

Cadastral in a digital world - Nordic and Global Perspectives

FIG Commission 7 Annual Meeting and International Seminar
24 - 28 September 2018, Bergen, Norway, Europe



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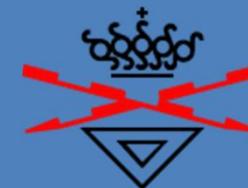


Session 3 – Nordic Perspectives

”The Danish Model”

25th of September 2018

By Torben Juulsager



Den danske Landinspektørforening

”The Danish Model” – Cadastral System

1. Danish societal framework conditions
2. Concept of the Danish Cadastre
3. The cadastral process – legal framework and management
4. Professional requirements – the licensed surveyors
5. Business requirements – private practice
6. Summary



Private Property

- The Danish society is a social democracy based on a capitalist form of society with private ownership
- Property is inviolable – protected by Constitution:

Constitutional Act § 73, 1: *“The right of property shall be inviolable. No person shall be ordered to surrender his property except when required in the public interest. It shall be done only as provided by statute and against full compensation.”*

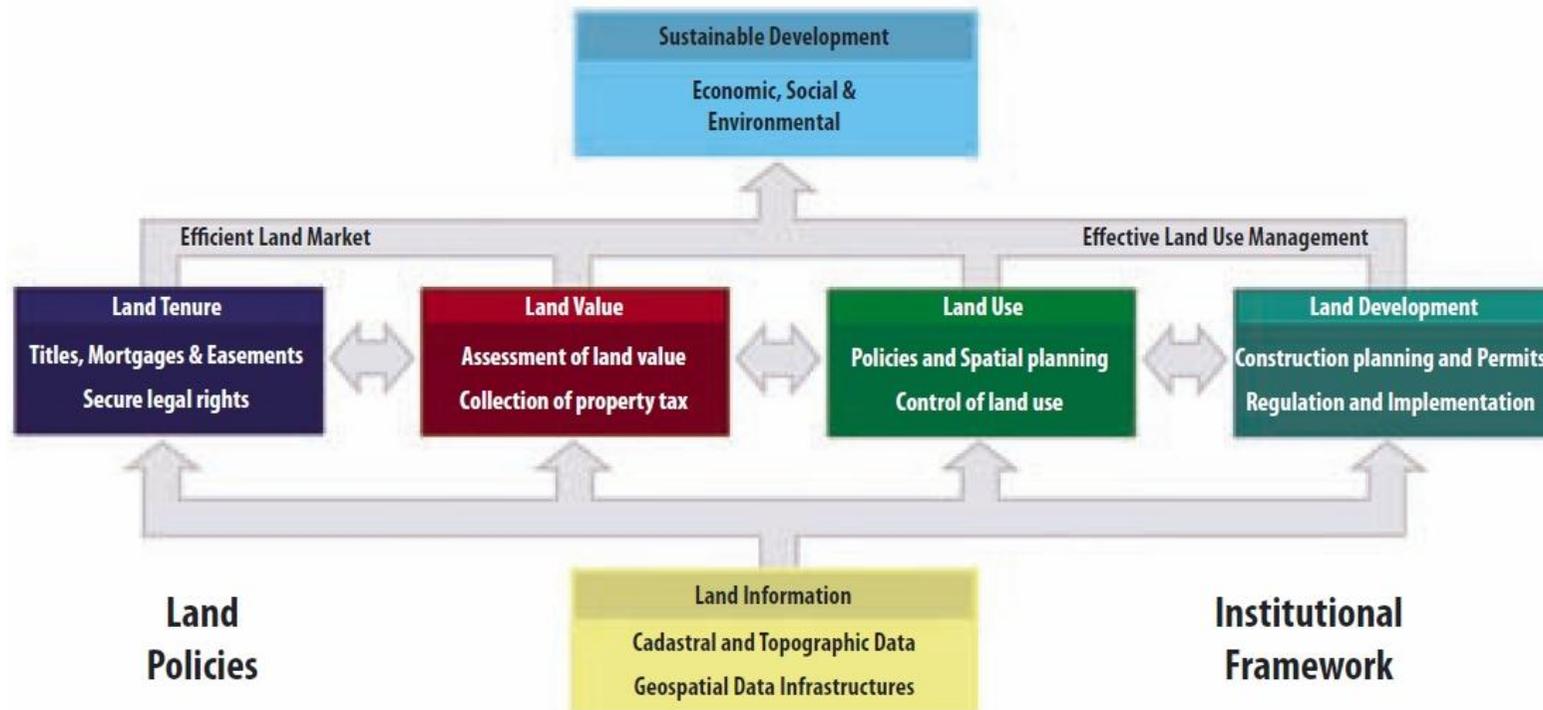
- Public **control** and **restrictions** to manage the balance between public and private interests
- Real estate/private property is the **basis for significant national and private economies**



Land Administration System



- A **digital multipurpose cadastral system** is a central tool in Danish Land Management and sustainable development – supporting interrelated functions of land tenure, value, use and development



