

Cadastral – From Vision to GIS

FIG Workshop On Standardization
in the Cadastral Domain
Bamberg, Germany
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Topics of Discussion

- The Cadastre 2014 initiative
- Methods and technology
- Physical data base design
- Spatial relationships
- Queries and indexes
- Implementing Cadastre 2014
- Publicizing cadastre data
- Conclusion

Review of Cadastre 2014

- Land objects are the legal inventory
- Survey descriptions are a part of the inventory
- Proposes an object-oriented model
- Maintain relationships with other group definitions
- Land can be modeled using multiple land objects
- Cadastral systems are not isolated but work with other land information systems

GIS and Cadastre 2014

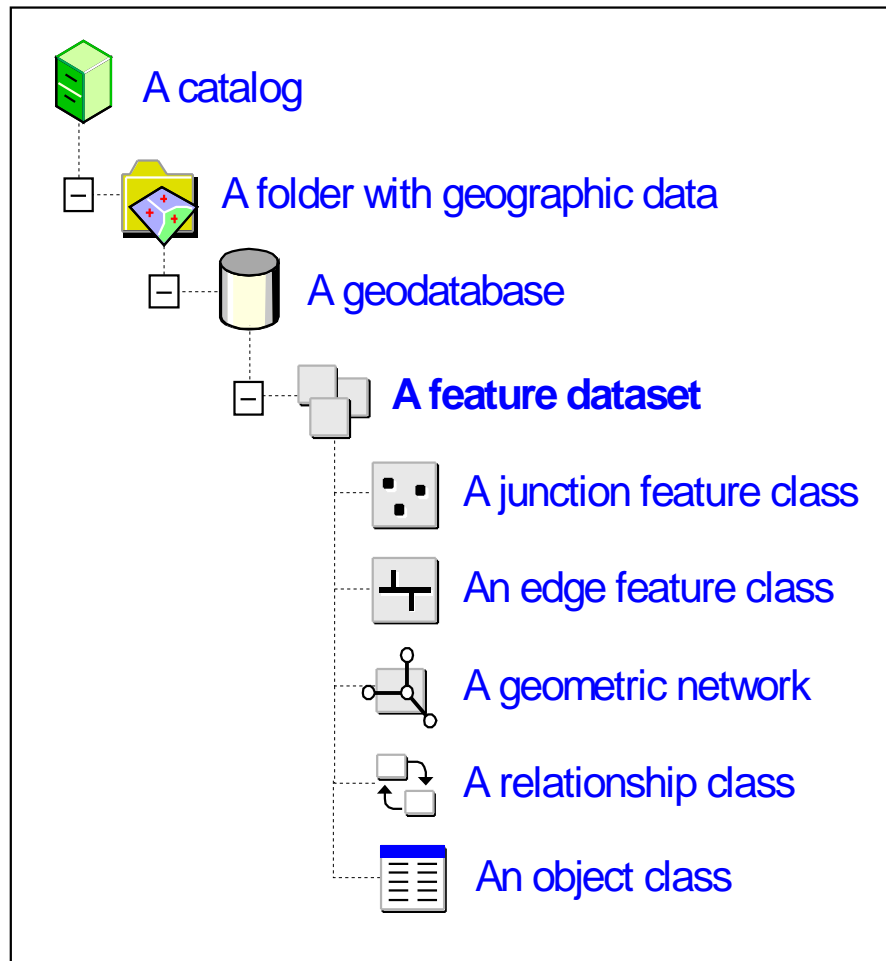
- GIS evolved to utilize object relational as an enterprise system
- Visualize data as maps
- Analyze geographic data and create derived information
- Support queries
- Share data with other systems using standards

Methods and Technology

- Verify the conceptual design supports the applications of land administration
- Define tabular structure and relationships in a logical design
- Create the physical design

Physical Database Design

- Spatial associated objects
- Spatial objects
- Subtypes for grouping objects
- Relationship classes
- Topology
- Rules to define legal values



Defining Spatial Relationships

- Association
- Topology – data integrity
- Reference to coordinate systems

Topology

“A legal description polygon object **must share boundary** with a surveyed boundary line”.

