



The implementation of the new Cadastral Data Model – A brick for the SDI in Germany

Markus Seifert

Bavarian Administration for Surveying and Cadastre
German Delegate to FIG Com 7

FIG Commission 7 Annual Meeting 2008, Verona
Country Report Germany



„Map mess“: The current situation at municipality level in terms of cadastral related maps

Example:



City of Leverkusen

- 81 (!) subjects using geospatial information
e.g. real estate cadastre
town planning ...
- 64 sort of maps in 19 different scales
e.g. regional development plans
road classification plans ...



„Data Mess“

General maps

city map, topographic map 1:2500
development plans,

...

Local community planning maps

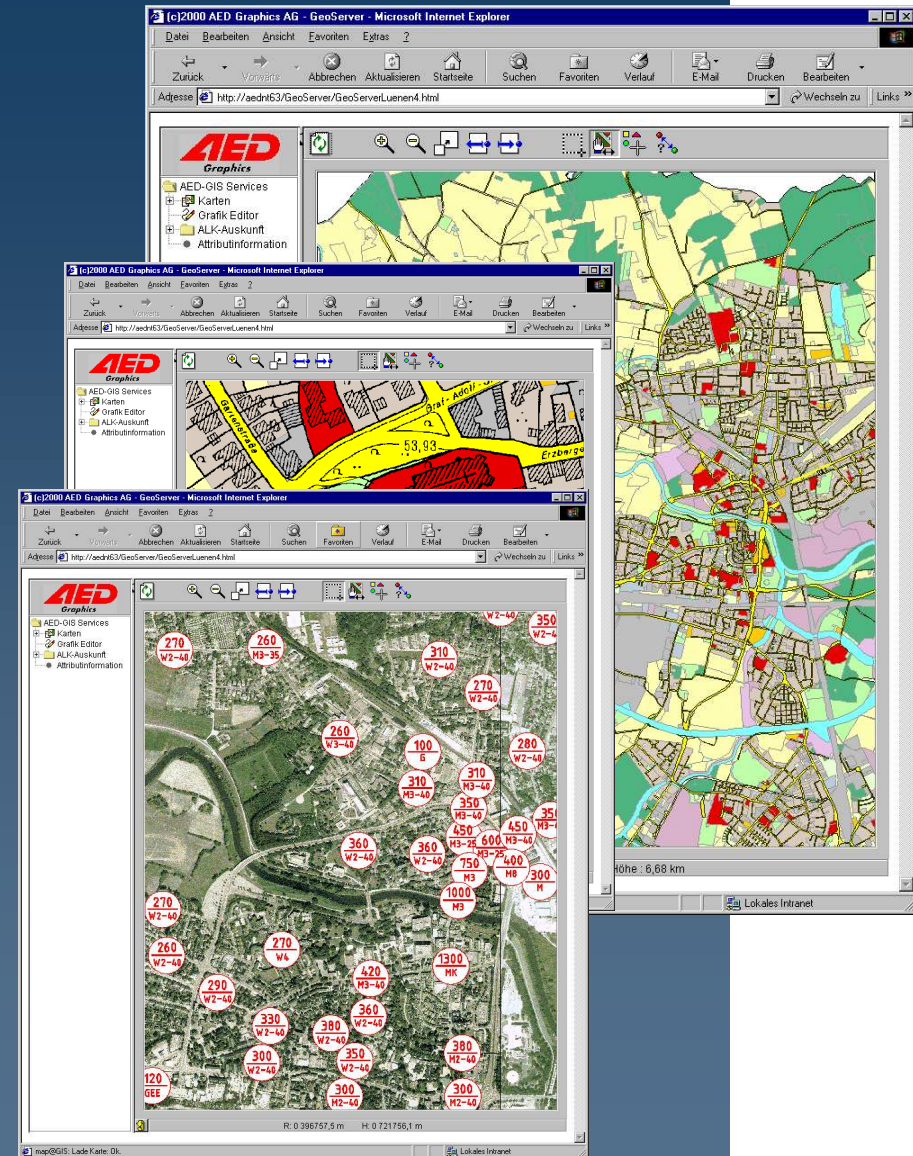
city base map,
town plan map, green space map,

...

Municipal detail maps

cadastral map
maps for technical documentation
real estate value map
tree cadastre

...





How can we solve this problem?



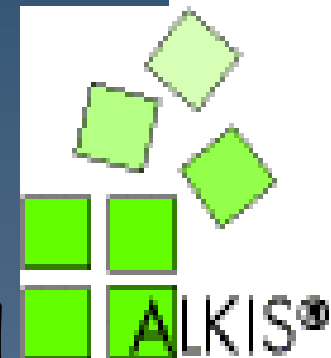
Integration of different data in one single object based datamodel that matches the real world phenomena into a computer readable format
=> **Model based approach**



Creation of a data model for spatial and non-spatial objects
=> **Data Modeling**
=> **Application Schema**



