

# Evergreen: Library deOSSification (pt. 2)

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# Who I am

Dan Scott

Systems Librarian, Laurentian University

Project Manager, Project Conifer

Evergreen developer

# Who I have been

IBM tech writer / information architect / software developer / product planner / open source guy

Library (information systems) student

English and Philosophy student

High school punk in the smoking section

# A tour of library technology



# MARC metadata format

```
00962njm 2200253 a
4500001001100000005001700011008
004100028035002000069050000900
0891000024000982450046001222600
038001683000036002063490020002
4250501340026251101280039665000
3300524700001500557700001700572
7000019005897000020006089490074
0062859600060070203-00181372002
0121132036.0020121s1999  cauuuu
      eng d a(Sirsi) a353305 a5490
aLovano, Joe,d1952- aFriendly fire
/cJoe Lovano and Greg Osby
aHollywood, CA :bBlue Note,c1999
a1 sound disc :bdigital, stereo
aCOMPACT DISC(S) aGeo J Lo --
The wild east -- Serene -- Broad Way
blues -- Monk's mood -- Idris -- Truth
be told -- Silenos -- Alexander the
Great aJoe Lovano, saxophone
```

```
<collection
xmlns="http://www.loc.gov/MARC21/slim">
<record>
  <leader>00962njm a2200253 a 4500</leader>
  <controlfield
tag="001">03-0018137</controlfield>
  <controlfield
tag="005">20020121132036.0</controlfield>
  <controlfield tag="008">020121s1999  cauuuu
      eng d</controlfield>
  <datafield tag="035" ind1=" " ind2=" ">
    <subfield code="a">(Sirsi) a353305</subfield>
  </datafield>
  <datafield tag="050" ind1=" " ind2=" ">
    <subfield code="a">5490</subfield>
  </datafield>
  <datafield tag="100" ind1=" " ind2=" ">
    <subfield code="a">Lovano, Joe,</subfield>
    <subfield code="d">1952-</subfield>
  </datafield>
```

# unAPI.info

- A Web standard for returning alternate representations
- Example:  
"In search of the common good"
- Supported formats:
  - HTML
  - Atom
  - RSS2
  - RDF/DC
  - OAI/DC
  - MARCXML
  - MODS\*
  - OPAC

# Character encoding

- Very slow transition to Unicode
  - Majority of library metadata is still encoded in MARC8 (aka ANSEL – genealogists take note)
  - Not all Unicode characters can be represented in MARC8
  - Upgrades to Unicode often drag along other expensive requirements (hello Oracle!)
- Evergreen is UTF8 from database through to display

# Rich silos

- Libraries led the way in peer-to-peer sharing technology in 1984 with Z39.50 (huh?) protocol
  - SRW and SRU are less arcane variations on Z39.50 – still inter-silo communication
  - FUD about record sharing by large, co-operative non-profit agencies chilled much of the potential
- Evergreen offers OpenSearch as well as silo technology
  - Conifer will bring all of our records together



# Legacy API access

A single transaction:

```
E<TIMESTAMP>R  
^S52CVFFCIRCBASE^FcNONE^FW<PROFILE>^FE<LIBRARY>^NQ<BARCODE>^FW<  
PROFILE>^UO<BARCODE>^dC3^Og^Fv200000^^O
```

Command line:

```
echo "input" | command1 -flags | command2 -flags
```

- This is not a pleasant way to build or extend applications.
- Build your own API wrapper and Web access? Ugh.

# OpenSRF API (Perl)

Fetching a library hierarchy:

```
$tree = OpenILS::Utils::CStoreEditor->new->search_actor_org_unit(  
    [  
        {"parent_ou" => undef },  
        {  
            flesh           => -1,  
            flesh_fields => { aou => ['children'] },  
            order_by       => { aou => 'name' }  
        }  
    ]  
) ->[0];
```

# OpenSRF API (Python)

Fetching a library hierarchy (Python):

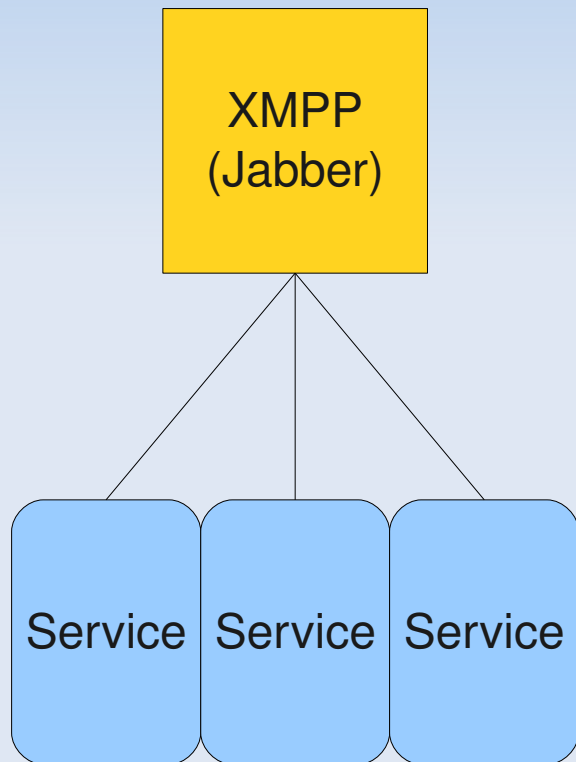
```
tree = osrf.ses.ClientSession.atomic_request(  
    'open-ils.actor',  
    'open-ils.actor.org_tree.retrieve')
```

