



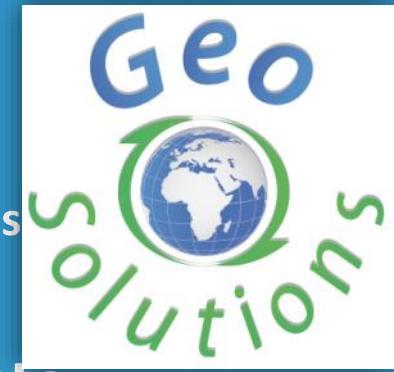
# One GeoNode Many GeoNodes

Dott. Giovanni Allegri  
Ing. Simone Giannecchini



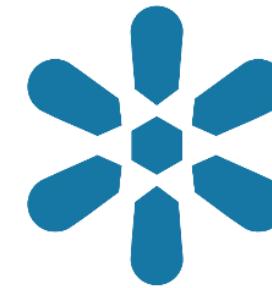
# Quick Facts

- Founded in late 2006
- Expertise
  - GeoSpatial Data Fusion, Web Mashups, Mobile Apps
  - OGC, ISO, INSPIRE Standards
- Supporting/Developing FOSS4G projects
  - MapStore, GeoServer, GeoNetwork, CKAN, McMurdo
- Offer
  - [Enterprise Support Services](#)
  - [Deployment Warranty](#)
  - [Professional Training](#)
  - End-To-End Projects ([Integration](#))
- Clients
  - UN FAO (CIOK, FIGIS, NRL, FORESTRY, ESTG), UN WFP, World Bank, DLR, EUMETSAT, IBC, APPA, NATO, CMRE, UNESCO, IGAD, UNEP, etc.
  - ER, BASF, DigitalGlobe, MDA,



Made in Italy

## One GeoNode





Sharing, Collecting, Using Information to Inform Decisions

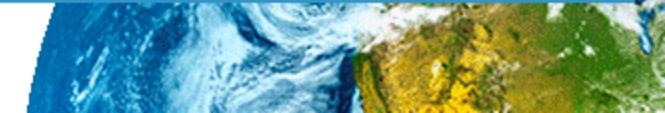
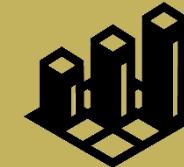
Sharing

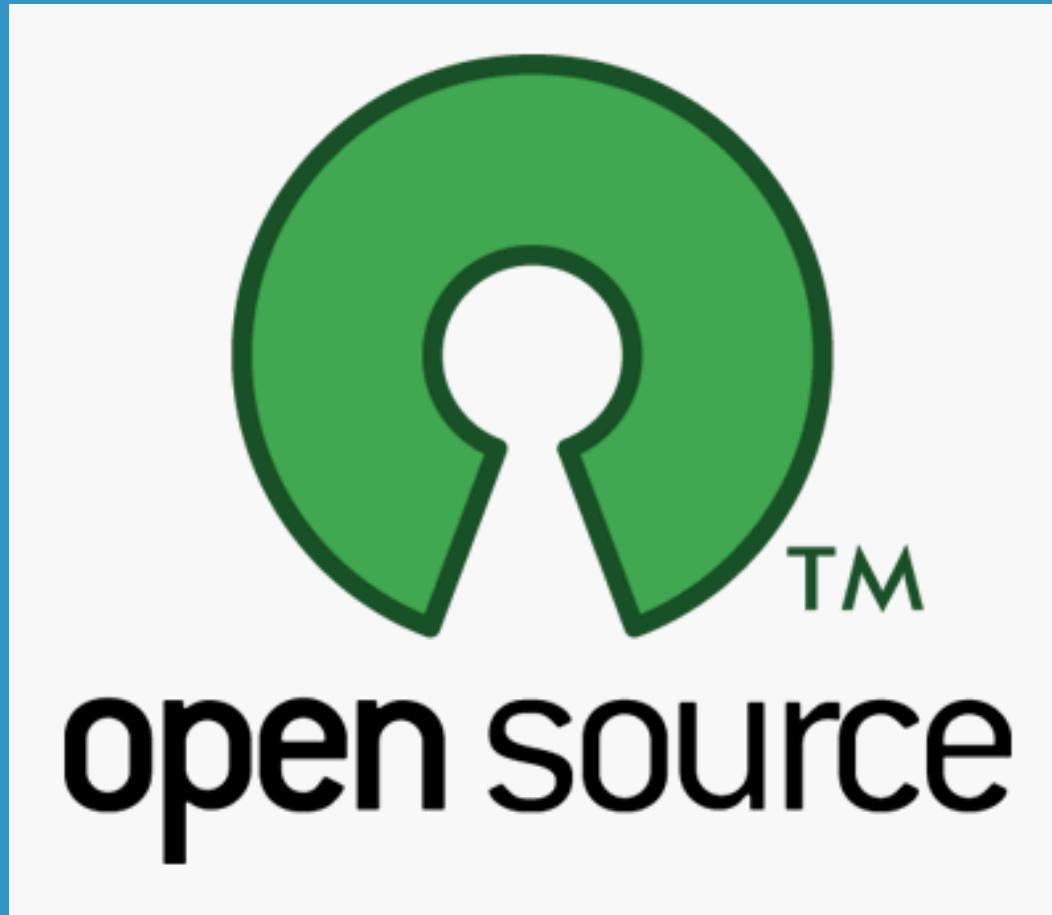


Collecting

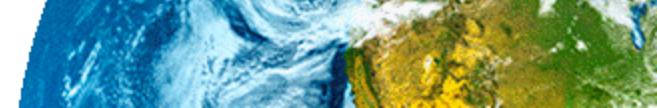


Using





**It's open source, Of course!**





# GeoNode

Is a platform for the management and publication of geospatial data. It brings together mature open-source software projects under an easy to use interface. With GeoNode, non-specialized users can share data and create interactive maps.





## GEONODE IS MADE FOR



### Users

who log into a  
GeoNode website and  
use its functionality.

### Administrators

who install and  
deploy GeoNode  
websites in produc-  
tion for their Users.

