VOOKA

Current plans into the built environment information system – pilot project June 2022–March 2023

RYHTI Rakennetun ympäristön tieto

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Project objectives

1. To store in a single location the external boundary data of **current** plans in South Savo municipalities and the original planning documents related to them (local detailed plans, detailed shore plans, local master plans)
2. To test the workload involved in collecting the data
3. To automate data collection and analysis processes
4. To create instructions for future work

Implementation: Ubigu Oy, Gispo Oy and Plandisain Oy
Coordination: Finnish Environment Institute
Carried out in close cooperation with the ELY Centre for South Savo

The project is part of the Built Environment Data project (Ryhti).

Background

External boundary data of plans are currently collected by the National Land Survey of Finland in connection with Cadastre maintenance, the ELY Centres and, in the case of master plans, also by the Finnish Environment Institute's master plan service. Datasets are also maintained by municipalities or their planning consultants.

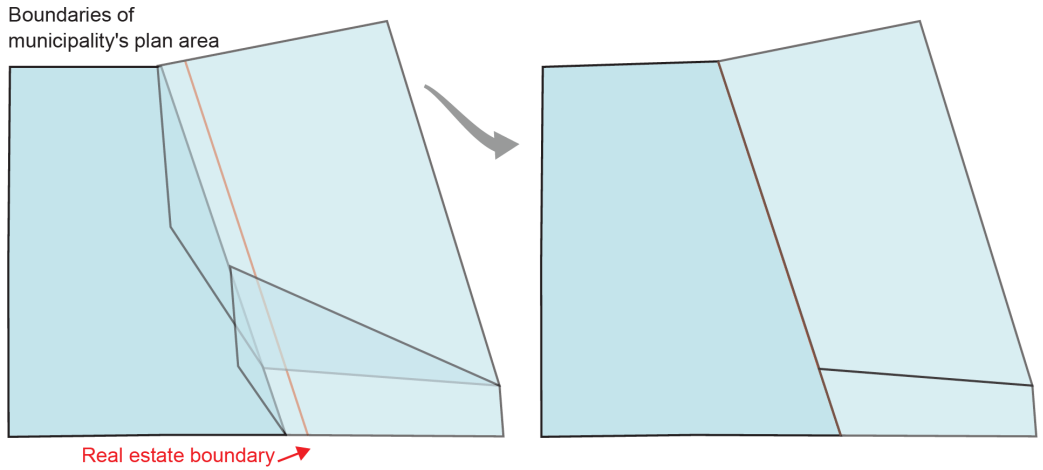
The statement of purpose of the National Land Survey of Finland and the Ministry of the Environment described in connection with the Ryhti project is that the National Land Survey could in the future access the planning data it needs and the basic attribute data relating to them through a national built environment information system.

In previous projects, it has been established that approx. 2,000 local detailed plans, approx. 240 local master plans and 600 detailed shore plans exist in the pilot area of the VOOKA project (South Savo).

Two municipalities in the pilot area (Savonlinna and Mikkeli) are controllers of the Land Information System (LIS), and their plan data are not available in the LIS on the same scale.

Starting points of the work

1. Plan data (location data, PDFs, documents) are stored in different places and come in a variety of formats, and some of them are difficult to find.
2. The National Land Survey of Finland’s Land Information System contains plan boundary data that are mainly of high quality from almost all municipalities, excepting local detailed plans from the municipalities that are LIS controllers.
3. Depending on their source, there are major differences between the external boundaries and contents of the plans.
4. Ultimately, the plan documents can be found in municipalities.



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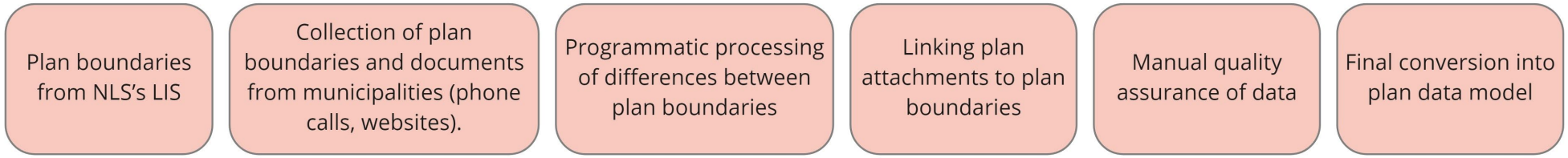
General process

1. Exporting plan data from the LIS system and obtaining plan indices and the PDF documents associated with them from municipalities (phone calls, websites, interfaces).
2. Automated comparison and correction of the data obtained from the LIS and municipalities.
3. Generating a coherent combined dataset based on data from the LIS and municipalities following specified rules (based on comparisons of geometries and attribute data).
4. Correcting, harmonising, and renaming links to plan documents.
5. Manual quality assurance and correction of the data (complicated errors that computers struggle to pick out).
6. Final conversion of the data format into Ryhti plan data model.



