The GEOSS User Requirements Registry: Linking Users of GEOSS Across Disciplines and Societal Areas

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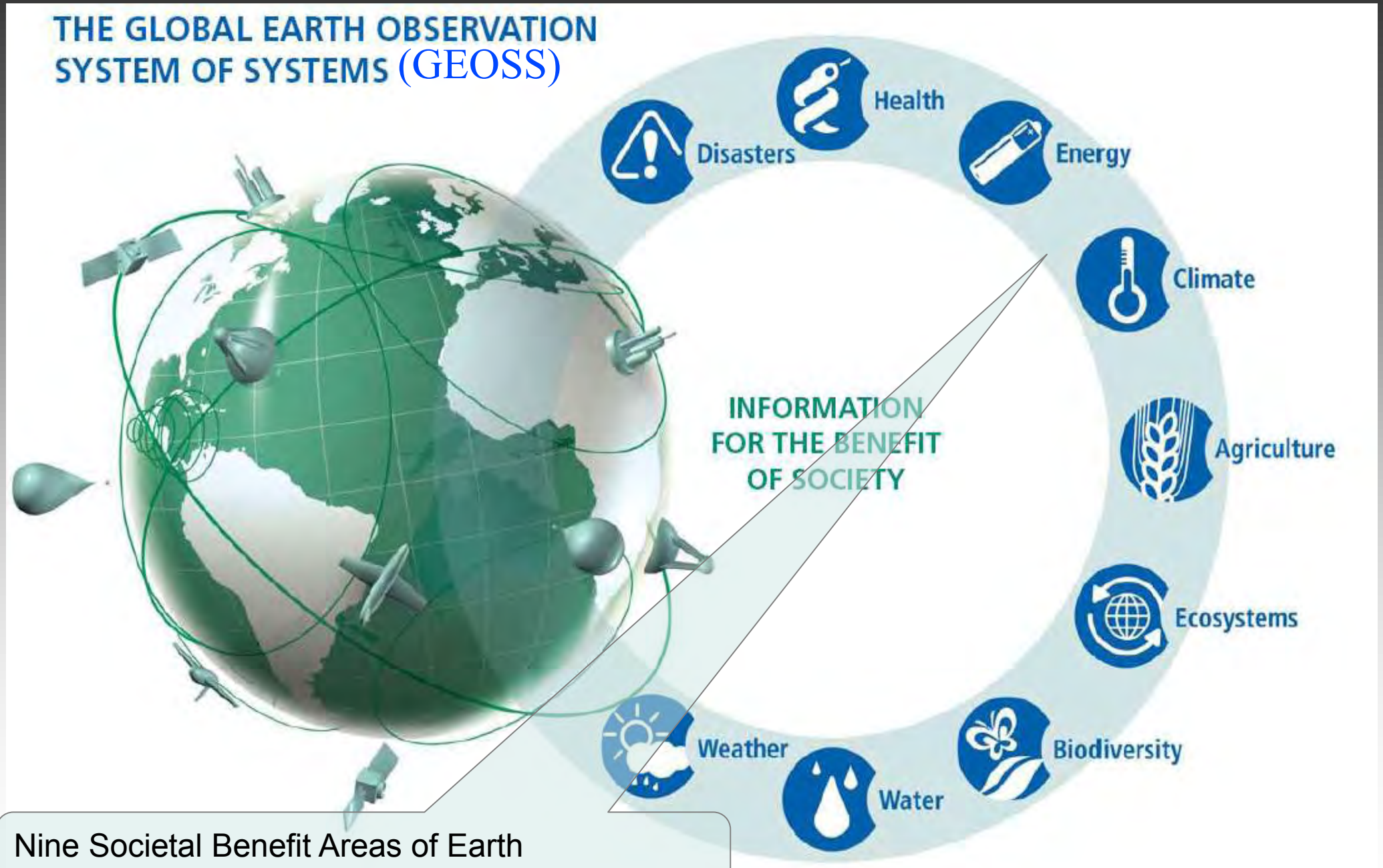
2) Environmental Protection Agency, USA
3) Tiwah, Inc., USA
4) Science Consulting Group, Corp. USA

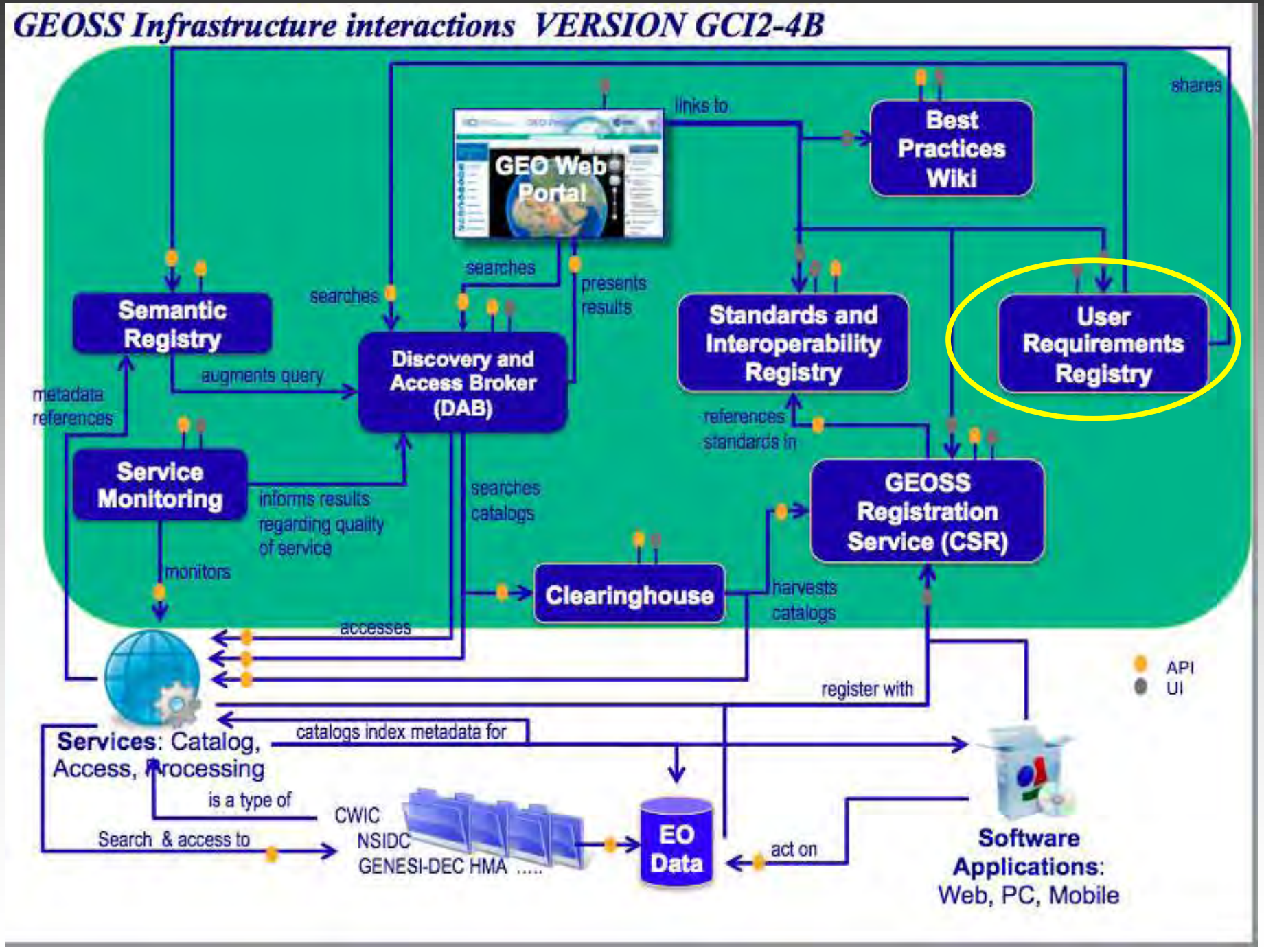
With input from many others ...

