



Open Source Geospatial
Foundation
Taiwan Chapter

地理資訊系統開放源碼/自由軟體簡介

Introduction of Free/Open Source Software for GIS

鄧東波

dongpo@iis.sinica.edu.tw

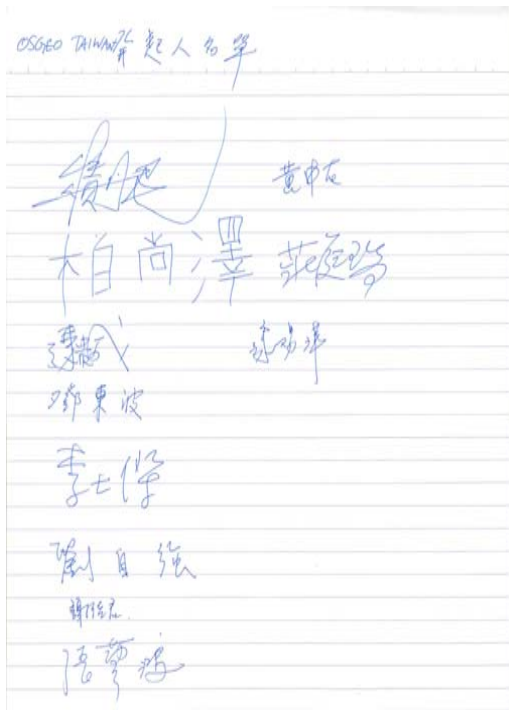
Workshop on Free/Open Source Software for GIS 2007

2007年地理資訊系統開放源碼自由軟體工作坊

6.29.2007

OSGeo Taiwan

- **OSGeo Taiwan Chapter**是一個自願性的非營性組織。
- 一群來自於不同領域的專家學者，同時對於地理資訊系統開放源碼/自由軟體有興趣的人所組成。



Initial Membership

- Mr. Dongpo Deng (IIS, Academia Sinica)
- Mr. Hsiung-Ming "veevee" Liao (Computing Center, Academia Sinica)
- Mr. Shih-Chieh "Ilya" Li (NDAP, Academia Sinica)
- Mr. Sander Borghuis (s.borghuis at geo dot uu dot nl, NTU, UU.nl)
- Dr. Tain-Yuan Shih
- Dr. Tyng-Ruey Chuang (Creative Commons Taiwan Project, IIS, Academia Sinica)
- Mr. Yi-Hong Chang (IIS, Academia Sinica)
- Mr. Tsung-Wei "Marr" Hu (OSSF, IIS, Academia Sinica)
- Dr. Sheng-Tsai Huang (NPUST, Community University)
- Mr. Kuei-Cheng Chen (Steps Co.,LTD)
- Mr. Eric Sun (OSSACC)
- Mr. TzuChiang Liou (IIS, Academia Sinica)
- [Dan Jacobson](#)

OSGeo Taiwan的任務

- 促進地理空間資訊開放源碼/自由軟體在台灣的發展。
- 地理空間資訊開放源碼/自由軟體宣導和教育。
- 促進地理空間資料在公私部門的分享與利用。
- 扮演地理空間資訊開放源碼/自由軟體開發者和使用者的橋樑。
- 提供地理空間資訊開放源碼/自由軟體資源、如教育訓練、工作坊、技術規範、中文說明書等。

OSGIS 在台灣

- 使用率低、不佳的使用經驗、缺乏相關中文資源。
- 學術團體有較高的興趣，但公部門可能對於**Open Source GIS**的認識較少，以致於害怕使用**Open source GIS**。
- 在台灣的**GIS**領域需要一個對**Open Source GIS**推廣、促進和釋疑的角色。
- 在全球地理空間資訊的浪潮下，台灣也缺乏**Open Source GIS**的聲音。

什麼是 Open Source, 它如何運作

- 對於散佈有一定程度限制的免費的可得的軟體和源碼。
- 以合作、社群為基礎的軟體發展模式。
- 以軟體使用者和開發者整合為導向。
- 網際網路提供虛擬的軟體開發小組的骨架。

Open Source模式的好處

- 沒有授權費用
 - 資源是被分配到發展應用程式和加強軟體，不是授權到多個機器上。
- 可根據使用者的需求開發出高度客製化的應用程式。
- 活躍的使用社群。
- 以應用程式的直接用戶(end-user)的需求為優先。
- 問題可以獨立解決。

Open Source in GIS

- **Open Source**在 GIS的發展歷程中扮演重要，但不明顯被人知道的角色，例如，**GCTP**和**PROJ4**函式庫。
- 許多使用**Open Source**技術的整合性和服務性公司團體紛紛成長，如**DM Solutions Group**，**Intevation GmbH**，**CCGIS**，和**Camptocamp SA**。
- 所有商業 GIS軟體或多或少都使用 **Open Source GIS**的元件或產品，如 **Libgeotiff** 和**GDAL/OGR Lib**。

