gvSIG project: Open Source SDI client

www.gvsig.gva.es

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FONDO EUROPEO DE DESARROLLO REGIONAL

GENERALITAT VALENCIANA
CONSELLERIA D'INFRAESTRUCTURES I TRANSPORT

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Introductions:

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Salvador Bayarri, IVER (SME Valencia)

Martín García, Dept. Infrastructures and Transport (CIT), Generalitat Valenciana
Gabriel Carrión, CIT
Luis W. Sevilla, CIT
Gonzalo Mira, CIT

Francisco Peñarrubia, IVER
Álvaro Anguix, IVER

Generalitat Valenciana (GV) is the government of the Valencian Community (Castellón, Valencia, Alicante)

Spain is currently heavy de-centralized (17+2 communities)

Conselleria de Infraestructuras y Transporte (CIT) or Dept of Infrastructures and Transport, is the maximum authority in the Generalitat Valenciana for Public Works, Transport, Architecture, Ports and Coasts, Energy, and Telecommunications.

Approximately 1000 PC users of various types

Origin of gvSIG

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gvPontis: migration of IT to free software solutions

Conselleria de Infraestructuras y Transporte

Optimize information systems → **Technological independence** → **Sustainable development**

- Migration to information systems under **LINUX** (end of 2002)
- **Areas of action:**
  - Office Suites
  - Operating systems and communications
  - databases
  - corporate systems within Conselleria
    - GIS and CAD

→ **Development of GIS client: gvSIG**

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Origin of gvSIG

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GIS-CAD: migration procedure

Needs analysis of GIS-CAD users, by questionnaire and interviews

- Visualization
- Query
- Edicion
- Spatial analysis
- Topology
- Map preparation
- Printing

Analysis of the GIS-CAD software on the market

- ArcView
- ArcGIS
- Jump
- Grass
- AutoCAD
- MicroStation
- IntelliCAD

Initial requirements analysis.

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Origin of gvSIG

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GIS-CAD. Procedure.

Public Tender: Exp. 2003/01/0090

"Desarrollo de aplicaciones SIG (Sistema de Información Geográfica) para la C.O.P.U.T. Utilizando software libre."

Public Tender: Exp. 2004/01/228

"Servicios informáticos de incorporación de funcionalidades de geoprocesamientos, topología y CAD en el producto gvSIG"

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Origin of gvSIG

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Tender required working prototypes in C++ and Java, and for Windows and Linux !

Initial actors (circa 2004)

- **Administration: Conselleria de Infraestructures i Transport. Generalitat Valenciana**
- **University: Universidad Jaume I de Castellón**
- **SME contractor: IVER Tecnologías de la Información**

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Origin of gvSIG

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Main characteristics

- Development language: Java (Multiplatform).
- Free license (GNU/GPL).
- Modular, scalable, powerful.
- Int'l standards-based (OGC, ISO, W3C).
- Simple interface
- International (Español, Valenciano, Euskera, Gallego, English, French, Italiano, Portugués, German, Czech, soon Mandarin)

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gvSIG and SDI

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Born as a GIS client

- Initially designed to meet GIS needs of the Conselleria

- Then the team learned of INSPIRE:

  - Optimal access to geodata, maintained in situ
  - Facilitate discovery of geodata
  - Connectivity and interoperability

----> and they were believers

- gvSIG grew to become a thick SDI client, offering best of both worlds

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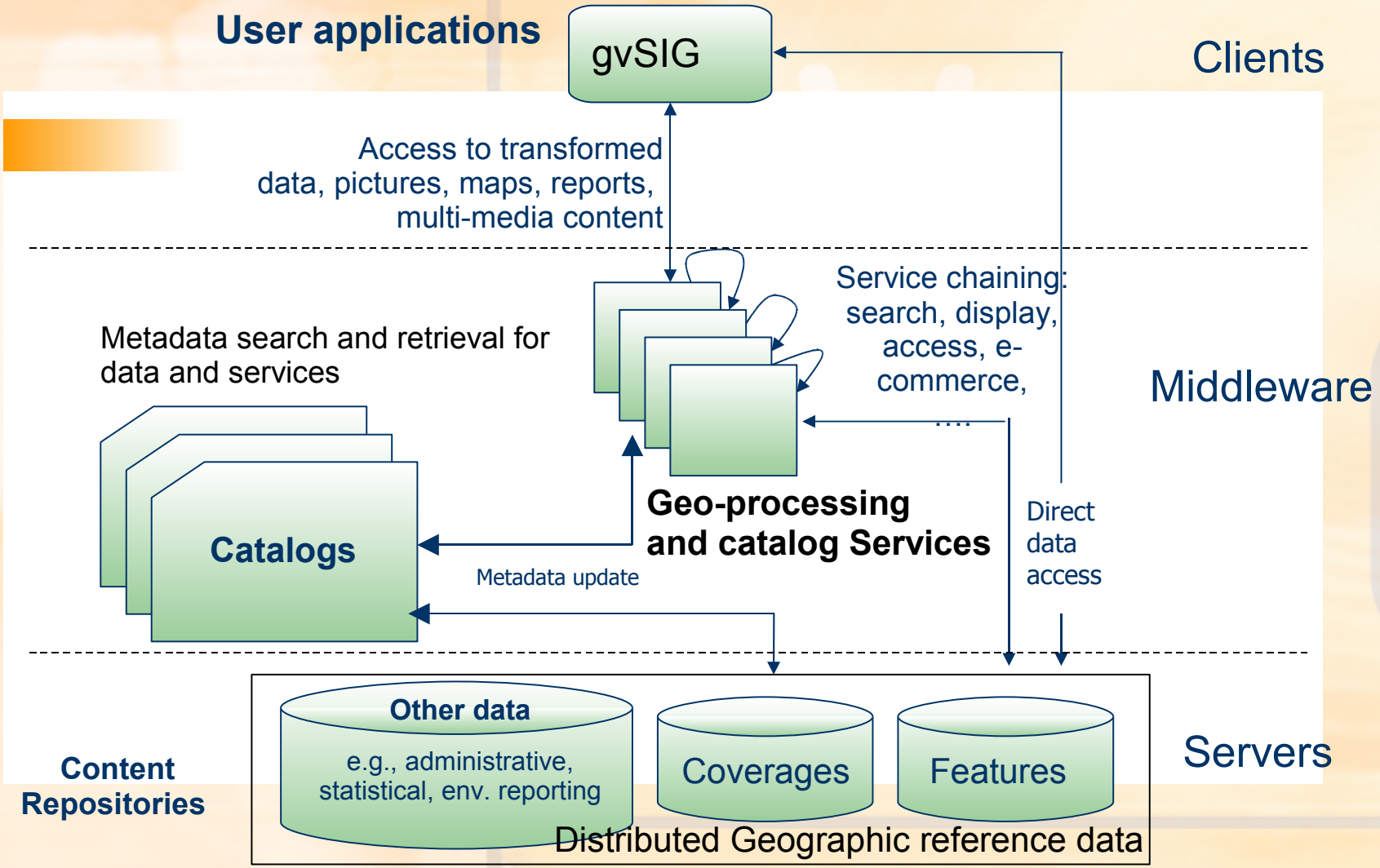
User applications
gvSIG
Clients
Access to transformed data, pictures, maps, reports, multi-media content
Service chaining: search, display, access, e-commerce, ...
Middleware
Metadata search and retrieval for data and services
Catalogs
Geo-processing and catalog Services
Metadata update
Direct data access
Content Repositories
Other data
e.g., administrative, statistical, env. reporting
Coverages
Features
Servers
Distributed Geographic reference data

gvSIG Background

- Developed with companies (IVER) and universities (UJI)
- GPL License
- Java. Multiplatform (Windows, Linux, Mac -at 1.0-)
- Multilingual, easy internationalization
- Version 1.0 RC2 available now at www.gvsig.gva.es and in distributions like GeoNetwork Open Source DVD

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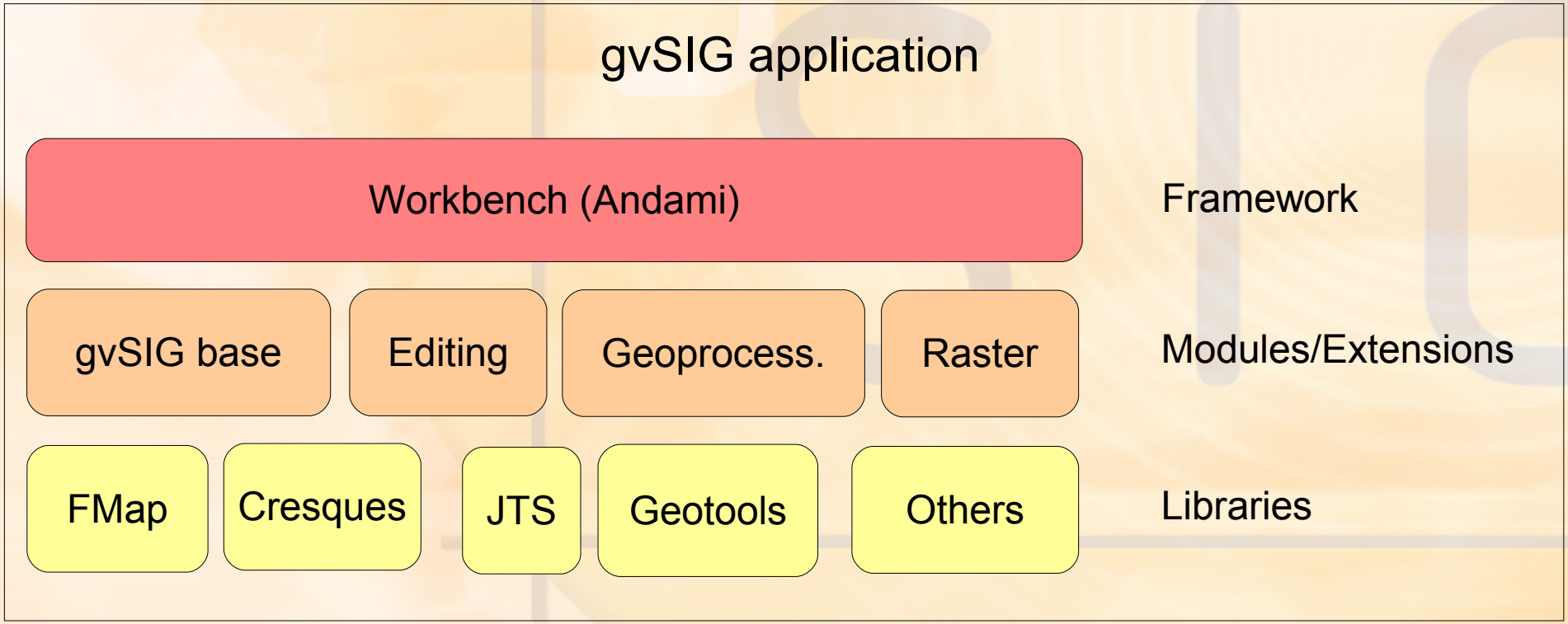
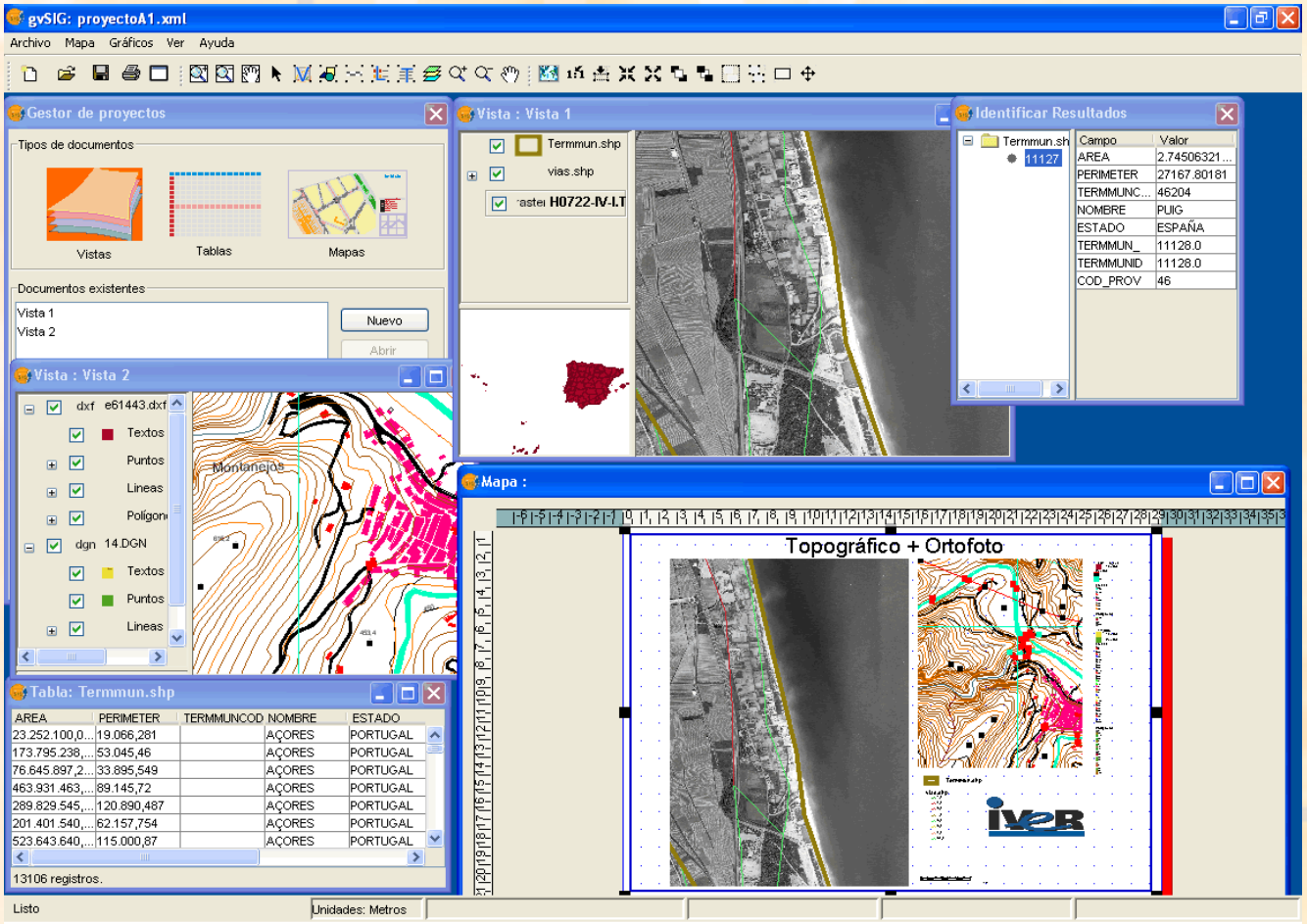
gvSIG Background: Architecture

