NLS
NATIONAL
LAND SURVEY
OF FINLAND

Openness as a strategy

Arvo Kokkonen, Director General

Jani Kylmäaho, Director for Development and Digitalization

Openness as a strategy

General info about National Land Survey of Finland and the strategy of opening data

Arvo Kokkonen

Open data and use of open source solutions in NLS Finland

Jani Kylmäaho

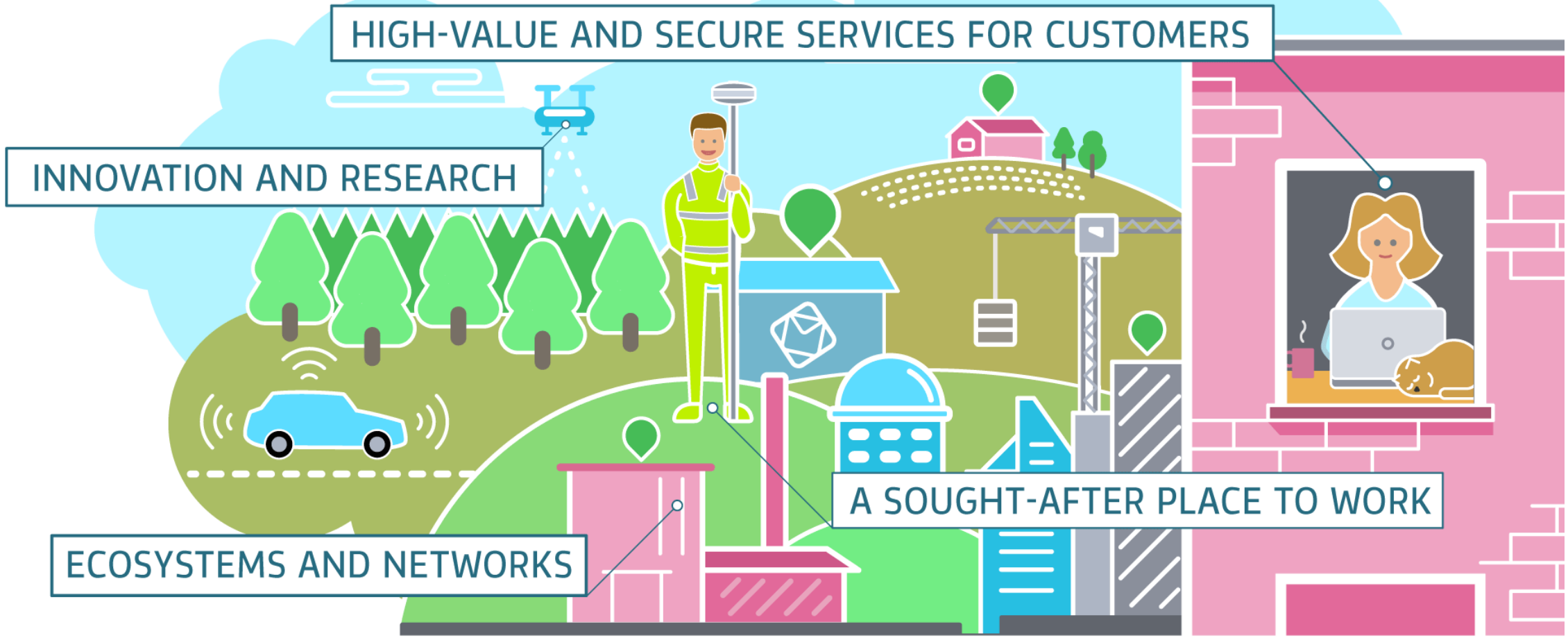
National Land Survey of Finland

1600 employees, offices in 36 localities across Finland

Fields of work:

- ✓ conduct **land surveys**
- ✓ maintain information about **real properties** and apartments
- ✓ handle **registrations of title and mortgages** of real properties and apartments
- ✓ **produce map** materials and **spatial data**
- ✓ **develop data systems**, and
- ✓ promote the **research** and application of spatial data

