GeoNetwork opensource

Spatial data management
Geographic data sharing for everyone

Lab topics

- Getting started with GeoNetwork opensource
- Installation at a glimpse
- Directory structure
- How-to?
  - search in a GeoNetwork node
  - synchronise & harwest nodes
  - customize your catalogue
  - add a service
- Q&A

Getting started with GeoNetwork

- History at a glimpse :
  - 2000/2001 : prototyping by FAO
  - 2002/2003 : version 1 by FAO/WFP
  - 2004/2005 : version 2 by FAO/UNEP/WFP
  - 2006/2007 : version 2.1

Getting started with GeoNetwork

GeoNetwork™ Opensource v2.1
Geographic data sharing for everyone

- Users:
  - UN: FAO/UNEP/WFP/WHO/OCHA/UNHCR
  - Other: CGIAR/ESA/FGDC/JRC/FEWSNET
  - Individual projects: Spain, France, Czech, UK, Australia, South Africa, ...
  -
  - 200+/150+ members on user/dev mailing lists

Getting started with GeoNetwork

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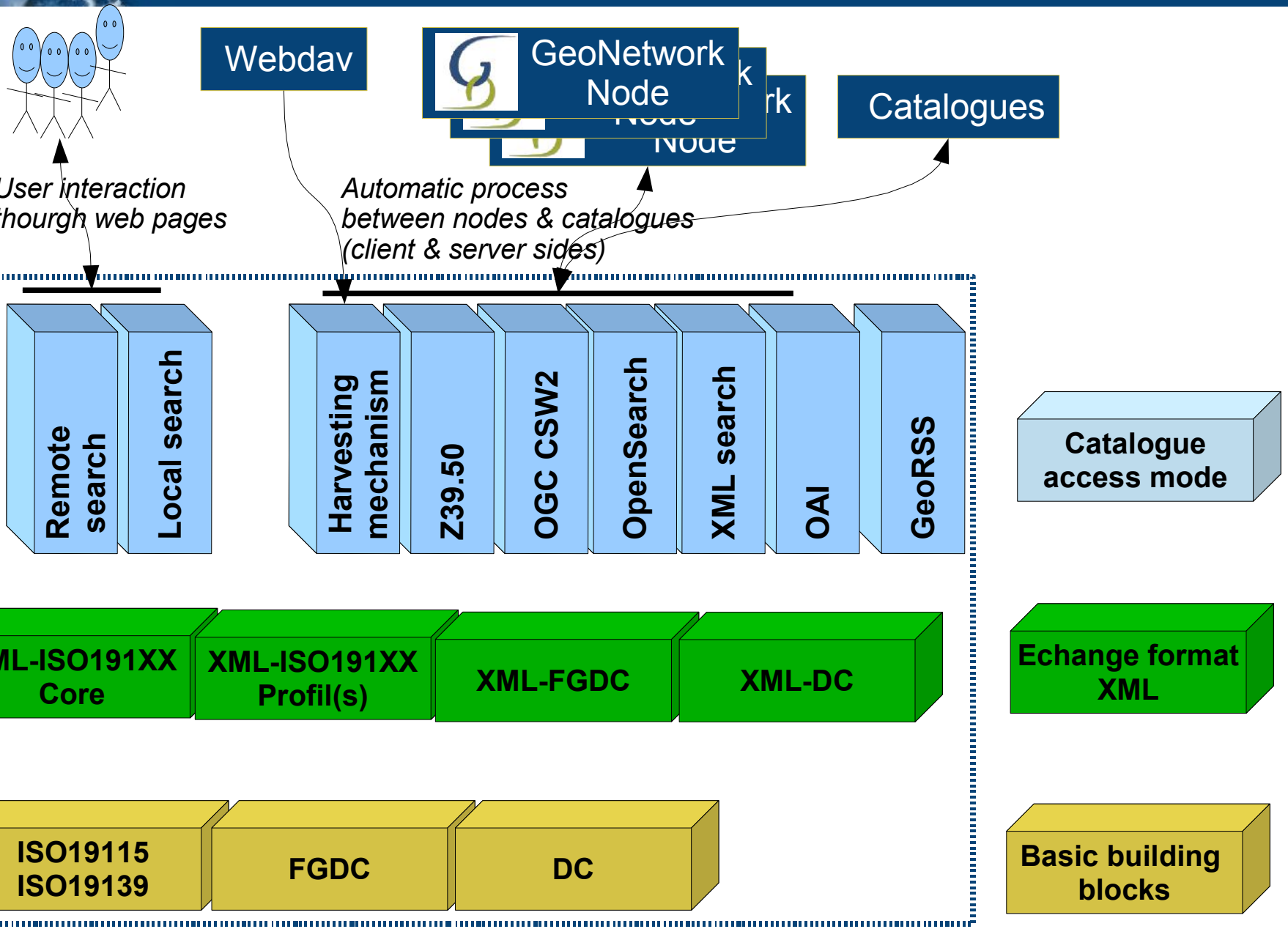
- What is GeoNetwork ?
  - A web based catalogue application
  - Platform independant (Java) / JDBC compliant DB
  - A component in the Spatial Data Infrastructure (SDI)
  - GPL
  - OSGEO incubation process

