International Cartographic Association
Association Cartographique Internationale
ICA ACI

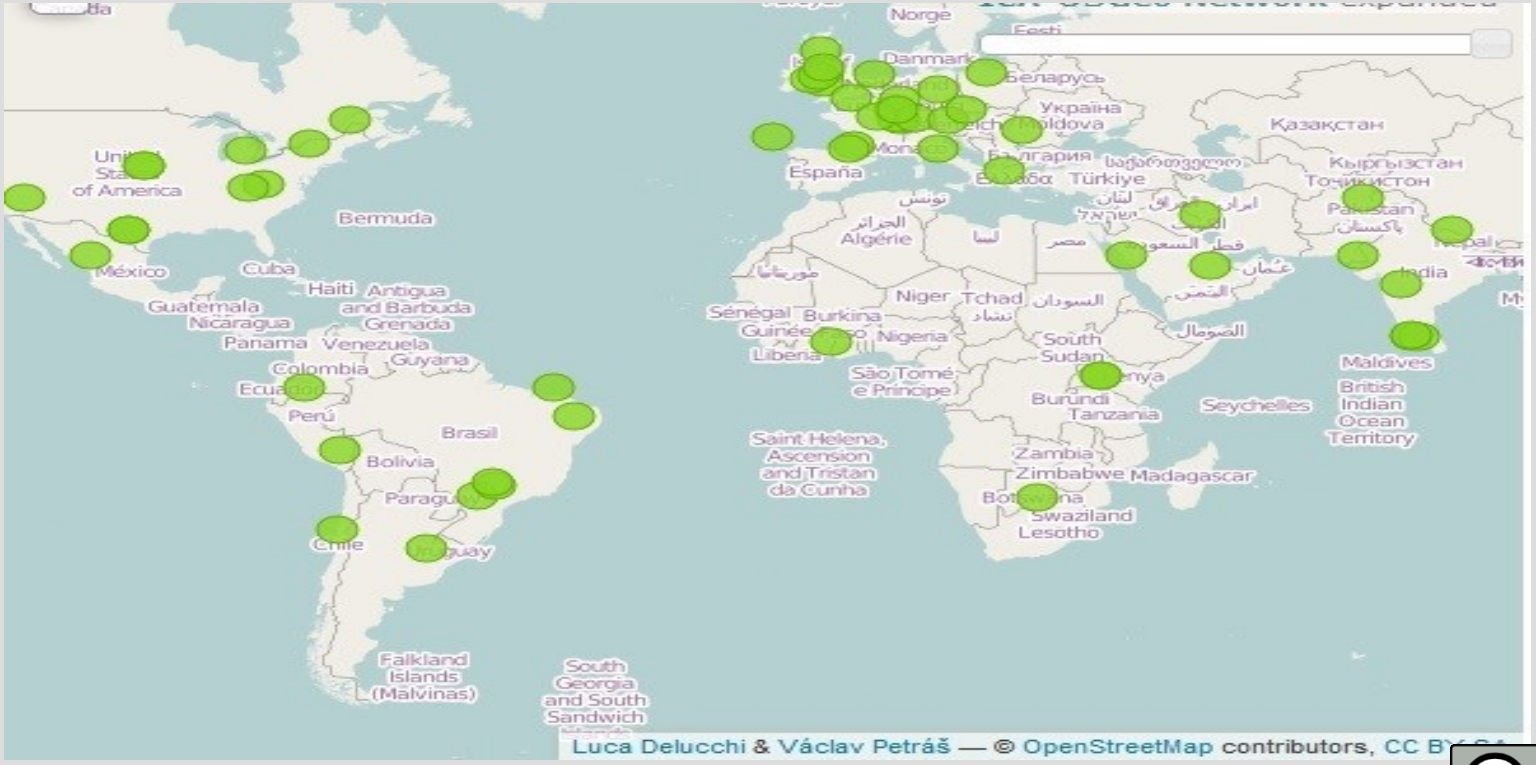
isprs
information from imagery

OSGeo
Your Open Source Compass

Geo for All

Open Geospatial Science

Suchith Anand



Open Geospatial Labs are being established worldwide to scale up research and teaching globally as part of the ICA-OSGeo MoU

Suchith Anand

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Title 1–20	Cited by	Year
Automated production of schematic maps for mobile applications J Mark Ware, GE Taylor, S Anand, N Thomas Transactions in GIS 10 (1), 25-42	26	2006
Automated schematic map production using simulated annealing and gradient descent approaches S Anand, S Avelar, JM Ware, M Jackson GISRUK 7, 2007	17	2007
Automated schematization for web service applications J Swan, S Anand, M Ware, M Jackson Web and Wireless Geographical Information Systems, 216-226	14	2007
Geospatial information integration for authoritative and crowd sourced road vector data H Du, S Anand, N Alechina, J Morley, G Hart, D Leibovici, M Jackson, ... Transactions in GIS 16 (4), 455-476	12	2012
Data mash-ups and the future of mapping M Batty, A Crooks, A Hudson-Smith, R Milton, S Anand, M Jackson, ...	11	2010

Citation indices	All	Since 2009
Citations	130	107
h-index	7	7
i10-index	5	5

Co-authors View all...

Mike J Jackson
Jeremy Morley
Dr Didier G. Leibovici
Jerry Swan
Michael Batty
Lucy Bastin
Andrew Thomas Crooks


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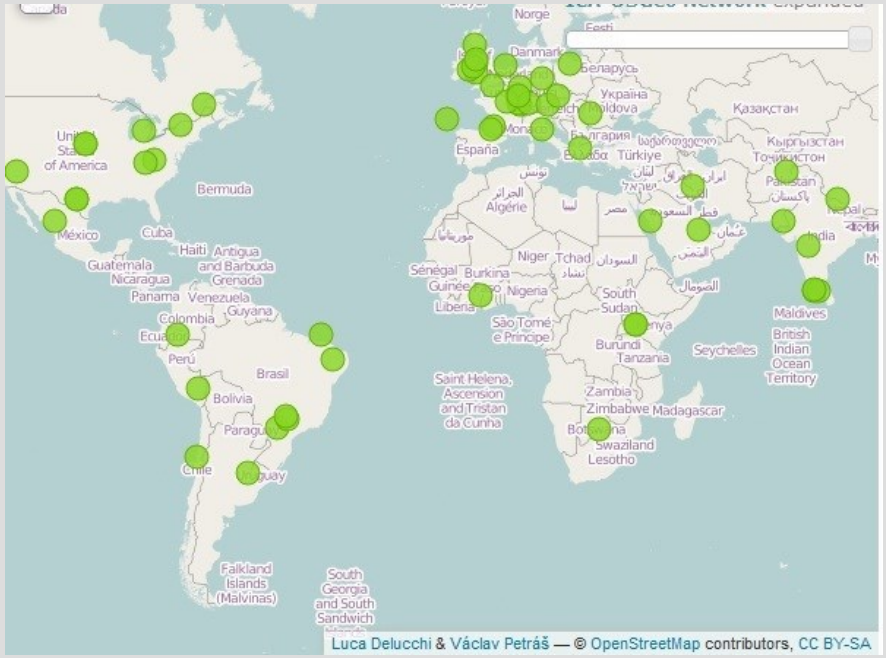
“Geo for All”

Making Geospatial education and opportunities accessible to all


From Geo for Some
to
Geo for All
Kate Chapman/@wonderchook
Humanitarian OpenStreetMap Team
HOT
FOSS4G
Geo For All
FOSS4G
NOTTINGHAM 2013

“Geo for All” Team



ICA-OSGeo MoU in Sep 2011

Over 100 labs established worldwide as of today

North America – over 20 labs
Europe – over 40 labs
South America – 9 labs
Africa – 4 labs
Asia – 15 labs
Australia - 2 lab

Will be establishing over 500 labs in universities worldwide by 2018

“Geo for All” started from very humble beginnings

Aim – Build research and teaching infrastructure worldwide

Problem – No initial funding!

