Danish Basic Data

- Creation of property data between authorities
- Distribution and use of property data

Senior adviser Jørgen Skrubbeltrang
Data officer Simon Reimers
November 4, 2025

Danish Geodata Agency

Danish Geodata Agency

Agenda

1) Property data as part of the basic data program, Jørgen

2) Data quality - ongoing process and work, Simon

3) Use of property data, Jørgen

4) Matriklen.dk “Cadastre.dk”, Simon

5) Questions, roundup and discussion

Property data as part of the basic data program

Jørgen Skrubbeltrang

Danish Geodata Agency

Background

Denmark's Open Property Data Initiative 2002

Danish Government approved free access to central and local property data

Registers included

- Cadastre – data from register
- Building and dwelling register
- Municipal Property Register (ESR)
- National Register of Real Property Valuation

OIS - Data Warehouse

- Central platform for public access to property data
- Available to both public and private users

Impact

- Sparked innovation among private entrepreneurs
- Enabled development of IT solutions benefiting public and private sectors

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THE eGOVERNMENT STRATEGY 2011-2015

GOOD BASIC DATA FOR EVERYONE – A DRIVER FOR GROWTH AND EFFICIENCY

THE DANISH GOVERNMENT / LOCAL GOVERNMENT DENMARK
OCTOBER 2012

Background

Danish eGovernment Strategy 2011–2015 - a real property data reform

Strategic Focus

- Key initiative: **“Shared basic data for all authorities”**
- Real property data targeted for reuse: buildings and addresses
- Goal: Simplify and strengthen digital infrastructure for property data
- Outcome: Eliminate register duplication and streamline local property registers

Action plan developed through cross-agency collaboration

- Ministries and agencies
- Danish Land Registration Court
- Local Government Denmark

Activities included:

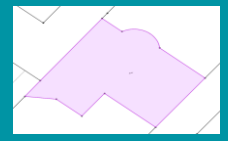
- High-level and technical proposals for new infrastructure
- Redesign of business processes and IT systems

Background

Danish Property Data Infrastructure before Basic Data Program - Core Registers

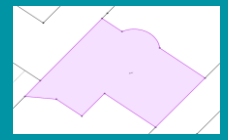
Cadastre

- Purpose: Identifies land parcels and restrictions
- Excludes buildings on leased land and condominiums
- Uses parcel numbers as key



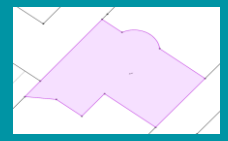
Land Registry

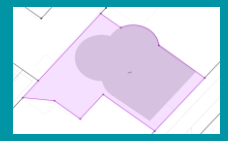
- Purpose: Records ownership, mortgages, servitudes/easements
- Contain properties of land parcels, buildings on leased land and condominiums
- May contain outdated ownership data



Municipal Property Register (ESR)

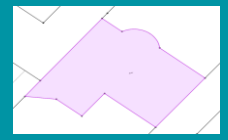
- Purpose: Data and information for administrative work and tasks in municipalities
- First digital property register 1960s
- Includes ownership, valuation, and taxation data.
- Uses 10-digit unique property ID.





Building and Dwelling Register (BDR)

- Purpose: Information about all buildings and technical installations in Denmark
- Details on building interiors and exteriors.
- Uses 10-digit unique property ID



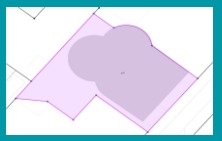
Challenges

- Registers designed for administrative needs — not user-centric
- Legacy IT systems makes it challenging for the registers to co-create

Goals and objectives as part of the Property Data Program

Cadastre

- The basic registration of **condominiums** is transferred from the Land Registry to the Cadastre and harmonized with the general registration of real property



- The basic registration of **buildings on leased land** is transferred from the Municipal Property Register (ESR) to the Cadastre.

- **Properties under development** are registered in the Cadastre with information about their final identification, geolocation, etc.
- A **new common property identification number (BFE-number)** is established and used as a unique identifier for properties and their components.
- **Location addresses** are assigned and maintained for all real properties in the Cadastre.

Ownership Register

The Danish Geodata Agency establishes an Ownership Register as the authoritative record of actual property owners and any associated administrators.

Other objectives as part of the Basic Data Program

1

"To ensure data reuse and avoid duplicate registrations and shadow registers, map data, **cadastral maps**, CVR (Central Business Register) and company data are being released, **making them freely accessible** to both the public and private sectors—just like address and property data are today. Through this release, these core data can be freely used by public authorities and private companies for both commercial and non-commercial purposes, provided that applicable legislation is, of course, observed."

The Danish cadastral map is free from 2013

4

In order to **improve the distribution** of common public-sector data, a common infrastructure is to be established providing for stable and efficient distribution of data; a data distributor.

The Data Distributor (DAF) is launched in 2018

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Completing the Geodata Agency's part of the program

June 2018	The existing it-system for cadastral updating was expanded to handle all the types of real property A new system registering properties in-the-making Co-operation between Cadaster and Land Registry in a new digitised workflow
February 2019	Registration of buildings on leased land in the cadastre
March 2019	Registration of condominiums in the cadastre
April 2019	The Property Location Register
May 2019	Property Ownership Register

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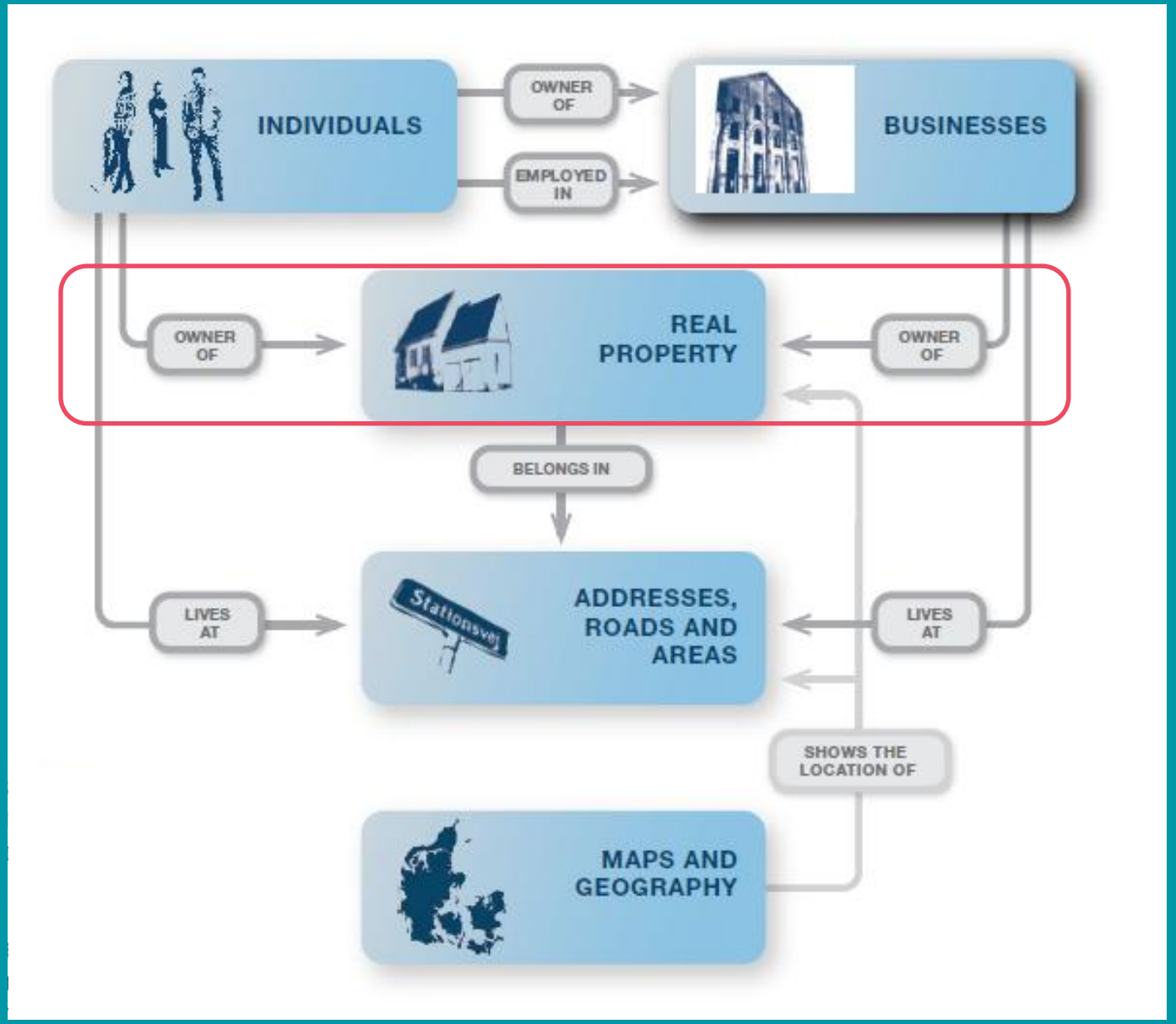
Property data a part of The Danish Basic Data Program 2014-2019



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Creation of property between authorities and between registers

