OGC
Open Geospatial Consortium

Desarrollo de Infraestructura de Datos Espaciales con Recursos y Estándares de OGC

CONFIBSIG XIII
Toluca, Mexico

Luis Bermudez
lbermudez@opengeospatial.org
May 26, 2011

Acerca de este tutorial

- Diapositivas en Ingles
- Charla en Español
- Preguntas aceptadas en cualquier momento
- Estoy para ayudar aprovechen !

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Tutorial Outline

- OGC Overview: *45 minutes*
  - Need for open standards
  - the organization
  - standards overview and technology framework
- Spatial Data Infrastructure: *15 minutes*
- Resources: 15 min
- Group Session on Modeling one's own SDI: *20 minutes*
  - Individual work
  - Group discussion
- Final remarks: *10 minutes*
- Q&A: *15 minutes*

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Why Standards?

Kylie Armstrong
Business Development
Western Australian Land Information Authority
Landgate, Australia

" When you are delivering spatial web services on behalf of 20 government agencies to more than a 1000 organizations running their own spatial systems, you need standards."

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Why Standards?

Kylie Armstrong
Business Development
Western Australian Land Information Authority
Landgate, Australia

"Using the internationally recognized OGC and ISO standards for both the architecture and web services has been essential to our success."

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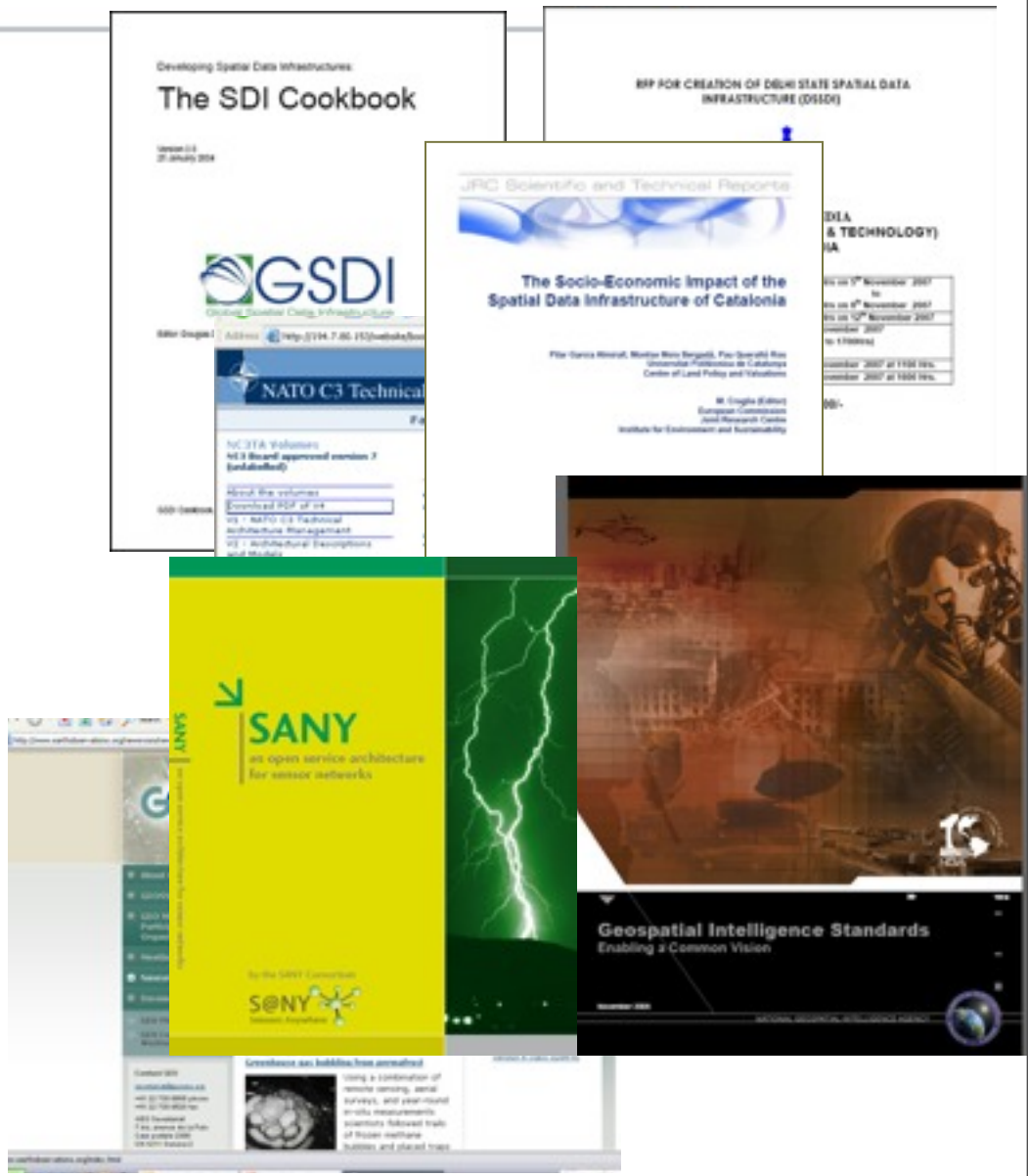
Policy Requirements for Open Standards

- Global Earth Observation System of Systems (GEOSS)
- NATO C3
- US NGA
- US Federal Geographic Data Committee
- European INSPIRE Directive
- European Space Agency
- Local, national, regional government
- Science and Research



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Open Geospatial Consortium (OGC)

- Founded in 1994, not for profit, consensus based and voluntary
- To serve as a global forum for and lead the development, promotion and harmonization of open and freely available geospatial standards.

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OGC From an Organizational Perspective

Over 420 Member Organizations

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ORDNANCE SURVEY

- "Faced with the requirement to re-engineer what is already probably the most sophisicated geospatial data capture and customer supply system in the world, Ordnance Survey anticipates that Membership in **OGC** will help us to influence and anticipate software interface and component product design. This will help minimise the risk that geoprocessing software vendors' new products will fail to meet our requirements. It will also ensure that we take full advantage of geospatially related developments which are based on the most effective mainstream and emerging Information Technology."

Bryan Nanson, Director of Information Management (1998)

OS OnDemand

OS OnDemand is a web map service that delivers our mapping over the web directly into your organisation.

The service offers you mapping of Great Britain at a range of scales, making it ideal for a huge variety of applications.

OS OnDemand is available as either a **Web Map Service (WMS)**, which allows your organisation to have a single view data, or a **Web Map Tile Service (WMTS-like)** which makes customising maps for your website much faster.

The WMS is based on open standards and compliant with the Open Geospatial Consortium (OGC®) web services stand for use via a browser or a geographic information system (GIS).

Features and benefits | Suggested uses | Service details | Useful links

Miembros en America Latina

- CentroGeo (RI - desde 2009) - Mexico - institución académica dedicada a la investigación, educación , innovación tecnológica en Geomática y Geografía Contemporánea
- CPqD (RI - desde 2004) - Brazil - Centro de investigación y desarrollo de tecnologías de información y comunicación, fundada en 1976 por Telebrás, empresa estatal de telecomunicaciones
- SIGIS Soluciones Integral (Com -desde el 2009) - Venezuela - Consultoría, Servicios y Productos relacionados con las tecnologías de Sistemas de Información Geográfica (GI

Significant Government Participation

- US DHS
- US EPA
- US FAA
- US NASA
- USGS
- US NGA
- US Census
- US NOAA
- JPEO
- Oakridge National Lab
- Natural Resources Canada

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Over 35 Adopted Standards

- Data Services
  - Sensor Observation Service (SOS)
  - Web Coverage Service
  - Web Feature Service
  - Web Map Service ..
- Catalogue Services
  - Catalogue Service
- Processing Services
  - Open Location Services (OpenLS)
  - Coordinate Transformation Service
  - Sensor Planning Service (SPS)
  - Web Processing Service (WPS)

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Over 35 Adopted Standards

- Encodings
  - Geography Markup Language (GML)
  - Styled Layer Descriptor (SLD)
  - Transducer Markup Language (TML)
  - Sensor Model Language (SensorML)
  - CityGML
  - Web Map Context (WMC)
  - Observations & Measurements (O&M)
  - Filter Encoding
  - KML
  - Symbology Encoding
  - GML in JPEG 2000
  - .....

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OGC Alliance Partners

… and others

www.opengeospatial.org/ogc/alliancepartners

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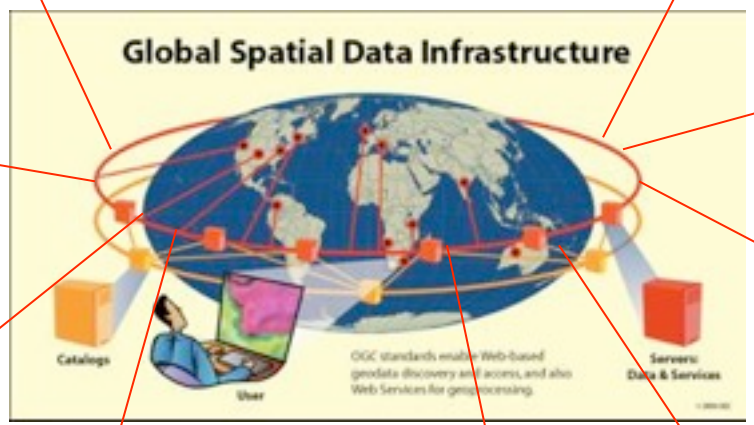
OGC Activities Driven by Community Needs

Education & Research

Sustainable Development

Utilities

Health



E -Government

Emergency Services

Consumer Services

Energy

Geosciences

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Domain Working Groups

Meteorology Domain Working Group

- Advancing Practices to share met/ocean data
- Lead by WMO

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Domain Working Groups

Meteorology Domain Working Group

- Advancing Practices to share met/ocean data
- Lead by WMO

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Domain Working Groups

Emergency and Disaster Management DWG

- Provide requirements and Best practices for web service interfaces, models and schemas
- for enabling the discovery, access, sharing, analysis, visualization and processing of information to
- the forecasting, prevention, response to and recovery from emergency and disaster situations.

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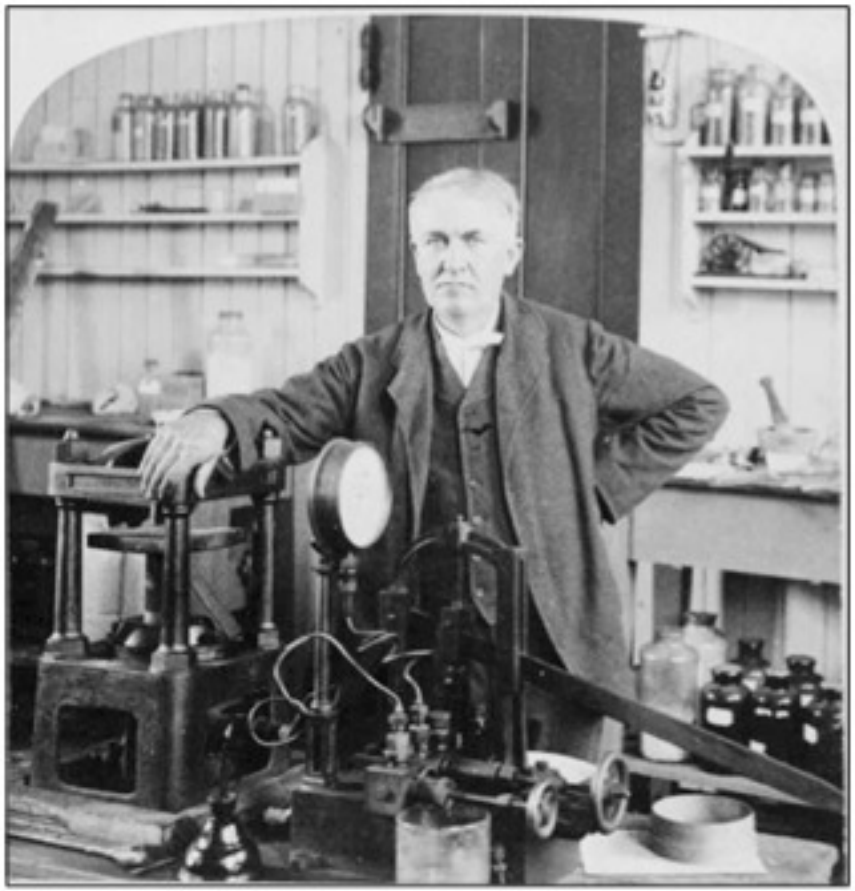
..how do we know if a standard works ?



I have not failed, I've just found 10,000 ways that won't work.

Thomas Edison

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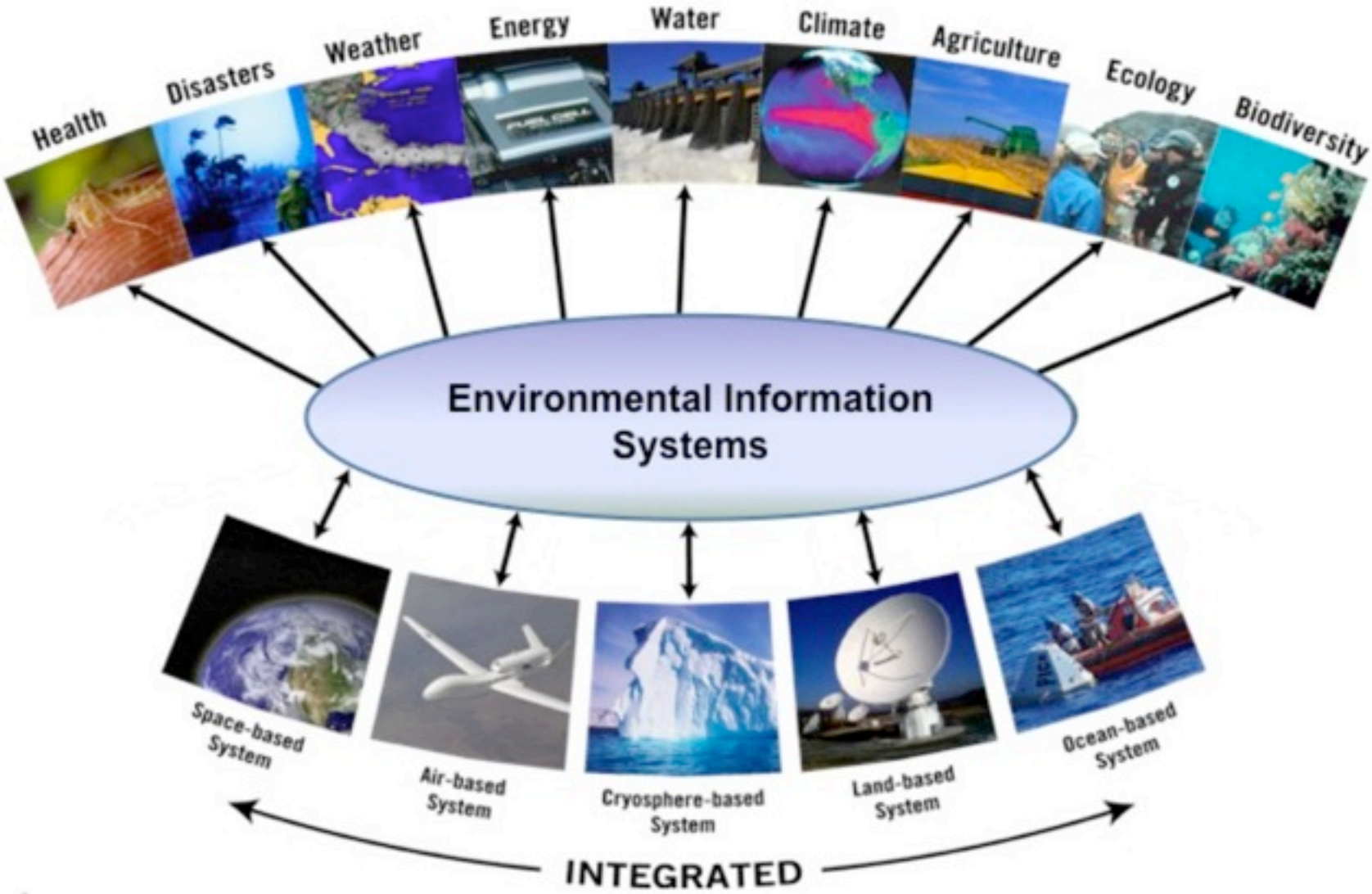
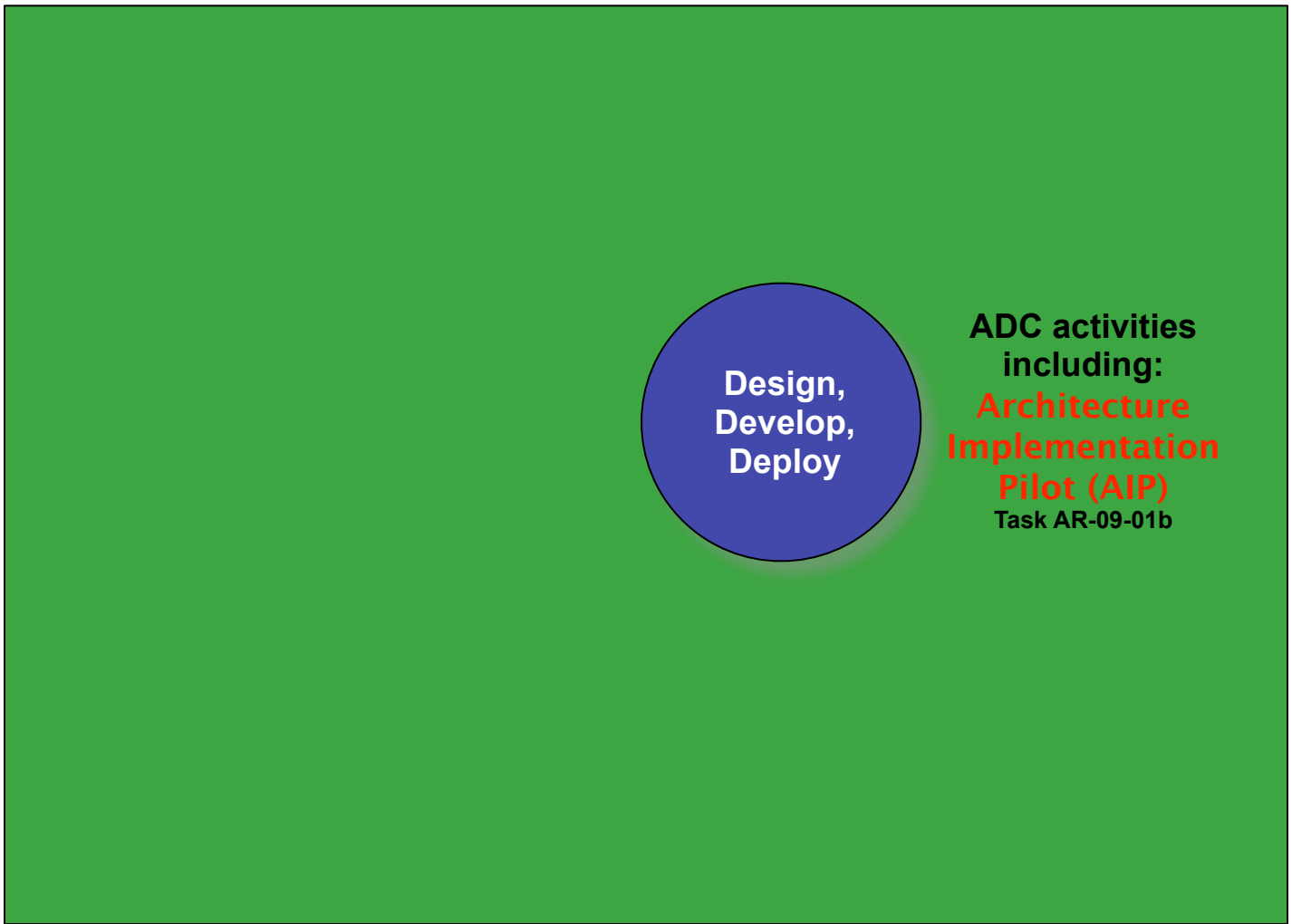
Interoperability Program

40+ initiatives since 1999.

GEOSS


Health
Disasters
Weather
Energy
Water
Climate
Agriculture
Ecology
Biodiversity
Environmental Information Systems
Space-based System
Air-based System
Cryosphere-based System
Land-based System
Ocean-based System
INTEGRATED

GEOSS Architecture Implementation Pilot



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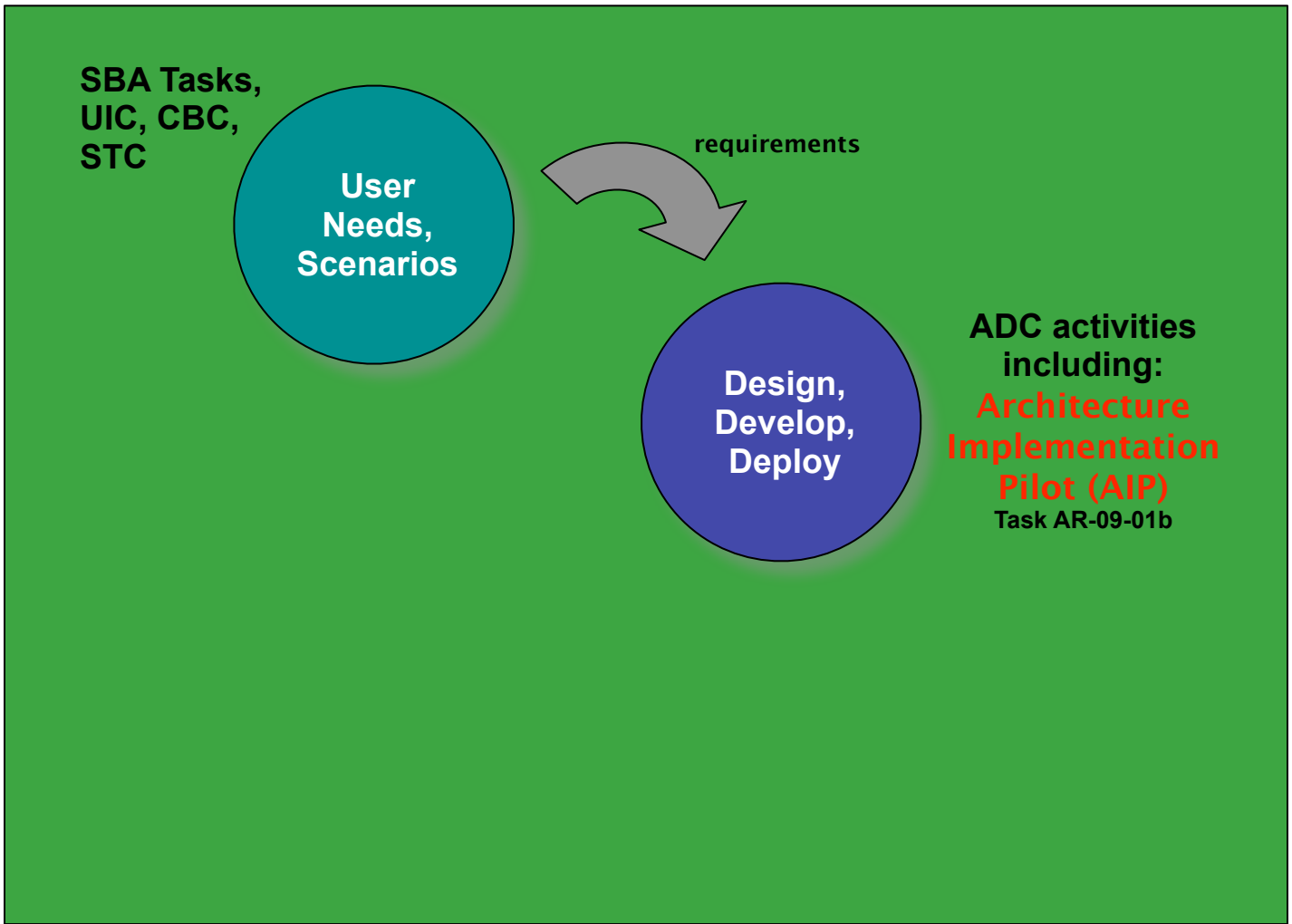
GEOSS Architecture Implementation Pilot



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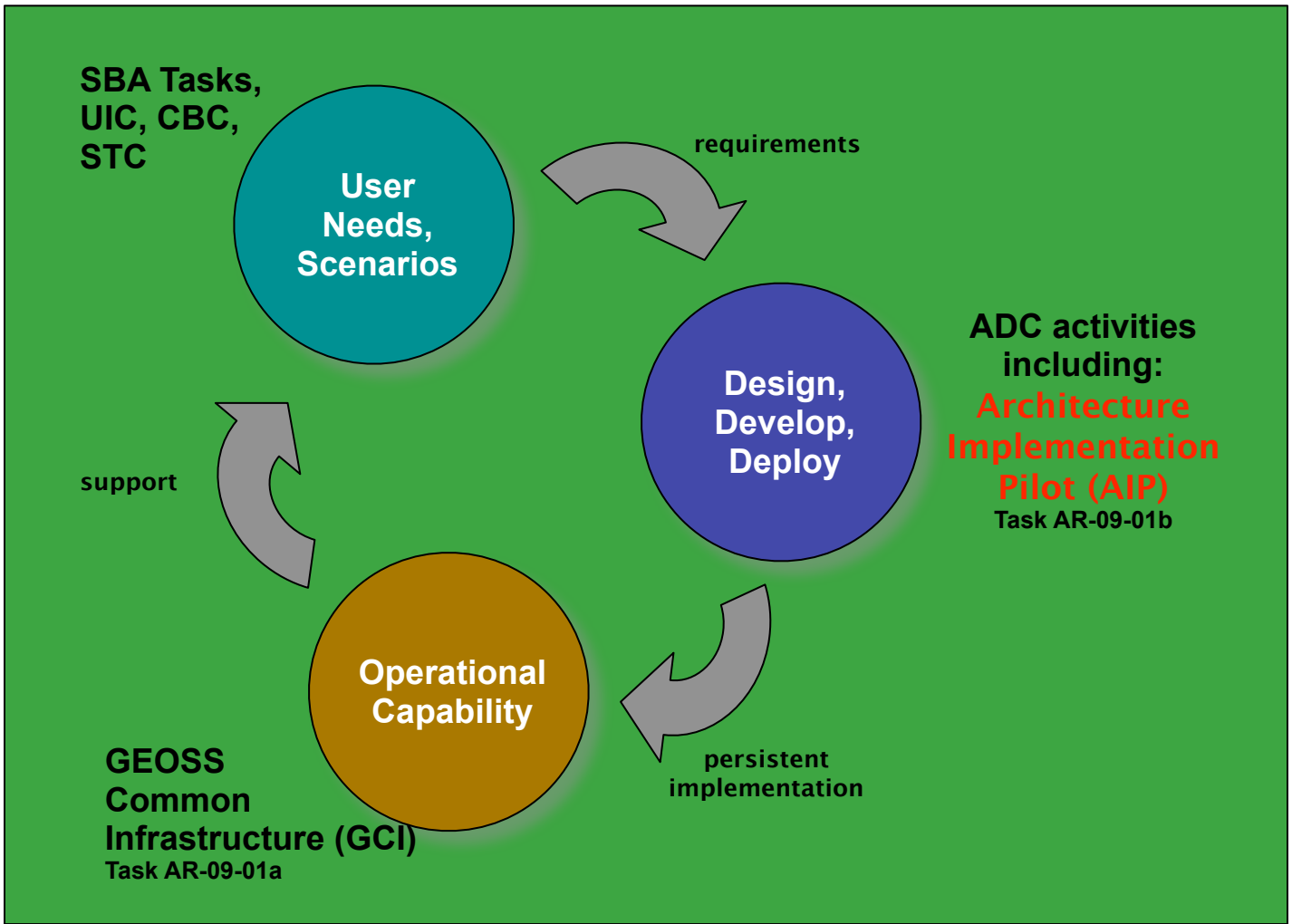
GEOSS Architecture Implementation Pilot



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Need for Compliance Testing

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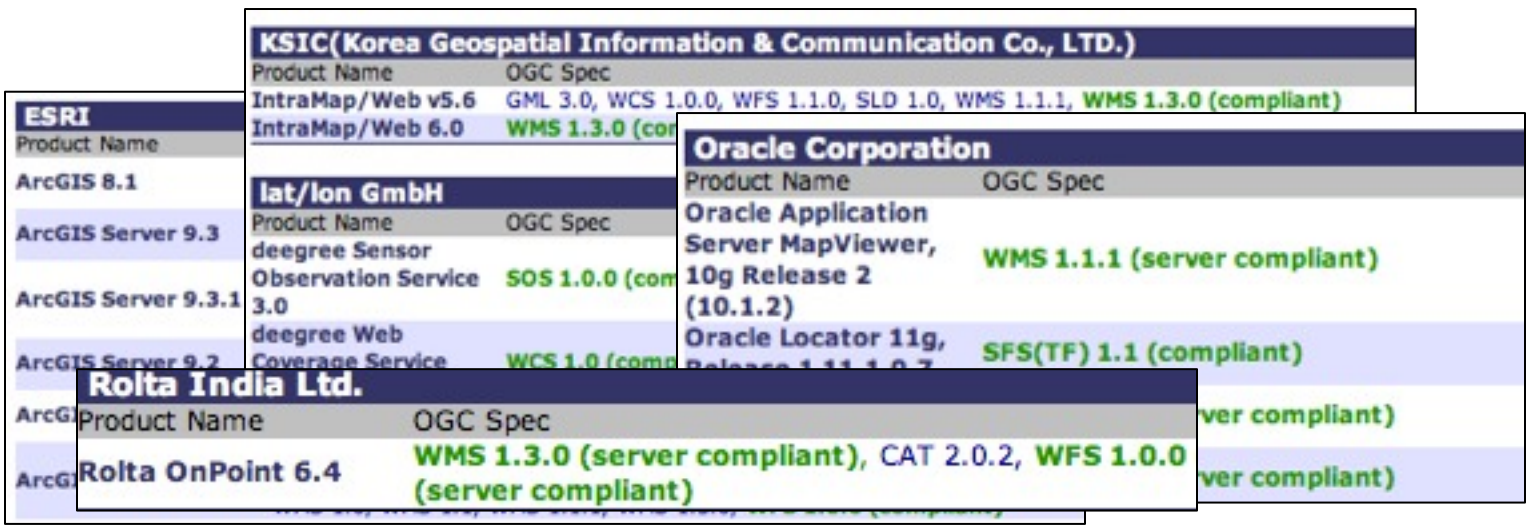
Compliance Numbers (Mar 2011)

- More than 10 years providing certification
- Web Testing Engine - open source - operational since 2007
- **More than 600 implementing products in the market**
- More than 260 compliant products in the market



KSIC(Korea Geospatial Information & Communication Co., LTD.)

Product Name	OGC Spec
IntraMap/Web v5.6	GML 3.0, WCS 1.0.0, WFS 1.1.0, SLD 1.0, WMS 1.1.1, **WMS 1.3.0 (compliant)**
IntraMap/Web 6.0	WMS 1.3.0 (cor

ESRI

Product Name
ArcGIS 8.1
ArcGIS Server 9.3
ArcGIS Server 9.3.1
ArcGIS Server 9.2
ArcGI
ArcGI

Iat/Ion GmbH

Product Name	OGC Spec
deegree Sensor Observation Service 3.0	SOS 1.0.0 (com
deegree Web Coverage Service	WCS 1.0 (comp

Oracle Corporation

Product Name	OGC Spec
Oracle Application Server MapViewer, 10g Release 2 (10.1.2)	WMS 1.1.1 (server compliant)
Oracle Locator 11g,	SFS(TF) 1.1 (compliant)
	ver compliant)
	ver compliant)

Rolta India Ltd.