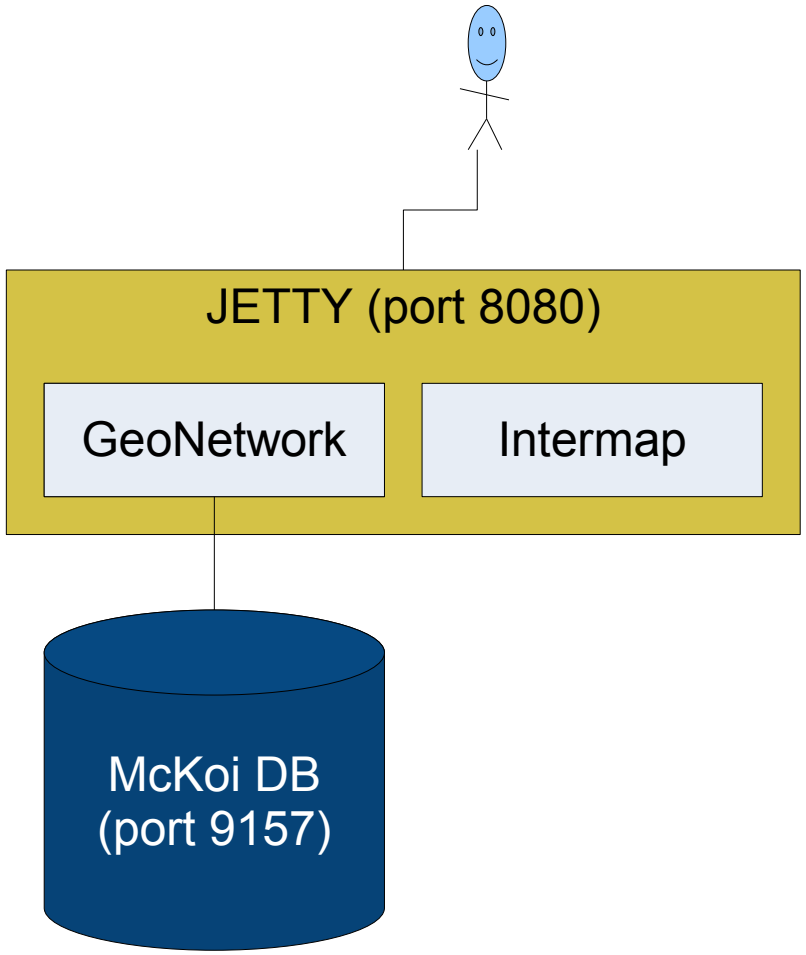
Getting started with GeoNetwork

- Functionnality:
  - Searching of spatial data & services (lucene)
  - Downloading of data
  - Online dynamic viewing through OGC services
  - Metadata editor (template, validation)
  - Users management
  - Synchronisation / catalogue / distributed search

Getting started with GeoNetwork



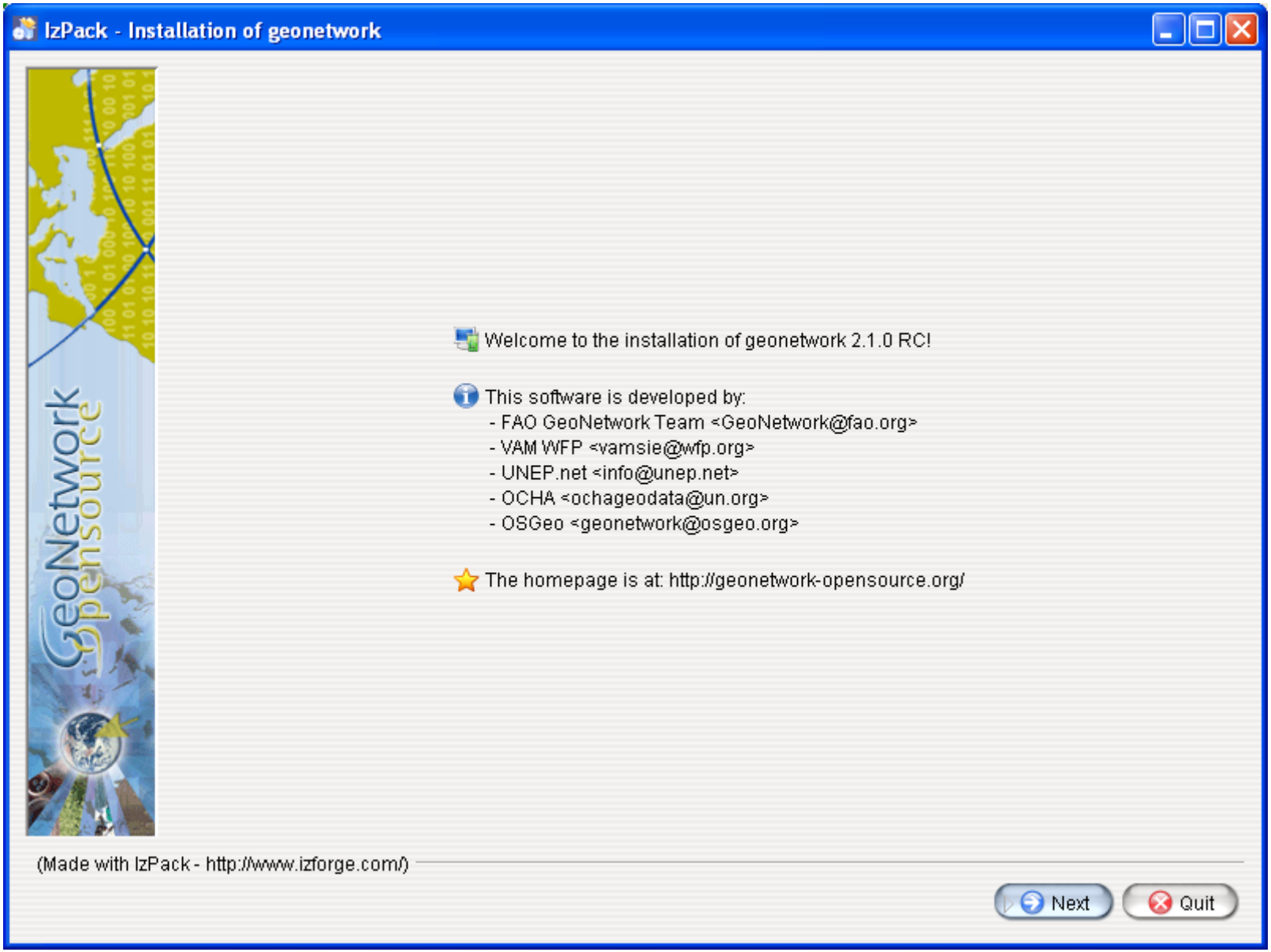
- Architecture & technologies : Labs 09 configuation using version 2.1RC1
- 2 webapps:
  - GeoNetwork
  - Intermap



