

Sianfoo

The Name

- Needed a name
- Saw Discovery channel about Siafu ant.
 - Largest colony of any social insect
 - Eat everything (up to 100k animals in a single raid)
 - Ants build things and work together (like Siafoo)

What is it?

- Code / Knowledge sharing site
- A sort of a wiki, but not really
- Store
 - Useful scripts
 - Utility functions
 - Boilerplate code (like GUI startups)

Motivation

- Reduce wasted time looking for:
 - Boilerplate code
 - Random bugs
- Home for:
 - Useful scripts and small code (too small for SVN)
 - Prototypes
 - Misc programming information (like tips, and tricks)

What can it do?

- Post code **Snippets**
- Write **Articles**
- Organize stuff into **Libraries**
- Collaborate using **Groups**

Siafoo vs Blogs

- Anyone can edit code and articles
 - Information doesn't age as much
 - Bugs are fixed without the author's intervention
 - No need to look at comments
- Easy to locate and organize snippets/articles/etc
- License, original source and author

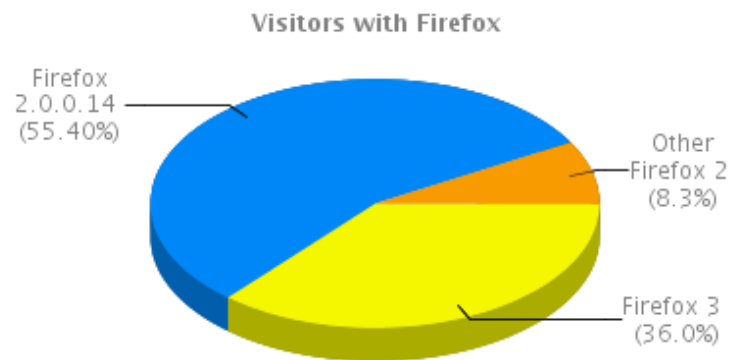
Features

- Code highlighting
- reStructured Text
- Access Controls
- All content is versioned
- Update stream (like Trac timeline)

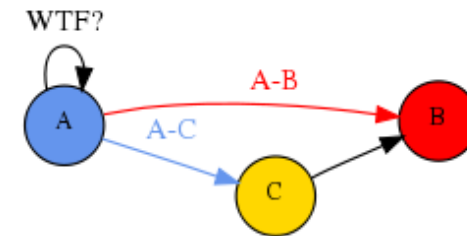
Features (cont.)

- Algorithms
- Sharing
 - Sending
 - Embedding
 - Dynamic (with JavaScript)
 - Static (Copy/Paste highlighted HTML)
- Subscriptions
- XMLRPC

reStructured Text



$$\begin{aligned}\nabla \cdot E &= \frac{1}{\epsilon_0} \rho \\ \nabla \cdot B &= 0 \\ \nabla \times E &= -\frac{\partial B}{\partial t} \\ \nabla \times B &= \mu_0 J + \mu_0 \epsilon_0 \frac{\partial E}{\partial t}\end{aligned}$$



```
1 import java.io.*;
2 import javax.servlet.*;
3
4 public class Hello extends GenericServlet {
5     public void service(ServletRequest request, ServletResponse response)
6         throws ServletException, IOException {
7         response.setContentType("text/html");
8         final PrintWriter pw = response.getWriter();
9         pw.println("Hello, World!");
10        pw.close();
11    }
12 }
```

reST (cont)

- A text formatting “language”
- Looser / Cleaner syntax than Wikis
- Expandable
- Directives (`.. foo::`) for “complex” operations

Siafoo specific reST

- Graph::Easy (PyPerl)
 - Graphviz, Graph::Easy syntax
 - Database caching
- LaTeX
- Misc
 - Code blocks, Snippets, etc.
 - Charts
 - Amazon
 - YouTube

Code highlighting

- Pygments
- ~110 languages
- Easily extendible
 - New languages (like GLSL and COBOL)
 - Built-ins for new languages (NumPy, Blender-Python, Nodebox, etc.)

