

ICSU-World Data System, New Scientific Data Management

Yasuhiro Murayama[1], Mustapha Mokrane[2], Bernard Minster[3]

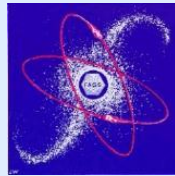
[1] NICT/WDS-Scientific Committee, [2] WDS-International Programme Office, [3] UCSD/WDS-Scientific

Creation of ICSU-World Data System

ICSU (Intl. Council for Science)
29th General Assembly decision
in Maputo (October 28, 2008):



PAST
(since
1950's)



WDC (World Data Center)
FAGS (Federation of Astronomical and Geophysical
Data Analysis Services)

PRESENT
(2008~)



ICSU International Scientific Unions data bodies
ICSU National Members data bodies
ICSU Interdisciplinary Bodies data activities

WDS Scientific Committee 2012-2015

- **Bernard Minster** (*Chair, USA*)
- **Michael Diepenbroek** (*Germany*)
- **Kim Finney** (*Australia*)
- **Françoise Genova** (*France*)
- **Wim Hugo** (*South Africa*)
- **Jane Hunter** (*Australia*)
- **Vasily Kopylov** (*Russian Fed.*)
- **Guoqing Li** (*China*)
- **Ruth Neilan** (*USA*)
- **Lesley Rickards** (*UK*)
- **Ryosuke Shibasaki** (*Japan*)
- **Ariel Troisi** (*Argentina*)
- **Ex-Officio**
- **Howard Moore** (*ICSU*)
- **Yasuhiro Murayama** (*NICT*)



**WDS-SC Members, IPO staff
and ICSU President**

- *1/3 from WDS member directors (data centers/services)*
- *By ICSU EB for 3 year term*
- *The current: started June 2012*

WDS implementation

1. **Constitution** (ICSU EB)
2. **Data policy** (similar to data sharing principles of GEOSS and CODATA)
3. **Certification criteria** (for regular and network memberships)
4. **Applications for Membership** (open process)
5. **International Programme Office** (ICSU's decision)

WDS

International Programme Office



WDS IPO Inauguration, May 2012

Membership

Regular (53)	Data curation and data analysis services. (Individual data centres, data services)
Network (8)	Networks of regular members, umbrella organizations (e.g. IODE, IVOA...)
Partner (2)	Do not deal directly with data collection, curation, and distribution, but supports WDS
Associate (13)	Organizations interested in the WDS endeavour

- Many applications were discouraged
- Many other applications are in progress...

Objectives

- The WDS ensures the **long-term stewardship** and provision of **quality-assessed data** and data services to the international science community and other stakeholders. The WDS incorporates new scientific data activities into a common, **globally interoperable**, distributed data system. The WDS advances interconnections between data management components for **disciplinary and multidisciplinary scientific data applications**. WDS has a broad disciplinary and geographic base and strives to become a **worldwide ‘community of excellence’** for scientific data.

