

BELMONT FORUM COLLABORATIVE RESEARCH ACTION ON E-INFRASTRUCTURE AND DATA MANAGEMENT

PHASE 1: DEVELOPING A COMMUNITY STRATEGY AND IMPLEMENTATION PLAN

SECOND STEERING COMMITTEE MEETING

**April 26-27, 2014
Vienna, Austria**

Executive Summary

This material is based upon work supported by the U.S. National Science Foundation under Grant No. 1358990 and the UK Natural Environment Research Council under Grant Ref NE/L014319/1. Any opinions, findings, conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation or the Natural Environment Research Council.



INTRODUCTION

A Steering Committee Meeting was held in Vienna, Austria, April 26-27 2014 to review progress of the Work Packages (WPs)¹ for Phase I of the Belmont Forum E-Infrastructure and Data Management Cooperative Research Agreement (CRA).² The 21 meeting participants consisted of Steering Committee (SC) members and Group of Programme Coordinators (GPC) members, in addition to an Austrian scientist-observer and Secretariat staff. Goals of the meeting were to:

1. Review and confirm overall project timeline and deliverables
2. Review WP progress to-date
3. Share best practices and lessons learned from WP meetings to-date; apply them to other WP's as appropriate
4. Identify synergies, overlaps, and gaps among WP's
5. Develop strategies and actionable next steps to leverage synergies, avoid overlaps, and address gaps; identify associated resources and leaders
6. Develop effective communication and collaboration strategies across the SC, GPC, Secretariat and WPs
7. Identify emerging ideas, concepts and issues, and their potential impacts on future Belmont Forum activities

All of the above goals were met. Key meeting outcomes are summarized below.

COMMUNITY STRATEGY AND IMPLEMENTATION PLAN

Dialogue among the SC and GPC members throughout the meeting helped clarify the potential content and focus of recommendations in the *Community Strategy and Implementation Plan*— the culmination of the WP investigations and the principal deliverable of Phase 1 of this CRA. The *Plan* will likely consist of a vision that clearly expresses global e-infrastructure needs, barriers and gaps as they exist today, in addition to recommendations to the Belmont Forum of strategic science policies, identifying what can be done better in multilateral way, to support global change research.

Potential Recommendations and Contents

Recommendations could consist of one or more funding calls and/or policies or procedural changes. Recommendations should focus on:

1. Actions that produce quick wins leading to recognizable results in the short term (even though building e-infrastructure is a long-term activity)
2. Strategic leverage points that the Belmont Forum could leverage to make a big difference with small sums of money or policy changes.
3. Implementation strategies to turn findings and recommendations into real change

¹ Instigated at the first Steering Committee Meeting, held in Windsor, United Kingdom, October 15-17, 2013.

² For more information about this CRA, please see www.bfe-inf.org. The WPs are: Data Integration for Multidisciplinary Research (WP 1), Improved interface between the computation and data infrastructures (WP 2), Harmonisation of global data infrastructure for sharing environmental data (WP 3), Data Sharing (WP 4), Open Data (WP 5) and Capacity-Building (WP 6).

Additional contents of the *Plan* could consist of, but are not limited to, the following:

1. Qualitative analysis on the opportunities and benefits of funding e-infrastructure
2. Analysis of funding mechanisms to sustain e-infrastructure in the short and long-term
3. Strategic community-building initiatives that incentivize communities to organize themselves around data infrastructures

Considerations

Additional issues to consider when drafting the *Plan* include:

1. What unique outcomes can the Belmont Forum provide to society?
2. The need to engage the GPC in the co-design of the CRA to prevent a gap between submitting and acting upon recommendations
3. The role of e-infrastructure should be to realize inter-linkages among researchers/scientists, data managers, infrastructure providers, leaders/policy-makers, data users
4. Sustainable ways to build e-infrastructure, beyond the specific focus of each WP
5. The Belmont Forum should be a testbed for ideas generated in the WPs
6. A de facto outcome of the *Plan* could change the way the Belmont Forum operates (policies and procedures)

TIMELINE

The original project timeline anticipated presenting a draft *Community Strategy and Implementation Plan* to the Belmont Forum in late 2014/early 2015, and a final *Plan* in April/March 2015. However, the Belmont Forum must have the SC's draft recommendations prior to its meeting in October 8-10, 2014, in order to consider any funding calls in 2015. Thus, an interim report should be submitted no later than September 15, 2014.

