



GeoNode Architecture

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

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Hi Everybody!

- David Winslow
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?



A vertical strip on the left side of the slide shows a topographic map with contour lines and labels such as 'LEDGE', 'WEST', 'TILLIES', and 'D G'.


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!!



A vertical strip on the left side of the slide shows a topographic map with contour lines and labels. The labels 'LEDGE', 'WEST', 'TILLIES', 'R', 'D', and 'G' are visible, oriented vertically. The map is in black and white with some red contour lines.

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



GeoExt

HTTP



django

HTTP

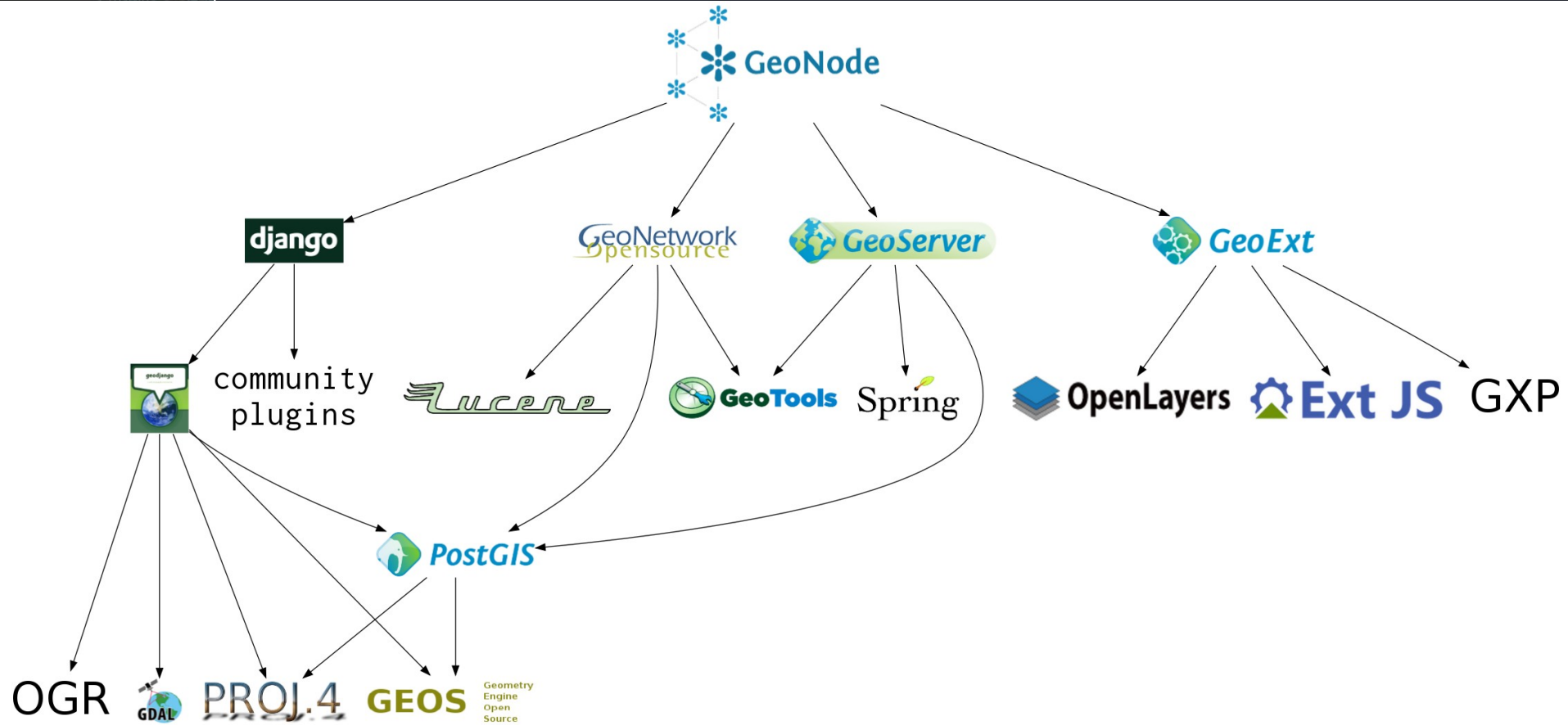