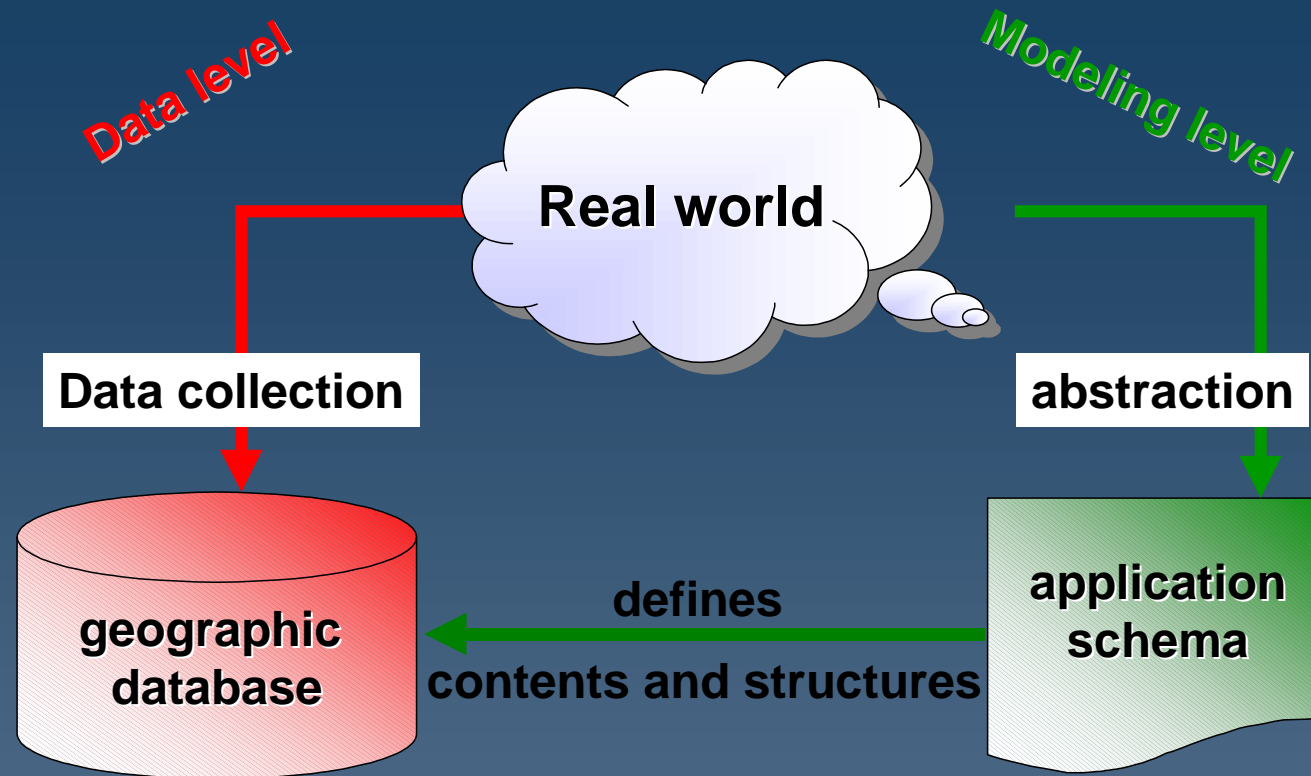
Establish this application schema as a „brick“ of the geospatial infrastructure



The Working Committee of the surveying agencies in Germany (AdV) has started and coordinates the process



Model-driven Approach is also promoted for a ESDI



This recommendation is listed for example in the [Technical Report CEN/TR 15449](#)

“Geographic information - Standards, specifications, technical reports and guidelines, required to implement Spatial Data Infrastructures (SDI)”



Data modelling as a basis for a SDI

- A simple overlaying of maps in the internet does not need an object-oriented data model but sufficient search and presentation functionalities (web map services)
- In future the requirements for geo-information will increase, that means geoinformation must be (automatically) readable
- SDI Requirements
 - Standardised and readable description of the digital content using a data model
 - Internet services that can handle geoinformation in the internet (search, find, interpret, process, transfer und present → web feature services)
 - A spatial data infrastructure therefore needs web functionalities as well as standardised data models for describing all geoinformation (reference data and thematic)

