The Commons Initiative
at San Francisco State University
http://commons.sfsu.edu

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Presented at:
Computer and Information Sciences
University of Hyderabad, India
SF State University (1899 - present)

• 29,000 + students

• Colleges: Business, Creative Arts, Education, Ethnic Studies, Health and Human Services, Humanities, Science and Engineering

• Campus:
  ◦ Main Campus: 1600 Holloway Ave. San Francisco
  ◦ Downtown Center: 835 Market St., San Francisco
  ◦ Romberg Tiburon Center, Tiburon

http://www.sfsu.edu
Commons Initiative - Mission

• Two-fold:
  ◦ To connect people, so they can communicate their ideas, and collaborate on projects in the digital commons space at SF State. (inward)
  ◦ To foster an environment where SF State commons can participate in the commons worldwide. (outward)

http://commons.sfsu.edu
Two-fold mission

for instance...

Drupal at SF State

Drupal Worldwide
Upstream - Downstream

for instance...

Campus projects

How?

Worldwide Commons
Not a committee

A community initiative.

Open to all:
Students, Staff, Faculty
Lenses

• Education
  ◦ How to bring “commons” into the classroom.

• Technology
  ◦ Neat stuff happens on campus. Share!

• Outreach
  ◦ Sustained collaboration and participation.
Advisory Board

Upstream connections
Alexis Rossi is on her second tour of duty at the Internet Archive, working on a program to archive the entire Internet and thinking about questions like "what does 'the entire Internet' mean?" and "do we really want it ALL?" Alexis currently manages all aspects of Internet Archive collections work for every type of media, and runs the Wayback Machine project. From 2006-2008, Alexis managed the audio and video collections and Open Library, as well as working on the Open Content Alliance, and the Zotero/IA project.

Alexis has been working with Internet content since 1996 when she discovered that being picky about words in books was good training for being picky about data on computers. She spent several years managing news content at ClariNet (the first online news aggregator), worked as the Editorial Director at Alexa Internet, and as Product Manager at Mixercast. Alexis has an MLIS, concentrating on web technologies and interfaces, and enjoys making jewelry, dancing, costuming, and baking Cookie Smackdown-winning cookies.

Email: alexis@archive.org
Alolita Sharma, Wikimedia

Alolita Sharma

Director, Features Engineering at Wikimedia Foundation
Director, Treasurer at Open Source Initiative (OSI)

20 years of industry experience in managing and developing software solutions for web, telecommunications, banking and government markets leveraging web and open source technologies. As an open source strategist, collaborated with leaders in India and Asia to create sustainable ICT policies and best practices.

Specialties

- Strategies and best practices for leveraging open source.
- Engineering management.
- Software development using collaborative tools and techniques.
- Building communities around open source.
- International community development and outreach.
- Deep understanding of open source ecosystems in India and Asia.

Email: alolita.sharma@gmail.com
Asheesh Laroia loves growing camaraderie among geeks. In the past, he has chaired the Johns Hopkins Association for Computing Machinery and taught Python classes at Noisebridge, San Francisco’s hackerspace. He realizes that most of the work that makes collaborative projects successful is hidden beneath the surface.

He has volunteered his technical skills for the UN in Uganda, the EFF, and Students for Free Culture, and is a Developer in Debian. He has worked at Creative Commons and the Participatory Culture Foundation as a software engineer, designing and scaling web systems. Today, he lives in San Francisco, CA, working on OpenHatch.org.

Email: asheesh@asheesh.org
Web: http://asheesh.org/
Brian Behlendorf
Managing Director, Chief Technology Officer, World Economic Forum


Email: brian@behlendorf.com
Web: http://brian.behlendorf.com/
Stefano Maffulli, Openstack

OpenStack community manager, Stefano built his career around Free Software and open source. As Italian Chancellor of the Free Software Foundation Europe, he also created the FSFE Fellowship participation program. Later as community manager of leading mobile open source sync solution Funambol, his efforts boosted downloads and bolstered enterprise contributions. For Twitter, he led efforts to expand in the Italian market. In his spare time, he builds furniture and is learning how to sail in the San Francisco Bay.

Email: stefano@maffulli.net
Web: http://maffulli.net
Tim Vollmer is Policy Coordinator for Creative Commons, and has worked as a policy fellow, business development assistant, and intern for Creative Commons. Prior to rejoining CC, Timothy was Assistant Director to the Program on Public Access to Information for the American Library Association Office for Information Technology Policy in Washington, D.C. Timothy is a graduate of the University of Michigan School of Information, with a specialization in information policy. While at Michigan, he was a research investigator for the Open.Michigan Open Educational Resource initiative, helped develop a student-centric OCW publishing pilot there.

Email: tvol@creativecommons.org
Two example projects

3D Printing
Learning Analytics
3D Printing
3D Printing

- Length (X), width (Y) and depth (Z)
- Icing on a cake.
  - Make a flower from butter and sugar icing.
2D Printing

• Inkjet printers
  ◦ Cartridge is X axis
  ◦ Paper feed is Y axis
  ◦ No depth.

Add Z Axis

• Print using molten plastic
• Move print head up slightly
• Layer plastic
• Cooled plastic = 3D object
Industrial

- Fills up a small room
- $20,000 to $50,000
- Used for prototyping
- Don't forget the ink!

