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May 17, 2024

Course: Geospatial Information Infrastructure

# Geoportal untuk Menjamin Interoperabilitas Data Spasial

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UNIVERSITAS GADJAH MADA

# Geoportal: Interoperabilitas Data Spasial

- Standar Pertukaran Data Spasial
- Pengertian dan Contoh Geoportal
- Arsitektur Geoportal
- Penggunaan Geoportal

LOCALLY ROOTED, GLOBALLY RESPECTED

# STRATEGY : THE DEVELOPMENT OF GEOSPATIAL INFORMATION INFRASTRUCTURE NETWORK NODES

Target : 57 Ministries, 34 Provinces, and 508 Regencies/Cities

PerPres Nr. 85 / 2007 saat ini sudah direvisi No. 27 /2014



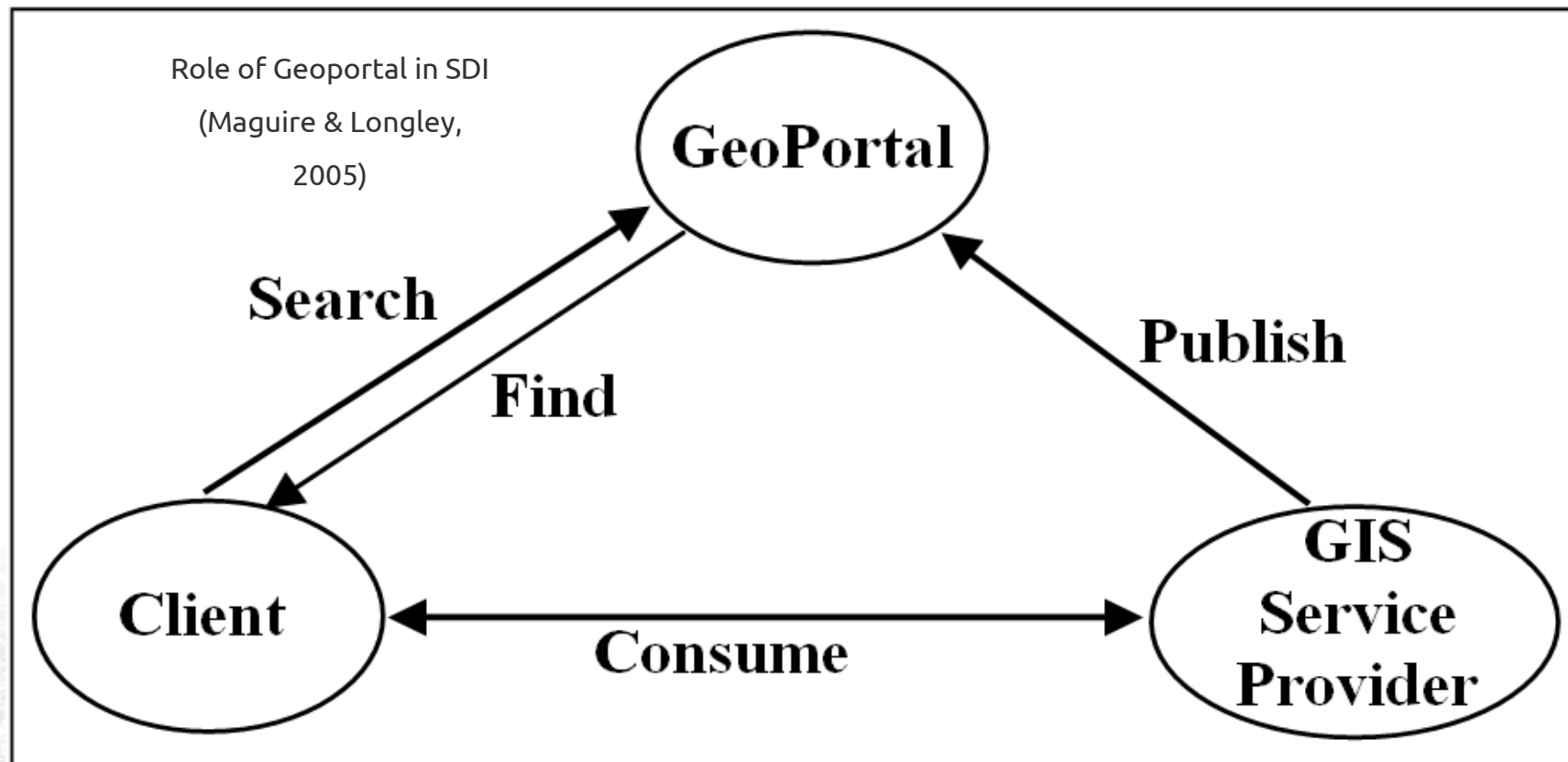
PerPres JARINGAN INFORMASI GEOSPASIAL NASIONAL  
 Pasal 4 ayat (1)  
 Jaringan IGN terdiri atas:  
 a. Jaringan IG pusat; dan  
 b. Jaringan IG daerah.

Pasal 4 ayat (2)  
**Jaringan IG daerah** sebagaimana dimaksud pada ayat (1) huruf b meliputi **Pemerintah Daerah**.

Pasal 4 ayat (4)  
 Instansi Pemerintah, Tentara Nasional Indonesia, dan Kepolisian Negara Republik Indonesia sebagaimana dimaksud pada ayat (2) dan **Pemerintah Daerah** sebagaimana dimaksud pada ayat (3) bertugas sebagai **Simpul Jaringan**.

Pasal 5 ayat (3)  
 Dalam hal Simpul Jaringan di **Pemerintah Daerah**, unit kerja sebagaimana dimaksud pada ayat (2) merupakan **satuan kerja perangkat daerah yang ditetapkan Gubernur atau Bupati/Walikota**.

# Definisi Geoportal



*“A single point of access to spatial information, regardless of the location, format, or structure of the data source”*