Product Name	OGC Spec
Rolta OnPoint 6.4	**WMS 1.3.0 (server compliant)**, CAT 2.0.2, **WFS 1.0.0 (server compliant)**

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Conceptos

Internet

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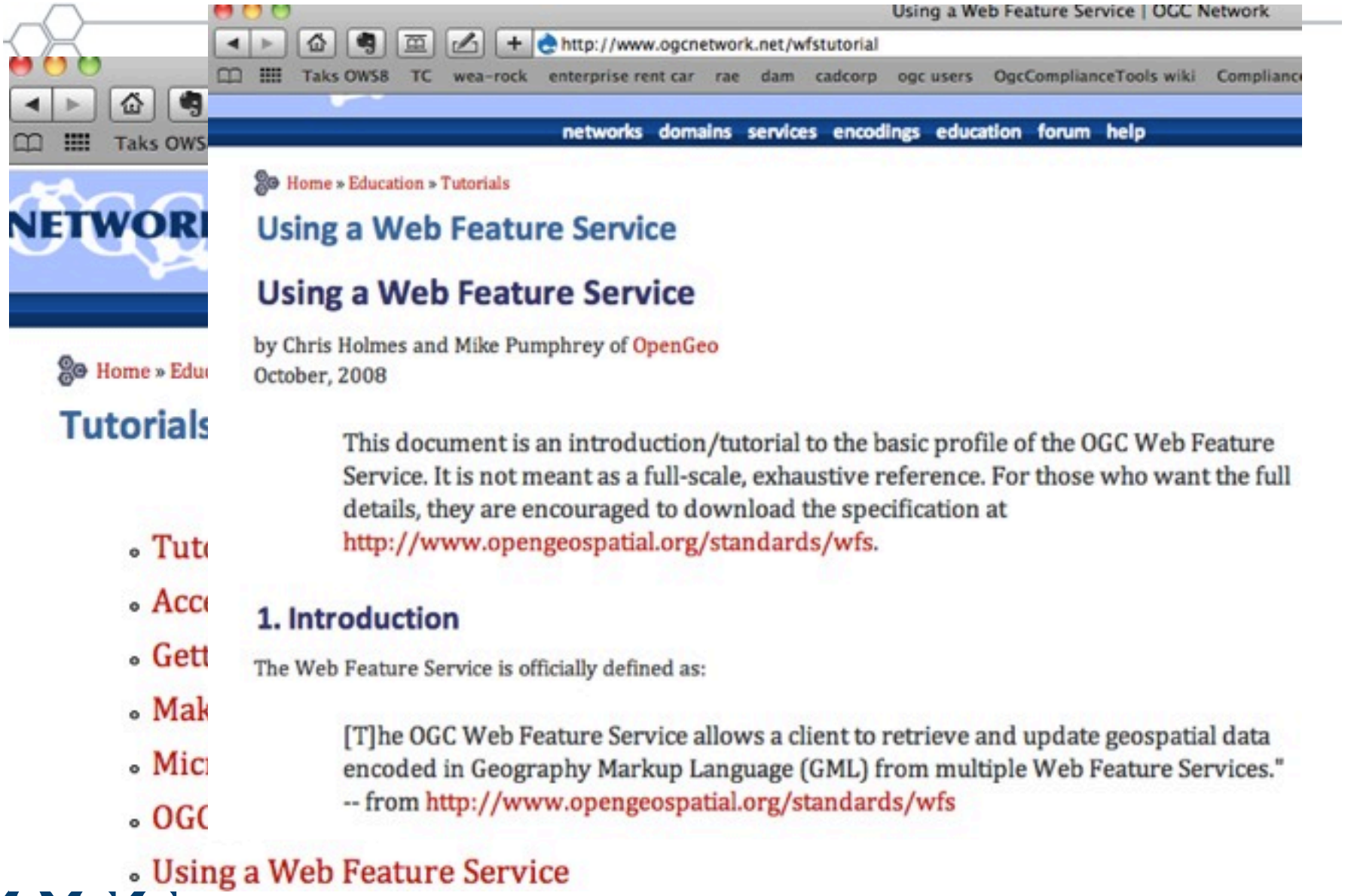
World Wide Web



Protocolos

- Forma de Comunicación
- Encapsulado de mensaje
- Peticion y respuesta

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Protocolos

- Peticion y Respuesta

```
GET /index.html HTTP/1.1
Host: www.example.com
User-Agent: nombre-cliente
[Línea en blanco]
```

```
HTTP/1.1 200 OK
Date: Fri, 31 Dec 2003 23:59:59 GMT
Content-Type: text/html
Content-Length: 1221

<html>
<body>
```

Peticion y respuestas especializadas

- Get .. deporte favorito
- Get.. restaurante más cerca
- Get.. ultimo libro de Marquez

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Peticion y respuestas especializadas

- Get .. deporte favorito - > responde:
  - Icono de futbol
  - “futbol”
  - “soccer”
  - Un archivo en Excell
  - Una foto haciendo un gol
  - Un mensaje de audio “ futbol”

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Servicio

- Conjunto de llamadas especializadas
  - Por ejemplo - Servicio de restaurantes
    - Encuentrame todos los restaurantes a 5 km de distancia
    - Encuentrame el restaurante con el mejor guacamole
    - Agrega mi comentario - comida salada, servicio terrible - al restaurante X
    - Reserva el restaurante YY a las 8 PM y preparen un ponque con 30 velas
- Que tal que todos los restaurantes definieran las llamadas de su propio servicio ?
  - Como se deben hacer las peticiones
  - Como se debe responder ?

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OGC Standards

SEARCH

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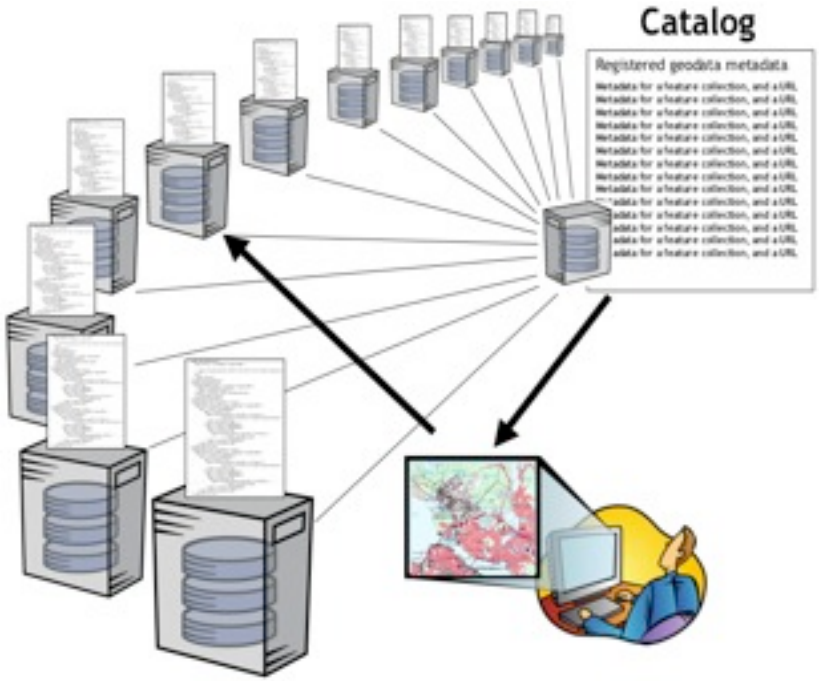
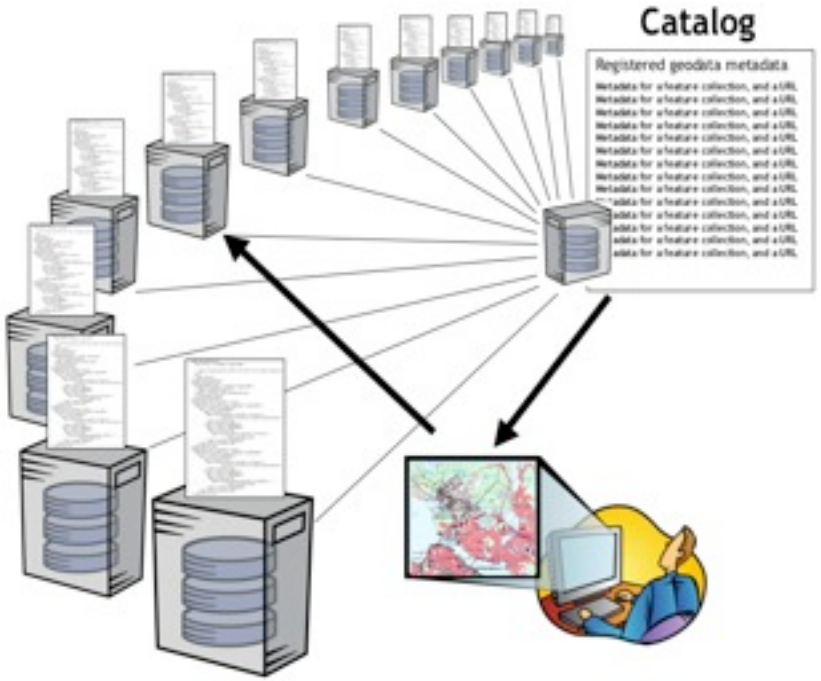
Publishing and Discovery



Publishing and Discovery



- OGC Catalog Service 2.1.2,
  - ISO 19119 Metadata Profile
  - Z39.50 Profile
  - OASIS ebRIM Profile
  - RegRep in the works

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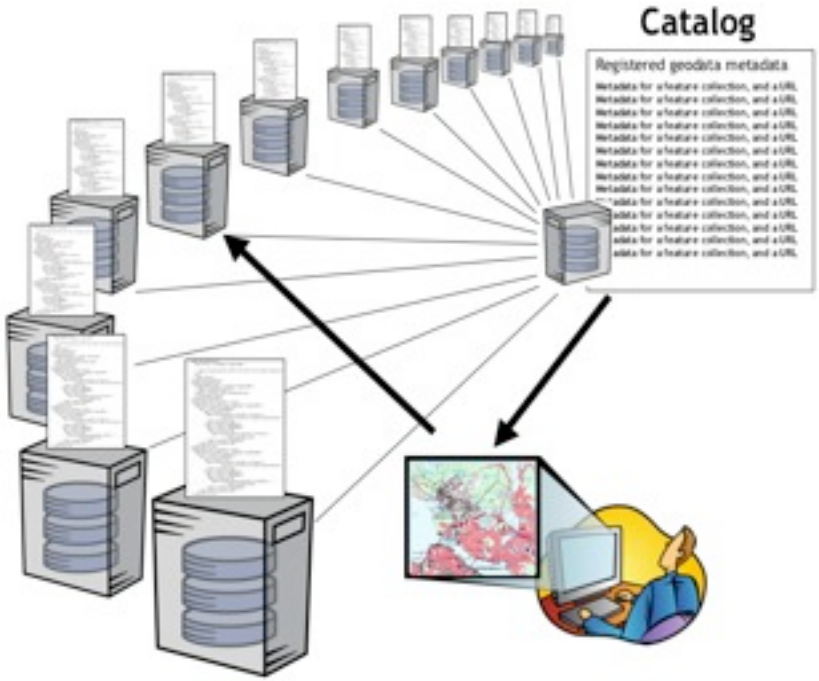
Publishing and Discovery



- OGC Catalog Service 2.1.2,
  - ISO 19119 Metadata Profile
  - Z39.50 Profile
  - OASIS ebRIM Profile
  - RegRep in the works
- Support publishing and discovery of distributed geospatial data and associated services

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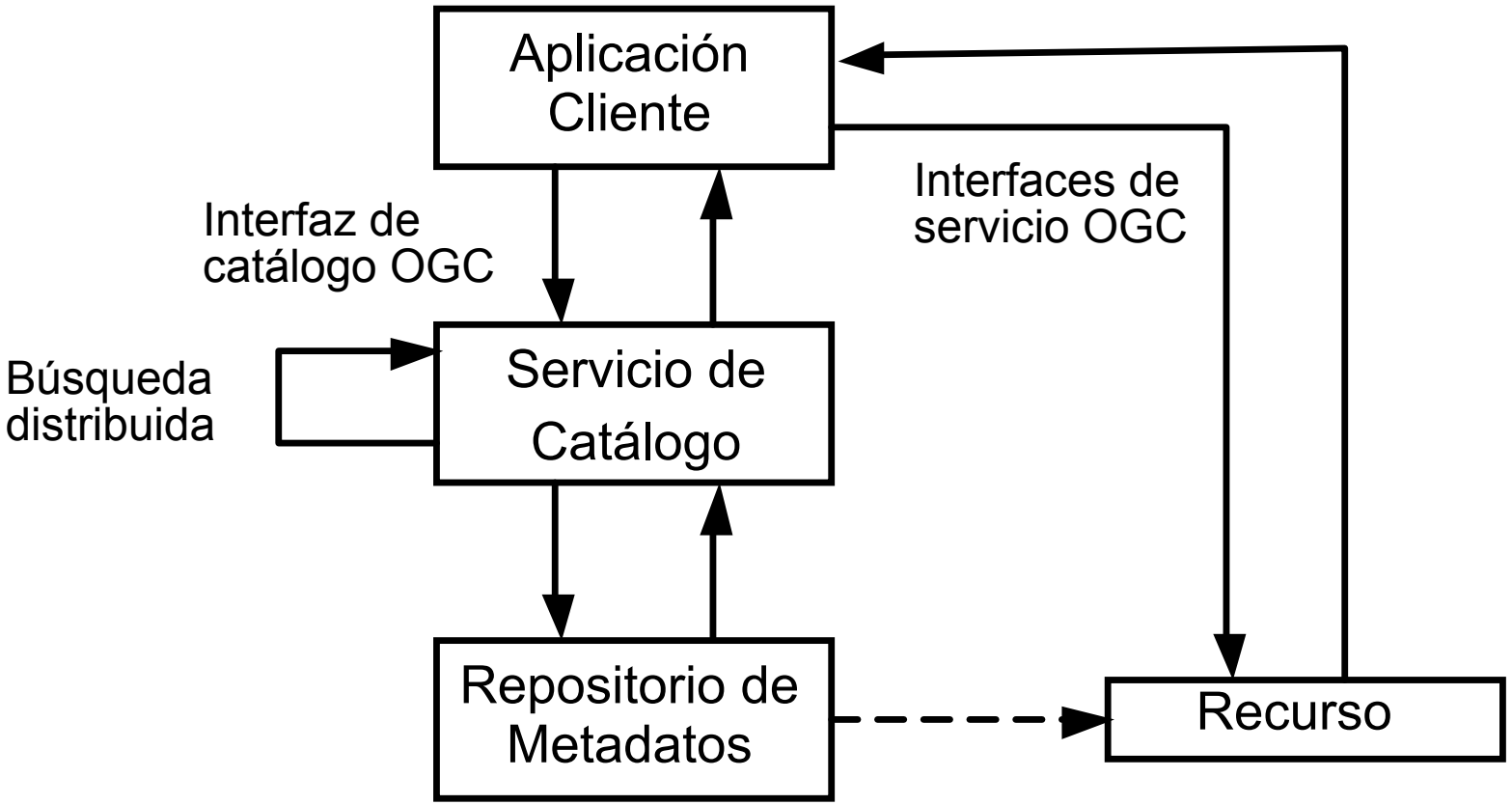
Architectura Referencia



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Catalogs/Registries

- Catalogs for services, data, styles, catalogs, etc.
- Provide easy update and maintenance of discovery metadata
  - Provide standard interfaces for registration (Publish)
  - Support automated cross-catalog updates (harvesting)
- Provide easy discovery of resources (Find)
  - Provide standard interfaces for discovery
  - Provide standard query language(s)/metadata
  - Provide associations among related objects
- Goal is to enable Publish and Find with or without human intervention

GEOSPATIAL INFORMATION ENCODING

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OGC Geography Markup Language (GML)

- GML an application of eXtensible Markup Language (XML)
  - XML specified by World Wide Web Consortium (W3C)
  - GML specifies XML Schemas that specify XML encoding of geographic features, their geometry, and their attributes
- GML encodes digital feature data
  - Encodes features, attributes, geometries, collections, etc.
  - Applications require specifying more specific Application XML Schemas
  - GML v3, supports 2 1/2 and 3D geometry as well as complex geometry and topology
- GML 3 is also ISO 19136

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Geography Markup Language: Representing Geographic Features

Another Information Community's Schema

Highway is:
_Pavement thickness
_Right of way
_Width
....
Cell transm. Platform is:
_Location
_No. of antennas
_Elevation
....

One Information Community's Schema

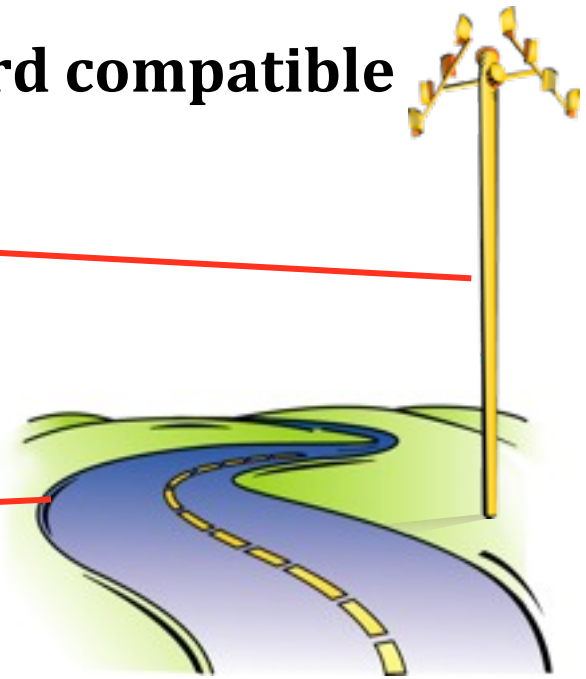
Road is:
_Width
_Lanes
_Pavement type
....
Cell tower is:
_Owner
_Height
_Licensees
....

Mayberry's Cell Tower

(an instance of Cell Transm. Platform in another IC's schema)

Mayberry Road

(an instance of Road in one IC's schema)



GML

Support for complex geometries, spatial and temporal reference systems, topology, units of measure, metadata, feature and coverage visualization.

Backward compatible

GML defines a data encoding in XML that allows geographic data and its attributes to be moved between disparate systems

Version 3.2 advances interoperability on all fronts!!

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GML Application Activities

Profiles

- GML Point Profile
- GML Simple Features Profile
- GML GeoShape for use in IETF
- GML in JPEG2000
- GeoRSS: GML Serialization

US NSDI GML Schemas for Framework Datasets

European INSPIRE Data Specifications

Community Application Schemas

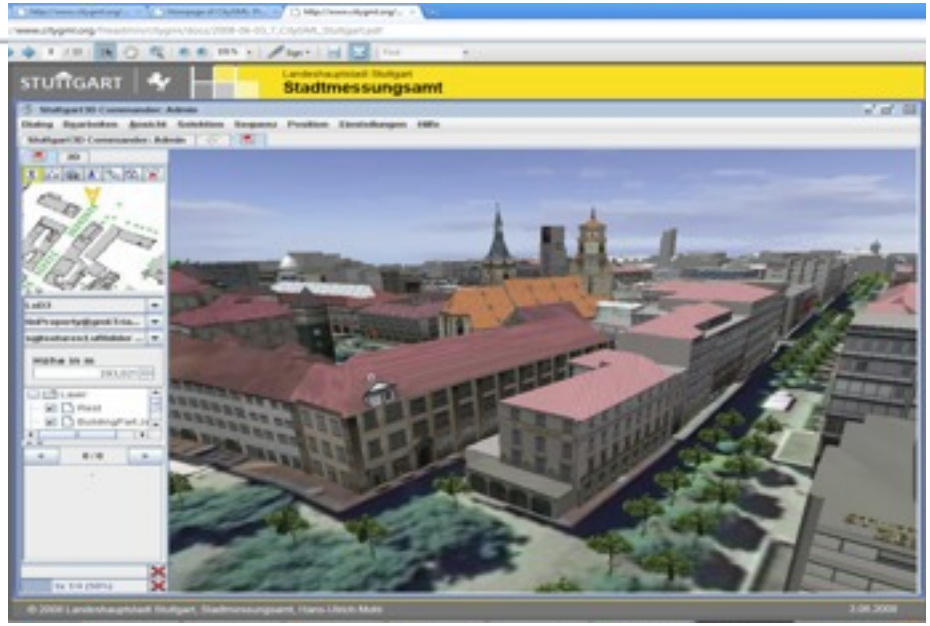
- Climate Science Modeling Language (CSML)
- CityGML
- CleanSeaNet
- NcML/GML (NetCDF and GML)
- TDWG Biodiversity GML
- GeoSciML - Geological Sciences ML
- MarineXML
- Ground Water Modeling Language
- WaterML

Further information on OGC Network
http://www.ogcnetwork.net/node/210

3D Urban Models – OGC CityGML

Source: Thomas Kolbe. TU Berlin

Atlanta, GA
Source: GTA Geoinformatik GmbH



- Urban Planning
- Emergency Mgt / Response
- Transportation / Logistics
- Retail Site analysis
- Sustainable / Green Communities
- City Services Management
- Noise abatement
- Many other uses…

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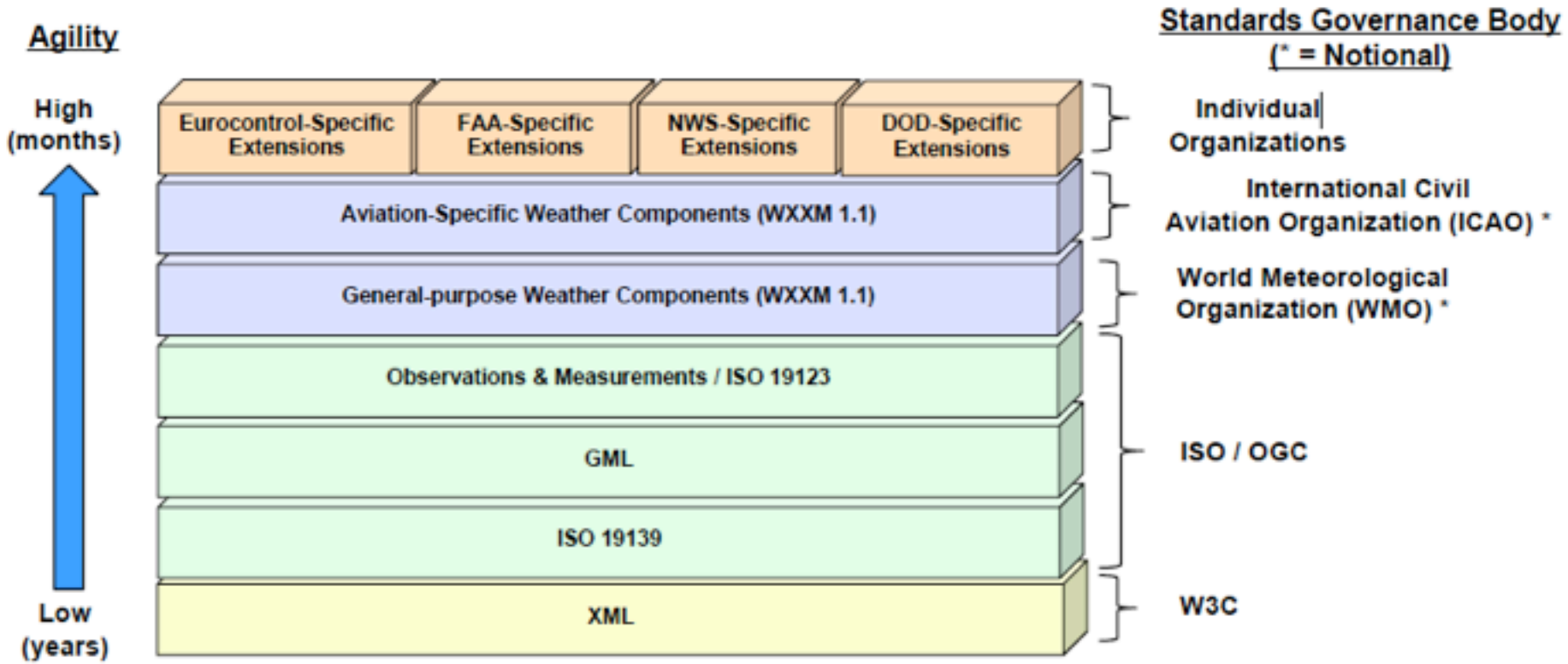
Helping the World to Communicate Geographically

WXXM: Aviation Weather data in GML

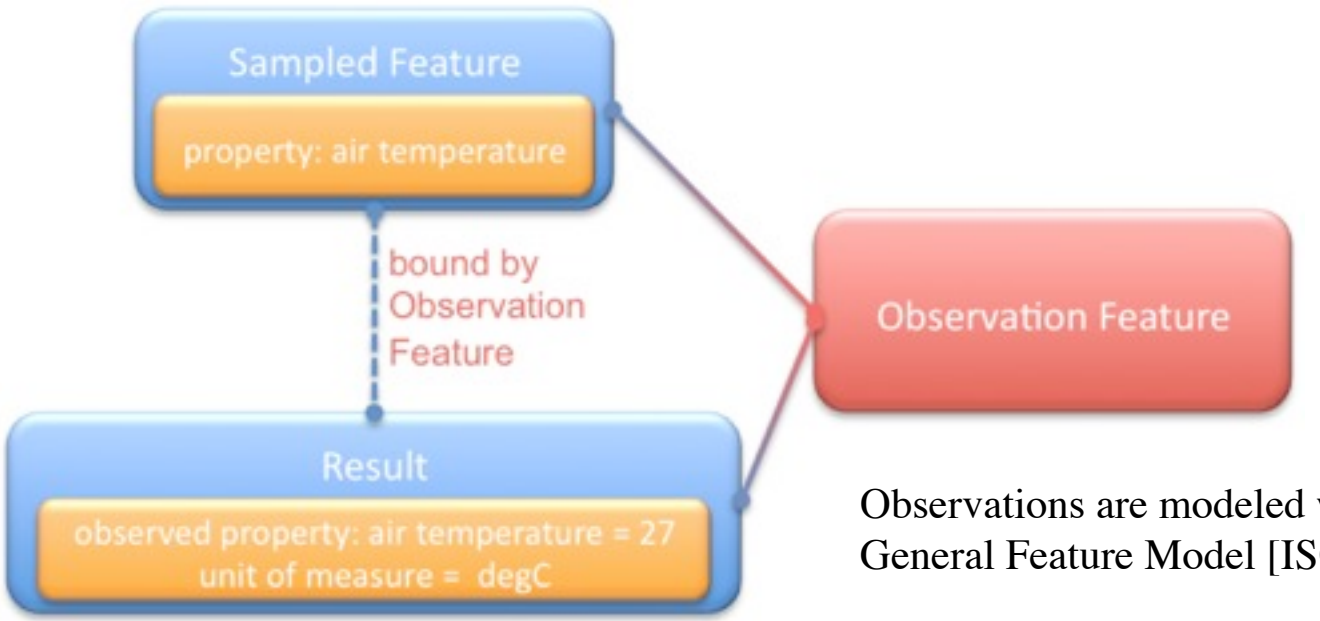
• Ad-Hoc Working Group Membership: *Eurocontrol, FAA, NWS, DOD(Air Force Weather Agency, Fleet Numerical Meteorology and Oceanography Center), NOAA, British Atmospheric Data Center*



Composable, extensible data model balances standardization with the need for individual communities (FAA, Eurocontrol, NWS, DOD) to innovate over time

Observations

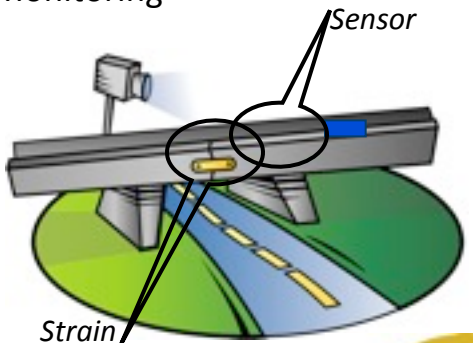
- An **observation** is an event that estimates an **observed property** of a **feature of interest**, using a **procedure**, and generating a **result**
  - Sometimes 'observed property' and 'feature of interest' are conflated in describing geophysical parameters, e.g. sea surface temperature
- Often sampling is used to measure properties of a feature
  - In this case the feature of interest is a 'sampling feature'



Observations are modeled within General Feature Model [ISO 19109]

OGC Sensor Web Enablement

- Sensors connected to and discoverable on Web
- Sensors have position & generate observations
- Sensor descriptions available
- Services to task and access sensors
- Local, regional, national scalability
- Enabling the Enterprise



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What is SensorML?

- Models and XML encodings for describing processes
  - **Detectors, actuators, etc. are modeled as processes**
  - **Can be used to describe "left-side" processes ("how were these observations obtained?") and "right-side" processes ("what can I derive from these observations?")**
- Vision:
  - Discovery of transducers and processes / plug-n-play sensors **– SensorML is the means by which sensors and processes make themselves and their capabilities known**
  - Observation lineage **– SensorML provides sensing and processing history of observations; supports quality knowledge of observations**
  - On-demand processing **– SensorML supports on-demand derivation of higher-level information (e.g. geolocation or products) without a priori knowledge of the sensor system**
  - Extensibility **– SensorML provides easy means for meeting various community needs**

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SensorML Examples

http://www.ogcnetwork.net/SWE

- Video Web Cam - sensor system illustrating the ability to modularize descriptions between various components
- Tigershark UAV video camera - fairly complete description of a high-definition video camera on-board an Unmanned Air Vehicle (UAV).
- Davis Weather Station - Example description of a weather station.
- CBRNE Gamma Detector - Simple HPI 2070 Gamma detector.
- Marine CTP Buoy Sensor - An SBE 37-SMP MicroCAT Conductivity-Temperature-Pressure sensor mounted on a buoy by the Monterey Bay Aquarium Research Institute (MBARI).
- CSM Frame Sensor Model - Community Sensor Model (CSM) based Frame Sensor Model for geolocating imagery from GSI KCM-39 video camera.
- CEOS CalVAL Satellite Sensors - European Space Agency (ESA) and Committee for Earth Observation Satellites (CEOS) SensorML profiles (RelaxNG), instances, and documentation for standard satellite sensor descriptions.

