The Norwegian cadastre system

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Overview

- The new cadastre law and the authorities
- One of the Norwegian “core-systems”
- Central database - Distributed clients - Web services
- Use-case driven registration and maintenance
- Cadastre unit, buildings and addresses
- Keys, features and update-pages
- Data model examples
- Publicity - web application “www.SeEiendom.no”

- Matrikkelen - Live demonstration
The cadastre history and developing process

- The Norwegian Cadastre system 1980–2006 (GAB)
- New law adopted by the Parliament 2005 (Matrikkelen)
- Developed at Kartverket and private companies
- Massive quality control (manual/automatic)
- Former tabular register and parcel map joined
- Existing data checked and imported from 2007
- All municipalities (431) up and running 1. jan 2010
- Still a lot of improvements and new features planned
New concepts

• The municipality is responsible for surveying and registration (may hire surveyors or project consultants)

New cadastral types:
• Volumes under or above the surface, 3D properties
• Land in common ownership
• Sections may have a parcels

• Better quality control and consistency
• Not possible to divide an unsurveyed lot

• Web based access
• Client – server technology
• Better service and distribution of information
Authorities

The new law will strengthen and clarify roles

• The Ministry of Environment will be responsible ministry

• The Norwegian Mapping and Cadastre Authority will be central cadastral authority. Responsible for the overall administration and supervision of the cadastre and the local cadastral authorities (the municipalities)

• The Municipalities will be local cadastral authorities, responsible for updating the cadastre with respect to new cadastral units, surveys and adjudication processes, buildings, addresses and public impositions.
National digital infrastructure

- five components

Agency for Public Management and eGovernment (Difi) advises the five national building blocks:

• National Enterprise Register (companies)
• National Personal Registry (persons)
• Matrikkel (cadastre)
• Altinn (WEB-based information to/from public agencies)
• Common electronic ID (MinID)
Communication between national services
Updated daily or immediately through Change Log

- National Personal registry
- National Enterprise registry
- Postal district
- Census data
- Land-registry
- WEB services
- Change Log
- Pollution and Heritage
- other Synchronized databases
- Name
- Home address
- Company name
- Business address
- Address
- Zip code
- Statistics
- New cadastral unit
- Owner
One national database

Updated by the municipalities and land registry

- The database is run and maintained by N. Mapping Auth.
- Common API through web services, read end update
- Distribution of geometry through WMS/WFS
- Different user-clients available
- Personal or computer clients
- Possible local copy
- All updates must be committed in the central cadastre-base
The new Cadastre
- Architecture overview

- Cadastre API
- Cadastre application server
- Cadastre database
- Change log API

- Municipal read access
- Public read access
- Reporting client

- External Cadastre clients
- Municipal process system
- Cadastre client

- Other public registers
  - The Land Register
  - The National Population Register
  - The Central Coordinating Register for Legal Entities
  - The Postal code register
  - The Cultural Heritage Register
  - The Ground Pollution Register
  - The Integrated Land Information System

- Municipal process system

- Reporting client

- Cadastre client

- Public read access

- Municipal read access

- External Cadastre clients
Registration – Clients

The commercial clients offers an integrated environment

The client developed by the authority is available for all users

Two commercial update-clients available to the municipalities

Local integrated cadastre and administrators tool

Combines cadastre with other data:

• Surveying
• Land-use
• Planning information
• Detailed maps
• Local infrastructure (pipes, cables, roads)
• Conservation and wildlife
• Project information
• Internal filing systems
The three main tables

Properties – Addresses - Buildings

National address register –
• municipality + street address + dwelling number
• Possible cadastre address
• All residences must have an address

National building register -
• Unique building number
• Must be placed on a legal property
• Building process information

National cadastre –
Municipality + cadastre number
• Units to be divided must have a measured parcel
• New properties must have a parcel
• Must have cadastre number before Land Registration
The cadastral unit
This unit is vital for all other objects in the cadastre
The cadastre unit identification

Unique identification used in the cadastre and the land registry

Municipal number
Cadastral zone number
Parcel number
Leasehold number
Building section