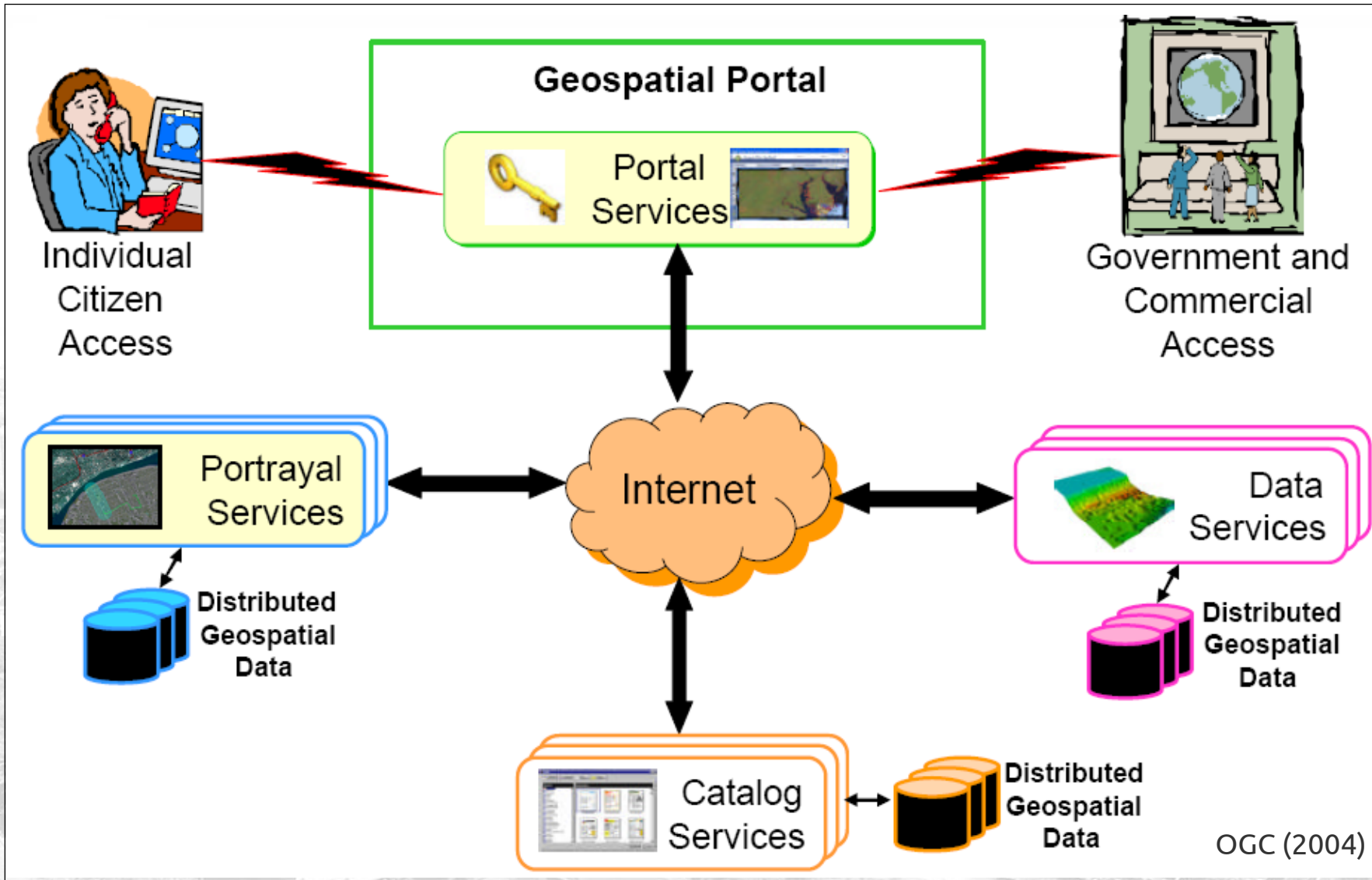
*(ESRI, 2004)*

*“A human interface to a collection of online geospatial information resources, including data sets and services”*

*(OGC, 2004)*



# Definisi Geoportal



## 4 Fungsi Geoportal:

1. Portal Service
2. Catalog Service
3. Portrayal Service
4. Data Service

Geospatial Portal  
Reference  
Architecture (OGC,  
2004)

# Fungsi Geoportal

**Portal Services:** Provide the **single point access** to the geospatial information on the portal. In addition, these services provide the management and administration of the portal.

**Catalog Services:** Used **to locate geospatial services** and information wherever it is located and provide information on the services and information if finds to the user.

**Portrayal Services:** Used to **process the geospatial information** and prepare it for presentation






**Data Services:** Used to **provide geospatial content** and data processing






Geospatial Portal Reference Architecture (OGC, 2004)

# "Discovery"

# Fungsi Geoportal: Portal Pencarian




LEBIH MURAH DI APP    MENJADI SELLER    CUSTOMER CARE    LACAK PESANAN    LOGIN    DAFTAR

 buku    

Kategori      LazMall     Pulsa & eVouchers     Voucher Belanja     Global Collection

Beranda > Hasil Pencarian

Kategori yang Berhubungan 1905964 barang ditemukan untuk "buku"

Urutkan berdasarkan: Popularitas     Lihat:  


Agama  
Majalah Ilmu Pengetahuan  
Buku catatan  
Pendidikan

Warna


- Netral
- Multi Warna
- Black
- White
- Ungu
- Merah
- Biru

Layanan


- Global Collection




buku pendidikan agama islam kelas 1 sekolah dasar.  
**Rp12.000**  
Rp13.000 -8%  
★★★★★(24)    Indonesia




buku pendidikan agama islam kelas 2 sekolah dasar.  
**Rp14.000**  
Rp15.000 -7%  
★★★★★(11)    Indonesia



Buku Tematik Kelas 3 Tema 2,3,4  
**Rp70.000**  
Rp75.000 -7%  
★★★★★(3)    Indonesia



Buku Tematik Kelas 3 tema 2 Menyayangi Tumbuhan dan Hewan  
**Rp24.500**  
★★★★★(5)    



# Fungsi Geoportal: Portal Pencarian

Home Beranda Data ▾ Maps About ▾  Sign in



## Geoportal Daerah Istimewa Yogyakarta

Sistem informasi ini berisi tentang data geospasial beserta metadatanya (keterangan data) yang tersusun dalam bentuk katalog. Data-data yang disimpan pada katalog ini berupa layer peta, peta, dan dokumen



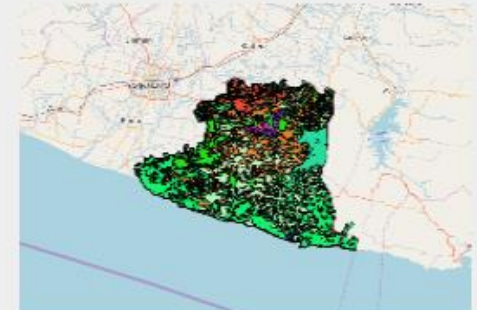
Peta Rencana Pola Ru...



Arahan Pola Ruang Ka...



Arahan Pola Ruang Ka...



Arahan Pola Ruang K...



# Fungsi Geoportal: Portal Pencarian

## Explore Layers

Upload Layers

Cart

Add resources through the "Add to cart" buttons.

Create a Map

Filters Clear

TEXT

KEYWORDS

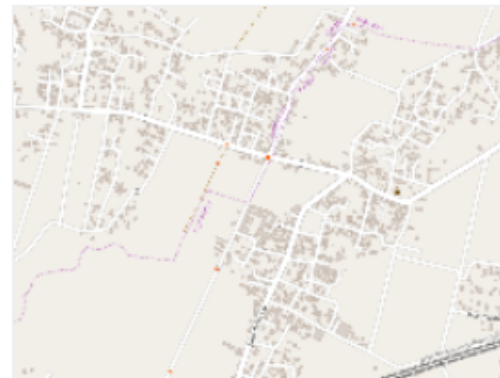
TYPE

Raster 1

Vector 84

Total: 84

Sort

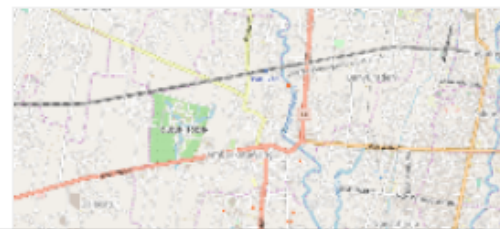


ECONOMY

### Titik Aset Bangunan di Engkuk Engkukan

No abstract provided

data\_puesdm 3 Dec 2018 75 0 0  
 Create a Map



PLANNING CADASTRE

### Titik Aset Bangunan di Kec. Gamping

Titik Aset Bangunan Kecamatan Gamping Kabupaten Sleman tahun 2018





This XML file does not appear to have any style information associated with it. The document tree is shown below.