VISION: ADVANCING TOGETHER



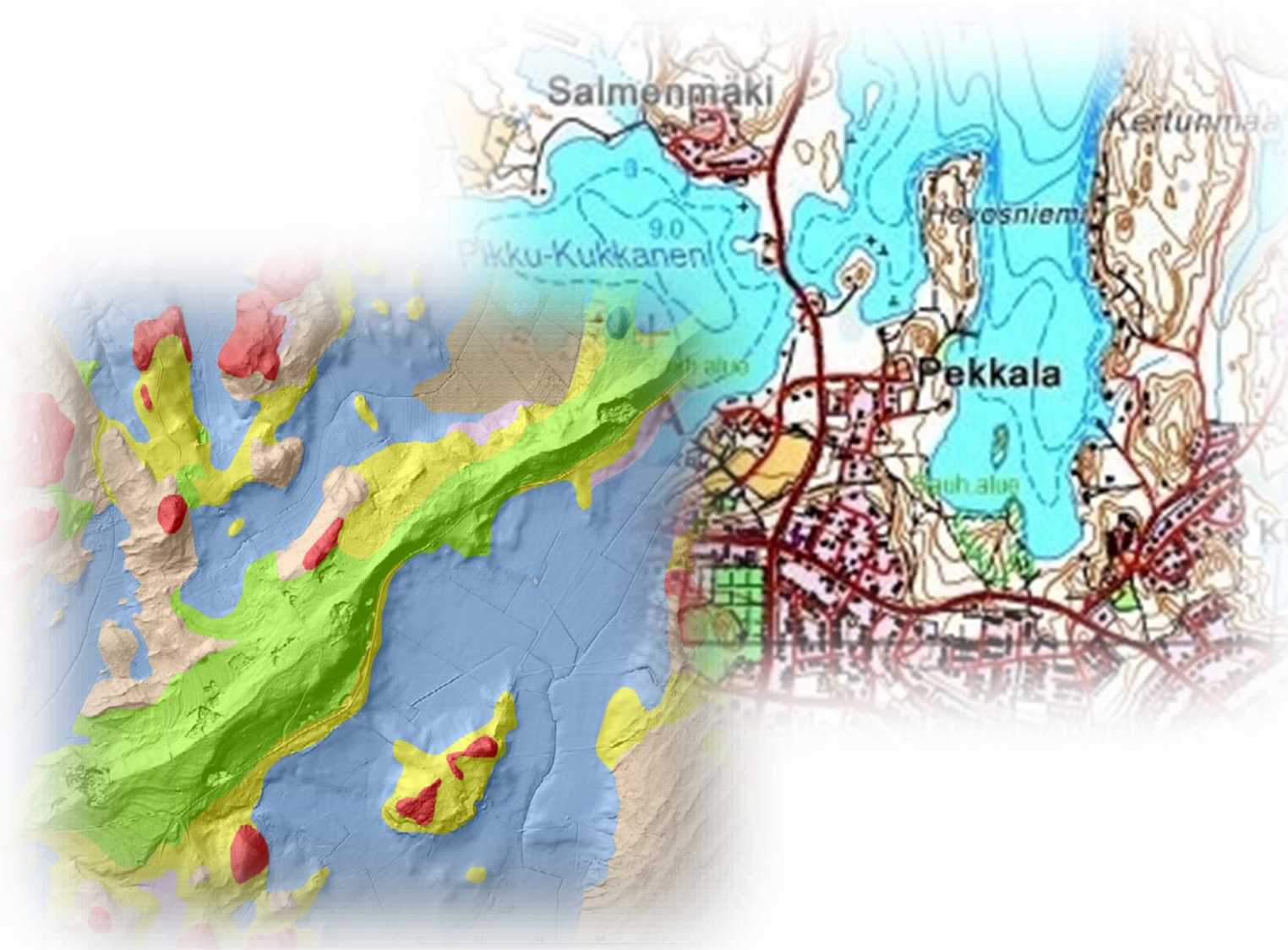
MISSION: INFORMATION ABOUT THE EARTH

Cooperation

- Open data directive
- Ecosystems
- Avoiding silos
- Cloud service strategy
- Machine learning / AI

All topographic data was opened 2012

- Laserscanning data
- Aerial photographs
- Topographic database
- All raster maps
- Place names
- Elevation models