- Modular, efficient and easily extensible



gvSIG Background: Functionality

- Visualizacion, query, map composition



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gvSIG Background: Functionality

- Data input/output

- Reading:

· SHP
· DGN
· DXF
. DWG

· ECW
· MrSID
· JPEG2000
· JPG
· PNG
· GIF
· TIFF

. PostGIS
. MySQL

- Writing:

· SHP
. DXF

· ECW
· GeoTIFF
· Jpeg2000
· MrSID

. PostGIS

gvSIG as SDI Client

- Rich support of OGC remote services:
  - WMS (1.1.0 - 1.3.0)
  - WFS (1.0.0) + GML import/export (2.1.2) at 1.0
  - WCS (1.0.0)
  - Catalog seach tool (OGC CSW 2.0, IDEC)
  - Gazetteer search tool (WFS 1.0.0, WFS-G 0.9, ADL)
- Supports ArcIMS Map and Feature services, too

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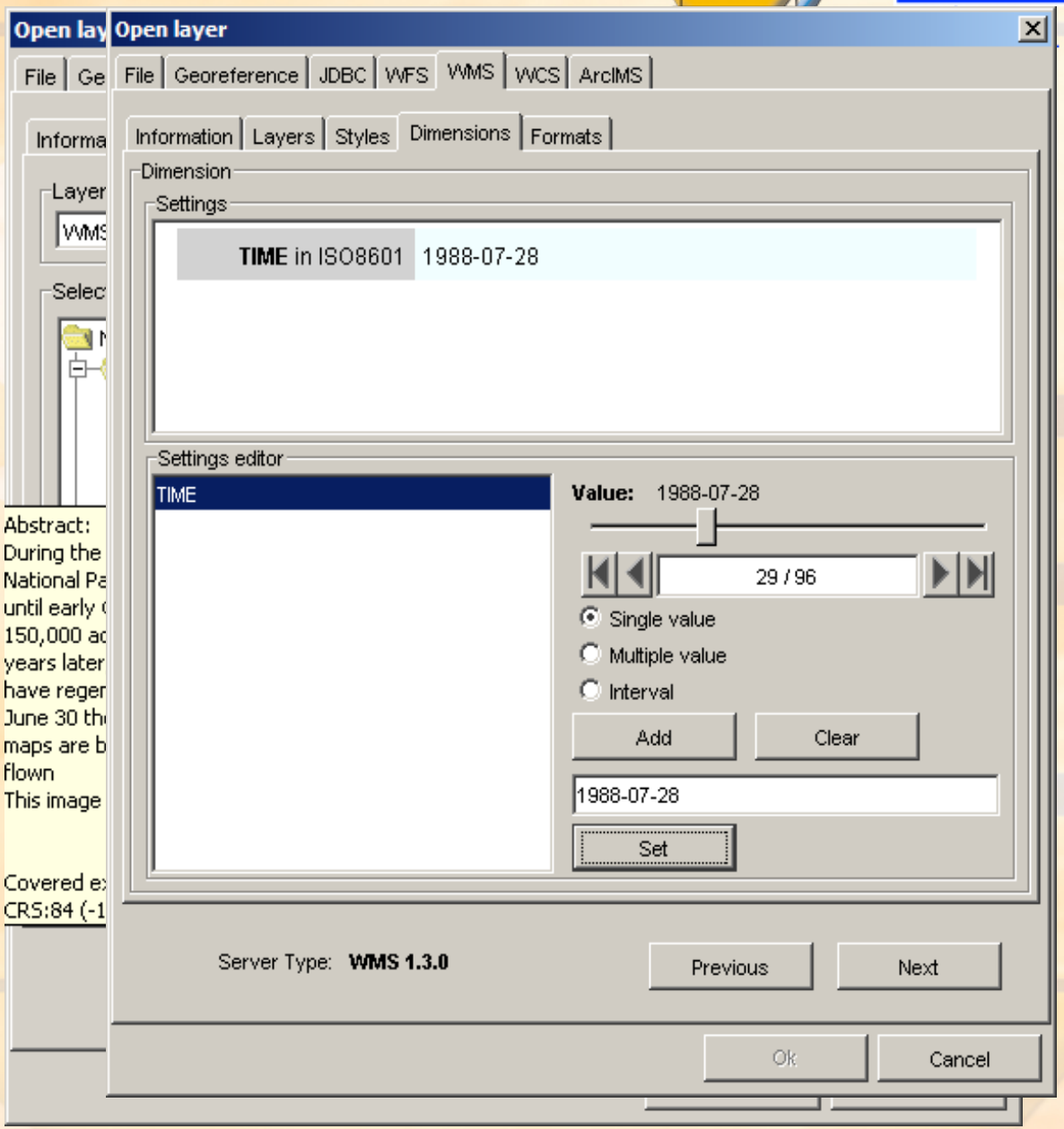
Example:
GUI for WMS access



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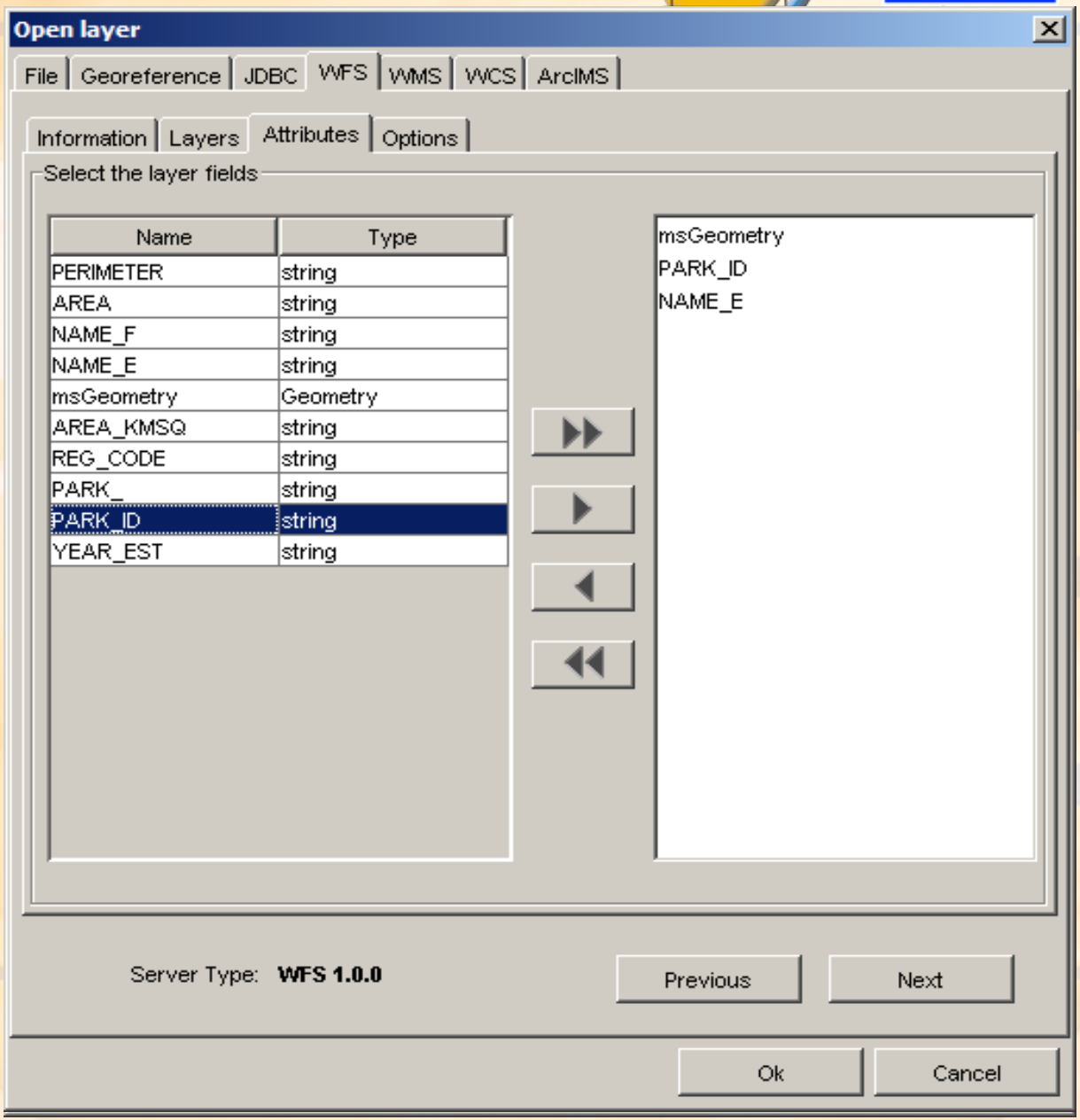
Example:
GUI for WFS access