Biggest Strength – amazing support from colleagues and students

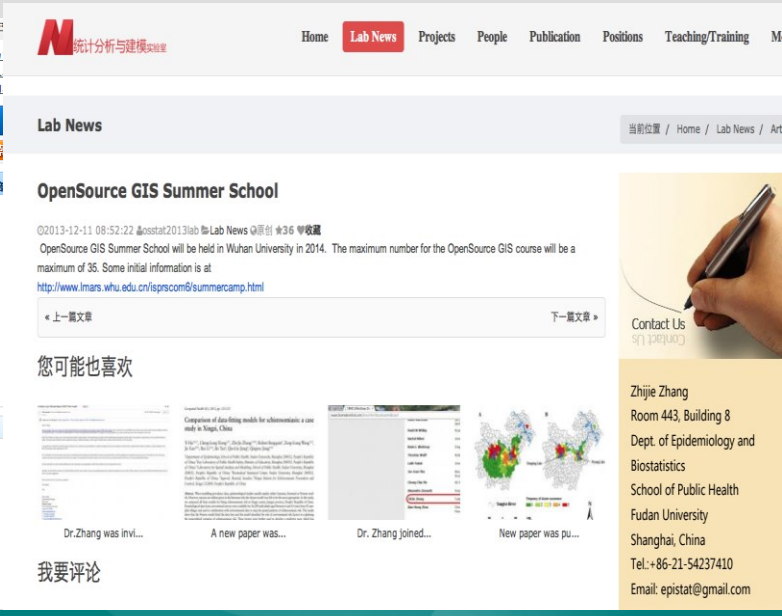
June 2010 Open Source Geospatial Lab founding meeting at UoN

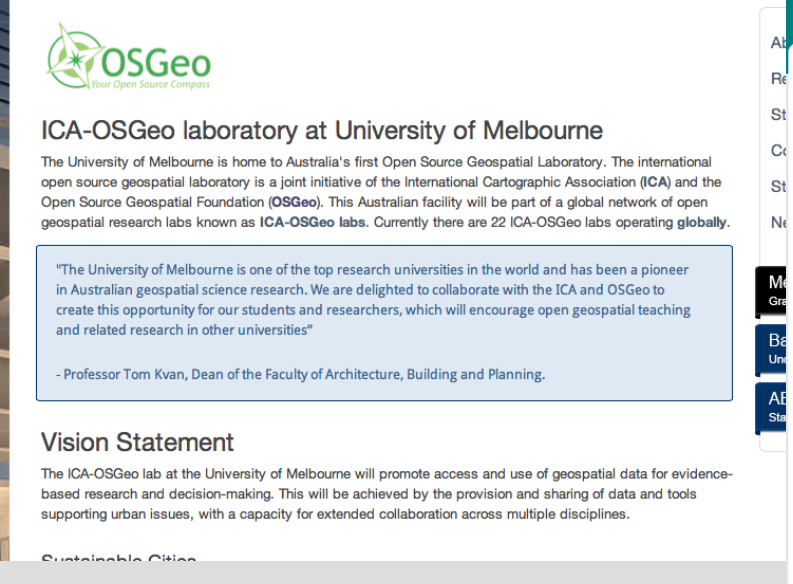
Aim

Establishing open source GIS research and training opportunities

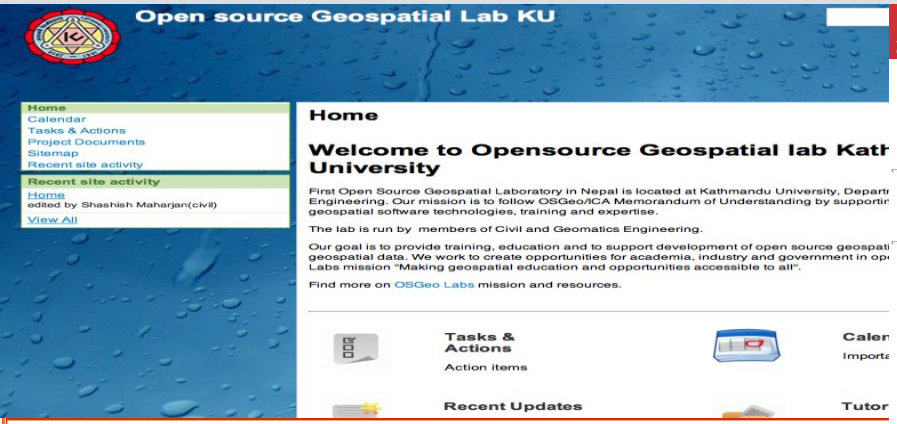
Who are we?

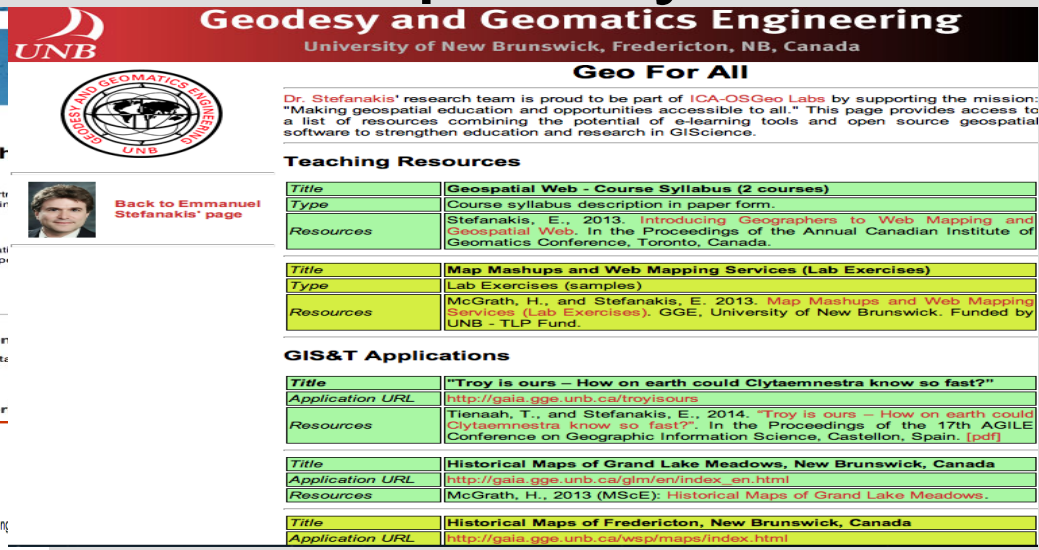
We are Global community





We are Multi disciplinary





We are all passionate about Cartography

Malaysia Campus

Home | Study | Student life | Schools and departments | Research and bus

University of Nottingham, Malaysia > School of Geography > Research > Geospatial Science > OSGEO lab

School of Geography

- Welcome
- Courses
- Careers
- Research
- Water Resources
- Tropical Conservation Ecology
- Geospatial Science
- Research Students
- Student experience
- Make an enquiry
- People

OSGEO lab

The Open-Source Geospatial Research lab was established late 2011 following the MoU signed between International Cartographic Association (ICA) and OSGEO foundation. It was the first of its kind in Southeast Asia and is playing its active role in promoting the similar establishment in the region.

Activities

- Researches on development and deployment of open-source geospatial resources in various applications.
- Develop open-source geospatial material for education and training.
- Promote open-source geospatial technologies applications in Malaysia and the region.

Current projects

- Deployment of OSGEO tools in teaching and learning (on-going, School of Geog
- Remote sensing image understanding services on cloud-computing platform (or
- Remote sensing data synergy for monitoring large-scale construction projects (
- Terra SAR-X for monitoring large-scale construction projects (on-going, DLR)
- Crowd-sourcing interactive quality data assessment (on-going, CFFRC)
- Unmanned Aerial Vehicle (UAV) intercropping mapping (on-going, CFFRC)
- Urban growth monitoring with multi-scale remote sensing approach (completed
- Multi-scale remote sensing disaster recovery monitoring (completed, GeoGRID,

ICA-OSGeo OSGL at ETH Zurich

Home | Team | Training | Research | Cooperation | Contact

Welcome to ICA-OSGeo Open Source Laboratory at ETH Zurich

Quality open source training and software for Cartography and GIS

The Open Source Geospatial Laboratory (OSGL) at ETH Zurich is a joint initiative of the International Cartographic Association (ICA) and the Open Source Geospatial Foundation (OSGeo).

In September 2011, the International Cartographic Association (ICA) and the Open Source Geospatial Foundation (OSGeo) signed a Memorandum of Understanding (full text here) with the aim of developing on a global basis collaboration opportunities for academia, industry and government organizations in open source GIS software and data.

The OSGL at ETH Zurich is actively implementing this memorandum with the vision to support the development of open-source geospatial software technologies, training and expertise. It also aims to provide support for increasing the number and quality of open source teaching and training materials for Cartography and GIS. As a proud member of the ICA-OSGeo Network, the ETH Zurich OSGL is focusing on Education, Open Geodata and on Cartographic and Geospatial Research. Additionally we are participating in the the ICA Commission on Open Source Geospatial Technologies and through the Institute of Cartography and Geoinformation we are an associate member of the Open Geospatial Consortium.