THE GROUP ON EARTH OBSERVATIONS (GEO)



Nine Societal Benefit Areas of Earth Observations Identified By Ministerial Summit

THE GEOSS COMMON INFRASTRUCTURE (GCI)



The GEOSS User Requirements Registry: Linking Users of GEOSS Across Disciplines and Societal Areas

- A Reminder: Building a User-Driven GEOSS
- Purpose and Benefits of the URR
- The Look and Feel of the URR
- Data Model
- Populating
- Analyses
- Summary and Outlook

A USER-DRIVEN GEOSS

10 Year Implementation Plan for the Global Earth Observing System of Systems (GEOSS) endorsed by Ministerial Summit in 2005:
- build GEOSS as a user-driven system of systems;
- develop a User Requirement Registry;
- frequently review the user needs as a basis for gap analysis.

Designing, building, populating and using the URR started in 2006

The experience over the last years made clear:

Collecting information on user needs and translating them into observational requirements is not a straight-forward task.

We learned:

The process and infrastructure for collecting user needs and observational requirements need to:
- reach out to, and engage, global users across all societal areas;
- enable users to express their needs;
- be flexible, adaptable, proactive, versatile, comprehensive;
- allow for frequent (gap) analysis.

PURPOSE AND BENEFITS OF THE URR

Purpose: Collect, publish, store, and analyse information on user needs

Analyze user needs:

- Determine societal relevance of user needs and observation requirements in support of prioritization
- Identify gaps in the observation system or application network
- Measure the societal relevance of datasets and products

Benefits:

- Cross-cutting through all SBAs and multidisciplinary nature
- Addresses a void, because most requirements registries are Provider-focused
- Interactive nature of URR allows users to publish data, and provide comments on other data entries (Wikpedia-like system)
- Provides a place to store and integrated the results of many specialized assessments and registries

LOOK AND FEEL OF THE URR

GEOSS URR

http://www.scgcorp.com/urrbeta/

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GEO URR USER REQUIREMENTS REGISTRY

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The GEOSS User Requirement Registry (URR)

The intergovernmental Group on Earth Observations (GEO) is building the Global Earth Observation System of Systems (GEOSS) to help users better utilize earth observations in a broad range of societal benefit areas including health, agriculture, water, energy, weather, climate, disasters, ecosystems, and biodiversity. GEOSS is user-driven. The User Requirements Registry (URR) is a versatile component of the GEOSS Common Infrastructure (GCI) for the collection and quantification of user-related information and a crowd-sourcing tool for the engagement of users with GEOSS. Read More ...

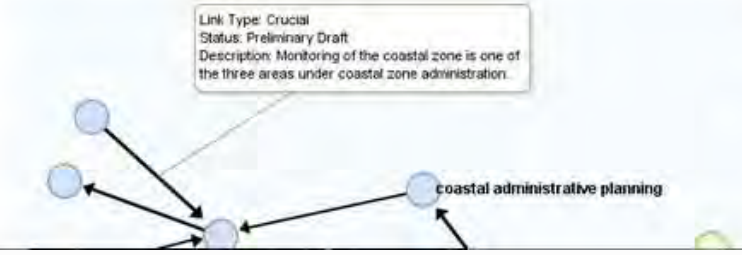
The Role of the URR for the GEO Work Plan Implementation

The URR also provides important functions supporting the implementation of the GEO Work Plan. Read More ...

The URR Data Model

The core of the URR is a comprehensive database with information about:

- Applications
- Earth Observation Requirements
- Research, Technology, Infrastructure, and Capacity Building Needs
- Interconnectivity (links) between all entries. Read More ...



Analyses of User Needs

The URR is designed to facilitate three generic types of analyses:
Prioritization of user needs and observational requirements, Gap analyses, and Relevance analyses

Key for all three analyses is information about the interconnectivity between specific entries in the URR, which is captured in the Links function and graphically displayed using a visualization tool.
Read More ...

LOOK AND FEEL OF THE URR

GEOSS URR

http://www.scgcorp.com/urrbeta/ReadMoreURR.aspx

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GEO URR USER REQUIREMENTS REGISTRY

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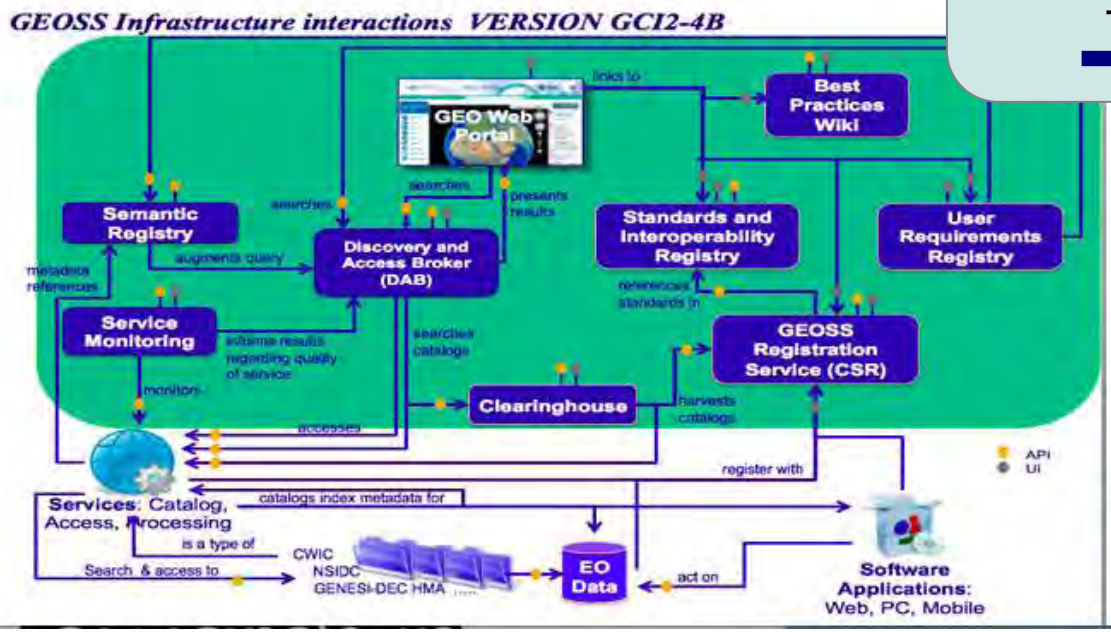
GEOSS: A System of Systems Driven by Societal Benefits

The Group on Earth Observations (GEO) is building the Global Earth Observation System of Systems (GE ers in a wide range of Societal Benefit Areas (SBAs) of Earth observations (EOs) (GEO, 2005). Utilizing the Societal Benefits sed by GEO, GEOSS requires an interdisciplinary scientific approach; a scientific interpretation of the collected observations ng the extent to which SBAs are, or could be, utilizing EOs provides important guidance to the development and use of GEOSS. Kn s and their relation to SBAs can provide a basis for an objective measure of societal relevance of observations and applications.