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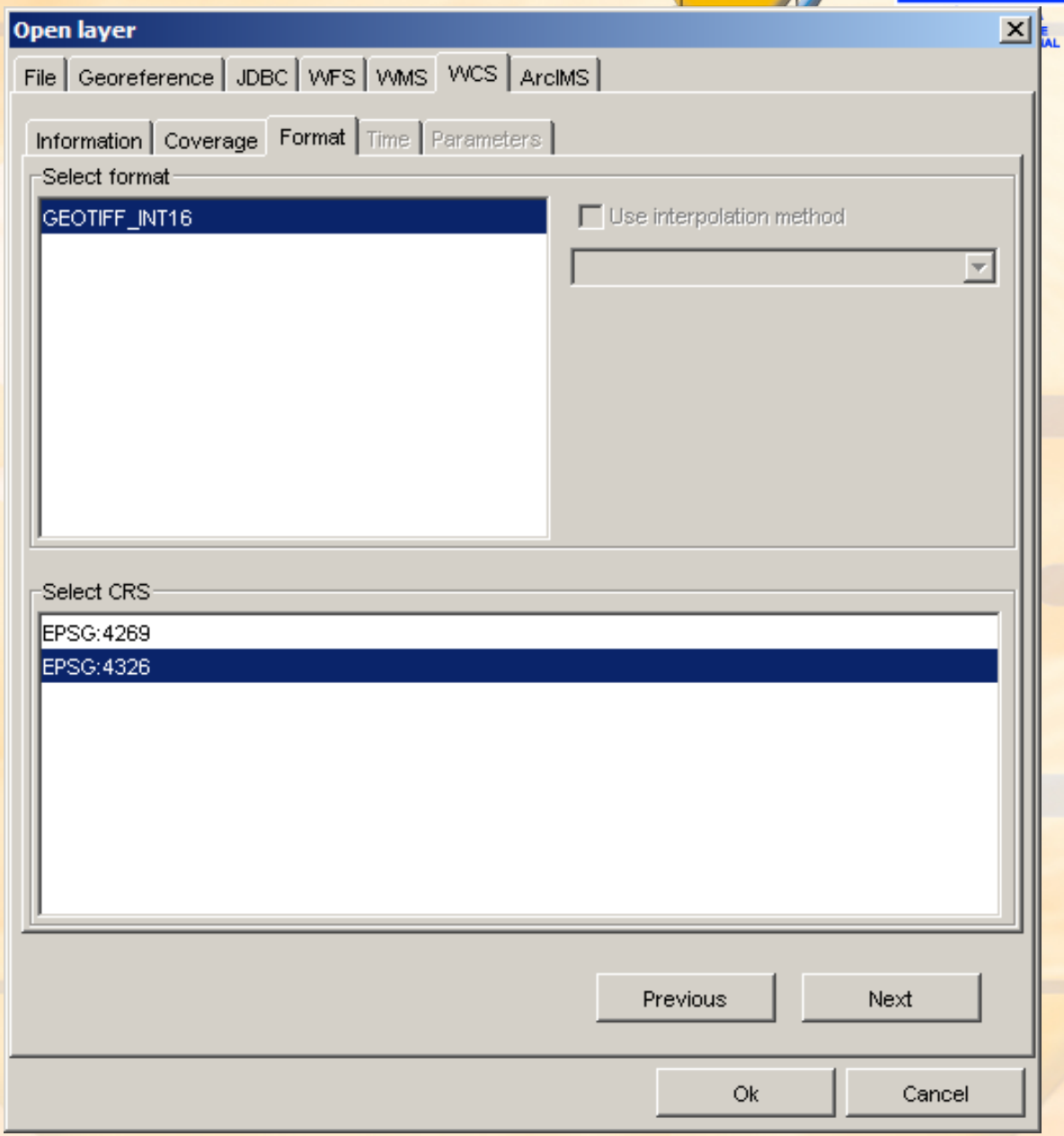
Example:
GUI for WCS access



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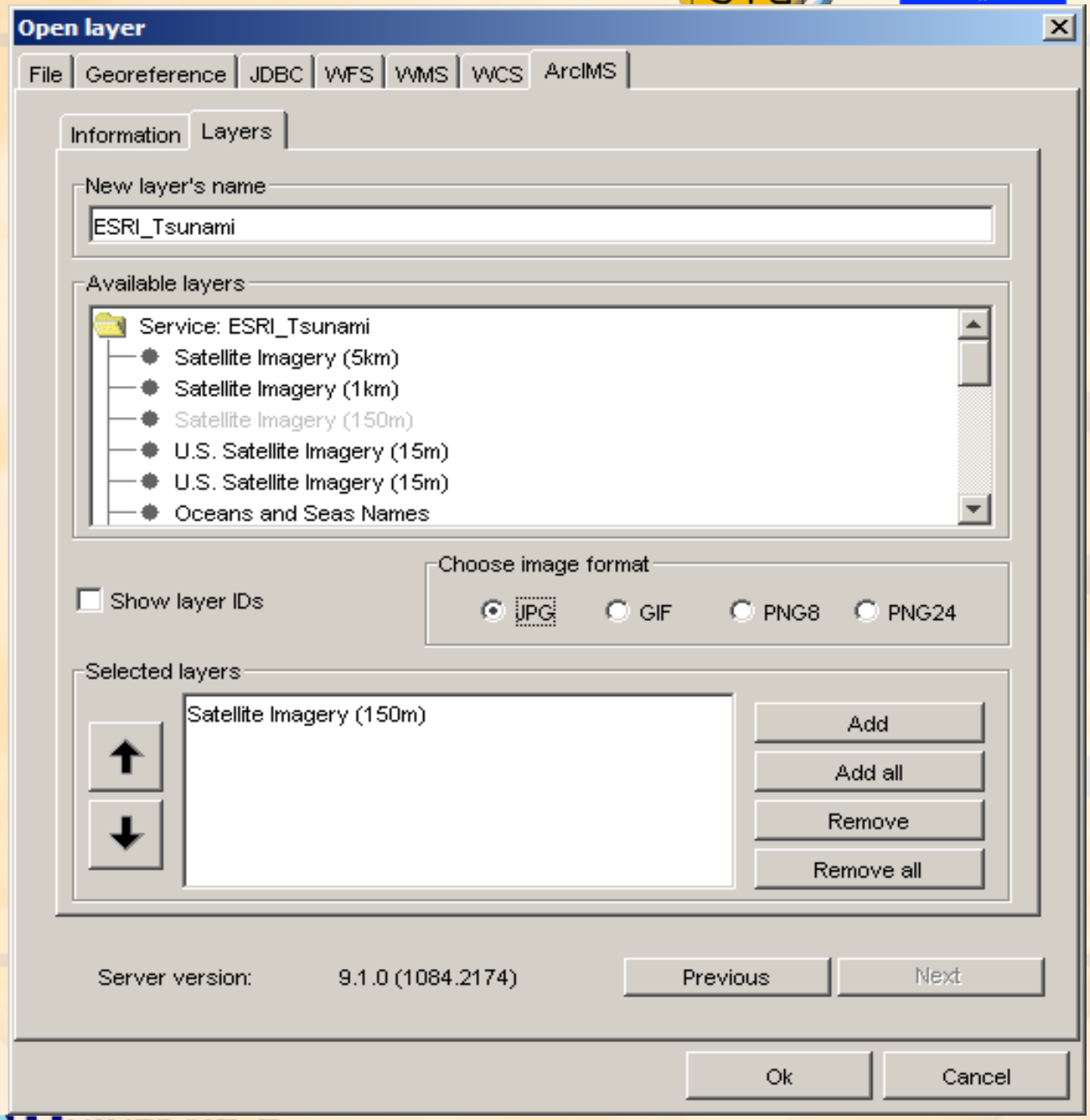
Example: ArcIMS access