0103 34/2 (basic cadastral number)
1129 2/123/4 (leasehold)
0606 12/3/0/45 (section)
Cadastral unit properties
Quality and feature information on every new/changed object

- **Cadastral unit map**
  - label point
  - calculated area
  - quality indication

- **Parcel**
  - parcel type
  - label point
  - calculated area
  - quality indication

- **Line**
  - length
  - type
  - quality indication

- **Point**
  - coordinates
  - type or monumentation
  - source
  - survey
  - accuracy
Cadastral unit update

Process information stored on every changed object

Object information:
- Municipality and cadastral Number
- Cadastral unit type
- Name and Area
- Date of first registration
- Owner and “enrolled in land registry”
- Addresses and Buildings
- Process information:
  - Date of transaction
  - Type of transaction
  - References
  - Date of registration
  - Signature of registrar
  - List of concerned units
  - List of concerned neighbors
Cadastral unit features
Leasehold with two parcels
Cadastral type: Volume

Cadastral units may be under ground, in water or in the air

• Used when section is not possible
• Must be an approved “building”
• Must be self-contained
• May have several volumes
• May also have ordinary parcels
• Only the projection of the volume is registered
Building – structure data

A building must sit on a parcel of a cadastre unit

- “Main building” – unique national building number 134723
- Extensions – 134723-1, 134723-2 ....
- Process information:
  - Planning permission
  - Construction permission
  - Temporary use permission
  - Ordinary use permission
  - Abandoned
  - Other statuses
- Alternative process for small buildings
- Must have a contact person
- Dwellings must have an address
- Several functions available: split, join, move, delete
Building – feature data

Several mandatory and user-data

- Type of building (use)
- Historic status-data
- Historic applications for modernisation or extensions
- Same set of data for “main building” and each extension
- Floors with different types of areas and number of flats
- List of “units”, that is flats, dwellings, office or other units
- Units have type, areas and pointer to cadastre unit
- Units may have address (unique address for each flat)
- Cultural heritage (links to the Directorate for Cultural Heritage)
- Statistical information (use category)
Building – feature data input
Building – floor and unit information

**Etasje**
- Etasjeplan: H - Hovedetasje
- Etasjenr: 3
- Ant. boenheter: 2

**Bruksareal**
- Til bolig: 262
- Til annet: 
- Sum: 262

**Bruuttoareal**
- Til bolig:
- Til annet:
- Sum:

**Alternativ arealet**
- Alt. areal:
- Alt. areal2:

**Adresse**
- Vegadresse: 
- Matrikkkeladresse:
  - Adressekode: 16255
  - Nordsamisk - davvisämeågiella

**Bruksenhettype**
- Bolig
- Ikke godkjent bolig
- Fritidsbolig
- Annet enn bolig
- Unnumrerert bruksenhet
- Etasjeplan: H - Hovedetasje
- Etasjenr: 4
- Løpenr: 2
- Kjøkkenlengde: 1 - Kjøkken
- Bruksareal: 95
- Antall rom: 3
- Antall bad: 1
- Antall WC: 1

**Adresse**
- Finn: 
- Nr: 1
- Bokstav: 
- Nordsamisk - davvisämeågiella

**Norskmånske**
- Á
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*Kartverket*
Address structure

An address must be put on a cadastre parcel

An address is unique inside a municipality and zip zone

Street address – Karl Johans gate 4, Grensen 23b
Cadastre address – 245/3
  more than one address – sequence number - 245/6-2
Dwelling address - Grensen 23b H0302, 245/6-2 H0201
Dwelling part comes from building units
H/U/L/K = main floors (H), basement(U/K), attic(L)
<03>= third floor
<02>= second flat to the right from floor enterance
Address feature data and functions

Formal process when street-names and address-names are decided

- Short street name (concatenation)
- Address name – place, farm, area or district name
- Short address name (concatenation)
- Link to cadastre unit
- Co-ordinates and verification flag (inside building)
- Digital zone in formation:
  - Election district, zip code, statistical area, school district,
    town sub division and user defined zones

Several processing functions to alter or transform addresses
Massive functions for new addresses or large scale changes
Street names are exported to digital street-maps
Address features - data form
Data for “private” municipal use