Updated Timeline

1. August 1, 2014: Work Packages (WPs) provide a report on preliminary findings to the Secretariat
2. Late August/early September 2014: SC meeting to synthesize WP findings into a cohesive interim report (exact date and location TBD)
3. September 15, 2014: Interim report due to the Belmont Forum
4. October 8-10, 2014: Belmont Forum Plenary Meeting in Beijing, China
5. December 12-14, 2014: SC meeting in San Francisco, USA prior to AGU 2014
6. January 2015: Draft Community Strategy and Implementation Plan due to the Belmont Forum Principals
7. March/April 2015: Final Community Strategy and Implementation Plan due to the Belmont Forum Principals

While this is a tighter timeline than originally anticipated, this process is critical in engaging the Belmont Forum in the co-design of any future CRA(s) to prevent a long gap between submitting the

Community Strategy and Implementation Plan and the Belmont Forum acting upon the *Plan's* recommendations.

INTERIM REPORT

The interim report is a first step in the co-design process, intended to:

1. Flag emerging issues and preliminary recommendations that may include one or more funding calls (CRAs)
2. Allow the Belmont Forum enough time to release a CRA(s) in 2015, if recommended
3. Accommodate funding agencies' annual budget deadlines, which influence when CRAs are released

Interim Report Contents and Considerations

The SC and Secretariat will synthesize WP findings into a cohesive interim report prior in late August/early September 2014. Several considerations for the interim report were identified:

1. The level of detail may not be consistent across all WPs and focus areas, depending on individual WP findings
2. Limitations, questions, uncertainties and should be made clear; details will be filled in as part of the completed *Community Strategy and Implementation Plan*
3. The interim report should include the most reasonable actions that the SC proposes or knows of at the time, based on initial WP findings.
4. There should be adequate detail so that the Belmont Forum can decide if there will be a CRA in the immediate future
5. This should be a quality interim report, not a rushed final report

Interim Report Format

The SC agreed that the Secretariat will produce and circulate a template with guidelines for the interim report with fixed sections and word/page count limits to help focus and harmonise WP contributions. Appendices of evidence material collected by the WPs can then be added.

Work Package Deliverables for Interim Report

Each WP is asked to submit a short report to the Secretariat by August 1, 2014, which will serve as the basis for the interim report. Each WP report should:

1. Review the existing situation/lay of the land in each WP focus area(s)
2. Identify the need or objective of taking action in a particular area: What are the issues that need to be addressed and why?
3. Identify whether a CRA could address this issue. If so, how?
4. Identify strategic policies or actions to address each issue

WP deliverables for the complete *Community Strategy and Implementation Plan* will be due in early 2015 and will consist of concrete evidence to support initial recommendations outlined in the interim report. These deliverables will be finalized after the Belmont Forum provides feedback on the interim report.

WORK PACKAGE UPDATES

Each of the SC leads provided a brief update on each WP:³

1. Goals and specific areas of focus
2. Milestones and deliverables
3. Work package best practices and challenges (process)
4. Potential synergies, overlaps and gaps with other WPs

All the WPs have held virtual meetings and have begun to identify subcommittees and sub-tasks. Only one WP (WP 4 – Data Sharing) held an in-person meeting.⁴ While all the WPs are moving forward, they face common challenges:

1. Co-locating meetings is difficult because people have obligations to the original meeting
2. It is difficult to define the scope of each WP, which has changed as the WPs have developed, leaving the a greater potential for gaps, overlaps and synergies
3. It is difficult to keep activities focused on what the Belmont Forum can fund or what it can implement
4. It is a challenge for each WP to determine a timeline and steps to move forward
5. It is difficult to facilitate communication across the WPs due to time zone issues, language barriers, and the fact that this is an extra volunteer effort for WP participants
6. It is difficult to determine how to best communicate, given the many means available (listservs, Knowledge Hub, Google docs, virtual calls, etc.)

These challenges were addressed (partially or in full), particularly those that relate to project scope, individual WP scope, timeline, deliverables and next steps. Some have yet to be resolved, however, and are listed in the *Remaining Issues* section below.

Work Package Synergies, Gaps and Overlaps

There are many potential synergies, gaps and overlaps across the WPs (see Appendix I). Close communication across the WPs can help to leverage synergies, avoid overlaps and fill gaps, ensure consistency and cohesiveness in WP evidence collection methods, and resolve common challenges. There was also consensus that initial WP work could focus on cataloguing resources via a shared Google Docs spreadsheet, thus minimizing the risk of duplication. Each WP also identified action items to address these issues as they pertain to each WP's relationship with the other WPs.

Proposed Work Package Relationships/Workflow

One outcome of this meeting was a proposed structure of how the WPs relate to each other right now. As the interim report is written in August/September, the WP relationships will be revisited.