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DATA ACCESS

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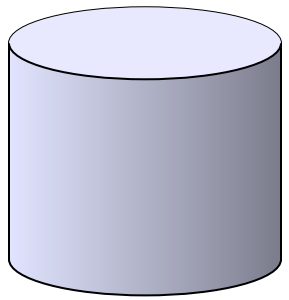
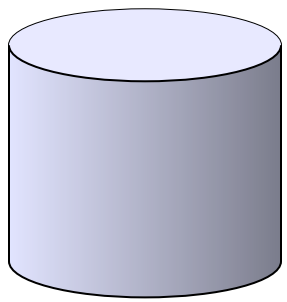
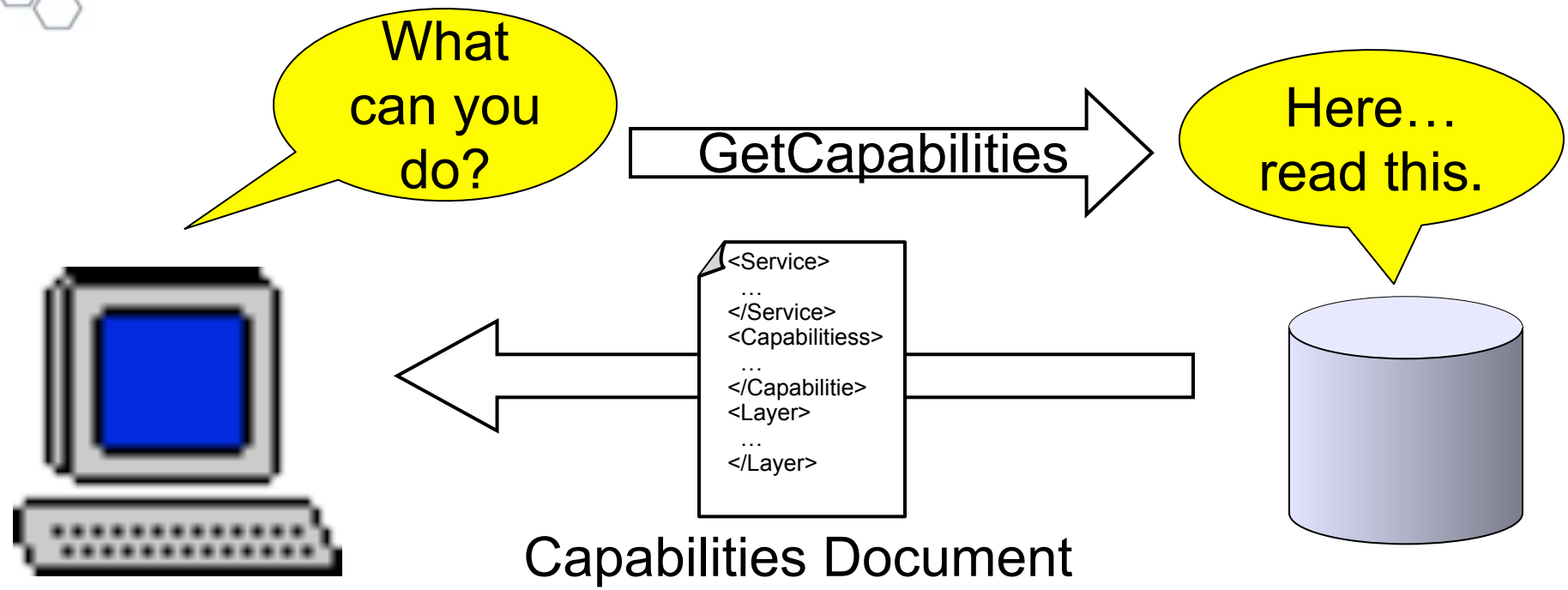
OGC Web Services (“W*S”) Pattern



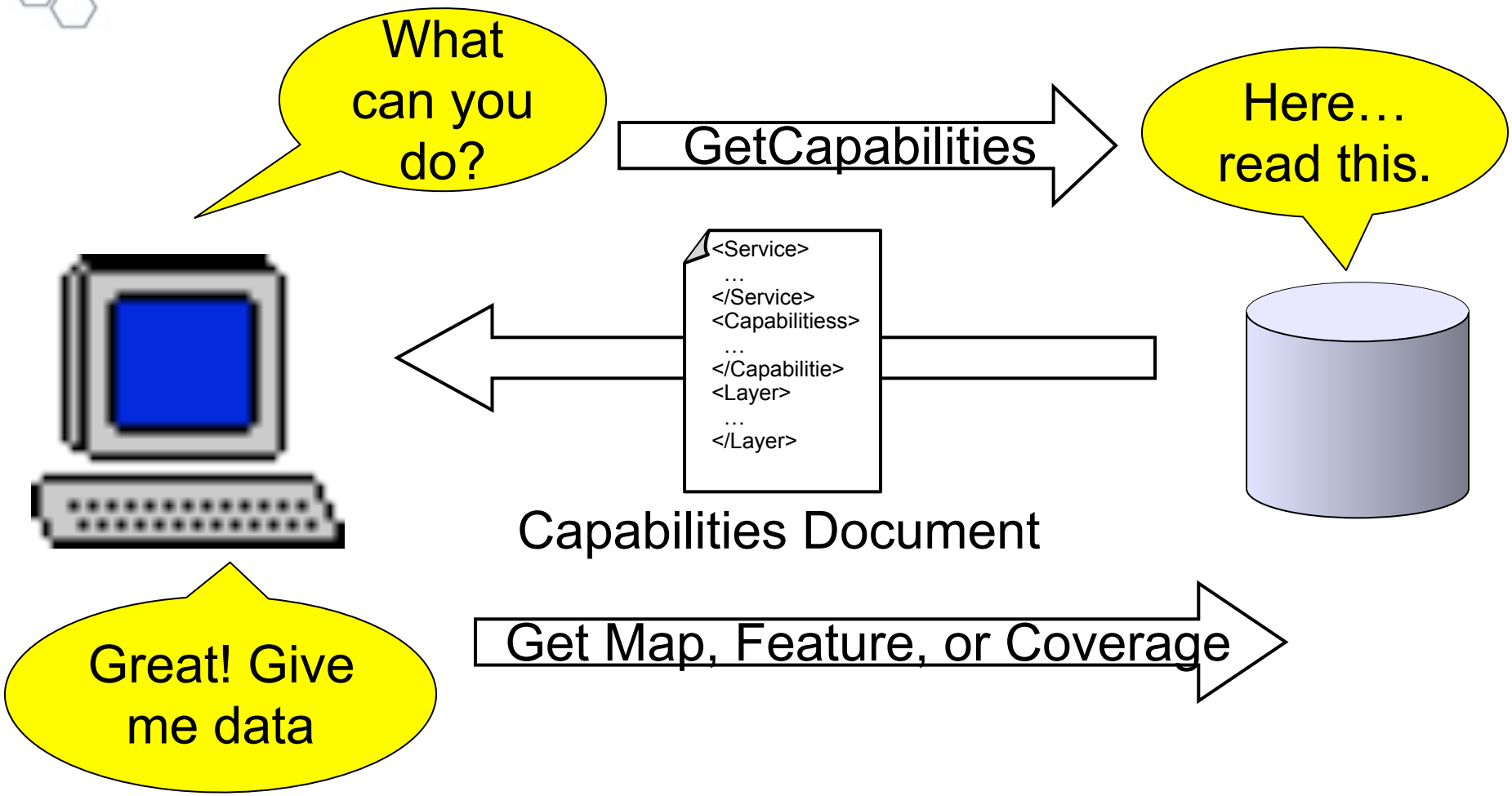
OGC Web Services ("W*S") Pattern



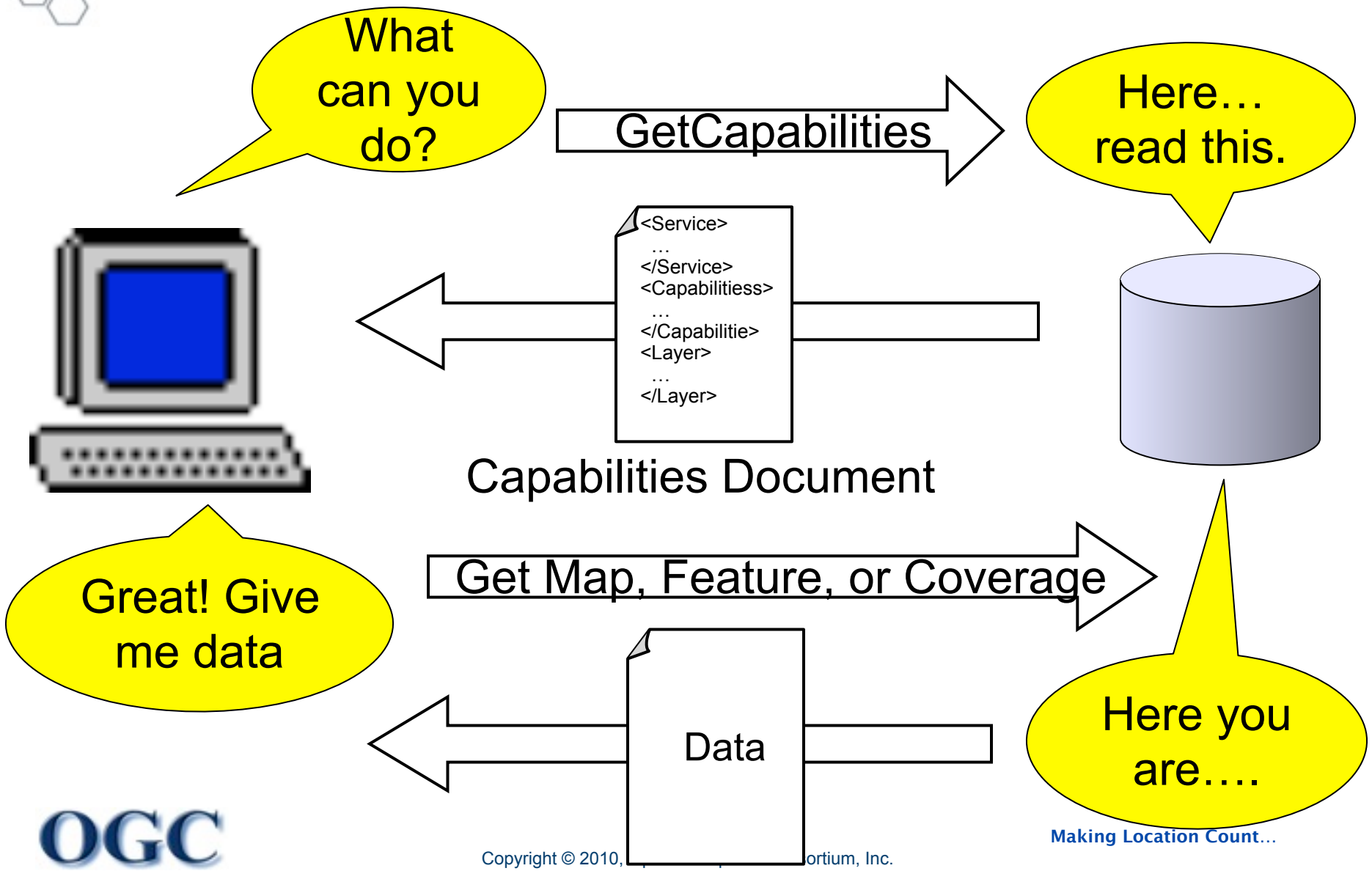
OGC Web Services ("W*S") Pattern



OGC Web Services ("W*S") Pattern



OGC Web Services ("W*S") Pattern



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Making Location Count…

VECTOR DATA ACCESS

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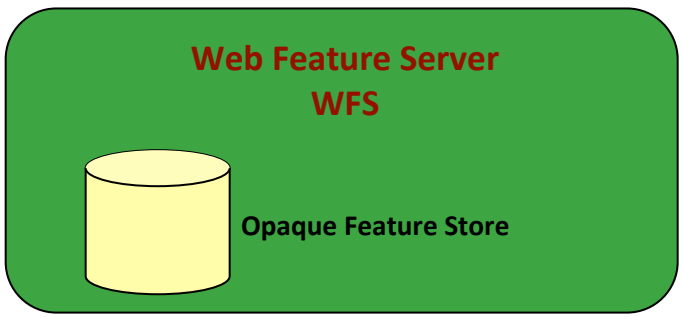
Web Feature Service (WFS)



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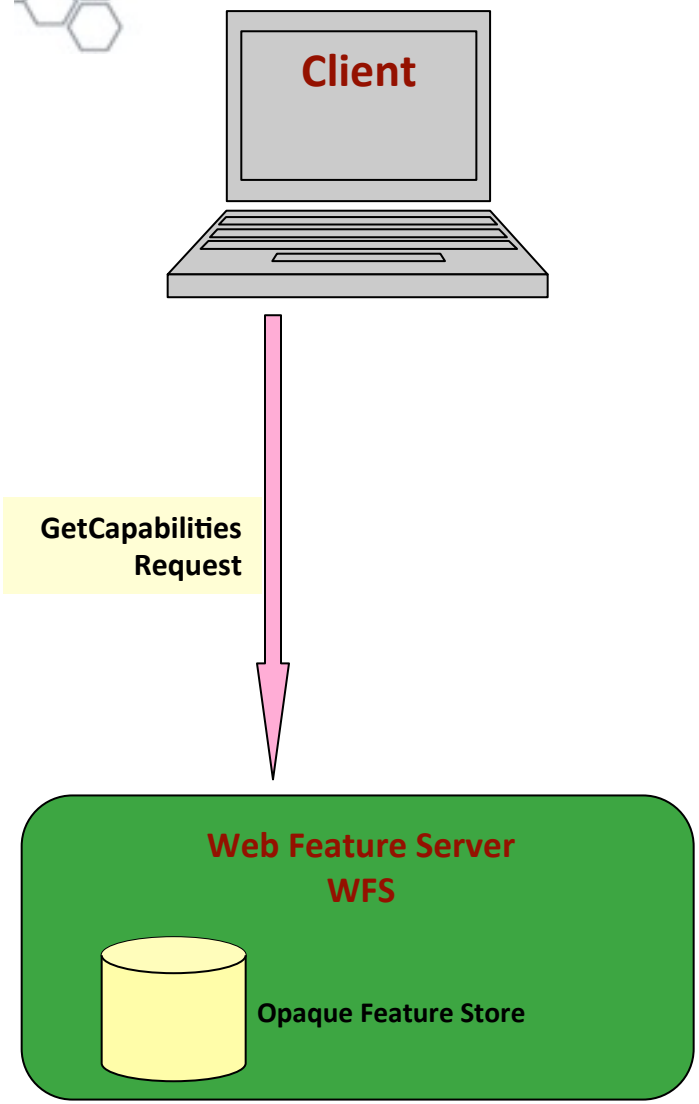
Web Feature Service (WFS)



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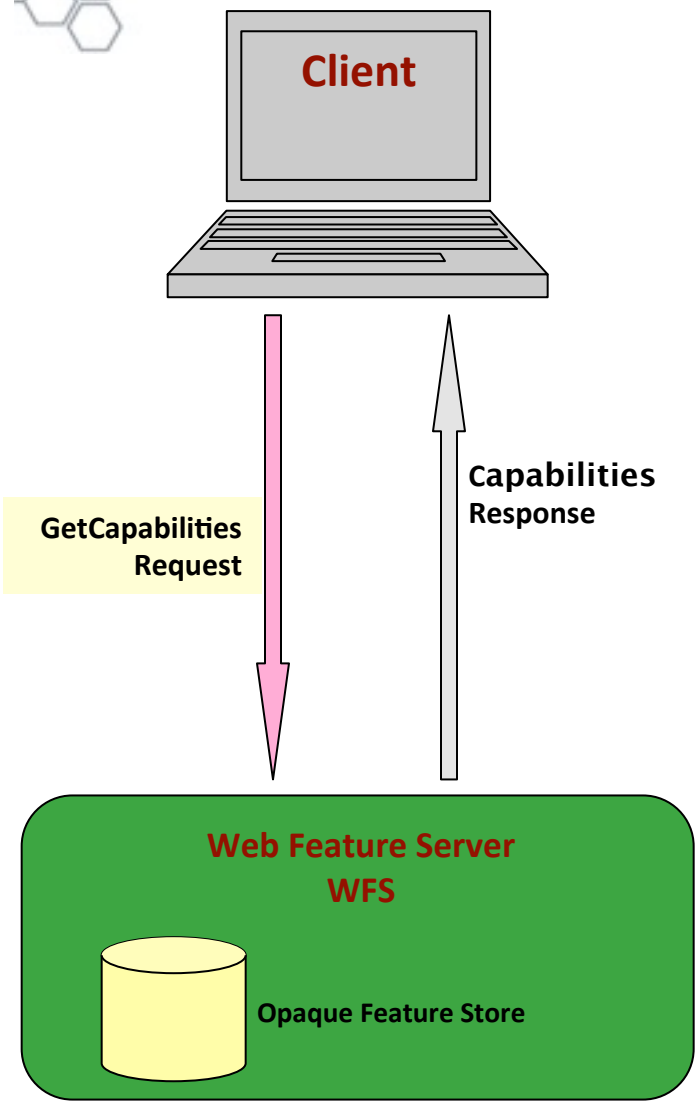
Web Feature Service (WFS)



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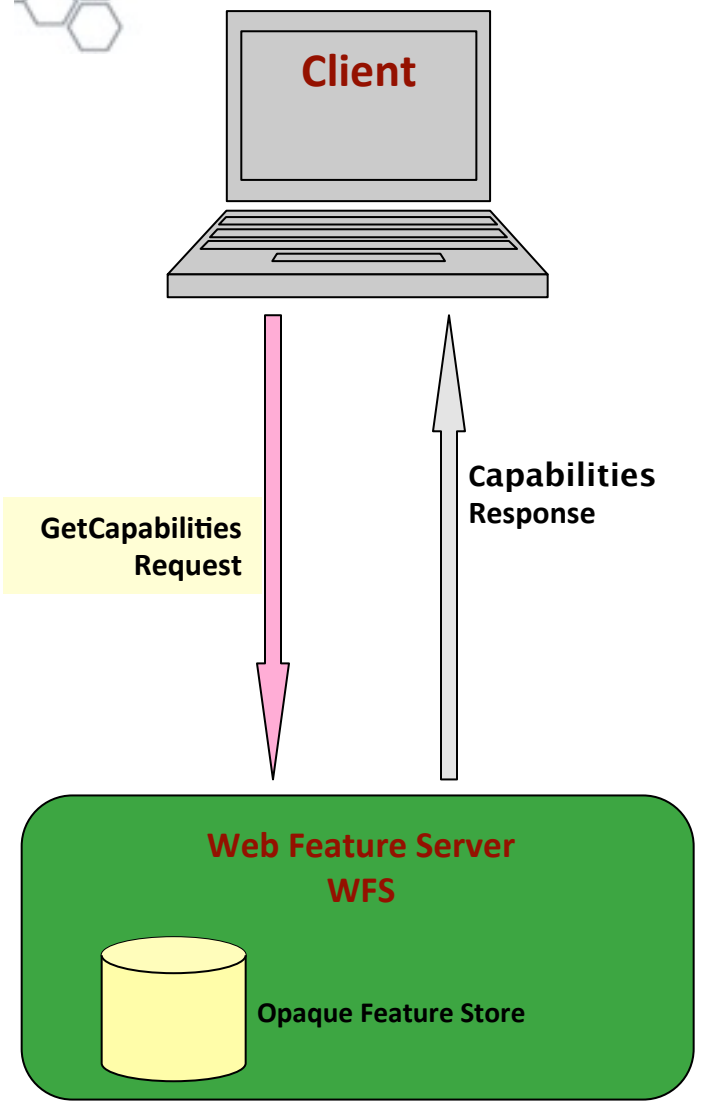
Web Feature Service (WFS)



GetCapabilities

```
<Service>
        <Name>CubeWerx WFS</Name>
        <Title>CubeWerx Web Feature Service</Title>
        <Abstract>Web Feature Server maintained by X.</Abstract>
        <OnlineResource>http://www.server.com/wfs.cgi?</OnlineResource>
</Service>
```

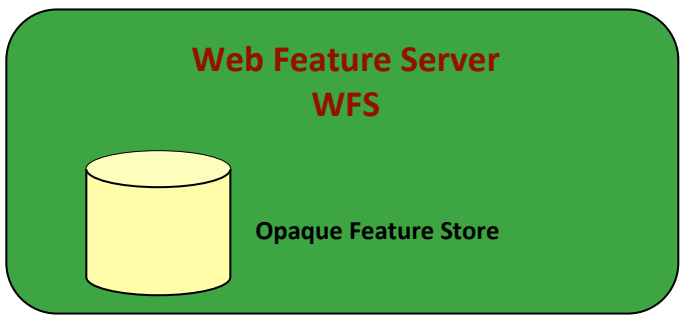
```
<Capability>
<!-- defines which WFS operations the service supports, etc. -->
</Capability>
```

```
<!– Defines the list of feature types that this instance can operate upon and -->
<!-- which operations are supported on each feature type-->
<FeatureTypeList>
<Operations> <Query/> </Operations>
<FeatureType>
    <Name>Roads</Name>
    <SRS>EPSG:4326</SRS>
    <LatLongBoundingBox minx="-179" miny="-85“ maxx="179“ maxy="83"/>
    <Operations>
        <Insert/>
        <Update/>
        <Delete/>
    </Operations>
</FeatureType>
</FeatureTypeList>
```

```
<!– Defines the capabilities of the filter supported by this feature instance-->
<ogc:Filter_Capabilities>
    <ogc:Spatial_Capabilities>
        <ogc:Spatial_Operators> <ogc:BBOX/> </ogc:Spatial_Operators>
    </ogc:Spatial_Capabilities>
</ogc:Filter_Capabilitites>
```

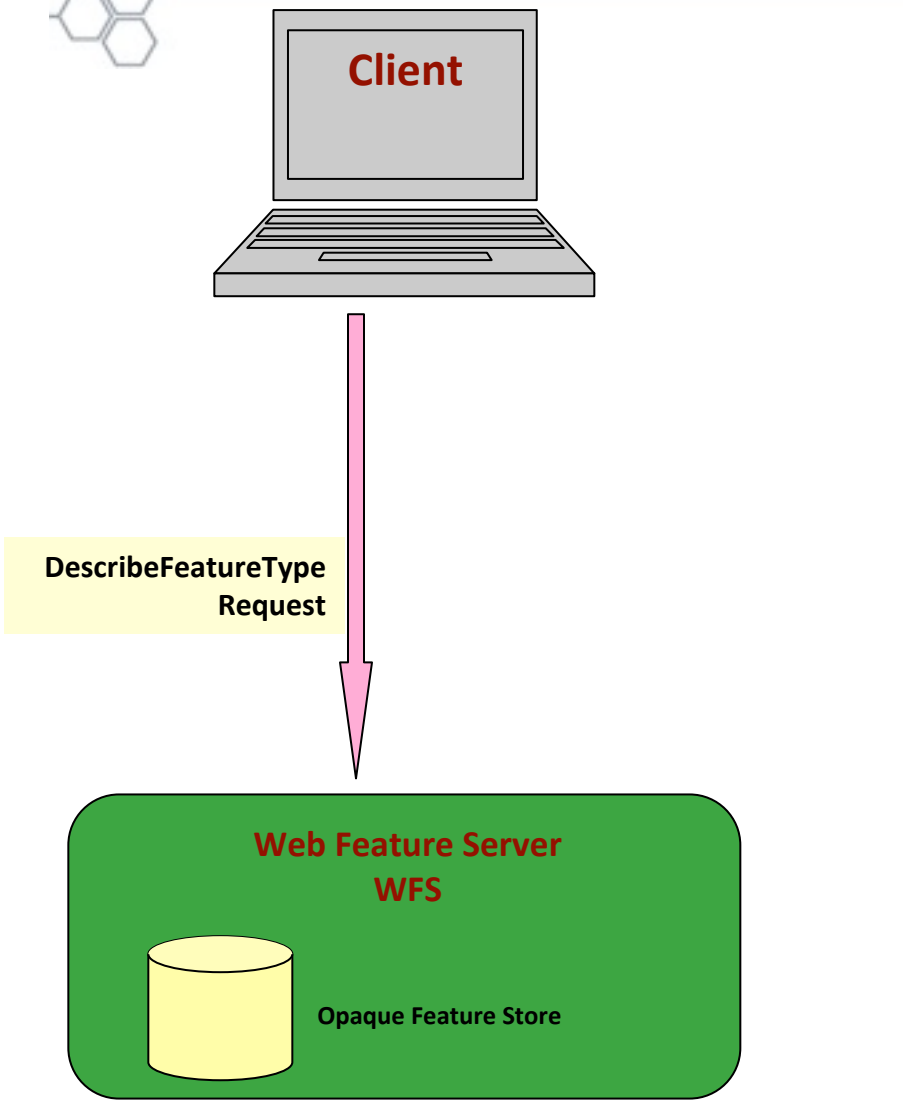
OGC

Web Feature Service (WFS)



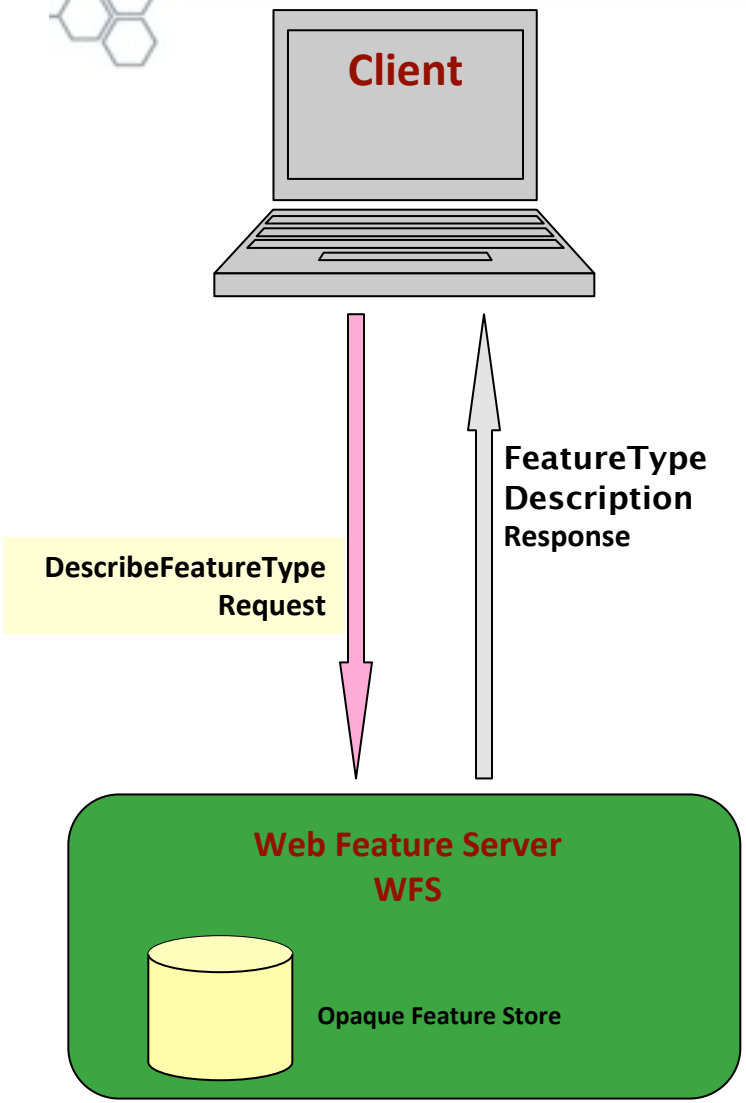
OGC

Web Feature Service (WFS)



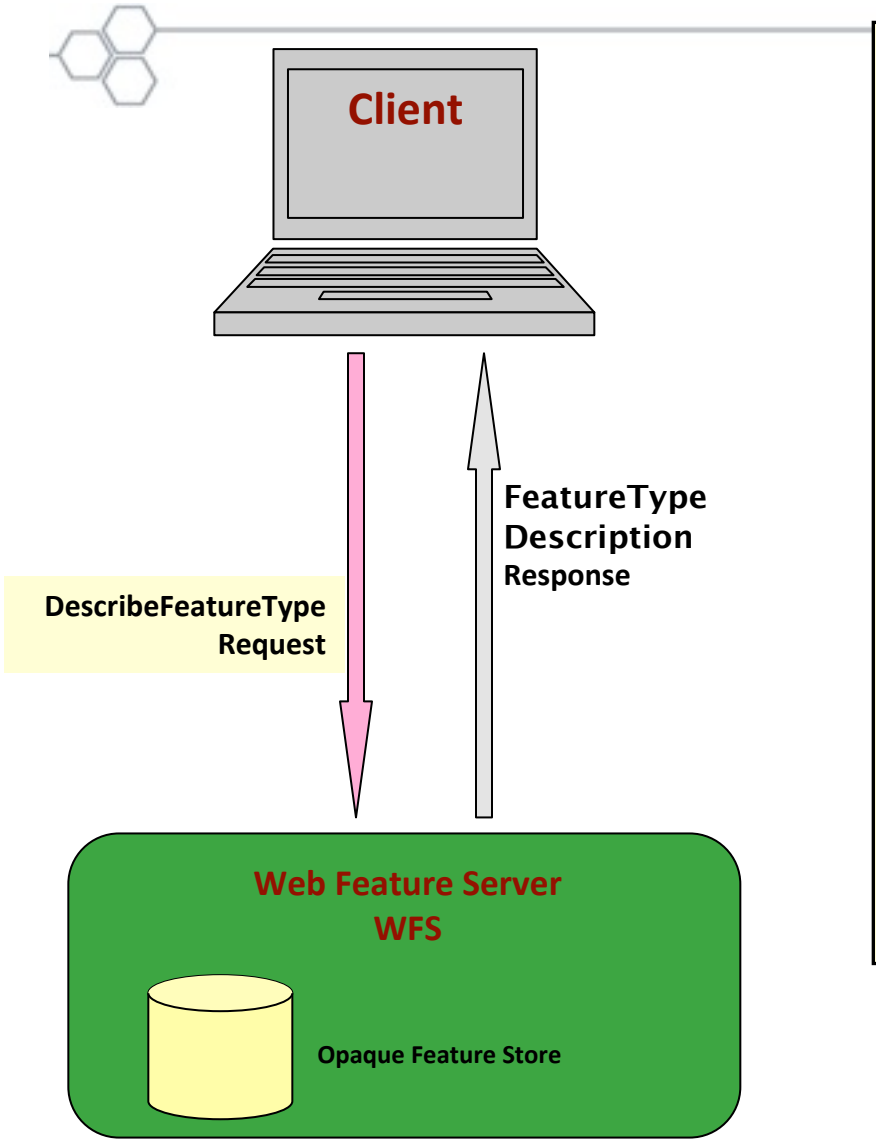
OGC

Web Feature Service (WFS)



OGC

Web Feature Service (WFS)



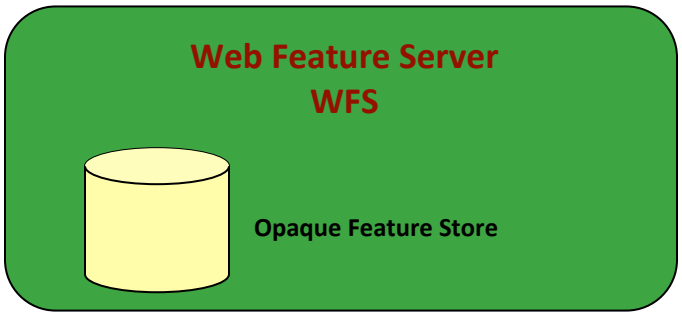
DescribeFeatureType

```
<?xml version="1.0" ?>
<DescribeFeatureType version="1.0.0“ service="WFS"
        xmlns="http://www.opengis.net/wfs"
        xmlns:ns01="http://www.server01.com/ns01"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<TypeName>ns01:Roads</TypeName>

</DescribeFeatureType>
```

```
<complexType name=“Roads">
<complexContent>
    <extension base="gml:AbstractFeatureType">
    <sequence>
    <element name="WKB_GEOM“
            type="gml:LineStringPropertyType">
    <element name="SURFACE_TYPE" minOccurs="0">
    </element>

    <element name="NLANES" nillable="true" minOccurs="0">
    <simpleType><restriction base="integer">
    <totalDigits value="2"/> </restriction> </simpleType>
    </element>
    </sequence>
</complexContent>
</complexType>
```

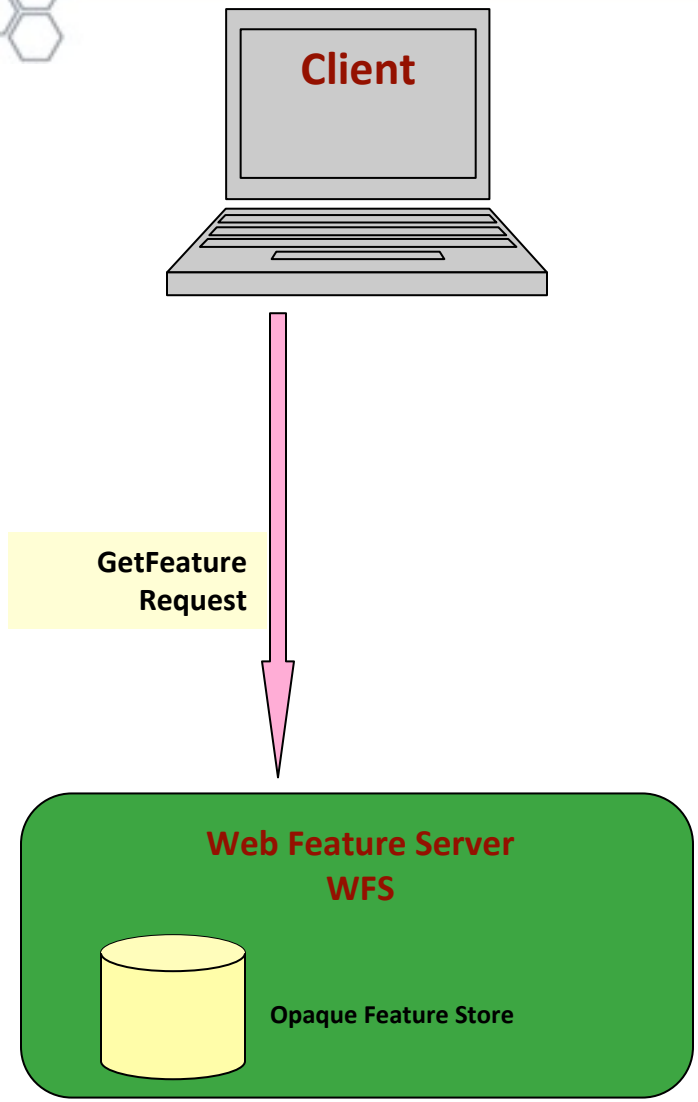
OGC

Web Feature Service (WFS)