Acknowledgements

The ICA-OSGeo Open Source Geospatial Laboratory is kindly integrated in the Institute of Cartography and Geoinformation.

Links

ICPAC

IGAD CLIMATE PREDICTION AND APPLICATIONS CENTER

"Fostering Climate Prediction and Applications"

Home | Products | Data Portal | WMO RCC | MESA | African Drought Monitor | Applications | About Us | Chec

ICPAC PRODUCTS AND BULLETIN

- 10 day Bulletin
- Monthly Bulletin
- Climate Watch
- Newsletter

STATUS OF THE CLIMATE

- WMO Update: Prepare for El Niño
- EL NIÑO/LA NIÑAUPDATE
- High Impact Weather
- El Nino Southern Oscillation Watch (EN)
- El Nino Southern Oscillation Watch (FR)
- Heavy Rainfall/ Flood Risk
- ITCZ/ITD
- SST Indices
- ITCZ/ITD

FORECAST

BACKGROUND

In 1989, twenty four countries in Eastern and Southern Africa established a Drought
Nairobi (the DMCN) and a sub centre in Harare (Drought Monitoring Centre Harare
weather related disasters. In October 2003, the Heads of State and Governments of th
Development (IGAD) held their 10th Summit in Kampala, Uganda, where DMCN w

NCSU OSGeoREL

Overview | Projects | Software | Courses | Publications | Contact | About

Open Source Geospatial Research and Education Laboratory

The NCSU OSGeo Research and Education Laboratory (NCSU OSGeoREL) is located at the North Carolina State University, Center for Geospatial Analytics in Raleigh, NC, USA. We are part of the worldwide network of ICA-OSGeo laboratories following the motto Geo for All. As one of the founding laboratories we are the central node for North America.

Our mission is to develop collaboration opportunities for academic, industrial, and government organizations in free and open source GIS software and data.

Follow us on Google+, YouTube and GitHub.

Offered courses

Through our GIST program we offer interdisciplinary, graduate level courses on geospatial analysis and modeling. Students are taught the fundamentals and methods in a software independent way by using both open source and proprietary tools. Go to courses and find out more.

People

Faculty:
Helena Mitasova, Laura Tateosian, Ross Meentemeyer (home page at FER)
Graduate students and visiting scholars:
Anna Petrasova, Vaclav Petras, Emily Russ, Brendan Harmon, Keren Cepero, Nathan Lyons, Paul Paris
Former graduate students and visiting scholars:
Eric Hardin, Katie Weaver, Margherita di Leo, Eva Stopkova

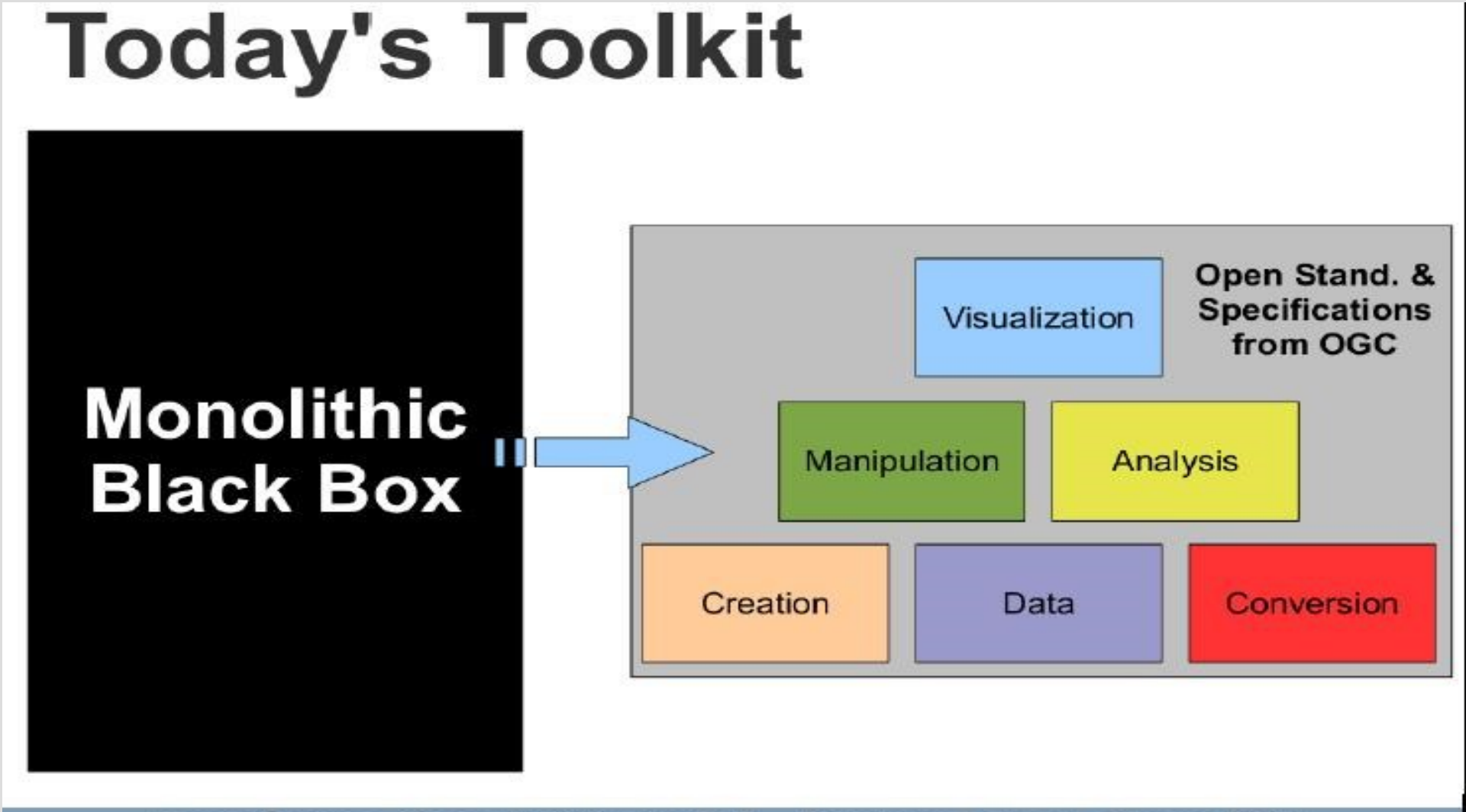
If you want to become a member of NCSU OSGeoREL or you feel as a part of it and you are not listed here, please do not hesitate to contact us.

There are many dimensions to “Open”

- Open source software.
- Open data.
- Open standards.
- Open access to research publications.
- Open education resources

But fundamentally it is based on Open Principles

Science is NOT a Black Box



Unique convergence of three key developments that made Open Geospatial Science possible

sci·ence [sahy-uhns] Show IPA

noun

1. a branch of knowledge or study dealing with a body of facts or truths systematically arranged and showing the operation of general laws: *the mathematical sciences.*
2. systematic knowledge of the physical or material world gained through observation and experimentation.
3. any of the branches of natural or physical science.
4. systematized knowledge in general.
5. knowledge, as of facts or principles; knowledge gained by systematic study.

EXPAND

Ability for showing the operation of general laws is fundamental for scientific research

Geospatial Standards (for ex. OGC spec.)

Open Data

Maturity of open source software (for ex. OSGeo stack)

Open Source Geospatial Foundation (OSGeo) established in Feb 2006

OSGeo is the leader of Open Source Geospatial and high impact community

Project Development Statistics
Updated: 2-Nov-2008

Project (link to stats page)	Codebase Lines of code	Contributors	Effort (person years)	Est. cost $USD
deegree	475,756	20	125	6,880,114
gvSIG	1,797,359	62	506	27,804,278
GEOS	93,369	14	23	1,252,806
Feature Data Objects (FDO)	770,748	22	212	11,679,154
GeoNetwork opensource	359,225	11	93	5,122,974
GeoTools	1,472,845	46	410	22,548,581
GDAL	619,706	26	170	9,357,931
Quantum GIS	193,174	34	50	2,761,972
OSSIM	525,942	21	143	7,846,712
GRASS GIS	518,049	61	140	7,682,948
OpenLayers	68,695	12	17	913,757
MapServer	108,306	32	27	1,499,454
MapGuide Open Source	360,959	34	95	5,240,110
Community MapBuilder	141,198	24	35	1,921,633
Mapbender	261,029	23	68	3,713,822
Total	**7,766,360**	**442**	**2,114**	**116,226,246**

OS Geo Product development statistics 2008

Open GIS Summer School in Girona

And empowering the next generation

Why having a framework for Open Geospatial Science important for the future?

