The way forward for 3D geometries in Norway

Results from the Volumgeometry Pre-Project

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06.02.2026

Today:
Commercial derived products

- Volume representation of **buildings**
  - 3 private companies produce similar data sets
- Derived from
  - **The 2.5D Common Geodatabase (FKB)**
  - The National Detailed Elevation Model (NDH)
- Sold to
  - Municipalities (owners of the FKB data!)
  - Other public and private users
- Structured and stored in CityGML
  - **LOD 2.2**

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High level of detail, still some challenges

The Volumegeometry report

- Standards and specifications
- Experiences from other nations
- Commercially produced datasets in Norway
- Experiences and needs in the municipalities
- Data collection and management
- Data from BIM and building permits

- Discussion
- Recommendations

https://kartverket.no/om-kartverket/nyheter/forskning-og-utvikling/2025/november/rapport-om-forprosjekt-volumgeometri-i-norsk-geodataforvalting

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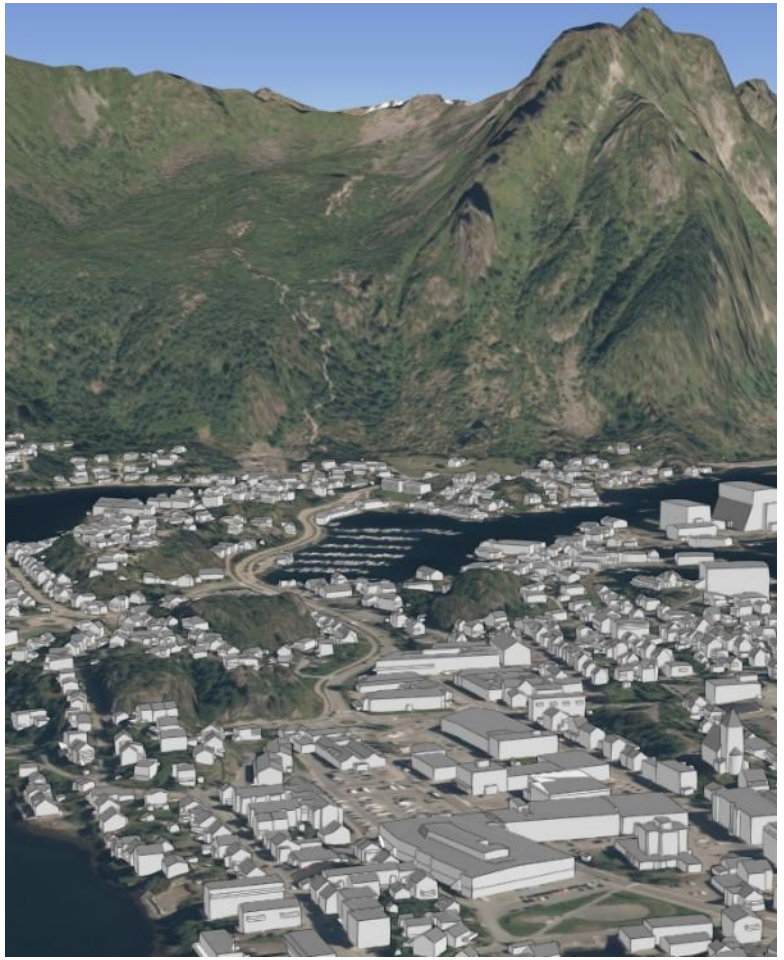
Recommendations (1-6)

- Volume geometries should still be established as a derived representation
- Carry out a test project focusing on correcting typical errors and possible additional registrations
- FKB should be further developed, focusing on data required to derive volume geometry
- An unambiguous use of CityGML should be the basis for datasets with volume geometry
- Possibilities for a public machine-generated dataset with volume geometries should be investigated
- Efforts should be made for a transition to object-based management of spatial data



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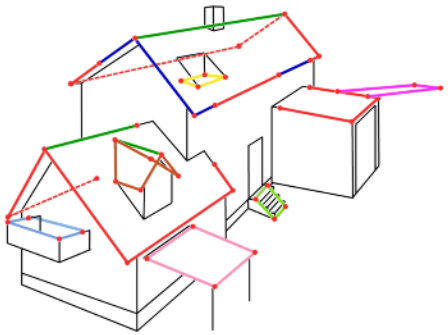
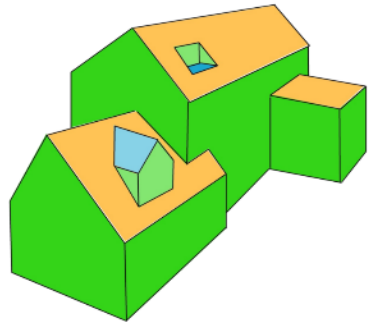
Recommendations (1)

