

ZotPortal:

Integrating Legacy Systems and Planning for the Worst Case

Erik A. Olsson

erik.olsson@uci.edu



STUDENT AFFAIRS

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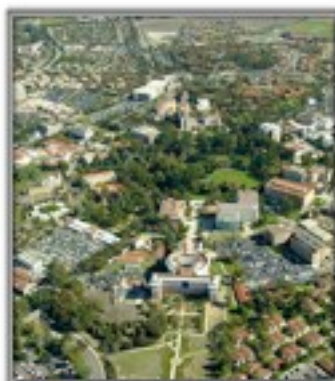
University of California, Irvine

In between San Diego
and Los Angeles

30,000 students

Founded 1965

Jasig member
institution (every year)



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Agenda

Some history

"Selling" the Prototype

Connecting the silos

Preparing for the worst-case

Plans for the future

Q&A

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A Quick History

Staff Portal - uPortal based (2001)

Started many times

Student Portal committee (2005)

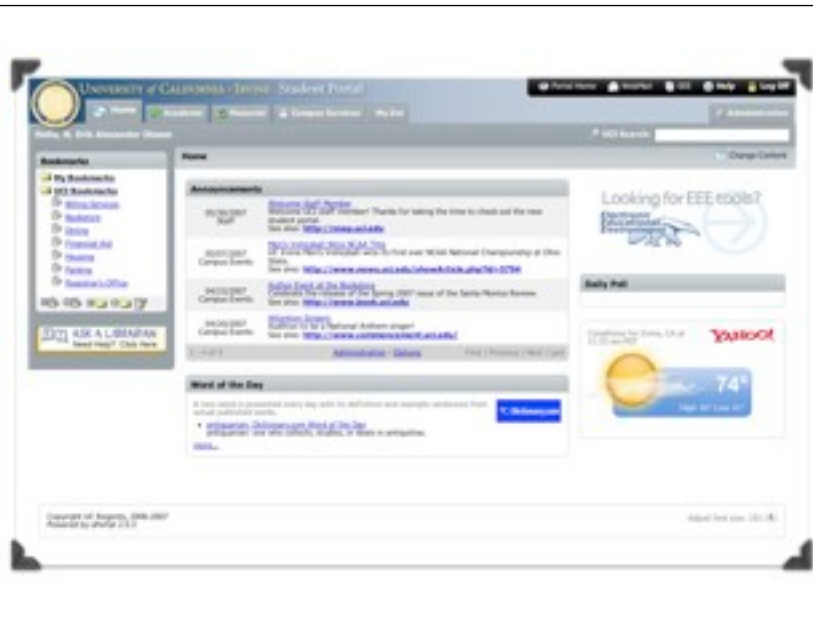
2006 FTE hired

Early 2007 first prototype

Based on MyVT branch



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“Selling” the Prototype

The traveling road-show

50+ presentations: libraries, academic departments, student groups, managers, chancellor

Input from many stakeholders

Identified the requirements

Wiki

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Prototype to Reality

Approval to proceed

Decide on a version
2.5.3 → 2.6.1 → 3.0.1

ALM → DLM

Table-based → DIV-
based

Something to use a
development base



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Usability

Followed User-Centered Design (UCD) principles

Made personas, user stories, etc

Mock-ups in Illustrator

When you have something to test, test it (with
incentives)

Discovered several problems

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Usability



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Test Results

Studies & survey results

Students want: course enrollment, course management system (EEE), financial aid, bookstore, admissions & "fun stuff."

UI problems mostly fixed by uPortal 3 release

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Connecting the Silos



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Connecting the Silos

Difficulties

- Disparate standards
- Disparate skill sets
- Willingness to participate
- Availability

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Approaches

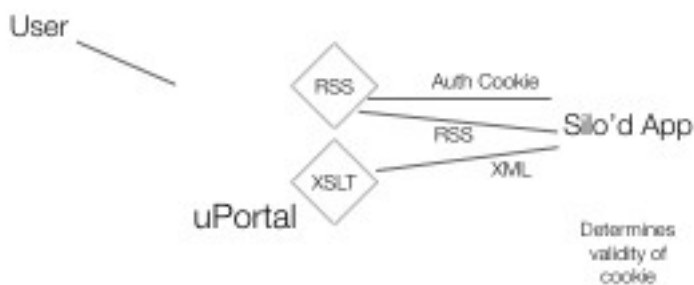
1. Authenticated RSS/XML
2. IP-restricted script with parameters (or web proxy)
3. Authenticated Screen Scraping
4. Web-services SOAP/WSDL

