Mixed Fuel for Innovation: Development Trends Blending Open Source with other Code

Open Source Business Conference

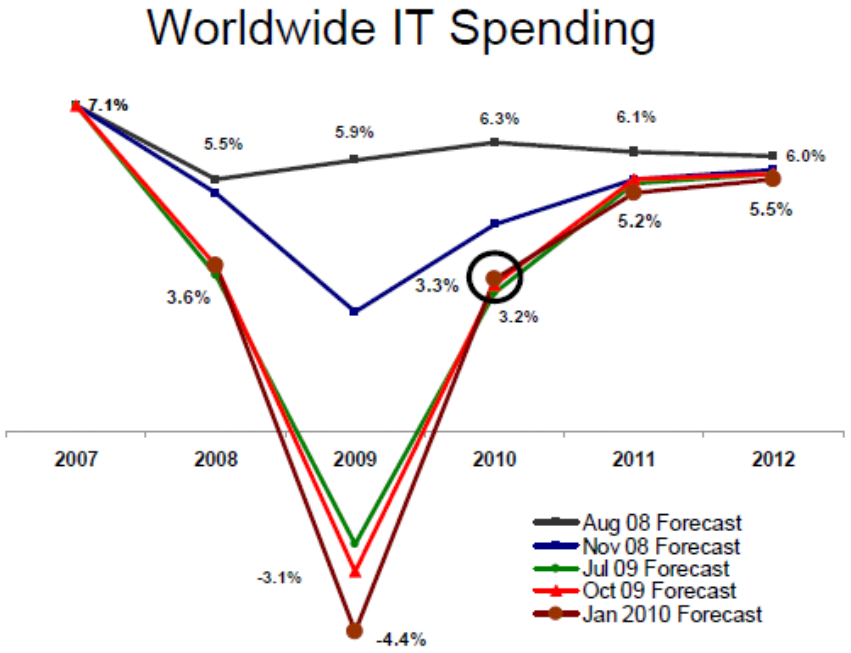
March 18, 2010

Agenda

- Market Trends
- Open Source Adoption
- Conclusions
- Case Studies
- Q&A

Difficult Times Motivate Change

- Economic slowdown has reduced IT spending…..
- Increased pressure to innovate and improve business agility
- Need to innovate more, with less



IDC Worldwide Black Books, 2008-2010

451 Group Survey on OSS Use (December 2009)

- 87% of companies say OSS meets or exceeds cost savings expectations After adopting of OSS
- 39% of OSS users ranked **flexibility** as the primary benefit

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The Changing Face of Software Development

- Software development has changed
  - Internet, community development, OSS licensing
  - Componentization & Search for re-use
  - Agile methods
- Economics of OSS are compelling…especially now
  - 85% of enterprises use OSS; 45% use is mission-critical
  - Large pool of proven, re-usable software
    - **220,000 projects; 5B lines of code; 2M person-years / $400B of value**
- "Multi-Source" & Re-use represent new pragmatism
  - Up to 80% of new development avoided @ $10-$20 per LoC
- Market Need – "Managing Abundance"
  - < 40% of customers have OSS Policies; far fewer use tools
  - Opportunity: address challenges of Multi-Source development:
    - **Compliance / Management – IP, security, export**
    - **Management / Automation – policy, process, multi-source**

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It's Become a Multi-Source World

