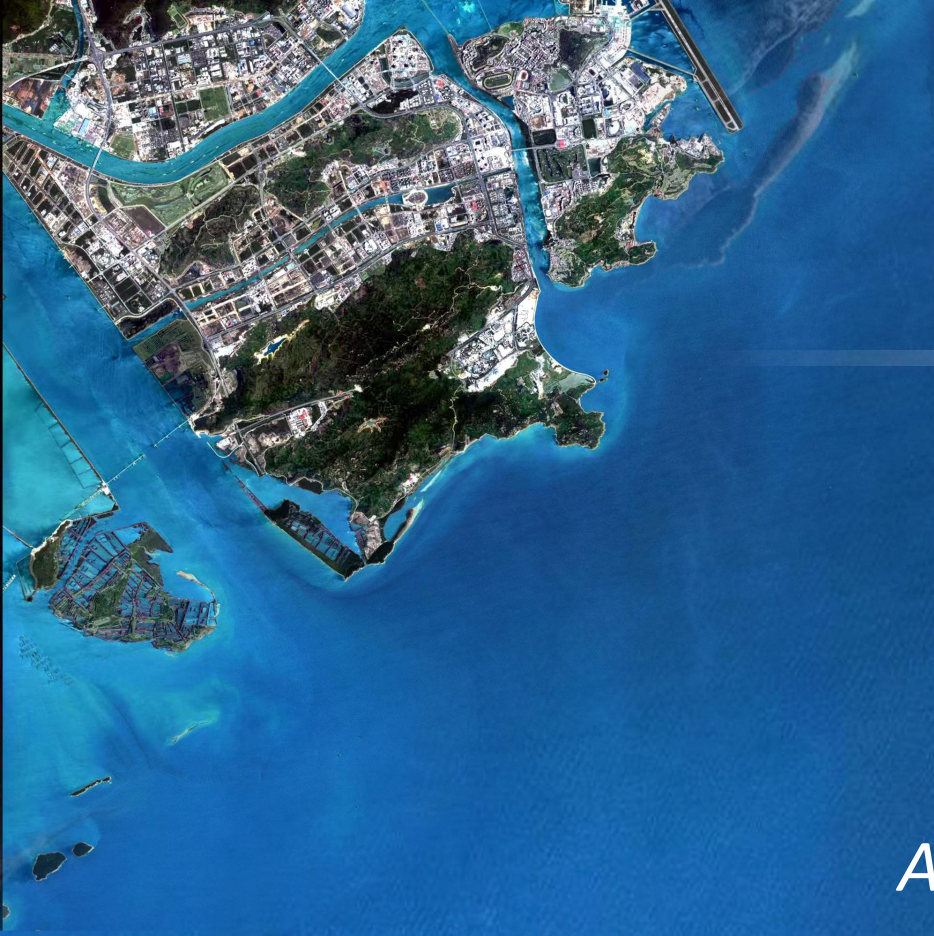


6th Asia-Oceania Group on Earth Observations (AOGEO) Workshop

May 29-31, 2023 Macau, China

Construction progress of new ChinaGEOSS component

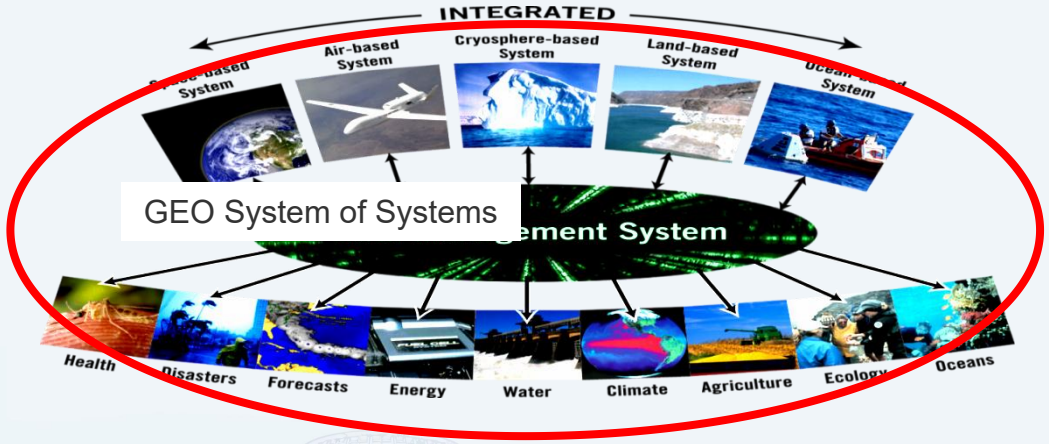
Wang Jian, Zhang Lianchong
Aerospace Information Research Institute(AIR), CAS

