

INSPIRE e le Spatial Data Infrastructures:

l'approccio progettuale di un system complementor



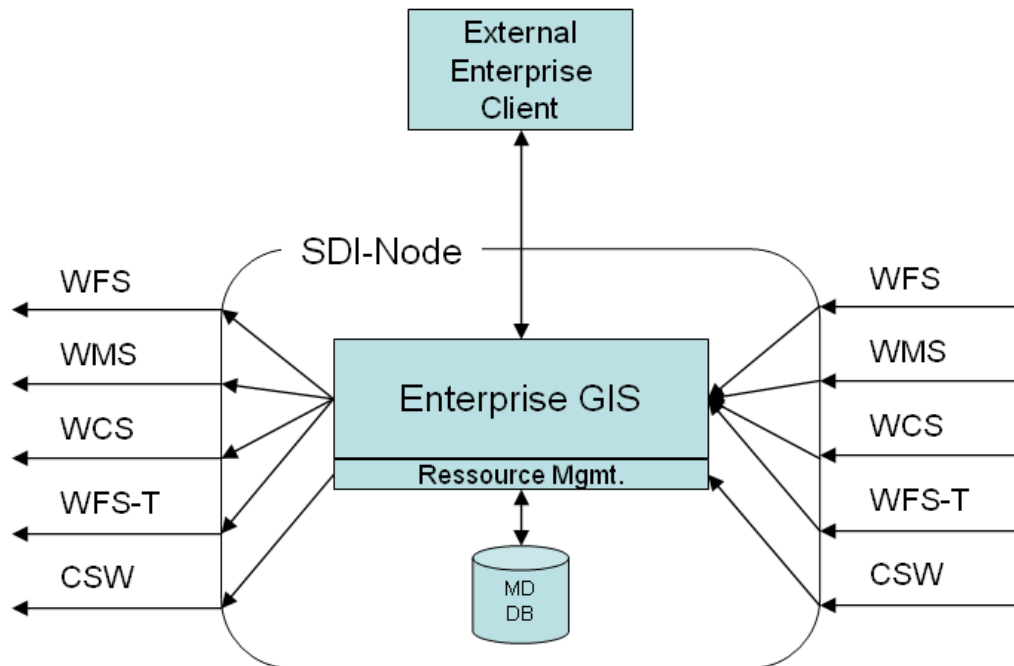
Andrea Fiduccia
Project Manager & Business Developer
Intergraph Italia LLC

Intergraph SDI: dai progetti, i prodotti

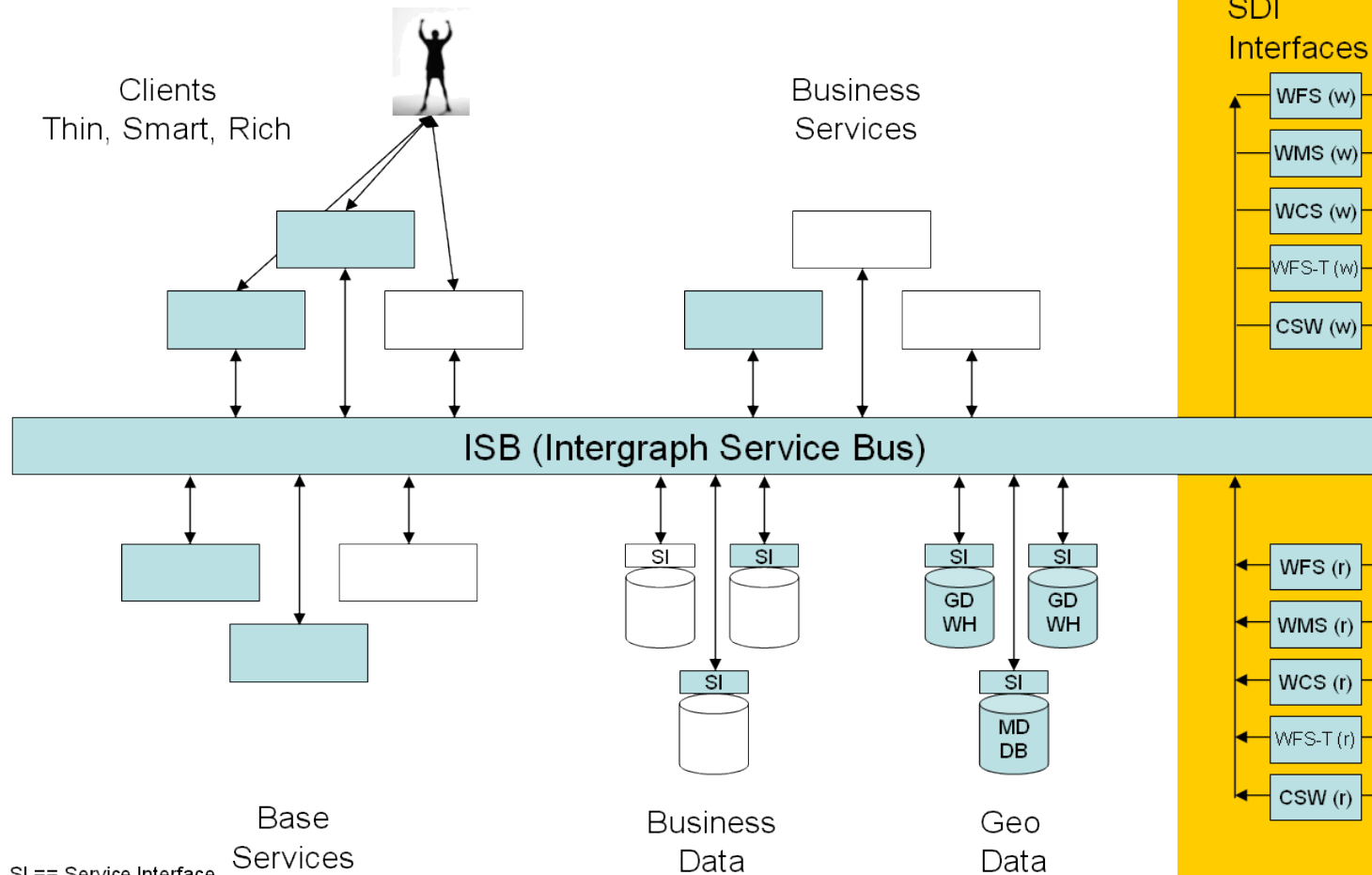


- Intergraph SDI – Basic
 - OGC compliant free of charge services (part of GeoMedia WebMap),
 - WMS (Web Map Service) , WFS (Web Feature Service) and WCS (Web Coverage Service; 6.1),
 - SDI desktop client (GeoMedia),
 - SDI WMS Viewer (OGC Viewer).
- Intergraph SDI – Pro
 - Additional OGC compliant services (specifications & part. Discussion papers),
 - SDI security package and SDI service management and monitoring package,
 - WFS-T (Transactional Web Feature Service), WFS-G (Gazetteer Web Feature Service), CS-W 2.0 (Catalogue Service) and Open Location Services.
- Intergraph SDI – Portal
 - Clients utilizing SDI services,
 - Very Thin & Thin client for Web-Browsers,
 - Catalogue exploring functionality,
 - Web-based Metadata Management.

SDI: Outer node architecture



SDI: Inner node architecture



SI == Service Interface
 (w) == writer module
 (r) == reader module
 GDWH == geodata warehouse
 MDBD == metadata database
 ← blue filled == Intergraph „Products“

Una “vita” nell’OGC

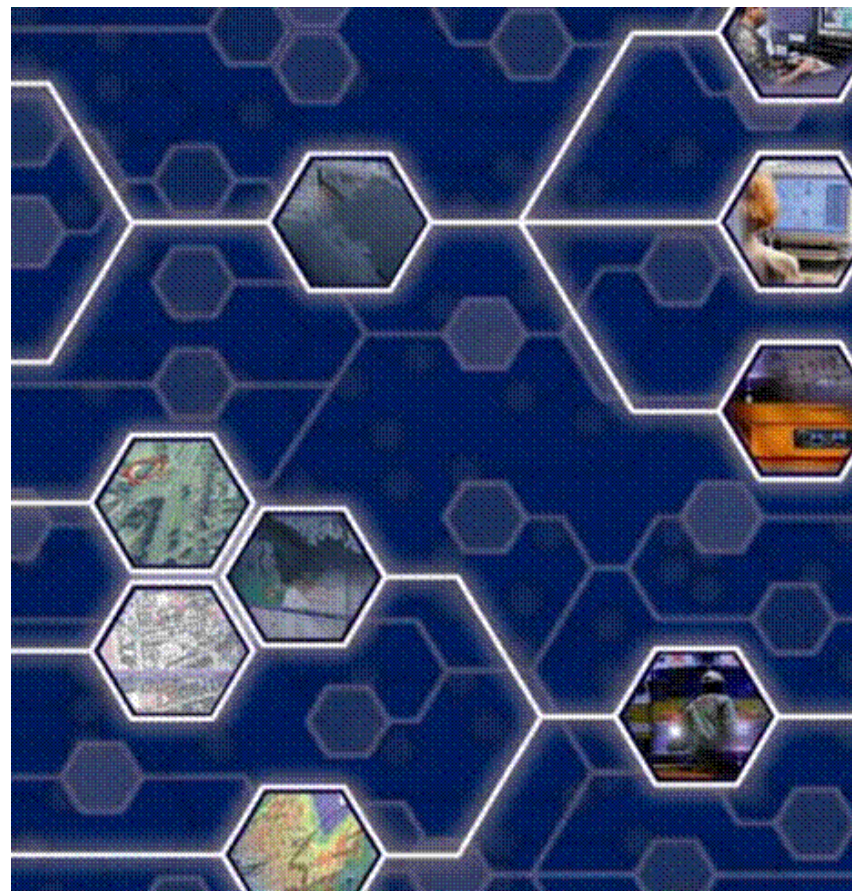
OGC

INTERGRAPH

The Open Geospatial Consortium (OGC) Vision:

“A world in which everyone benefits from geographic information and services made available across any network, application, or platform.”

**Intergraph è un socio
fondatore e strategico
dell’OGC.**





OGC WEB SERVICES-PHASE 4 DEMONSTRATION

The Open Geospatial Consortium (OGC) Interoperability Program (IP) is a global, hands-on and collaborative prototyping program for rapid development of proven candidate specifications for consideration for consensus adoption and public release by the OGC Specification Program.

- [PLAY VIDEO](#)
(Currently available in Google Video and Quicktime formats)
- [START INTERACTIVE DEMONSTRATION](#)
(requires the free [Flash Player](#))

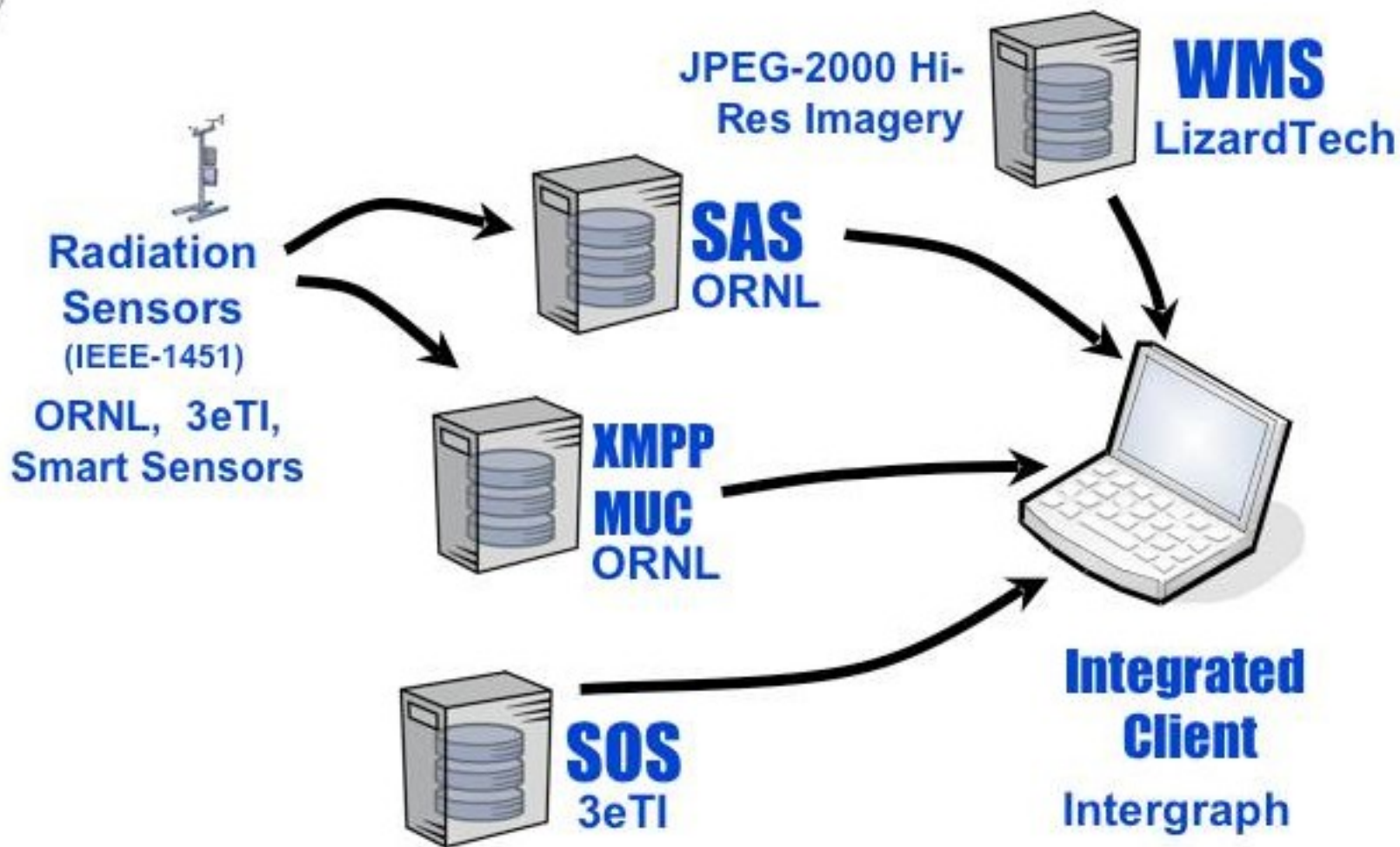


ABOUT OWS-4

OGC Web Services, Phase 4 (OWS-4) was an Interoperability Initiative that advanced OGC technology in the following areas:

- Sensor Web Enablement (SWE)
- Geo Processing Workflow (GPW)
- Geo-Decision Support (GeoDSS)
- Geo-Digital Rights Management (GeoDRM)
- CAD / GIS / BIM (CGB)
- OGC Location Services (OpenLS)
- Compliance Testing (CITE)

Scene 1- Sensor Detection and Alert





- INTRODUCTION
- ABOUT OWS-4
- DEMONSTRATIONS
 - Emergency Response
 - ▶ SENSOR ALERT
 - ▶ VIDEO TASKING
 - ▶ REGIONAL COLLABORATION
 - ▶ WEATHER IMPACTS
 - ▶ COMMON PICTURE
 - ▶ ASSURED TRANSACTIONS
 - ▶ QUALITY ASSESSMENT
 - ▶ BUILDING SELECTION
 - ▶ BUILDING ANALYSIS
 - ▶ BUILDING DESIGN
 - ▶ PATIENT TRACKING
 - ▶ BOOKMARKS
 - Earth Observation
- SIDEBAR DEMOS
- GML CLIENT DEMO
- CREDITS
- HELP

GeoMedia Professional - [MapWindow1]

File Edit View Insert Tools Analysis Warehouse Legend OGC VPF Fusion GIToolkit WMS Window Help

Lon,Lat(d:m:s) -74.11:02.884, 40:44:24.822

No Active Filter

OrthosWMS (1)

Display Order Groups

Press F1 for Help. 1:99,7

Activity in epid35 Room

GeoDSS Inte...

Search

Query Results

- WCS
- FPS
- DAS
- SOS
- SPS
- Video
- SAS
- GeoRSS
- JPIP

>>

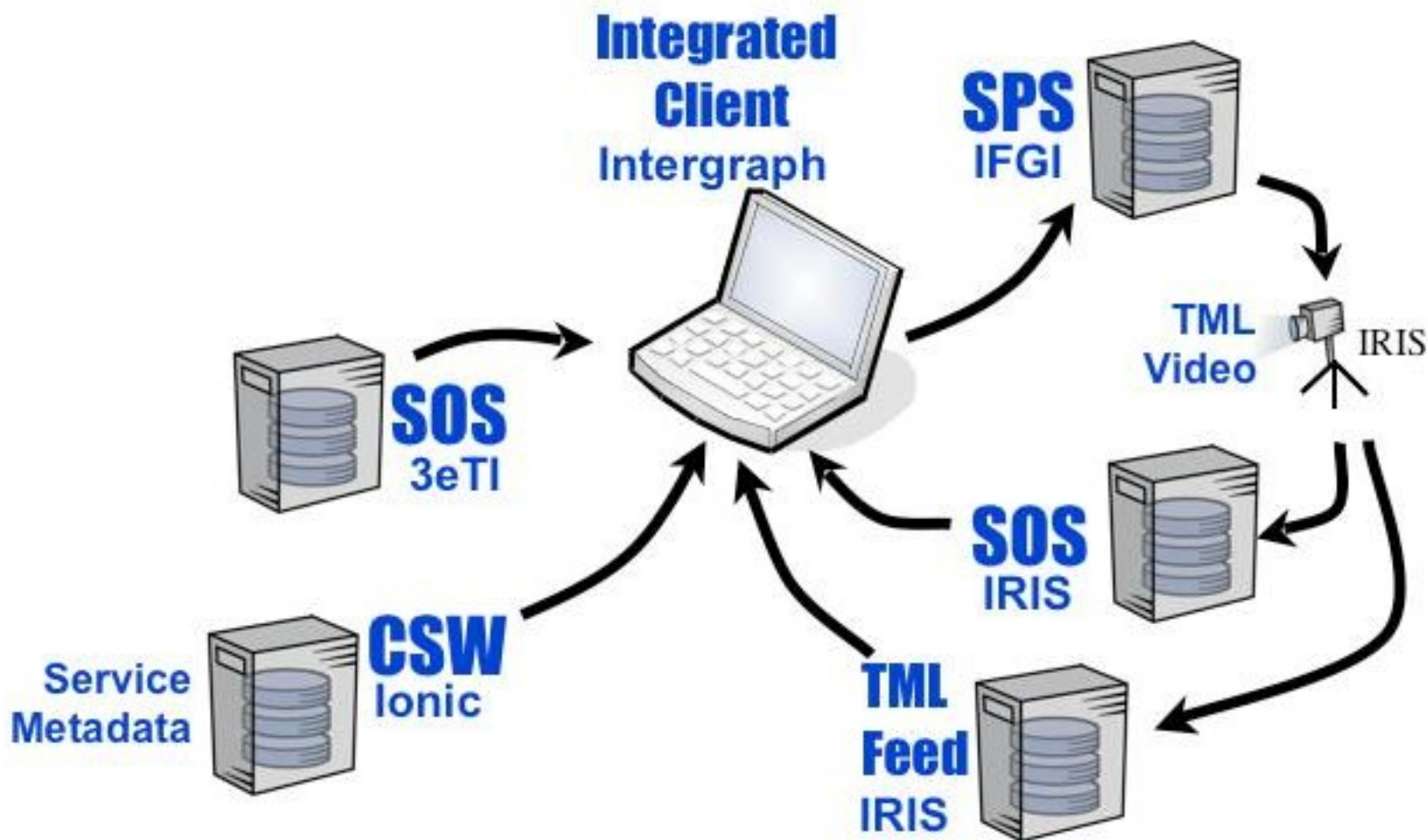
An observation is retrieved from the alarming sensor using a Sensor Observation Service (SOS).

BACK || NEXT

VIEW WIRING DIAGRAM

EXIT DEMO

Scene 2- Video Tasking



OGC
Open Geospatial Consortium, Inc.

INTRODUCTION
ABOUT OWS-4
DEMONSTRATIONS

Emergency Response

- ▶ SENSOR ALERT
- ▶ VIDEO TASKING
- ▶ REGIONAL COLLABORATION
- ▶ WEATHER IMPACTS
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- ▶ BOOKMARKS

Earth Observation

SIDEBAR DEMOS
GML CLIENT DEMO
CREDITS
HELP

EXIT DEMO

GeoMedia Professional - [MapWindow1]

File Edit View Insert Tools Analysis Warehouse Legend OGC VPF Fusion GIToolkit WMS Window Help

Lon,Lat(d:m:s) -74.05:35.010, 40:42:36.214

No Active Filter

- Labels of Port-New
- Port-Newark-Radia
- OrthosWMS (1)

Tml Video Display frames [12] ref [IRIS02_CAM_H264_N...]

Connect Video Source

Get Observations Map Sensors

Search
Query Results
WCS
FPS
DAS
SOS
SPS
Video
SAS
GeoRSS
JPJP

Press F1 for Help.

start GeoM... Camt... Tml V... Type to s... 7:58 AM

Receive and display video camera feed.

◀ BACK || NEXT ▶

VIEW WIRING DIAGRAM



INTRODUCTION
ABOUT OWS-4
DEMONSTRATIONS

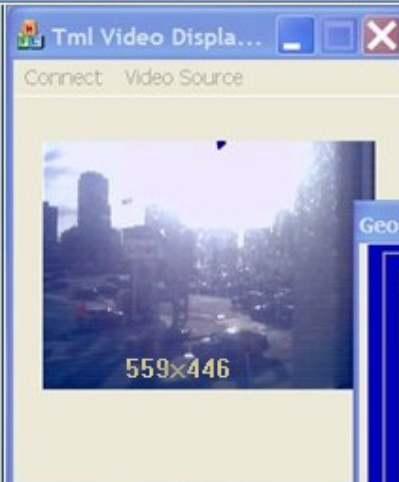
Emergency Response

- SENSOR ALERT
- VIDEO TASKING
- REGIONAL COLLABORATION
- WEATHER IMPACTS
- COMMON PICTURE
- ASSURED TRANSACTIONS
- QUALITY ASSESSMENT
- BUILDING SELECTION
- BUILDING ANALYSIS
- BUILDING DESIGN
- PATIENT TRACKING
- BOOKMARKS

Earth Observation

SIDEBAR DEMOS
GML CLIENT DEMO
CREDITS
HELP

EXIT DEMO



GeodSS Integrated Client

SPS

SPS URL:

Offerings:

- urn:x-ogc:object:sensor:IRIS:TMLPT_C:1:iriscam01 - http://mars.uni-muenster.de:8080/52nSPSv1/SPS?REQUEST=GetSensorMetadata
- urn:x-ogc:object:sensor:IFGI:AXISPTZ_A:1:ifgicam02 - http://mars.uni-muenster.de:8080/52nSPSv1/SPS?REQUEST=GetSensorMetadata
- urn:x-ogc:object:sensor:IRIS:TMLPT_C:1:iriscam02 - http://mars.uni-muenster.de:8080/52nSPSv1/SPS?REQUEST=GetSensorMetadata

Metadata:

*** Sensor ID: urn:x-ogc:object:sensor:IRIS:TMLPT_C:1:iriscam02 ***
 Phenomenon: urn:x-ogc:def:phenomenon:OGC:Radiance
 Description: http://mars.uni-muenster.de:8080/52nSPSv1/SPS?REQUEST=GetSensorMetadata
 Bounding Box:
 Min x: -74.138972

Phenomenon:

| Task Property | Task Value |
|---------------|------------|
| tilt | -1 |
| pan | -18 |
| rpan | |
| rtilt | |

CS-W_ClientDC

Request for task 1165586398180_1943289561315753 is confirmed

OK

Search

Query Results

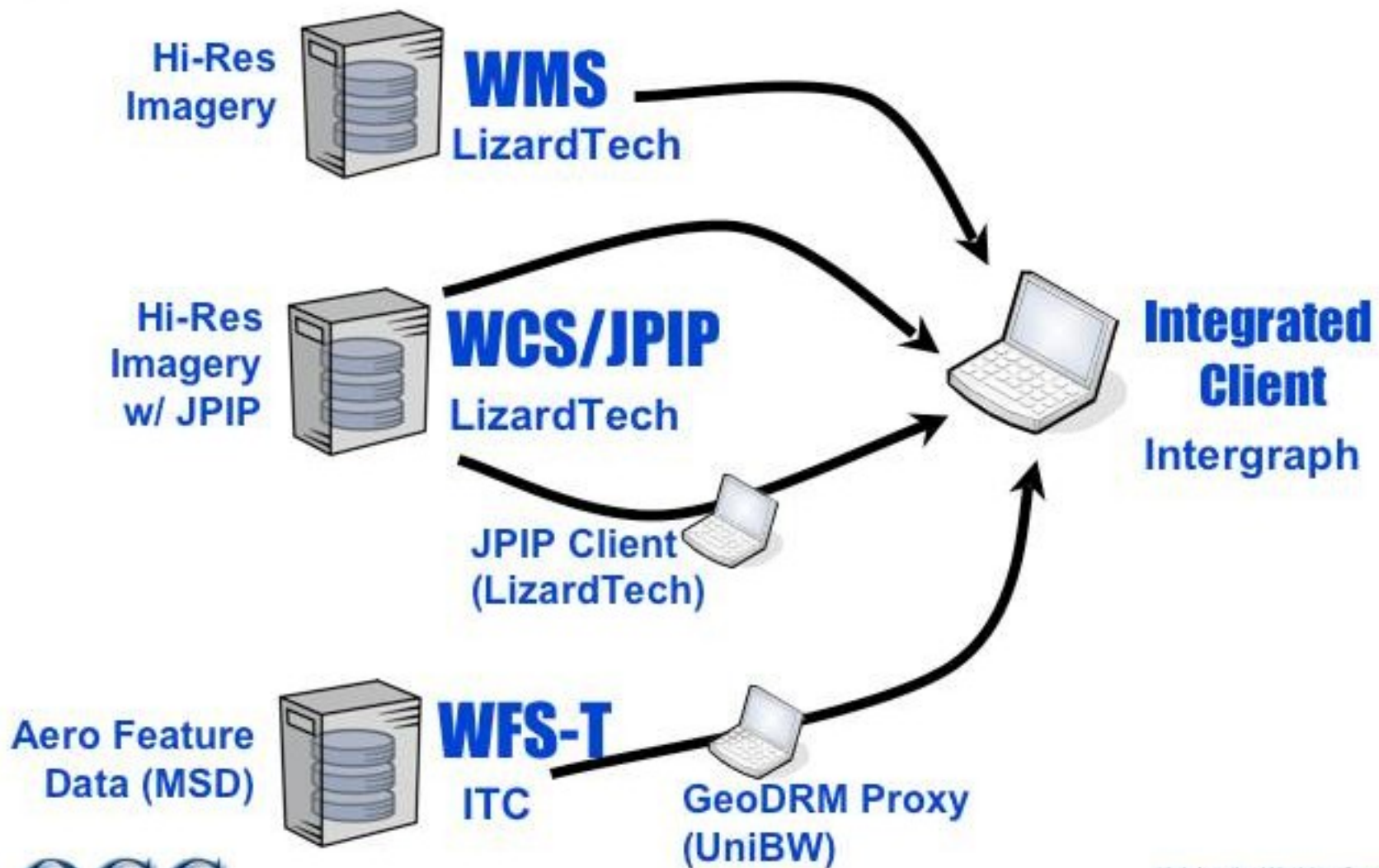
- WCS
- FPS
- DAS
- SOS
- SPS
- Video
- SAS
- GeoRSS
- JPIP

