OSGeo: International networking in the open source GI field

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An introduction to the Open Source Geospatial Foundation

- **An umbrella organization**
  - Unites free and open source software for geoinformatics (FOSS4G) users, developers, businesses, and educators

- **An international community**
  - People organized in committees and working groups, communicating through email lists and on IRC and Wiki, and meeting in conferences such as the recent FOSS4G2006 in Lausanne, which attracted ~500 people

- **A host of projects, currently**
  - 8 software projects
  - A geodata project
  - An education and curriculum project

The story of OSGeo in short

- **Grassroots process**
  - No master plan, personal goals to solve problems
  - Communities develop around broadly useful projects
    - GDAL/OGR, University of Minnesota MapServer, R spatial, GRASS, and many others
- **Freedom and openness leads naturally to wishes for even better interoperability and a larger, united community**
  - A wish for a meta project emerges
    - Legal support
    - Cooperation and quality
    - Visibility and outreach
- **Autodesk, Inc provides a spark after OSG'05**
  - Open source MapGuide, get connected with OS folks
- **A foundation**
  - Bootstrap with Core Persons and Charter Members

Goals of the foundation (Page 1)

Mission statement: To support the development of Open Source geospatial software, and promote its widespread use

• To provide resources for the foundation projects – infrastructure, funding, legal aid, etc.

• To promote public geodata – promote and study open geodata formats and licences, promote public access to state-collected geodata, and run a repository of open geodata

• To create and promote educational and other material that supports the goals of the Foundation

- Tutorials, Documentation, Binary distributions, Materials for universities, Datasets etc.

Goals of the foundation (Page 2)

•To promote the use of open source software in geospatial industry in general

• To work for open standards and standards-based interoperability

• To encourage communication and cooperation between FOSS4G communities

• To operate an annual OSGeo Conference, in coordination with related efforts

Related efforts and ”openness”

• OSGeo is not there to undermine or reinvent existing efforts, for example OGC (Open Geospatial Consortium), EOGEO, Projects developing FOSS4G, Commons of Geographic Data project, NCGIA Core Curriculum, etc. etc.

• OSGeo is based on the ideology of ”openness”, but it is also very practical
  - cooperation with businesses, and businesses itself are in the core of OSGeo
  - public geodata is a good idea
    - public geodata benefits and encourages small businesses
    - non-public basic data is just not very practical
  - but, freedom *is* important to OSGeo
    - software developer’s and user’s freedoms, freedom to know about one’s geospatial environment
    - freedom to share ideas and their expressions as software with like-minded people and help others

OSGeo people

- **Board**
  - **Arnulf Christl**, Mapbender project, CEO of CCGIS, lives in Bonn, Germany
  - **Chris Holmes**, GeoTools & GeoServer, works for The Open Planning Project, lives in New York City
  - **Gary Lang**, from Autodesk
  - **Mark Lucas**, consults US DoD pushing OS software, lives in Melbourne Florida
  - **Dave McIlhagga**, MapServer & MapGuide, CEO of DM Solutions Group, lives in Canada
  - **Markus Neteler**, Grass, works for ITC and CEA (research centers), lives in Trento, Italy
  - **Venkatesh Raghavan**, professor of geoinformatics in Osaka City University
  - **Jo Walsh**, Public geodata, lives in London, UK(?)
  - **Frank Warmerdam**, GDAL etc., independent developer, President of OSGeo
- **Others**
  - **Tyler Mitchell** (Web Mapping Illustrated), **Michael P. Gerlek** (Lizardtech), **Gary Sherman** (QGIS), etc. etc.

OSGeo globally

- **North America**
  - Canada, USA
- **Europe**
  - Esp. Germany, Italy, Spain, Poland, UK

- **Local chapters outside Europe and North America**
  - South Africa
  - Brasil
  - Indonesia
  - China
  - Japan
  - India

- **Software internationalization and localization**
- **Local/regional training, support, development**
- **Promote OSGeo locally/regionally**

About free / open source software

- **A development methodology, designed to**
  - preserve the freedoms
    - to run the program, for any purpose
    - to study how the program works, and adapt it to one's needs
    - to redistribute copies of the software, so you can help others
    - to improve the program, and release the improvements
  - utilize the talent and help of many people
    - merit is based on skills and contributions
    - everybody can do something
- **Licence is important!**
- **Price tag, if there is one, is not based on giving rights to the software**
- **Access to source code does not always mean free**
- **Standards are very important for FOSS!**

How does it all work?