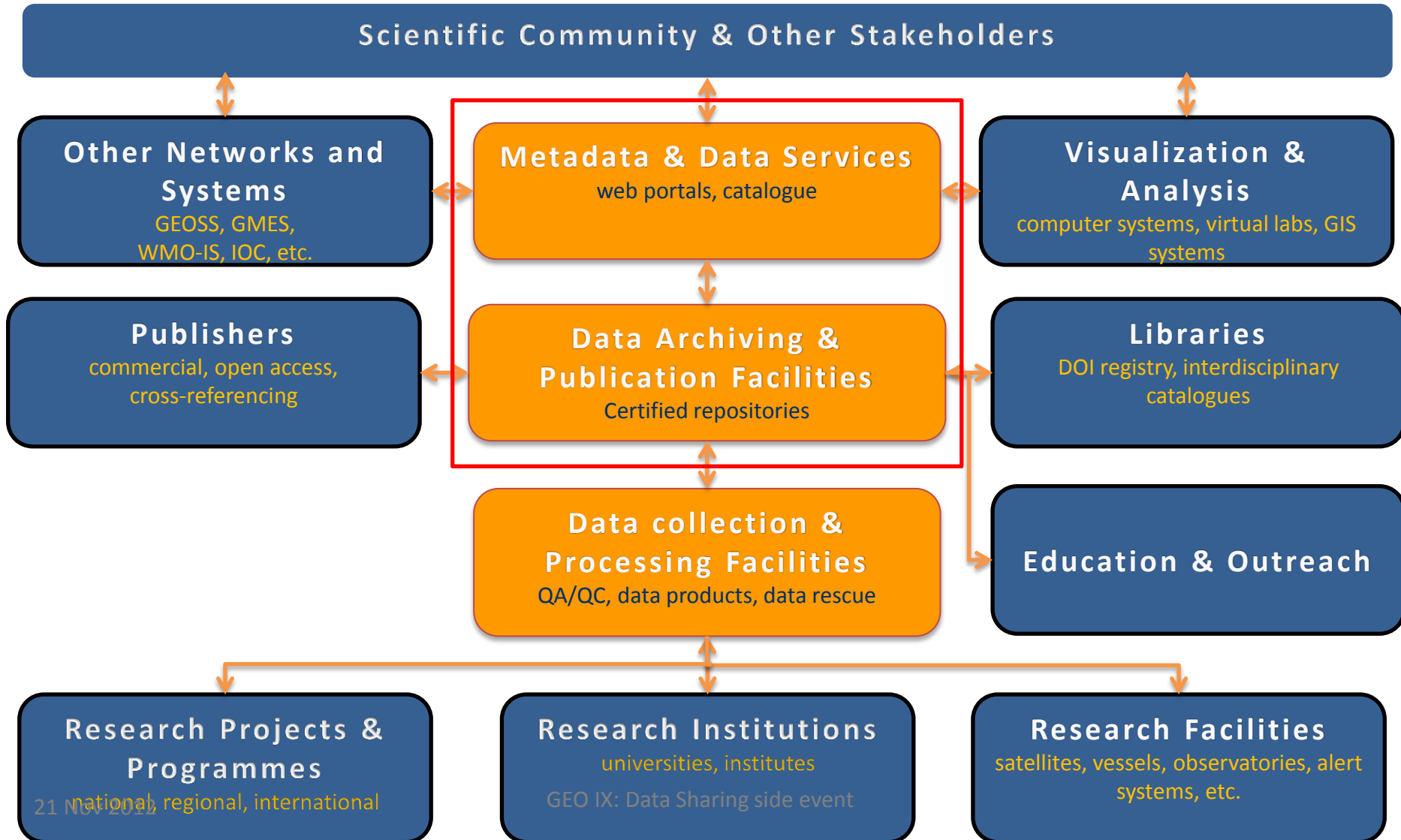
Requirements

- ✓ Full and open access data policy
- ✓ Broad disciplinary and geographic coverage
- ✓ Trustworthiness
- ✓ Adoption of data standards/conventions

Next Steps

[WDS-scientific committee, 2011]

- Working groups
- Membership
- Future Earth, GEOSS, CODATA...



"System of data systems"

