ILWIS and 52° North: From closed source to open source and interoperable image services

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Presentation outline

- ITC
- ILWIS
- 52° North
- ILWIS web services & chaining
- Conclusions
Where is ITC?

What is ITC about?

- ITC = International institute for geo-information science and earth observation
- 250 staff, 600 students/year
- Mission: Capacity building and institutional development for and in economically and technologically less developed countries
ITC’s spearheads in education, research & projects

Geo-information science and earth observation for

- improving planning and management of multifunctional use of space
- strengthening civil society
- a better understanding of global change
- food security, water management and the environment
- disaster management

ITC’s GIS: ILWIS

ILWIS: the Integrated Land and Water Information System

- PC-based integrated Geographical Information System (GIS) & Remote Sensing software
- Developed by ITC
- Originally designed in 1985 for a land use zoning and watershed management project in Sumatra
- Used extensively in courses in and outside ITC, in research and projects
ILWIS key features

- Integrated raster and vector design
- Comprehensive set of image processing tools
- Orthophoto, image georeferencing, transformation and mosaicing
- Rich projection and coordinate system library
- Geo-statistical analyses, with kriging and co-kriging for improved interpolation

ILWIS arithmetic operations
ILWIS GUI

ILWIS goes open source

- Shareware
- Development by ITC

- Open source: GPL license
- Community based development
ITC participates in 52°North

- Collaboration platform for research-oriented open source software development
- Objectives:
  - Advance the development of cutting edge open source technology for SDIs
  - Transform the innovations into practical technological solutions

Who is 52°North?

- Cooperation of research institutes and enterprises
- Founded by
  - Institute for Geoinformatics (Muenster, Germany)
  - con terra GmbH (Muenster, Germany)
  - ITC (Enschede, The Netherlands)
  - ESRI Inc. (Redlands, CA)
- Open for any innovation / research oriented organization or individual
52°North Communities

Well established communities
- Sensor Web Community
- Security & Digital Rights Management Community

Within initialization phase
- Web Processing Community
- ILWIS Community

Use of software repositories

The way forward for ILWIS: Open interfaces! *ITC Open*

- Diversity of S/W clients and GI functionality needed in projects and education

![Diagram showing diversity of S/W clients and OGC interfaces](image)
**ITC Open - Architecture**

- **Local/LAN storage**
- **Client**: GetCap, Execute
  - **Java API**
  - **Servlet (Java)**: Registry, WMS connector, ILWIS connector
  - **ILWIS (COM)**: Raster filter operations
  - **Display**
  - **Vector data**
  - **Raster data**
  - **OGC service interfaces**
    - WMS
    - WPS
    - SLD
    - WFS

**Filter services powered by ILWIS**

- Web processing Client
  - North: 3742794, South: 3741376
  - East: 46540, West: 465000

- Original image (WMS): http://geooserver.itsc.it/leemmens/01.jpg
- Processed image (WMS): http://geooserver.itsc.it/leemmens/02.jpg
Client-side service integration

Add WMS Layer to Map Search Locations Calculate Statistics

Add WMS Layer

Add to map

landcover
Client-side service integration

Service chaining in uDig

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<th>WFS@ITC: Roads</th>
<th>WPS@ITC: Generalisation</th>
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<td>WFS@JRC: Hazard polys</td>
<td>WPS@ITC: Buffering</td>
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<td>WMS@ITC: Corine Landuse</td>
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Fire hazard assessment scenario in the Spanish province of Galicia
Conclusions

- Issues
  - Service granularity
  - Client-side handling of service in/output
  - Smart storage in service chaining
  - Community based software development

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http://www.itc.nl

http://52north.org/ilwis