AO GEO
Earth Observations for Asia-Oceania

https://aogeo-workshop-2022.casconf.cn/
Email：aogeo_china@aircas.ac.cn

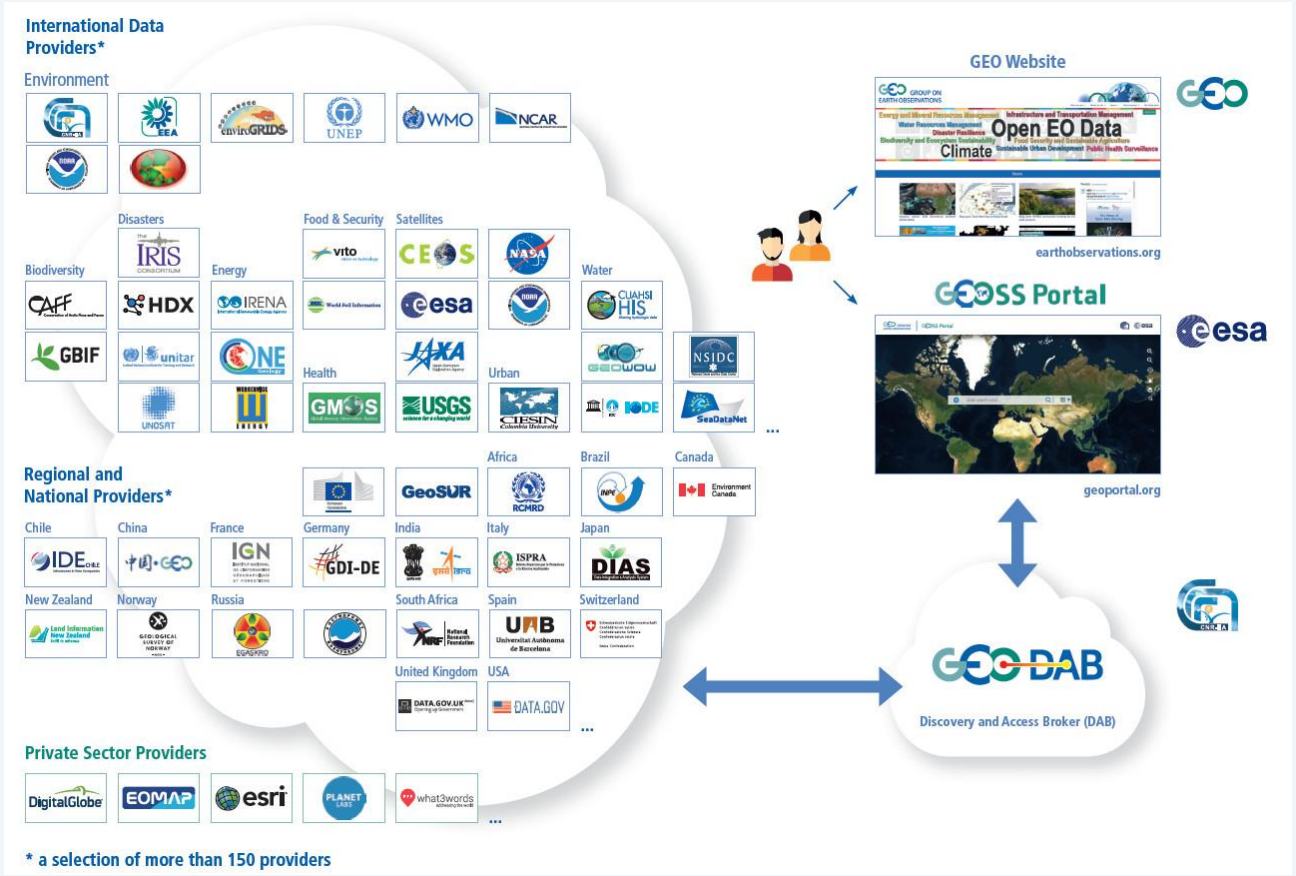
1. Background
2. Overall Progress
3. Major progress and highlight achievements
4. Next Plan

GEOSS-The core and driving force of GEO's work



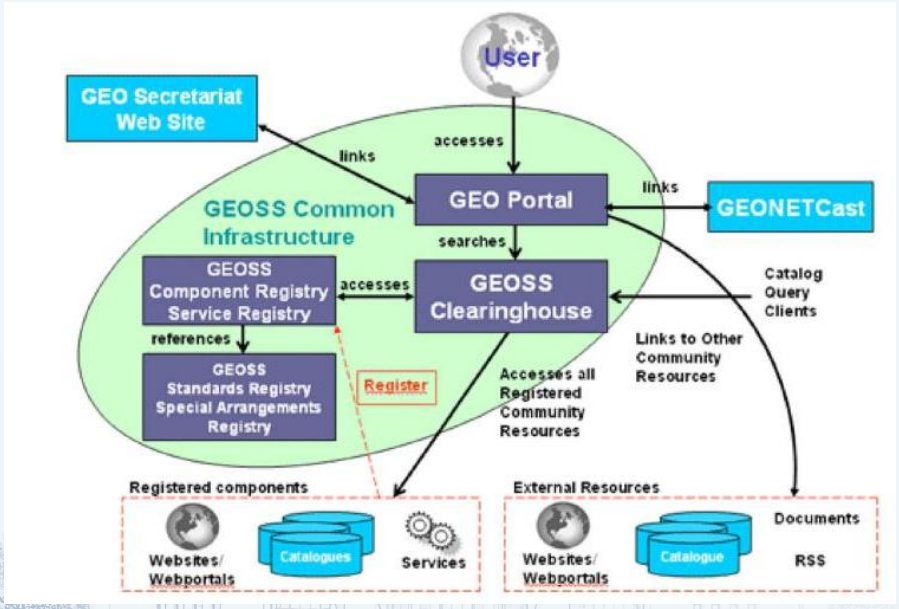
- More than 166 autonomous data catalogs and information systems, comprising over 400 million data and information resources.