Creating a new property for a company

Authorities and Registers involved

Danish Agency for Climate Data - **DAR -** Denmark Address Register

Danish Property Assessment Agency - **BDR** - Building and Dwelling Register

Danish Geodata Agency - **CAD** - Cadastre

Danish Geodata Agency - **ROP** - Register of owners of real property

Danish Geodata Agency - **PLR** - Property Location Register

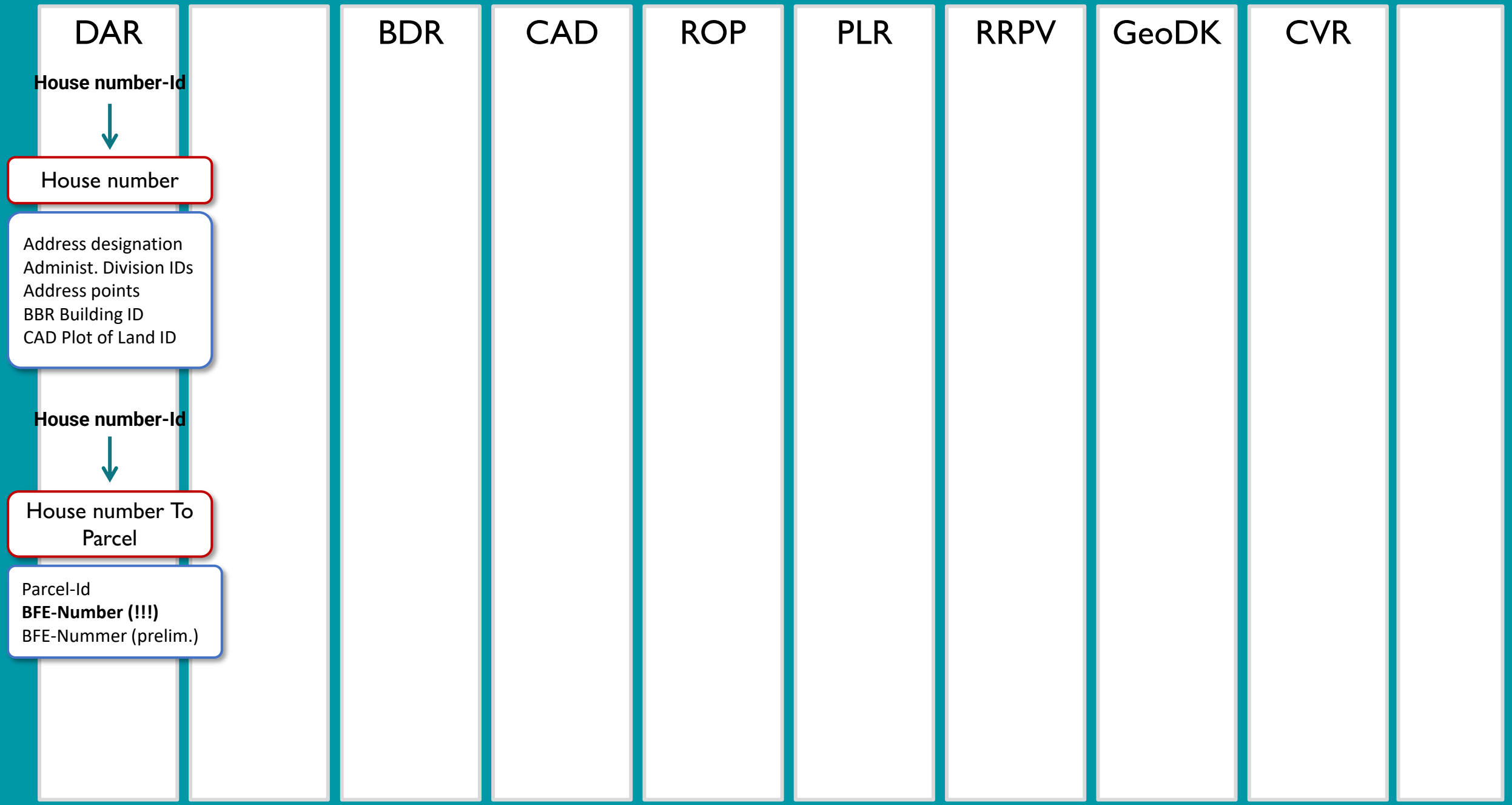
Danish Property Assessment Agency - **RRPV** - Register of Real Property Valuation

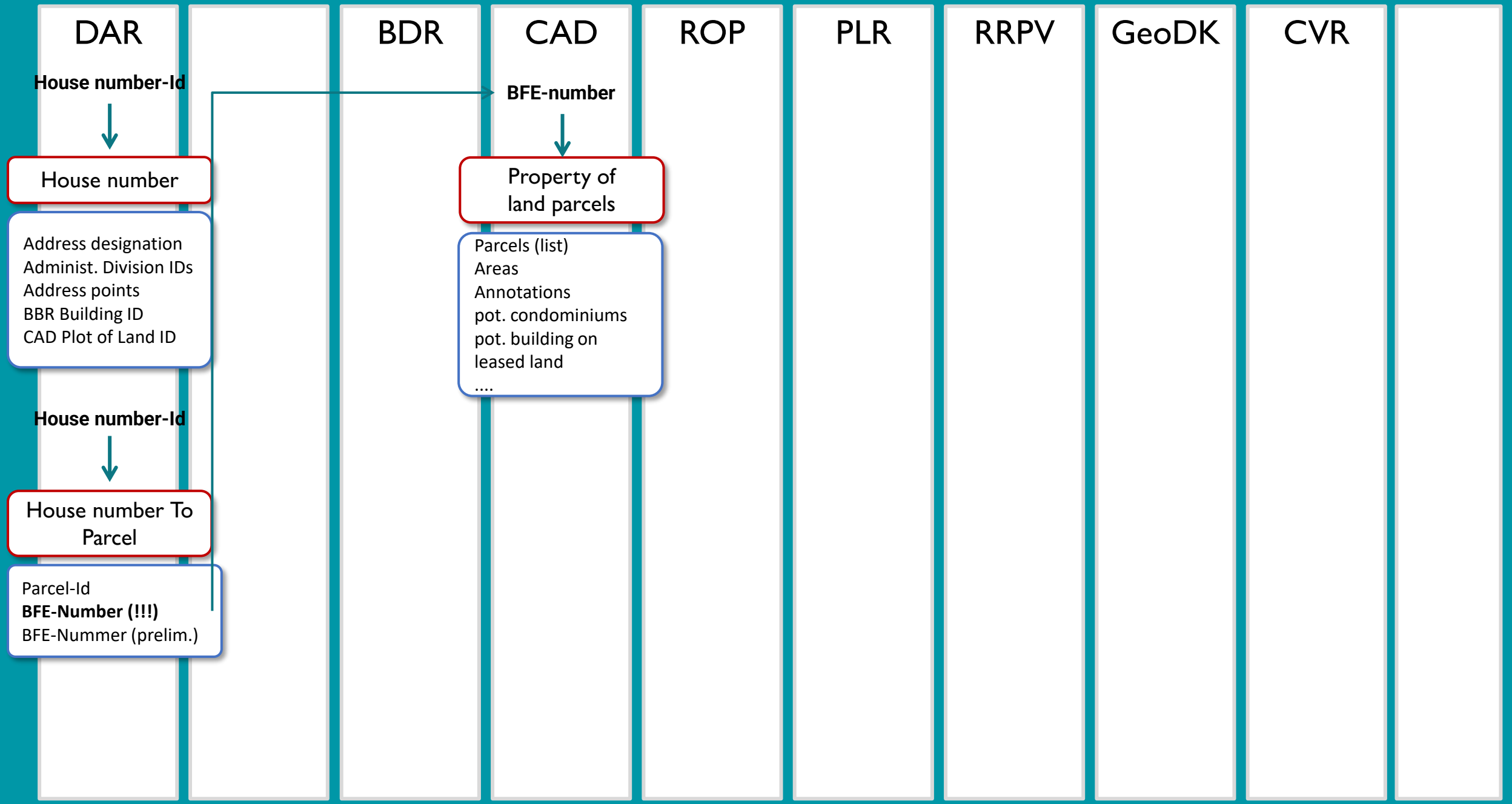
Danish Agency for Climate Data - **GeoDK** - System updating topographical maps