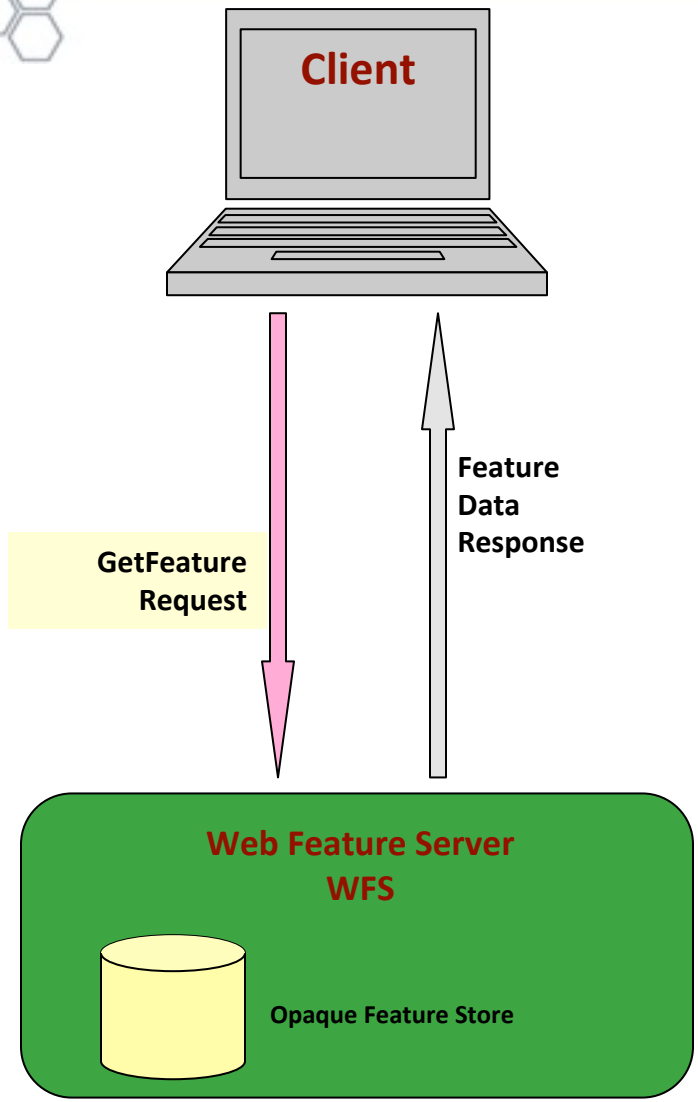
OGC

Web Feature Service (WFS)



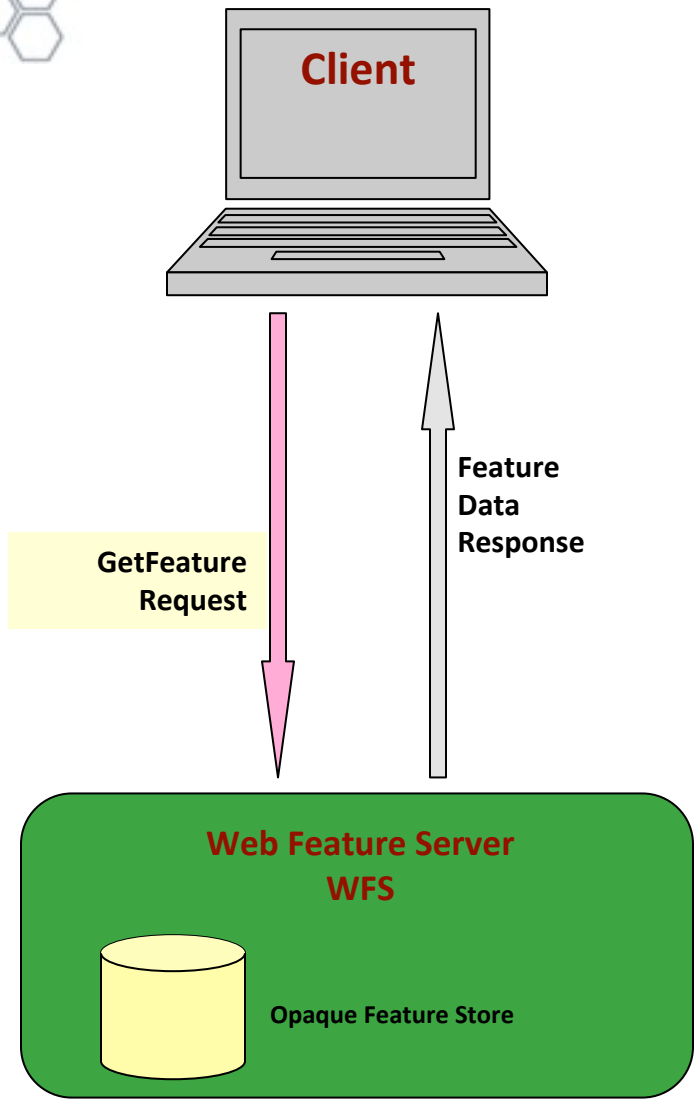
OGC

Web Feature Service (WFS)



OGC

Web Feature Service (WFS)



GetFeature

```
<GetFeature version="1.0.0“ service="WFS“
    xmlns:myns=http://www.someserver.com
  <Query typeName="myns:ROADS“>
    <ogc:PropertyName>myns:PATH</ogc:PropertyName>
    <ogc:PropertyName>myns:LANES</ogc:PropertyName>
    <ogc:Filter>
   <ogc:Within>                <ogc:PropertyName>myns:PATH</
ogc:PropertyName>
   <gml:Box>
       <gml:coordinates>50,40 100,60</gml:coordinates>
   </gml:Box>
   </ogc:Within>
   </ogc:Filter>
   </Query>
</GetFeature>
```

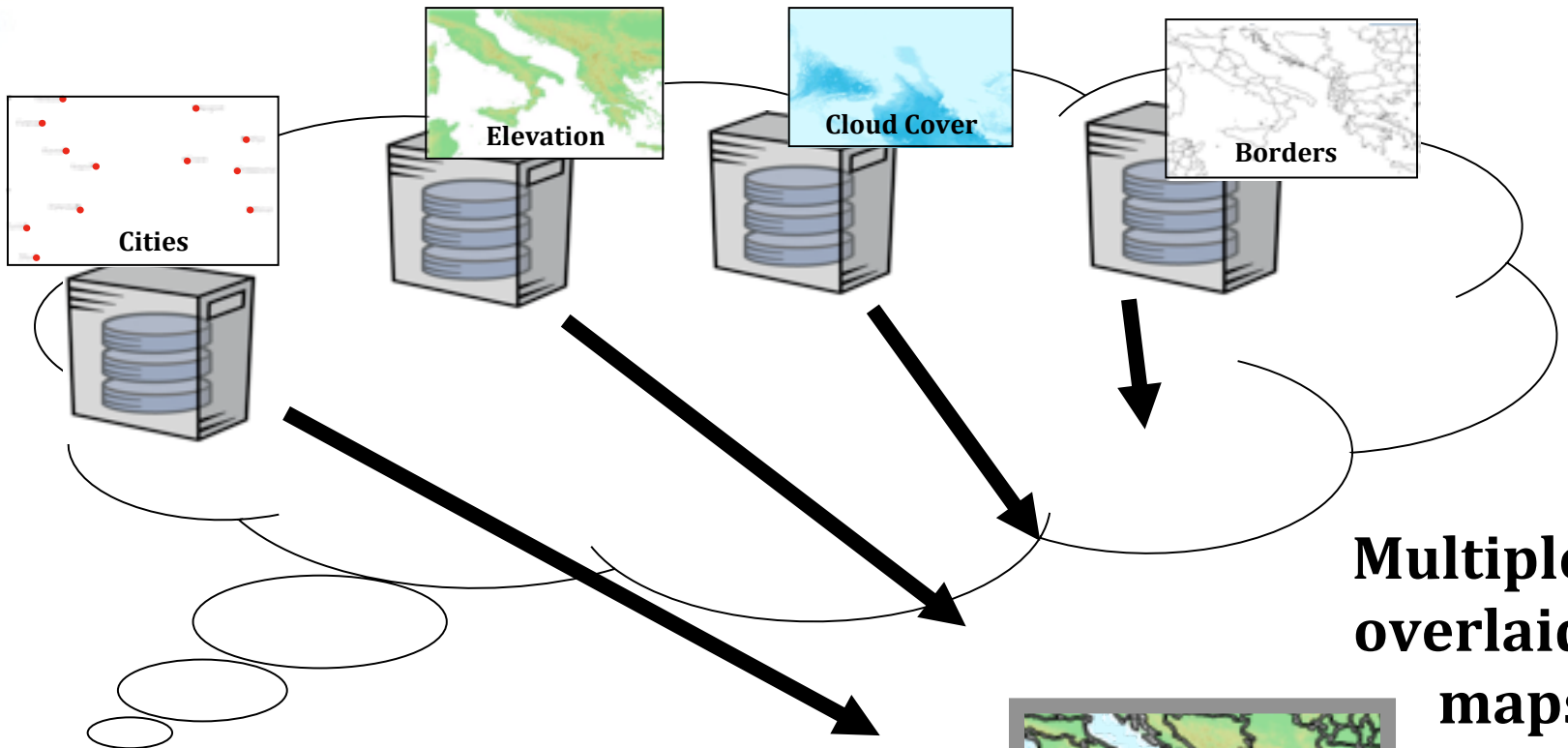
```
<wfs:FeatureCollection
<gml:featureMember>
<ROADS fid="ROADS.100">
<PATH>
  <gml:LineString gid="1“ srsName="epsg.xml#4326">
  <gml:coordinates>10,10 10,11 10,12 10,13</gml:coordinates>  </
gml:LineString>
</PATH>
<NLANES>4</NLANES>
</ROADS>
</gml:featureMember>

<gml:featureMember>
<ROADS fid="ROADS.105">
<PATH>
   <gml:LineString gid="2“ srsName="epsg.xml#4326">
   <gml:coordinates>10,10 10,11 10,12</gml:coordinates> </gml:LineString>
</PATH>
<NLANES>2</NLANES>
</ROADS>
</gml:featureMember>
</FeatureCollection>
```

OGC

WEB MAPPING

OGC

Web Map Service (WMS) can get multiple maps

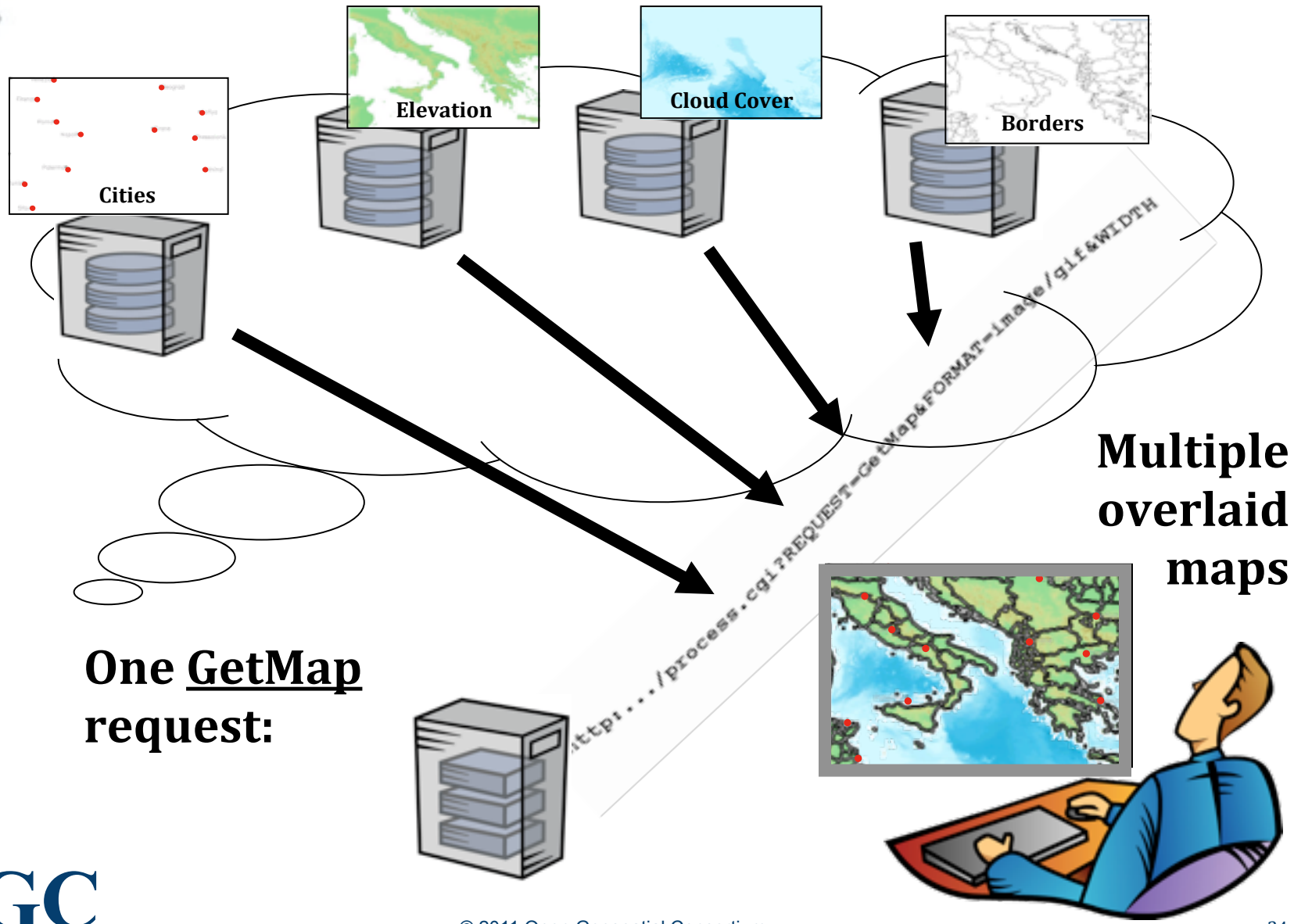


Multiple overlaid maps

One GetMap request:

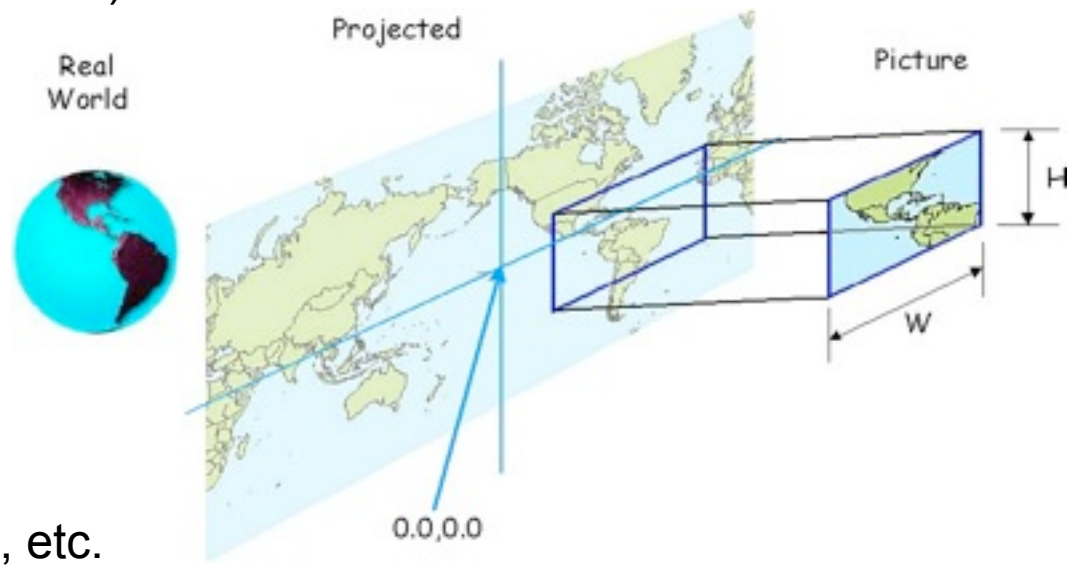
OGC

Web Map Service (WMS) can get multiple maps



OGC Web Map Service

- Spatial Context
  - Spatial Reference System (EPSG)
  - Corners of map (geographic extent)
  - Image width & height
- List of “layers”
  - Layer name
  - Symbolization style
- Return Format
  - GIF | JPEG | WebCGM | SVG, etc.
  - Background info (color, transparency)
  - Exception Type = InImage | Encoded/Parseable

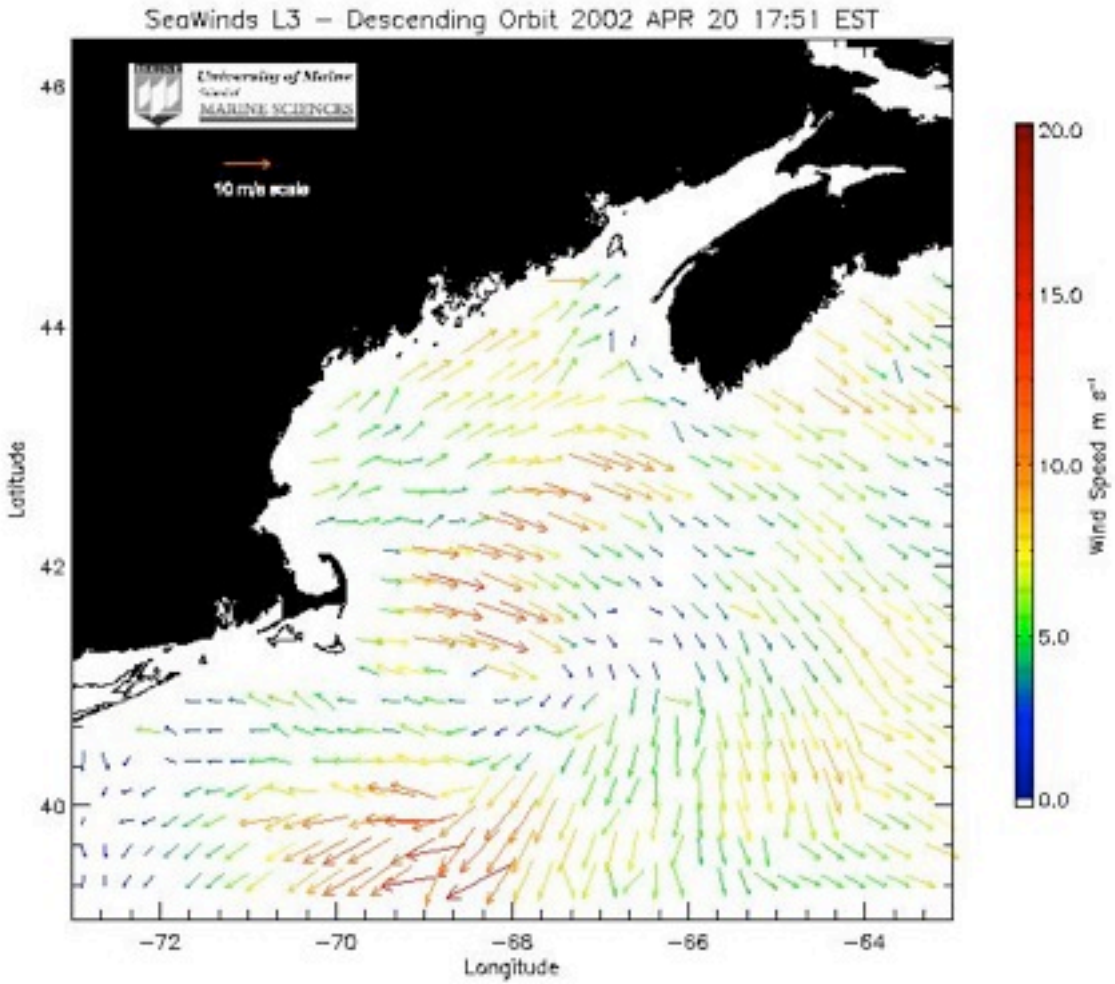


COVERAGE DATA ACCESS

OGC

Coverages Represent Space-Varying Phenomena

- Point grid (e.g., wind speed & direction)



OGC

WCS

- Same methodology as WFS
- GetCapabilities
- DescribeCoverageType
- GetCoverage

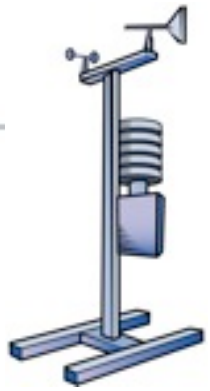
OGC

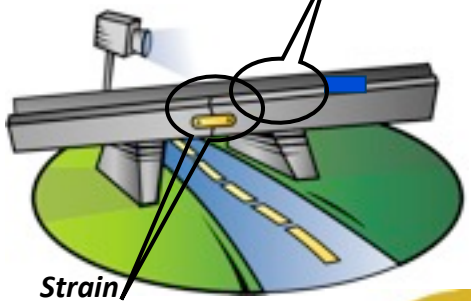
SENSOR WEB ENABLEMENT

OGC

OGC Sensor Web Enablement

- Sensors connected to and discoverable on the Web
- Sensors have position & generate observations
- Sensor descriptions available
- Services to task and access sensors
- Local, regional, national scalability
- Enabling the Enterprise



