

OpenSolaris DevCon 2007

● Day

GUUG-Frühjahrsfachgespräch 2007

Engineer for Serendipity

Roy T. Fielding, Ph.D

Chief Scientist, Day Software

Cofounder, The Apache Software Foundation

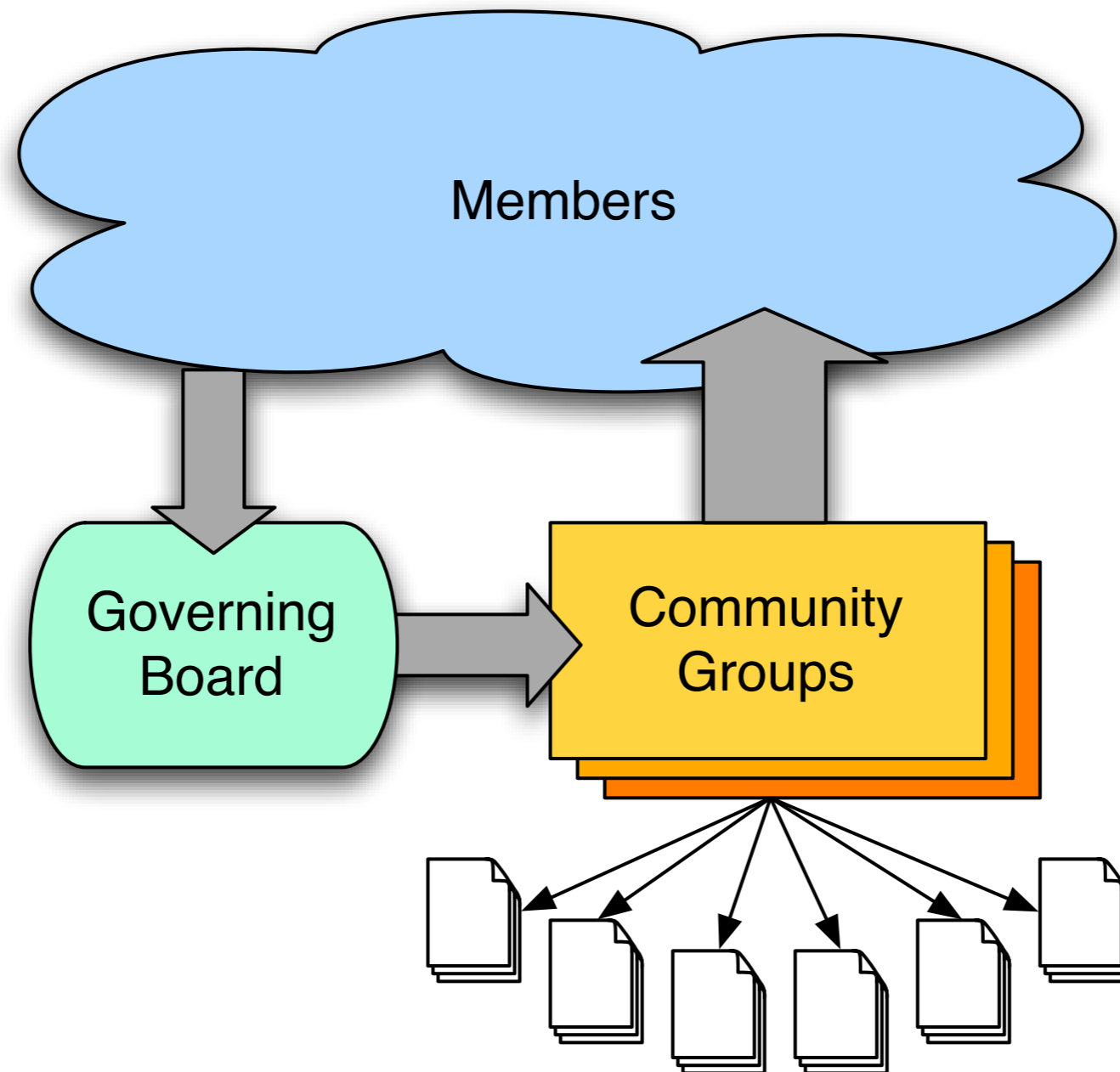
Vice President, Apache HTTP Server

Community Advisory Board / OGB, OpenSolaris

OpenSolaris Constitution



OpenSolaris Governance Structure

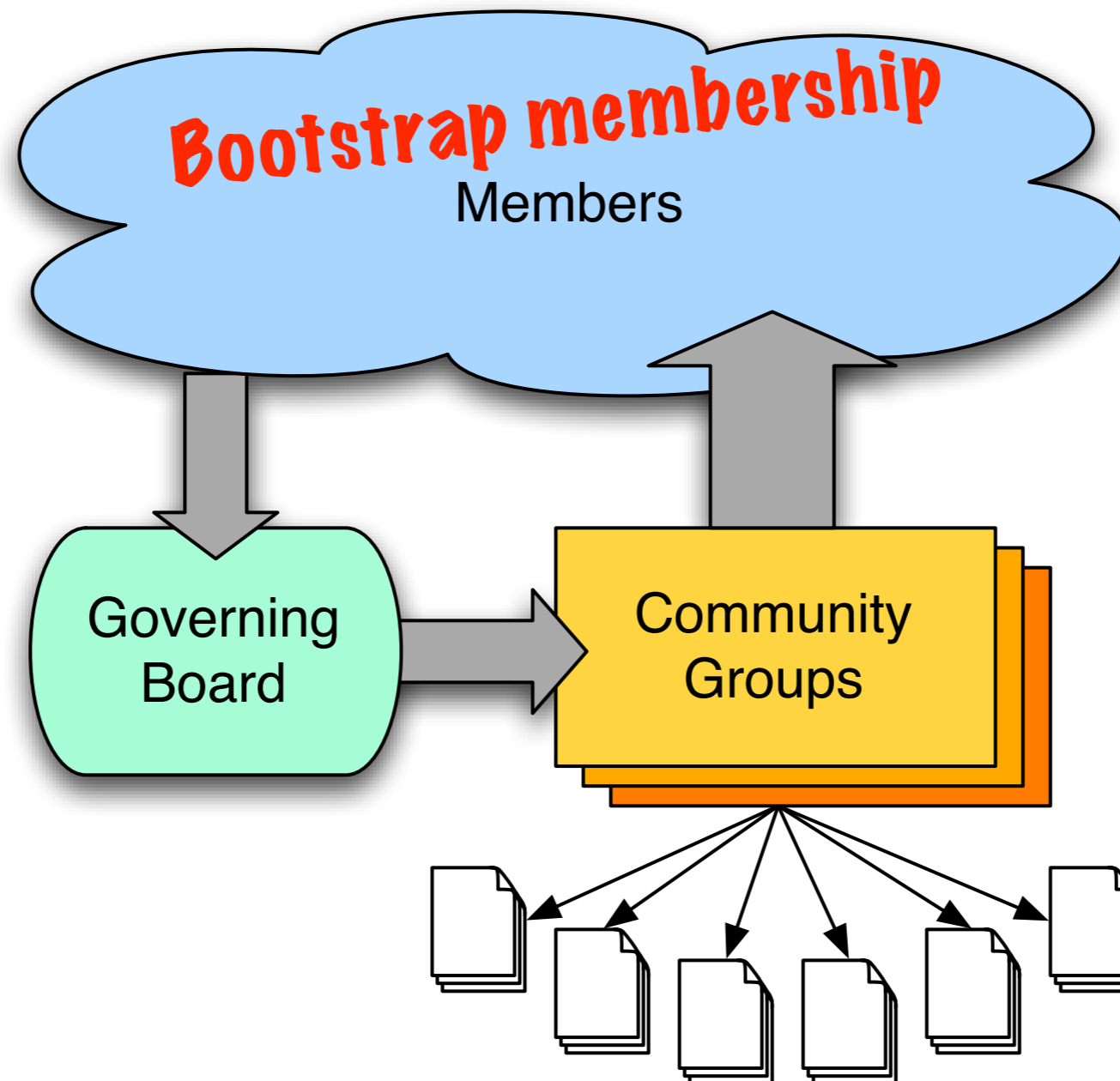


http://www.genunix.org/wiki/index.php/OpenSolaris_Governance_Draft_03

OpenSolaris Constitution



OpenSolaris Governance Structure

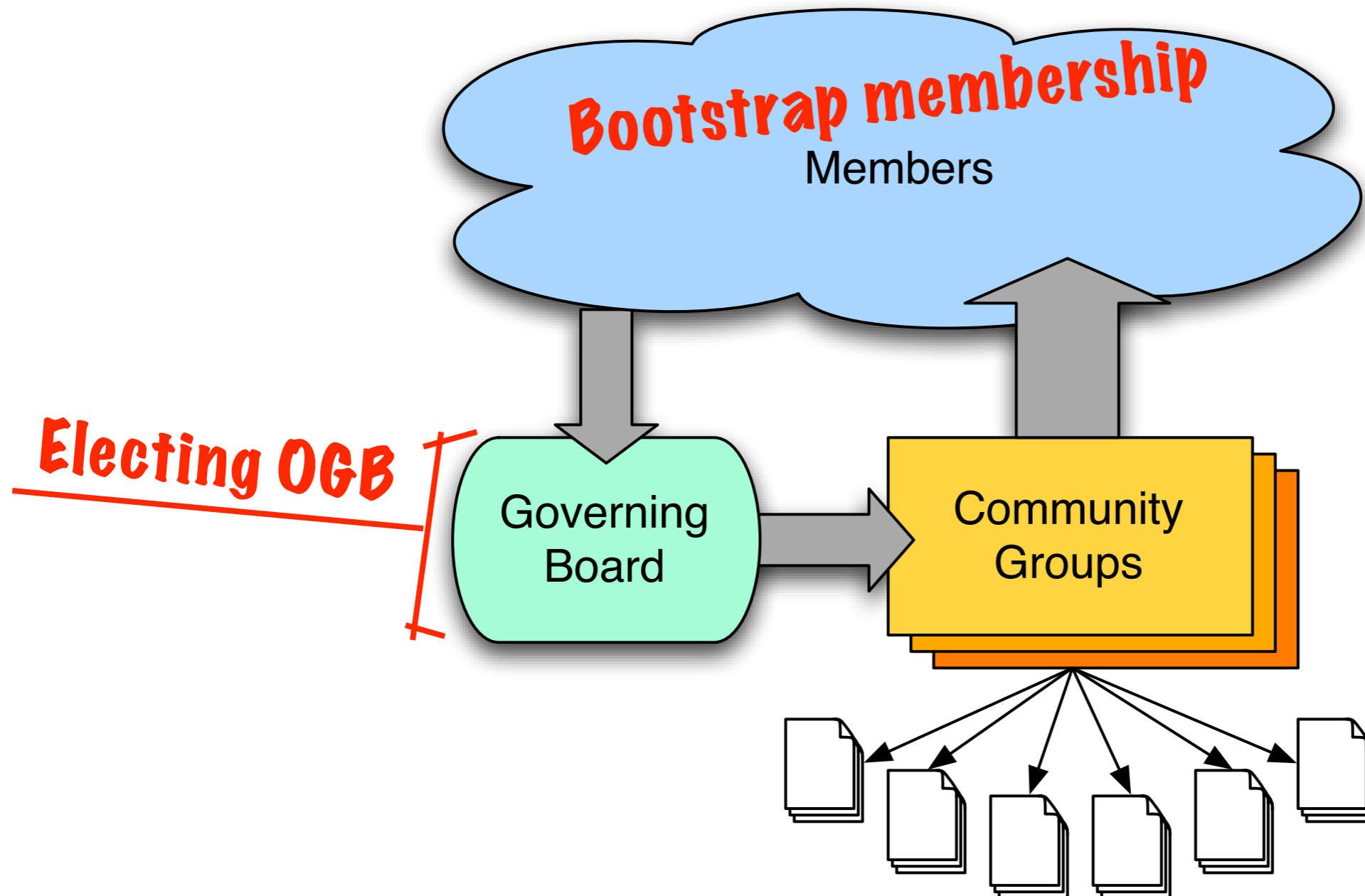