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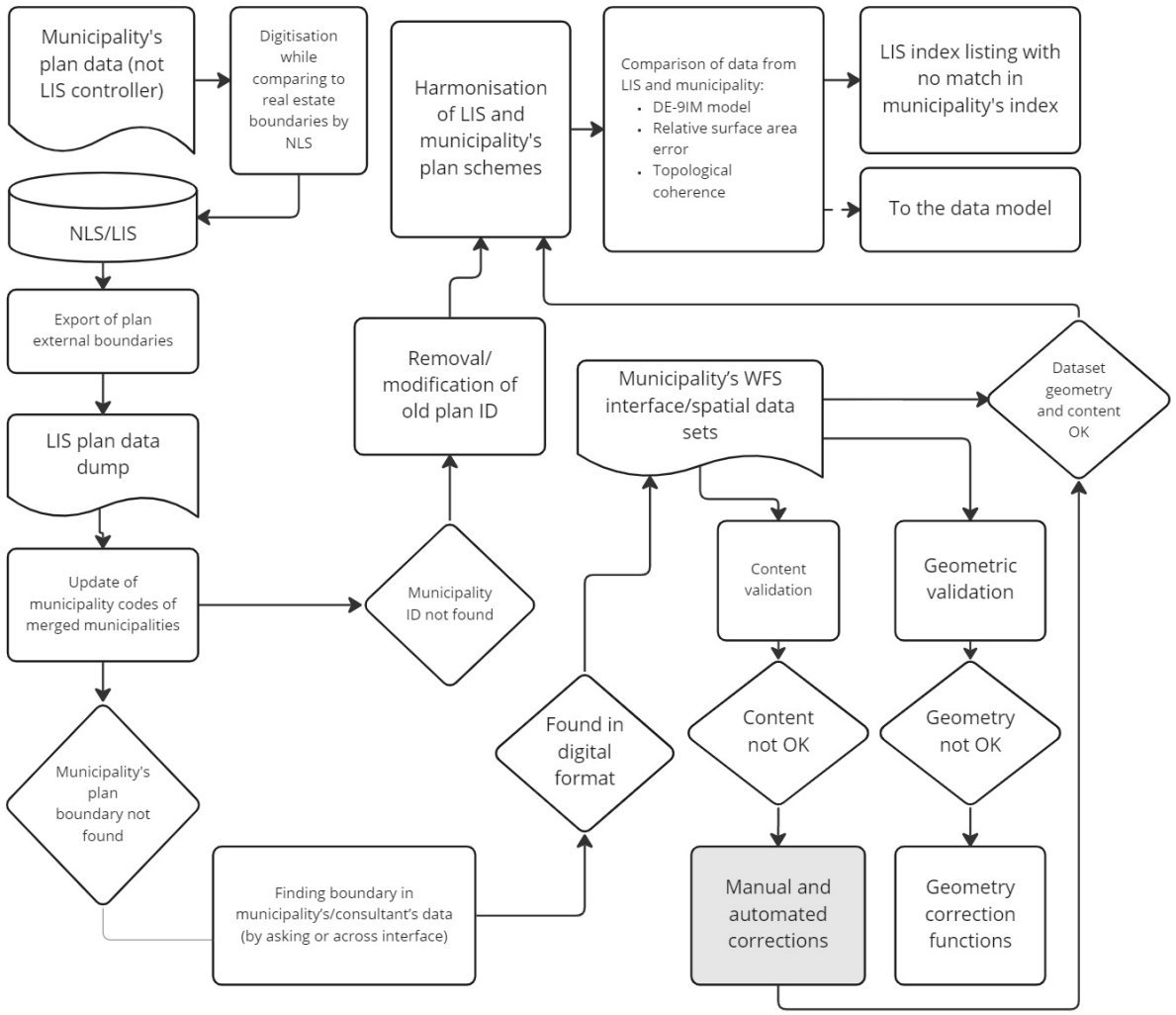

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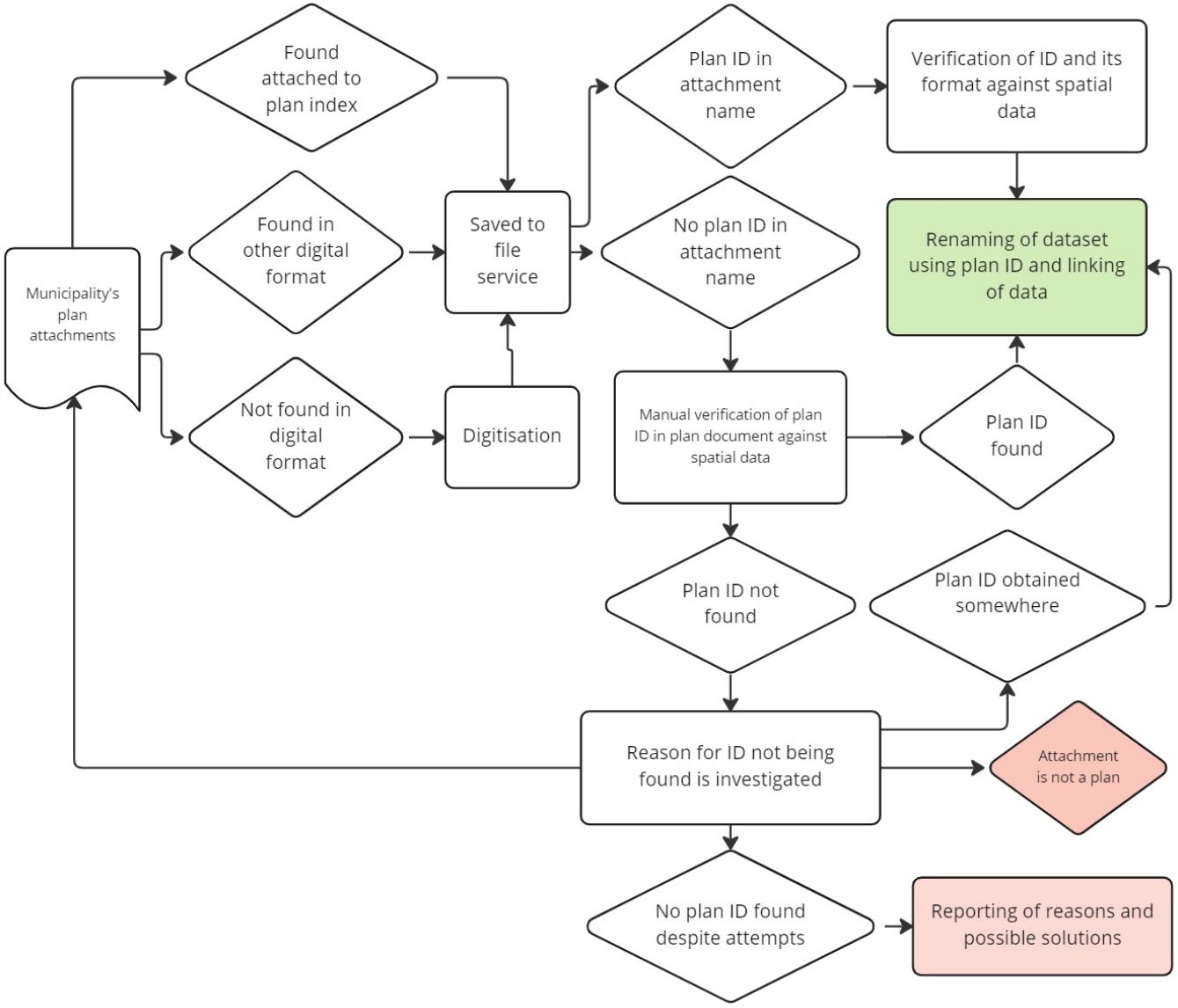

