United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

Ocean best practices

www.OceanBestPractices.org

IODE

Under the hood: demonstrating the core OBPS tech

AI for promoting linkages and co-development

Pier Luigi Buttigieg, Pauline Simpson, Peter Pissierssens, Scott Caltagirone, Mark Bushnell, Juliet Hermes, Emma Heslop, Johannes Karstensen, Frank Muller-Karger, Cristian Muñoz and Francoise Pearlman, Jay Pearlman

HMC HELMHOLTZ METADATA COLLABORATION

The Mission: solutions for a FAIRer future for Ocean Best Practices

FAIR: Findable, Accessible, Interoperable, Reusable

Wilkinson et al. (2016) *Scientific Data* 3, DOI:10.1038/sdata.2016.18

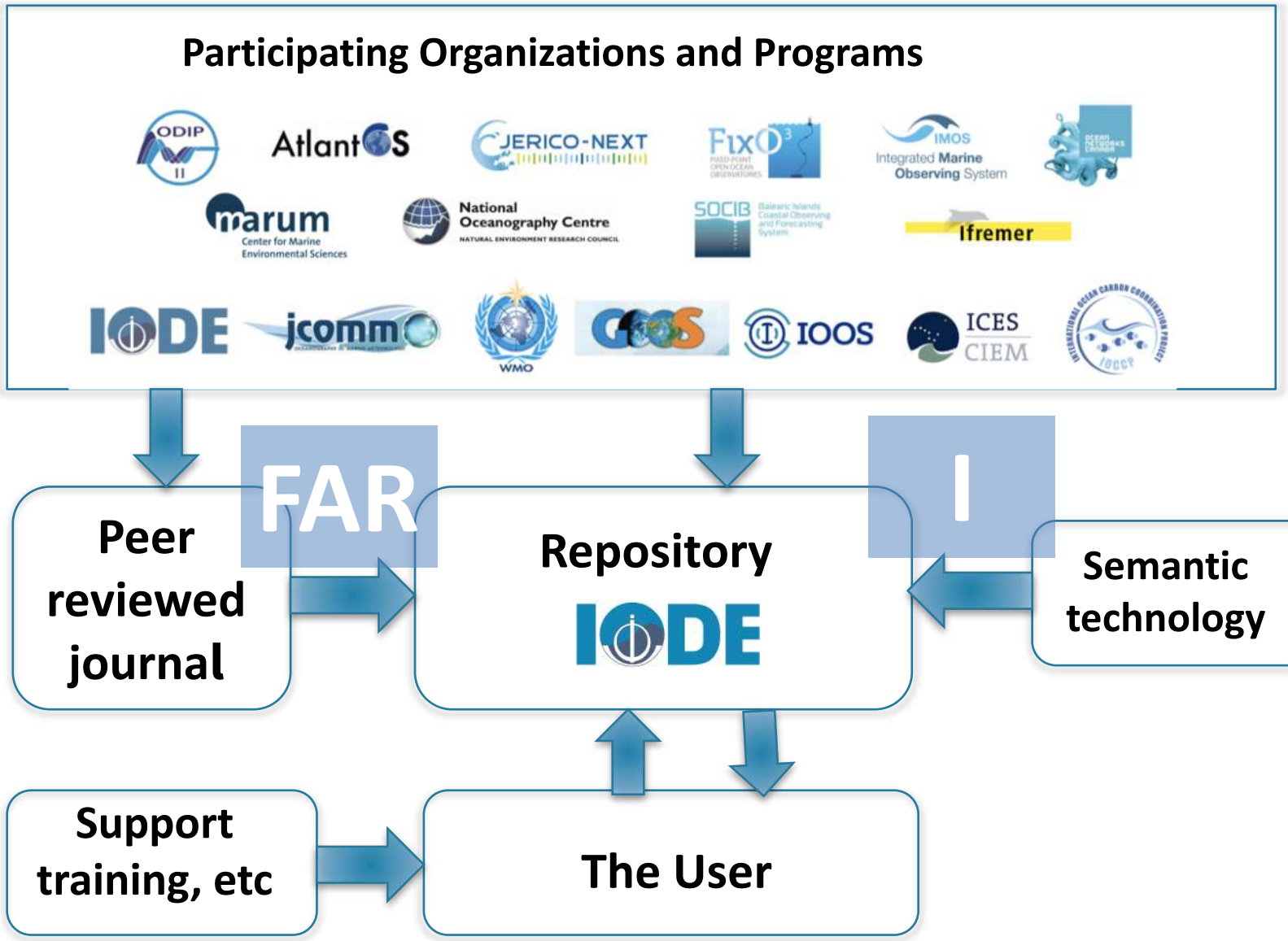
FORCE11
The Future of Research Communications and e-Scholarship