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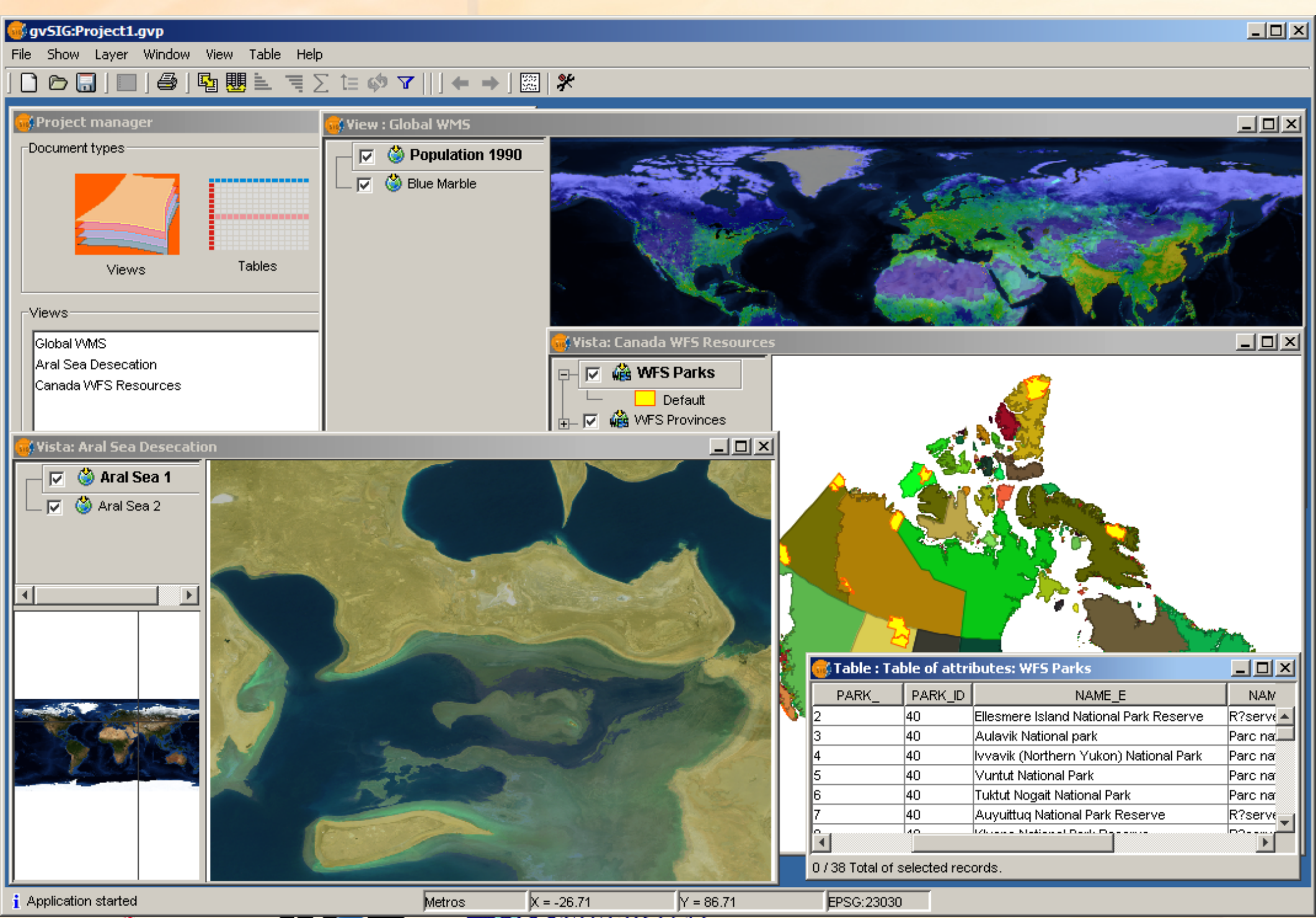
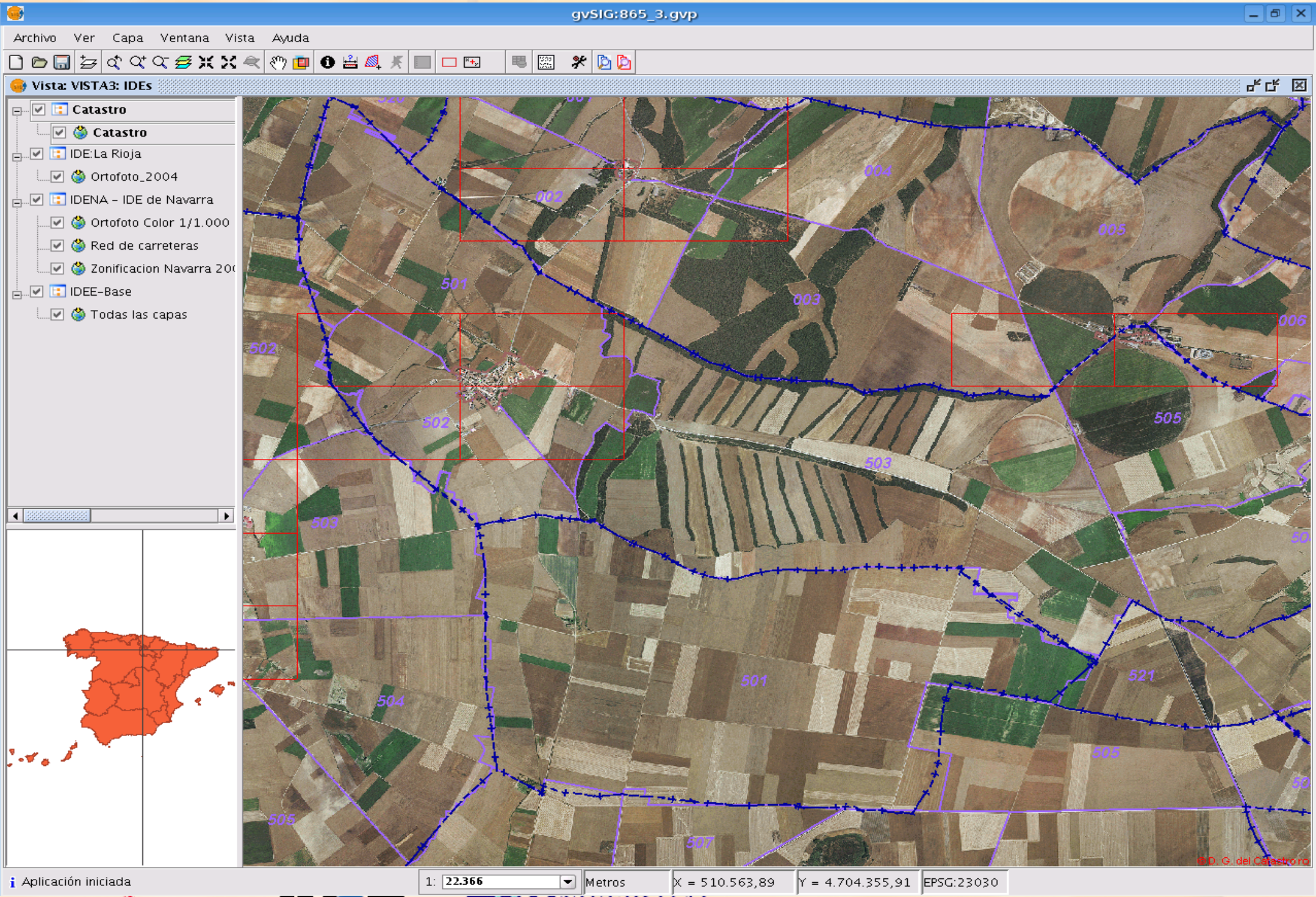
Examples: Integration of remote WMS, WFS, WCS services from different servers/catalogs and local sources





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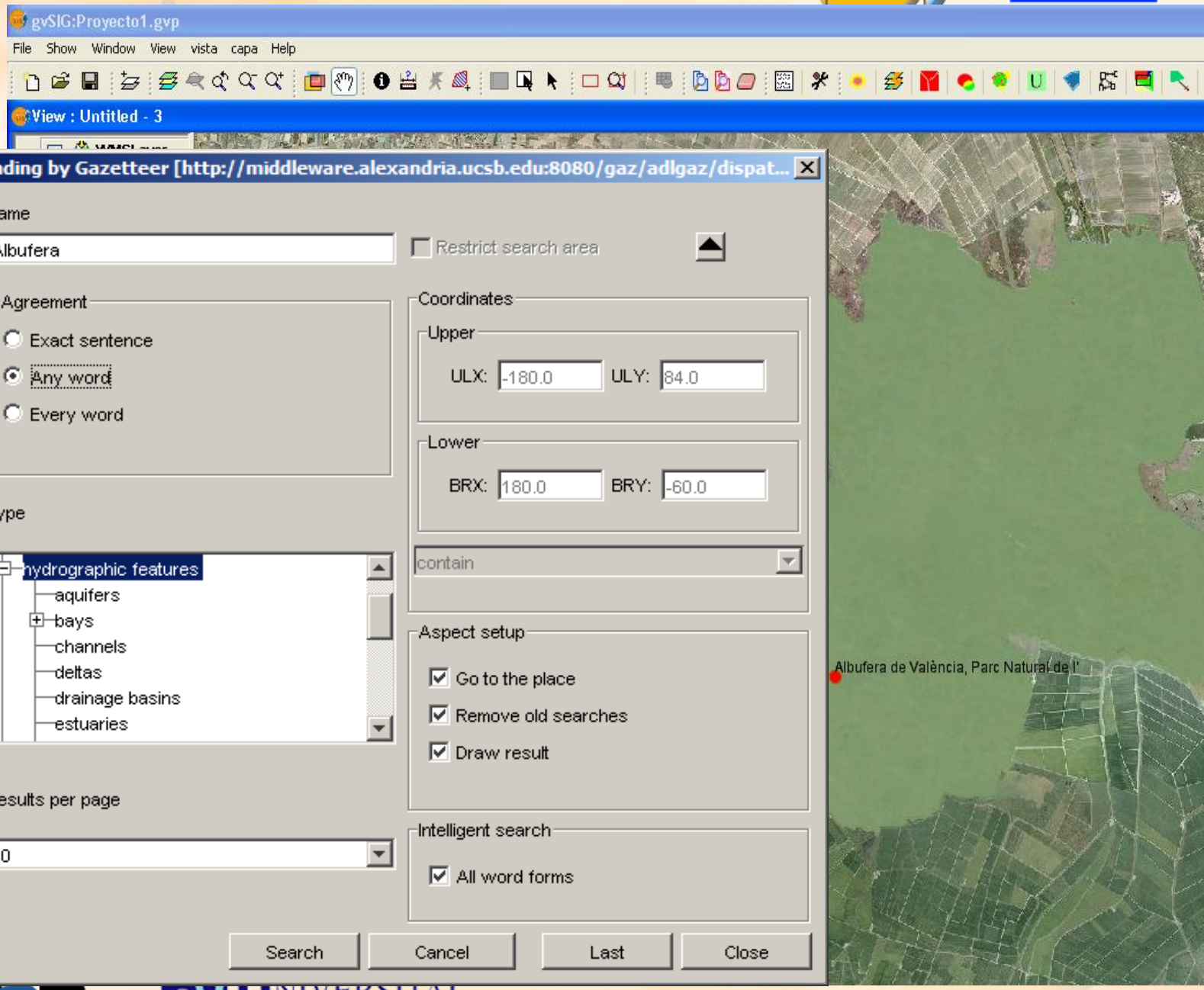
Example: Gazetteer Search



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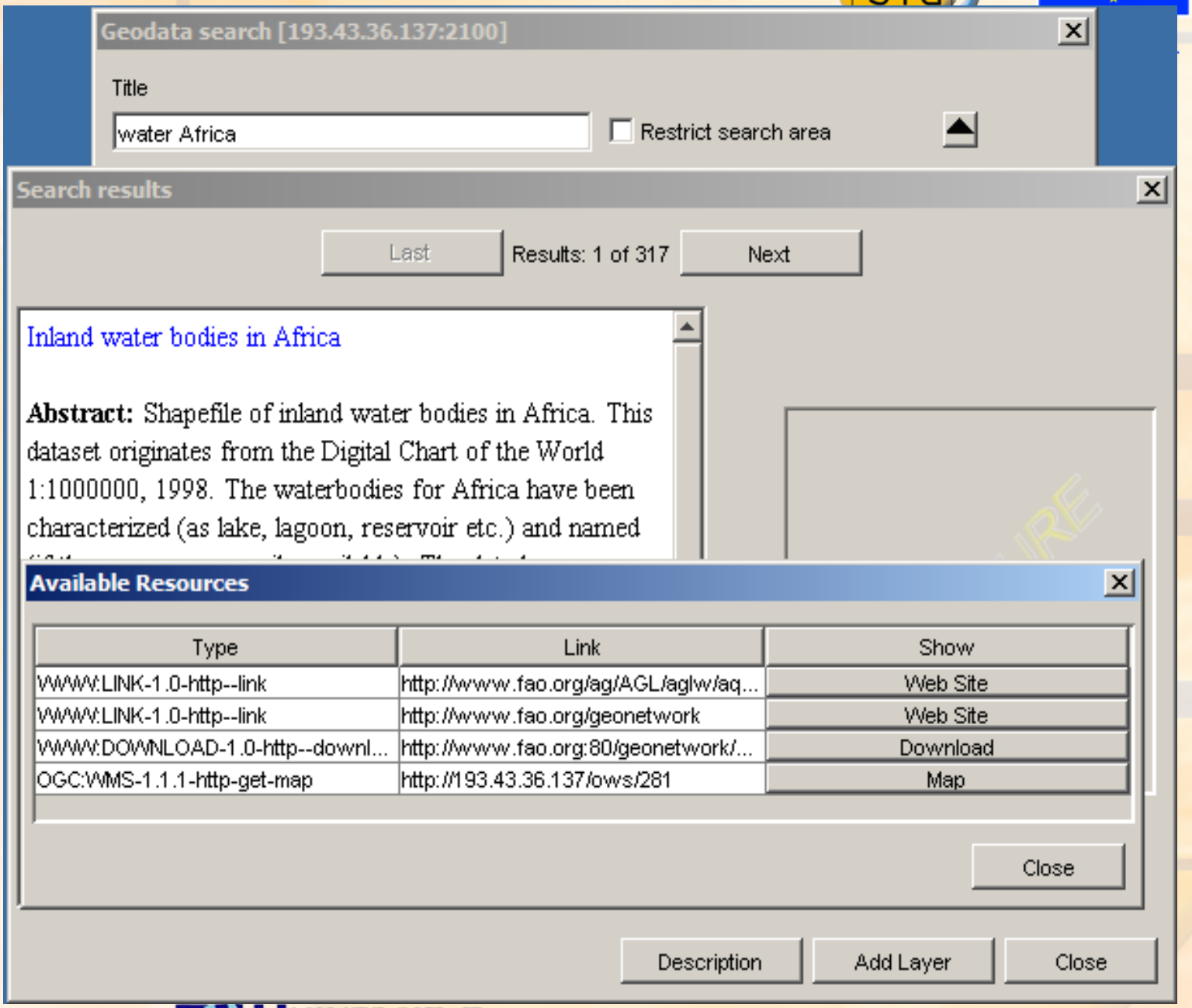
Example: Catalog Search