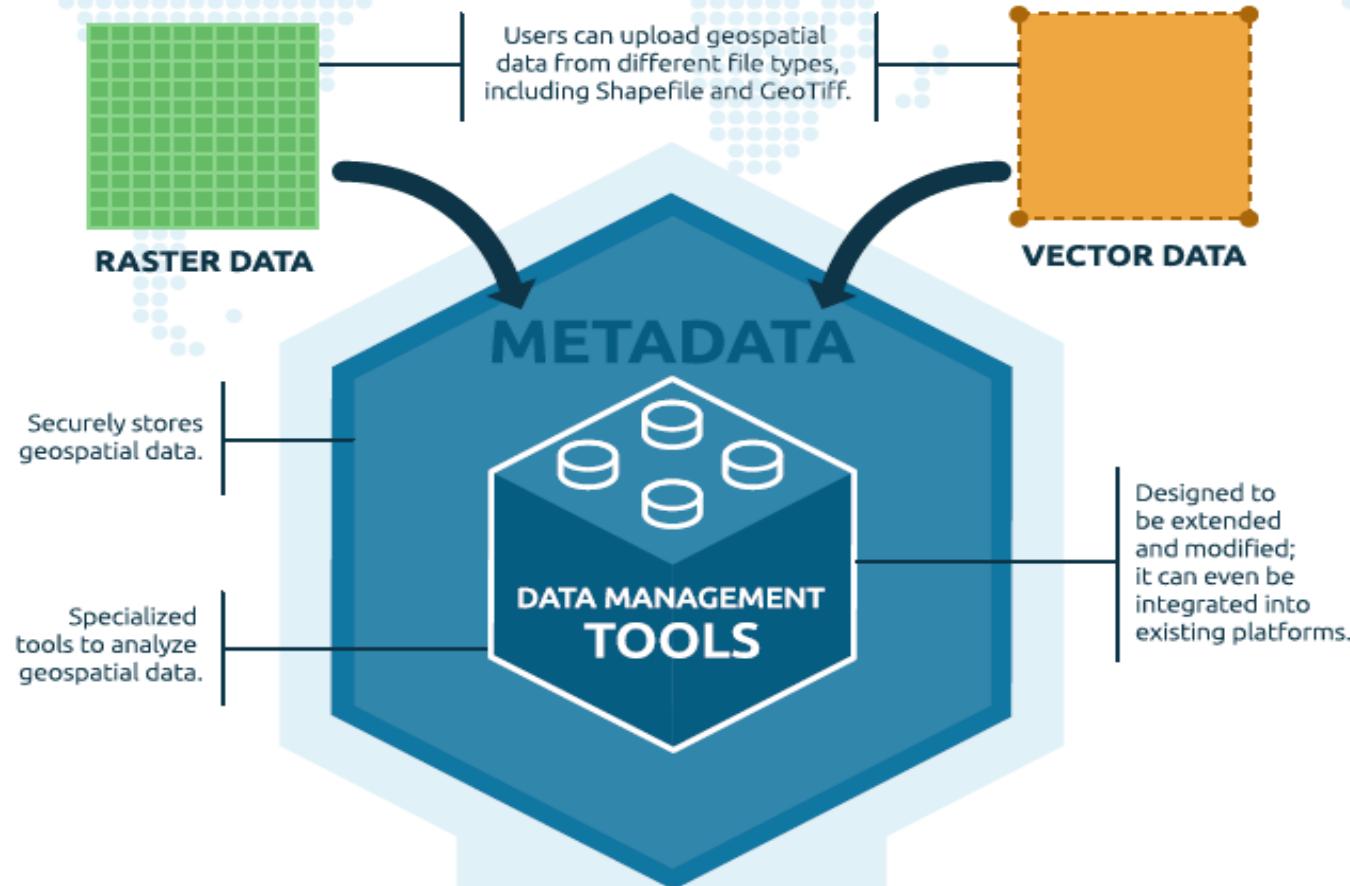
### Developers

who write code to add  
functionality, integrate  
with other systems, fix  
bugs, and potentially help  
an Administrator setup a  
server and deploy a  
GeoNode instance for  
production.



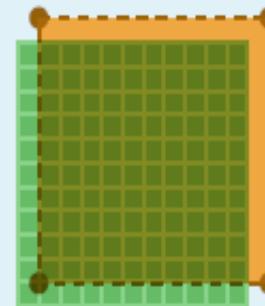


# MANAGEMENT AND PUBLICATION OF GEOSPATIAL DATA





# GeoNode



## DATA MIXING

Open standards are compatible with external layers from OpenStreetMap, Google Satellite or elsewhere.



## MAPS CREATION / MAP VISUALIZATION

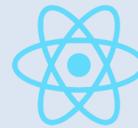
Features a web-based styles editor to create maps.



# GeoNode



## What's it made of?



React



*OpenLayers*



# django



*GeoServer*





Many GeoNodes





- GeoNode cannot address all use cases
    - Avoid reinventing the wheel
    - Avoid implicit/explicit forks
- Custom GeoNode Applications to the rescue!

- A proper “GeoNode Project”:
  - Start from a **template** (`geonode-project`)
  - Generate a “**materialized**” Django project
  - It extends the “**vanilla**” GeoNode
  - It provides a **custom Django app**
  - It addresses specific use cases

- Your application is of general interest?



**This approach offers several opportunities**

- Customize GeoNode look and feel
- Extend its models without modifying GeoNode Core
- Extend its functionalities without modifying GeoNode Core
- Define a brand new end user interface

**This approach allows us to**

- make the most out of what GeoNode core offers
- without sacrificing **versatility**
- without sacrificing **specific project needs**

**It's doable, we did it** (or at least we tried to ☺)

*Hold tight, awesome examples next!*



# Project 2: Afghanistan Disaster Risk

- **WB-GFDRR Project - Design and Implementation of Risk Management Modules to the Afghanistan Disaster Risk GeoNode**
- **Risk Management and Cost Benfit Analysis Modules**
  - Fill Afg gvt information gap on hazards by a multi-peril risk assessment and cost-benefit analysis covering the entire country
  - Extend GeoNode with modules able to easy the access to all this amount of analysis in a way that people can easily recognize
  - Create flexible/extensible modules to present different types of Cost Benefit Analysis
- **<http://disasterrisk.af>**





