Sustainable Land Management based on Fast Approach Cadastral Documentation

Dr. Alexander Kohli, Switzerland
geosuisse, Delegate to Commission 8
FIG Working Week 2011, Marrakech, Morocco, TS02K – Spatially Enabled Society

Agenda

1. Basic Principles of Data Modeling in a Spatially Enabled Society
2. Experiences – Information to be Documented / Modeled
3. Sustainable Land Management (SLM) – Fast Approach Documentation
4. Conclusions

Dr. Alexander Kohli, Switzerland, geosuisse, Delegate to Commission 8
FIG Working Week 2011, Marrakech, Morocco, TS02K – Spatially Enabled Society
**Basic Principles of Data Modeling in a Spatially Enabled Society**

- Public, permanent access to updated spatial information is a common good in SES/SEG (Wallace, 2007);
- The SES happens even without SDI’s as development is fast and huge availability of spatial information;
- Spatial information on same topic of different sources can/must be overlaid;
- Distinction of information sources and legal state is crucial.

→ Independently modeled spatial information layers in a SDI.

---

**Independently modeled Information layers**

**Law**
- Land Code:
- Legal Boundaries
- Disputed Boundaries
- Tenures
- Public Law:
- Urban zoning
- Protection zones
- Indigenous Heritage etc.

**Cadastre**
- Graphical Cadastre
- Register of Real Estate and (other) Rights

... an achievement of ‘FIG Cadastre 2014’
Experiences – Information to be Documented / Modeled

Australia – Indigenous Heritage

Independently modeled Information layers

<table>
<thead>
<tr>
<th>Law</th>
<th>Cadastre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Code:</td>
<td>Graphical Cadastre</td>
</tr>
<tr>
<td>Legal Boundaries</td>
<td>Register of Real Estate and (other) Rights</td>
</tr>
<tr>
<td>Disputed Boundaries</td>
<td></td>
</tr>
<tr>
<td>Tenures</td>
<td></td>
</tr>
<tr>
<td>Public Law: Urban zoning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>... conflicting legal boundaries.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphical Cadastre</td>
<td></td>
</tr>
<tr>
<td>Register of Real Estate and (other) Rights</td>
<td></td>
</tr>
</tbody>
</table>

... conflicting legal boundaries.
Kosovo – Property Problems

Illegal Occupation and Evictions

60’000 – 100’000 claims + 60’000 verification requests!

Illegal Construction

Abandoned Property

2. Experiences – Information to be Documented / Modeled
Dr. Alexander Kohli, FIG Working Week 2011, Marrakech, Morocco, TS02K – Spatially Enabled Society

Independent modeled Information layers

Law

Land Code: Legal Boundaries, Disputed Boundaries, Tenures

Public Law: Urban zoning, Protection zones, Indigenous Heritage, etc.

Cadastre

Graphical Cadastre

Register of Real Estate and (other) Rights

... conflicting legal boundaries.

2. Experiences – Information to be Documented / Modeled
Dr. Alexander Kohli, FIG Working Week 2011, Marrakech, Morocco, TS02K – Spatially Enabled Society
Sustainable Land Management (SLM)…
… by Risk Based Land Use Planning

- Not stopping – **but steering of development**;
- Measures for steering (trials for stopping):
  - legally approved land use planning with public involvement;
  - risk based land use planning (**destruction** incl.);

Urban Planning and…
… Results like Sprawl

2. Experiences – Information to be Documented / Modeled
Dr. Alexander Kohli, FIG Working Week 2011, Marrakech, Morocco, TS02K – Spatially Enabled Society
Independently modeled Information layers

### Law
- Land Code:
  - Legal Boundaries
  - Disputed Boundaries
  - Tenures
- Public Law:
  - Urban zoning
  - Protection zones
  - Indigenous Heritage
  - etc.

### Cadastre
- Graphical Cadastre
- Register of Real Estate and (other) Rights

... conflicting land use.

#### Sustainable Land Management (SLM)...

- Land use under awareness of Public-Right Restrictions:
  - More transparency (building code, lines of construction, forest, refuse dumps, water protection etc.);
  - Easy access to information.
  - Cadastre on Public Right Restrictions of Landownership Rights
Independently modeled Information layers

**Law**
- Land Code:
  - Legal Boundaries
  - Disputed Boundaries
  - Tenures
- Public Law:
  - Urban zoning
  - Indigenous Heritage
  - Protection zones etc.

**Cadastre**
- Graphical Cadastre
- Register of Real Estate and (other) Rights

... conflicting land use.

2. Experiences – Information to be Documented / Modeled

Dr. Alexander Kohli, FIG Working Week 2011, Marrakech, Morocco, TS02K – Spatially Enabled Society

Fast Approach Documentation (I)

Sustainable Land Management in a SES must be based on updated land documentation:

- Call for new tools – fast approach cadastre (SLTM);
- ‘FIG Cadastre 2014’ – use of separate layers for different topics as legal status, land holding type, occupations etc.;
- Registration not only of legal objects – but all rights, tenures, holdings;
- Procedures to regularize and legalize tenures.

Dr. Alexander Kohli, FIG Working Week 2011, Marrakech, Morocco, TS02K – Spatially Enabled Society
Fast Approach Documentation (II)

Fast Approach Documentation of property, houses, rights, or tenures:

1. **Identification** on satellite / orthophoto maps → preliminary land title – **surface description** on separate cadastre layers according to ‘FIG Cadastre 2014’;

2. **Resolution of conflicts and approval** – negotiation and reciprocal signing of maps by the owners / holders → general public display for **public approval**;

3. **Procedures to formalize** tenures (land reform acts) based on clear documentation of spatial information.

Fast Approach Documentation (III)

**Law**
- Land Code:
- Legal Boundaries
- Disputed Boundaries
- Tenures
- Public Law:
- Urban zoning
- Protection zones
- Indigenous Heritage etc.

**Cadastre**
- **Graphical Cadastre**
- **Register of Real Estate and (other) Rights**

Registration by points, polylines or surfaces also – not only by measured parcels/areas!
Conclusions

Being spatially enabled for Sustainable Land Management means

- **Comprehensive** documentation of spatial information in one system (legal / institutional independence, platform independent data modeling, ‘FIG Cadastre 2014’ principles);

- **Straight forward approach** for documenting spatial information incl. rights representing the actual situation – as a pre-requisite;

- **Quick and transparent procedures** to regularize and legalize tenures, or other illegal assets (construction) → good governance;

- Making the information to a **permanent accessible common good** (web based, SDI, etc.).

---

Thank you for your attention...

Dr. Alexander Kohli, Switzerland
geosuisse, Delegate to Commission 8
alexander.kohli@bsb-partner.ch
BSB + Partner, Consulting Engineers