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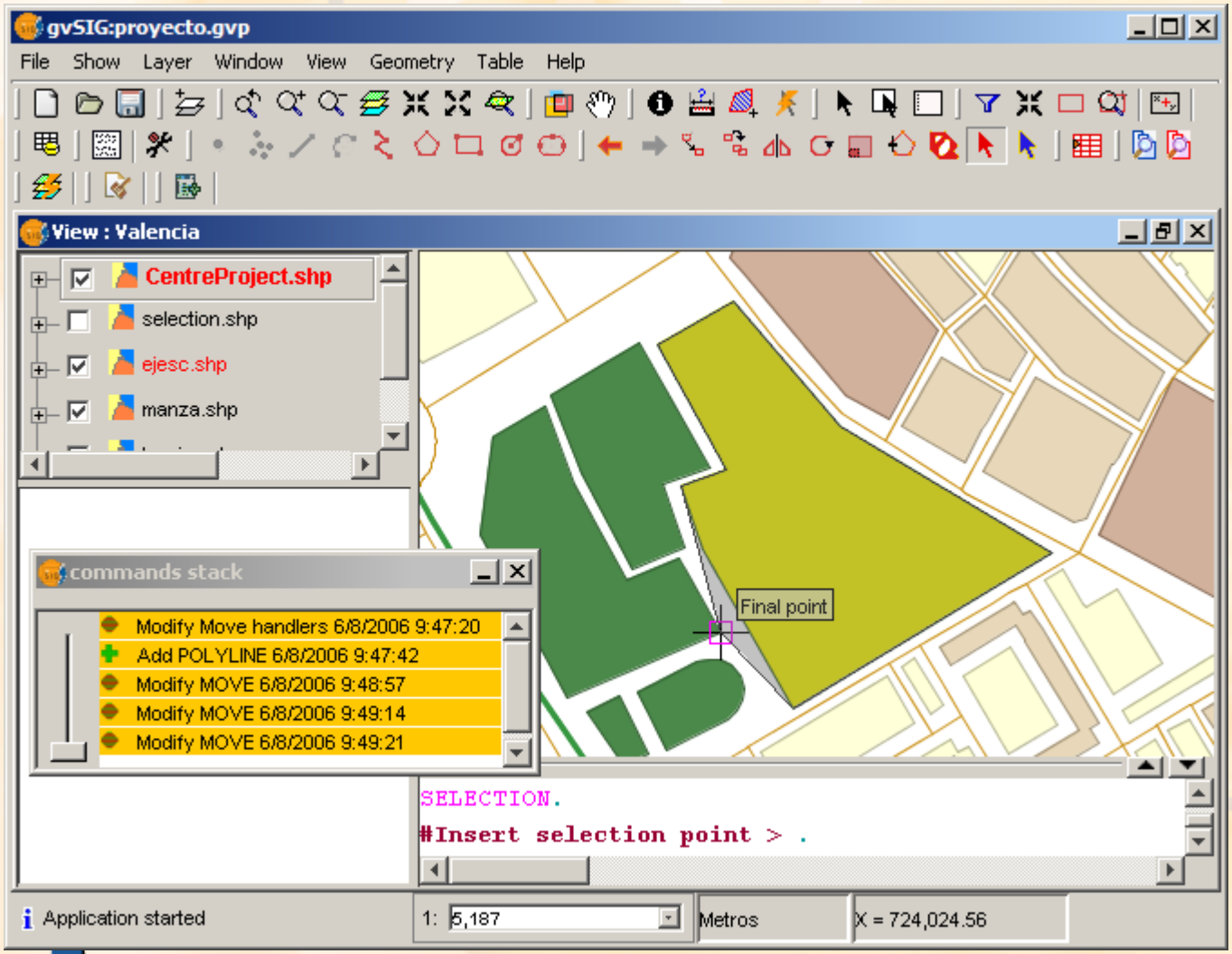
gvSIG 1.0: Editing



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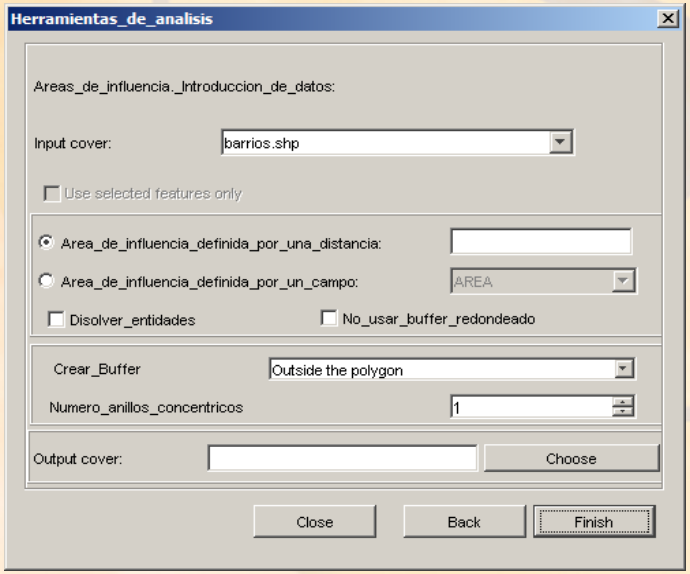
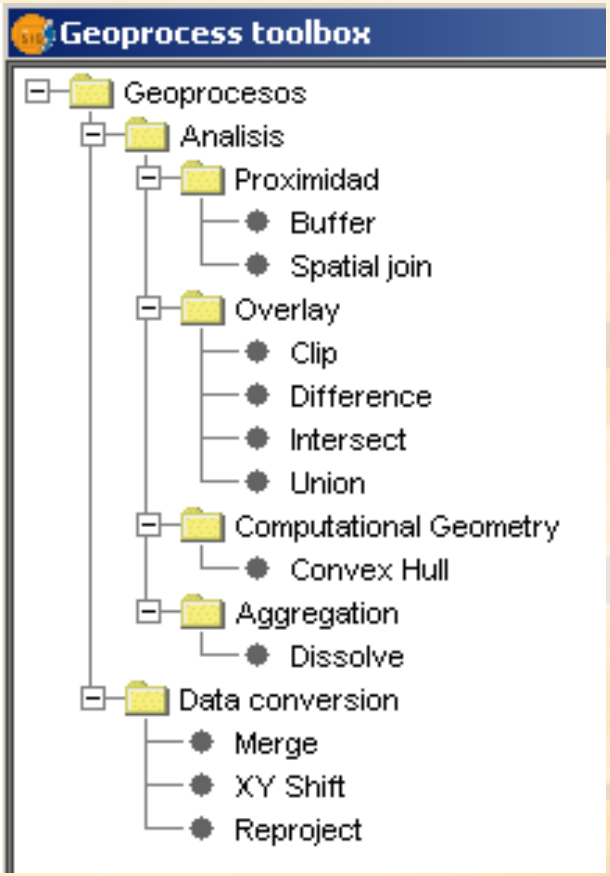
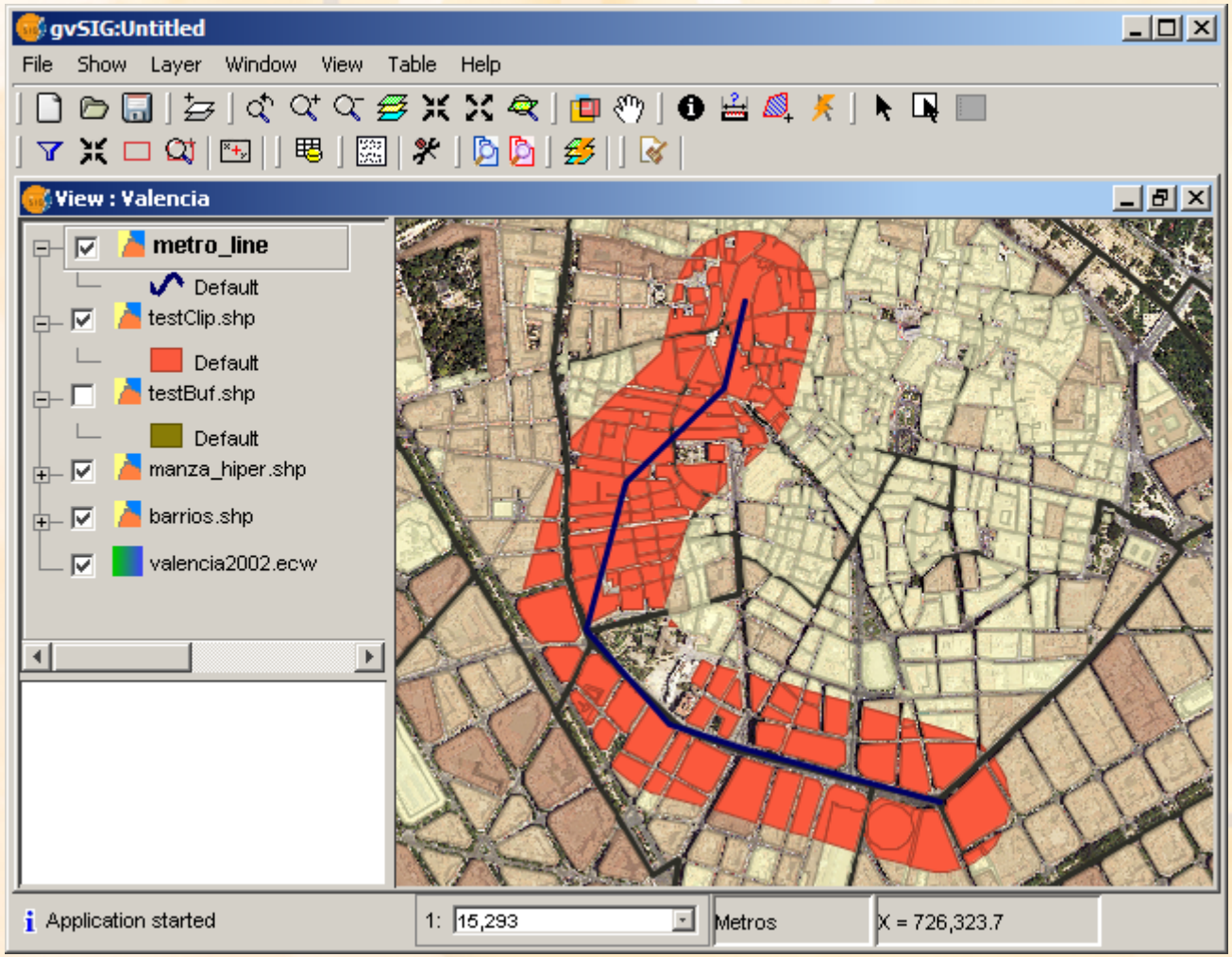
gvSIG 1.0