# Afghanistan Disaster Risk

<http://disasterrisk.af/>



| Afghanistan GeoNode

Layers

Maps

Documents

Risk Management Tools ▾

People

Groups



The World Bank



GFDRR  
Global Facility for Disaster Reduction and Recovery

## Welcome to the Afghanistan Disaster Risk Info

A public platform for creating, sharing and accessing geospatial data and maps for decision-making about disaster risk

Afghanistan Disaster Risk WebGIS





## Risk Data Extraction & Visualization Tool FROM THIS ...

REFERENCE	ISO	ADMIN_NAM	ADMIN_LEVEL	DIST_CODE	10	20	50	100	250	500	1000
0	Afghanist	AF	Afghanist	0 AF	2	2	2	2	2	2	2
1											
2	Afghanist	AF	Badakhsh	1 AF15	5	5	5	5	5	5	5
3	Afghanist	AF	Badghis	1 AF29	2	2	2	1	1	1	1
4	Afghanist	AF	Baghlan	1 AF09	2	2	2	2	2	1	1
5	Afghanist	AF	Balkh	1 AF18	2	2	2	1	1	1	1
6	Afghanist	AF	Bamyan	1 AF10	3	2	2	2	2	2	2
7	Afghanist	AF	Daykundi	1 AF22	2	2	2	2	2	2	2
8	Afghanist	AF	Farah	1 AF31	2	2	1	1	1	1	1
9	Afghanist	AF	Faryab	1 AF28	2	1	1	1	1	1	1
10	Afghanist	AF	Ghazni	1 AF11	2	2	2	1	1	1	1
11	Afghanist	AF	Ghor	1 AF21	2	2	2	2	2	2	2
12	Afghanist	AF	Hilmand	1 AF32	1	1	1	1	1	1	1
13	Afghanist	AF	Hirat	1 AF30	1	1	1	1	1	1	1
14	Afghanist	AF	Jawzjan	1 AF27	1	1	1	1	1	1	1
15	Afghanist	AF	Kabul	1 AF01	1	1	1	1	1	1	1
16	Afghanist	AF	Kandahar	1 AF33	1	1	1	1	1	1	1
17	Afghanist	AF	Kapisa	1 AF02	1	1	1	1	1	1	1
18	Afghanist	AF	Khost	1 AF26	2	2	1	1	1	1	1
19	Afghanist	AF	Kunar	1 AF13	3	2	2	2	2	2	2
20	Afghanist	AF	Kunduz	1 AF17	1	1	1	1	1	1	1
21	Afghanist	AF	Laghman	1 AF07	2	2	2	2	1	1	1
22	Afghanist	AF	Logar	1 AF05	1	1	1	1	1	1	1
23	Afghanist	AF	Nangarhar	1 AF06	1	1	1	1	1	1	1
24	Afghanist	AF	Nimroz	1 AF34	1	1	1	1	1	1	1
25	Afghanist	AF	Nuristan	1 AF14	5	5	5	5	5	5	5
26	Afghanist	AF	Paktika	1 AF25	2	2	1	1	1	1	1
27	Afghanist	AF	Paktya	1 AF12	2	2	2	1	1	1	1
28	Afghanist	AF	Panzher	1 AF08	5	4	3	3	2	2	2
29	Afghanist	AF	Parwan	1 AF03	2	2	2	2	1	1	1
30	Afghanist	AF	Samangan	1 AF19	3	2	2	2	2	2	1
31	Afghanist	AF	Sar-e-Pul	1 AF20	2	2	2	2	1	1	1
32	Afghanist	AF	Takhar	1 AF16	3	3	3	2	2	2	2
33	Afghanist	AF	Uruzgan	1 AF23	2	2	1	1	1	1	1
34	Afghanist	AF	Wardak	1 AF04	2	2	2	2	1	1	1
35	Afghanist	AF	Zabul	1 AF24	2	2	2	2	1	1	1

◀ ▶ | baseline | SSP1 | SSP2 | SSP3 | SSP4 | **SSP5** | +





# Risk Data Extraction & Visualization Tool

## ... TO THIS

| Afghanistan GeoNode      Layers    Maps    Documents    Risk Management Tools    People    Groups    Sign in

Overview    Earthquake    Riverflood    Water scarcity    Avalanche    Landslide

Population affected by droughts (Classes)

This directory contains two files indicating the population affected by droughts. Results are given for the current (reference, or baseline) situation and for the future situation (2050; five SSP scenarios). File "available\_water\_per\_capita.xlsx": The results show, for each admin level, return values of the average available water per capita in m<sup>3</sup>/years File "available\_water\_per\_capita\_class.xlsx": Same results as above, but now presented in terms of five classes, varying from severe drought (class 1) to abundance of water (class 5). Class | Lower limit [m<sup>3</sup>/cap/year] | Upper limit[m<sup>3</sup>/cap/year] 1|0|50 2|50|500 3|500|1,000 4|1,000|1,700 5|1,700| -

Scenario: SSP1

baseline —    SSP1    SSP2    SSP3    SSP4    SSP5

Current Scenario Chart

:drought [1]-abundance of water [5]

Return Period: 10



## Risk Data Extraction & Visualization Tool ... AND THIS

A screenshot of the Afghanistan GeoNode interface, showing disaster risk data extraction and visualization tools.

The top navigation bar includes: Layers, Maps, Documents, Risk Management Tools (dropdown), People, Groups, and Sign in.

The main content area displays:

- Scenario: SSP4**: A map of the region showing various hazard layers and a 300 km scale bar.
- Current Scenario Chart**: A bar chart showing cumulative economic loss for different return periods. The chart shows a significant jump at the 1,000-year mark.

Return Period	Estimated Loss (\$)
10	~100,000,000
20	~500,000,000
50	~2,000,000,000
100	~4,000,000,000
250	~3,000,000,000
500	~2,500,000,000
1,000	~6,000,000,000
2,500	~6,000,000,000
- Summary Chart**: A line chart showing cumulative economic loss over time for multiple scenarios.
- Legend**: A color-coded legend for economic loss ranges from \$0 to \$6,000,000,000.