FAIR

Findable
Accessible
Interoperable
Reusable

Wilkinson et al. (2016) *Scientific Data* 3, DOI:10.1038/sdata.2016.18

The Ocean Best Practices System



frontiers Research Topics

FORCE11
The Future of Research Communications and e-Scholarship

FAIR

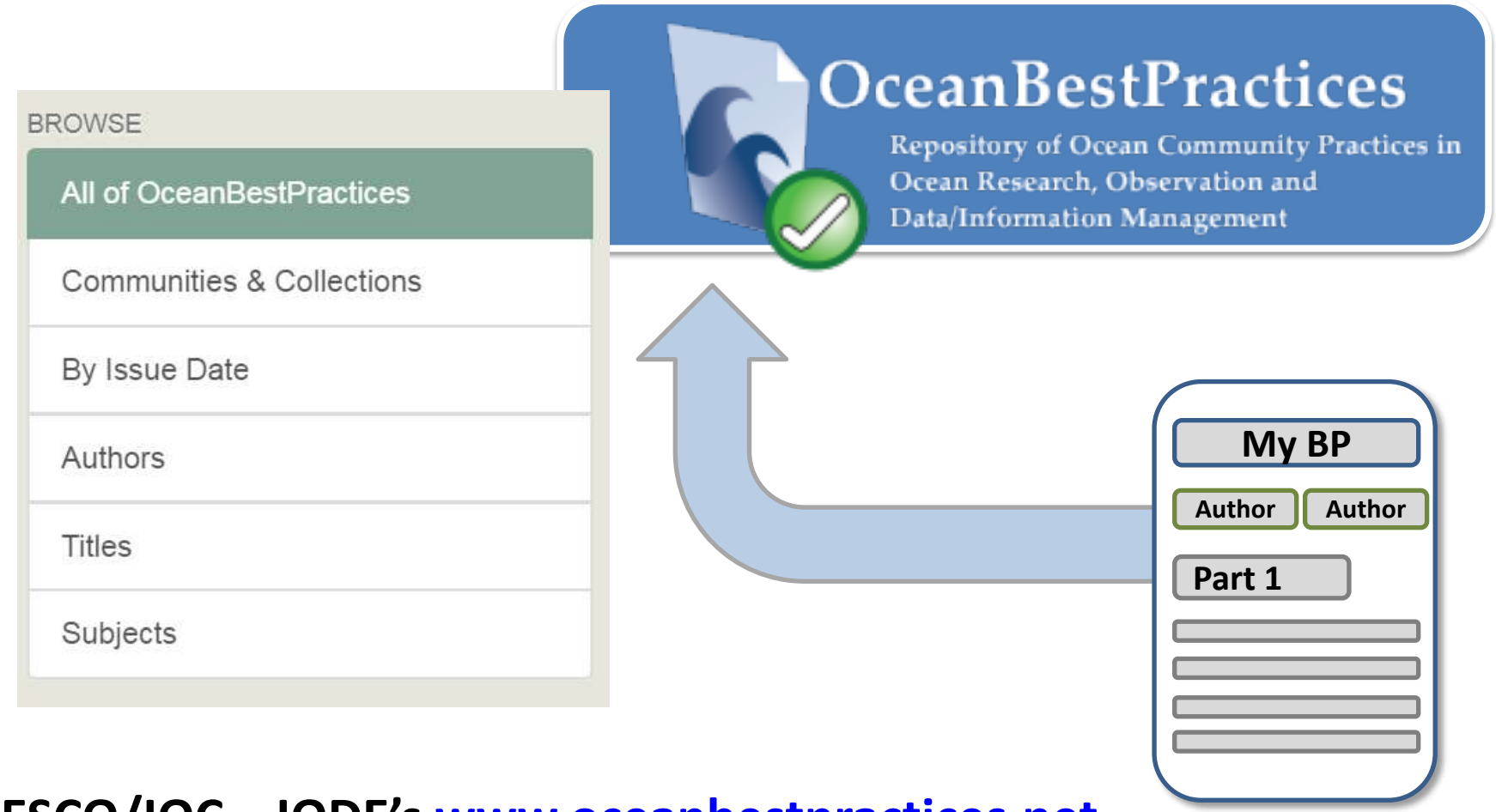
TO BE INTEROPERABLE:

I1. (meta)data use a formal, accessible, shared, and broadly applicable language for **knowledge representation.**

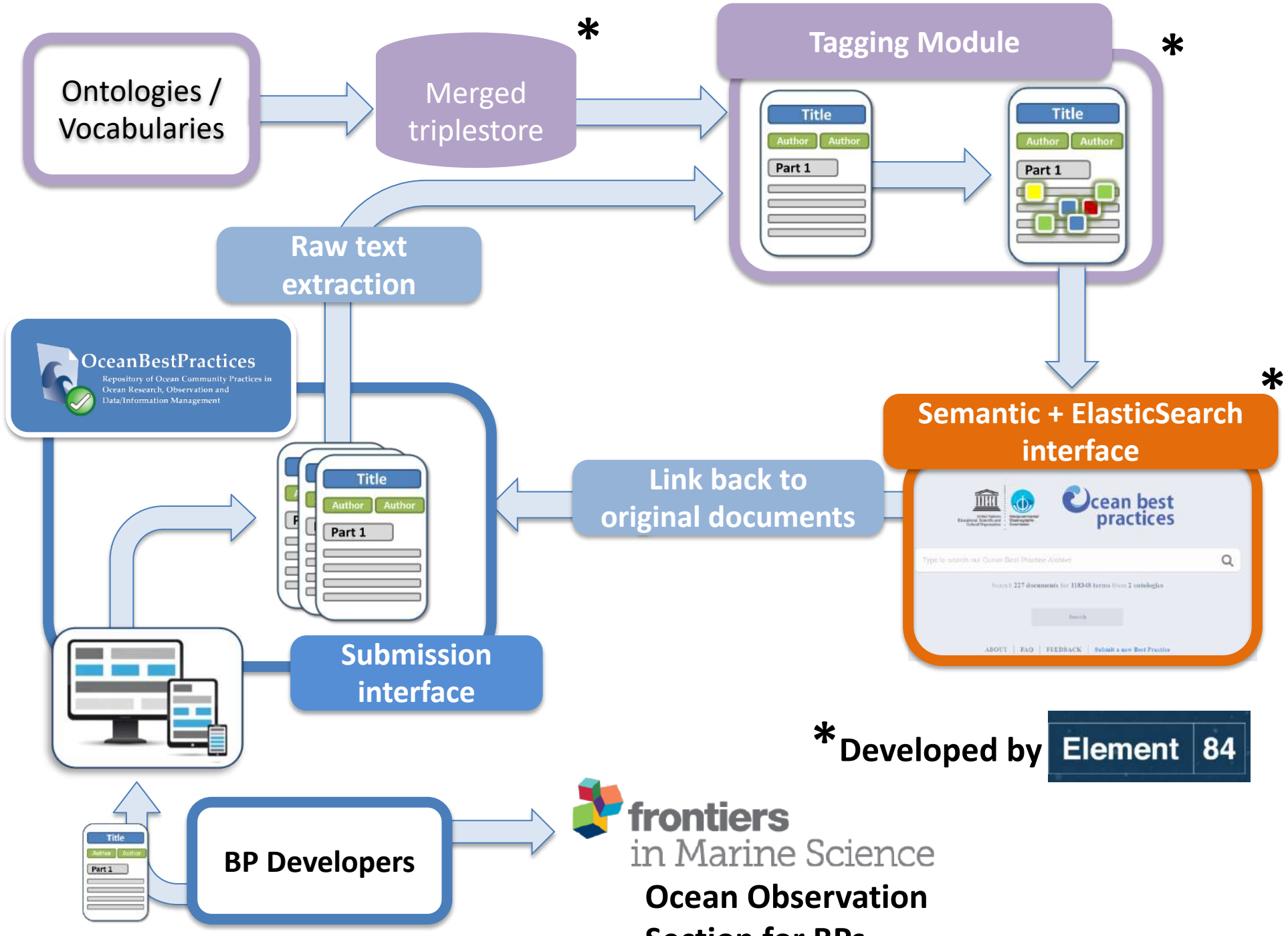
I2. (meta)data use vocabularies that follow FAIR principles.