Avoided:

- Direct database

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Approach 1: RSS/XML



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Approach 1: RSS/XML

Used for:

“My Admissions Application” channel

“MyEEE Tasks” channel (course management)



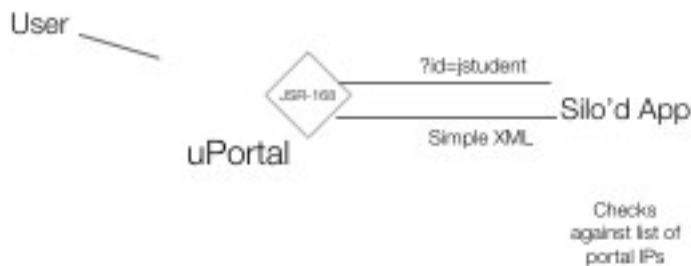
Work involved:

Install XSLT file, setup channel,

Small portlet, pull in the RSS

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Approach 2: IP-restr. script



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Approach 2: IP-restr. script

Used for:

“My Housing” portlet

Needed “campus_id”

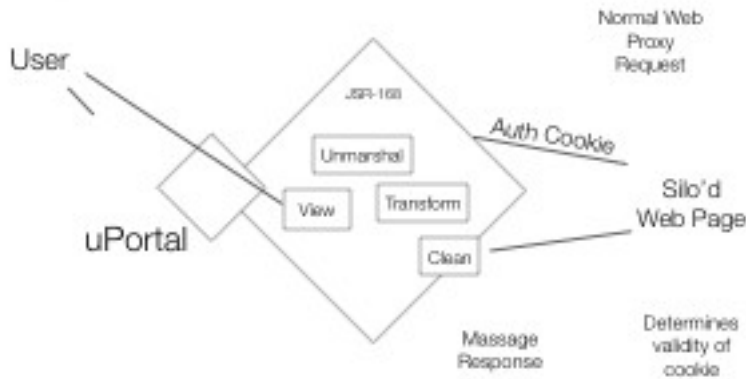


Work involved:

Create simple portlet to fetch & parse simple response codes

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Appr. 3: Auth. Screen Scrape



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Appr. 3: Auth. Screen Scrape

Used for:

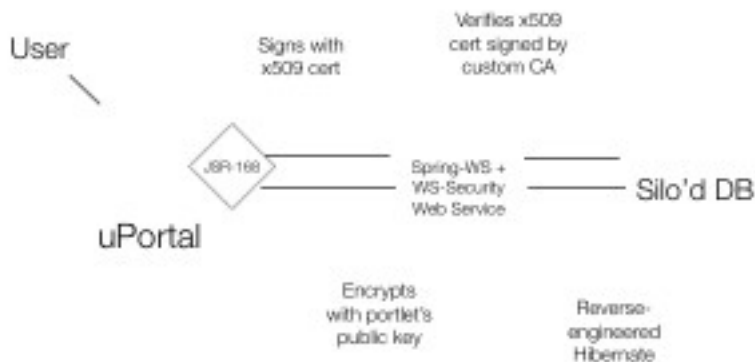
- Library portlet
- Fetching bookstore books

Why bother?

- Department uses vendor product with bad HTML
- Want to show less than whole page and rewrite significantly (otherwise WPP works)