## Cost Benefit Analysis & Decision Tool FROM THIS ...

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
						Base	AR1	BB2	CT1	DC1	DC2	DC3	AAL				
Base	Improved masonry (Engineered)				Scenario 0	0,04	0,345925926	0,345925926	0,061728395	0,183419753	0,02	0,003	\$ 3.311.319,72	Average			
AR1	Masonry/adobe/rubble stone masonry/unengineered				Scenario 1	0,04	0	0,691851852	0,061728395	0,183419753	0,02	0,003	\$ 2.426.520,22	Adjusting masonry in rural and bad qualit			
BB2	Brick masonry (horizontal reinforcement or otherwise)				Scenario 2	0,04	0	0	0,061728395	0,875271605	0,02	0,003	\$ 2.303.303,02	Adjustment to RC (Low Code)			
CT1	Timber frame - heavy infill masonry				Scenario 3	0,04	0	0	0,061728395	0	0,895271605	0,003	\$ 1.467.846,08	Adjustment to RC (Moderate Code)			
DC1	In-situ RC Frame with non-structural cladding				Scenario 4	0,04	0	0	0,061728395	0	0,447635802	0,450635802	\$ 1.277.786,08	Improvement of Stock to code			
DC2	RC frame with infill masonry				Scenario 5	0,04	0	0,345925926	0,061728395	0,172962963	0,356382716	0,023	\$ 2.016.248,44	Rural School Improvement			
DC3	In-situ RC Frame with shear wall					\$ 1.706.672,69	\$ 5.112.112,81	\$ 2.554.341,24	\$ 2.004.774,40	\$ 2.376.243,58	\$ 1.421.731,94	\$ 997.145,69					
RP	return period				RP (years)	Scen 0	Scen 1	Scen 2	Scen 3	Scen 4	Scen 5						
see the full national risk analysis sheets for the vulnerability function																	
					1	\$ 203.747,27	\$ 104.959,29	\$ 82.733,36	\$ 24.189,01	\$ 14.715,88	\$ 61.888,44						
					5	\$ 3.890.050,48	\$ 2.803.952,74	\$ 2.595.331,58	\$ 1.563.211,27	\$ 1.313.202,30	\$ 2.252.694,32						
					10	\$ 7.599.026,72	\$ 5.699.488,15	\$ 5.412.514,69	\$ 3.511.530,38	\$ 3.042.032,84	\$ 4.792.059,21						
					15	\$ 10.527.220,44	\$ 7.990.022,46	\$ 7.668.474,19	\$ 5.111.150,43	\$ 4.486.369,28	\$ 6.803.064,38						
					20	\$ 12.931.983,15	\$ 9.891.182,27	\$ 9.565.617,36	\$ 6.488.394,94	\$ 5.710.804,90	\$ 8.535.568,58						
					25	\$ 15.120.793,71	\$ 11.606.166,93	\$ 11.300.904,41	\$ 7.640.450,96	\$ 6.801.010,37	\$ 9.975.992,45						
					30	\$ 16.892.920,38	\$ 13.053.512,73	\$ 12.713.560,91	\$ 8.732.844,34	\$ 7.763.728,82	\$ 11.371.314,27						
					35	\$ 18.665.047,04	\$ 14.500.858,53	\$ 14.126.217,40	\$ 9.657.683,45	\$ 8.678.593,54	\$ 12.511.547,81						
					40	\$ 20.215.532,79	\$ 15.662.278,88	\$ 15.357.814,94	\$ 10.582.522,56	\$ 9.446.470,75	\$ 13.651.781,35						
					45	\$ 21.568.552,75	\$ 16.749.207,13	\$ 16.424.303,95	\$ 11.438.788,11	\$ 10.214.347,96	\$ 14.792.014,89						
					50	\$ 22.921.572,71	\$ 17.836.135,37	\$ 17.490.792,97	\$ 12.157.292,10	\$ 10.982.225,18	\$ 15.644.268,71						
					55	\$ 24.274.592,67	\$ 18.923.063,61	\$ 18.557.281,99	\$ 12.875.796,09	\$ 11.622.963,20	\$ 16.494.491,58						
					60	\$ 25.627.612,63	\$ 19.875.382,91	\$ 19.592.629,90	\$ 13.594.300,09	\$ 12.213.369,30	\$ 17.344.714,44						
					65	\$ 26.628.040,97	\$ 20.675.423,69	\$ 20.390.787,52	\$ 14.312.804,08	\$ 12.803.775,39	\$ 18.194.937,30						
					70	\$ 27.576.986,44	\$ 21.475.464,46	\$ 21.188.945,15	\$ 14.968.406,42	\$ 13.394.181,49	\$ 19.045.160,17						
					75	\$ 28.525.931,92	\$ 22.275.505,24	\$ 21.987.102,77	\$ 15.491.521,28	\$ 13.984.587,58	\$ 19.788.608,90						
					80	\$ 29.474.877,40	\$ 23.075.546,02	\$ 22.785.260,39	\$ 16.014.636,13	\$ 14.574.993,68	\$ 20.409.227,04						
					85	\$ 30.423.822,87	\$ 23.875.586,80	\$ 23.583.418,01	\$ 16.537.750,99	\$ 15.064.127,62	\$ 21.029.845,19						
					90	\$ 31.372.768,35	\$ 24.675.627,58	\$ 24.381.575,63	\$ 17.060.865,85	\$ 15.490.900,06	\$ 21.650.463,33						
					95	\$ 32.321.713,83	\$ 25.475.668,36	\$ 25.179.733,25	\$ 17.583.980,70	\$ 15.917.672,50	\$ 22.271.081,47						
					100	\$ 33.270.659,30	\$ 26.121.472,56	\$ 25.920.967,06	\$ 18.107.095,56	\$ 16.344.444,94	\$ 22.891.699,62						
					110	\$ 34.790.398,45	\$ 27.202.768,40	\$ 27.006.472,79	\$ 19.153.325,27	\$ 17.197.989,83	\$ 24.132.935,91						
					120	\$ 36.074.117,37	\$ 28.284.064,24	\$ 28.091.978,52	\$ 19.994.117,88	\$ 18.051.534,71	\$ 25.374.172,20						
					130	\$ 37.357.836,28	\$ 29.365.360,09	\$ 29.177.484,26	\$ 20.733.103,13	\$ 18.905.079,60	\$ 26.345.118,80						
					140	\$ 38.641.555,20	\$ 30.446.655,93	\$ 30.262.989,99	\$ 21.472.088,37	\$ 19.680.764,58	\$ 27.174.913,00						
					150	\$ 39.925.274,12	\$ 31.527.951,77	\$ 31.348.495,72	\$ 22.211.073,62	\$ 20.277.346,48	\$ 28.004.707,21						
					160	\$ 41.208.993,03	\$ 32.609.247,62	\$ 32.434.001,45	\$ 22.950.058,86	\$ 20.873.928,38	\$ 28.834.501,41						





