GGOS Working Group on Data and Information Systems

(GGOS WG DIS)

prepared by

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Purpose

The GGOS Working Group on Data and Information Systems will support GGOS

- in all data management aspects of the design,
- in coordination, and implementation of the GGOS data and information system for the interdisciplinary scientific and non-scientific user community

GGOS WG on DIS

GGOS WG on DIS will

- develop and provide suggestions for an uniform access to heterogeneous space geodetic and in-situ data and information systems
- building upon the successful histories of IAG services
- evolving a GGOS portal

GGOS WG on DIS

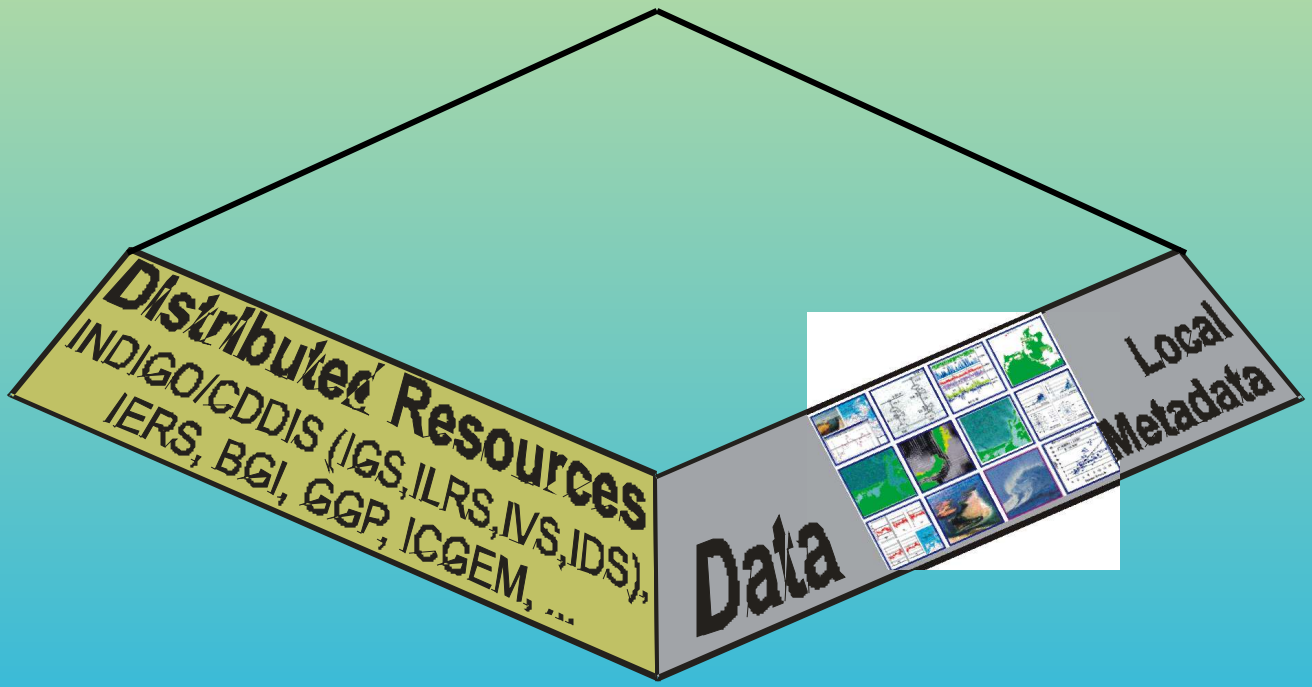
GGOS WG on DIS will

- promote the use of standards and conventions,
- recommend implementations of metadata management for GGOS,
- guarantee the interoperability with other data bases and services by providing proposals for web services, i.e., interfaces for machine-to-machine communication
- align with GEOSS (Group on Earth Observations System of Systems) approach and methodology

Tables of existing data and products of IAG services

- INDIGO / CDDIS
  - IGS, ILRS, IVS, IDS
- IERS
  - ITRF, ICRF, EOP, GGFs, Conventions,
- IGFS
  - Global gravity fields – ICGEM (GFZ, JPL, CSR)
  - Superconducting gravity data - GGP
  - Absolute gravity data – e.g. BGI, NIMA
  - Earth tides - ICET

Pyramid of needs



Metadata

- Metadata are a prerequisite to reuse geodetic data sets.
- In a heterogeneous computing environment with
  - a variety of available data sources
  - a great number of different applications for the data,

  the metadata provide guidance to find the most appropriate dataset for a certain application.
- Metadata provide information about the identification, the extent, the quality, the spatial and temporal schema, the spatial reference and the distribution of data.
- The metadata are capable of locating, evaluating, extracting, and employing the required datasets.

Collecting Information

- **Choice of meta data catalogue**
  - Directory Interchange Format (DIF) developed by NASA (Global Change Master Directory), focused on science, used by Marine Environmental Data Inventory (MEDI) or at GFZ
  - ISO 19XXX standards (widely used standard in GIS, WMO, …)
    - ISO 19115 Meta data
    - ISO 19119 Geographic information - services
    - ISO 19139 Data Exchange - XML schema implementation
- **Interoperability** by cross-mapping the different metadata standards

ISO 19115 metadata entity set information	Metadata Elements
MD_Metadata	Metadata file identifier
	Metadata standard name
	Metadata standard version
	Metadata language
	Metadata character set
	Metadata point of contact
	Metadata time stamp
	Scope to which the metadata applies
MD_Identification	Dataset title
	Dataset reference date
	Dataset responsible party
	Abstract describing the dataset
	Descriptive keywords
	Status
MD_DataIdentification	Spatial representation type
	Spatial resolution of the dataset
	Dataset language
	Dataset character set
	Dataset topic category
	Geographic location
	bounding box or geographic identifier
	Vertical and temporal extent of dataset
MD_Constraints	Name of handling restriction
DQ_DataQuality	Scope of data
	Lineage Statement
MD_MaintenanceInformation	Maintenance frequency
MD_SpatialRepresentation	Grid spatial representation
	Vector spatial representation
MD_ReferenceSystem	Reference system
MD_ContentInformation	External feature catalogue
	Coverage content
	Image descrption
MD_PortrayalCatalogueReference	Portrayal catalogue citation
MD_Distribution	Distribution format
	On-line ressource
MD_MetadataExtension	Information on metadata extensions
MD_ApplicationSchemaInformation	Application schema information