Danish Business Authority - **CVR** - Danish Company Register

DAR		BDR	CAD	ROP	PLR	RRPV	GeoDK	CVR	

House number-Id


DAR
BDR
CAD
ROP
PLR
RRPV
GeoDK
CVR
House number-Id
House number
Address designation
Administ. Division IDs
Address points
BBR Building ID
CAD Plot of Land ID
House number-Id
House number To Parcel
Parcel-Id
BFE-Number (!!!)
BFE-Nummer (prelim.)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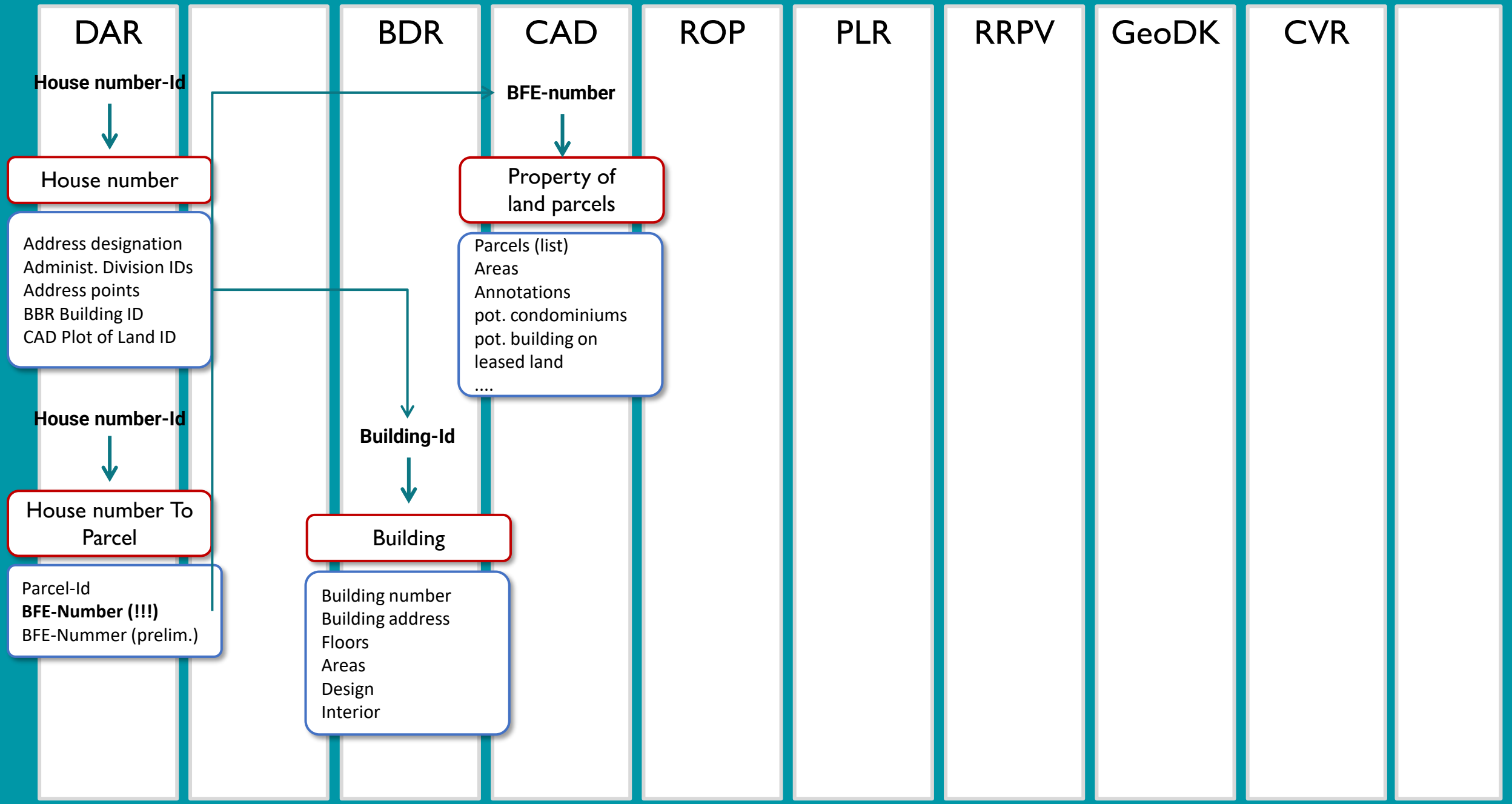
GeoDK
CVR
House number-Id
House number
Address designation
Administ. Division IDs
Address points
BBR Building ID
CAD Plot of Land ID
House number-Id
House number To Parcel
Parcel-Id
BFE-Number (!!!)
BFE-Nummer (prelim.)
BFE-number
Property of land parcels
Parcels (list)
Areas
Annotations
pot. condominiums
pot. building on leased land
....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Parcels (list)
Areas
Annotations
pot. condominiums
pot. building on leased land
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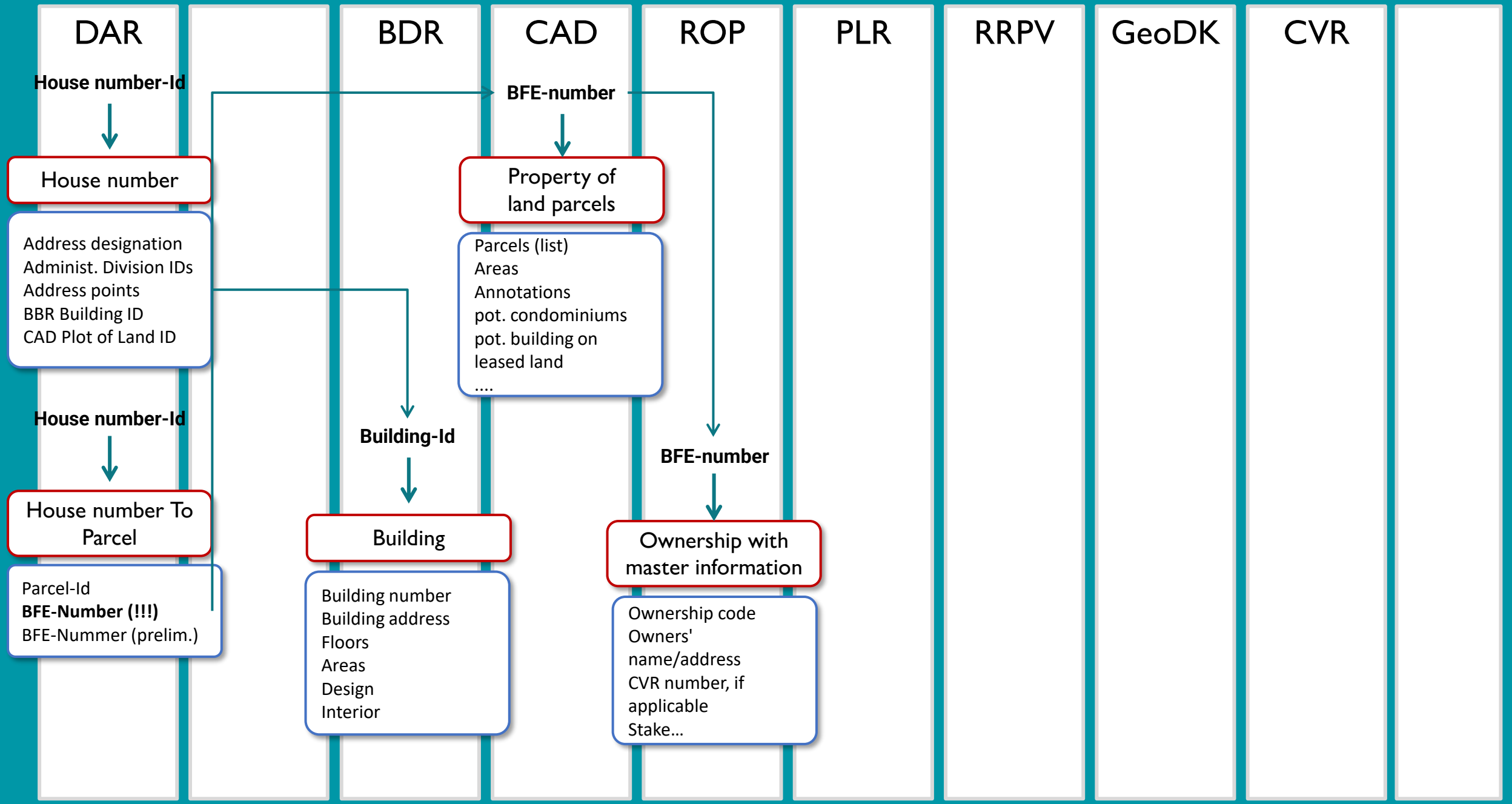
Building-Id
Building
Building number
Building address
Floors
Areas
Design
Interior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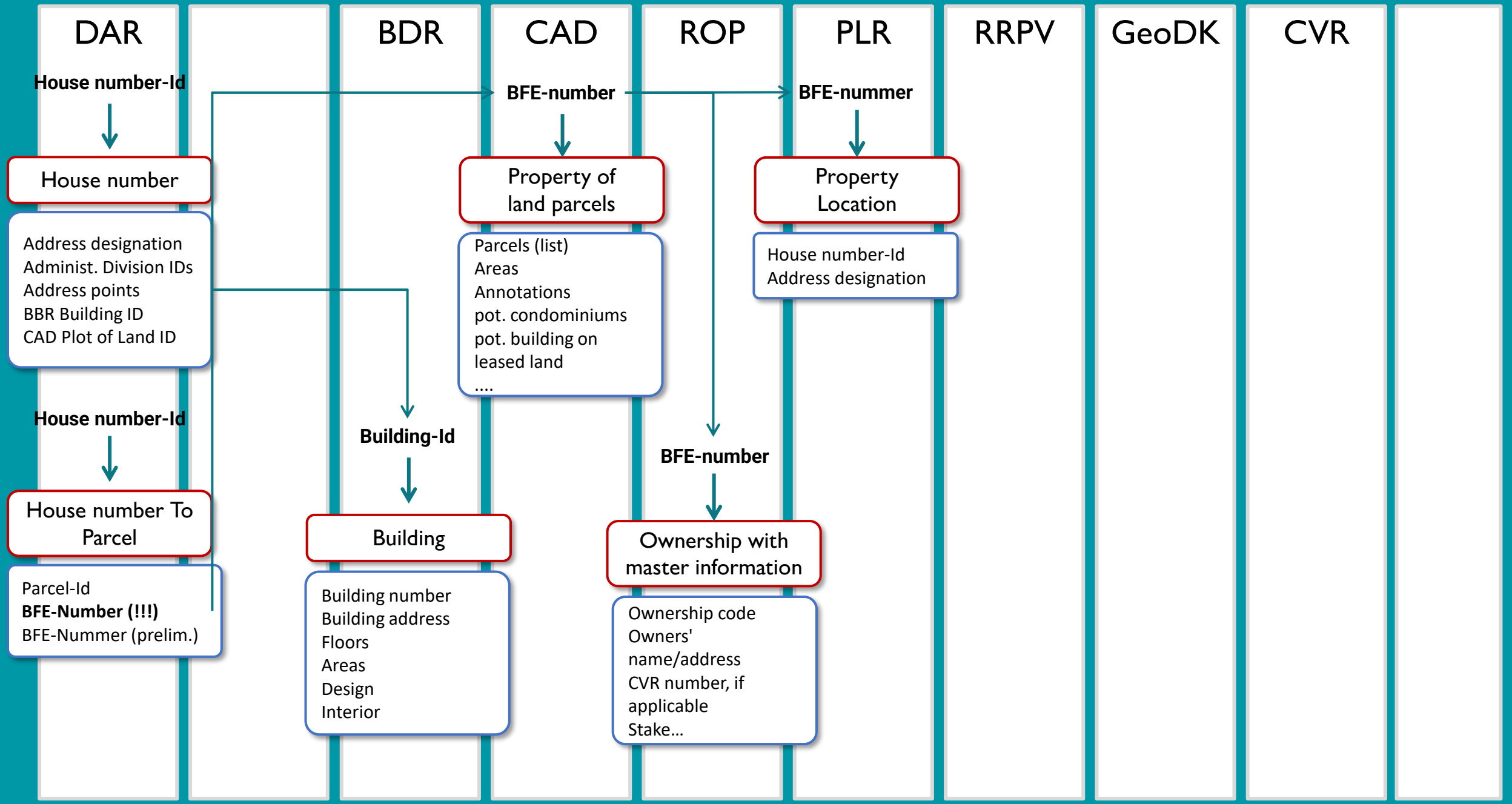
....
House number-Id
Building-Id
BFE-number
House number To Parcel
Building
Ownership with master information
Parcel-Id
BFE-Number (!!!)
BFE-Nummer (prelim.)
Building number
Building address
Floors
Areas
Design
Interior
Ownership code
Owners' name/address
CVR number, if applicable
Stake...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House number-Id
BFE-number
BFE-nummer
House number
Property of land parcels