Access Controls

- View/Edit/Etc permissions
 - User / Group ownership
 - “Friends” permission
- Moving to ACLs soon

Versioning

Home Articles Libraries Snippets Images Groups Friends

My > Snippets > Python > Quick and dirty wxPython and PyOpenGL Volume Rendering Skeleton > History > Revision 1 vs. Revision 2

Quick and dirty wxPython and PyOpenGL Volume Rendering Skeleton

Revision 1 vs. Revision 2

Unmodified Added Removed Modified

Description		
r1	r2	
6	6	``r`` - Reload shader sources
7	7	
8	8	``l`` - Toggle lighting
9	9	
10	10	
11		.. warning:: This code will not work without :snippet:`122`
	11	.. warning:: You must first download :snippet:`122` and :snippet:`117`
12	12	
13	13	
14	14	To extend it into something that can view MRI (or similar) data you can do something like:
15	15	
16	16	.. code:: Python

Code		
r1	r2	
1		from ctypes import *
2		import Image, ImageOps, numpy, math, pygame, sys, wx
	1	import Image, ImageOps, numpy, math, sys, wx
3	2	
4	3	from numpy import array
5		from pygame.locals import *
	4	from pygltmisc import *
6	5	from wx.glcanvas import GLCanvas
7	6	from TransferFunctionWidget import TransferFunctionWidget
8		

Update Stream

Atom feed with the filters you've selected

The screenshot shows a web interface with a navigation bar at the top containing 'Home', 'Algorithms', 'Articles', and 'Libraries'. Below the navigation bar is a 'Recent Activity' section. The section title is 'Recent Activity' followed by an RSS icon. Below the title are two rows of filter icons: 'Show:' with icons for a star, a pencil, a vertical bar, and a globe; and 'About:' with icons for a document, a folder, a star, a bar chart, a globe, and a mail icon. The main content area displays a list of activity items. Each item starts with a date (e.g., '16 Jul 2008'), followed by a star icon and a count (e.g., '2'). The items include timestamps and descriptions of updates, such as 'New news reST help page has been updated', 'New article Removing duplicates from a PostgreSQL database', 'New snippet A somewhat broken Ray Casting fragment', 'Article Launching a sub process under Unix, Windows', 'New snippet Load DEM Terrain in Blender posted by Steve', and 'New article Launching a sub process under Unix, Windows'.

Filter activities by **action type**

Filter activities by **object type**

Filters

Apply Filter

Remove Filter

Number of items with this license

Search filters

The screenshot shows a web application interface for code snippets. At the top, there are navigation tabs for 'Algorithms', 'Articles', and 'Lib'. Below this, a breadcrumb trail reads 'Browse > Snippets > Language: Python'. The main content area is titled 'Snippets' and includes two radio buttons: 'Only My Subscriptions' and 'Only Items I Own'. A search bar labeled 'Search Snippets' is present. Below the search bar are four filter panels: 'Keywords' (with items like wxWidgets, wxPython, wx), 'Licenses' (with items like BSD, GPL, LGPL, Public Domain, Python 1.6 (CNRI)), 'Users' (with items like David Isaacson, Stou Sandalski, Andrew Stromberg, Jonathan Wong), and 'Group Owners' (with items like iCapsid, Sialoo). Each filter panel has a search input field. Below the filters is a 'Ranking (Highest -> lowest)' dropdown and a 'Sort' button. A pagination bar shows '10 of 55' items and page numbers '1 2 3 4 5 6'. The main list of snippets includes: 'Convert Text to *Big Latie*' from David Isaacson (5.0 rating), 'Convert Tabs to Spaces in Multiple Files' from David Isaacson (5.0 rating), and 'Python colored output' from Stou Sandalski (4.0 rating). Each snippet entry includes a small icon, the title, author name, and a brief description. Annotations with arrows point to various elements: 'Apply Filter' points to the 'Licenses' filter; 'Remove Filter' points to the 'Licenses' filter; 'Number of items with this license' points to the count '(18)' for BSD; 'Search filters' points to the 'Keywords' filter; 'Average Rating' points to the '5.0' rating for the first snippet; 'Change subscription settings' points to the 'Only My Subscriptions' radio button; and 'Indicates ownership' points to a small icon next to the author name of the third snippet.