依開發語言 Open Source GIS 分兩大類

- 以C語言為基礎

- UMN Mapserver
- GRASS
- OpenEV
- QGIS
- OGR/GDAL
- PROJ4
- GEOS
- PostGIS

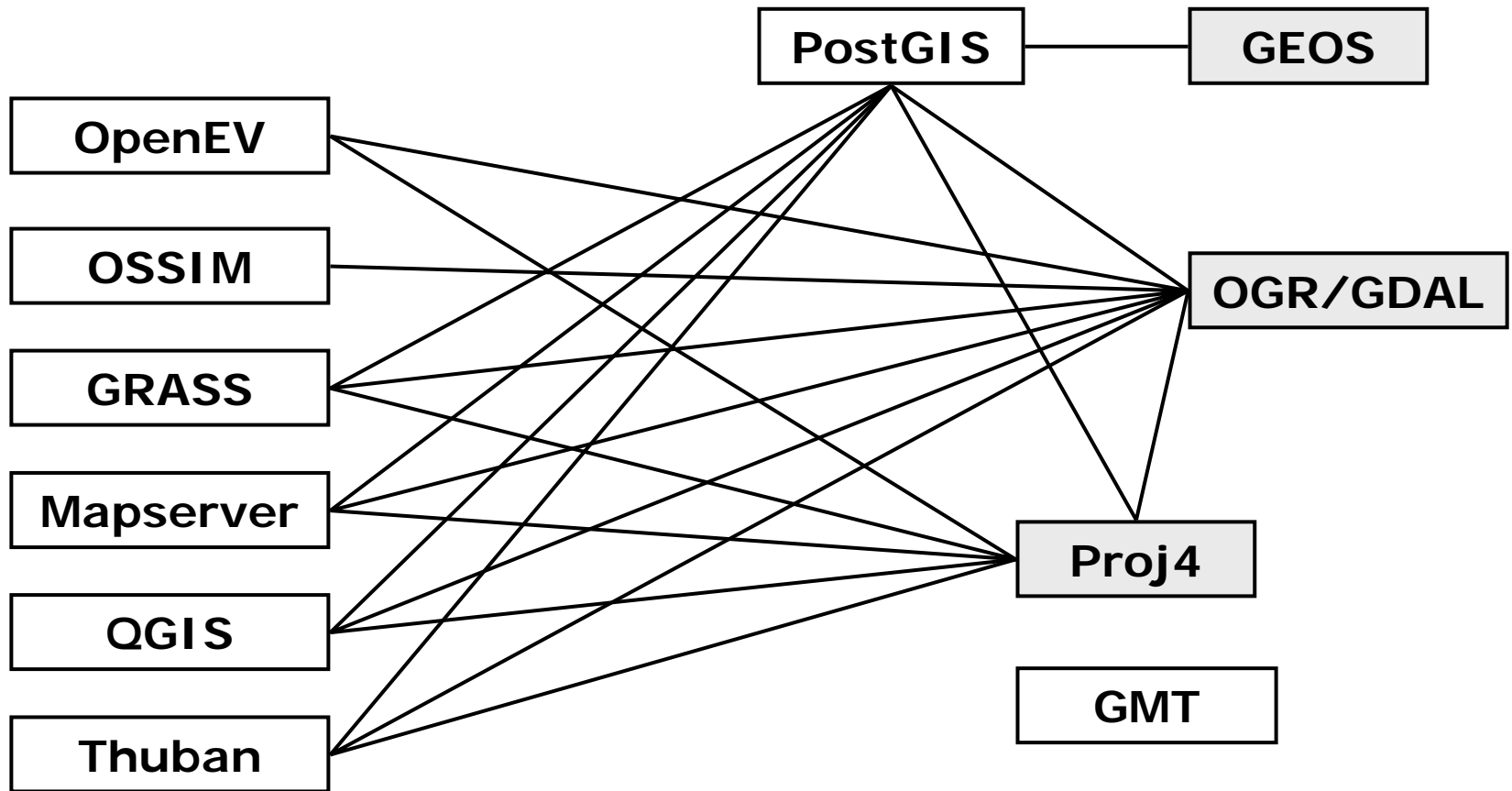
- 以Java為基礎

- GeoTools
- GeoServer
- DeeGree
- OpenMap
- JUMP
- uDig

OpenGIS
WMS/WFS

JDBC

以C語言為基礎



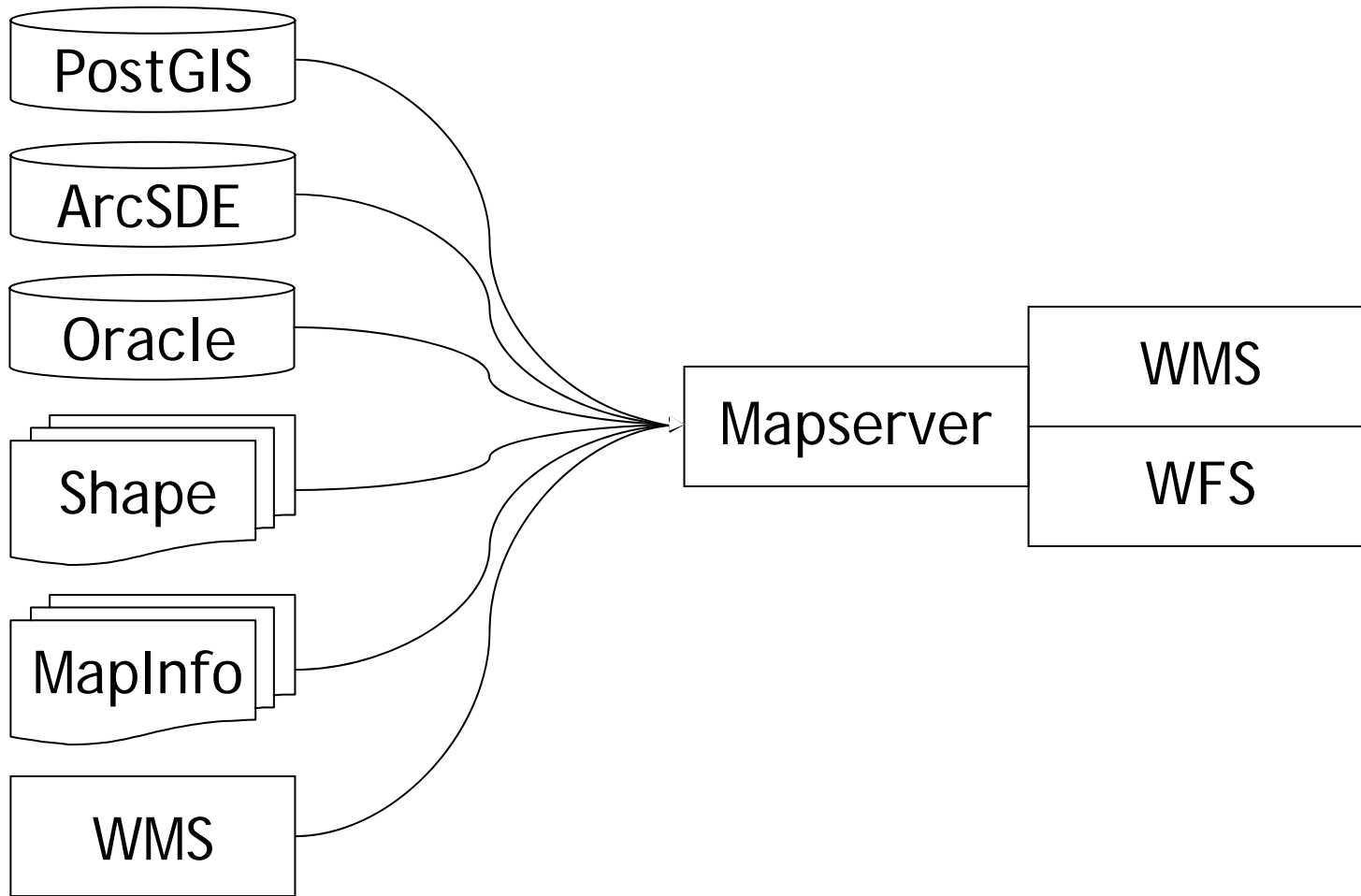
C語言的函式庫

- **GDAL**
 - Raster Format Reader / Writer
- **OGR**
 - Vector Format Reader / Writer
- **PROJ4**
 - Coordinate Reprojection
- **GEOS**
 - Geometry Objects and Functions