- Geoprocessing
  - Extensible framework
  - Vector processing operators





gvSIG 1.0: Geoprocessing



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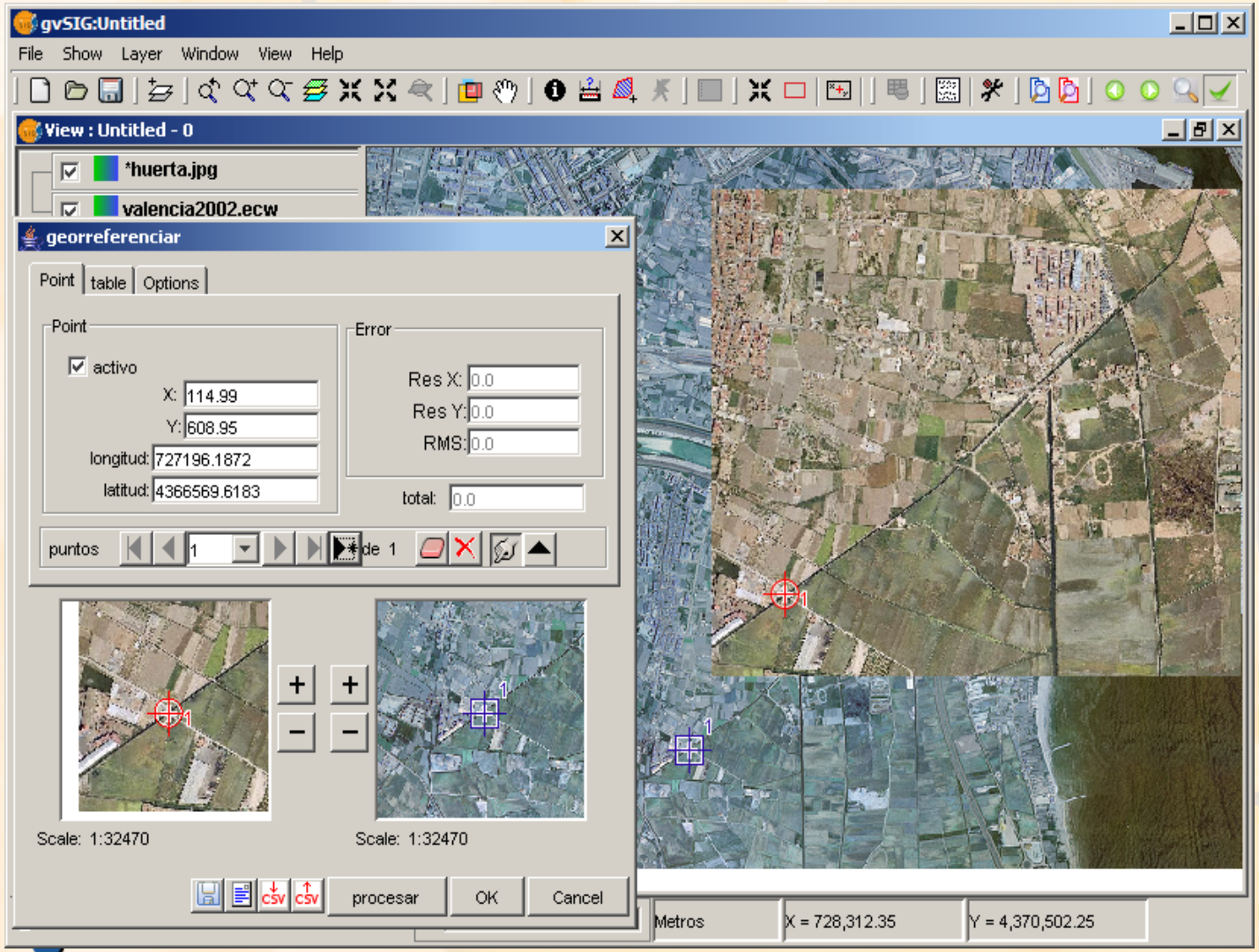
gvSIG 1.0: Image georeferencing



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After 1.0: Development roadmap

- Most basic functions covered with 1.0
- gvSIG becoming platform for specialized users:
  - Core enhancements: symbology, labeling
  - Network and topology analysis
  - Raster analysis
  - 3D and temporal GIS
  - **SDI authoring: OGC service publishing**

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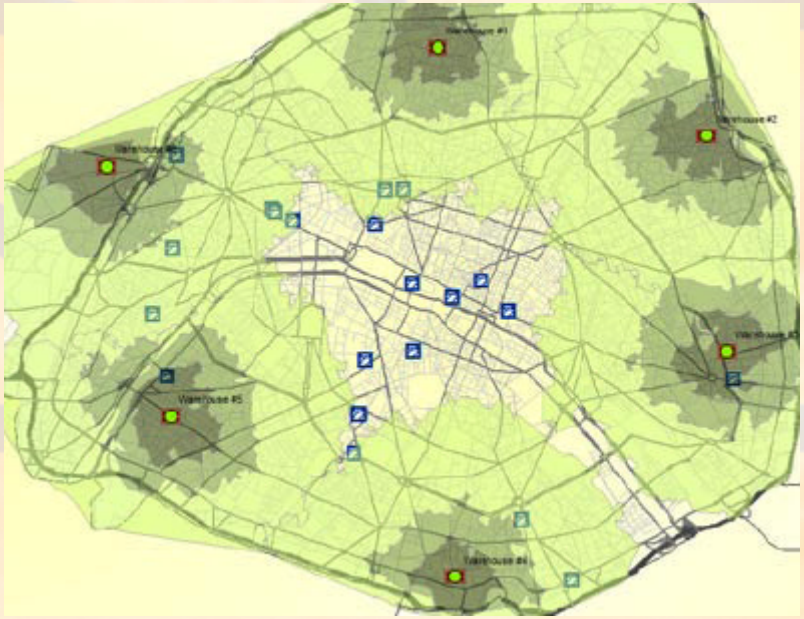
After 1.0: Network analysis

- Network generation and topology tools
- Optimal path calculation
- Service areas
- Optimal spanning tree
- Upstream and downstream event analysis



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After 1.0: Raster analysis

- More I/O formats and options (e.g. by band)
- Accurate raster reprojection
- Histogram view and correction
- Mosaicing and fusion tools
- Filters
- Classification and vectorization
- Spatial analysis geoprocesses
- Surface interpolation and analysis

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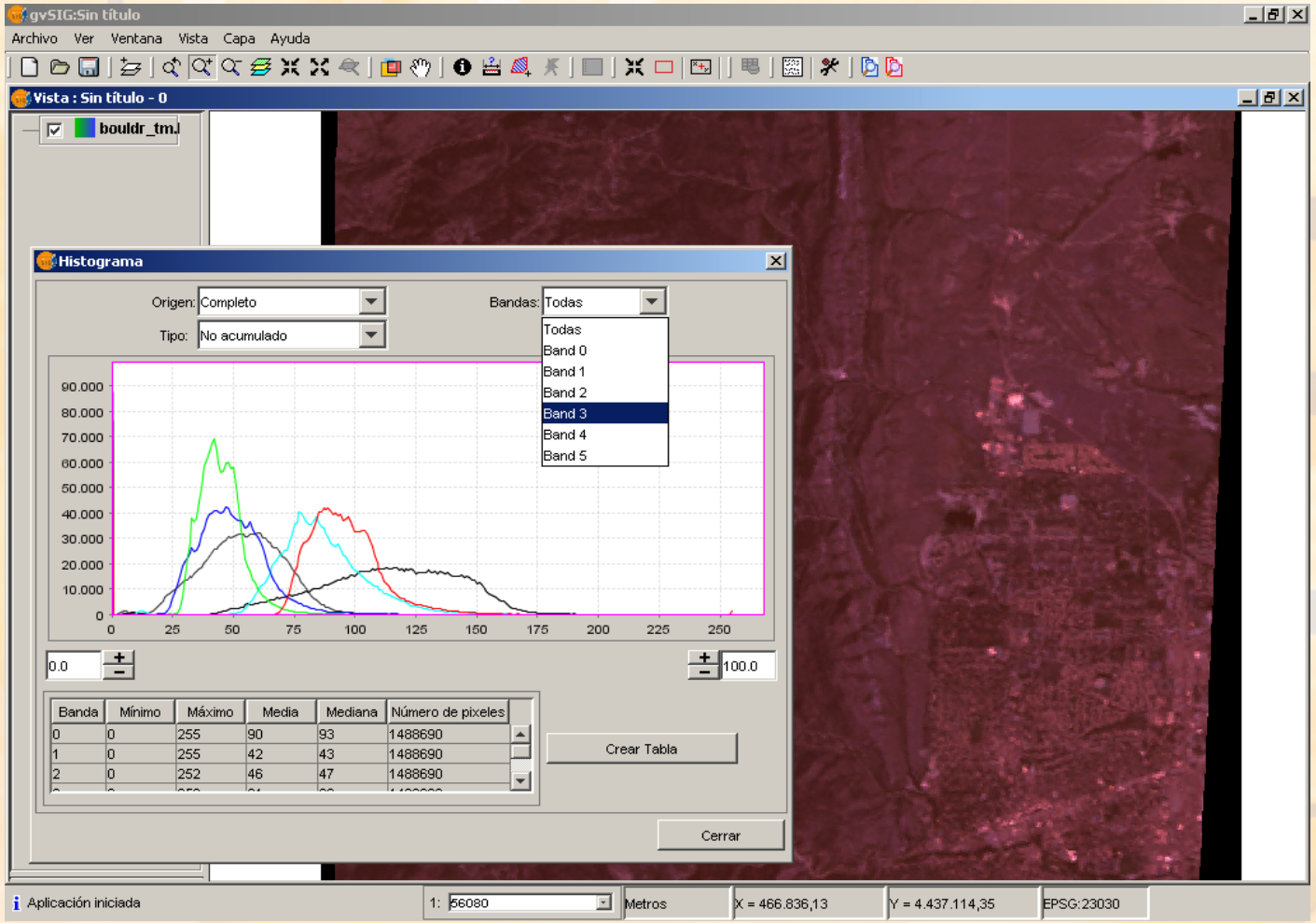
After 1.0: Raster analysis