GEO GROUP ON EARTH OBSERVATIONS Implementing GEOSS through the GCI



6TH ASIA-OCEANIA GROUP ON EARTH OBSERVATIONS (AOGEO) WORKSHOP

1.0 GEOSS



Clearinghouse

GEO Portal

Registration System (Organization/Agency/Institution)

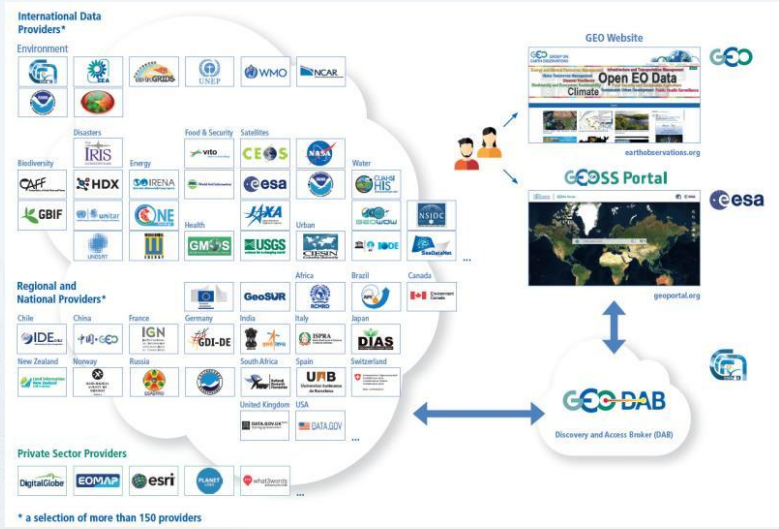
2.0 GEOSS

GEO Portal

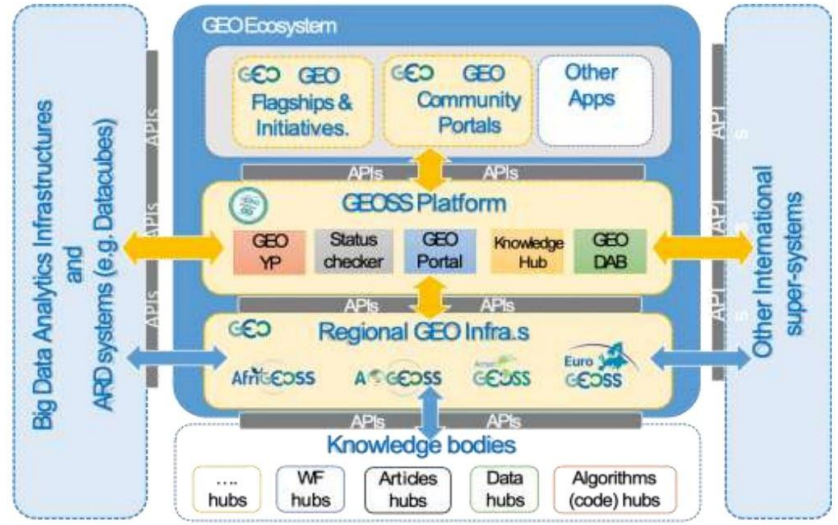
Clearinghouse

Registration System (Organization/Agency/Institution)

Data Access Broker(DAB)



3.0 GEOSS



GEO Portal

Clearinghouse

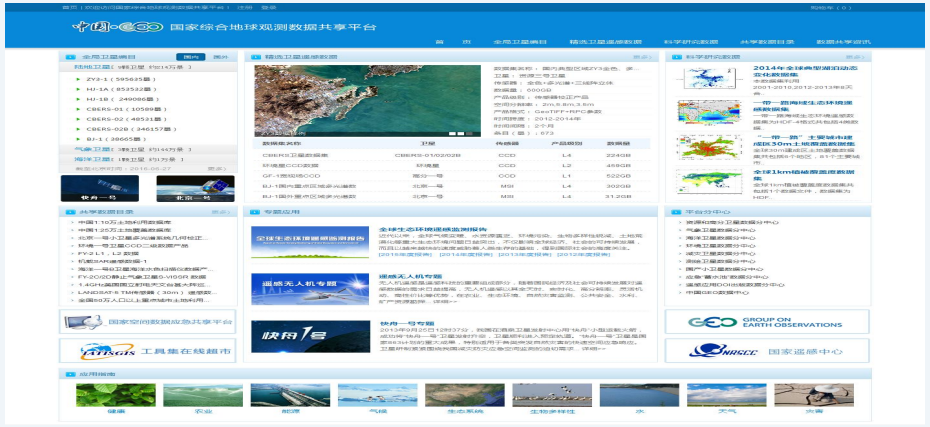
Registration System (Organization/Agency/Institution)