Metadata Standards

- **ISO mandatory**
- **ISO recommended core**
- **ISO NOKIS**

Proposal for GGOS Core Metadata

ISO19115 metadata entity set information	SO No	Metadata elements	ISO core	GGOS
MD_Metadata	2	Metadata file identifier	o	o
	10	Metadata standard name	o	o
	11	Metadata standard version	o	
		Metadata language	c	c
	4	Metadata character set	c	c
	8	Metadata point of contact	m	m
	9	Metadata date stamp	m	m
	6	Scope to which the metadata applies	(o)	**c**
MD_Identification	360	Dataset title	m	m
	361	Dataset short title	(o)	**o**
	362	Dataset reference date	m	m
	29	Dataset responsible party	o	**m**
	25	Abstract describing the dataset	m	m
	33	escriptive keywords	(o)	**m**
	8	Status	o)	
MD_DataIdentification	37	Spatial representation type	o	o
	38	Spatial resolution of the dataset	o	**m**
	9	Dataset language	m	m
	40	Dataset character set	c	c
	41	Dataset topic category	m	m
	42	Geographic location		
	45	Vertical and temporal extent of dataset		**m**

Proposal for GGOS Core Metadata

MD_Constraints	71	Constraints on using the resource	(o)	**o**
DQ_DataQuality	9	Scope of data	(o)	**m**
	81	Lineage statement	o	**c**
	13			
	5	Value unit for reporting a data quality result	(o)	**o**
	137	Quantitative value of the evaluation procedure	(o)	**o**
MD_MaintenanceInformation	143	Maintenance frequency	(o)	**o**
MD_ReferenceSystem	196	Reference system	o	**m**
	27			
MD_Distribution	1	Distribution format	o	**m**
	277	On-line resource	o	**m**
	285	Format name	o	**m**
	286	Format version	o	**m**
MD_MetadataExtension-Information	4	nformation on metadata extensions	o)	
D_ApplicationSchema-Information	21	pplication schema information	(o)	**o**

Table: The GGOS metadata standard, an extended recommended ISO core-element set

(m = mandatory, c = conditional, o = optional, (o) = not part of core set).

Metadata Editor

CatMDEdit – OpenSource project at SOURCEFORGE.net

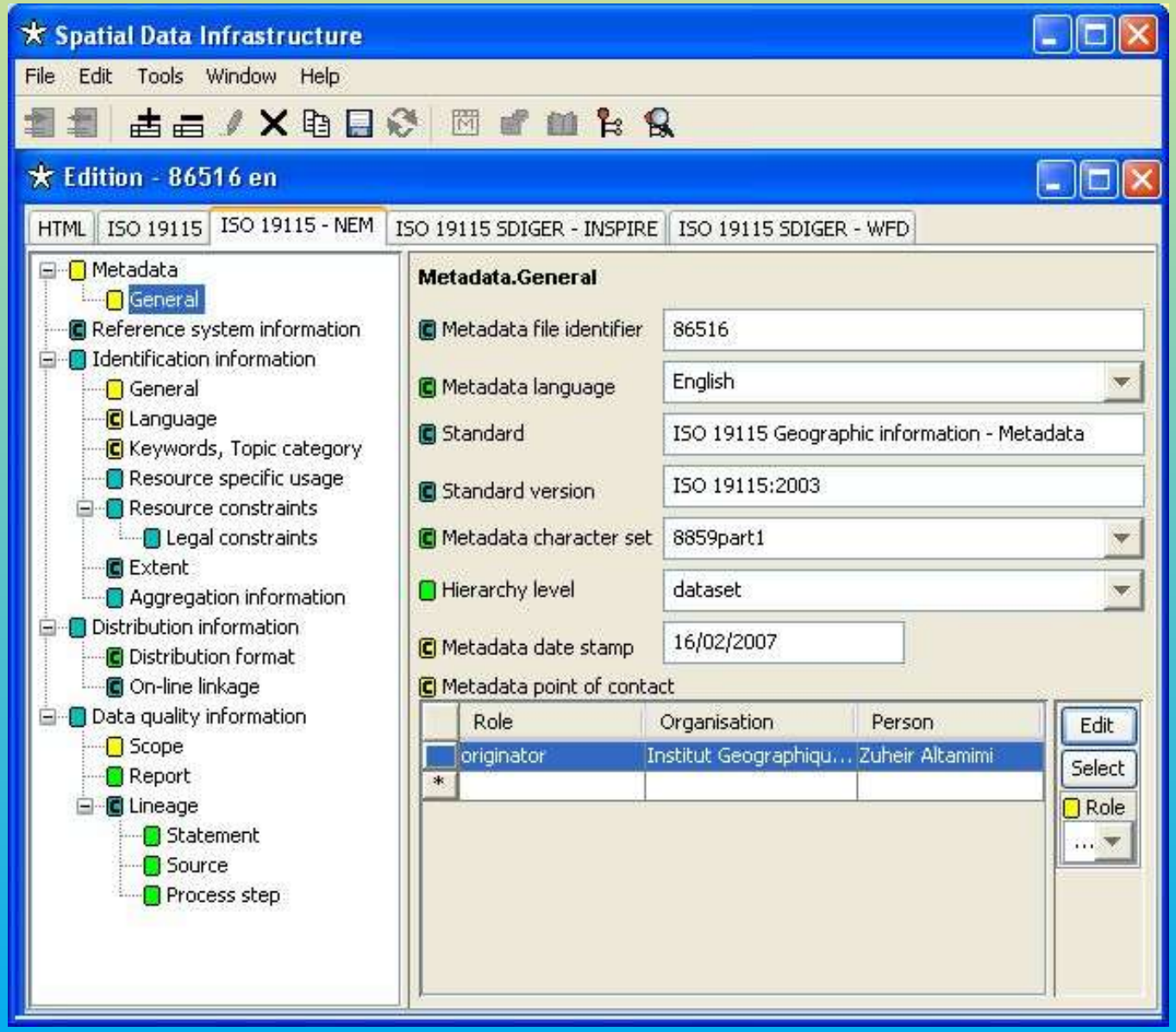
What is CatMDEdit?

CatMDEdit is a metadata editor tool that facilitates the documentation of resources, with special focus on the description of geographic information resources.