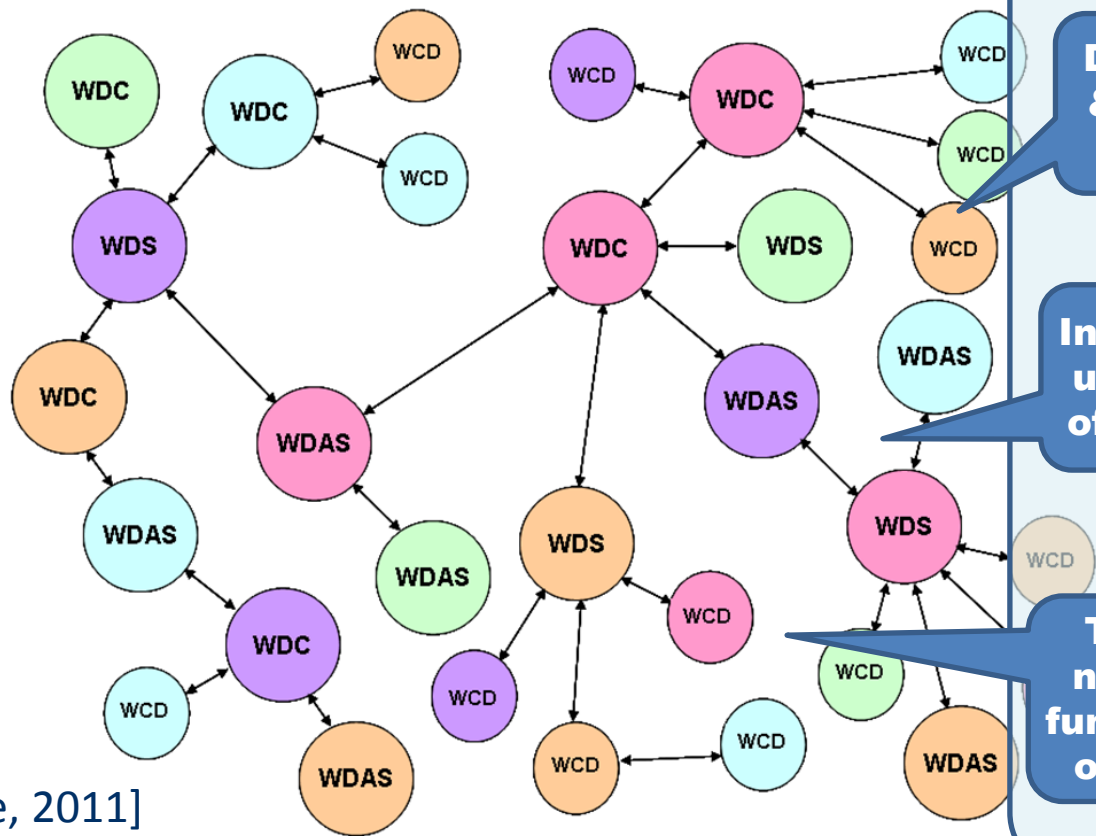
Parallel concept to GEOSS

WDC = World Data Center

WDS = World Data Service

WDAS = World Data Analysis Service

WCD = World Center for Data



Targetting:

Data owned & managed by each

Interoperable: use datasets of each other

The whole network for functioning as one system

[WDS-scientific committee, 2011]

