged in many professional organizations
  - Many organizations had found the data because of the wide publicity that the opening raised
  - Citizens had also loaded data frequently, but need easy-to-use applications rather than raw data ( eg. orthophotos were good).
  - Some new business possibilities were gathered as benefits, too

# Results

- Representatives of 20 major user organizations
  - Most important subsets of data for all:
    -Geographical names
    - Elevation contourlines
    - Buildings
    - 1:25 000 map raster
    - Traffic network
  - Some differences between public organizations and private companies, eg.
    - Raster maps most useful for public organizations
    - Vector data most useful for companies
    - Orthophotos useful for all
  - Factors that hinder the benefits:
    - No 3D information of buildings available
    - Difficult to use simultaneously with municipalities' (map) vector data
    - Metadata is not sufficient (needed for each object, changes, time label, …)
    - Some GISs do not support the data well enough

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# Results

- Expert panel (18 participants)
  - Areas of development:
  - Data model of NLS data and data by municipalities should be consistent
  - Life cycles of the data objects is needed
  - Metadata about the changes is needed (accurate 4D)
  - More 3D data is needed

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# Summary of Results

- TDB, aeriel imagery, ALS data and topographic maps 1:25 000 and 1:50 000 are necessary for many public organizations and private companies
- This is the only available nationwide data
- Many organizations could not carry out their tasks without it

Some other examples

- Significant cost and labour savings for many users
- Better planning and decision making
- Physical and mental well-being ( maps-citizens-outdoors)
- Enables new business possibilities for companies

Economical value of the impacts could not be evaluated

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# How to proceed

New concept:

## National Topographic Data Base

Joint task with the NLS, other governmental agencies and municipalities, 3/2015 – 12/2018.

Project leader Antti Jakobsson

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# More information

www.nls.fi