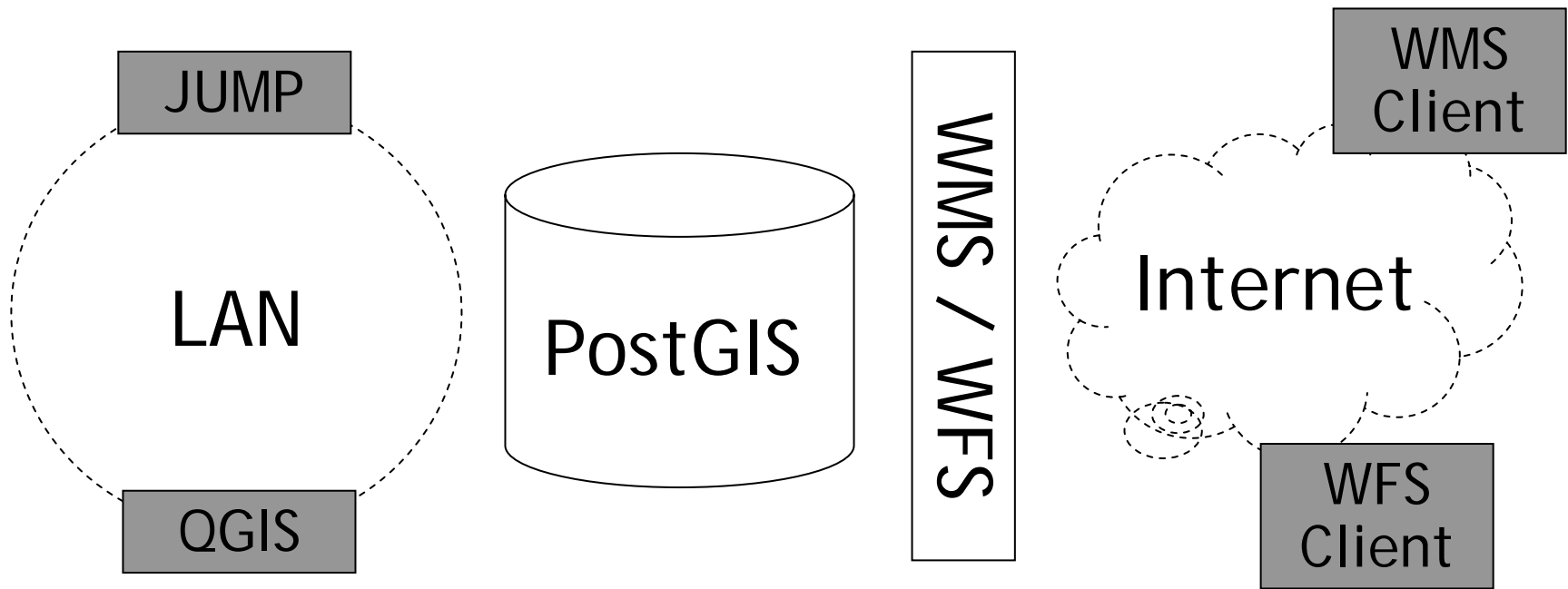
C語言的服務(Servers)

- **Mapserver**
 - OpenGIS Web Map Server
 - OpenGIS Web Feature Server
 - OGR / GDAL / PROJ4
 - PostGIS / ArcSDE / Oracle Spatial
- **PostGIS**
 - OpenGIS Simple Features for SQL
 - PROJ4 / GEOS