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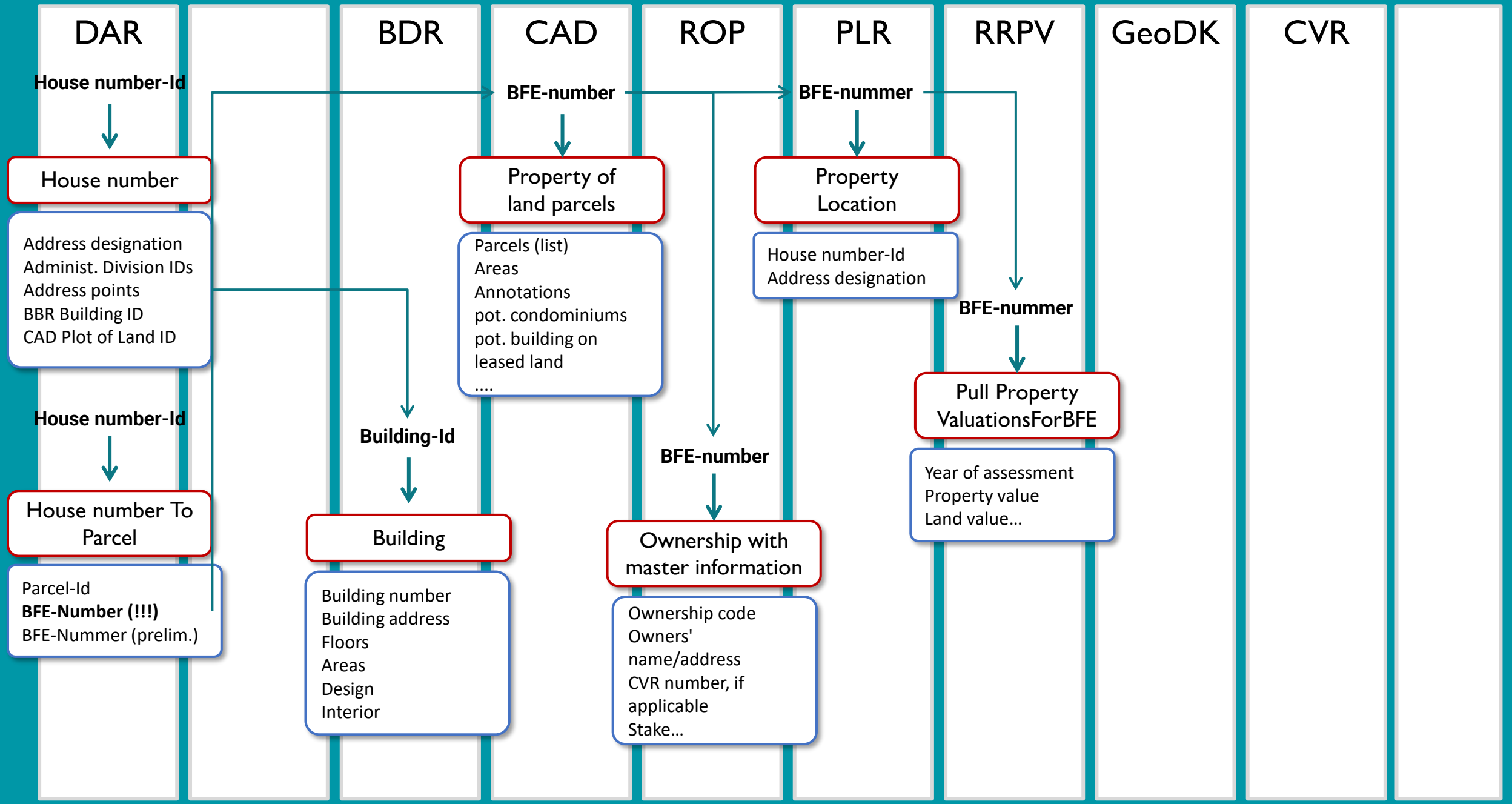
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House number To Parcel
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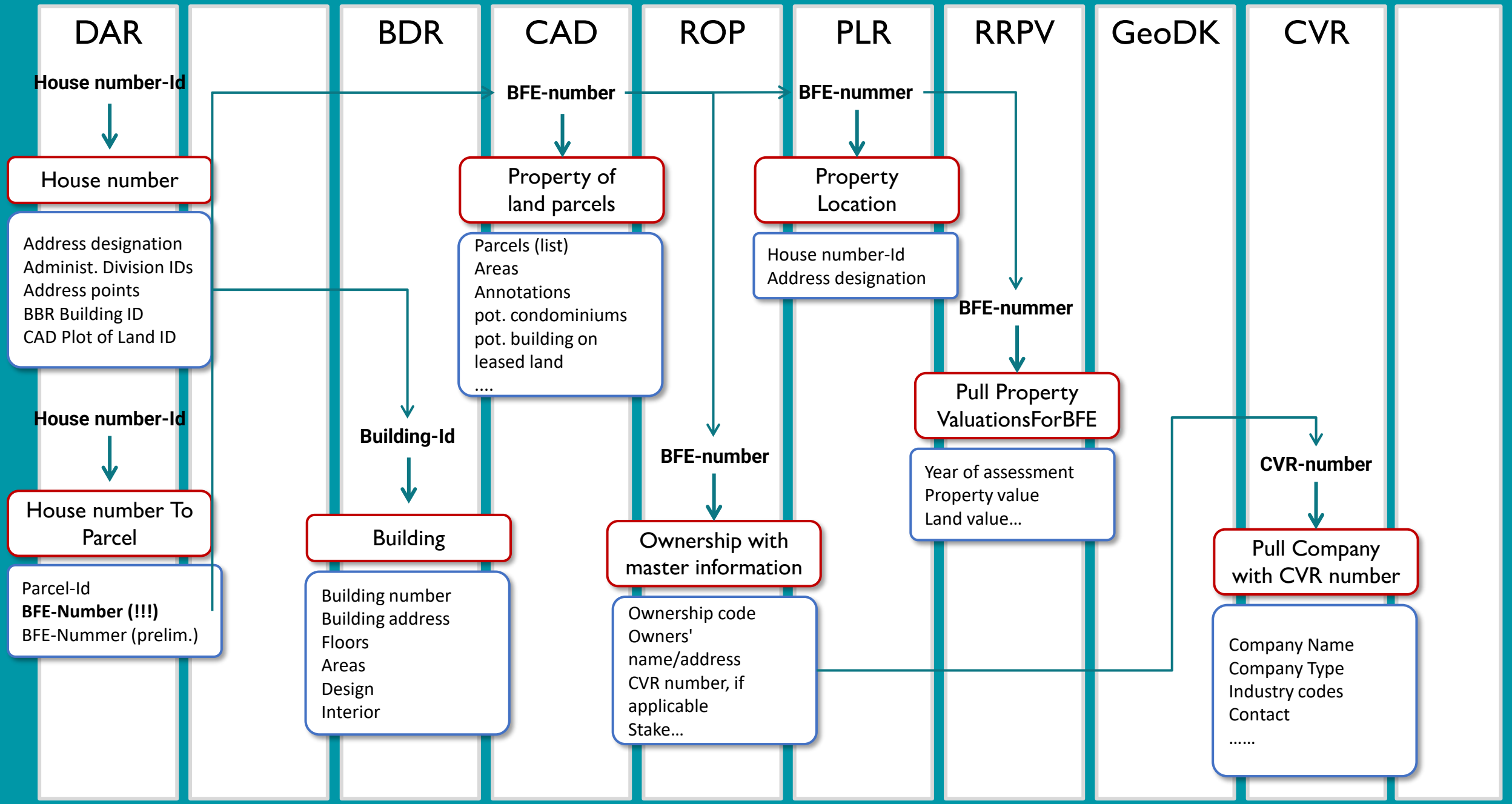
BFE-Nummer (prelim.)
Building-Id
Building
Building number
Building address
Floors
Areas
Design
Interior
BFE-number
Property of land parcels
Parcels (list)
Areas
Annotations
pot. condominiums
pot. building on leased land
....
BFE-number
Ownership with master information
Ownership code
Owners' name/address
CVR number, if applicable
Stake...
BFE-nummer
Property Location
House number-Id
Address designation
BFE-nummer
Pull Property ValuationsForBFE
Year of assessment
Property value
Land value...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CVR
House number-Id
House number
Address designation
Administ. Division IDs
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BBR Building ID
CAD Plot of Land ID
House number-Id
House number To Parcel
Parcel-Id
BFE-Number (!!!)
BFE-Nummer (prelim.)
Building-Id
Building
Building number
Building address
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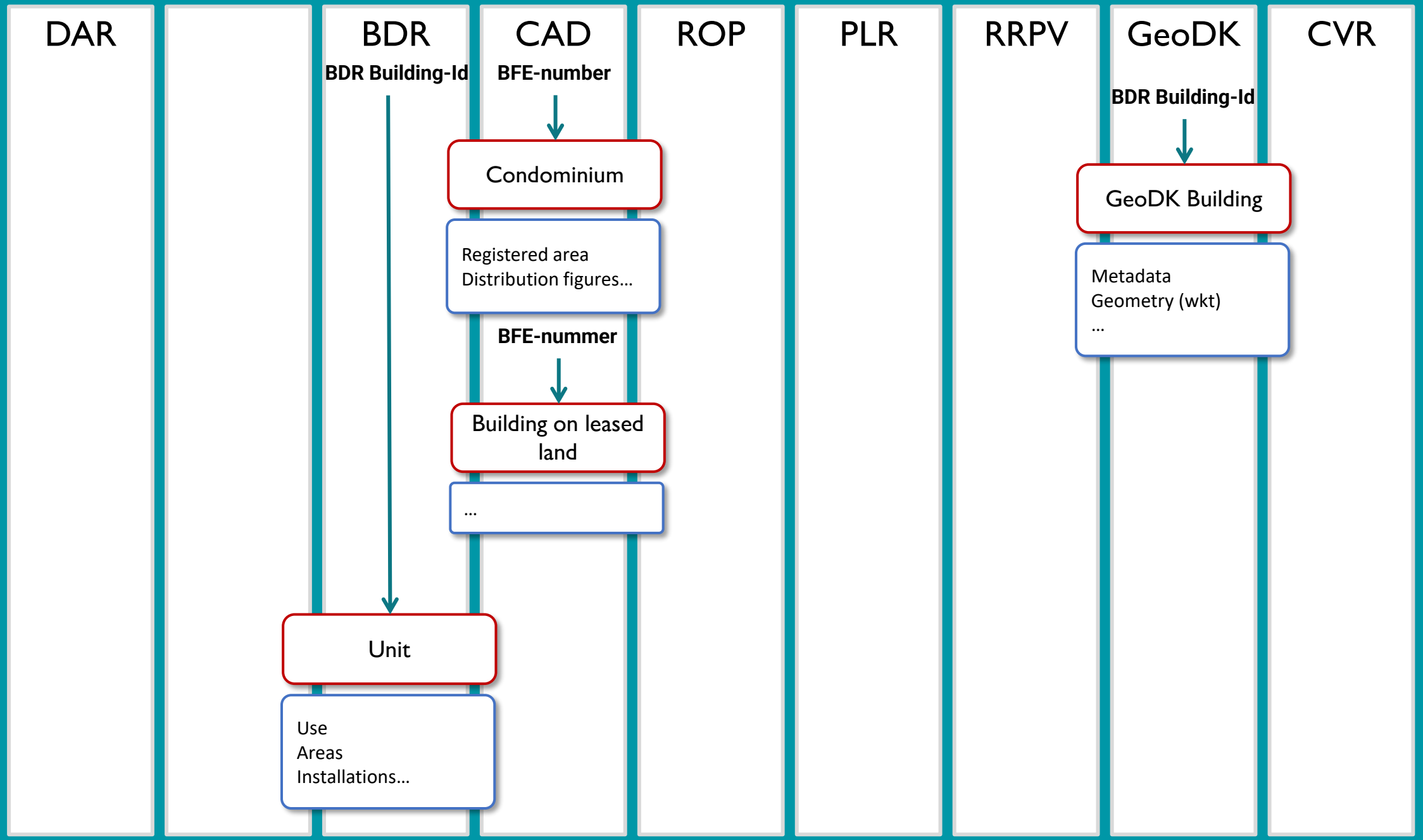
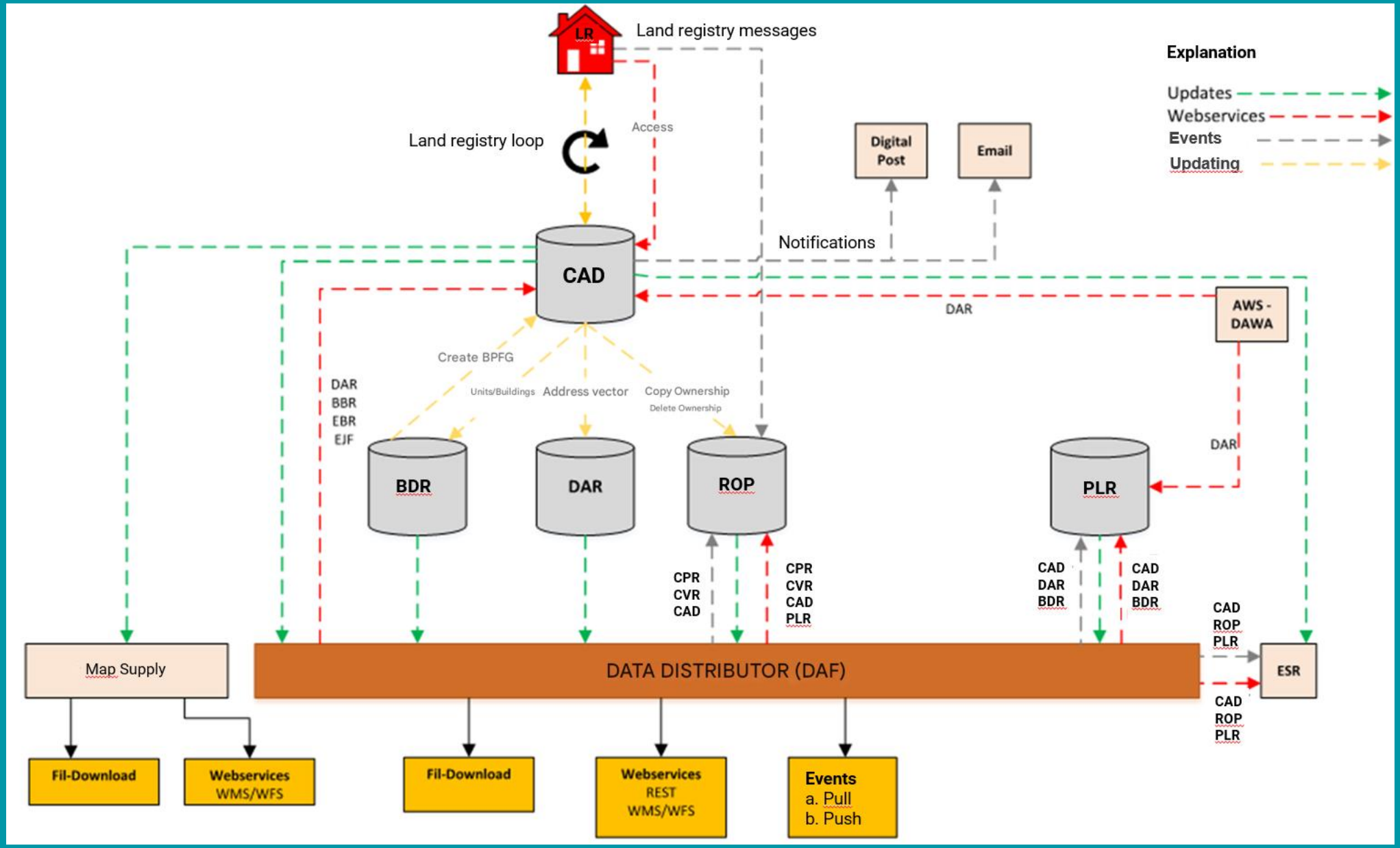
BFE-number
Ownership with master information
Ownership code
Owners' name/address
CVR number, if applicable
Stake...
BFE-nummer
Property Location
House number-Id
Address designation
BFE-nummer
Pull Property ValuationsForBFE
Year of assessment
Property value
Land value...
CVR-number
Pull Company with CVR number
Company Name
Company Type
Industry codes
Contact
.....

