

Cosmo and CalDAV

Open Source, Standards-based Calendar Sharing

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<http://wiki.osafoundation.org/Journal/ApacheConDublin>

Me

- Work
 - Microsoft Exchange (WebDAV, calendar protocol)
 - Xythos WebFile Server (WebDAV in java)
 - OSAF Dev manager (Chandler protocols, Cosmo)
- Standards
 - IETF Area Director, Applications Area
 - WebDAV, email, calendaring, Atom

Topics

- Cosmo main goals
 - OSAF ecosystem
- Context: Web 2.0, services vs. servers
- CalDAV architecture and challenges
- Next steps

OSAF



ApacheCon
Europe 06

What is Cosmo

OSAF's Calendaring and Sharing Server

- Support Chandler usage but not limited to Chandler
- Calendaring and Sharing
- Easy to install, administer, for just a workgroup
- Free
 - Apache license

Jackrabbit and JCR

- Jackrabbit: Apache Project
 - Reference implementation of JCR
 - WebDAV support
 - Hierarchical node storage model
- JCR (aka JSR 170): Java Content Repository API
- As used in Cosmo:
 - Replaces a traditional database
 - Take advantage of WebDAV support
 - Extend to support CalDAV

What is Chandler

OSAF's Rich Personal Information Management (PIM) Application

- Manage events and tasks in an **integrated** and **extensible** framework
- Python, wxWidgets, pyLucene...
- 0.6 is experimentally usable
- 0.7alpha2 is in “dogfood” usage

Chandler



All



Mail



Tasks



Calendar



Sync All



New



Send

✓ My calendar

✖ Trash

✖ ApacheCon

◀ ▶ December 2005

US/Pacific

Week Sun 11 Mon 12 Tue 13 Wed 14 Thu 15 Fri 16 Sat 17 ▲

7

8

9

10

11

12

1

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3

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5

8:45 AM
Doctorow Keynote10:30 AM
Phipps talk11:30 AM
Intro to WebDAV3:00 PM EST
CalDAV Authors call2:00 PM
Roller

8:45 AM Doctorow Keynot
10:30 AM Phipps talk
11:30 AM Intro to WebDAV
3:00 PM CalDAV Authors c
2:00 PM Roller

◀ Today ▶

December 2005

S	M	T	W	T	F	S
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18	19	20	21	22	23	24
25	26	27	28	29	30	31

January 2006

S	M	T	W	T	F	S
1	2	,3	,4	,5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21



CalDAV Authors call

location

all-day ☐

starts 12/12/05 at 3:00 PM

ends 12/12/05 at 4:00 PM

time zone US/Eastern

status Confirmed

occurs Once

alarm None

What is Scooby

Calendar WebUI front-end for Cosmo

- Using AJAX
- Using CalDAV as if it were a client
- Allows kiosk access or general online alternative calendar access
- 0.1 was framework release

Contributors welcome of course

OSAF “Ecosystem” Goal

Easy to share personal information

- Especially calendars, personal or shared
 - Email and tasks too -- mixed or separate
- Hand control over to users!
 - Workgroup destiny: must be easy to set up
 - Data: standards compliant, import/export
 - User Interface: support rich clients, easy features
 - Availability: Web app as well as synch

A Fairly Close Comparison



.mac

The simplicity of the Mac
meets the power of the Internet.

- Similar goal (plus backup)
- Similar rich application support (iCal)
- WebDAV
- But how about free?
- How about under user control?

WebDAV

Web-based Distributed Authoring (and Versioning)

- Used for
 - Remote file system access (Windows and Mac)
 - Content Management
 - Source control (subversion)
- Internet-scale hierarchical storage
- Rich meta-data for any content type

What else can we do?



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DSC06937.JPG



DSC06938.JPG



DSC06954.JPG



DSC06958.JPG



DSC06964.JPG



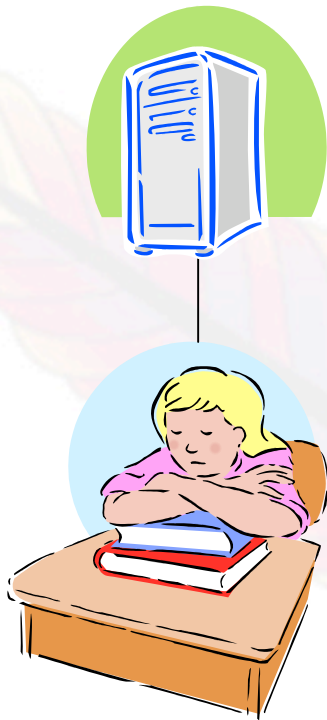
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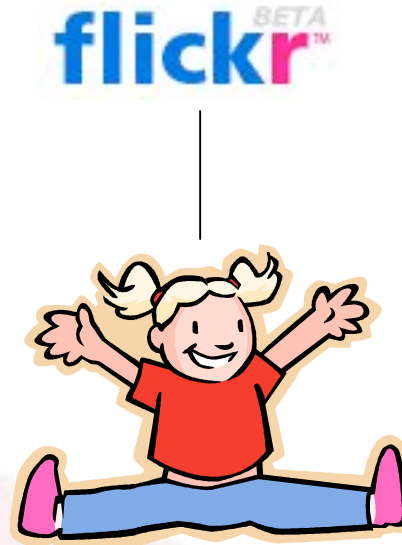


Don't Specialized Services Win?