Strategic level
Research
Teaching
Attracting research funding /sustainability
Social Responsibility

Open principles is now implemented by the UK Government and delivering huge cost savings for government -£409 million in the first half of the year it was implemented alone.

Government bodies must comply with Open Standards Principles

1 November 2012

From today all government bodies must comply with Open Standards Principles, an agreed set of standards to make our IT more open, cheaper and better connected, Minister for Cabinet Office, Francis Maude said today.

The Open Standards Principles have been developed following the public consultation 'Open Standards: Open Opportunities – flexibility and efficiency in Government IT' which took place from February to June this year. The principles will help Government to deliver more innovative IT services and further drive savings and encourage more competition for government contracts.

There has been overwhelming support from the public and the IT community for setting an open standards policy for software interoperability, data and document formats:

- nearly 70 per cent of respondents believe the principles would improve innovation, competition and choice in the provision of government services; and
- over 70 per cent agree that they would help improve value for money.

Francis Maude said:

"We know that there are more real savings to be made in Government IT contracts – in the first half of this year, we have already saved £409 million on ICT services."

"Government must be better connected to the people it serves and partners who can work with it - especially small businesses, voluntary and community organisations. Having open information and software that can be used across government departments will result in lower licensing costs in government IT, and reduce the cost of lock-in to suppliers and products.

"It is only right that we are encouraging competition and creating a level playing field for all companies to ensure we

Related links

Francis Maude speech at an event for IT professionals

Related News and Media

Liam Maxwell engaged by Efficiency and Reform Group

ICT Strategy Strategic Implementation Plan to deliver savings of over a billion pounds

New government Chief Information Officer announced

CloudStore opens for business

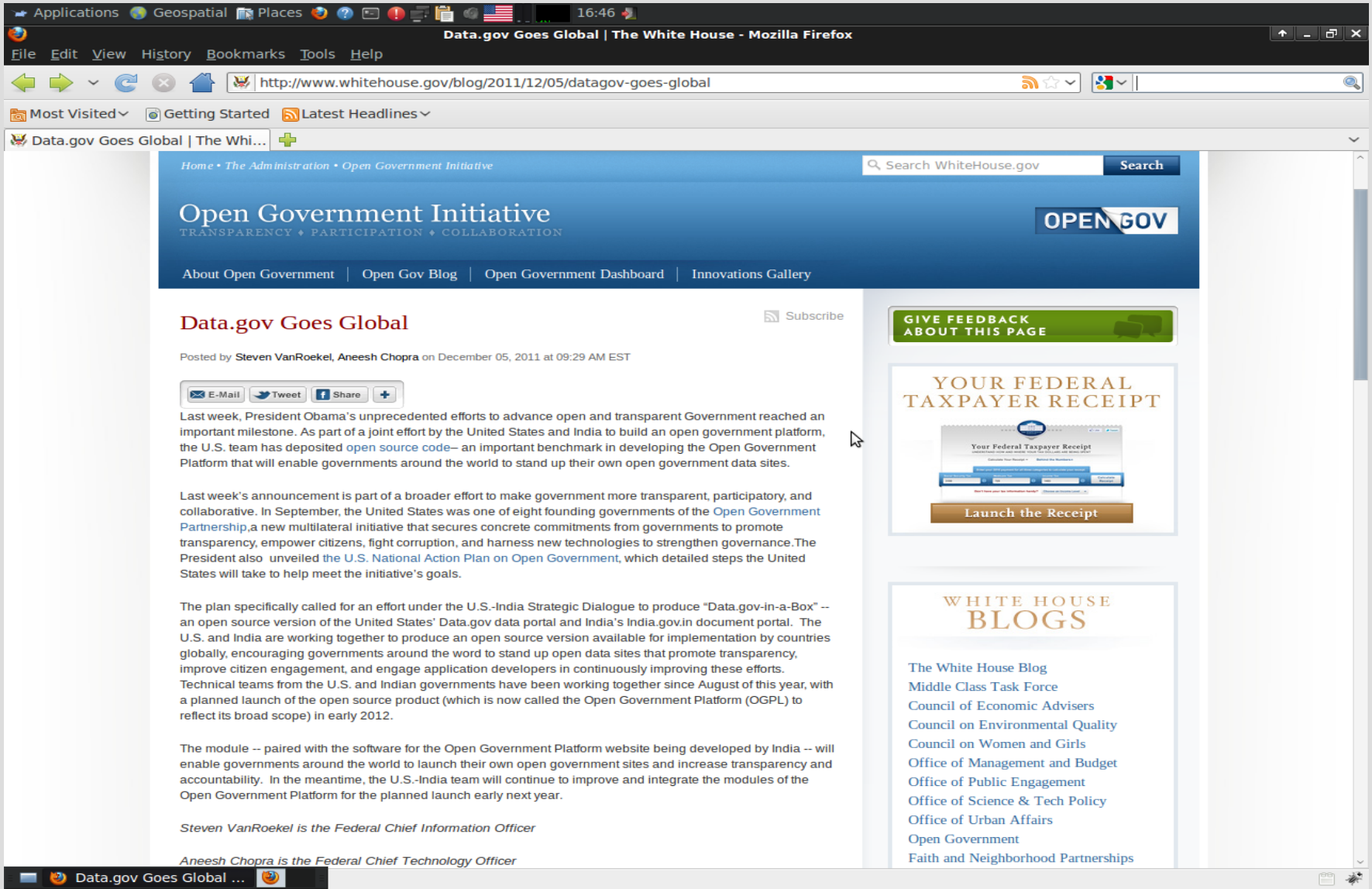
Cabinet Office and Oracle sign deal to save £75 million for taxpayers

