



# 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.

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

# 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!!



A vertical strip on the left side of the slide shows a topographic map with contour lines and labels. The labels include 'LEDGE' at the top, 'WEST' in the middle, 'TILLIES' below it, and 'RIDGE' at the bottom. The map is oriented vertically.

SDI + Web 2.0 = ???

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# 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

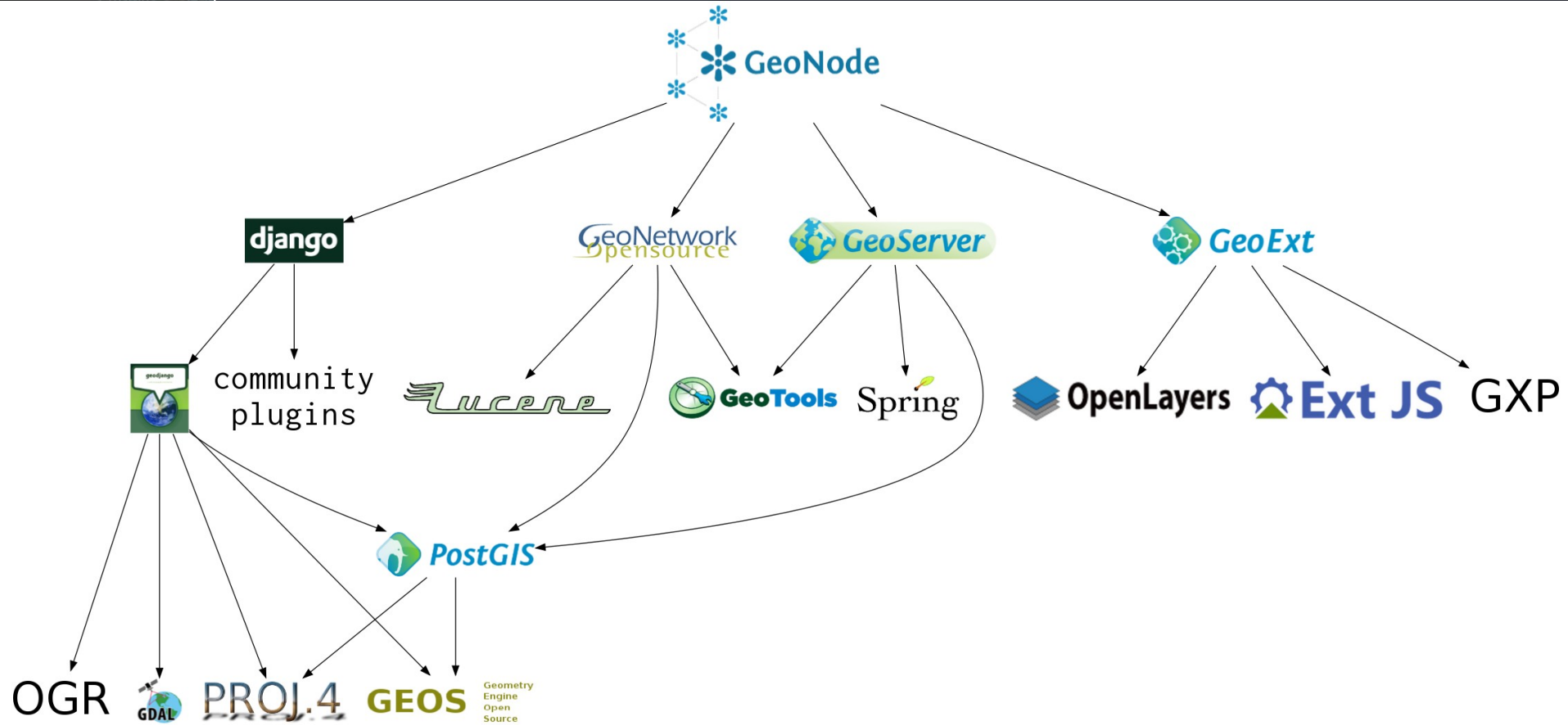


**GeoServer**

HTTP

**GeoNetwork**  
OpenSource

# Bigger Picture





# Uploads

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





**django**

**django**



**django**



**django**

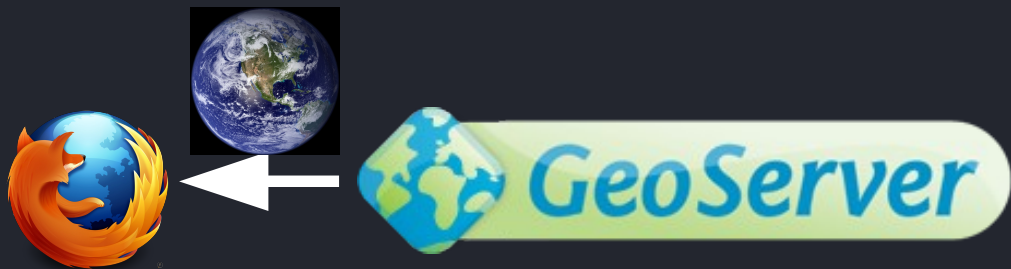
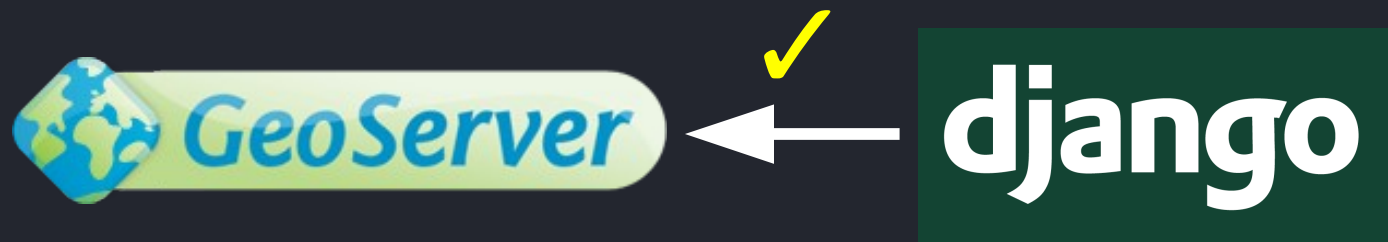
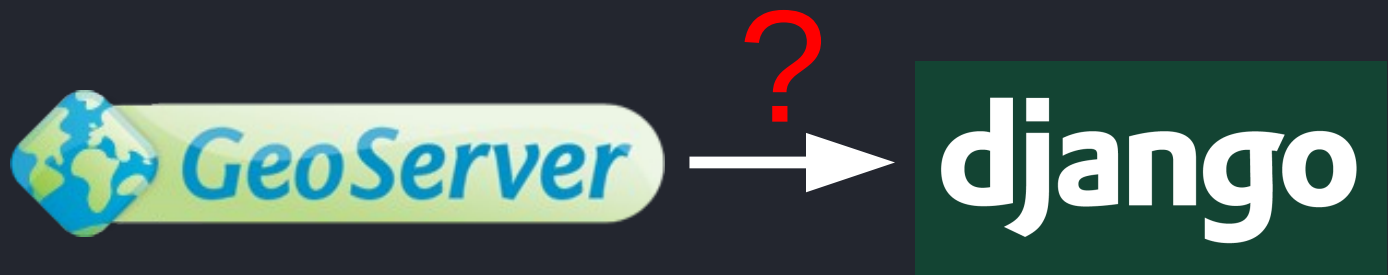
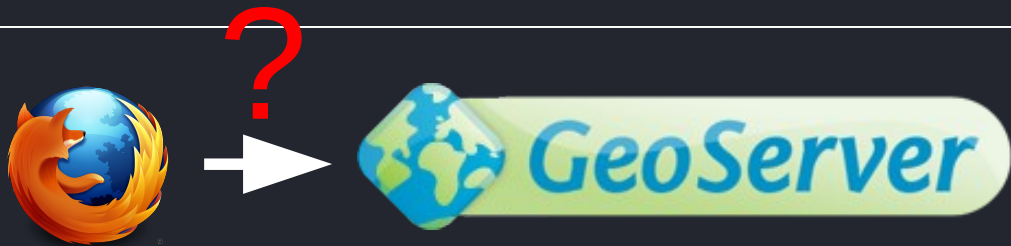


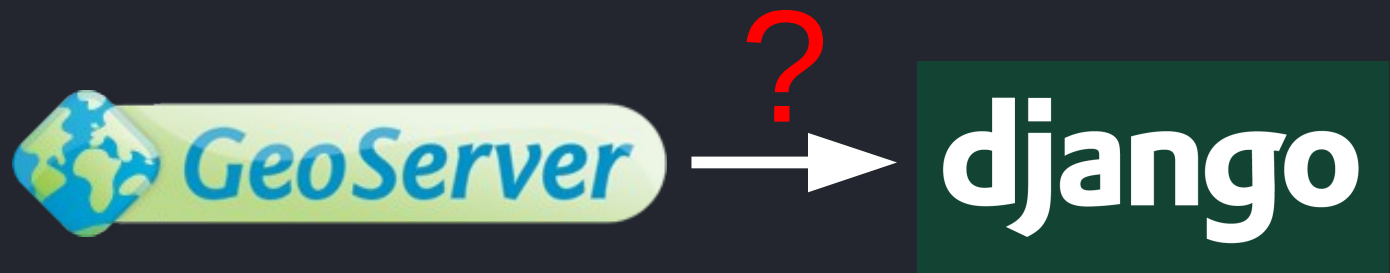
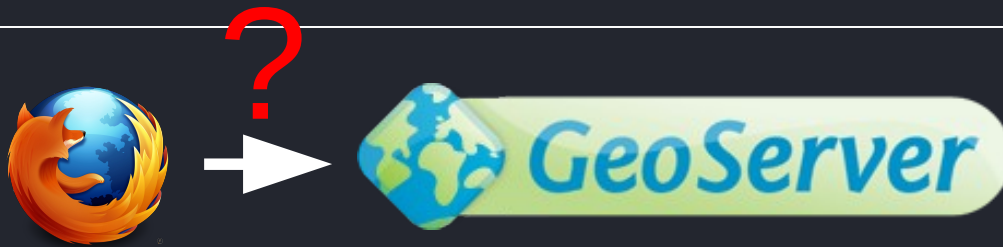




# Adapting GeoServer Security

- 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?