

GIS/IT Integration through Open Source Software

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Topics

What is OSS?

What is OSS capable of?

UDOT Research Project

Demo of sample application

Licensing Considerations

Conclusions

What is OSS (1 of 2)

- Acronyms
 - OSS - Open Source Software
 - FOSS - Free and Open Source Software
 - FLOSS -Free/Liberal and Open Source Software
- What does “Free” mean?
 - Is FOSS free? Is freely available software FOSS?
 - Freedom to use and distribute
 - Mechanism to ensure the derivatives are free
- Common features
 - Source code and object code are delivered for a fee or free of charge, for personal or commercial use, in its entirety or partially
 - Recipient has the right to modify and to distribute the modified work
 - Collaboration
 - Delivered as-is
 - Subject to US export control limitations

What is OSS (2 of 2)

- Started in academia
 - As a movement and involved the use of public funds
- Carried forward by non-profit groups/foundations
 - Mozilla Foundation, Apache Foundation. ...
- Embraced by the private sector & governments
 - Redhat, Oracle, Autodesk, Microsoft ...
 - US Department of Defense ...
- Advocacy Groups
 - Open Source Initiative
 - Free Software Foundation
- Vibrant communities (FOSS4G, for example)

What can OSS do?

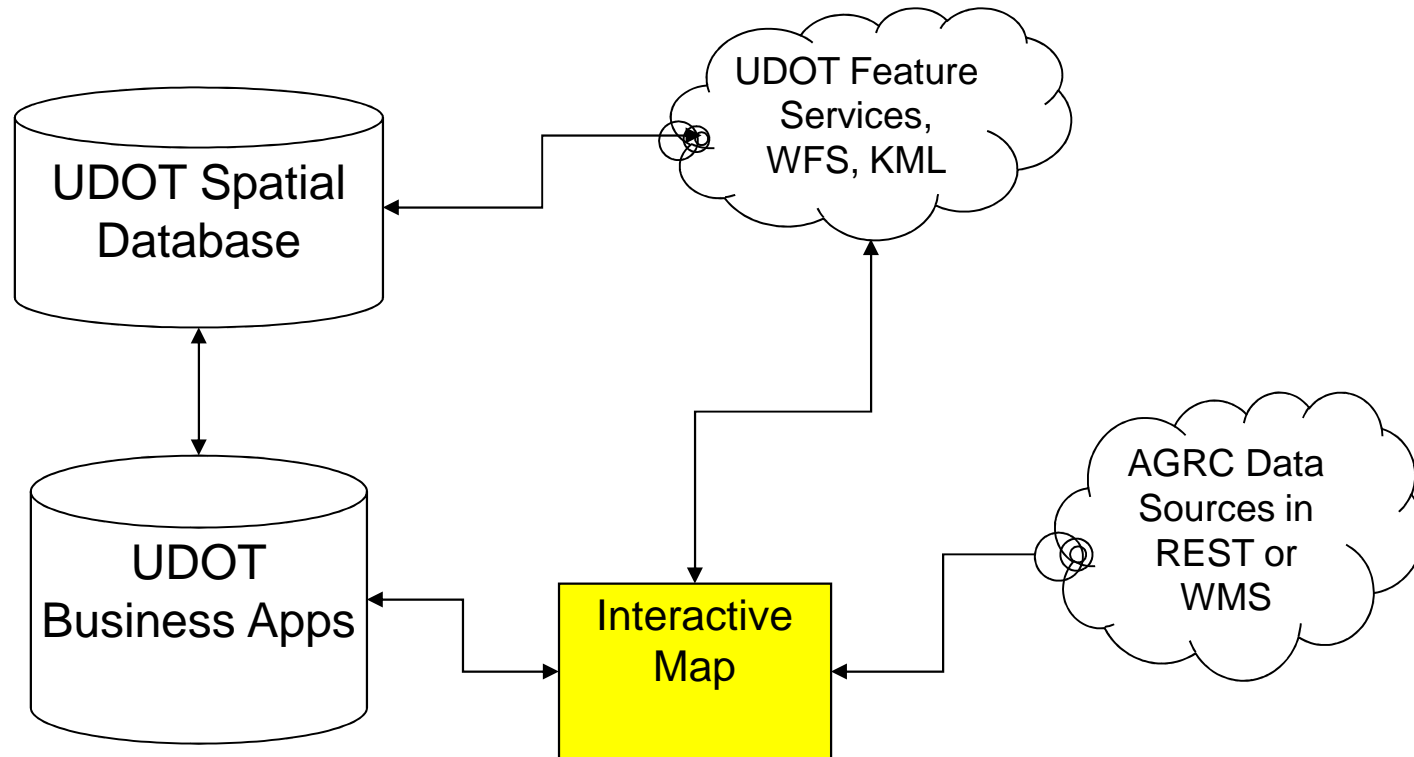
There are OSS versions for most software applications