GeoServer

HTTP

GeoNetwork
OpenSource

Bigger Picture





Uploads

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



django

django



django



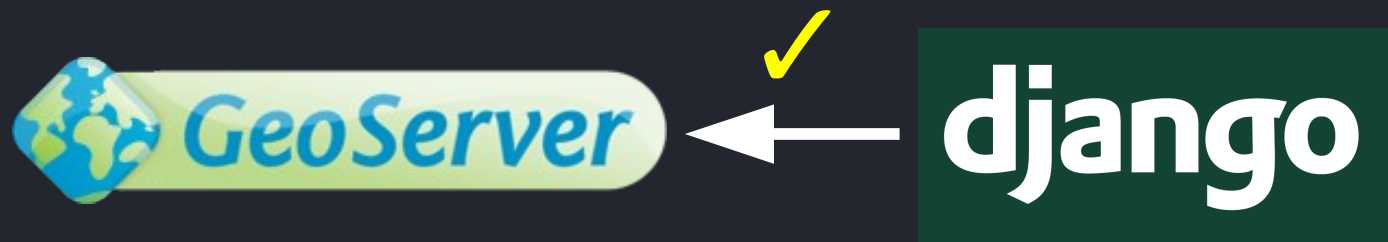
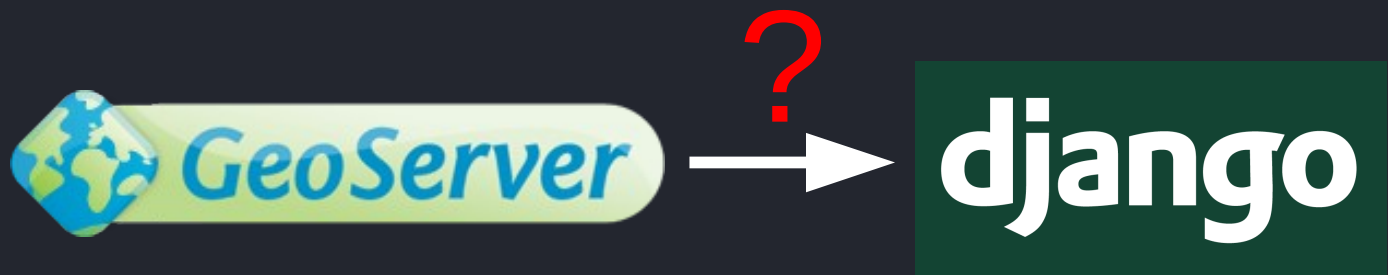
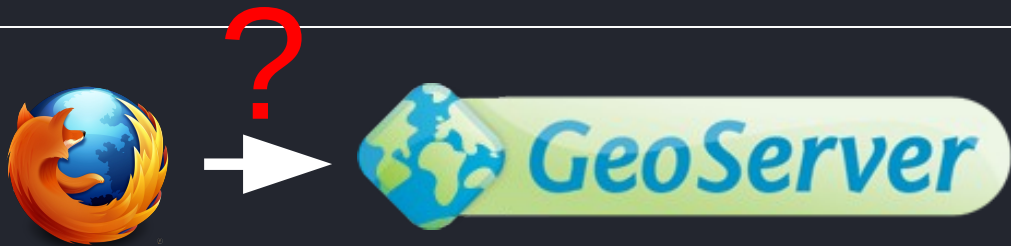
django

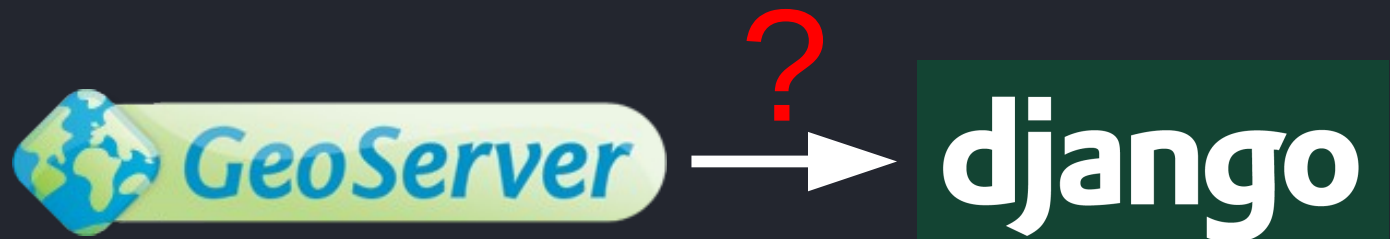
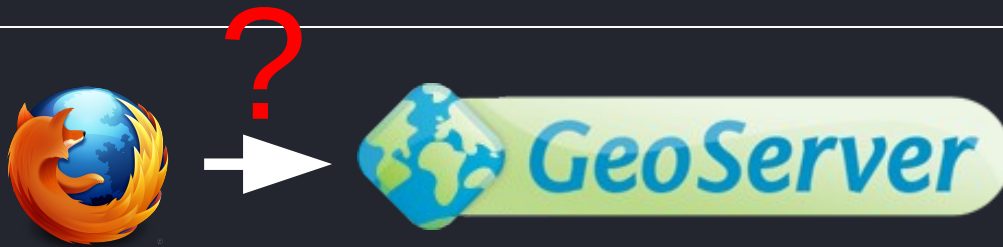




Adapting GeoServer Security

- 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



django

django



GeoNetwork
OpenSource



django




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)

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Giving Back - OWSLib

- WMS Attribution
- CSW Improvement



GeoNode

- SDI
- Web 2.0
- Open Source

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Questions?