Control

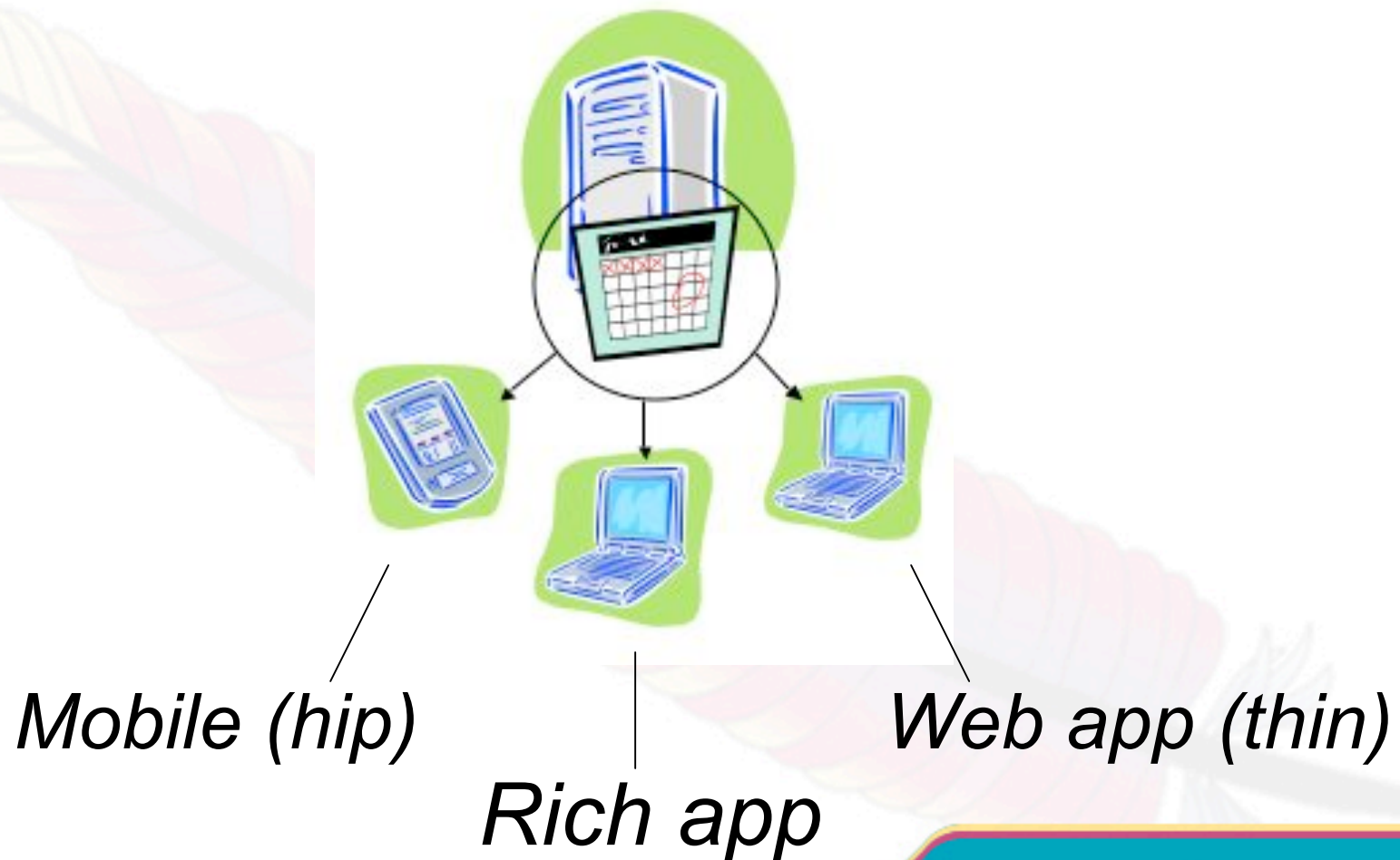
Vs.



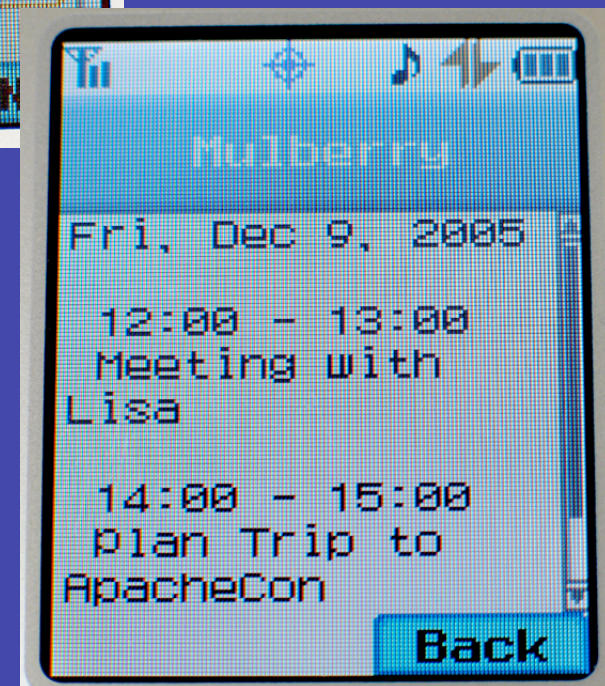
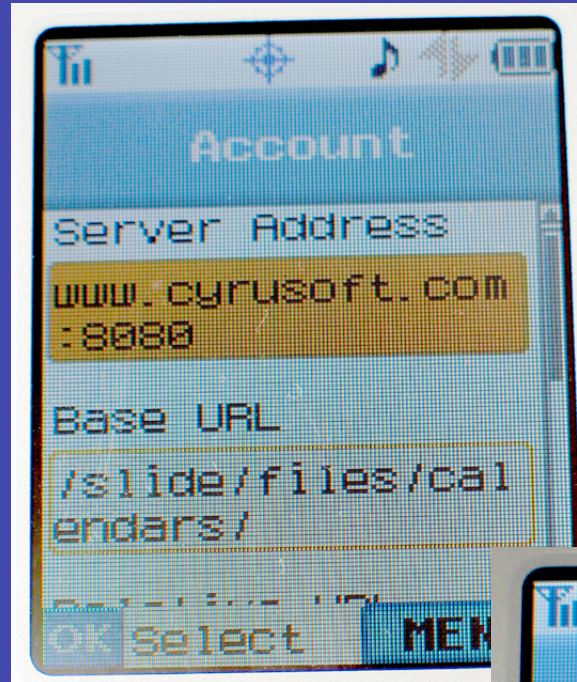
Features!