Illustrative example of interoperable data systems

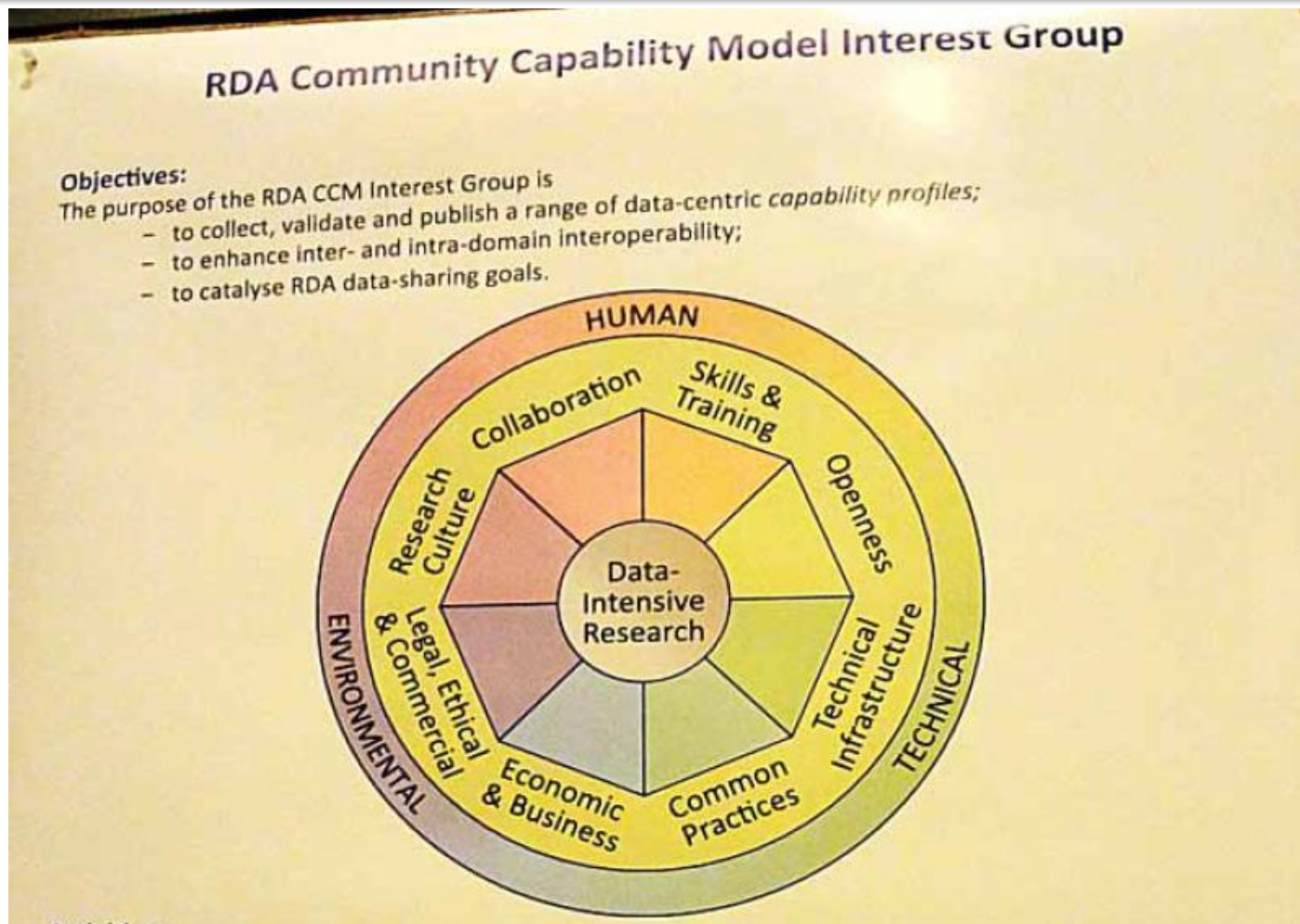
→ Free Scale Network

Open Data (↔ "Big Data")

Fusion in future?

RDA: Toward Data intensive science

(Collaboration of Univ. of Bath and Microsoft Research Connections)



- RDA (Research Data Alliance) was established March 2013.
- Promoted in G8 science minister meeting June 2013.
- Big data science (data intensive science) comes only if the human, environmental, and technical difficulties are overcome.

