Open Standards & Open Source at ESRI

Web Mapping for Conservation Organizations Workshop
Redlands, California
March 8th – 9th, 2010
Open Standards Defined

• ...

Source:
ESRI Participates in Open Standards Processes and Organizations

...
ESRI’s Solutions Support/Offer Open Standards

- Reference online source, list/table
Open Source Defined

- Freedom to Distribute
- Include Source Code
- Derived Works
- Integrity of the Author’s Code
- No Discrimination
- Distribution of License
- License not Specific to a Product
- License must not restrict other Software
- License must be Technology Neutral

Source: OpenSource.Org
Licensing

- Berkeley Software Distribution (BSD)
- GNU General Public License (GPL)
- Lesser General Public License (LGPL)
- 60+ OSI-approved licenses
- Hundreds of open source licenses
Popular Business Models

- Service and Support
- Loss Leader
- “Sell it, free it”
- Accessorizing
- "Widget Frosting"
Open Source at ESRI

- Pervasive use in software development
- Encourage users and developers to complement ESRI solutions with open source & interoperability

Keywords:
- PostgreSQL
- JBoss
- The Apache Software Foundation
- Python
- Java
- Redhat
- NetBeans
- Eclipse
- Apache Ant
Open Approaches & ESRI

• Continue work with the open source community to further GIS research & development

• Active participant in open source & interoperability standards communities
Open Source at Microsoft

• Historically combative
• Now softened and focused
  – Open Source Lab
  – OSI-approval of its os licenses
  – Collaboration: JasperSoft, JBoss, Novell, Sourcesense, SpikeSource, SugarCRM, ZenSource, Zend
Open Source at Google

• Key part of their Strategy
  – Reduces their Cost of Ops (Ubuntu)

• Activities include …
  – Open-source project hosting
  – ‘Summer of Code’ program
  – 120+ open-source projects
    • Android*

• *Perception* that GoogleMaps, GoogleEarth are open source
Open Source in the Public Space

- National Defense Authorization Act
- Health e-Information Technology Act
- Department of Defense
- Department of Energy
- National Security Administration
Open Source in the DoD

Open Source Software (OSS or FLOSS) and the U.S. Department of Defense (DoD)

David A. Wheeler
February 11, 2008


This presentation contains the views of the author and does not indicate endorsement by IDA, the U.S. government, or the U.S. Department of Defense.

Roadmap Plan

April 2006

Prepared for:

Ms. Sue Payton
Deputy Under Secretary of Defense
Advanced Systems & Concepts
www.acq.osd.mil/asc/

Prepared by:

J.C. Herz
Mark Lucas
John Scott

Version 3.1 (Final)

Cleared for Open Publication, June 7, 2006
Office of Security Review, Department of Defense
Open Source in the Public Space

Critical State and Local Government Issues

- Reduce Operational Costs
- Increase Security
- Maximize Revenue
- Improve Customer Service

Government CXOs

Courtesy: Rishi Sood, Gartner, April 2008
Where OS is Happening

• Not Only in GIS (see InfoWorld*)
• Seeing open source GIS more in the following locations:
  – State agencies, City/Local Government, County Government
  – Higher Education, Curriculum includes OS GIS
  – Localized User Groups forming
• European Commission, Open Standards**
FAQ

- What about Security?
- Warranty?
- Indemnification?
- Support?
- Vendor Lock-in?
- Procurement?
Open Source Issues

- Should not be ignored
- No strategy unique to open source
- No single OS business strategy
- Procurement Process
Misconceptions

- Open source is chosen for “religious” reasons
- Open source costs nothing
- It is anti-commercial
- It’s not reliable or supported*
- It’s a legal minefield
- It’s not for mission-critical Applications
### Early Adopters of "Free" IT

<table>
<thead>
<tr>
<th>Adopter Type</th>
<th>Software</th>
<th>Hardware</th>
<th>IT Svcs</th>
<th>Cloud Svcs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational institutions</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Startups</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Software developers</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Web 2.0 (dot-com) companies</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>&quot;Digital natives&quot;</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Government</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All enterprises</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By 2011, early technology adopters will forgo capital expenditures and acquire 40% of their IT infrastructure as a service or "free."
Inhibitors

• Copyright & Patents
• SLAs don’t exist w/Community versions
• Non-compatible & conflicting licenses
• Often, No accountability
• Increasing demand in IT for SaaS*
• Sometimes flimsy Open-source process communications (source: Gartner)
  – e.g. OpenSSL-Debian security flaw
Costs to Consider

• Evaluation Costs
  – Finding, investigating many oss’
  – Installing, configuring software
  – Creating test environments
  – Writing eval programs
  – Investigating to get answers
  – Researching integrating techniques
  – Collaborating with OS communities
Costs to Consider

- License and Maintenance Costs
  - Subscription and licensing fees may exist!
    - Redhat, Suse, Jboss, others..
Costs to Consider

