GENERALITAT VALENCIANA
CONSELLERIA D'INFRAESTRUCTURES I TRANSPORT

OGC Member

Second Part

INSPIRE and SDI:
heterogeneous GI accessing solution

An Open Source Software approach to Spatial Data Infraestructures.

Study of different scenarios

Second Part: INDEX

I. Intro: SDI: Beginings, what is all about; web services; OGC

II. Scenarios:
- Geospatial data visualization: WMS
- Vector GI acces for advanced viewing and processing: WFS
- Raster GI acces for advanced viewing and processing: WCS
- GI access through metadata: Catalogue Standards.

III. Conclusions

Duration: 90'

Directed to: Charges of information technology, Departments of Planning and Development, Departaments of local Goverment, etc.

Speaker: Luis W.Sevilla Muelas. CIT. gvSIG Development Team Leader at CIT.

Intro: SDI: Beginings

Antecedents: Clinton Order NSDI (EEUU, 1994)

http://www.fgdc.gov/publications/documents/geninfo/execord.html

European Union: INSPIRE EC directive (2004).

http://inspire.jrc.it

Reference: Global Spatial Data Infraestructure.

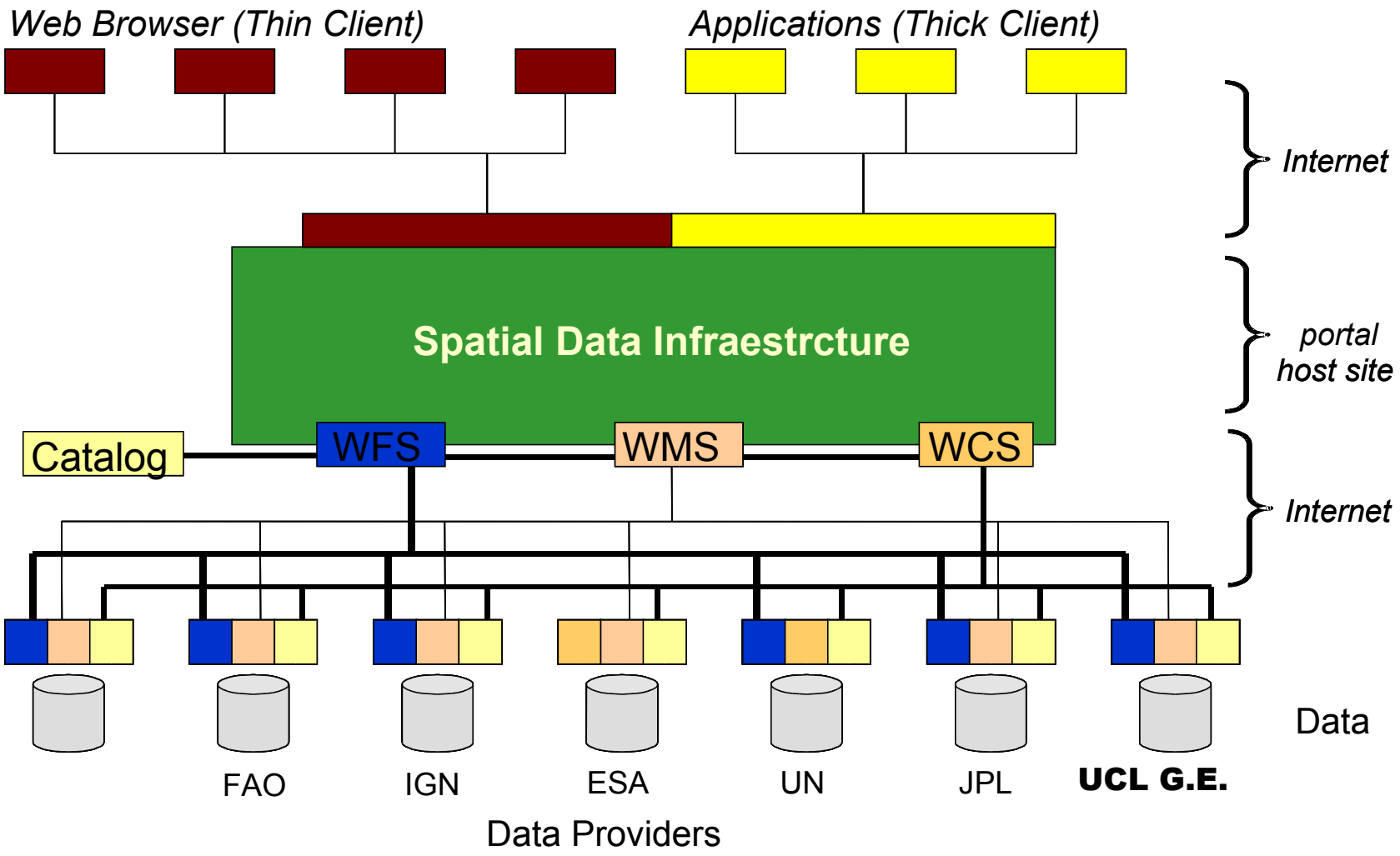
http://www.gsdi.org

Intro: SDI. what is all about?