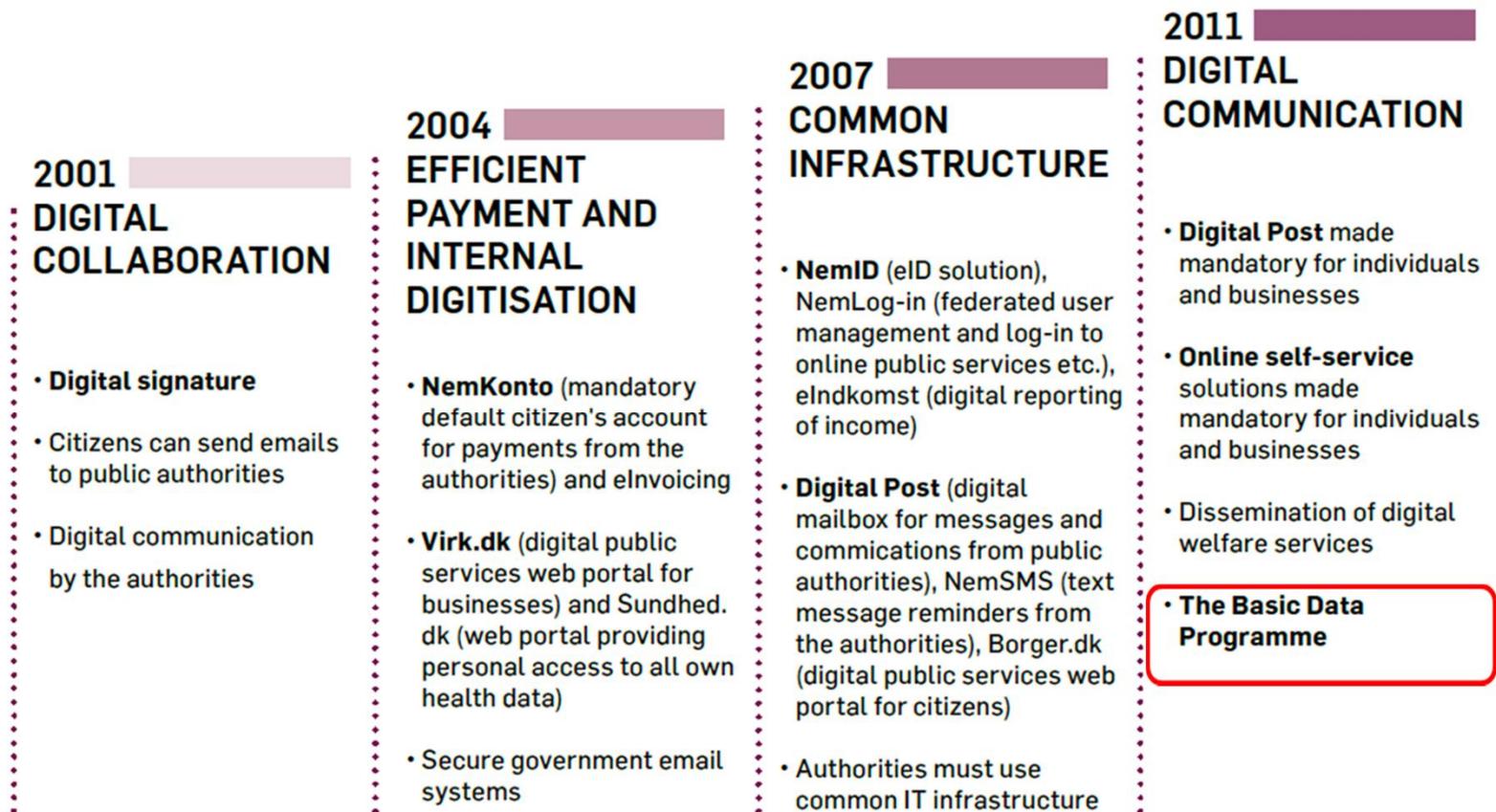
A Global land administration perspective (Enemark 2004)



Common Public Digitization Strategies – since 2001



- Digitization for a more **efficient** and **sustainable** society - eGovernance



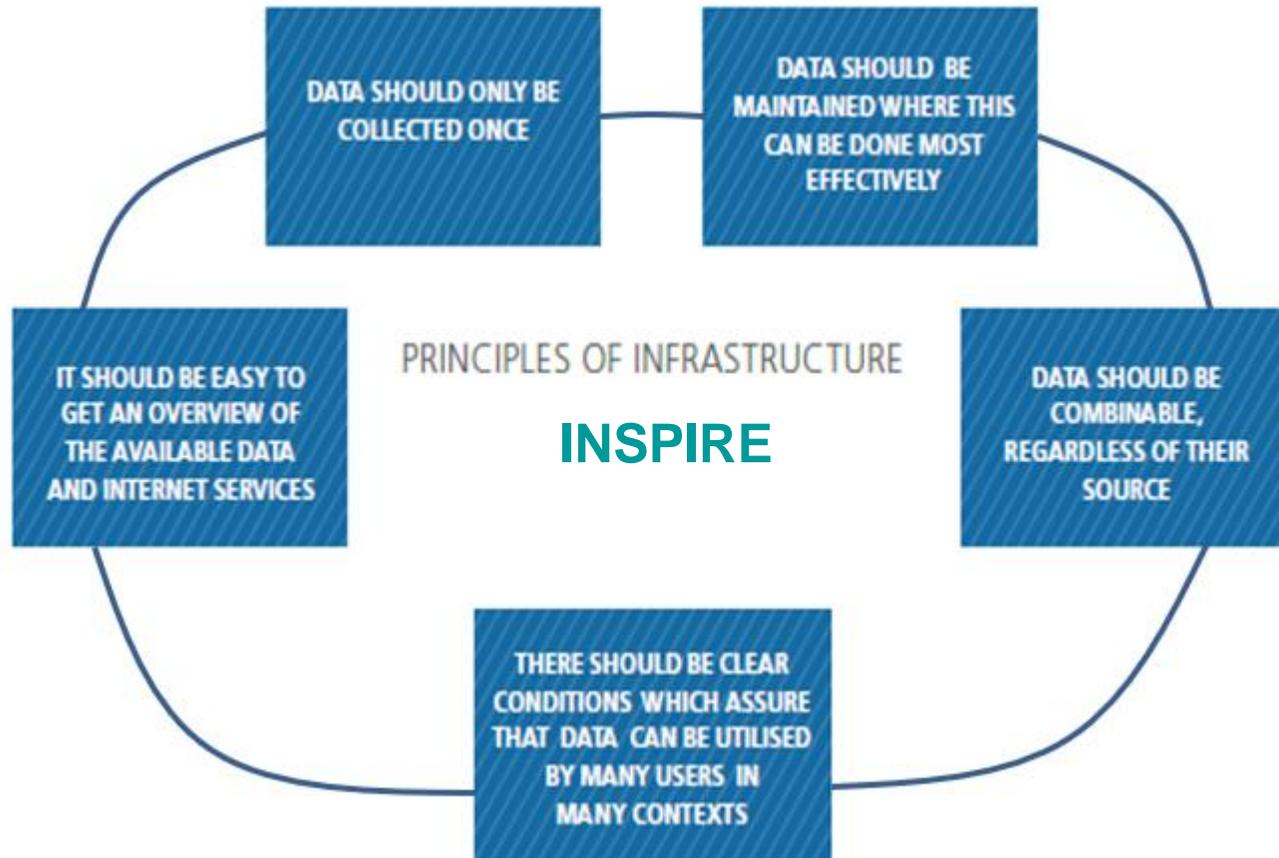
Basic Data Programme



- **Good Basic data** to accelerate the adoption on and optimizing digital solutions in the public and private sector
- A **shared digital infrastructure** that is safe and sufficiently robust to meet future requirements
- Effective and reliable **sharing of core data** for and between all authorities
- **No redundant data** in the system. Data/information is collected once by the responsible authority, shared and downloaded at the source
- **Easy overview** of available data and internet services
- **Free access to basic data for everyone 01.01.2013 – for both private and commercial use**