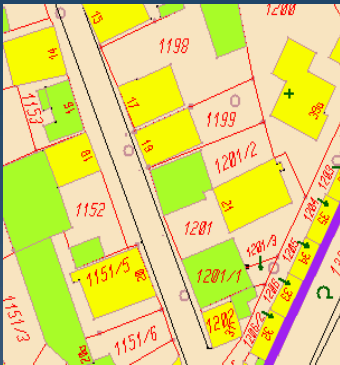




The National Geodatabase – Reference Data

ALK

Automated Real Estate Map



ALB

Automated Real Estate Register

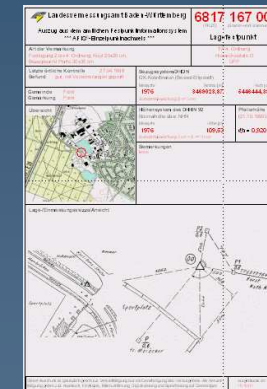


AFIS-ALKIS-ATKIS
Application Schema



ATKIS

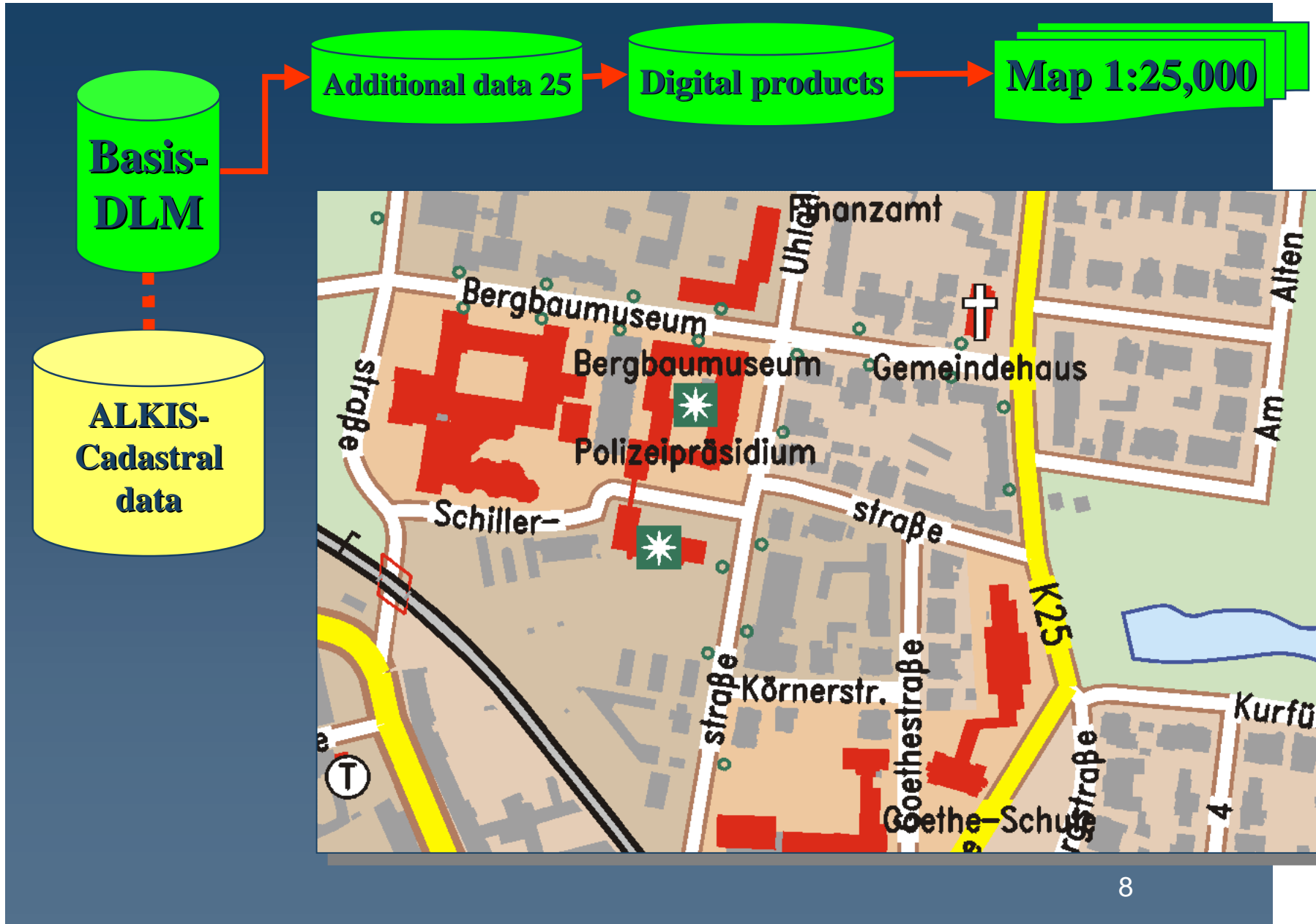
Official Topographic and Cartographic Information System



