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SDIMOBILE:
OPEN SOURCE GEO-WEBSERVICES FOR MOBILE DATA CAPTURE IN CADASTRAL APPLICATIONS

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OVERVIEW

SDIMOBILE:

OPEN SOURCE GEO-WEBSERVICES FOR MOBILE DATA CAPTURE IN CADASTRAL APPLICATIONS

- Background
- A cadastre use case
- System Analysis and Design of mobile data collection system:
  - **SDImobile middleware**
- Prototype Implementation and Testing
- Conclusion

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BACKGROUND

Nowadays mobile devices with GPS are used widely for field data collection

Cadastre information systems can benefit

- many (developing) countries lack proper land administration data
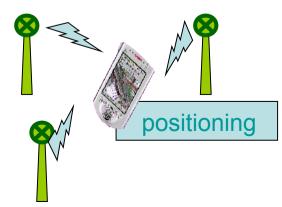- need collecting both spatial and non-spatial data quick / simple / pragmatic / cheap

Mobile devices have technological limitations:

- small screen size, small memory and processing power
- wireless networks are (relatively) unreliable and costly.

Therefore: design of a mobile data collection system requires special attention

positioning

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SDI^light approach

- a down–to–earth approach towards SDI

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SDI^{light} approach

- a down–to–earth approach towards SDI
- Open Standards whenever available
- Open Source where possible
- used in teaching, projects and research
- provides researchers, students and partners with a platform for relatively simple, low–cost, yet powerful ways of sharing data amongst various stakeholders

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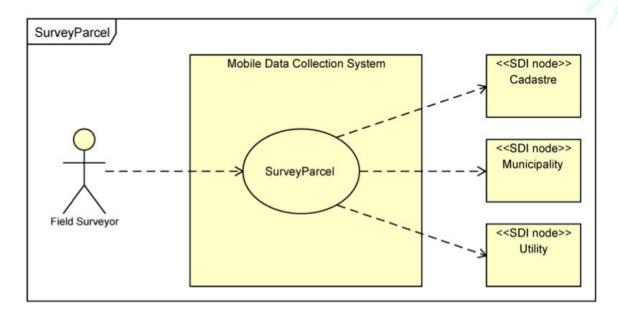
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CADASTRE USE CASE

- use case based on earlier work on Ghana Land Registry
- here limited to delineation of new properties
  - ▶ capturing spatial and non-spatial data
  - ▶ within existing cadastral framework (SDI node)
    - consistency checks, topological relationships, unique identifier, etc.
  - ▶ using existing further SDI nodes:
    - utility company for restriction/servitude on the property
    - municipality to provide administrative information
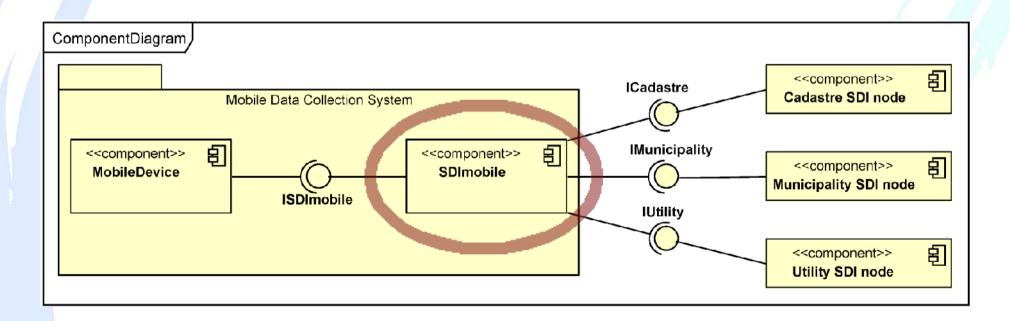
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THE CONCEPT

Design of a mobile data collection system requires special attention

- we designed a system where mobile capturing clients are supported by an *middleware* SDI node