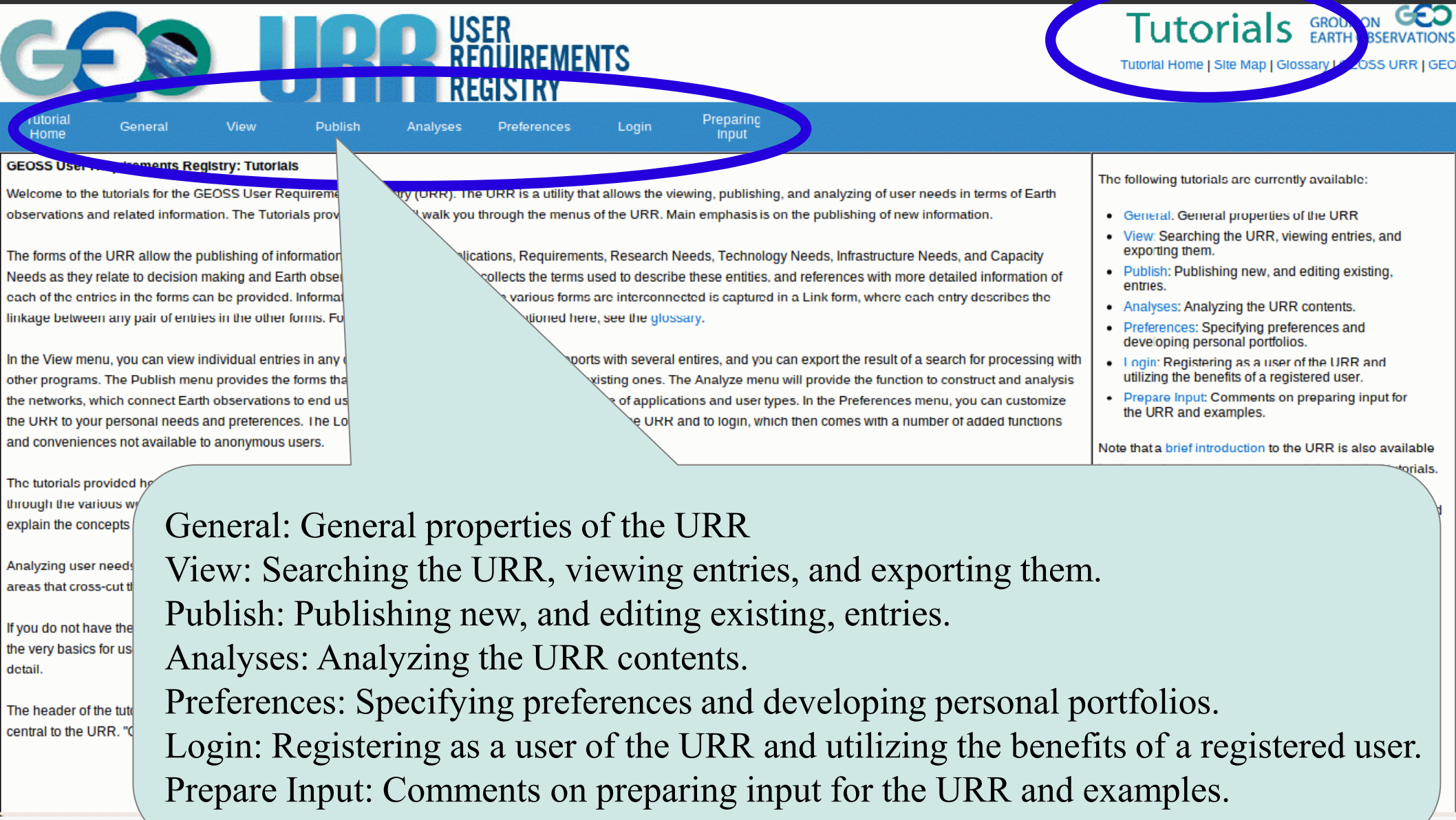


ry

(URR) is an integral part of the GEOSS Common Infrastructure (GCI) that allows answering questions related to an user-driven design and functionality of GEOSS. The URR collects user-related information, such as user types, their applications and activities, the requirements of the applications in terms of EOs and other products, and the needs in terms of research, infrastructure, technology, and capacity building that would enable or improve applications. This information is collected in standard formats and nomenclature across disciplines and SBAs. Interconnectivity of the entries in the URR is captured with a novel link concept, and this information enables the prioritization of applications, requirements and needs, gap analyses, and the determination of the relevance of a given data product.

The URR is inherently linked to other components of the GCI,

LOOK AND FEEL OF THE URR



Working currently on a set of video tutorials

LOOK AND FEEL OF THE URR

GEOSS URR

http://www.scgcorp.com/urrbeta/

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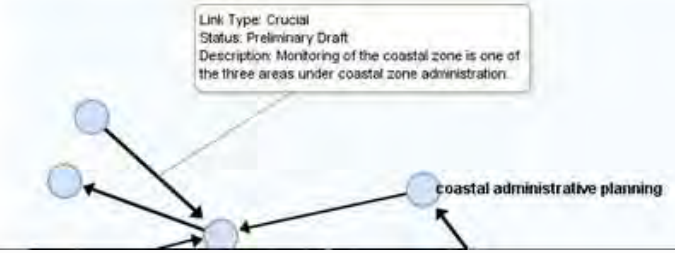