- OS, Tools, Programming Languages
- Servers - Web, Application, Database
- GIS Domain
 - www.opensourcegis.org
- UDOT Research 2009
- Web-based Integrated LB Explore (an example)

UDOT Mapping Needs

- Mapping capabilities reveal data quality issues, especially for LRS-based data
 - Completeness
 - Location accuracy
- Need a map-based interactive tool to add or modify event locations
- Can be used by many operational systems
 - Loosely coupled
- Meets LRS requirements

I-Map General Architecture



I-Map Research Summary

- Three research projects:
 - ArcGIS Server JS API
 - OpenLayers JS API
 - ArcGIS Server Web ADF for .NET Framework
- OpenLayers was chosen based on the following criteria:

Item	Comments
Performance	Critical
UI	Important
Programmability	Ease of coding and maintenance
Administrative Overhead	Keeps the DBAs happy :)

LinearBench Explore Demo

- Users: DOT Professionals
- Architecture: Web Service-Based Multi-Tier Web Application
- Key OSS Components of the Software
 - OpenLayers API
 - FLOT API, JQuery
 - Ext JS
 - Python Libraries including Report Lab for PDF generation
- Development environment:
- GeoServer, ArcGIS Server
 - Apache HTTP, Microsoft IIS
 - Linux, Windows OS
 - Oracle, MS SQL Server

OSS Consumers' General Obligations

Item	Original		Derivatives		
	End-User Application	SDK	Derivative as End-User Application	Derivative as SDK	Modification
By	Authors	Authors	Developers	Developers	Developers, Contributors
Description or Examples	Apache, OpenOffice, Linux, GeoServer, MapServer	jQuery, ExtJS, Python Lib	End-user applications derived from the OSS	SDK derived from the OSS	Bug fixes and enhancements
Distribution to	All	All	Intended recipients as end users	Intended recipients as developers	All
Source Code Content	All	All	?	?	All
Redistribution	Yes	Yes	Yes	Yes	Yes

Licensing Comparison (1 of 2)

Author	Example	License	Style	Copyleft	GPL v3 Compatible
Apache Software Foundation	HTTP Server, Tomcat	Apache License 2.0	Permissive	No	Yes
Python Software Foundation	Python	PSFL	Permissive	No	Yes
Mozilla Foundation	Firefox	MPL 2.0	Weakly Protective	Limited	Yes
Idaho State University	MapWindow GIS	MPL 1.1	Weakly Protective	Limited	No
AutoDesk, GeoServer	MapGuide, GeoServer	LGPL 2.1 / GPL 2.0	Weakly Protective	Limited	Yes
University of California	OpenLayers	Modified BSD	Permissive	No	Yes
Sencha	Ext JS, Touch, Chart	GNU GPL 3.0	Protective	Yes	Yes

Licensing Comparison (2 of 2)

License	Redistribution						
	Combined with non-OSS	Attribution	Trade-mark Use	License Replication	Source		
					Original Code	Modified Code	New/ Derived Code
Apache License 2.0	Yes	Yes	No	Yes	No Req	No Req	No Req
PSFL	Yes	No	Yes	Yes	No Req	No Req	No Req
MPL 2.0	Yes	Yes	?	Yes	Include as MPL	Include as MPL	No Req
MPL 1.1	Yes	Yes	?	Yes	Include as MPL	Include as MPL	No Req
LGPL 2.1 / GPL 2.0	Yes	Yes	?	Yes	Include as LGPL	Include as LGPL	No Req
Modified BSD	Yes	Yes	No	Yes	No Req	No Req	No Req
MIT	Yes	Optional	Optional	Yes	No Req	No Req	No Req
GNU GPL 3.0	No	Yes	?	Yes	Include as GPL	Include as GPL	Include as GPL

Conclusions

- OSS is not necessarily free of cost
- OSS greatly enriches our resources and options
- OSS licensing is complex and murky
- OSS is becoming a major force in the software landscape
- Keep an open mind to embracing OSS

Thank You!