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Typical challenges in the data

Topology

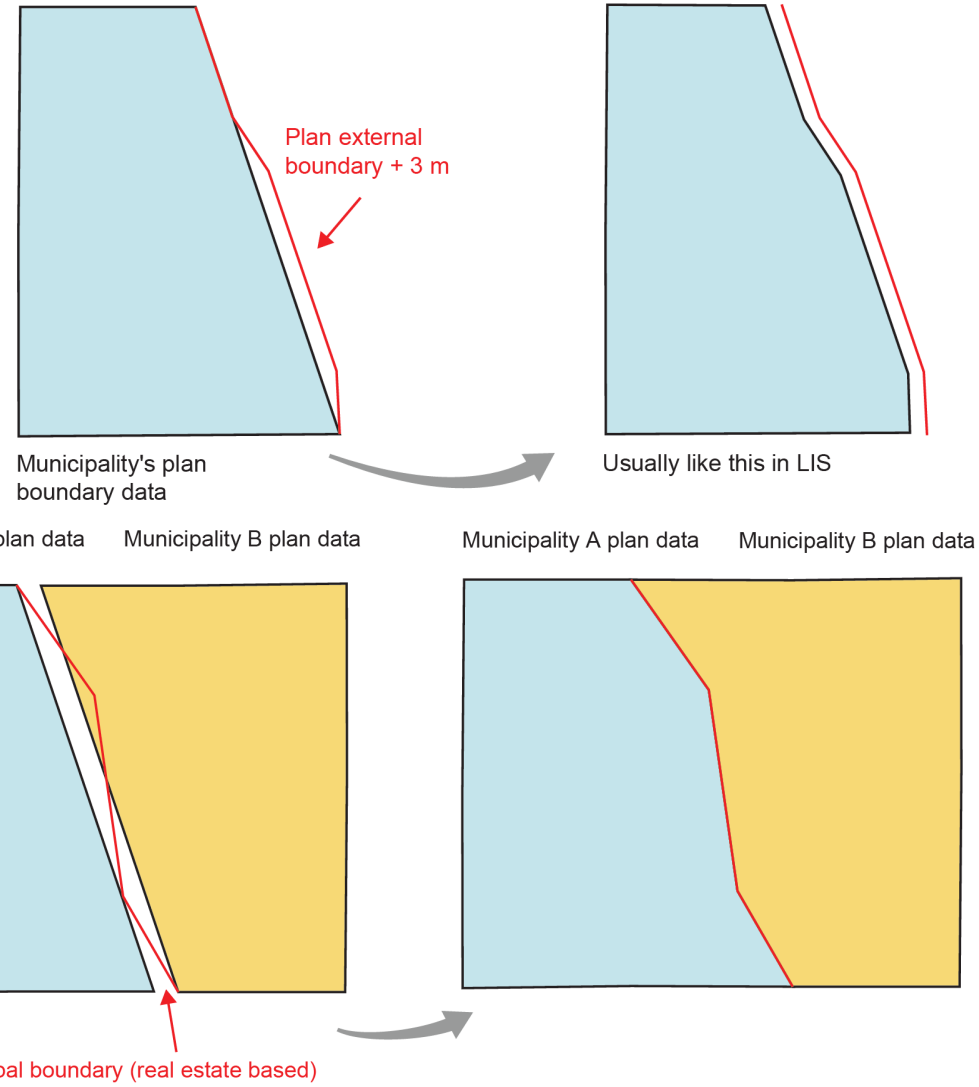
- areas drawn as lines
- intersecting areas
- overlapping areas
- gaps that do not exist in areas

Multiple formats

- DWG, DGN, SHP, TIF, TAB, WFS, KuntaGML

Missing data

- Plan boundaries not known (e.g. due to plans that are not legally valid or data lost in municipal mergers).
- Original documents not digitised or no information available on their existence.