Fetching a library hierarchy (srfsh command line):

```
request open-ils.actor open-ils.actor.org_tree.retrieve
```

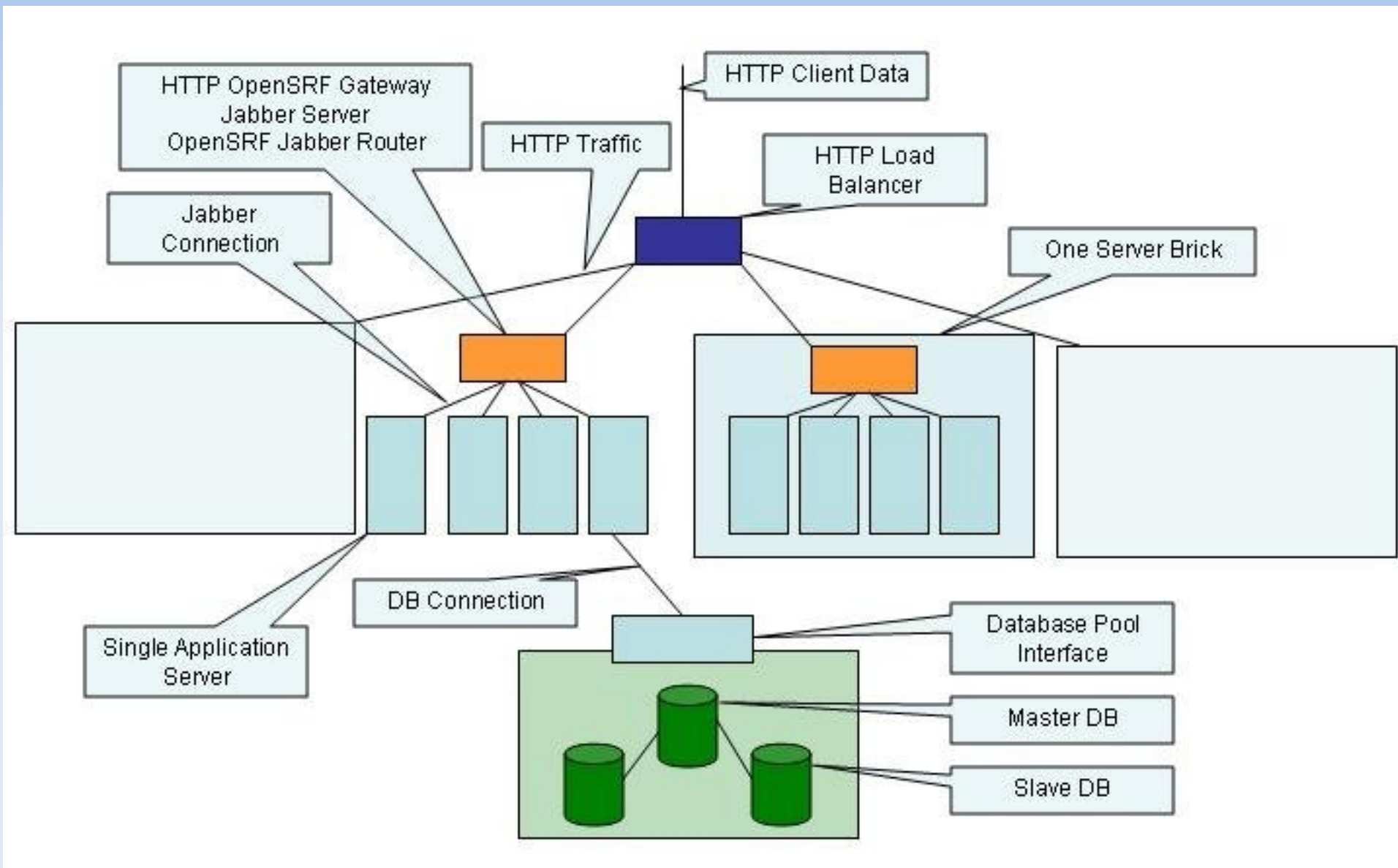
Okay, Python and srfsh just act as OpenSRF clients here, calling the Perl service. But you didn't want to implement that thing twice anyway, right?