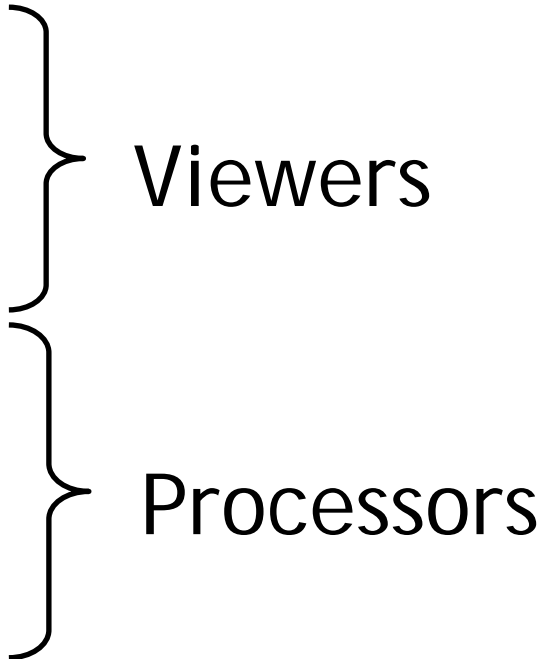
Mapserver



PostGIS



C Applications

- OpenEV
 - QGIS
 - Thuban
 - GRASS
 - OSSIM
 - GMT
- Viewers
- Processors
- 

Layers

View: View 1

- ottawa_patch.img

ottawa_patch.img Properties

General Raster Source Draw Style Image Info

Raster

Band: 1

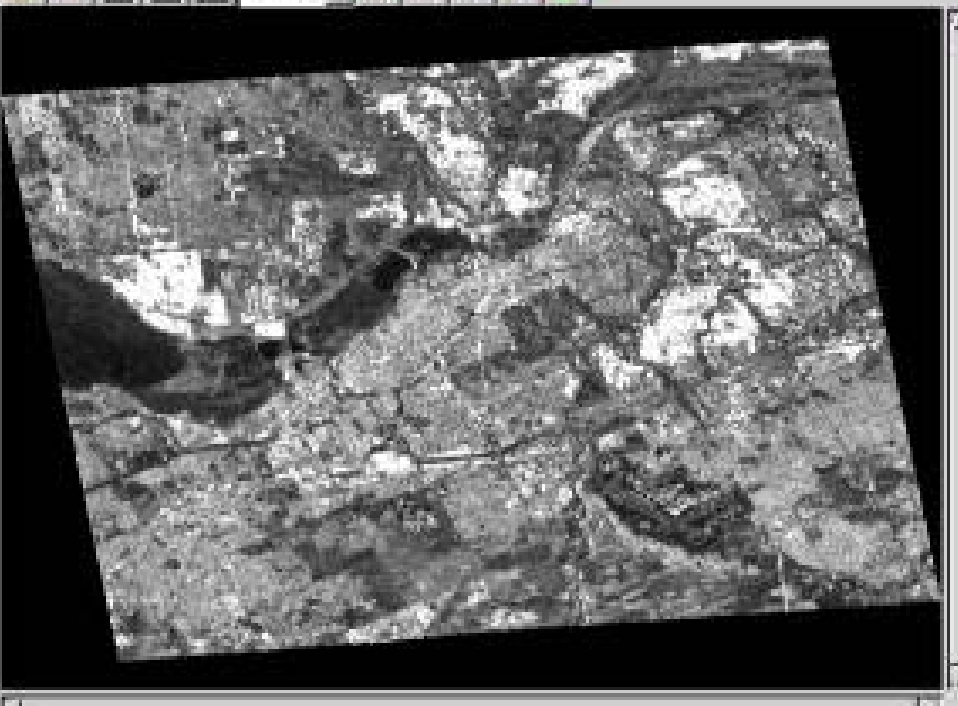
Scale Min: 1.0 1.0

Scale Max: 430.0 430.0

OpenEV View 1

File Edit Help

1:4.1



Preferences

Tracking Tool Raster Caching Help Browser

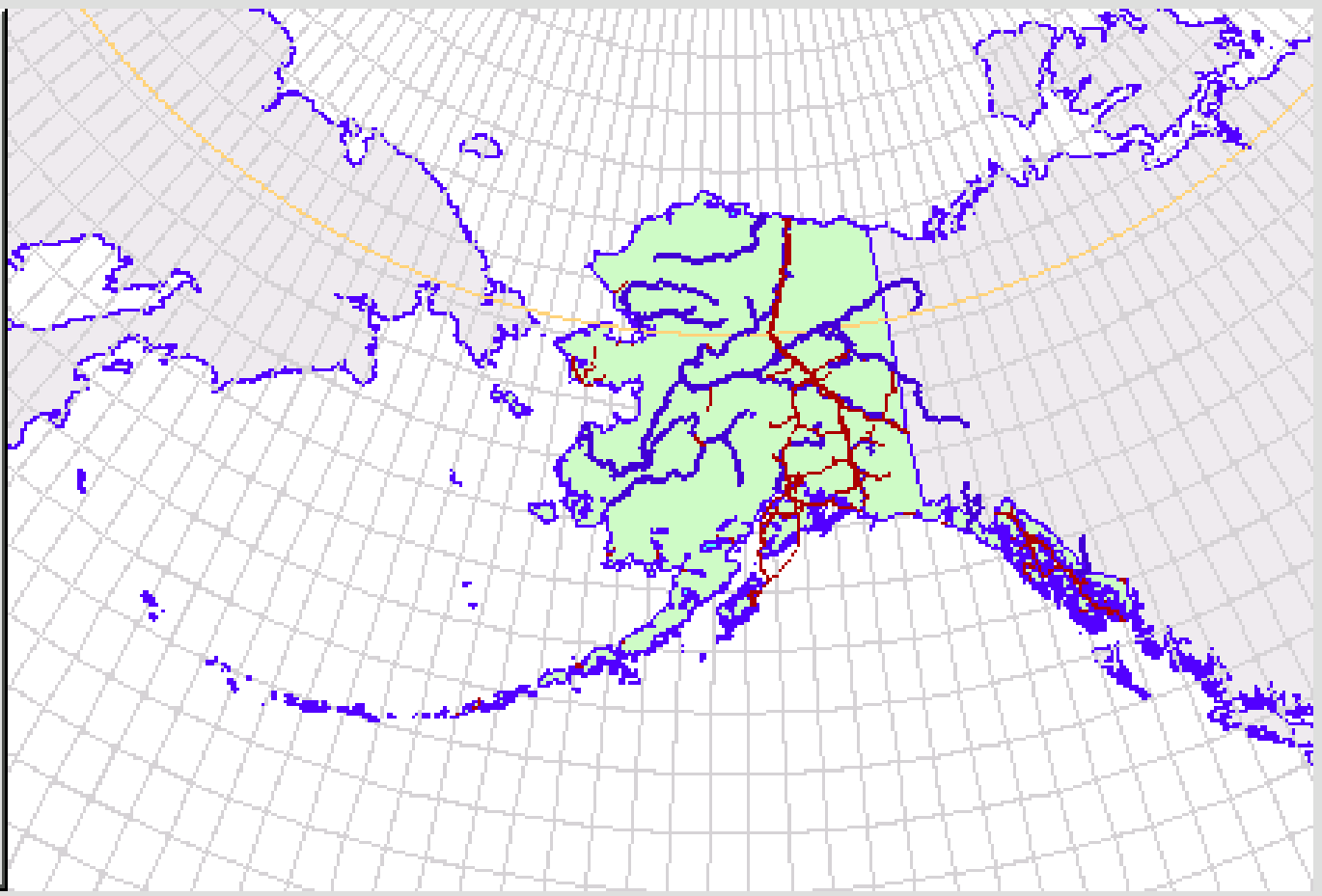
Coordinate: Georeferenced

Lat/Long Format: ddd:mm:ss.ss

Pixel Value: On



- Layers
- Transportation
 - Major Rivers
 - Major Lakes
 - Arctic Circle
 - Alaska
 - Grid
 - Russia
 - Canada