³ These presentations can be accessed at:

<https://drive.google.com/folderview?id=0BxE8IKrxOMWnZmkycjlqUWV6VIU&usp=sharing>

⁴ WP 2 and WP 3 held brief in-person meetings immediately following this meeting.

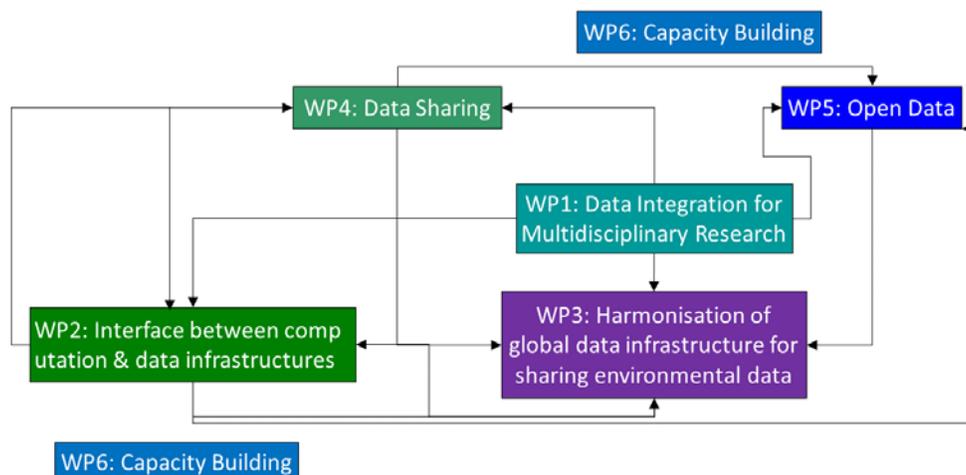


Figure 1: Proposed WP Relationships/Workflow

UPDATED ROLES AND RESPONSIBILITIES

Meeting WP deliverables on-time will require strong leadership from the SC Members and guidance from the GPC as needed, in addition to consistent Secretariat staff support.

Steering Committee Members

1. Provide intellectual leadership, approve conclusions and recommendations produced
2. Serve as a liaison to external organisations with which they are involved
3. Lead WPs and associated subgroups
4. Create and maintain an accurate but flexible work-plan including deadlines for WP activities, and communicate this plan to WP members
5. Allocate WP members to subgroups and tasks; manage subgroups and tasks, including regular reporting of subgroups
6. Provide all WP deliverables to the Secretariat in a timely manner, including deliverables prior to the interim report, draft and final *Community Strategy and Implementation Plan*
7. Lead teleconferences and in-person meetings, including being prepared with an agenda prior to the call and following up with WP members on action items

Group of Programme Coordinators

1. Provide guidance on when and how to engage the broader stakeholder community (end-users and infrastructure providers) with respect to the interim report and final *Plan*
2. Participate in Secretariat, SC and WP meetings to provide a funding agency perspective on useful processes and concepts the WPs could pursue (participation to be determined)
3. Help clarify and constrain the scope of each WP as appropriate
4. Each GPC members should support his or her respective national delegation as needed

Secretariat

1. Provide feedback to WP Leads on workplans, timelines, reports and deliverables
2. Assist WP leads with meeting planning and organisation as requested
3. Keep WP Leads informed of potential crossover areas to prevent duplication of effort
4. Maintain clarity and coherence across all CRA activities
5. Ensure CRA deadlines are communicated and met
6. Schedule, coordinate and manage in-person meetings, teleconferences, mailing lists, Knowledge Hub (website) development, hosting and maintenance
7. Provide administrative assistance to the SC and WPs; help develop areas of focus, draft work-plan, scheduling meetings and calls, communicate with WP members, research and document ad hoc as requested

ACTION ITEMS

Steering Committee

Short Term

1. Review and provide feedback on the SC Meeting outcomes report
2. Distribute updates to WPs to communicate:
 - a. Revised timeline and deliverables
 - b. How WP work will move forward
 - c. Expectations on what WP members will do to contribute
3. Review the draft template for the interim report

On-Going

1. Provide strong leadership to meet WP deliverables and milestones
2. Provide frequent and consistent follow-up with WP members
3. Coordinate with other WPs to fill gaps, leverage synergies, avoid overlaps (these WPs proposed to work closely together to avoid potential overlaps: WP1 / WP3, WP2 / WP3, WP4 / WP5)
4. Participate in monthly SC calls and online dialogue (via email and the Knowledge Hub)
5. Identify liaisons to other WPs as appropriate to leverage synergies and avoid overlaps
6. Attend upcoming SC in-person meetings (late August/early September 2014 and December 2014)
7. Determine whether an in-person WP meeting is needed and when. Schedule in-person meetings as soon as possible to give WP participants sufficient time to arrange travel
8. New SC member Martin Visbeck will become a member of WP6 (Capacity-Building)

