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Open Source Software – Lessons Learned

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Open Source Software

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What is Open Source Software?

Common Characteristics

- Source code
  - is available
  - can be modified
- Collaborative development community
- Modifications considered for integration
- Formal definition http://opensource.org/osd

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Many Similar Terms – What's the difference?

- Open Source Software
- Free Software

- Freeware

- Shareware

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Different License Terms

Licenses can be different

- Copyleft - requires the release of source code of modified or new software-parts (e.g. GNU General Public License)
- Permissive - Provides a provision for adding your own license term. Apache, BSD, MIT (MIT license sample below)
  - Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:
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- GNU Lesser GPL – Typically for DLLs – more permissive than GPL by restricting “Freedoms” only to the free software

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Potential Benefits

- Lower costs of entry and maintenance
- Flexibility
- Auditable and Secure
- Reliability
- Vendor Independence

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Potential Challenges

- Possible steep learning curve
- You may be on your own
- Not always free
- May have unknown limitations
- Open Source projects can be retired or abandoned
- No warrantees
- No SLAs

Case Studies

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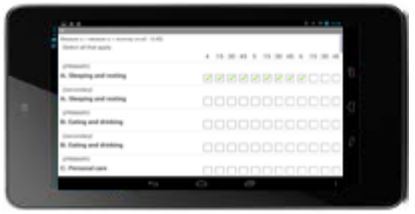
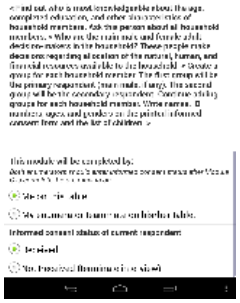
Product Profile – ODK

Open Source Mobile Data Collection

- Client application deployed on more than 1200 Android Devices
- Instrumentation includes
  - More than 2700 questions
  - Over 1500 skips
  - Complex Grids
- Data collection in 9 countries
- Questionnaires in 4 languages
- Four on premise Aggregate Servers





Very Good Overall Experience. Primarily academic user community. Limited vendors with deep product internal knowledge available

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Product Profile - Drupal

Open Source Content Management System

- Developed and Operating 14 Client Production sites
- Sample sites functions include
  - General public information dissemination
  - Training and learning portals
  - Public and private user collaboration sites
- Sites utilize a broad range of complex community contributed modules and locally developed modules

Steep learning curve. Excellent tool once designers and developers have become proficient

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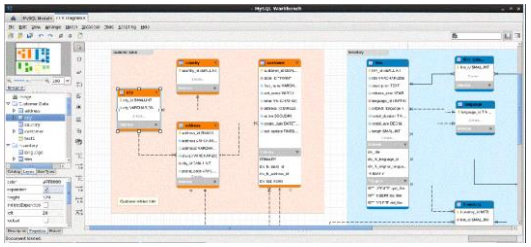
Product Profile – MySQL

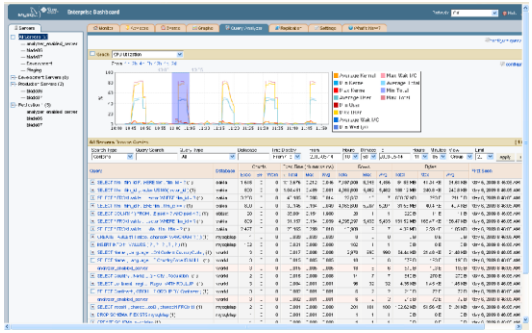
Open Source Database Management System

- Operating Five Database Servers
  - Three Community Edition servers
  - Two Enterprise Edition servers
- Servers host approx 50 client project related databases



Reliable, scalable and robust database management system

Some advanced features only available in enterprise edition



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Westat Experience

- **Scenario 1**
  - Data from very large instruments caused server application to intermittently fail
  - Community support is primarily provided by an academic group with a few commercial vendors having deep knowledge of the product internals
  - Due to the unique nature of the problem, community support was not readily available
- **Resolution**
  - Vendor with deep product knowledge identified
  - Vendor and Westat development staff identified a software defect
  - Vendor developed a fix and contributed it back to the community
- **Lessons Learned**
  - When choosing an Open Source Software product, identify vendors with deep product knowledge who can be relied upon
  - Be sure to understand if the product has been used by others with similar size and performance requirements

Westat Experience

- **Scenario 2**
  - New project requirements emerged that ideally would be implemented through product software modification
  - Community could not commit to incorporating proposed software changes for several release cycles due to pre-existing roadmap priorities
  - Westat would need to re-integrate software modifications for each release until changes were to be incorporated into core product by community
- **Resolution**
  - Project Team identified an alternate method to support the requirement
- **Lessons Learned**
  - Understand the project's governance model and how influential you can be in introducing enhancements
  - Be prepared to maintain a separate software branch that includes your modifications, in the event the community does not immediately incorporate your modifications

Westat Experience

- **Scenario 3**
  - An open source product is publicized to operate on a variety of technology execution stacks (Linux and Windows)
  - In practice, most community members and vendors operate on a Linux technology stack
  - Westat has significant Microsoft technology skills and as a result operates the product on a Microsoft Windows execution stack
  - When researching issues on community sites, some issues are more difficult to resolve as fewer community members operate the product on Windows
- **Resolution**
  - Resolving issues where technology execution stack is suspected to be a contributing factor, may take longer and more effort to resolve
  - Considering the possibility of migrating to a Linux stack
- **Lesson Learned**
  - At the outset, identify the typical configuration utilized by the community and evaluate risks of using alternate configurations

Westat Experience

- **Scenario 4**
  - An open source product designed to operate on a variety of technology stacks is in actuality primarily used/operated by community members and vendors on a Linux technology stack.
  - When a security patch for the product was released, detail installation instructions and update procedures were provided for Linux/Apache installations. Installation information for other platforms were lacking.
- **Resolution**
  - Team members spent considerable time analyzing Linux instructions and defining equivalent instructions for Microsoft.
- **Lesson Learned**
  - At the outset, identify the typical configuration utilized by the community and determine risks of using alternate configurations.

Westat Experience

- **Scenario 5**
  - We noticed that a website database connection would time out when database backups were being performed
- **Resolution**
  - This is a known limitation with the product's Community Edition. The Enterprise Edition provides a more comprehensive backup module that performs row level locking to avoid full DB lock
- **Lesson Learned**
  - Understand the limitations of the community edition and features that enterprise editions support
  - Determine whether the community edition is sufficient for your needs
  - If purchasing the enterprise edition consider re-evaluating the benefits of the product when compared to other COTS options

Considerations

Regarding the product …

- Is there a healthy and active community ?
- Is there a sizable number of community members who use the product in the same manner and configuration as you intend to ?
- Are there commercial vendors with deep product knowledge who can provide ample service and support ?
- Who is sponsoring the community and what is their motivation ?

Considerations

Regarding the product (continued)…

- Are there equivalent or similar commercial products ?
- Beyond license and maintenance fees, what benefits or savings do you anticipate ?
- What is the learning curve to become proficient with the application ?
- Is there an enterprise edition of the product, and if so how does the community edition differ ?
- How is the community governed ?

Considerations

What do you intend to do with the product …

- Are you planning to modify source code ?
- Are you planning to redistribute the software ?
- Are there any license restrictions to consider ?
- Do you intend to be an active community member and contributor ?

Thank you.

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