# OpenSRF architecture



- JSON-over-XMPP
- Applications register available services with a Jabber router
- Services can be clients of other services
- Also HTTP gateway and transport

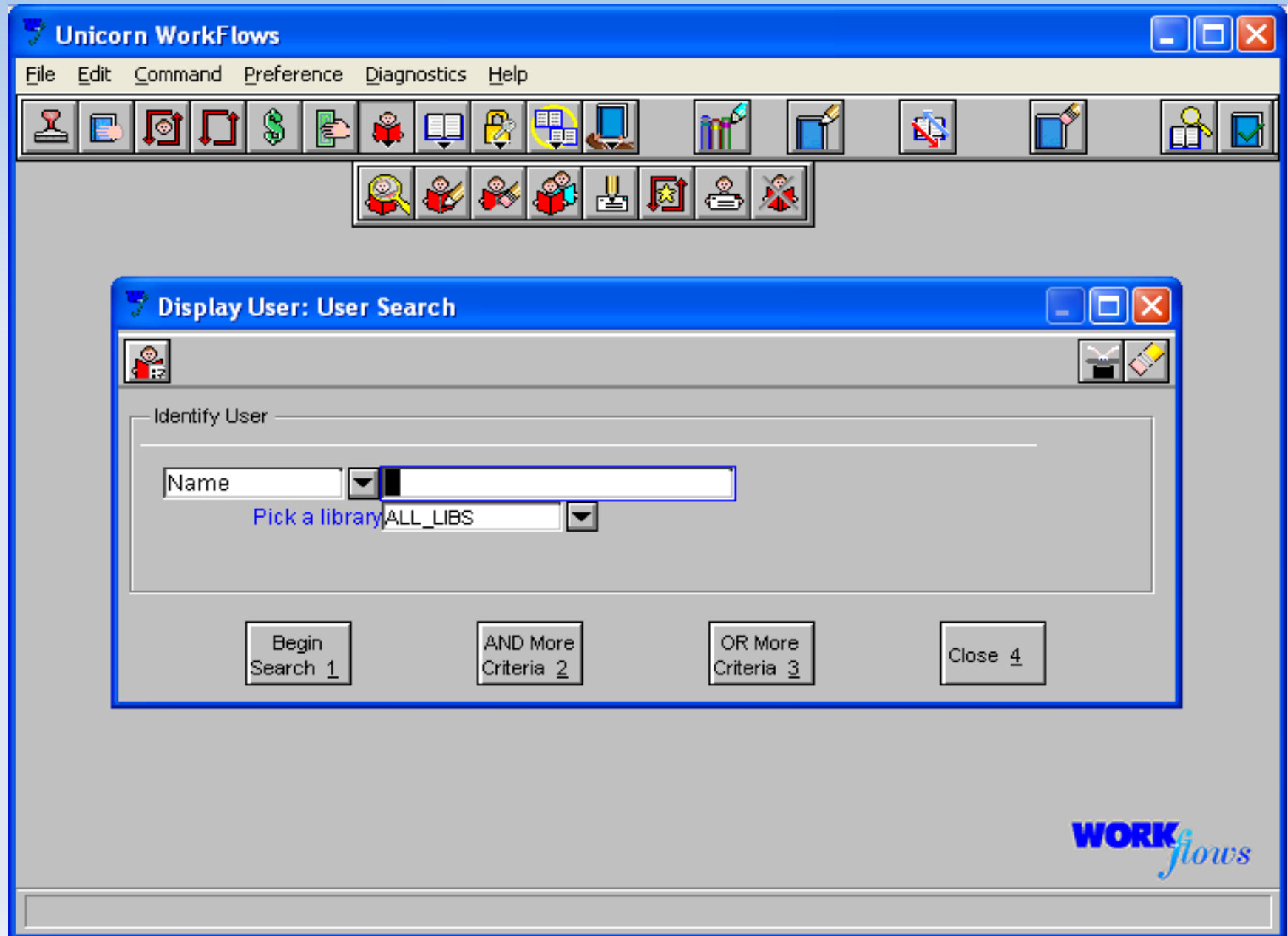
# Evergreen architecture



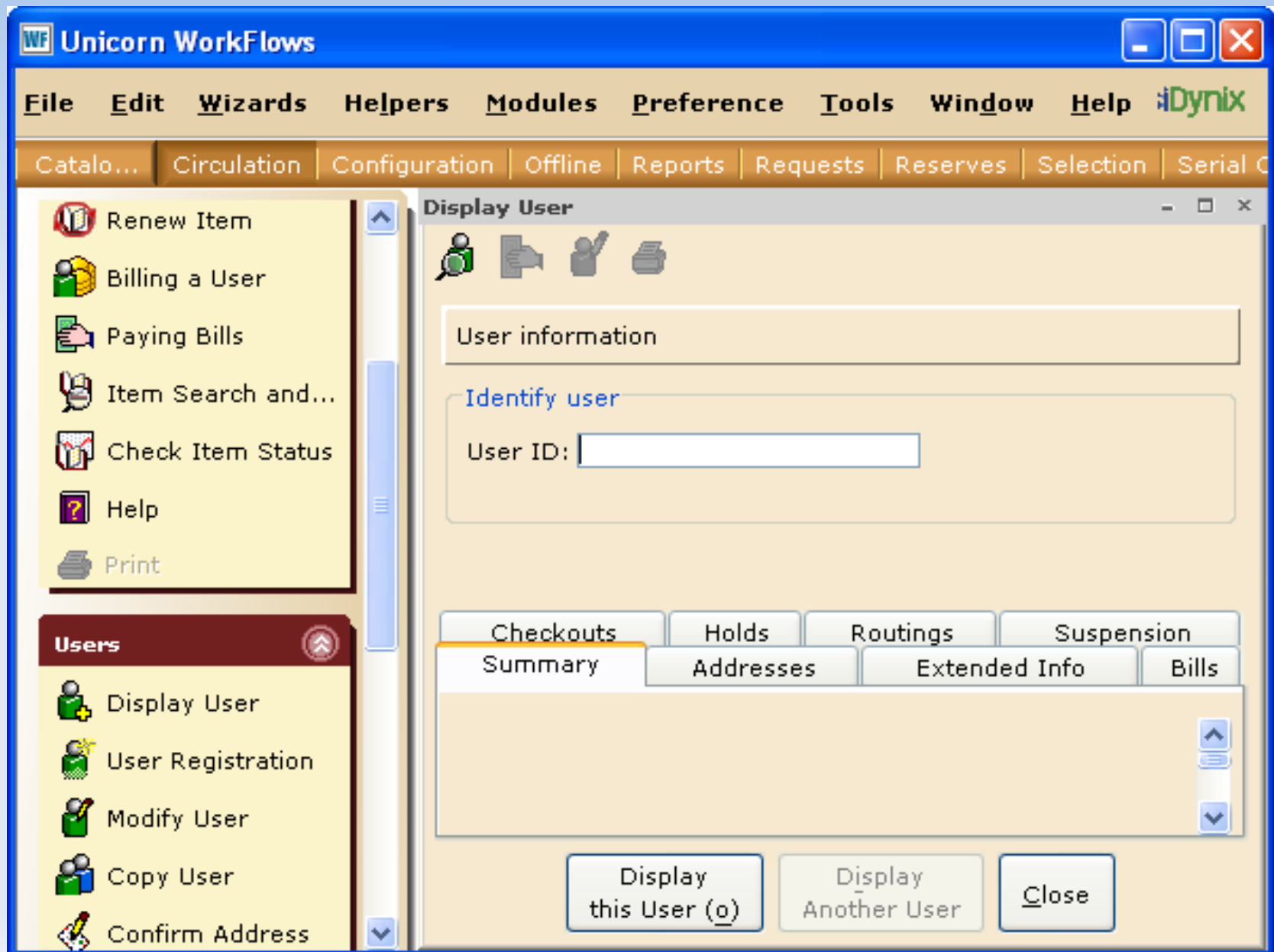
# Library data stores

- The proprietary options run the gamut:
  - From non-relational databases with horrible reporting capabilities
  - To proprietary “embedded” databases with additional license required to write custom apps
- Evergreen runs on PostgreSQL
  - Uses PostgreSQL full-text search
  - Includes a powerful report builder

# Aesthetics (staff side)



# Aesthetics (staff side)





# Aesthetics (staff side)

The screenshot shows a web browser window with the following elements:

- Address Bar:** 1: admin@BR1-zilm.192.168.221.130
- Menu Bar:** File, Edit, Search, Circulation, Cataloging, Admin (-), Help
- Page Title:** 1 Patron Search
- Section Header:** No Patron Selected
- Search Form:** A box containing search criteria:
  - Include inactive patrons?**
  - Limit results to patrons in:** Everywhere (dropdown menu)
  - Last Name:** [Empty text input field]
  - First Name:** [Empty text input field]
  - Middle Name:** [Empty text input field]
  - Email:** [Empty text input field]
  - Phone:** [Empty text input field]
  - ID:** [Empty text input field]
  - Address 1:** [Empty text input field]
  - Address 2:** [Empty text input field]
- Search Button:** Search Form
- Footer:** A horizontal scrollbar at the bottom of the page.

# Aesthetics (public)



Laurentian University  
Université Laurentienne

Laurentian University Library System

[En français](#)

user ID:

PIN:

[Login to iLink](#)

[Search](#) [Reserves](#) [My Account](#)

[Go Back](#) [Help](#) [Limit Search](#) [New Search](#) [Previous](#) [Next](#) [Kept](#) [Logout](#)

## Search Results

words or phrase "goods" search found 443 titles.

Pages << [1](#) [2](#) [3](#) [4](#) ...[10](#) ...[20](#) ...[23](#) >>

#1 HE 199.5 D3 N56 2008 Ref. 2008

[Details](#)

2008 emergency response guidebook : a guidebook for first responders during the initial phase of a dangerous goods/hazardous materials transportation incident

[Keep](#)

Canada. Transport Canada.