Change subscription settings

Average Rating

Indicates ownership

Full Screen Editor

The image shows a screenshot of a web-based code editor in full-screen mode. The editor is divided into two main panes: a top 'Preview Pane' and a bottom 'Edit Pane'. A horizontal 'Drag bar' separates the two panes, with a callout indicating it can be used to change the pane size. On the right side, there is a button labeled 'Exit Full Screen mode'. On the left side, there is a button labeled 'Generate Preview'. The 'Preview Pane' displays a rendered version of a blog post titled '4.1 The Right Way', which includes Python code snippets and explanatory text. The 'Edit Pane' shows the raw HTML and code for the same content. The interface is clean and modern, with a light gray background and yellow callout boxes.

Preview Pane

Generate Preview

Edit Pane

Exit Full Screen mode

Drag bar to change pane size

```
4.1 The Right Way

While writing this article, I stumbled upon the right way to select values inline, next in Python 2.5 (you'd think there would have been more fanfare!). Python now supports the syntax 'value_if_true if test else value_if_false'. So, you can do simple selection of values in one line, with no weird syntax or major caveats.

1 test = True
2 # test = False
3 result = 'Test is True' if test else 'Test is False'
4 # result is now 'Test is True'

Okey, it's a bit ugly still. Also, you can also chain multiple tests in one line:

1 test1 = False
2 test2 = True
3 result = 'Test1 is True' if test1 else 'Test1 is True, test2 is False' if test2 else 'Test1 and Test2 are both False'

The first condition is evaluated first, and if test1 is false the second condition is evaluated. You can do more complicated things too, especially if you throw in some parentheses.



```

the right way

While writing this article, I stumbled upon the "right way" (http://www.python.org/doc/2.5/whatsnew/wh-25.html) to select values inline, one in Python 2.5 (you'd think there would have been more fanfare!). Python now supports the syntax "value_if_true" if "test" "else" "value_if_false". So, you can do simple selection of values in one line, with no weird syntax or major caveats:

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The first "if" "else" is evaluated first, and if test1 is false the second "if" "else" is evaluated. You can do more complicated things too, especially if you throw in some parentheses.

.. admonition: Personal Note
 This is pretty new on the field, and my reaction is mixed. It really is the Right Way, it's cleaner, and I like it... but it's still ugly

```


```

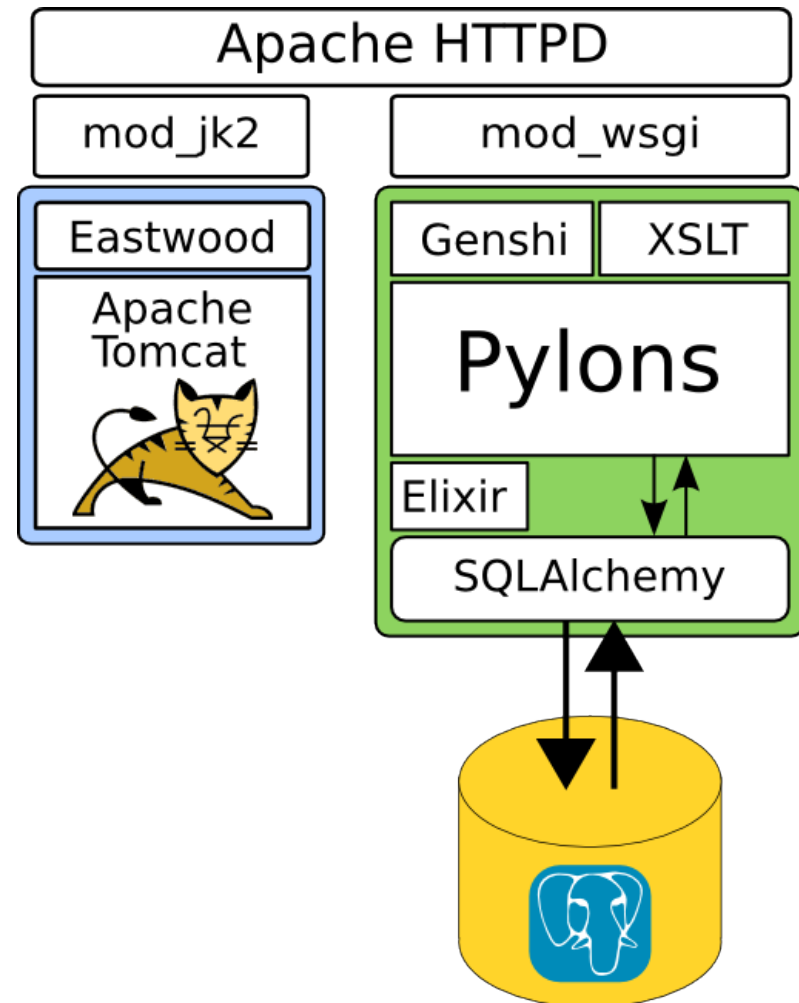
Social Networking?

