GeoNode Architecture
Wrangling $100 Million Worth of FOSS to Make SDI Building a Walk in the Park

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Hi Everybody!

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  - Developer, OpenGeo
  - Technical Lead, GeoNode
  - Contributor to GeoServer
  - User of GeoExt, OpenLayers, GeoNetwork, PostGIS, ...
- dwins on github, freenode, etc.
What's GeoNode?

• SDI + Web 2.0 = SDI 2.0
What's an SDI?
S means Shared*

- Multiple organizations participate

* Okay, actually it means “Spatial.” but you know about that already...
D means Data

• Focus on describing data (Metadata)
• Up to providers to figure out how to distribute
  – Web
  – Email
  – Truck full of hard drives
I means Infrastructure

• One SDI server (and one admin) provide service many users
• Users just* focus on the metadata

* For suitably large values of “just”
What's Web 2.0?
Web 2.0 means Interoperability ("Mashups")

- Standard protocols
- Data dumps
- (rest) APIs
Web 2.0 means User-centric

• Accounts
• Profiles
• Activity streams
Web 2.0 means Collaboration

• Comments
• Tags
• Reuse
POP QUIZ!!
SDI + Web 2.0 = ???
GeoNode
GeoNode
Make publishing easy
• Upload data through the web
• Edit metadata in the same place
• Restrict access if you need to
GeoNode
Make publishing useful

• **Convert** to many output formats
  – Google Earth works immediately after upload

• **Build maps** combining uploaded layers
  – Link, embed, download

• **Style layers** in context
GeoNode
Collect metadata

• Provided through browser editor
• Associated with users
• What maps is a layer in?
• What tags do other users add?
Nuts n' Bolts

• Search
  – from GeoNetwork

• Tiles and conversion
  – from GeoServer

• Users and web interface
  – from Django

• AJAX and “app” interface
  – from GeoExt
Bigger Picture

GeoNode

django

GeoNetwork OpenSource

GeoServer

GeoTools

Spring

GeoExt

OpenLayers

Ext JS

GXP

community plugins

PostGIS

OGR

PROJ.4

GEOS
Uploads

- Django handles forms/uploads
- GeoServer handles WMS/WFS
- GeoNetwork handles CSW
Adapting GeoServer Security

• Django user table is authoritative
• GeoServer verifies actions with Django before executing
• No propagation time for user info
Adapting GeoServer - GeoProcessing

- WPS still in the pipeline
- Interim solution: REST services
  - Generic REST Processing?
Adapting – GeoExt/Django AJAX Services

• Not really adapting – Ext's bread and butter
• Django services as needed for styles, users, metadata records...
• Preload map configurations, etc.
Adapting – GeoNetwork

• Slimmed-down GMD schema
• Automated permission setting from Python
Giving Back – GeoServer

• WMS Attribution
• Pluggable security system
• Bugfixes
• gsconfig.py
Giving Back – GeoServer

WMS Attribution

• WMS Attribution – advertises provider information in WMS capabilities

• Added to GeoServer for GeoNode use
Giving Back – GeoServer Security System

• Improved support for swappable backends
• GeoServer respects Django Users
Giving Back – GeoServer

- `gsconfig.py`
  - Python module for reading and writing GeoServer configuration using RESTConfig extension
  - Created to support GeoNode, but useful outside that context
  - Admin autopilot
Giving Back – GeoExt

• Printing Components
• Bugfixes
• GeoNode runs directly off GeoExt trunk
• Additional widgets in GXP (GeoServer-specific)
Giving Back - OWSLib

• WMS Attribution
• CSW Improvement
GeoNode

• SDI
• Web 2.0
• Open Source
Questions?