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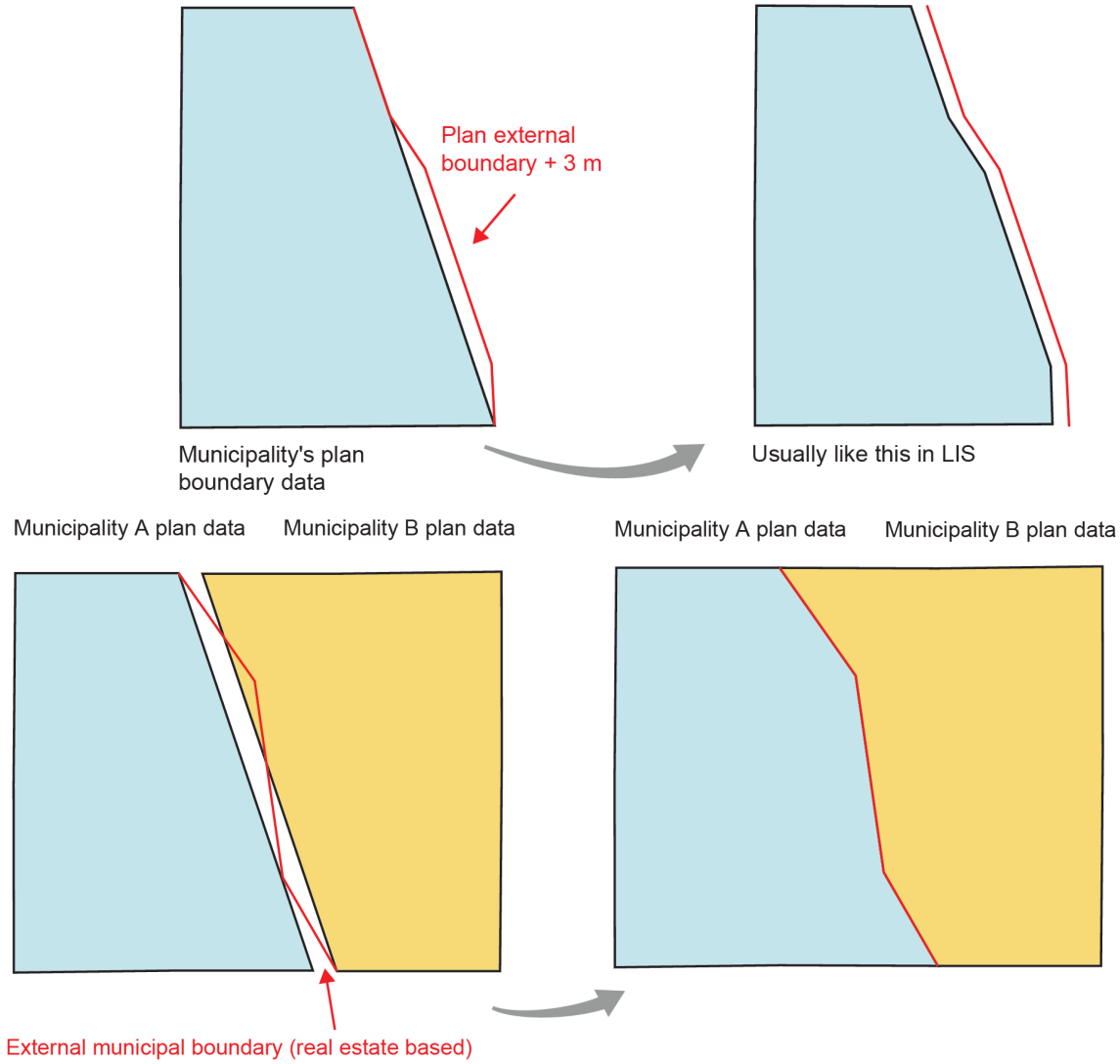
Typical challenges in the data

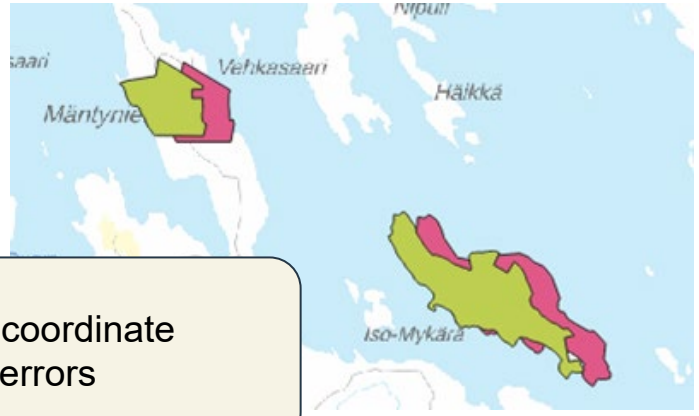
Poorly recorded attribute data

- Plan name/ID is often missing.
- Attribute data are described as CAD drawing labels that cannot be automatically linked to the correct area.
- Extremely incomplete dates.

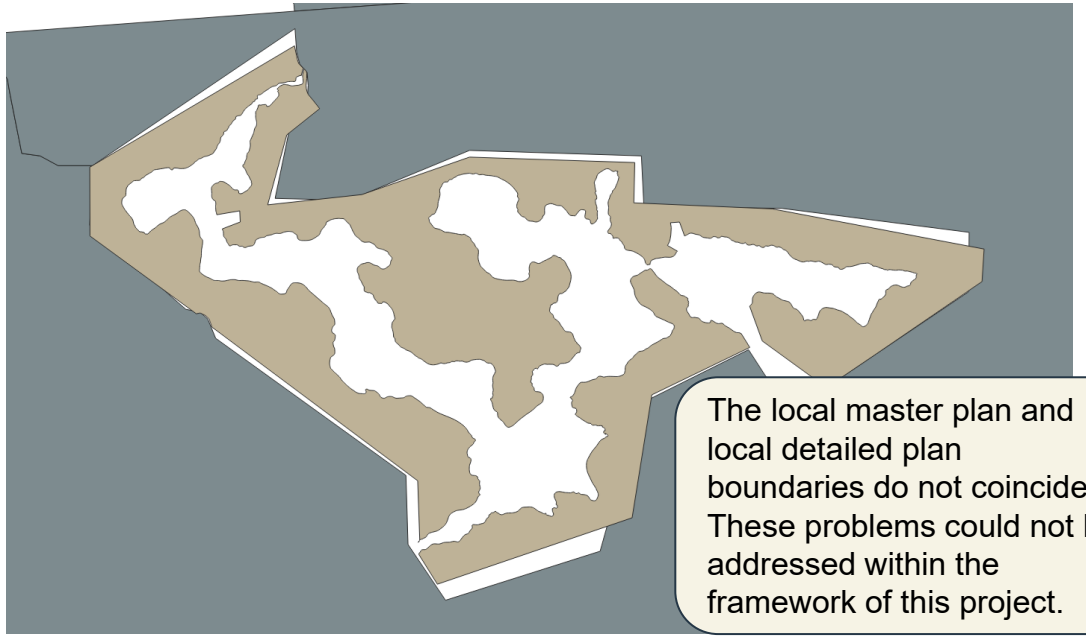
Other problems

- Coordinate system errors
- Phantom records
- Varying ways of describing dates
- Significant differences in interpretations of plan boundaries between data from the municipality and LIS