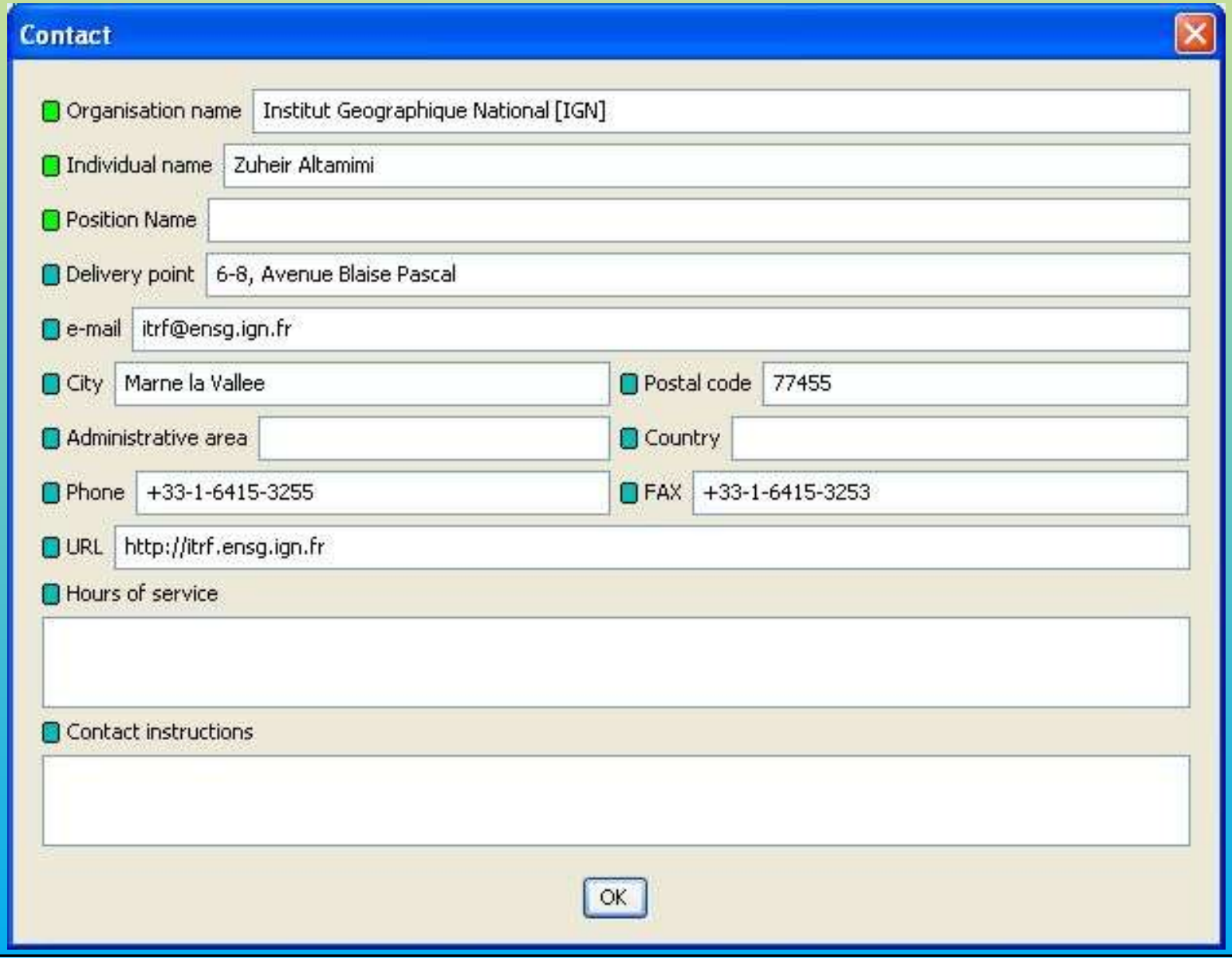
The tool has been implemented in Java and has the following features:

- Multi-platform (Windows, Unix). As it has been developed in Java and the storage of metadata records is managed directly through the file system, the application can be deployed in any platform with the minimum requirement of having installed a Java virtual machine.
- Multilingual. The application has been developed following the Java internationalization methodology. Nowadays, there is a Spanish, English, French, Polish, Portuguese and Czech version. With little effort, other languages can be supported.
- Selection and filtering of metadata records stored in the local metadata repository.
- Metadata edition in conformance with the "ISO19115. Geographic Information - Metadata" standard. Four interfaces are provided for the edition of metadata records:
  - A detailed interface following the ISO19115 comprehensive profile.
  - A reduced interface following the "Núcleo Español de Metadatos" (NEM). NEM, a subset of ISO19115, is a recommendation under development which has been defined by the Spanish National Geographical High Board ("Consejo Superior Geográfico"). This subset includes all the elements defined for the ISO19115 Core metadata profile ("Core metadata for geographic datasets").
  - An interface following the SDIGER - INSPIRE metadata profile, which has been developed under the framework of the SDIGER project. This profile is based on the international standard ISO19115 that was customized to meet the requirements set up in the proposal for a Directive of the European Parliament and of the Council establishing an infrastructure for spatial information in the Community (INSPIRE).
  - An interface following the SDIGER - WFD metadata profile, which has been developed under the framework of the SDIGER project. This profile is based on the international standard ISO19115 customized to follow the guidelines for metadata to implement the GIS Elements of the Water Framework Directive.
- Metadata edition in conformance with the SDIGER - Dublin Core Metadata Application Profile for geographical data mining, which has been developed under the framework of the SDIGER project. This profile is based on the Dublin Core Spatial Application Profile developed by the European Standardization Committee to improve the discovery of geographic information.
- Exchange of metadata records according to different standards and formats.
  - Import and export of ISO19115 metadata in XML format in compliance with ISO19139 technical specification.
  - Additionally, interoperability with other metadata standards apart from ISO19115. The application allows input and output XML files in conformance with the standards CSDGM (Content Standard for Digital Geospatial Metadata, defined by U.S. FGDC), Qualified Dublin Core, SDIGER - Dublin Core Metadata Application Profile for geographical data mining, or MIGRA (Spanish standard for geographic information exchange).
- Different styles for presentation of metadata records