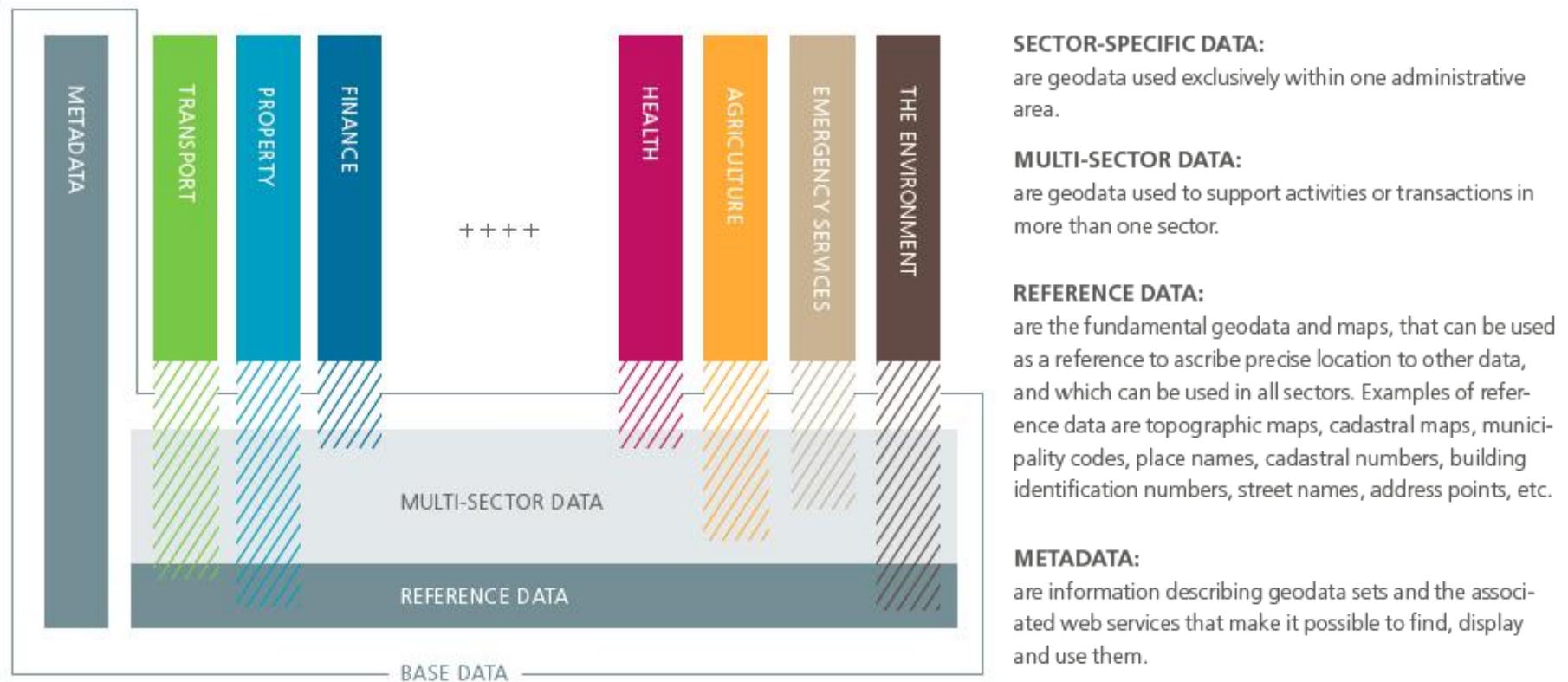


Principles of Spatial Data Infrastructure



The Danish Spatial Data Infrastructure model

- Cadastral data are recognized as authoritative basic data (reference data)
 - basic data are for free use for authorities and the public

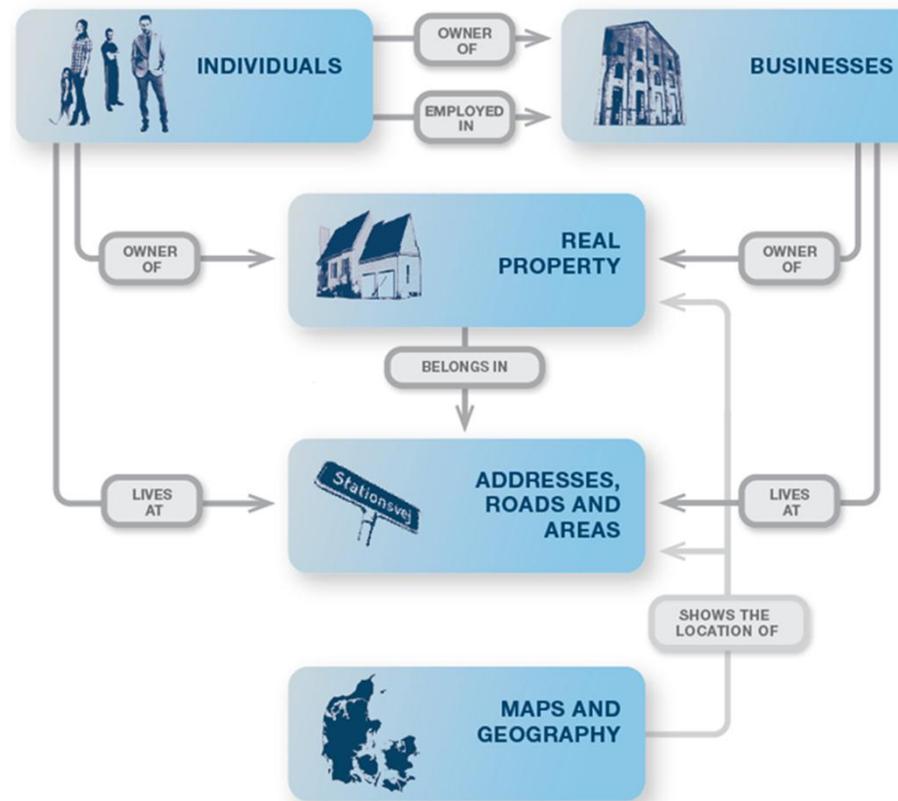


The Danish spatial infrastructure model (The Geodata Agency 2011)



Basic Data in brief

- Basic data is the core information authorities use in day-to-day processing to carry out its tasks



The Danish Cadastre – part of society's economic infrastructure

- **Basic purpose:** System to ensure a reliable and trustworthy formation, registration and change of property and access to up-to-date authoritative proprietary basic data
- **Welfare society's invisible backbone:** The totality of legislation, players, administration, management, records, systems and elements related to real estate, which ensures a reliable foundation for
 - Location
 - Possession
 - Use and settlement
 - Protection and Conservation
 - Taxation
 - Mortgages