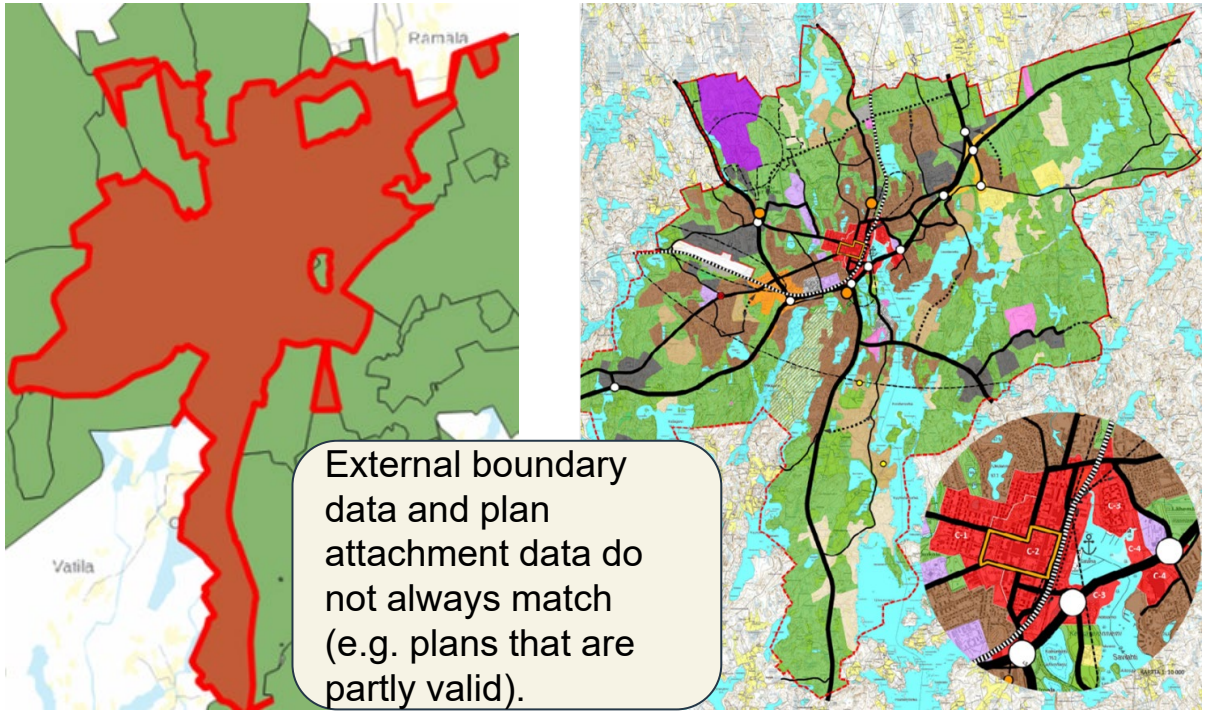




Legacy coordinate system errors

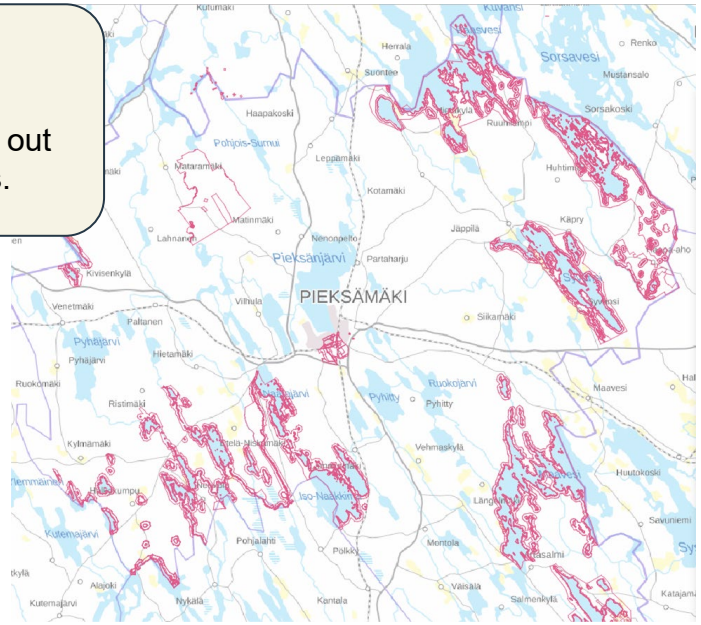


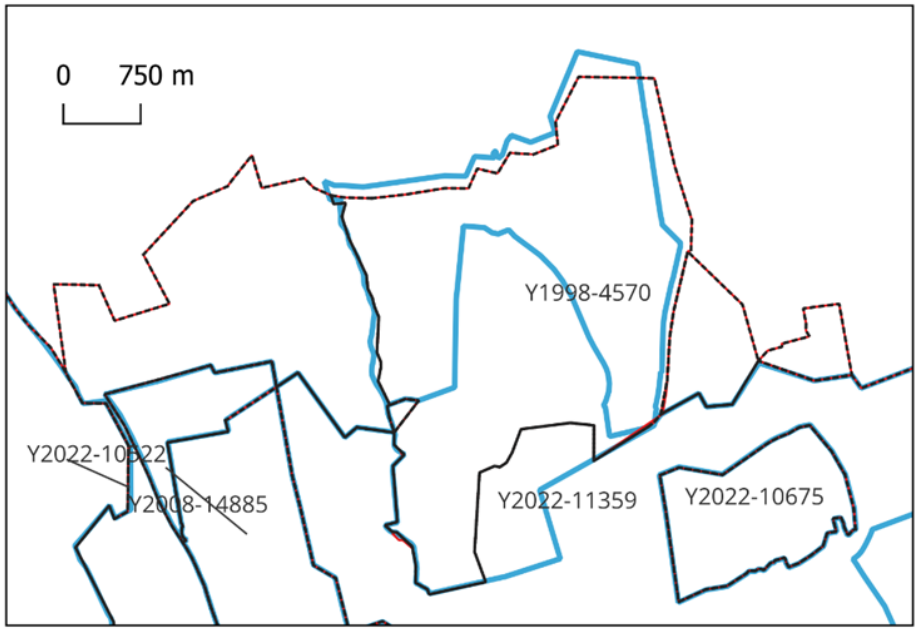
The local master plan and local detailed plan boundaries do not coincide. These problems could not be addressed within the framework of this project.