Metadata Editor



Metadata Editor



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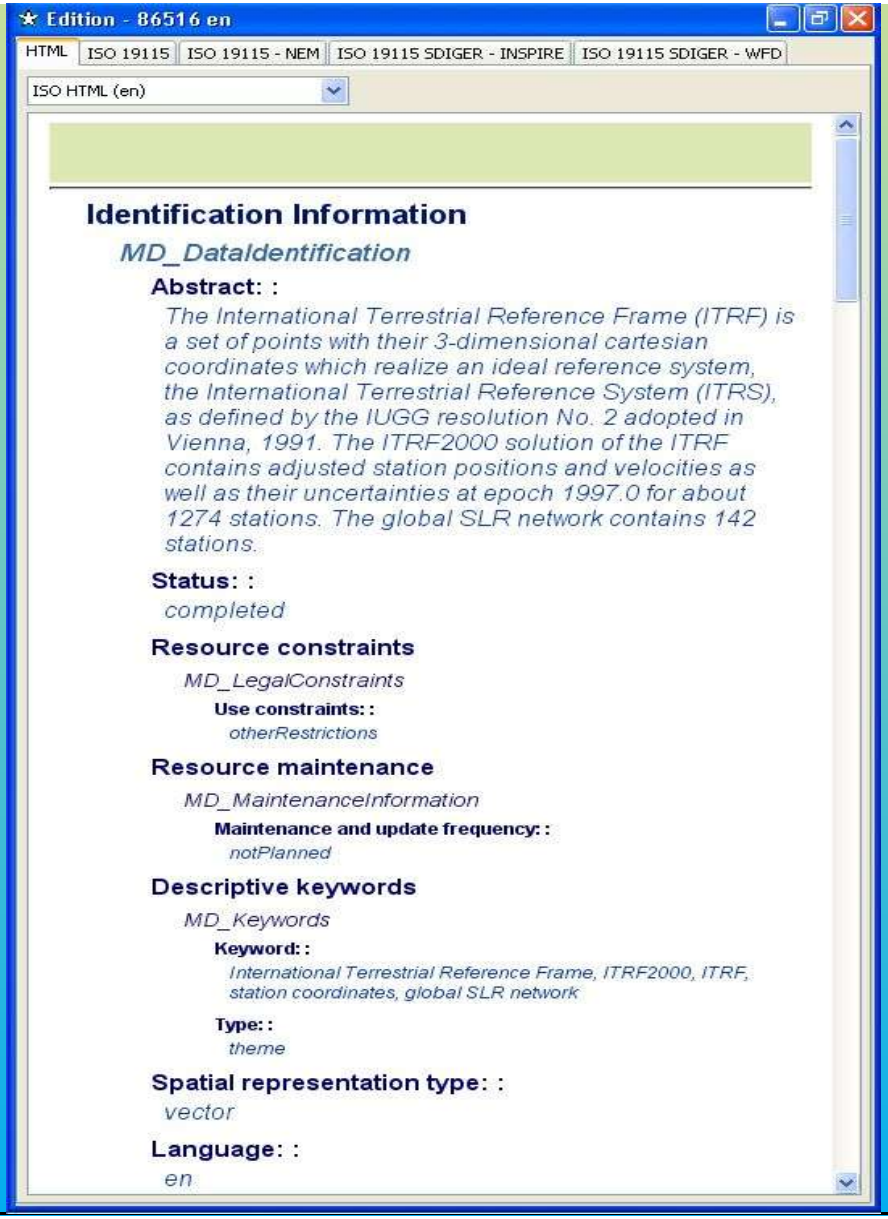
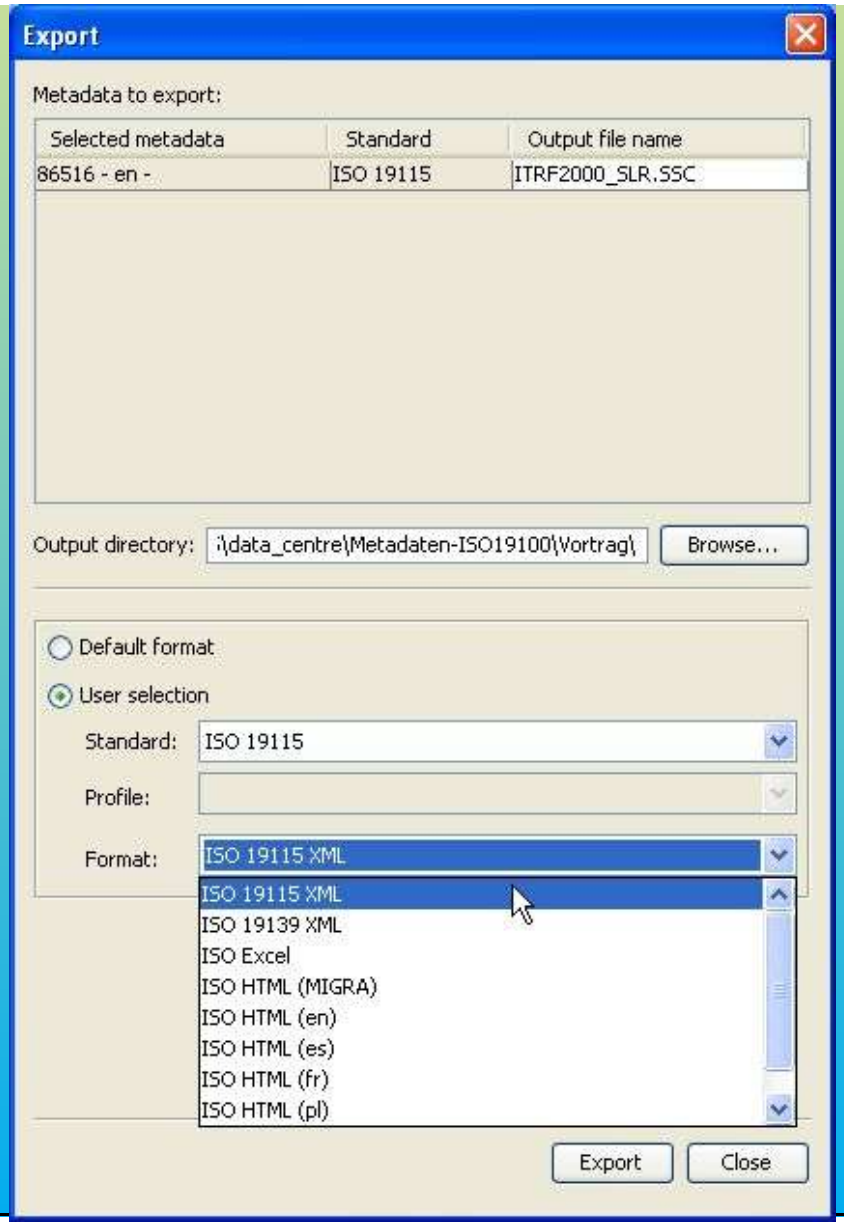