✓ Volume geometries should still be established as a derived representation

- Clear signals from mapping companies on the costs of <u>constructing</u> volume geometries in mapping projects
  - Not cost-effective compared to the current data collection
- Today's 2.5D data largely provides good volume geometries
  - Norway has particularly good data
  - Can be even better with increased focus on 3D
  - New methods for data collection – facades, etc.
- Utilize data from BIM for new buildings





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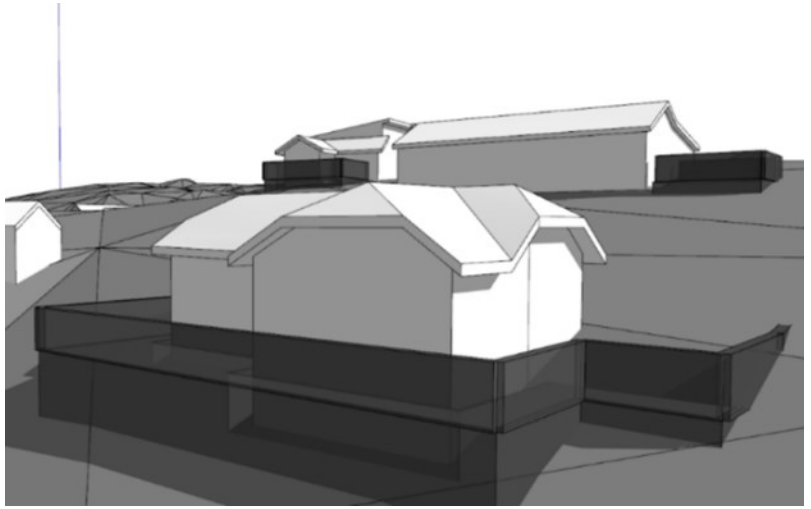
Recommendations(2)

Carry out a test project focusing on correcting typical errors and possible additional registrations

- Additional registrations – more details, chimneys, etc.
- Stricter quality controls
- Focus on 3D as an end product



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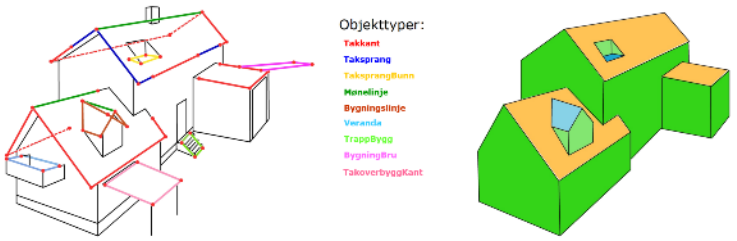
Recommendations (3 and 4)

FKB should be further developed, focusing on data required to derive volume geometry

- Based on experiences from the test project
  - Additional registrations
  - Stricter quality controls
  - Focus on 3D as an end product



An unambiguous use of CityGML should be the basis for datasets with volume geometry

- "Everyone" uses CityGML
- Norwegian guidance document and possible Norwegian profile with extension (ADE) for Norwegian FKB data
- Based on experiences from the test project

CityGML

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Recommendations (5)

Possibilities for a **public** machine-generated dataset with volume geometries should be investigated

- Today's solution with commercial products works well
  - However: A public dataset would give all data owners access
  - Other nations establish public datasets
- Commercial companies are positive about a public dataset
  - They can use it to increase the value further
  - But: Quality must be close to today's commercial dataset
- Costs, benefits, financing, and capacity must be investigated

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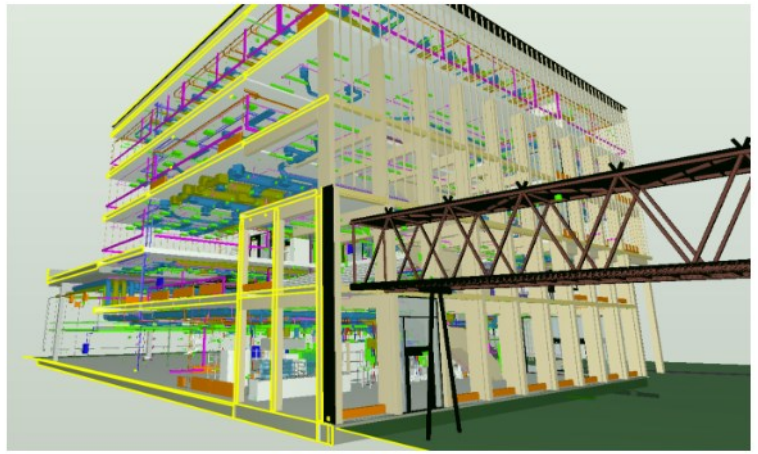
Recommendations(6)

