Bavarian Ministry
of Finance

From e-cadastre to u-cadastre: The European approach

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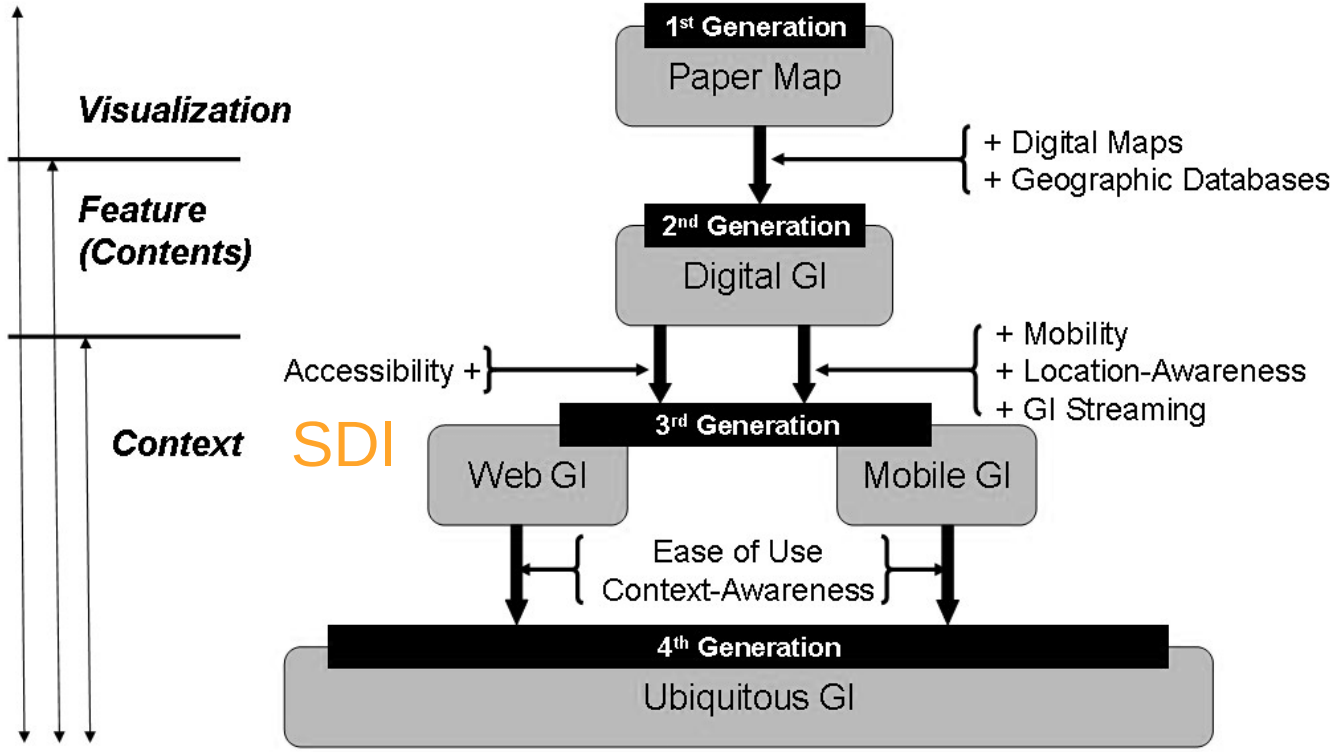
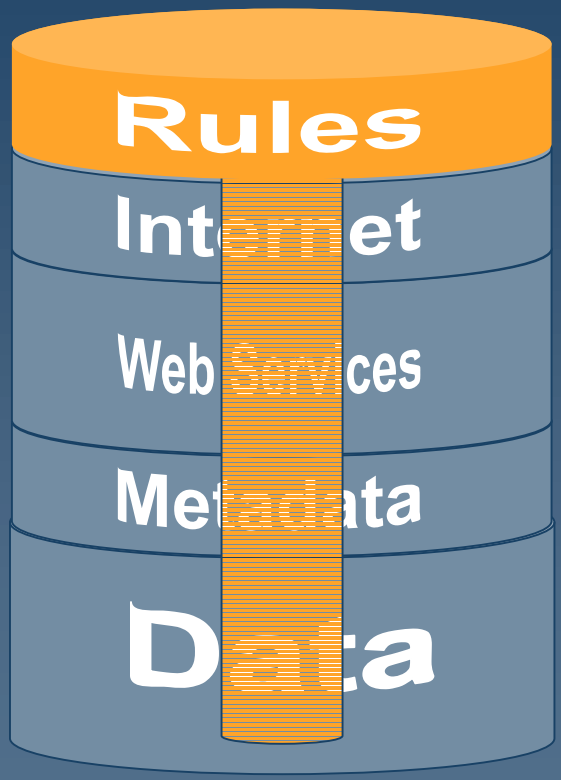
Introduction: Levels of GI Development