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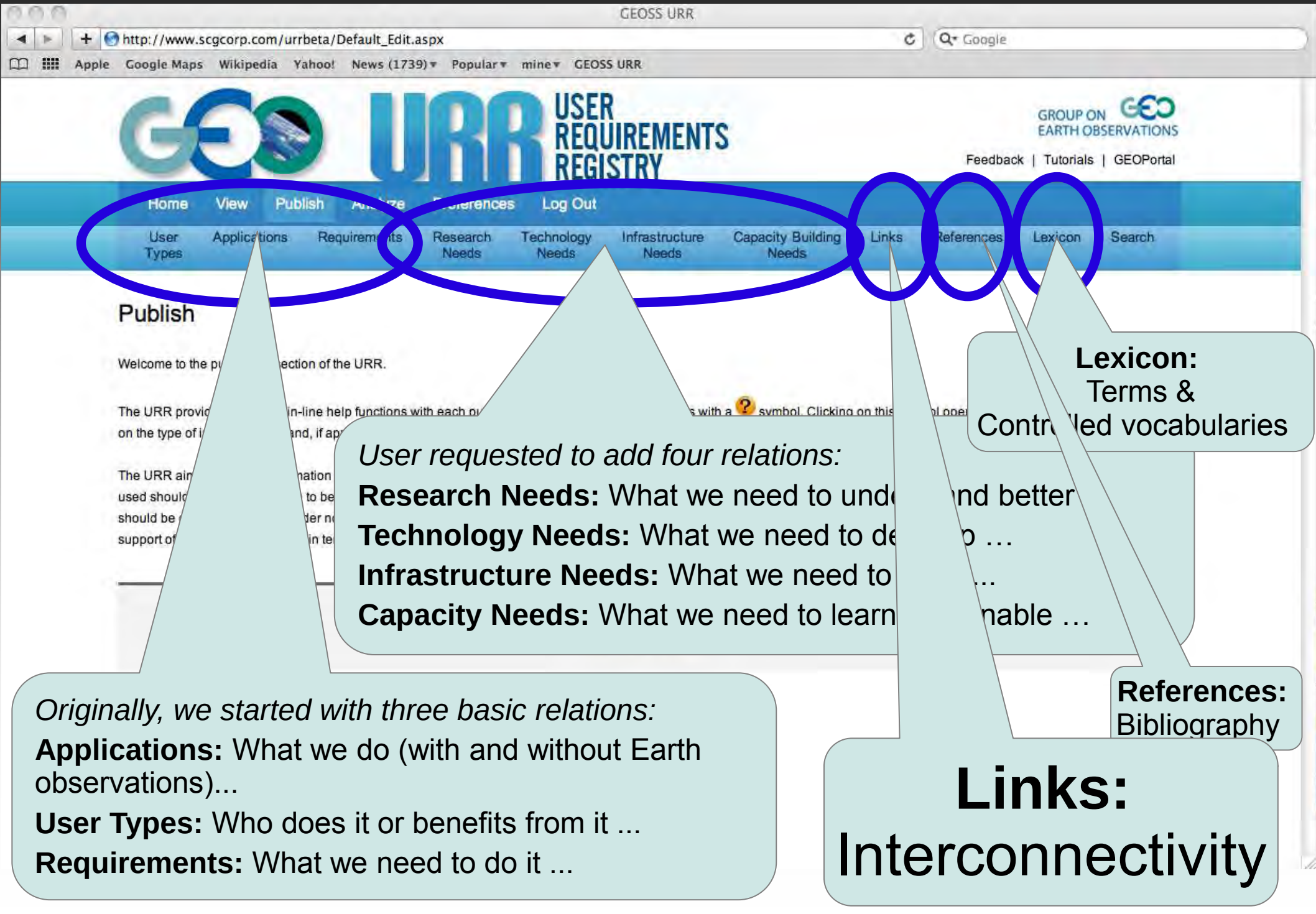
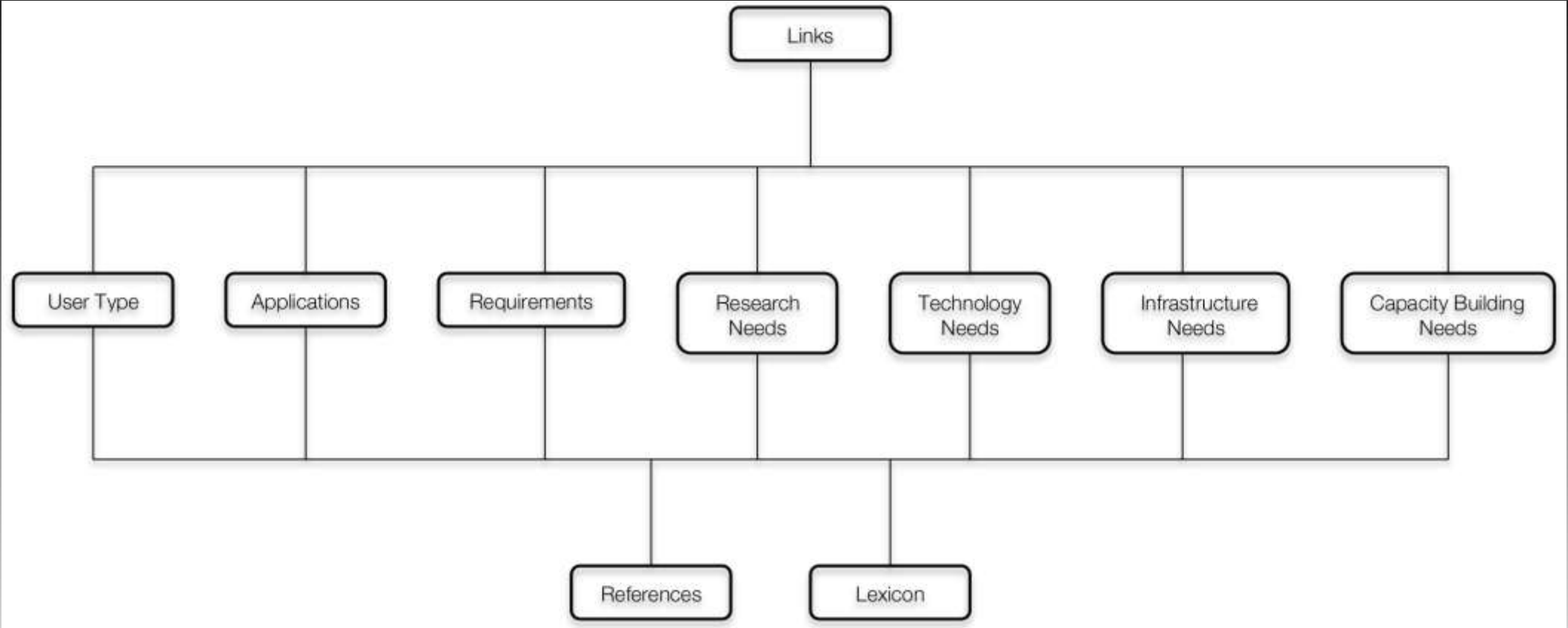


URR DATA MODEL



Seven key relations:

Applications
User Types
Requirements
Research Needs
Technology Needs
Infrastructure Needs
Capacity Building Needs

Auxiliary Registries:

References
Lexicon

URR DATA MODEL

Lexicon:

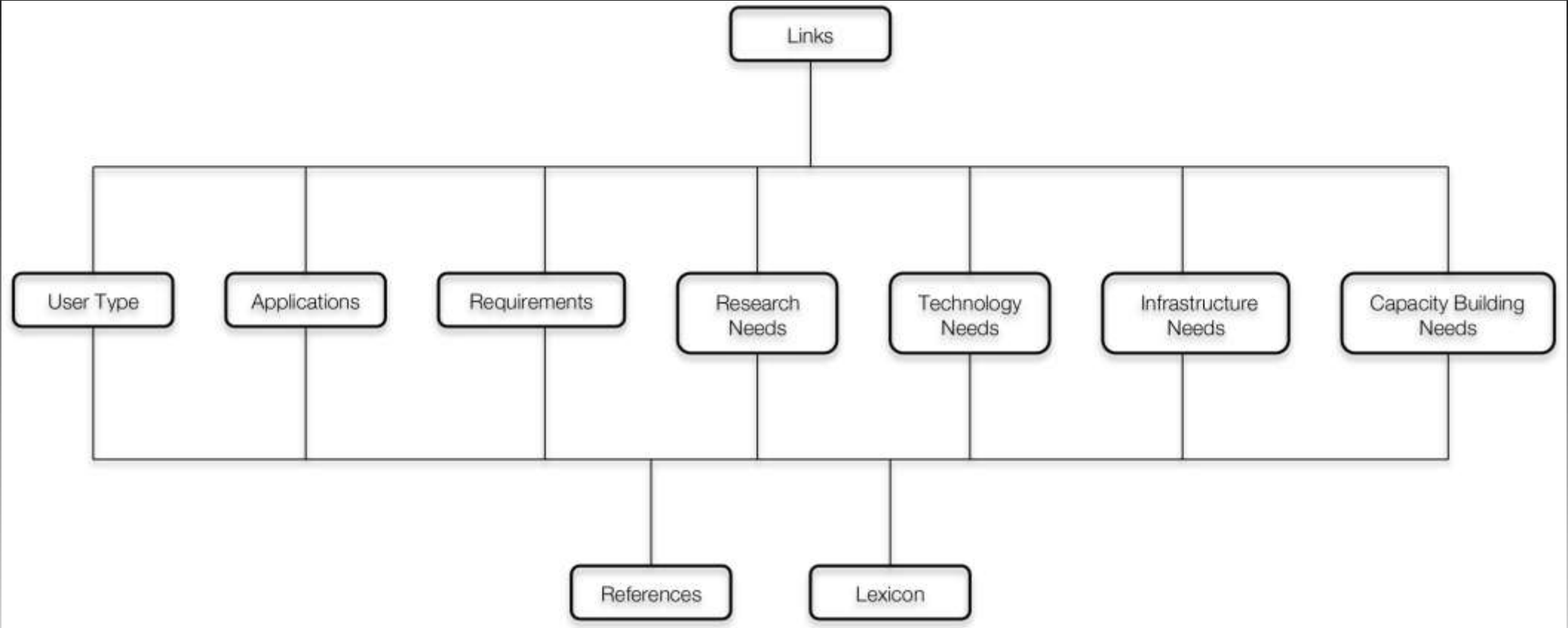
- collects all terms used in the URR;
- contains the controlled vocabularies

Controlled Vocabularies include:

- definition of acronyms and abbreviations;
- keywords;
- Earth observation parameters;
- units of observation parameters or other quantities;
- media;
- attributes of observations;
- geographical areas;
- Essential variables.

Lexicon and Controlled Vocabularies may be integrated into a GEOSS-wide Semantic Registry

URR DATA MODEL



Seven key relations:

Applications
User Types
Requirements
Research Needs
Technology Needs
Infrastructure Needs
Capacity Building Needs

Auxiliary Registries:

References
Lexicon

Interconnectivity:

Links

URR DATA MODEL

How can we capture interconnectivity in value-chains from Earth observations to societal benefits?

Links: connect a source entry and target entry in the same or in two different of the seven key relations.

Link concept turned out to be very powerful to capture connectivity between different elements.

Allows the construction of value chains and networks of value chains from Earth observations to end users.

POPULATING THE URR

Four approaches used so far:

(1) Expert input (e.g., US-09-01a Assessment Reports, Communities of Practice)

(2) Crowd-sourcing (open peer contributions)

(3) Harvesting existing registries

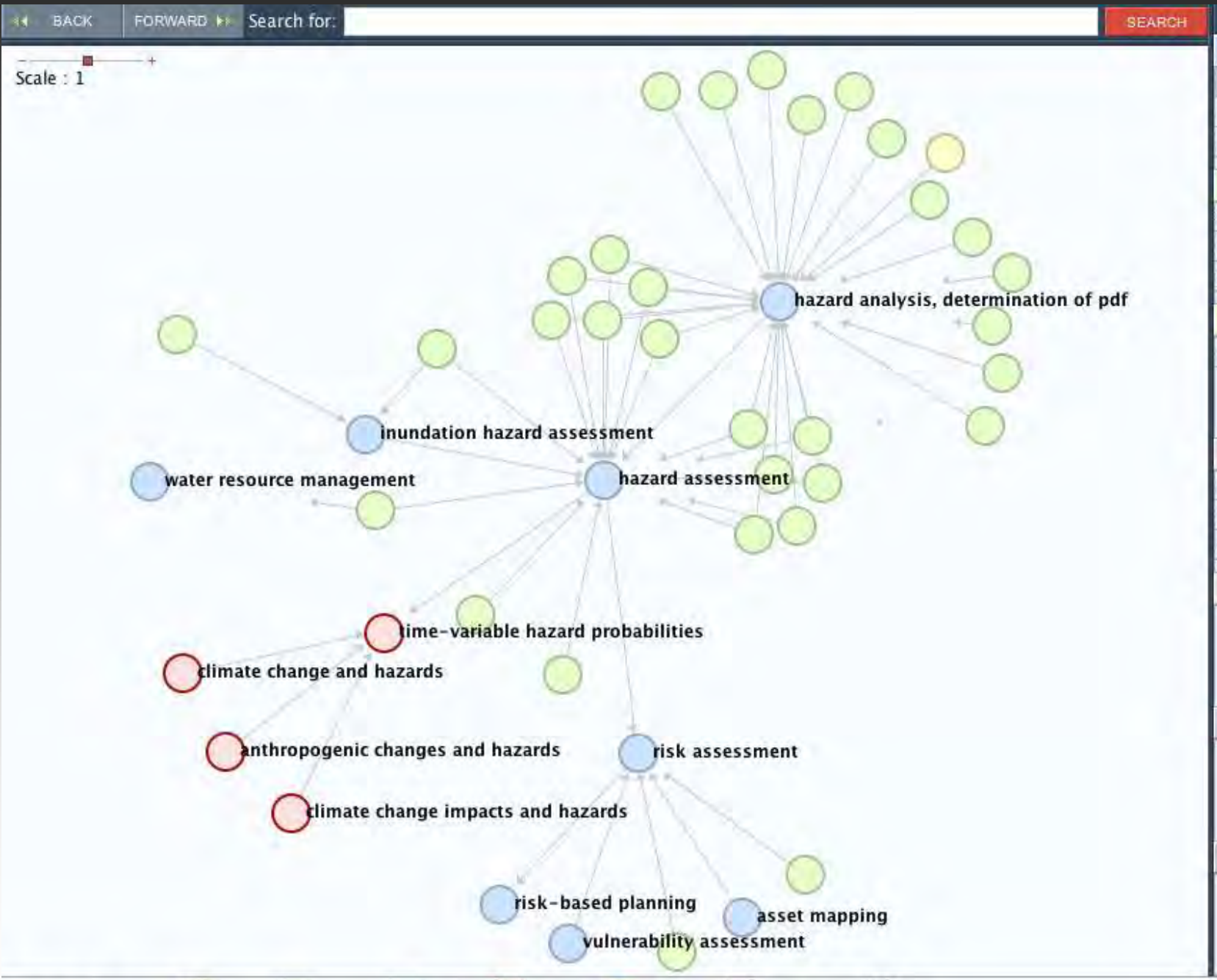
(4) Interviews (selected user groups)

Issues:

- Understanding Applications, User Types, Requirements, Links, …
- Large differences in the quality and granularity of entries
- Spam
- URR data model differs from most published documents and existing data bases

There is a need for reviewing and editing of entries.

