The CDC's Outbreak Management System as a Case Study for the Transition of an Existing Software Tool to an Open Source Paradigm

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The Challenge

Take an existing tool, written in a proprietary language, using proprietary tools, and transition its development to an open source model while maximizing reuse of existing code, components and infrastructure.

The OMS Vision for an Open Source Environment

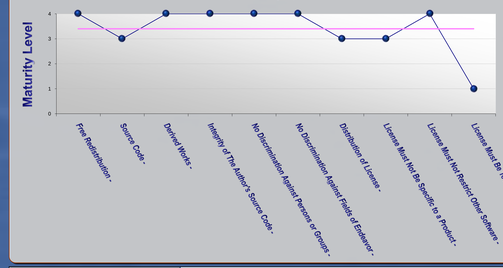
supporting outbreak investigation, national situational awareness, and traditional case reporting through collaborative community contribution

OMS's Open Source Values

- Collaborative software development via community contribution
- Improving software quality (OMS evolution) via community peer review
- Increased awareness of OMS and its impact on Public Health
- Increased dissemination and support of OMS
- Leverage and contribute to NCPHI open source efforts

Assessment of Current State Relative to the Open Source Initiative Criteria for Open Source

(↑ Lowest – 4 Highest)

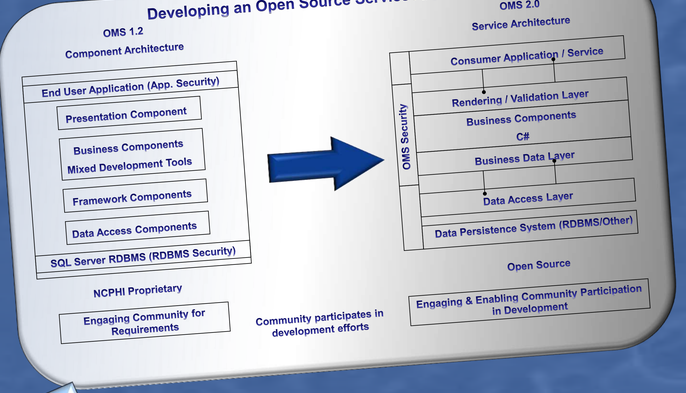


Free Redistribution	Either Licensing or Royalties required for use	3
Source Code	Source code is available for primary executables, but not for all required libraries or components. These may have separately available source code.	3
Derived Works	Either derived or modified works are permitted, but require additional licensing (e.g. developer licensing).	2
Integrity of The Author's Source Code	The license may restrict source-code from being distributed in modified form only if the license allows the distribution of "patch files" with the source code for the purpose of modifying the program at build time. The license must explicitly permit distribution of software built from modified source code. The license may require derived works to carry a different name or version number from the original software.	4
No Discrimination Against Persons or Groups	The license must not discriminate against any person or group of persons	4
No Discrimination Against Fields of Endeavor	The license must not restrict anyone from making use of the program in a specific field of endeavor. For example, it may not restrict the program from being used in a business, or from being used for genetic research.	4
Distribution of License	Redistribution for limited purposes without license (e.g. run time only license can be distributed, but not development license)	3
License Must Not Be Specific to a Product	The rights attached to the program must not depend on the program's being part of a particular software distribution. If the program is extracted from that distribution and used or distributed within the terms of the program's license, all parties to whom the program is redistributed should have the same rights as those that are granted in conjunction with the original software distribution.	4
License Must Not Restrict Other Software	The license must not place restrictions on other software that is distributed along with the licensed software. For example, the license must not insist that all other programs distributed on the same medium must be open-source software.	4
License Must Be Technology-Neutral	Specific technology, platform or interface required.	1

Enabling Open Source Infrastructure

- Project management and governance models in place
- Community contributes and participates
- Continued development with transparency
- Public communication site is operational:
  - Bug tracker
  - CVS repository
  - Bulletin Board
- Beta and stable releases available (Beta testers participating)
- Comprehensive code documentation
- Roadmap for development exists
- Defined quality management process
- Defined bug fix process

Developing an Open Source Service Architecture



OMS

OMS Open Source Options

- Open Source the entire application
  - The entire OMS application is open source and released under a license
  - Allows for complete rewrites of the application and forking
- Open Source Enhancements (Plug-in Architecture)
  - OMS is structured where the core application development remains internal, but modules can be written to plug in different pieces (i.e. MySQL plugin, Oracle plugin, etc.)
  - This approach would also allow for future compatibility with tools like Epi Info™, CRA, BioSense, etc.
- Or, any combination

Language Selection

Object Oriented Language Options	Advantages	Disadvantages	
Java	• Well established in Open Source • Availability of free tools • Robust capabilities	• No reuse of existing codebase – greater time to market • Cost of proprietary tool options	
Visual Basic .Net	• Robust capabilities • Reuse of existing codebase	• Little open source presence • Unavailability of free tools	
C#	• Some open source presence • Availability of free tools • Robust capabilities • Reuse of existing codebase (including conversion of VB .Net)	• Far less established than Java as an open source tool • Cost of proprietary tool options	✓

License Selection

Questions	Yes	No	
Do you want to relinquish any control over how your code is used and distributed?	Berkeley Software Distribution (BSD) Massachusetts Institute of Technology (MIT)	Next Question	
Do you want to allow people to use your code in non-open source programs?	Next Question	GNU General Public License (GPL) Lesser GPL (LGPL)	
If somebody uses your code in their program and sells their program for money, do you want some of that money?	Dual License	GPL	✓