Geodetic Reference Points

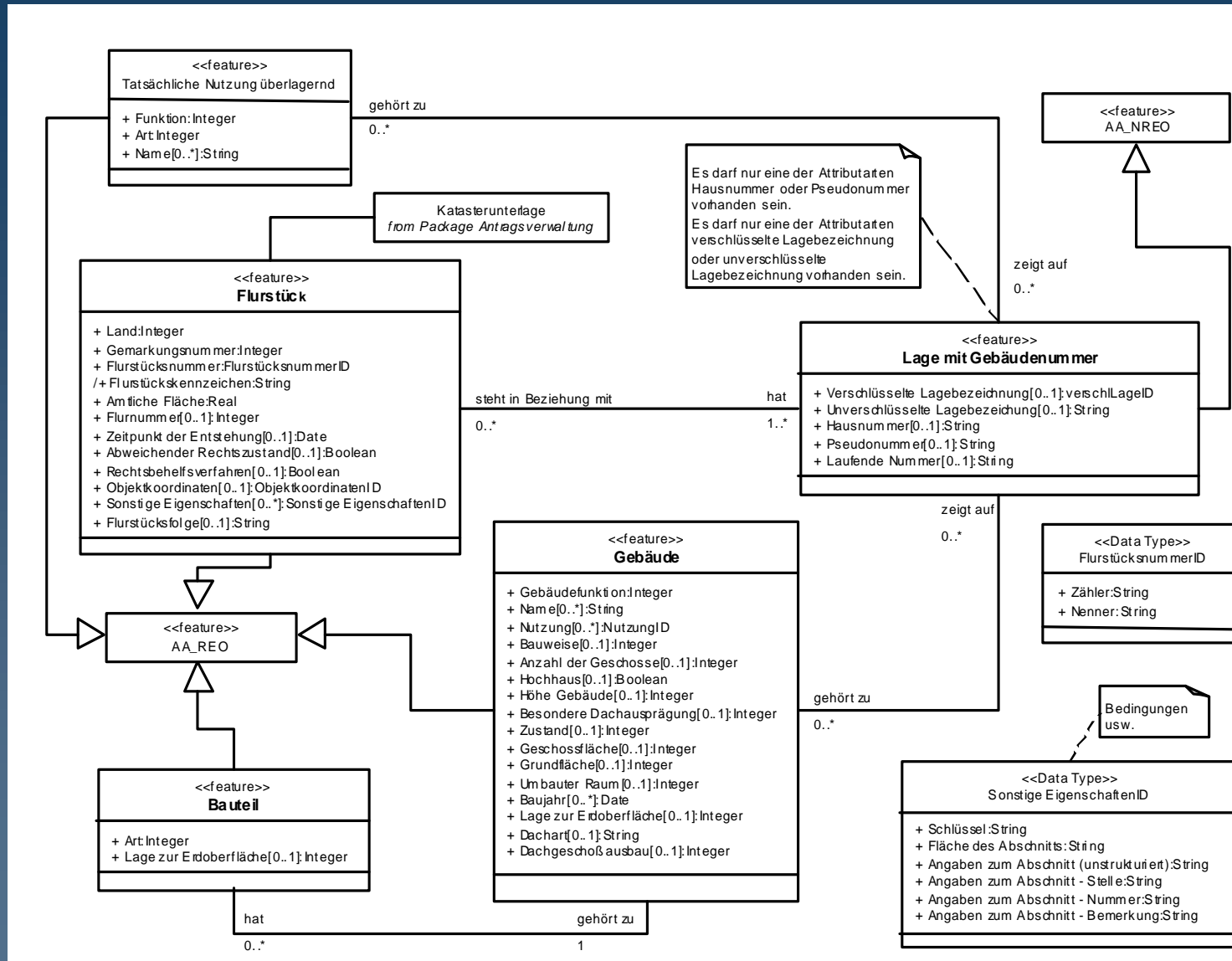


Integration of cadastral buildings in 1: 25,000





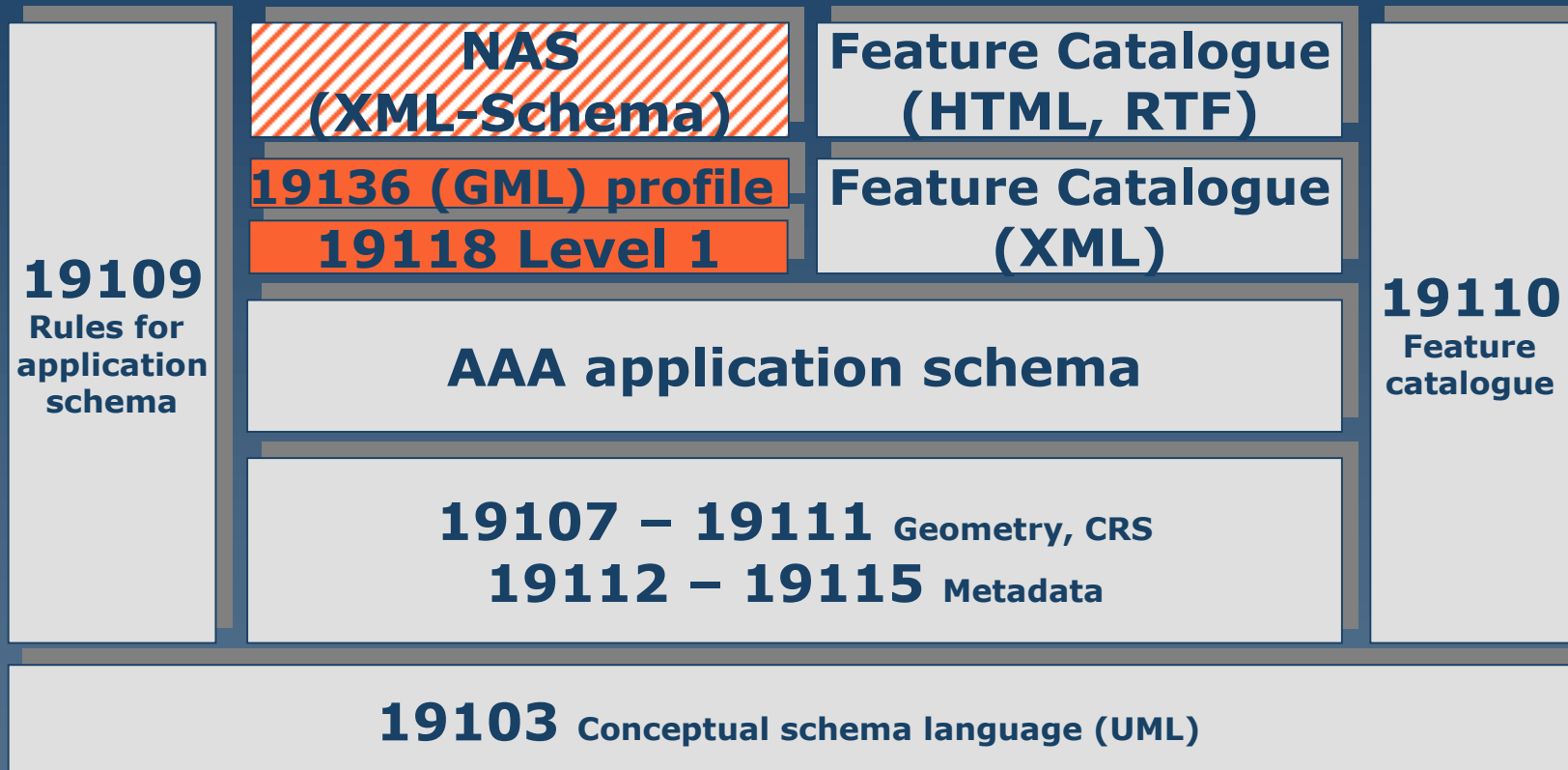
Cadastral data model described with UML





Consequent use of International Standards

ISO 19109 and referred standards are promoted as ESDI rules for specifying data structures and semantics.