I3. (meta)data include qualified references to other (meta)data.

Technical interoperability based on knowledge is a basis for community interoperability



UNESCO/IOC – IODE's www.oceanbestpractices.net

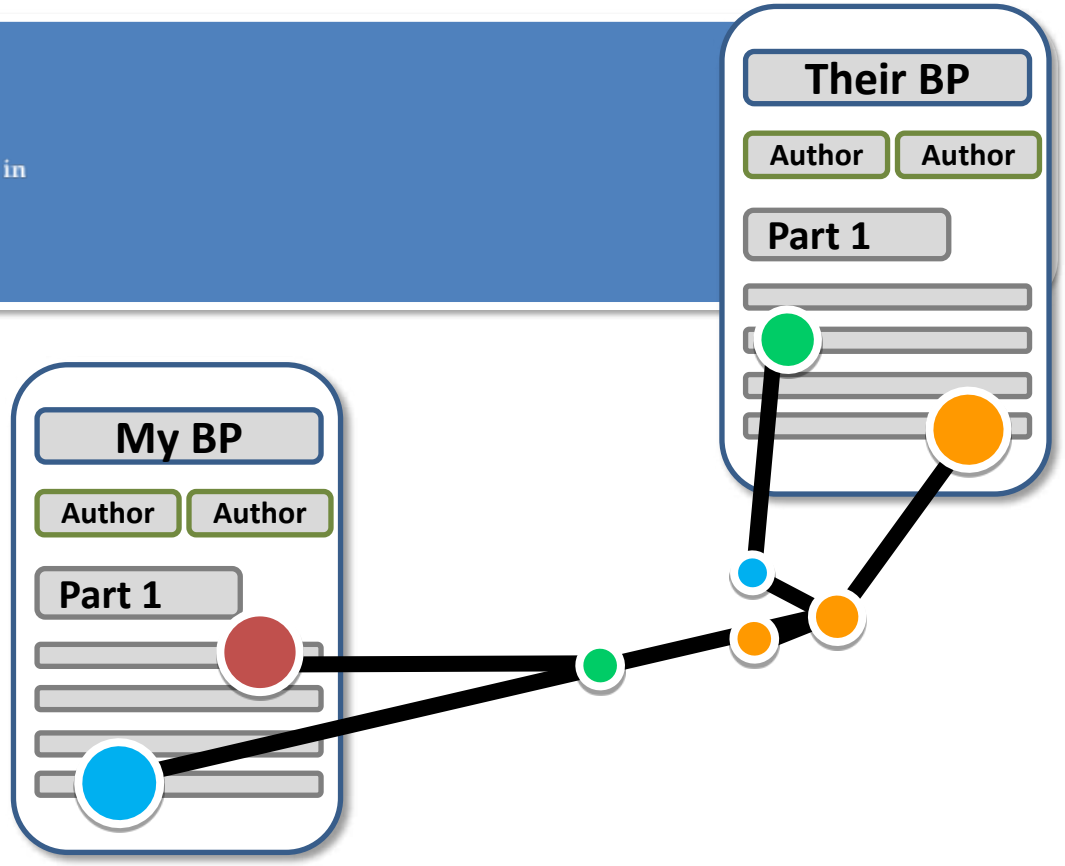

Ontologies / Vocabularies
Merged triplestore
*
Tagging Module
*
Title
Author
Author
Part 1
Raw text extraction
OceanBestPractices
Repository of Ocean Community Practices in Ocean Research, Observation and Data/Information Management
Semantic + ElasticSearch interface
*
Link back to original documents
Submission interface
*Developed by Element 84
BP Developers
frontiers in Marine Science
Ocean Observation Section for BPs

OceanBestPractices

Repository of Ocean Community Practices in Ocean Research, Observation and Data/Information Management