German system / model

- The Danish cadastral system is organized as a **title system**
 - Titles are registered in the **Land Register** based on cadastral identification
 - Land parcels are registered uniquely in the **Cadastre** based on cadastral measurements identifying the position of the property boundaries

The Land Register

- A digital register that includes basic data about **rights and burdens in property** based on cadastral identification
 - **Title information** – Deeds, purchase price etc.
 - **Easements** – Public and private restrictions
 - **Mortgages** – Principal (original size of loan) and mortgagee



The Cadastre

- A digital multipurpose property register – Two-part role legal and administrative
 - Authoritative basic data register
 - Reference data for spatial eGovernance

Three main elements in the cadastre

- Cadastral Register – Identifies the land parcels by digital information on cadastral numbers, area, various statutory registrations
- Cadastral Maps – Identifies the land parcels geographically in a digital index map in UTM/ETR(89) ref-system containing property boundaries, cadastral number private roads and other administrative borders
- Cadastral Archive – Identifies the position of the property boundaries by measurements (measurement sheets), agreements on boundary determination, permissions, other documents



Public-private cooperation model – two shared responsibility

- **The Danish Geodata Agency:** State authority for registration of real property and overall responsibility for the cadastral system – legislation, data model, control, approval and registration of property changes in the cadaster
- **Private surveyors:** Licensed surveyors in private practice performs cadastral work – preparing and submitting property formation and changes for approval and registration in the cadaster
- First appointed surveyors where given license to do cadastral work in 1768 = “250 years in service of society” (1768-2018)



Sustainable considerations for regulation



- **Security** – As a safe basis for land administration, the information in the cadastre must be updated and credible
- **Quality** – Cadastral work must be performed with the required quality
- **Legality** – Cadastral changes and the intended land use must comply with other legislation
- **Legal certainty** – By execution of cadastral work, legal certainty for third parties must be maintained
- **Independence** – Cadastral work must be carried out independent of economic interests in involved properties



The Parcelling Act

- **National Cadastral Authority** – The Geodata Agency shall keep and maintain the land register as a register of all properties and cadastral map with associated cadastral measurements of property boundaries
- **Monopoly** – Cadastral work may only be performed by licensed surveyors in private practice and their assistants who are appointed (given license)
- **Cadastral work - legal definition** – Includes the determination of boundaries and preparation of the documents necessary for registration of property and changes in the cadaster
- **Subdivision requirements** – There is only allowed transfer or mortgaging of an area if it presents a real estate property. Change of ownership of a parcel of land that is part of a real estate property may be effected under the rules on land transfer.
- **Consideration for “third parties”** – Cadastral changes must be done under respect of neighbors, rightsholders, legislation and public restrictions



The Parcelling Act – boundary determination

- **Process** – Legal basis is the cadastral information but must be compared with physical conditions (fences, hedges ...)
- **IF discrepancies** – The surveyor must involve landowners to clarify the reason before the boundary is determined
- **Adverse possession** – 20 years of uninterrupted possession leads to a proscriptive right - legal ownership
- **Boundary disputes** – Formal process conducted by licensed surveyors as a “first court of justice”
 - The landowners must apply to a licensed surveyor, acting as a judge
 - The licensed surveyor seeks the question raised by preliminary investigations and a convened meeting with the parties on the spot
 - The licensed surveyor determines the property boundary and tries to achieve an agreement
 - If agreement can not be reached – the case goes to court



Practicing Chartered Surveyors Act

- **Sole purpose** – A private surveying company must have the sole purpose of performing surveying and cadastral work
- **Impartiality requirements** – Cadastral work must be performed by objective licensed surveyors in private practice without any material or any kind of interests in the property and in the outcome of the case
- **Personal responsibility** – A licensed surveyor in private practice is personally liable, together with the company, for any claims arising in consequence of assistance provided by the surveyor to a client
- **Ownership** – In a private surveying company, at least 51 per cent of the company capital and voting rights must be owned by licensed surveyors
- **Management** – In a private surveying company, the majority of the members of the board of directors and the management board must be licensed surveyors



Main phases in the cadastral proces – in brief

- **Requisition** – Consultancy and preparation
- **Preparation** – Data collection, prior consultation, advice, dialogue with other advisers etc.
- **Boundary determination** – Measurements, marking and registration
- **Owner involvement** – Owner and neighbor declaration = conflict prevention
- **Clarification and consulting authorities** – Advising, permission and control
- **Clarification and consulting rightsholders** – Ownership, mortgage and easement conditions
- **Case preparation** – Application and registration documents
- **Case transmission** – Digital application
- **Approval and registration** of cadastral changes



Parcelling/subdivision and land transfer – documentation

- Registration documents
 - Schematically description
 - Map of changes – based on a copy of the cadastral map
 - Measurement sheet
- Owner declarations
 - Boundaries, use and road access
- Authority approvals
 - State and municipal administrative areas
- Surveyor declarations
 - Boundaries, agricultural law, nature conservation law, road legislation, mortgages



The cadastral process – legal framework and management

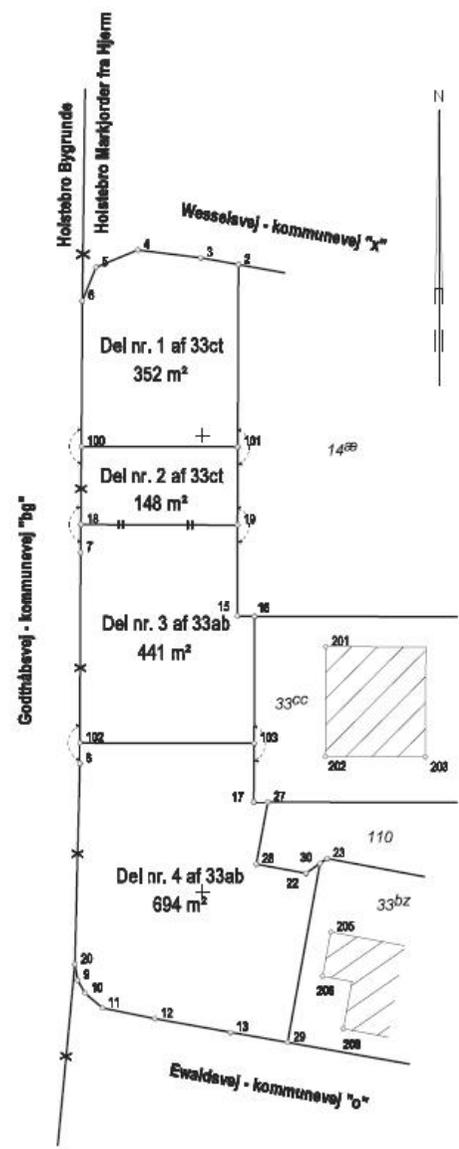
Opmålingsdistrikt		Leica SmartNet GPS	
200	71	Måleblad	I følge lovbekendtgørelse nr. 494 af 12.6.2003 er den, som flytter, borttager, beskadiger eller ødelægger et kendetegnet skelmærke eller et varigt mærke for opmåling, pligtig til at betale udgifterne ved dets genanbringelse, og kan idømmes bøde, jf. § 48.