Group of Programme Coordinators

1. Provide guidance by participating in Secretariat, SC and WPs calls
2. Send encouragement and thanks to the WP members for their participation thus far
3. Provide a national perspective on goals, programs and challenges

Secretariat

1. Explore dates and locations for an SC Meeting in late August/early September 2014
2. Draft a preliminary template for project-wide interim and final reports
3. Write Vienna SC meeting report and distribute to the SC
4. Schedule a teleconference with the GPC to discuss critical issues:
 - a. Broader engagement of Belmont Forum stakeholders (end-users and e-infrastructure providers)
 - b. How the GPC can be a resource to the Secretariat, SC, WPs or across WPs
 - c. Further clarification of the goals of the interim report
5. Prepare update for SC members to distribute to WPs, including:
 - a. Expectations on what WP members will do to contribute
 - b. Revised timeline
 - c. Overview of WP Deliverables
6. Explore how to better present this project to the WPs, and to a general audience
7. Create Google document spreadsheet to list relevant existing resources (institutions, people, reports, surveys, working groups, etc.)

REMAINING ISSUES

Several issues surfaced but are not yet resolved:

1. How can we best ensure cohesiveness and consistency in WP evidence collection?
2. What should we (the Secretariat and SC) do to engage the end-users and e-infrastructure providers? What type of feedback do we need from stakeholders?
3. When, in relation to submitting the interim report and the draft/final Community Strategy and Implementation Plan, should the broader community be engaged?
4. How can strategic community engagement efforts be made with minimal time or resources?
5. Will the Community Strategy and Implementation Plan have an impact or role outside of the Belmont Forum? If yes, does this change, in a substantive way, the nature, style or content of the Plan?

APPENDIX III: WORK PACKAGE SYNERGIES, OVERLAPS AND GAPS

Synergies						
	WP 1 (Data Integration for Multidisciplinary Research)	WP 2 (Data / Comp.)	WP 3 (Harmonisation of global data infrastructure)	WP 4 (Data Sharing)	WP 5 (Open Data)	WP 6 (Capacity Building)
WP 1 (Data Integration)			1. "Data quality"/"data authority" discussed jointly. 2. Identify minimal requirements for interoperability to enable cooperation across disciplines in the framework of environmental observations	Data sharing standards - potential to leverage	Potential for overlaps, but also potential for synergies (extensive communication among WP4/WP5 leadership already in place)	
WP 2 (Improved Data/ Computation Interface)	Integration of multidisciplinary research; 2) Data annotation and data provenance when derived from data analysis and/or simulation 2. Data Services including identifiers/ provenance/citation, certification/quality, annotation assurance, secondary data publication, curation. Data Distribution incl. public service portal, HPC generated data and secondary data publication. Data life cycles incl. public service portal (mid/long term, community commitment) and archival and curation (long term community commitment)		Data Services incl. identifiers/provenance/citation, certification/quality, annotation assurance, secondary data publication, curation. Data Distribution incl. public service portal, HPC generated data and secondary data publication. Data life cycles incl. public service portal (mid/long term, community commitment) and archival and curation (long term community commitment); Identity management AAI policy and interoperability, how open is the data at different stages. Synergistic initiatives and governance between Data and Computing e-infrastructures incl. human capacity development and synergistic e-infrastructures management.	2. Data Services including identifiers/provenance/citation, certification/quality, annotation assurance, secondary data publication, curation. 3. Data Distribution incl. public service portal, HPC generated data and secondary data publication. Identity management AAI policy and interoperability, how open is the data at different stages. Synergistic initiatives and governance between Data and Computing e-infrastructures incl. human capacity development and synergistic e-inf. management.	Identity management AAI policy and interoperability, how open is the data at different stages.	Synergistic initiatives and governance between Data and Computing e-infrastructures incl. human capacity development and synergistic e-infrastructures management.
WP 3 (Data Inf.)						
WP 4 (Data Sharing)	1. "Authority"/"trust" or data and information 2. Does it cover long-term preservation?; 3) Credibility of findings re-use of data is a WP4 issue: provenance, long-term viability of data and archives; 4) Standardization - similar topics re: semantics/ontologies				Potential for overlaps, but also potential for synergies (extensive communication among WP4/WP5 leadership already in place)	There are 3 lawyers in WP4, focusing on standard data transfer agreements and other issues TBD. WP6 legal subcommittee should leverage WP4.
WP 5 (Open Data)	Identifying ways to facilitate open data sharing (across research disciplines and between research and the civil society) and impediments for not doing so and identifying key projects where and how open data sharing has been successfully achieved; Enable research communities to draw on work done by civil society/crowdsourcing, and enable civil society to analyse results generated by the research community.			Strong synergies & overlaps with WP4. This demanded a clearer definition of open data – this is the accepted definition, Open data is providing unrestricted data to everyone. Open data is freely available for everyone to use and republish, without legal restrictions.		
WP 6 (Capacity Building)	Should be renamed: Capacity Building and Sustainability!				Sustainable funding of data facilities in the context of Open Data. Since WP6 will "Investigate resource gaps, including Data Inf."	
General	Can WP1 deliverables be replicated by other WPs?					