BROWSE

- All of OceanBestPractices
- Communities & Collections
- By Issue Date
- Authors
- Titles
- Subjects

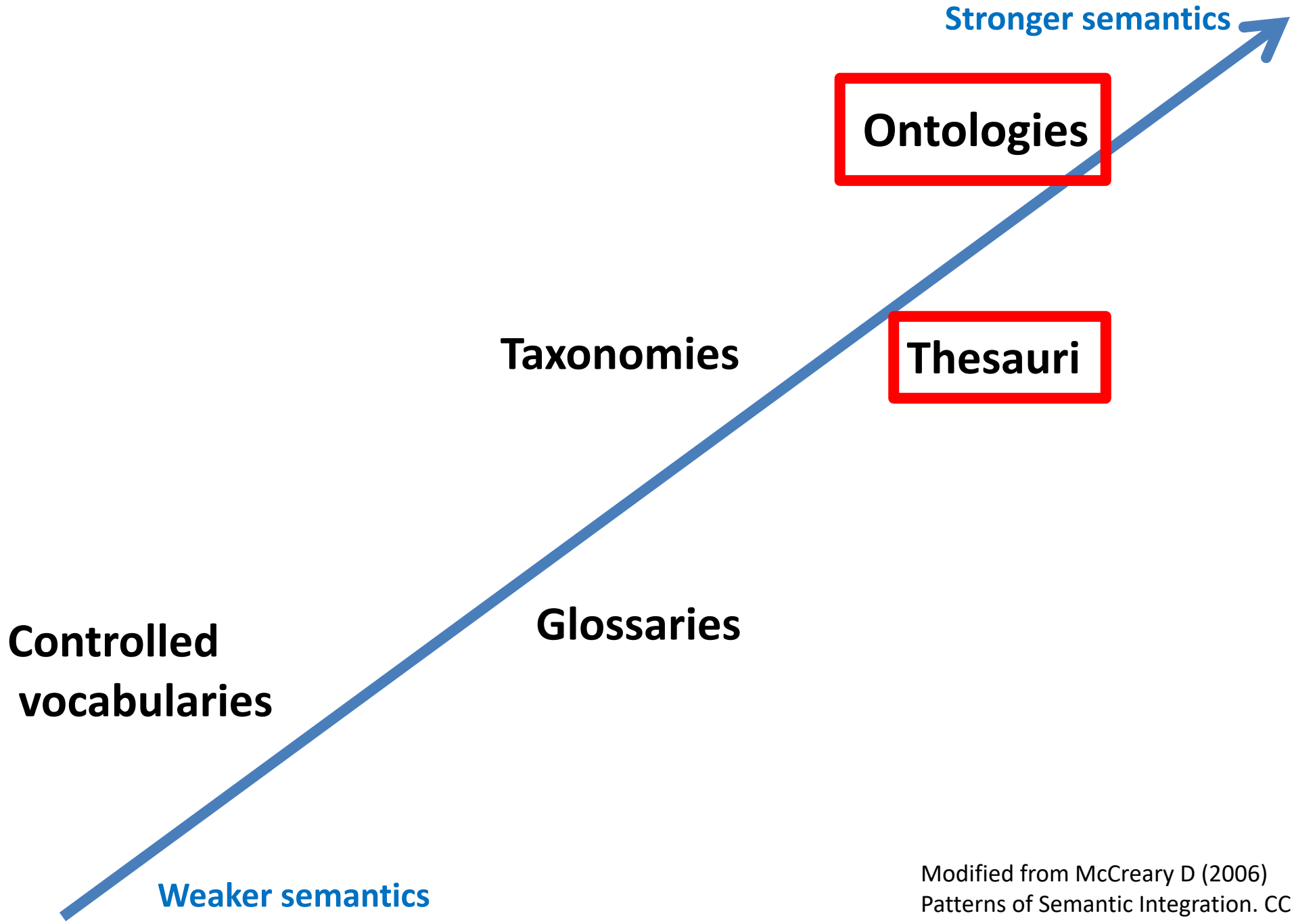