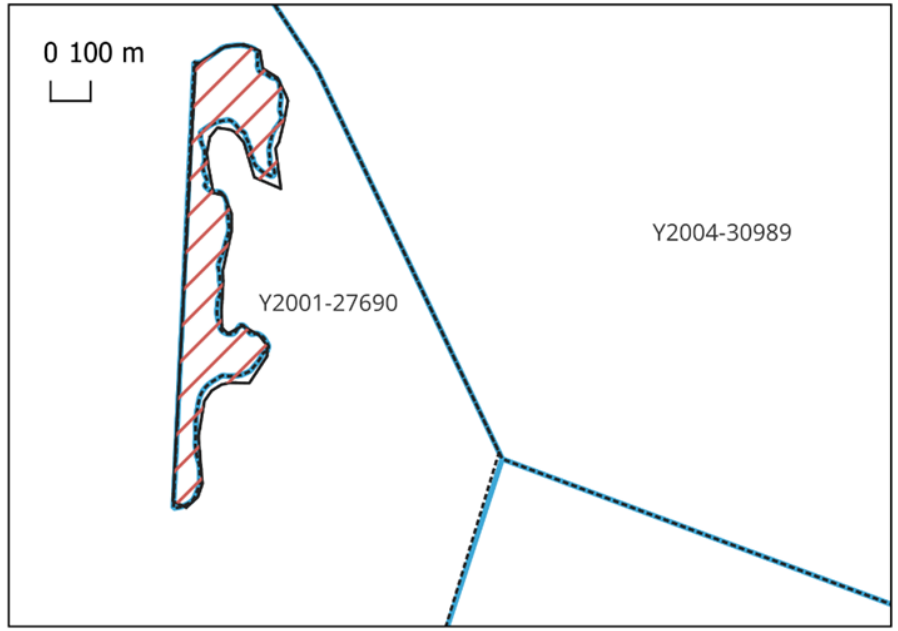


External boundary data and plan attachment data do not always match (e.g. plans that are partly valid).

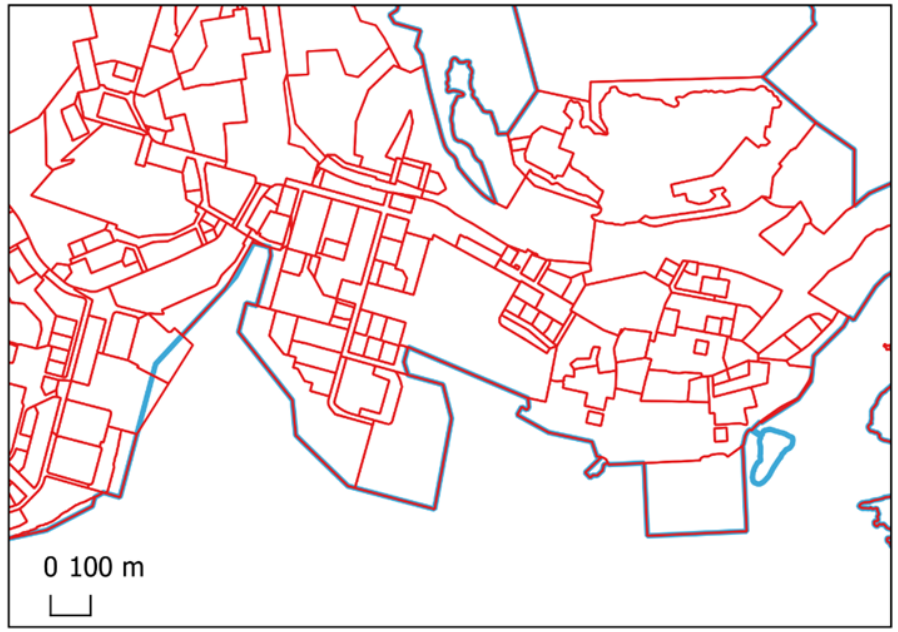
Software cannot always convert boundaries drawn out as lines into areas.







Municipality's original plan index
LIS (National Land Survey of Finland 2022)
Data corrected in VOOKA pilot
Plan attachments of two municipalities in plan index



Examples of differences between the local master plans and local detailed plans obtained from the municipality and LIS. LIS data were incomplete in the municipalities acting as controllers. In the area of one municipality, a plan was found for which both municipalities had produced plan attachments.

Data protection issues

- Planning decisions and documents are public under section 12.2 of the Constitution.
- Existing decisions cannot be changed or concealed afterwards (without substantial legislative amendments).
- It should be noted that some plans (especially older ones) may include information currently classified as confidential, and they must be checked before publication. This should also be taken into account in the implementation of the built environment information system.
- The fact that underground plans are not imported to the service has been addressed in the built environment information system.