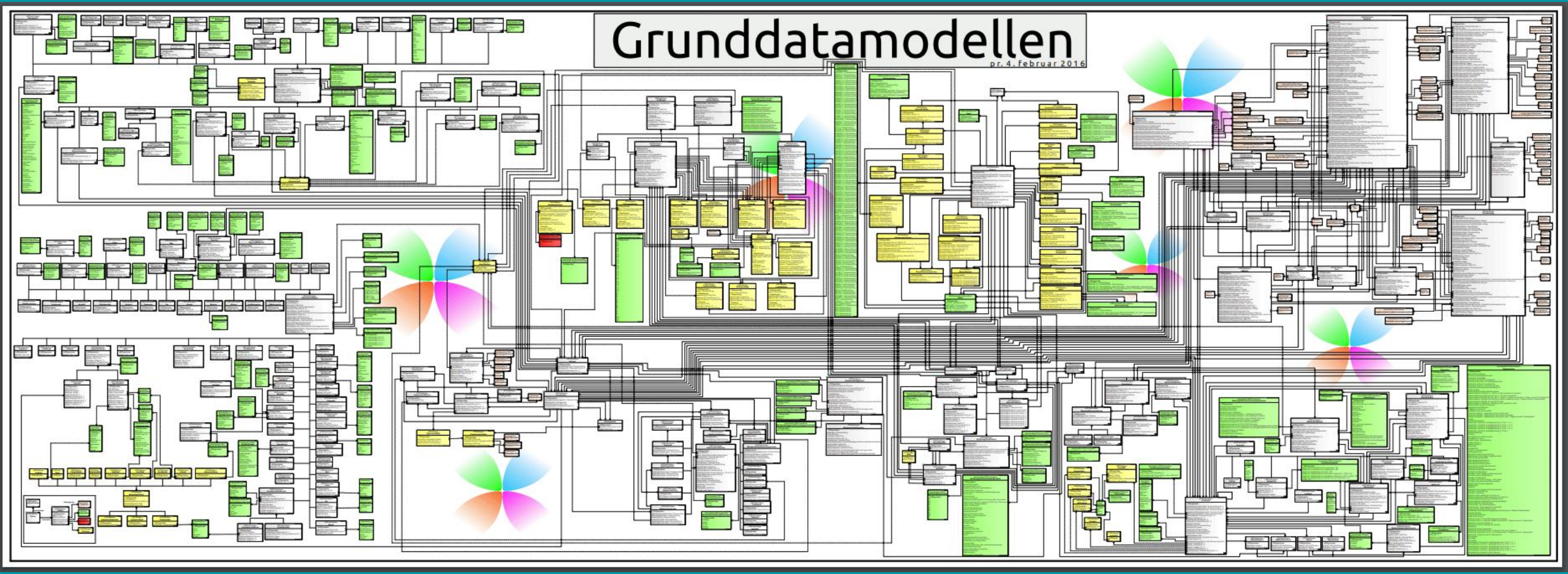

DAR
BDR
BDR Building-Id
CAD
BFE-number
ROP
PLR
RRPV
GeoDK
BDR Building-Id
CVR
Condominium
Registered area
Distribution figures…
BFE-nummer
Building on leased land
…
GeoDK Building
Metadata
Geometry (wkt)
…
Unit
Use
Areas
Installations…