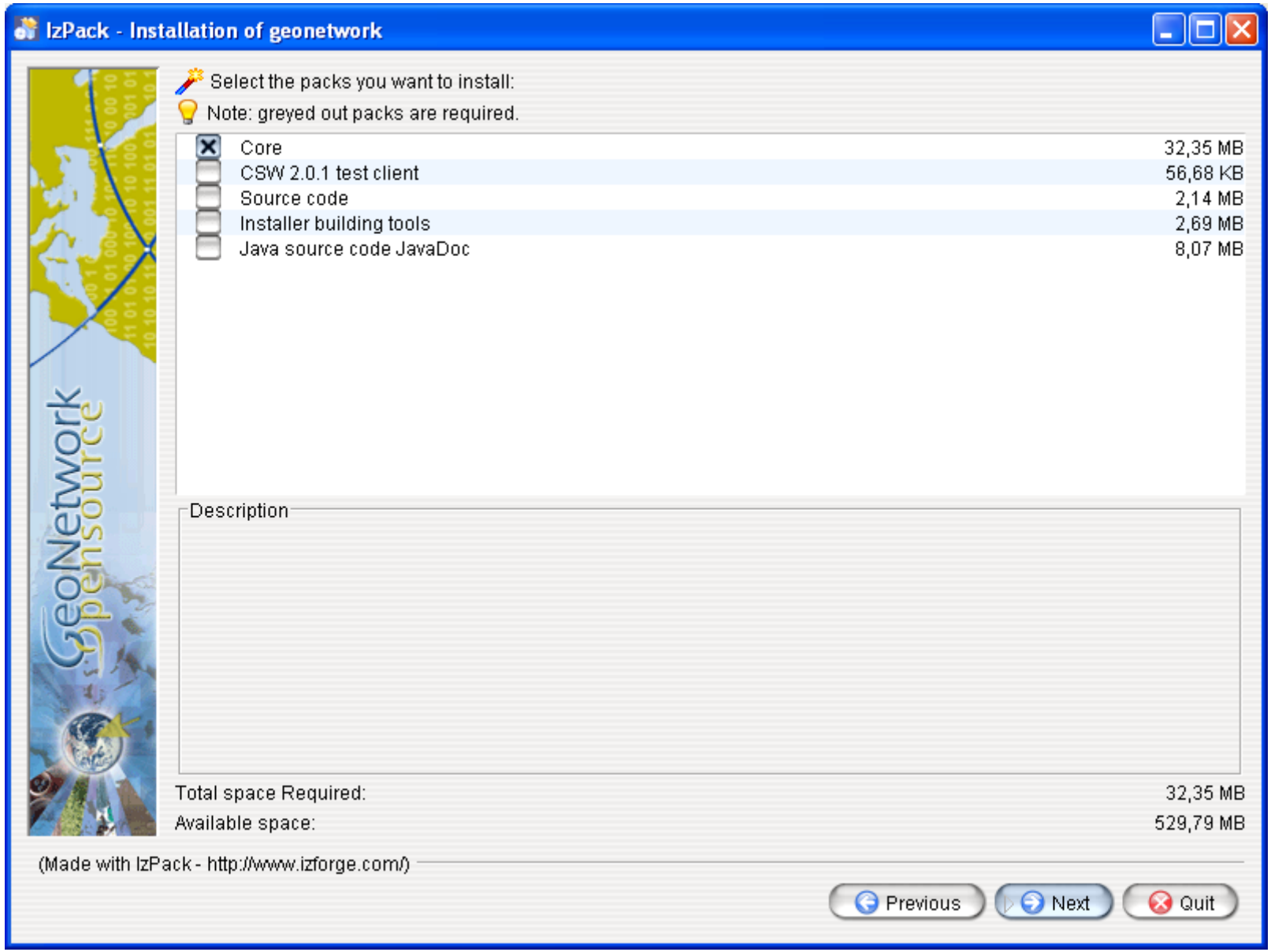
Installation at a glimpse

- Download the archive http://geonetwork-opensource.org/
- Run the installer (needed java 1.5) which will:
  - Install jetty container
  - Install GeoNetwork & Intermap webapp
  - Install default mckoi DB
  - (Optional) install sample data
  - (Optional) use GAST to:
    - migrate/import
    - configure another database

Installation at a glimpse



Installation at a glimpse



Directory structure

- Test installation:
  - Start GeoNetwork
  - By default GeoNetwork is installed : http://localhost:8080/geonetwork

Directory structure

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- geonetwork
  - conversion
  - images
  - loc
    - ar
    - cn
    - en
    - es
    - fr
  - scripts
  - WEB-INF
    - data
    - db
    - lib
    - lucene
  - xml
    - codelist
    - csw
    - mappings
    - schemas
    - search
    - validation
  - xsl
    - config
    - conversion
    - harvesting
    - localization
    - ownership
    - xml

Localized string

GeoNetwork Configuration (config.xml)
Database (default mckoi)
Lucene index

Thesaurus

Metadata Schemas (XSD, i18n, thumbnails upload)

XSL Stylesheets:
- Portal web page (main, rss, metadata, ...)
- Editor
- Administration
- Convert/import/export
- Harvest GeoNetwork/CSW/Webdav/Z39.50

- Objectivs:
  - How-to search in a GeoNetwork node ?
  - How-to synchronise & harvest nodes ?
  - How-to customize your catalogue ? (beginner)
  - How-to add a service ? (advanced)