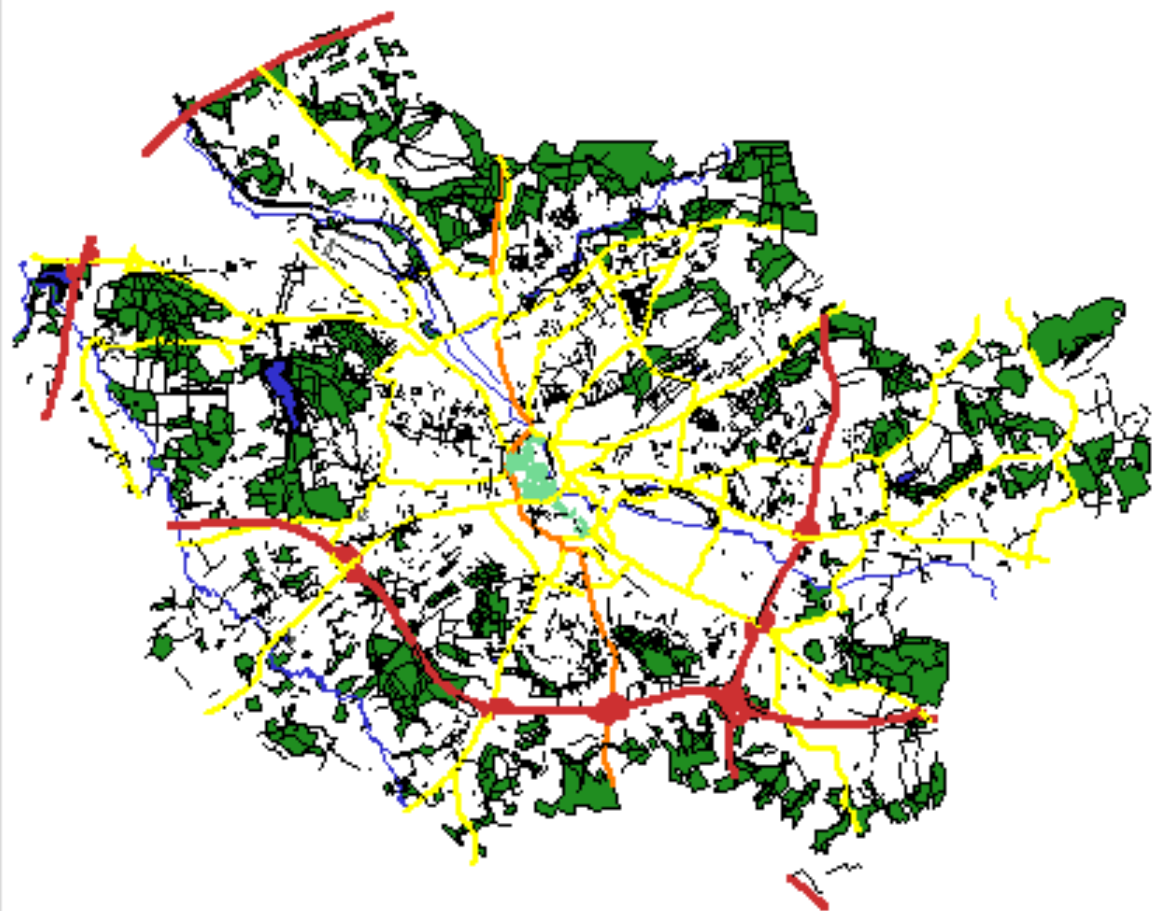
-2674265.39832, 2340525.87816

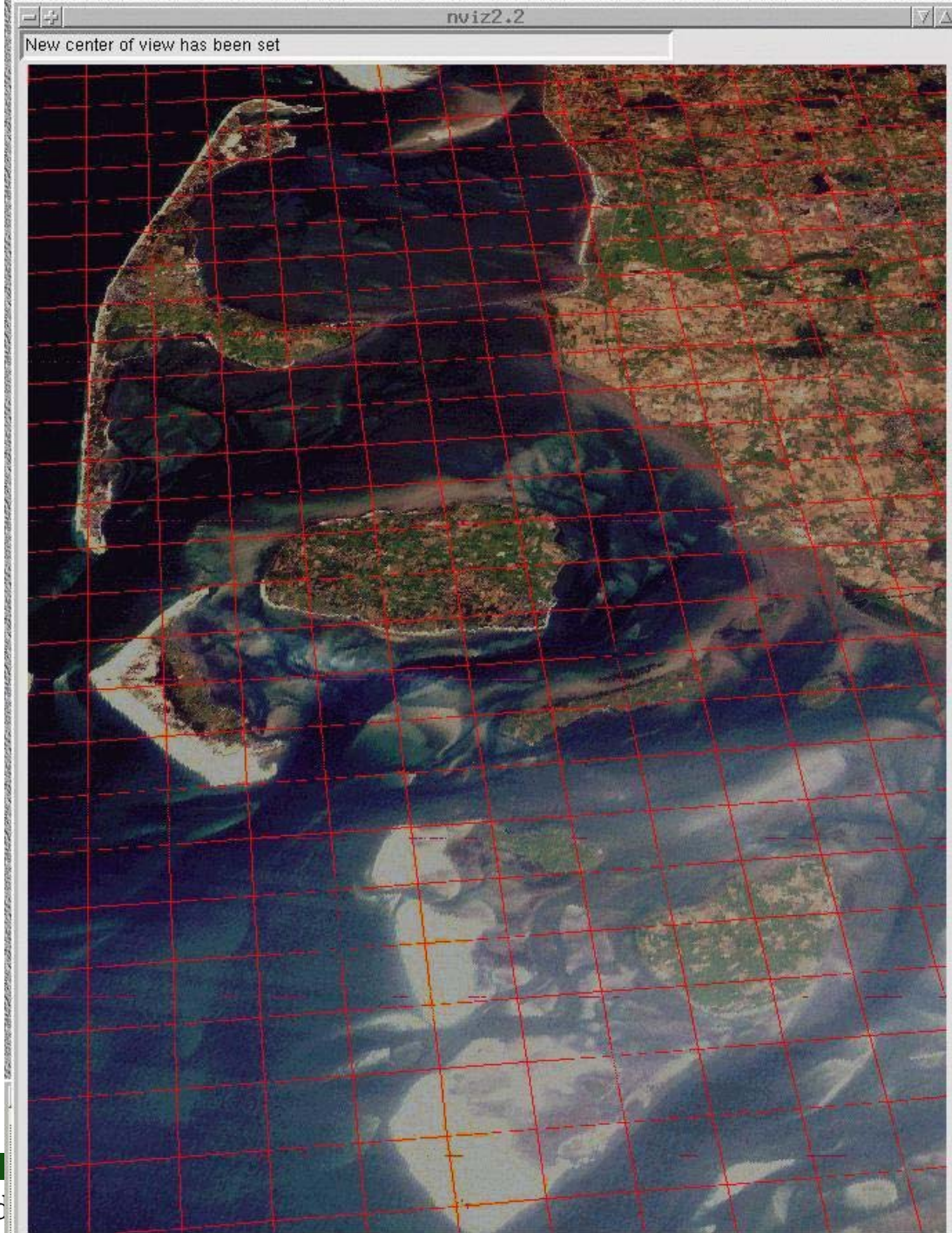


Legend



- Streets
 - Autobahn
 - Main Road
 - Major Street
 - Lane
 - Footpath
 - Pedestrian Area
- Gewässer
 - DEFAULT
- Gewässerflächen
 - DEFAULT
- Grünflächen
 - DEFAULT





top2

File Panel Scripting

Auto Clear **REDRAW** Clear

Surface Vectors Sites Cancel

LOOK here center cancel

height 3309 zexag 0.93

perspective 22.0 RESET

Surface Panel

Grid Resolution 132

Polygon Resolution 26

Current Surface Only All Surfaces

Surface Style:

- Polygon
- Wire
- Wire/Poly

Shading:

- Flat
- Gouraud

Current: eins@kueste New Delete

topography eins@kueste No Zeros

color 123rgb@kueste No Zeros

mask mask not set Wire Color

transparency transparency not set Position

shininess 60.000000

emission emission not set

Draw Current Close

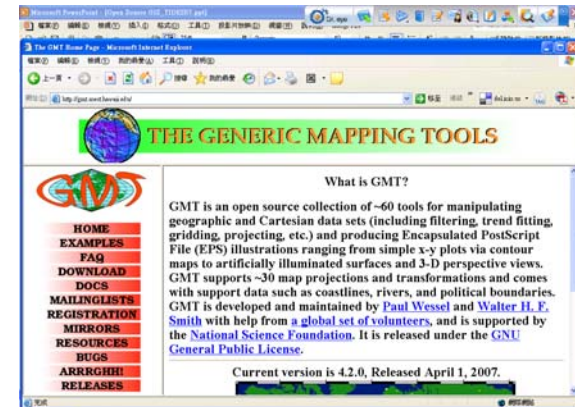
GRASS GIS 5.0 and NVIZ2.2 visualization tool 1999



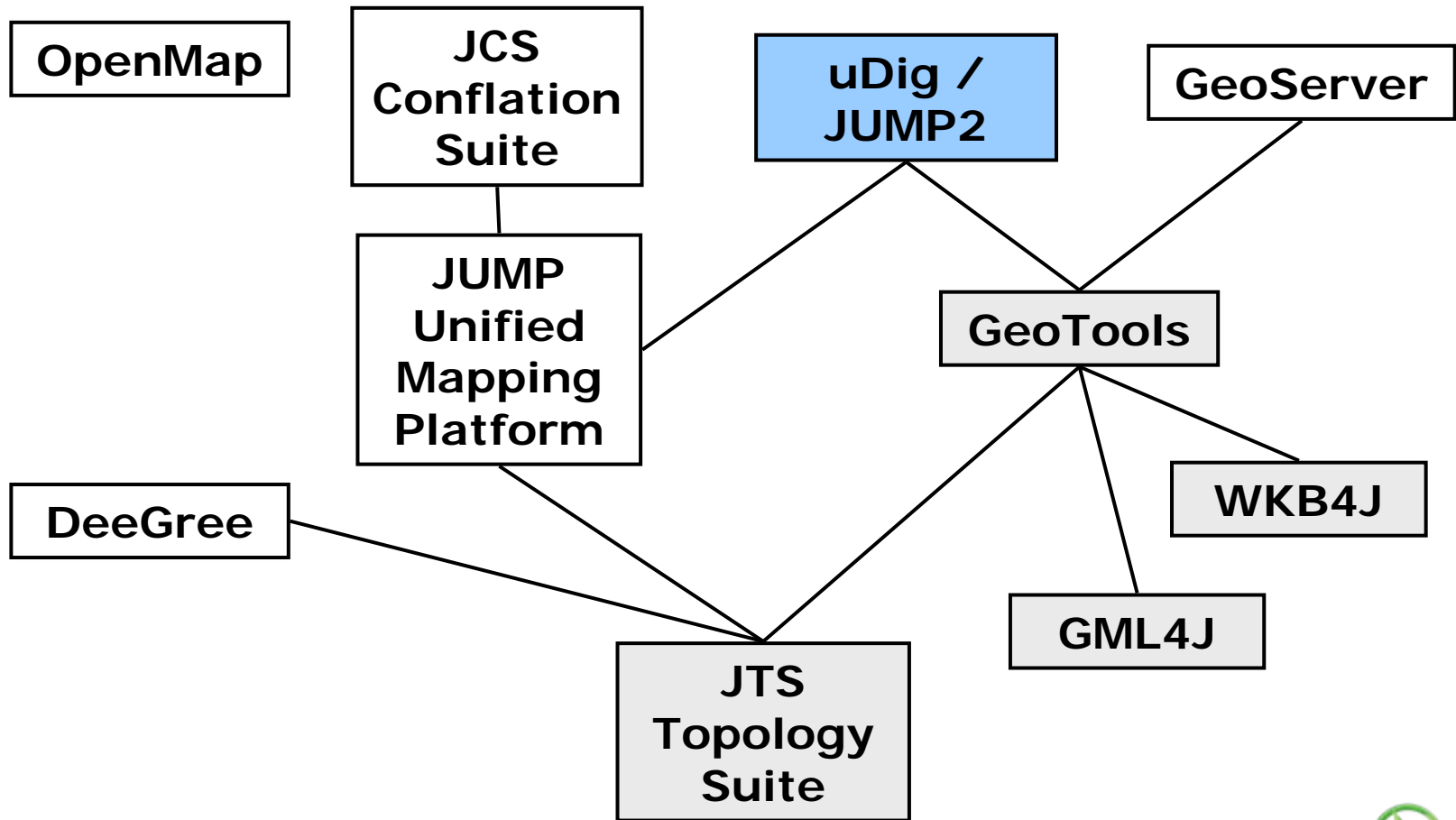


GMT

- GMT → Generic Mapping Tools
- UNIX Philosophy
 - Many small tools, chained together
- Gridding, Contouring, Plotting
- Surface Models



Java Tribe

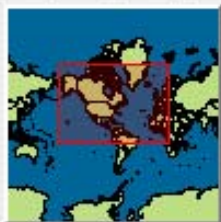


Java Libraries

- **JTS Topology Suite**
 - OpenGIS Geometries and Methods
- **GeoTools**
 - Data Formats, Java GIS Toolkit
- **WKB4J**
 - Java Well-Known Binary Reader / Writer
- **GML4J**
 - Java GML Reader / Writer