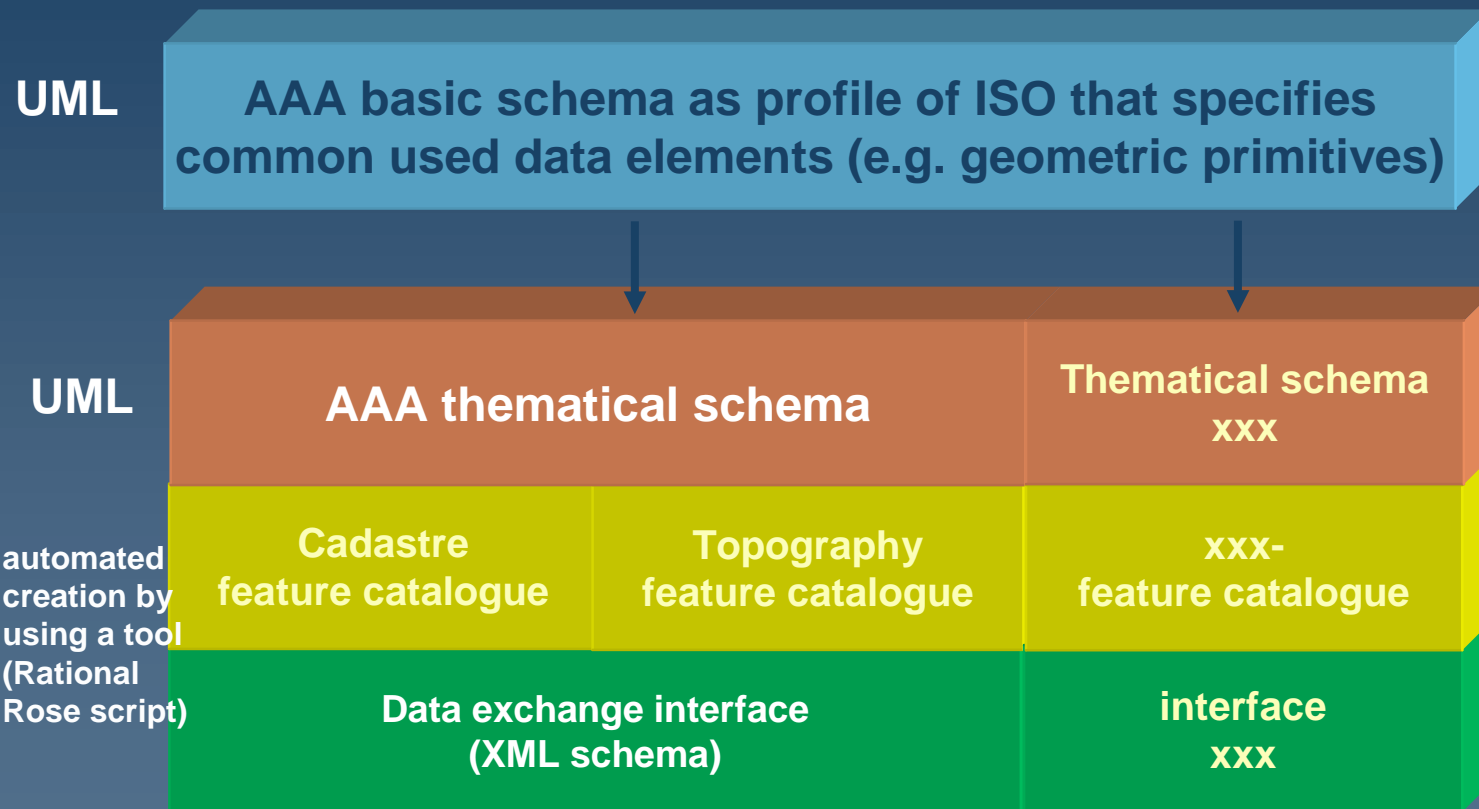




Generic Structure of the AAA data model

Components of the AAA data model

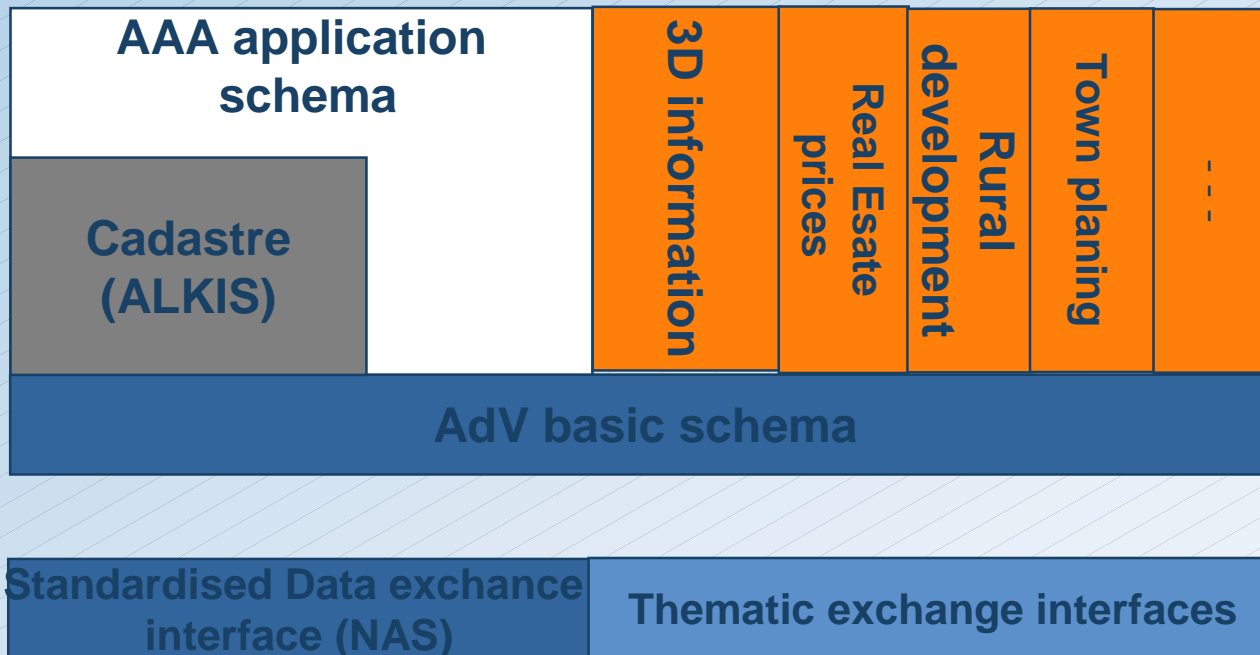