View all news

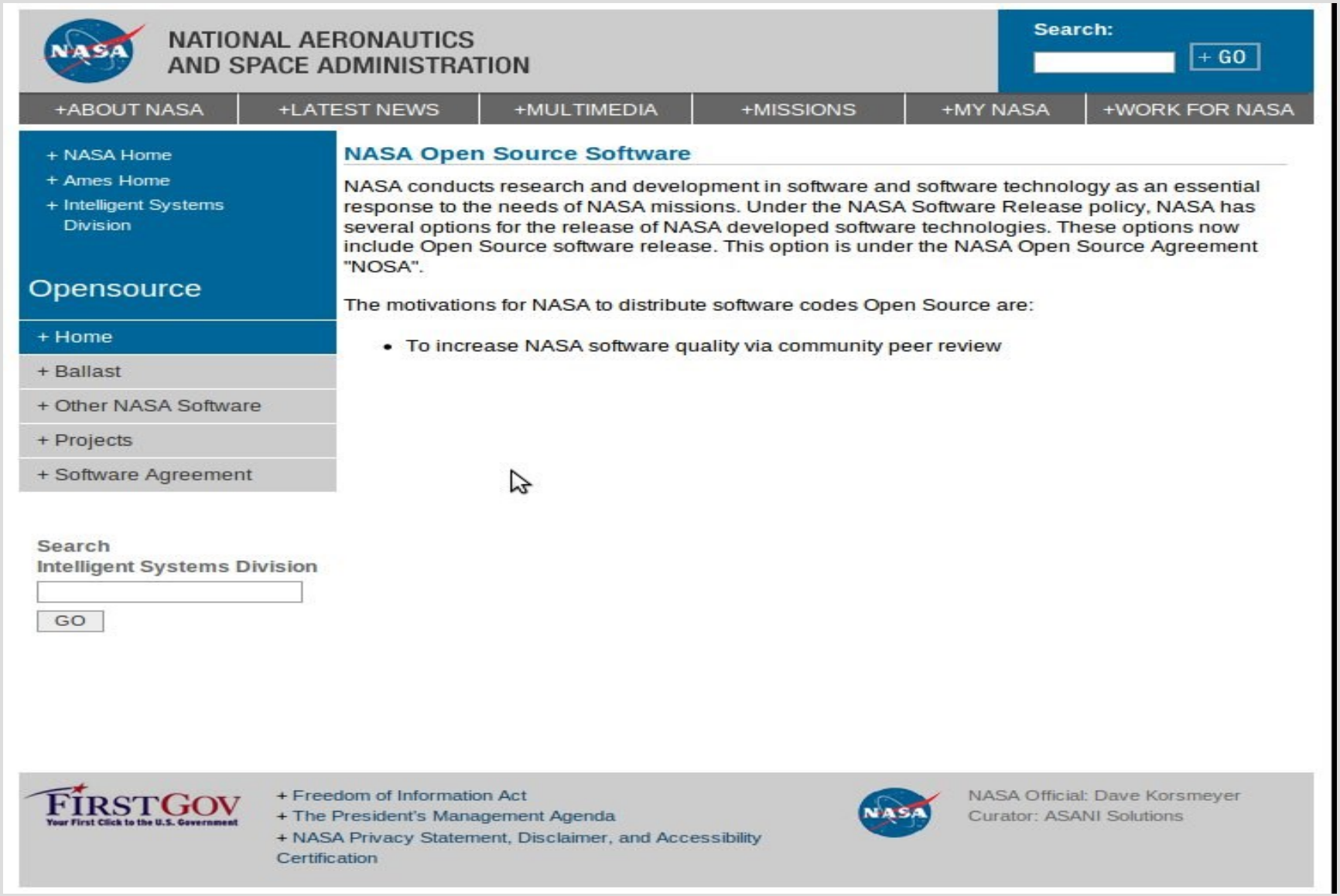
Most recent resources

1. Taking account of bidders' past performance
2. List of strategic suppliers
3. Open Standards Consultation responses
4. Open Standards Consultation documents
5. Charitable Incorporated Organisation (CIO) – Secondary Legislation before Parliament

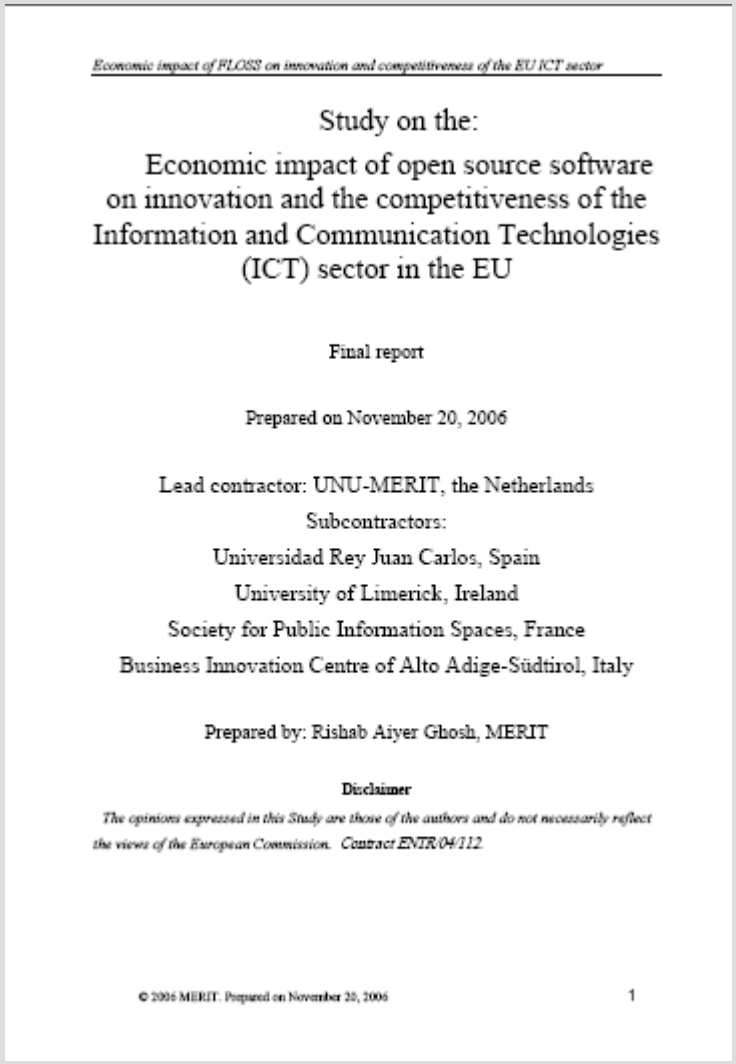
This is also global



Research importance - Increasing software quality



Increasing innovation



Economic impact of FLOSS on innovation and competitiveness of the EU ICT sector

Study on the:

Economic impact of open source software on innovation and the competitiveness of the Information and Communication Technologies (ICT) sector in the EU

Final report

Prepared on November 20, 2006

Lead contractor: UNU-MERIT, the Netherlands

Subcontractors:

Universidad Rey Juan Carlos, Spain

University of Limerick, Ireland

Society for Public Information Spaces, France

Business Innovation Centre of Alto Adige-Südtirol, Italy

Prepared by: Rishab Aiyer Ghosh, MERIT

Disclaimer

The opinions expressed in this Study are those of the authors and do not necessarily reflect the views of the European Commission. Contract ENTR/04/112.

Internet backbone is powered by OSS

Since April 1996 Apache has been the most popular HTTP server software in use. As of May 2011 Apache was estimated to serve 63% of all websites and 66% of the million busiest

"May 2011 Web Server Survey". Netcraft. May 17, 2011

http://ec.europa.eu/enterprise/ict/policy/doc/2006-11-20-flossimpact.pdf

One research example- URBAN GROWTH

OBSERVATION : More than 50% of Earth inhabitants live in cities *(United Nations)*

GLOBAL URBAN PROBLEMS: traffic congestions, air quality, journey time, mobility, economic sustainability, citizens' health, impact on environment …

THE CHALLENGE : develop and integrate innovative solutions gathering technical and political actors in order to answer to traffic, health and environment issues

THE ISSUE

PROBLEM

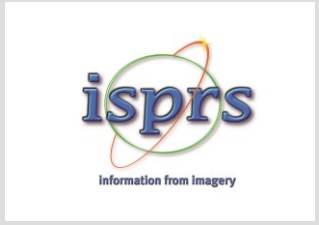
- Unplanned urban growth problems are much bigger in developing/poor countries
- Mapping is a critical component to help understand and develop solutions for urban growth problems
- Proprietary software tools are very expensive (hence unavailable) for economically poor countries and communities worldwide

Kibera , Kenya

http://www.flickr.com/photos/8485582@N07/7365580810

Dharavi, Mumbai

http://www.flickr.com/photos/56685562@N00/2340042701



“Geo for All”

OpenCitySmart - The Open Platform for Smart Cities

Patrick Hogan , Brandt Melick, Maria Antonia Brovelli, Charles Schweik, Jim Miller, Sven Schade, Chris Pettit, Ant Beck, Doreen Boyd, Darren Robinson, Suchith Anand

Why?

The world is shrinking, actually we are getting larger in it, and the cities have to absorb today's exponential increase in population.

World population since the 'second industrial' revolution after 1850s has grown from 1 billion to almost 8 billion today.

In 1950 at a mere 2.5 billion, we were almost evenly distributed between rural and urban. Today, in the developed world, approximately 80% of the population lives in cities.

Why must each city solve these problems alone?

If the cities of the world were to share solutions with each other, they could each focus on different parts of the problem and thereby only bear the burden for a small fraction of the load.

By working together we may come to better appreciate what we share in common as well as experience the joy being able to help each other.

Our proposal

To establish a unifying, open virtual globe, OpenCitySmart, with an API for functionalities.

- To be based on existing open solutions
- Seed this global platform with an initial suite of functionalities that include tools for managing a renewable power grid, wind and solar, based on the success stories of municipalities in northern Italy.
- Include functionalities for managing input of LiDAR data and infrastructure .

This will be in concert with municipalities around the world, including, Springfield, Oregon USA, Como Italy and Melbourne Australia.

We support the 'Open Cities Guiding Principles:

- All material created is made available for all under an Open License
- All material is designed to be extended by others, API-centric, modular componentry.
- All participants aim to reuse, optimize, extend and add new components (in that order :-)

Our intent here is that we have one or a few **core platform(s)** each architected with an open API for functionalities (the menu system). This effort will benefit from friendly competition, with the best features of each 'competing' platform, providing what a SmartCity needs.