Ex1: Search in a GeoNetwork node

Search in a GeoNetwork node

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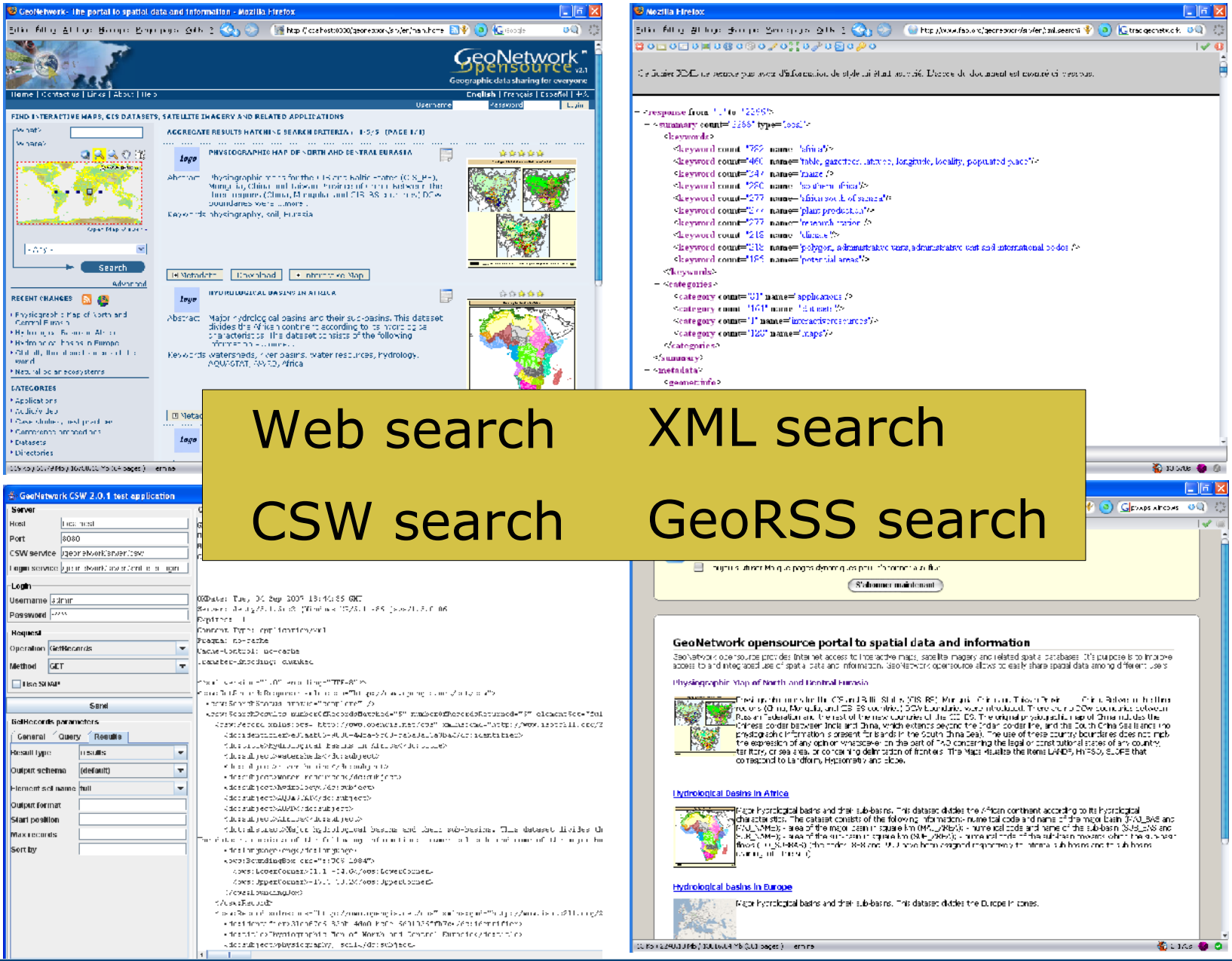
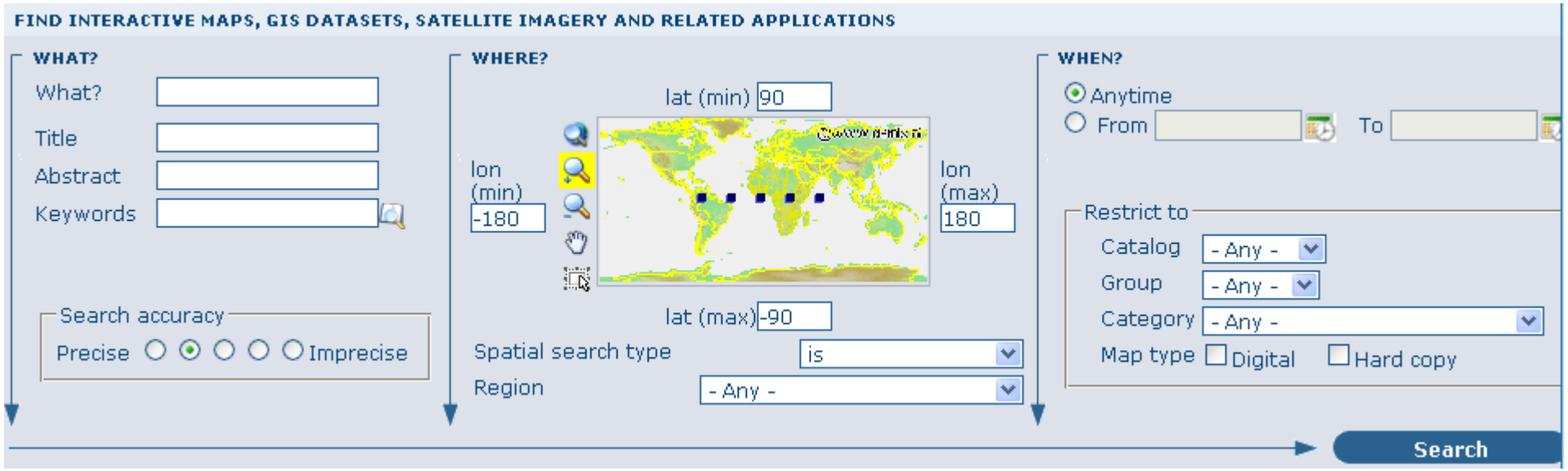


Search in a GeoNetwork node

- Search criteria:
  - Any (full text index)
  - Title, Abstract, Keywords
  - Fuzzy/exact search
  - Simple geographic search (bbox)
  - Group, Category, Site ... and others could be added



Search in a GeoNetwork node

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- Exercise: Objective of this exercise is discovering the search interface & criteria of GeoNetwork

- You need to perform the following steps :

  1)Go to the home page

  2)Try some search

  3)Test the rss view

  4)(Advanced) test the CSW client

GeoNetwork- The portal to spatial data and information - Mozilla Firefox

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http://localhost:8080/geonetwork/srv/en/main.hc

GeoNetwork Opensource v2.1

Geographic data sharing for everyone

Home | Last results | Contact us | Links | About | Help

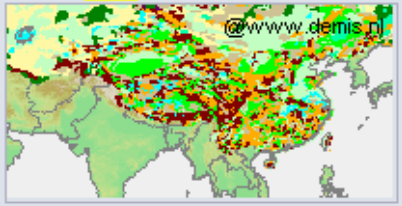
English | Français | Español | 中文

Username Password Login

FIND INTERACTIVE MAPS, GIS DATASETS, SATELLITE IMAGERY AND RELATED APPLICATIONS

What?