1 copy available at J.N. Desmarais Library in Reference (2nd Floor)

#2 HE 554 L7 B66 2008 2008

[Details](#)

Getting the goods : ports, labor, and the logistics revolution

[Continue search in](#)

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[You Found Titles in Categories](#)

[Commerce](#)

[Economic History](#)

[Finance](#)

[Forestry](#)

[General Sociology](#)

[Political Institutions & Public Administration](#)

[Public Finance](#)

[Recreation, Leisure](#)

[Societies and Clubs](#)

# Aesthetics (public)



[Search](#) [History](#) [Headings](#) [Titles](#) [Patron](#) [Login](#) [Help](#) [Exit](#)

Infobridge - University of Windsor Libraries

Search Request: Left Anchored Title Search = goods

Search Results: Displaying 1 through 50 of 54 entries.

Find This:  Find Results in:  Quick Limit:

Sort by:

#	Title <	Author	Date	Title Long
	<a href="#">GOODS AND SERVICE SECTORS STRUCTURAL CHANGE AND CANADIAN ECONOMIC</a>	<a href="#">ECONOMIC COUNCIL OF CANADA</a>	1991	GOODS AND SERVICE SECTORS STRUCTURAL CHANGE AND CANADIAN

# Aesthetics (public)

EVERGREEN<sup>™</sup> Text Size: Regular / Large | Language: American English

goods  Keyword All Formats [Choose a library to search](#)

Home Limit to Available  Sort Results by Relevance

Advanced Search

My Account

Log in

**My Title Results**

Relevant Subjects

- Public goods
  - Externalities (Economics)
  - Infrastructure (Economics)
  - Consumer goods
  - Civilization
  - Consumption (Economics)
  - Consumers
  - International cooperation
  - Good and evil
  - Hazardous substances

Relevant Authors

- Brewer, John

Results 1 - 10 of about 10000 (page 1 of 1000) Start « »		Available copies / Total copies
		Everywhere
	<p>In search of the common good McCann, Dennis.   c2005 T &amp; T Clark   print vii, 360 p. ; 24 cm.</p> <p><a href="#">Place Hold</a> <a href="#">Browse in Google Books Search</a></p>	0 / 0
	<p>Global public goods : international cooperation in the 21st century... Kaul, Inge.   1999 Oxford University Press   print xxxviii, 546 p. : ill. ; 24 cm.</p> <p><a href="#">Place Hold</a> <a href="#">Browse in Google Books Search</a></p>	0 / 0
	<p>Providing global public goods : managing globalization Kaul, Inge.   2003 Published for the United Nations Development Programme [by] Oxford University Press   print xxii, 646 p. : ill. ; 24 cm.</p> <p><a href="#">Place Hold</a></p>	0 / 0
	<p>Delivering the goods 21st century challenges to urban goods trans... Organisation for Economic Co-operation and Development   2003 Organisation for Economic Co-operation and Development   electronic electronic resource electronic resource remote 1 PDF file (152 p. : ill.).</p> <p><a href="#">Place Hold</a> <a href="#">Browse in Google Books Search</a></p>	0 / 0
	<p>D.G.A.I.S : Dangerous Goods Accident Information System = S.I.A.M... Statistics Canada</p>	0 / 0

# Aesthetics (public)



All Fields

Find

Advanced

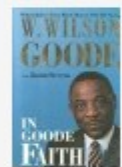
Login

English

New Search  Search Within

Showing 1 - 20 of 9586 Results for **goods**

Sort **Relevance**



[In Goode faith](#)

by [Goode, W. Wilson](#)

**Call Number:** F155.3.G66A3 1992

**Located:** Main Library

● Available

**Book**

[Add to favorites](#)



NO IMAGE  
AVAILABLE

[Religion, ethics & the common good](#)

**Call Number:** BJ1249 .R464 1996

**Located:** Main Library

● Available

**Book**

[Add to favorites](#)

[The good doctor](#)

by [Mates, Susan Onthank](#) 1950-

**Call Number:** PS3563.A83538G66 1994

[Add to favorites](#)

Narrow Search

**Institution**

[MyInstitution](#) (9586)

**Library**

[Library A](#) (9586)

**Format**

[Book](#) (4584)

[Electronic](#) (4568)

[Microfilm](#) (182)

[Video](#) (128)

[eBook](#) (38)

[more...](#)

**Call Number**

[B - Philosophy, Psychology, Religion](#) (1163)

[H - Social Science](#) (1113)

[P - Language and Literature](#)

# Aesthetics (public)

Catalog

Music

public goods

All Fields

Search

## Limit Search by...

collection

library

region

call number

format

source

language

topic form genre

Displaying items 1 - 10 of 6,765 for the search x public goods

sort: Relevancy

RSS

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | ... 676 | 677 | Next »

### 1 Public goods, private goods

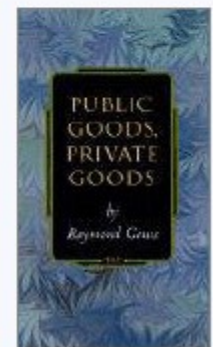
Preview

Author: Geuss, Raymond

Format Book

Call Number JC574 .G48 2001

Availability [check availability](#)



# Aesthetics (public)



Inspiring Innovation and Discovery

## Library Catalogue

Libraries Home | Health Sciences

Questions?  
Comments?