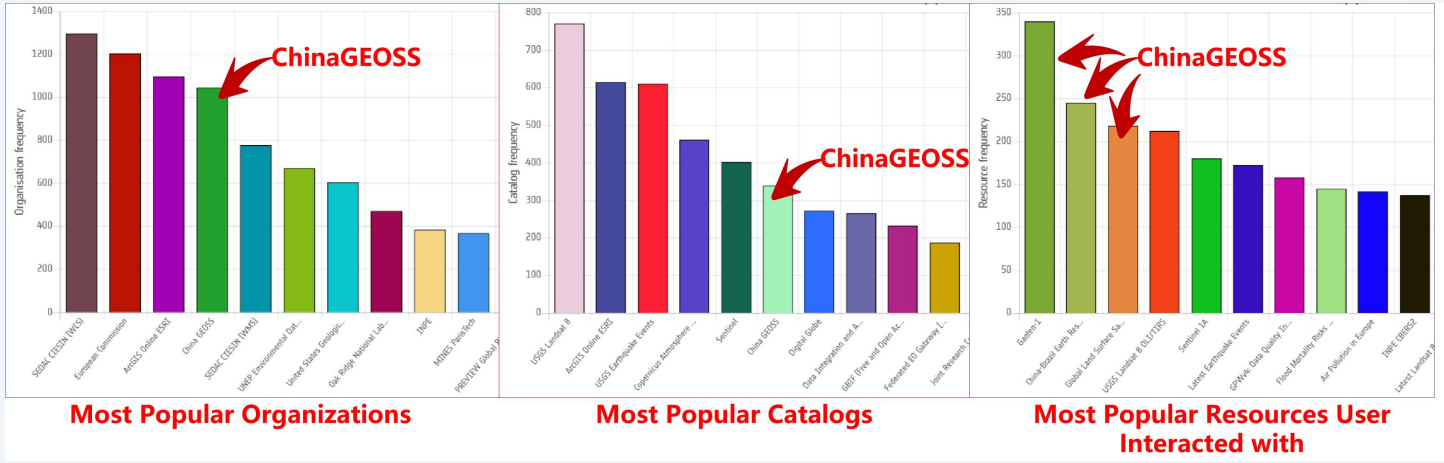
Knowledge Hub

Status Checker

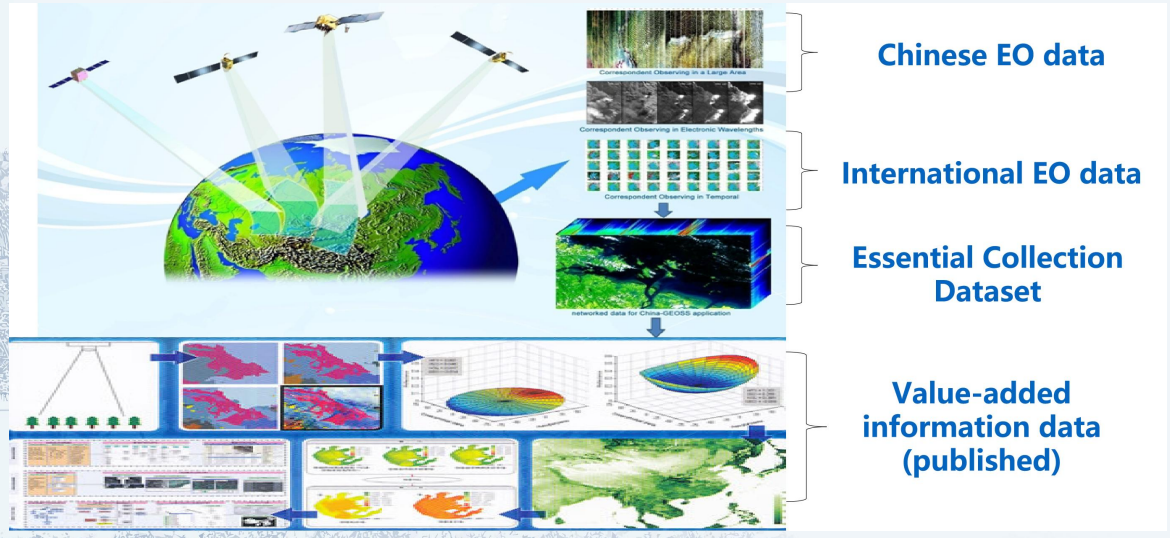
Data Access Broker(DAB)

6TH ASIA-OCEANIA GROUP ON EARTH OBSERVATIONS (AOGEO) WORKSHOP





Most Popular Organizations | Most Popular Catalogs | Most Popular Resources User Interacted with



- Over the last decades, Chinese satellite data are widely used in different fields.
- ChinaGEOSS DSNet was created in 2011 by NRSCC.
- A Key Contributor to GEO： Since 2016, more than 4.5 million Chinese EO data can be discovered and accessed in the GEOSS portal.

GEO portal

Clearing House

China GEOSS

Data Access Broker (DAB)

Registration System(data, information, knowledge)

