Plone: FNAL Experiences with Content Management

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CSI – Core Servers & Infrastructure

- Responsibilities
  - Windows Infrastructure
  - Web (Apache & IIS)
  - Storage
  - Scientific Linux Fermi
  - Email
  - Calendar
  - Backups
  - AFS

User Requests

- Multiple Wiki Support
- Document Management
- Issue Tracking
- Restricted Web site design
- Workflow tools

Support multiple web applications or provide configurable, extensible framework?

What Is Plone?

- Plone is a Content Management System designed for:
  - a document publishing system
  - workflow tracker
  - portal server
  - groupware collaboration tool

Why Plone?

- Open source
- Supported
  - ~100 developers on the Plone Development team
  - 3rd Party support available
- Easy to use
- Easy to install
- Built on CMF on top of Zope

Why Plone?

- Database Interoperability
  - most relational database systems, open source and commercial

- Secure
  - Multiple methods to authenticate
  - Folder and document permissions
  - Sandbox structure

Why Plone?

- Multiple protocols
  – FTP, XMLRPC, HTTP and WEBDAV
- Extensible
  – Numerous plug-ins for features and content types
- Platform Independent
  – Runs on Windows, Linux, Mac OS X, FreeBSD and Solaris

FNAL Uses

- Scientific Linux
  - Documentation management
  - Restricted Access
  - Bug Tracking
  - Password authentication
  https://www.scientificlinux.org/

FNAL Uses

- Windows Policy Committee
  - Documentation management
  - Restricted Access
  - Form approval process
  - FNAL Kx509 certificate authentication
  https://plone.fnal.gov/WinPol/
  https://plone.fnal.gov/P1/WinForms

FNAL Additions

- Authentication
  - Fermi Kerberized X509 certificate
  - DOE Grid Certificates
  - LDAP Integration
- System Logbooks
- Committee Request Approval
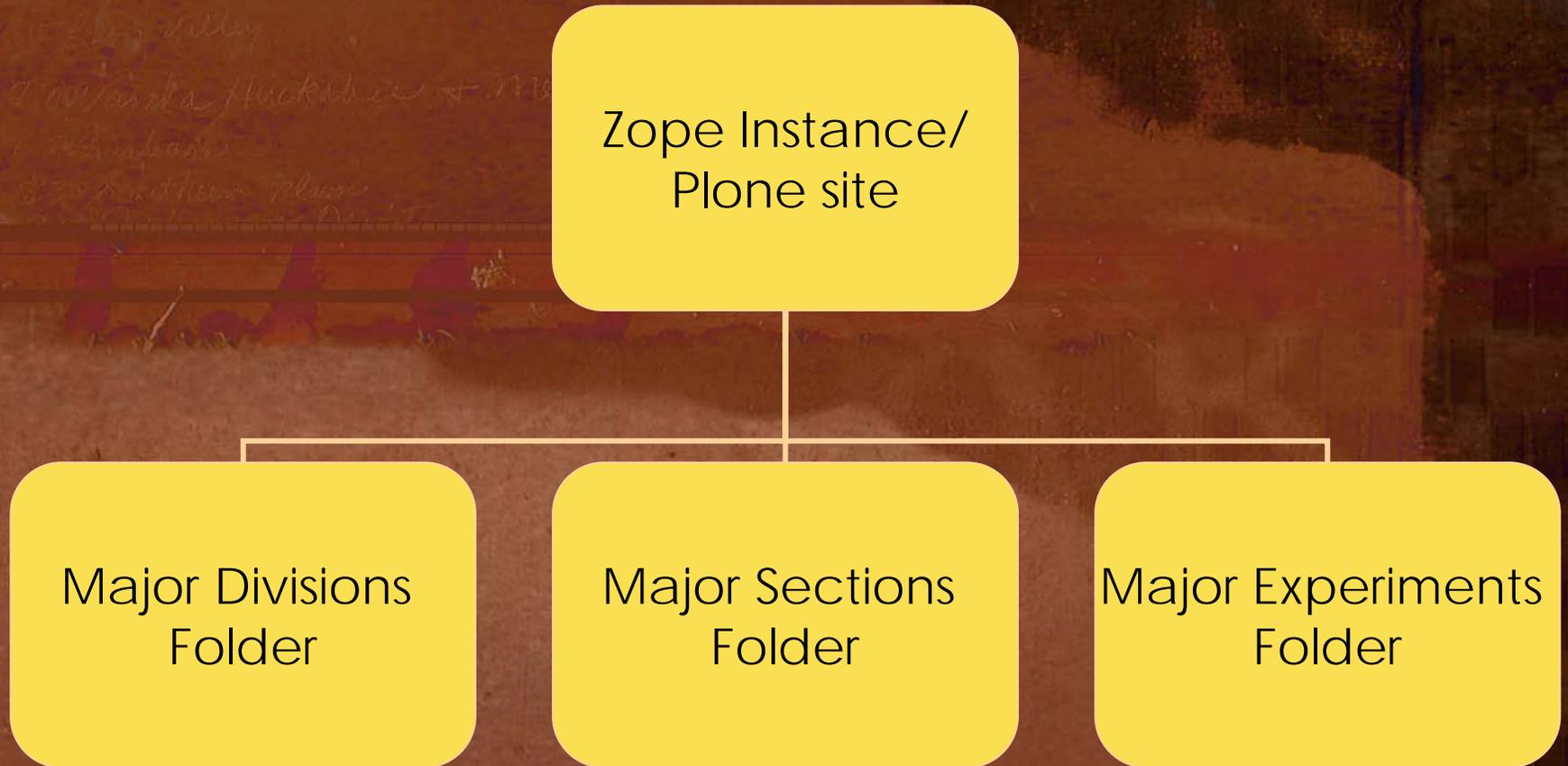- Date Range folder (Agenda, Gant Chart, etc. w/content)