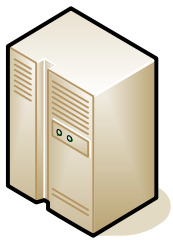


OGC

SWE Components – Web Services

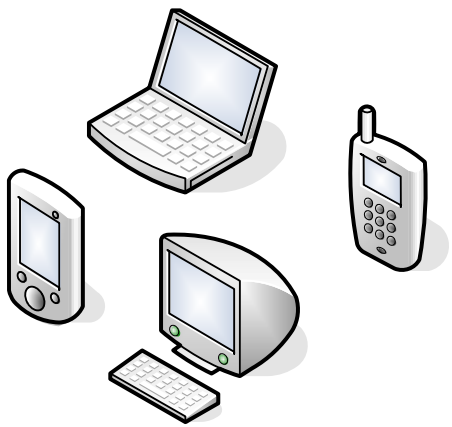
SOS

SPS



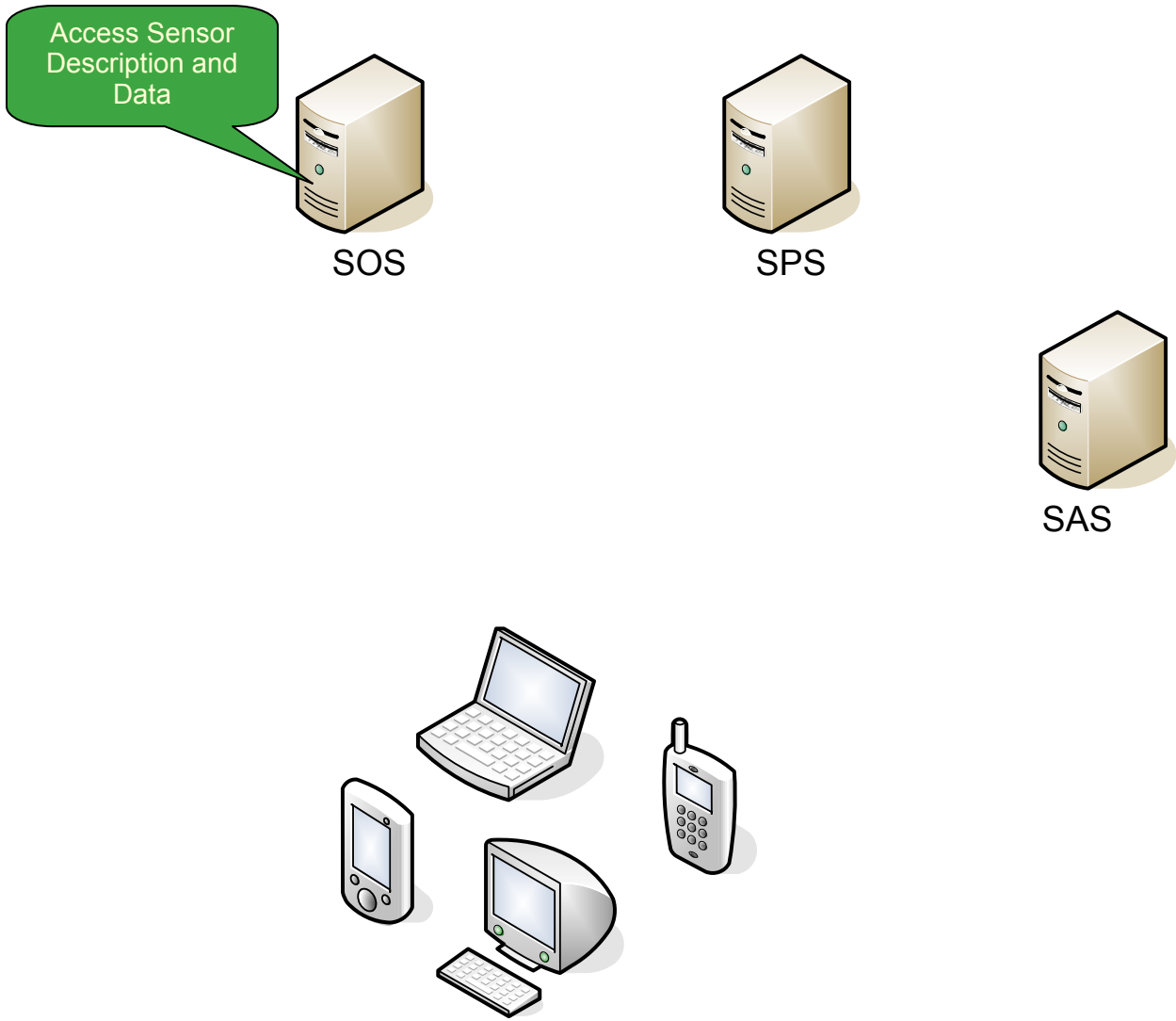
Catalog Service

SAS

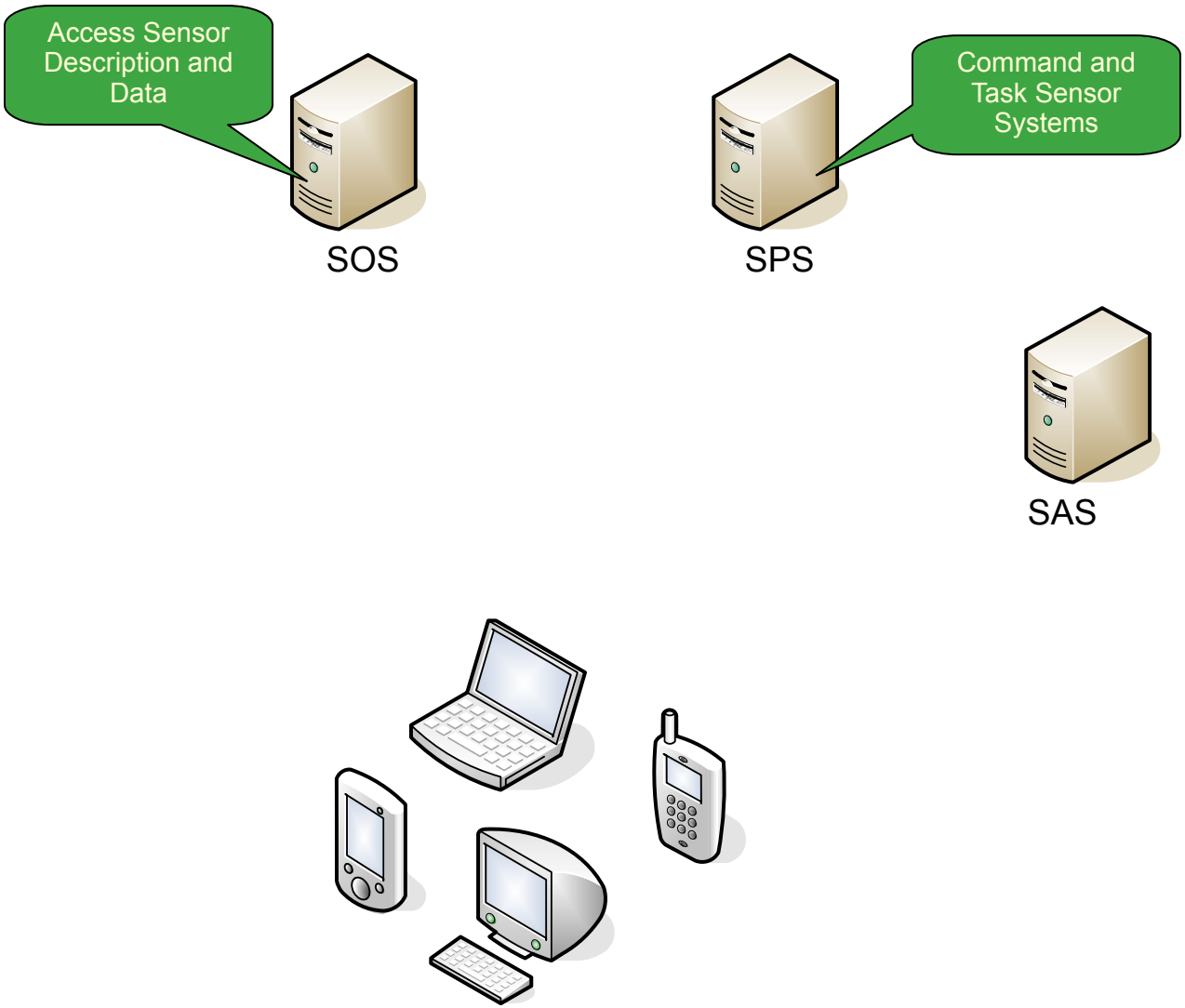


Clients

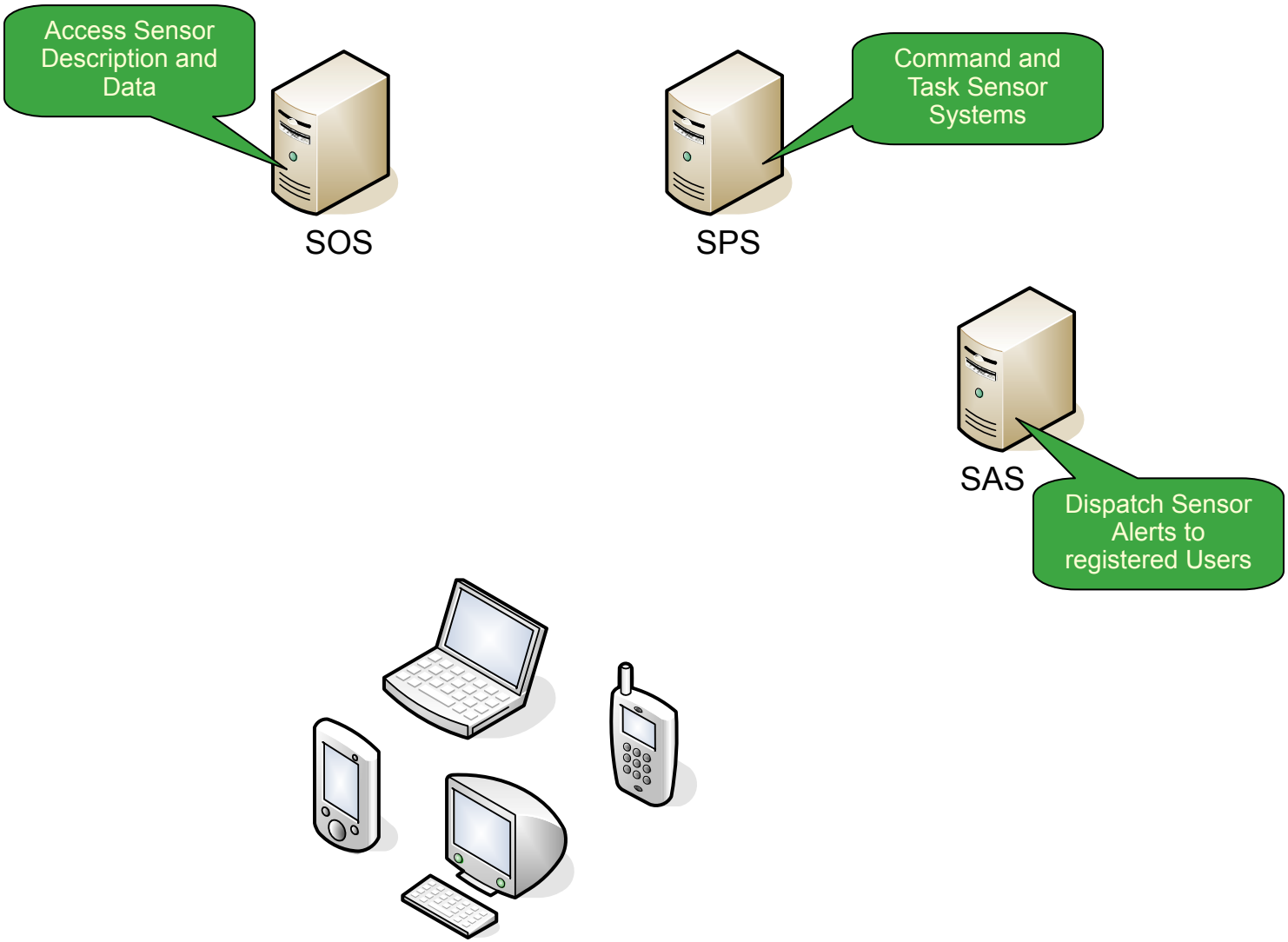
SWE Components – Web Services



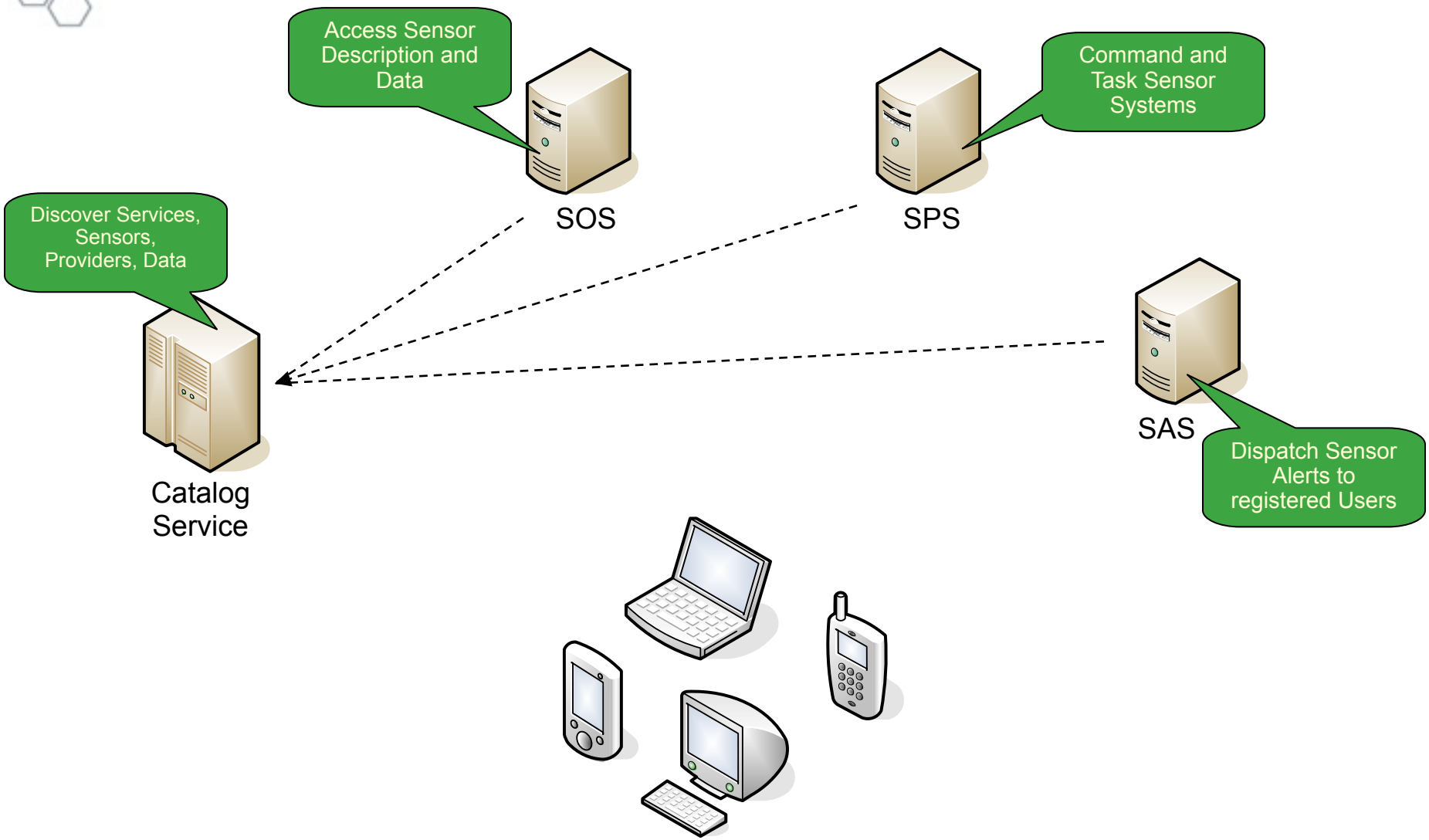
SWE Components – Web Services



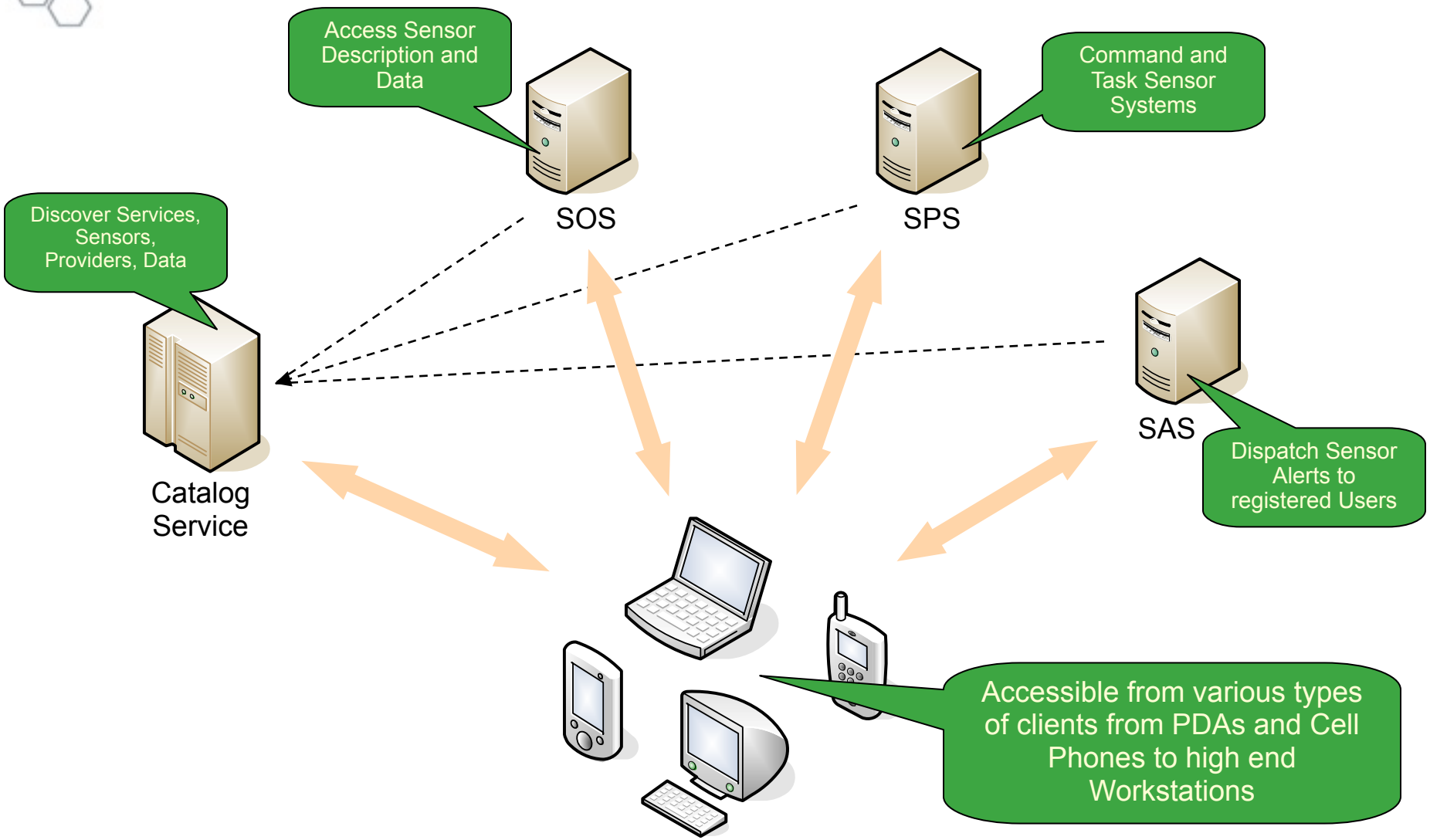
SWE Components – Web Services



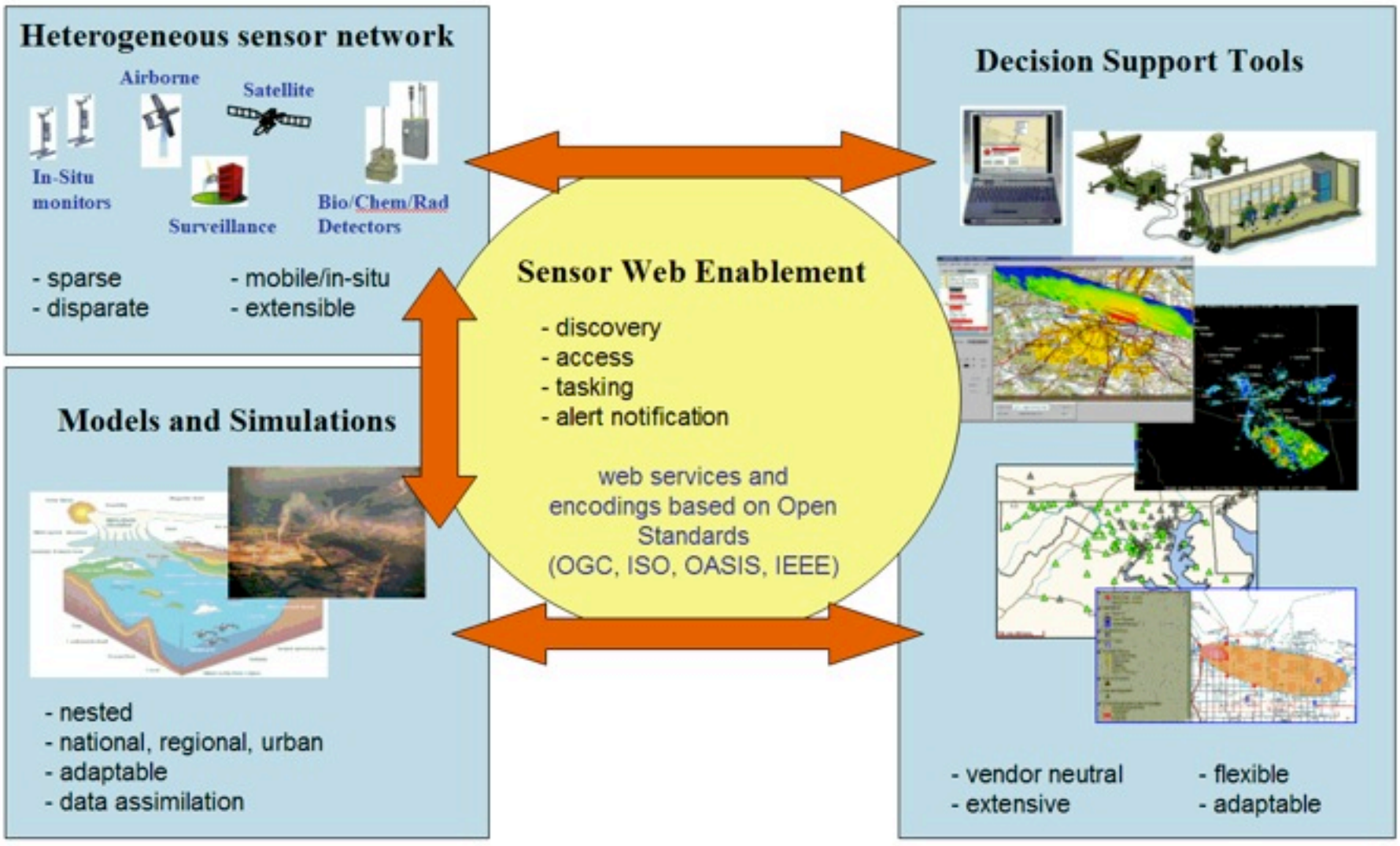
SWE Components – Web Services



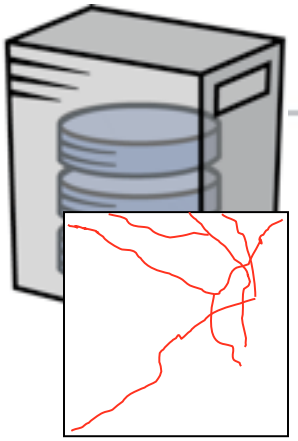
SWE Components – Web Services



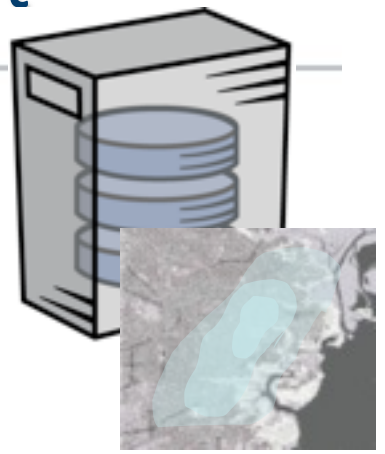
To integrate sensors into the Geospatial Web,



OWS Integrated Decision Support



Web Feature Server

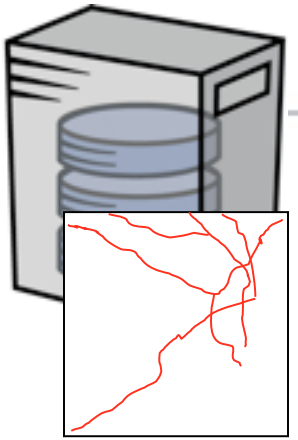


Web Coverage Server

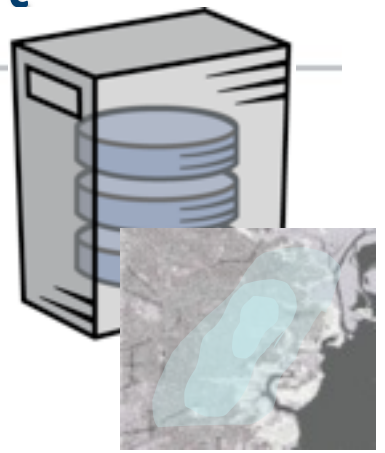
Web Map Server

With OGC web services, an analyst or operator can dynamically access that data which is relevant to the task at hand, directly from the authoritative data steward, using a variety of tools.

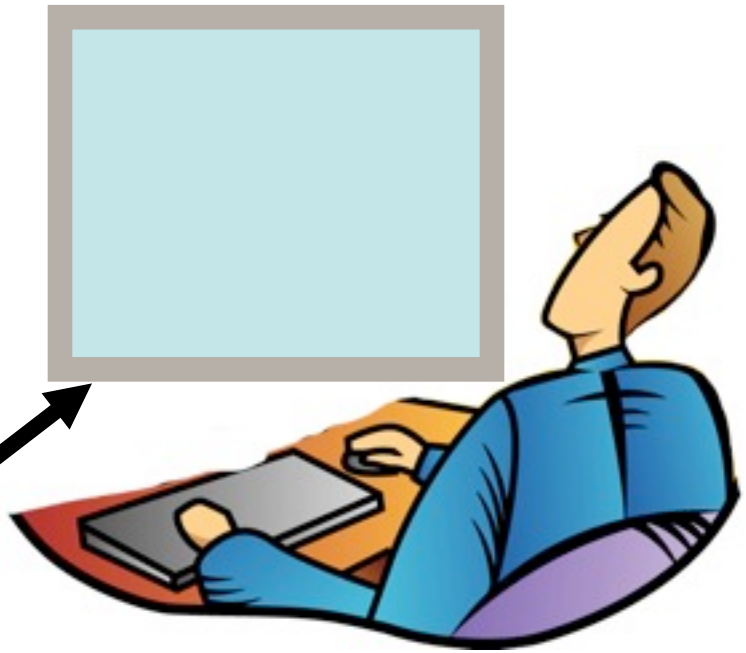
OWS Integrated Decision Support



Web Feature Server



Web Coverage Server



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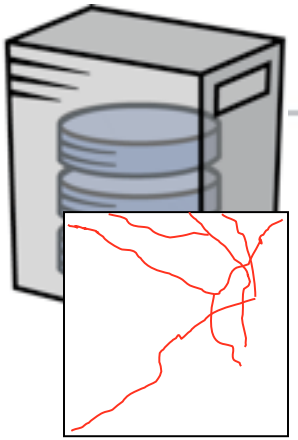
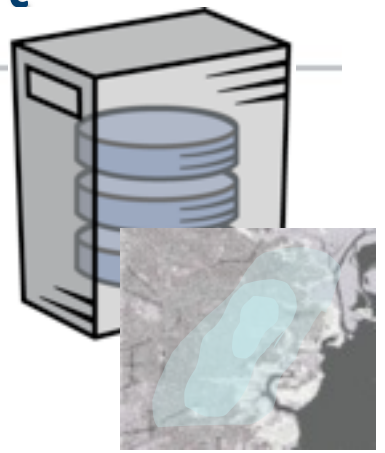
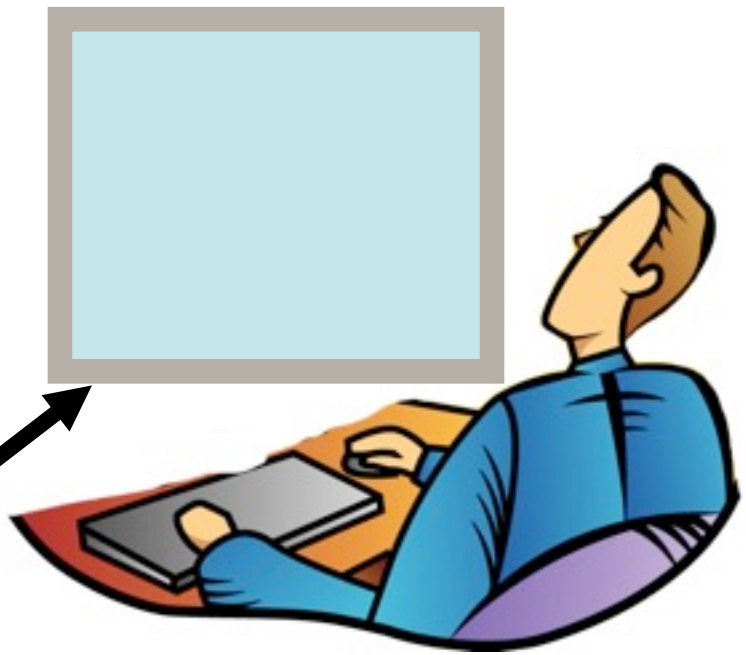
OWS Integrated Decision Support



Web Feature Server



Web Coverage Server



Web Map Server

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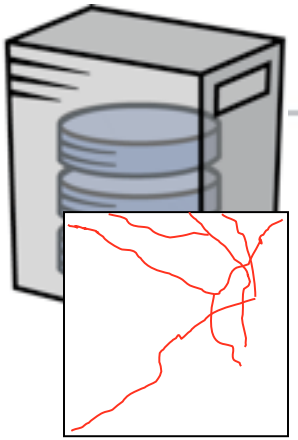
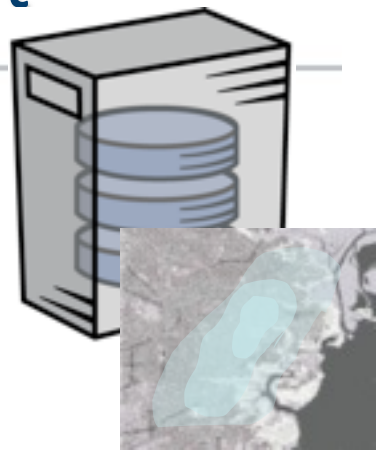
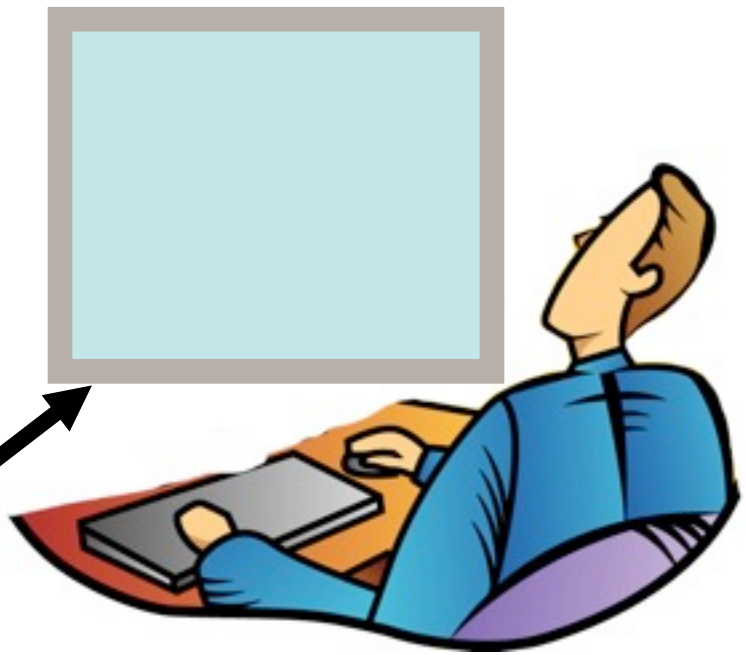
OWS Integrated Decision Support



Web Feature Server



Web Coverage Server



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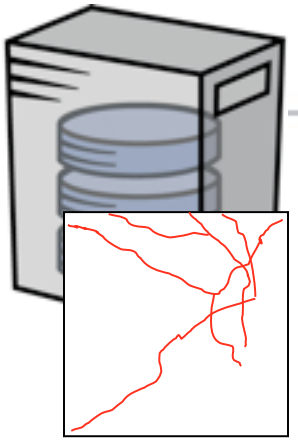
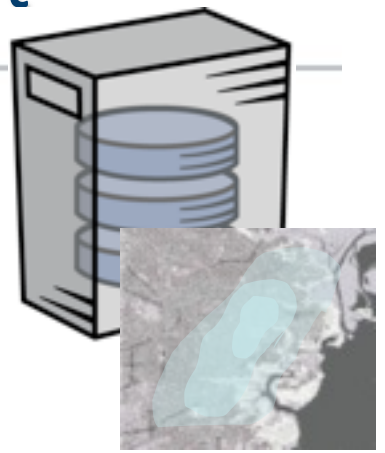
OWS Integrated Decision Support



Web Feature Server



Web Coverage Server

Web Map Server

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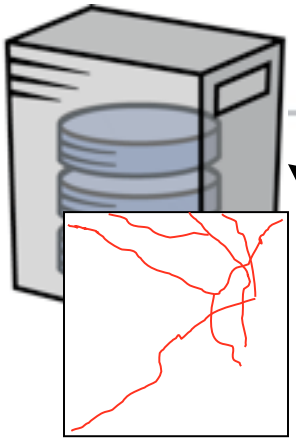
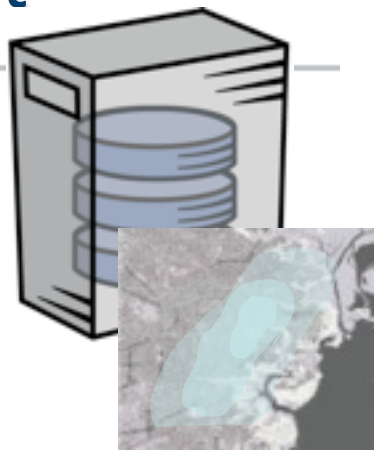
OWS Integrated Decision Support



Web Feature Server



Web Coverage Server

Web Map Server

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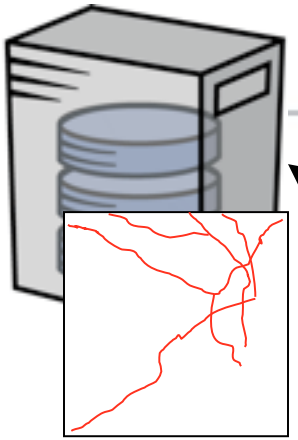
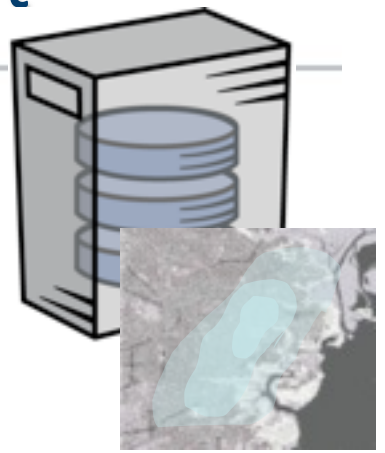
OWS Integrated Decision Support



Web Feature Server



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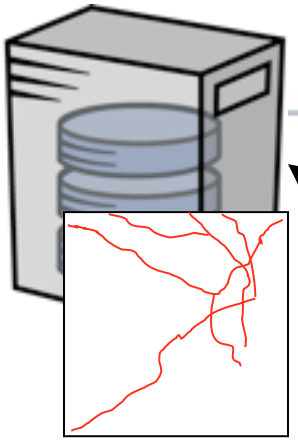
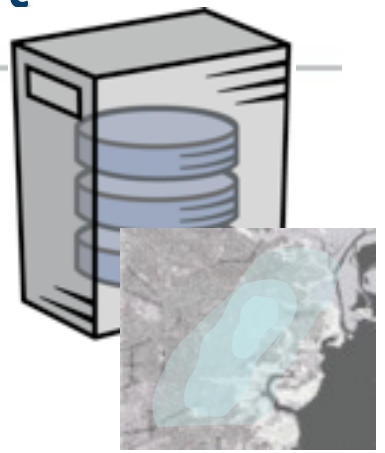
OWS Integrated Decision Support



Web Feature Server



Web Coverage Server

Web Map Server

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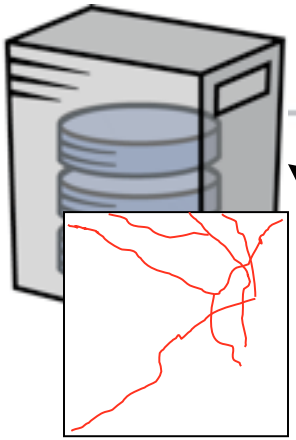
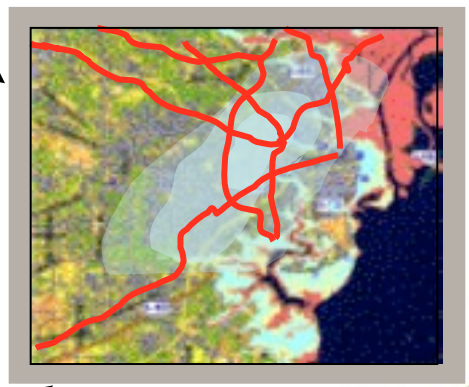
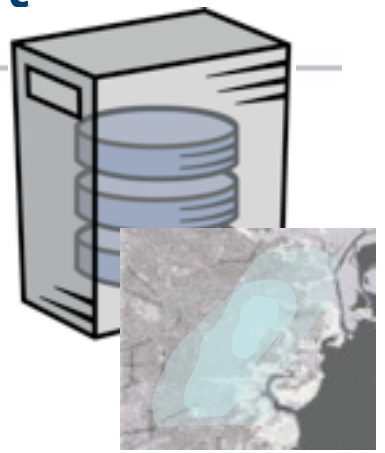
OWS Integrated Decision Support



Web Feature Server





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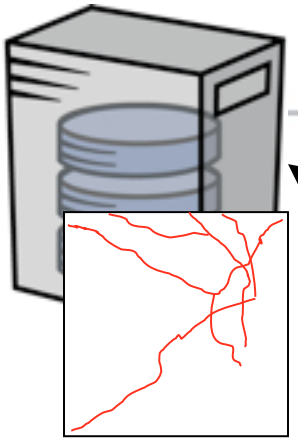
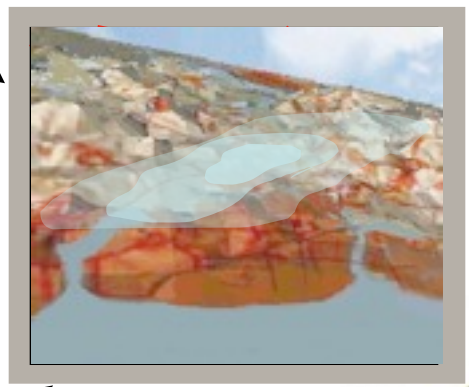
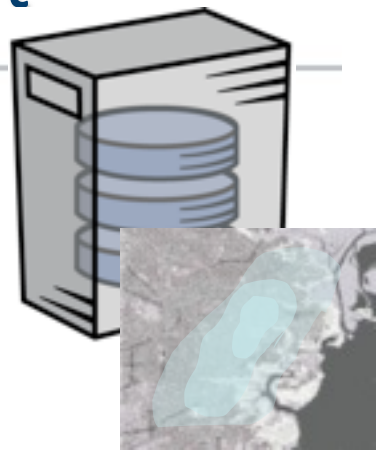
OWS Integrated Decision Support



Web Feature Server





Web Coverage Server

Web Map Server

With OGC web services, an analyst or operator can dynamically access that data which is relevant to the task at hand, directly from the authoritative data steward, using a variety of tools.

GEO-SYNCHRONIZATION

OGC

Atom Publication Protocol

…for publishing and editing Web resources belonging to periodically updated websites. The protocol at its core is the HTTP transport of Atom-formatted representations. The Atom format is documented in the Atom Syndication Format (draft-ietf-atompub-format-06.txt).