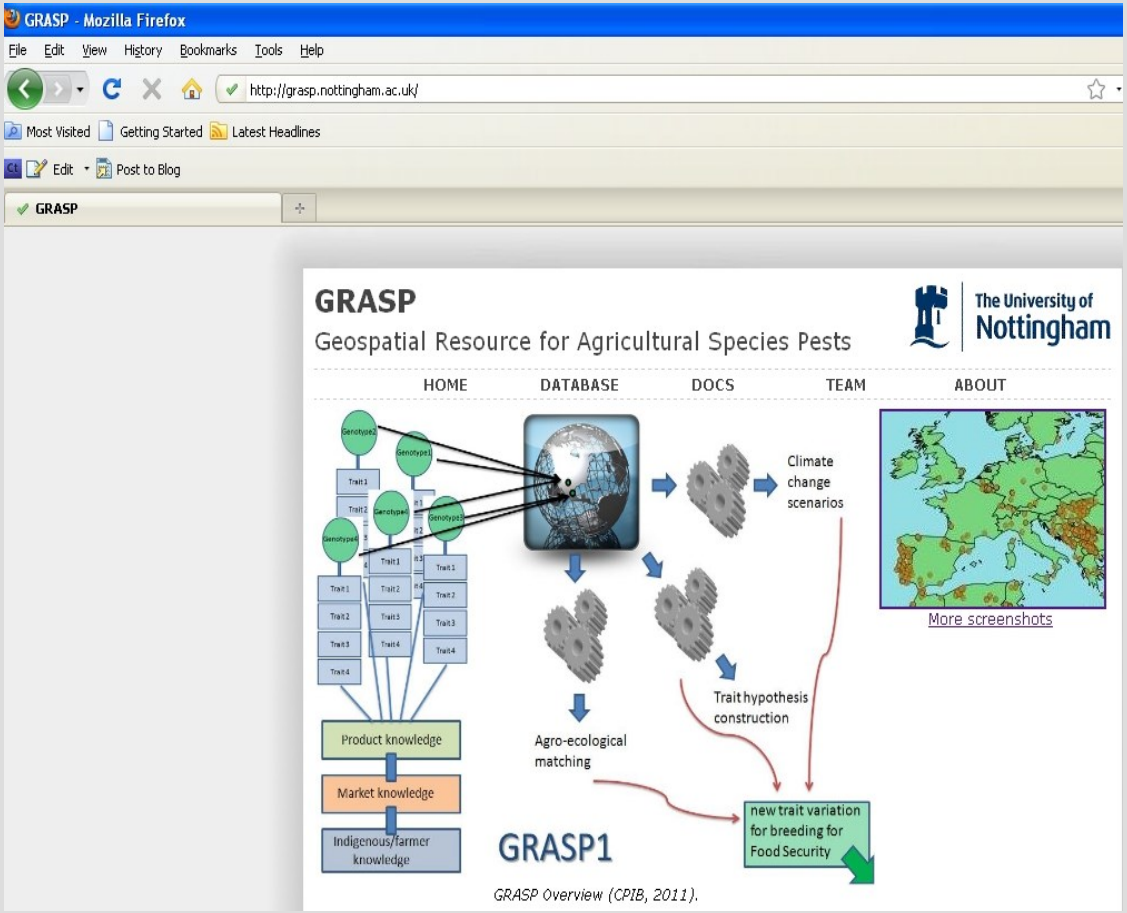
Resources at our disposal to enable OpenCitySmart

- NASA Worldwind Platform
- What if Platform
- Open Source Geospatial Foundation's software tools

More importantly we got an amazing global "Geo for All" team working on our mission

See preview at https://youtu.be/7NaX9b6F05c

Example of attracting research funding/sustainability: AgriGIS Research example

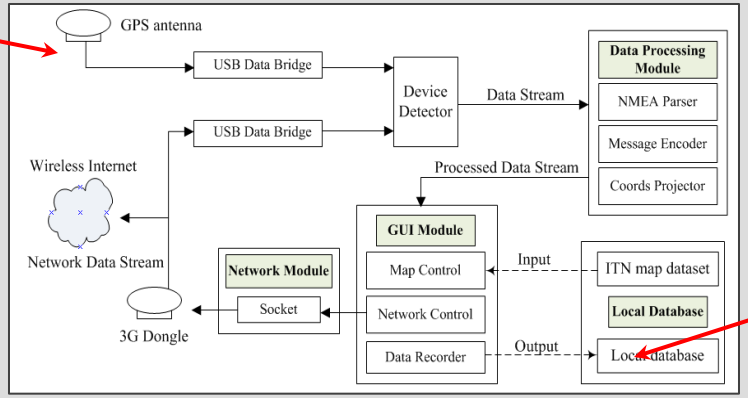


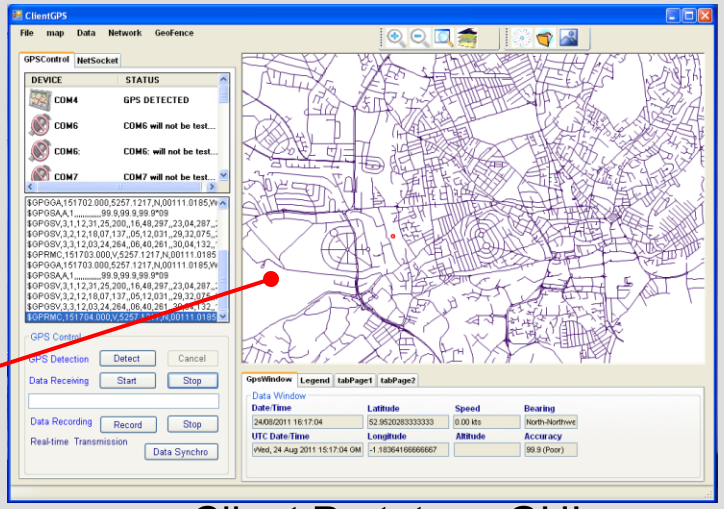
Fully build on Open Source and Open Standards

£10k seed funding internal project helped build up a new research theme at UoN with now BBSRC funding (£150k) and 3 PhD studentships + post doc position at CFFRC to build upon the GRASP framework developed in just 1 year