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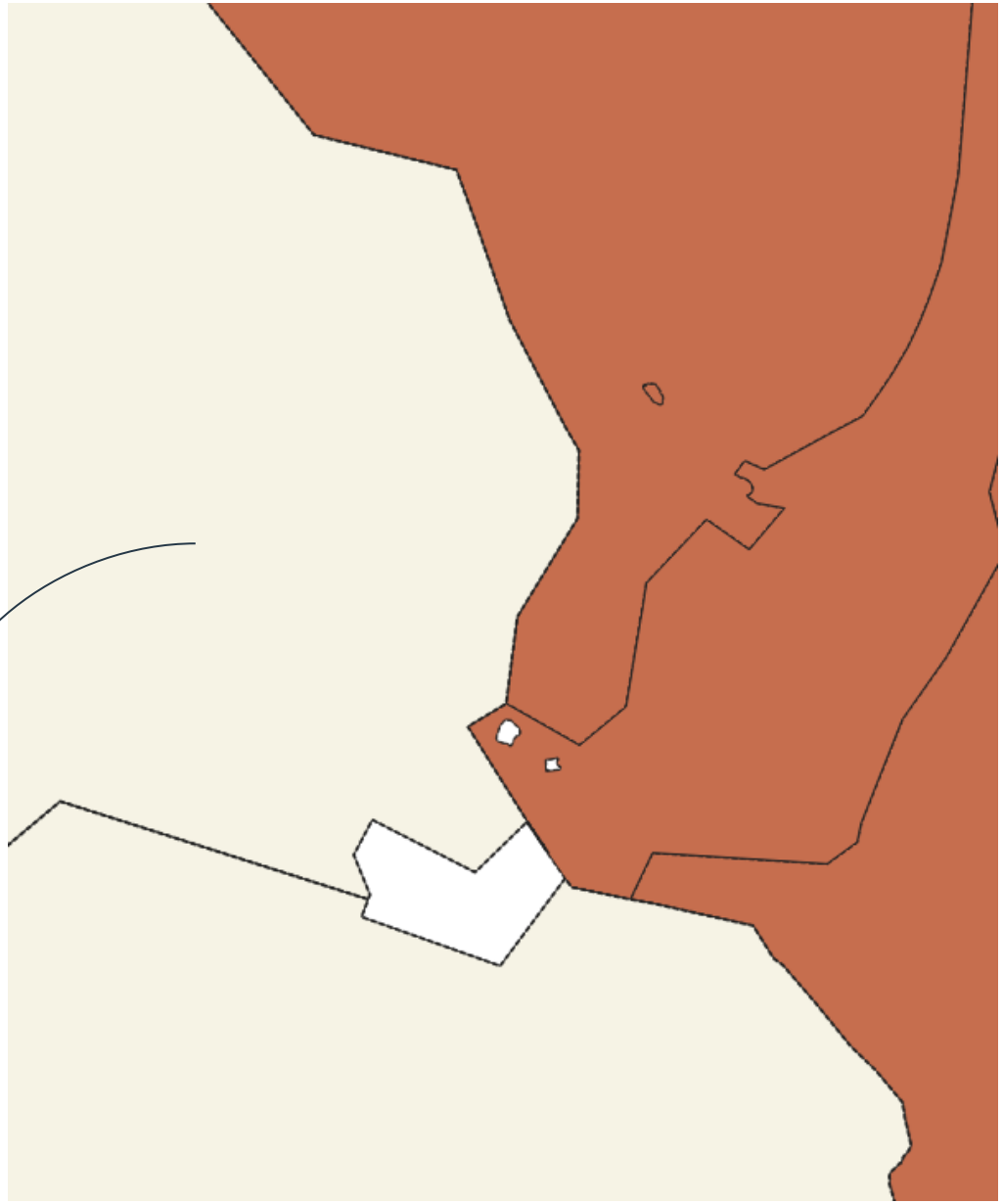
Coherent zoning datasets

- On municipal boundaries
- Between a municipality's plans
- A plan attachment included for each plan index

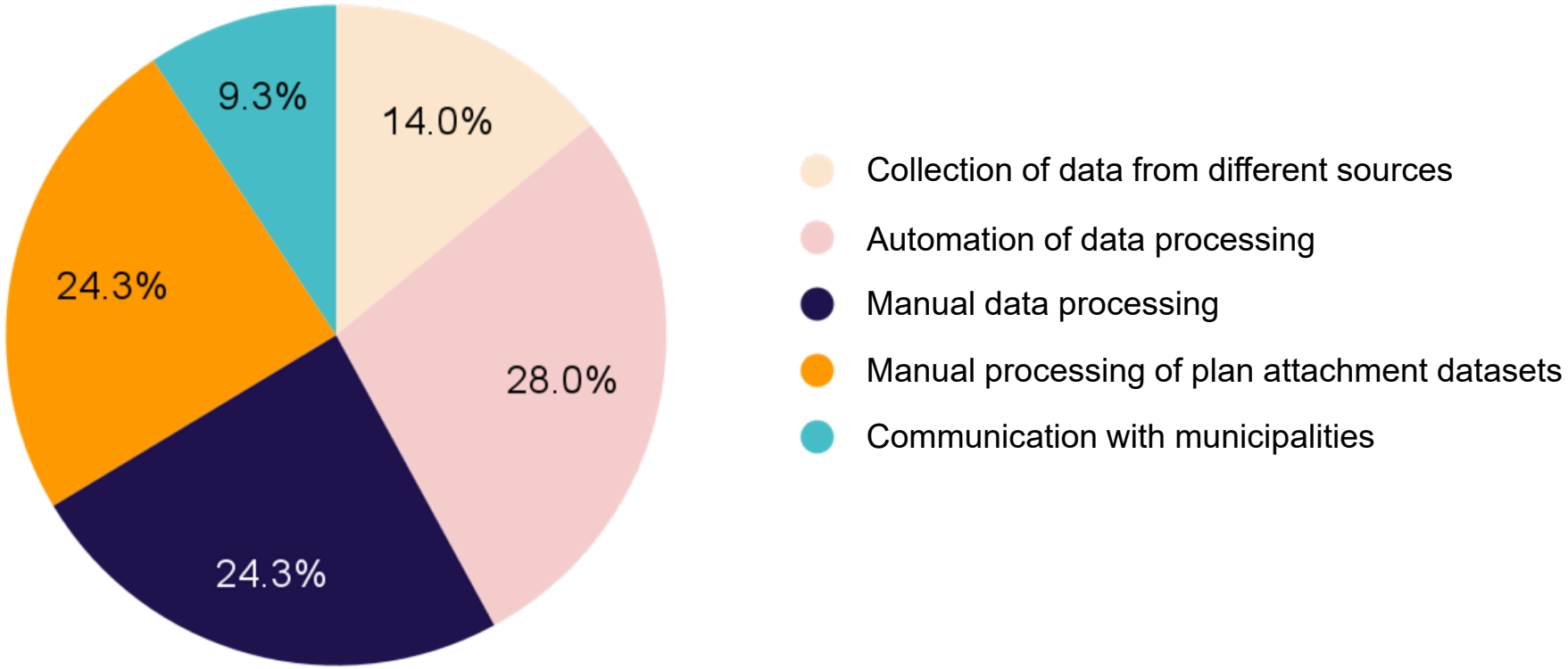
- 491-23-0304-7110-1.pdf
- 491-23-0304-7109-1.pdf
- 491-23-0304-7108-1.pdf
- 491-23-0304-Y2022-11435-1.pdf
- 491-23-0304-Y2022-11457-1.pdf
- 491-23-0304-Y2021-13263-1.pdf
- 491-23-0304-7102-1.pdf



Processing the data took from over one hour (master plans) to 15 minutes (local detailed plans) per plan.