ANALYSES


BACK
FORWARD
Search for:
SEARCH
Scale : 1
hazard analysis, determination of pdf
inundation hazard assessment
water resource management
hazard assessment
time-variable hazard probabilities
climate change and hazards
anthropogenic changes and hazards
risk assessment
climate change impacts and hazards
risk-based planning
asset mapping
vulnerability assessment
History
APPLICATION
Show names
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risk assessment
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REQUIREMENT
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seismic hazard map
USERTYPE
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volcanologist
RESEARCH
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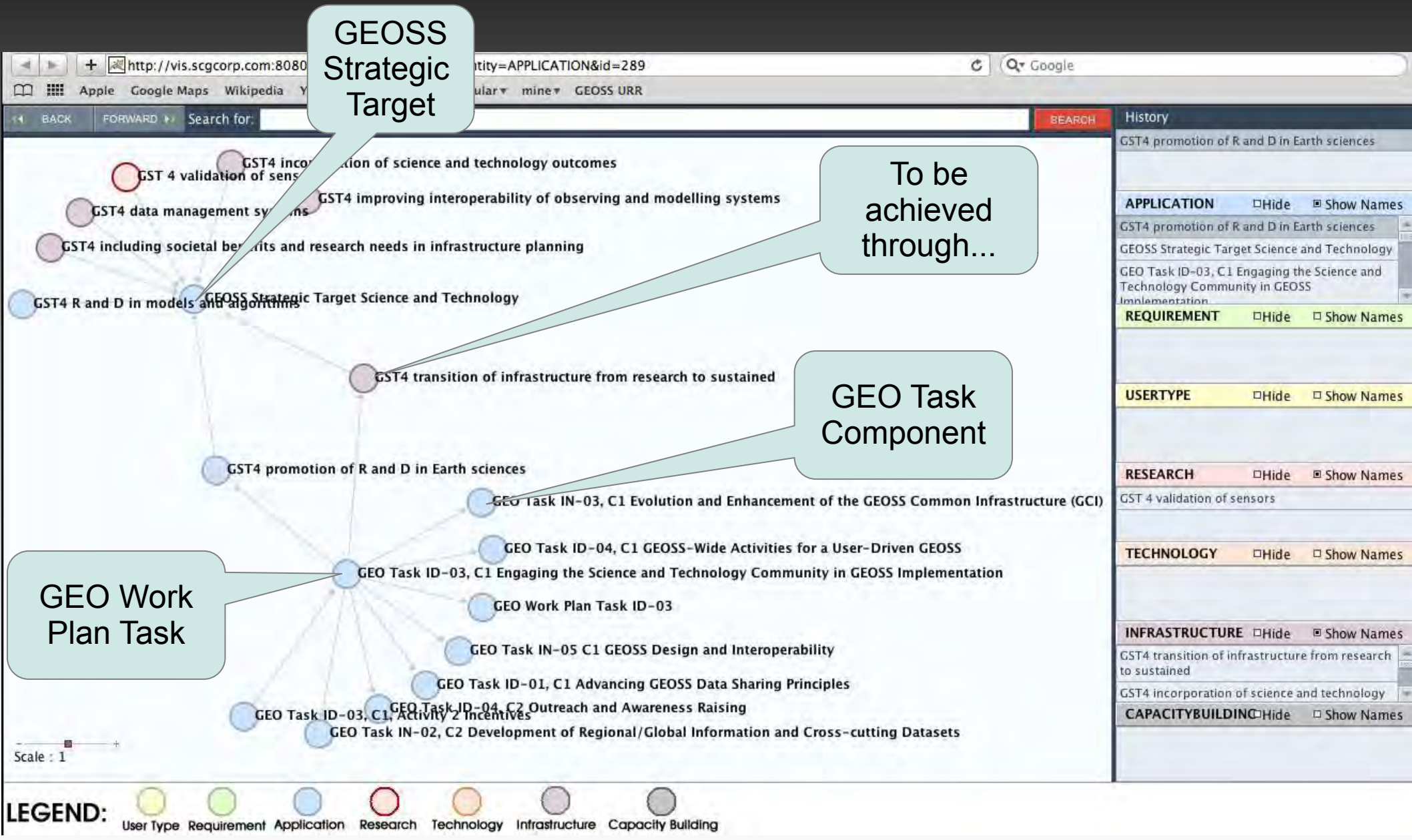
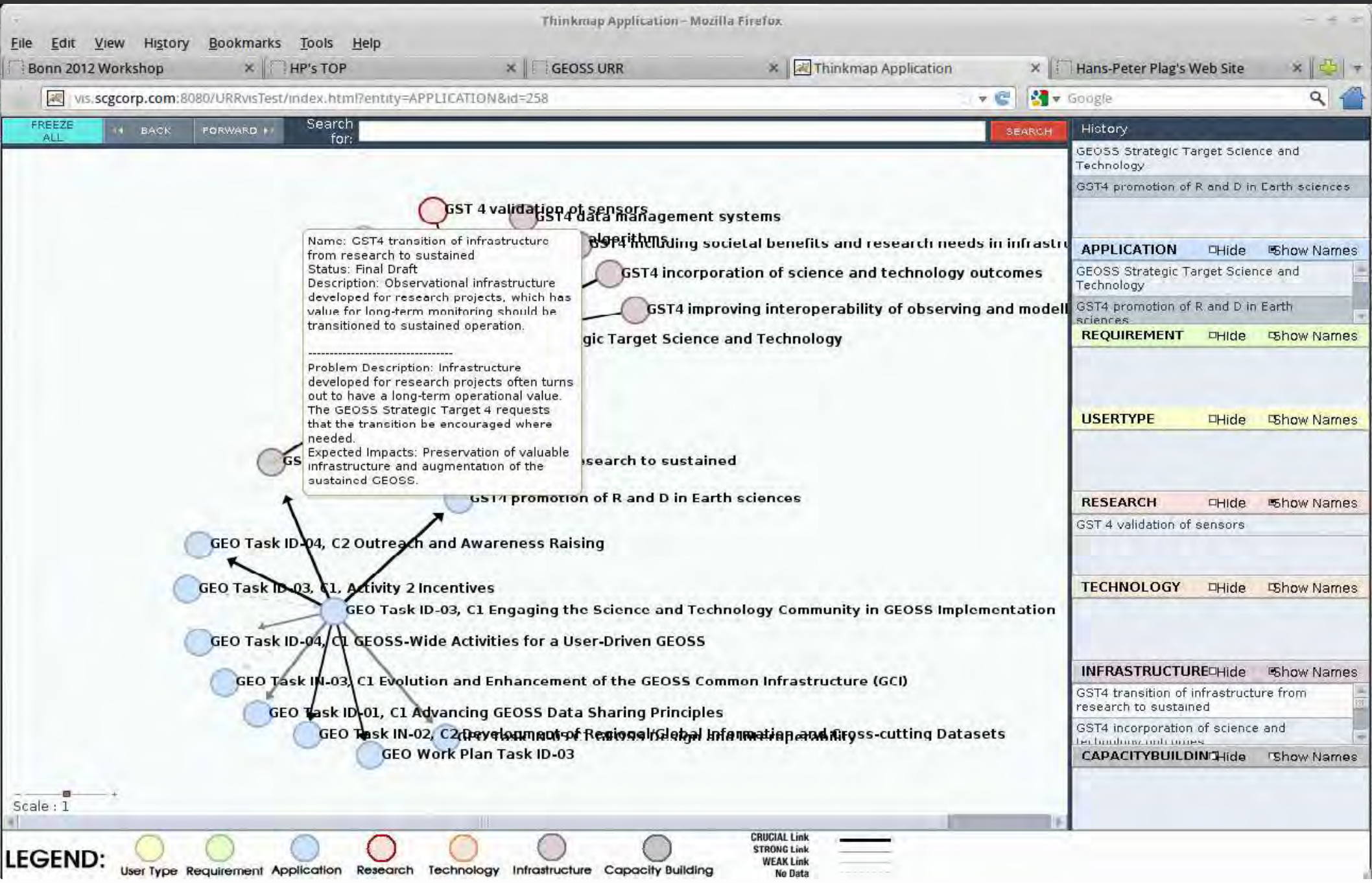
time-variable hazard probabilities
climate change impacts and hazards
climate change and hazards
TECHNOLOGY
Show names
INFRASTRUCTURE
Show names
CAPACITYBUILDING
Show names
LEGEND:
User Type
Requirement
Application
Research
Technology
Infrastructure
Capacity Building

