



# Federal University Oye-Ekiti

## 2<sup>nd</sup> Software Freedom Day

*September 21, 2013*

## Keynote Address

### **FOSS: The Challenge for Nigeria**

*Christian Bolu, PhD*





# Agenda



**1. Introduction**

**2. FOSS Adoption**

**3. Countries adopting FOSS**

**4. Adoption in Education**

**5. Benefits of FOSS**

**6. FOSS at Federal University Oye-Ekiti**

**7. Conclusion**





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# Introduction

## FOSS



**Free and open-source software (FOSS) is software that can be classified as both free software and open source software.**

**That is, anyone is freely licensed to use, copy, study, and change the software in any way, and the source code is openly shared so that people are encouraged to voluntarily improve the design of the software.**



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# Adoption

- ❑ FOSS (Free/Open Source Software) has grown in leaps and bounds during the last two decades, and has been seeing widespread adoption in domains like E-governance, SME s, Education and Research, etc .**
- ❑ While almost all organisations use FOSS in some form today, there is a wide variation in the manner and extent to which they do so, and presently no quantitative measure exists that can capture the true picture.**



# Adoption

## Adoption Maturity Indices



- Business Readiness Rating
- Open Source Maturity Model
- Open Source Potential Index, which has been used to rank countries on two indices (Activity and Potential) based on their usage, adoption and support of FOSS.



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# Country Adoption

## Adoption



- The Government of Kerala, India, announced its official support for free/open-source software in its State IT Policy of 2001, which was formulated after the first-ever free software conference in India, "Freedom First!", held in July 2001 in Trivandrum, the capital of Kerala, where Richard Stallman inaugurated the Free Software Foundation of India.

- The German City of Munich announced its intention to switch from Microsoft Windows-based operating systems to an open-source implementation of SuSE Linux in March 2003.

# Country Adoption

## Adoption



- In 2004, a law in Venezuela (Decree 3390) went into effect, mandating a two-year transition to open source in all public agencies. As of June 2009 this ambitious transition is still under way.

- In 2005 the Government of Peru voted to adopt open source across all its bodies. In the preamble to the bill, the Peruvian government stressed that the choice was made to ensure that key pillars of democracy were safeguarded: "The basic principles which inspire the Bill are linked to the basic guarantees of a state of law."

# Country Adoption

- In 2006, the Brazilian government has simultaneously encouraged the distribution of cheap computers running Linux throughout its poorer communities by subsidizing their purchase with tax breaks.
- In April, Ecuador passed a similar law, Decree 1014, designed to migrate the public sector to Libre Software.
- In July 2001 the White House started moving their computers to a Linux platform based on Red Hat Linux and Apache HTTP Server.[2] The installation was completed in February 2009. In October 2009 the White House servers adopted Drupal, an open source content management system software distribution.



# Country Adoption

## Adoption



- State owned Industrial and Commercial Bank of China (ICBC) is installing Linux in all of its 20,000 retail branches as the basis for its web server and a new terminal platform. (2005)
- Cuba - Students from the Cuban University of Information Science launched its own distribution of Linux called Nova to promote the replace of Microsoft Windows on civilian and government computers, a project that is now supported by the Cuban Government.



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# Adoption in Education

## Adoption



❑ Government officials of Kerala, India announced they will use only free software, running on the Linux platform, for computer education, starting with the 2,650 government and government-aided high schools.

❑ The Philippines has deployed 13,000 desktops running on Fedora, the first 10,000 were delivered in December 2007 by Advanced Solutions Inc. Another 10,000 desktops of Edubuntu and Kubuntu are planned.

# Adoption in Education

## Adoption



In 2012 the Leibniz-Rechenzentrum (Leibniz Supercomputing Centre) (LRZ) of the Bavarian Academy of Sciences and Humanities unveiled the SuperMUC, the world's fourth most powerful supercomputer.

The computer is x86-based and features 155,000 processor cores with a maximum speed of 3 petaflops of processing power and 324 terabytes of RAM. Its operating system is SUSE Linux Enterprise Server.