Toward Data Publication/Data Citation

Building a Culture of Data Citation



Thank you

Visit www.icsu-wds.org

Backup slides

日本学術会議の対応

内閣府

日本学術会議

総会

事務局

委員会

分野別委員会

課題別
委員会

幹事
会

部

機能別委員会

国際委員会

ICSU附置
委員会対応
小分科会

情報学
委員会

地球惑星
科学委員会

Future Earth

大西会長、
春日副会長、
WDS関係者
等 参加

ICSU附置
委員会
連絡協議会

国際サイエンス
データ分科会

国際
対応
分科会

DIVERSITAS
an international programme
of biodiversity science

WCRP
GLOBAL
IGBP
CHANGE

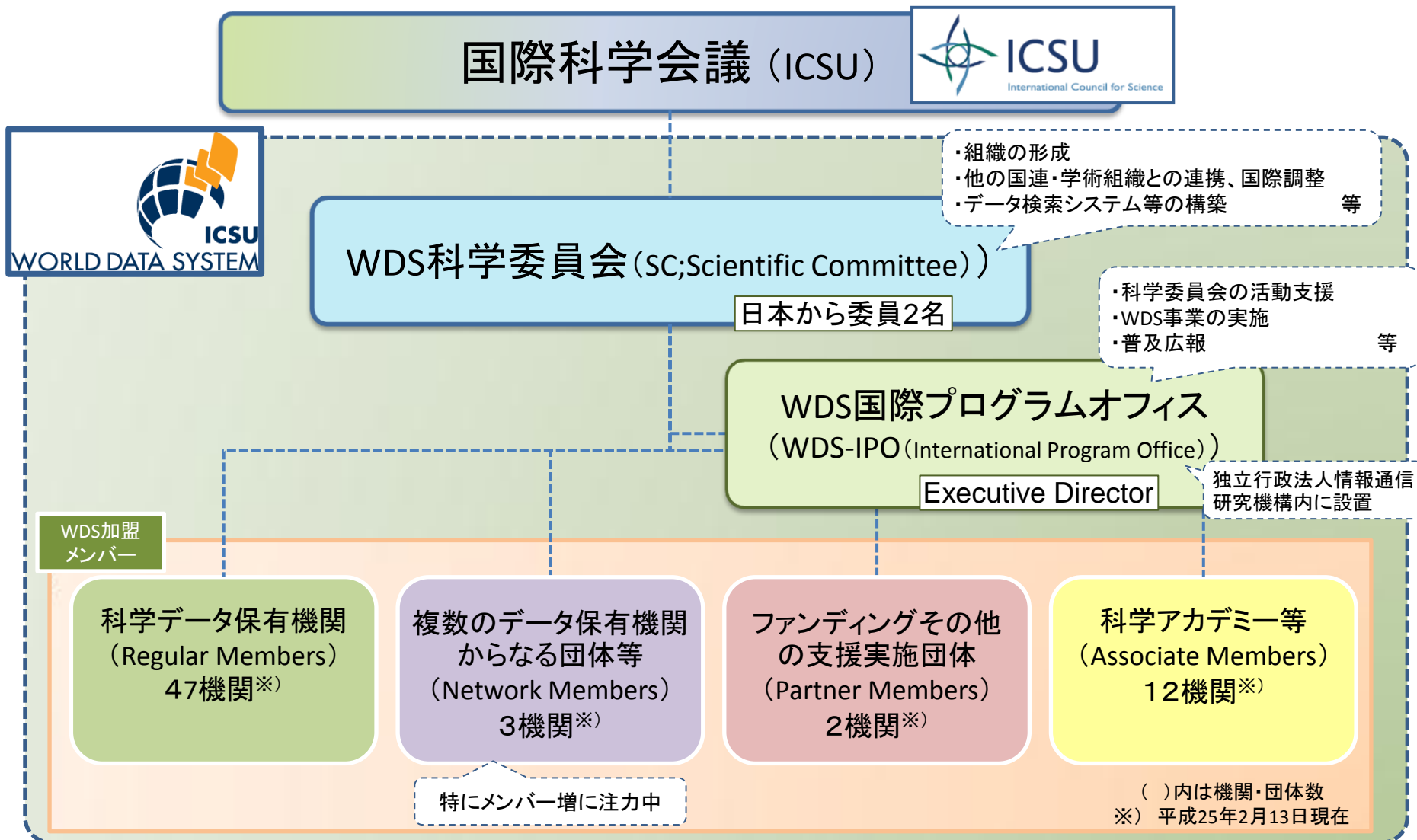
IHDP

