

Open Source and Free Software: the potential for applying open source solutions to health informatics problems in education, research and practice

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Abstract

Interest is growing rapidly among many scientific communities, and among health and public sector organisations, in Open Source and Free Software (OSS/FS) approaches, applications and implications. It is important and appropriate that the health informatics community should have sufficient knowledge and understanding to be able to consider their potential impact, and to provide advice and leadership in the field. Such knowledge will facilitate health informaticians' contribution, in an informed manner, to the wider discussions on the applications of OSS/FS within health and healthcare. OSS/FS has implications for the education and training of health professionals, the implementation of a range of applications, from electronic health records through to the confidentiality and secure transmission of patient data, and for research into all aspects of healthcare and health informatics.

This tutorial will provide an opportunity to understand the basic principles and issues underlying open source and free software. It will, in addition, provide an opportunity to examine a range of applications in general use and with relevance to healthcare environments, as well as to discuss the implications of the OSS/FS approaches for future developments in health informatics. The tutorial will introduce the work of the IMIA Working Group on Open Source Health Informatics (OSWG), the IMIA-NI Open Source Nursing Informatics Working Group (OSNI), and other related developments. It will also provide an opportunity to critically assess some of the claims made for OSS/FS software and approaches. By the end of the tutorial, which will be framed

around examination of examples of OSS/FS, participants should have sufficient knowledge and understanding to be able to consider the potential application of OSS/FS solutions to a range of issues within their own practice environments, be they clinically, educationally or research-based.

1. General description of content

This tutorial is aimed to be delivered primarily at a basic level, and will introduce participants to many of the underlying concepts, applications, arguments and issues behind Open Source and Free Software (OSS/FS). It will provide the opportunity for participants to discuss in detail what is potentially one of the most important developments within information and communications technologies since the development of the World Wide Web.

OSS (Open Source Software) is 'software whose source code is openly published, is usually available at no charge, and which is often developed by voluntary efforts.' [1] As such, 'it revolutionises the way in which software has historically been developed and distributed'. [2] [3] Free Software (FS) has a slightly different underlying philosophy, and part of the purpose of the tutorial will be to allow participants to compare and contrast features of the two philosophies.

The tutorial will provide the opportunity to examine the potential impact of OSS/FS on many aspects of healthcare and of health informatics. Examples of OSS/FS application in general use, with office-based applications, and with specific application in healthcare, education, research, and other areas, will be used as the basis for consideration of the issues raised within the

tutorial. At the end of the tutorial, attendees should be aware of the issues that the health informatics community will need to address in respect of OSS/FS.

2. Outline of topics to be addressed

The topics to be addressed will include:

- what are Open Source and Free Software (OSS/FS) and their underlying philosophies;
- the historical development of the OSS/FS approaches, especially in relation to health and health informatics;
- an introduction to some of the OSS/FS applications currently available, including server applications, web browsers, and office applications;
- an introduction to some of the OSS/FS applications specifically developed for use in healthcare and e-learning;
- a brief overview of the existing groups addressing OSS/FS in health and nursing;
- the programme of the IMIA Open Source Health Informatics Working Group, [4] and the IMIA-NI Open Source Nursing Informatics Working Group [5];
- an overview to the range of Government, public sector and healthcare organisations in many countries that are adopting, or examining, OSS/FS solutions;
- why it is important that health professionals and health informaticians have knowledge of the OSS/FS approaches;
- some implications of OSS/FS for health informatics in clinical, education and research areas.

It is important that attendees at the tutorial be taken through a planned introduction to the history, development, and philosophy of OSS/FS, to enable them to understand the differences from proprietary software. From this grounding in the underlying issues, examples of OSS/FS applications that are readily available and commonly used will provide a practical demonstration for some of the benefits that are claimed.