Share, tag, comment,
group, interestingness

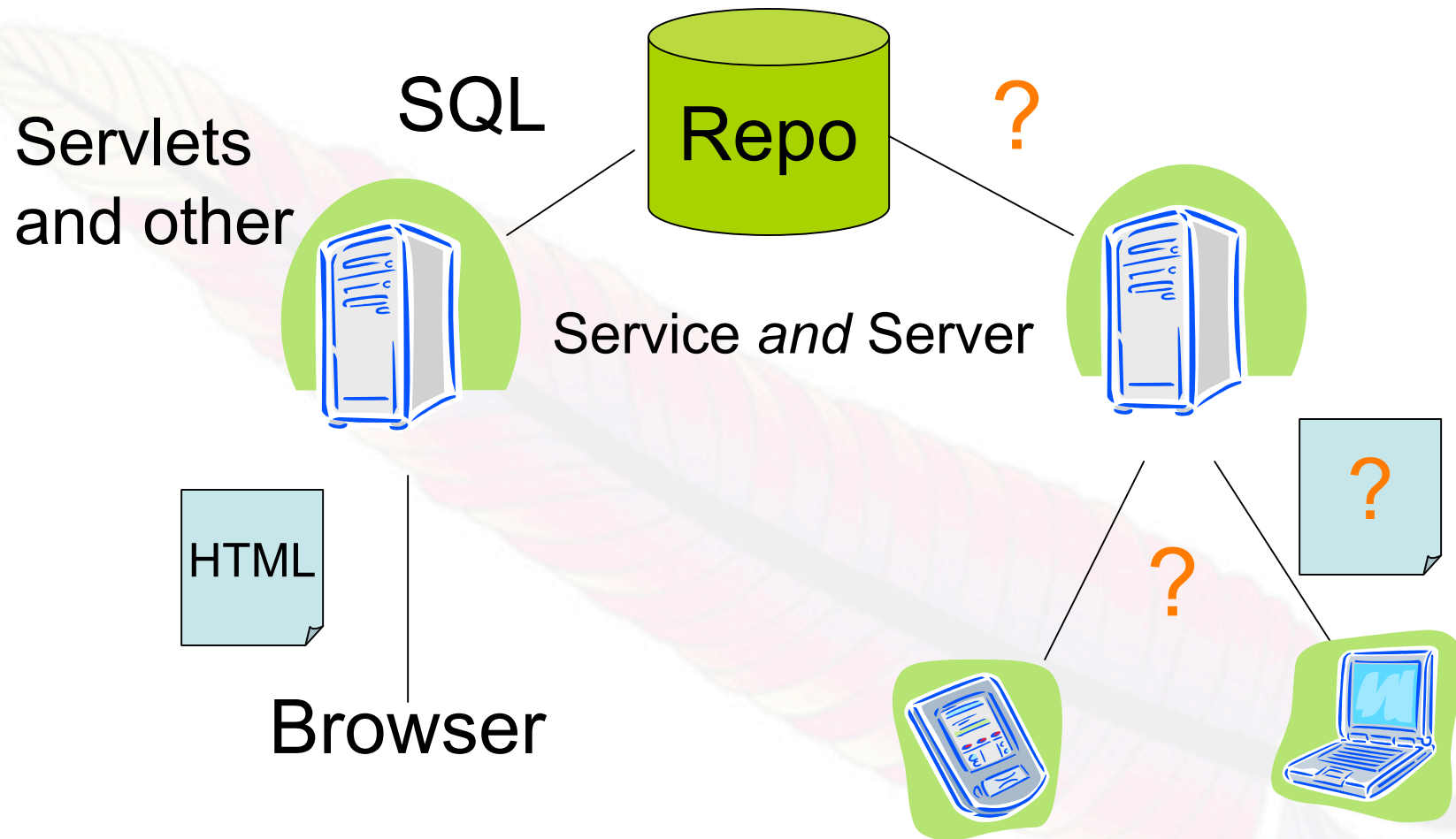
Access for Rich, Thin *and* Hip