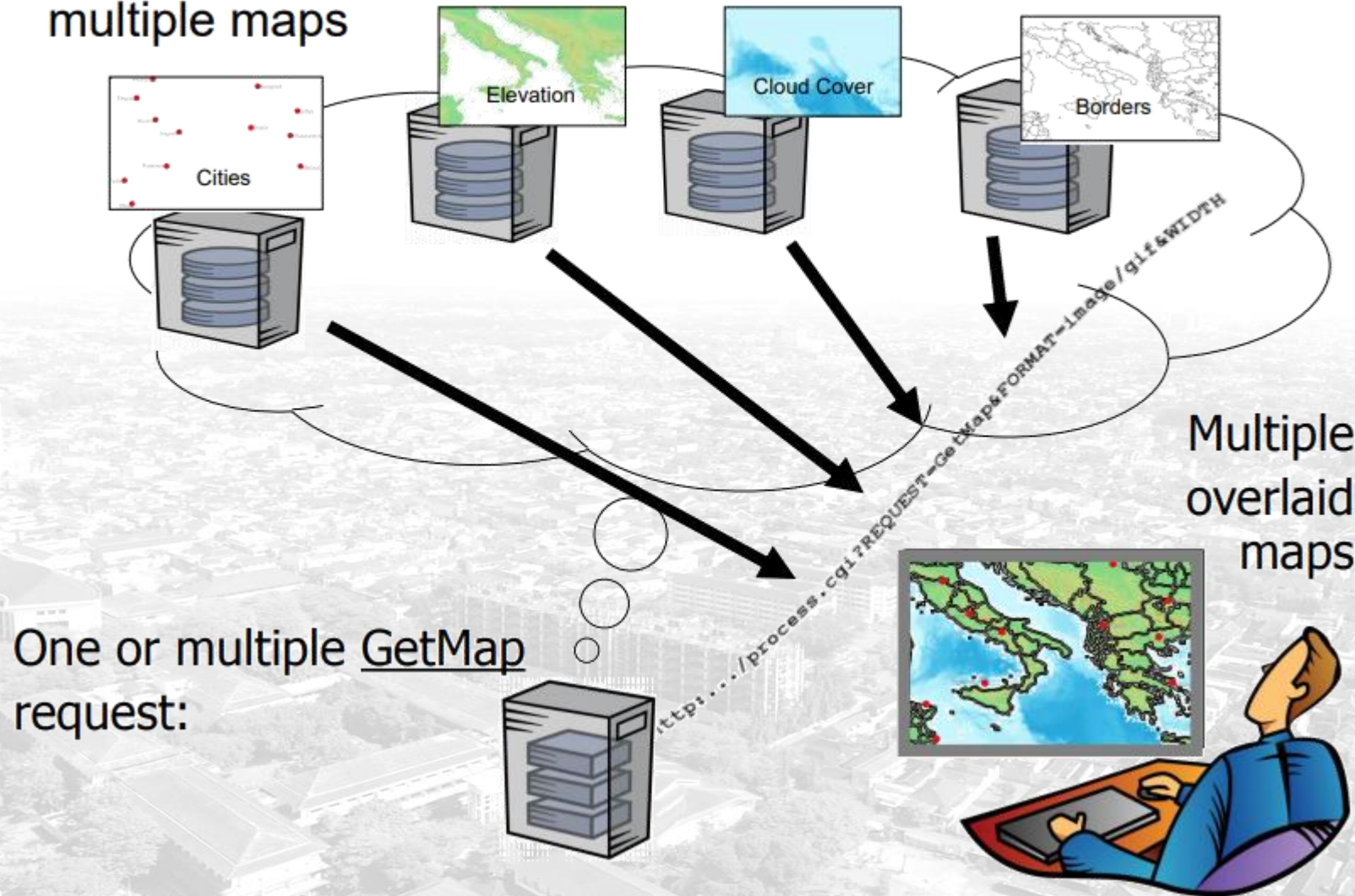
```
<!-- pycsw 2.0.2 -->
<csw:Capabilities xmlns:csw="http://www.opengis.net/cat/csw/2.0.2" xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:dct="http://purl.org/dc/terms/"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:gml="http://www.opengis.net/gml" xmlns:inspire_common="http://inspire.ec.europa.eu/schemas/common/1.0"
xmlns:inspire_ds="http://inspire.ec.europa.eu/schemas/inspire_ds/1.0" xmlns:ogc="http://www.opengis.net/ogc" xmlns:ows="http://www.opengis.net/ows"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" updateSequence="1545096720" version="2.0.2"
xsi:schemaLocation="http://www.opengis.net/cat/csw/2.0.2 http://schemas.opengis.net/csw/2.0.2/CSW-discovery.xsd">
  <ows:ServiceIdentification>
    <ows:Title>GeoNode Catalogue</ows:Title>
    <ows:Abstract>
      GeoNode is an open source platform that facilitates the creation, sharing, and collaborative use of geospatial data
    </ows:Abstract>
    <ows:Keywords>
      <ows:Keyword>sdi</ows:Keyword>
      <ows:Keyword> catalogue</ows:Keyword>
      <ows:Keyword> discovery</ows:Keyword>
      <ows:Keyword> metadata</ows:Keyword>
      <ows:Keyword> GeoNode</ows:Keyword>
      <ows:Type codeSpace="ISOTC211/19115">theme</ows:Type>
    </ows:Keywords>
    <ows:ServiceType codeSpace="OGC">CSW</ows:ServiceType>
    <ows:ServiceTypeVersion>2.0.2</ows:ServiceTypeVersion>
    <ows:ServiceTypeVersion>3.0.0</ows:ServiceTypeVersion>
    <ows:Fees>None</ows:Fees>
    <ows:AccessConstraints>None</ows:AccessConstraints>
  </ows:ServiceIdentification>
  <ows:ServiceProvider>
    <ows:ProviderName>Organization Name</ows:ProviderName>
    <ows:ProviderSite xlink:type="simple" xlink:href="http://localhost:8000/">
  <ows:ServiceContact>
    <ows:IndividualName>Lastname, Firstname</ows:IndividualName>
    <ows:PositionName>Position Title</ows:PositionName>
    <ows:ContactInfo>
      <ows:Phone>
        <ows:Voice>+xx-xxx-xxx-xxxx</ows:Voice>
        <ows:Facsimile>+xx-xxx-xxx-xxxx</ows:Facsimile>
      </ows:Phone>
      <ows:Address>
        <ows:DeliveryPoint>Mailing Address</ows:DeliveryPoint>
        <ows:City>City</ows:City>
      </ows:Address>
    </ows:ContactInfo>
  </ows:ServiceContact>
</csw:Capabilities>
```

<http://gis.jogjaprov.go.id/catalogue/csw?service=CSW&version=2.0.2&request=GetCapabilities>



# Fungsi Geoportal: Map Viewer

Web Map Service(s) (WMS) can produce multiple maps



**Map Viewer**  
mampu menggabungkan data dari berbagai sumber sesuai format standar

# Fungsi Geoportaal: Map Viewer

The image shows a screenshot of a web GIS map viewer interface. The map displays the United States with state boundaries and names. The interface includes several key components:

- Table of Contents (TOC):** Located on the left side, it shows a list of layers including "Default" and "USA Population".
- Menu Bar:** Located at the top right, it contains a search bar with the text "Search by location name or coordinates ...", a home button, a user profile icon, and a menu icon.
- Basemap Switcher:** Located at the bottom left, it shows a row of map style thumbnails, including "Open Street Map", satellite, and other styles.
- Side Bar:** Located on the right side, it contains navigation controls such as zoom in (+), zoom out (-), full screen, and 3D view.
- Data Frame:** The main map area is labeled as the "Data Frame".
- Footer:** Located at the bottom, it includes the text "© OpenStreetMap contributors", a scale bar for 2000 km, and a scale of 1:73957339.