From this mixture of theoretical and practical introduction, the attendees will then have a basis on which to consider the potential applications of OSS/FS within health and nursing, and in particular, informatics. Knowledge of the nature and work of existing groups will provide for discussion of how and where the healthcare, nursing, health informatics and nursing informatics contributions to discussions and developments can be made. In closing the tutorial, attendees will then have an opportunity to speculate on future developments, and identify questions that the

health informatics community will need to address. The tutorial will incorporate consideration of the application of OSS/FS in clinical, research and education areas, and will include a consideration of the philosophy of OSS/FS in e-learning courseware development and delivery.

The presenters will jointly address the topic areas, and the tutorial will encourage discussion and interaction, based in the attendees' knowledge, experience and particular issues and questions that may be raised within the presentations and discussions.

3. Objectives and educational goals

On completion of the tutorial, attendees will:

- be able to provide a general description of the underlying philosophy and principles of the OSS/FS approaches to software development and use;
- be able to describe why the open OSS/FS approaches, especially in relation to health, are of importance at this point in time;
- be able to recall several of the major OSS/FS applications that are available, both for general use and within healthcare environments;
- be able to list the main existing groups addressing OSS/FS in healthcare, informatics and nursing;
- be able to briefly describe the programmes of the IMIA Open Source Health Informatics Working Group and the IMIA-NI Open Source Nursing Informatics Working Group;
- be able to provide arguments for the importance of health professionals, and in particular health informaticians, being aware of OSS/FS; and
- be able to list some implications of OSS/FS for health informatics in clinical, education and research areas.

4. Who should attend, level of content and pre-requisites

This tutorial is aimed to be primarily at a basic level, and will introduce participants to many of the concepts, applications, arguments and issues. OSS/FS is a relatively new field, and while many health informaticians may have some rudimentary knowledge of their nature and implications, the tutorial assumes that attendees have no knowledge of OSS/FS. It will be suitable for all health professionals working in all areas of informatics, including education, research, and policy, as well as those working in clinical areas, as open source applications can potentially be used in all these areas.

While at least 80% of the content will be at an essentially basic and introductory level, the final 20% will build on this and encourage a higher level, exploration by participants of the issues they and their organisations face in considering the potential of OSS/FS approaches.

The only pre-requisite is an open mind.

The style of both presenters is facilitative, encouraging questions and contributions to the discussions from participants.

5. Previous presentation of related material

Earlier versions of the tutorial content, but with a focus on nursing informatics, rather than health informatics, aspects have been presented as:

1. Wright G & Murray, P, Open Source: Global Issues, MIST2002 (Medical Informatics Symposium in Taiwan), Taipei, Taiwan, October 2002.
2. Murray, PJ, Evolving towards open source: implications for nursing informatics, Twenty-first Annual International Computer and Technology Conference of Rutgers University College of Nursing, Orlando FL, April 2003.
3. Murray PJ & Wright G, Open Source and its implications for nursing informatics, NI2003 (Eighth World Congress on Nursing Informatics), Rio de Janeiro, Brazil, June 2003

6. Speaker details

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References

[1] Peeling N, Satchell J. Analysis of the impact of Open Source software. Farnborough: QinetiQ Ltd; 2001.

[2] Shaw NT, Pepper DR, Cook T, Houwink P, Jain N, Bainbridge M. Open Source and International Health Informatics: Placebo or panacea? Informatics in Primary Care, 2002; 10(1), 39-44

[3] Murray, P, Shaw, N, Wright, G. Open source and healthcare informatics - taking forward the discussions. British Journal of Healthcare Computing & Information Management, 2002; 19(5), 14.

[4] Murray, PJ, Vejvalka, J & Wright G. Website and proposal for the IMIA Open Source Health Informatics Working Group. Available from: URL: <http://www.chirad.info/imiaoswg>

[5] Murray, PJ. Open Nurse collaboration website. Available from: URL: <http://www.open-nurse.info>

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The presentation materials will be available after the tutorial through the CHIRAD and Open Nurse collaboration websites – www.chirad.info and www.open-nurse.info