Java Applications

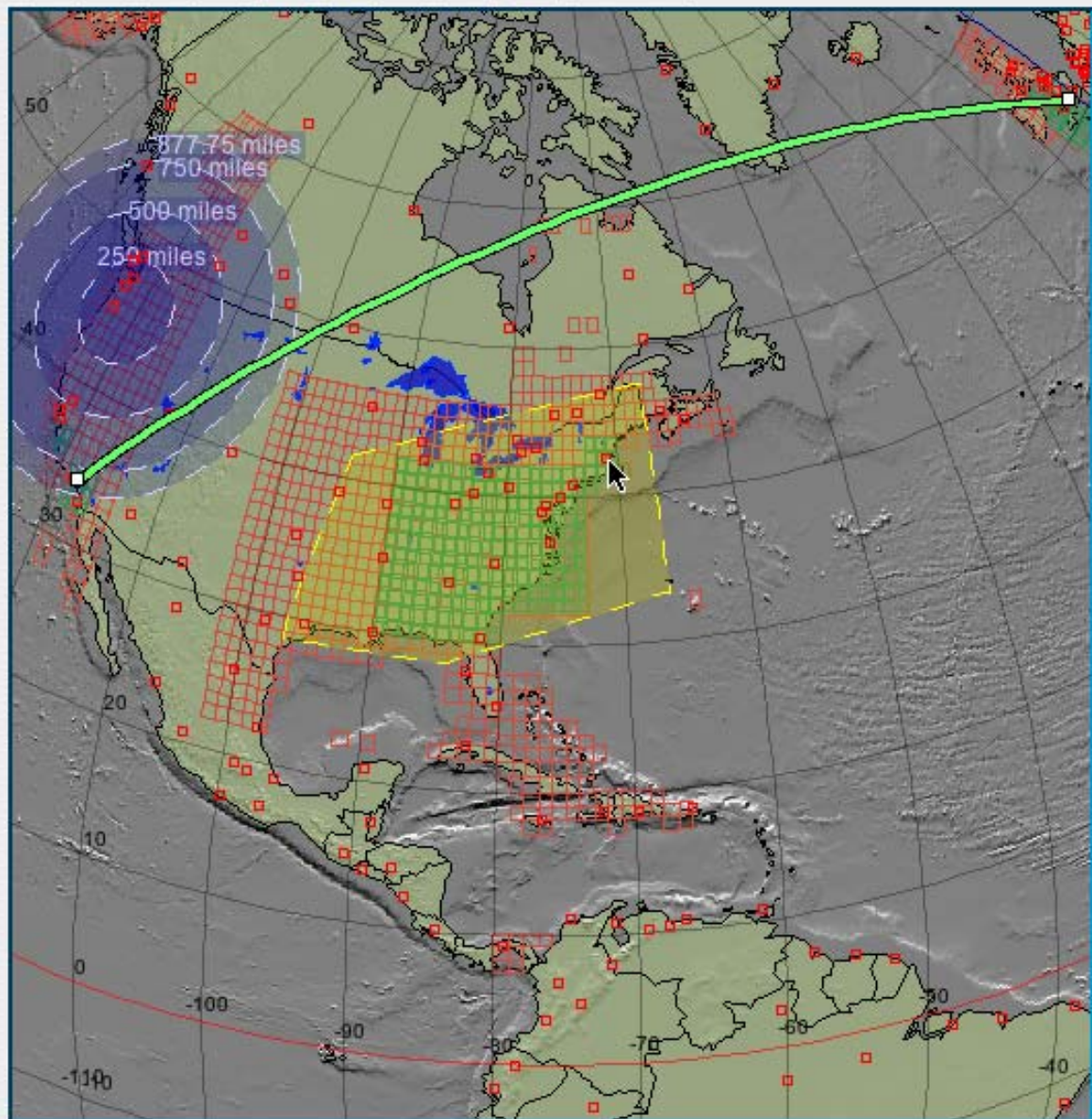
- **OpenMap**
 - **DeeGree**
 - **JUMP / JCS**
 - **GeoServer**
 - **uDig**
- } Standalone
- } JTS Based



1:50,000,000

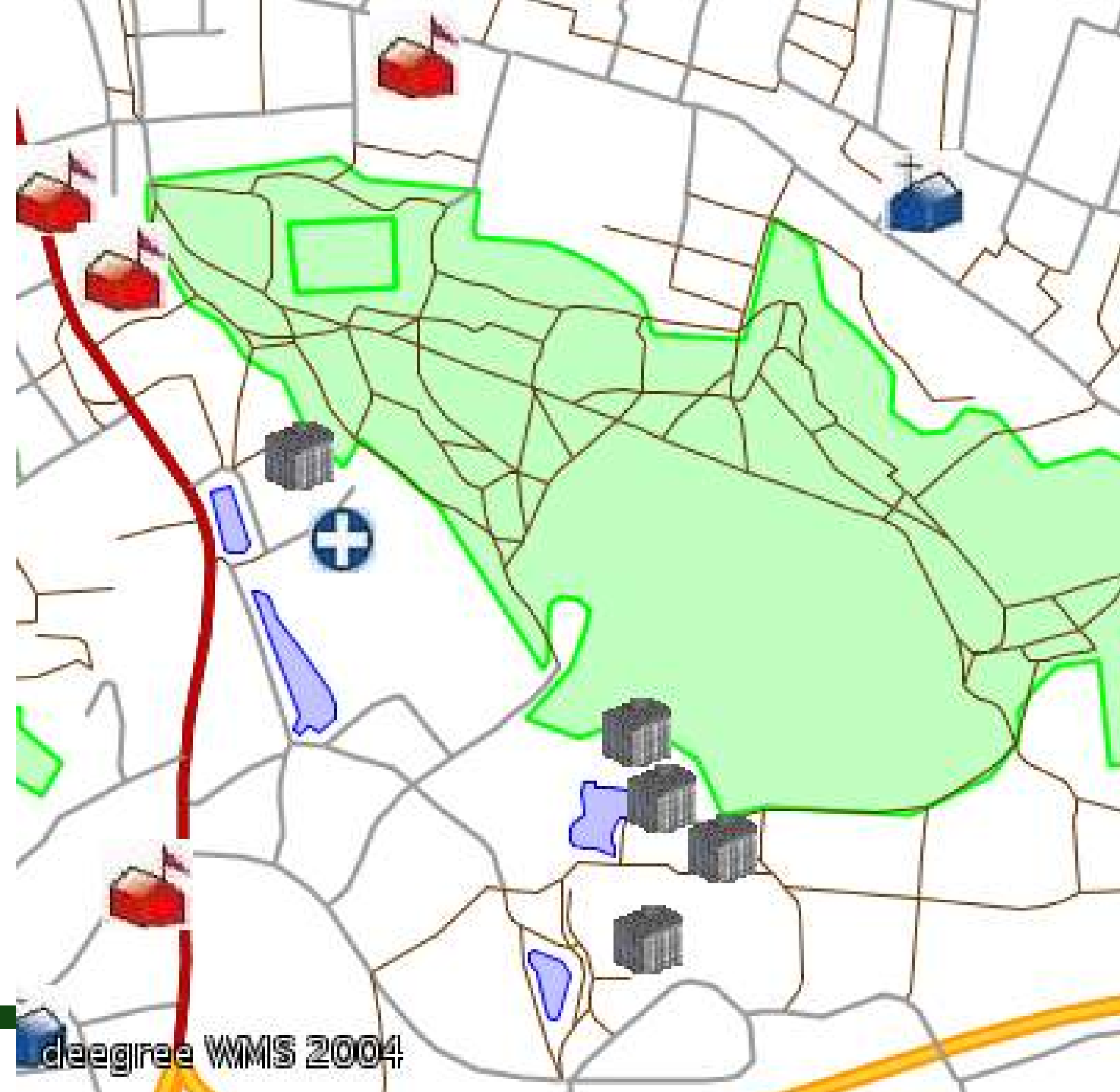


- World Cities
- UTM Grid
- Day/Night Shading
- Date & Time
- Drawing Layer
- Distance Layer
- Graticule
- Terrain Tools
- Demo Layer
- DTED Coverage
- Water
- DTED



Lat, Lon (42.21, -70.83) - x, y (291,220)

Boston



Task 1

- Working
 - victoria_ici
 - roads
- System



View Attributes: roads

roads (13554 features)

FID	MSLINK	RD_SEG_ID	HWY_RTE	FEAT_
358	204785	167144		Spencer Rd Onramp
324	204816	167150		Millstream Rd Offramp
379	204817	167143		Millstream Rd Onramp
332	204822	167162		Millstream Rd Offramp
326	204825	167152		Millstream Rd Onramp
		167168		Millstream Rd Onramp
		167141		Six Mile Rd Offramp
		148830		Six Mile Rd Offramp
		167142		Six Mile Rd Offramp
		167203 17A		Royal Oak Dr Onramp
		167199		Royal Oak Dr Offramp
		167201 17A		Royal Oak Dr Offramp
		142501		Swartz Bay Passenger Loop
		167181		Wain Rd Offramp

Editing

Options...