>>

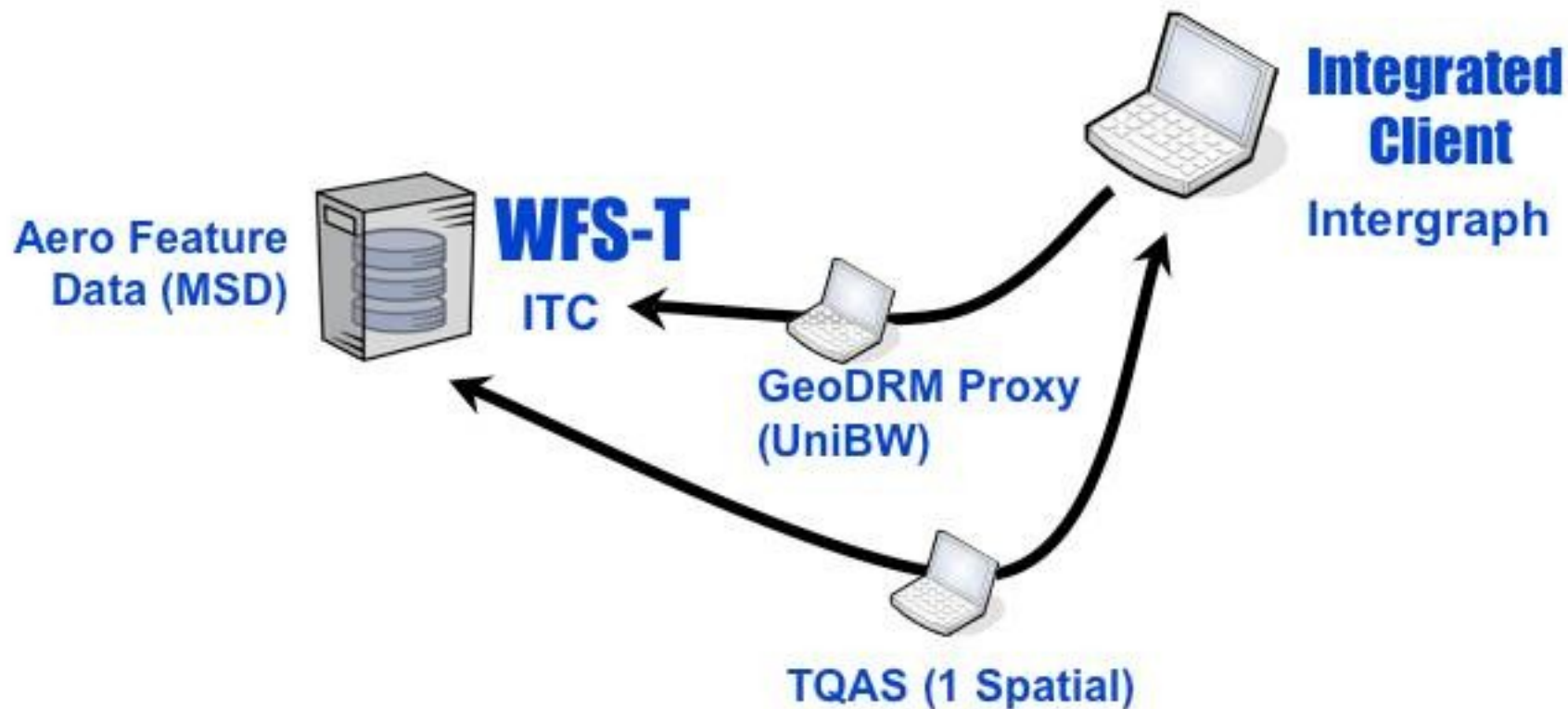
Task video camera to pan and tilt using a Sensor Planning Service (SPS).



Scene 5 - Establish Common Operating Picture



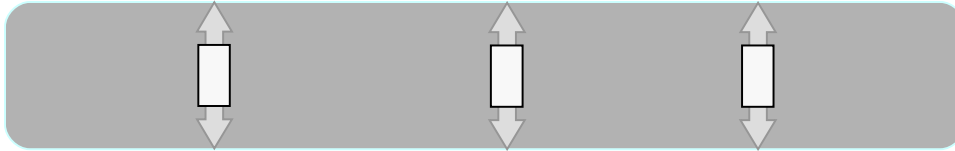
Scene 6 - Assured Transactions



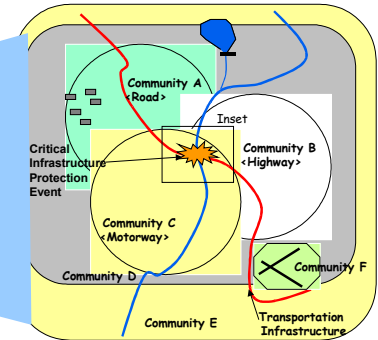
I progetti di interoperabilità per la Geospatial Intelligence



GIS Specialists NATO Commands Functional Systems Analysis & Support Crisis Management

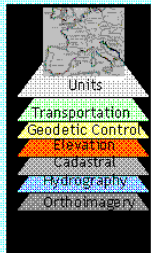


Common Relevant (Interoperable) Operating Picture



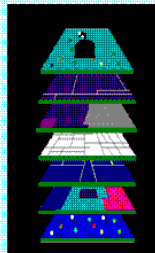
Global
National
NATO Strategic
NATO Regional

Reference Information



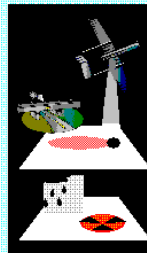
Information classes of digital geographic data defined in the collective as core geospatial, gazetteer, catalogue and viewer Services

Infrastructure Information



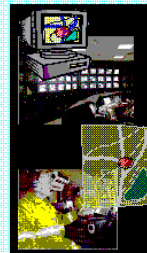
Information classes defined in domain and thematic areas of interest: Orbat Info, Janes Defence, Transportation, Air, Land

Dynamic Information

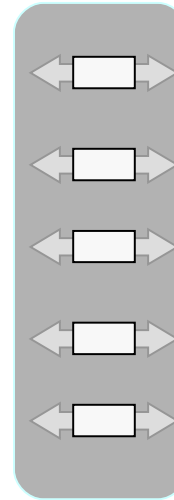


Information classes of dynamic environmental and decision support: Enemy, Friendly and Neutral Forces; Weather; Traffic Movements, Sensors, Location Services

Product Information



Product classes generated by distributed systems: Map Views; Land/ Air/ Sea Pictures; Intelligence or Logistics Status Reports



National Sources: Data and Services

NATO HQ: Data and Services

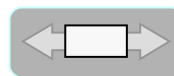
Functional Services: Data and Services

In-theatre: Data and Services

Location Based Services



Information Architecture: Models, Transforms, Application Schemas and Dictionaries



Service Architecture: Standards, Certified Services for Accessing, Processing, Presenting Information

Enabling a Geospatial Interoperability Framework

I Geoportali Militari

es. NGA – GI WebMapSvr, WMS Viewer for Feature Level Databases (FLDB)



Server:

- OGC compliant WMS portal
- ISO compliant metadata
- NGA approved 'themes'
- Data access thru Oracle FLDB and TerraShare Web
- Style Library based on NGA GeoSym symbology

Viewer:

- Map Viewer with Catalogue functions
- Attribute based queries and display
- Layered Raster with transparency
- Display "on / off" by Theme or Feature Class
- Grid Generation
- Map File "Save As"
- Plot directly from Viewer
-

Il riconoscimento dell'importanza di SDI 1.0 nel framework di “Interoperabilità Efficiente”



Geospatial Intelligence Standards Enabling a Common Vision

November 2006

NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY



Survey Administration of State of Baden-Wuerttemberg (*Germany*)



- Runs a web-based shop system for their geodata
- Offers strong SDI services for several geodata layers based on Intergraph's technology for general use of industry and government organizations



Baden-Württemberg
LANDESVERMESSUNGSAMT





REGIONE DEL VENETO



Area SIT

Aerofototeca

Vai al Carrello

N° Oggetti: 3

Azzera Carrello

Visite oggi: 149

Visite totali: 25744

Cartografia:

CTR

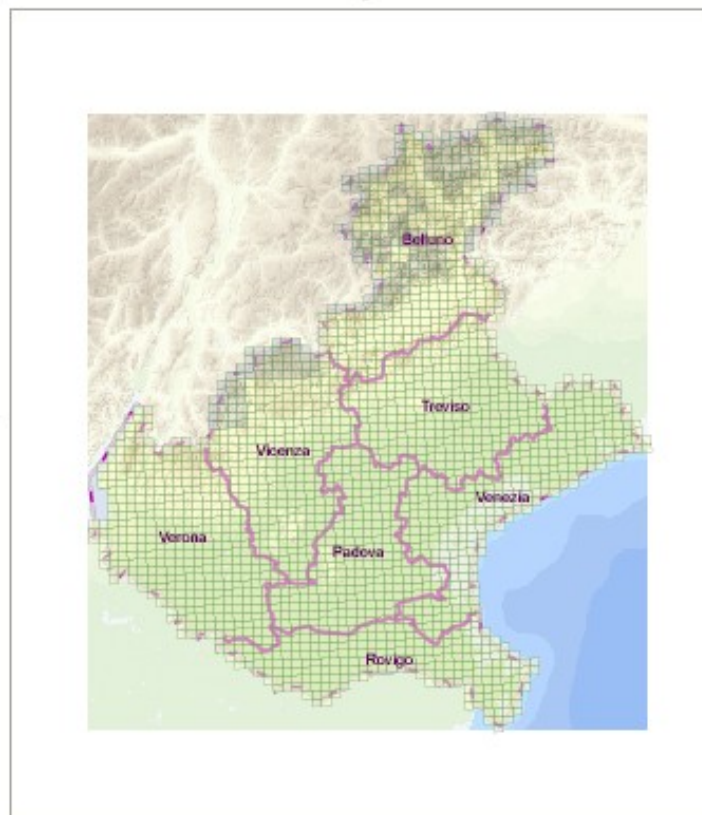
- Raster 10000
- Vettoriale 5000
- Vettoriale 10000

Ortofoto

Punti Geodetici

Metadati

Vettoriale 5000



- Toponimi**
- Disp. CTRN 1:5.000**
- Agg. CTRN 1:5.000**
- Regione
- Provincia
- Comune
- Raster**

Modifiche:

Applica

Annulla

Localizza Comune

Abano Terme

Mostra

Zoom

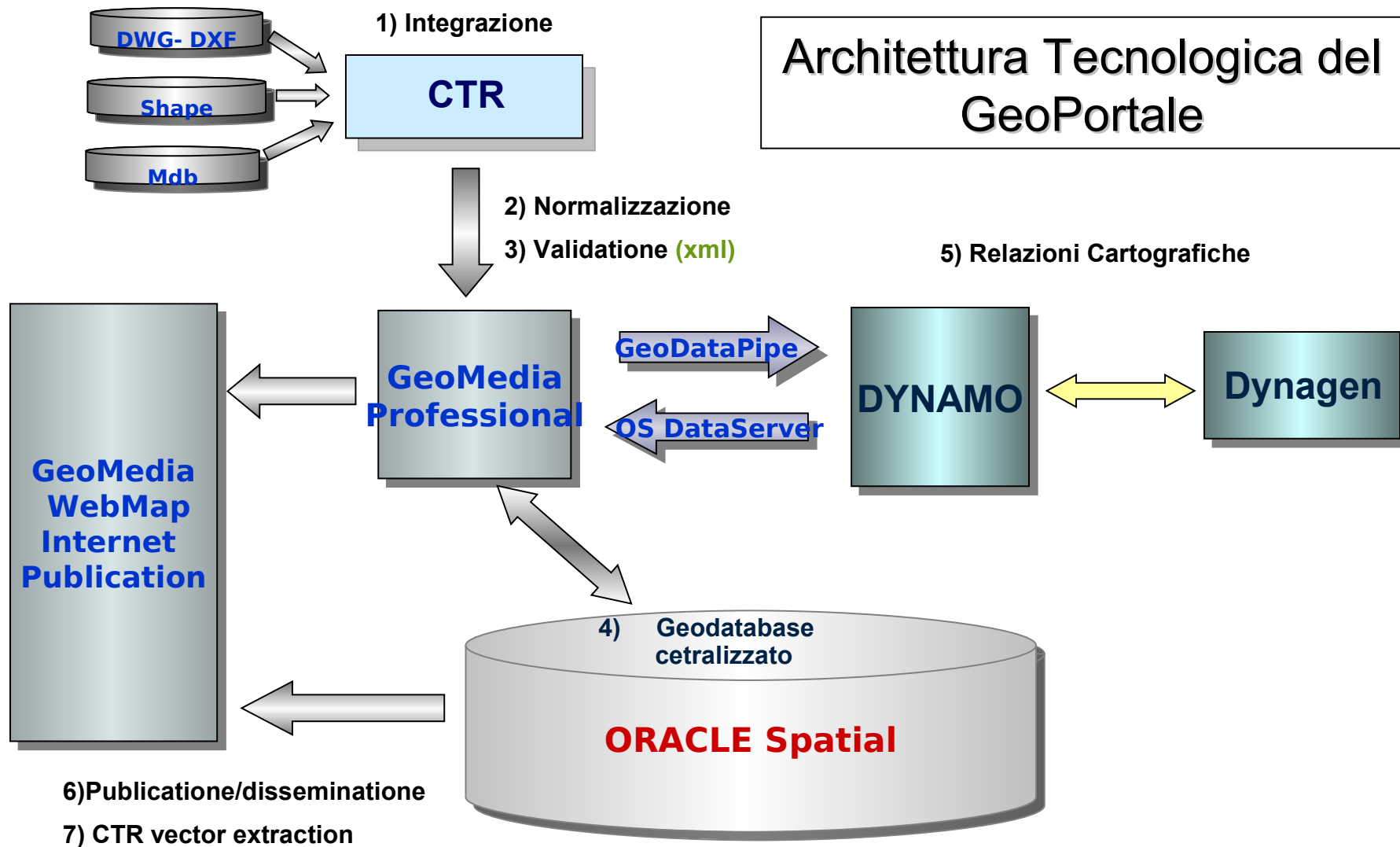
Seleziona Fogli

- Per Provincia
- Per Comune
- Per Foglio
- Per Area libera

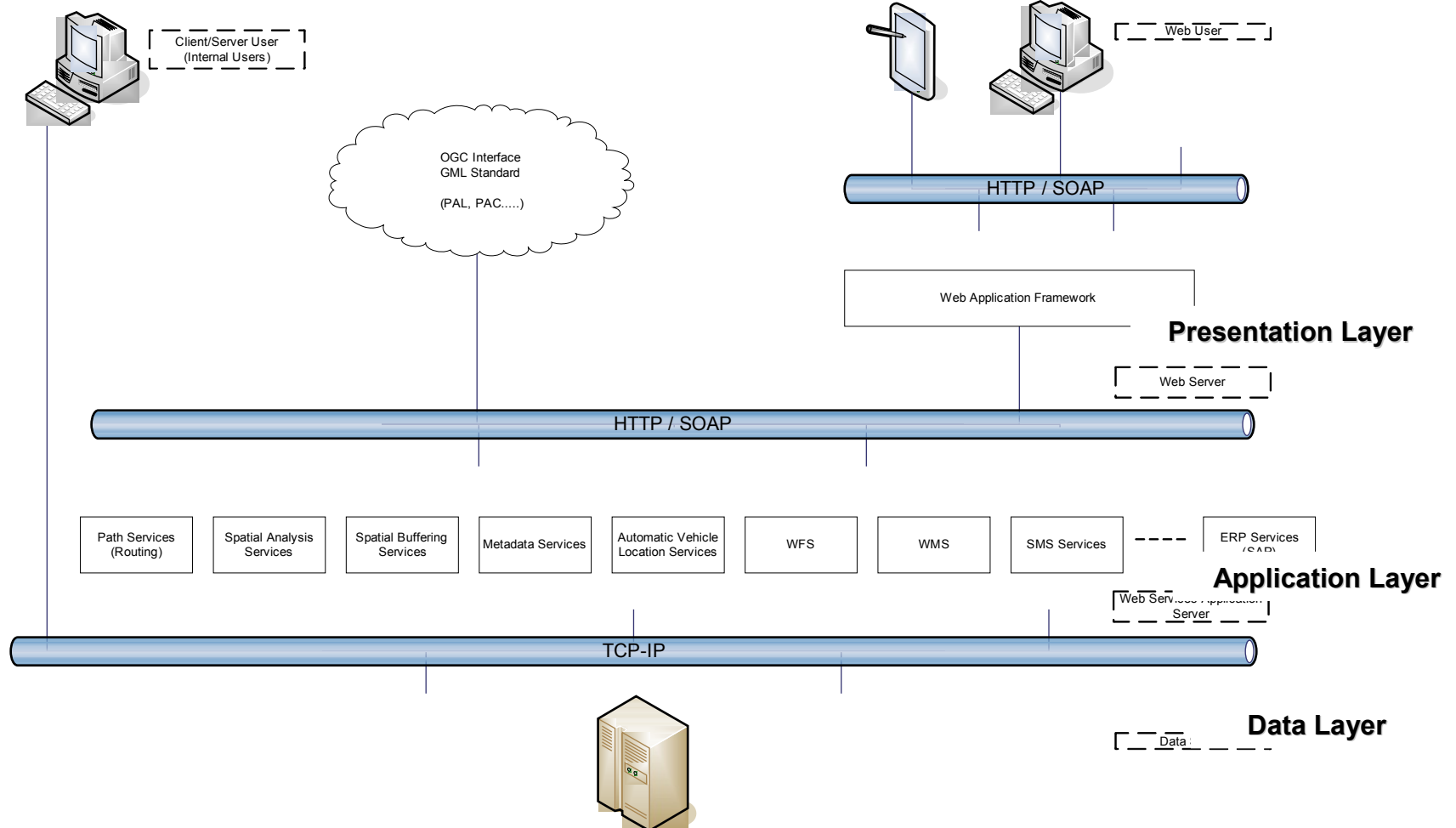
90 km



Scala 1 : 2305601



Standard Technology : SOA & Web services

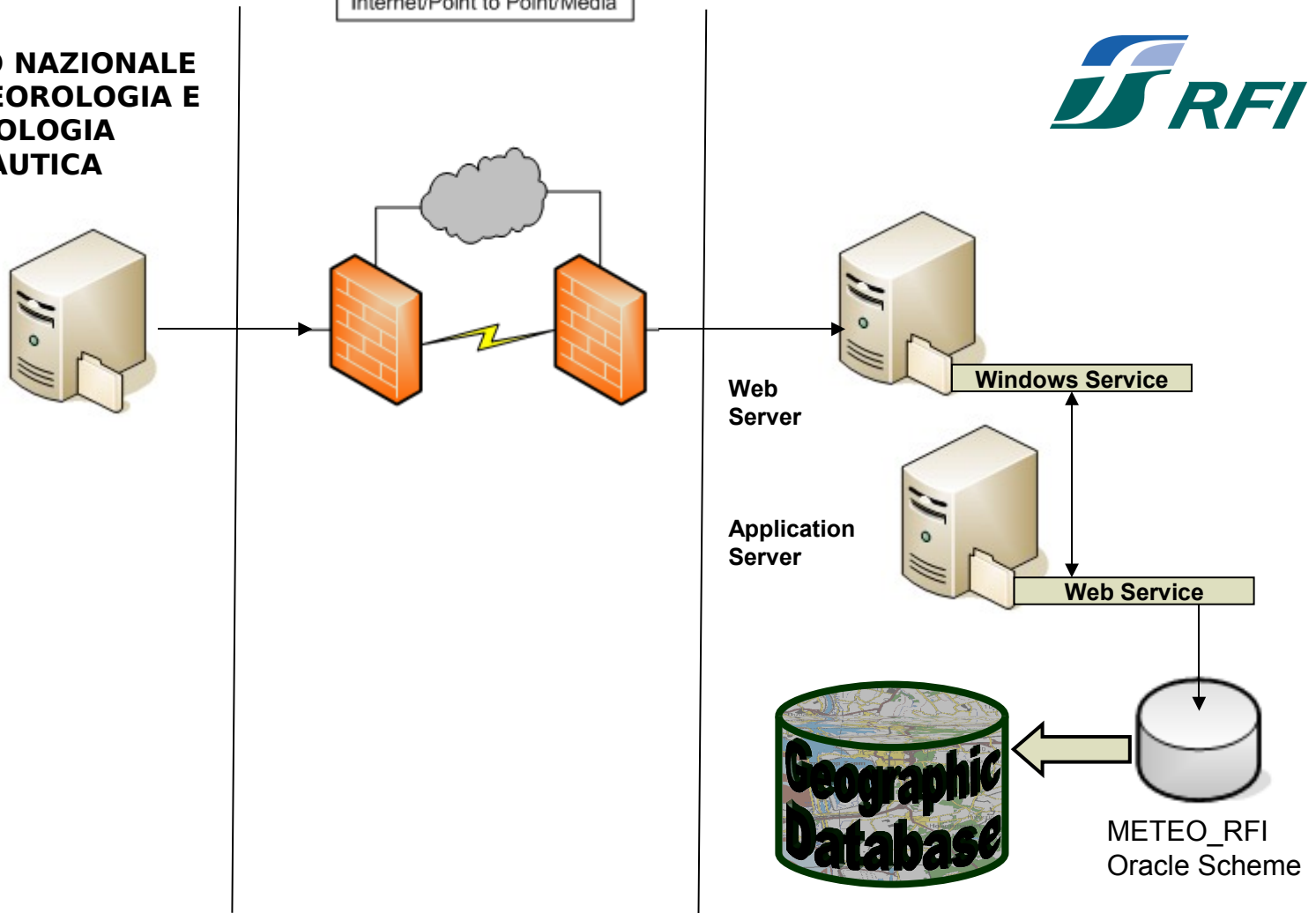


Natural phenomena impacts: The solution



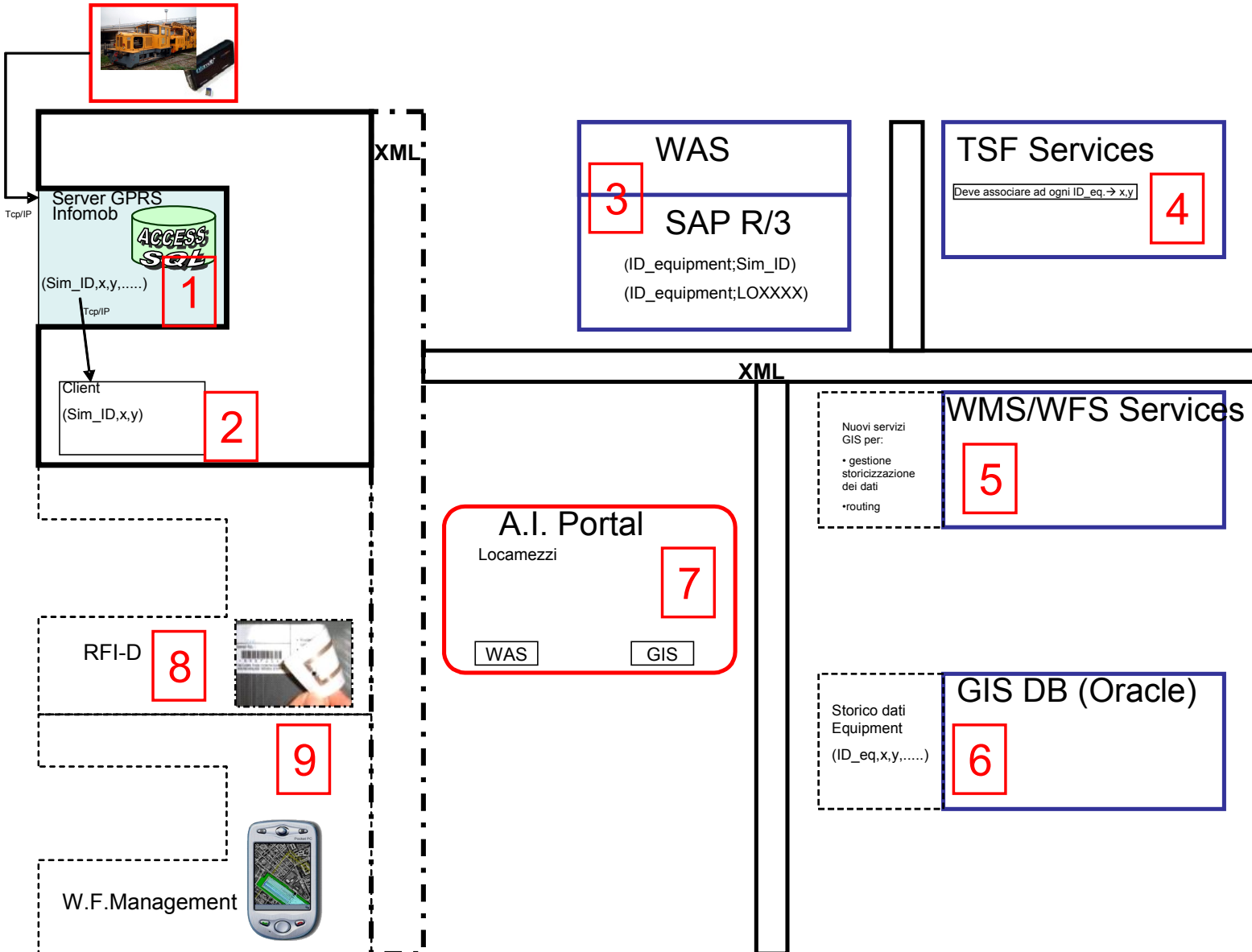
**CENTRO NAZIONALE
DI METEOROLOGIA E
CLIMATOLOGIA
AERONAUTICA**

Internet/Point to Point/Media



Meteorology
measures and
forecasts

Railway line faults mgmt : XML/SOAP Architecture



City of Nijmegen Services on Internet



- First WMS application in The Netherlands
- Website for citizens
- Search function like on Marktplaats.nl
- Nijmegen combines GeoMedia with Google images and information from GBKN