FNAL Additions

- Workflow
  - Request submittal
  - Review/Vote
  - Approval
  - Yearly reminder

FNAL Design

- Infrastructure Server
  - 24 x7 hardware
  - Based on lab organization chart
- Site Server
  - 24 x7 hardware
  - Special Projects, International Sites
- Test Server
  - Standard hardware
  - "Sand box"

FNAL Design – *Infrastructure Server*

Zope Instance/
Plone site

Major Divisions
Folder

Major Sections
Folder

Major Experiments
Folder

FNAL Design – Infrastructure Server

- One Plone site running on top of a single Zope instance with folders for major sections, divisions and lab experiments
  - Control over portlets
  - Custom Style Sheets (colors/layout)
  - Full control over content

FNAL Design – Infrastructure Server

- Inherit Authentication Rules (users and groups)
- Inherit Plug-ins
- Shared Search across all folders in site.

The Infrastructure server has 6GB of memory

FNAL Design – *Site Server*

FNAL Design – Site Server

- Multiple Plone sites running on top of a single Zope instance. This system is used by projects that reach outside the lab or where specific Plone module development is required.
  - Control over portlets
  - Custom Style Sheets (colors/layout)
  - Full control over content
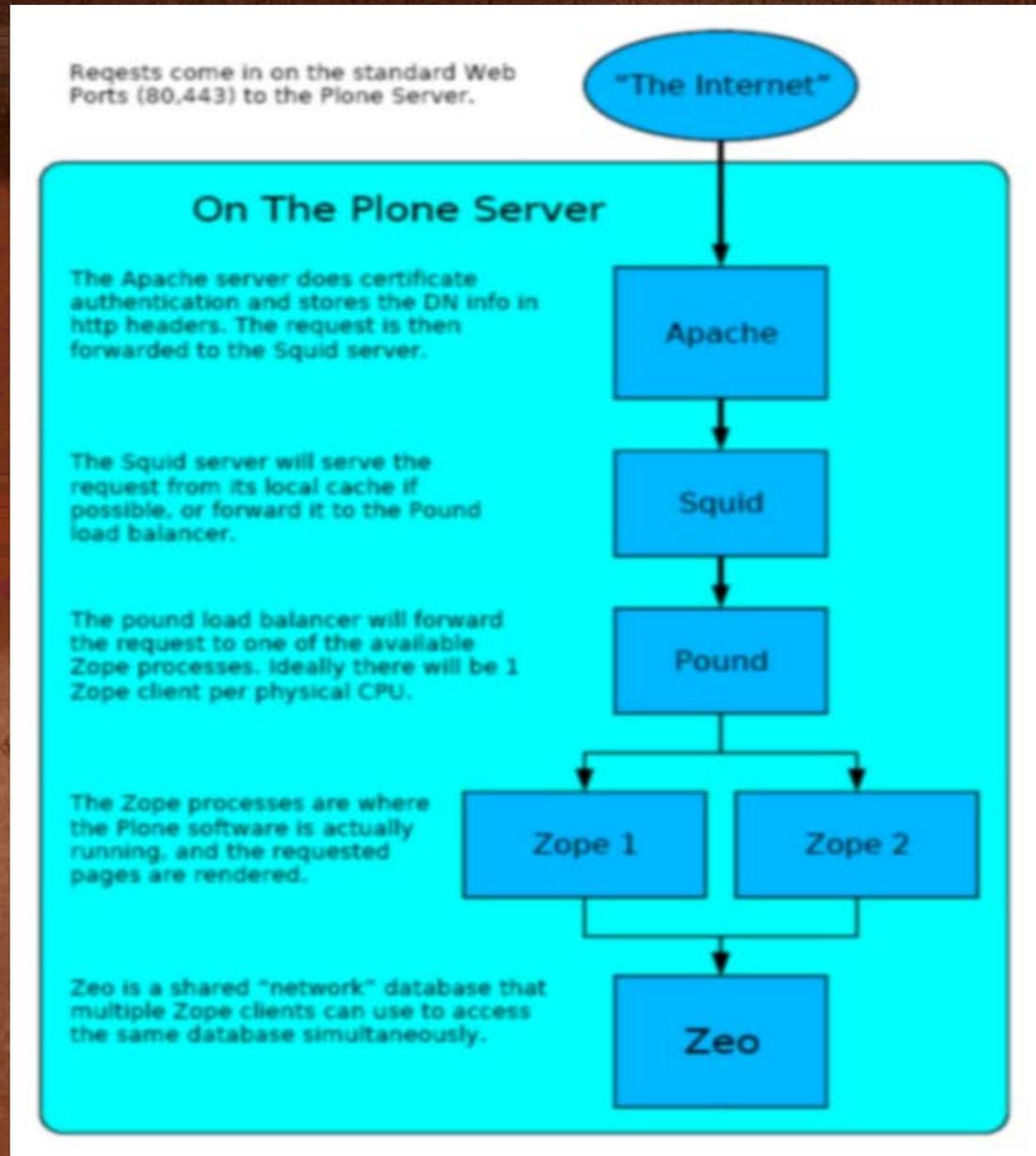
FNAL Design – Site Server

- – Control of Authentication rules (including users and groups)
- – Ability to choose Plugins (can't handle different versions of same plugin though)
- – Localized Search for site

The Site server has 2GB of memory

Under The Hood

- SSL authentication via Apache
- Squid Caching
- Load Balancing
- Direct DB access without affecting ZOPE performance

Reqests come in on the standard Web Ports (80,443) to the Plone Server.

"The Internet"

On The Plone Server

The Apache server does certificate authentication and stores the DN info in http headers. The request is then forwarded to the Squid server.