• Installation and Configuration Costs
  – Time spent...
     ...learning how to install the software [in an IDE/production/test]
     ...doing basic performance testing
     ...developing backup scripts
     ...learning how to operate/monitor software
     ...integrating into production systems
     ...training developers, users, IT staff
Costs to Consider

• Integration and Customization Costs
  – Time spent...
    ...Gathering requirements for I & C
    ...Reading source code, doc’n, list-servs, forums, blogs to get educated
    ...Designing, coding, testing I & C
  – Fees for consultants, 3rd party developers (buy v. build)
Recommendations

• Understand your real need for an Open source software strategy
• Support and Integrate
  – Building critical mass
  – Hybrid/blend strategy
  – Reduce critical dependencies
• Sponsor OS projects; Contribute
• Leverage embedded OS
Measure Maturity

Functionality
Usability
Quality
Security
Performance
Scalability
Support
Documentation
Adoption
Community
Governance
Recommendations

- **Do not** Deny and Regulate
  - “We’re immune”; “It’s inferior quality”

- **Do** Accept and Innovate
  - “We have to figure out how to play and thrive”
  - “Let’s add differentiated value”
  - “Make sure our clients know why ours is worth more than $0”
Recommendations

• Enterprise must Consider ...
  – Fitness of Purpose
  – Maturity
  – Technology Adoption Profile
  – Deployment Scenario
  – Licensing

• For Enterprise, determine the TCO
• Calculate the 3-to-5 year ROI
<table>
<thead>
<tr>
<th>Category</th>
<th>ArcGIS</th>
<th>GRASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>Poor; can be extremely expensive, depending on the license and extensions needed.</td>
<td>Excellent; freely available to the public.</td>
</tr>
<tr>
<td>Installation</td>
<td>Excellent; very easy.</td>
<td>Good; very easy but slightly more involved due to Cygwin.</td>
</tr>
<tr>
<td>Training and Technical Support</td>
<td>Excellent; abundant resource material, training, and support.</td>
<td>Poor; training and support virtually non-existent.</td>
</tr>
<tr>
<td>Database</td>
<td>Excellent; easy to use and develop, several options.</td>
<td>Fair; harder to use and develop than ArcGIS, does not give the user as much freedom.</td>
</tr>
<tr>
<td>Data Import and Export</td>
<td>Fair; offers the options necessary to work with most downloadable data.</td>
<td>Excellent, offers a wide range of options.</td>
</tr>
<tr>
<td>Display</td>
<td>Excellent; on-the-fly projection makes display of data extremely easy.</td>
<td>Fair; offers the tools necessary to display data but does not offer on-the-fly projection.</td>
</tr>
<tr>
<td>Image Classification</td>
<td>Cannot perform image classification. Second program such as ENVI is needed.</td>
<td>Good; offers the tools necessary to conduct several types of classification but could definitely be improved.</td>
</tr>
<tr>
<td>Post Classification Analysis</td>
<td>Poor; offers a few options such as calculate areas but does not give the user many options. ENVI or other program must be used.</td>
<td>Excellent; offers an abundance of statistical tools that are easy to use.</td>
</tr>
<tr>
<td>Map Layout</td>
<td>Excellent; offers the user the ability to produce highly customizable, professional maps.</td>
<td>Poor; very few cartographic design or map layout tools. A second image manipulation program such as GIMP or Photoshop must be used.</td>
</tr>
<tr>
<td>Overall Functionality</td>
<td>Fair; offers a wide variety of tools but since it does not offer image classification or statistical tools it was given a lower score.</td>
<td>Excellent; offers a wide variety of analytical and statistical tools</td>
</tr>
<tr>
<td>Overall ease of use</td>
<td>Excellent; very straightforward and easy to use.</td>
<td>Fair; could be much more straightforward and user friendly. User must be much more experienced with GIS and GIS concepts.</td>
</tr>
</tbody>
</table>
Countering Open Source

For every open source widget...

– Need support for each
– Need consultants who specialize in each
– Need training for the API or language
– Need database exchange formats/processes
– Need commercial data in that format
– Need common data object model across widgets
– Need employee pool who uses the widgets

...Multiply by # of possible platforms

... And don’t forget interoperability.
Other Resources

- *Open Source for the Enterprise* (2005)
- *Open Sources 2.0* (2006)
- *Open Source Primer* an ESRI White Paper
- www.ossensus.org
Summary

• Distinguish Open Standards from Open Source
• ESRI is committed to Open Standards
  – Are the other solutions you are considering committed?
• ESRI supports Open Source
• Consider vendor’s pedigree, brand, indemnification, warranty, support, quality, trust
• Calculate ROI and TCO
• Don’t forget ESRI’s “open position”
  – Linux, Apache, SOAP/XML, NetBeans, Eclipse, Python, ANT, JBoss, ArcSDE Java API, Java Studio Creator, OGC, etc.