Metadata Editor

Metadata Editor



Metadata Editor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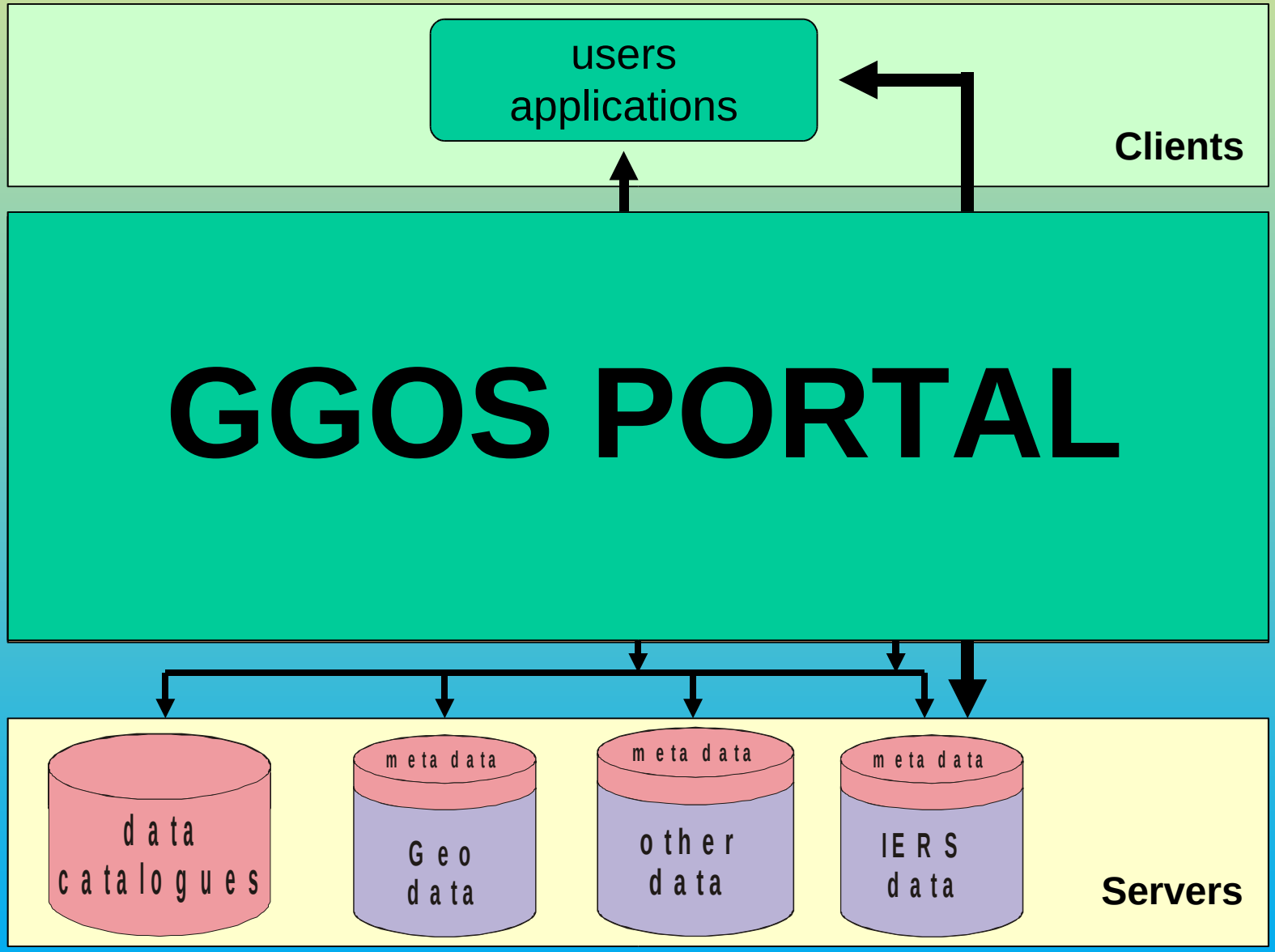
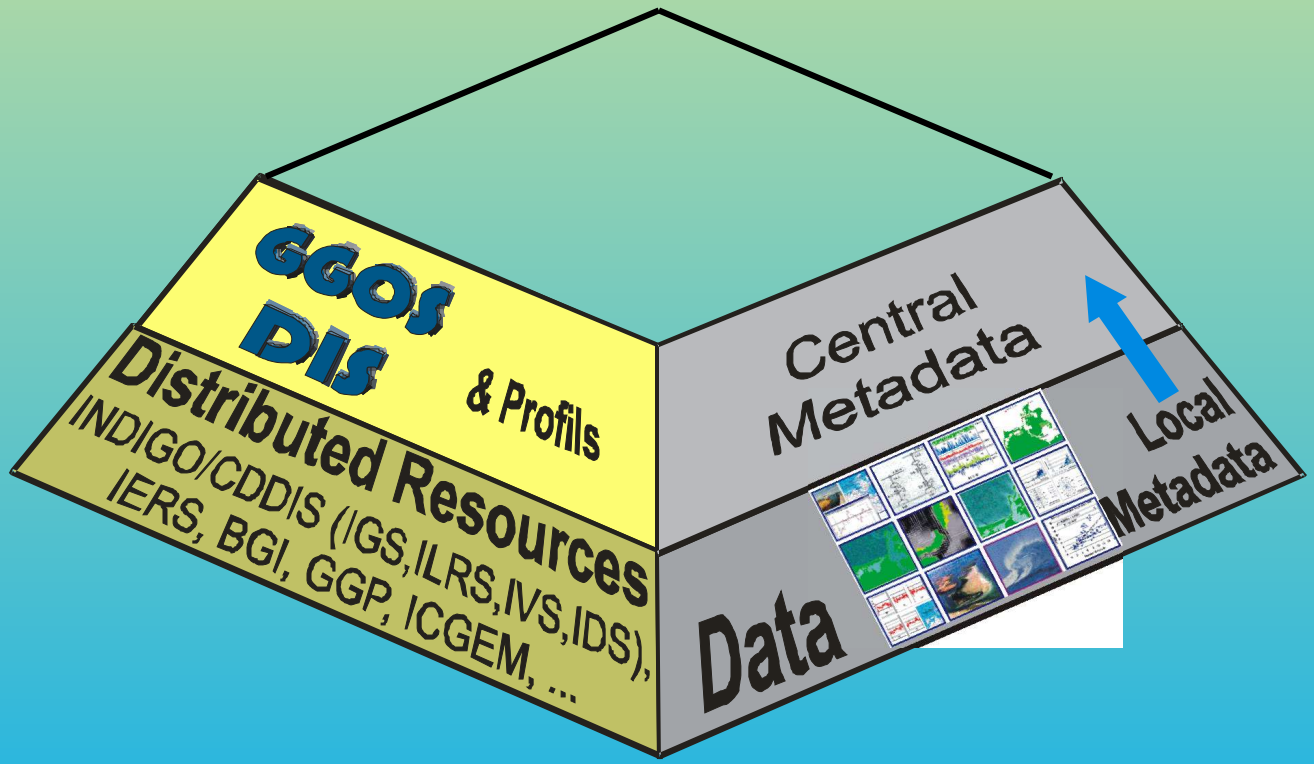
Planned User Access



Importance of GGOS Portal

- The IAG Services already produce very important and valuable products to be promoted by GGOS
- Promotion of these products for Earth sciences and applications through an internet portal
- GGOS Portal:
  - One access point (entry door) for all geodetic products relevant in the frame work of GGOS (not to the products themselves, that are available at the individual services data centers)
  - Start with the burning questions of society and lead the way from there to the products, their characteristics, location, availability, latency, accuracy
  - More than a link list, it's a broker, applications should be possible
  - Information by harvesting, services decentralised
  - Service oriented architecture (SOA), service registry
  - Ad-hoc discussion group (D. Dransch, A. Helm, B. Richter, B. Ritschel, M. Rothacher).