- Siafoo is not a social networking site, but it has some of the same elements
 - Friends and Groups (mostly for access control)
 - Messages
- Useful without the social networking part
- The point is to “Do Stuff”

How it works...

Application Stack

- Fairly straight forward web app
- Apache httpd
- PostgreSQL
- Python (Perl and Java)
- Runs on SL (but it doesn't matter)



Scientific Linux

- We know SL from UCD work
- Cool:
 - Just RHEL / CentOS
 - Stable (1 year release cycle)
 - Good hardware vendor support
 - Xen Virtualization
- Not So Cool:
 - Older Python, PostgreSQL, Apache, etc.
 - Xen GUI is archaic

Why Python?

- A general purpose programming language
- Lots of libraries and features
- Not too slow
- We already knew Python...

Why PostgreSQL?

- “Real” database server (sorry)
- Data integrity comes first
- High performance / scalability
- XML Support
- Full Text Search (TSearch2)
- Single storage engine (InnoDB/MyISAM/... ?!)

SQLAlchemy

- Object Relational Mapper (ORM)
 - Object-based representation of database
 - Relation setup (one-one, many-one, one-many)
- SQL Expressions (SE)
 - Execute arbitrary SQL statements with automatic data coercion
 - Example: `func.foo('bar', 1337, [1,2,3,4])`
- (Tip: Freeze required version in `setup.py`)

Elixir

- Thin wrapper around SQLAlchemy's ORM
- Extensions: Versioning, Encryption, List plugin
- Cleaner code (than pure SA)

```
class Person(Entity):  
    name = Field(String(128))  
    addresses = OneToMany('Address')
```

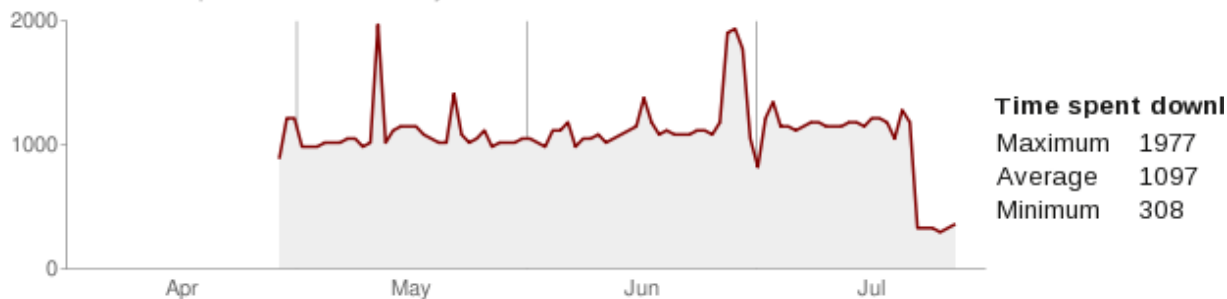
```
class Address(Entity):  
    email = Field(Unicode(128))  
    owner = ManyToOne('Person')
```