CODATA
小委員会

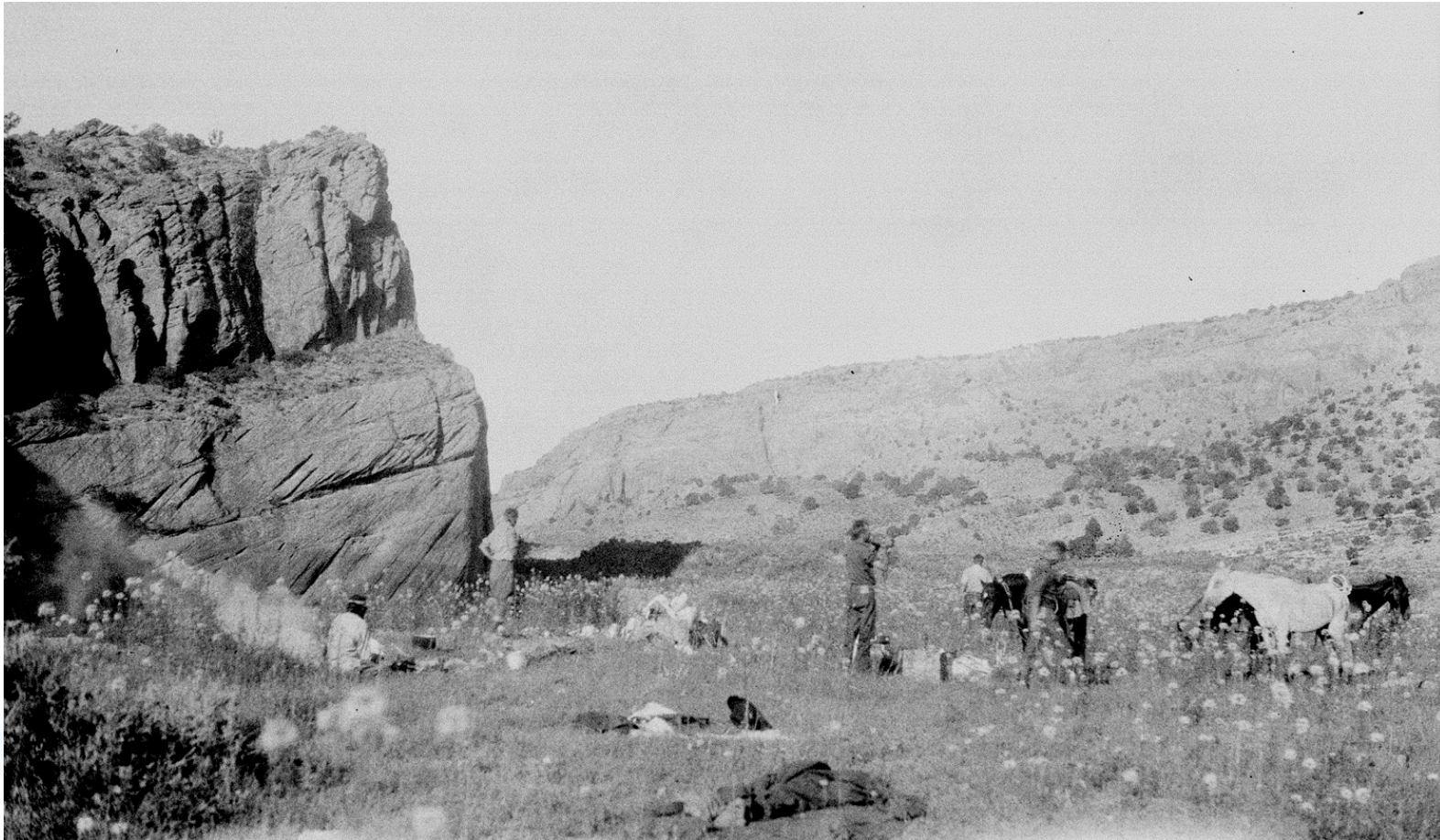
WDS
小委員会

WDS関係組織

- ・活動計画の大枠を科学委員会が決定
- ・国際プログラムオフィスは委員会活動支援+WDS事業の実施



Tsegi Canyon, 1927



James J. Hanks Collection, Special Collections and Archives, Cline Library, Northern Arizona University. NAU.PH.2005.3.1.2.3c. Metadata at <http://archive.library.nau.edu/> item 45552

Tsegi Canyon, 2005 (Bob Webb)



Repeat geo-photography: A data publication, curation and analysis service for the geological community