Pyramid of needs

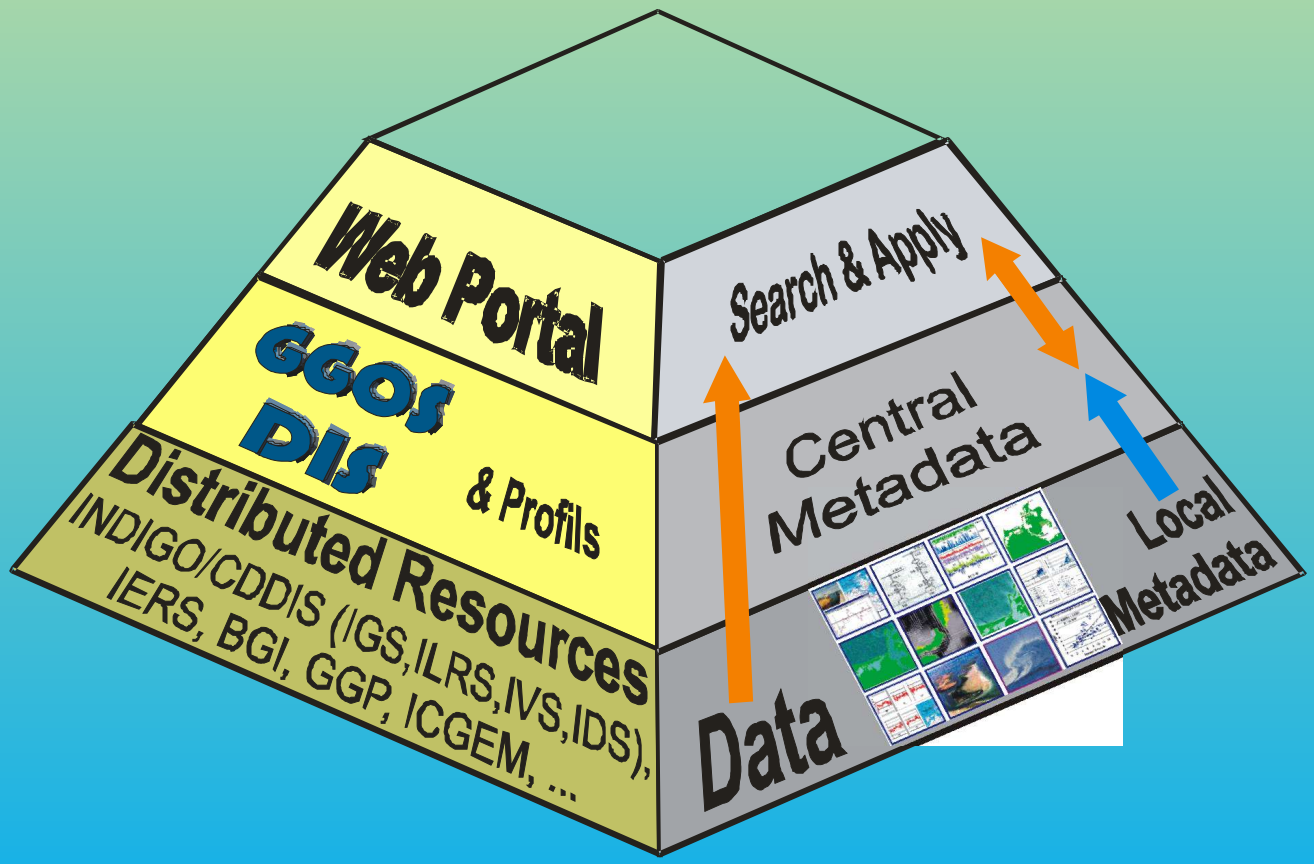


GGOS-Portal

http://www.ggos.org => structure of home page, multiple entries to serve all interests

GGOS Mission		
Natural Hazards Themes		
Main Geoscientific Themes		
Main Geodetic Themes		
Services / Applications	Techniques / Instruments	Products

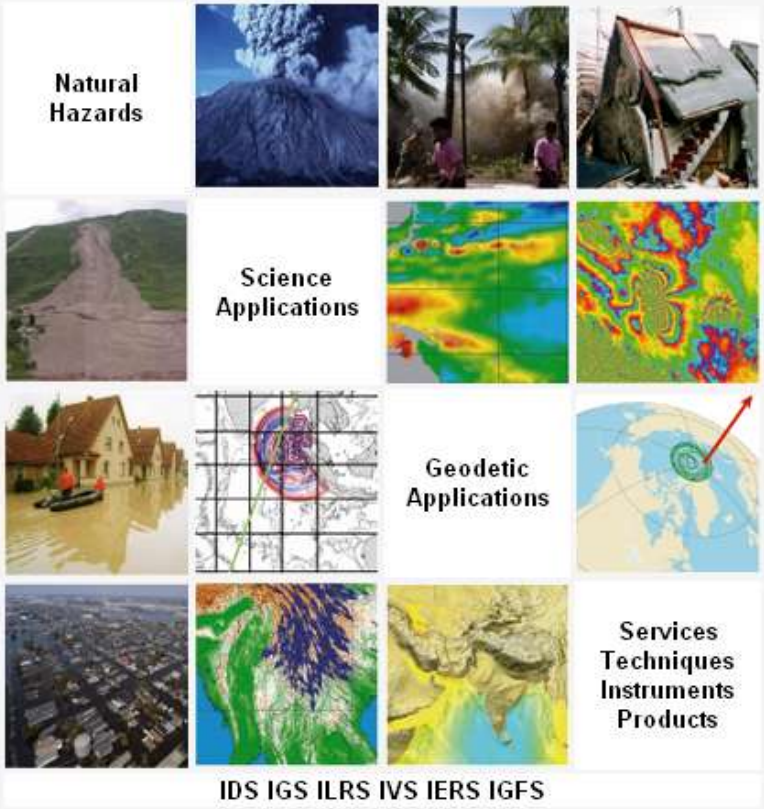
Pyramid of needs

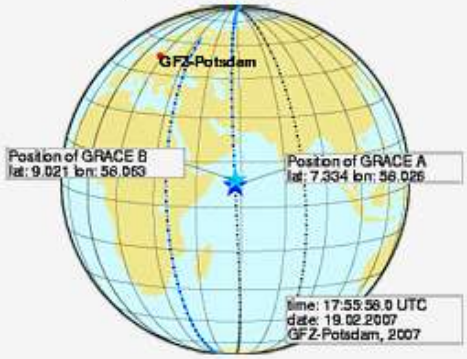


Proposal for a GGOS portal (draft)
by A. Helm, GFZ

Global Geodetic Observing System

about GGOS | news | tasks | working groups | meetings | discussion forum | links | downloads | sitemap | legal notice





launch GGOS browser

GGOS search:

limit search:

☐ region ☐ time period

☐ application ☐ technique

☐ product type

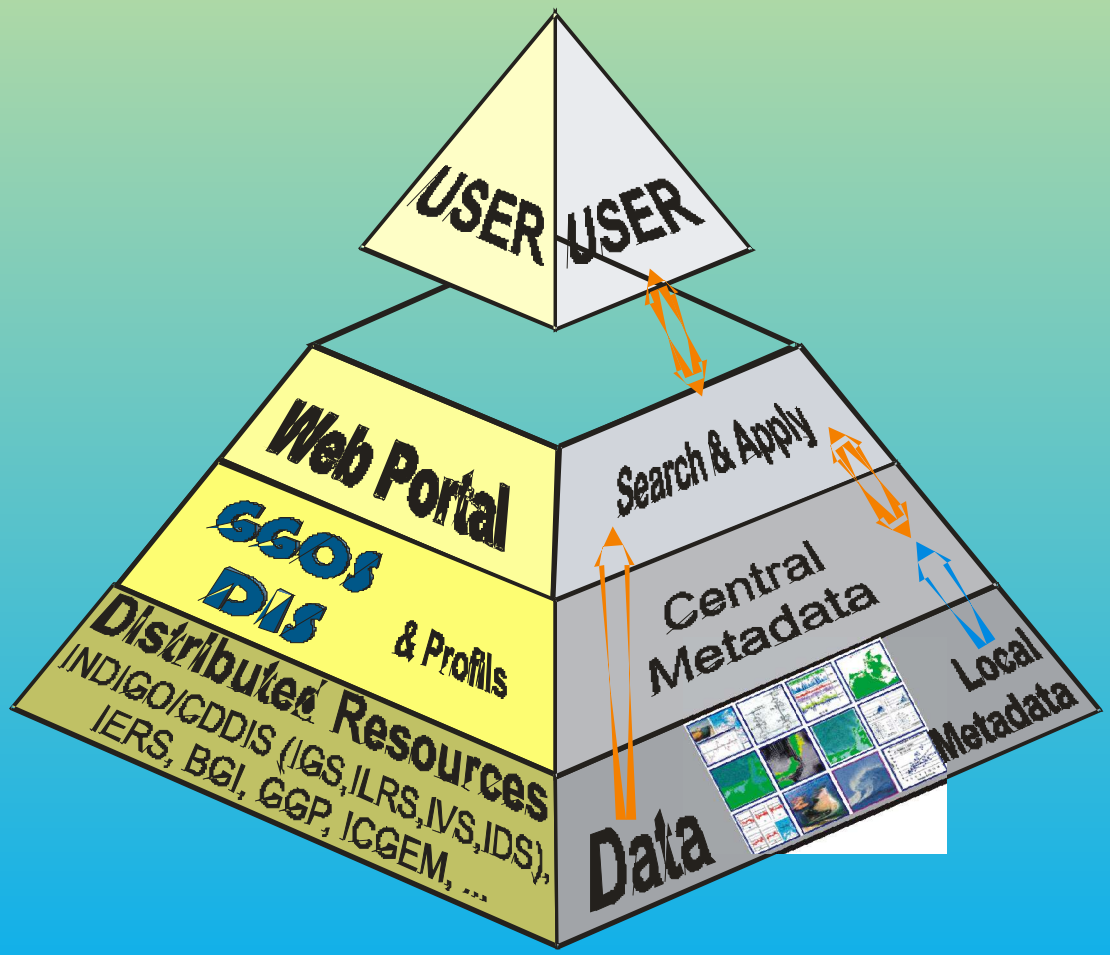
submit inquiry

supply contribution:

hyperlink

enter metadata

Pyramid of needs



Next Steps to Go

- Complete the catalogue of GGOS products (examples available)
- Decision on metadata catalogue – core elements (proposal available)
- Start / continue creation of metadata (editor, scipts available)
- Make available service applications (Co-operation within the Services, exchange of knowledge, architecture, software, schemas, …)
- Set up GGOS portal (prototype)

Google Co-op BETA

Welcome to Google Co-op

Google Co-op is a platform that enables you to customize the web search experience for users of both Google and your own website.

Create your own search engine

Harness the power of Google search technology to create a free Custom Search Engine that reflects your knowledge and interests - and make money from the resulting traffic.

My Search Engines - Featured Examples
Documentation - Discussion Group

Deliver specialized search results

Let users integrate your information or services into their Google search results with Subscribed Links.

My Subscribed Links - Featured Examples
Documentation - Discussion Group

Help users refine their searches

Use your expertise to help improve Google web search for specific subjects by labeling the best sites with topics.

My contributions - Current topics
Documentation - Discussion Group

Custom Search Blog
Go to the Custom Search Blog »