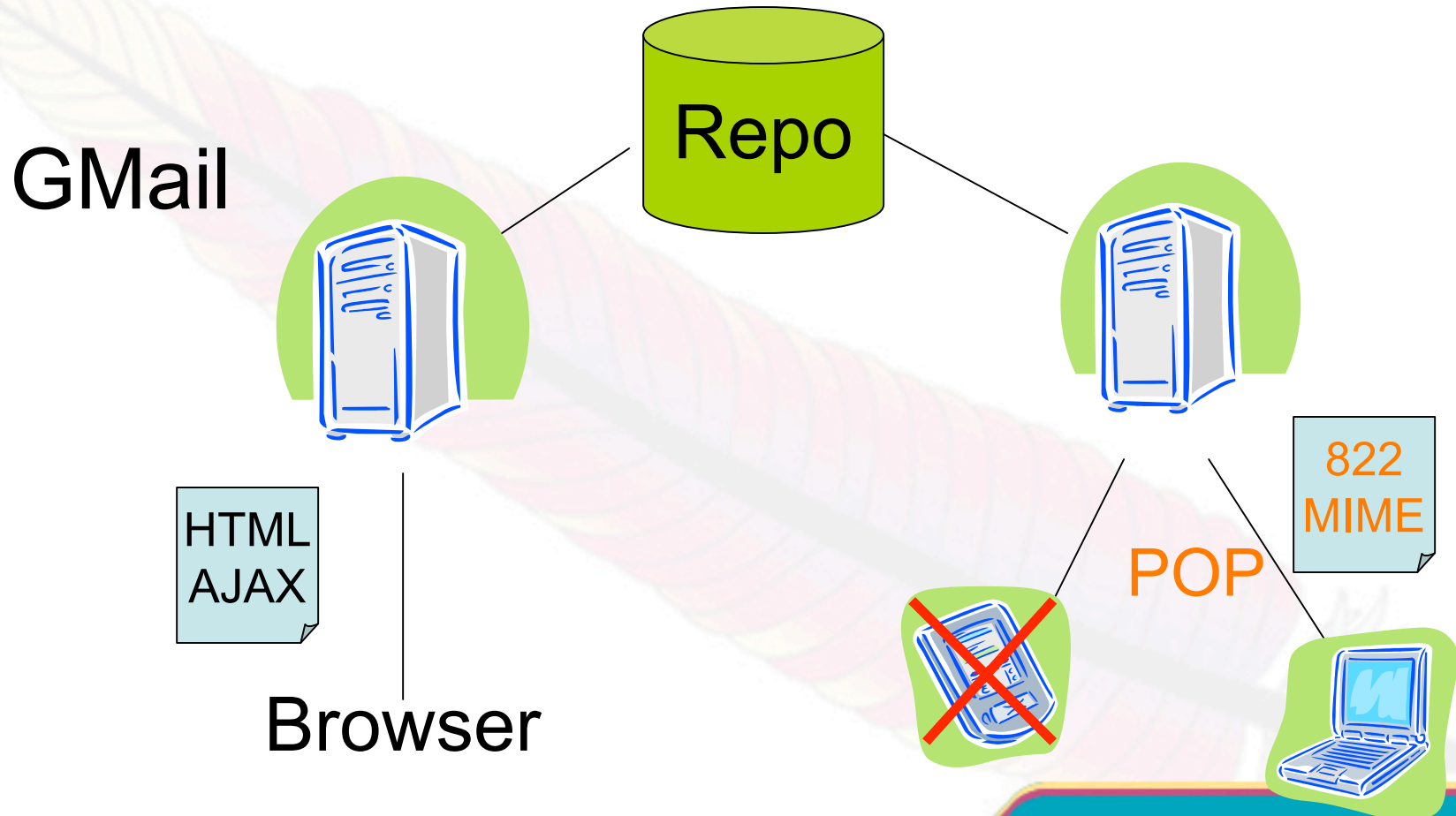




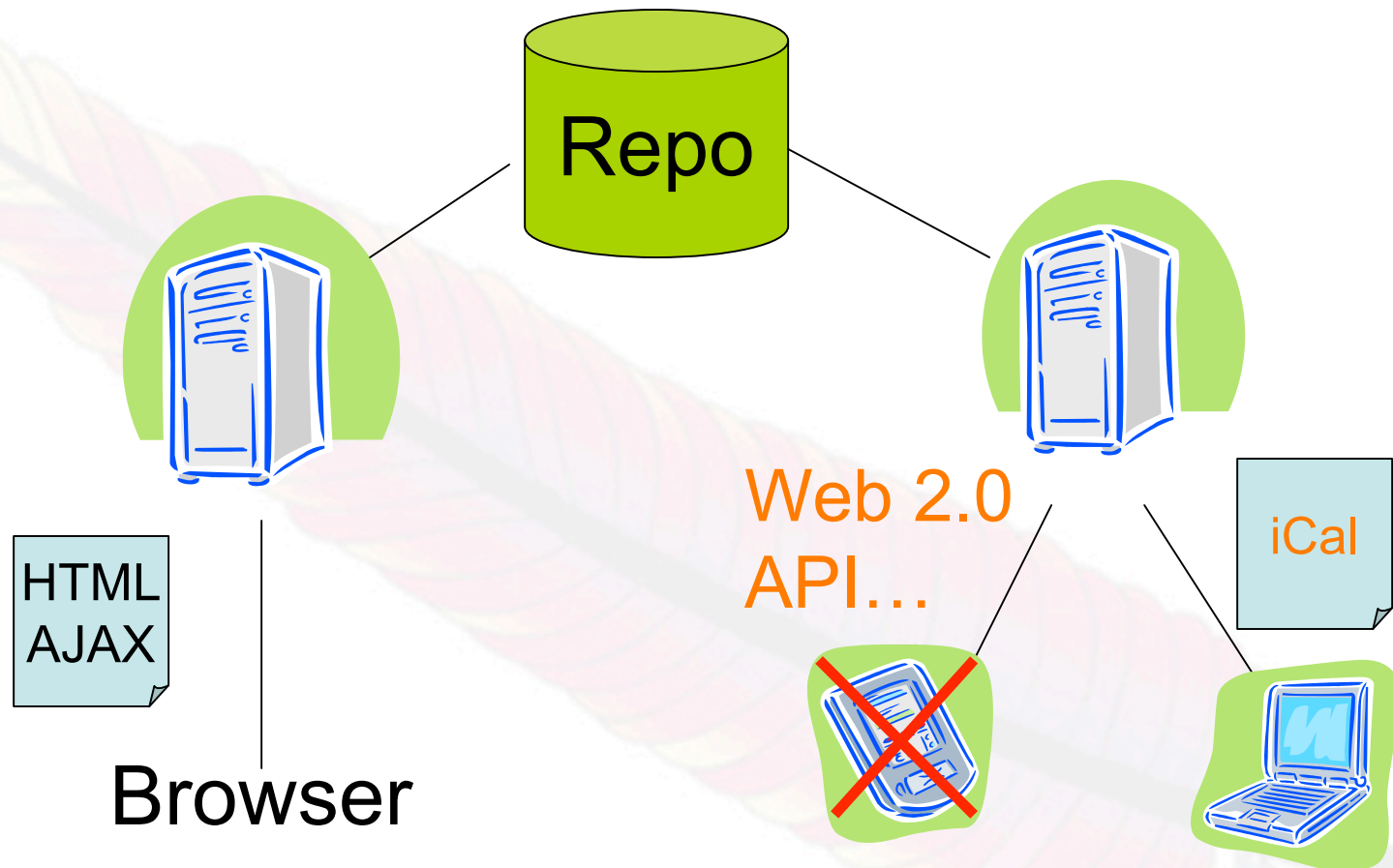
Control *and* Functionality