Pylons

- MVC Framework
- Choice of template engines
- Out of the box SQLAlchemy or SQLAlchemyObject
- Ruby On Rails style routing and AJAX
- Slightly harder to setup (than cherypy or php) but easier to manage in the long run
- Unit testing integration (nose)

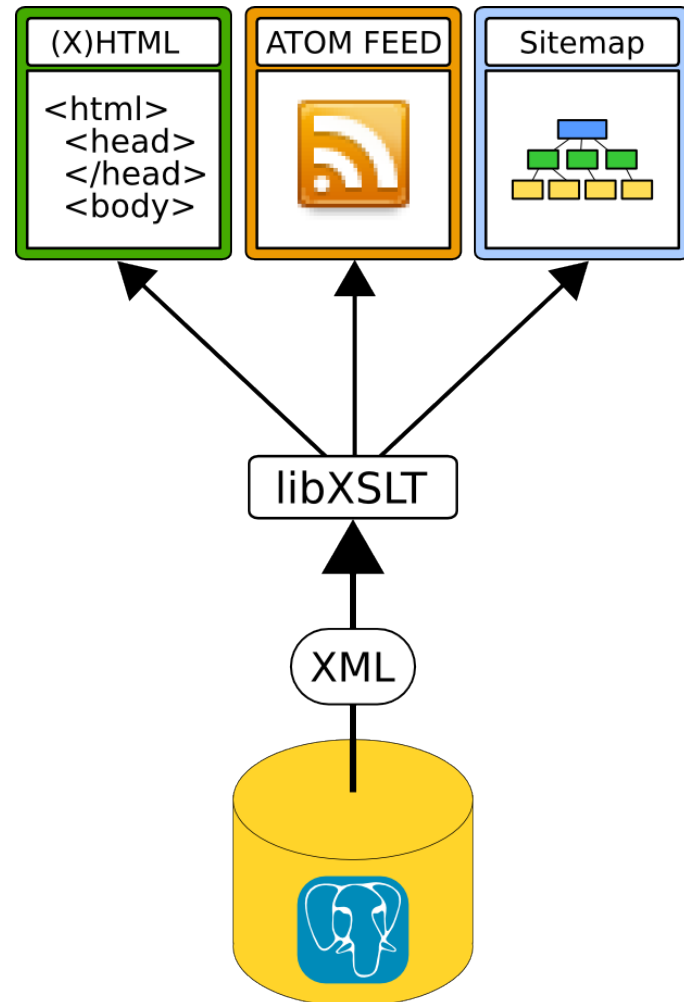
Genshi

- Parse, generate, and process HTML, XML
- Clean XML-like templates (feels like JSP)
- Stream filters and match templates
- Not as fast as text-based engines
- Static includes (since v0.5)



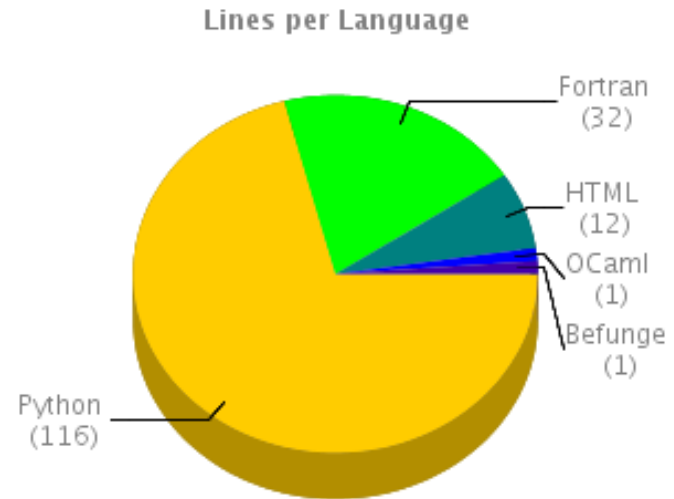
XSLT

- Good
 - Very very fast
 - Less code
 - Easy updates
- Bad
 - Hard to maintain for complex stuff
 - Stay away from LXML
 - libXML2/libXSLT are hard to use