Knowledge Hub

Missing
Status Checker

YellowPage

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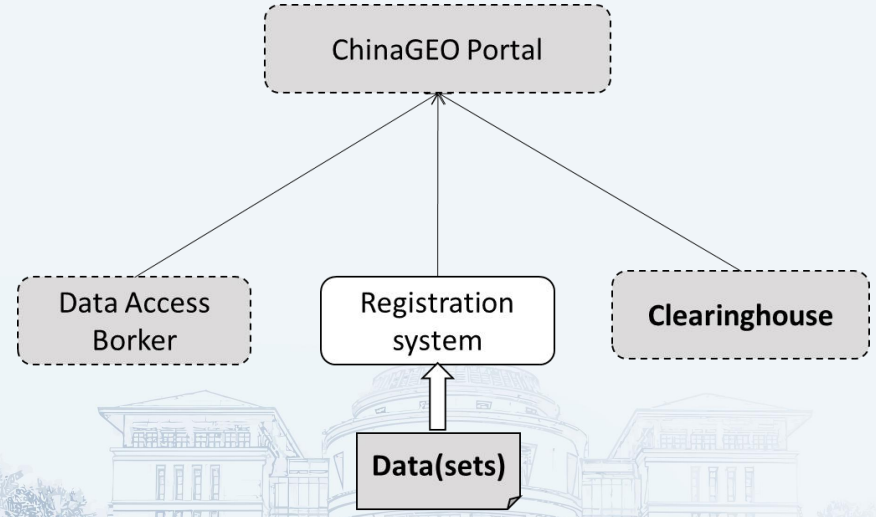
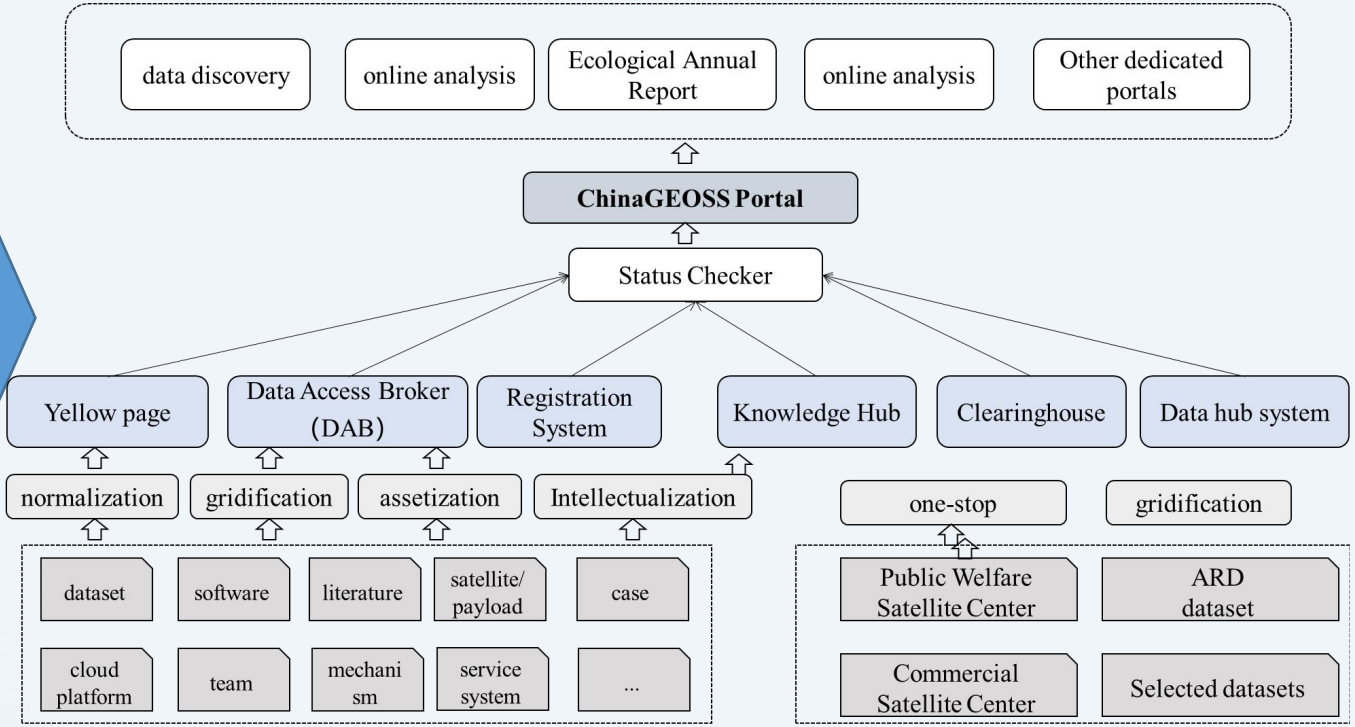


ChinaGEOSS Framework



Next Generation ChinaGEOSS Framework

-This study was supported by National Research and Development Program of China (2021YFE0117000)

Research on Registration Techniques for Heterogeneous Digital Objects

Unified Registration and Description Subsystem

- Description Specification
- Metadata Extraction
- Permanent Storage
- Description Framework

Identifier Encoding Subsystem for Heterogeneous Data Objects

- Classification Information
- Source Information
- Granularity Information
- Time Information

Interface Management Subsystem

- Automated Information Matching
- Bulk Registration
- Error Detection
- Automatic Registration

- **Create a classification system for different types of resources with unique codes.**
- **Develop a registration system for ChinaGEOSS digital objects that aligns with international standards and reflects national characteristics.**
- **Utilize the ChinaGEOSS portal to achieve permanent storage of resources through data submission or interface software services.**

Research on Registration Techniques for Heterogeneous Digital Objects

	suffix structure	suffix character content	Coding example
1	resource type	English alphabet	rp、db
2	publication date	6 digits (4 for year, 2 for month))	202005
3	publication date	6 digits, sequential coding (000001-999999)	000001
4	part code	Random combination of 6 letters and numbers	53f5r3

DOI (Digital Object Identifier)

	suffix structure	suffix character content	Coding example
1	resource type	English alphabet	rp、db
2	publication date	6 digits (4 for year, 2 for month))	202005
3	publication date	6 digits, sequential coding (000001-999999)	000001
4	part code	Random combination of 6 letters and numbers	53f5r3

CSTR (Science and Technology Resource Identification)

- **6 types of digital objects (datasets, documents, reports, videos, models, and software)**
- **1789 resource registrations.**

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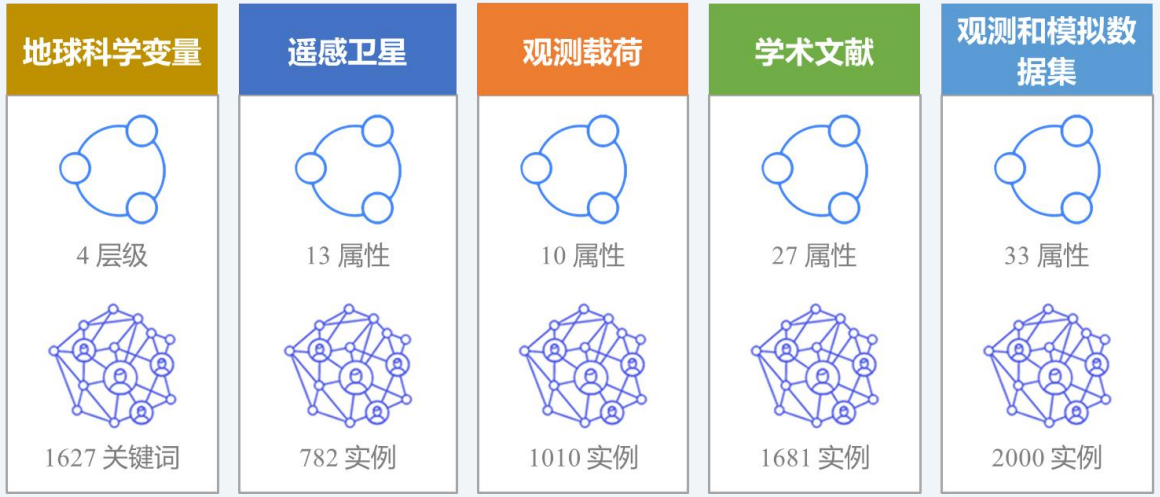
Research on knowledge systems and knowledge bases in the three priority areas of GEO