Histogram View



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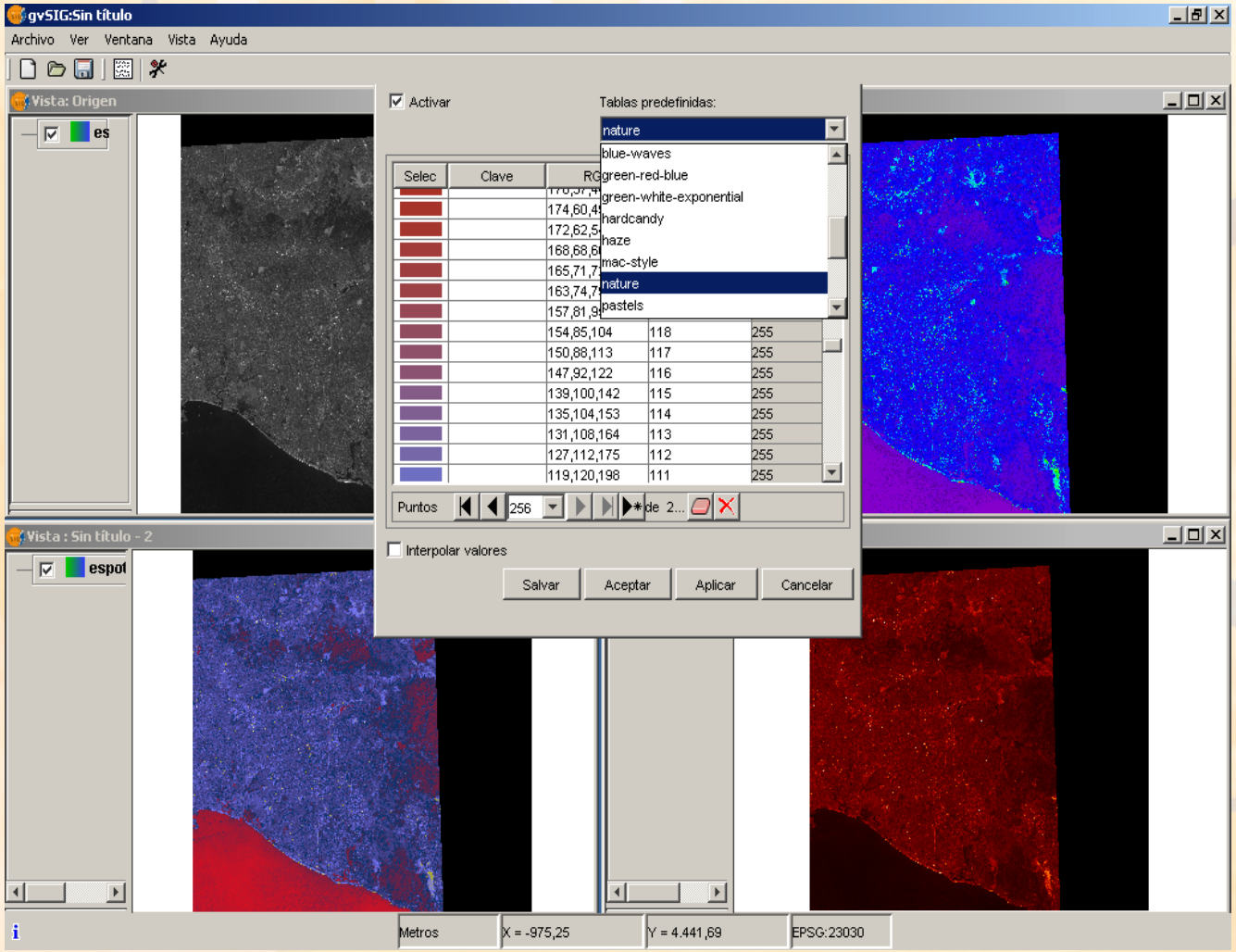
After 1.0: Raster analysis

Look-up Tables



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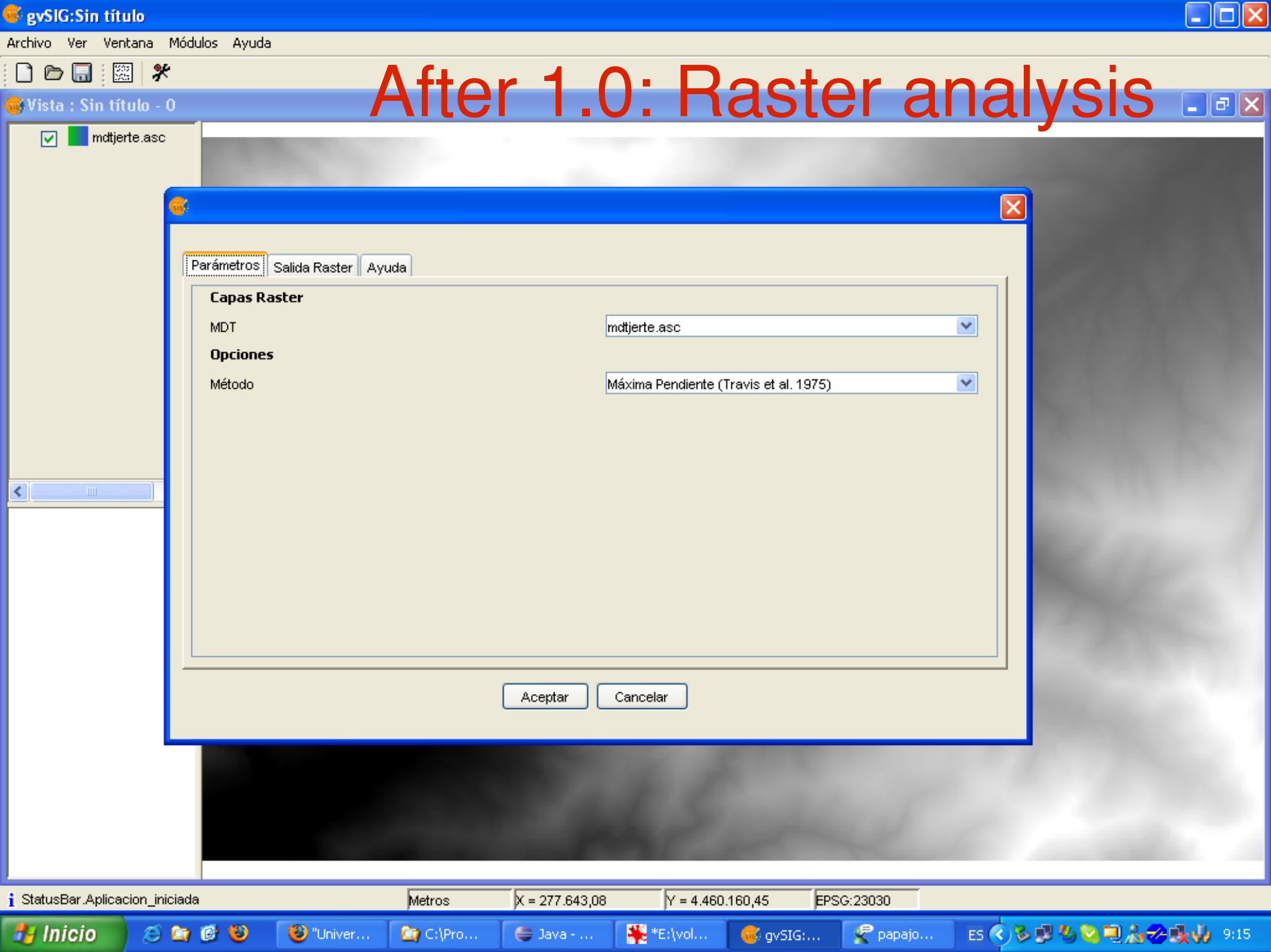
gvSIG:Sin título
Archivo Ver Ventana Módulos Ayuda
After 1.0: Raster analysis
Vista : Sin título - 0
mdtjerte.asc
Parámetros
Salida Raster
Ayuda
Capas Raster
MDT
mdtjerte.asc
Opciones
Método
Máxima Pendiente (Travis et al. 1975)
Aceptar
Cancelar
StatusBar.Aplicacion_iniciada
Metros
X = 277.643,08
Y = 4.460.160,45
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Inicio
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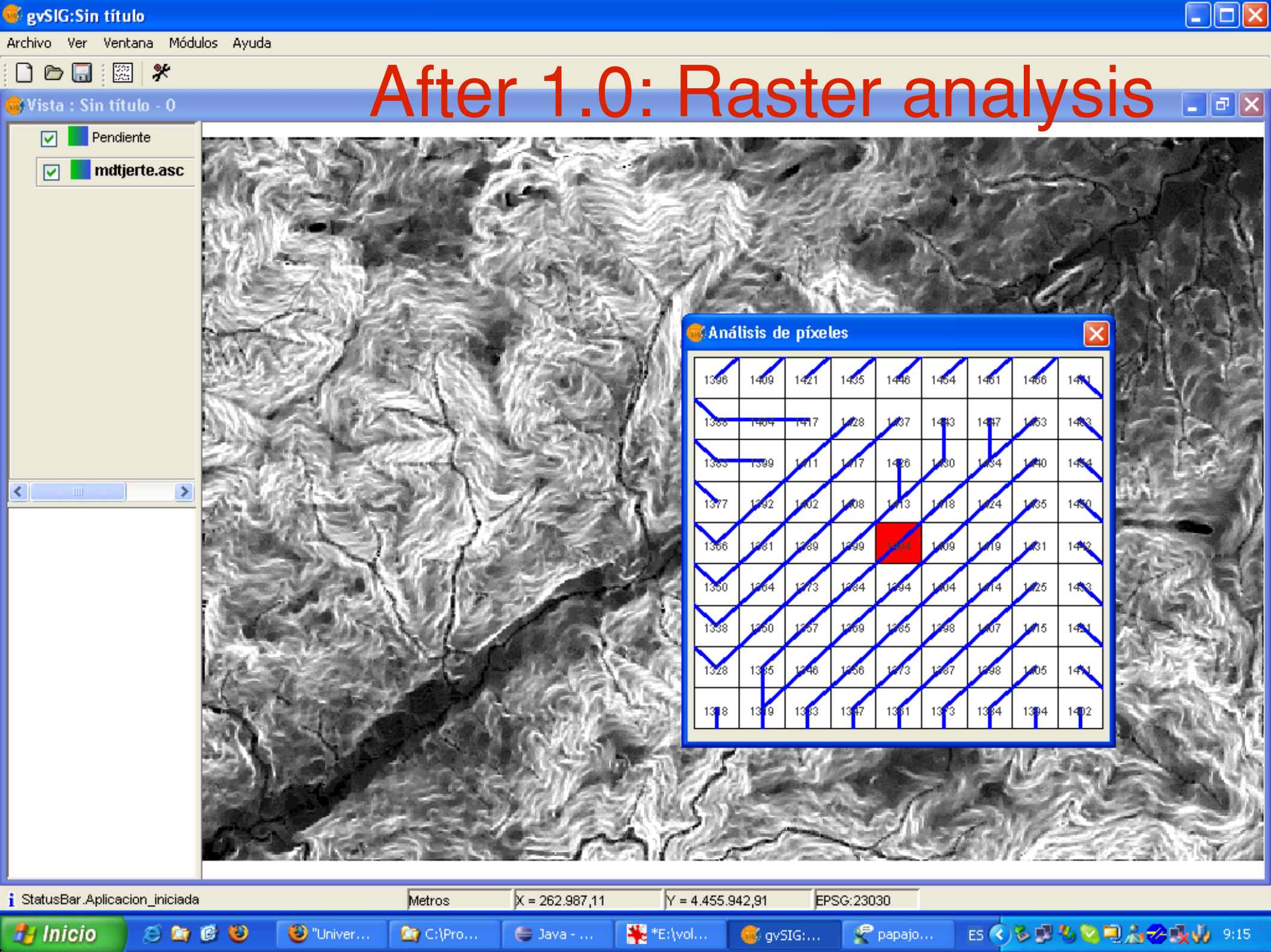
After 1.0: Raster analysis



After 1.0: 3D and Temporal GIS

- 3D visualization of large datasets (raster, TIN, vector and 3D objects), in global and Cartesian views
- GIS functionality on 3D view: symbology, analysis
- View and layer animation
- Temporal data
  - Time series
  - Multidimensional data (NetCDF)
  - Dimension parameter in OGC services
- 3D and temporal geoprocesses