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OpenSolaris Constitution



OpenSolaris Governance Structure

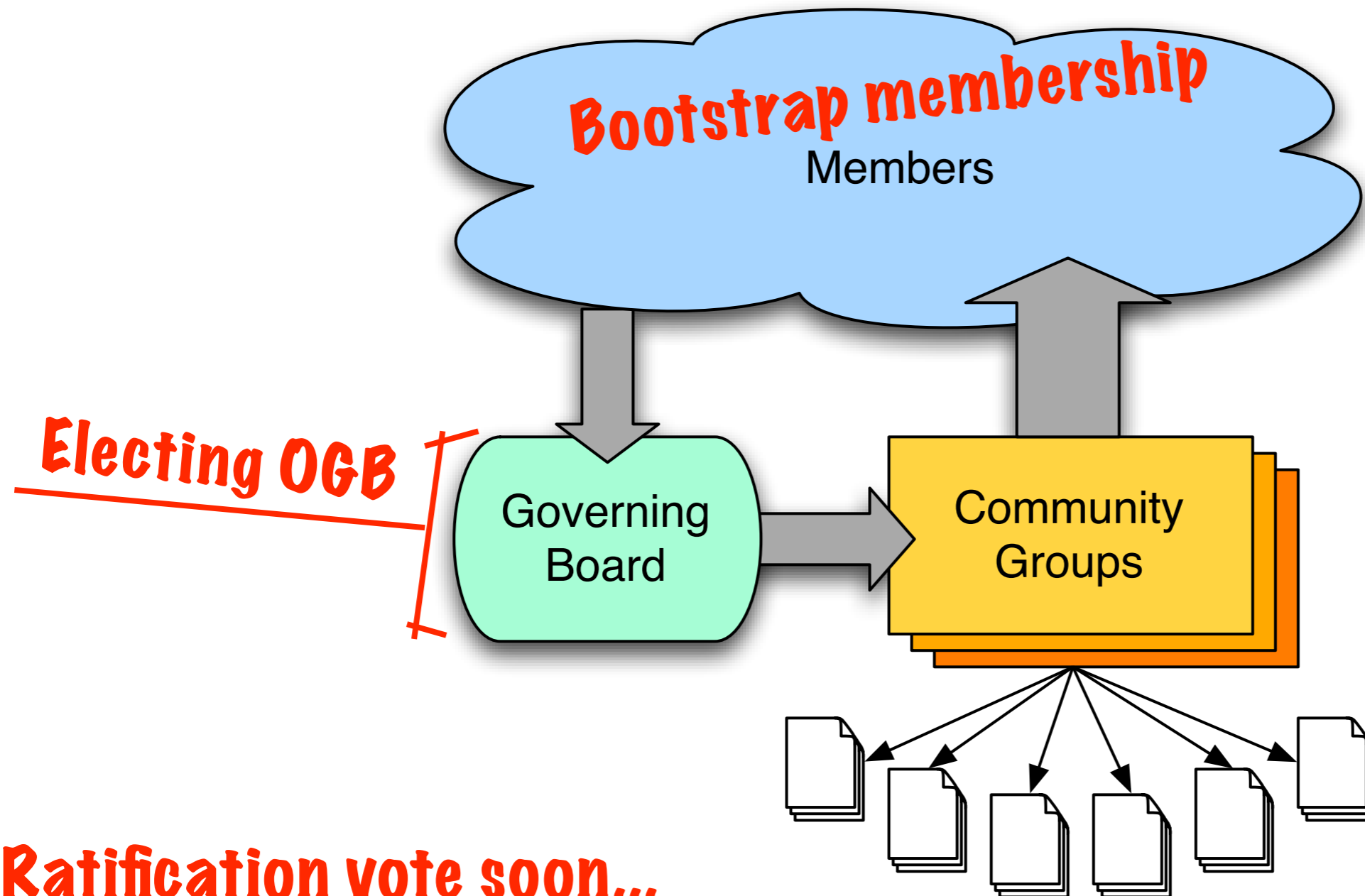


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OpenSolaris Constitution



OpenSolaris Governance Structure



Ratification vote soon...

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Confessions of a Unix Hacker



My first real job ...

**“We just bought a WICAT minicomputer.
Go figure it out, and then teach the others.”**

June 1983

Motorola 68000, 2MB RAM, 50MB HD

Unix System 7

... and hooked ever since

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1986-88

Sequent
B20000

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Sun
Workstation

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1, 1+, 2, 5

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1, 1+, 2, 2+

1995-

FreeBSD
for Apache

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1, 1+, 2

1995-

FreeBS
for Apache

1999-

Linux

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1, 1+, 2

1995-

FreeBSD
for Apache

1999-

Linux

2001-

Apple OS X

...and what did I learn?