- **Internet**
  - email, email lists
    - discussion, questions, answers
  - web pages
    - content management systems, documentation, Wiki
  - version control systems
    - CVS, SVN
    - source code for libraries, programs, documentation, test cases, books
    - committers, nightly snapshots, building robots
  - IRC
    - discussions, meetings
  - VOIP
- **Conferences**

OSGeo software incubation

- **A process designed to ensure**
  - a successfully operating open and collaborative development community
  - have a clear IP oversight of the code base
  - that projects adopt OSGeo principles
  - that projects are mentored through the incubation

- **OSGeo principles**
  - good management
  - contributors are taken care of
  - standards and collaboration between projects
  - integrity of code base
  - good documentation, code management, discrepancy tracking, project mailing lists, automated build and test
  - OSGeo branding

The initial OSGeo software stack

- **Software libraries**
  - Geospatial Data Abstraction Library GDAL/OGR
  - GeoTools
  - Feature Data Objects FDO
- **Desktop tools**
  - GRASS (General purpose GIS)
  - OSSIM (Geospatial image processing)
- **Geospatial data servers**
  - UMN MapServer
  - MapGuide Open Source
- **Web application frameworks**
  - Mapbender
  - MapGuide Open Source
- **Web applications**
  - MapBuilder

Geospatial Data Abstraction Library

- Single abstract data model for raster and vector geospatial data
- Very useful as a i/o-library for higher-level tools
- Contains a basic toolkit
  - Data translation
  - Basic data processing
  - Reprojections
- Modular structure for format drivers
  - a large number of supported raster and vector formats
- Swig-based bindings for several other languages besides C++/C
  - Perl, Python, VB6, R, Ruby, Java
- Used by many FOSS and proprietary projects
  - GRASS, OSSIM, QGIS, ArcGIS, Google Earth, …

GeoTools

- Implementations of many of the OGC standards in Java
- Drivers for many data sources
- Linked to other free and open Java projects
  - Java Topology Suite
  - GeoAPI
  - GeoWidgets
- Used by
  - GeoServer, a WFS implementation
  - GeoVISTA Studio, a geocomputation and geovisualization environment
  - uDig, a desktop Internet GIS

Feature Data Objects

- an API and collection of drivers for various geospatial data sources
  - GDAL
  - OGR
  - Shapefiles
  - ArcSDE
  - WMS
  - WFS
  - MySQL
- currently used by many Autodesk products

GRASS

- Oldest FOSS4G, currently in version 6.1 released August 11. 2006
- Very active community, new developments
  - scripting
  - use in web-based systems
  - QGIS as an easy-to-use GUI
- Used actively in research
- Comprehensive system
  - own database system
  - GUI and command line
  - Visualization tools
  - large analytical toolset, for both raster and vector

OSSIM

- High-preformance engine for remote sensing, image processing, etc. purposes
- Development has been funded by several US government agencies
- Used for research and operational purposes

UMN MapServer

- Server for geospatial data
  - Supports WMS, WCS, WFS
- Server for interactive web mapping solutions
  - Flexible configuration
- MapScript
  - Scripting environment for working with geospatial data
  - Supports several languages: PHP, Python, Perl, C#, Java
- Integrates well with front-end environments like ka-Map, Chameleon, Mapbender, MapBuilder and CartoWeb

MapGuide Open Source

- Web-based platform for webmapping and geospatial web services
- Interactive viewer
- Quality cartographic output
- Supports PHP, .NET, Java for application development

Mapbender and MapBuilder

- Website development toolkits
- Can use data from various sources and in various formats
- User management

Other FOSS4G tools

• **Not OSGeo foundation projects, but these and other free software really belong to the general FOSS4G software stack**

- PostGIS, Simple Features for PostgreSQL, a popular free RDBMS
- QGIS, a user friendly desktop GIS
- R spatial, spatial modules for the R statistics language
- GEOS, port of Java Topology Suite to C++
- SAGA, GIS or GIS application framework
- PCL, Python Cartographic Library
- Perl Geo modules
- GPS Manager, GUI application for GPS work
- MapWindow, user friendly extensible desktop GIS and ActiveX control
- … freegis.org has 304 software entries!

OSGeo data project

- **Guidelines and examples for open and free geodata and geometadata standards**
- **Public geodata licensing**
- **Packaging geodata**
  - esp. educational purposes
- **Geodata discovery**
  - indexing and searching for geodata and metadata

OSGeo educational project

- **Books and tutorials**
- **Courseware**
- **Outreach**
- **Research**

Current issues

- **Things happening on the Wiki**
  - “Geodata Metadata Requirements”
  - “How to create a new OSGeo BuildBot instance”
- **Discussions on the email lists**
  - “Terms for logo use”
  - “Message translation in OSGeo software projects”
  - many emails concerning various conferences
- **Infrastructure**
  - Move to a new content management system
  - Services at Telascience

Thank you for your attention.

Any questions?

wiki.osgeo.org