Production series from Stratasys
Hobby Market

- Plastic (the ink) costs $30 a kilogram
Question:

Affordability
How much would you pay for a 3D printer?
RepRap

• Replicating Rapid Prototyper
• Print a printer from a printer
  ◦ 70% to 90%
• Self-replicating printers!
• http://reprap.org

Watch the video:
MakerBot

- Early open source printer
- Became proprietary
- Acquired by Stratasys
- Printers range from $1200 to $7000
- http://makerbot.com

Cupcake
Printrbot at Kickstarter

• Goal of $25,000
• Raised $830,827 on Kickstarter
Printrbot Bots

- [http://printrbot.com](http://printrbot.com)
Parts

• Motors
• Bed
• Extruder
• Filament
• Threaded rods
• Smooth rods
• Pulleys
• Gears
• ...

[Image of parts and packaging]
Plastic

- ABS
- PLA
- Other
Tweaks

• Open Source => Lots of tweak'ability!
• Tweaks make it better.
  ○ http://printrbottalk.com
  ○ https://www.youtube.com/user/printrbot
Printrbot Jr. V2
Learning Analytics
XOVis – Analytics and Visualization

Learning Analytics for Sugarlabs and OLPC
Overview

• Peering into data about usage of laptops

• Learning Analytics
  ◦ 1) measurement, 2) collection, 3) analysis and 4) reporting

• Visualization is part of the reporting section
  ◦ Tends to be most memorable, because of its visual component
  ◦ Reporting should be more than just visualization

• XOVIs as an add-on to existing and new projects
  ◦ Existing projects can add this and “do analytics”
  ◦ New projects can implement integrated analytics along with each school deployment.
History

• Paraguay – Raúl Gutiérrez Segalés and Morgan Ames

• Jamaica – Leotis Buchanan and Sameer Verma

• Australia – Martin Abente Lahaye

• India – Anish Mangal and Sameer Verma

• Nepal – Martin Dluhos, Andi Gros, Sameer Verma

• See http://www.olpcsf.org/node/204
XOVis

Written by Martin Dluhos

https://github.com/martasd/xovis
Methodologies

• Qualitative
  ◦ In-class observation
  ◦ Interviews
    ▪ Children, parents, siblings, teachers, principals, local community

• Quantitative
  ◦ Assessment tests as proxy
  ◦ Metadata

• One corroborates the other.
Metadata

• Not a bad word.

• Metadata is data about data.
  ○ Data: Creative work by the child.
  ○ Metadata: time of creation, duration, collaboration, save-and-resume, etc.

• Metadata acts as a proxy for engagement.

• Engagement is a proxy for learning.

• Observing aggregates.
The Datastore

- User data is stored in Sugar using a datastore written in Python.
- The front-end (user interface) to the datastore is the Journal activity
- The Journal activity allows for storage, retrieval, searching, indexing, sorting etc. as contained in the datastore.
- In addition to the Journal as an expression of the datastore, we can extract relevant bits about the data stored as metadata.
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XOVis: Cloud-based analytics and visualization dashboard

What happens at school?
Central management for orchestration, monitoring and analytics is done in the cloud.

Micro-cloud appliance at school acts as a local mirror for content and management.

Laptop with child has some offline content. It works in school and can go home.
Each child’s work is automatically stored in a Journal on her laptop.
Metrics

This work is distilled into metrics at the school micro-cloud appliance

Frequency of Use

- Tuxmath
- Photos
- Maze Activity
- Web Activity
- Videos
- Speak Activity
- Physics Activity
- TamTam Activity
- Record Activity
- Pippy Activity
Analytics

Metrics from school appliances are synced with the cloud to generate analytics.
Resilience

What happens when the Internet connection breaks or slows down?
Eventual Consistency

We use “eventual consistency” to synchronize data between each school and the cloud.
CouchDB

Apache CouchDB™ is a database that uses JSON for documents, JavaScript for MapReduce indexes, and regular HTTP for its API.

http://couchdb.apache.org

Database, Aggregation, Offline Sync, Document Storage, NoSQL, etc.
CouchDB supports “eventual consistency” through incremental replication and conflict management between CouchDB instances at the schools and a central location, such as the Ministry of Education.
xovis

Methods: 
metadata 
stats 
dbinset

process_journal_stats.py

CouchDB

json

Excel LibreOffice R

CSV
XOVis: Quest for Data

Select a deployment site:

Activity Frequency

- Web
- Oficina
- Develop
- Turklekt
- Weather
- Abacus
- Measure
- physics
- SimpleGraph
- Speak
- Abecedarium
- Calculate
- Chat
- Ecoys
- Finance
- IconChange
- Imploide
- InfoSlicer
- RC
- Labyrinth
- Membrane
- Moon
- MusicKeyboard
- Pippi
- Portfolio
- Record
- Ruler
- ShareStats
- TeamTermEdit
- Terminal
- TurboAndroid
- WikipediaEN
- Words
- XoScope

Launched Instances

Built using Highcharts JS
XOVIs: Quest for Data

Select a deployment site:

- Activity Frequency
- Files Generated
- Activities Shared
- Time of Day Use
- Use by Month
- Use by Year
- Use of Each Activity by Year
- Use of Each Activity by Month

![Chart showing activity files generated and files created](chart.png)
XOVIs: Quest for Data

Time of Day Activity Use

Launched Instances

Hour

00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21

Built using Highcharts JS
XOVis: Quest for Data

Select a deployment site:

- Activity Frequency
- Files Generated
- Activities Shared
- Time of Day Use
- Use by Month
- Use by Year
- Use of Each Activity by Year
- Use of Each Activity by Month

Activity Use By Months

- January
- February
- March
- April
- May
- June
- July
- August
- September

Launched Instances

Built using Highcharts JS
XOVIs: Quest for Data

Activity Use By Years

Launched Instances

2013

2014
The Power of HTML5
Scope

• Add multiple schools or deployments
  ◦ Within a country
  ◦ Across countries

• Compare certain stats across multiple deployments
Development continues. Join us!

https://github.com/martasdx/xovis