Sensors and platforms, Environments, Chemicals, SDGs…

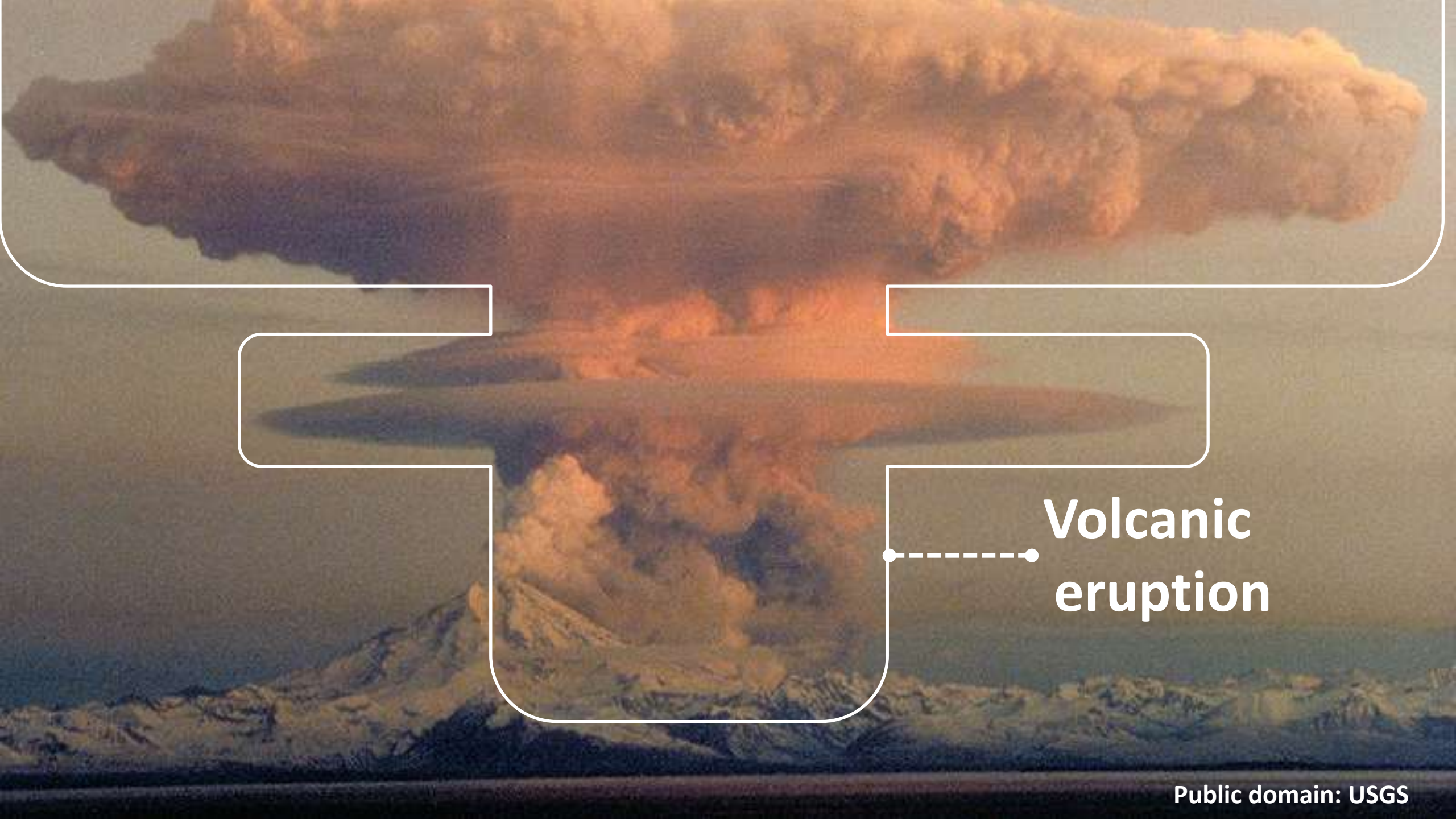
BODC **NERC Vocab Server**

OBO Foundry Ontologies