How to Engineer for Serendipity

```
egrep '^From: ' 200511.mbox | \  
cut -d '<' -f 2 | cut -d '>' -f 1 | sort | uniq
```

“The genius of the Unix pipeline is precisely that it is constructed from the very same commands used constantly in simplex fashion. The mental leap needed to see this possibility and to invent the notation is large indeed.” [Ritchie, 1979]

Architected by M. Douglas McIlroy, 1972.

Pipe and Filter Style

Simple construction of coroutines
each filter can be understood on its own
functionality is a multiple of composition
complexity is reduced, test independently

Reusable, Extensible, and Evolvable
filters can be replaced with better versions
filters can be added by third parties

No interactivity (requires pre-configuration)

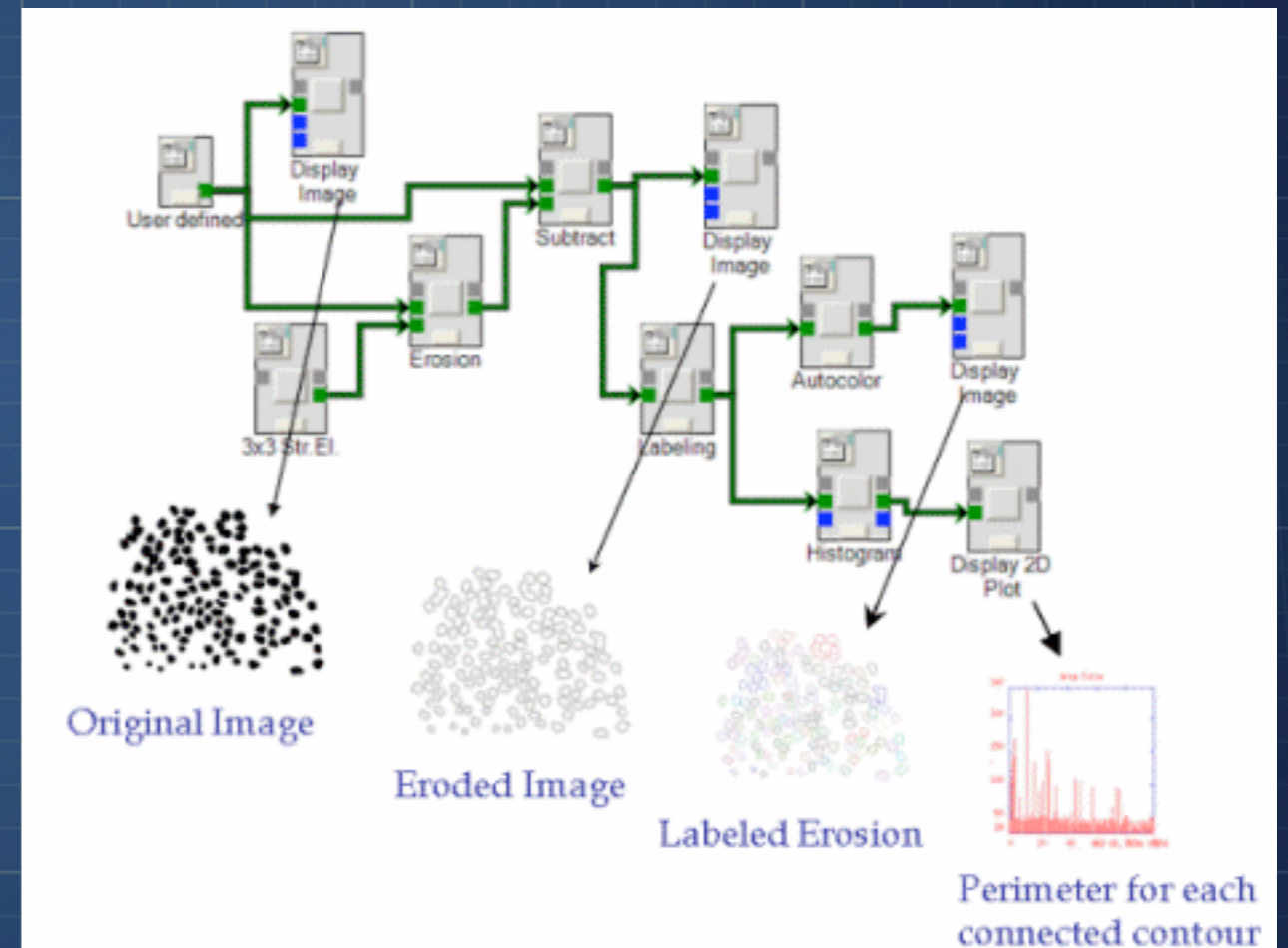


Khoros Cantata

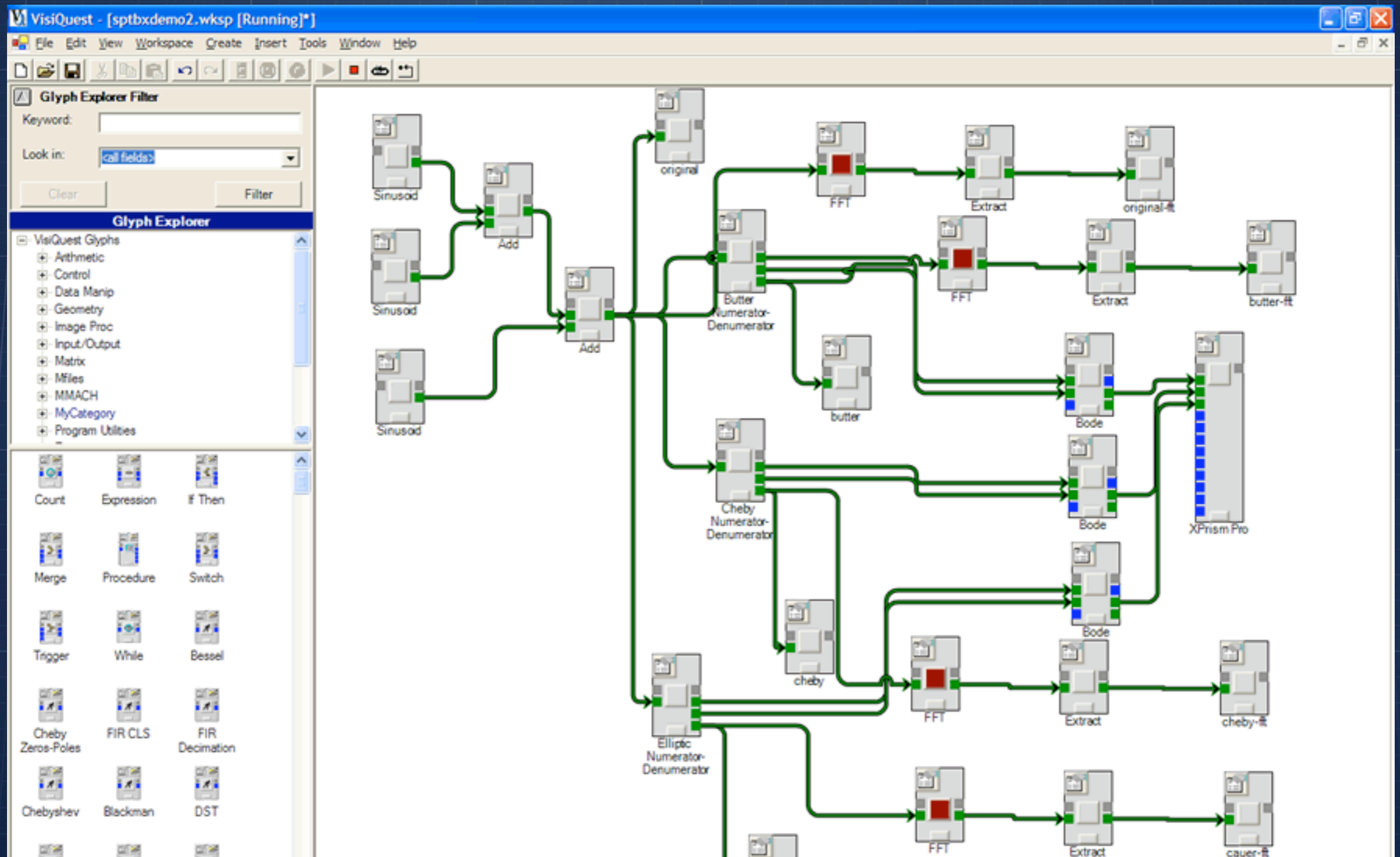
UNM, 1990

Visual programming
for large datasets

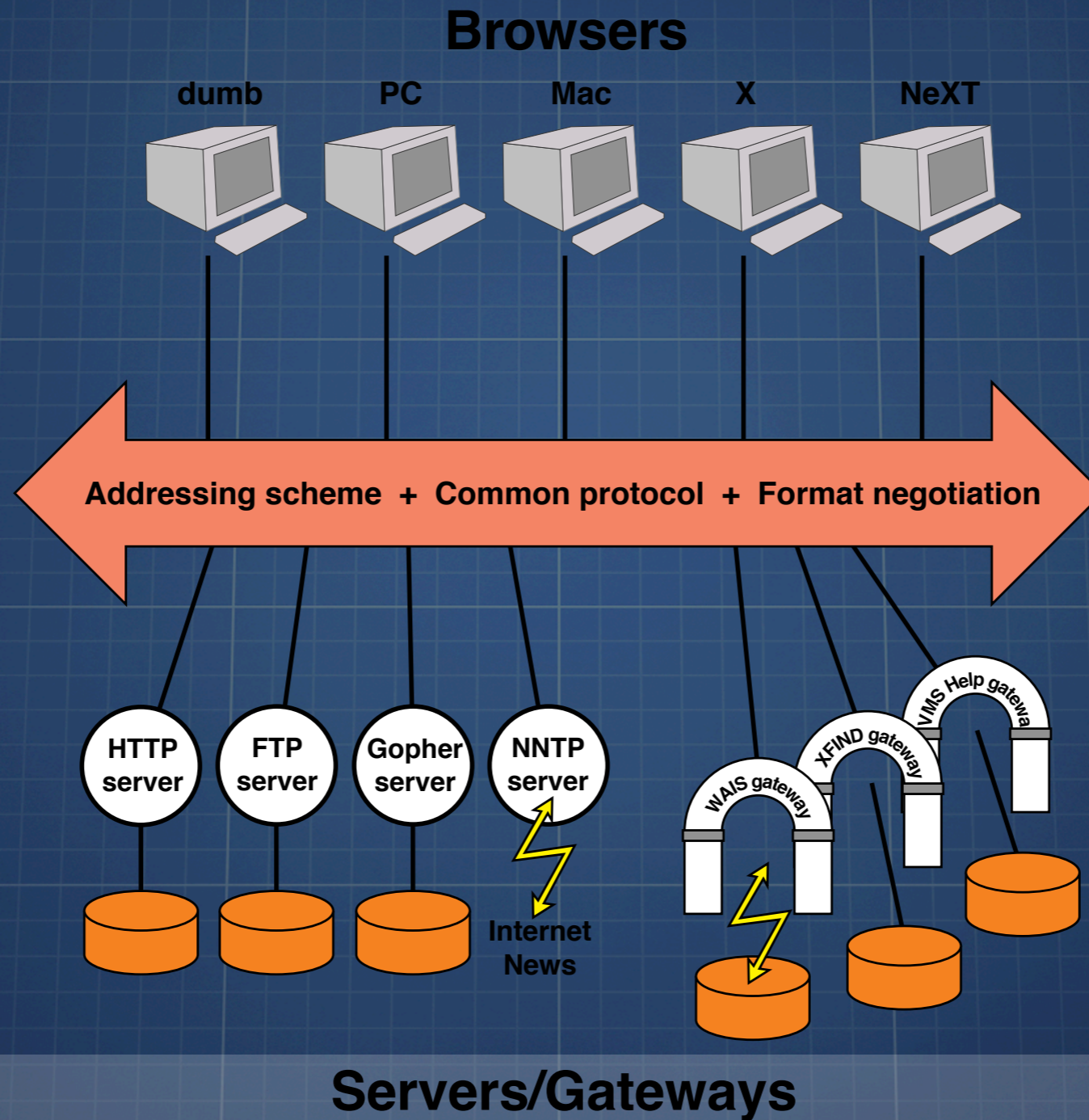
(AccuSoft Visiquest)