System processes



Model of the Danish Basic data

The big poster – 6 by 1½ meters, readable at 50 cm

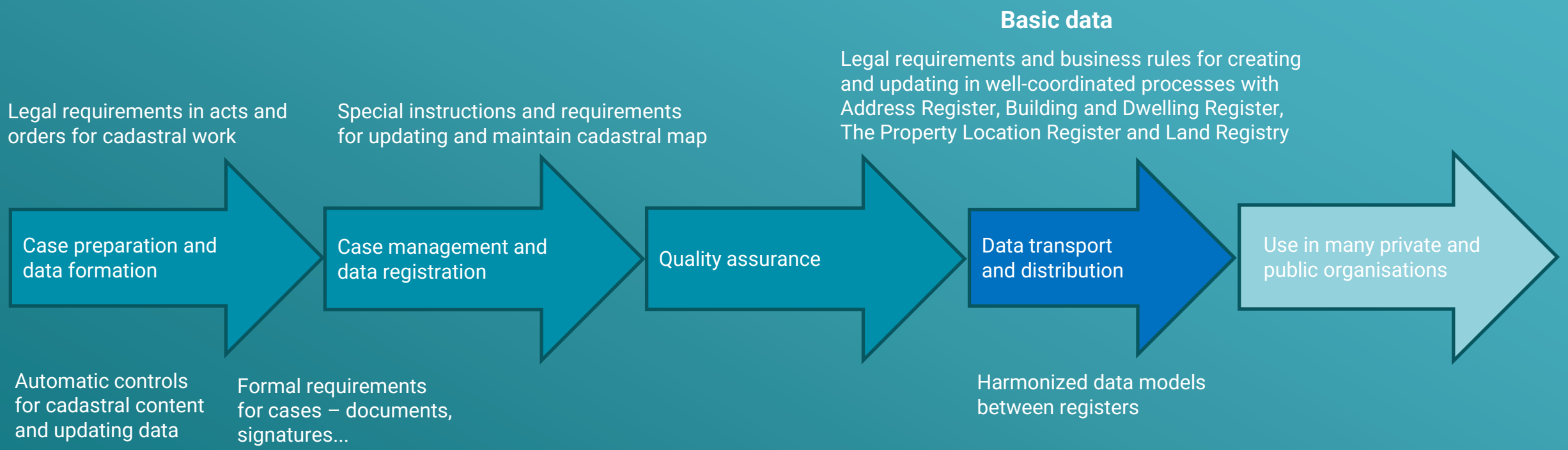


https://datafordeler.dk/dataoversigt/

Data quality - ongoing process and work

Simon Reimers

Attention and work with quality in all process steps



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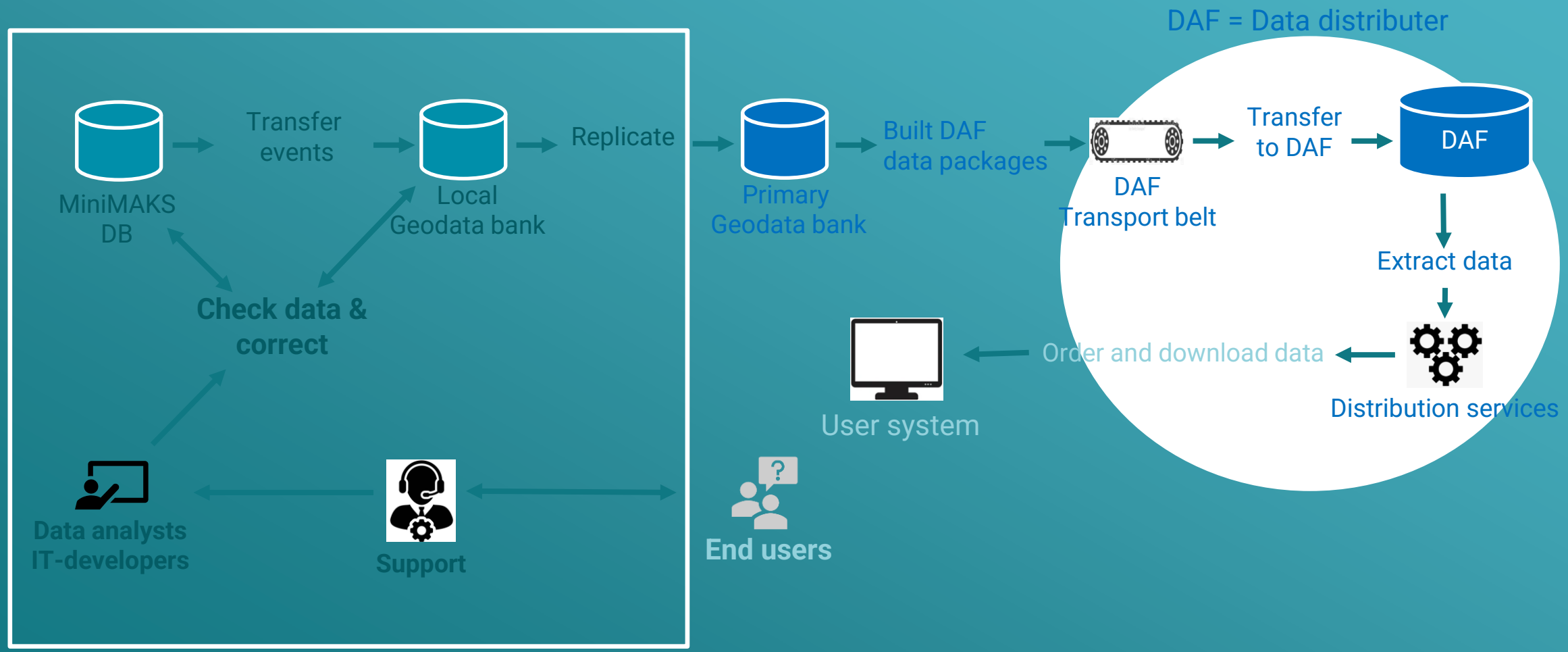
Quality assurance

4 core data quality dimensions

DQ dimension	Definition
completeness	the degree to which the data set contains the data elements that are expected based on the specification of the data set
accuracy	the degree to which data values corresponds to actual values
currentness	indicating to which degree data is current
reusability	the degree to which data is understandable and without difficulties can be used by others

Overall datachain – distribution of data



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Different types of errors in the data chain

Errors in Primary Geodata bank

- Error in Oracle replication
- 3 cases out of +500,000 transactions
- Difficult to recreate
- Two of the times were very early in the morning (at night)
- The data update fails only later - when the Data Distributor tries to update a row that is missing - It may therefore take some time before the error is discovered

Incident

MAT2 Dataopdatering er stoppet i produktionsmiljøet.

25.09.2023 klokken 11:00: Der bliver fortsat arbejdet på at løse problemet.

22.09.2023 klokken 15:15: Der arbejdes fortsat på at løse problemet.

22.09.2023 klokken 10:15: MAT2 dataopdatering er stoppet i produktionsmiljøet, sidste opdatering var 22.09.2023 klokken 07:06:43

Errors in the exhibition at the data distributor

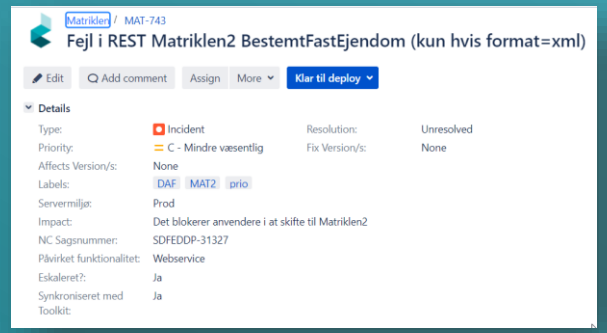
It happens that services fail or do not give a desired response

May be due to

- Error in specification
- Error in implementation at DAF
- Error/deficiency in data model

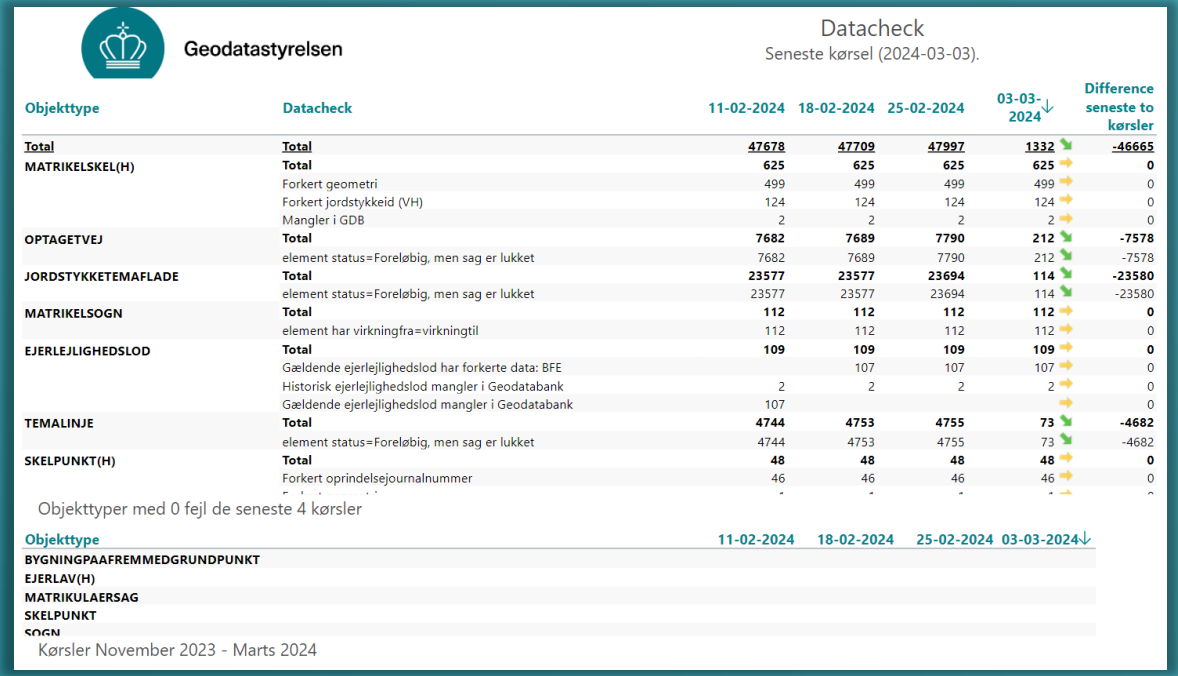
Solved by:

- Update of specification → ½ year or more
- Error correction at supplier → 1-6 months
- Update of model →1-2 years or more



Monitoring of of data quality

Content	Actual	Historical	Preliminary
Property of land parcels, condominium, building on leased land	1	2	6
Parcel Boundary Boundary points	2	3	6
Theme linestring Theme polygon	3	5	7
Municipality, parish	4	6	-



Geodatastyrelsen

Datacheck

Seneste kørsel (2024-03-03).

