Open Source Software and Education in Africa

by

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AVOIR

Introduction

- Overview of Free and Open Source Software

- The application of FOSS in education

- Challenges faced by Universities in the implementation of FOSS

- African Virtual Open Initiatives and Resources

Overview of FOSS

- FOSS = Free and Open Source Software
- Free as in freedom or liberty
  - FLOSS = Free / Libre Open Source Software
- The Four Freedoms that define FOSS

The Four Freedoms

(0) Run the program for any purpose

(1) Study and adapt it

Requires source code

(2) Redistribute copies

(3) Improve and release

Benefits of using FOSS

- Lower Costs
- Increased reliability and security
- Encourages innovation
- Builds local capacity
- Software can be customised
- Software can be localised

The Use of FOSS in Education

FOSS can be applied to Education via:

- Learning Management Systems (LMS's)

  - KEWL

  - Moodle

- Open Content / Open Access Systems

  - OJS

  - Wikipedia

  - DATAD – Database of African Theses and Dissertations

- Building Capacity throught the development of FOSS

  - AVOIR

Online Learning

Learning Management Systems

- An online system for delivering content to learners; assessing learners and managing the learners and process.

- Virtual space in which to meet and collaborate on projects.

- Open source LMS's:

    - KEWL
    - Moodle

Advantages of Online Learning

- Allows a dispersed group of people access to education
  - Learners are not limited by their geographical location but have access to resources across the network.
  - Each location in the network may represent an educational resource.

- Promotes learner centric learning
  - Encourages students to take responsibility for their own learning
  - Teaches students to think / reason critically
  - Teaches effective research methods
  - Gives the student confidence in his/her abilities

Online Learning vs Distance Learning

- The student is able to collaborate online with the lecturer and fellow students

- Immediate and continuous access to learning materials

- Continuous guidance, assessment and feedback

Open Source and Open Access

- Open access goes hand in hand with open source when it comes to education.

- Open source software provides the means. Open access provides the information.

Open Access Systems

OJS – Open Journal Systems

- Open source project often used as an open access publishing system

Wikipedia

- Collaboratively built open access online encyclopedia.

- Contributions received from volunteers and editable by anyone online.

MIT Opencourseware

- Provides course material online

Challenges Faced with Access to Information

- Limited resources
  - Low bandwidth / bad connectivity
  - High cost Internet

- Subscriptions to journals are costly
  - Increasing number of available journals

- Texts (books / journals) used in teaching are often out of date / old.
  - Lose out on the cutting edge

- Limited access to locally relevant information

Challenges Faced in Implementing FOSS

- ## Few trained technical people available

  - ICT programmes teach usage of proprietary software

- ## Switching between systems can be difficult

  - Lecturers tend to be sceptical about using FOSS

  - Often unaware of the amount of software available – only see linux

  - Learning a new system takes time and money

- ## Limited resources

  - Limited number of computers

  - Low bandwidth / bad connectivity – slow download speeds

  - High cost of Internet

Building Capacity through the Development of FOSS

Build a free software community.

- Train developers in the necessary skills to create free software.

- Provide assistance with support, training, deployment and marketing.

- Each member of the community brings their own set of skills and expertise.

  - Uniting scarce and dispersed skills in a common purpose

- A pool of free and open sources software exists.

  - The community can draw from this pool and contribute new or improved software back into the pool.

Build a network of communities

- Support comes from within the network.

  – Each community provides support to other communities.

- The network focuses on building specific tools, branching out once their skill set has increased.

  – A pool of free software is built up within the network.

- Allow the creation of business that may arise from the products of the network.