OGC

How GeoSync works

- A Server publishes 2 things:
  - a Web Feature Service (the latest data set)
  - a “change feed”

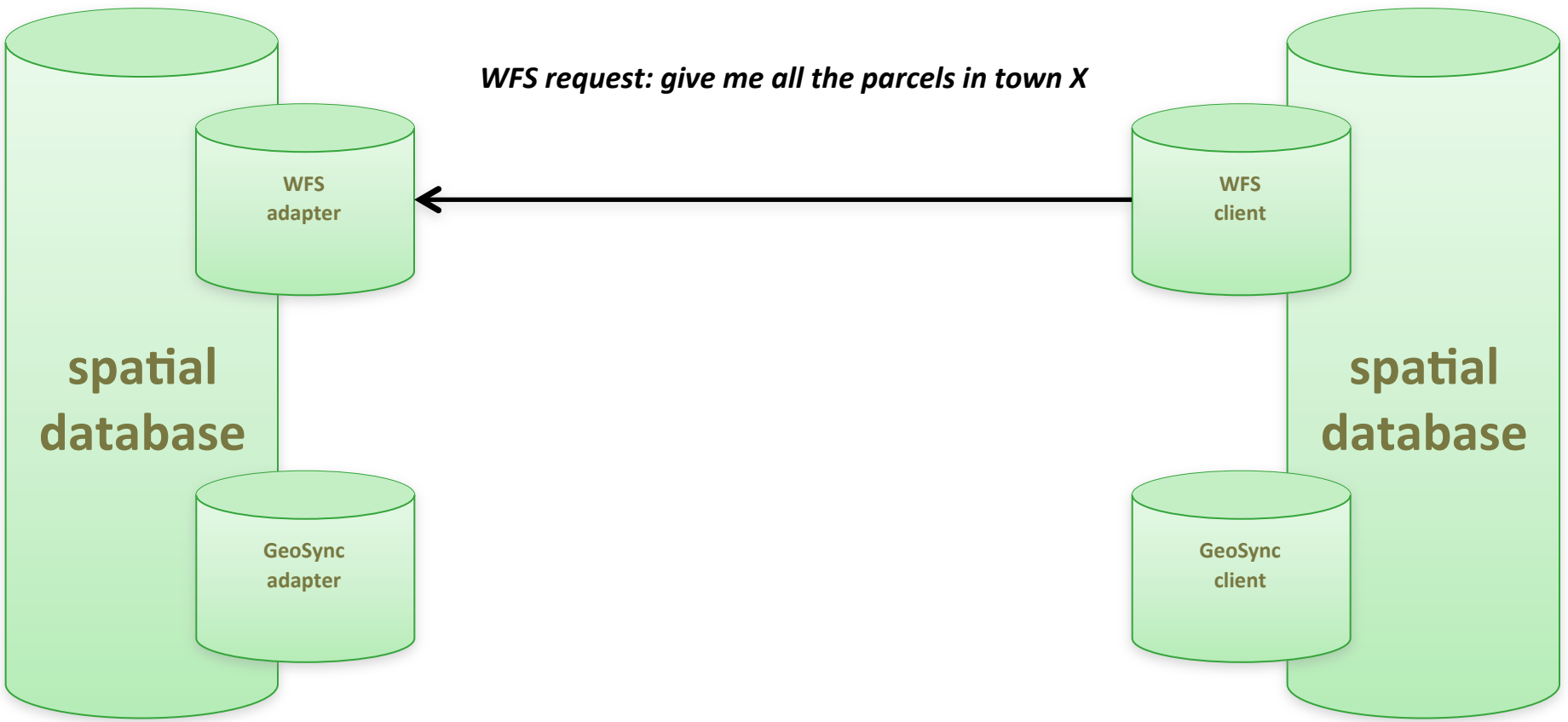
- A Client:
  - queries the WFS **once** for the data it wants
  - then queries the change feed for updates

OGC

“Big” data requests vs. update requests

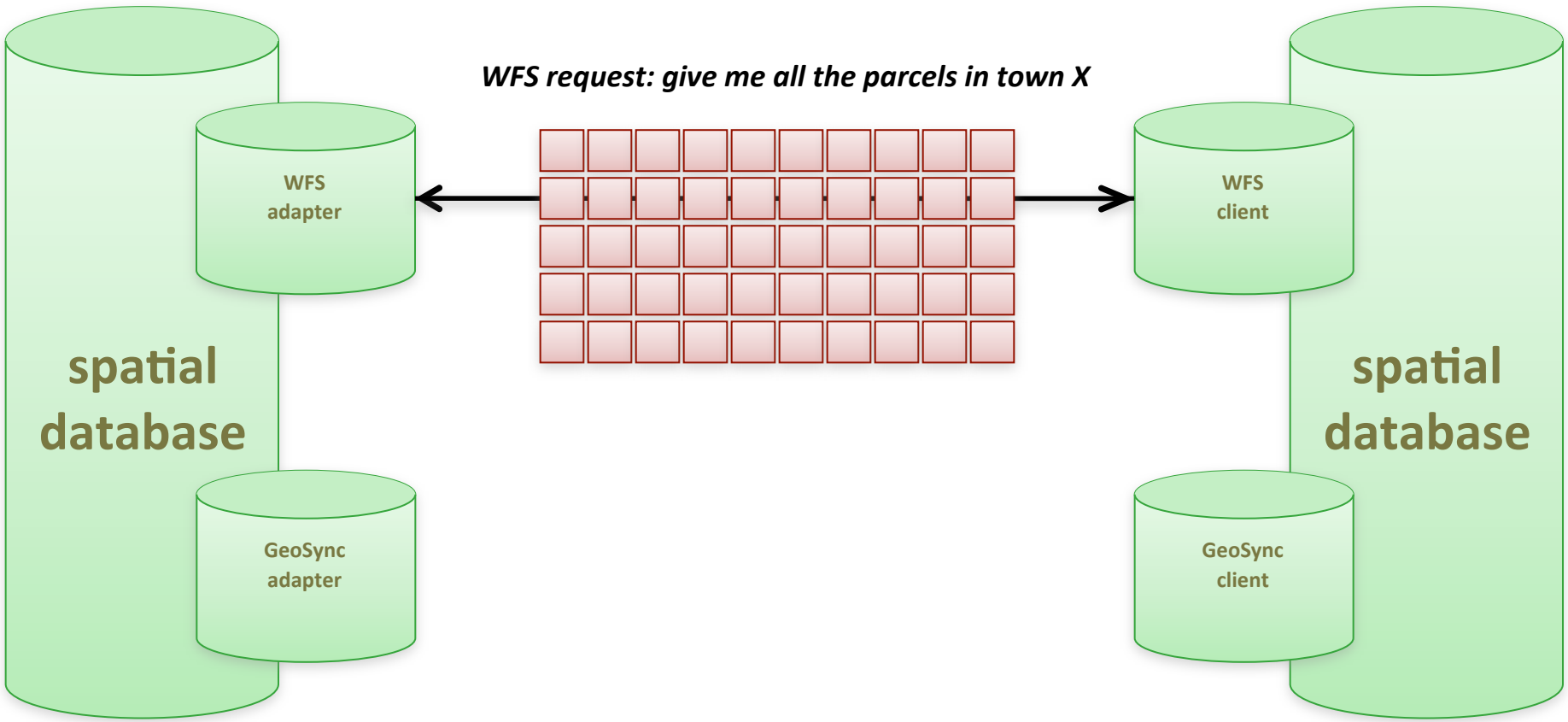
OGC

“Big” data requests vs. update requests



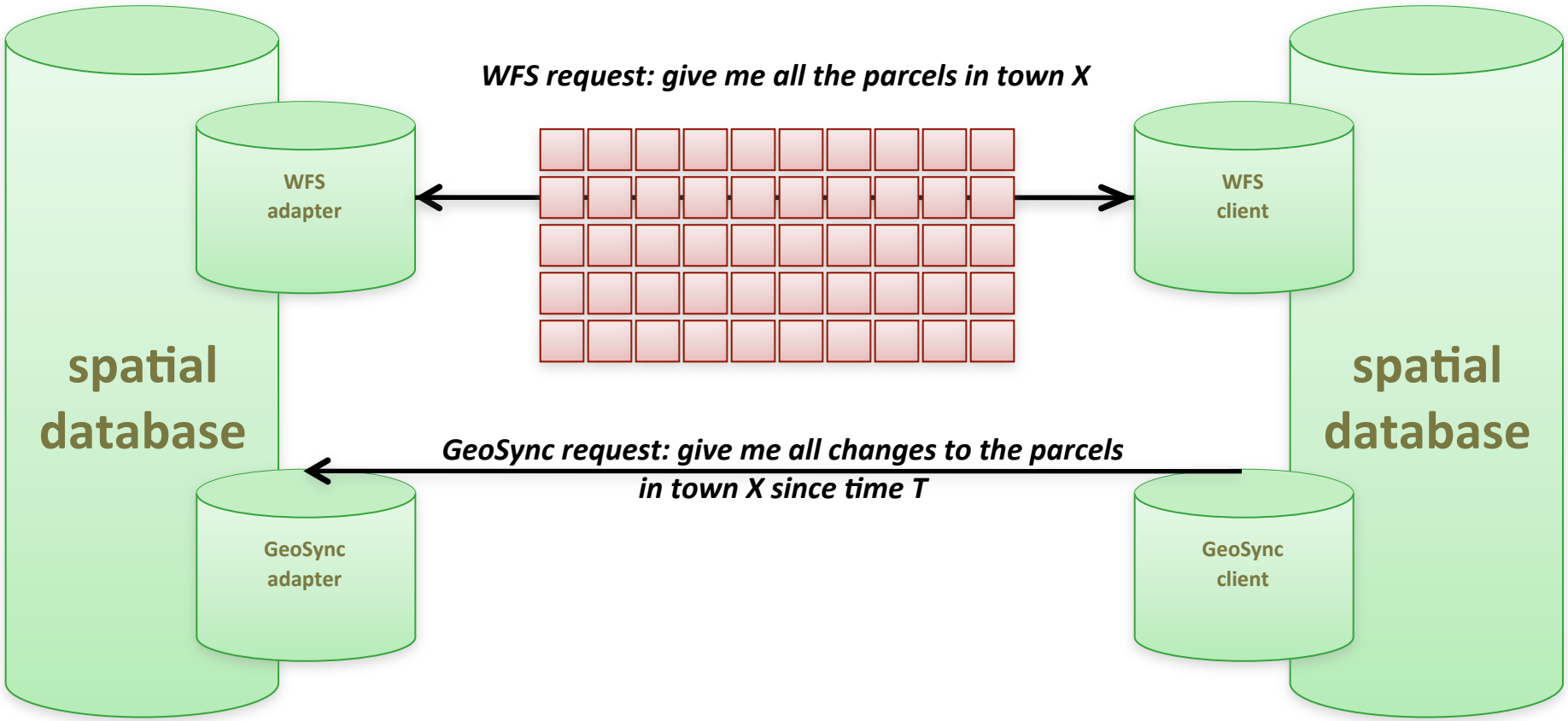
OGC

“Big” data requests vs. update requests



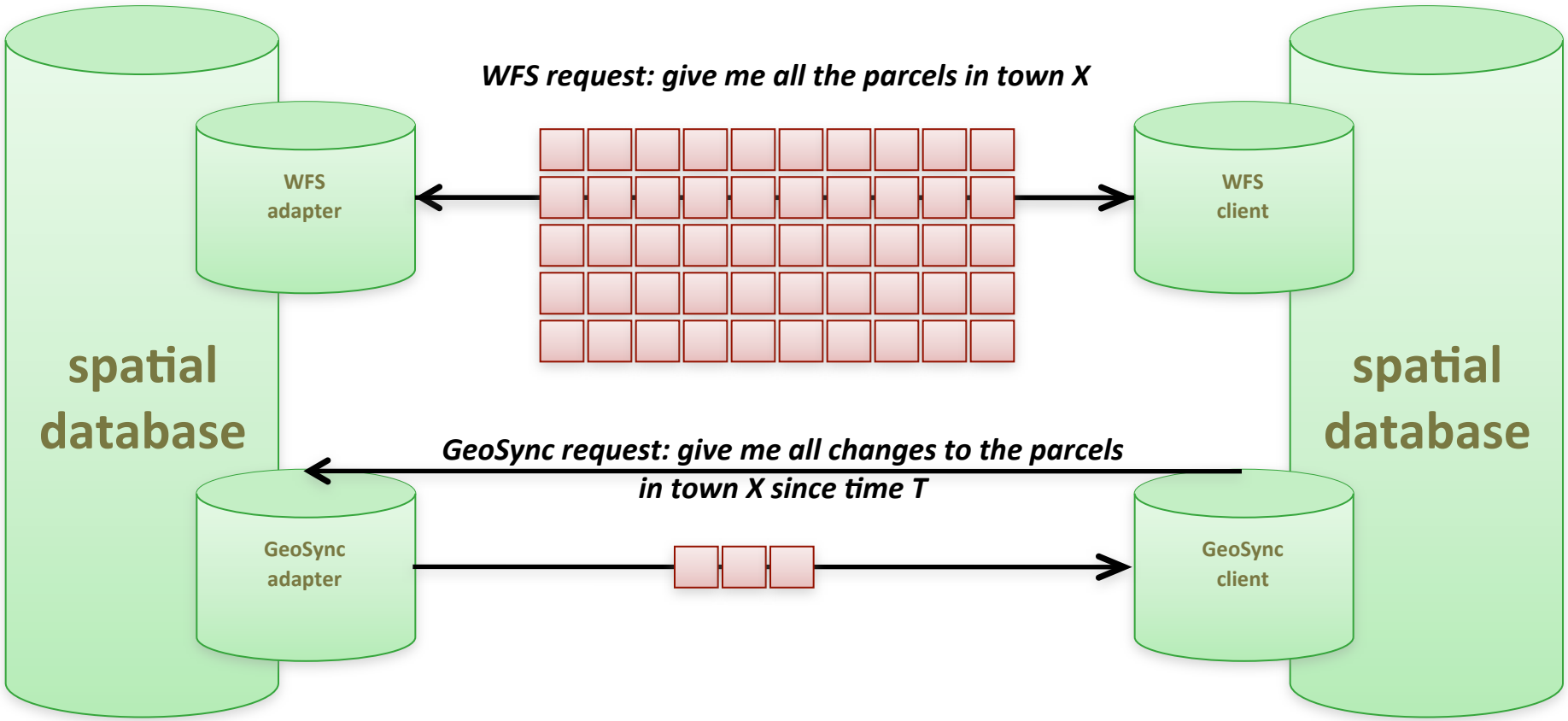
OGC

“Big” data requests vs. update requests



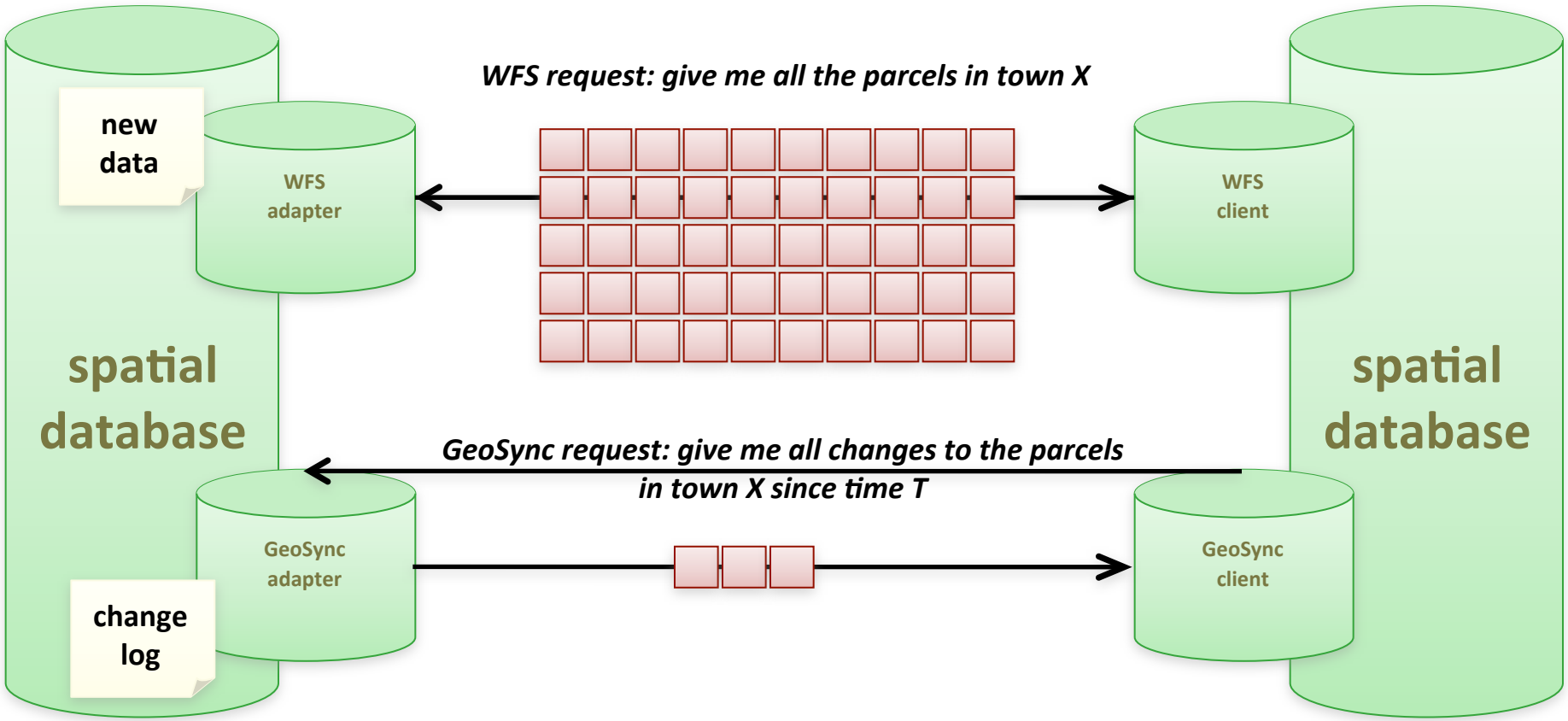
OGC

“Big” data requests vs. update requests



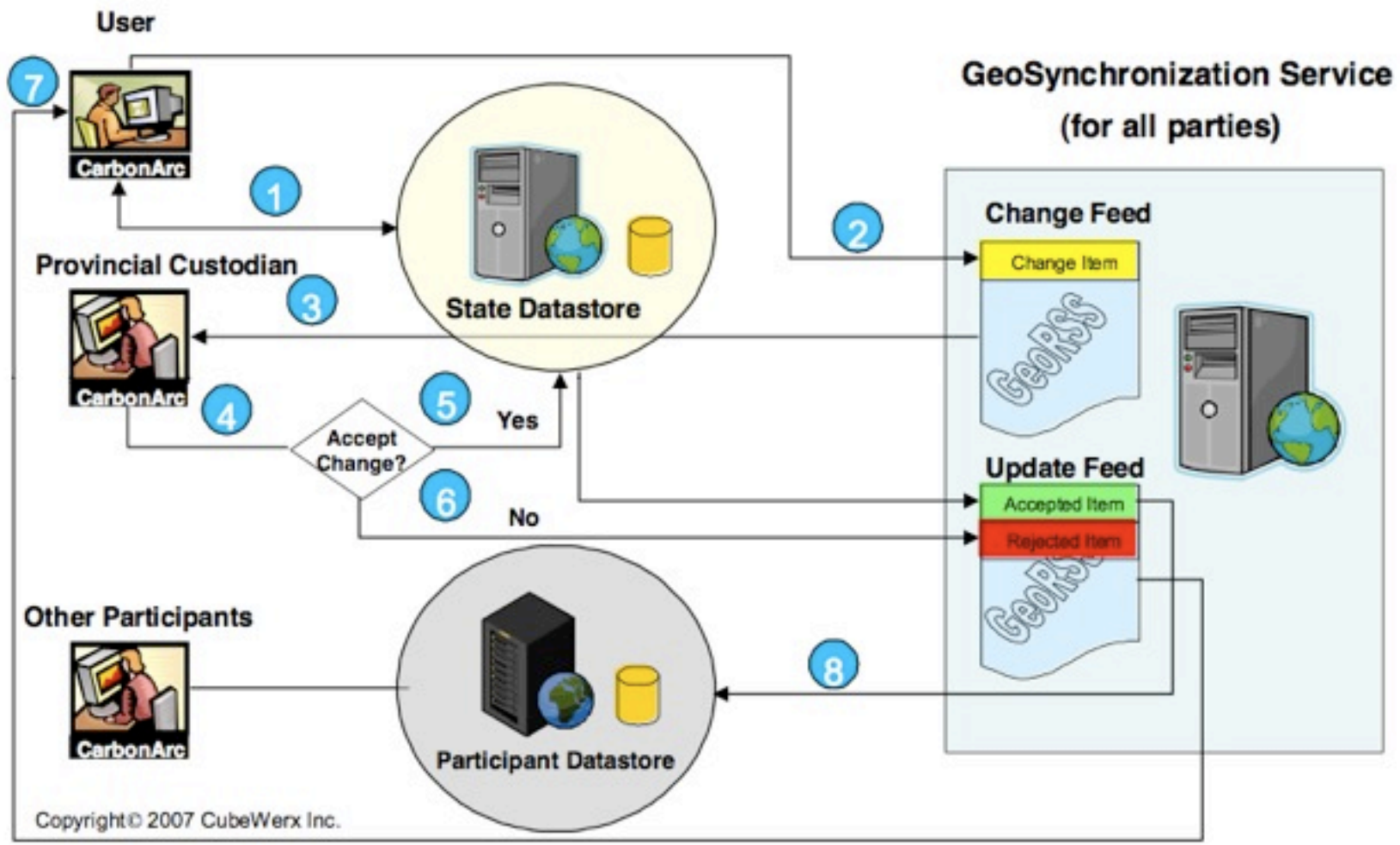
OGC

“Big” data requests vs. update requests



OGC

Implementation in CGDI Pilot



DISTRIBUTED WEB PROCESSING SERVICE

OGC

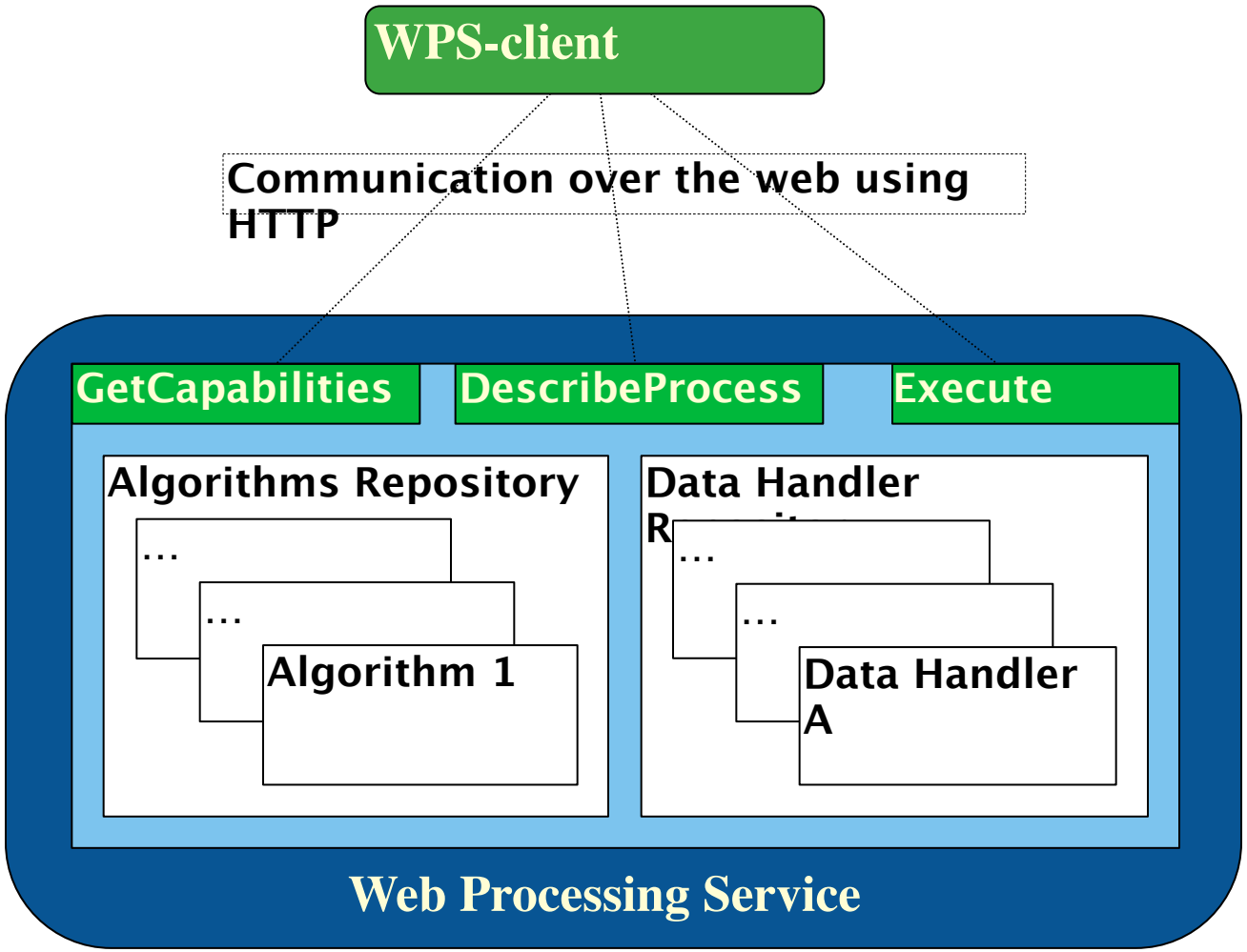
Geo-Processing

- Hundreds of types of algorithms for geodata
- How can we scale to interoperable geo-processing?

- OGC Web Processing Service (WPS)
  - Interface that facilitates the publishing of geospatial processes, and the discovery of and binding to those processes by clients
  - Processes include any algorithm, calculation or model that operates on spatially referenced data.
  - WPS may offer calculations as simple as subtracting one set of spatially referenced numbers from another) or as complicated as a global climate change model.

OGC

OGC Web Processing Service (WPS)



OGC

“Chaining” Web Services For Decision Support

Service chaining creates Value-added products

OGC Interfaces

Decision Support Client

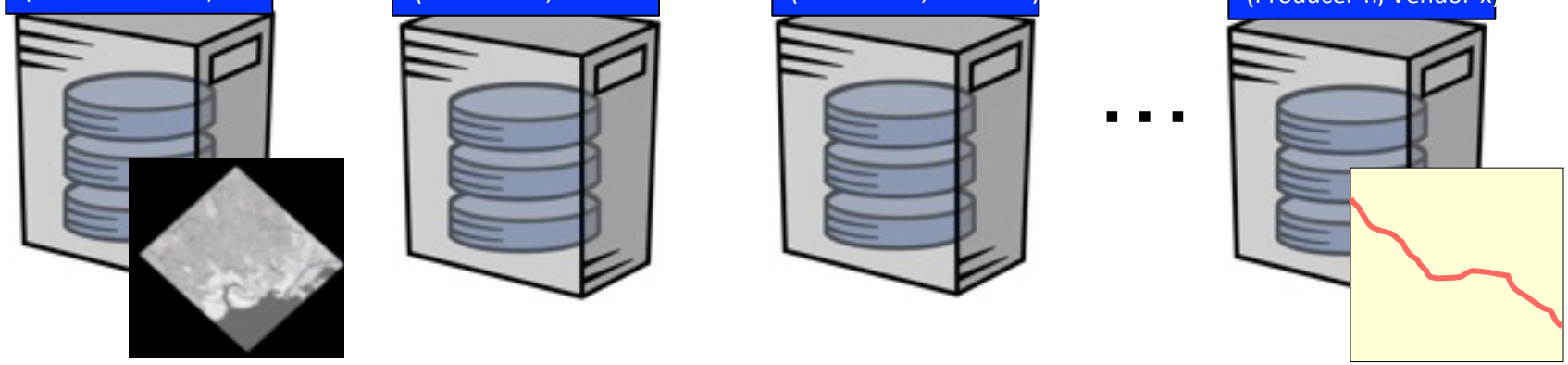
Internet

WCS (NASA Data Pool)

WPS - WCTS (Producer-B, Vendor-2)

WPS - Classification (Producer-C,Vendor-3)

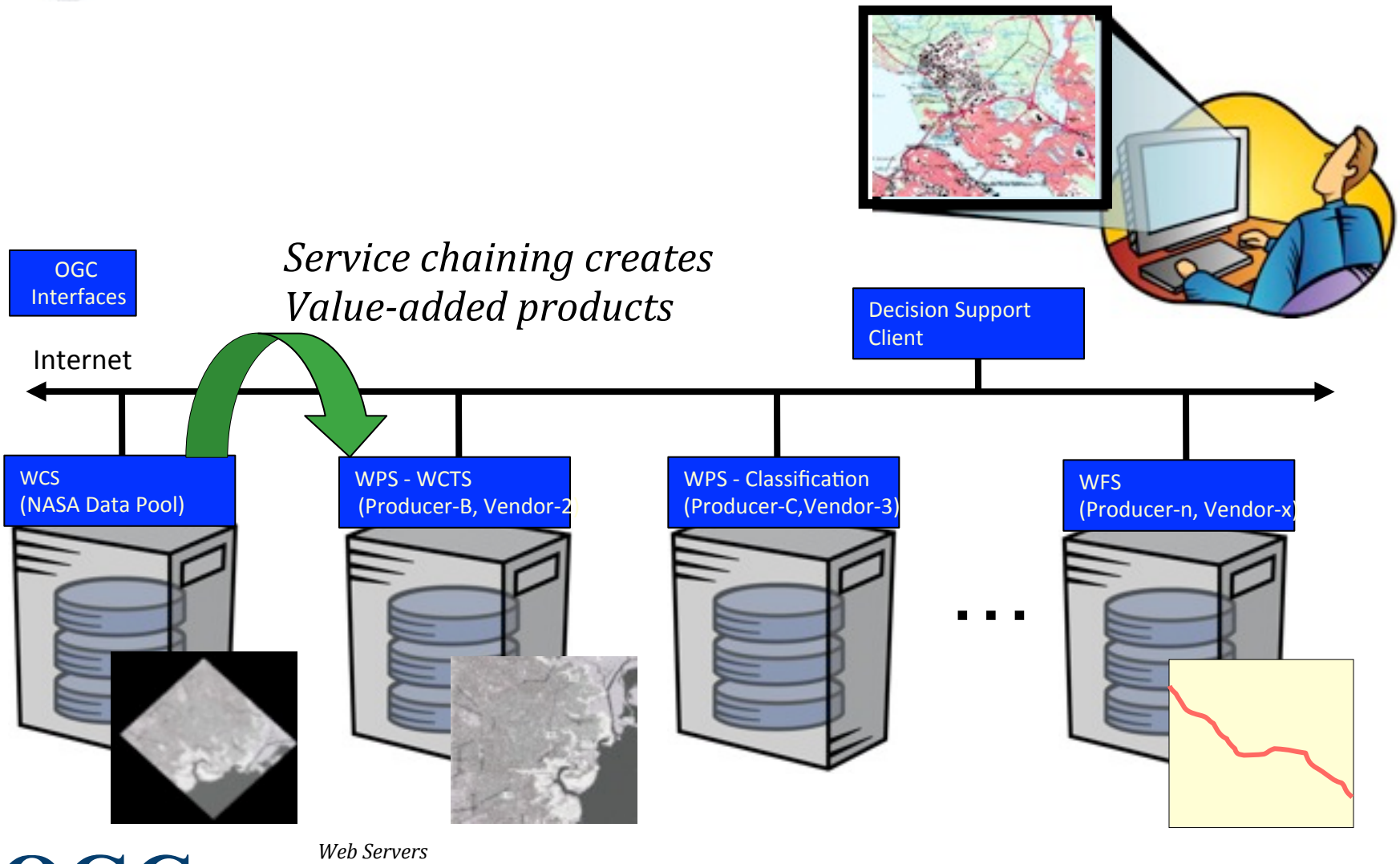
WFS (Producer-n, Vendor-x)



