OpenData and INSPIRE with GeoServer, GeoNetwork and MapStore: lessons learned from real-world use cases

Ing. Simone Giannecchini, GeoSolutions
Silvana Griffa, CSI Piemonte
Giovanni Menduni, City of Florence
Gianluca Vannuccini, City of Florence
Outline

• About GeoSolutions
• Open Source SDI Building Blocks
• Open Data, Open Source and Standards at work
• Conclusions
GeoSolutions

- Founded in Italy in late 2006
- Expertise
  - Image Processing, GeoSpatial Data Fusion
  - Java, Java Enterprise, C++, Python
  - JPEG2000, JPIP, Advanced 2D visualization
- Supporting/Developing FOSS4G projects
  - GeoTools, GeoServer, MapStore
  - GeoBatch, GeoNetwork
- Clients
  - Large NGOs, Public Administrations
  - Private Companies
  - Good balance between Italian and International Clients

http://www.geo-solutions.it
Open Source Building Blocks
GeoServer

- GeoSpatial enterprise gateway
  - Java Enterprise
  - Management and Dissemination of raster and vector data
- Standards compliant
  - OGC WCS 1.0, 1.1.1 (RI), 2.0 in the pipeline
  - OGC WFS 1.0, 1.1 (RI), 2.0
  - OGC WMS 1.1.1, 1.3
  - OGC WPS 1.0.0
- Google Earth/Maps support
  - KML, GeoSearch, etc..
GeoWebCache

- Tile Oriented Geospatial Cache
  - Java Enterprise
  - Maps Acceleration (10x to 100x)
- Standards compliant
  - OGC WMS 1.1.1, WMTS 1.0
  - TMS
  - WMS-C
- Google Earth/Maps support
- Stand-Alone or Integrated in GeoServer

GeoWebCache

Persistent raster/KML tile cache
MapStore

- Create, Manage, Share Stunning Maps easily
- Mashing-up various sources of data
- Inject markers and tracks with custom HTML pop-up
- Embed in existing sites and portal
- Use as complete geoportal solution
GeoNetwork

- **Metadata**
  - FGDC, Dublin Core
- **Export/Import**
  - RSS & GeoRSS newsfeeds
  - XML + XSL
- **Catalogue interfaces**
  - OGC CSW 2.0.2 ISO Profile
  - OAI-PMH
  - Z39.50
  - Geo-OpenSearch
  - GeoRSS
  - WebDAV
- **Web Mapping Client**
  - OGC standards for WMS, WMC
- **Web Map Server (through GeoServer)**
  - WMS, WFS, WFS-t, WCS, KML
GeoBatch

- Real-time produced data
  - Remote Sensing, In situ, Models, etc..
- Recognizable, isolate data streams
- Flow
  - Incoming series of geospatial data
  - Specific format
  - Defined rules for preprocessing
  - Defined rules for ingestion and/or exploitation
  - Automatic Ingestion and preprocessing → No manual intervention
- Example, flow of EO raster

Producer ➔ Tile ➔ Pyramid ➔ Publish

GeoWebCache
GeoServer
GeoSolutions
Real World Use Cases
Florence OpenGeoData Portal

- Integration with CSW (GeoNetwork + MapStore)
- OpenData portal
  - Direct Download
  - WFS, WMS, WMTS
- Nice Mix of Proprietary + Open Source
- INSPIRE Compliancy at Services Level
  - CSW, WMS, WMTS…
- Support for Italian RNDT specification (CSW)
- Data Transformation (TODO)
Florence OpenGeoData Portal
LaMMa - GeoPortal
LaMMa - GeoPortal

- Integration with CSW (GeoNetwork + MapStore)
- Meteosat Data
  - All channels + products for 1st, 2nd and 3rd generation data
  - On the fly generation of false color images
- Radar Data
  - Multiple types
  - On the fly optimization
- Various models at various resolutions
  - ARW (3km, 9km, 20km)
  - GFS (3km, 9km, 20km)
  - 2 runs every day
- Retaining only a limited time window of data
  - 1 week of models
  - 1 month of Meteosat and Radar data
- INSPIRE on the radar, limited efforts so far
Cultura Italia - MuseiID Portal

- Integration with CMS & Search Engine
- Inject custom markers and tracks with custom HTML pop-up
- Mobile Enabled Version
- Link-back to managed resources
- Example [here](#)
- No standards, simply OpenData \(\rightarrow\) Agility
WIZ EU Project

- Integration with CSW (GeoNetwork + MapStore)
- Dissemination of Data and Metadata for Water Management
- Metadata to be harvested by INSPIRE GeoPortal
- OpenData focus
- CrowdSourcing water data
  - Quality Reports
  - Lossess
CSI Piemonte - GeoPortal

SEARCH

VIEW

GeoPortale Piemonte

REGENE PIEMONTE

La mappa è costituita da seguenti layer: 'Localita' (strati delle labe...)

Land use, Copertura del suolo, PTA.

Geosolutions
CSI Piemonte - GeoPortal

- Integrated Search & Visualization
- INSPIRE (CSW)
- Support for Italian RNDT specification (CSW)
- Cross Border Mash-ups
- Integration with existing legacy catalogues
CSI Piemonte – AERA Project

- Air Environment Regions ALCOTRA
- Integrated Search & Visualization
- INSPIRE (CSW)
- Support for Italian RNDT specification (CSW)
- Cross Border Mash-ups & Metadata Federation
- Integration with existing legacy catalogues
County of Bozen - GeoPortal

- Multilingualism
- Integration with existing solutions
- Download Services
- Support for Italian RNDT specification (CSW)
- Support for INSPIRE (CSW, WMS, WMTS… )
Open Source

- Great Benefits for EU
  - Proprietary Software is mainly built outside EU
  - Let’s not give up on our best brains!
- Push for innovation
  - Openness foster collaboration
  - Openness foster innovation
- Open Source for Dummies
  - Select products carefully, engage the community
  - Give back → avoid Vampires & Vendor Lock-in
  - Account for Professional Support → no paying no gain!
- Open Source != Free
  - Plan for the features you need not how many licenses you need!
INSPIRE

- Top-down process
  - Works by imposition
- Complexity
  - Complex Solution for a Complex problem
- Adapting to INSPIRE is expensive
  - Existing products
  - Existing infrastructure
  - Existing data repositories
- Real world moves faster than standardization bodies
  - Open Data & Open Source provides momentum, let’s use it!
Conclusions

- We work for people
  - People ask for more data & services rather than regulations
- Open Source is getting a lot momentum
  - No upfront costs is fostering adoption
  - But generating somewhat wrong expectations
- Free and Open Source is not completely Free!!!
  - Support, Training, etc… not free
- Open Source & Open Data
  - are fostering innovation
- INSPIRE is slowing getting into focus
  - Complexity is often underestimated
  - Knowledge is somewhat lacking
Thank you for not sleeping (loudly)!

simone.gianneccchini@geo-solutions.it