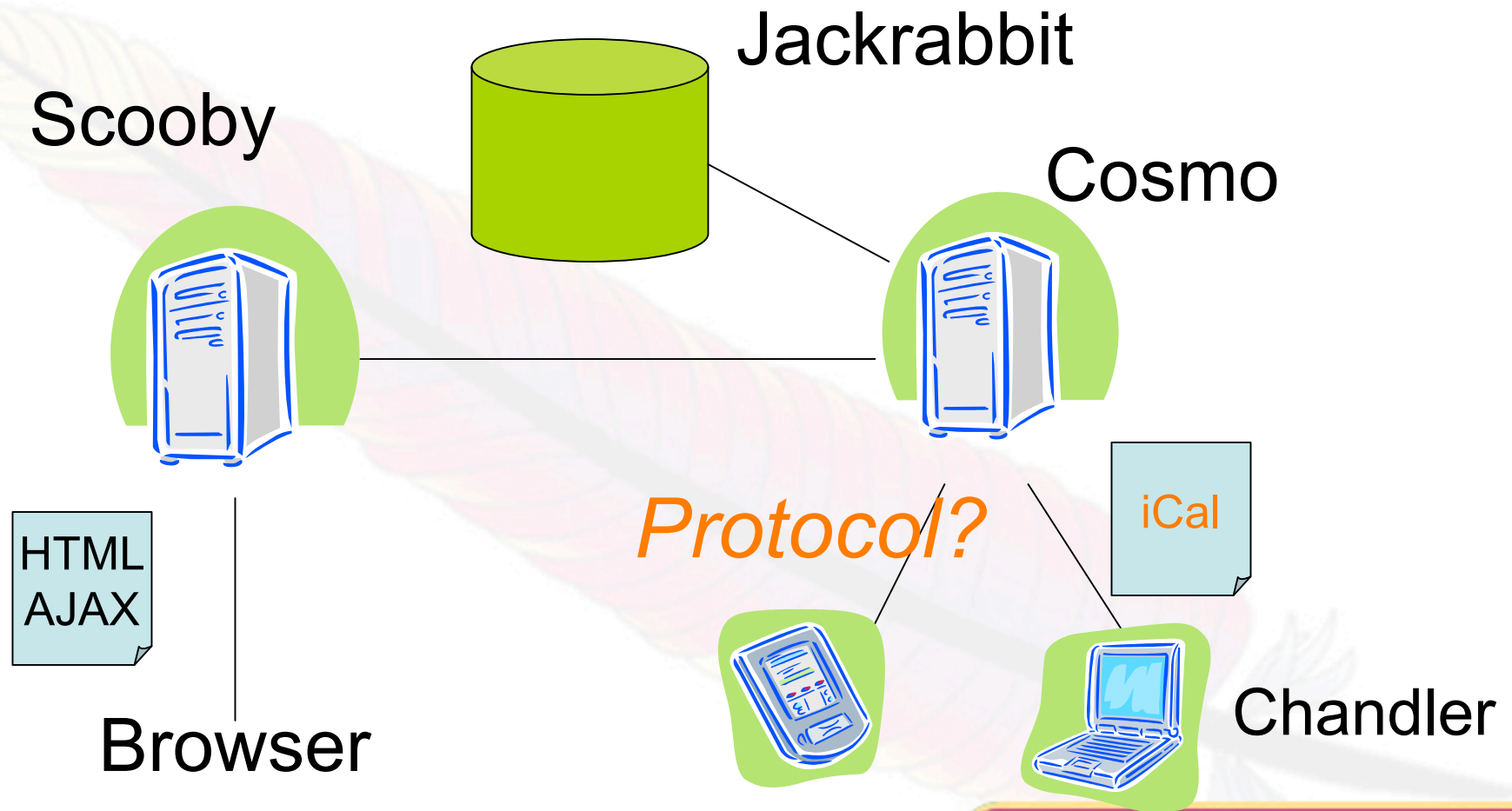
Example for email



Same for calendaring



We need a standard



How to do that for calendaring?