# Cost Benefit Analysis & Decision Tool ... TO THIS

Afghanistan GeoNode | Layers | Maps | Documents | Risk Management Tools | People | Groups | Sign in

Overview Earthquake Riverflood Waterscarcity Avalanche Landslide

Doshi-Bamyan Road Case Study

A case study of the Doshi-Bamyan Road was undertaken to examine the effect of earthquakes on the potential path of the road. Current analysis depicts the risk reduction of meters of roads damaged along several Return Periods (10y, 50y, 100y, 250y, 500y, 1000y, 2500y) and for different damage scenarios (Slight, Moderate, Extensive, Complete), by applying Structural Retrofitting and Geotechnical Engineering methods.

50 Year Lifetime Benefit (assuming constant increase of benefits)

	Using AAL (mean)	Using median of 50 year lifetime
<b>Cost of Project:</b>	\$16,677,797.81	\$16,677,797.81
<b>Existing Losses:</b>	\$16,080,589.68	\$2,278,557.93
<b>Retrofitted Losses:</b>	assuming NPV, discount etc as set out in report \$6,649,654.07	\$341,783.69
<b>Potential Savings:</b>	\$9,430,935.61	\$1,936,774.24
<b>B/C ratio</b>	0.565478471582561	0.116128895860483

Current: Baseline

Current situation; without Structural Retrofitting and Geotechnical Engineering



# Cost Benefit Analysis & Decision Tool ... AND THIS

Afghanistan GeoNode | Layers | Maps | Documents | Risk Management Tools | People | Groups | Sign in

Overview Earthquake Riverflood Waterscarcity Avalanche Landslide

Schools case study

Retrofitting and Benefit ratio estimation.

Cedillos et al. (2012) and Smyth et al. (2004) detail successful retrofitting of schools in different environments around the world. The price of retrofit is often around 8-20% the value of the structure but would improve life safety far in excess of that. The base AAL for schools is approximately 0.2% across Afghanistan which corresponds to slightly higher than the total AAL which is around 0.15-0.16%. This indicates the vulnerable nature of poorly built masonry schools. If these were adjusted in different ways using various scenarios of government or external improvement, the following savings could be made. Five scenarios are set out in order to examine the impact change of adjusting the vulnerability of the school stock.

Current: Baseline

Risk Reduction Scenario Compared to Baseline

Adjusting masonry in rural and bad quality to better quality | Adjustment to RC (Low Code)

Adjustment to RC (Moderate Code) | Improvement of Stock to code

Rural School Improvement

300 km

Leaflet | Open StreetMap contributors

\$0 - \$25  
\$25 - \$50  
\$50 - \$100  
\$100 - \$200  
\$200 - \$400  
\$400 - \$800  
\$800 - \$1.600  
\$1.600



- **UNESCO Project - Water Information Network System by the International Hydrological Programme of UNESCO**
- **Enable a publishing workflow for spatial Layers**
  - Give real powers to Group Managers
  - Isolate GeoNode Groups private data
  - Each dataset must be approved by an editor before it can become public
- **Improve the contributors experience**
  - Introduce the possibility of uploading KMZ and Temporal Series
  - Improve the integration with external Desktop GIS clients, and allow people to upload SLDs from external resources





# UNESCO WINS

<http://ihp-wins.unesco.org/>



GeoNode Data Maps About

## Upload Layers

Drop files here

or select them one by one:

Choose Files

Files to be uploaded

LSMensCSR5r3120\_0\_T\_tendance\_235678\_trend

Google Earth KMZ

- LSMensCSR5r3120\_0\_T\_tendance\_235678\_trend.kmz Remove

Select the charset or leave default

KMZ  
Raster  
Upload

GeoNode Data Maps About

## LSMensCSR5r3120\_0\_T\_tendance\_235678\_trend

© OpenStreetMap contributors



# UNESCO WINS

**GeoNode** Data Maps About

## Upload Layers

Drop files here

or select them one by one:

Choose Files

Files to be uploaded

SalesJan2009iso8601\_good

Comma Separated Value

SalesJan2009iso8601\_good.csv Remove

Files are ready to be ingested! Continue

**SalesJan2009iso8601\_good**

Print Feature Info

Map controls: zoom in, zoom out, pan, search, etc.

Feature Info table:

Name	Value
Transaction...	2009-01-01T...
Product	Product1
Price	1200
Payment_T...	Diners
Name	Janis
City	Ballynora

© OpenStreetMap contributors

**GeoNode** Data Maps About

Search admin

## Upload Layers

Explore Layers

**Geospatial Data "SalesJan2009iso8601\_good"**

Please indicate which attributes contain the latitude and longitude coordinates in the CSV data.

With this data, GeoNode was able to guess which attributes contain the latitude and longitude coordinates, but please confirm that the correct attributes are selected below.

Latitude: Latitude

Longitude: Longitude

Cancel Next

**GeoNode** Data Maps About

Search admin

## Upload Layers

Explore Layers

**Inspect data for "SalesJan2009iso8601\_good"**

Configure as Time-Series

City	Product	Name	Country	Price	Longitude	State	TransactionDate	LastLogin	PaymentType	Lat
Astoria	Product1	Federica Andrea	United States	1200	-123.83	OR	2009-02-01T13:08Z	2009-03-01T12:32	Mastercard	46.
Echuca	Product1	Gouya	Australia	1200	144.75	Victoria	2009-03-01T14:44Z	2009-03-01T14:22	Visa	-36.
Cahaba Heights	Product2	Gerd W	United States	3600	-86.8025	AL	2009-04-01T12:56Z	2009-04-01T12:45	Visa	33.
Mickleton	Product1	LAURENCE	United States	1200	-75.23806	NJ	2009-04-01T13:19Z	2009-04-01T13:04	Visa	39.
Peoria	Product1	Fleur	United States	1200	-89.58889	IL	2009-04-01T20:11Z	2009-04-01T19:45	Mastercard	40.
Martin	Product1	adam	United States	1200	-88.85028	TN	2009-02-01T20:09Z	2009-03-01T12:45	Mastercard	36.

