Brokering Governance WG Recommendations

Stefano Nativi (CNR), Jay Pearlman (IEEE), Max Craglia (EC JRC)
Connectivity-orientation: Heterogeneity is a challenge

Metadata schemas, Interface protocols,
Data types and formats, Use policies, ... .
(Big) Data Economy framework

CUSTOMERS/USERS

Information/Knowledge Presentation

Information/Knowledge Generation

Data Access and Interoperability

Data Aggregation / Harmonization

Data Production

ENABLING INFRASTRUCTURAL TECH

Sensors

Network

Data Cubes

Clouds

Apps, Visual tools

ML, DL

Brokering

Mediation, Normalization

IoT, Big Data

Monetizable product/service

Heterogeneity

stefano.nativi@cnr.it
Manage diversity: brokering & mediation services

Allow different implementations of a common conceptual object

Mediate among different artifact types (e.g. Data types, APIs, Service types, etc.)
Brokering Service pattern

- **End-to-end architecture**
  - N x M
  - Mediation task
  - Harmonization task
  - Data Servers

- **Data Economy architecture**
  - N + M
  - Intermediation services
  - Third-party (Web-as-a-Platform)
  - Data Server

Governance/sustainability

Brokering Governance WG

stefano.nativi@cnr.it
Brokering Governance WG

Scope

❖ Brokering (service framework) **Sustainability Assessment**
  ❖ Different Business Models for targeting diverse User types
  ❖ Software Maintenance and Sustainment

❖ **Agreements definition** between brokering organization and data/service providers
  ❖ Preserving autonomy required by the Broker pattern
  ❖ Different agreement template for the diverse business models/User types

❖ **Community adoption** and support of the Broker pattern
  ❖ Use cases, training, pilots, ...
  ❖ Assessing the recognized business models and brokering agreements
WG Structure & Outcomes

Community requirements

GEO GEOSS, ICSU WDS, NSF Earth Cube and IODE

WP1. Business Models

WP2. Suppliance Agreements

WP3. Use Case Assessments

Brokering (Middleware) Governance

New WG proposal
Sustainable Business Models for Brokering Middleware to support Research Interoperability

Alternative business models

1. Information and Ad sales
2. Corporate Support and Product/Service Sales
3. Software as a Service (SAS)
4. Government Funding through Federal Data Facility Guardianship
5. Government Funding Through Assistance Awards and Contracts
6. Consortium Model
Outcomes: The Hybrid Model (Sustainability Process phases)

- **No single model by itself** is likely to provide the desired sustainment.
- **A hybridized model** incorporating aspects of three different business models over the lifespan of the brokering middleware.
- **A set of Recommendations** for the sustainability of a broker middleware/service for research.

Diagram:
- Early phase: Government guardianship, Government awards
- Mid-phase: (Blank)
- Maturity phase: (Blank)
Recommendations: Proposed process + Agreement Template
Endorsements/ Adopters

- Use case #1 South African Environmental Observation Network

- Use case #2 Global Earth Observation System of Systems

- Multi-organizational and Multi-disciplinary System of Systems programmes and initiatives, such as:
  - ICSU WDS,
  - NSF Earth Cube,
  - WMO Hydrological Observing System (WHOS)
  - NSF Data One,
  - GEO BON
  - ERAnet on Earth Observation (ERA-Planet)
  - Afro Maison –and more generally AfriGEO
Facilitate the development and provision of (Big) Data Insights, relying on an heterogeneous data supply-chain

- Facilitate the access and use of IoT data and Big Data (e.g. long satellite data series)
- Facilitate the Data Web (Web 3.0) and Data Economy data value chain implementation

Facilitate the development of Software Ecosystems (collaborative environments) leaving enterprise systems as autonomous as possible

Enable the development of Multi-organizational platforms (e.g. Software Eco-Systems) that are User-oriented

- Facilitate the full adoption of Web 2.0 pattern –and the use of Web as a platform.
- Facilitate the development of multi- and cross-disciplinarity applications
Future Plans & Contact

- More Use cases in the framework of a new WG: “Brokering Framework”
- A fruitful collaboration with the Data Fabric Group
- Contribution to the charter of a new possible IG: “From Observational Data to Information (OD2I)”

For more information
- Email: Stefano Nativi (stefano.nativi@cnr.it)
- Websites: [https://rd-alliance.org/group/brokering-ig.html](https://rd-alliance.org/group/brokering-ig.html)  
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