Refine your search

Expand All  Collapse All

New Titles

▶ Call Number

▶ Publication Year

▶ Location

▼ Format

Basic Search

Advanced Search

Browse

[Course Reserves](#) | [My Account](#) | [RACER](#) | [Help](#)  
[Book Renewal](#)

Find **books, journal titles, online resources** and other materials in all four campus libraries and affiliates.

Anywhere

New  
Search

Search Within  
Results

Examples:

816 matching items.

You searched in 'Anywhere': [public good](#) (remove)

[about this button](#)

1 2 3 4 5 ▶ ▶▶

Results/page: 20  Sort By: Relevance

1. **Global public goods financing : new tools for new challenges : a policy dialogue**

New Titles

# Aesthetics (public)

Books (809)  
Online (365)  
Research Collections (49)  
Videos & DVDs (40)  
Journals, Magazines, News... (7)  
Manuscripts (4)  
Audio (3)

▶ Subject

▶ Publication Type

▶ Language

▶ Geographical Region

▶ Subject Era

▶ Author

## challenges : a policy dialogue

**By:** Allen, Mark.

**Published:** [New York : United Nations Development Programme, Office of Development Studies, 2002]

MILLS Gov Pubs (2nd floor) UN2.. DE..90-  
2002G46

[Check Availability](#)

2.

## Advancing Public Goods [electronic resource].



**By:** Touffut, J.-P.

**Published:** Northampton : Edward Elgar Publishing, 2006.

**Link to online resource** - Preview this e-book for 5 minutes and request extended use

e-Book

Online

3.

## Public goods and public welfare

**By:** Head, John G.

**Published:** Durham, N.C. : Duke University Press, 1974.

MILLS Bookstacks HJ 192 .H4 1975

[Check Availability](#)

4.

## Competition in the Provision of Local Public Goods : Single Function Jurisdictions and Individual Ch...



**By:** Reifschneider, A. Petermann.

**Published:** Northampton : Edward Elgar Publishing, 2006.

**Link to online resource** - Preview this e-book for 5 minutes and request extended use

e-Book

Online

5.



## Providing global public goods : managing globalization

## New Titles

### Business Ethics of Innovation

Harekamp, Gerd

### Handbook of Environmental Economics : Environmental Degradation and Institutional Response...

Möller, Karl-Göran

### Intellectuals and the Public Good : Creativity and Civil Courage

Misztal, Barbara A.

### Structure and Agency in the Neoliberal University

Canaan, Joyce E.

### Handbook of Development Economics

Schultz, T. Paul



# Cruel and unusual requirements

- Proprietary systems' have a weird fondness for proprietary hardware
  - One major product boldly stepped forward to support Linux (RHEL) in 2006, another in 2008
  - Incredibly expensive for a test environment
- Linux and commodity x86-64 hardware help make Evergreen scalable
  - Example: \$8K for 16 GB RAM, 8 CPU cores, 6 disk RAID arrays running Debian or Ubuntu

# Support

- Many proprietary library system vendors offer indifferent or non-existent support
  - Best support often comes from other users via (usually closed) mailing lists
  - Monolithic service packs
- Commercial support is available for Evergreen
  - Open mailing lists
  - Ability to pick and choose fixes and features

# So, obviously, FOSS!

- Started investigating Evergreen as a serious option in Fall 2006
  - Project Conifer launched in Summer 2007
  - Published Evergreen Business Readiness Ratings and evaluation of multilingual support in Fall 2007
  - dbs added as a core Evergreen developer Fall 2007
  - First “internationalization” release Fall 2008



# It's not just about books...

- A platform for library application development
  - Example: course reading lists and reserves – integration with course management software (Sakai, Moodle, Blackboard, WebCT)
- Managing and making massive amounts of digital content usable
- Consolidating our collective efforts
  - Develop a process to do one thing the right way once that serves all consortial partners

# Pilot hardware

**App servers:**  
16 GB RAM  
8 cores  
2x72 GB RAID 1

Comet  
(stable trunk)