Showing 1 to 10 of 49 rows  rows per page

1 2 3 4 5 >

**Vector Time Series**



# UNESCO WINS

**GeoNode** Data Maps About

## Notification Settings

Notification Type	Email
User following you Another user has started following you	<input checked="" type="checkbox"/>
User requested access A new user has requested access to the site	<input checked="" type="checkbox"/>
Account activated This account is now active and can log in the site	<input checked="" type="checkbox"/>
Request to download a resource A request for downloading a resource was sent	<input checked="" type="checkbox"/>
Layer Created A Layer was created	<input checked="" type="checkbox"/>
Layer Updated A Layer was updated	<input checked="" type="checkbox"/>
Layer Approved A Layer was approved by a Manager	<input checked="" type="checkbox"/>
Layer Published A Layer was published	<input checked="" type="checkbox"/>

## Improved Notifications

**GeoNode** Data Maps About

## Create Message

To users

To groups

Test Group

Subject

Hi

Content

Test Message

[Back to Inbox](#)

**GeoNode** Data Maps About

## Messages

Inbox All

With	Subject	Last Sender	Preview	Delete?
Test Group	Hi	me	Test Message...	<a href="#">Delete</a>

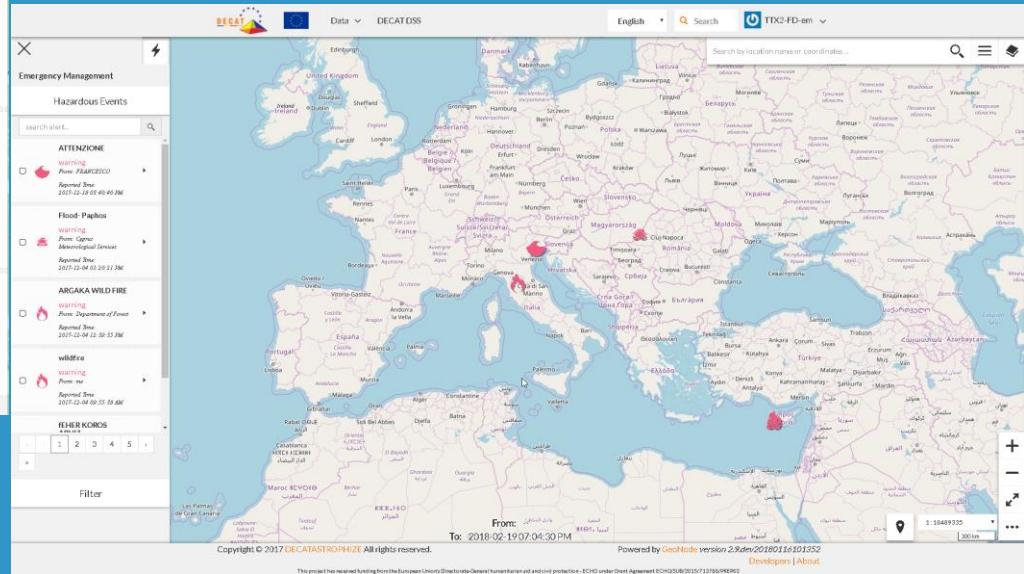




- EU Project
- “*Towards Better Protection of Citizens against Disaster Risks: Strengthening Early Warning Systems in Europe*”
- 3 Phases Approach to Emergency Preparedness
  - Early Warning & Alert
  - Impact Assessment
  - Emergency Management
- GeoNode Custom Application
  - Various GeoNode Enhancements
  - Various GeoNode Extensions
- <http://decat.geo-solutions.it>



# DECATASTROPHIZE – Early Warning

- **Early Warning**
- Collect Alerts for potential disasters
- Promote to disaster when confirmed
- Early Warning Module (front-end and back-end)
- Single Page Front-End (based on MapStore)
- Custom Back-End



# DECATASTROPHIZE – Impact Assessment



Impact Assessment  
Probable Flood  
Hazard Info  
advisory  
Reported from John Doe  
Updated Time 2017-09-28 11:58:33 AM  
Reported Time 2017-09-28 11:58:26 AM  
Location 43.527868°N 10.313619°E  
Description: Water is showing up in the surface of the parking lot.

Impact Assessment  
Test EU Tsunami  
Model Info  
Water level simulation 1  
Created Date 2017-09-29 12:54:33 PM  
From: -- To: 2017-09-29 12:01:31 PM

- Impact Assessment
- Upload of disaster models runs
- Create Update COP for Emergency Managers

Impact Assessment  
Models  
Filter  
by Hazards  
 oilspill  
 wildfire  
 drought  
 flood  
 tsunami  
 earthquake  
Name: Run Name  
Description: Run Description  
Date: DD/MM/YYYY  
Time: HH:MM:SS

OPTIONS  
CATALOG  
MEASURE  
SETTINGS  
SAVE AS...  
ANNOTATIONS  
Default  
test\_upload\_1\_1  
test\_levels\_1  
points\_Italy\_2  
Flood Area



The screenshot displays the DECATASTROPHIZE platform interface. At the top, there's a navigation bar with the project logo, EU flag, "Data", "DECAT DSS", language selection ("English"), search bar, and user account ("TTX2-FD-em"). On the left, a sidebar titled "Annotations" lists several items with icons:

- Special protection areas of Cyprus Paphos forest
- Village Kynoussa might be in Danger Population:71
- Police Close road to protect civilians
- Technical Scholl - Shelter Analytically: 10 Men
- Department of Forests - Ground Forces
- Department of Forests - REQUEST FORCES
- Department of forest - Ground Forces
- Police - Ground Forces one police vehicle with two police officers

The main area shows a map of Cyprus with a legend at the bottom right. A callout box on the right side provides "Feature Info" for a location at Lat: 35.06267 - Long: 32.52451, including a "More Info" link. It also shows an "Annotations" section with edit and delete icons, a "Permalink" (http://decat.geo-solutions.it/decat/#/permalink/hazard/124/95), and a "Description" section listing three items: "5 Italian planes", "1 Greek plane", and "1 Greek Helicopter". A note states: "There are no features for the following layers: event, selectedalerts, alerts, Road Network". The map includes labels for towns like Polis, Mokouria, and Skaros, and regions like Akamas Forest.