Objekttype	Datacheck	11-02-2024	18-02-2024	25-02-2024	03-03-2024	Difference seneste to kørsler
Total	Total	47678	47709	47997	1332	-46665
MATRIKELSKEL(H)	Total	625	625	625	625	0
	Forkert geometri	499	499	499	499	0
	Forkert jordstykkeid (VH)	124	124	124	124	0
	Mangler i GDB	2	2	2	2	0
OPTAGETVEJ	Total	7682	7689	7790	212	-7578
	element status=Foreløbig, men sag er lukket	7682	7689	7790	212	-7578
JORDSTYKKETEMAFLADE	Total	23577	23577	23694	114	-23580
	element status=Foreløbig, men sag er lukket	23577	23577	23694	114	-23580
MATRIKELSOGN	Total	112	112	112	112	0
	element har virkningfra=virkningtil	112	112	112	112	0
EJERLEJLIGHEDSLOD	Total	109	109	109	109	0
	Gældende ejerlejlighedslod har forkerte data: BFE		107	107	107	0
	Historisk ejerlejlighedslod mangler i Geodatabank	2	2	2	2	0
	Gældende ejerlejlighedslod mangler i Geodatabank	107				0
TEMALINJE	Total	4744	4753	4755	73	-4682
	element status=Foreløbig, men sag er lukket	4744	4753	4755	73	-4682
SKELPUNKT(H)	Total	48	48	48	48	0
	Forkert oprindelsejournalnummer	46	46	46	46	0

Objekttyper med 0 fejl de seneste 4 kørsler

Objekttype	11-02-2024	18-02-2024	25-02-2024	03-03-2024
BYGNINGPAAFREMMEDGRUNDPUNKT				
EJERLAV(H)				
MATRIKULAERSAG				
SKELPUNKT				
SOGN				

Kørsler November 2023 - Marts 2024

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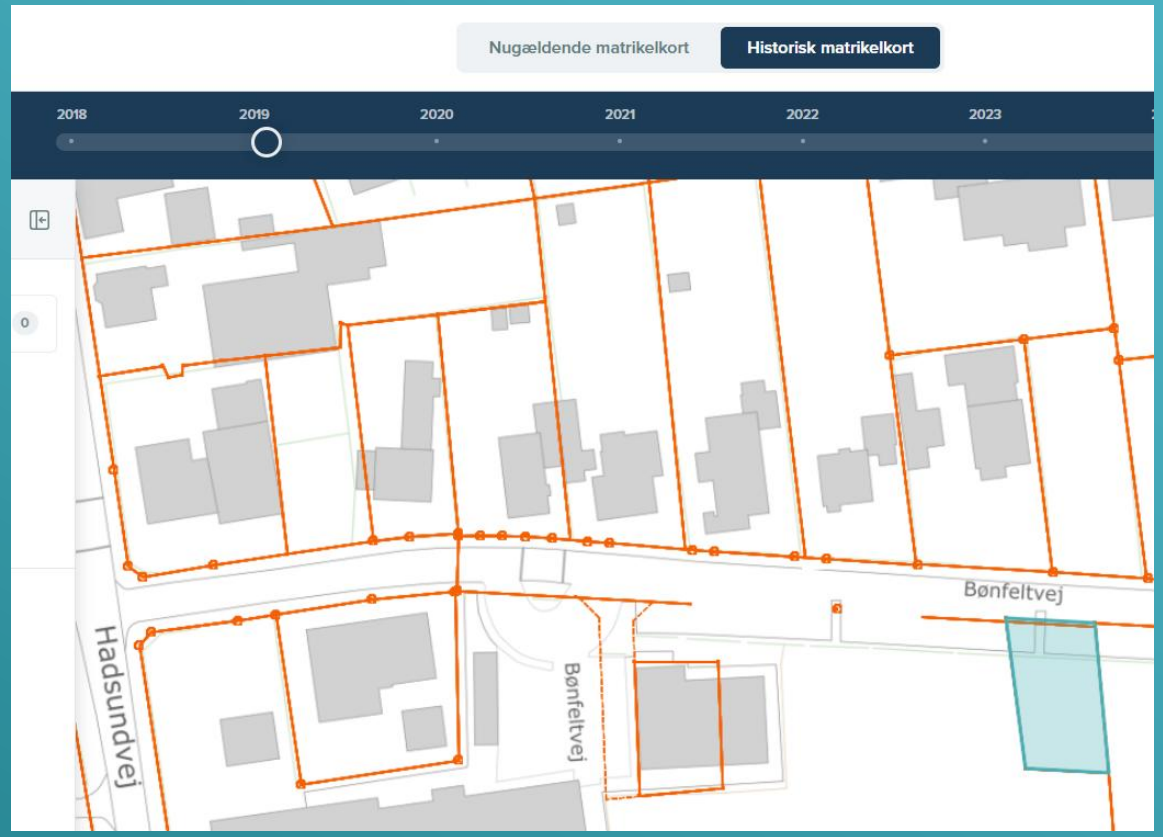
Historical errors

- Until now we have focused on errors in the current data

- But users also want to use the historical data
- For example, plots of land on a given date

- Only a few differences found
- Complex to correct



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Data model – use of bitemporality!

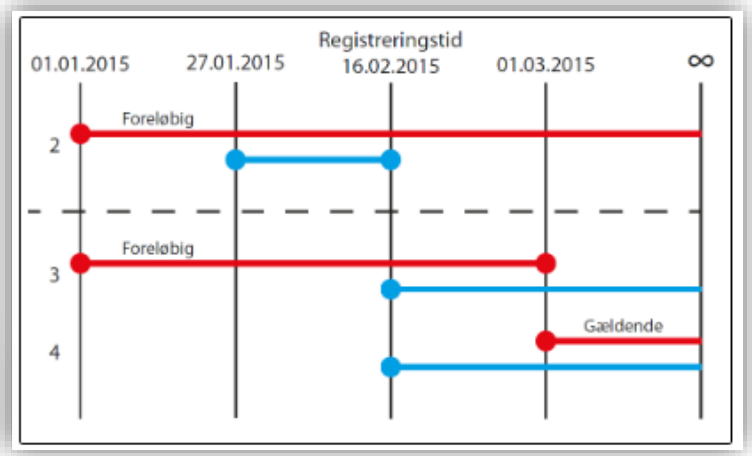
- Record data to accomodate differing legislative and administrative demands for data based decision making.
  - When was this data recorded/changed?
  - What data has effect at a point in time?
    (may differ – e.g. loans and taxes related to purchase of house)
- Examples (pardon the Danish)

The example shows recording of the following data:

- (black text) Recorded on 27-01-2015 (Reg.Fra) that given content (indhold) has status tentative (Foreløbig) from 01-01-2015 (Virk.Fra) to indefinite (Virk.Til).
- (blue text) Recorded on 16-02-2015 (Reg.Fra) that given content (indhold) has status tentative (Foreløbig) from 01-01-2015 (Virk.Fra) to 01-03-2015 (Virk.Til) AND status final (Gældende) from 01-03-2015 (Virk.Fra) to indefinite (Virk.Til)

Note: Original data is not deleted – but marked that registration existed until 16-02-2015 (Reg.Til).

ID	UUID	Indhold	Reg. Fra	Reg. Til	Virk. Fra	Virk. Til	Status
2	xxxx	Københavnsvej	27-01-2015	16-02-2015	01-01-2015	-	Foreløbig
3	xxxx	Københavnsvej	16-02-2015	-	01-01-2015	01-03-2015	Foreløbig
4	xxxx	Københavnsvej	16-02-2015		01-03-2015	-	Gældende



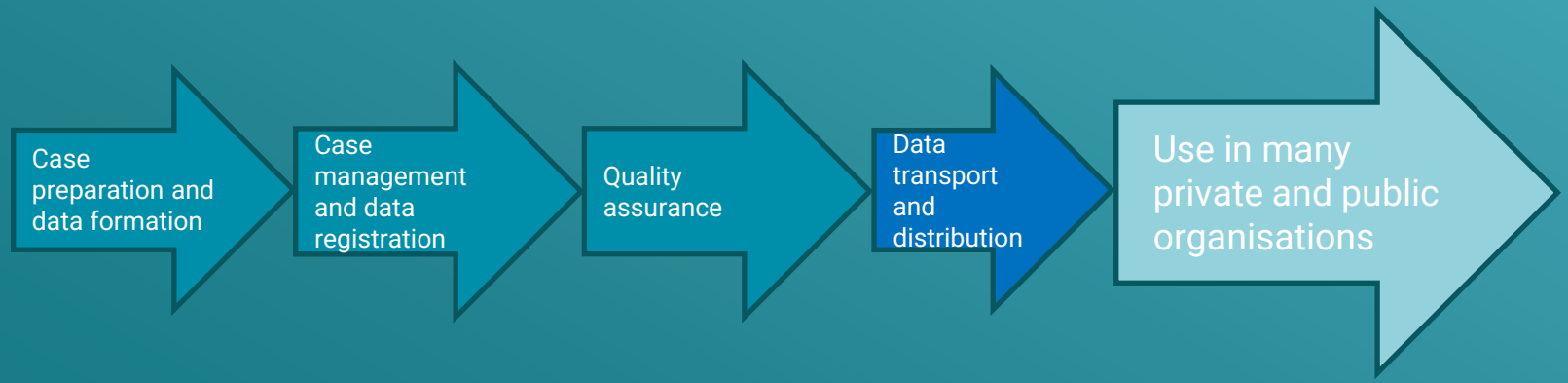
Use of property data

Jørgen Skrubbeltrang

Geodatastyrelsen

Foundation and basis for high-volume use of property data

- ✓ Many years of experience with property registration in collaboration with other stakeholders
- ✓ Robust and well-established legislation
- ✓ Third-generation system support for property registration
- ✓ Coordinated and harmonized data creation with other authorities and registers
- ✓ Free and open data
- ✓ A well-established value chain for property data



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Cadastre and property registration

IMPORTANT • BIG

500
million
basic data
objects

3.000
million
downloads
a year

BIG

More figures about use of property data

Number of users of cadastral data from the Data Distributor on web services

- 396 user organisations
  - 247 private companies
  - 98 (all) municipalities
  - 39 other public authorities

However, many large organisations use file downloads and we do not have figures for that. We also do not have figures for the many organisations and users who receive data from private "data brokers"

Well-established but very big and complex IT infrastructure
In some ways disconnect data creators and data users?

Creation of data

Property owner

Legal adviser

Chartered surveyor

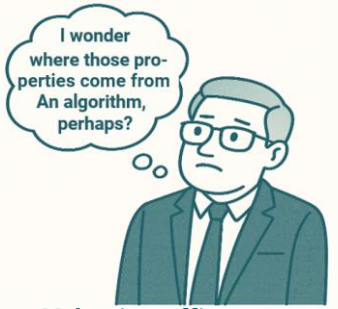
Case officer

Process	Registration	Data transport authority to Datadistributer	Distribution
Systems	MIA, ERPO and miniMAKS	Local geodata bank, Primary Geodatabank, after burner, transport belt of data, Data Distributor	Different services of the Data Distributor The Danish Data and Map Supply
Technology-issues	System legacy, historical data data quality, semi-automatical controlls, modernisation, time to market...	One coherent basic data model but differences between register models and display models. Loading, security, logging and monitoring of operations, cleaning up technical debt, bitemporality, new product vision, parallel operation periods, time to market...	File Extraction, File Download, Events, Web Service, REST, WFS, WMS , json, xml, gml, geopackage Open Access, Service User, Certificate Move to Entity-Based File Downloads, Entity-Based GraphQL Services, Flexible Lookup Logic, New Use of Events, Geodata Services, Self-Service, Access Control, Flexible Lookup Logic, Auto-Generation...
Administrative and business issues for authorities and and users	Distributed responsibility across different authorities and different legislation, large users with different application needs. Proliferation of BFE number, phasing out of ESR, Co-assessed properties, ideal shares, timeshares and cooperative housing are not basic data. Historical data, completeness, correctness, timeliness and reusability of data. Large resource drain for conversion to entity-based display, needs of registration authorities and users vs. operation and maintenance of Data Distributor. Not possible to get user-differentiated logs, requests for new property-related data become basic data...		

