

Transaction Processing on Planar Partition for Cadastral Application

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Cadastral Information System

- Is a register
 - To store and deliver information about tenure
 - To process updates
- Is transaction oriented
 - Much like banking systems
 - Only data of far more complex structure
- Parcel-based systems → planar partition
 - Set of polygons without gaps and overlapping



Approaches to updating geometry

■ Traditional

- Small group of experts
- General purpose geometry editing tools
- Editing directly to the database
- Strictly in-house



■ Alternative?

- Much more experts (not only in-house)
- Focus on the data (instead on technology)

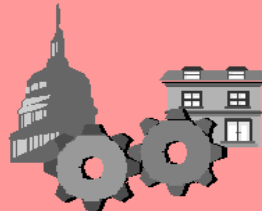


Why?

■ Outsourcing

Statement 5 on Cadastre 2014

Cadastre 2014 will be highly privatized! Public and private sector are working closely together!





Comment Public systems tend to be less flexible and customer oriented than those of private organizations.

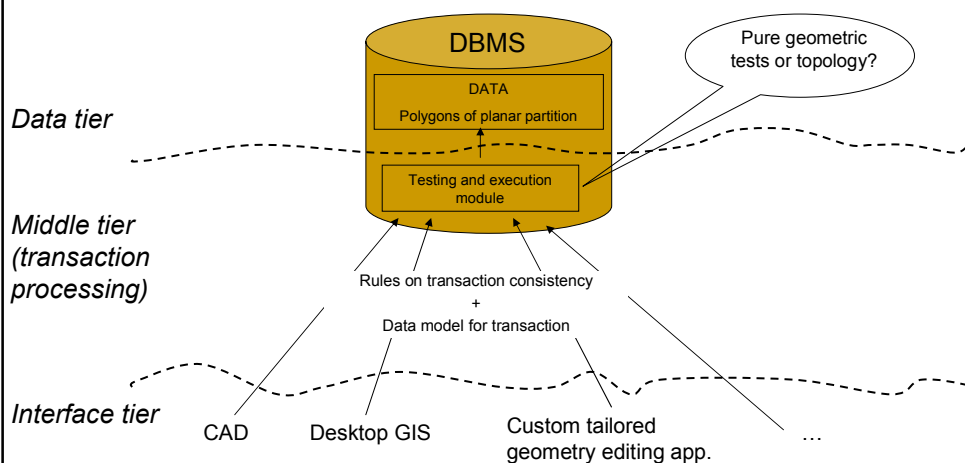
Free economies demand flexibility in land markets, land planning and land utilization. Flexibility may be provided better by private institutions. For necessary security, however, public involvement is indispensable.

Consequences The private sector will gain in importance. The public sector will concentrate on supervision and control.

Basic principles

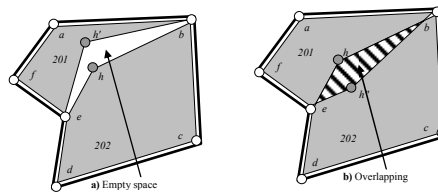
- The transactions
 - Precise model
 - Simple enough (for outsourcing) 
- The transaction testing/execution engine
 - Provide maximum level of data consistency
 - Preferably Real time processing 

Three tier approach



Testing transactions on planar partition

- Topological approach used
 - Stored half-edges for entire planar partition
 - On line half-edge extraction from new polys
- On-line topology testing (using half-edges)
 - Any inconsistencies detected and reported



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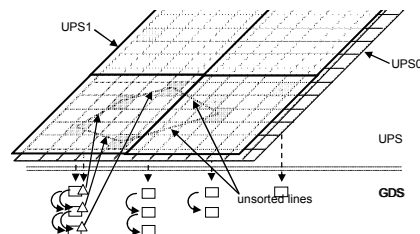
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Performance issues

- In-memory spatial index (created on-line)
- Uniform planar subdivision UPS (2 levels)
 - UPS0 for points (nodes)
 - UPS1 for lines (edges)



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Conclusions

- Hi performance topology engine
 - for polygons of planar partition
- Easily outsourced
 - DBMS centric
 - Dxf exchange format → very simple
- Oracle DBMS used → highly scalable
- Vektoria (implemented using the concept)
 - Installations in Cadastral offices in Croatia and Bosnia and Herzegovina

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Thank you...

...Q&A

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