# ICT in Education Delivery

Federal University Oye-Ekiti

Area	Solution
E-books/e-journals	Subscriptions, etc
E-Assessment/E-Testing	Moodle
E-learning	Moddle
Voice and Video Conferencing	BigBlueButton, Google+
E-collaboration	Google+/ hangout, Google Apps
Plagiarism Policy	Approval
Plagiarism Software	TurnItin, <a href="http://www.plagtracker.com/">http://www.plagtracker.com/</a>







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# Benefits

## Adoption



- Can be adapted to the underlying hardware solution
- Can be customized to meet job specification as exactly as possible
- Can be security audited
- Can be by the user, being an individual, a company or a public institution, or by some contractor(s) without the slightest vendor lock-in
- Usually there is an abundance of more or less experienced contractors available to accomplish the tasks above and also the system administration

# Benefits

## Adoption



- ❑ The profile of the potential contractor starts at some student (or pupil), a freelancer, some Small and medium enterprises to huge corporations
- ❑ Stability and security issues can be addressed and resolved in a direct manner by the user or all users using a community approach
- ❑ Higher motivation to exchange testing results and user experiences between adopters directly or openly, especially if they are not competitors

# Benefits

## Adoption



- ❑ Higher motivation to contribute back to the software by bug-reports, since there is no external profiteer, that could charge for the improvements and bug-fixes, because the code is simply available
- ❑ At will cooperation based on mutuality and reciprocity
- ❑ There is no contractual dependency on the vendor whatsoever; (please note that a lack of resources to work with the source code is not solvable by any license)
- ❑ Very often free and open-source software is also free of cost, leaving maximum financial leverage to be put into the tailoring of the entire hard- and software solution (which can be outsourced to external contractors)

# Benefits

## Adoption



❑ Very ubiquitous free and open-source software, depending on the adoption rate and the time scale, has been extensively security audited and tested on many hardware solutions and in various application scenarios; e.g. the Linux kernel is ubiquitously in use on servers, routers and mobile devices all over the world, hence field-tested and case-hardened for the exposure in the Internet.

❑ Software is an immaterial good; when such a good is distributed under a free and open-source license, its monetary and non-monetary value to its users and to the economy they are part of can multiply heavily.



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# FUOYE 3-Tier ICT Literacy

## Definition

L	Content	Certification	For Whom
1	Linux Level 1	LPIC-1, LIBRE Office	All Students
	Microsoft Office Specialist	MOS: Microsoft Office Word, Excel, PowerPoint,	All Students
2	Linux Level 2	LPIC-2	Science, Engr
	Microsoft Office Specialist Expert	MOS: Microsoft Office Word, Excel MOS: Microsoft Office PowerPoint	Science Engineering
	Autodesk, Oracle, SAP, CISCO	AutoCAD, SAP TERP10, OCP, Java, CCNA, CCNA Wireless, CWNA	Engr, Sc, Agric
3	Linux Level 3	LPIC-3	Engineering
	Microsoft Office Specialist Master	MOS: Microsoft Office Word, Excel, PowerPoint	Engineering Science
	Autodesk, Oracle, SAP, ESRI, Mathworks	Inventor, Map, OCP, Java, GIS, MATLAB, Scillab	Science, Agric Engineering

# ICT in Administration

## Proposed Solutions/Strategy

Area	Solution
Identification	Biometrics, RFID
Integrated Business Process	E-Business Solutions
Assets Inventory	Assets Geo-referencing-GIS
E-Mail Policy	E-Mail Policy Enforcement
E-Government	Digital Document Management System





# ICT in Engineering

## Computer Aided Engineering - FOSS

- ❑ **Salome-Meca**-3D CAD, Meshing. Post Processing, Multiphysics Finite Element analysis
- ❑ **Code Aster** - multiphysics Finite Element analysis
- ❑ **OpenFOAM** - multipurpose CFD oriented solvers
- ❑ **Elmer** - multiphysics FE package
- ❑ **Calculix** - pre-post & FE solver, Abaqus-like syntax
- ❑ **Code-Saturne** - 3D CFD solver



# ICT in Engineering

## Computer Aided Engineering - FOSS

- ❑ **GMSH** - Scriptable & general purpose geometry modelling, meshing and post processing
- ❑ **MBDyn** - multibody dynamics. comes with a Blender interface, animation of results with easyanim
- ❑ **Scilab**-MATLAB/Simulink-like mathematical programming environment
- ❑ **wxMaxima** - Maple like symbolic computing environment
- ❑ **R** - Mathematical modelling & statistics





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# Conclusion

- ❑ Challenge: Where is Nigeria in this comprehensive adoption of FOSS in Governance, Education and Public utilities?
- ❑ There is the need for Higher Education Institutions in Nigeria to increase their FOSS adoption through their academic programmes.
- ❑ More efforts to be made by organisation such as this to sensitise the populace on the Features, Benefits and Advantages of FOSS.
- ❑ Increased research should be done by this organisation on the FOSS usage and adoption.





# Federal University Oye-Ekiti Software Freedom Day

*September 21, 2013*

*Thank You!*