WebGIS ≠ Geoportaal



# Fungsi Geoportal: Map Viewer

← → ↻ Not secure | gis.jogjaprov.go.id/maps/23/view

Beranda Data Maps About Search Sign in

Map Print Identify Query Measure Edit Maps / Peta Arahan Pola Ruang Kabupaten/Kota

LAYERS

Overlays

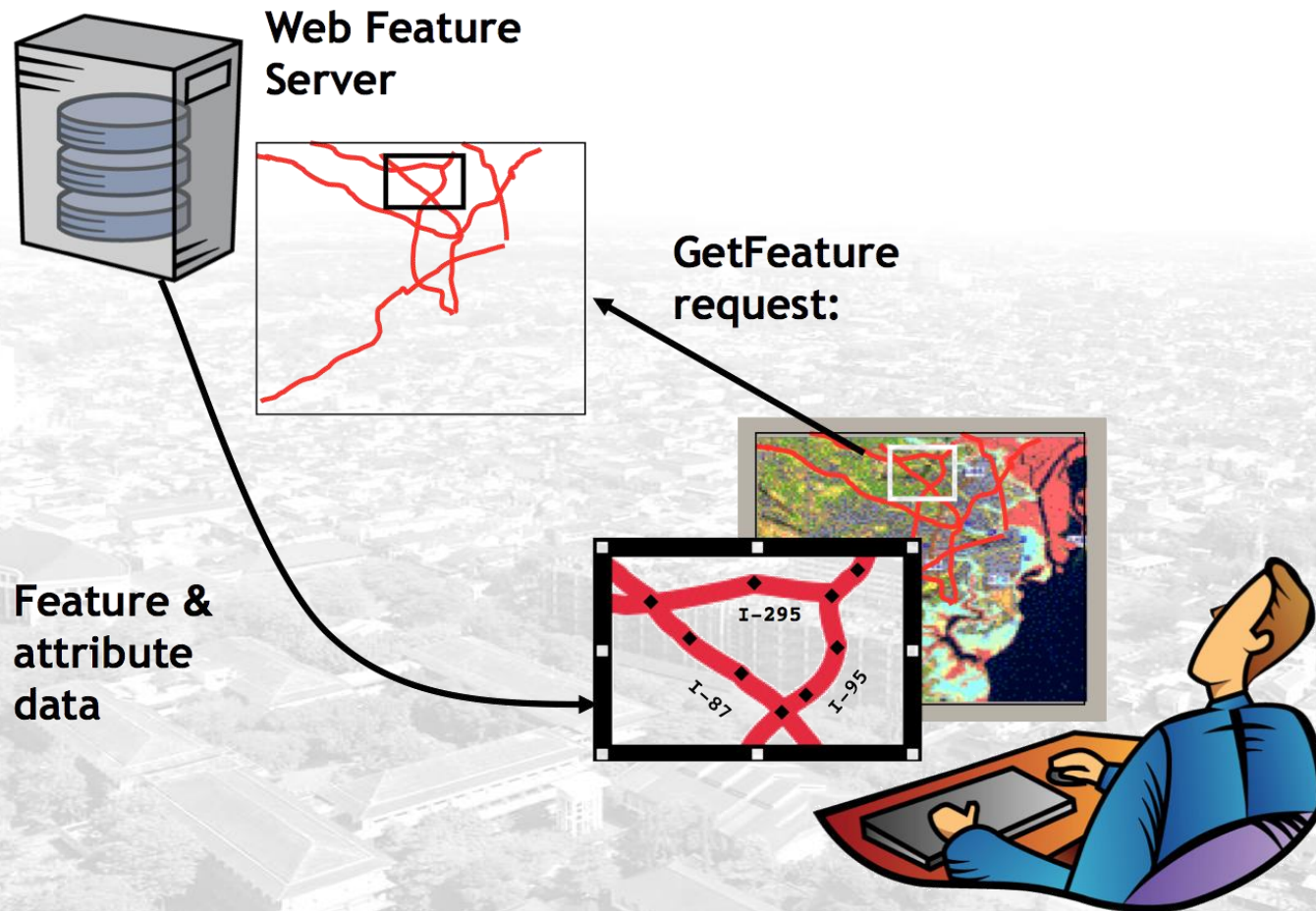
- Arahan Pola Ruang Kabupaten Kulon Progo
  - Hutan Lindung
  - Hutan Produksi
  - Hutan Rakyat
  - Industri
  - Kawasan Sempadan Waduk
  - Konservasi dan Resapan Air
  - Pelestarian Alam
  - Perdagangan
  - Perikanan Darat
  - Permukiman Perdesaan
  - Permukiman Perkotaan
  - Pertanian Lahan Basah
  - Pertanian Lahan Kering
  - Sempadan Pantai
  - Sempadan Sungai
  - Suaka Alam
- Arahan Pola Ruang Kabupaten Gunungkidul
  - Hutan Konservasi (TAHURA)
  - Hutan Lindung
  - Hutan Produksi
  - Hutan Rakyat

© OpenStreetMap contributors



# Fungsi Geoportals: Layanan Data


Web Feature Service (WFS) returns data.



Data geospasial dalam berbagai format dapat diambil dari Layanan Geoportals

# Fungsi Geoportal: Layanan Data










← → ↻ ⓘ Not secure | gis.jogjaprov.go.id:8080/geoserver/web/wicket/bookmarkable/org.geoserver.web.demo.MapPreviewPage?1 ☆

   Remember me

## Layer Preview

List of all layers configured in GeoServer and provides previews in various formats for each.

<< < 1 2 3 4 > >> Results 1 to 25 (out of 89 items)

Type	Title	Name	Common Formats	All Formats
	Landsat DIY 2017	geonode:l8_diy_17	OpenLayers KML	Select one ▼
	Aset di Madugondo	geonode:aset_madugondo	OpenLayers KML GML	Select one ▼
	ibukota_kabupaten	geonode:ibukota_kabupaten	OpenLayers KML GML	Select one ▼
	ibukota_provinsi	geonode:ibukota_provinsi	OpenLayers KML GML	Select one ▼
	penutupan_lahan	geonode:penutupan_lahan	OpenLayers KML GML	Select one ▼
	tanah	geonode:tanah	OpenLayers KML GML	Select one ▼
	aksesibilitas	geonode:aksesibilitas	OpenLayers KML GML	Select one ▼
	sungai	geonode:sungai	OpenLayers KML GML	Select one ▼
	Tata Guna Lahan DIY 2016	geonode:penggunaan_lahan_2016	OpenLayers KML GML	Select one ▼

# Fungsi Geoportal: Layanan Data

The screenshot displays a web-based Geoportal interface. At the top, there is a navigation bar with a home icon labeled 'Beranda', a 'Data' dropdown menu, and a 'Map' dropdown menu. On the right side of the navigation bar, there is a search box with a magnifying glass icon and the text 'Search', and a 'Sign in' button. The main content area features a large map of Yogyakarta, Indonesia, with a blue line layer representing an irrigation channel. The map includes labels for various locations such as Mungkid, Muntilan, Purworejo, Wates, Yogyakarta, Klaten, and Wonosari. A 'Download Layer' dialog box is open in the center of the screen, with a close button (X) in the top right corner. The dialog box has two tabs: 'Images' and 'Data'. The 'Data' tab is selected, and it lists several download formats: GeoJSON, Excel, CSV, GML 3.1.1, GML 2.0, and Zipped Shapefile. A 'Close' button is located at the bottom right of the dialog box. On the right side of the map, there is a sidebar with several buttons: 'Download Layer', 'Metadata Detail', and 'Download Metadata'. Below these buttons, there is a 'Legend' section showing a blue line symbol and the text 'Blue Line'. Further down, there is a section titled 'Maps using this layer' with the text 'This layer is not currently used in any maps.' At the bottom of the sidebar, there is a section titled 'Create a map using this layer' with the text 'Click the button below to generate a new map based on this layer.'