Nr	Y	X	BEMERKNING
2	216868,69	318246,01	Gl. Jærnrer m. skeltegn
3	216869,43	318250,17	Gl. Jærnrer m. skeltegn
4	216870,29	318257,12	Gl. Jærnrer m. skeltegn
5	216868,40	318261,72	Gl. Jærnrer m. skeltegn
6	216864,72	318263,22	Jærnrer/gl.mål
7	216837,20	318263,42	Gl. Jærnrer m. skeltegn
8	216814,06	318263,50	Gl. Jærnrer m. skeltegn
9	216790,41	318263,73	Jærnrer/gl.mål
10	216789,00	318262,92	Gl. Jærnrer m. skeltegn
11	216787,38	318261,00	Gl. Jærnrer m. skeltegn
12	216786,21	318255,21	Jærnrer/gl.mål
13	216784,73	318246,89	Gl. Jærnrer m. skeltegn
15	216830,15	318246,13	Jærnrer/gl.mål
16	216830,13	318244,23	Gl. Jærnrer m. skeltegn
17	216809,86	318244,31	Gl. Jærnrer m. skeltegn
18	216840,27	318263,40	Gl. mål
19	216840,22	318246,10	Gl. mål
20	216792,15	318264,05	Jærnrer/gl.mål
22	216802,08	318238,56	Jærnrer/gl.mål
23	216803,69	318236,23	Jærnrer/gl.mål
27	216809,86	318242,78	Jærnrer/gl.mål
28	216803,09	318244,05	Jærnrer/gl.mål
29	216783,62	318240,60	Jærnrer/gl.mål
30	216803,14	318237,02	Jærnrer/gl.mål
100	216848,81	318263,34	Jærnrer med skaltegn
101	216848,76	318246,07	Jærnrer med skaltegn
102	216816,32	318263,49	Jærnrer med skaltegn
103	216816,26	318244,29	Jærnrer med skaltegn
201	216826,82	318236,38	Bygningshjørne
202	216814,83	318236,42	Bygningshjørne
203	216814,80	318225,41	Bygningshjørne
205	216795,67	318235,84	Bygningshjørne
206	216790,85	318236,73	Bygningshjørne
208	216785,12	318234,44	Bygningshjørne

+

X

X
+ Y=210000



Matr. nr. 33ab, 33ct	Geodatastyrelsen © Copyright
Ejerlav: Holstebro Markjorder fra Hjerm	
Kommune: Holstebro Kommune	
Opmålt i: april 2016	Torben Juulsager
Målforshold: 1: 500	Landinspektør
Landinspektør j.nr.: 1600545	Dato: 6. april 2016



Nupark 51 7500 Holstebro
 TLF 9742 0877 FAX 7012 1014
 holstebro@geopartner.dk

Signaturforklaring

----- : Blindt skel, der ikke bortfalder

Mål eller koordinater, der kun er til brug ved indlægningen på matrikelkortet, er angivet med klamme.

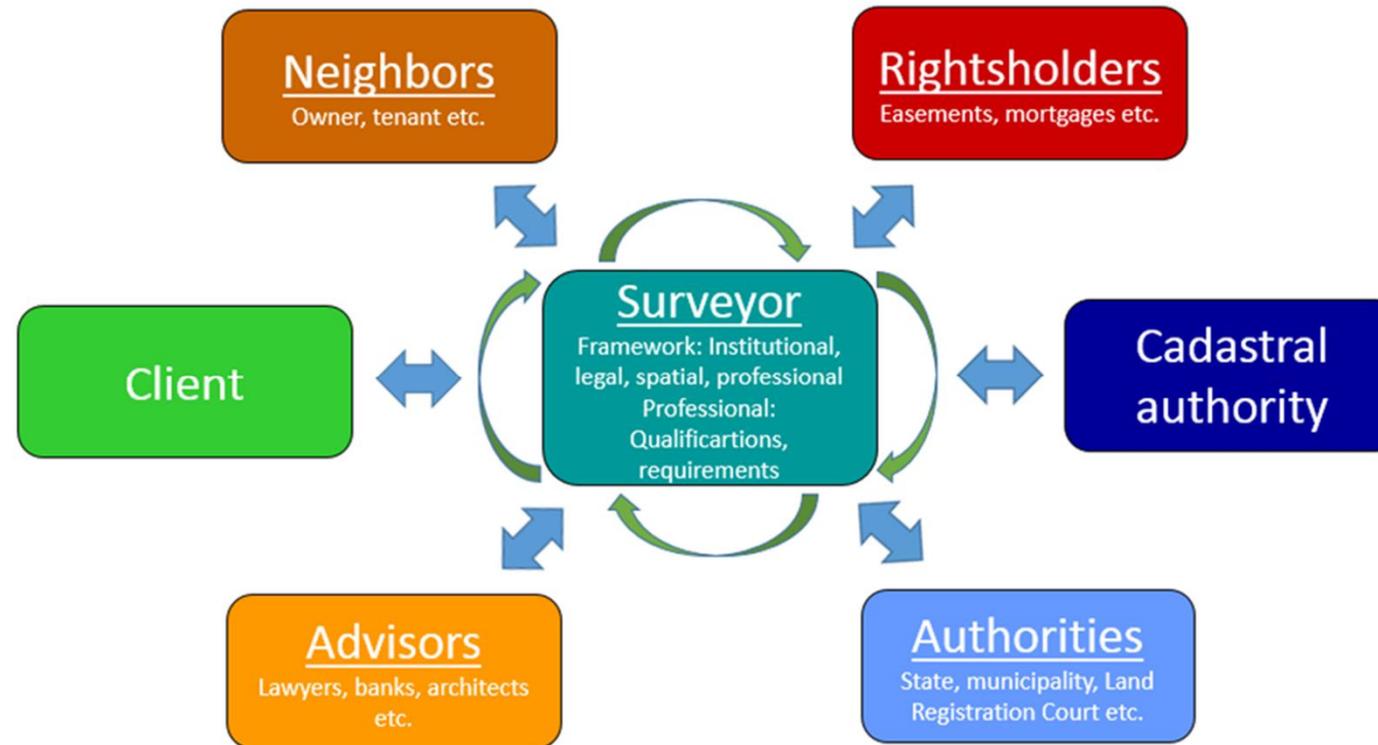
Mål eller koordinater, der er overført fra en sag, der tidligere er indsendt til Geodatastyrelsen, er mærket med GL.