Where?



Open Map Viewer

- Any -

Search

Help Advanced search

RECENT CHANGES

- Physiographic Map of North and Central Eurasia
- Hydrological Basins in Africa
- Hydrological basins in Europe
- Globally threatened species of the world
- Natural polar ecosystems

CATEGORIES

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- Audio/Video
- Case studies, best practices
- Conference proceedings
- Datasets

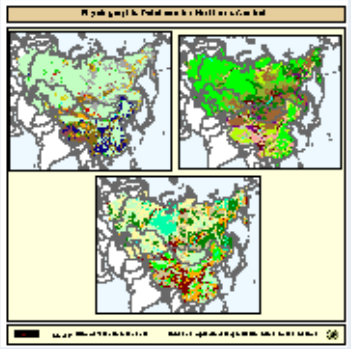
AGGREGATE RESULTS MATCHING SEARCH CRITERIA : 1-5/5 (PAGE 1/1)

Logo

PHYSIOGRAPHIC MAP OF NORTH AND CENTRAL EURASIA

Abstract Physiographic maps for the CIS and Baltic States (CIS_BS), Mongolia, China and Taiwan Province of China. Between the three regions (China, Mongolia, and CIS_BS countries) DCW boundaries were ...more...

Keywords physiography, soil, Eurasia



⊞ Metadata Download ⊞ Interactive Map

Logo

HYDROLOGICAL BASINS IN AFRICA

Abstract Major hydrological basins and their sub-basins. This dataset divides the African continent according to its hydrological characteristics. The dataset consists of the following information:- ...more...

Keywords watersheds, river basins, water resources, hydrology, AQUASTAT, AWRD, Africa

⊞ Metadata Download Interactive Map

Logo

NATURAL POLAR ECOSYSTEMS

No preview

104 Kb / 861 Kb / 11576.76 Mb (20 pages) Terminé 1.842s

Search in a GeoNetwork node

- Example of OSS searching into GeoNetwork nodes:

Browser using Opensearch or RSS

Cartoweb using XML search

GeoNetwork Node

OpenLayers using GeoRss search

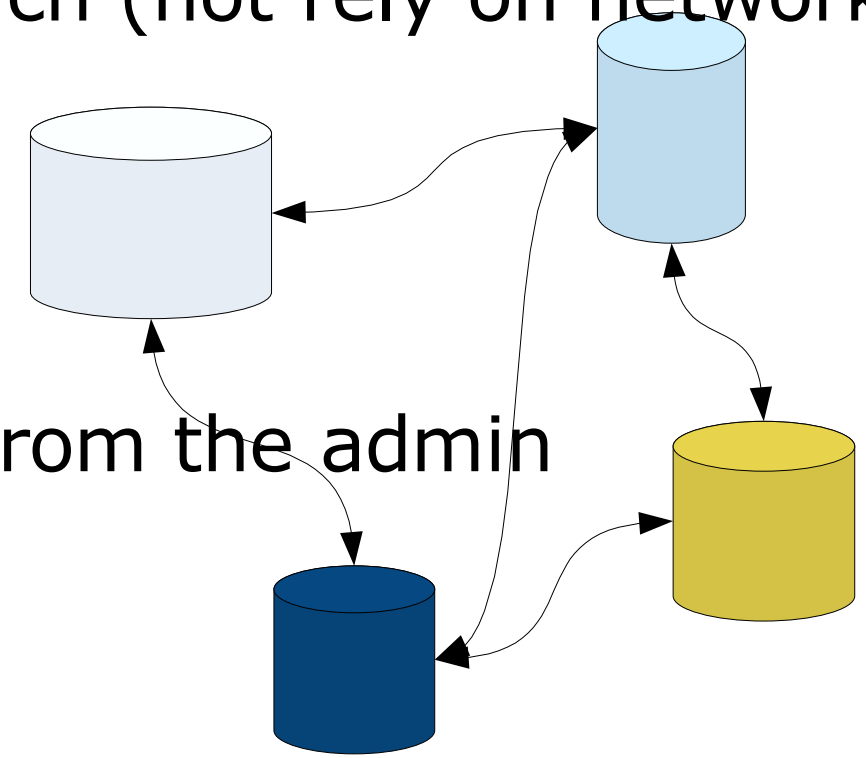
GeoNetwork using CSW2, XMLSearch, Z39.50

GeoNetwork Node

Ex2: Harvesting & synchronisation between nodes

Harvesting & synchronisation

- Harvesting is a method to retrieve collection from different nodes based on criteria.
- Advantages :
  - faster than remote search (not rely on network availability)
  - Synchronisation
  - Multi-protocol
- Harvesting configuration from the admin interface



Harvesting & synchronisation

GeoNetwork Opensource v2.1
Geographic data sharing for everyone

- Exercise : Objective of this exercise is illustrating harvesting methods available in GeoNetwork