Apache

The Squid server will serve the request from its local cache if possible, or forward it to the Pound load balancer.

Squid

The pound load balancer will forward the request to one of the available Zope processes. Ideally there will be 1 Zope client per physical CPU.

Pound

The Zope processes are where the Plone software is actually running, and the requested pages are rendered.

Zope 1 **Zope 2**

Zeo is a shared "network" database that multiple Zope clients can use to access the same database simultaneously.

Zeo

FNAL Support

- Customers are required to provide at least one (1) manager for their folder or site.

- The manager(s) is/are responsible for:
    - Learning about Plone
    - Configuring the Plone site/folder to customer specifications
    - Maintaining plug-ins that they have requested

FNAL Support

- CSI provides:
  - server support
  - authentication method
  - folder/site creation
  - Plug-in recommendation, testing and installation
  - instance configuration help

FNAL Support

- 3rd party Support
  - Examining 3rd party support for plug-in testing and development and instance configuration help.

Lessons Learned

- Customisation beyond a certain point has a steep learning curve.
- Plone likes memory. Lots of memory
- Plone is slower than static web pages
- Better to have one Zope instance and multiple Plone sites than multiple Zope Instances and Plone sites (on one box)

Lessons Learned

- Training is a good idea!
- Search doesn't work across separate Zope instances
- LDAP integration with Active Directory painful if there are too many groups and users

In Conclusion

- Useful, very flexible system
- Well worth the learning curve
- Performs well if set up right
- Early performance issues scared off some users
- We have just scratched the surface of its potential