Use of data

Municipal employee

Analyst at a bank



Valuation officer

Property investor

Have to distinguish between different types of users

Dialogue with **system and data developers**

Dialogue with **user organisations**

Communication and explanation
to **professional end users**

Communication and explanation
to **citizens and businesses**

Examples

E-nettet – provider for the financial sector
Resights - portal for property developers and investors
Septima – portals for various sectors
LIFA Digital – portals for municipalities and various private sectors
The IT and Development Agency of the Danish Ministry of Taxation

Finance Denmark
The Danish Assessment Agency
Local Government Denmark
Statistics Denmark

Real estate agents
Housing Lawyers
Case officers at the Danish Assessment Agency
Specialists in the utility sector
Municipal GIS employees

Property owners
Journalists
Engineers
Biologists
Citizens in general

Dialogue with data users

Dialogue with users via

- Support
- Meetings
- Conferences
- Visits
- Network
- Linkedin

Communication and explanation of knowledge is very important

- Documentation
- Metadata
- Instructions and guidelines
- Presentations
- Papers and articles
- Road shows
- A new book about property data?

Discussions, meetings, visits are mostly with

- **Financial sector**
  - Business and system developers in banks, mortgage institutions and datacentres
- **Tax authorities**
  - Danish Property Assessment Agency
  - The IT and Development Agency of the Danish Ministry of Taxation
- **Municipalities**
- **Land surveyor companies**

The future of basic data and property data?

New strategy for Basic Data launched next week by The Agency for Climate Data

Strategy for Future Basic Data 2026-2030

One goal is to invite private sectors like finance, utilities and insurance to be a part of the work with basic data

- *Can big private data users e.g. the finance sector in the future make demands for quality of data and how data is created?*

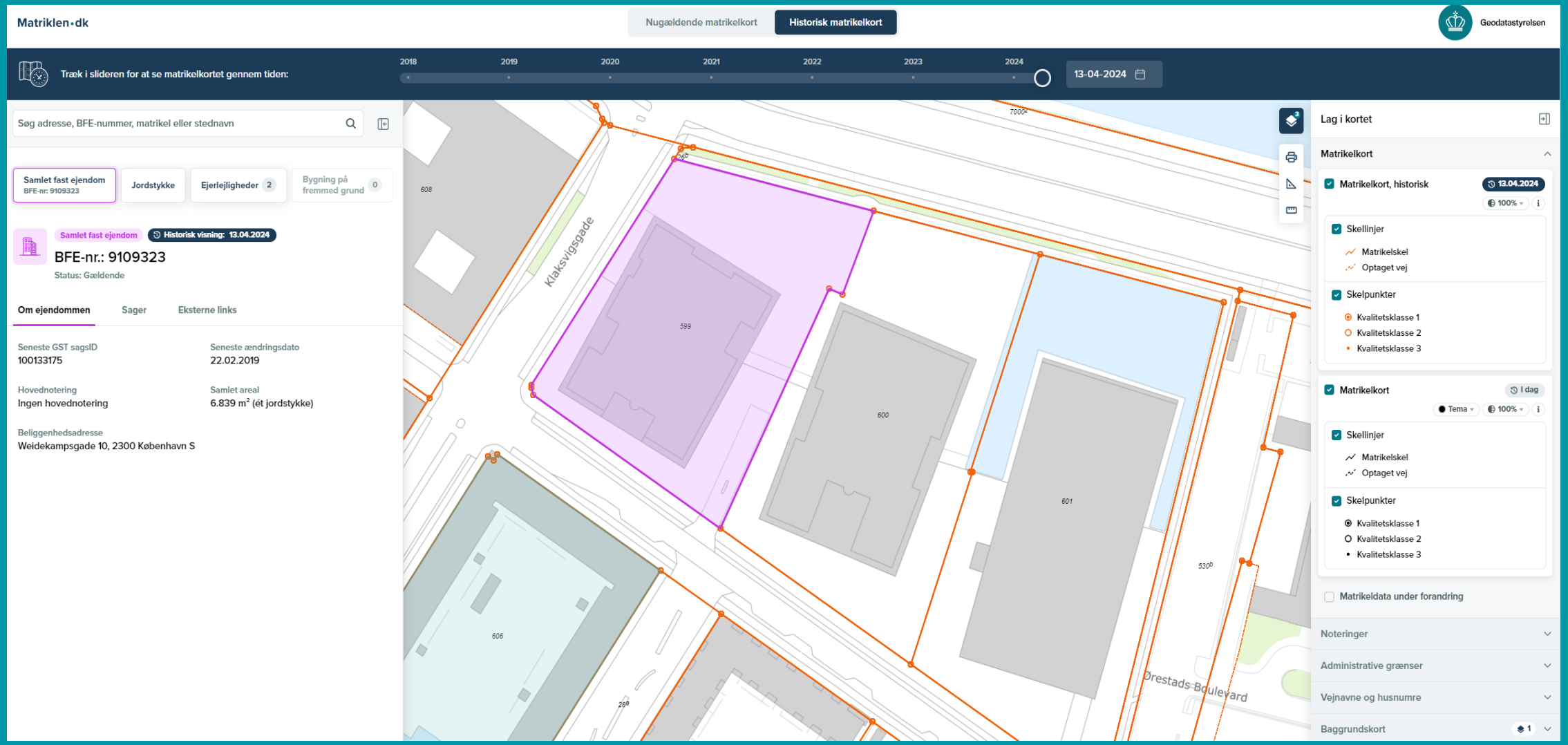
Panel discussion with the private sector next week on this and other issues concerning the future of property data.

Danish Geodata Agency

Matriklen.dk *"Cadastre.dk"*

Simon Reimers

Matriklen.dk – new platform for access to property data

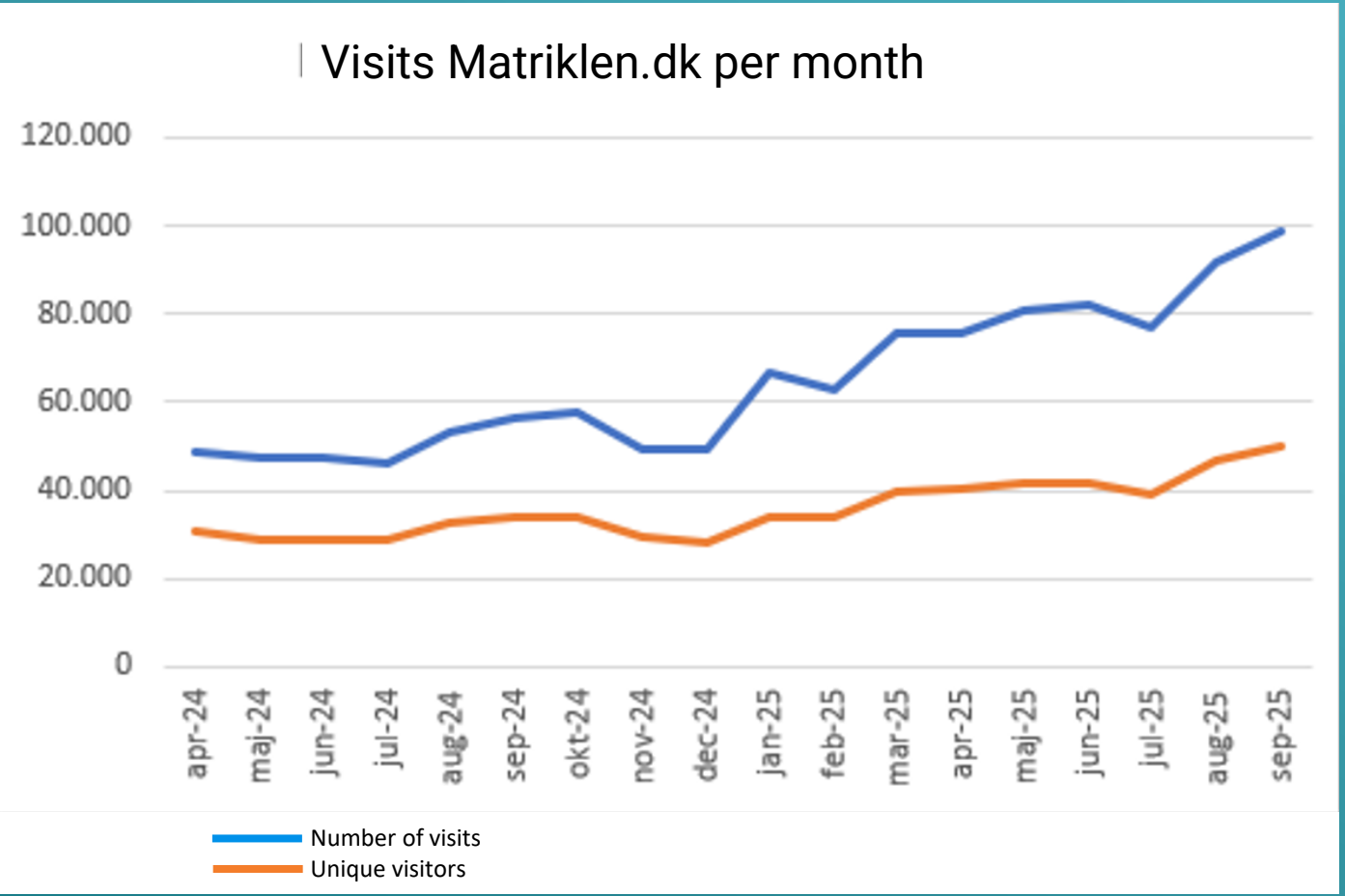


Actual and historic data of real property and owners
launched April 2024

Matriklen.dk

Succes

No advertising but still increase in use



Geodatastyrelsen

Matriklen.dk

Demo

The 3 types of properties

Case information

Preliminary data

Historical data – registry and map

Property owners

Display of cadastral data with data from other authorities

- Building and Dwelling Register
- Oblique photos

www.matriklen.dk

Geodatastyrelsen

Questions?

Lunch