ANALYSES


GEOSS Strategic Target
To be achieved through...
GEO Task Component
GEO Work Plan Task
BACK
FORWARD
Search for:
SEARCH
History
GST4 promotion of R and D in Earth sciences
APPLICATION Hide Show Names
GST4 promotion of R and D in Earth sciences
GEOSS Strategic Target Science and Technology
GEO Task ID-03, C1 Engaging the Science and Technology Community in GEOSS Implementation
REQUIREMENT Hide Show Names
USERTYPE Hide Show Names
RESEARCH Hide Show Names
GST 4 validation of sensors
TECHNOLOGY Hide Show Names
INFRASTRUCTURE Hide Show Names
GST4 transition of infrastructure from research to sustained
GST4 incorporation of science and technology
CAPACITYBUILDING Hide Show Names
GST4 improving interoperability of observing and modelling systems
GST4 including societal benefits and research needs in infrastructure planning
GST4 R and D in models and algorithms
GST4 transition of infrastructure from research to sustained
GST4 promotion of R and D in Earth sciences
GEO Task IN-03, C1 Evolution and Enhancement of the GEOSS Common Infrastructure (GCI)
GEO Task ID-04, C1 GEOSS-Wide Activities for a User-Driven GEOSS
GEO Task ID-03, C1 Engaging the Science and Technology Community in GEOSS Implementation
GEO Work Plan Task ID-03
GEO Task IN-05 C1 GEOSS Design and Interoperability
GEO Task ID-01, C1 Advancing GEOSS Data Sharing Principles
GEO Task ID-04, C2 Outreach and Awareness Raising
GEO Task IN-02, C2 Development of Regional/Global Information and Cross-cutting Datasets
Scale : 1
LEGEND:
User Type
Requirement
Application
Research
Technology
Infrastructure
Capacity Building

ANALYSES


Thinkmap Application – Mozilla Firefox
File Edit View History Bookmarks Tools Help
Bonn 2012 Workshop
HP's TOP
GEOSS URR
Thinkmap Application
Hans-Peter Plag's Web Site
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Google
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Search for:
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GEOSS Strategic Target Science and Technology
GST4 promotion of R and D in Earth sciences
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INFRASTRUCTURE Hide Show Names
GST4 transition of infrastructure from research to sustained
GST4 incorporation of science and
CAPACITYBUILDIN Hide Show Names
GST 4 validation of sensors
GST4 data management systems
GST4 incorporation of science and technology outcomes
GST4 improving interoperability of observing and modell
Name: GST4 transition of infrastructure from research to sustained
Status: Final Draft
Description: Observational infrastructure developed for research projects, which has value for long-term monitoring should be transitioned to sustained operation.
Problem Description: Infrastructure developed for research projects often turns out to have a long-term operational value. The GEOSS Strategic Target 4 requests that the transition be encouraged where needed.
Expected Impacts: Preservation of valuable infrastructure and augmentation of the sustained GEOSS.
GEO Task ID-04, C2 Outreach and Awareness Raising
GEO Task ID-03, C1, Activity 2 Incentives
GEO Task ID-03, C1 Engaging the Science and Technology Community in GEOSS Implementation
GEO Task ID-04, C1 GEOSS-Wide Activities for a User-Driven GEOSS
GEO Task IN-03, C1 Evolution and Enhancement of the GEOSS Common Infrastructure (GCI)
GEO Task ID-01, C1 Advancing GEOSS Data Sharing Principles
GEO Work Plan Task ID-03
Scale : 1
LEGEND:
User Type
Requirement
Application
Research
Technology
Infrastructure
Capacity Building
CRUCIAL Link
STRONG Link
WEAK Link
No Data

ANALYSES

Analysis goals:

- Prioritization: importance of requirements, applications, user types, …
- Gap analysis: which requirements are (not) met?
- Relevance: How relevant is this data set?

Prioritization - URR internal:

- What user types and applications depend on this requirement?
- What data products are needed for this application?
- What research is needed to enable this application?

