Belmont Forum e-Infrastructures & Data Management: Data Accessibility Statement as a Value-Added Element to Transdisciplinary Global Change Research

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Belmont Forum: An international partnership of science funding agencies and science councils

- *28+ national science-funding agencies* and science councils + some NGOs

- *Increase impact of environmental change research and data:* transnational, transdisciplinary CRAs

- *Promote and leverage policies, methods and systems for: transnational data FAIRness, sharing research products and data stewardship*

Belmont Forum's Open Data Policy and Principles and FAIR

Data should be:

- **Discoverable** *through catalogues and search engines*
- **Accessible** *as open data by default, and made available with minimum time delay*
- **Understandable** *in a way that allows researchers—including those outside the discipline of origin—to use them*
- **Manageable** *and protected from loss for future use in sustainable, trustworthy repositories*
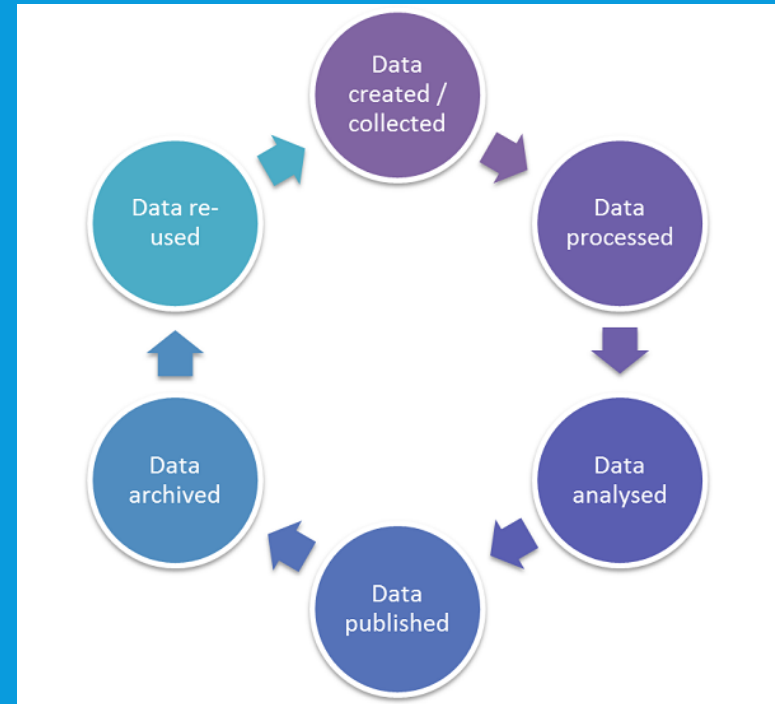
FAIR Principles

- *Findable*
- *Accessible*
- *Interoperable*
- *Reusable*

e-Infrastructures & Data Management (e-I&DM) 2016-2019

Goal: implement BF Open Data Policy & Principles

e-I&DM Deliverables:

● Coordination & Collaboration to ensure deliverables reflect best practices/state of the art

● Data Management Plan template (Data & Digital Outputs Management Plan template)

● Data Accessibility Statement

● Data Management Curricula Framework for training

● Online Training Toolkit

● In-person training module for BF researchers

Graphic adapted from the UK Data Archive via:
https://www.lancaster.ac.uk/library/rdm/what-is-rdm/plan/data-lifecycle/

Added Value of Open Data in Global Change Research

This presentation is focused on BF's approach to data accessibility and developing a DAS.

- Turn the onus of data management into a bonus of a sharable dataset as a project deliverable linked to published work

- Promotes reproducibility (and therefore robusticity of results)

- Deters fraud

- Builds trust and validity in research outcomes

Data Publishing Policy Project

DAS is one of e-I&DM's core deliverables

Leads: Fiona Murphy, Ph.D and Bob Samors (e-I&DM Coordination Officer)

Convened an Advisory Group, strategic outreach events and leveraged efforts from an existing RDA working group of publishing industry representatives and funders to determine goals and necessary components of DAS.

- Elsevier
- Springer Nature
- Wiley
- Hindawi
- Digital Science
- Wellcome Trust
- PLoS
- Copernicus

DAS Implementation

A DAS for Belmont Forum researchers has high impact:

Data accessibility as a convergence of:
- o   Funding
- o   Research
- o   Publishing

Belmont Forum value added:
- Data underlying published research is accessible, thereby improving reproducibility of results
- Data can be reused (because they can be found!)