- Objetive: To enable the accesing to the cartoghaphic resources preexistents.

- Internet en el ámbito de la Información Geoespacial.
- Estandarización (Open Geospatial Consortium).
- Protocolos de interoperabilidad (servicios web).
- Acuerdos colaborativos.

Intro: SDI. what is all about?



Intro: web services specifications; OGC

ISO/TC211 and Open Geospatial Consortium (OGC) Specification Standards:

ISO 19128 Web Map Service (WMS): visualización.

Web Feature Service (WFS): edición y actualización.

Web Coverage Service (WCS) gestión de I.G. ráster.

Web Catalog Service (WCatS) acceso a catálogos de metadatos.

ISO 19115 / ISO 19139: Metadata definition standards.

Normas para que servidores y clientes "se entiendan".

Scenario I: GI acces for viewing: WMS

The intention of online or web mapping is to portray geospatial information quickly and easily for most users, requiring only map reading skills.

---- Screen Capture ---

Online web mapping servers provide display-ready information to web clients, which then display it. Information may be formed by one or more layers composed in a map.

WMS standard allows clients to display simultaneously information coming from more than one server, in a vendor-independent way.

Scenario I: GI acces for viewing: WMS

Web Map Server

A service that can produce maps drawn into a standard image format (PNG, GIF, JPEG, etc). based on a standard set of input parameters.

This specification standardizes the way in which maps are requested by a client and the way that servers describe their data holdings.

The resulting map can contain "transparent" pixels where there is no information and thus several independently drawn maps can be laid on top of each other to produce an overall map. This is possible even when the maps come from different Web Map Servers.

Also support the definition of the render of the layer by mean of Style Layer Descriptors (SLD).

Scenario I: WMS Practice

- antecedents:
  - Map Server query: UMN Mapserver from his integrated client
- thin client
  - WMS Server query: UMN Mapserver serving WMS
  - adding another layer (from a different server)
- thick client example:
  - gvSIG accessing remote WMS layers
  - gvSIG overlapping some raster an vector local data with
  - gvSIG overlapping some LAN WMS layers

Scenario II: Vector GI acces for advanced viewing and processing: WFS

Web Feature Server (WFS)

A service that can describe data manipulation operations on OGC Simple Features (feature instances) such that servers and clients can "communicate" at the feature level.

A Web Feature Server request consists of a description of the query and data transformation operations that are to be applied to WFS Web-enabled spatial data.

The request is generated on a client and is posted to the WFS server. The WFS Server interprets the request, checks it for validity, executes the request and then returns a feature set as GML to the client. The client then can use the feature set.

Scenario II: WFS and DB Practice

- thik client example:
    - gvSIG accesing remote WFS layers
    - gvSIG overlapping some LAN WFS layers over previous WMS practice result.
    - gvSIG overlapping some DB layers with this.

Scenario III: Raster GI acces for advanced viewing and processing: WCS

Web Coverage Server (WCS)

A service that supports the networked interchange of geospatial data as coverages containing values or properties of geographic locations. [from OGC 02-024]

The WCS provides access to intact (unrendered) geospatial information, as needed for client-side rendering, multi-valued coverages and input into scientific models and other clients beyond simple viewers.

Scenario III: WCS Practice

- thin client
  - WCS Server query: UMN Mapserver serving WCS

- thick client example:
  - gvSIG accessing remote WCS layers
  - gvSIG overlapping some raster an vector local data with.

Scenario IV: GI access through metadata: Catalogue Standards.

Catalogues are a single collection of metadata entries that is managed together.

Catalogue Service

A service that responds to requests for metadata in a Catalogue that complies with certain browse or search criteria. The metadata may be for dataset instances (e.g., dataset catalogue) or may contain service metadata (service catalogue).

These are the central piece in an SDI. By allowing the discovering of data services through his associated characteristics (metadata) they allow to think in a dispersed collection of GI data servers as a infrastructure

Scenario IV: GI access through metadata: Catalogue Standards.

Catalogue Entry

A single metadata entry made accessible through a catalogue service or stored in a catalogue.

ISO 23950 Information Retrieval (Z39.50): Application Service Definition and Protocol Specification.

An International Standard specifying a client/server based protocol for Information Retrieval.

Scenario IV: Catalog Practice

- thin client (geoportal)
  - FAO/Geonetwork Portal. Some search and map access.