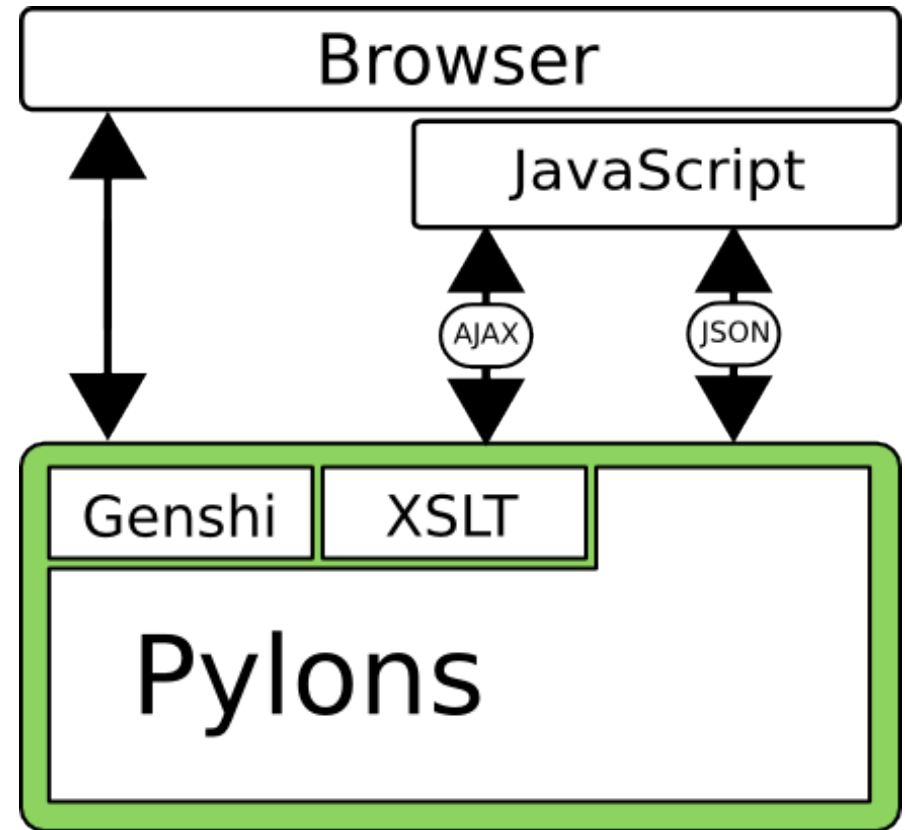
Eastwood

- Google Charts API
 - Encodes chart in request string
- jFreeChart
- Bad
 - Dataset size limits
 - Values are not exact
 - No caching (yet)



Front-End

- Mootools
- Asynchronous Requests / Responses
 - AJAX
 - JSON



Mootools

- Lightweight and modular
- Very well documented
- Clean API
- Compatible with Safari 2+, FF2+, Opera 9+, IE6+
- Fixes IE bugs

Future Plans

- Pastebin (private/public)
- Blogs (hosted and/or aggregated)
- Eclipse Plugin (other plugins)
- Todos / Tasks / Micro-bugs
- Code lint (other analysis and stats)

Feedback

- What wastes your time (other than meetings)?
- What can Siafoo do to save you time?
- How can it be more useful to groups?

More Information

- Siafoo: <http://www.siafoo.net/help/about>
- Pylons: <http://www.pylonshq.com>
- Elixir: <http://elixir.ematia.de>
- Eastwood: <http://www.jfree.org/eastwood/>