Aim: National geodata base



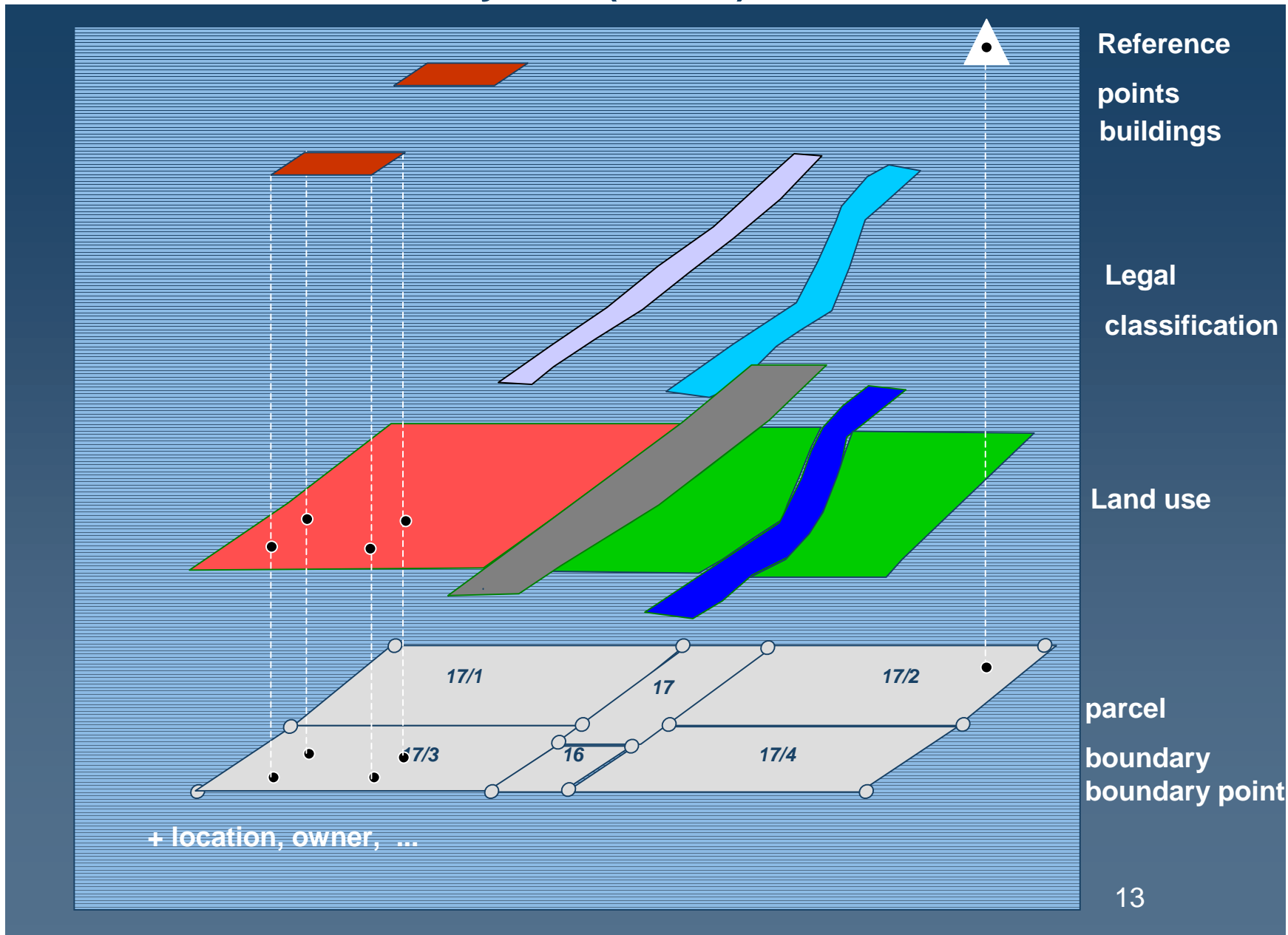


Modelling of thematic data