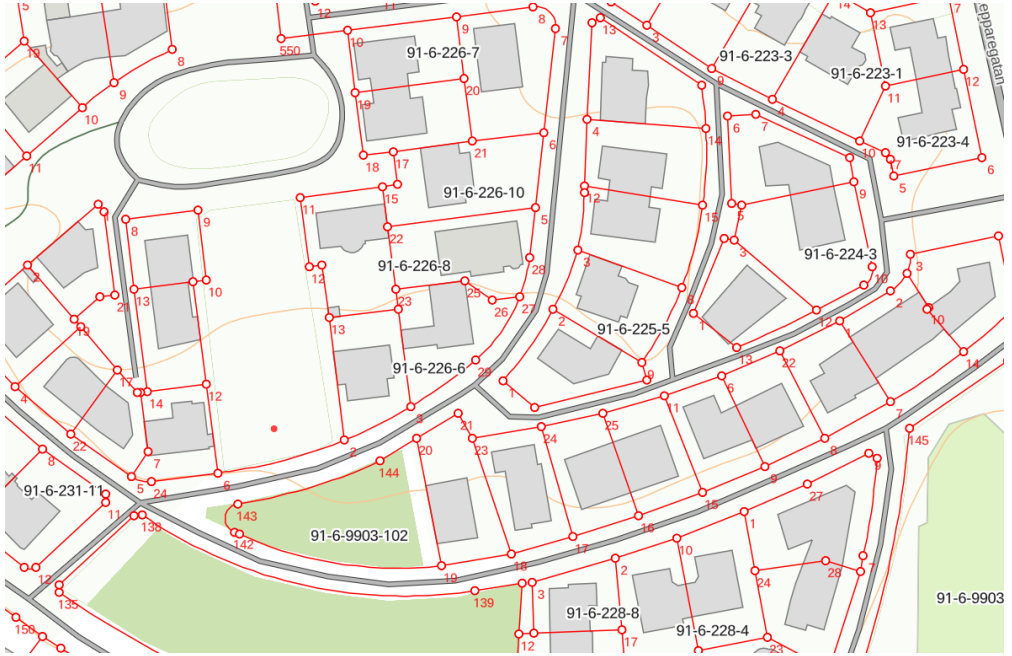


Cadastral parcels
+ register numbers
+ statistical data on real estate prices
was opened in 2017

Basically all data that can be opened is now open

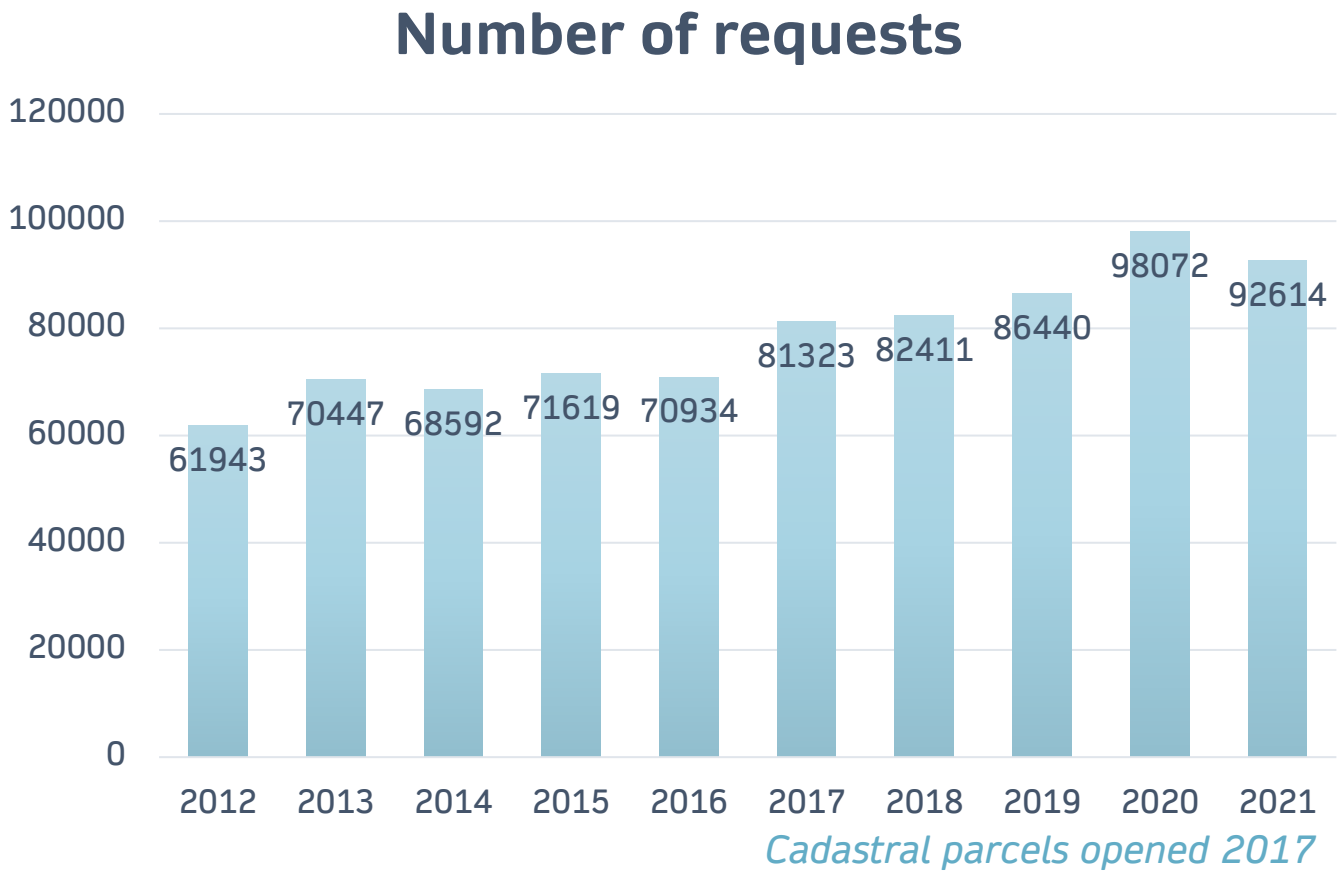
Some data will not be opened:

cadastral register data and individual price information due to legislation (mainly privacy reasons)

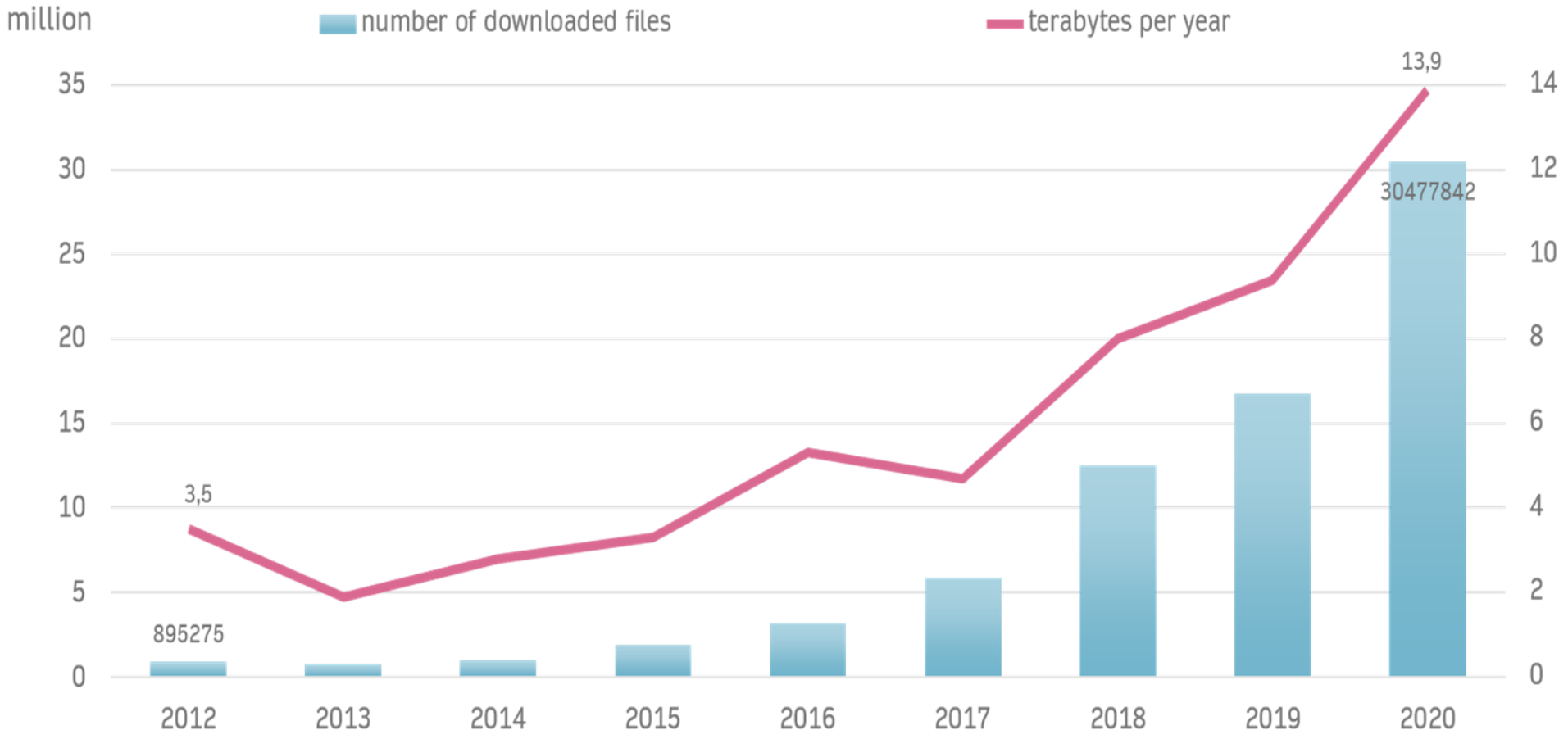


Demand of Open data

- All NLS open data requests since 2012



Demand of Open data



Cadastral parcels opened 2017

Why open data?

- Open data movement and the policy of the government
  - *Public sector data should be open*
- Other easily accessible data was used more instead of national data
  - *Even public sector users were doing so*
- Availability and free of charge were important issues for users
  - It’s better to open the national data than to risk decrease the use of it with license fees
  - Any restriction of use makes a hindrance for users
    - increases bureaucracy and cost for delivery
  - Very difficult to make licence- and pricing models for all new service based innovations
- The quality of the data will improve the more it is used

Open Source at National Land Survey of Finland

Open in Many Ways

1. Open Data
2. Open Standards
3. Open Source
4. Open Collaboration

Open data

- Open data File download service – topographic data available also as GeoPackage
- Positioning service data (not as stream, only RINEX file download)
- Map APIs (WMTS, Vector tiles)
- Beta APIs
- 3D-buildings, available starting 2022, nationwide 2025