Source: ISO/TC 211

Components of e-cadastre…



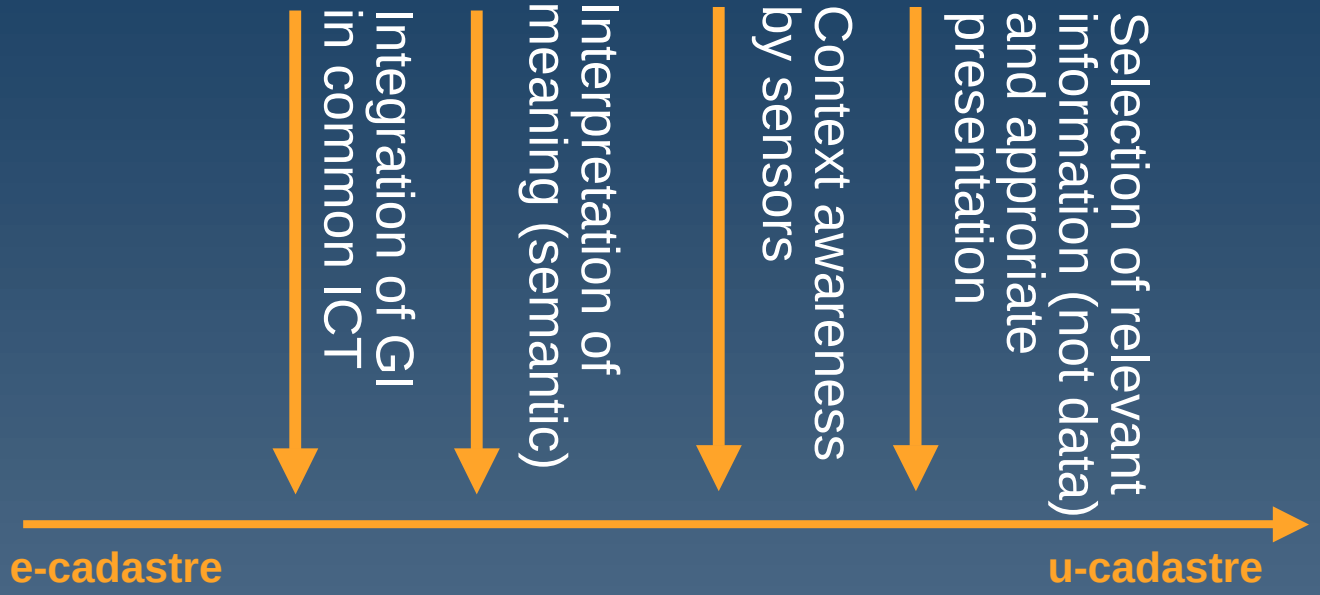
Legal regulations (e.g. INSPIRE),
GI standards (OGC, ISO)

Web Services for discovery, presentation and download

Formal information about the data in order to
Be able to find relevant data and to analyse
The feasiblity for specific purposes

Digital spatial data from the surveying and mapping agencies (as reference) and other thematic data