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Approach 4: Web-service



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Approach 4: Web-service

No early progress

Gained DB access, basic schema docs

Hibernate "rev-eng" ant scripts

Design XSD

Implement service and deliver to department

Other departments now using

Demo of this portlet

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My Courses (demo)

```
Enrolled Classes
-----
Code Dept Num Title Type Sec Days Hrs Days Time Location Instructor
44700 MATH 017 MATH0170 0177 2000 LEC A 4.0 00 Mo We Fr 11:00-11:50p SS 014 OSBRO, P.
44701 MATH 017 MATH0170 0177 2000 LAB 20 2.0 00 Tu Th 11:00-11:50p SS 014 STAFF
44702 MATH 075L MATH 075L 0200 LAB 20 2.0 00 Tu Th 1:00p-1:50p M200 018 OSBRO, P.
44703 MATH 110 100 MATH10A 017 2000 LEC A 4.0 00 Mo We Fr 1:00-1:50p SS 014 OSBRO, L.
44704 MATH 110 100 MATH10A 017 2000 LAB 20 2.0 00 Tu Th 1:00-1:50p SS 014 STAFF
44705 MATH 110 MATH 100B0100 LEC A 4.0 00 Mo We Fr 11:00-11:50p SS 014 OSBRO, P.
44741 MATH 110 MATH 100B0100 LAB 10 1.0 00 Tu Th 11:00-11:50p M200 014 STAFF
Total Section: 11.0
```

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Preparing for the Worst Case



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Requirements

Potential combined traffic of Staff Portal & Course Management System (EEE)

Full redundancy

Extremely low cost

Need:

- Load balancer/app switch (redundant)

- Reliable hardware (redundant)

- Redundant data centers

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Products Considered

Barracuda, very cheap, light-duty, not scalable

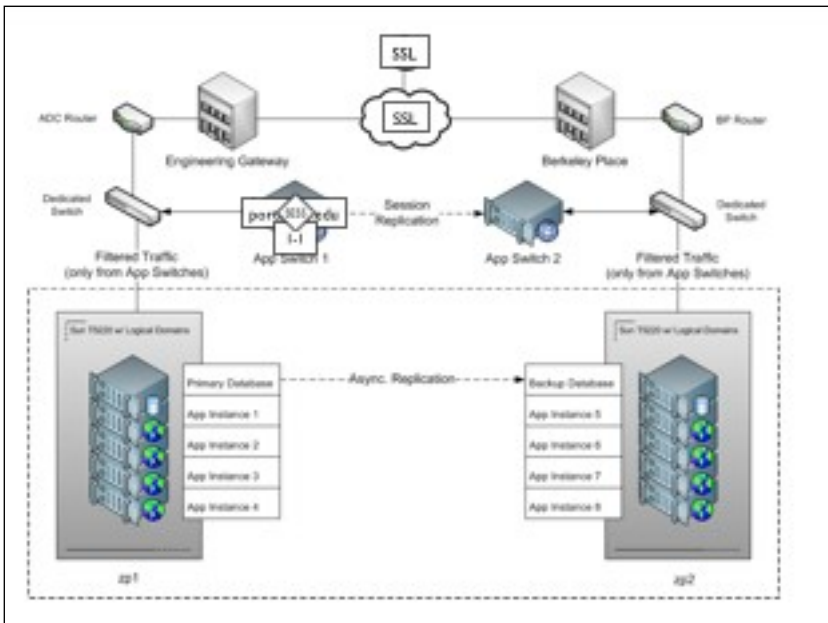
F5, easy to use, very expensive & not scalable

Cisco, cheap & scalable, difficult to use

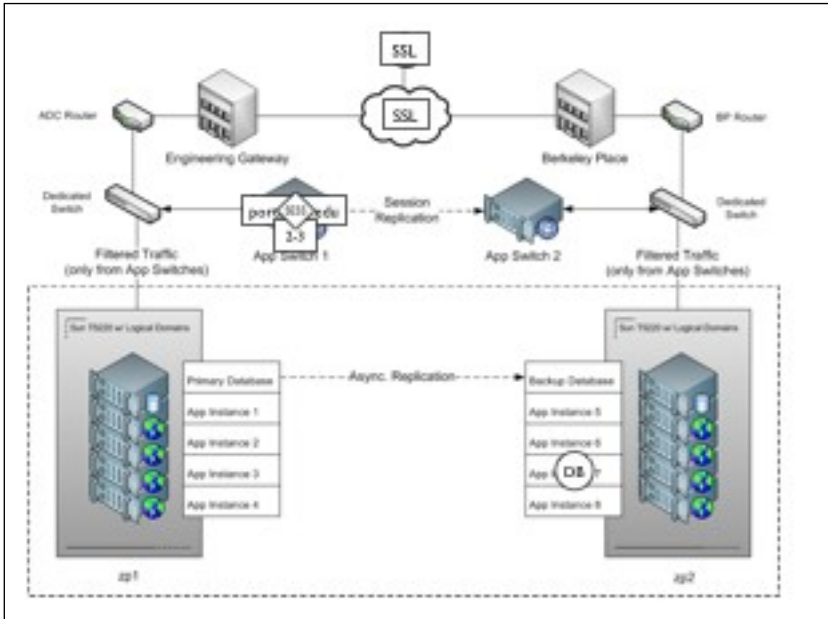
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Normal Operation