- **Coming up**: Open Data Directive / High Value Datasets, Data Governance Act, …

Short history of Open Source activity

- Until 2008, Scattered use of open source libraries and software
- 2008 First spatial data APIs based on open source servers
- 2009 Decision to build Finnish Geoportal on an open source solution
- 2010 Postgresql introduced as a storage solution
- **2011 Oskari web mapping platform shared as Open Source**
- 2014 Decision that NLS FI builds all web maps based on Oskari
- 2019 Majority of APIs run on open source servers, Postgresql usage is growing
- **2020 Decision to build the new Topographic Mapping system core on open source**

Non-comprehensive list of OS @ NLS

Linux, PostgreSQL, Oskari, OpenLayers, Hibernate, Java OpenJDK, IntelliJ Idea, GitLab, GeoServer, GeoTools, Geonetwork, Flyway, Proj, JTS, GEOS, GDAL, Mapserver, Mapcache, Emacs, Firefox, Eclipse IDE, Audacity, Apache HTTPD, Apache Tomcat, 7-Zip, Chromium, Jetty, Jenkins, Maven, PostGIS, PuTTY, QGIS, React JS, Request Tracker, Rocket Chat, Spring Boot, Swagger, …

Approx. **100** Open Source applications or frameworks

NLS ICT Development Agenda

1. Cloud Services
2. Open Source
3. Increasing the handprint and interoperability of information
4. Adopting a more Agile way of working
5. Up-to-date tools for a Modern workplace