GEMEENTE Nijmegen

Aan de Balie

Schaal: 100 m

| <input checked="" type="checkbox"/> | Dossiernr | Ontvangst | Soort | Dossiertype | Omschrijving | Status | Lokatieaanduiding | Module | Toon |
|-------------------------------------|-----------|------------|----------|-------------------|---|-------------------------|---|--------|------|
| <input checked="" type="checkbox"/> | 20031148 | 17/12/2003 | Aanvraag | PRINCIPE AANVRAAG | het gedeeltelijk veranderen en vergroten van woningen | OMGEZET IN BOUWAANVRAAG | Camphuisenkade 2 t/m 29 en Camphuisenstraat 29 t/m 40 | BWT | Toon |

Polish Kataster OnLine



MATRA II - Scenariusz - Wgląd w mapę - Microsoft Internet Explorer

Kataster Online

Operator: Tomasz Głowacki
Scenariusz: Wgląd w mapę
Kontekst: CIECHANÓW, obręb: 0080 - ŚMIECIN KOLONIA

Wydruk: A4 Pionowo 1:500

Działka ewidencyjna: 89

Skala mapy: 1:2000 50 m

WSTECZ MENU GŁÓWNE

Done Trusted sites



GEOSERWER

Serwer Informacji i Usług Geograficznych

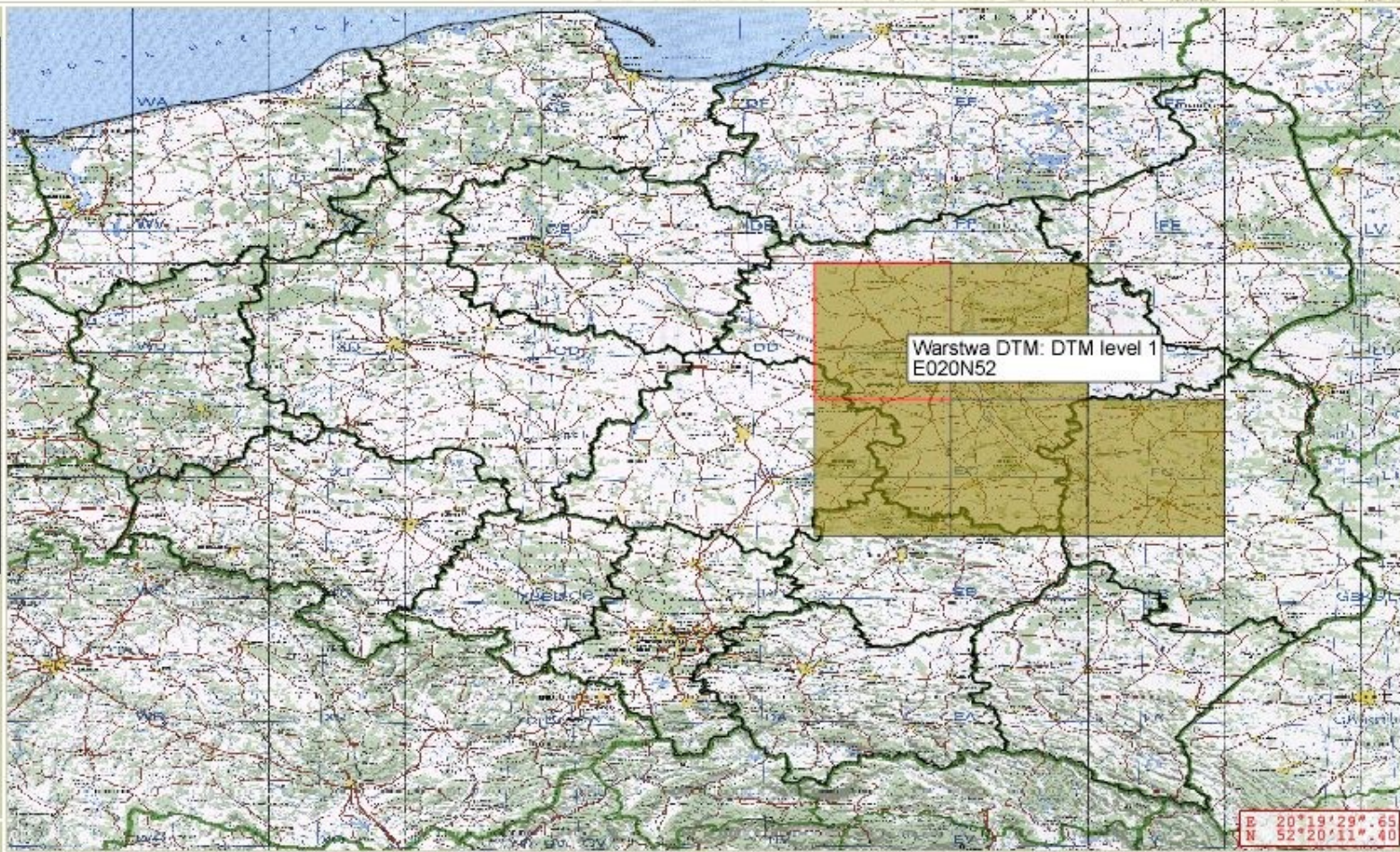
Name: Tomasz Berezowski

Events

Contact End session

Menu

- Map settings
- Data processing
- Simple analysis
- 3D analysis
 - DTM driller
 - by area
 - Generate 3D structure
 - Study area management
 - Display study area
 - Line of sight
 - Get crosssection
- User briefcase
- Processing status
- Products



E 20°19'29".65
N 52°20'11".40

Navigation

1:50000

1:1000000

CADRG 1:50 000

CADRG 1:250 000

CADRG 1:1 000 000

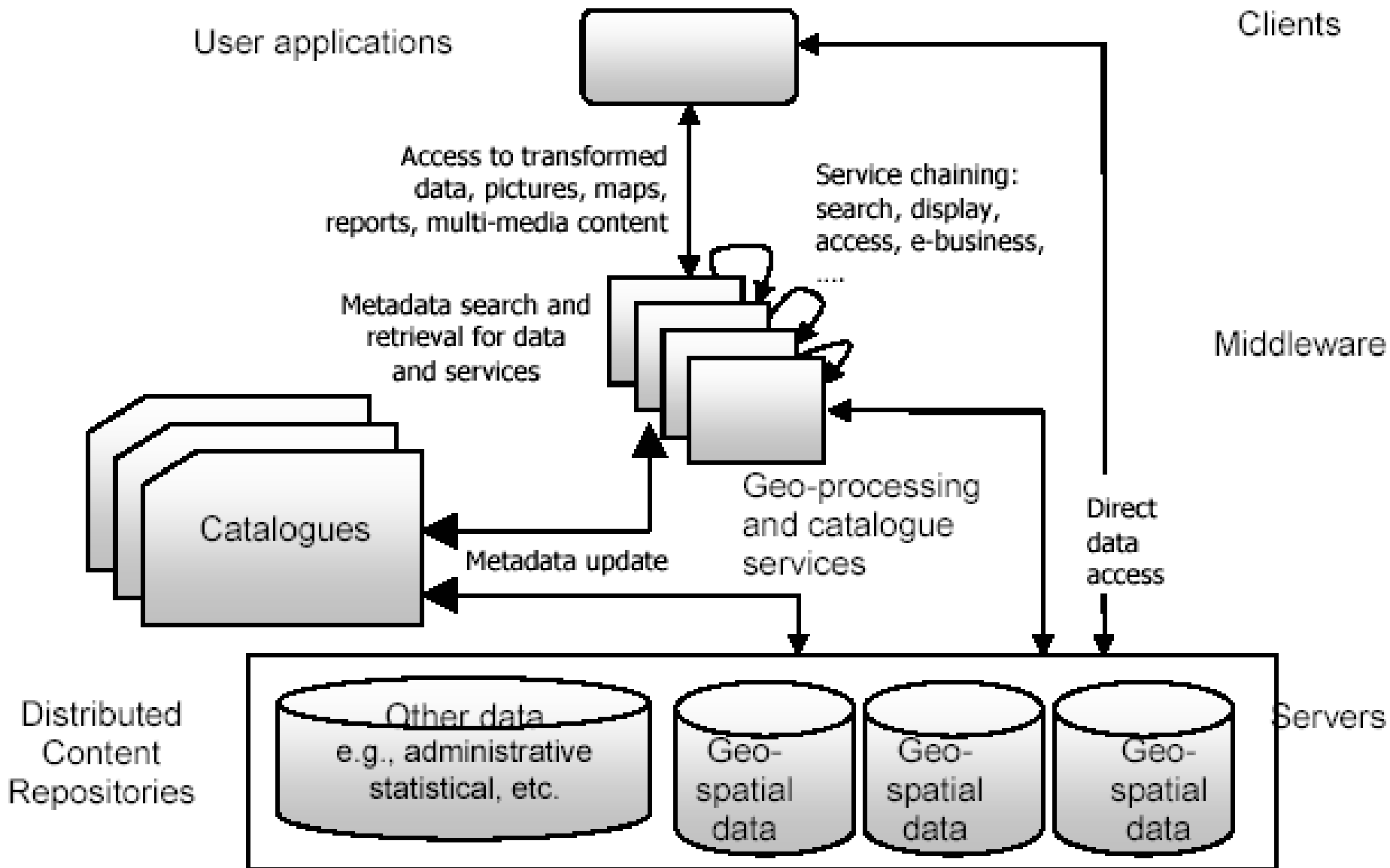
gPlan - Ireland

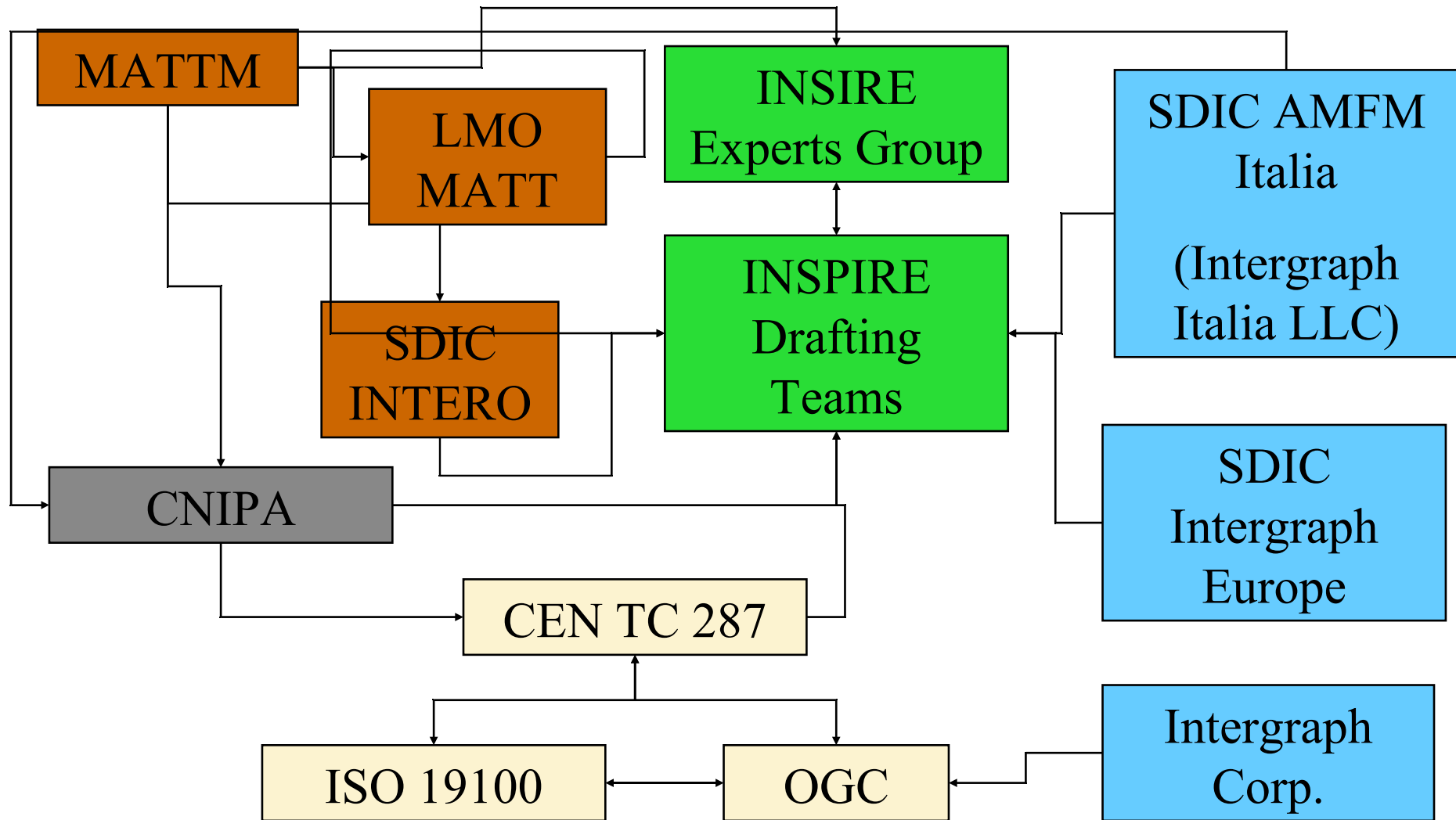


- Online planning geo-portal used by c. 20 Irish Local Authorities
- Integrated mapping & planning application details – incl. drawings & correspondence
- Reduces planning office front-desk queues
- Improves customer service