- Emergency Management → coordinate field interventions
- Use Impact Assessment COP as back-end layers
- Collaborative Map Annotations Module (front-end and back-end)



- GFDRR and UK Department for International Development
- “*Hazards, Exposures and Vulnerabilities Explorer*”
- Explore, preview and download risk related global data
  - Hazards (British Geological Survey)
  - Exposures (GEM)
  - Vulnerabilities (University College London)
- GeoNode Custom Application
  - Custom API + GeoNode API
  - Custom frontend (REST API)





GFDRR | HEV-E Hazard, Exposure and Vulnerability Explorer | About

Search by location name or coordinates

South Pacific 2000 km

© OpenStreetMap contributors | Imagery from MapBox



GFDRR | HEV-E Hazard, Exposure and Vulnerability Explorer | About | Support | United Republic of Tanzania | X

Hazards Exposures Vulnerabilities

Filter title, description or category

Sort by: alphabetical: A to Z

moz\_v10\_buildings\_137  
Mozambique exposure v10 by ImageCat

osm\_test\_ph\_buildings\_65  
Zanzibar OSM Data with GEM taxonomy

osm\_tnz\_main\_roads\_road\_network\_115  
Tanzania main roads, imported from OpenStreetMap.

tanzania\_arusha\_exposure\_buildings\_76  
Tanzania Gridded Building Exposure for Admin Arusha

tanzania\_dar\_es\_salaam\_exposure\_buildings\_77  
Tanzania Gridded Building Exposure for Admin Dar es Salaam

Loaded 11 of 11 matched

200 km

© OpenStreetMap contributors | Imagery from MapBox



GFDRR | HEV-E Hazard, Exposure and Vulnerability Explorer | United Republic of Tanzania

ex1\_buildings\_63

Filter by tanzania\_industrial\_exposure

Styles

Construction

Occupancy

Construction

Masonry

Concrete

Steel Frame

Composite

Wood

Earth

Unknown

Occupancy %

Construction

Construction	Occupancy %
Masonry	~10%
Concrete	~10%
Steel Frame	~2%
Composite	~35%
Wood	~15%
Earth	~20%
Unknown	~20%

Occupancy

Residential

Commercial

Industrial

You might be also interested in the following data

200 km

© OpenStreetMap contributors | Imagery from MapBox



- Intergovernmental Authority on Drought and Development and Biodiversity
- “An integrated geoportal for IGAD’s and Biodiversity Development Program resources”
- Thematic Data and Document catalog
  - Thematic areas categorization
  - Data management by country and cross border areas
  - Harvesting and remote services hub
- GeoNode Custom Application
  - Custom template and models
  - Extended remote services (WMS, GeoNode, ArcGIS REST)



<http://igad-dev.geo-solutions.it>

IGAD Spatial Web Portal

IGAD Spatial web portal is a platform that facilitates the creation, sharing and collaborative use of geospatial data.

Get Started >

Search for Data.

Search

Advanced Search

## Discover the available datasets.





The screenshot shows the IGAD GeoPortal homepage with a green header bar. The header includes the OGC Member logo, the IGAD logo, and a navigation menu with links: Data, Mappe, A proposito, Thematic Areas, Resources, Knowledge products, and a search bar. Below the header, the page title "SDGs" is displayed, followed by the subtitle "Sustainable Development Goals". On the left side, there are two dropdown menus: "COUNTRIES" (listing Djibouti, Ethiopia, Kenya, Somalia, South Sudan, Sudan, and Uganda) and "CROSS BORDER AREAS" (listing Cluster 1 Karamoja, Cluster 2 Borena, Cluster 3 Somali, Cluster 4 Dikil, Cluster 5 Ethiopia and South Sudan 1, Cluster 6 Ethiopia and South Sudan 2, Cluster 7 Ethiopia Sudan and Eritrea, and Cluster 8 Ethiopia and Somali). The main content area is divided into four columns of four boxes each, each containing a Sustainable Development Goal: GOAL 1: No Poverty (red), GOAL 2: Zero Hunger (yellow), GOAL 3: Good Health and Well-being (green), GOAL 4: Quality Education (red), GOAL 5: Gender Equality (orange), GOAL 6: Clean Water and Sanitation (light blue), GOAL 7: Affordable and Clean Energy (yellow), GOAL 8: Decent Work and Economic Growth (maroon), GOAL 9: Industry, Innovation and Infrastructure (orange-red), GOAL 10: Reduced Inequality (pink), GOAL 11: Sustainable Cities and Communities (orange), GOAL 12: Responsible Consumption and Production (brown), GOAL 13: Climate Action (dark green), GOAL 14: Life Below Water (blue), GOAL 15: Life on Land (light green), and GOAL 16: Peace and Justice Strong Institutions (dark blue).



# IGAD GeoPortal



**GeoNode** Data Maps About

## Register New Service

Service URL  
<https://gis.ngdc.noaa.gov/arcgis/rest/services/SampleWorldCities/MapServer/?f=json>

Service Type  
ArcGIS REST MapServer

Create

**GeoNode** Data Maps About

## Import resources world...

Harvesting resources...