Web Servers

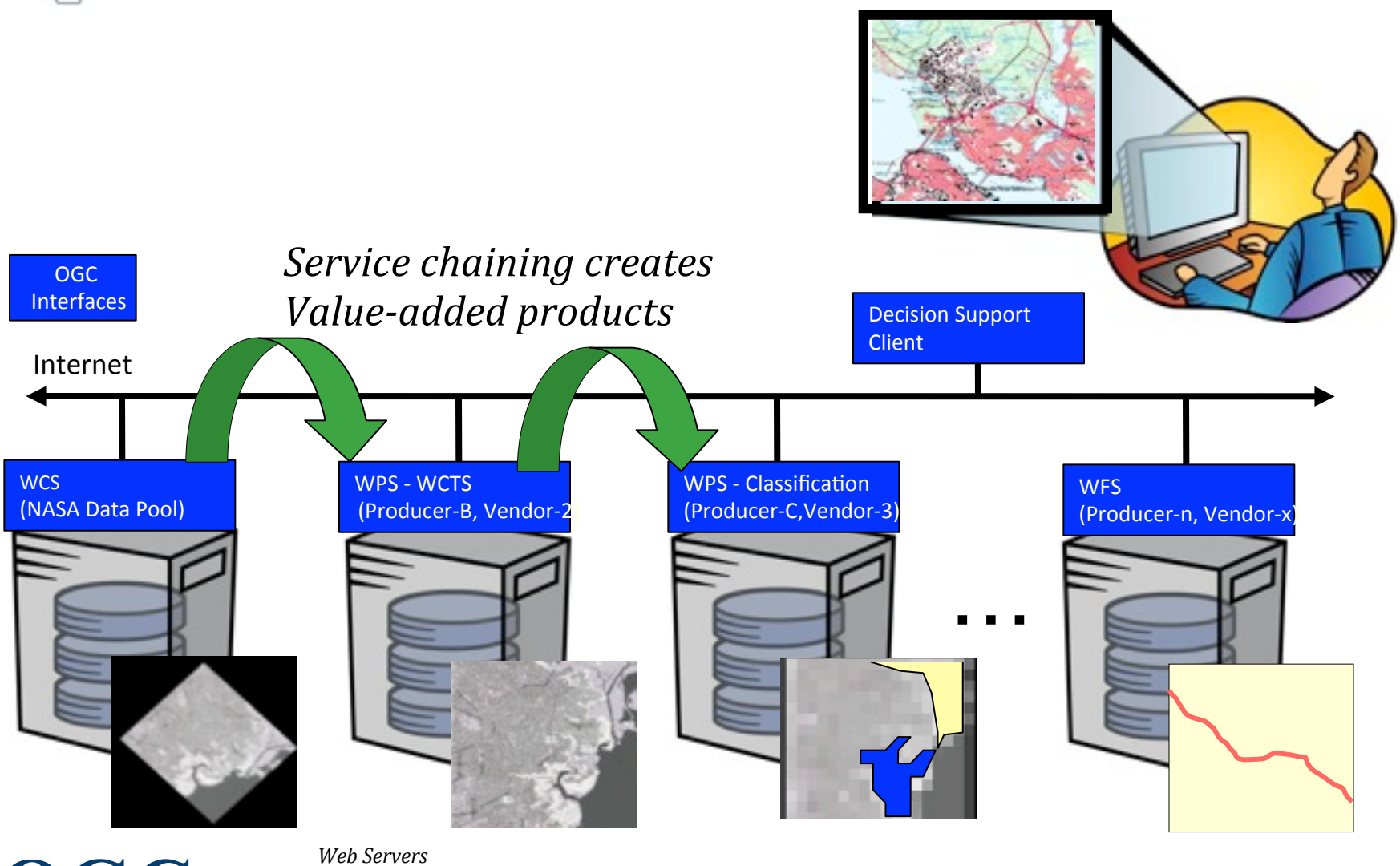
OGC

“Chaining” Web Services For Decision Support



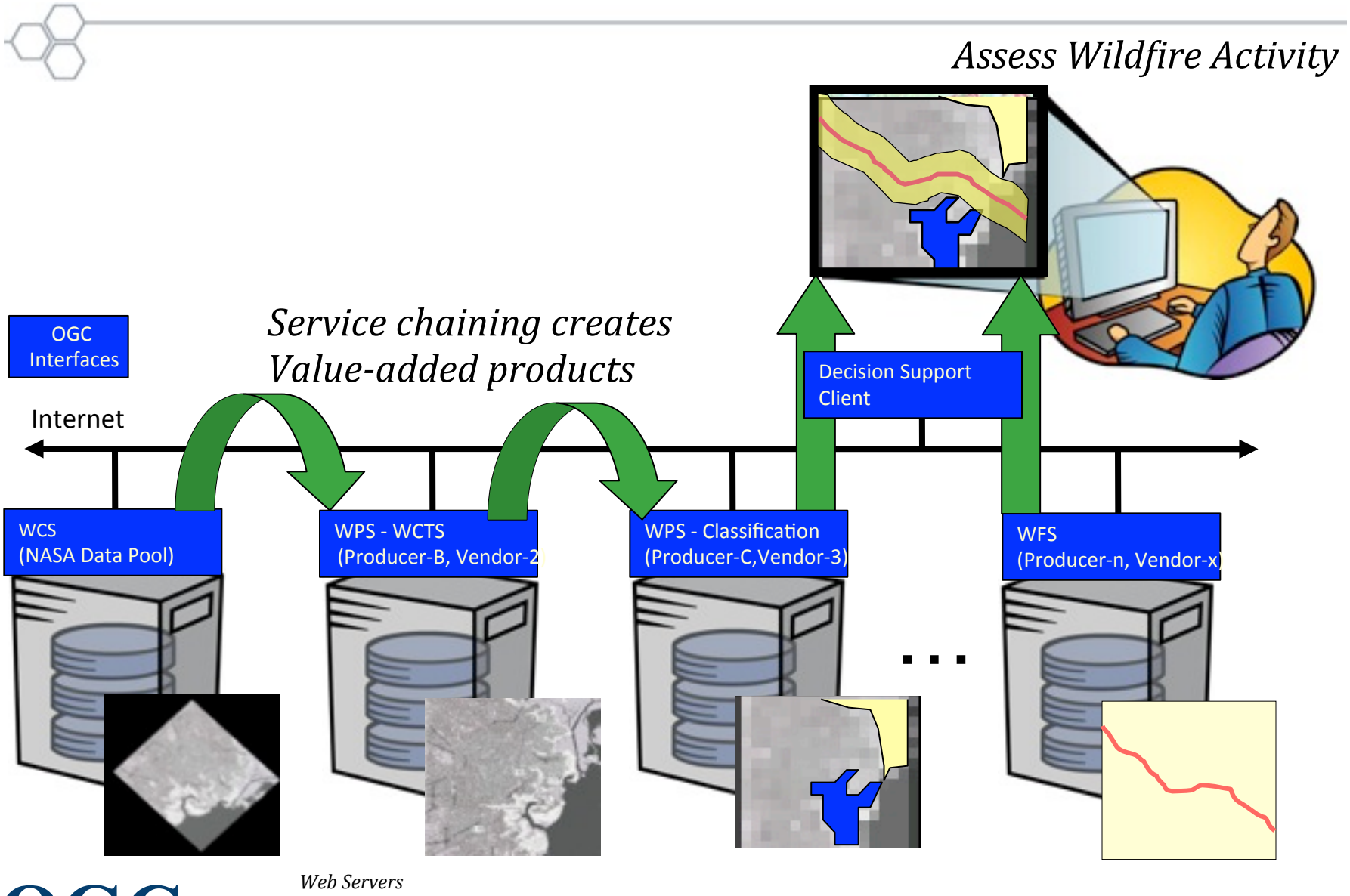
OGC

“Chaining” Web Services For Decision Support



OGC

“Chaining” Web Services For Decision Support



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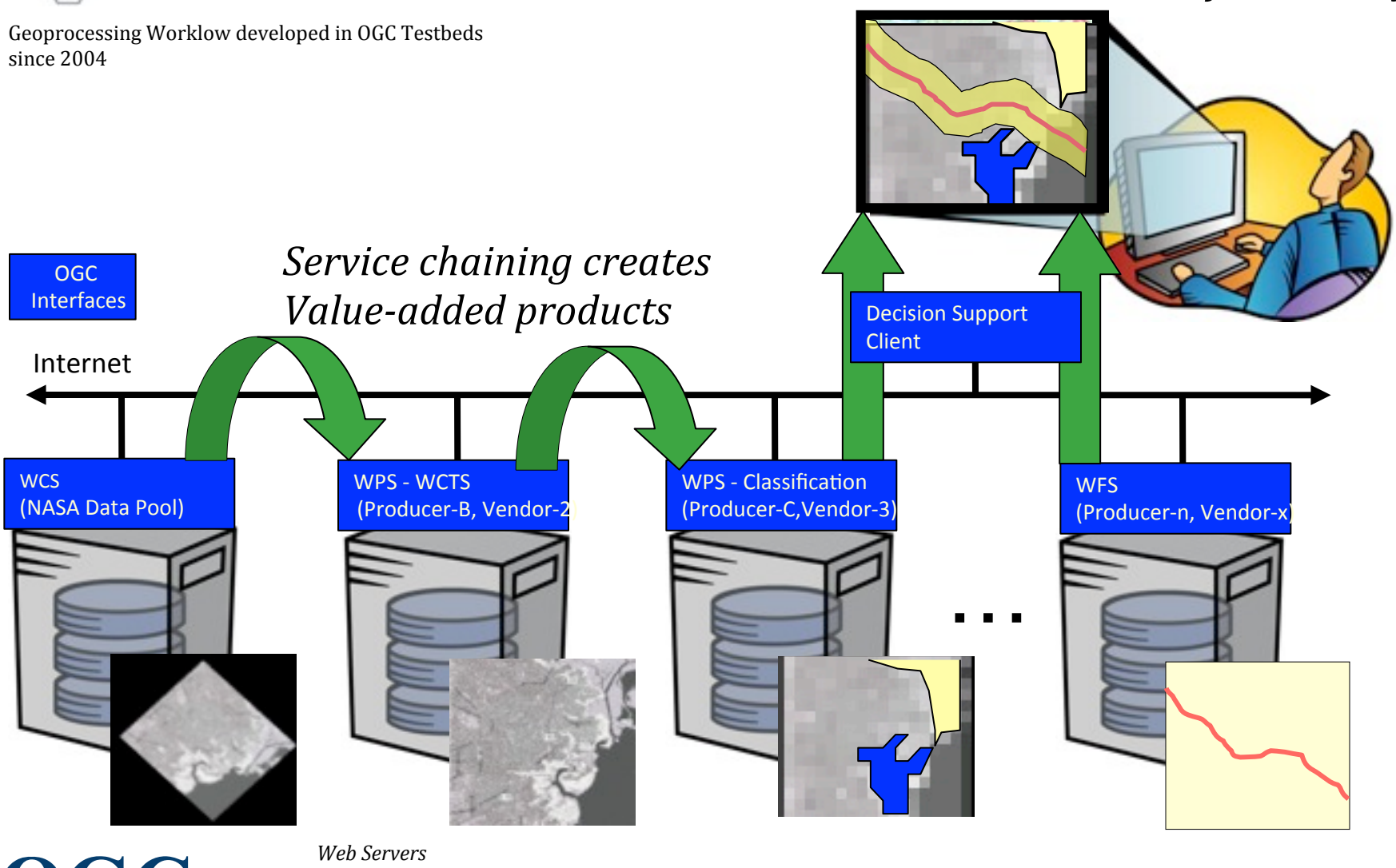
“Chaining” Web Services For Decision Support

Geoprocessing Worklow developed in OGC Testbeds since 2004



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STANDARDS-BASED LIGHTWEIGHT PAYLOADS AND MICRO-FORMATS

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Mass Market Geo

- OGC Vision is being realized in 'mass market geo'
  - Google Earth & Maps
  - Windows Virtual Earth
  - Yahoo Maps
  - Mobile phone location based services (e.g. Nokia Ovi)
  - Real time 'sensor connection' to the world coming soon

- Standards for Mass Market Geo need to match weight of uses
  - Lightweight application schemas of encodings
  - GeoRSS
  - GeoJSON
  - Open Location Services

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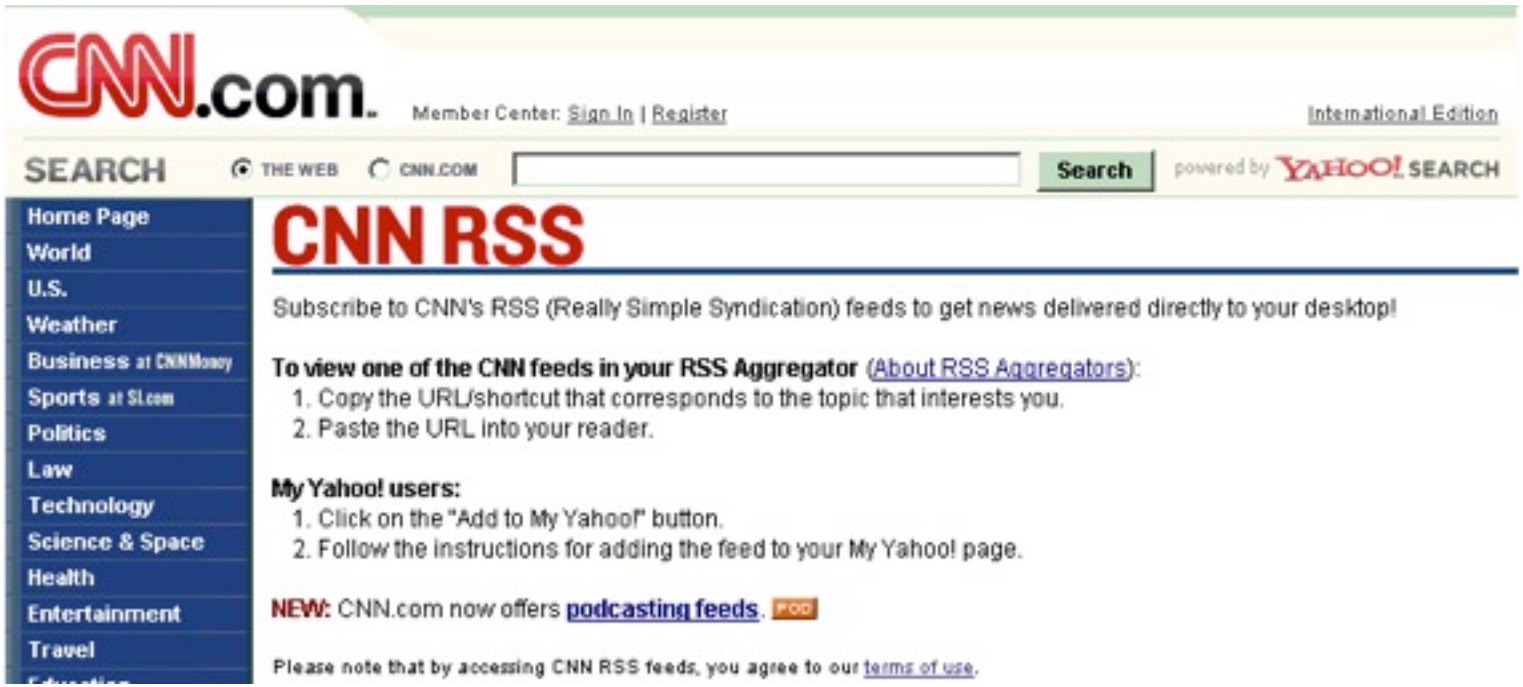
What is RSS?

- RSS stands for Really Simple Syndication. It is a way to easily distribute a list of headlines, update notices, (alerts), and sometimes content to a wide number of people.



GeoRSS

- Encodings for expressing geography in RSS feeds
  - Multiple geometries: point, line, area or bounding box
- Can be used for news feeds & ***alerts*** for weather warnings, earthquakes, photo sharing, database update alerts, traffic alerts, and on and on and on and on . . .
- http://www.georss.org released in January of 2006

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GEOSPATIAL RIGHTS MANAGEMENT

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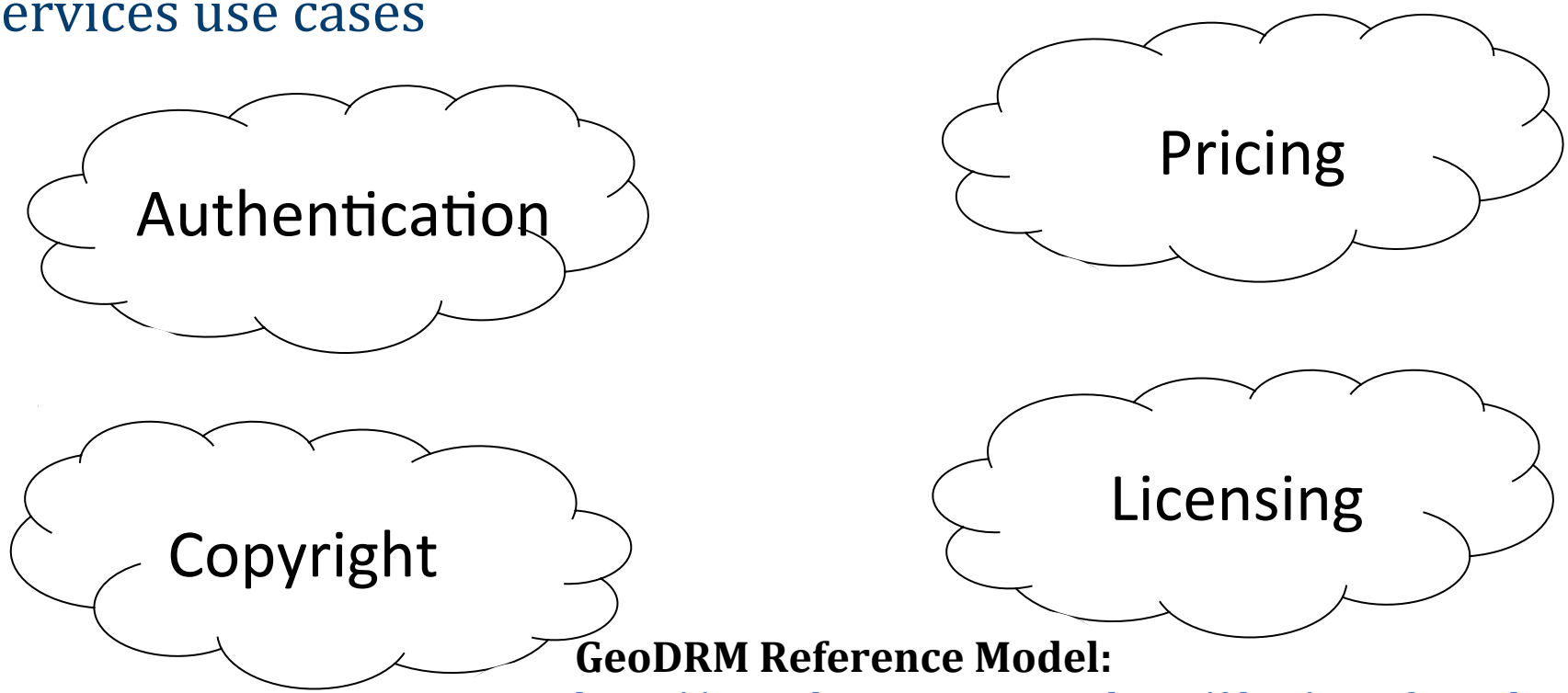
Geospatial Digital Rights Management

- OGC members are leveraging broader standards based Digital Rights Management (DRM) approaches in conjunction with OGC standards to validate their ability to support geospatial data and services use cases



GeoDRM Reference Model:
http://portal.opengeospatial.org/files/?artifact_id=14085

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GeoRM Progress

- **Geospatial Digital Rights Mangement Reference Model (GeoDRM RM)**
  - http://www.opengeospatial.org/standards/as/geodrmrm
- **GeoXACML Implementation Specification**
  - http://www.opengeospatial.org/standards/geoxacml
- What's needed
  - GeoRM web service APIs
  - exemplary rights management schemes
- GeoRM Summit on June 22 (at next TC)

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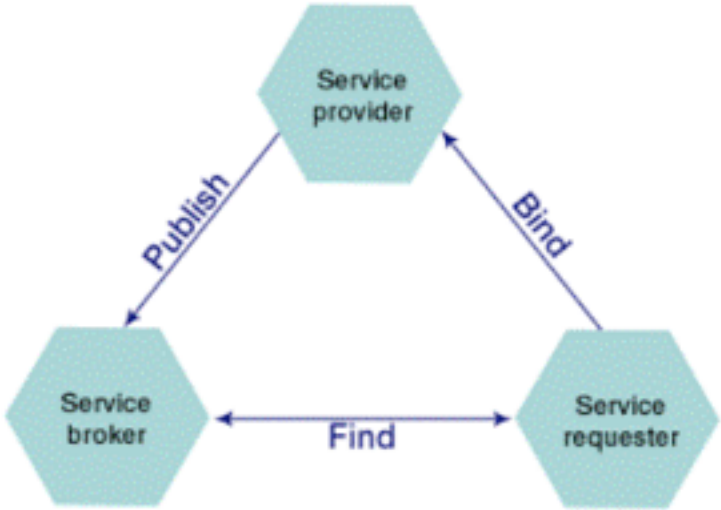
OGC Architecture



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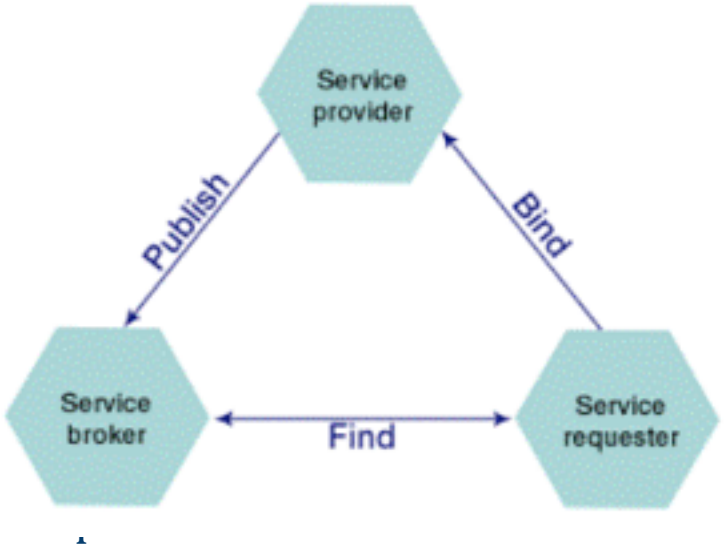
OGC Architecture

- OGC standards can be integrated into a web services architecture / platform so that:
  - Resource providers can advertise their resources **(publish)**
  - End users can discover resources that they at run-time **(find)**
  - End users and their applications can access and exercise resources at run-time **(bind)**



- This requires:
  - A forum where resources can advertise the and users can find the resources they need.
  - Self describing resources so applications can **bind at run-time** to the resources they find.

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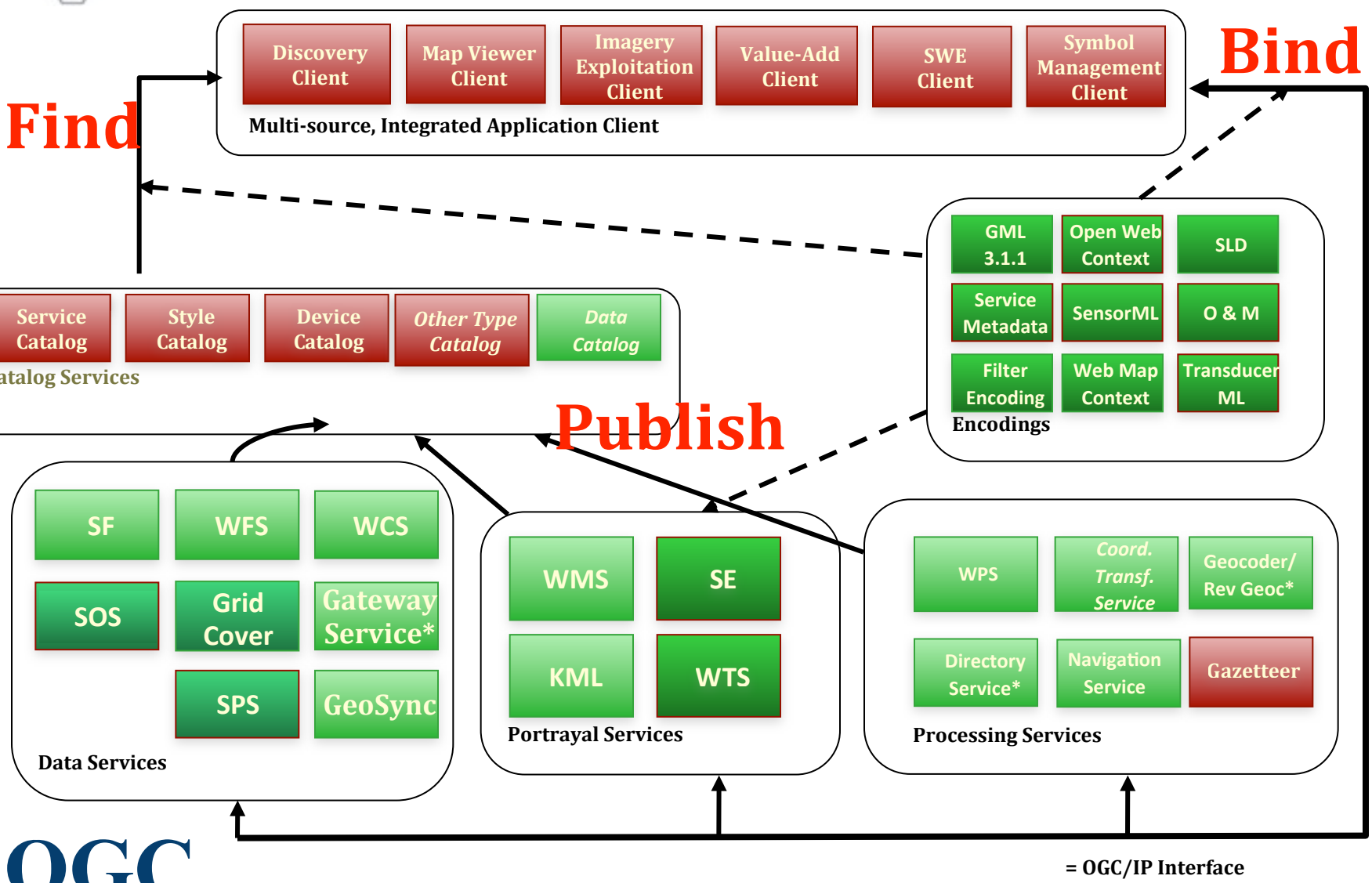
A Web Services Framework for OGC Standards



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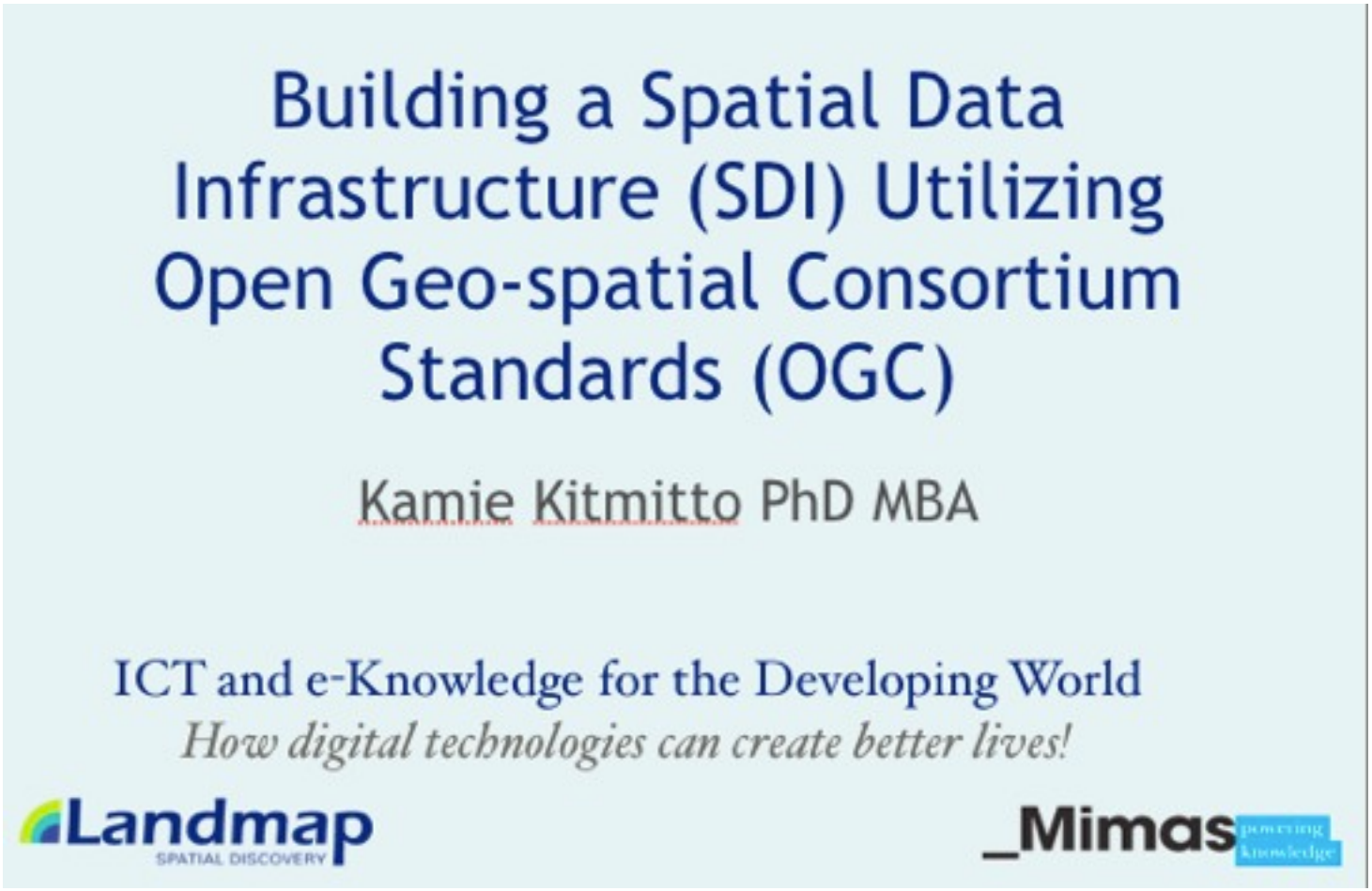
Open Geospatial Consortium

Spatial Data Infrastructure (SDI)

Highlights about SDIs from Kitmitto

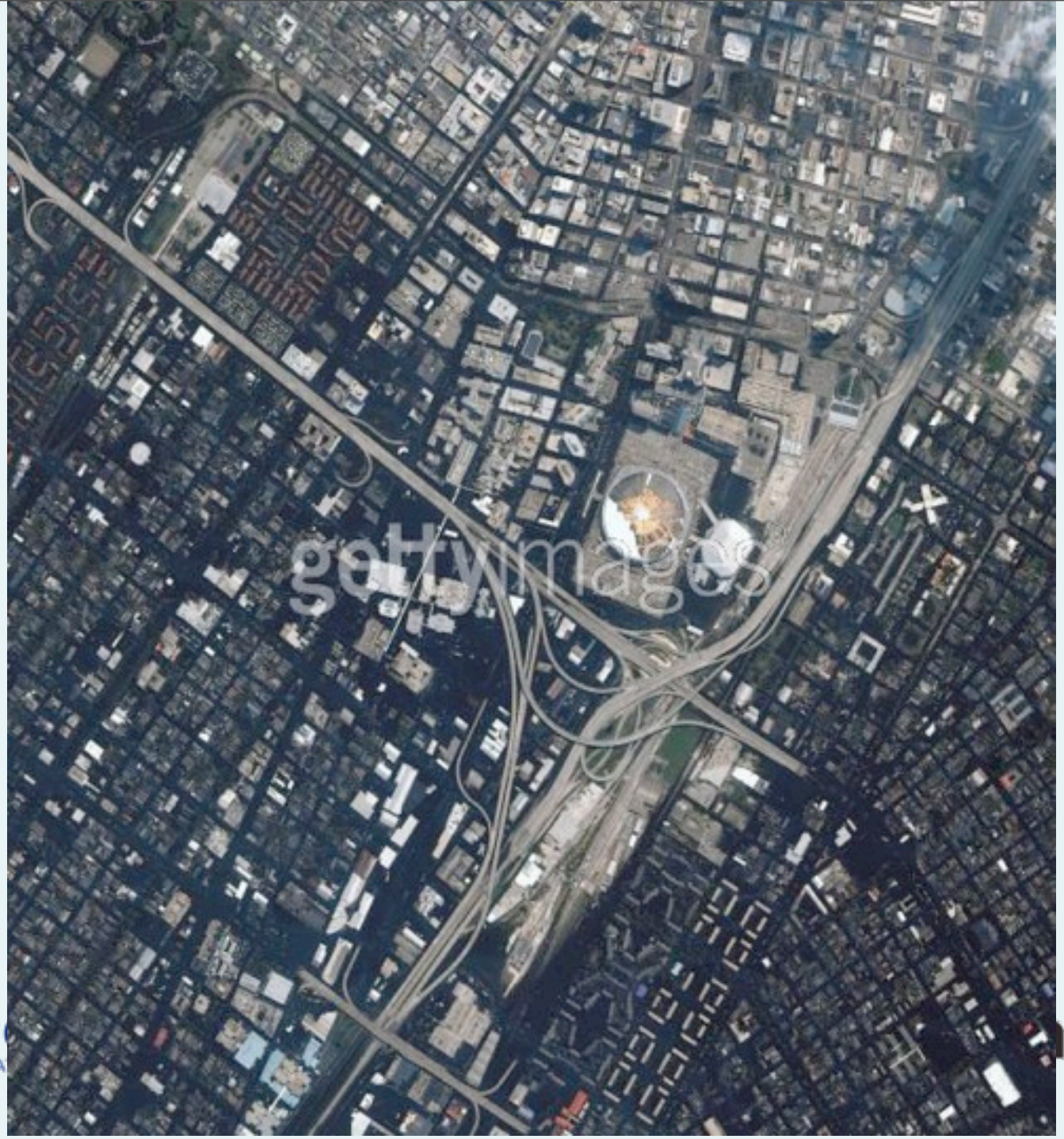


What's so Special about Geographic Data?

What is common for all the following places?