AccuSoft VisiQuest

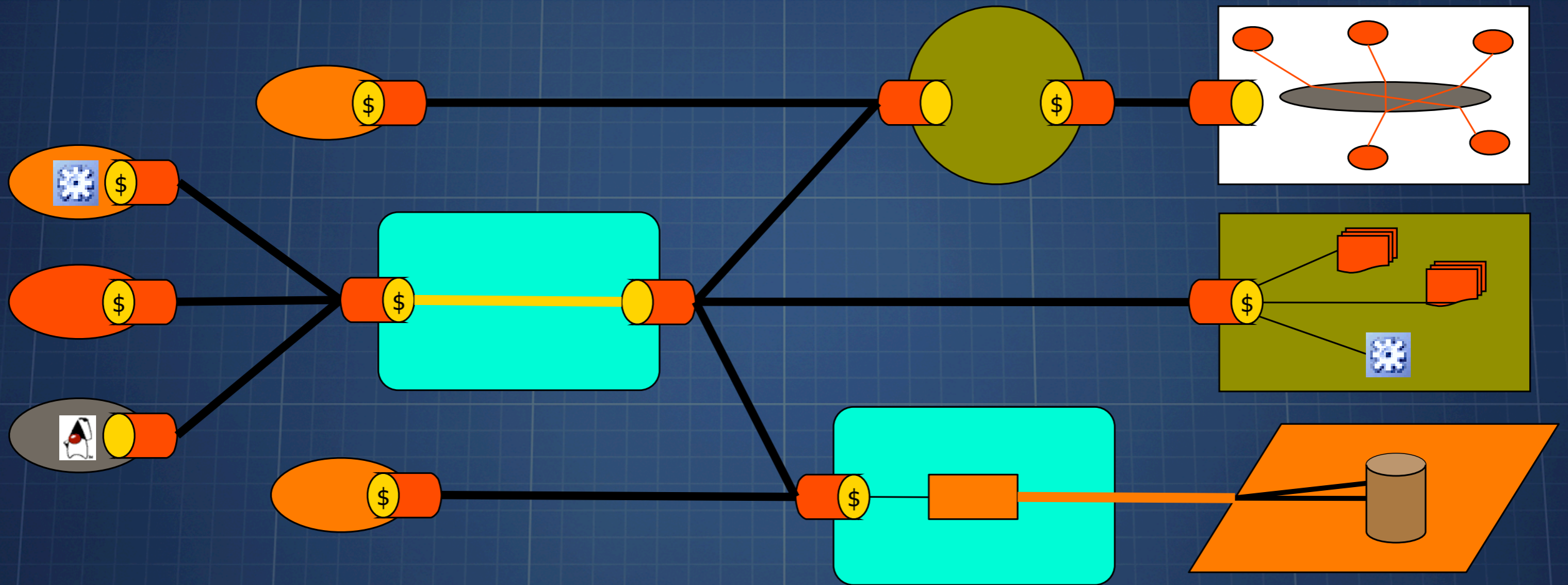


Web Architecture (1992)



© 1992 Tim Berners-Lee, Robert Cailliau, Jean-François Groff, C.E.R.N.