[B. Minster, 2011]¹⁸

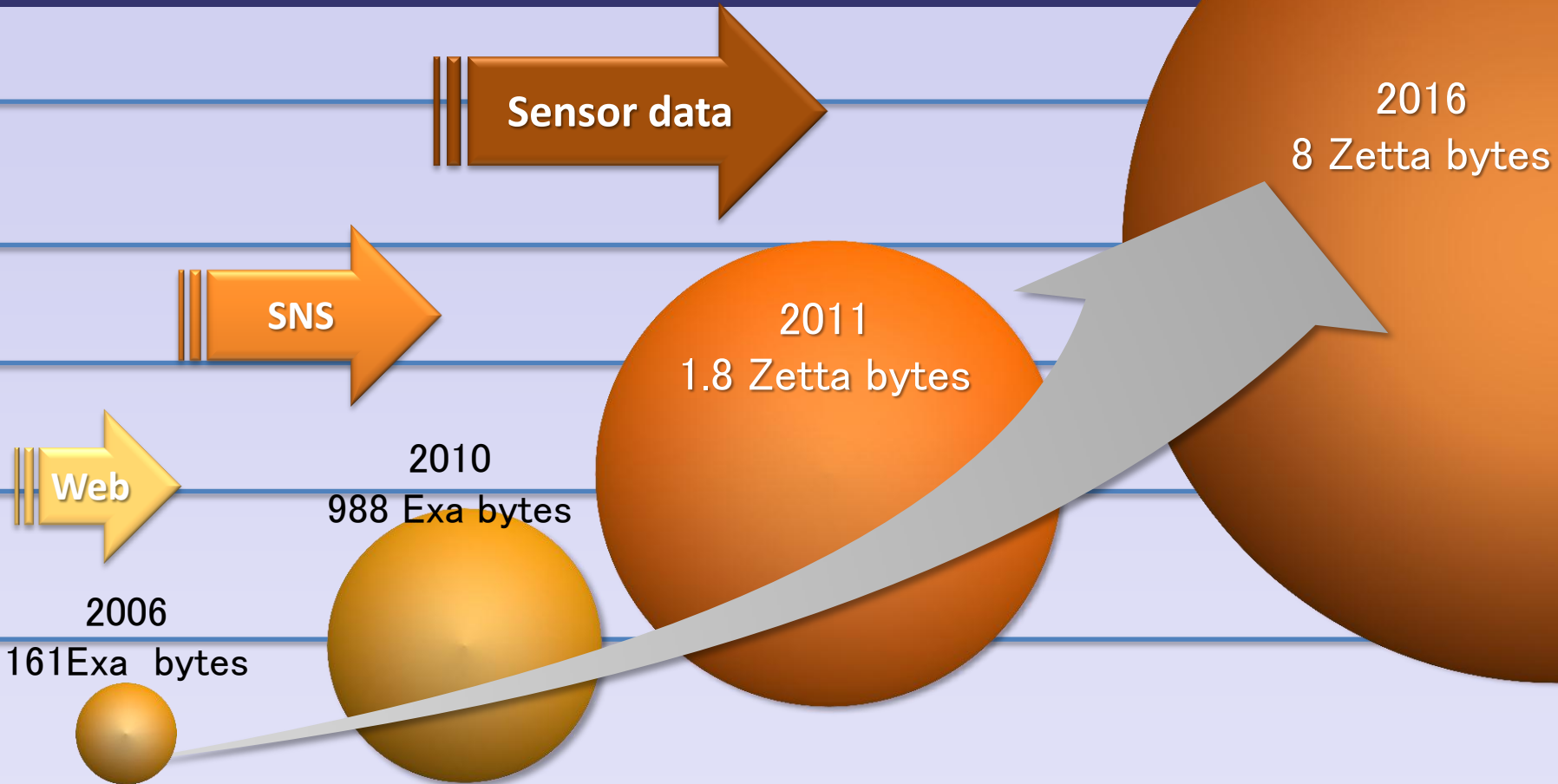
WDS Objectives



- Enable **universal and equitable access** to quality-assured scientific data, data services, products and information;
(一般公開するポリシー；品質評価されたデータ)
- Ensure **long term data stewardship**;
(長期的なデータ保全)
- Foster compliance to agreed-upon **data standards and conventions**;
(標準的、共通形式の利用を促進)
- Provide **mechanisms to facilitate and improve access** to data and data products.
(データのアクセシビリティの改善)