Outsourced Code Development

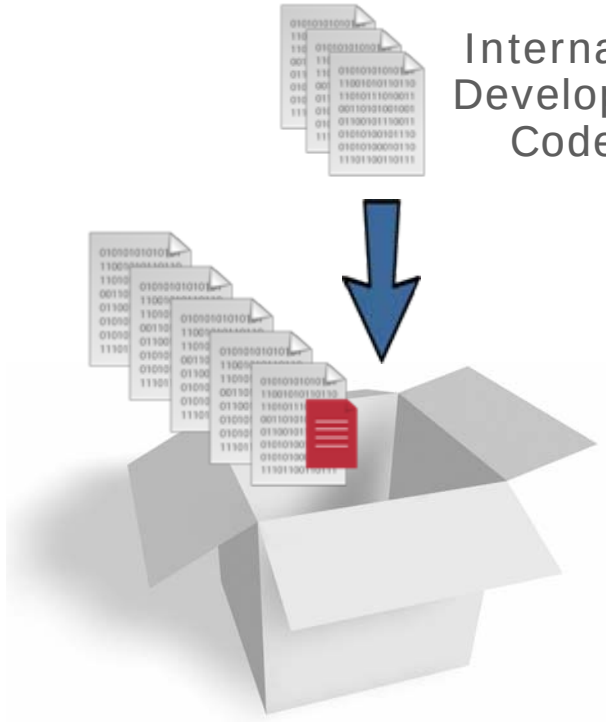
Commercial 3rd-Party Code

Code

Open Source Software

- Individuals
- Universities
- Corporate Developers

Obligations



Internally Developed Code

Software Application

YOUR COMPANY

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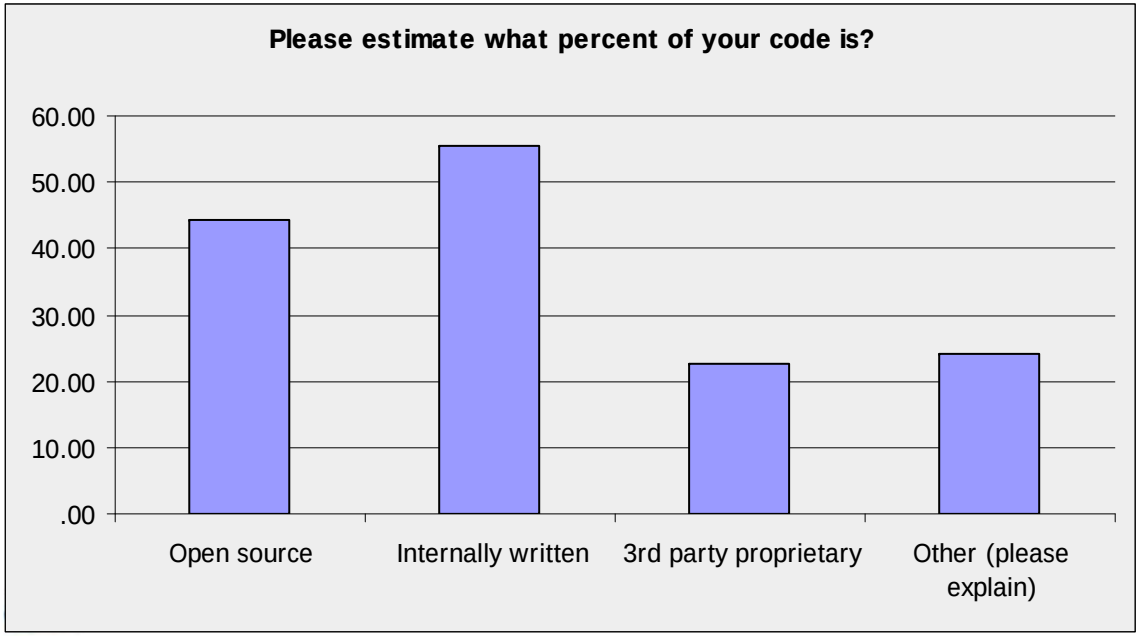
...and Open Source is Playing a Big Role

- From a *recently* completed study of commercial software projects:
  - 22% of typical application/project is open source
    - Avg project size: ~ 700MB of code
    - Cost to develop the OSS used: ~$26M
    - Dozens to hundreds of OSS components
  - Sampled hundreds of commercial projects
    - Millions of files, representing hundreds of GB of code
- In development



OSS is a significant portion of code in Development

Source: Survey of Users from WWW.Koders.com (January-March 8, 2010)

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The Abundance of Open Source

- 19,000 new open source projects created in 2009
- Mobile
  - Over 3200 projects, 903 new OSS projects in 2009 representing a 39% increase
  - There were 224 new projects for Android in 2009, almost 3X that of iPhone at 76, the next nearest platform.
- Healthcare
  - 800 projects, $6 billion USD of development costs, 31,000 staff years to replicate.
- Potential for OSS to offset IT App Dev spending (assume OSS offset 10%)
  - WW: $57B
  - US only: $17B