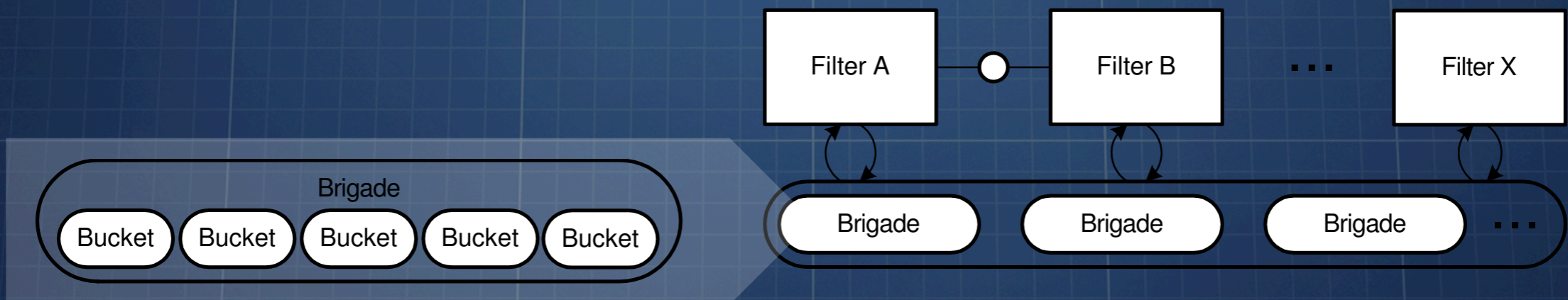
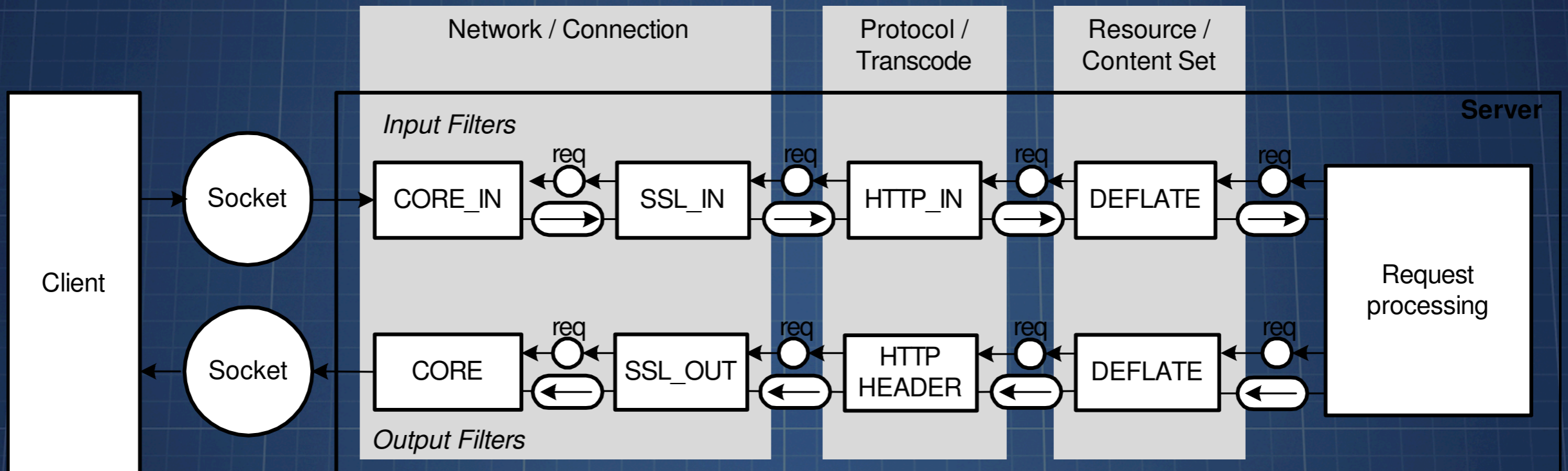
REST



The Web, Re-Architected (1994-98)



Apache httpd 2.x Filters



[HPI Apache Modeling Project, <http://apache.hpi.uni-potsdam.de/>]



Apple Automator

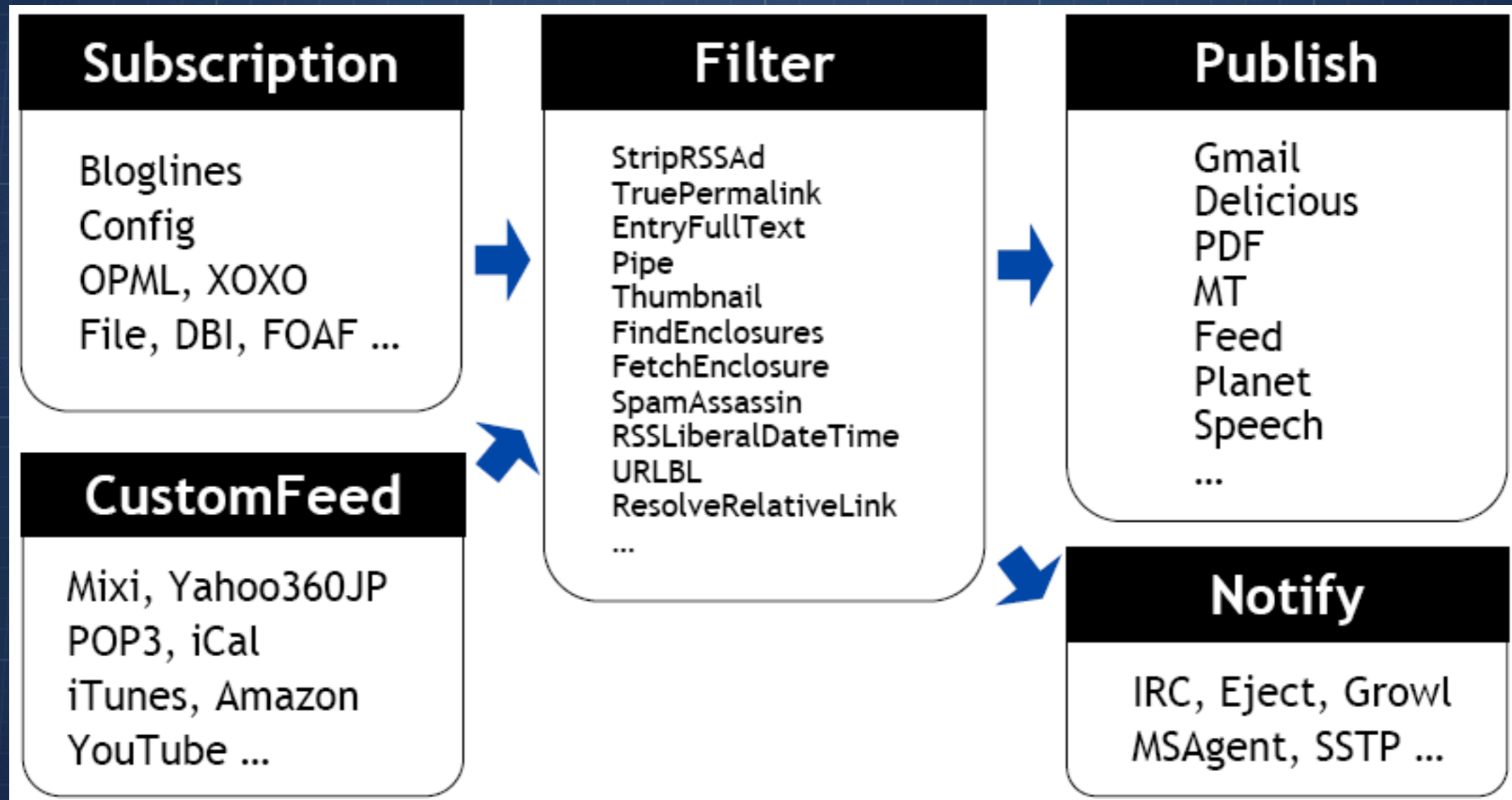
The screenshot displays the Apple Automator application interface. On the left, the 'Library' pane shows a list of applications including Address Book, Automator, DVD Player, Finder, Font Book, iCal, iDVD, Image Capture, iPhoto, iTunes, Keynote, Mail, PDF, Preview, QuickTime Player, Safari, Spotlight, System, TextEdit, and Xcode. The 'Action' pane lists various actions such as 'Add Chart to Slide', 'Add Slide to Keynote...', 'Add to Font Library', 'Ask for Confirmation', 'Ask For Servers', 'Change master of K...', 'Close Keynote Prese...', 'Connect to Servers', 'Copy to Clipboard', 'Delete All iPod Notes', 'Delete Slide', 'Display Webpages', 'Eject iPod', 'Extract Notes', 'Get Image URLs fro...', 'Get Link URLs from ...', 'Get New Mail', 'Get Specified iPhoto...', 'Get Specified Servers', 'Get Text from Webpage', and 'Launch Application'. The main workflow area on the right contains five steps: 1. 'Ask for Confirmation' (Anything), 2. 'Get Current Webpage from Safari' (URLs), 3. 'Get Image URLs from Webpage' (URLs) with the option 'linked from these webpages', 4. 'Download URLs' (Files/Folders) with the location set to 'Pictures', and 5. 'Import Photos into iPhoto' (iPhoto photos) with options to 'Add to: Choose Album' (Library) or 'New Album' (.Mac Photos), and a checked option 'Delete the Source Images After Importing Them'.