From e-cadastre to u-cadastre



Characteristics:
- digital data
- web services
- mobile devices
- positioning service
- examples: Google maps, car navigation systems

So, u-cadastre needs…

- Local position
- Spatial refererence (e.g. a street map)
- Context information (what data are currently relevant for specific circumstances) and the capability to analyse the context and the necessary data
- Mobile device
- Network with high data rates
- User, reasonable use cases
- Rules, guidelines, GI standards

Functionality of Standards for data harmonization

Standardised documentation of the meaning (semantic)

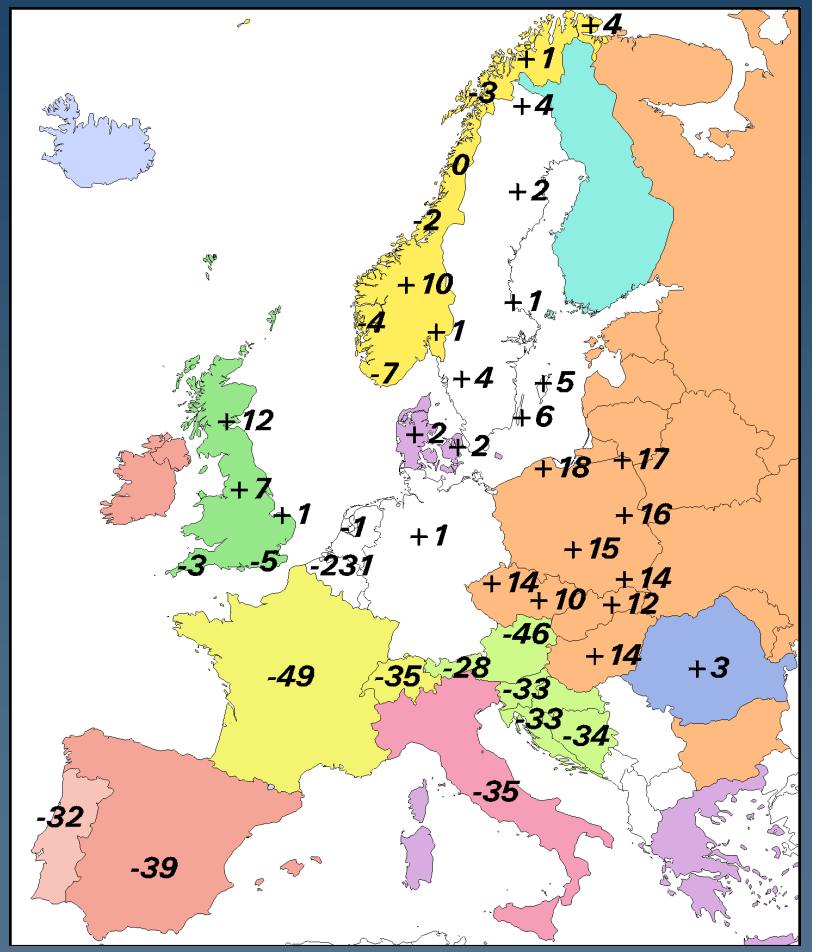
Standardised description of the meaning

Not standardized description of the meaning

Cross-border GI need a common reference

Harmonization of data:

Need for a common used, European vertical reference system



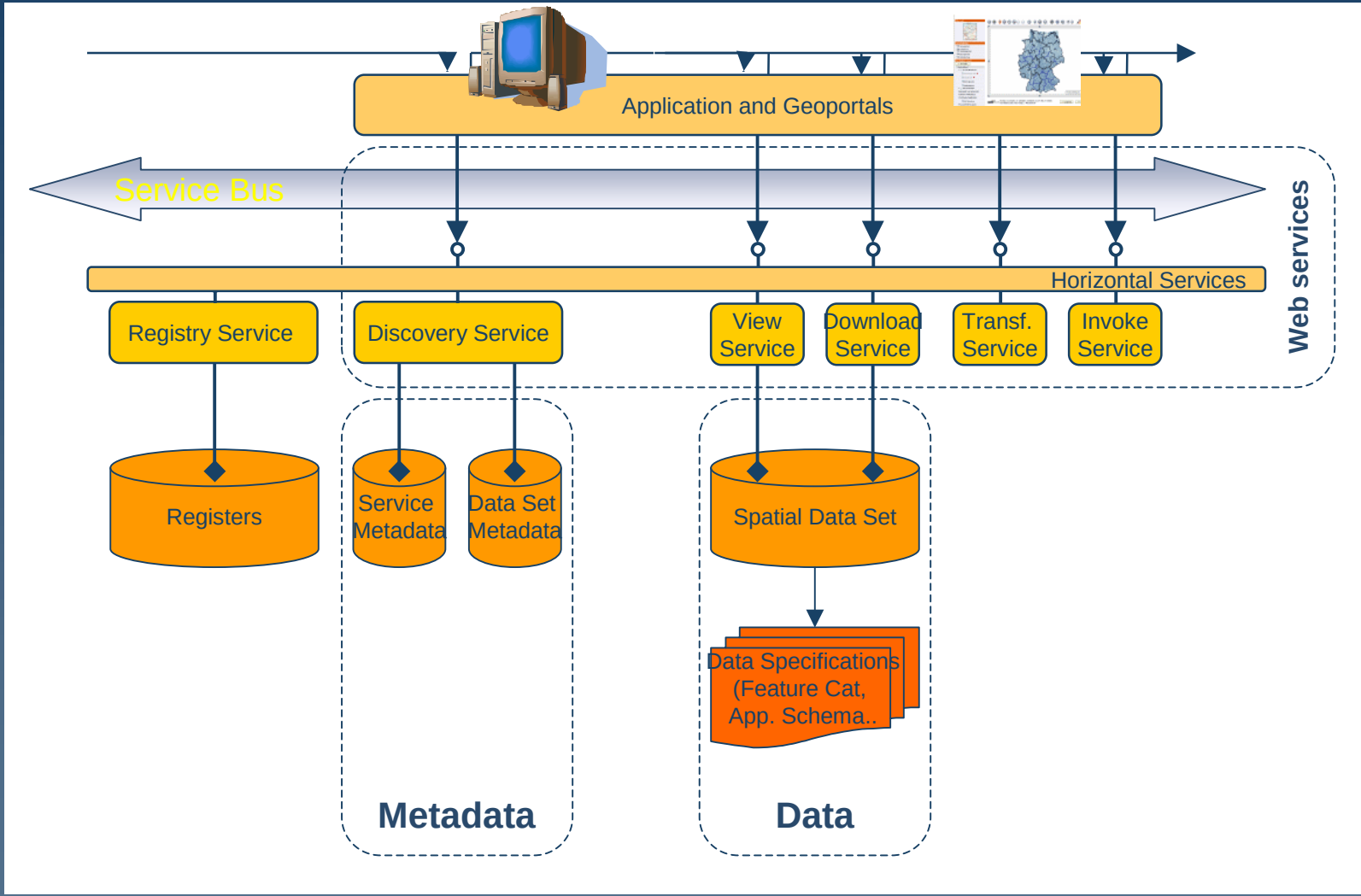
Differences (cm) between a planned European reference system (UELN) and the current national height systems in Europe

Solution: INSPIRE – SDI in Europe

Infrastructure for Spatial Information in Europe

- European initiative for implementation of a spatial data infrastructure
- Came 2007 May 25 in force
- Until 2009 transposition in national law
- Aim: Existent spatial data should be made available using exisiting GI standards and defining further rules
- INSPIRE also develops detailed technical implementing rules and technical guidelines
- Not just the „infrastructure“ (web service interfaces), but also concrete data content will be provided taking into account the user needs

INSPIRE Architecture



Addressed data content to be harmonized (selection)

INSPIRE Annex I	Annex II	Annex III
• Coordinate reference systems • Geographical grid systems • Geographical names • Administrative units • Addresses • Cadastral parcels • Transport networks • Hydrography • Protected sites	• Elevation • Land cover • Orthoimagery • Geology	• Statistical units • Buildings • Soil • Land use • Human health and safety • Utility and governmental services • Environmental monitoring facilities • Production and industrial facilities • Agricultural and aquaculture facilities • demography Etc.

