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Meeting Abstract

Free/Libre Open Source Software in Health Care (FLOSS) – A tool for global capacity building

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Text

Objectives: To provide a framework for global capacity building for eHealth in low resource settings based on free/libre open source software principles, ecosystems theory and previous experience.

Introduction: The philosophy of free and open source software has influenced biomedical informatics from the very beginning. A fruitful and strong community has developed in different subfields e.g. Bioinformatics Open Source Conference (BOSC), medical informatics (see e.g. MedFLOSS.org) and recently FLOSS principles have influenced the development of drugs and led to the field of open drug discovery (e.g. osdd.net). Other related areas are open data, open standards, open access and open science. The global health informatics community has addressed the topic of capacity building in low resource settings in numerous events and activities e.g. in the IMIA WG Health Informatics for Development (imia-wg4dev.org) or the Asia eHealth Information Network (aehin.org). In this paper the free and open health & hospital information system GNU Health [1] is used as a central node in an ecosystem for capacity building for eHealth in low resource settings.

Material and Methods: The authors use FLOSS principles, ecosystems theory and innovation management procedures to develop a holistic model for capacity building in eHealth for low resource

settings.

Results: The potential for solving real world problems and providing a framework for evolutionary development of complex systems has already been proven by many FLOSS systems. Some well known examples are OpenMRS, DHIS2 and VistA. In [2], [3] the authors provide a comprehensive overview of the development in the last decade in the field of health informatics.

GNU Health has been developed to provide a solution for low resource settings. GNU Health is based on the Tryton framework which provides a feature-rich enterprise resource planning (ERP) solution based on free software. GNU Health provides modules for patient management and hospital administration as well as interfaces to other solutions for e.g. lab test (e.g. Occhiolino, Bika LIMS).

The idea is to use the GNU Health system as the central node in an open ecosystem for capacity building for eHealth. We argue that hospitals and clinics provide a regional local point of expertise both in health care delivery as well as technical expertise (in collaboration with regional professional support providers e.g. local IT companies). At the lower level there are EMRs, PHRs and tools for community health workers (CHWs). At the higher level are district health information systems. Providing small clinics and hospitals with health information systems will set up the backbone for a regional health care system.

The model consists of an „ecosystem“ of different interrelated „action fields“ that should be addressed in a collaborative approach. We use the ecosystems metaphor since all action fields are interrelated and depend on each other. The art is to keep the ecosystem in a stable balance to let the system thrive i.e. addressing all fields at the same time and not leaving out one field. Below we briefly address the different action fields:

Governance: A good governance structure is essential for sustainable development. A long term strategy is needed to build trust among all stakeholder groups and provide the needed transparency, accountability and liability.

Community: A vital community is essential for the development. There are actually two communities. The first community is the user community of „domain-experts“. These are the actual drivers and evaluators of the product. The second community is the community of developers and implementers. Implementers are trained local technical people from IT staff or local companies. They may also be developers. Other developers are health informatics experts from around the globe that contribute to the development of the system

Local professional support: In [4], [5] the author describes recent efforts to build an ecosystem for capacity building for eHealth in the Philippines. This model serves as a blue-print for the idea of setting up local support capacity.

Education and training: It is essential that both technical local staffs as well as end users are educated to use the system but to also further maintain and develop the system. Experience has shown that e-Learning does have limitations in this context and that on-site training is invaluable. However, due to a shortage of manpower a good framework with the latest in blended learning would greatly enhance the process of dissemination. The goal is to set up a network of educators and disseminators that work in different regions. This should be supported by a centrally managed educational platform.



Funding: A good funding structure secures the sustainable and reliable development of the whole ecosystem and is an important success factor. Since all improvements are available for the global community the investment in the core development of GNU Health is multiplied by the numerous sites using the software system and diffuses in a global network on all continents.

Government / Public Health administration involvement: For the sustainable development of capacity building the involvement of the government or public health administration is important.

Multilateral organizations and NGOs involvement: NGOs and multilateral organizations are an important player for support of dissemination and funding. Fruitful relationships and support is vital for sustainable development and building trust in the community.

Conclusions: It has already been shown that FLOSS principles provide an excellent foundation for user-driven innovation and sustainable development. However, adoption of the methodology is still very limited. The reasons are numerous as outlined in related research. By applying the ecosystem model provided in this contribution the process of sustainable capacity building and North-South-collaboration can be improved and accelerated.

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