Efforts should be made for a transition to object-based management of spatial data

- Unique and persistent identification
  - Link to other representations – BIM, Overture Maps, etc.
  - For identifying objects that should not be machine-generated
- Many other arguments for this recommendation beyond this project!



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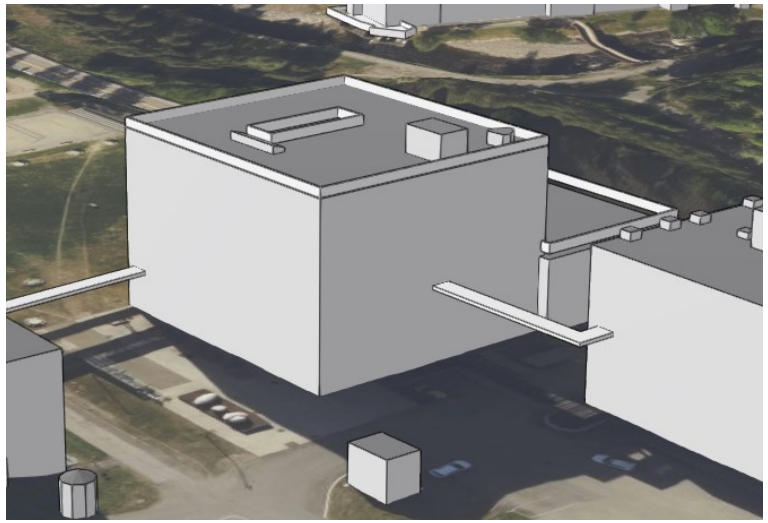

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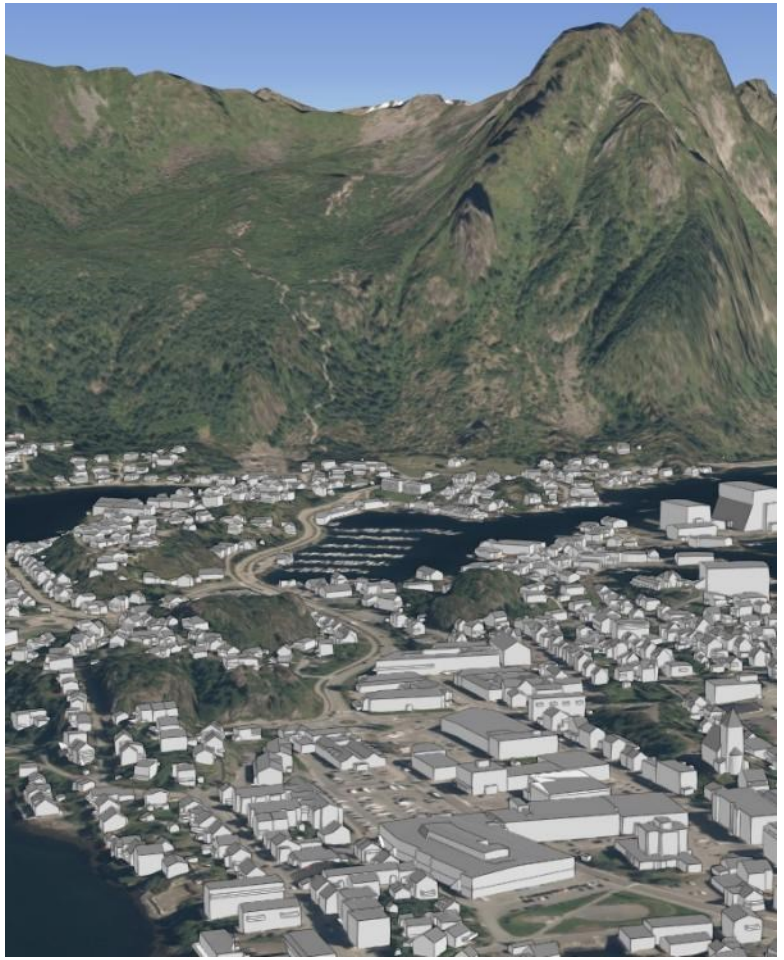

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