Need a calendar standard.

- CAP stalled after seven years
 - “Calendar Access Protocol” was connection-oriented, IMAP-like
- Start over again with new people, ideas
- Start with HTTP
 - Crucial for good Web application architecture

HTTP, WebDAV, CalDAV

RESTful...

- HTTP provides data model
 - Resources, addresses, download, upload, synch
- Add WebDAV:
 - Collection model, move and copy
 - Permissions: ACL
- Add iCalendar: 1 event per resource

What else do you need?

- Limitations to ensure interoperability
 - E.g. unique UUIDs within a calendar
 - Thus you need a specialized collection: **calendar**
 - And a way to create a calendar
- Specialized queries
 - Free-busy queries: server should calculate
 - Date-time range requests and recurrence expansion
 - For both client simplicity and performance

Personal and enterprise use cases

CalDAV

Open and interoperable protocol for calendar access and sharing

- IETF submission
 - IESG Approved
- Authors
 - me
 - Bernard Desruisseaux
 - Cyrus Daboo

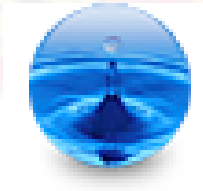
Calendar Consortium

<http://www.calconnect.org/>

- Publicity and pressure
- Interop testing
- Generate use cases, scenarios from customers
- Exploratory work
 - E.g. Public event schemas, venue information
- Free-busy challenge: coordinate with TOG and Boeing