Geoportal:

Web Portal

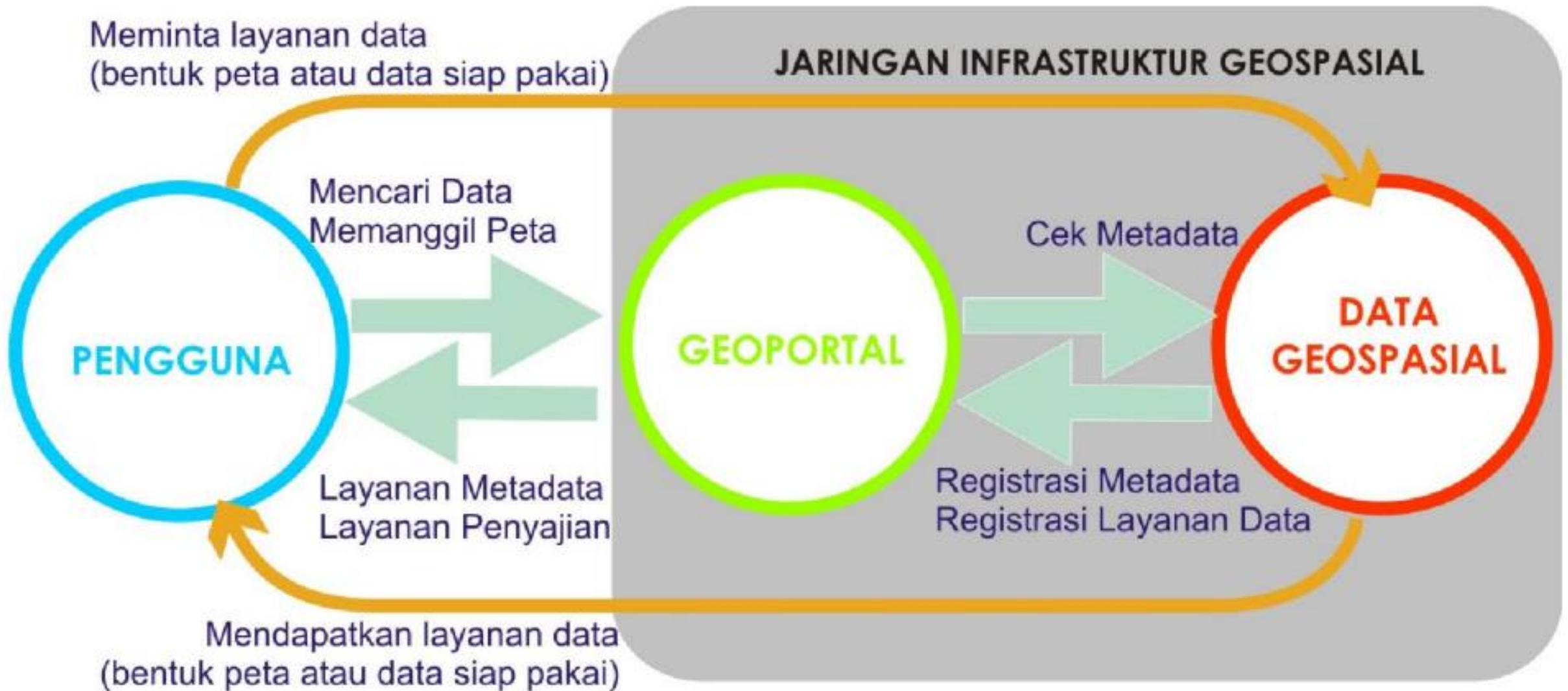
Basisdata spasial

Spatial Data Server

Metadata Catalogue

Map Viewer/Analysis

# Geoportal dalam JIGN

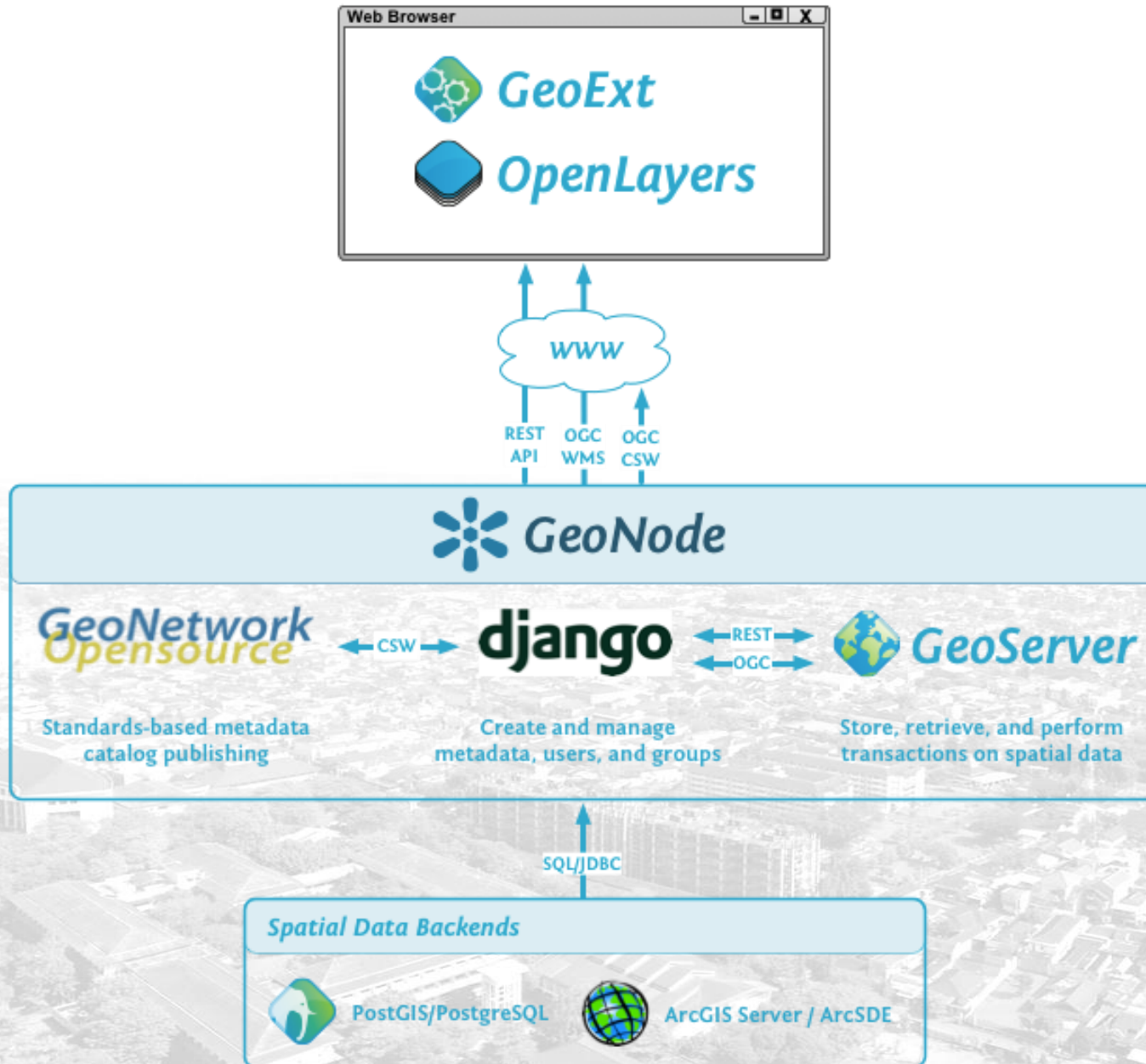


# Arsitektur Geoportal

*Application layer*

*Service layer*

*Data layer*





Browser-based

Desktop

User Interface



OpenLayers



QGIS



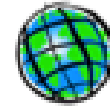
uDig



Google Maps



Bing Maps



ArcGIS Desktop



Google Earth

Application Server



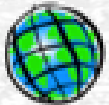
GeoServer



GeoWebCache



Intergraph GeoMedia



ArcGIS Server



ERDAS Apollo



Autodesk MapGuide

Database



PostGIS/PostgreSQL



Oracle Spatial



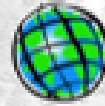
MySQL with Spatial



Microsoft SQL Server



IBM DB2



ArcGIS Server / ArcSDE

Aplikasi dalam Geoportal

# Aplikasi Geoport

## ❑ Proprietary:

- Portal for ArcGIS/**ArcGIS Enterprise**
- Integraph Geomedia
- CadCorp Geognosis
- Erdas Apollo SDI

## ❑ Open-Source:

- Constellation-SDI/Geoblacklight
- OGP (OpenGeoPortal)
- ESRI Geoport
- Deegree
- **Geonode**
- **PALAPA**
- **Geonetwork**
- **Cartoview**

## ❑ Other

- OpenGeoSuite (*retired*)



# Aplikasi Geoport



GEOPORTAL BADAN INFORMASI GEOSPASIAL

[Home](#)

[Jelajah](#)

[Pencarian](#)


Geoportal PALAPA merupakan salah satu simpul Jaringan Informasi Geospasial Nasional (JIGN). Data dan informasi geospasial disediakan dalam bentuk GIS web services dan dapat ditelusuri keberadaan datanya.