Data-Intensive Era

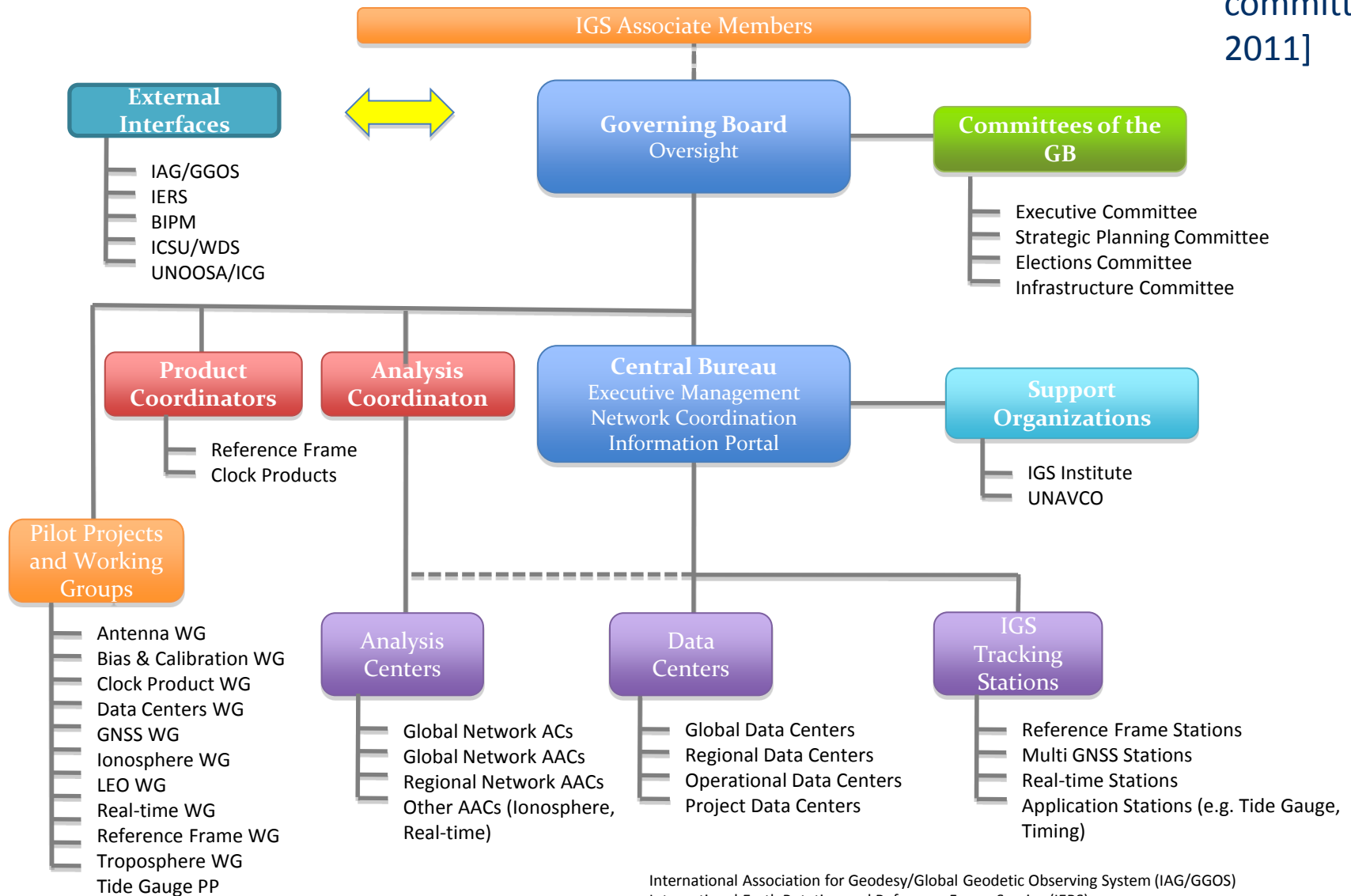
Data explode 44x in next decade



IDC 2011 Digital Universe Study: Extracting Value from Chaos (June, 2011)

One node? ... Or many?

[WDS-scientific committee, 2011]



International Association for Geodesy/Global Geodetic Observing System (IAG/GGOS)
 International Earth Rotation and Reference Frame Service (IERS)
 Bureau International des Poids et Mesures (BIPM)
 International Council for Science/World Data Systems (ICSU/WDS)
 United Nations Office for Outer Space Affairs/International Committee on GNSS (UNOOSA/ICG)
 Analysis Center (AC)
 Associate Analysis Center (AAC)

FIN.