Key elements of DAS

- PIDs where available: Reanalysis
  - DOIs, GrIDs, IGSNs
- Location or information on underlying data
  - Contact details or charges for accessing
- Mapping of data sets and subsets to published research
- Standard terms for repositories and institutions
- Licensing restrictions (for use or reuse)
- Restrictions to access (ethics, environment, human subjects, or fees)
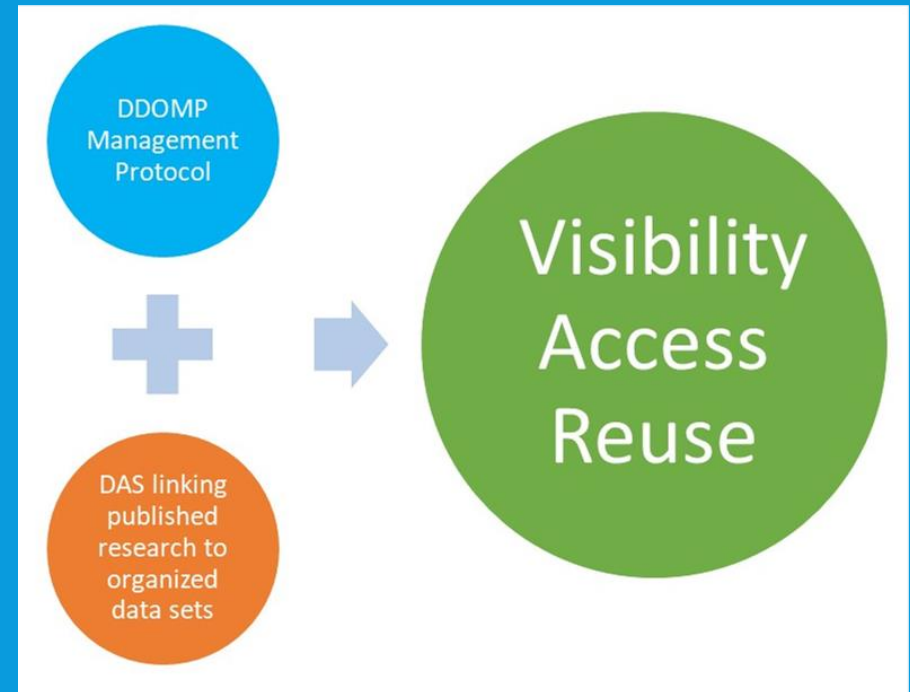- Granting agency

Data and Digital Objects Management Plan

Promotes open data by making researchers consciously consider data management issues from inception of a project, throughout the **full life cycle** of the research.

- Data Management considerations required as part of the pre-proposal, proposal, award <u>and</u> publication efforts
  - Long term value of data collected
  - Team/personnel responsibilities (accountability) for data management
  - Budgeting throughout the data lifecycle
  - DDOMP as living document
  - Multiple assessment points in CRA process for researcher feedback

Alignment of DDOMP and DAS

By linking the requirements of the DDOMP with a commitment through the DAS to make datasets underlying the published research accessible and findable, funders and publishers are aligned in their shared expectation that researchers follow a coherent set of actions for full path data and digital outputs management.

DAS Actions

- Consideration of DOIs or other PIDs (such as IGSN or GrID)
  - → *Provides permanent, traceable link to high value datasets*

- Conformance with repository requirements (metadata, ontology standards)
  - → *Requires budgetary considerations*
  - → *Team member responsible for data stewardship at outset of project*
  - → *Ensures security and longevity of datasets*

- Licensing considerations (e.g., CCBY)
  - → *Facilitates reuse and ensures credit*

Repositories: The Essential Step

- Belmont Forum Open Data Policy and Principles recognize the need for repositories to be trustworthy.

  - Prefer certification in repositories (CoreTrustSeal is gold standard)

  - Standardized ontologies and metadata

  - Researchers are encouraged to conform data to repository requirements at the beginning of their projects, not the end

- Future goals for e-I&DM may include:

  - Require compliance with CoreTrustSeal

  - align with the Go-FAIR initiative for publisher and repository requirements

Looking Ahead

- Continue to connect DAS goals with processes described in DDOMP

- Broaden network of science publishers applying a DAS

- Embed goals within messaging and expectations of CRA process and funding partners

- Provide more practical guidance on trustworthy repositories: finding, evaluating, meeting requirements, funding

- Promote dataset visibility/accessibility as part of science communications

- Collect DAS metrics as basis for evaluating data reuse and value added

- Consider how to implement a DAS in context of transdisciplinary data

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