Example: Transportation

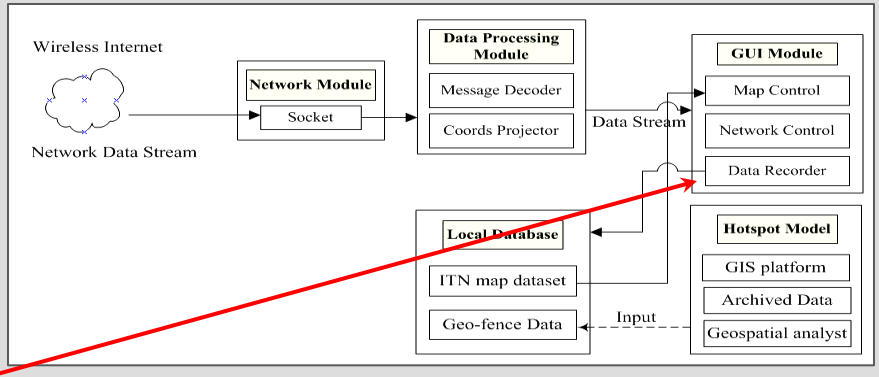
Low-cost GRays2 Receiver

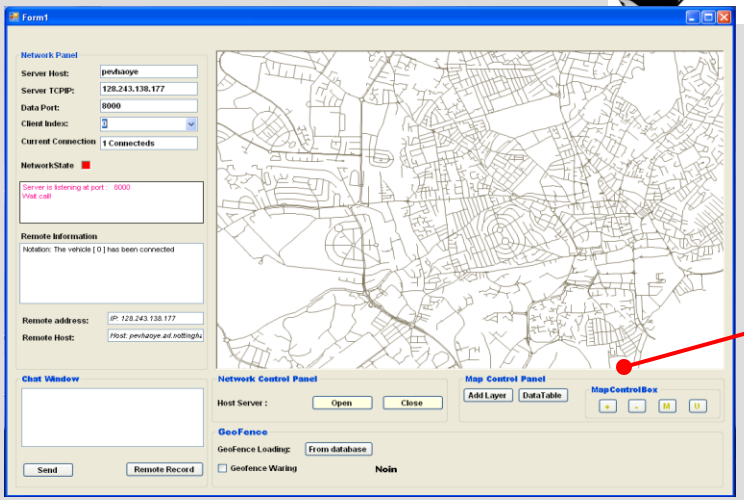




Client Prototype GUI

HuaWei 3G Dongle



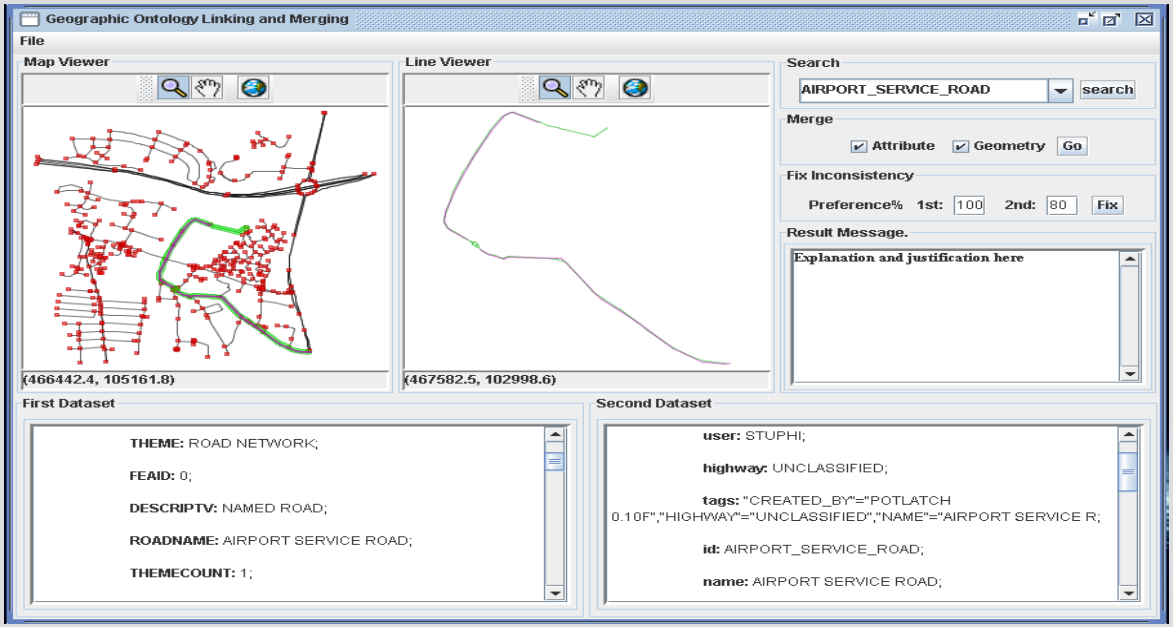


Server Prototype GUI

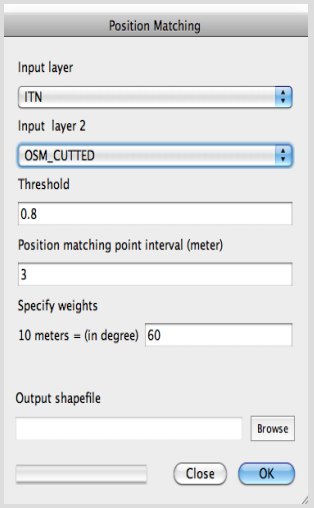
Ye H, Meng X, **Anand S**, Yang L. (2011), "Development of a Traffic Incident Hotspot Data Acquisition System Based on Open-source GIS" ,8th Symposium on Location-based Services, Vienna University of Technology , Austria

Future of Urban Mapping?

How do we combine data from authoritative data sets with feature-rich, informal data, recognizing the variable coverage of informal data while capturing the best of both worlds?

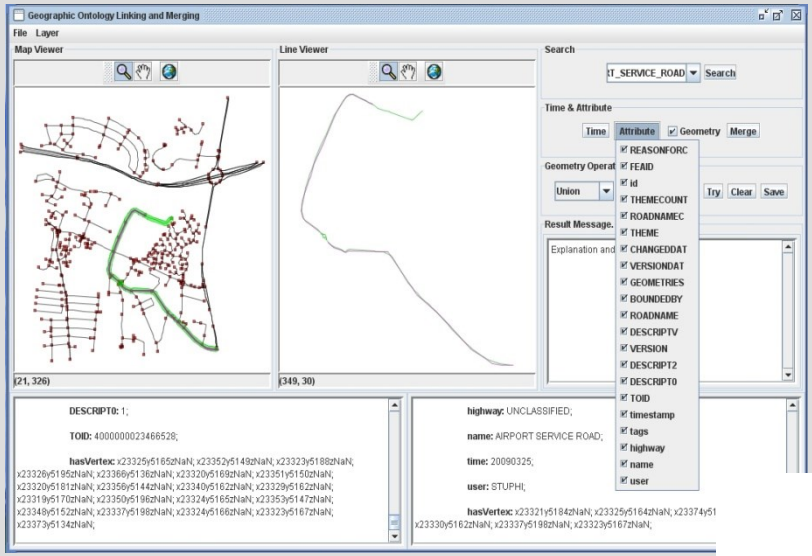


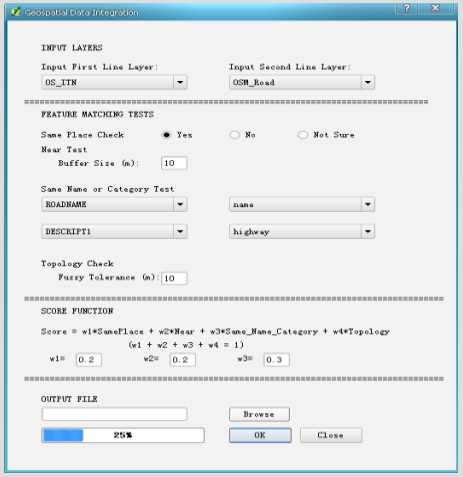
?



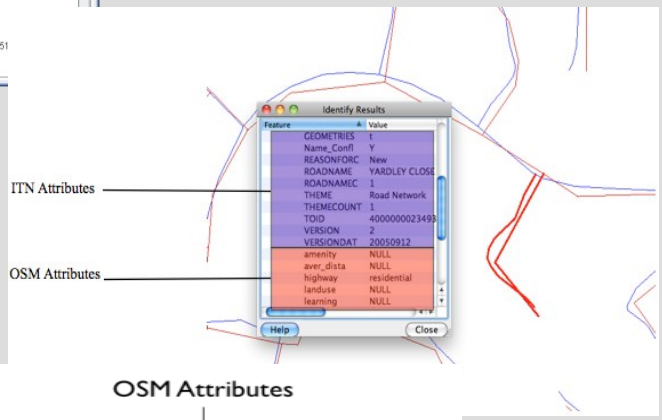
Research based on study funded by Ordnance Survey

Fully build on Open Source



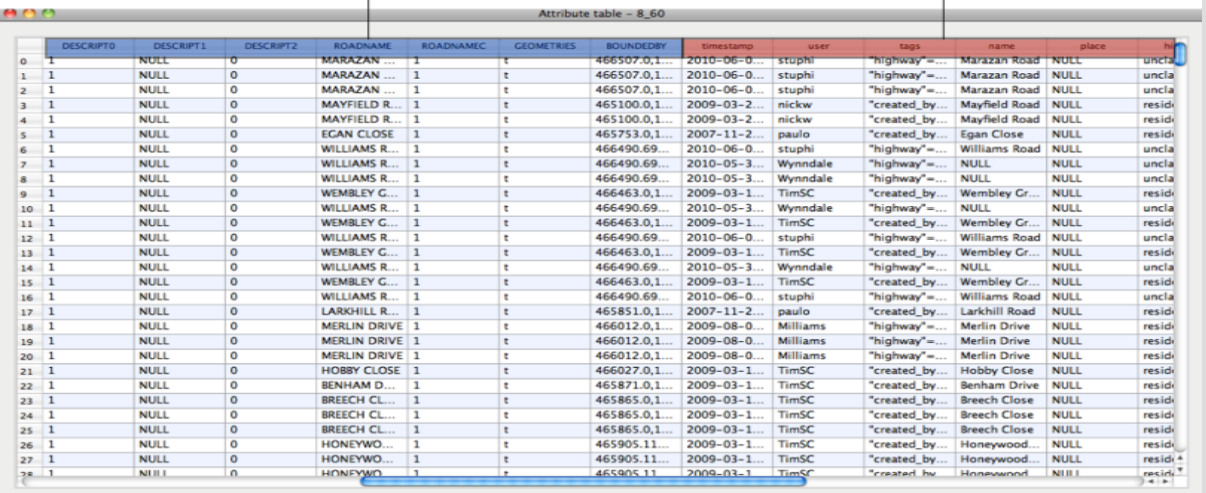


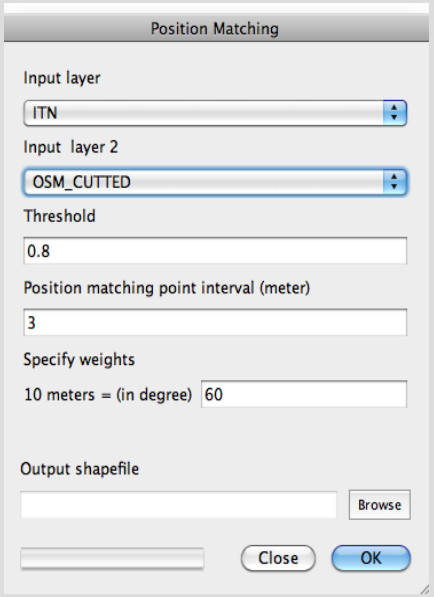
Du H, **Anand S**, Alechina N, Morley J, Hart, G, Leibovici, D, Jackson, M, Ware J M . (2012) "Geospatial Information Integration for Authoritative and Crowd Sourced Road Vector Data", Transactions in GIS, Wiley-Blackwell Publishing