- this **SDImobile** node was our focus

- mobile client only to test capturing cadastral data in a very limited use case
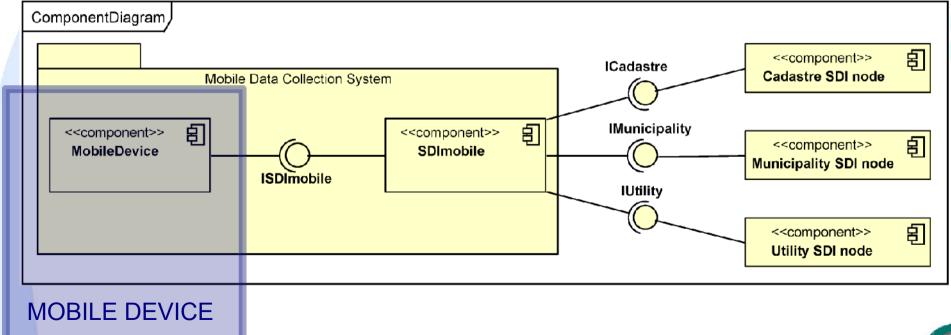
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THE CONCEPT

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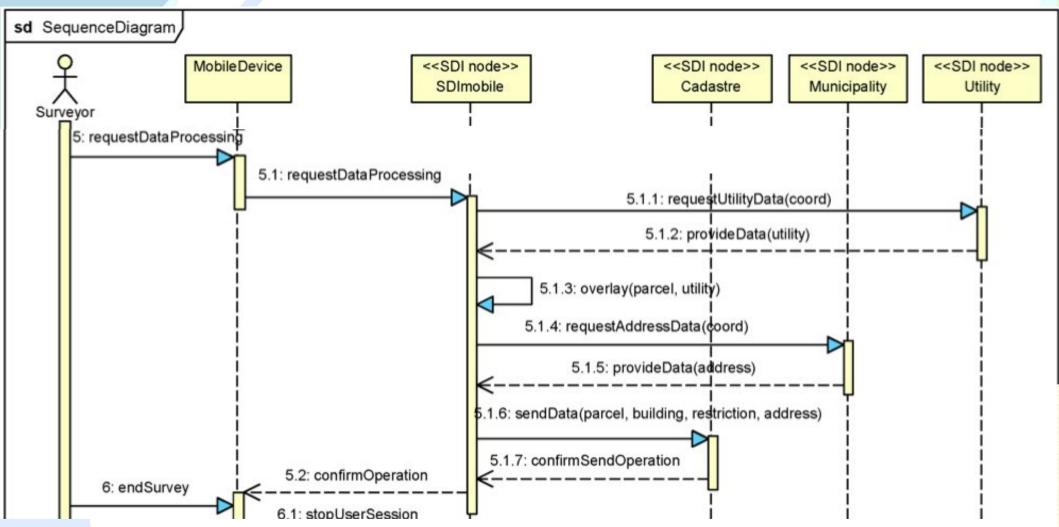
- we designed a system where mobile capturing clients are supported by an *middleware* SDI node

- this **SDImobile** node was our focus

- mobile client only to test capturing cadastral data in a very limited use case

- loose coupling of mobile client with rest of system

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THE CONCEPT (continued)

- wireless communication minimized and optimized

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IMPLEMENTATION

Limited proof–of–concept implementation

- **SDImobile middleware**
  - ▸ PostgreSQL/PostGIS back-end DB
  - ▸ Geoserver WFS-T services
  - ▸ ASP Python scripts
- **very simple mobile client**
  - ▸ browser based (runs on all smartphones)
  - ▸ HTML + Geolocation API + OpenLayers Javascript API

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CONCLUSION

- Combination of lightweight mobile client and a middleware SDI node is promising and has great potential for mobile field data collection
  - ▸ minimizes and optimizes wireless communication
  - ▸ leaves computation– and data–intensive processing on the server
  - ▸ standardises & simplifies access to SDI for the mobile client
- Future work:
  - ▸ more elaborate use cases
  - ▸ more sophisticated mobile client (e.g. caching, editing tools) and/or use of existing software (e.g. gvSIG mobile, QGIS mobile)

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THANK YOU FOR YOUR ATTENTION !
(more details in paper in proceedings)

QUESTIONS....?

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