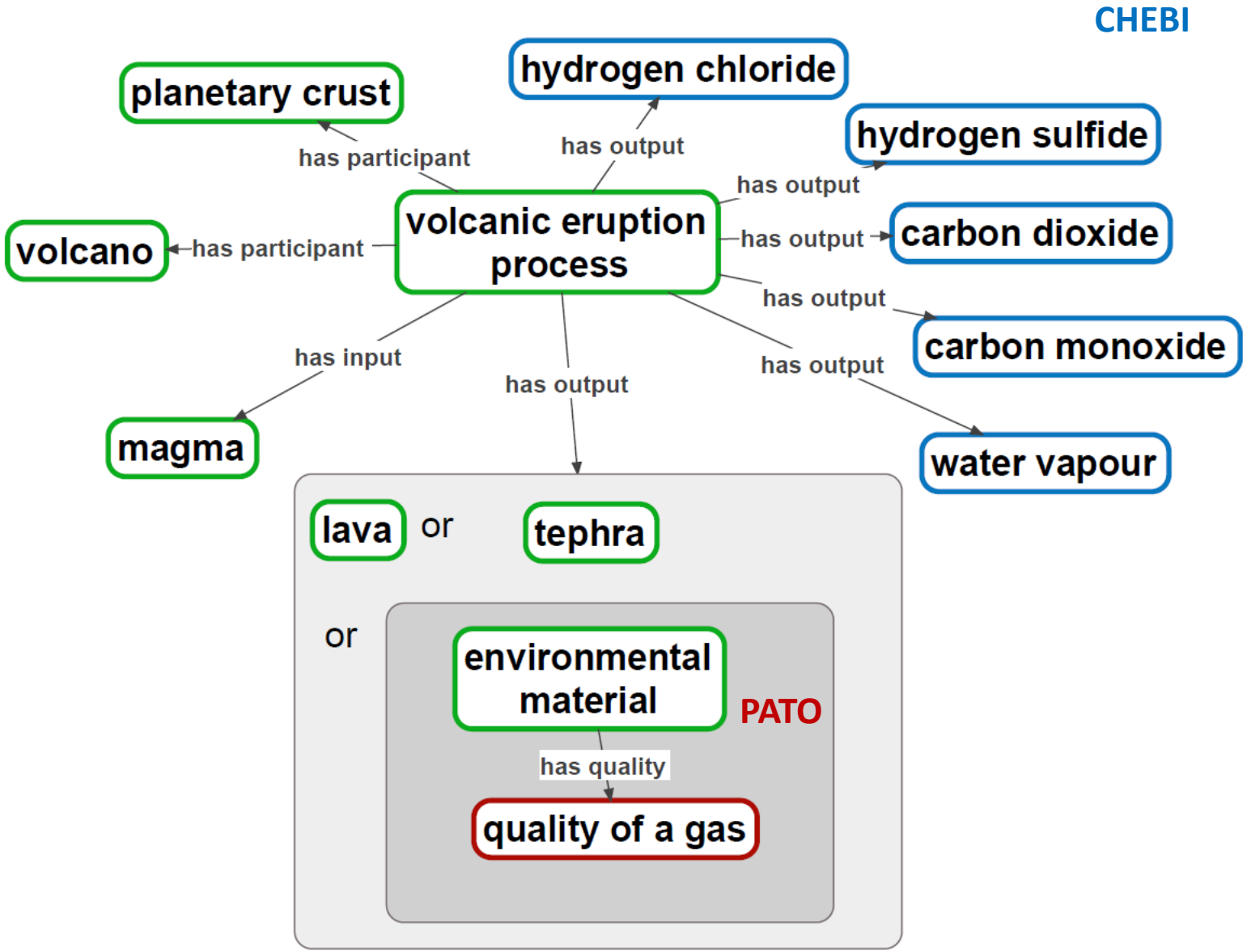
ENVO, CHEBI, SDGIO



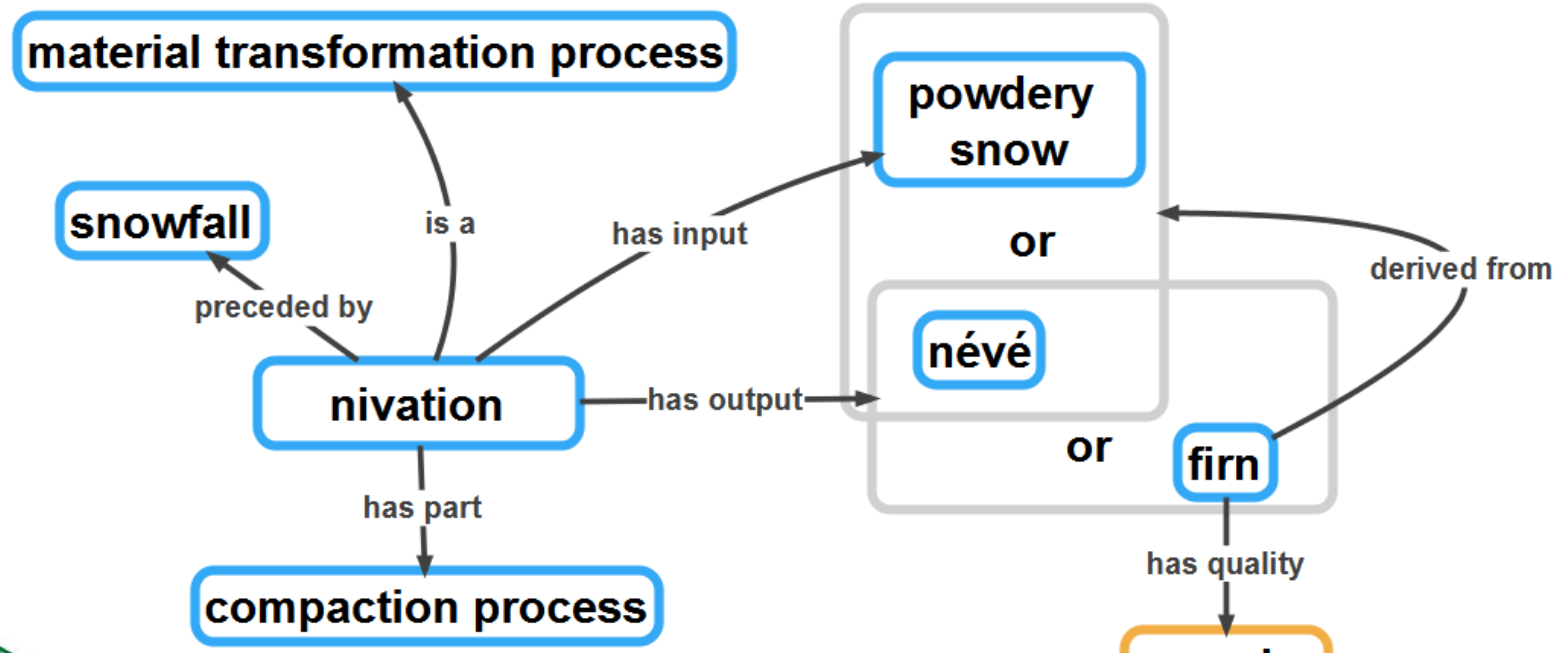
Modified from McCreary D (2006) Patterns of Semantic Integration. CC 2.5