Expression method of geoscience knowledge "space-time + triplet"



- 1627 five-level observed variables
- 782 Earth observation satellites
- 1010 observation loads
- A sample dataset of 1000 satellite observations
- 1000 Sample Earth Simulation Datasets

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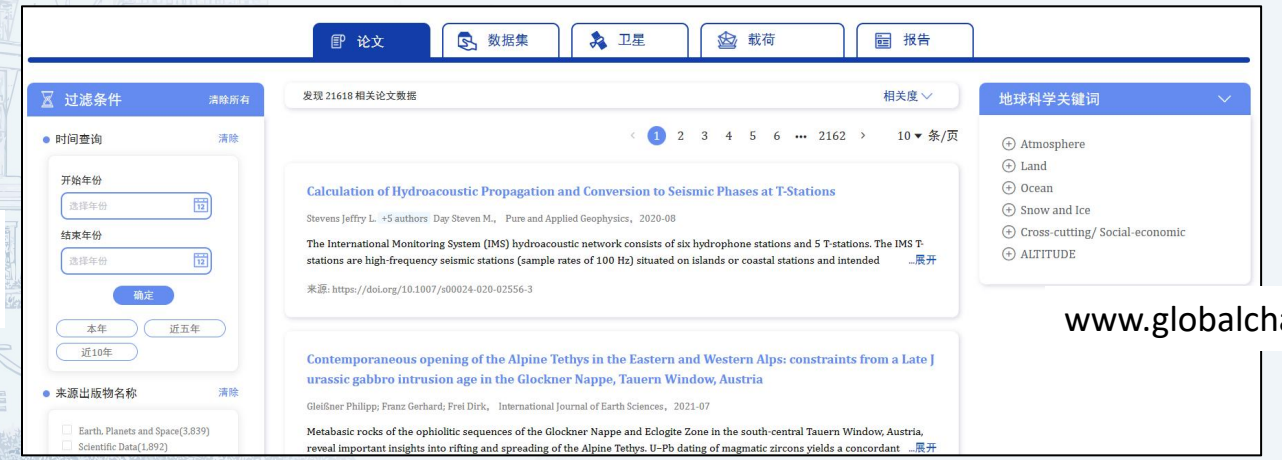
Research on knowledge systems and knowledge bases in the three priority areas of GEO