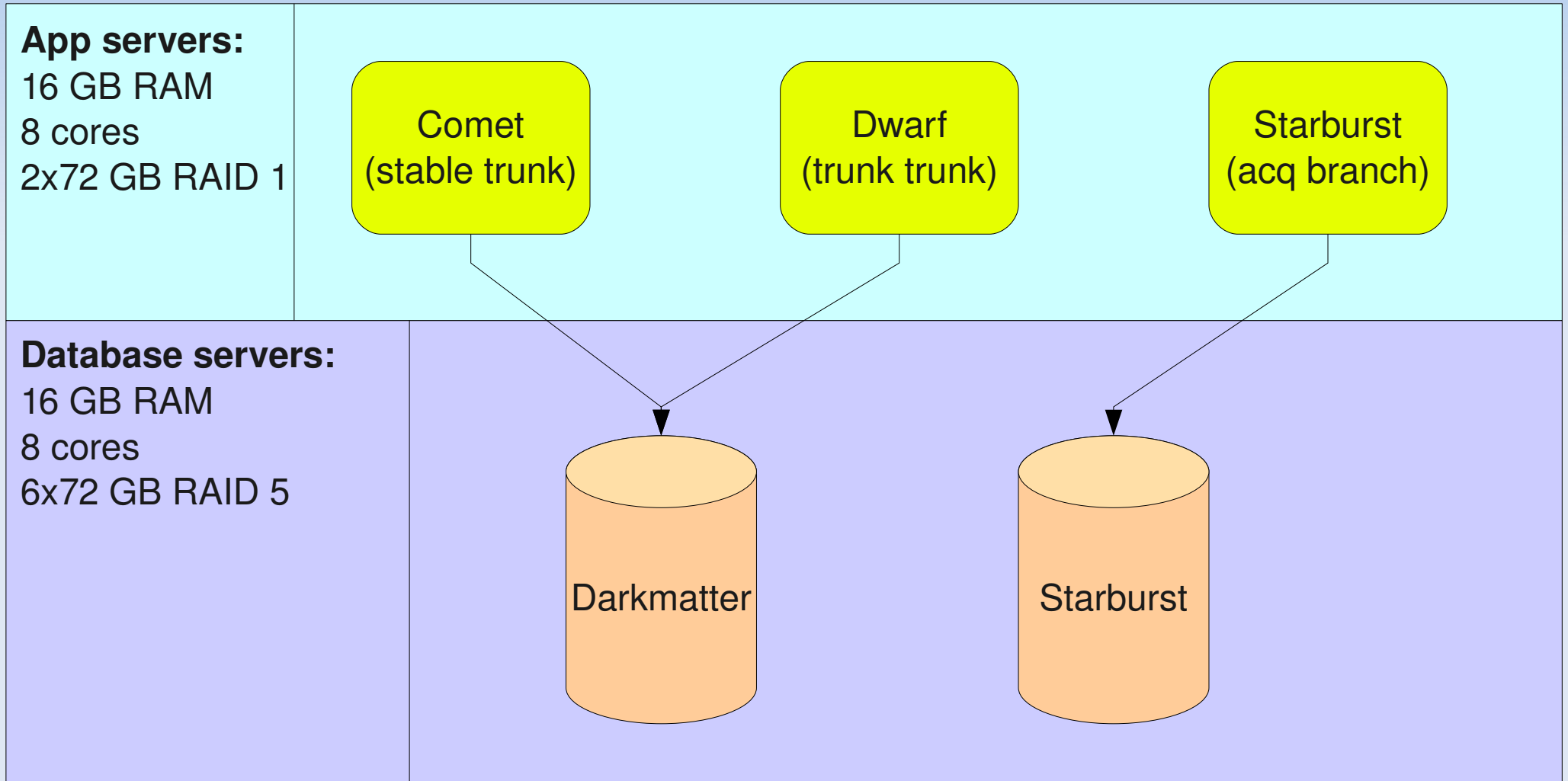
Dwarf  
(trunk trunk)

Starburst  
(acq branch)

