



Presented at the FIG Working Week 2023,
28 May - 1 June 2023 in Orlando, Florida, USA

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Protecting
Our World,
Conquering
New Frontiers

Locating property boundaries by use of low-cost technology and available public datasets

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What it's about

- Study confirming that a smartphone, Qfield, and georeferenced historical land consolidation maps and available public datasets are efficient tools to locate boundary marks in Norway

Some basics

- Cadastral surveying was introduced firstly in 1980 in rural areas in Norway
- The cadastral map introduced in 2010 is of varying quality
- A cadastral survey does not determine the legal boundary
- Freedom of contract applies to property boundaries
- Boundary marks agreed upon by the land owners are of great importance when determining a boundary
- Boundary marks can be difficult to locate as time goes on

The cadastral map

- Data from different sources
- Not complete and of varying quality
- Initiatives from the Ministry to assess FFPLA principles and crowd sourcing for quality improvement of the Norwegian cadastre



Source: www.geonorge.no and www.norgebilder.no.

Land consolidation maps

- The land consolidation courts have produced large volumes of maps (island maps)
- Strong involvement from the landowners
- Detailed information about boundary demarcation, and most cases true to scale
- Suitable for georeferencing in QGIS, and used in Qfield on mobile phone



Source: <https://wcarkiv.domstol.no/wcarkiv/kommunelist.wc?ID>

Case Alver - method

Step 1: QGIS:

Establish a project.

Load background information: the topographic map and cadastral map.

Georeference the land consolidation map.

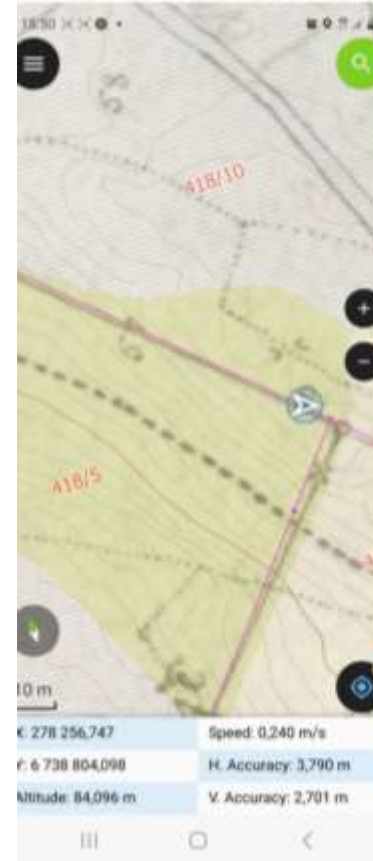
Export the project by the Qfield plugin.

Step 2: Qfield:

Import the QGIS project.

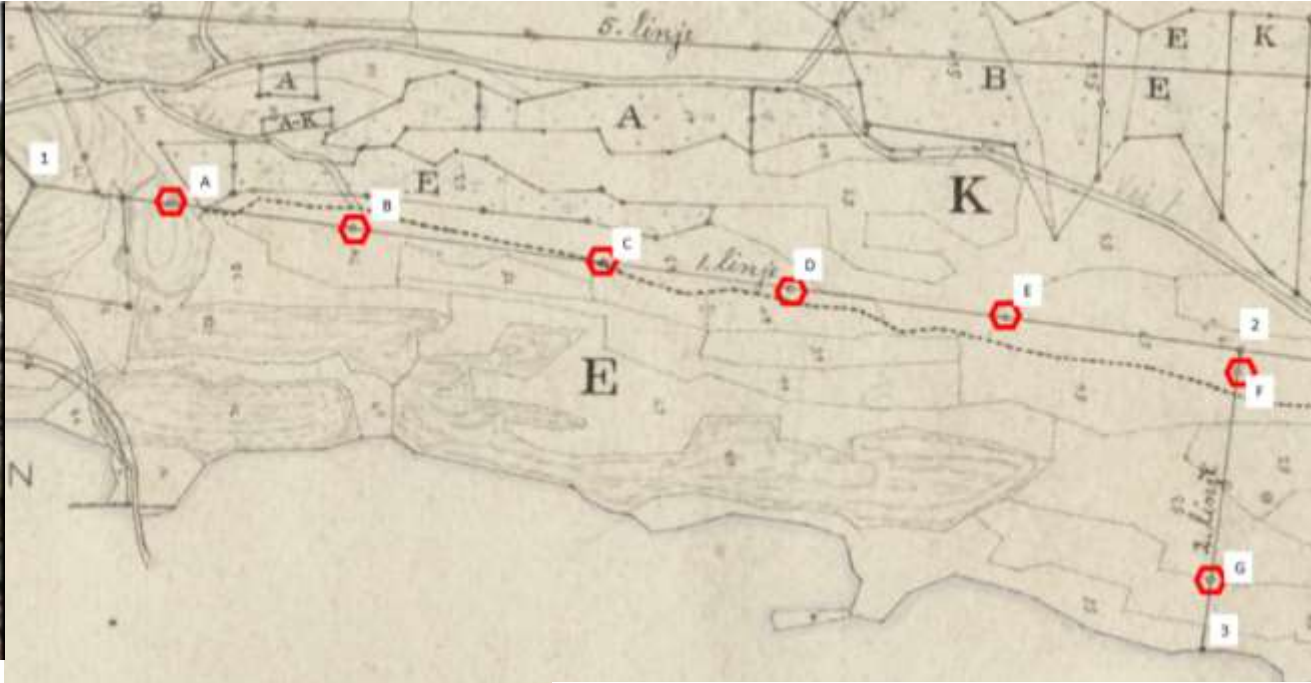
Step 3: Terrain:

Move to the actual area, walk to the position by use of Qfield and look for the boundary markers. They are normally within a distance of 3 – 5 meters.



Source: www.geonorge.no, <https://wcarkiv.domstol.no/wcarkiv/kommunelist.wc?ID>.

Case Alver - results



Source: <https://wcarkiv.domstol.no/wcarkiv/kommunelist.wc?ID>. Photo: L.B.Mjøs

Boundary point	Type of boundary marker	Result
1	Boundary stone	Stone fence erected on position
A	Cross in solid rock	Stone fence erected on position
B	Boundary stone	Uncertain
C	Boundary stone	Not found, big tree at position
D	Boundary stone	Not found
E	Boundary stone	Found
2	Boundary stone	Found
F	Cross in solid rock	Stone on position, brought there by the landowners to mark the cross?
G	Boundary stone	Not found
3	Boundary stone	Found

Case Røst

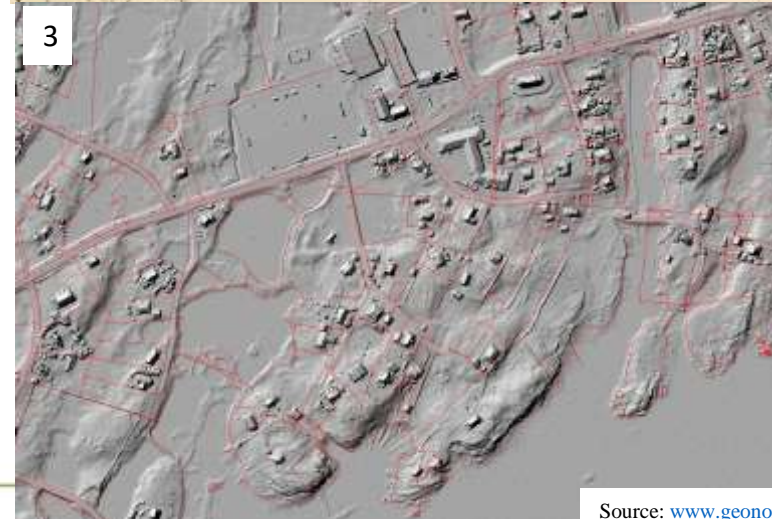
- Field course in cadastral surveying 2020 - 2022
- More the 100 cadastral monuments recovered by using Qfield
- Precise surveying with Catalyst, if needed



Source: <https://warkiv.domstol.no/warkiv/kommunelist.wc?ID> and www.norgebilder.no. Photo: Per Ove Røkke

Case Røst

- Different available public dataset are used
- Note that boundaries and terrain details are not coinciding in the two more recent maps (3 and 4)
- This is caused by poor quality control in digitalisation process



Source: www.geonorge.no, <https://warkiv.domstol.no/warkiv/kommunelist.wc?ID> and www.norgebilder.no

Final remarks and recommendations

- **Fit-For-Purpose tools for updating and correcting the cadastral map are well suited for the situation in Norway**
- **The existing cadastral regulations are complicated and rigid when it comes to correcting and updating the cadastre**
- **A FFPLA approach will clarify the role of the landowner in the process of updating of the cadastral map, and reduce the costs**
- **Provided that relevant material (georeferenced historical maps and imagery combined with available geodata) is made available to landowners or their consultants, QGIS/Qfield will be an efficient tool for improving the cadastre**

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FIG WW 2027 to Stavanger – Norway ??

Welcome to booth 215