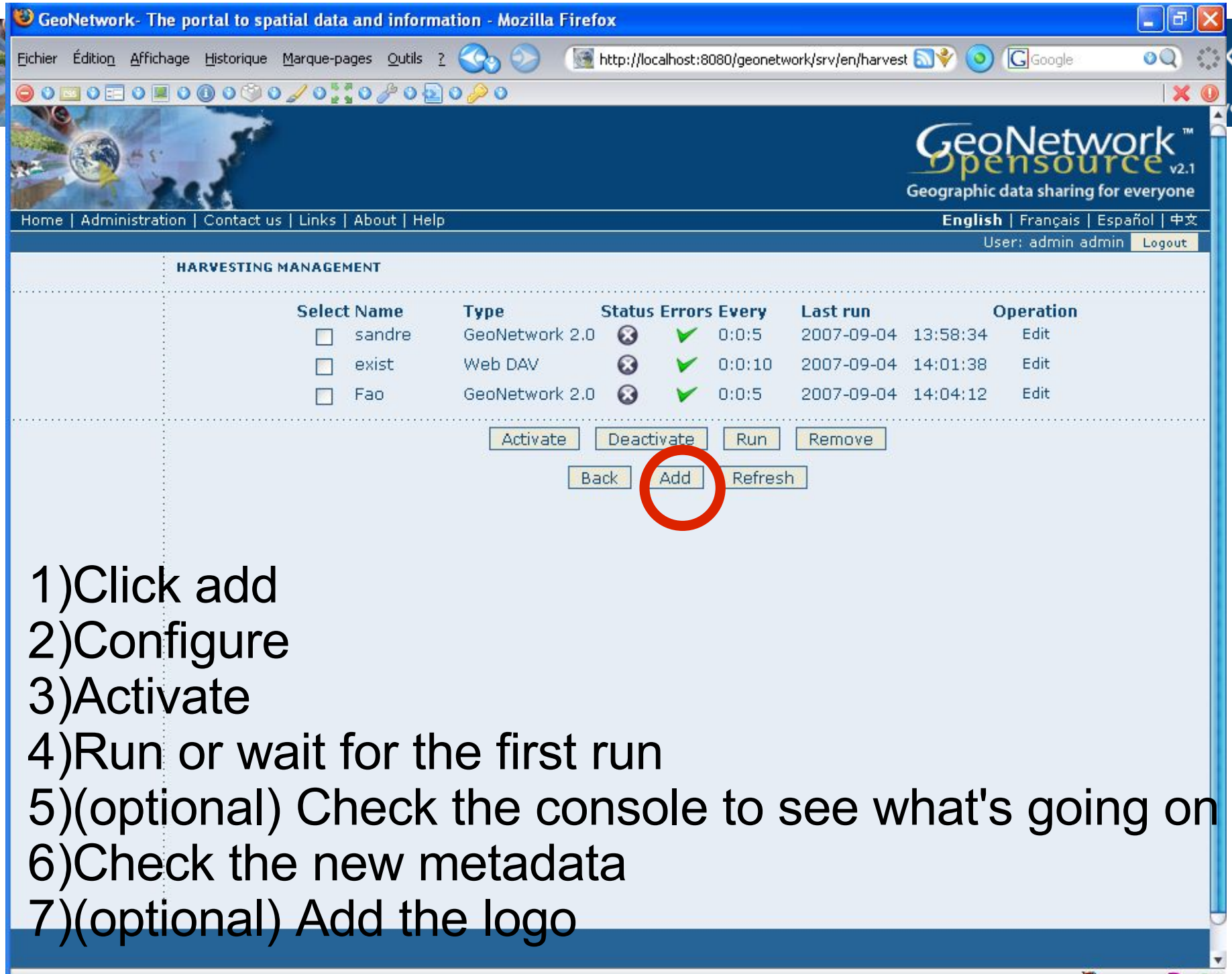
- You need to perform the following steps :

  1)Login : admin/admin

  2)Move to « administration » section

  3)Click on « Harvesting management »

  4)Configure harvesting process (using XML harvesting and webdav)



1)Click add
2)Configure
3)Activate
4)Run or wait for the first run
5)(optional) Check the console to see what's going on
6)Check the new metadata
7)(optional) Add the logo

Harvesting & synchronisation

- Sample configurations:
  - GeoNetwork node synchronisation:
    - http://www.fao.org/geonetwork
    - http://sandre.eaufrance.fr/geonetwork
    - ... or from other existing nodes : http://geonetwork-opensource.org/geonetwork-nodes
  - Webdav harvesting:
    - Get metadata from xml document available on a directory on the web
    - http://sandre.eaufrance.fr/exist/webdav/db/tmp/Me

GeoNetwork- The portal to spatial data and information - Mozilla Firefox

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http://localhost:8080/geonetwork/srv/en/harvest

GeoNetwork- The portal to spatial ... /db/tmp/Metadata

GeoNetwork Opensource v2.1

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User: admin admin Logout

HARVESTING MANAGEMENT

SITE

Name: Fao

Host: www.fao.org

Port: 80

Servlet: geonetwork

Use account ☐

SEARCH CRITERIA

Site ID [ ] Add

Site ID FAO

Free text: africa

Title:

Abstract:

Keywords:

Digital ☐

Hardcopy ☐

OPTIONS

Every 0 : 0 : 5 (days : hours : minutes)

One run only ☑

Please notice that harvesting old GeoNetwork nodes is unsafe. The old nodes do not have unique site ids and this could cause unpredictable results (like removing nodes from other harvestings).

Back Save

68 Kb / 3.83 Mb / 11579.74 Mb (50 pages) Terminé 1.873s 1 Error

GeoNetwork- The portal to spatial data and information - Mozilla Firefox

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http://localhost:8080/geonetwork/srv/en/harvest

exist webdav

GeoNetwork- The portal to spatial ... /db/tmp/Metadata

HARVESTING MANAGEMENT

SITE

Name: exist

URL: http://sandre.eaufrance.fr/exis

Icon: default.gif REMOTE

Use account ☑

Username: guest

Password: *****

OPTIONS

Every 0 : 0 : 10 (days : hours : minutes)

One run only ☑

Validate ☐

Recurse ☐

PRIVILEGES

Groups: Intranet, All, Sample group — Add

Group View Interactive map Featured

CATEGORIES

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Interactive resources
Applications
Case studies, best practices
Conference proceedings
Photo
Audio/Video