Andre signaturer:
 Se DS 104 og 198

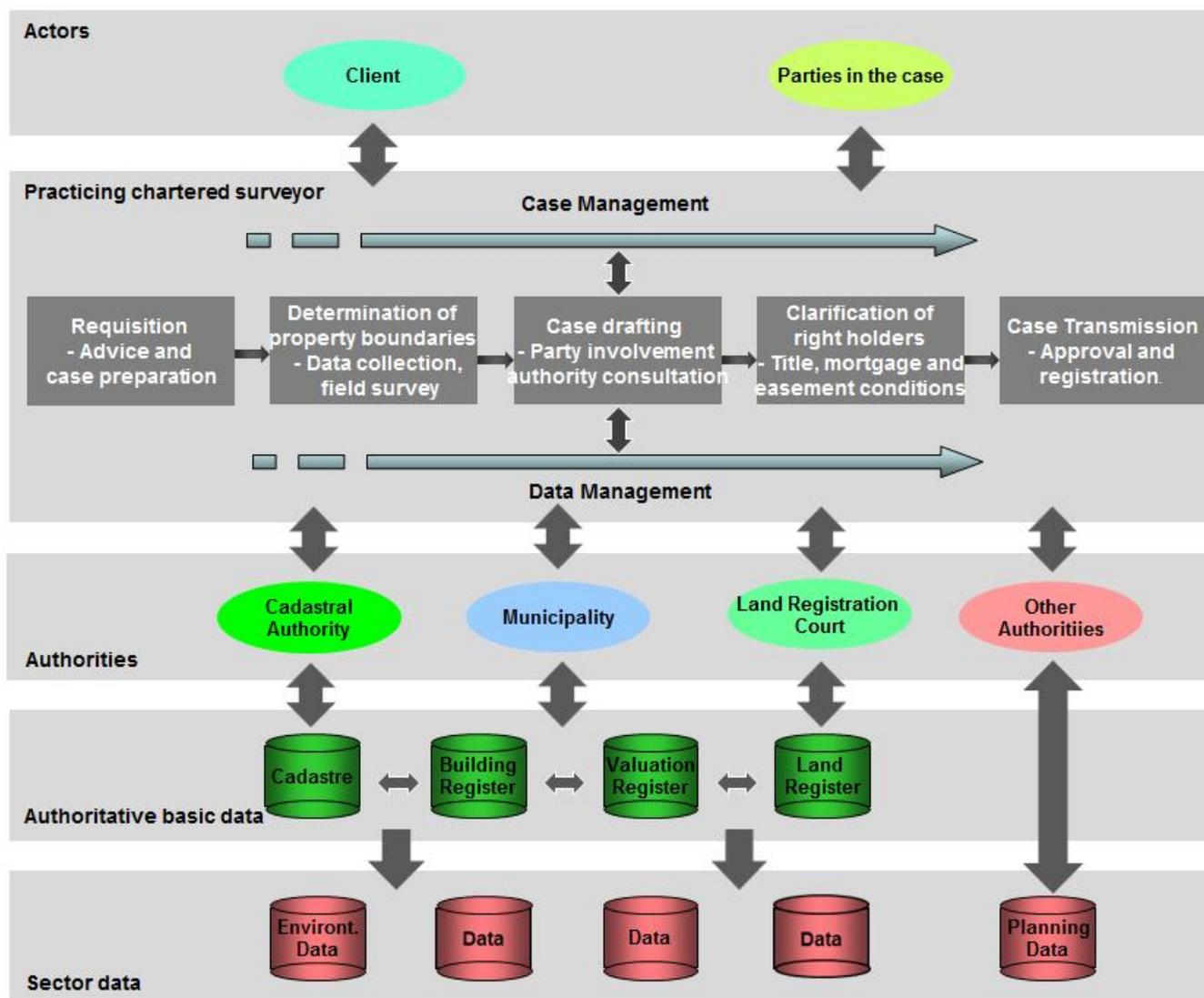
The role of the licensed surveyor – driver and mediator



- Defending property rights and carrying out property changes on the spot
- Ensuring legality and the rights acquired in the properties