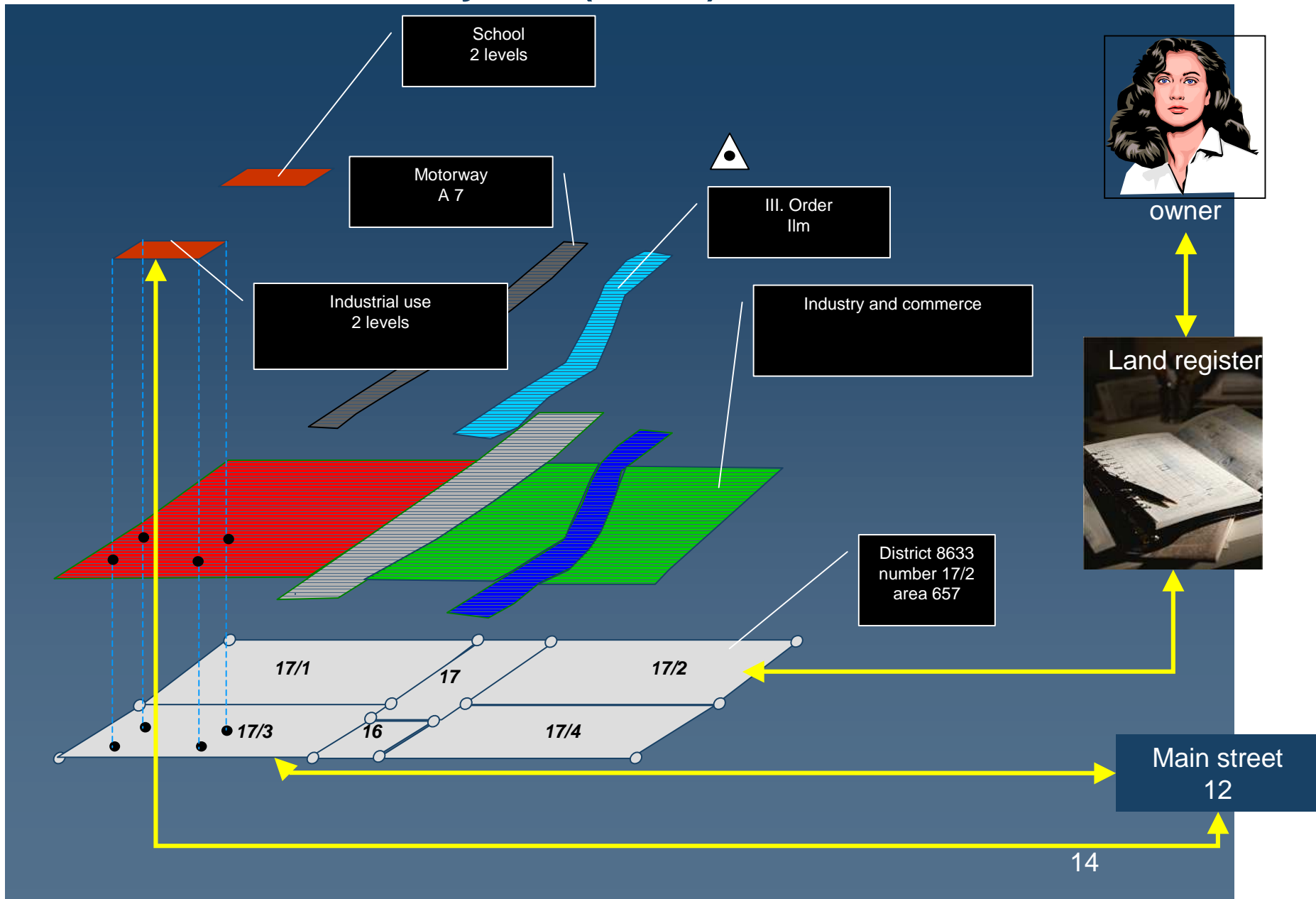
AAA basic schema as basis for thematic information systems



Content of the new cadastre information system (ALKIS)