3 resources can be imported

Id	Name	Description
0	Cities	Cities
1	Continent	Continent
2	World	World

**GeoNode** Data Maps About

Search admin

**IGAD\_Fiber\_optic\_landing\_stations**

Download Layer  
Metadata Detail  
View Layer  
Download Metadata

**Legend**  
violet square point style  
● violet point

**Maps using this layer**  
This layer is not currently used in any maps.

**Create a map using this layer**  
Click the button below to generate a new map based on this layer.  
Create a Map

**Styles**  
The following styles are associated with this layer:  
● (default style) violet square point style

**About**  
Owner, Point of Contact, Metadata Author  
zeleke

no image

**Cities**  
Service is online  
Cities

admin 23 Mar 2018 0 0 0 Create a Map

**TEMPORAL SERIE**  
boxes\_with\_date  
No abstract provided

admin 23 Mar 2018 3 0 0 Create a Map

**ENVIRONMENT**  
Catchments in Djibouti

Service is online  
This dataset is a water catchment boundaries in Djibouti. The country is divided into 25 drainage catchments in this GIS file. For detail applications, several smaller catchments should be generated from available topographic data

admin 25 Jan 2007 0 0 0 Create a Map

## Improved Import Remote Services



GeoNode Data Maps About

### Upload Layers

Drop files here

or select them one by one:

Choose Files

Files to be uploaded

SalesJan2009iso8601\_good

Comma Separated Value

SalesJan2009iso8601\_good.csv Remove

GeoNode Data Maps About

Search admin

### Upload Layers

Explore Layers

### Inspect data for "SalesJan2009iso8601\_good"

Configure as Time-Series  ?

City	Product	Name	Country	Price	Longitude	State	TransactionDate	LastLogin	PaymentType	Lat
Astoria	Product1	Federica e Andrea	United States	1200	-123.83	OR	2009-02-01T13:08Z	2009-03-01T12:32	Mastercard	46.
Echuca	Product1	Gouya	Australia	1200	144.75	Victoria	2009-03-01T14:44Z	2009-03-01T14:22	Visa	-36.
Cahaba Heights	Product2	Gerd W	United States	3600	-86.8025	AL	2009-04-01T12:56Z	2009-04-01T12:45	Visa	33.
							2009-04-01T13:19Z	2009-04-01T13:04	Visa	39.
							2009-04-01T20:11Z	2009-04-01T19:45	Mastercard	40.
							2009-02-01T20:09Z	2009-02-01T20:09	Mastercard	36.

Search

Register Sign in

Time Series import from CSV



## Too Many GeoNodes?





## Objectives for next major version

- Improved Upload and Data Storage
- Multiple data sources
- Abstraction for Mapping Engines (GeoServer, QGIS Server, ...)
- Federation
- Single Page Application Front-End (at least for users)
- Streamlined Deployment and CI/CD
- ...



# Better Upload



- **Now**
  - Direct upload of files
  - No throttling, no asynch upload
  - No clear separation between uploaded data and published resources
  - No proper data storage system
  - No configurable preprocessing
- **Future**
  - **Data Sources**
    - File upload
    - Remote sources (S3, Dropbox, FTP, etc.)
  - **Data Storage System**
    - Asynch & Pull upload
    - Quota & bandwidth management
    - Object Storage Support
  - **Configurable ingestion pipelines**
  - **Pluggable data source providers**
    - Point clouds
    - 3D models
    - Etc.



# Multiple backend services



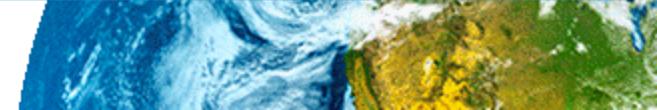
- **Now**
- **Remote Services**
  - OGC WMS
  - Remote GeoNode
  - ArcGIS REST MapServer
- **No AuthN/AuthZ support**
- **Future**
- **Backend Services**
  - No more dicothomy between local and remote services.
- **Authentication / Authorization**
  - backend providers will, eventually, integrate AuthN/AuthZ services with GeoNode Security Layer





# Multitenancy

- **Now**
- **GeoNode Groups**
  - Stretching this concept we can at most compartmentalize published resources
  - Groups share underlying data, users and UI. Separation only enforced through permissions management
- **“geosites” contrib app**
  - Logical separation on top of Django sites concept
  - Still alive?
- **Future**
- **Multiple lightweight GeoNode “nodes”**
  - **Data sharding:** data storage dedicated to single tenant (increased security and safety)
  - **Backend services:** AuthN and AuthZ backend services to partition resources authorizations between tenants
  - **Users/Groups partitioning**
- **GeoNode “master” node**
  - Acts like a gateway to single tenant GeoNodes
  - Authentication service
  - Routing of requests (APIs, services) to tenant’s GeoNodes





## Goals

- design a replicable and versatile approach to implement custom frontends
- extend and enhance GeoNode's APIs, both as exposed methods and API architecture
- enhance the geonode-project approach

Next GeoNode should be a **modular framework**

- Independent GUI
- Quickly adapt/extend to custom requirements



# Deployment



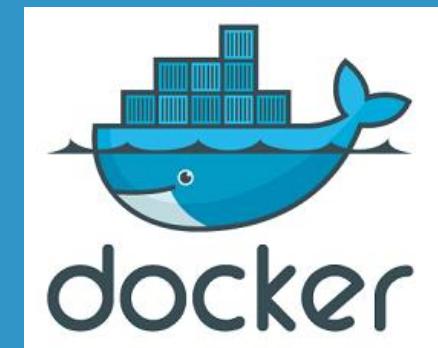
GeoNode's stack containerization is helping in managing complex deployments and streamlining DevOps activities.

We are testing **Docker** images and settings layout as defined in upstream GitHub repositories.

They prove to be an effective approach now and even more in the future, when we will be able to connect multiple data sources, backends and GeoNode nodes.

Our use cases are giving us the opportunity to

- stress the Docker approach
- improve it
- bring back to the community.



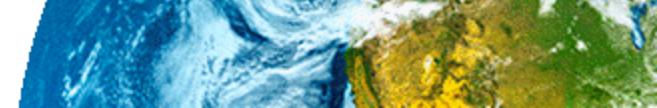


- **Improvements to GeoNode 2**
  - Improved custom clients pluggability
  - MapStore based client as the default client
  - Improved security layer, proxy views and auth token management
  - Some improvements planned to Remote Services security and Groups / Users partitioning
- **Code Hardening**
  - More Unit Tests
  - More Manual Tests
  - More Documentations





- Refactoring and cleaning up of GeoNode 2
  - Contrib apps go outside of the core
  - Other contrib apps moved to core → monitoring,
- Release Schedule Support
  - More Frequent (i.e. Timeboxed)
  - Formalize Proces
- Contribute to the transition to Python 3



That's all!



*<http://www.geo-solutions.it/contacts>*

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