Software Development on Linux Systems

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By

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Today

- Open Source Development Issues
- Current Themes
- Future

Open Source Development Issues

- We have looked at open source all semester and pointed out many of the advantages open source offers
- There are, however, issues with open source as with all things
- Open source development can be hindered by legal issues, misunderstanding, politics and cost

Open Source Development Issues

- One of the most biggest hindrances in open source development is legal conflicts
- Patent laws within the U.S. have been changed from first to invent with a required working copy to first to patent without any working proof of concept
- This has recently led to companies that wait for someone to invent a technology, and then patent it themselves

Open Source Development Issues

- As most open source developers themselves as unable to pay the costs of a patent, innovative projects may find themselves in a legal conflict with someone who paid for the patent

- Projects that are not necessarily innovative or are similar to other technologies may already be in conflict with an existing patent

- This can make open source development difficult under some circumstances

Open Source Development Issues

- Legal issues tend to most be rare though and should not discourage open source developers

- These issues exist equally within commercial software as well

- In fact, creating open source software is still easier than making commercial software normally as you can claim:
  - **Your project is not in direct competition**
  - **Your project is scientific research**
  - **Your project is not for profit (potentially)**
  - **The plaintiff can use your project as well**

Open Source Development Issues

- Another issue in open source is misunderstanding
- Even currently, open source software is misunderstood
- Open source software is very innovative and scientific, especially now while the economy is recovering
- Unfortunately, open source software is often considered “out-dated”, “unreliable”, “theft”, “free labor”, “worse than commercial software” and many other misunderstood preexisting views

Open Source Development Issues

- Most places in industry have begun to realize open source and the advantages of it
- There are still many places in industry that misunderstand open source and attempt to affirm their preexisting views
- Despite this, open source software looks great in industry as it shows you have work on a team to produce software on your own time

Open Source Development Issues

- Where open source tends to be mostly misunderstood is in society
- Much of society uses open source software every day and even rely on it, but are unaware of it
- Much of society still attributes open source to the negative views that exist
- Though industry may respect the value of open source, society often downplays the value or may even make a project appear negative

Open Source Development Issues

- Open source projects designed directly for society may find their project struggling for adoption
- This often occurs due to negative connotations about open source
- Though much of society uses Firefox or Chrome, they do not realize that they are open source projects
- Many people tend to feel that if a project is open source, they must be doing something malicious to make money off it, such as stealing their credit card numbers or installing viruses on their computer

Open Source Development Issues

- What society does tend to understand is science, innovation and learning
- Open source projects that claim to be for scientific, innovative or learning purposes, society tends to give them more value
- However, this can not be said about all projects and may deter users who are intimidated by science or software they think will be complex
- Society is slowing learning about open source, but it is still an issue that may arise in development

Open Source Development Issues

- As we mentioned earlier in the course, open source faces politics just as anything else
- It is not uncommon in open source to face politics within or between projects
- Projects fork and merge often, sometimes due to disagreements in direction
- Unfortunately, some projects are abandoned due to politics

Open Source Development Issues

- Politics can often disrupt a project in its infancy causing a team to disband
- This leaves projects abandoned or without enough developers to be completed
- Politics may also come from external forces, such as funding or pressure from another project to change licenses
- Many times projects have changed licenses due to pressure from other projects/organizations

Open Source Development Issues

- A large problem in open source is cost
- Cost in open source is less about funding and more about time
- If a team can not afford the time to complete a project, it may never be completed or picked up by another developer
- This is probably the biggest issue in developing open source software

Open Source Development Issues

- Many projects are not completed due to the cost in either time or money
- Many developers have full time jobs and are unable to dedicate large amounts of time to a project
- This should be estimated as cost of completion as your time is valuable
- Also, the differences in developer availability in a team can lead to political issues as well, when members are completing their part

Open Source Development Issues

- The takeaway of this is that open source is not without issues
- These were only some of the issues that open source development faces;

  Like anything, there are many other issues that can arise in development
- What you should understand, is that you should not give up or be deterred by these issues;

  Successful projects work through their issues and continue development

Current Themes

- As we have discussed, one current theme of open source is enterprise adoption
- Nearly all of the Fortune 500 companies, if not all, are heavily relying on open source
- Historically many companies feared open source technologies, but within the last decade, open source adoption has risen quickly

Current Themes

- Open source adoption has not just affected large businesses, however
- The great majority small and medium sized businesses requiring software rely on open source technologies due to cost, support, integration and licensing
- Most web infrastructure is built now is almost entirely on open source software

Current Themes

- Open source software is becoming highly respected in industry
- Many companies are now looking for developers with open source experience and/or experience with open source technologies
- This is only a recent change, however, and some companies are still resistant
- Given the number of man-years of development open source software can generate, companies are realizing it is necessary

Current Themes

- An area of open source that companies are taking interest in is cloud technologies
- Cloud technologies are another trending theme in open source
- Much of cloud software is open source and is quickly rising in usage
- Cloud-based technologies are popular area of development in open source

Current Themes

- Much of the open source cloud systems have strong corporate backing, such as
  - CouchDB
  - Hadoop
  - HPCC (High Performance Computing Cluster)
  - OpenStack
  - Eucalyptus
  - Puppet
  - RabbitMQ
  - Cloudstack
  - OpenNebula

Current Themes

- There are many other open source cloud software packages being developed, as well
- Some of these are designed for production environments, while many others are being designed as experiments
- Besides cloud software, many open source projects are being designed to integrate with and be optimized for cloud use
- These may be databases, file-systems, collaboration software, backup, business intelligence, inventory systems, web services, etc

Current Themes

- Related to cloud software, NoSQL is another rising trend in open source
- Many open source cloud projects use NoSQL for database management
- CouchDB, mongoDB, Neo4j, Apache Cassandra and Apache Hbase are all open source NoSQL projects
- Many new NoSQL projects are being developed actively, as well

Current Themes

- NoSQL integration is occurring very rapidly, with many open source projects fully supporting a number of NoSQL projects

- CouchDB itself has been used in the Linux desktop for awhile, and is widely supported by many projects

Current Themes

- One of the most noticeable and fastest growing themes in open source is mobile development
- Android is an open source platform that is rapidly growing in popularity
- Many apps on Android and other mobile platforms are open source themselves

Current Themes

- Many of the mobile libraries are open source and many more are being developed rapidly
- Ubuntu and Fedora have both have gained strong support for ARM processors
- Packages are being rebuilt for ARM rapidly and many of the features found in Linux are moving towards mobile
- Between the porting of current software to mobile and the rapid development of new mobile packages, open source software is growing exponentially for mobile platforms

Current Themes

- Another theme in open source, is the growing of open source socially
- Many sites have launched for open source developers that have a strong social aspect, such as github and coderwall
- There are also many sites coming up designed for open source developers to find others to work with on projects
- Though open source has always relied on collaboration, this movement into social coding is very new

Future

- You are encouraged to continue your open source project and create new projects in the future
- If you are interested at open source development at RIT, check out http://foss.rit.edu
- If you are looking for new projects, join Github or another open source site where you can see other projects
- Finally, happy coding