May be put on almost all object classes

Additional feature data, references and comments
Data-model overview for the cadastre unit

Documentation on [www.test.matrikkel.no/matrikkel](http://www.test.matrikkel.no/matrikkel)
Data model for address objects

Documentation on www.test.matrikkel.no/matrikkel
Data-model for building objects
Documentation on www.test.matrikkel.no/matrikkel
Publicity

The WEB-application **www.SeEiendom.no** shows non-restricted data from the cadastre base

- Index with place-names, addresses and cadastral numbers
- Shows feature data from cadastral units, buildings, addresses and parcels
# SeEiendom feature information

<table>
<thead>
<tr>
<th>Type</th>
<th>Grunneiendom</th>
<th>Beregnet areal</th>
<th>Beregnet areal fordi det er en eller flere usikre grønser</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kommune</td>
<td>0219 Bærum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gårdsnr</td>
<td>4</td>
<td>Tingfrest</td>
<td>Ja</td>
</tr>
<tr>
<td>Bruksnr</td>
<td>1</td>
<td>Seksjonert</td>
<td>Nei</td>
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<tr>
<td>Festnr</td>
<td></td>
<td>Mar festegnunner</td>
<td>Nei</td>
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<tr>
<td>Sektionsnr</td>
<td></td>
<td>Punktfeste</td>
<td>Nei</td>
</tr>
<tr>
<td>Bruksnavn</td>
<td>Fleskum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Koordinater</td>
<td>585560.06 6642818.54 (32632)</td>
<td></td>
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</table>

### Adresser (3)

<table>
<thead>
<tr>
<th>Adresse</th>
<th>Poststed</th>
<th>Tilleggsnavn</th>
<th>Grunnkrets</th>
<th>Kirkesogn</th>
<th>Postnummerområde</th>
<th>Valgkrets</th>
<th>Koordinater</th>
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</thead>
<tbody>
<tr>
<td>Døllevien 133</td>
<td>1346 Gjettum</td>
<td>Kolsås</td>
<td>Helegud</td>
<td>Gjettum</td>
<td>Evje</td>
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<tr>
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<td>Helegud</td>
<td>Gjettum</td>
<td>Evje</td>
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<tr>
<td>Døllevien 131</td>
<td>1346 Gjettum</td>
<td>Kolsås</td>
<td>Helegud</td>
<td>Gjettum</td>
<td>Evje</td>
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### Bygninger (13)

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<th>Bygningsnummer</th>
<th>Type</th>
<th>Status</th>
<th>Sopruk</th>
<th>Kulturninne</th>
<th>Næringsgruppe</th>
<th>Bygningsendring</th>
</tr>
</thead>
<tbody>
<tr>
<td>16143075</td>
<td>113 - Våningshus</td>
<td>Tatt i bruk</td>
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<td>Nei</td>
<td>Bolig</td>
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<td>16143030</td>
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<td>17370145</td>
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<td>Nei</td>
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<td>17370251</td>
<td>242 - hus for duvlandbr lager/silo</td>
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<td>Nei</td>
<td>Jordbruk, skogbruk og fiske</td>
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<tr>
<td>17370206</td>
<td>249 - Annen landbruksbygning</td>
<td>Tatt i bruk</td>
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<td>Nei</td>
<td>Bolig</td>
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<tr>
<td>17370294</td>
<td>101 - Garasjehus annoks til bolig</td>
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<td>Bolig</td>
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<td>181 - Garasjehus annoks til bolig</td>
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<tr>
<td>17370324</td>
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<td>Bolig</td>
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<tr>
<td>17371037</td>
<td>172 - Skogs- og utmarkskeie gamma</td>
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### Teiger (1)

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<tr>
<th>Type</th>
<th>Koordinater</th>
<th>Teigareal</th>
<th>Merknad</th>
<th>Hovedteig</th>
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<tr>
<td>Eiendomteig</td>
<td>585860.08 6642818.54 (32632)</td>
<td>&lt;04 258,1</td>
<td>Fiktive grenser</td>
<td>Ja</td>
</tr>
</tbody>
</table>
Thank you!