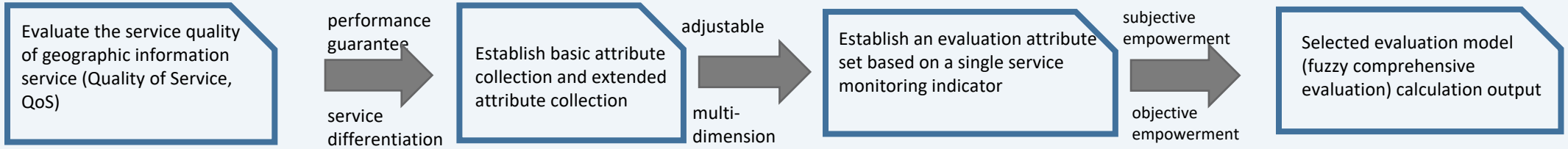
Home display

search result



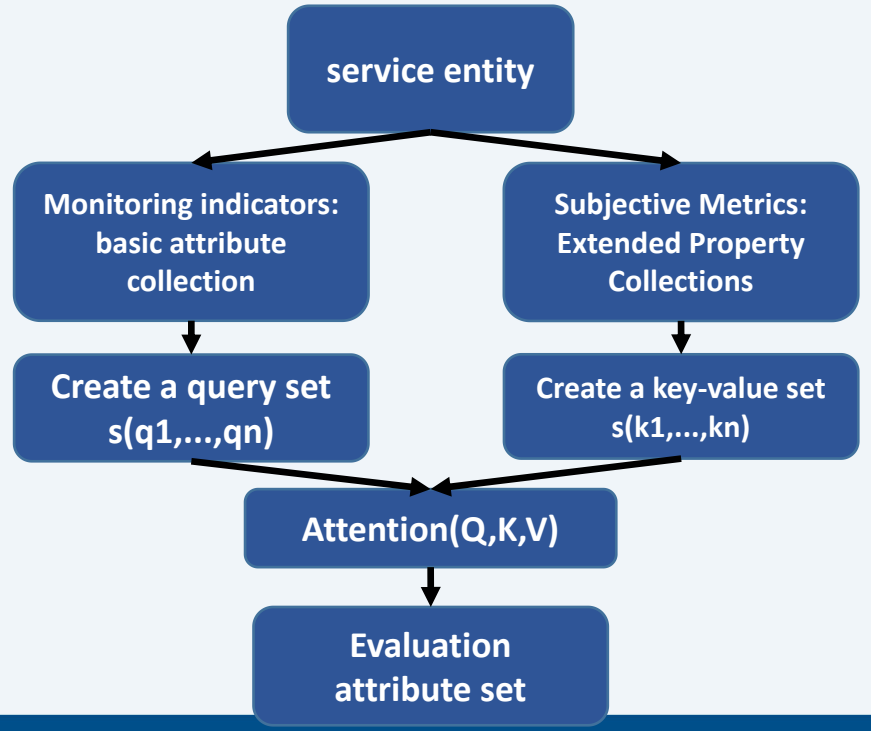
www.globalchange.net.cn

Research on quality control technology for digital object optimization



Geographic information service quality evaluation attribute table

attribute name	attribute type	attribute name	attribute type
Access success rate	objective attributes	reliability	objective attributes
Response time	objective attributes	concurrent visits	objective attributes
throughput	objective attributes	Location	objective attributes
safety	subjective attributes	Interoperability	subjective attributes
integrity	subjective attributes	priority	subjective attributes
Credibility	subjective attributes	economic cost	subjective attributes



The monitoring subsystem monitors at intervals of 1 hour. From January 24, 2023 to March 27, 2023, a total of 447,014 service quality monitoring records and 785 computer resource status monitoring records were generated.

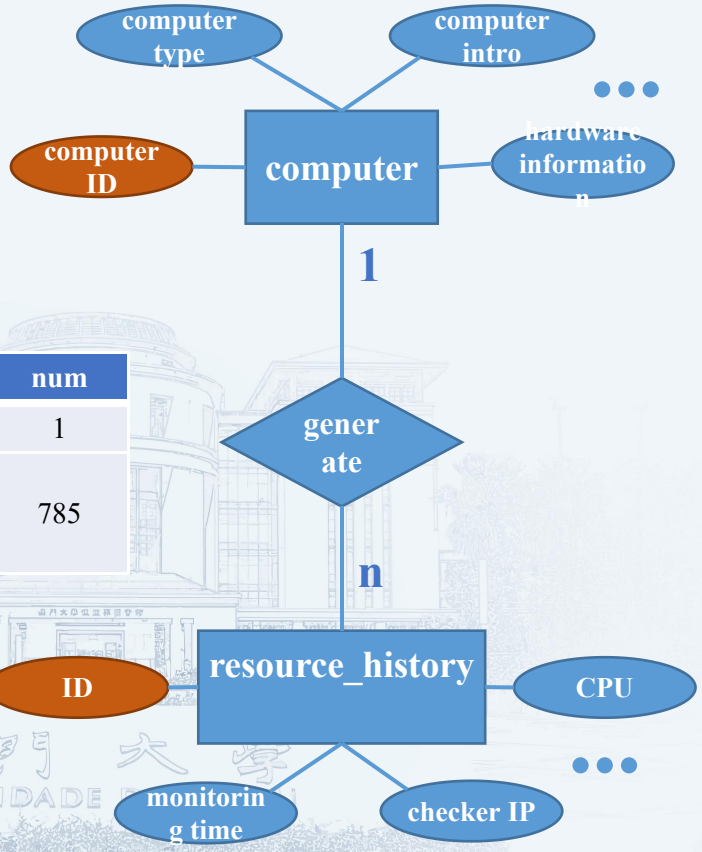
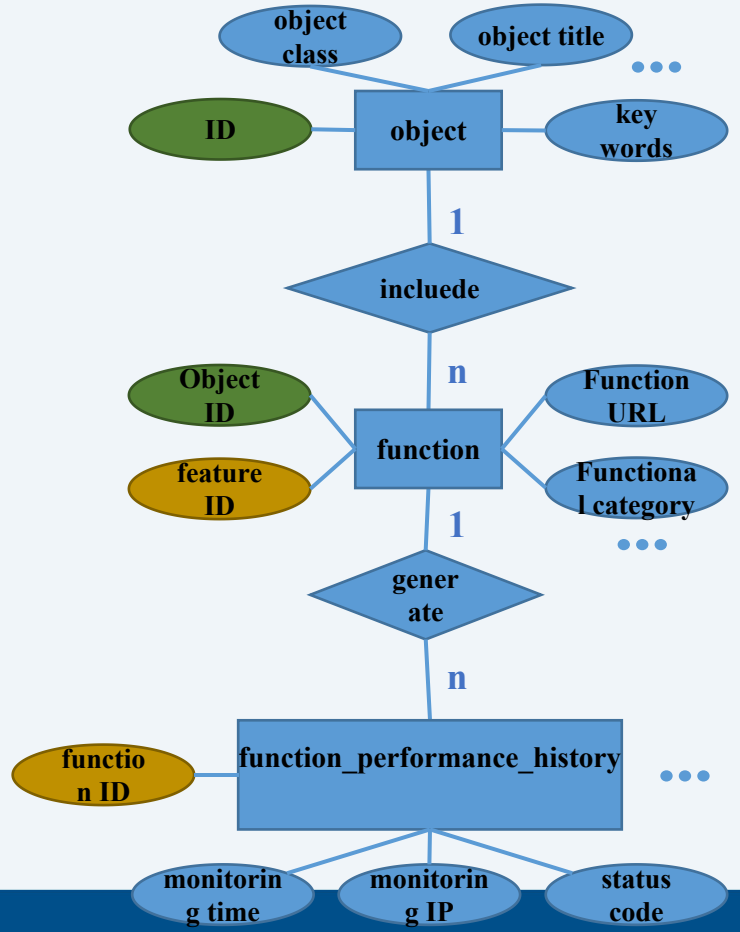