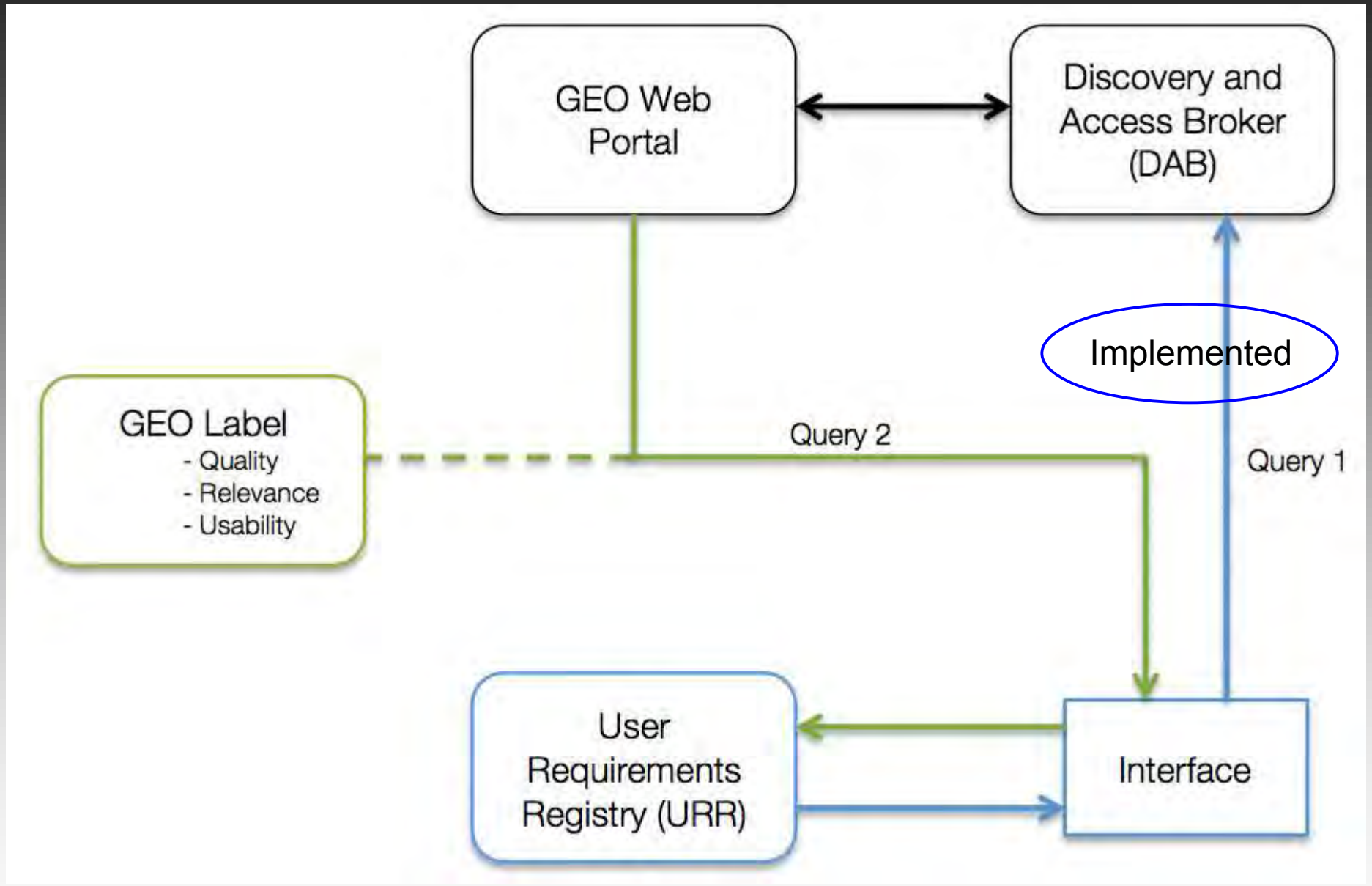
Gap Analysis - URR to Discovery and Access Broker:

- Are there data products that would meet my needs?

Relevance Analysis – GEO Portal to URR:

- Who is using my data for what?

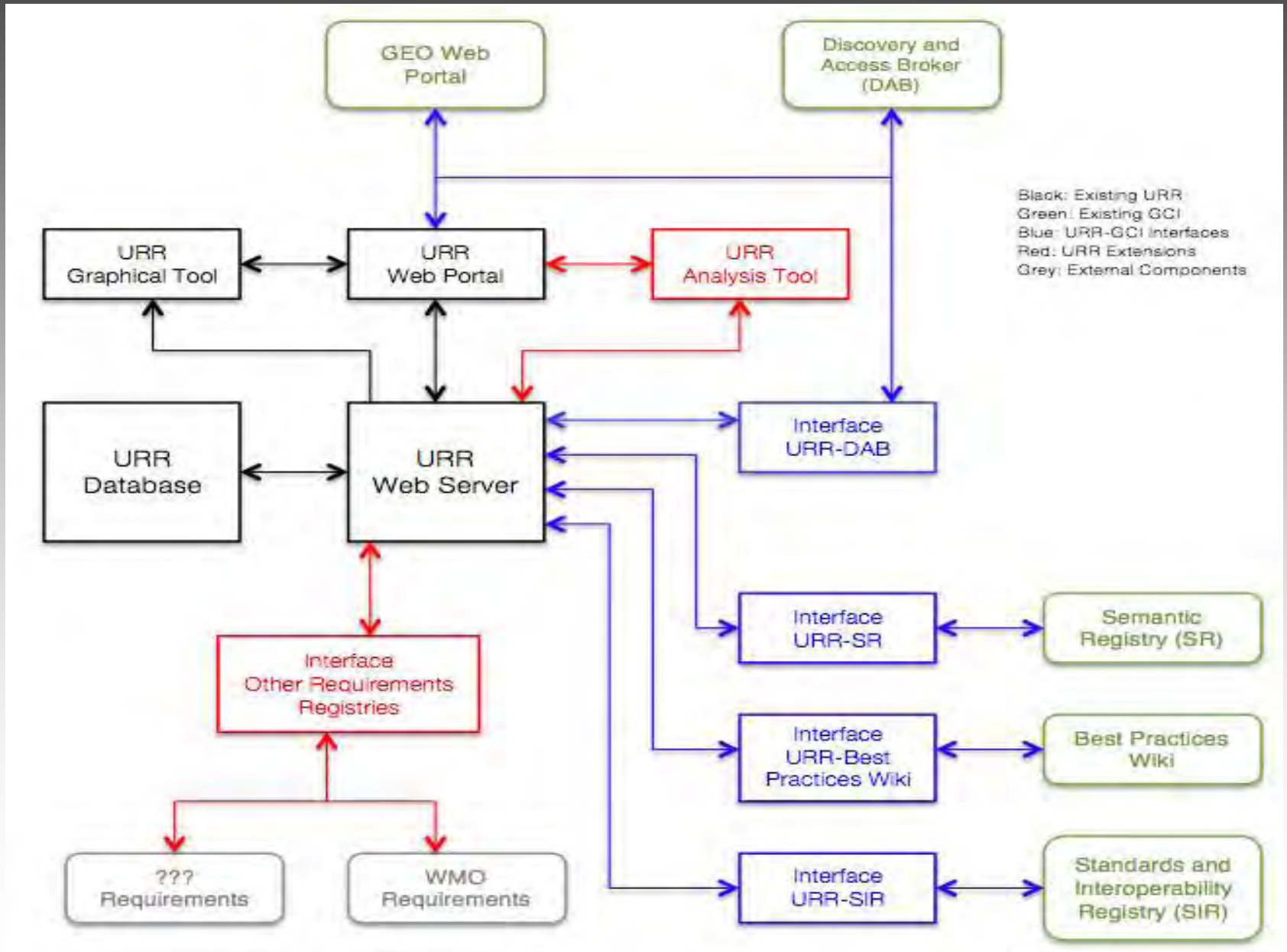
ANALYSES



Prioritization: based on relevance within URR
Gap analysis: Query 1
Relevance of datasets or products: Query 2

SUMMARY & OUTLOOK

Main points:
- URR links Societal Benefits, Science Disciplines, and GEOSS
- Populating the URR requires a multi-faceted approach
- Users need guidance in analyzing and publishing their needs

Users request new functionalities:
- Research needs, infrastructure needs, technology needs and capacity building needs were user requests
- linking of datasets to requirements
- linking of standards and best practices to applications
- linking of individual users to user types
- associated social network

OUTLOOK: MORE CONNECTIONS AND INTEROPERABILITY