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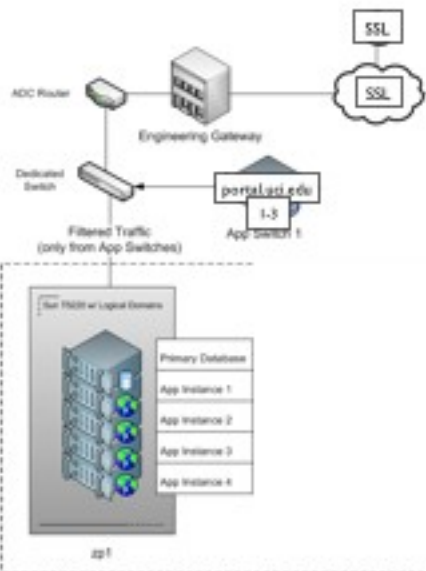


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Disaster 1

Berkeley Place goes down
 Secondary location
 100% uptime maintained

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Disaster 1 (BP) Considerations

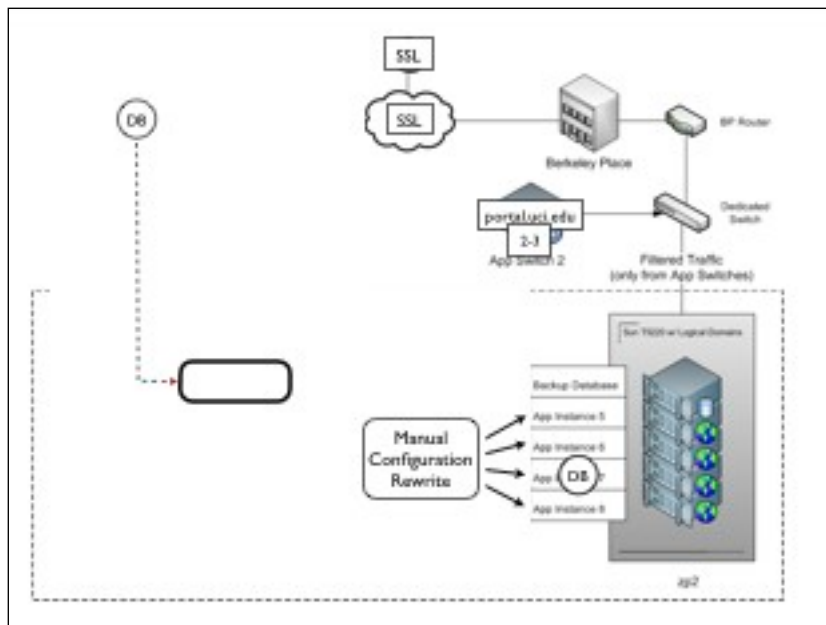
- Primitives are still up
- When BP comes back up, primitives unaffected
- No manual intervention required
- 100% uptime

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Disaster 2

- Worst Case
- ADC (Engineering Gateway) goes down
- Primitives go down

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Disaster 2 (ADC) Considerations

- Secondaries are now primaries
- Manual DB configuration change
- Depends on human response time
- Requires manual configuration change once ADC is back up

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Future Improvements

- Send DB traffic through App Switches
 - No manual configuration changes required
 - Protection against primary taking over automatically when restored
- App switch supports multiple contexts

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Since We Launched

Hardware failure on secondary server

Not noticed

App switch worked

Kernel panic in secondary server's primary domain

Killed networking

uPortal instances lost network connectivity

App switched worked

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Questions?

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