What We're Hearing from Customers

- FUD surrounding OSS is evaporating
- OSS is used in conjunction with Agile
- Goals for re-use/standardization of code of up to 80% vs. build / fix / fit ~20%
- Scale – *ad hoc* use of hundreds of OSS components has led to a management/tracking/support problem
- Customers are demanding to know what's in the code they're receiving
  - FOSSBazaar workgroup on data standardization in software supply chains

Top 20 Most Commonly Used Licenses in Open Source Projects

Rank	License	%
1	GNU General Public License (GPL) 2.0	49.0%
2	GNU Lesser General Public License (LGPL) 2.1	9.4%
3	Artistic License (Perl)	9.0%
4	BSD License 2.0	6.3%
5	GNU General Public License (GPL) 3.0	5.4%
6	Apache License 2.0	4.0%
7	MIT License	4.0%
8	Code Project Open 1.02 License	3.2%
9	Microsoft Public License (Ms-PL)	1.4%
10	Mozilla Public License (MPL) 1.1	1.2%
11	Common Public License (CPL)	0.6%
12	Eclipse Public License (EPL)	0.5%
13	zlib/libpng License	0.4%
14	GNU Lesser General Public License (LGPL) 3.0	0.4%
15	Academic Free License	0.4%
16	Open Software License (OSL)	0.3%
17	Common Development and Distribution License (CDDL)	0.3%
18	Mozilla Public License (MPL) 1.0	0.3%
19	PHP License Version 3.0	0.2%
20	Ruby License	0.2%

- Top 10 licenses account or 93% of OSS projects
- Top 20 licenses account for 97%
- Rank by # of OSS projects using the license

Source: Black Duck Software
Note: The table above illustrates the top 20 licenses that are used in open source projects, according to the Black Duck Software KnowledgeBase. This data is updated daily. This snapshot was taken on **March 9, 2010**. Visit: http://www.blackducksoftware.com/oss/licenses#top20

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Top Programming Languages Used By Open Source Projects

(Share is calculated based on lines of code)

Rank	Language	%
1	C	40.5
2	C++	14.3
3	Java	10.8
4	Shell	8.6
5	Javascript	5.7
6	PHP	4.9
7	Perl	3.1
8	Python	2.7
9	SQL	1.5
10	Assembler	1.3
11	C#	1.2
12	Pascal	0.9
13	Ruby	0.8
14	Ada	0.5
15	Objective C	0.4

- 80% of open source is C, C++, Java, Shell and JavaScript
- Of the top 5, only JavaScript is gaining in share – up almost 2 points
- Overall static languages losing share to dynamic languages

- Trends over the last 12 months
  - Biggest gainers: C++, Javascript
  - Biggest losers: C, Java, shell

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Top 10 Encryption Algorithms Used in Open Source Projects

Algorithm	Percent of All Algorithms	Type of Algorithm
RSA	13%	Asymmetric
DSA*	9%	Signature
DES	9%	Symmetric
MD5*	8%	Hash
SHA*	8%	Hash
Blowfish	6%	Symmetric
Diffie-Hellman	6%	Keyman
HMAC*	5%	Mac
ElGamal	5%	Asymmetric
AES	5%	Symmetric
sub total	74%	
Other	26%	
Total	100%	

* used for encryption only

See: "A Guide to Encryption Export Compliance for Open Source"

www.blackducksoftware.com/export

- Open source projects are allowed to publish software containing encryption under license exception TSU.

See: //www.blackducksoftware.com/oss/projects#encryption

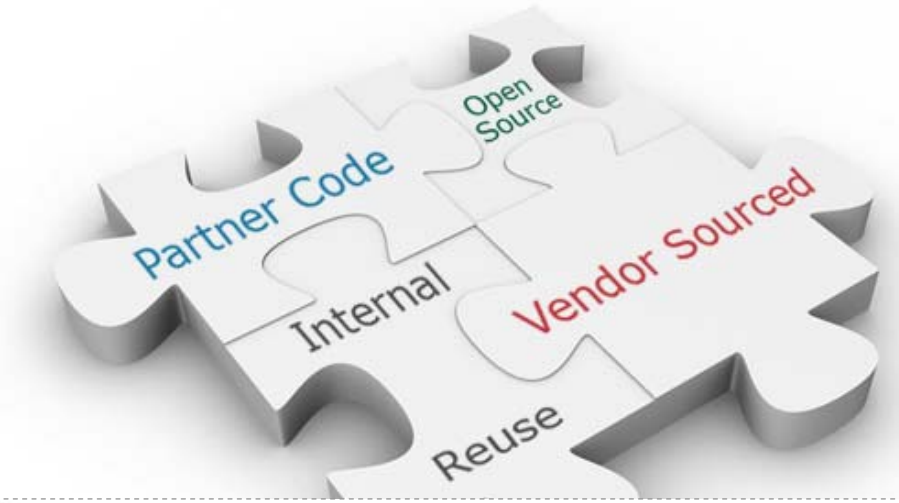
Development Challenges Using Open Source at Scale