ITN Attributes

OSM Attributes





Aim - Establish dedicated Open Access journals for Open Geospatial Science

isprs International Journal of Geo-Information

Title / Keyword | Journal: IJGI | Volume
Author | Section: -- | Issue | Clear
Article Type: all | Special Issue: Open Geospatial Sci | Page | Search

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A special issue of *ISPRS International Journal of Geo-Information* (ISSN 2220-9964).

Deadline for manuscript submissions: **closed (30 January 2015)**

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E-Mail: suchithanand76@gmail.com

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Now accepting submissions

Open Geospatial Data, Software and Standards is accepting submissions; please use the online submission system to submit your manuscript. If you are submitting a manuscript to a particular Special Issue, please refer to its specific name in your covering letter. For all enquiries about the journal, please contact: editorial@opengeospatialdata.com.

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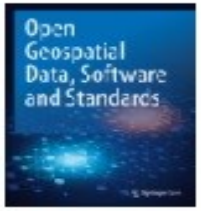
Aims & scope



Open Geospatial Data, Software and Standards provides an advanced forum for the science and technology of open data, crowdsourced information, and sensor web through the publication of reviews and regular research papers. The journal publishes articles that address issues related, but not limited to, the analysis and processing of open geo-data, standardization and interoperability of open geo data and services, as well as applications based on open geo-data. The journal is also meant to be a space for theories, methods and applications related to crowdsourcing, volunteered geographic information, as well as Sensor Web and related topics.

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Solutions For A Sustainable World!

Submit you proposal before 2014 May 31!

Why the Europa Challenge?

The Europa Challenge provides the opportunity for Europe's *best and brightest* to deliver sustainable solutions to the European community. And do this in ways that serve local, regional, national or international interests, while also advancing the career opportunities for those who accept the challenge. This is an international challenge open to all on our home planet. See the 2013 Winners, China had one of the top teams last year.

The top three teams will take home the crystal Europa Challenge bull! And a few hundred Euros!

Example of an excellent Initiative led by Prof. Maria Brovelli and colleagues

http://eurochallenge.como.polimi.it

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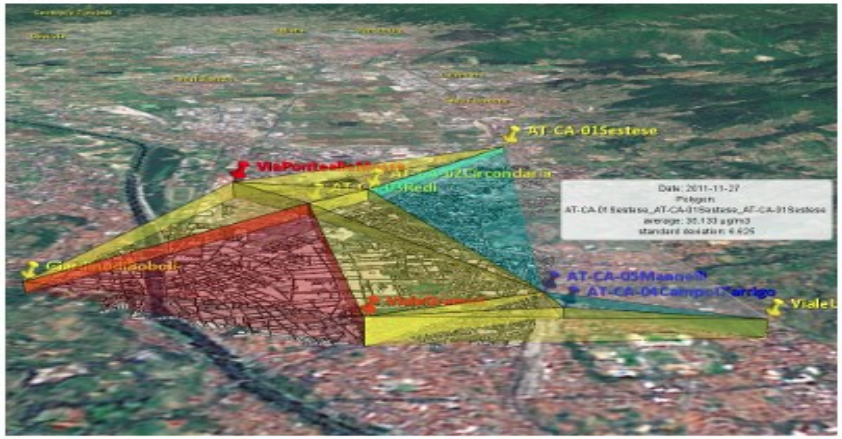
2013 Winners

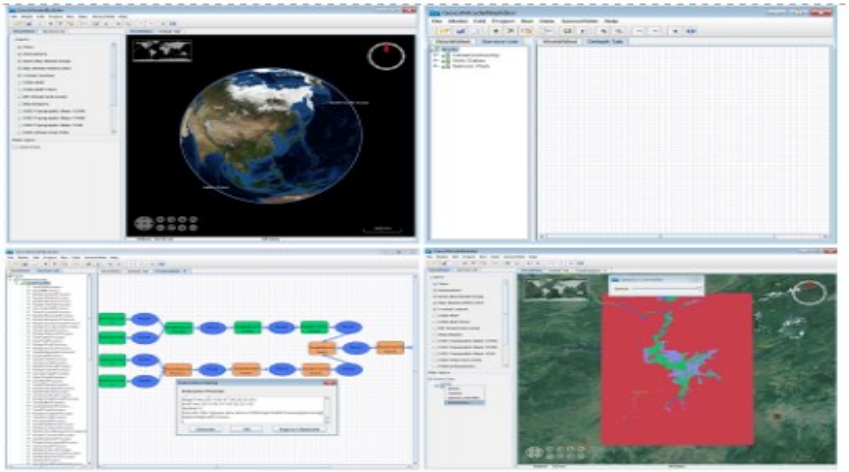


Air-Quality Data 3D Visualization

www.cirgeo.unipd.it/nasaww

Show a bird's-eye 3D view of air-quality data (PM10) acquired at time intervals from multiple sensors to ***reveal air-quality dynamics over space and time.***

Sensors are connected with a Triangular Irregular Network (TIN) to cover the area of interest. Data is represented geometrically and colorized to easily recognize high-to-low values. Areas affected by a potential risk for health are quickly discernible. Users can adjust data-acquisition times for dynamic updating.

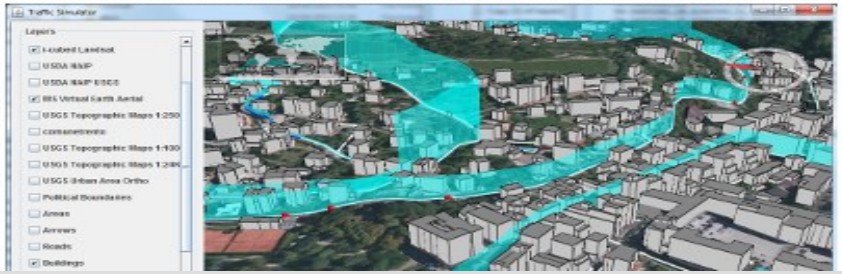


Environmental Monitoring With GeoJModelBuilder

www.sourceforge.net/projects/geopw

GeoJModelBuilder couples geo-processing Web services and Sensor Web services to support geo-processing modeling and environmental monitoring. The main goal of GeoJModelBuilder is to bring an easy-to-use tool to the geo-scientific community.

The tool allows a user to drag and drop various geospatial services to ***visually generate workflows and then to interact with those workflows in a virtual globe environment.*** It also allows users to audit trails of workflow executions, check the provenance of data products and support scientific reproducibility.



Urban Traffic Visual Analytics Simulator

www.interactivesystem.collaborate.org

The goal is to develop a highly interactive visual analytics system that helps urban planners, decision makers and traffic analysts simulate the urban scenario related to the urban viability. ***Users interact directly via the 3D context.*** This ensures intuitive understanding and easy adjustment to any simulated scenario.

The user interacts with the 3D environment through graphical metaphors that considerably reduce the time needed to set the

http://www.gofundme.com/ufgpg5n

Why Open Geo Science?

- helps in empowerment of staff and students
- capacity building
- developing creative and open minds in students which is critical for building open innovation
- contributes to building up Open Knowledge for the benefit of the whole society and for our future generations.

Building an open source, open standards, open data research framework through Open Geo Science

Represents the individual content creator on the World Wide Web

Key advantages

- Scalable
- Interoperability
- Accelerate Innovation
- Low costs
- No proprietary lockin
- Benefits wider community

International Cartographic Association
Association Cartographique Internationale

ICA ACI

isprs
information from imagery

OSGeo
Your Open Source Compass

Thanks to all colleagues in the "Geo for All" initiative

Let us all join to eradicate extreme poverty and enable shared prosperity for all