Workflows for ensuring consistency of cadastral data
Saša VRANIĆ, MSc; Hrvoje MATIJEVIĆ, PhD, Croatia

Presentation overview

• Introduction
• Databases and transaction models
• Business processes and workflow management
• Requirements for maintenance of cadastral data
• Conclusion
Introduction

- Cadastre – basis for land administration system
- Data model differences
- ISO 19152
- From data-driven to process-driven approach

Database and basic transaction model

- Basic transaction model (BTM)
  - Atomicity
  - Consistency
  - Isolation
  - Durability
- Concurrent transactions
- BTM not suitable for cadastral transactions
Advanced transaction models

- Advanced transaction models
  - Nested transactions
  - Long lived transactions (SAGA)
  - Split/Join transactions
  - Flexible transactions
  - Polytransactions
- Developed with purpose to mitigate deficiencies of basic transaction model
- ATM are too heavily dependent to a DBMS

Workflow management system (WFMS)

- Workflow definition
- WFMS purpose
- WFMS disadvantages
  - Poor support for ensuring consistency and data integrity
- Modelling business processes
  - UML AD
  - BPMN
WFMS reference model

Requirements for maintenance of cadastral data

- Cadastral data – represent spatial extent of legal facts
- Correctness of data
- Concurrent processes
- Legal/formal rules
- Visibility of data upon successful transaction execution
- External stakeholders
Simple use case

Technically Affected parcels

Formally Affected parcel

Splitting line

Resulting parcels

Vertices added to A and C by splitting

Conclusion

- Seamless process of maintenance of cadastral data
  - Many involved stakeholders
- Advanced transaction models cannot fulfill this purpose
- WFMS lack support for ensuring consistency of cadastral data (and data in general)
- Combination of WFMS and transaction models
- Further research
  - Formalization of correctness criteria in a cadastral WFMS
  - Definition of a model for management of concurrent processes on cadastral data
Thank you for your attention!
Questions?

Saša Vranić, MSc
Faculty of Geodesy at University of Zagreb, Croatia
e-mail: svranic@geof.hr
LinkedIn: https://www.linkedin.com/in/svranic