Who needs u-cadastre?

- Potentially cadastral parcels are not the most relevant information in an ubiquitous SDI
- But: Related information could be relevant
  - Addresses (gazetteer service)
  - Use of buildings („I am looking for the nearest shopping center or cadastral office etc.“)
  - Derived products (e.g. city plans)

u-cadastre use cases

What is relevant in a current position?

- Simple inquiries about the location („give me all information that is close to my location“)

- Advanced inquiries („give me specific information (e.g. train schedule, weather forecast) with certian characteristics“); provided data must be feasilbe for the specific context

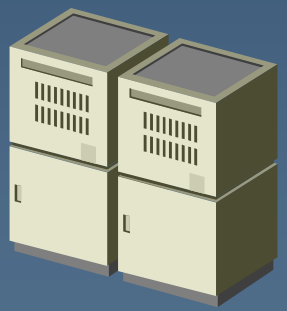
How can user access data today?

Client knows data provider

What data do you have?

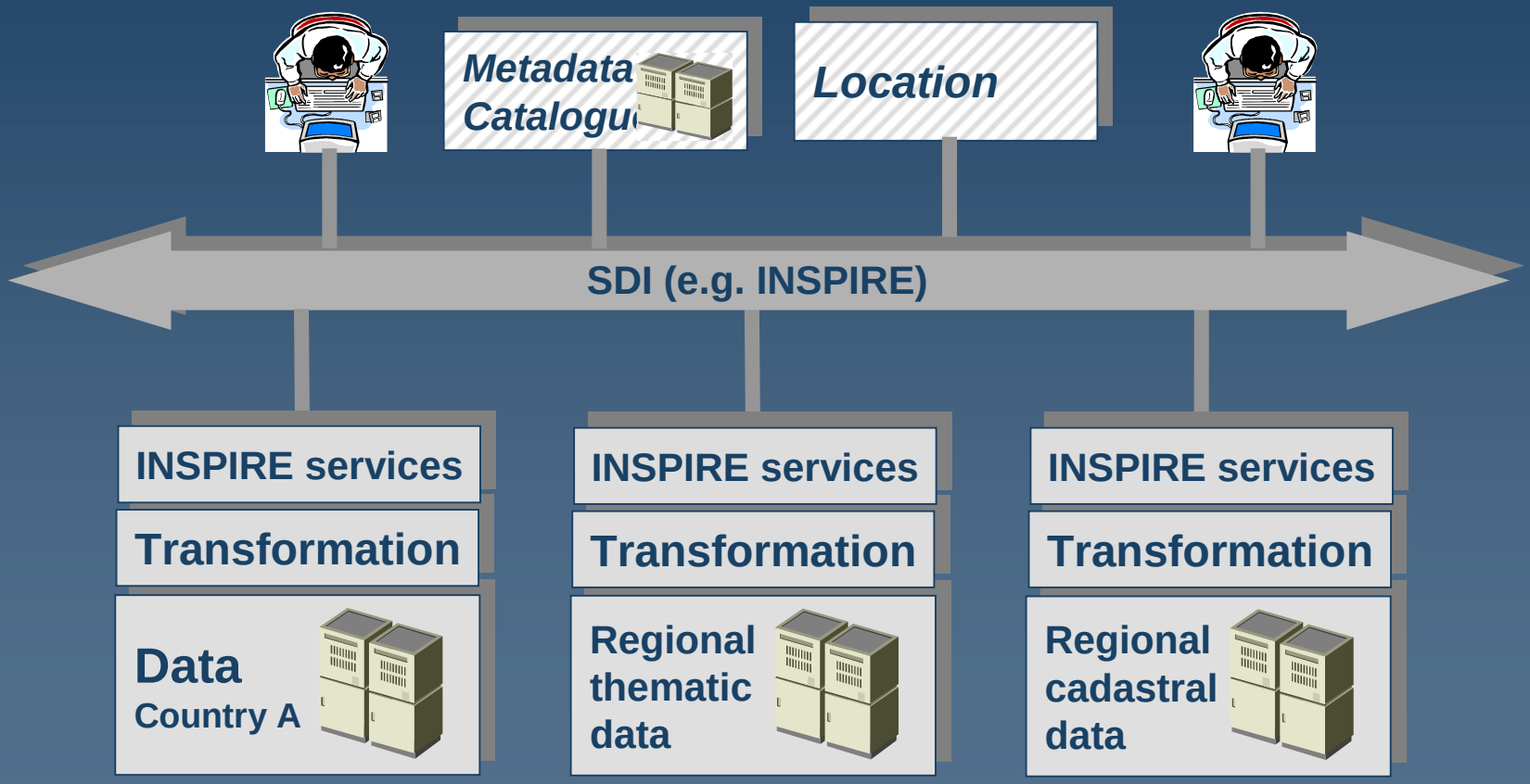
Here is what I have

Data provider knows client



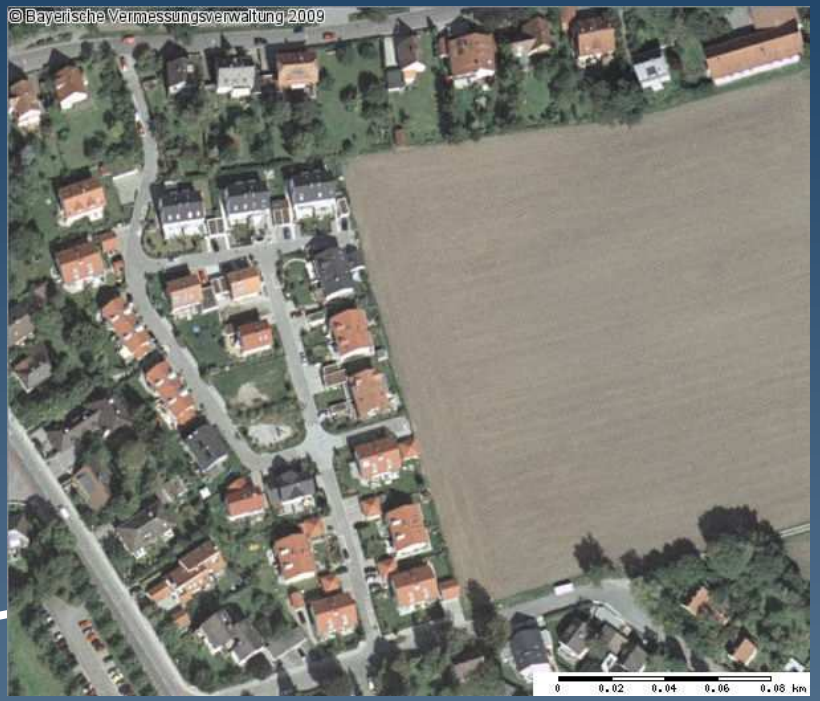
- Data provider decides about the content to be provided
- Communication by standardised web services

How Web Services work (tomorrow in an ubiquitous world)



How to analyse the feasibility of GI (today)

e.g. information about actuality of spatial information



Currently (without any concrete dates) only relative statements in terms of actuality are possible („this is older than that one“), but no absolute information. In an ubiquitous environment you have to query always the most actual (?) information.

Conclusions and Limits

- Who are the users of u-cadastre information? What are the use cases?
- Limited display resolution
- Limited mobile data transfer rates
- Ubiquitous access to the data
- Reliability and accessibility of relevant metadata
- Cadastral data must be found automatically by an u-application

➔So we are on the right track, but a lot of things have to be solved.