data_about: http://purl.obolibrary.org/obo/ENVO_01000634



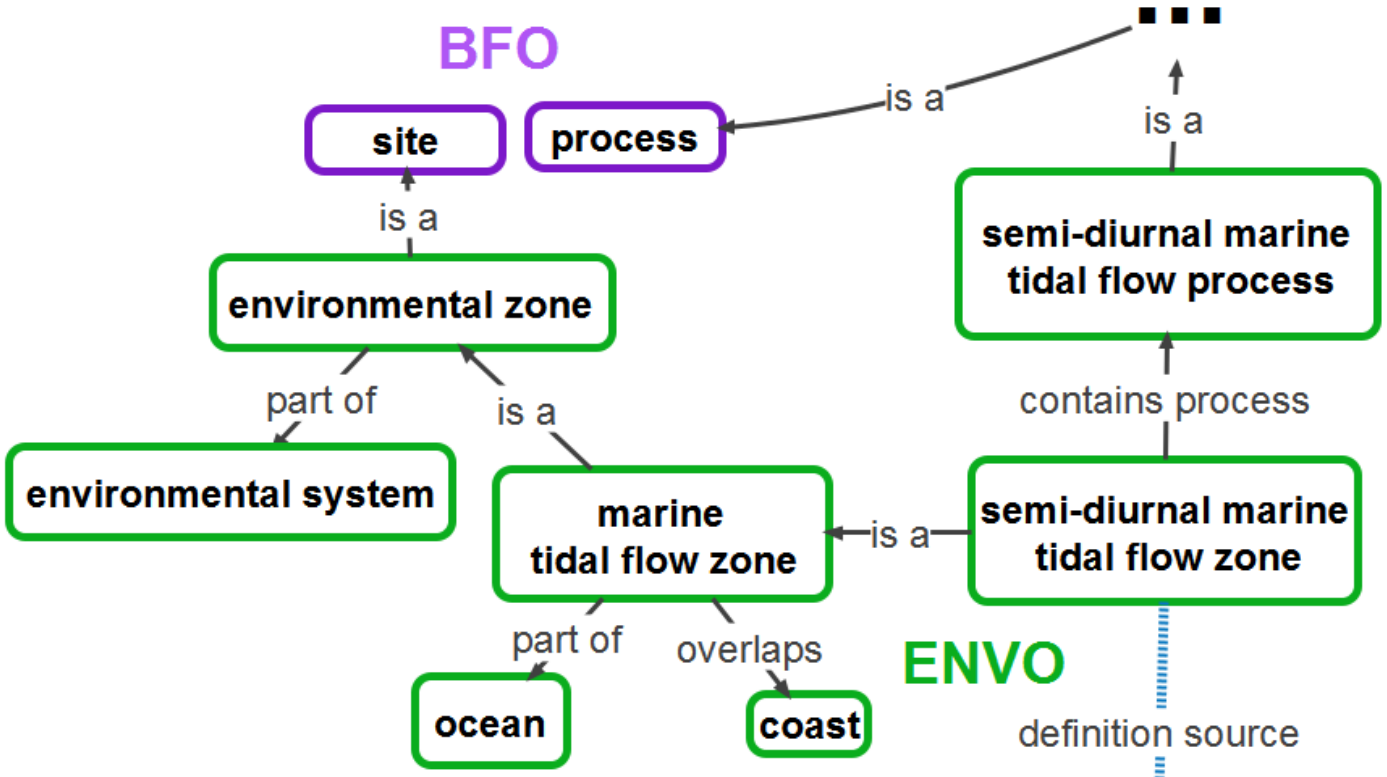
ESIP CryoHackathon series!



PATO

Each node links to many others in ENVO and other interoperating ontologies

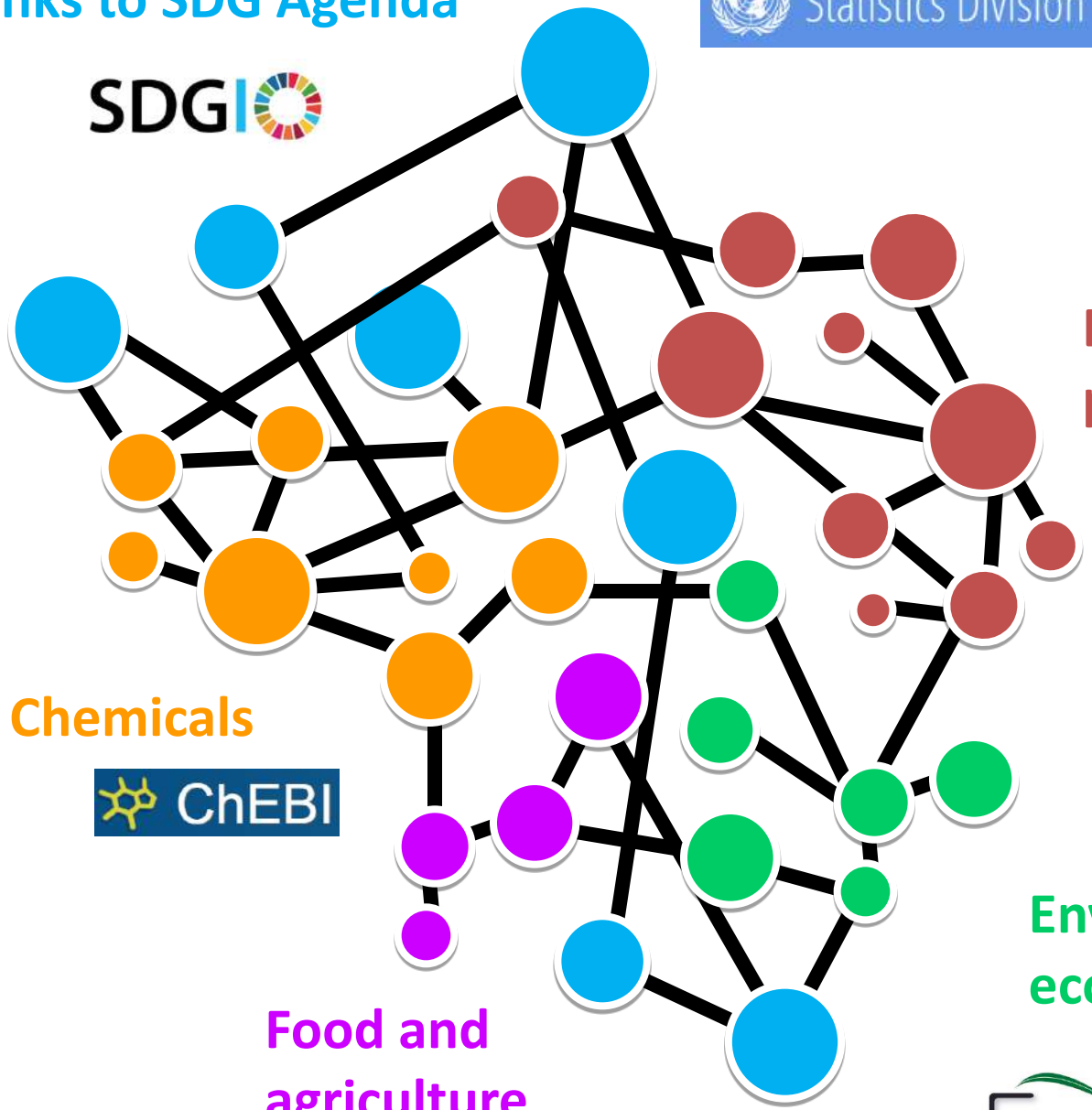
Ontological expression of the CMECS standard