Task 2

- Working
 - langford_ici
 - colwood_ici
- System



Feature Info: Task 2

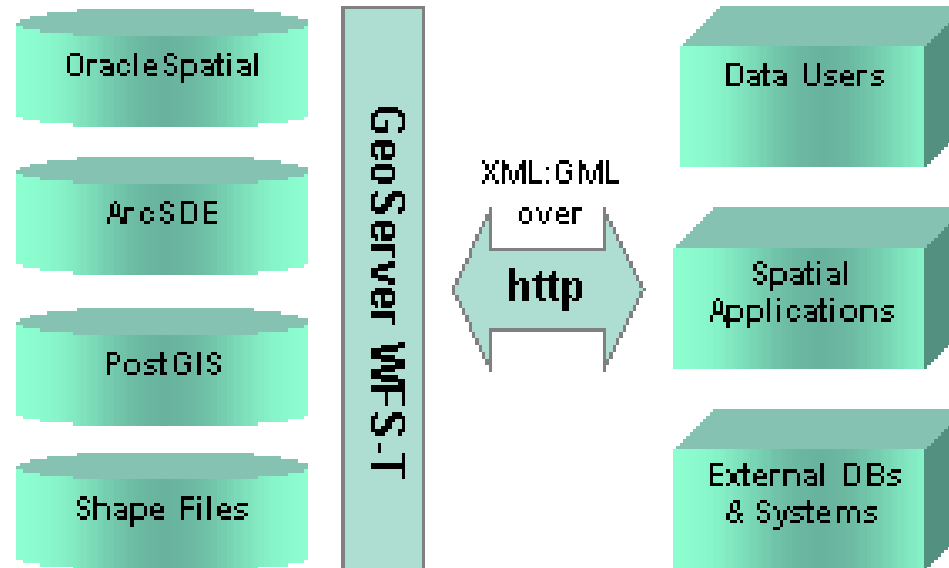
colwood_ici

FID 28753

POLYGON ((464855.125304957 5366116.26040797 5366013.3488641, 464813.82390704, 464801.944772286 5365973.09031328, 465938.23600255, 464777.649617223 536593.036760064 5365912.11223255, 464789.20533072, 464767.369434988 5365962.588626754 5365972.28115656, 464712.01327842

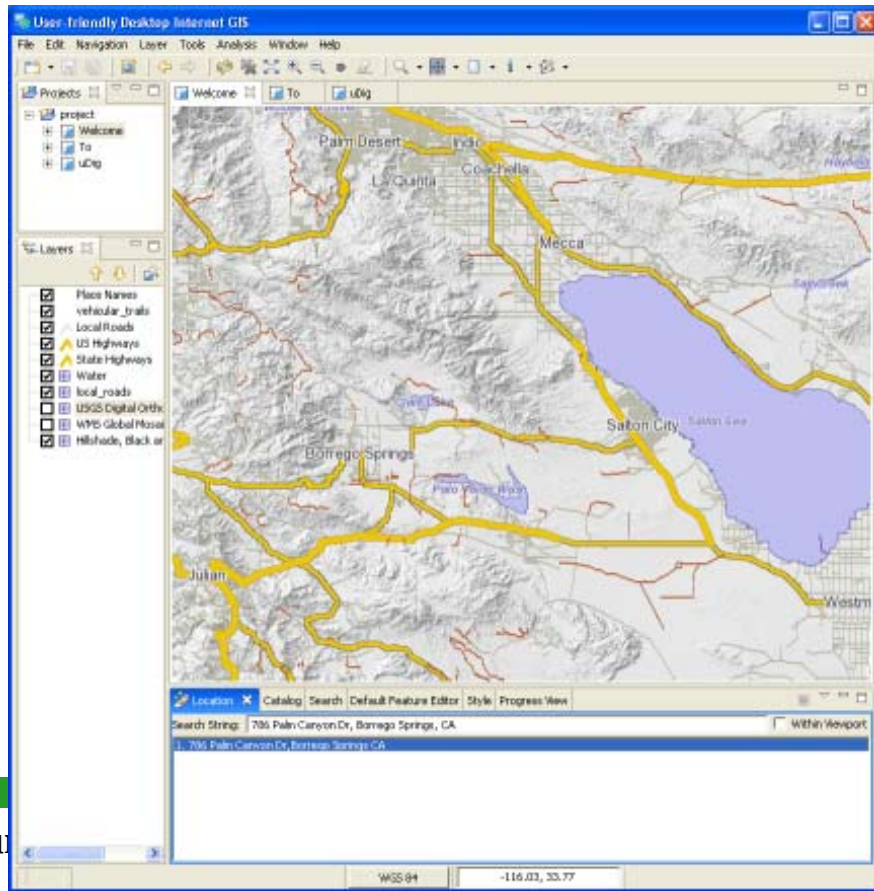
GeoServer

- OpenGIS WFS-T
- Web Feature Server - Transactional
- OpenGIS WMS (Beta)
- Database Datasources + Shape



uDig

- **U**ser-friendly **D**esktop **I**nternet **G**IS
- WFS, WMS, WRS
- PostGIS, ArcSDE, Oracle Spatial
- Printing, Reprojection
- Shape, GeoTIFF



Pros and Cons on OSGIS

Strengths

- Server Side
- Heterogeneous Environments
- Performance
- Standards Support
- Complex or Custom Applications

Weaknesses

- Interactive Desktop
- Paper Production
- Lowest Common Denominator
- “Standard” Applications



Open Source Geospatial
Foundation
Taiwan Chapter

Thank you for your attention!

Contact me: dongpo@iis.sinica.edu.tw

Mailing list: osgeo-talk@lists.openfoundry.org

OSGeo Taiwan Chapter:

<http://wiki.osgeo.org/index.php/Taiwan>