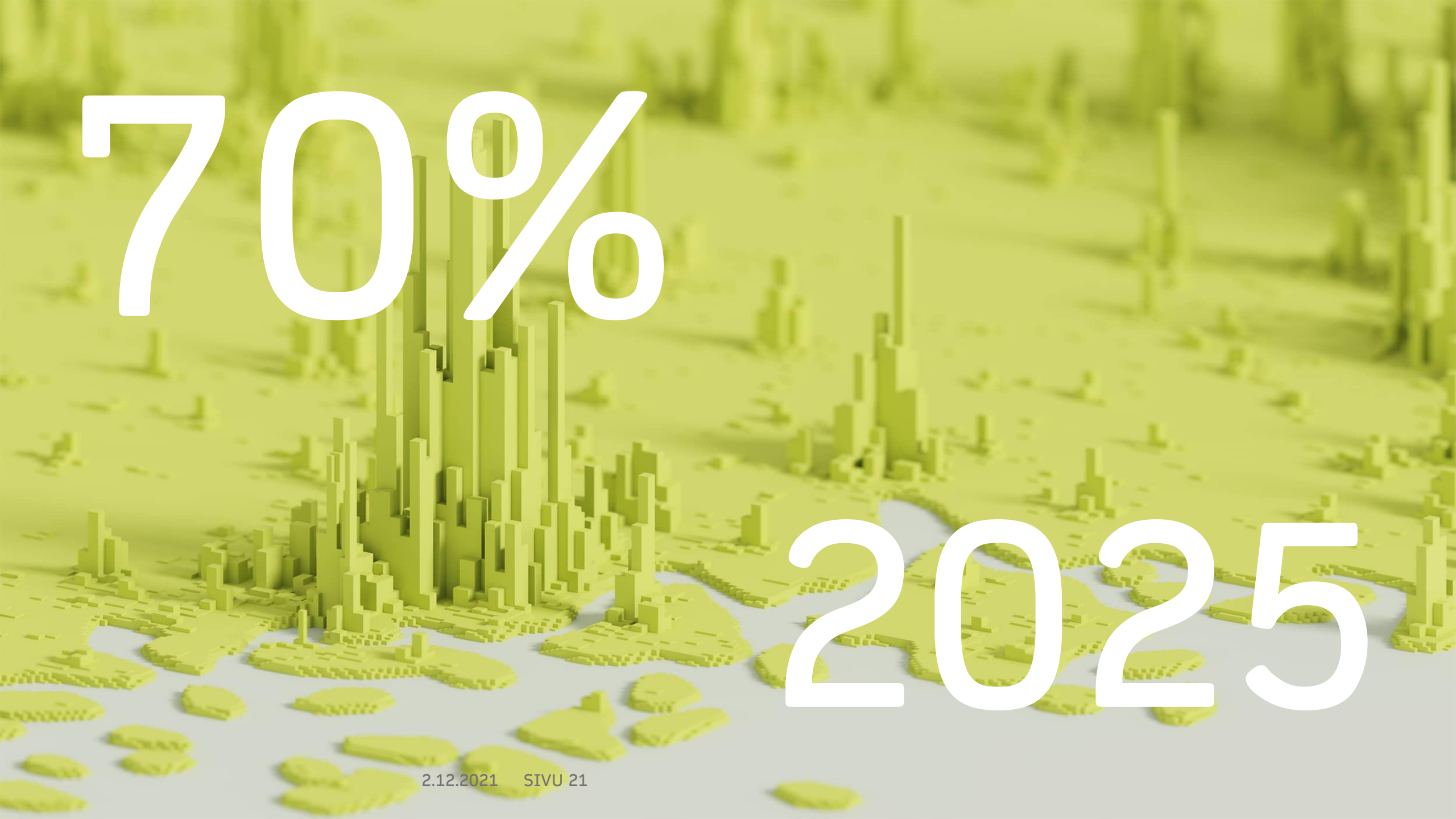
Why is NLS going Open Source?

1. Strategic Choice
2. Better Productivity through Open Collaboration
3. Innovation and faster leveraging of Research results
4. Agile and Open ways of working internally and with partners
5. Modular architecture – Resilience for change

Open Source Insights

Global and EU level


95%
2021


70%
2025

EU-level open source trends

- OpenForum Europe (independent think tank)
- Open Source Impact Study for European Comission
  - Impact of Open Source on EU economy **> 65 bn €** in 2018**.**
  - 10% more contributions -> **95 bn €** increase in EU gdp / year.
- **OSPO** (Open Source Program Office) – a recommended practice for coordinating open source activities within organizations
  - NLS has set up a virtual OS team
- Several EU member states (Germany, France, Finland, …) have mentioned use of open source in government programs
- Open Source identified as critical – how to support the communities?

Procurement

How to buy Open Source?

Can you choose Open Source?

Yes.

It is an enterprise architecture decision, which does not incur any public spending.

-> An architecture decision is not subject to procurement directive.

When you actually buy something, follow the directive!

Is Open Source Cheaper?

Yes and No.

No: We estimated setting up the new topographic mapping system costs about the same with each option.

-> However, you can build your process exactly the way you want.

Yes: Customizing closed source products can result in very expensive lifecycle costs!

OS Procurement Models

Joint Development

- Developing solutions together based on common needs
- Works well in public sector
- One organization takes care of the procurement process
- Challenge: how to overcome silos?

Crowd Funding

- Initiative usually by a company or OS community -> new feature for OS software
- Public sector organizations can participate
  - No advance payments
  - Can pay only a certain amount to a single company per year

Advancing together

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