table	num
computer	1
Resource Monitoring History	785



category	num
WMS	996
WFS	10
WCS	10
WMTS	3
GEOSS	10
TOTAL	1029

category	num
WMS	27092
WFS	10
WCS	10
WMTS	3
GEOSS	10
TOTAL	27125

category	num
WMS	441216
WFS	1759
WCS	1767
WMTS	519
GEOSS	1753
TOTAL	447014

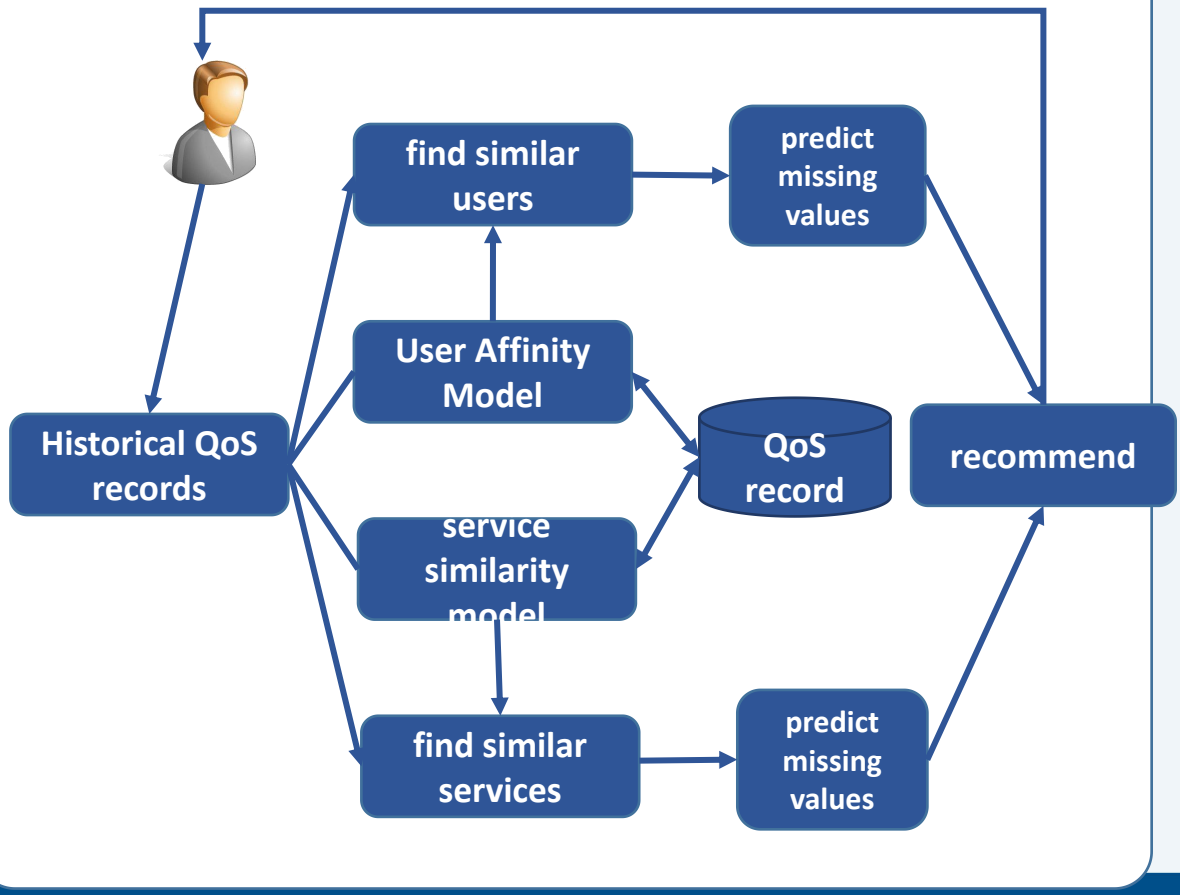
The recommendation based on service quality aims to dig out the user's preference pattern based on the user's historical service call records, and recommend services that may meet their preferences to the user.

User Interest Model Construction

- service feature vector
- user interest vector

Geographic Information Service Quality Model Construction

- Attributes of the service itself (comprehensive evaluation)
- Properties in the current running environment (transmission delay, etc.)
- Attributes of user requirements (Availability etc.)



Research on Yellow Page System for Earth Observation Resource

- Problems and Challenges of ChinaGEOSS

- Lack of scientific, systematic and efficient management of these resources
- These resources are difficult to be further mined and used, affecting service quality and efficiency

- Solutions and goals of ChinaGEOSS

- Development of the Yellow Page Prototype System for Earth Observation Resources for ChinaGEOSS
- Realize the unified registration, classification, retrieval, display and sharing of these resources
- Improve the discoverability, accessibility and usability of these resources

Yellow Page Prototype System for Earth Observation Resources:

- ✓ **resource portal,**
- ✓ **resource registration**
- ✓ **resource review**
- ✓ **resource identification**

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Next Plan

✓Develop YellowPage system
✓Integrate and test the quality control system, registration system, knowledge system and knowledge base
✓Improve the service quality recommendation rules of the portal system
✓Continue to carry out application demonstrations
✓Achieve trial operation status by the end of 2023 and early 2024

- 1st ChinaGEO Conference held in Beijing from September 8 to 9
- A newly upgraded DSNet website was demonstrated. The major upgrading functions are involved in infrastructure, data governance, user interaction and statistical analysis.

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