Management

- Find & leverage the right software from many sources
- Get a handle on code base after years of *ad hoc* 'ism
- Encourage standardization of components & versions

Compliance & Security

- Comply with open source policies
- Manage licensing and associated obligations
- Complying with export regulations



Formal control of open source software lags adoption:

- 58% of companies surveyed do not have formal polices or guidelines for OSS

Source: 451 Group, December 2009

SFLC Sues a Dozen GPL Violators

Takeaways

- Even big companies make mistakes
- OSS can enter from many sources
- It's difficult to manage OSS without both process and technology

Conclusions

The good news

- The Global recession has caused an acceleration in OSS adoption
- The abundance of open source continues to grow

But challenges remain

- Management, Compliance

Case Study

The Company

- Ethernet network products for Enterprises, Data Centers and Service Providers
- Public, 700 Employees
- Software is a key component and differentiator with development centers in 3 locations.

Use of OSS

- All use of OSS and third party software is based on the concepts of protection and respect.
- Scanned software products to obtain a complete list of the open source software contained in the products

Control & Training

- Use of open source must get Engineering VP and legal approval.
  - Automated scans of software at key points in product life cycle are now required.
- Training is required for

Takeaways

- Compliance with open source licenses was fairly straight forward to achieve, harder to instill discipline in the organization to maintain
- Vendors often are not where they need to be
  - Can't easily get list of open source software in their code
  - Can't get source code in a timely manner when requested

Case Study: Fortune 100 Insurance Company

- (company had been

Solution

- Automated compliance integrated with build tools; Automates internal approval process

Benefits

- Lowers risk of legal issues
- Automates manual process

Case Study: InfoPrint Solutions

RICOH | IBM
InfoPrint Solutions Company™

-
- Automate approval process
-

Solution

Black Duck Code Center for approval automation

Black Duck Protex servers validating BOM's and performing license discovery

Benefits

- Manages legal risk
- Enables collaboration around open source approvals
- Streamlines processes

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Overview & Why OSS Management is Important

Zenoss® Open Enterprise Management

- Developer of Commercial Open Source Software
- Distributed under GPL v2 and Commercial License
- Customers- Medium to Large Enterprise, OEM, Service Providers, Government, Outsourcers and Educational Institutions
- Demand for IP indemnification
- Demand for BOM (Bill of Material)
- Ensure license compliance and prevent license conflict
- Due Diligence review

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Where we were

Zenoss® Open Enterprise Management

- Geographically distributed developers
- Open source advocates who wanted to use everything free
- Developers were interpreting open source licenses
- Spreadsheet management of third party code
- “It’s just a couple of lines of code!”

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Potential OSS Entry Points

Zenoss® Open Enterprise Management

- Traditional Development Cycle
- Community Contributions
- Professional Services
- Support

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OSS Management Program

Zenoss® Open Enterprise Management

- Event driven manual process involves legal and engineering
- Checklist based review and approval for third party code
  - Engineering vets necessity
  - Engineering provides legal with details of project, license, URL, use in Zenoss
  - Legal reviews license, sets out compliance steps
  - Engineering implements, signs off on compliance
  - BOM kept on Google spreadsheet
  - New hires trained on process
- Black Duck implementation in Process
  - To verify our manual BOM compilation
  - Automated scan of code delta on nightly build

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Lessons Learned

Zenoss® Open Enterprise Management

- Reinforce process and requirements frequently
- Ask pointed, direct, questions; then ask them again….and again
- Follow up is important
- Senior management support is essential
- A “champion” in engineering is key
- Pay attention to all processes and sources of code (including professional services)