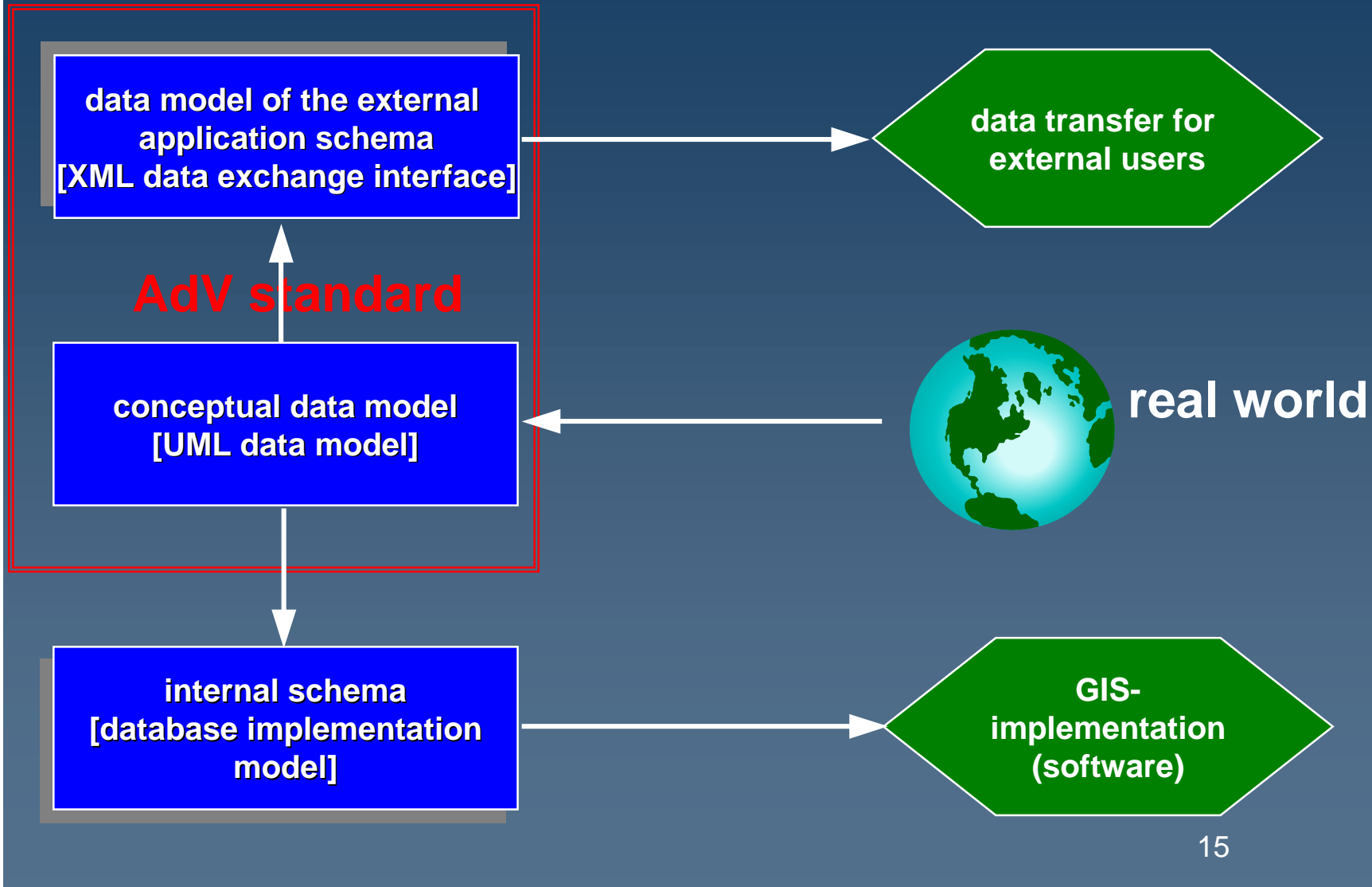
Content of the new cadastre information system (ALKIS)





The challenge: Implementation

No central AdV implementation





- Due to the federal structure of Germany there is no central implementation of ALKIS
- Implementation started in 2005 at all states of Germany (mapping concepts etc.)
- NOT the new software implementation is the challenge but the data quality enhancement of the current data in order to reach conformity to ALKIS
- In 2008 ALKIS starts operational work in some cadastral offices
- A revision process maintains the data model (some 1700 comments and change proposals have been solved during the implementation phase)
- Changes in cadastral business processes are not easy to apply
- (hopefully) compliant to INSPIRE (ALKIS uses a similar ISO based methodology)



- The AAA data model with the basic schema offers a thematic-independent and generic model framework that can be a baseline for modelling of other thematic domain data models. That will help to standardise the geoinformation in Germany.
- A SDI for geoinformation needs an exact and transparent definition of the sharable data. Therefore the same methodology as defined with the AAA data model can be used. Doing this, a national geo database can be established.
- The AdV offers support by using the UML tools for defining the data model and deriving the data exchange interface. Specific guidelines have been published on the AdV home page. The AdV guaranties maintenance at least until 2012.
- The success of the AAA data model bases on the consequent use of international GI standards from ISO.
- Corresponding geoservices will help to provide cadastral information that can be integrated within variable applications of e-government solutions.



Thank you for your attention!