CalDAV Implementations

Clients



Chandler



Sunbird



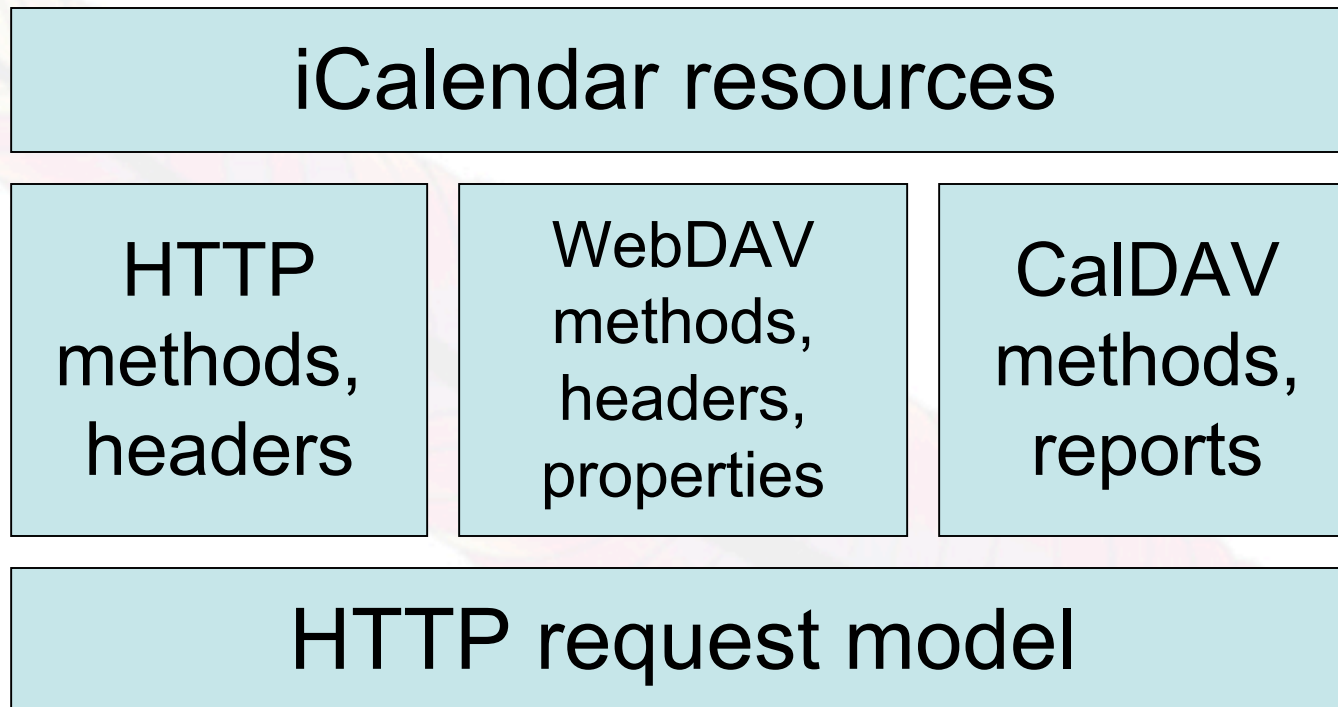
Evolution

Servers

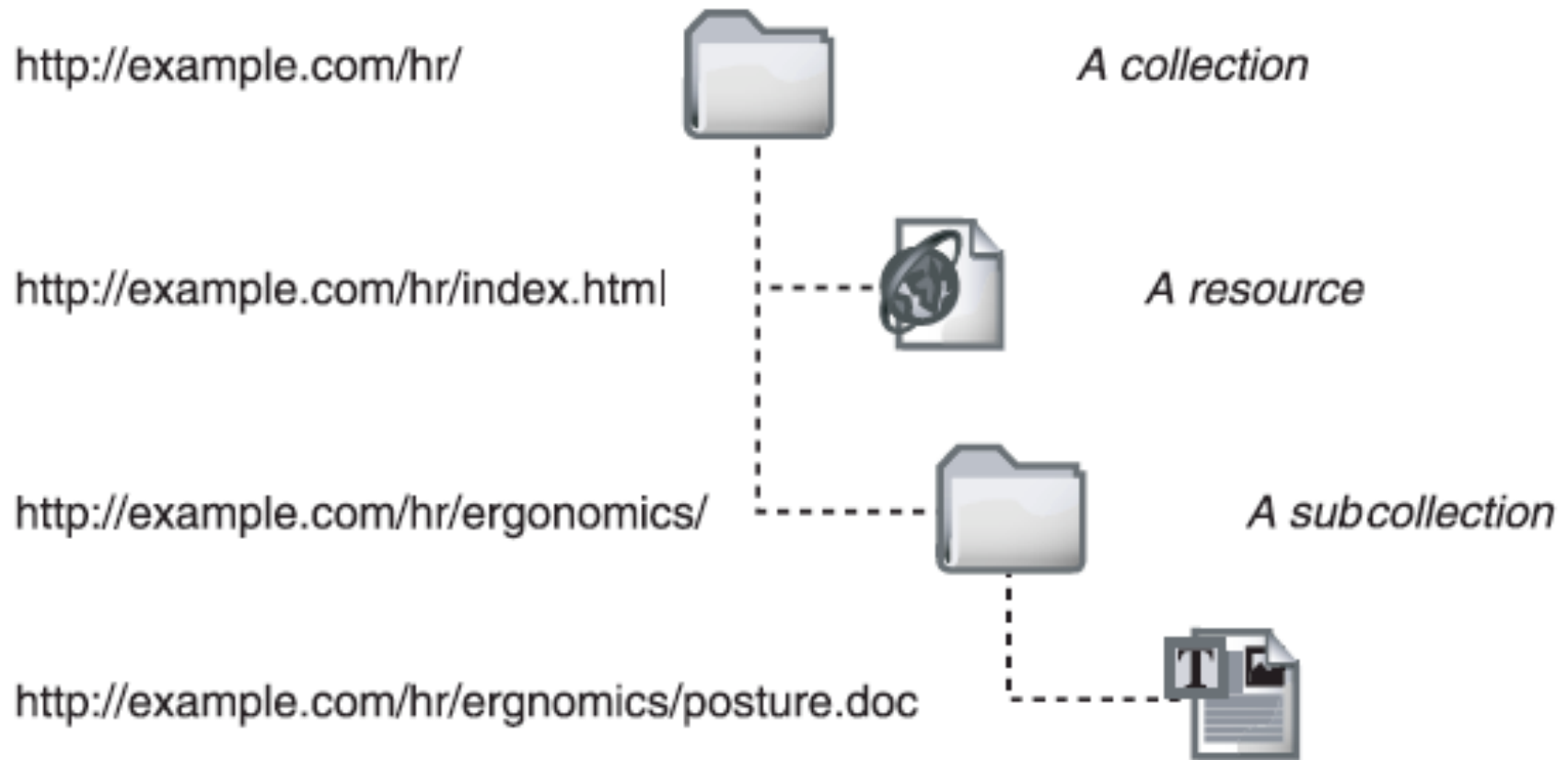
- Oracle
- Hula
- Bedework (University)
- Cosmo, Scooby

Choice!

Protocol Architecture



WebDAV data model



CalDAV data model



← Collection

Lunch with Jim
Friday 12pm

Ops meeting
Tuesday 2pm
Weekly

Staff meeting
Thurs 10:30
Weekly
Except Dec 6

Resources
(HTTP URLs)

Why iCalendar bodies?

- Rather retrograde syntax
- But we don't want to invent new syntax
- Put event info in WebDAV Properties?
 - Oops, can't reliably synchronize
- Use XML?
 - Sure, can do that too once somebody standardizes

Special Calendar features

- MKCALENDAR
- REPORT free-busy time
 - And a special permission
- REPORT events in a time range
 - Filter by properties as well as time
 - Required to browse instead of download
 - Handles recurrences

CalDAV Challenges

Events have recurrence patterns

... With exceptions

... In the context of a different timezone

... with daylight savings time!

Still, need a way to query

- “what events (re)occur this week” (wrt timezone)
- to support mobile devices

Permissions are hard

- Identify every resource to set permission
 - No standard inheritance model
- Identify user to grant permission to
 - Search by name?
 - Connect to LDAP?
 - Do they have an account
- Reconcile with existing permissions
 - Overwrite or add to?

Sharing without borders

- How to share with people outside my workgroup
- Cross site authentication?
 - Not yet -- and certainly not for rich applications
 - Works in livejournal -- OpenID

Login with your blog URL:
For example: happygirl.bloghost.com

Login

- Shibboleth, SAML -- but how to tie to HTTP?
- Pitch for WAE BOF

Tickets are Easy

Limited permission without authentication

- Calendar owner requests “read” ticket
- Server creates opaque token
- Calendar owner emails ticket to friends
- Can later revoke

Used in Cosmo, Chandler

Next Steps -- OSAF

- Chandler 0.7: lower barriers for calendar users
- Cosmo 0.5: last steps of CalDAV support
- Scooby 0.2: experimentally usable
- CalDAV client libraries (python, java)
- iCalendar library maintenance

Contributions and volunteers welcome

Next Steps -- Other

- Finish CalDAV
 - IESG Evaluation
 - Work on CalDAV Scheduling
 - More Interop testing at CalConnect
- Revise WebDAV: many bugs worked out
- Work on HTTP Authentication
- Revise iCalendar in CALSIFY WG
- Components for WebApp/JCR integration?