INSPIRE: architettura di sistema

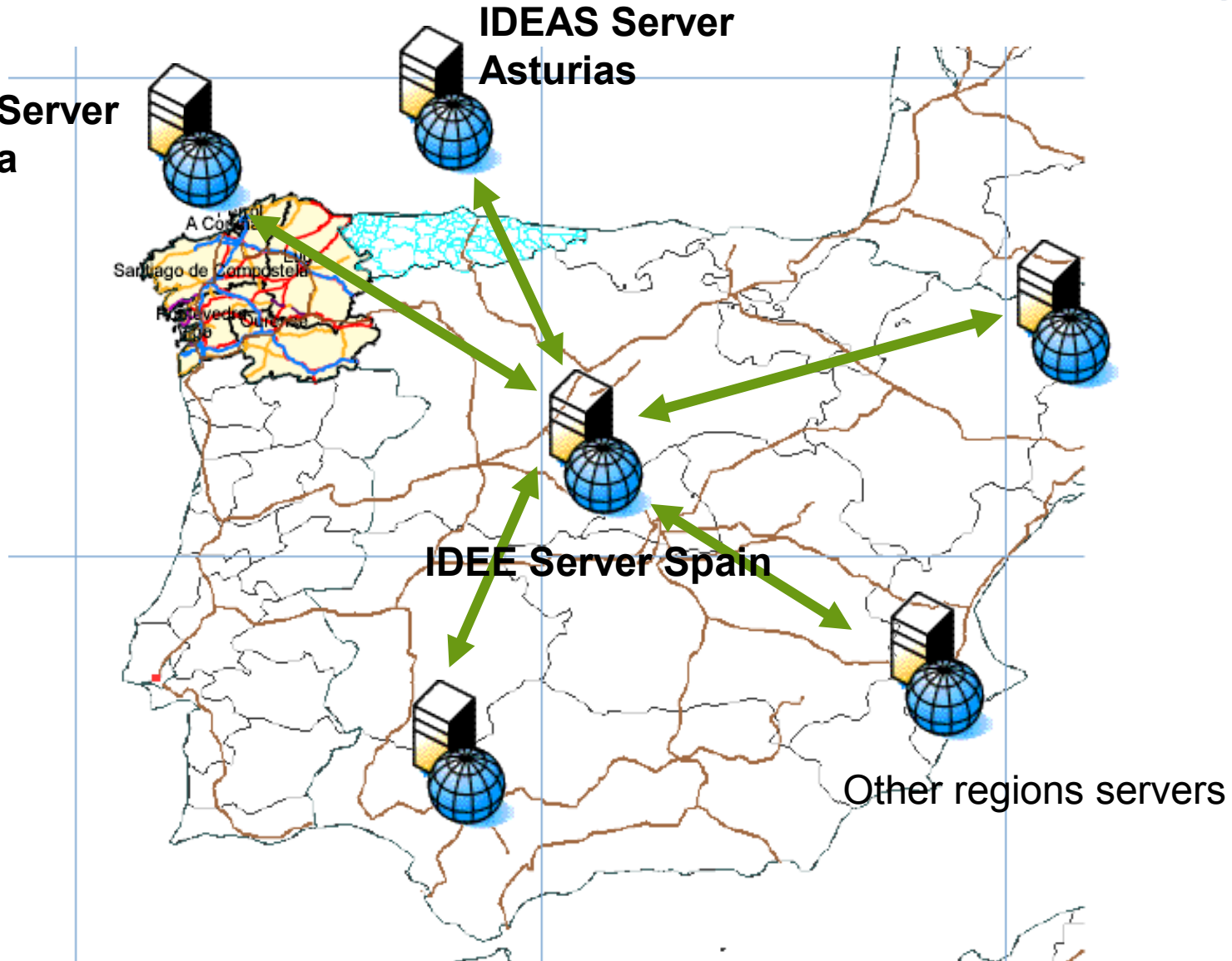




INSPIRE in Spagna: IDEE

**IDEG Server
Galicia**

**IDEAS Server
Asturias**



IDEAS/IDEG – Data

IDEAS

OrthoImage 1:25.000
Municipalities Map
Cartography 1:5.000
Cartography 1:10.000
Lands Map
Morphological Map
Roads Map
Environmental Information
Agrological Map

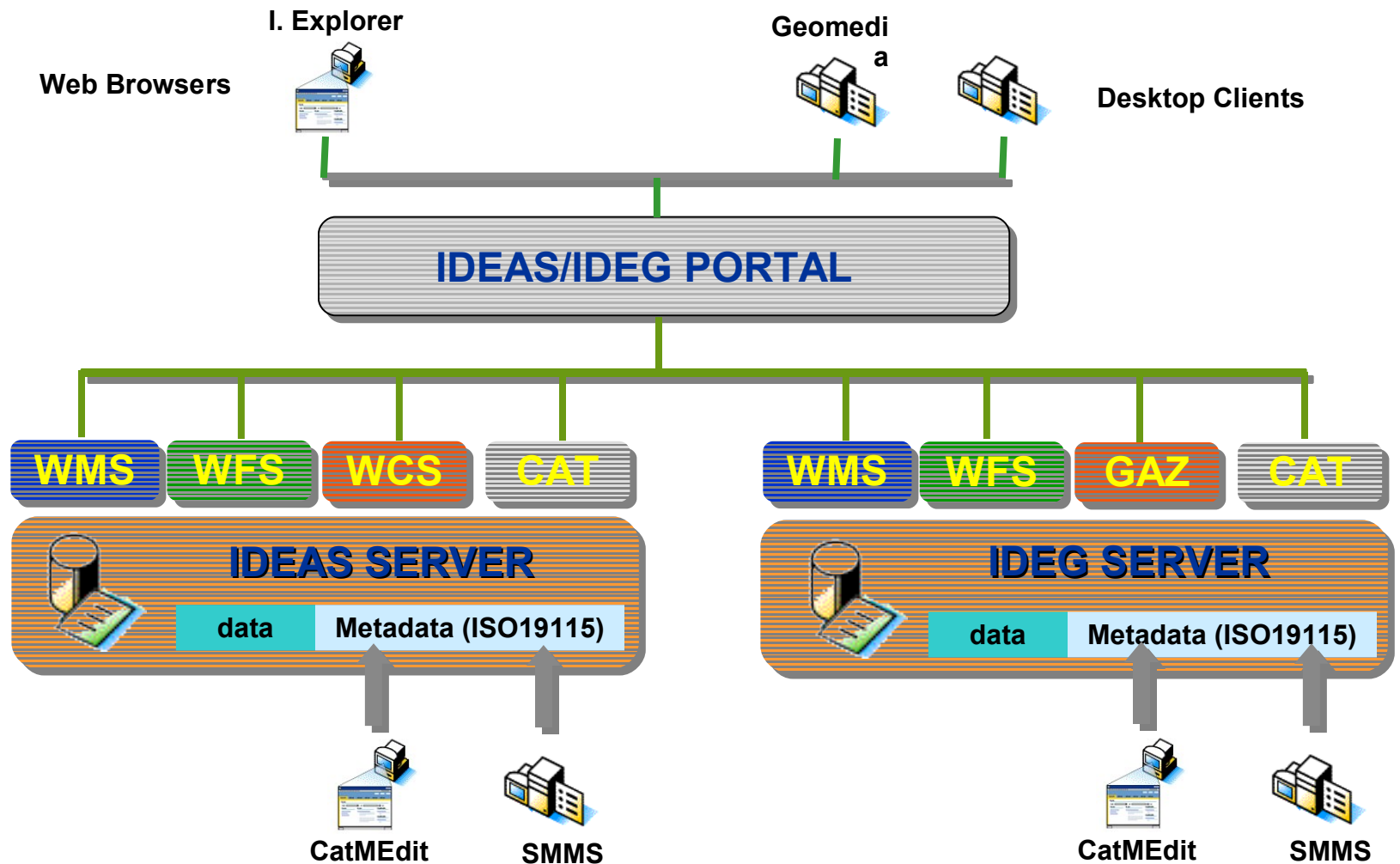
IDEG

Cartography 1:5.000 to 1:1.000.000

OrthoImage (0.25m.)
OrthoImage Spot+Landsat (5m.)
OrthoImage Landsat (15m.)

Land Cover Map
Hidrological Map
Lithological Map
Hidrogeological Map
Population and economic activities

IDEAS/IDEG – Architecture I



GALICIA SDI



Dirección <http://sitga.xunta.es/index.asp>

[Ir](#) [Vínculos](#)

SITGA IDEG

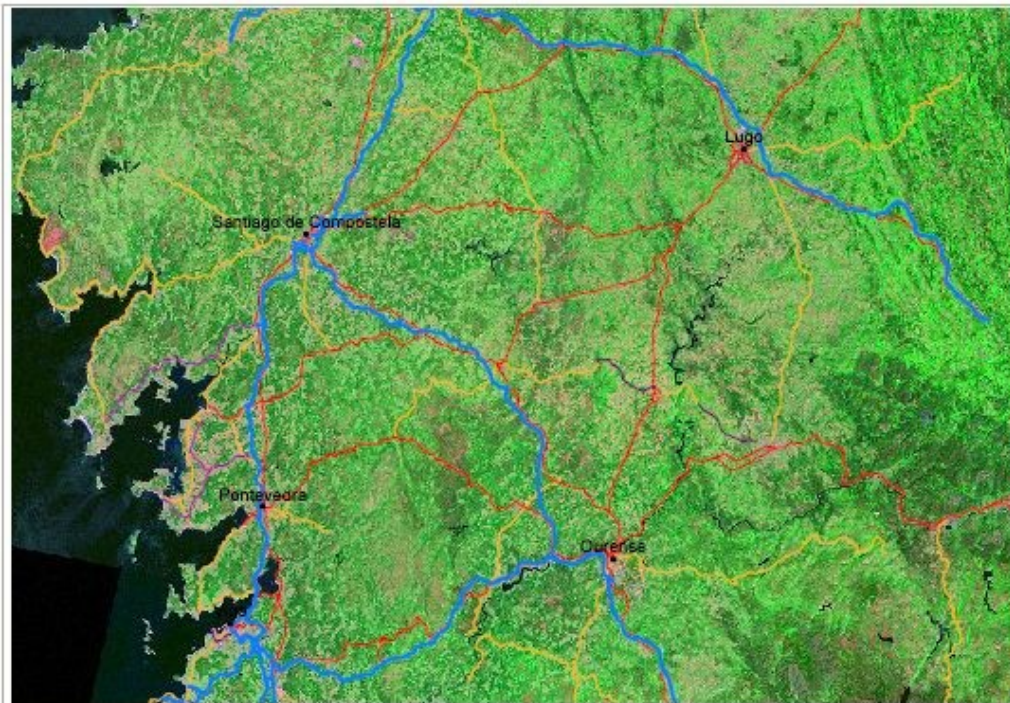
XUNTA DE GALICIA



SITGA

Cartografía básica

- Temáticos predefinidos
- Cartografía temática
- Servizo nomenclátor
- Catálogo
- Almacén de mapas
- WMS
- Cartografía Publicada
- Almacén de imaxes
- Utilidades



- Toponimia
- Núcleos
- Puntos singulares
- Vías de comunicación
- Hidrografía
- Límites administrativos
- Cartografía básica 1:5.000

[Actualizar lenda](#) | [Cancelar cambios](#)

Imaxe de fondo

LandSat2000_bandas742

Servidores WMS

IDEA S:

ENLACES

COMARCAS DE GALICIA

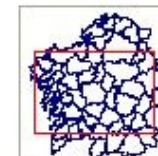
XUNTA DE GALICIA

SIXPAC

Cargando mapa

73 km

Escala 1 : 1000161



Sistema de coordenadas epsg23029



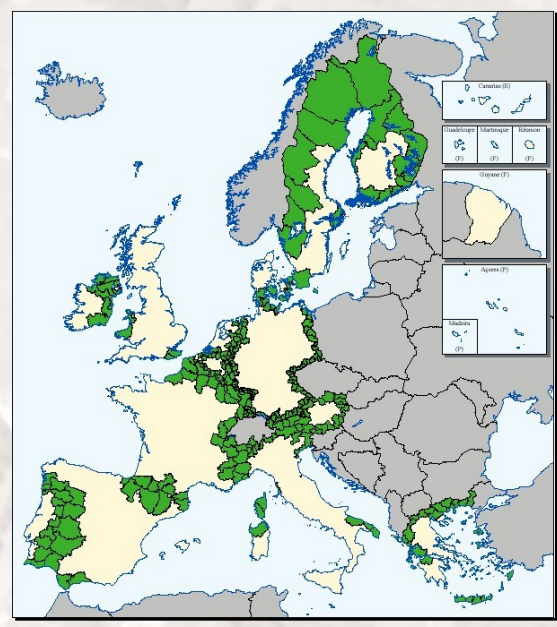


DRAEDM
 Direcção Regional
 de Agricultura de
 Entre-Douro e Minho
 Ministério de Agricultura,
 Pesca e Florestas



Transfrontier Cooperation

- **Subprogram Galicia – North of Portugal**
- **Mainline 3: Social-economic developpe and employment promotion**
- **Step 3.2: technological development, research and Information Society extension**
- **July 2003 – December 2004**



Interreg III A España - Portugal



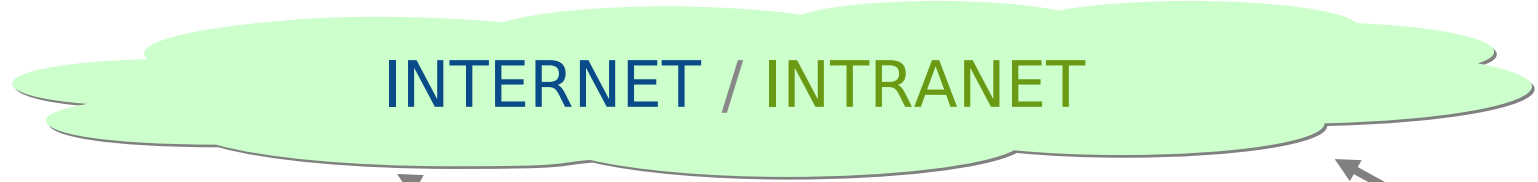
Web SERVER
Internet Information Server
GeoMedia WebMap Pro
WMS

IMAGE SERVER

TERRASHARE

Data Base Server

Oracle 9i



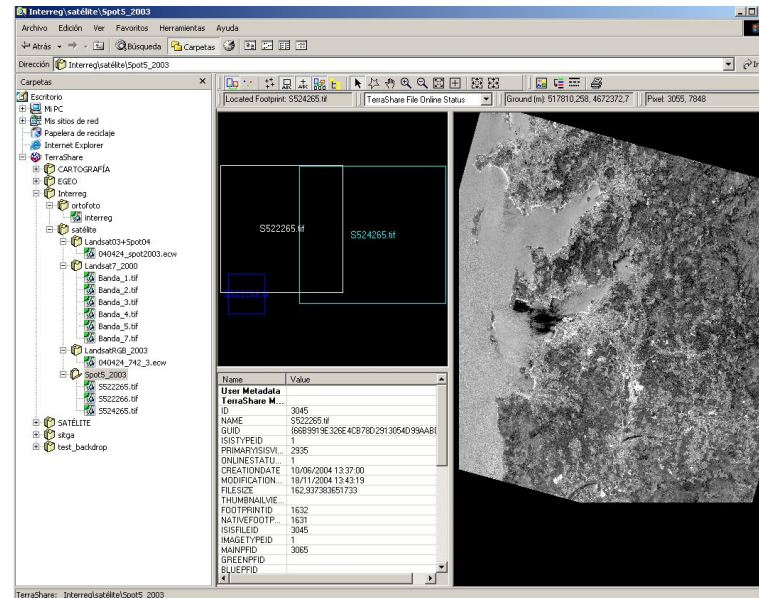
GeoMedia ArcView
...

WFS

WMS & Application Web



Image Server



Distributed server technology TERRASHARE of ZI, using the power of storage virtual raster information in only one server although the real information is distributed

TerraShare environment access by:

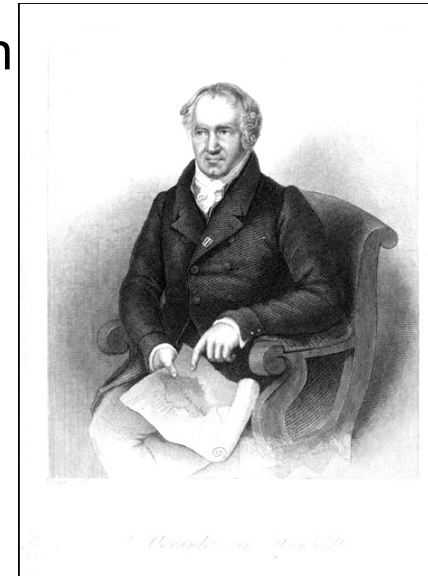
- Windows Internet Explorer for local users

- Internet Explorer for Internet user, totally integrated with GeoMedia WebMap

Humboldt Proposal

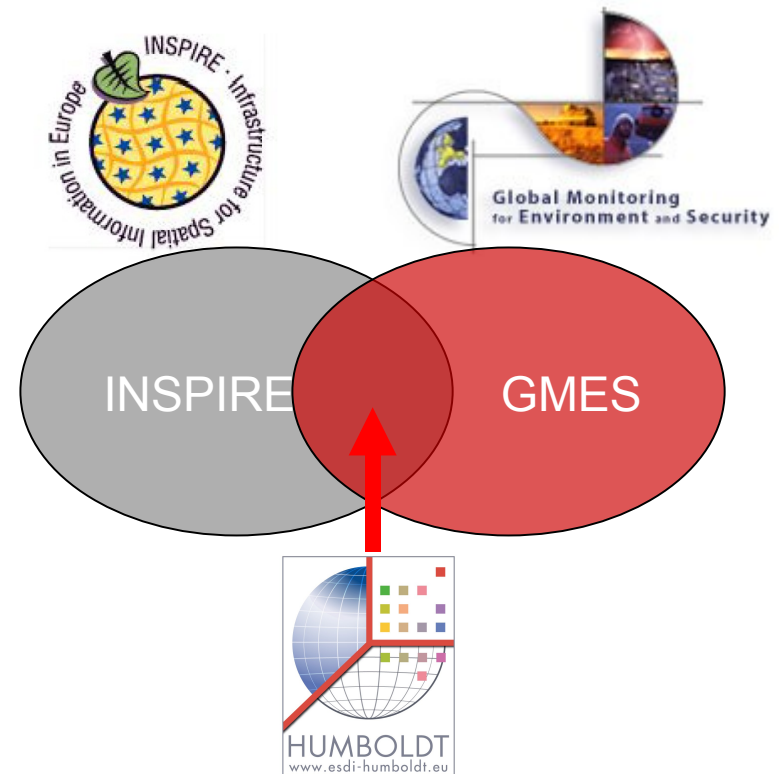


- Humboldt - Concepts and tools for data harmonisation and a sustainable ESDI
- Project duration: 48 Months
- Project volume: 15 Million € (available: 32,5 Mio €)
- Number of partners: 27 from 14 European Countries
- Target:
 - Support the implementation of an ESDI in a way that:
 - The requirements of GMES, INSPIRE, and users within other organizations can be met
 - A long-term usage is possible
 - The cost of the implementation and necessary data harmonisation is reduced where possible
 - Develop the processes and tools required for this based on common concepts and models.
 - Disseminate with the aim of getting maximum coverage



INSPIRE context

- Creation of a European SDI
 - Aim: support administration throughout the EU by securing the availability of qualified, ready to use spatial information
 - implementation by Member States
- ➔ Member States are responsible for e.g. **harmonisation**