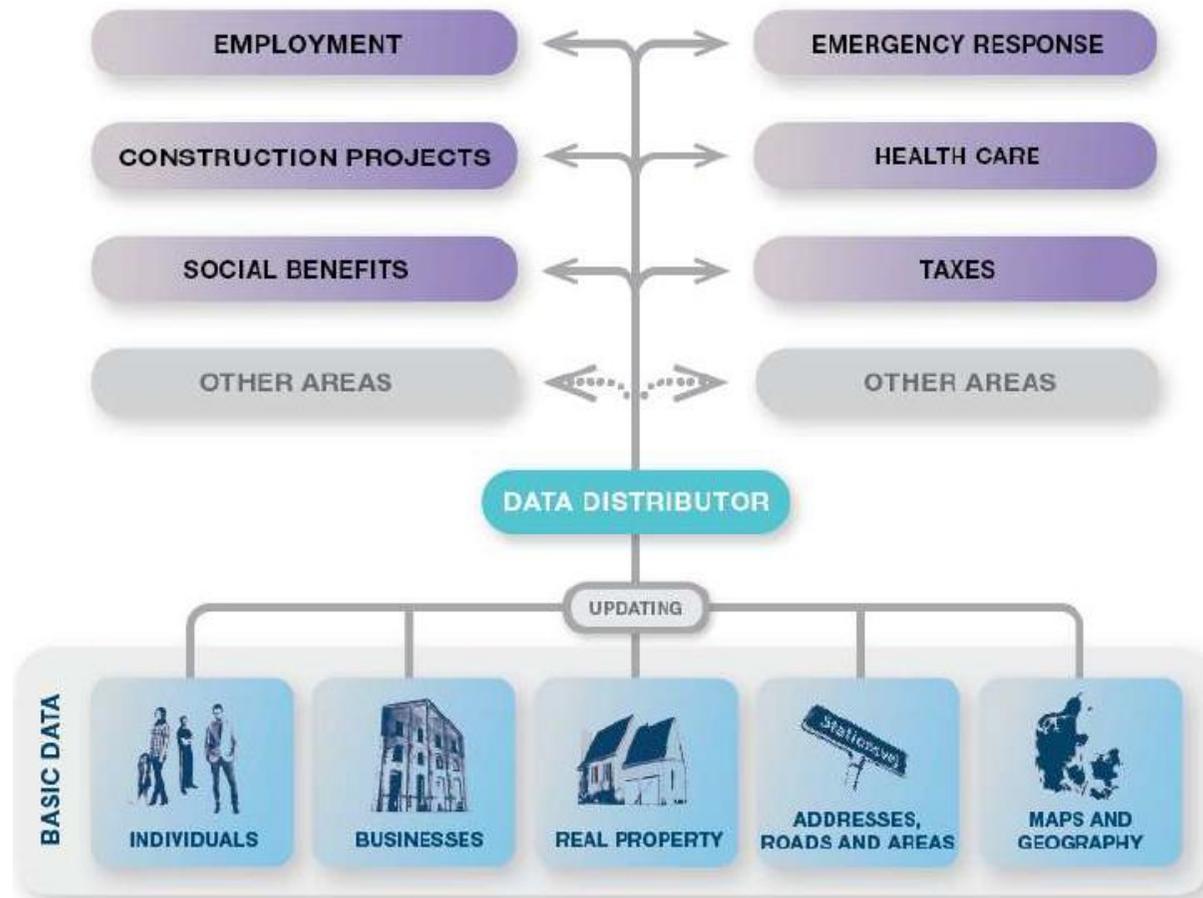


The cadastral process – digital perspectives



Distribution of basic data

- Establishing of a common distribution solution **The Data Distributor**

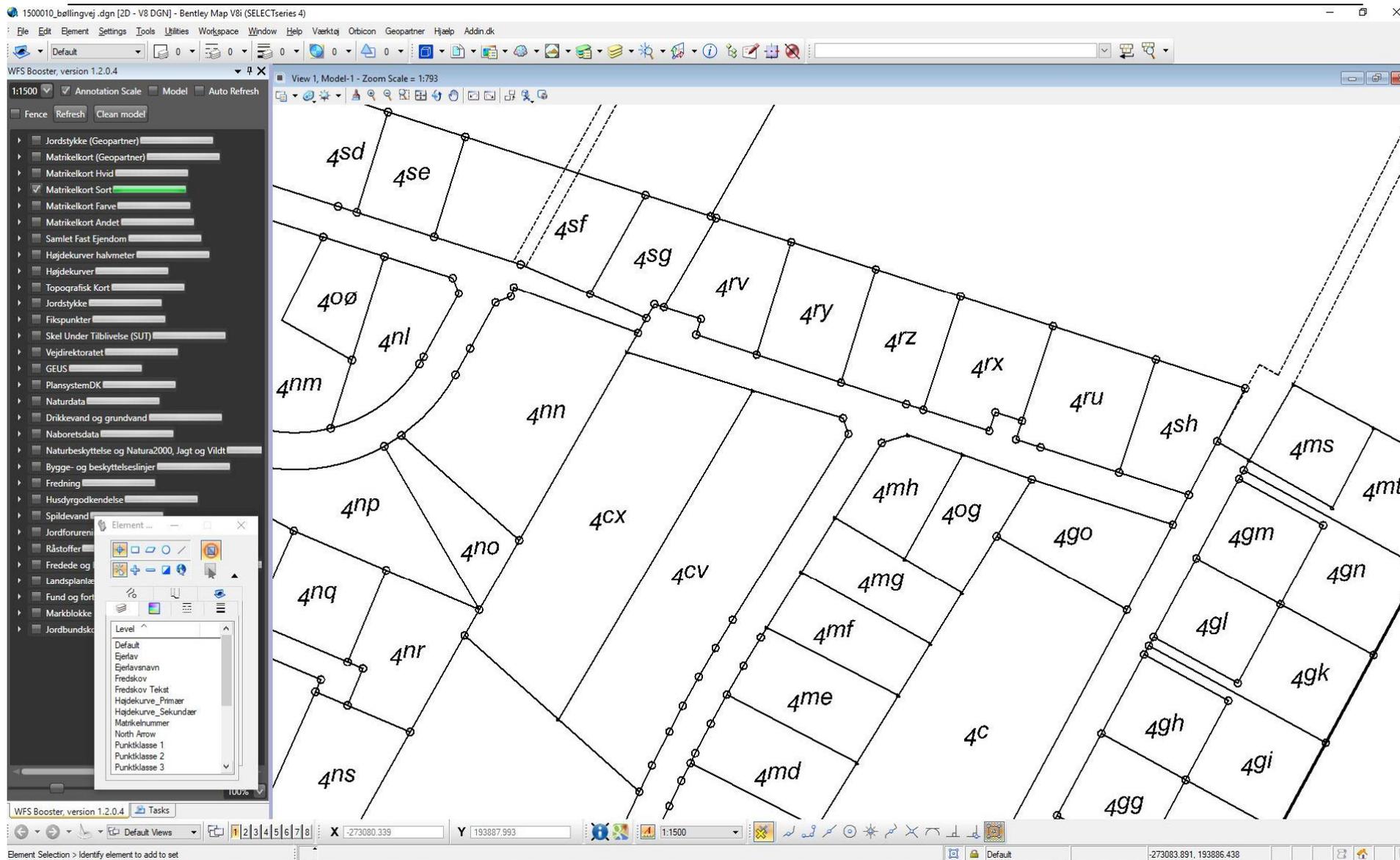


The Digital Cadastral Map

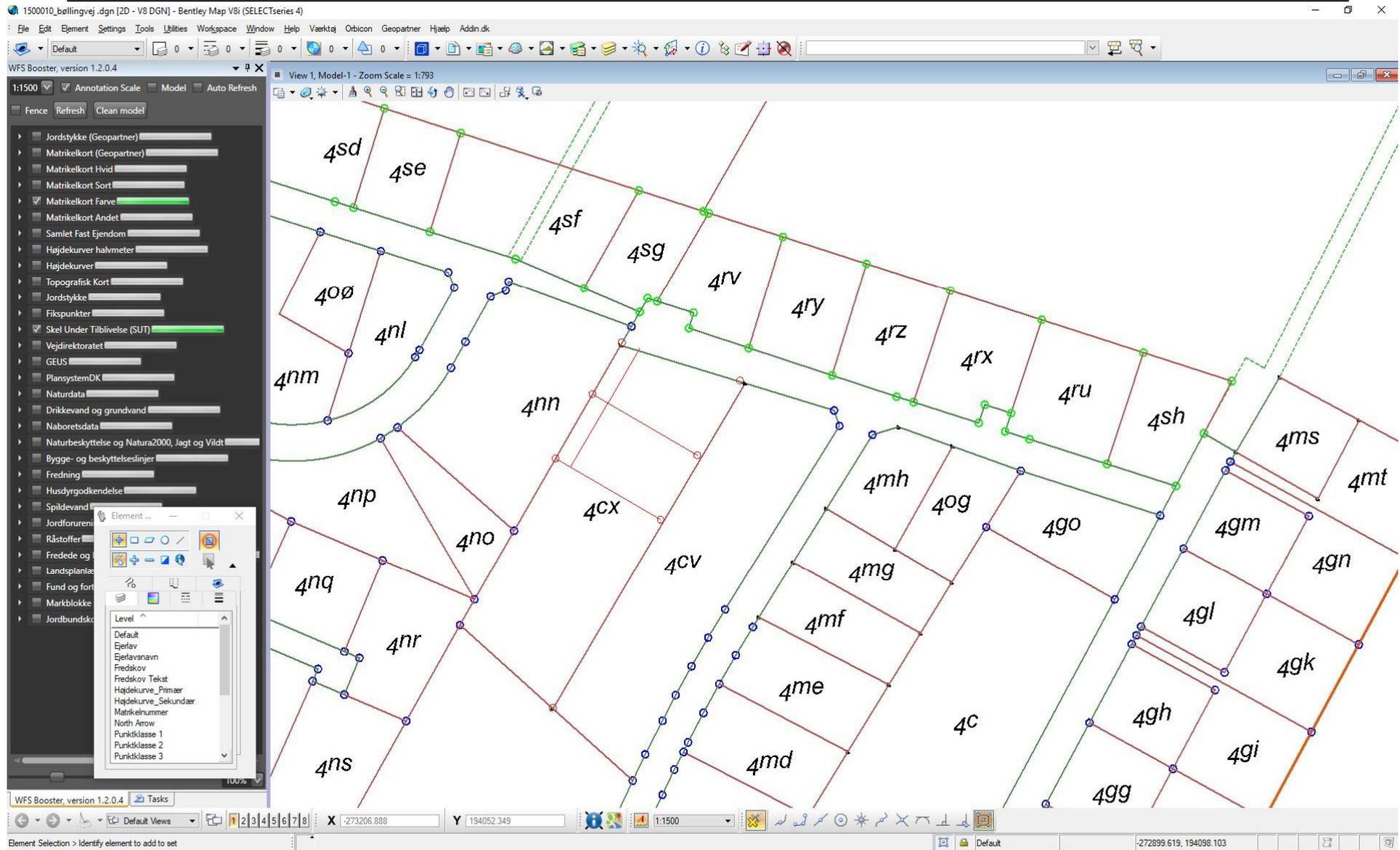
- Established in 1993 by digitizing of old analogue cadastral maps
- Connected to the national grid
- Dynamic updated
- Metadata
- Includes information about the quality of the boundary points
 - **quality class 1** = coordinates based on measurements
 - **quality class 2** = coordinates based on constructions
 - **quality class 3** = digitized boundary point



The cadastral process – digital perspectives



The cadastral process – digital perspectives



Professional qualifications and requirements



- **Education** – 5 years on University level consisting of a bachelor degree (3) and master degree (2) in surveying and cadastral science
- **Professional practice** – 3 Years of relevant cadastral practice
- **Appointment** – Awarded according to State law based on approval of professional skills, by the Danish Geodata Agency – based on documentation of minimum three years relevant cadastral/surveying work in practice (license to perform cadastral work)
- **Continuing Professional Development** – Not compulsory but de facto. Recommendation 37 hours per year – professional training, knowledge sharing and presentation/education



Insurance and ethics

- **Obligatory insurance** – A professional party insurance defined by the Danish Geodata Agency – State Authority
- **Ethical codes** – A guideline for the surveyor’s work and The CLGE Code of Conduct – ratified by most European Countries



Disciplinary requirements

- **Board of appeal** – A penalty board under State authorities independent from the surveyor’s organization, to settle complaints about the surveyor's work. Have the power to periodically or permanently revoke the appointment to provide cadastral work (3 c/y)
- **Disciplinary board** – A committee defined by the surveyor’s association providing advisory opinions and guidelines on professional matters (1 c/y)
- **Fees appeal board** – A committee defined by the surveyor’s association providing advisory opinions and guidelines on matters dealing with complaints about remuneration (10 c/y)





Characteristics

- Authoritative basic data
- Integrated digital Public – Private Collaboration Model
- Third party legal certainty – Owners, rightsholders, etc.
- Ensures that property changes are in accordance with the law and public regulations
- Skills requirements – Education and practical experience (appointment)
- Impartiality – No significant interest in affected properties

Advantages

- Conflict prevention process
- Credible and transparent process / system

Benefits