Getting Started

To view the actions for an application, click the application.
To show all the actions, click the Applications folder.
To find an action, enter a word or phrase in the search field.

To add an action to the workflow, drag it into the workflow.
To open a saved workflow from the library, double-click it.

Plagger



[Tatsuhiko Miyagawa, Six Apart, Ltd.]

Plagger

plugins:

- module: Subscription::Bloglines
config:
 - username: you@example.com
 - password: foobar
 - mark_read: 1
- module: Publish::Gmail
config:
 - mailto: example@gmail.com
 - mailfrom: miyagawa@example.com
 - mailroute:
 - via: smtp
 - host: smtp.example.com

[Tatsuhiko Miyagawa, Six Apart, Ltd.]



Yahoo! Pipes

The screenshot shows the Yahoo! Pipes editor interface. The browser address bar displays `http://pipes.yahoo.com/pipes/1mrlkB232xGjJDdwXqlxGw/edit?opendes...`. The page title is "Pipes: editing 'Copy of Apartment Near Something'". The interface includes a search bar for pipes and feeds, and navigation buttons: "Layout", "Expand All", "Collapse All", "Back to My Pipes", "New", "Save", "Save a copy", and "Publish...".

The left sidebar contains a menu of operators and sources:

- Sources
- User inputs
- Operators
 - For Each: Annotate
 - For Each: Replace
 - Rename
 - Count
 - Filter
 - Truncate
 - Content Analysis
 - Sort
 - BabelFish
 - Location Extractor
 - Union
 - Unique
- Url
- String
- Date
- My pipes

The main workspace shows a workflow diagram with the following components connected in sequence:

- Your location (location)
- URLBuilder
- Fetch
- Location Extractor
- Filter (highlighted in orange)
- For Each: Annotate
- Filter
- Minimum distance (number)
- Pipe Output

A "Debugger: Filter (4 items)" window is visible at the bottom right. The status bar at the bottom left indicates "Transferring data from l.yimg.com...".

Yahoo! Pipes

The screenshot shows the Yahoo! Pipes editor interface for a pipe named "Apartment Near Something". The browser address bar shows the URL: `http://pipes.yahoo.com/pipes/1mrlkB232xGjJDdwXqlxGw/edit?opendes...`. The interface includes a sidebar with categories: Sources (Yahoo! Search, Yahoo! Local, Fetch, Google Base, Flickr), User inputs, Operators (Url, String, Date, My pipes), and a search bar for pipes and feeds. The main workspace contains a workflow with the following steps:

- Fetch**: A box with a "URL" field containing the text "url".
- Location Extractor**: A box connected to the Fetch step.
- Filter**: A box with a "Permit" dropdown set to "all" and a "Rules" section containing a rule: "quality" is greater than "80".
- For Each: Annotate**: A box with the text "For each item in input feed, set attribute nearby to first item output from" and a dropdown set to "Yahoo! Local".
- Near what (text)**: A box with fields for "Name: what", "Prompt: Near what", "Position: 2", "Default: parks", and "Debug: parks".
- Minimum**: A box connected to the "Near what (text)" step.
- Debugger: none**: A box at the bottom right.

The workflow is connected by blue lines, indicating the flow of data between the steps. The status bar at the bottom left shows "Done".

Deficiencies

Unix pipes

single stream, no metadata

HTTP

one stream each direction
metadata up front

RSS/Atom Feeds

multiple single-stream inputs
limited media types, embedded metadata



waka

A replacement for HTTP (under development)
Token-based, length-delimited syntax
Self-descriptive messages

Interleaved message (meta)data packets:
Up to 64 channels per connection
Up to 63 payload streams per message

Complete transport independence
TCP, UDP, multicast, ...