Recent Contributions

Medical Library Association

Lijit Personal Network Search

United Way of America

Rhino Records

Government of Western Australia

Articles and Testimonials

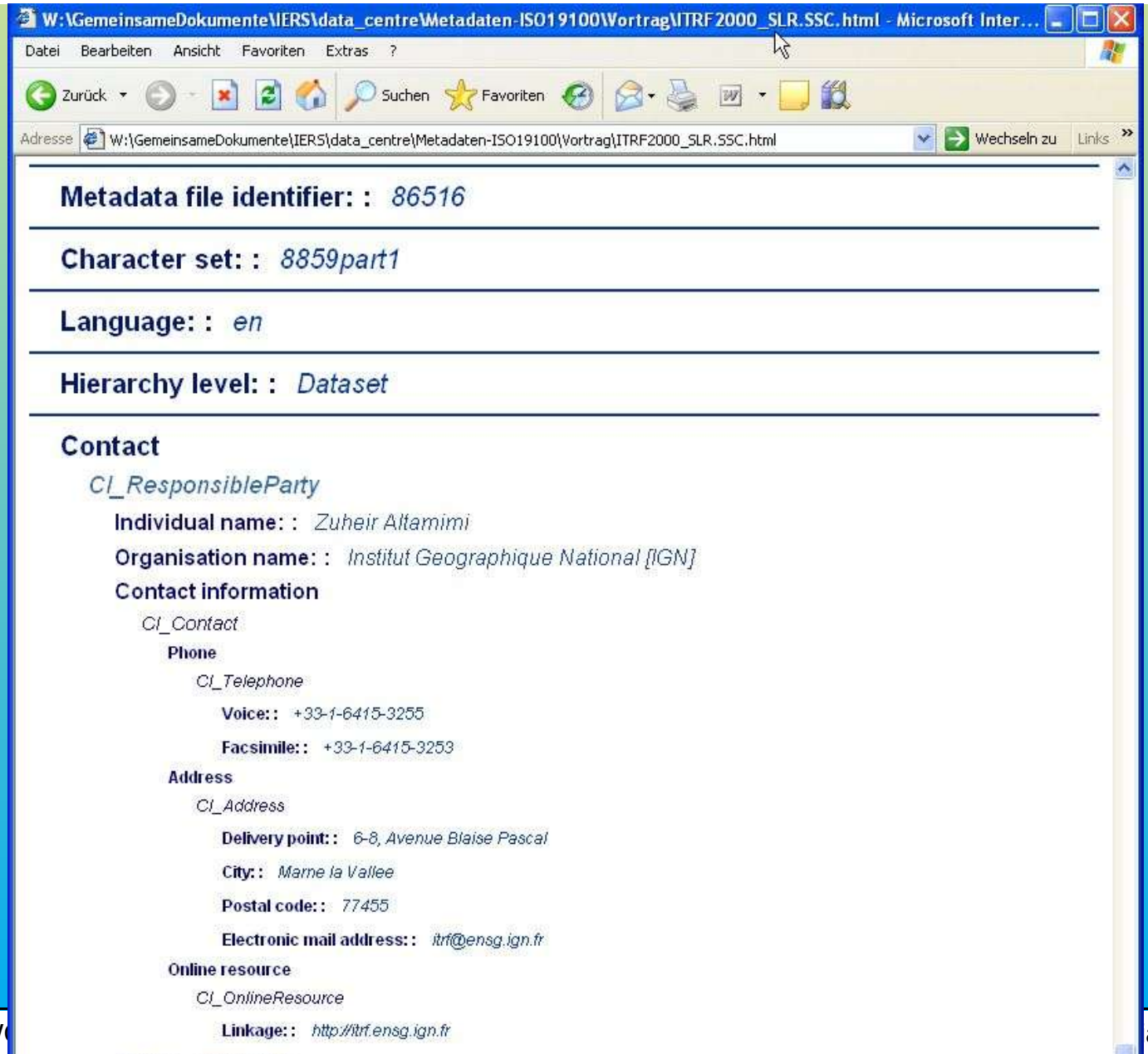
Google just got del.icio.us!
Vik Singh - Jan 3, 2007

Advanced Custom Search Engines
John Biundo and Eric Enge - Nov 15, 2006

Uses for Custom Search Engines
Tom Evslin - Nov 5, 2006

More »

Metadata Editor



Metadata Editor

Metadata Editor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          adjusted station positions and velocities as well as their uncertainties at epoch 1997.0 for about 1274 stations.
          The global SLR network contains 142 stations.
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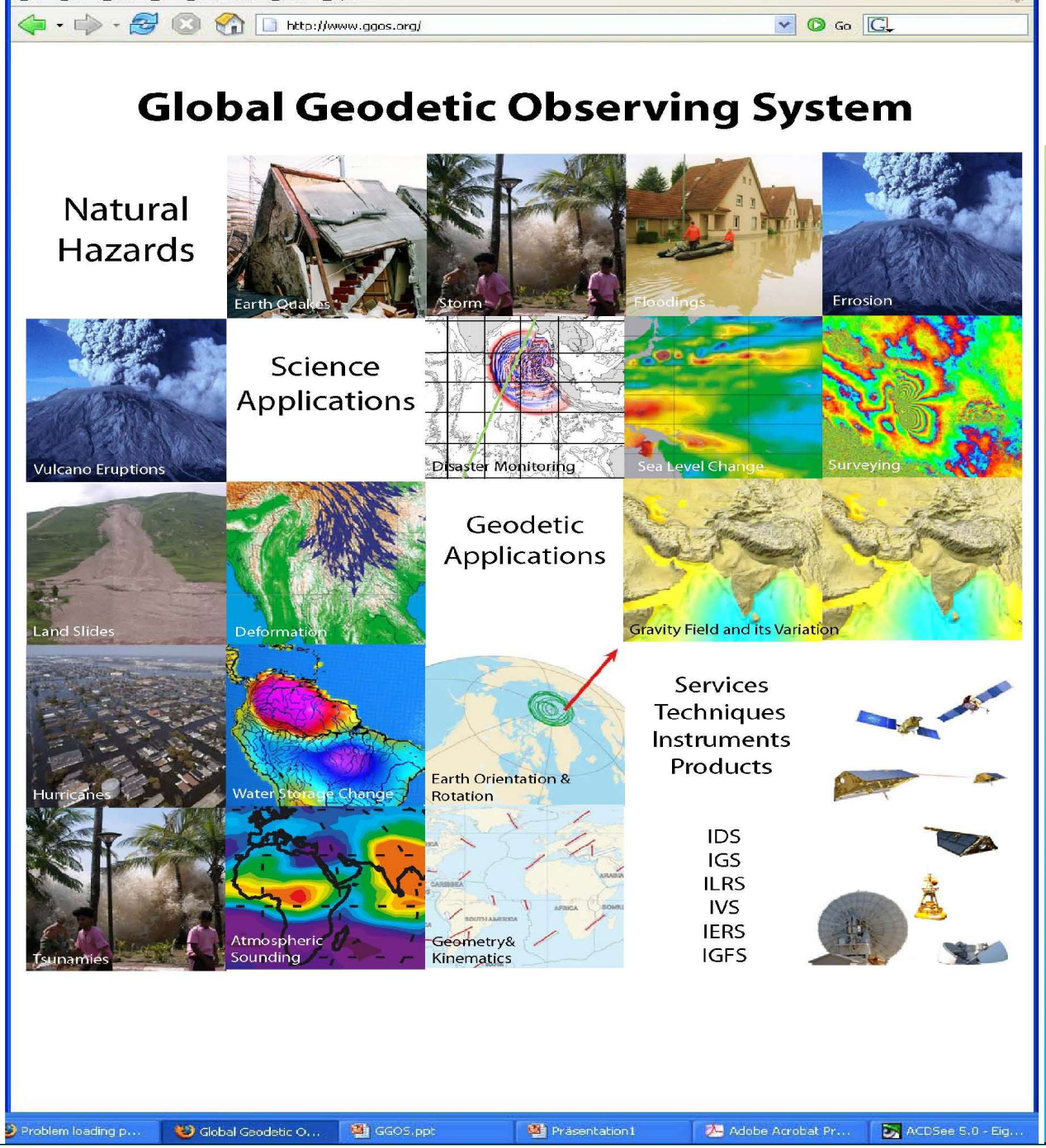
Objectives and Goals (cont.)

- develop strategies to protect the intellectual properties on data and products,
- align with GEOSS (Group on Earth Observations System of Systems) approach and methodology,
- interface to GEO on the Architecture and Data Committee (ADC),
- participate in the ICSU Scientific Data and Information Forum (SciDIF).



GGOS
http://www.ggos.org

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