- Security in property transactions and property management
- A responsible and innovative professional profession
- Cost optimization – Process and data



But first of all the **Danish Cadastral System supports UN SDG**

- 1.4 by 2030 ensure that all men and women, particularly the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership, and control over land and other forms of property, inheritance, natural resources, appropriate new technology, and financial services including microfinance



Thank You for Your attention





GOAL 1

END POVERTY IN ALL ITS FORMS EVERYWHERE

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 2

END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

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GOAL 3

ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 4

ENSURE INCLUSIVE AND EQUITABLE QUALITY EDUCATION AND PROMOTE LIFELONG LEARNING OPPORTUNITIES FOR ALL

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

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GOAL 5

ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 6

ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 7

ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 8

PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL

SUSTAINABLE DEVELOPMENT GOALS
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GOAL 9

BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION

SUSTAINABLE DEVELOPMENT GOALS
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all

GOAL 10

REDUCE INEQUALITY WITHIN AND AMONG COUNTRIES

SUSTAINABLE DEVELOPMENT GOALS
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about

people

GOAL 11

MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

SUSTAINABLE DEVELOPMENT GOALS
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GOAL 12

ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 13

TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS*

*Acknowledging that the United Nations Framework Convention on Climate Change is the primary international instrument for addressing the global response to climate change

SUSTAINABLE DEVELOPMENT GOALS
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GOAL 14

CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 15

PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS

SUSTAINABLE DEVELOPMENT GOALS
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GOAL 16

PROMOTE PEACEFUL AND INCLUSIVE SOCIETIES FOR SUSTAINABLE DEVELOPMENT, PROVIDE ACCESS TO JUSTICE FOR ALL AND BUILD EFFECTIVE, ACCOUNTABLE AND INCLUSIVE INSTITUTIONS AT ALL LEVELS

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

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GOAL 17

STRENGTHEN THE MEANS OF IMPLEMENTATION AND REVITALIZE THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT

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