- This also includes the work required to automate the process and it is likely that the workload will consequently be reduced in the future, but in some regions communication and data collection may be more labour-intensive than in South Savo.

Distribution of workload during the VOOKA pilot



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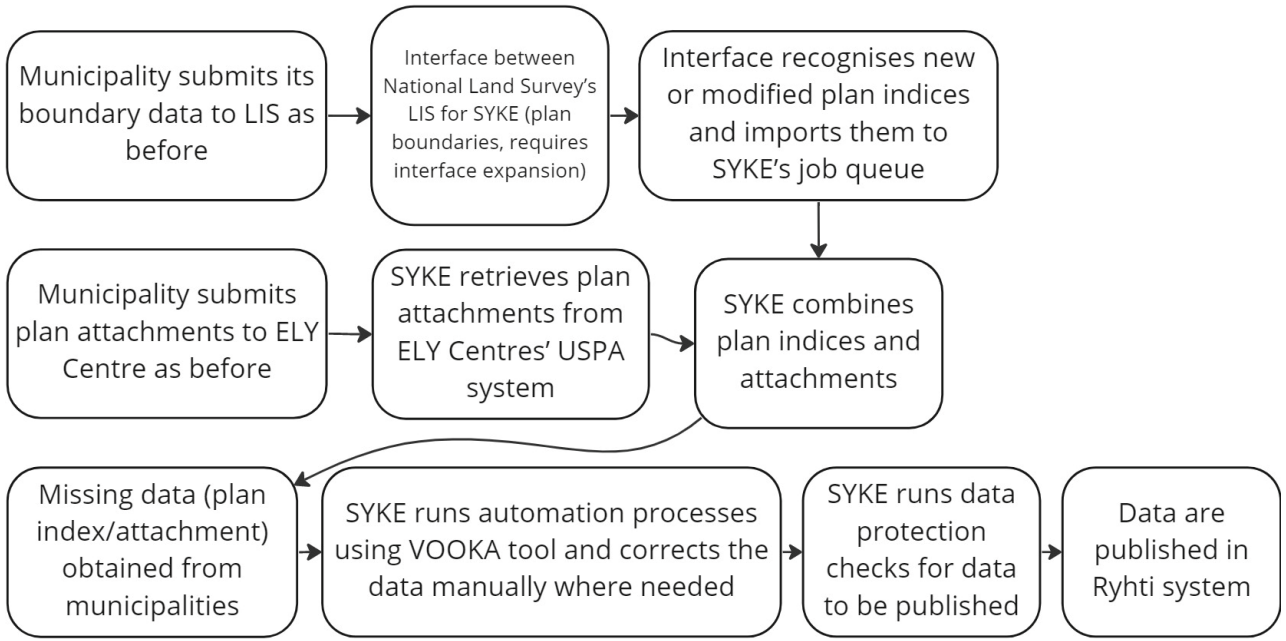
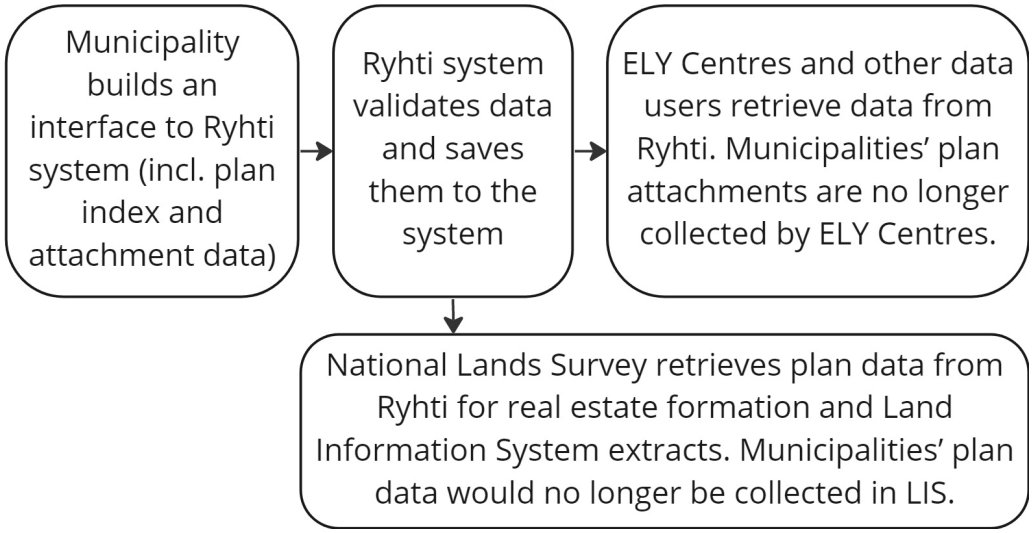
Administration model (following VOOKA pilot, proposal)

- The transition period of the legislative amendment will extend until the end of 2028, after which plan data must be uploaded directly to the Finnish Environment Institute's built environment information system.
- Before that, a model for carrying out the work that prevents the data from becoming obsolete must be in place.

Transition phase process



Process after transition phase



Outcomes and observations

Coherent plan datasets

- On municipal boundaries
- Within a municipality between plans in the same category
- Most plan indices have some plan attachment. No attachments were received for approximately 6% (in other words, attachments were received for 94%).

The number of plans received finally was approx. 2,708* at minimum

- 324 local master plans
- 1,854 local detailed plans
- 530 detailed shore plans

* The number of plans cannot be interpreted accurately because the data has sometimes been grouped by decision, sometimes ‘by plan’ (including changes). As the maximum number of plans was interpreted approx. 2,950.

Outcomes and observations

- Municipalities have very different resources for submitting/maintaining their data, and some were unable to submit all plan data during the project.
- The National Land Survey's Land Information System data are of a very high quality, and the data processing procedures in the VOOKA project were for the most part built for this system.
- As the process cannot be fully automated, manual work will still be needed.
- GitHub/Jupyter notebook has a tool for programmatic processing that can be used in future work https://github.com/ubigu/vooka
- An administration model to be used after the VOOKA pilot has been proposed.

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Thank you!

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