- thick client example:
  - gvSIG searching
  - gvSIG adding some layer trough catalog search

Conclusions

- What we need to do a Spatial Data INFRAESTRUCTURE?: The data (of course) to share, the standard services implementation to enable the access to that data, and the public availability of the service addresses. SHARE

- Why with Open Source?: User empowers by acquiring the technology behind SDI and the OGC services. He acquires then the freedom to choose services and solution providers. CHOOSE

- What may add gvSIG project?: By enabling end user to combine all the services and data access possibilities this project gives to him the ability to choose how to make his work. DO

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Migration Frame to Open Systems

Technological Independence

- Migration to Open Systems - LINUX (at the end of 2002)
- Study Areas:
  - Office automation
  - Operative systems and communications
  - Corporative Developments
  - G.I.S. & C.A.D.

Development of GIS Client: gvSIG

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Development of GIS Client: gvSIG

Previous work

GRASS

★★★★☆
grass.itc.it/

Potente Sistema de Información Geográfica (GIS) desarrollado en sus inicios por el Cuerpo de Ingenieros del ejército de los Estados Unidos y posteriormente liberado. Basado en UNIX, en la actualidad soporta ya prácticamente todas las plataformas y sistemas operativos.

JUMP

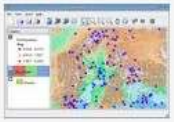
★★★½☆
www.jump-project.org

Sistema de Información Geográfica (SIG) de escritorio destinada a la visualización y procesamiento de datos espaciales.

QGIS

★★★½☆
qgis.org/

Quantum GIS es un sistema de Información Geográfica (GIS).



SAGA GIS

★★★★☆
geosun1.uni-geog.gwdg.de/saga/html/index.php

SAGA es un Sistema de Información Geográfica (GIS) raster desarrollado por la Universidad de Göttingen (Alemania). Es ideal para introducirse en el mundo de los GIS y sus conceptos por su facilidad de manejo y rápido aprendizaje.

ents

CUESTIONARIO SOFTWARE SIG N° Cuest:

Datos Personales
Nombre: e-mail:
Departamento: Tfno:
Relación Laboral con la C.I.T. ○ Funcionario ○ Asistencia Técnica ○ Becario
Ubicación: Nombre PC:
ID_Persona:

Datos Aplicación
Nombre: Versión:
Licencia ○ FreeWare ○ Educativa ○ Legal
Código:

Módulos adicionales ○ Si ○ No
Nombre: Uso:

Aplicaciones a medida ○ Si ○ No
Lenguaje de programación: Uso:

Uso de la Aplicación
Uso: Finalidad:

Operaciones estándar
☐ Visualización de ficheros ☐ Selección gráfica compleja ☐ Uniones de tablas
☐ Definición de unidades ☐ Selección por consulta ☐ Análisis espacial
☐ Edición de leyendas ☐ Edición de elementos gráficos ☐ Geocodificación
☐ Medición de áreas y distancias ☐ Edición de elementos alfanuméricos ☐ Creación de áreas de influencia
☐ Selección gráfica simple ☐ Enlaces de tablas ☐ Maquetación de mapas

Importación
☐ BMP ☐ JPG ☐ ECW ☐ TIFF ☐ DXF ☐ DWG ☐ DGN ☐ SHP ☐ COVER ☐ Otros:

Exportación
☐ BMP ☐ JPG ☐ ECW ☐ TIFF ☐ DXF ☐ DWG ☐ DGN ☐ SHP ☐ COVER ☐ Otros:

☐ Impresión, dispositivo utilizado

Se ajusta a la necesidad ○ Si ○ No
Comentarios:

Observaciones:

CuestionarioSIG.sxw

Development of GIS Client: gvSIG

Frame of gvSIG

- Public Tender: Exp. 2003/01/0090
- Programming language selection. C++ vs Java.
- Software Prototype → Language and company selection

- Infrastructures and Transport Department
- IVER TI S.A.
- Jaume I University

Evolution of gvSIG

Spatial Data Infrastructures (SDI)

- S.D.I.: new use of spatial information.
- INSPIRE: INfrastructure for SPatial InfoRmation in Europe

http://inspire.jrc.it

- Objective SDI: to make more and better spatial (geographical) information available for Community
- Objective gvSIG project: gvSIG evolution to SDI Client

- ISO 19115: Definition of the schema required for describing geographic information and services.
- Standards of Open Geospatial Consortium (OGC).

http://www.opengeospatial.org

Evolution of gvSIG

New horizonts

Implement new editing tools: CAD model

Give solution to all necessities related to the handling of Geographic Information being based on the integration of Open Source technologies.

GIS business. New Market: Open Source Model