Landmap
SPATIAL DISCOVERY

US Gulf Coast © Getty Image

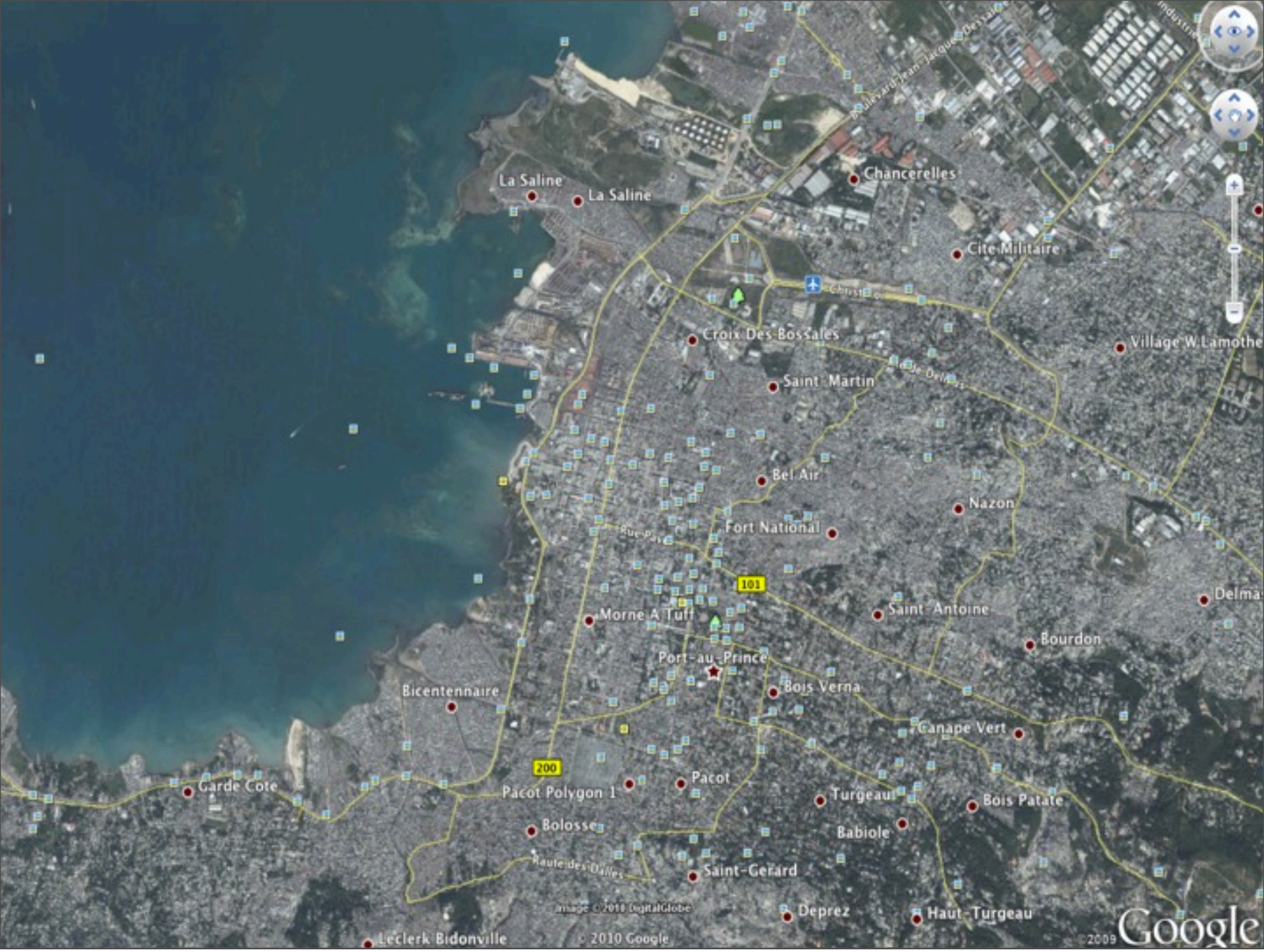


powering knowledge

Landmap SPATIAL DISCOVERY

Haiti Observes Three Days Of Mourning One Month After Earthquake Struck © Getty Images

_Mimas powering knowledge



Tuesday, May 31, 2011

?

After being struck by disaster They all needed mapping to be done or redone

An SDI is not Just about creating maps, mapping, or creating Geographic Information Systems (GIS)!

Landmap SPATIAL DISCOVERY

_Mimas powering knowledge

Establishing an SDI underpin all duties of government

Landmap
SPATIAL DISCOVERY

_Mimas powering knowledge

Establishing an SDI underpin all duties of government

Establishing an SDI underpin all duties of government

Establishing an SDI underpin all duties of government

Why SDI?

- Essential to the economy as other Infrastructures, Water, Roads and Phones.
- Infrastructure features
  - Collect/Create Once - Use Many - Maintain where appropriate
  - Allow easy Data and Information and Discovery
  - Cost recovery should not restrict extensive use
- Positions you for interoperability if used with OGC Standards

Landmap SPATIAL DISCOVERY

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National Mapping Agencies basic mapping duties?

- Geodetic Framework
- Topographic mapping
- Geographic Names
- Addresses
- Streets and their names
- Land and property rights
- Statistical Boundaries
- Administrative Boundaries

Landmap SPATIAL DISCOVERY

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SDI not just about data

- Building data for multiple uses
- Metadata: Describing geospatial data
- Cataloguing: Making data discoverable
- Visualisation: Online Mapping
- Easy Geospatial Data Access
- Legal Issues and Economic Policy
- Education, training, and capacity building

Landmap SPATIAL DISCOVERY

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Duties of Government

- Security of its people
  - Physical
  - Environmental (Environmental Sustainability)
- Maintain information for good governance
  - e.g. property rights, taxation duties, and census
  - (Gender Equality, Universal Education, Child/ Maternal Health, Combat HIV/AIDS)
- Regulate and stimulate efficient economic activity (Environmental Sustainability, End Poverty, Global Partnership, Universal Education)

Landmap SPATIAL DISCOVERY

Mimas powering knowledge

Return on Investment in SDI

for Developing Countries

- Establishes the parameter by which government can take stock of investment and returns
- Allow for rapid realization and identification of assets
- Establishes a standard way for reporting and measuring performance
- Enhances disaster response (Saving lives and property)
- Lays the foundation for planning sustainable development
- Eliminate duplication of effort

Landmap SPATIAL DISCOVERY

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Return on Investment in OGC

- Allows Interoperability
- Data and services Mash ups
- On Line Mapping
- Serving data, through WMS, WFS and WCS directly to Image processing or GIS for Decision Making Support
- Positions services for WPS possibilities and Grid applications
  - sophisticated modeling
  - for better decision making and disaster response

Landmap SPATIAL DISCOVERY

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Infraestructura de Datos Espaciales IDE (SDI)

Una **Infraestructura de Datos Espaciales (IDE)** integra datos, metadatos, servicios e información de tipo geográfico para promover su uso.

Una IDE es el conjunto "tecnologías, políticas, estándares y recursos humanos para adquirir, procesar, almacenar, distribuir y mejorar la utilización de la información geográfica". Al igual como las carreteras y autopistas facilitan el transporte vehicular, las IDE facilitan el transporte de información geoespacial. Las IDE promueven el desarrollo social, económico y ambiental del territorio.

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What others are doing ...

REGIONE AUTONOMA DELLA SARDEGNA
REGION OF SARDINIA (ITALY)
LOCAL AUTHORITY FOR MUNICIPALITIES, FINANCES AND URBAN PLANNING
DEPT. FOR THE REGIONAL SPATIAL DATA INFRASTRUCTURE

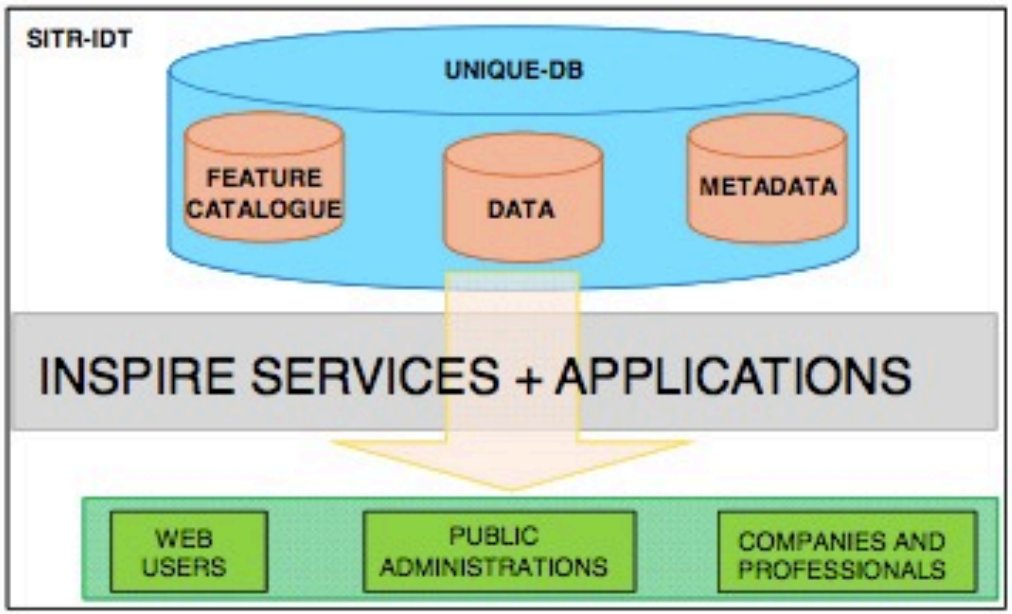
Implementation of INSPIRE Principles: Sardinia Region SDI State of the Art and Further Developments

Krakow, 24th June 2010

What others are doing ...

REGIONE AUTONOMA DELLA SARDEGNA

SITR-IDT: the regional Spatial Data Infrastructure of Sardinia



- To ensure the **efficiency** and to reach the **interoperability** it was created according to **INSPIRE** Directive, I.R. and technical guidances.
- **Central, services oriented** architecture

What others are doing ...

REGIONE AUTONOMA DELLA SARDEGNA

Compliance with INSPIRE

- **Spatial data services:**
  - Discovery service present, not compliant
  - View service as navigators and OGC-WMS, compliant
  - Download service as direct download and OGC-WFS, compliant
  - Transformation service only for coordinates, not compliant

Partial compliance for network services

IDEs en wikipedia

- Infraestructura de Datos Espaciales de Colombia. ICDE
- Infraestructura de Datos Espaciales de Argentina. IDERA
- Infraestructura de Datos Espaciales de Chile. SNIT
- Infraestructura Colombiana de Datos Espaciales. ICDE
- Infraestructura de Datos Espaciales de España. IDEE
- Infraestructura de Datos Espaciales del Perú. IDEP
- Blog de la Infraestructuras de Chile SNIT BlogSNIT
- Blog de la Infraestructuras de Datos Espaciales de España(IDEE) Blog-IDEE
- Infraestructura de Datos Espaciales de Andalucía IDEAndalucia
- Infraestructura de Datos Espaciales de Canarias IDECanarias
- Infraestructura de Datos Espaciales de Castilla-La Mancha IDECLM
- Infraestructura de Datos Espaciales de Catalunya. IDEC
- Infraestructura de Datos Espaciales de Navarra IDENA
- Infraestructura de Datos Espaciales de les Illes Balears IDEIB
- Infraestructura de Datos Espaciales de Santiago de Cali IDESC

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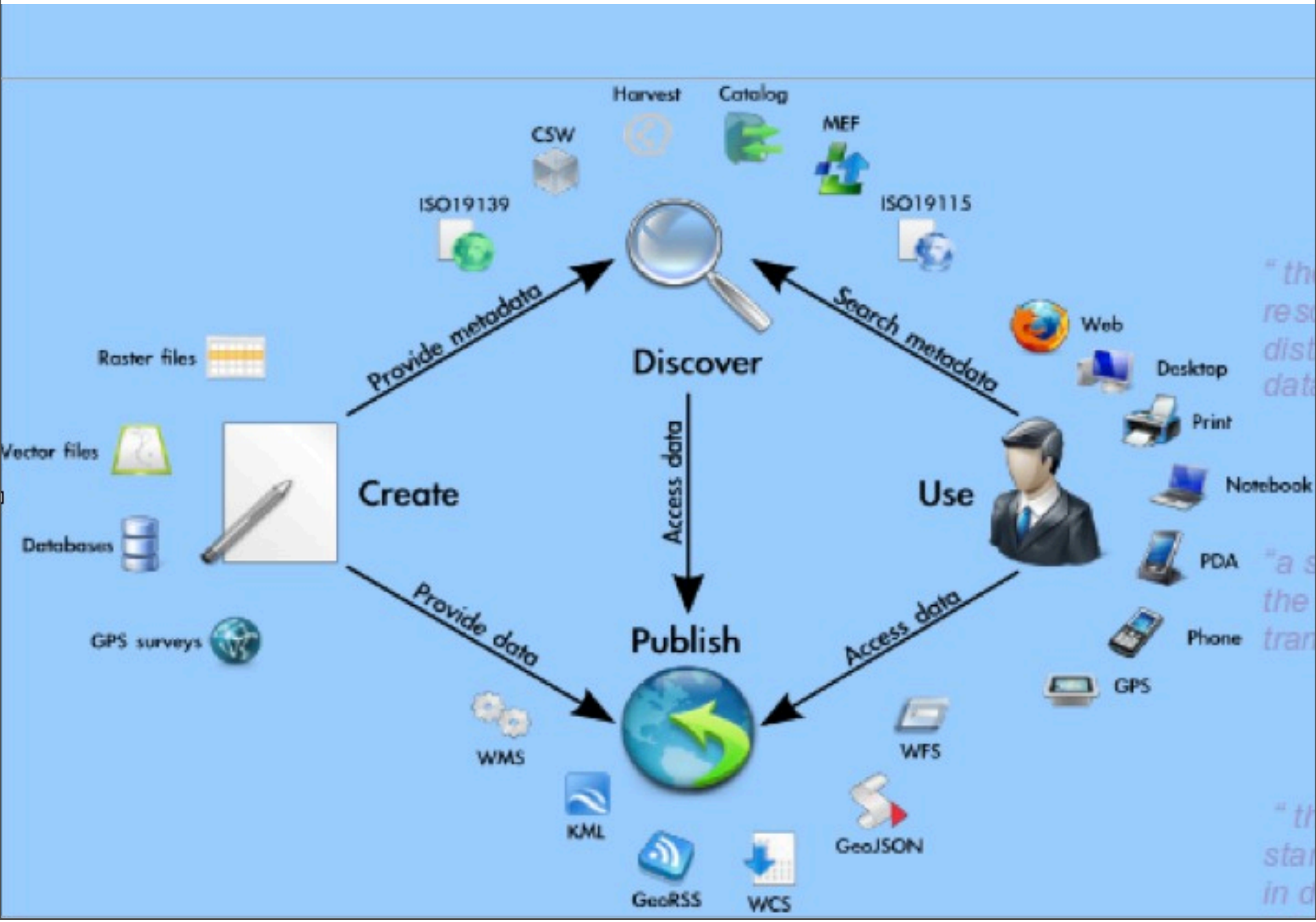
A Framework for Understanding S+DIs

SDI Overview



An SDI Taxonomy

level	type	capability	examples
1	file transfer	*read*	file sharing, FTP, Web download
2	file transfer with search	*read/search*	portals, such as GEOSS GEO Portal, Geospatial One-Stop
3	data infrastructure	*read/write/search*	Google MyMaps (plus Maps Data API)
4	spatial data infrastructure	*distributed read/write/ search/spatial search*	GeoConnections Canada(?)
5	spatial compute cloud	*read/write/search/ spatial search/spatial processing*	?

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OGC Service Match with SDI Taxonomy

level	type	capability	examples
1	file transfer	*read*	WFS, WCS
2	file transfer with search	*read/search*	add CSW
3	data infrastructure	*read/write/search*	add WFS-T (no WCS-T), GeoRM
4	spatial data infrastructure	*distributed read/write/ search/spatial search*	add Cascading WFS, **Geo-Synchronization**
5	spatial compute cloud	*read/write/search/ spatial search/spatial processing*	add **distributed WPS**

WCS: Web Coverage Service
WFS: Web Feature Service
WFS-T: Web Feature Service – Transactional
CSW: Catalog Services for the Web
WPS: Web Processing Service
GeoRM: Geospatial Rights Management

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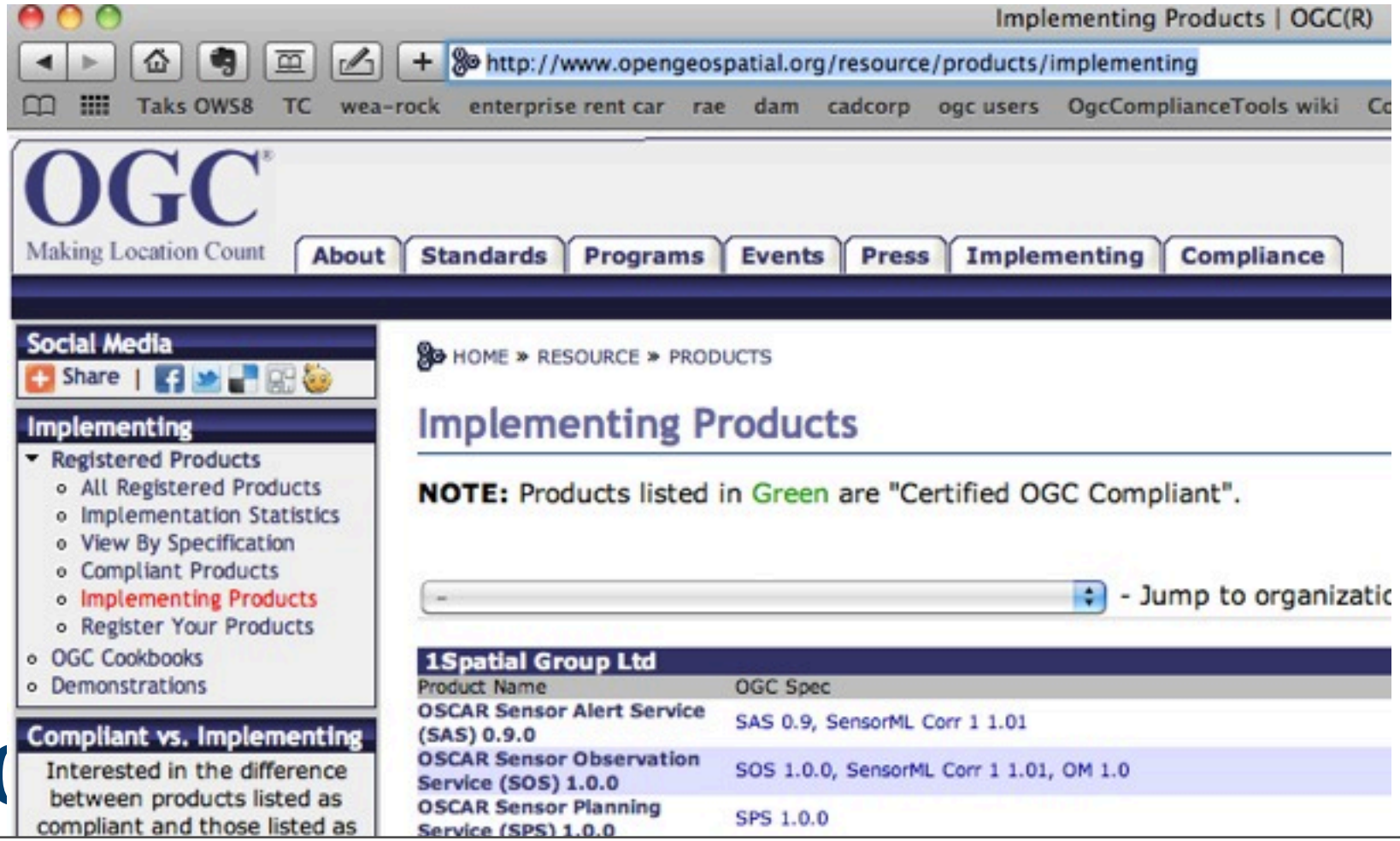
Herramientas

Implementaciones

- http://www.opengeospatial.org/resource/products/implementing



OSGEO

- La fundación para el Código Abierto Geoespacial
- http://www.osgeo.org/home

Idioma

- English
- Български
- 简体中文
- Deutsch
- Français
- Indonesian
- Italiano
- 日本語
- 한국어
- Nederlands
- Polski
- Portuguese (Brazilian)
- Русский
- Español
- Türkçe

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OSGeo Projects

Web Mapping

- deegree
- geomajas
- GeoServer ◆
- Mapbender
- MapBuilder
- MapFish ◆
- MapGuide Open Source
- MapServer
- OpenLayers

Desktop Applications

- GRASS GIS
- Quantum GIS
- gvSIG ◆

Geospatial Libraries

- FDO
- GDAL/OGR
- GEOS ◆
- GeoTools
- MetaCRS ◆
- OSSIM
- PostGIS ◆

Metadata Catalog

- GeoNetwork

Other Projects

- Public Geospatial Data
- Education and Curriculum

◆ Project in incubation

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Lista OSGeo en Español

Hola,

Por lo que parece, con esa petición obtendríamos la misma tesela pero con la parcela resaltada. A nivel visual podría valernos, aunque serían necesarias 2 peticiones:

- La primera para obtener la referencia catastral a partir de la posición en la que el usuario ha pinchado (ya lo hacemos).
- La segunda, para obtener la tesela en la que esa referencia catastral aparece resaltada.

Es posible que necesitemos más interacción con el objeto "parcela", y la posibilidad de seleccionar nuestros propios estilos a través de un SLD nuestro (aun no hemos probado si el WMS del catastro permite esta opción), pero es un buen principio. ¡Muchas gracias!

http://wiki.osgeo.org/wiki/Cap%C3%ADtulo_Local_de_la_comunidad_hispano-hablante

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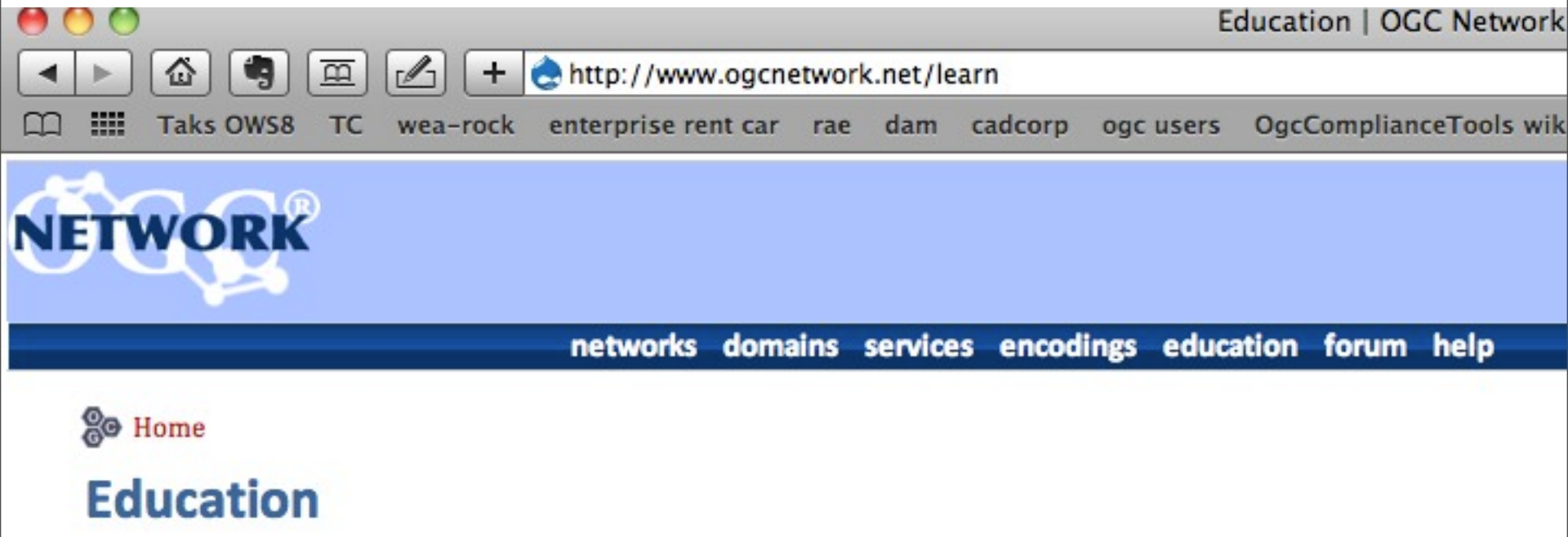
Foro Iberico y Latino-Americano del Open Geospatial Consortium.

- http://external.opengis.org/twiki_public/ILAFpublic
- https://lists.opengeospatial.org/mailman/listinfo/ila.forum

OGC Network



http://www.ogcnetwork.net/tutorials

networks domains services encodings education forum help Search this site:

Home » Education

Tutorials

-- how-tos on using and developing software that implements OGC standards --

- Tutorials in the Wild
- Accessing Web Feature Services with uDig
- Getting Started with WMS Image and Map Sources
- Make a Really Basic Catalog Service for the Web (CSW)
- Microsoft SQL Server - OGC Methods on Geography Instances
- OGC Cookbooks
- Using a Web Feature Service

GeoServer

About | Blog | Downlo

Dashboard GeoServer Welcome

Welcome

May 12, 2011: GeoServer 2.1.0 released! See what's new...

GeoServer is an open source software server written in Java that allows users to share and edit geospatial data. Designed for interoperability, it publishes data from any major spatial data source using open standards.

Being a community-driven project, GeoServer is developed, tested, and supported by a diverse group of individuals and organizations from around the world.

GeoServer is the reference implementation of the Open Geospatial Consortium (OGC) Web Feature Service (WFS) and Web Coverage Service (WCS) standards, as well as a high performance certified compliant Web Map Service (WMS). GeoServer forms a core component of the Geospatial Web

Log In

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Download Now
FREE!

new...

Documentation
- » Users Manual
- » Developers Manual

Community
- » Blog
- » Mailing Lists
- » IRC Meetings
- » Issue Tracker
- » Roadmap
- » Improvement Proposals

Group Session on Modeling one's own SDI

Preguntas

- En que estado de desarrollo esta su IDE ?
- En que nivel cree usted que su IDE este en 5 años ?
- Quienes son los miembros más importantes?
- Considera el público en general como otro posible miembro?
- Cuales son las políticas que deben esablecerse para desarrollar su IDE?
- Que tecnologías hacen falta o deben madurar para poder desarrollar su IDE?

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Comentarios Finales

Applying OGC Standards on your Systems

- Promote open standards in your organization
- Map the OGC standards to your system
- Select compliant implementations (as mentioned before
- Use web resources, tutorials etc..
- Join lists, forums ..
- Become an OGC member -:)

OGC

Proved Process !

Participate .. shape the future !

Participate .. shape the future !

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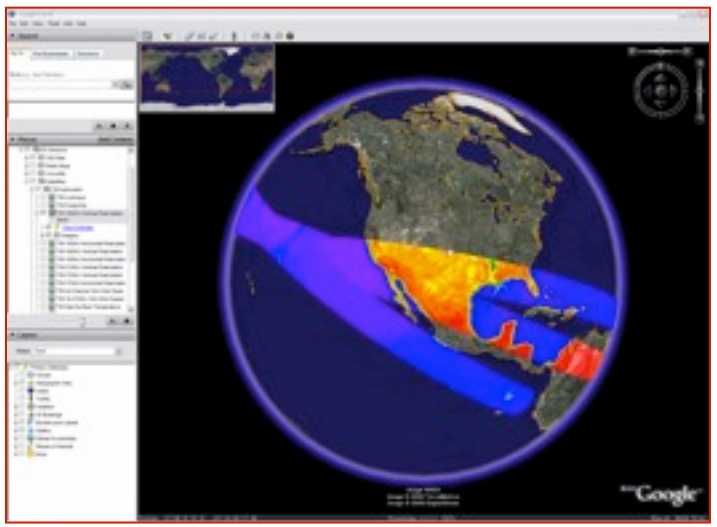
Interoperability is about Organizations

"Interoperability seems to be about the integration of information. What it's really about is the coordination of organizational behavior."

David Schell
Chairman OGC



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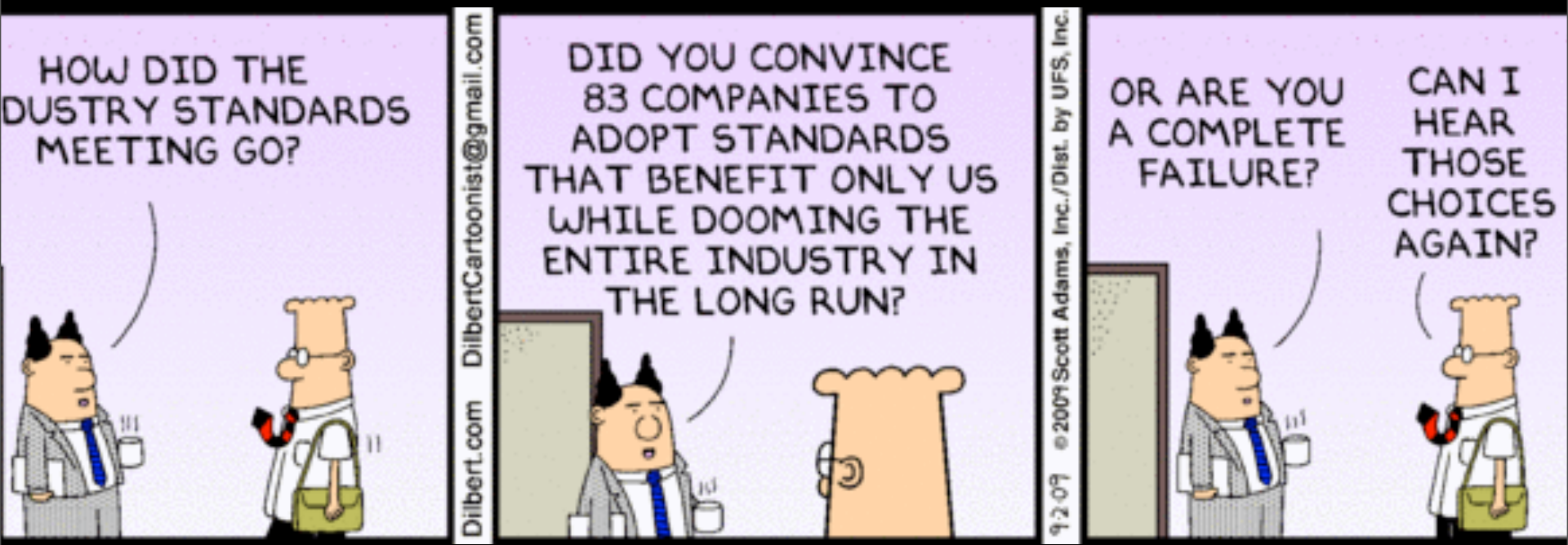
HOW DID THE DUSTRY STANDARDS MEETING GO?
DID YOU CONVINCE 83 COMPANIES TO ADOPT STANDARDS THAT BENEFIT ONLY US WHILE DOOMING THE ENTIRE INDUSTRY IN THE LONG RUN?
OR ARE YOU A COMPLETE FAILURE?
CAN I HEAR THOSE CHOICES AGAIN?
Dilbert.com DilbertCartoonist@gmail.com
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September 2011: OGC TC/PC Meetings

Start:
Mon, 2011-09-19 (All day)
End:
Fri, 2011-09-23 (All day)
Location:
Center Green
UCAR/NCAR
Boulder, CO, USA

Webinar gratuito de OGC "Estándares de Localización - ¿Cómo Ayudan al Gobierno?"

- Jueves, **2 de Junio** de 2011 a las 18:00:00 UTC (14:00 CEST)
- Para profesionales de los gobiernos locales y sub nacionales (municipio, estado, provincia, etc.)
- Link: http://www.directionsmag.com/webinars/
- Inscríbete: https://www2.gotomeeting.com/register/996819355.

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OGC Associate Membership Levels (US)

	US	Latin America
Commercial and National Government Organization	4,400	2,200
GovFuture Subnational (e.g. state or provincial organization)	500	250
GovFuture Local (e.g. town, city, county…)	200	100
Universities / Research Institutes	1,100	550

Reduction based on world economic indicator data compiled and published by the World Bank

OGC Public References

- Adopted Standards:
  - http://www.opengeospatial.org/standards
- OGC Reference Model:
  - http://www.opengeospatial.org/standards/orm
- OGC Web Services 4 Testbed Video Summary
  - http://www.opengeospatial.org/demo/ows4/
- Compliance Testing and Certification
  - http://www.opengeospatial.org/compliance
- List of Registered Products using OGC Standards:
  - http://www.opengeospatial.org/resource
- OGC Network – member-contributed OGC "encyclopedia"
  - http://www.ogcnetwork.net
- OGC User – case studies of OGC implementations in the global community
  - http://www.opengeospatial.org, click on "Press Room"

Mil Gracias

Luis Bermudez
Director Interoperability Certification
lbermudez@opengeospatial.org

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