Topology in Cadastral Systems

- A set of rules which enable administration and practitioners to model real world objects
- Enforces data integrity

Queries and Indexes

- Performance consideration
- Indexes improve query performance
- Tested and tuned

Implementing Cadastral 2014

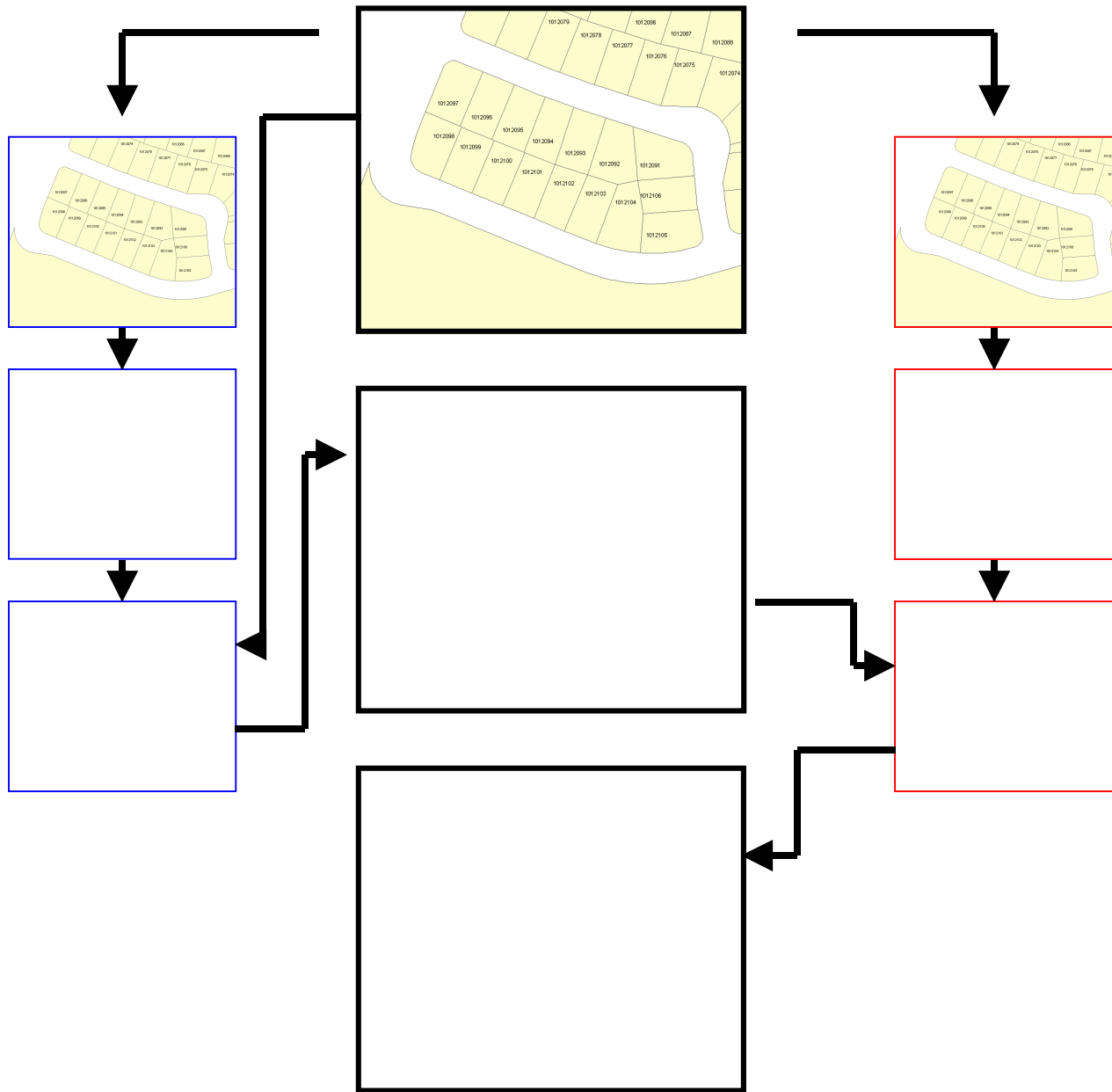
- Cadastral systems grow to be large multi-user enterprises
- Scalability
- Long transactions
- Different user, different requirements
- Publicizing the data

Scalability

- Two design approaches
 - database tables
 - GIS binary compression
- User environment
 - work flow considerations
 - version management

Editing Process

- Spatial objects and their relationships create unique work flows not found in common database technology
- Multi-user, long transactions
- Maintenance of transaction history
- Disconnected from the system



Publicizing Cadastral Data

- Considerations

- integration of spatial data and analyses into business process
- openness
- interoperability
- metadata
- Web services
- communication

Conclusion

Implementing Cadastre 2014 represents just the beginning. Cadastre 2014 is a framework for an extensible and flexible data model. Current GIS technology provides the tools and technology to support the data and workflows in an enterprise cadastral/land records system.