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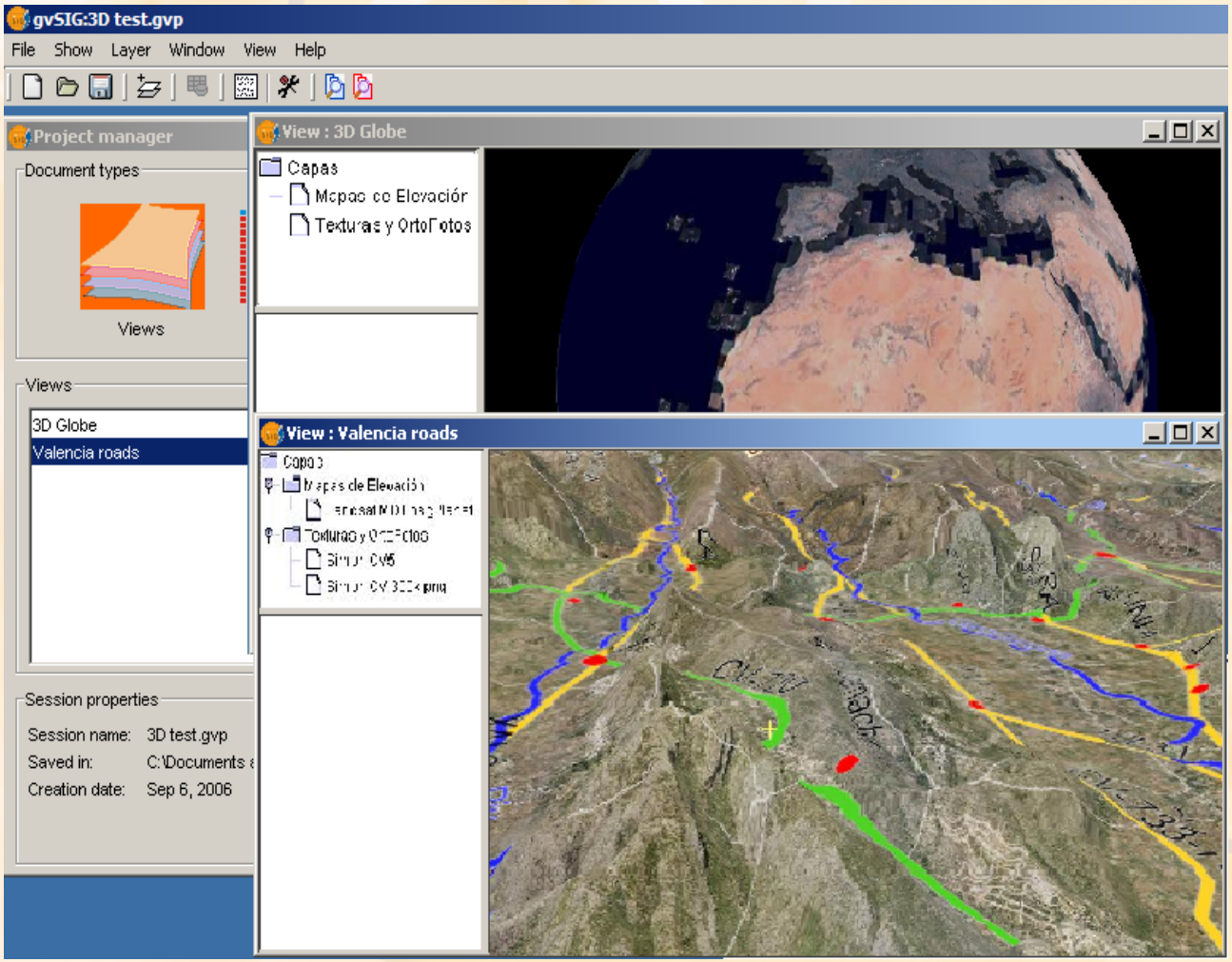
After 1.0: 3D and Temporal GIS



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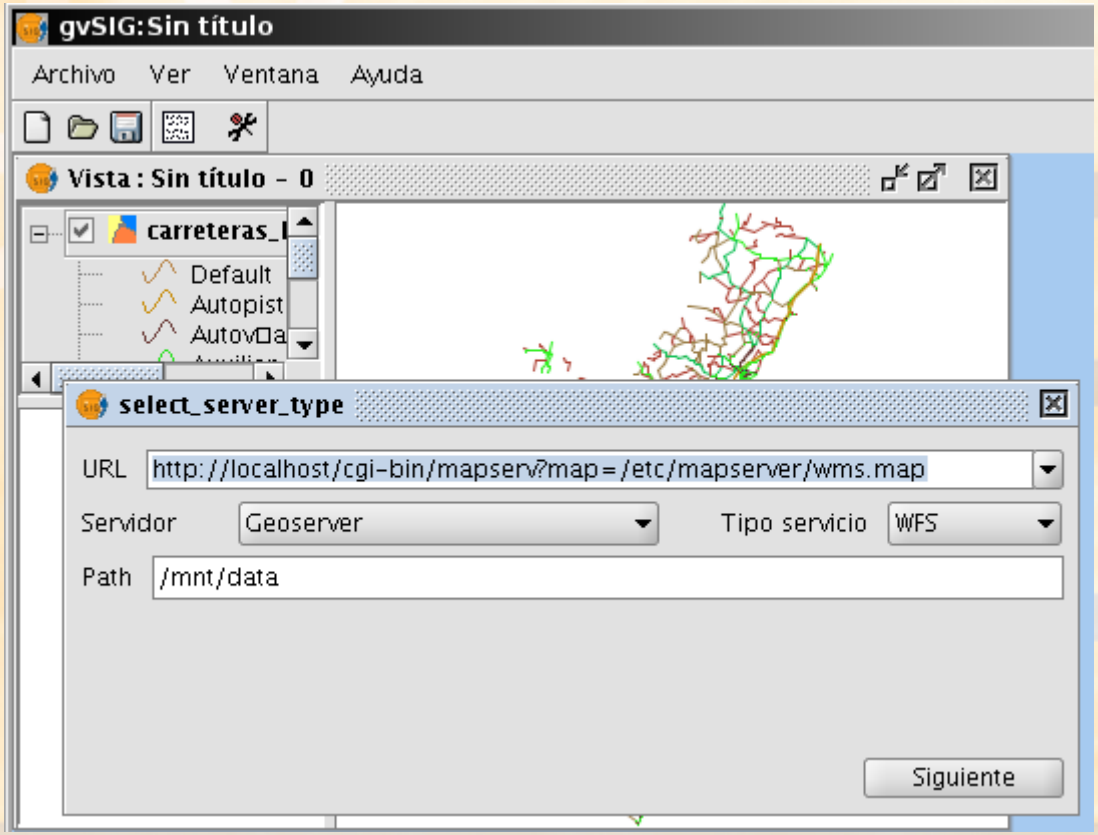
After 1.0: SDI authoring

- Export of gvSIG Views to WMS services
- Export gvSIG layers to WFS, WCS
- Support for multiple FOSS Servers
- Integrated metadata discovery and editing tools



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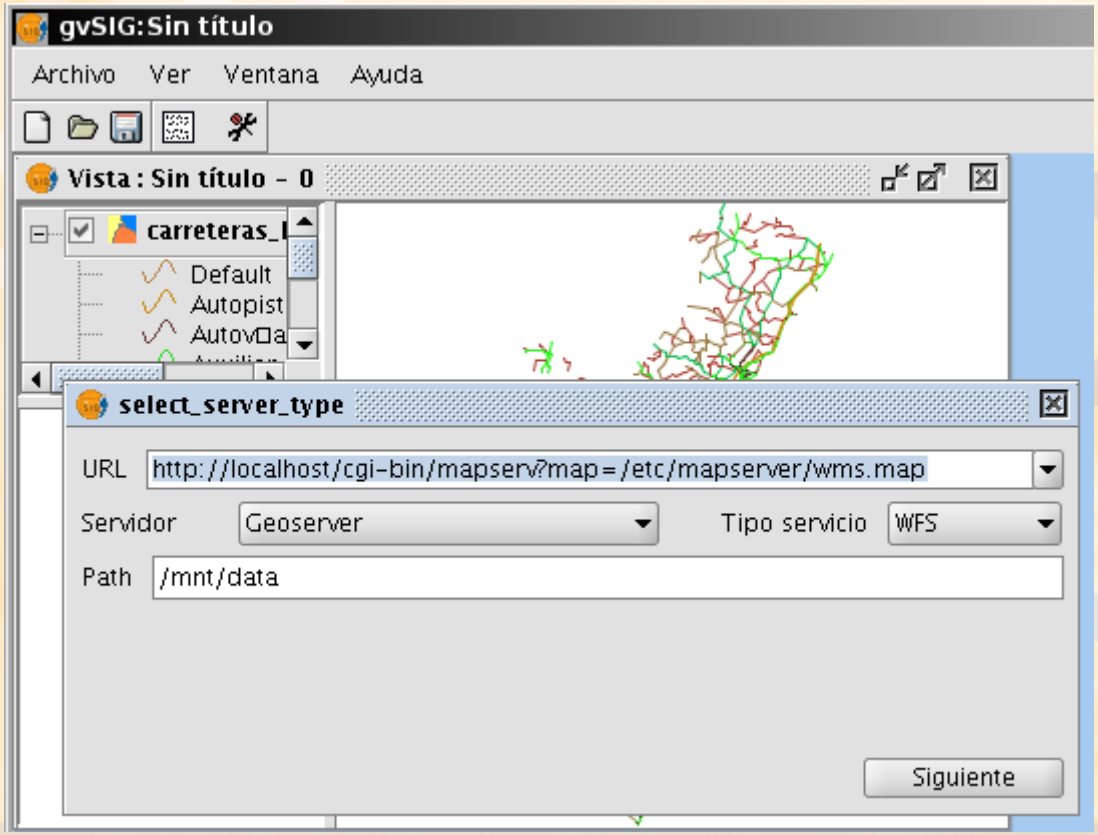

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gvSIG Community

- Main users:
  - **Government agencies**: Instituto Geográfico Nacional, Ministerio de Fomento, Instituto de Estadística de Valencia
  - **Companies**: Hidroven (Water company of Venezuela)
  - **International agencies**: UN, FAO, UNSDI
  - **Regional Governments**: Valencia, Castilla-La Mancha, Extremadura, País Vasco
  - **Cities**: Valencia, Teruel, Ronda, Getafe...
  - **Universities**: Politécnica de Madrid, Patagonia, Castilla la Mancha, Jaume I de Castellón...

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The gvSIG Community

Diverse: companies, public admin, universities, individuals

International: France, Portugal, Switzerland, Czech Rep., Venezuela, Cuba, Brasil, China, ...

Three community fora recently created:

- 434 subscribers on users list
- 266 subscribers on developer list
- 104 subscribers on international list

Two user meetings (2005, 2006)

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New community actions:

E-Learning materials

External quality control

Software and installation documentation

Internationalization (Chinese under way)

¿gvSIG Foundation?

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LIVE DEMOS

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Future actions:

Closer involvement in OGC

Interoperability Experiment, to stress-test WFS (collaboration with JRC?)

Collaboration with FAO (GeoNetwork) and the rest of the UN family

Attention to IDABC http://europa.eu.int/idabc/

Participation in OsGeo initiative

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Reflections

Thick client-based SDI is more interesting for advanced users of GI, than a geoportal

Technological Independence (European, national, regional)

- Invest in people, not licenses

Huge potential “multiplier-effect”

- Creates a community of collaborators

Freely accessible reference implementation

-not a black box solution

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Proposal

JRC: download and test gvSIG!

Promote gvSIG as an open reference implementation of ESDI thick client

Possible JRC collaboration in future versions

Possible versions supporting JRC's project needs (flooding, Natura2000, etc.)

Framework contract(s) with key actors of gvSIG project

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Thanks for your attention

www.gvsig.gva.es www.gvsig.com

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