# Aplikasi Geoportal

**GIS BPBD DKI JAKARTA** Home About Spatial Data Maps Documents Users Groups Blog

Type your search here ...  Sign in Help

Advanced Search

## Layers

Geospatial Information  
Events, Hazard, Risk, Vulnerability, Exposure, etc.

[Explore Layers](#)

Layers	100	Maps	20	Documents	737	Users	6
--------	-----	------	----	-----------	-----	-------	---

### Recent Layers

# Aplikasi Geoportals



Apps

Data ▾

Maps ▾

About ▾

🔍 Search



admin ▾

## Explore Apps

Manage Apps



### Time Data Viewer

Time Data Viewer enables you to display layers that have time attributes in a Cartoview Viewer map using a time slider



Explore

Create new



### WebApp Builder

WebApp Builder



Explore

Create new



### Simple Map Viewer

Simple, responsive and mobile enabled map viewer



Explore

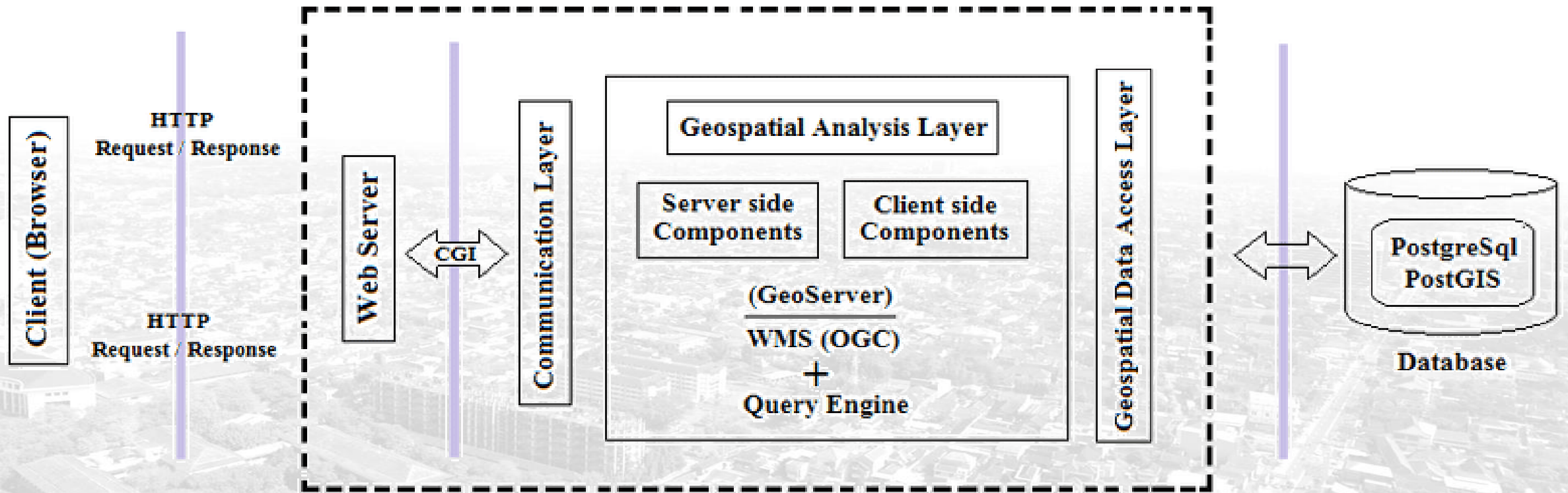
Create new



### Feature List

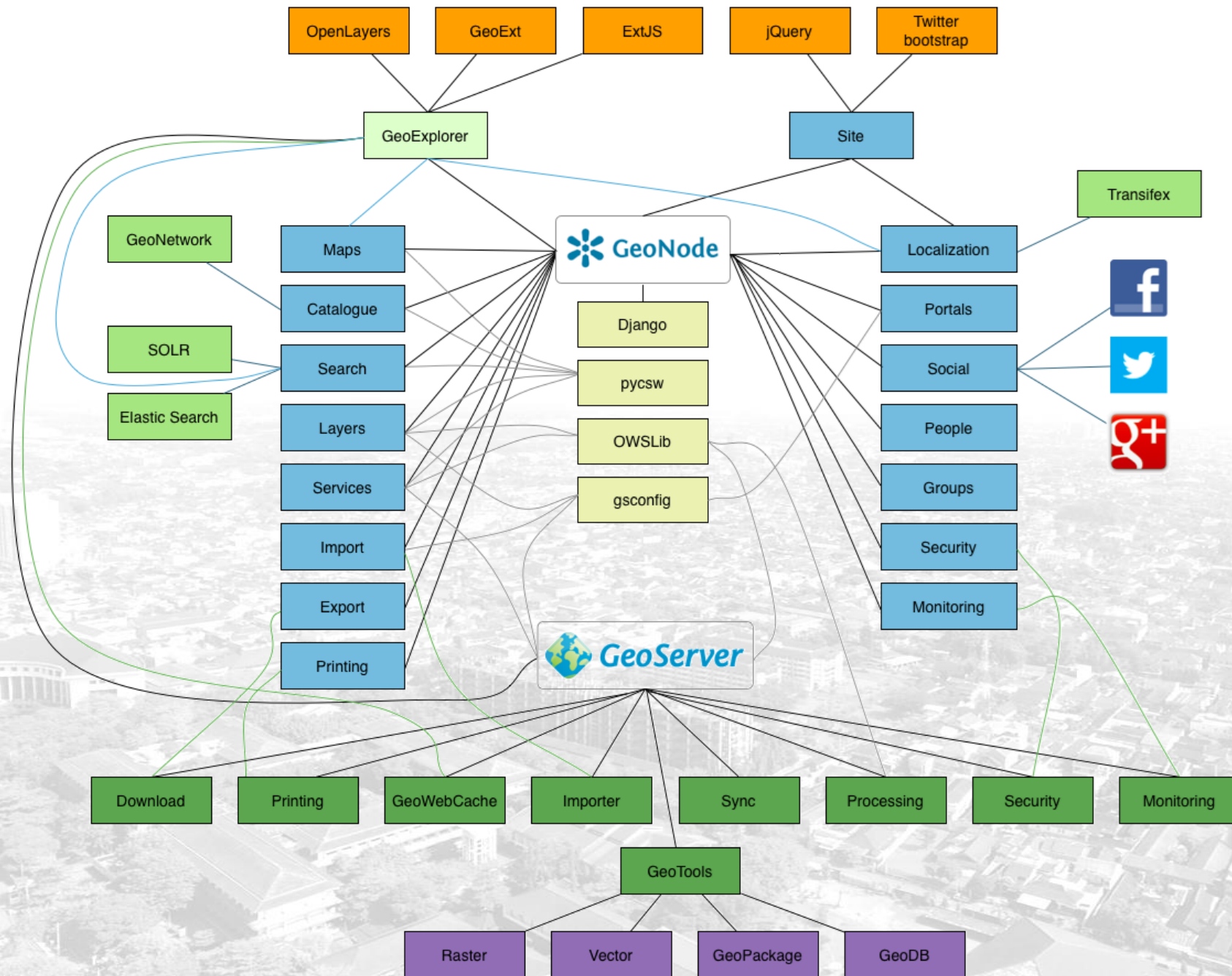
Simple Map Viewer to view your map with a list of features from a layer in this map