**Database servers:**  
16 GB RAM  
8 cores  
6x72 GB RAID 5

Darkmatter

Starburst



# Projected costs to go live

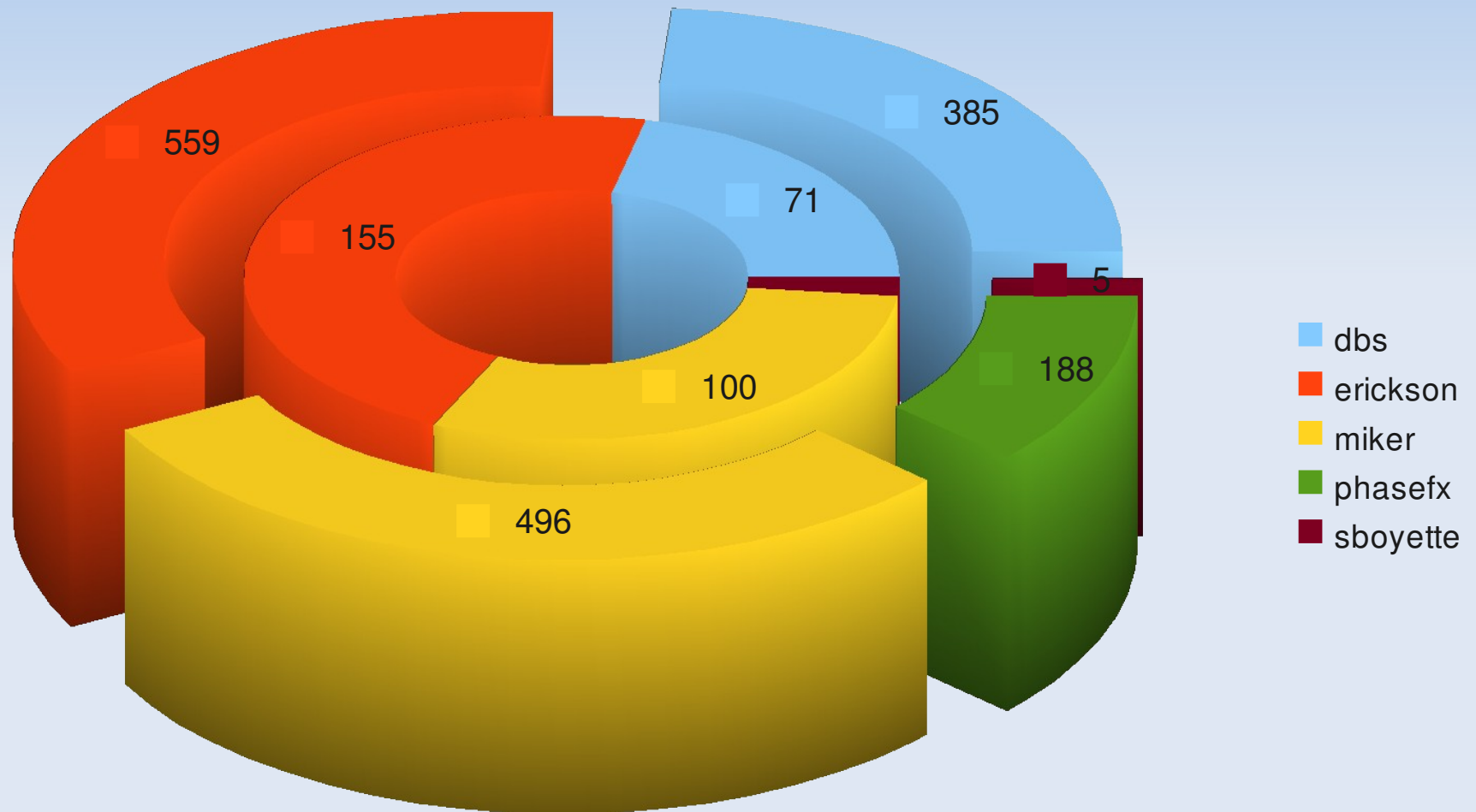
Co-op tech writer	\$12,000.00
Travel	\$10,000.00
Servers	\$60,000.00
Migration	<b><i>Redacted</i></b>
De-duping	<b><i>Redacted</i></b>
1 <sup>st</sup> year support	<b><i>Redacted</i></b>
Training	<b><i>Redacted</i></b>
Total	\$199,000.00 (+ services)

# Funding models

- Various pots of existing funds for development
  - Charge back for Art Rhyno's Knowledge Ontario service
  - Existing ILS and hardware budgets
  - “Percentage” model for existing employees
- Tried for some external funding but came away disappointed
- Cost-sharing for support & migration TBD



# Are we making a difference?



# of commits to Evergreen (outer ring) and OpenSRF repositories since September 2007

# Challenges

- Resources and skills
  - Conifer can hire if you have skills and time
    - Developers, testers, doc writers, UCD specialists...
  - Building mutual support skills in community
  - One commercial support company
  - Evolving software engineering processes
- Time frames and legacy vendor licenses
  - Evergreen 2.0 in early 2009, go-live in May 2009
- Cost-sharing metrics: FTE vs. hospital beds

# Whither Conifer?

- We've been fielding requests from institutions that want to join Conifer since shortly after the project launched
  - Colleges, hospitals, and other universities
  - Scale of economy – once we reach a critical mass, we will be able to justify supporting ourselves
  - Public libraries? School libraries?
  - Knowledge Ontario?

# Other FOSS library systems

- Koha
  - Launched in 2000, now hundreds of adopters world wide
  - ca. 2006 / 2007, Koha 2.x was still trying to support MySQL 5 and was hitting MySQL 4 scalability limits
  - Koha 3.0, released in 2008, rearchitected around MySQL limitations with a decoupled search layer
  - Solid commercial support options

# Other FOSS library systems

- NewGenLib:
  - Formerly proprietary system developed in India, released under GPL in early 2008
  - Impressive feature support
  - Written in Java
  - Still finding a community

# More information

- <http://evergreen-ils.org> (community site)
- <http://conifer.mcmaster.ca> (Drupal in the raw)
- <http://coffeecode.net> (my blog - now with less online poker content!)