59 Kb / 4 Mb / 11579.92 Mb (52 pages) Terminé 3.450s

Harvesting & synchronisation

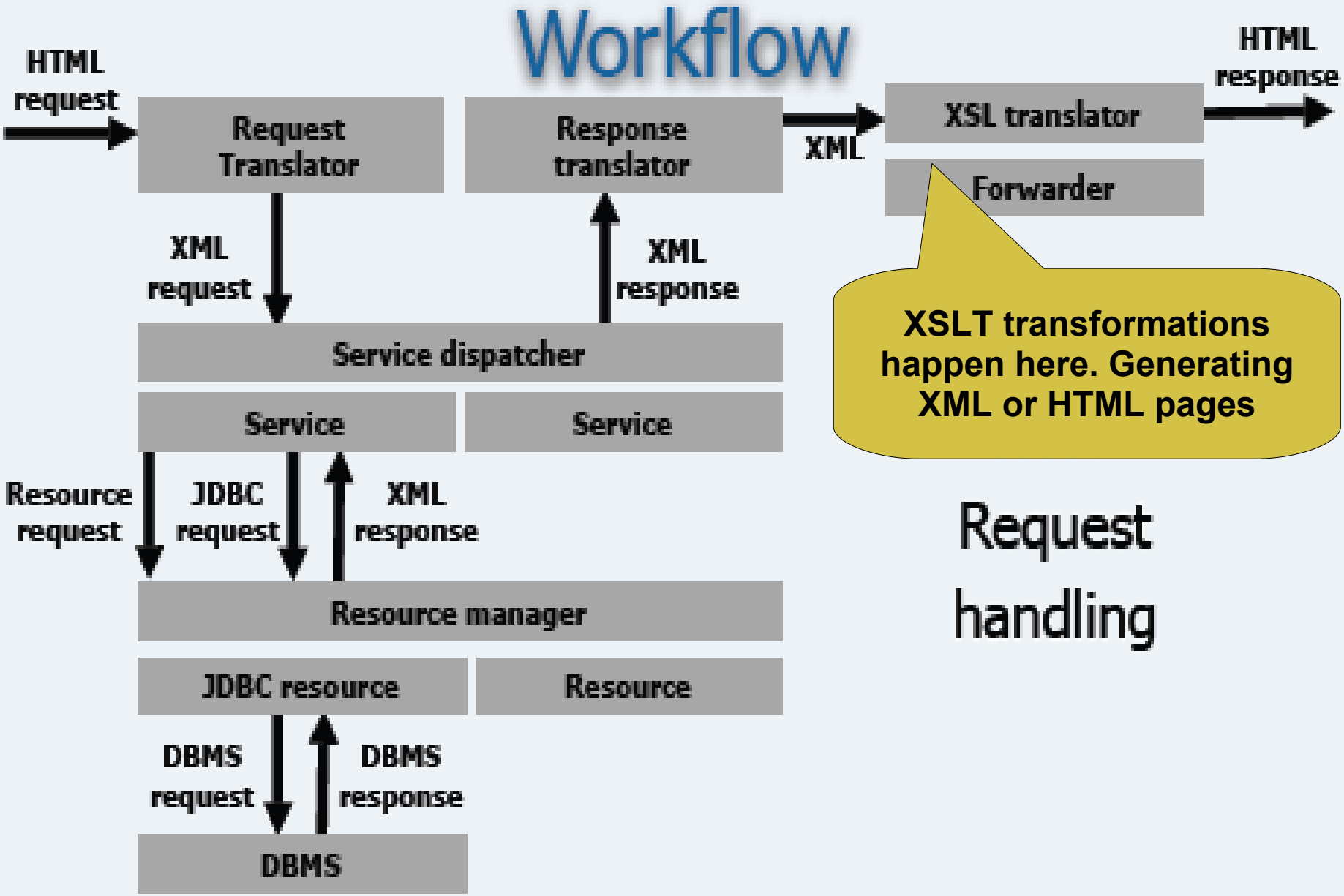
- Exchange format during harvesting process is based on XML.
- Between GeoNetwork nodes, a MEF format (Metadata Exchange Format) is used. It's composed of:
  - XML metadata
  - XML metadata privileges
  - Thumbnails (optional)
  - Data (optional)

Ex3: Customization

Customization

- Basic styling (colors, fonts) is made using CSS: Open the *geonetwork.css* file located in the **web** folder in your text or CSS editor
- Change images located in the images folder.
- Advanced styling is made using XSLT

Customization



Customization

- Exercise : Objective of this exercise is illustrating updating site design
-

- You need to perform the following steps :
  1)Edit the CSS
  2)Edit the banner.xsl

Ex4: Add services
(advanced users with XSL knowledge)

Add services

- Objectivs of this service is adding a service to view metadata having WMS in GoogleEarth

1) Analyse output to produce (ie. kml)
2) Create the service in config.xml
3) Set privileges for the new service
4) Customize the service output
5) Modify the search result page to add a link to open GoogleEarth

Add services

Extract online source info (URL and layer Name) from metadata to produce the following KML file (icon/href element)

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <kml xmlns="http://earth.google.com/kml/2.1">
3    <GroundOverlay>
4      <name>GeoNetwork WMS layers</name>
5      <Icon>
6        <href>
http://dev1.dmsolutions.ca/cgi-bin/mswms_gmap?VERSION=1.1.1&amp;REQUEST=GetMa
p&amp;SRS=EPSG:4326&amp;WIDTH=512&amp;HEIGHT=512&amp;LAYERS=popplace,ba
thymetry&amp;STYLES=default,default&amp;TRANSPARENT=TRUE&amp;FORMAT=image
/png&amp;</href>
7        <viewRefreshMode>onStop</viewRefreshMode>
8        <viewBoundScale>0.75</viewBoundScale>
9      </Icon>
0      <LatLonBox>
1        <north>90</north>
2        <south>-90</south>
3        <east>180</east>
4        <west>-180</west>
5      </LatLonBox>
6    </GroundOverlay>
7  </kml>
```

In order to start GoogleEarth when contacting the service mimetype has to be « application/vnd.google-earth.kml+xml »

Add services

- Create the service xml.metadata.get.kml in config.xml
  - In WEB-INF/config.xml add
    - <service name="xml.metadata.get.kml">
      - <class name=".services.metadata.Show" />
      - **<output**
        - **sheet="metadata-kml.xsl"**
        - **contentType="application/vnd.google-earth.kml+xml; charset=UTF-8"/>**
    - </service>

- *Open the file WEB-INF/config.xml*
- *Locate the service called « xml.metadata.get », copy/paste and add the output element*

Add services

- Set privileges for the new service
  - In xml/user-profiles.xml add ...
    - <allow service="xml.metadata.get.kml"/>
  - ... in the profile named « guest » (ie. For everyone)
- Then restart GeoNetwork in order to load the new service (config & privileges)

Add services

- Information needed to generate the kml link:

```
– <gmd:onLine>
  – <gmd:CI_OnlineResource>
    – <gmd:linkage>
        <gmd:URL>http://193.43.36.137/ows/7386_landf</gmd:URL>
      </gmd:linkage>
    – <gmd:protocol>
        <gco:CharacterString>OGC:WMS-1.1.1-http-get-map</gco:CharacterString>
      </gmd:protocol>
    – <gmd:name>
        <gco:CharacterString>landform</gco:CharacterString>
      </gmd:name>
    – <gmd:description>
        <gco:CharacterString>Physiography of North and Central Eurasia Landform</gco:CharacterString>
      </gmd:description>
    </gmd:CI_OnlineResource>
  </gmd:onLine>
– <gmd:onLine>
```

(2) Get URL ...

(1) Select only OnlineResource having protocol = WMS

(3) ... and get layer name.

... to create the url of the service.

Add services

- Information needed to generate the kml link – xPath expression to select the elements:
  - For each: //gmd:CI_OnlineResource[gmd:protocol/gco:CharacterString='OGC:WMS-1.1.1-http-get-map']
  - Then build URL using
    - gmd:linkage/gmd:URL
    - gmd:name/gco:CharacterString

xPath tips:

- // means select all nodes in the metadata XML tree
- Use [] to define a search criteria (eg. Select only if WMS)

Add services

- Customize service output
  - Create the file xsl/metadata-kml.xsl (or get it from the www)

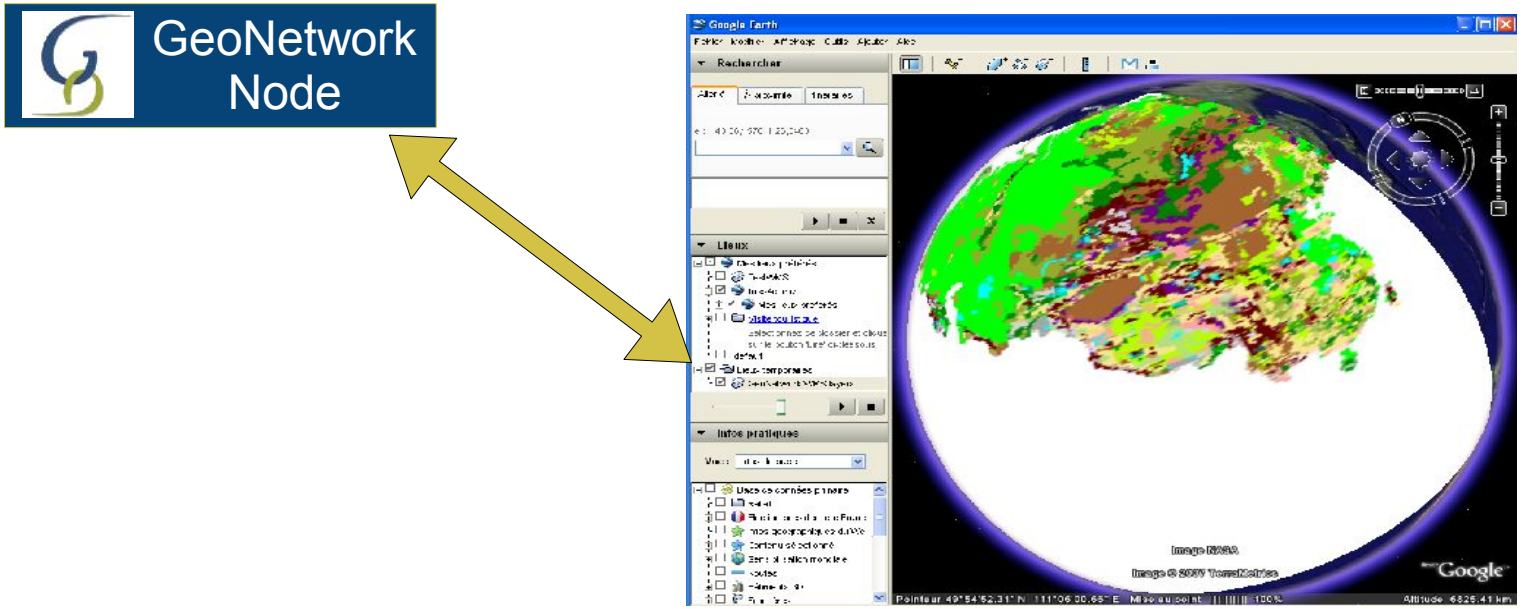
```xml
<?xml version="1.0" encoding="UTF-8" ?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
  xmlns:gmd="http://www.isotc211.org/2005/gmd"
  xmlns:gco="http://www.isotc211.org/2005/gco"
  version="1.0">

<xsl:template match="/">
  <kml xmlns="http://earth.google.com/kml/2.1">
  <GroundOverlay>
    <name>GeoNetwork WMS layers</name>
    <xsl:for-each select="
//gmd:CI_OnlineResource[gmd:protocol/gco:CharacterString='OGC:WMS-1.1.1-http-get-map']">
    <Icon>
    <href><xsl:value-of select="gmd:linkage/gmd:URL"/>
?VERSION=1.1.1&amp;REQUEST=GetMap&amp;SRS=EPSG:4326&amp;WIDTH=512&amp;
HEIGHT=512&amp;LAYERS=<xsl:value-of select="gmd:name/gco:CharacterString"/>
&amp;STYLES=default,default&amp;TRANSPARENT=TRUE&amp;FORMAT=image/png&amp;</href>
    <viewRefreshMode>onStop</viewRefreshMode>
    <viewBoundScale>0.75</viewBoundScale>
    </Icon>
    </xsl:for-each>
    <LatLonBox>
      <north>90</north>
      <south>-90</south>
      <east>180</east>
      <west>-180</west>
    </LatLonBox>
  </GroundOverlay>
  </kml>
</xsl:template>

</xsl:stylesheet>
```

XSL tips:

- xsl:for-each is used to loop on each element selected by the select criteria
- xsl:value-of is used to select an element/attribute of a tag

Add services

- Try the new kml service: http://localhost:8080/geonetwork/srv/en/xml.metadata.get.kml?id=9



Add services

- Once the service up and running, add a link to the search result page.
  - Open the file search-results-xhtml.xsl
  - Add a button (line 346, 351):
    - <button class="content" onclick="location.replace('{/root/gui/locService}/xml.metadata.get.kml?id={$metadata/geonet:info/id}')">GoogleEarth</button>

What is up for the future ?

GeoNetwork Opensource v2.1
Geographic data sharing for everyone

- SDI Toolkit
  - Integrate mapserver administration & metadata management
  - Metadata for data & services (ISO19119)
  - Use GeoNetwork to store / provide services configuration
  - Add your catalogue to existing website (portlet?, widget?)
  -
- OSGeo incubation process

Q&A?