https://cmecscatalog.org/cmecs/classification/unit/666.html

CMECS **semi-diurnal tidal flow**

Links to SDG Agenda



Biological processes

Chemicals

Environmental and ecological entities

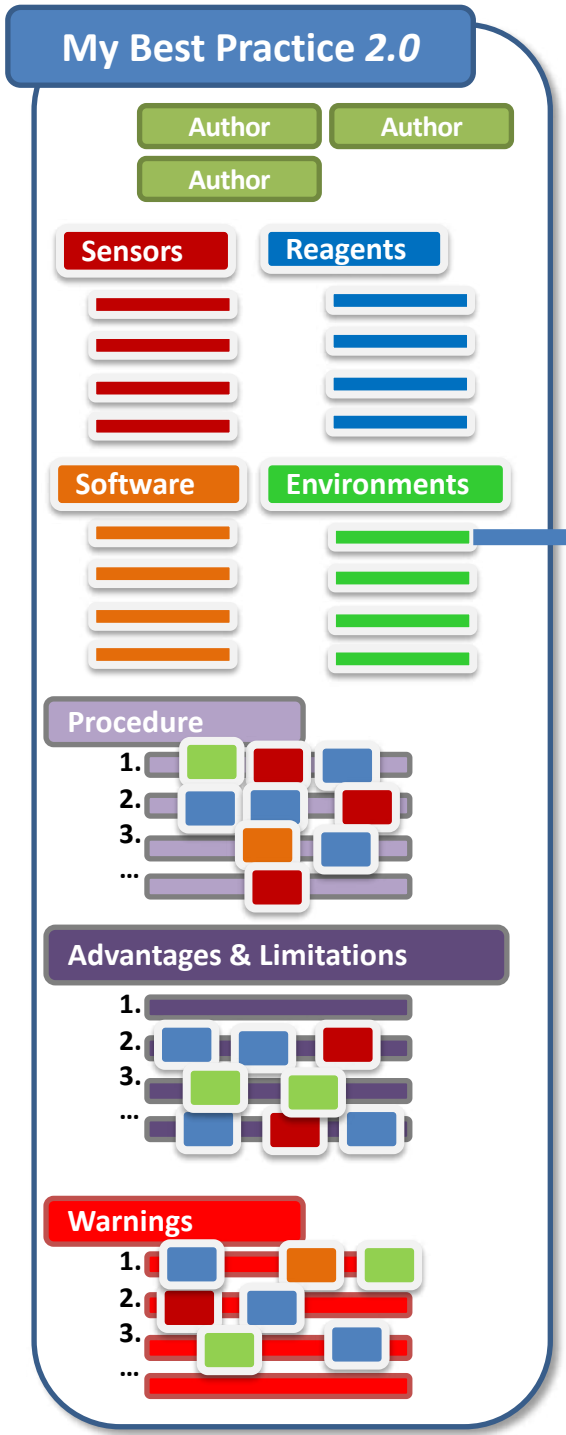
Food and agriculture

AgrO

Moving forward

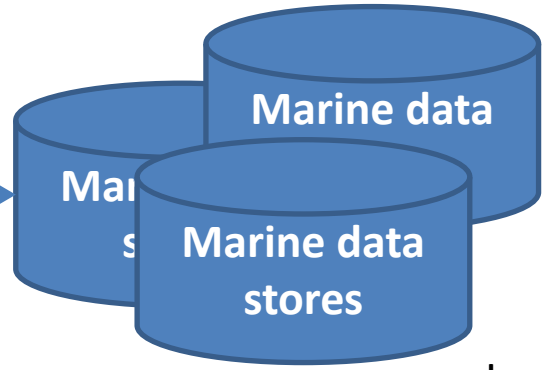
- Expand and interlink methods based on common methods, technology, or environments of operation
- Incorporate more semantic and terminology resources to improve coverage
    - Focus on EOVs and SDGs in collaboration with GOOS and UN Environment
- Provide community guidelines on submitting parseable best practices (Hörstmann et al. 2020 – community review open now)
- Use semantic tags to link BPs to oceanographic data holdings and streams
- Improve user experience of the OBPS to simplify interaction with ontologies, while preserving their expressivity

Hörstmann et al. (2020) **Towards a Best Practice for Developing Best Practices in Ocean Observation (BP4BP): Supporting Methodological Evolution through Actionable Documentation**. Paris, France, UNESCO, 28pp. (Intergovernmental Oceanographic Commission Manuals and Guides No.84). (IOC/2020/MG/84).DOI: 10.25607/OBP-781



Opening up BPs to informatics and linking them to data and information holdings

- Retrieve the common sensors across the protocols “McMussel mussel bed survey” and “OysterTech oyster reef survey”
- Retrieve all BPs that use the software “ArcGIS”
- Retrieve the advantages and limitations of the protocol titled “Sampling seawater for marine microbes”
- Retrieve the protocols and the list of reagents for documents authored by E Hemmingway



Inspired by https://smartprotocols.github.io/

DEMO

"Any sufficiently advanced technology is indistinguishable from a rigged demo“

— James Klass' variant of Clarke's Third Law (edited)