# Arsitektur Geoportal





# GeoNode Component Architecture

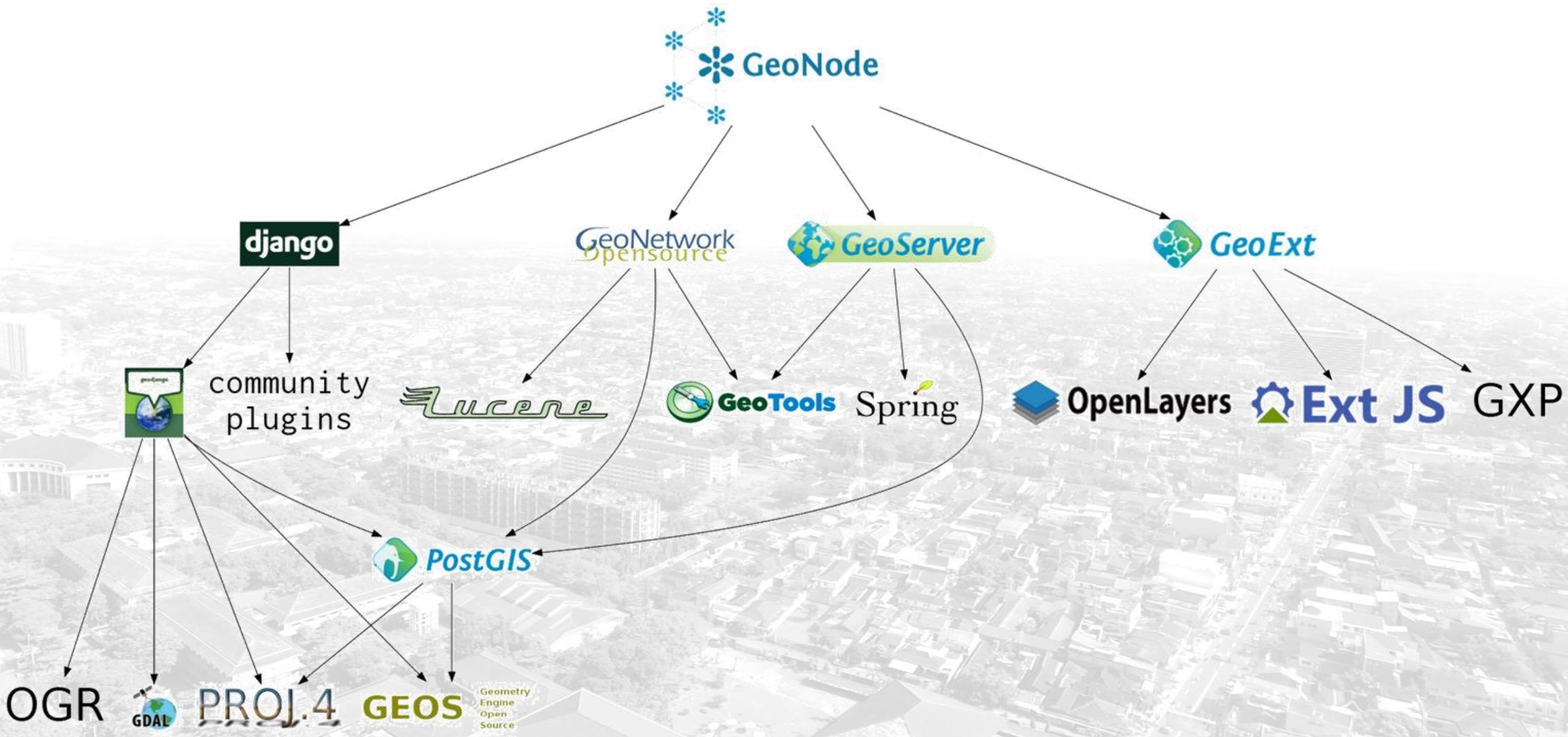


# Arsitektur Geoportal: Geonode

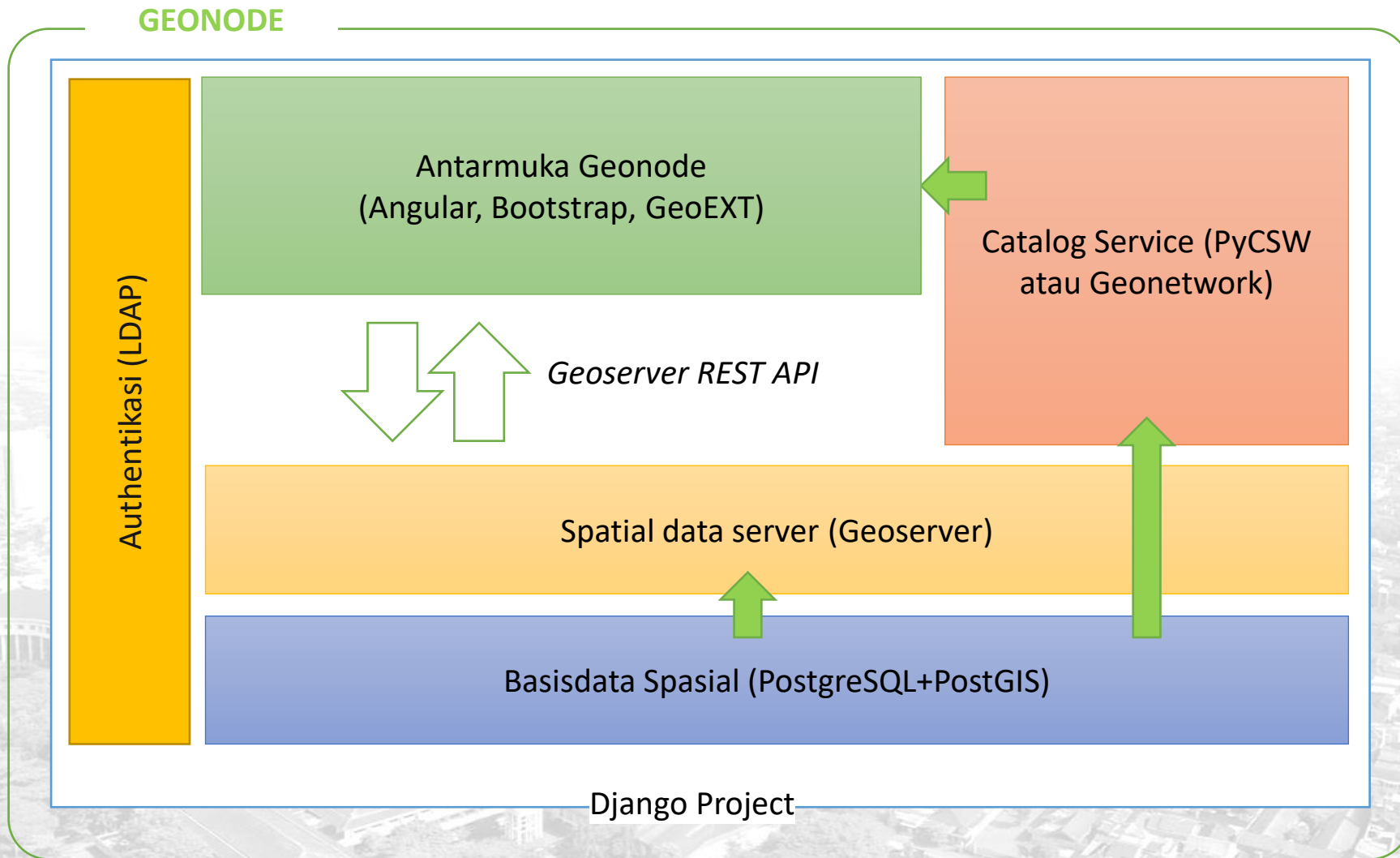
Sebuah Geoportal terdiri dari banyak komponen yang saling terkait