Volunteers welcome all around

Thank-you

Questions?

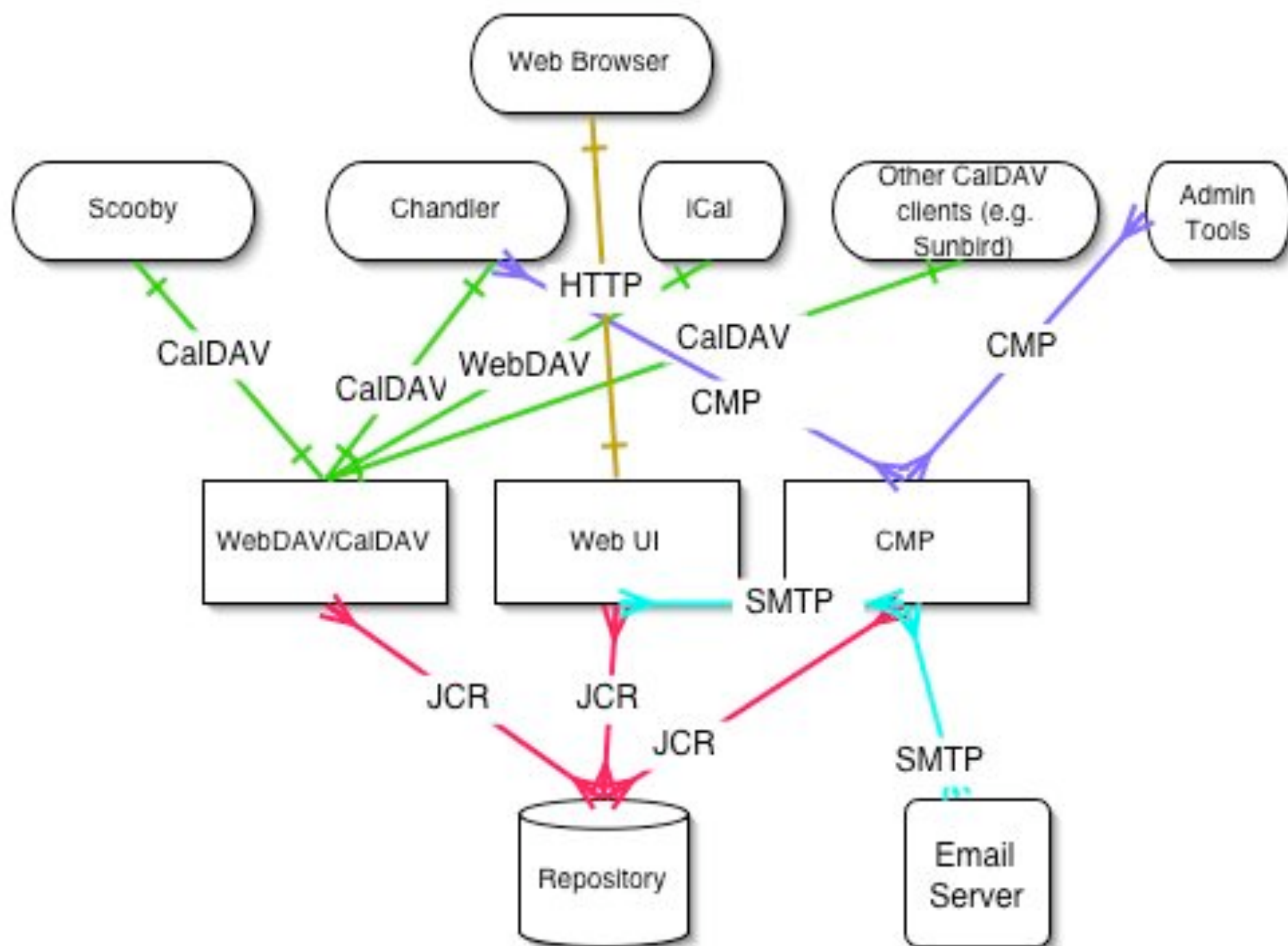
Links: wiki.osafoundation.org/Journal/ApacheConDublin



ApacheCon
Europe 06

Bonus slides

- Cosmo architecture
- GroupDAV comparison
- WebCAL comparison
- What about RSS, Atom, SSE



What about GroupDAV?

Simple Sharing conventions for WebDAV

- Very similar structure
- More general solution: any “groupware object”
- No scheduling, calendar queries, recurrence
 - ➡ For CalDAV we wanted reasonable adoption by companies like Oracle, MeetingMaker, thus had to develop some specific calendar features

What about WebCAL?

Apple's ad-hoc calendar pub/synch to WebDAV

- Extremely simple: 1 calendar, 1 URL
 - Architecture doesn't support mobiles well
 - Not designed for public calendars, sharing
- Mostly compatible with CalDAV
 - Some servers support both and convert
 - Some clients support either -- same transport
- Again, no scheduling, free-busy, or queries

RSS, Atom, SSE, GData

- Great formats for syndicating event info
 - But difficult to grow to replace CalDAV
- Users shouldn't have to choose
 - Thus, servers should do **both** CalDAV and syndication
 - Automatically create blog posts for event changes
- Plans for Cosmo to support this