- Example: AVOIR

A Network of Communities
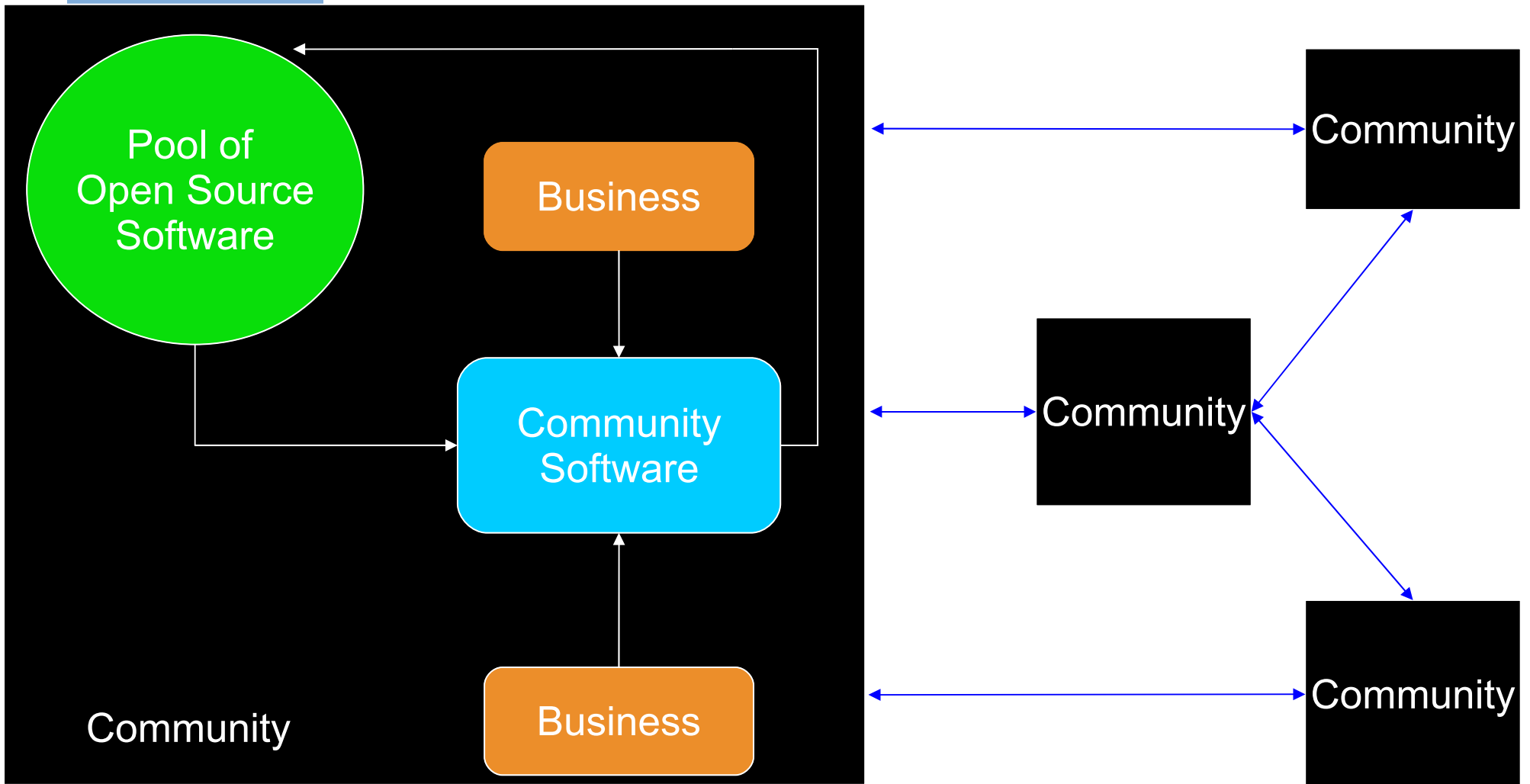
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- African Virtual Open Initiatives and Resources

- A collaboration between 13 Universities across Africa.

- Main focus is a Learning Management System (KEWL currently in it's third generation).

- The long term focus is to expose African software developers to development best practices and latest techniques, increasing and honing their skills and expertise.

- The developers have already started moving towards a more commercial focus where business opportunities are more likely.

Internship Programme

- Students from the University are taken on as interns for a period of about 3 months.

- Interns learn how to develop within the framework.

- They learn about open source software and communities, the developmental life cycle, etc.

- They are exposed to a real life working environment.

- After the initial internship period, they either stay about become junior developers or move on to new jobs and opportunities

- All intern projects are used.

AVOIR Partners

- Catholic University of Mozambique

- Eduardo Mondlane University (Mozambique)

- Makerere University (Uganda)

- Uganda Martyrs University

- National University of Rwanda

- University Cheikh Anta Diop de Dakar (Senegal)

- University of Dar es Salaam (Tanzania)

- University of Ghana Legon (Ghana)

- University of Jos (Nigeria)

- Jomo Kenyatta University of Agriculture and Technology (Kenya)

- University of Nairobi (Kenya)

- Nelson Mandela Metropolitan University (South Africa)

- University of the Western Cape (South Africa)
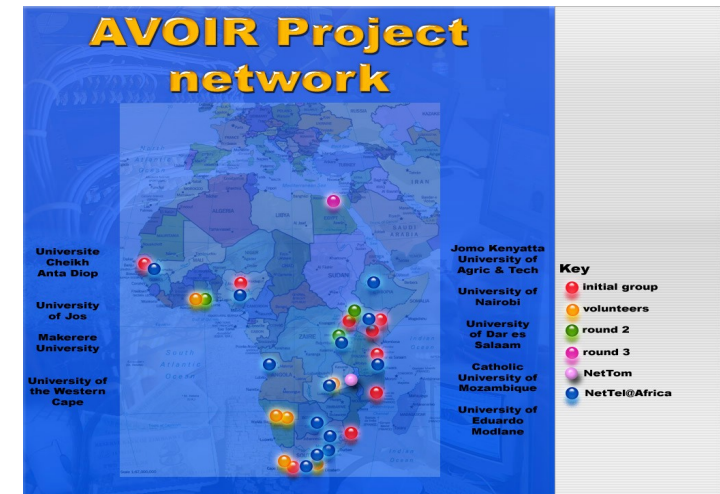
AVOIR in Ghana

- Several of the Universities have implemented the second generation version of KEWL on their campuses.

  - University of Ghana has started implemented KEWL in several faculties, starting with the Faculty of Chemistry. Last week the University ran a training program in conjunction with a developer from the University of the Western Cape, introducing new developers into the community.

Conclusion

- Open source software is a good way to decrease ICT costs.

- The open source community provides the necessary support and training.

  – Can help in the switch from proprietary to open source software.

  – Can help train staff at the University to support open source software.

- The use of open source LMS's allows people greater access to education and resources.

- The use of open source open access systems provides greater access to information.

Conclusion

- Collaboration is key to promoting development in Africa

  – Collaboration in building open source software and creating business opportunities.

  – Collaboration in creating content that will be locally relevant to students.

Thank you

Questions?