Masing-masing komponen mengatur proses bisnis yang berbeda (katalog, map viewer, basisdata spasial, map service, dst)

# Arsitektur Geoportal: Geonode



# Arsitektur Geoportal: Geonode



Geonode  
menggabungkan  
komponen-  
komponen  
manajemen portal  
dan data spasial  
dalam satu project  
berbasis Django



# Arsitektur Geoportal: Geonode

## Komponen Geonode

- **UI Logic:** MVP/MVC based on Django WSGI, Apache
- **Metadata manager:** pycsw (default), Geonetwork
- **Spatial data server:** Geoserver (default), ArcGIS server
- **Spatial DBMS:** PostGIS/PostgreSQL (default), MySQL, Oracle Spatial, MS SQL, ArcSDE
- **Protocol:** OGC Standards (WMS, WFS/WFS-T, WCS, CSW, TMS, etc)



# External Map Viewer

The screenshot displays an external map viewer interface. The main map area shows a satellite view of a residential area with overlaid land use data. The data is color-coded: orange for residential plots, green for parks or green spaces, blue for water bodies, and grey for roads or infrastructure. The interface includes a sidebar on the left with a search bar, an 'Add Data' button, and a 'DATA SETS' section. The 'DATA SETS' section is currently set to 'Bidang Tanah' (Land Use) and shows an opacity of 100%. Below this, there is a 'Style' section with a legend for different land use types. The legend includes: Hak Milik (orange), Hak Guna Usaha (yellow-green), Hak Guna Bangunan (light blue), Hak Pakai (green), Hak Pengelolaan (purple), Tanah Wakaf (dark blue), and Tanah Adat (cyan). The top right of the map area has navigation and utility buttons: Story, Map, Share / Print, Help, and About. The bottom of the map area shows a disclaimer, logos for Bing Maps, Cesium Ion, and Terra, and a 'Give Feedback' button. The bottom status bar displays coordinates: Lat 6.23066°S, Lon 106.79440°E, Elev 200 m.

**BHUMI.atrbpn**

Search for locations

Add Data

DATA SETS [ 1 ] Remove All

Bidang Tanah

Zoom To Extent About This Data Split Remove

Opacity: 100 %

Style

simbologi untuk persil berdasarkan jenis hak

- Hak Milik
- Hak Guna Usaha
- Hak Guna Bangunan
- Hak Pakai
- Hak Pengelolaan
- Tanah Wakaf
- Tanah Adat

Story Map Share / Print Help About

Give Feedback

Disclaimer: Peta ini tidak dianjurkan untuk keperluan navigasi dan analisis spasial presisi. | ©CNES (2020) Distribution Airbus DS

Bing maps CESIUM ion © 2020 Microsoft Corporation, © 2020 Maxar

Lat 6.23066°S Lon 106.79440°E Elev 200 m



# Penggunaan Geoportal

## Harvesting Metadata

Status Simpul Jaringan	
Cari Simpul Jaringan	
Simpul Jaringan	Status
Aceh	Gagal
Aceh Besar	Gagal
BANDUNG	Tersambung
BANDUNG BARAT	Tersambung
BEKASI	Tersambung
BENGKALIS	Tersambung
Badan Informasi Geospasial - IGD	Tersambung
Badan Informasi Geospasial - IGT	Tersambung
Badan Meteorologi, Klimatologi, dan Geofisika	Tersambung
Badan Narkotika Nasional	Tersambung
Badan Nasional Penanggulangan Bencana	Tersambung
Badan Perencanaan	Tersambung

### Ina-Geoportal Metadata

Data Terbanyak

Data Terbaru



Sumatera Selatan

Metadata:  
918



Aceh

Metadata:  
463



Jambi

Metadata:  
350



DI Yogyakarta

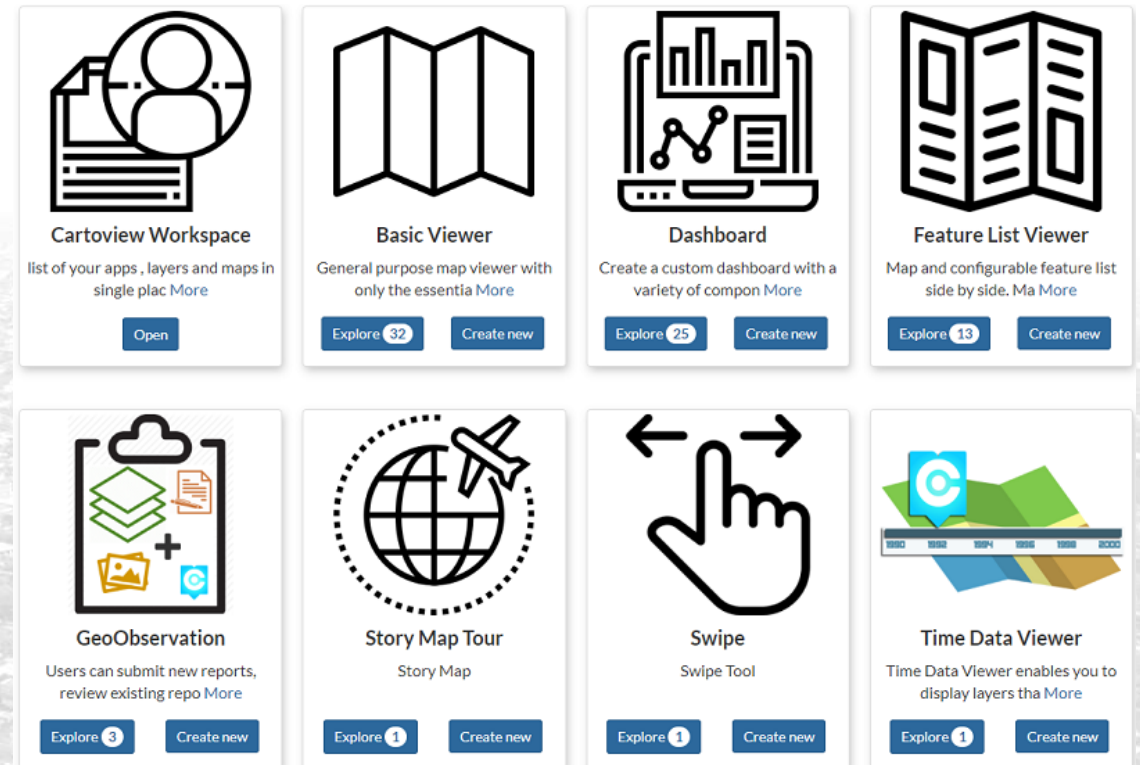
Metadata:  
278

\*Data yang di tampilkan menggunakan sistem CSW



# Review Geoportal

- Lakukan Review pada **masing-masing satu** geoportal yang dipilih
- Review meliputi: perangkat yang digunakan, jenis data, cakupan geoportal, dst (lihat assignment di MS Teams)
- **Deadline:** sebelum kuliah minggu depan





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# TERIMA KASIH

LOCALLY ROOTED, GLOBALLY RESPECTED

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