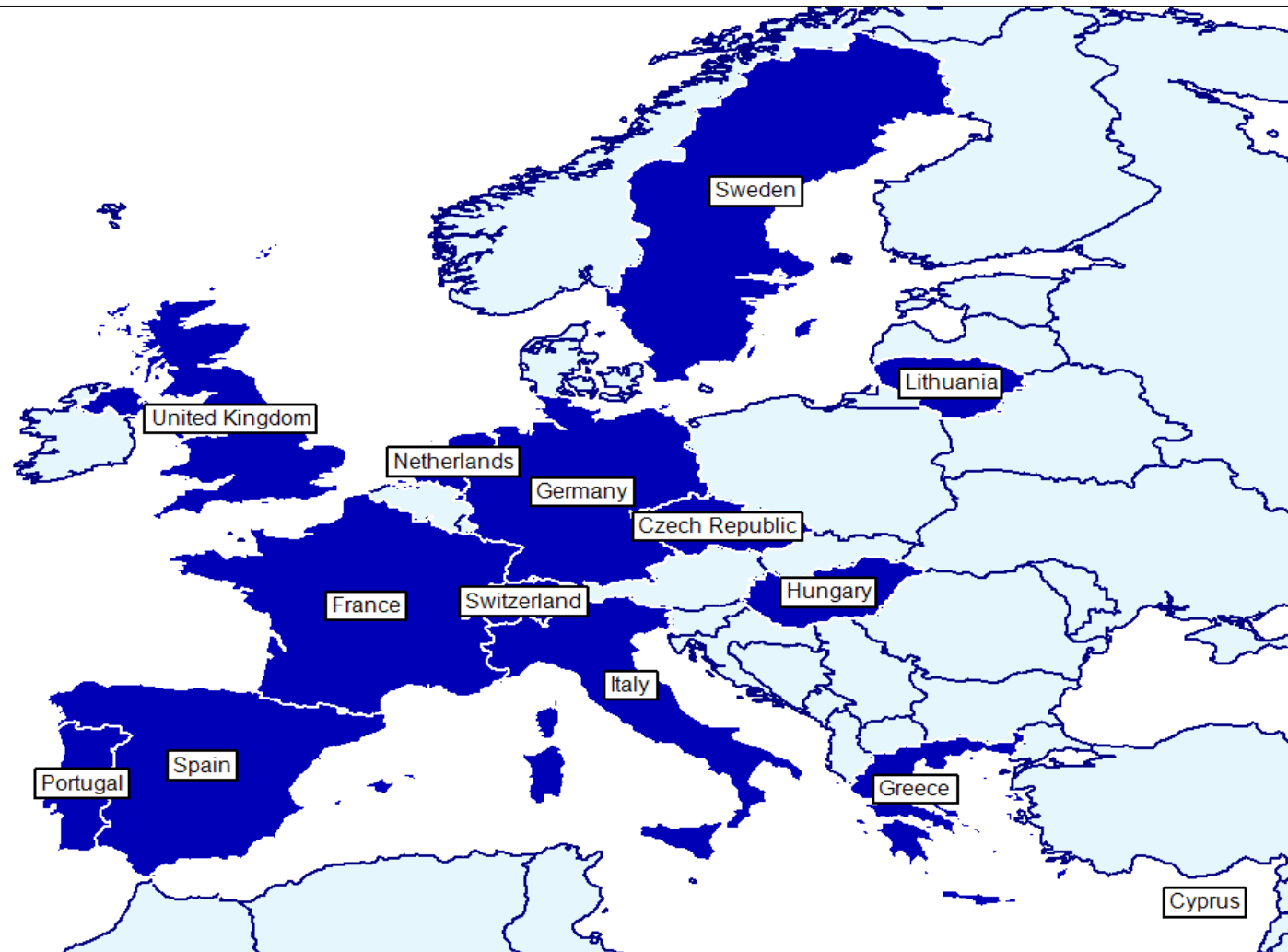


Humboldt Consortium

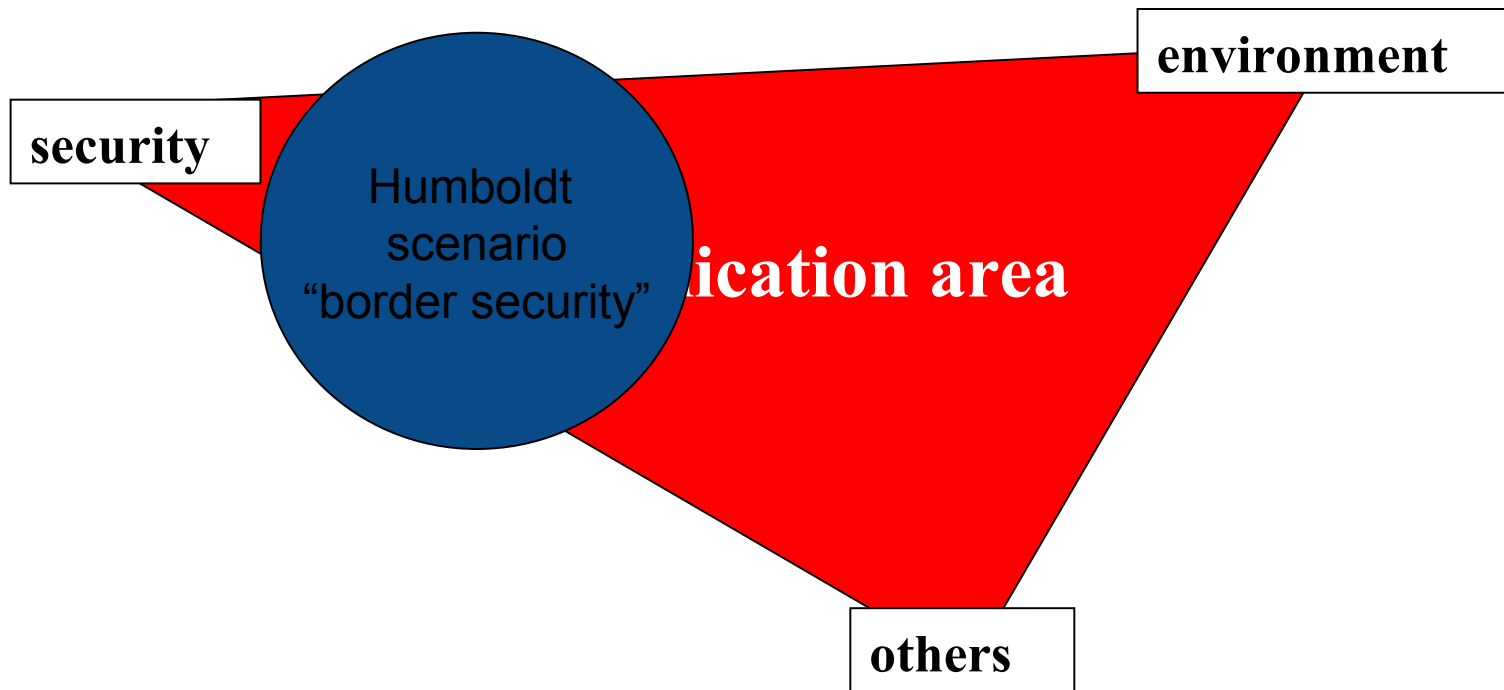


- Fraunhofer IGD Darmstadt, Germany
- ETRA Spain
- Help Service Remote Sensing, Czech Republic
- LogicaCMG UK
- Institut Geographique National, France
- Intergraph CR spol.s.r.o., Czech Republic
- Swiss Federal Institute of Technology Zurich, Switzerland
- Delft University of Technology, Netherlands
- University of Rome “La Sapienza”, Italy
- Institute of Geodesy, Cartography and Remote Sensing, Hungary
- Marine Information Service “Maris” BV, Netherlands
- Kaunas University of Technology Regional, Lithuania
- The Foundation “INI-GraphicsNet Stiftung”, Germany
- Hellenic Centre for Marine Research, Greece
- Instiut Français de Recherche pour l’Exploitation de la Mer, France
- National Environment Research Council, United Kingdom
- Swedish Meteorological and Hydrological Institute, Sweden
- University of the West of England, Bristol, United Kingdom
- Telespazio, Italy
- Geographical Information Systems International Group, Italy
- Round Table GIS, Munich, Germany
- CNR IREA, Italy
- Forest Management Institute, Czech Republic
- Instiuto Geografico Portuges, Portugal
- Collecte Localisation Satellites, France
- University of Gävle, Sweden
- Promitheas Business Innovation Centre, Cyprus

Humboldt Consortium

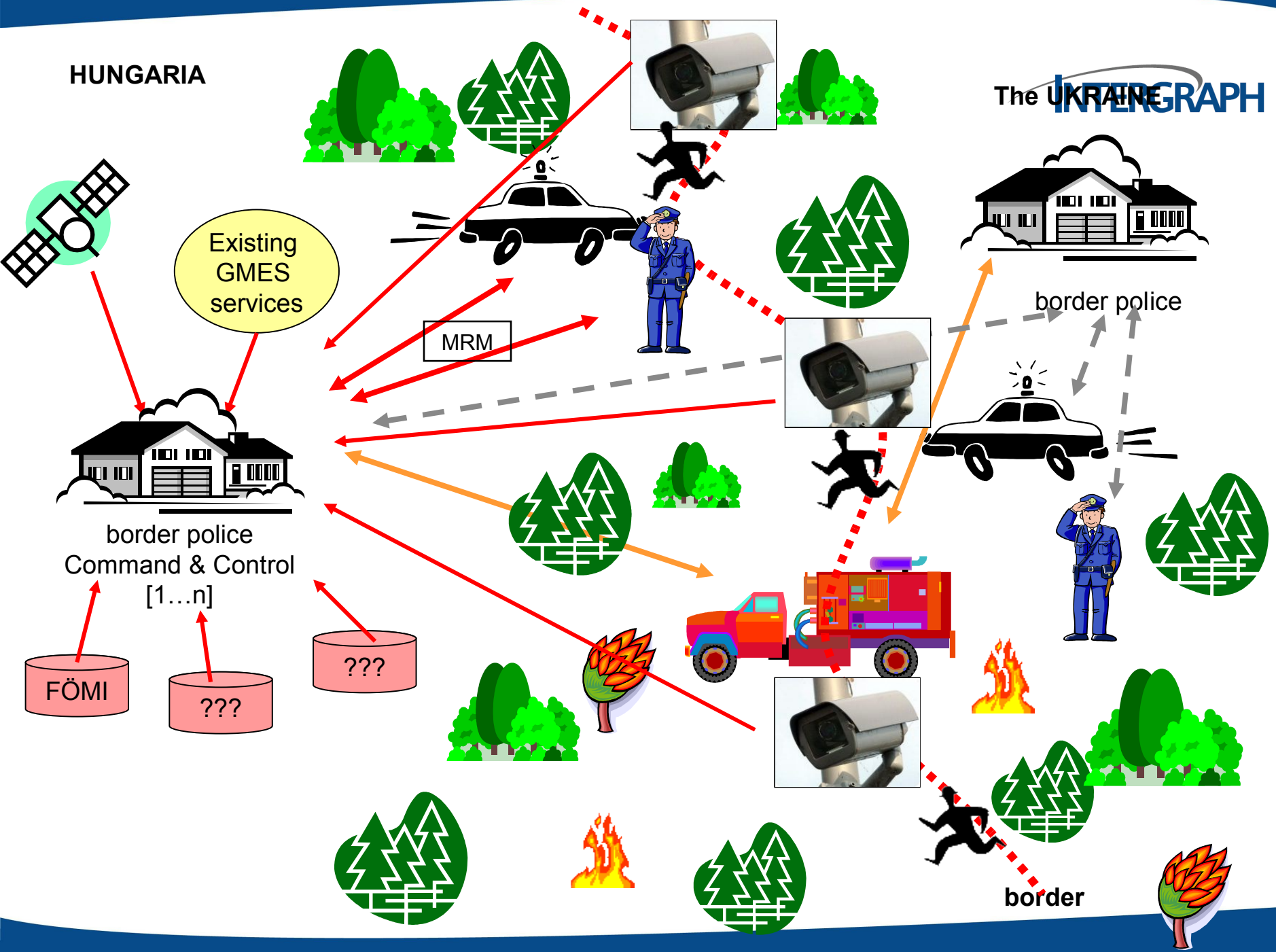


Humboldt scenarios



HUNGARIA

The UKRAINE **INTERGRAPH**



Humboldt – which standards?



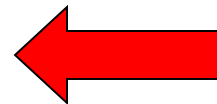
- XML
- SOAP, WSDL
- ISO 19115 (Metadata)
- ISO 19139 (Dataset Implementation Model & Schema)
- ISO 19113 (Web Services)
- ISO 19103 (CSL-UML)
- OGC
 - WMS
 - Styled Layer Descriptor
 - WFS
 - Filter encoding
 - GML
 - Web Coordinate Transformation Service
 - Coverage Service
 - Catalogue Service
 - Open Location Service (OLS) Core Services (Directory Service, Geocoder Service, Routing Service)
 - Gazetteer Service
 - Web Sensor service

GIS4EU

Provision of interoperable dataset to open GI to the EU communities

Project idea:

- **Lack of interoperable base cartography**
- **Provision of interoperable dataset following EU standards**
- **Dataset selection referring the following application fields:**
 - Land cover & vegetation
 - Water resource management
 - Risk management
 - Security
- **Operational validation of standards (reporting, guidelines)**
- **Harmonisation processes at different level (cross-border/class/language, up/down scaling)**
- **Harmonisation at data-provider side**



These needs only to define the “core” GI.

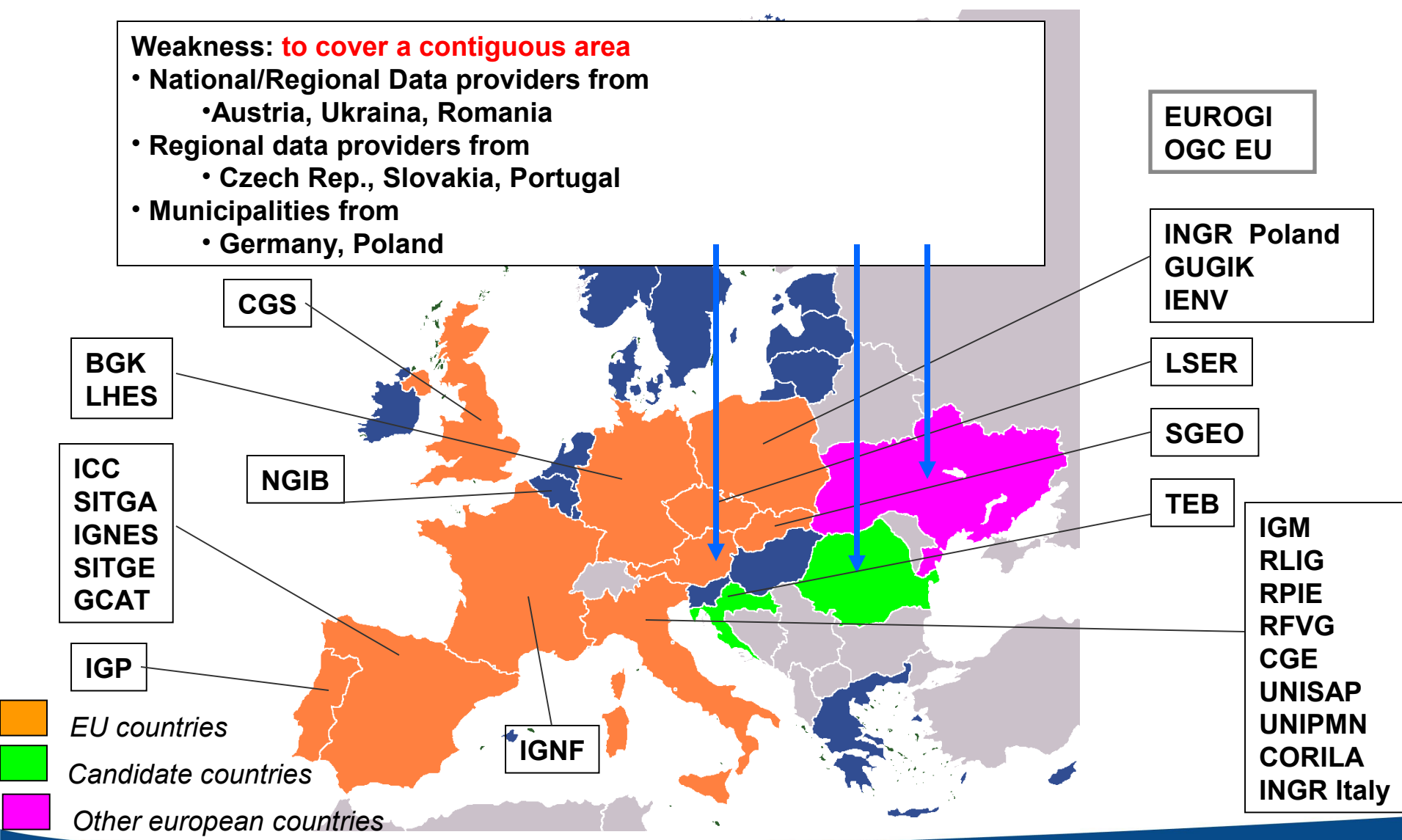
Motivation & Aims:

- **Provision of interoperable dataset to open GI to the EU communities in order to:**
 - **Supporting the data provider to open its data according to the standards defined by the EC directive (INSPIRE)**
 - **Delivery of a guideline to publish interoperable standard compliance GI dataset**
 - **Define workflows/guidelines in order to harmonize different dataset (cross-border/class/language, up/down scaling)**
- **Design data harmonization processes based on a common approach**
- **Pricing models analysis and their effect on re-use by the target groups**
- **Disseminate with the aim to maximize the GI data coverage**

GIS4EU - Partners

Weakness: to cover a contiguous area

- National/Regional Data providers from
 - Austria, Ukraina, Romania
- Regional data providers from
 - Czech Rep., Slovakia, Portugal
- Municipalities from
 - Germany, Poland



Grazie per l'attenzione!



A large, stylized version of the Intergraph logo, with the word "INTERGRAPH" in a bold, blue, sans-serif font, and a grey swoosh above the letters.

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