Potential Overlaps

	WP 1 (Data Integration for Multidisciplinary Research)	WP 2 (Improved Data/Computation Interface)	WP 3 (Harmonisation of global data infrastructure)	WP 4 (Data Sharing)	WP 5 (Open Data)	WP 6 (Capacity Building)
WP 1 (Data Integration for Multidisciplinary Research)			1) "Data Integration" vs. "Data Harmonisation"; 2) "Standards" are a means to "data harmonisation" not for coordination; 3) Setting common standards			
WP 2 (Improved Data/Computation Interface)		1) Should metadata be added? 2) Does software have the same or similar issues or modeling?				
WP 3 (Harmonisation of global data infrastructure)	1) Separate the levels of interoperabilities to be addressed; 2) systems integration; 3) discoverability through global registry	Could leverage tsunami use case		Addresses data sharing issues	Addresses data sharing issues	
WP 4 (Data Sharing)			1) Do minimal requirements for interoperability overlap with WP4? 2) list of priority actions to foster data sharing overlap with WP4		Potential overlap with WP 4 (data sharing)	
WP 5 (Open Data)						
WP 6 (Capacity Building)						

Gaps

	WP 1 (Data Integration for Multidisciplinary Research)	WP 2 (Data / Computation Interface)	WP 3 (Harmonisation of global data infrastructure)	WP 4 (Data Sharing)	WP 5 (Open Data)	WP 6 (Capacity Building)
WP 1 (Data Integration)			WP3 seems to address only interoperability and not looking at harmonisation of infrastructure at a higher level			WP6 should look at sustainability of e-infrastructures (fund of e-infrastructures)
WP 2 (Data/ Comp.)			Not only data interoperability but possible application of software should be considered; 2) WP2 and WP 1 are also addressing data harmonisation		Relating to trust issues, "data education" function should be discussed for preventing against incorrect usage of data.	
WP 3 (Data Inf.)		Tsunami hazard data handling procedures user scenario?				
WP 4 (Data Sharing)	Is there a distinction being made between technology issues and human resource/behaviour issues? Or are both elements being examined by WP1?		Data policy principles and data quality indicators may relate to WP4		Interface between science and civil society has technological human resource and human behaviour. We need to understand the underlying elements before trying to tackle the problem. Might be resident in WP4.	1) Capacity building also including technological hardware/infrastructure. Is this supposed to be addressed in the other WPs? If so, it is not being articulated by the other WPs. 2) Training - grad students/early professionals are often data curators who move on after degree or get better jobs
WP 5 (Open Data)					Sustainable funding of data facilities in the context of Open Data.	
WP 6 (Capacity)						
Additional Gaps	Documentation of existing activities		Is there a theoretical framework for data harmonisation, or is it always 'context driven'?	Emphasize societal economic value of data sharing	National security impediment for open data	Overall capacity building, not just education. Request a national perspective, including goals, programs, challenges
	Highlight 'best practices'		Earthquake and tsunami early warning systems rely on fast discoverability and access together to be able to assimilate data in forecast simulation models. 2) Use cases are important to consider to avoid national solutions that would delay global interoperability.	"literature review"	Commercial uses	Should focus on sharing resources across Belmont Forum countries.
	develop a 'vision' document		Include secondary product derived from HPC simulation scenarios that today must be shared, discoverable and interoperability with observations from various environment disciplines.	Identify 'leverage points' that could bring about change	work on impacts and opportunity of data sharing could be more highlighted	Reward system
	Inclusion of social data		Inclusion of social data	Data quality		Could have professional society or focus group of data curators at AGU or EGU
	The presentation seems not to address the areas of focus identified in WPs. The 8 areas are really important for realizing data integration.				Standards	
	What do we mean by trustworthiness? Can we use social media/blogging to improve trust?				Inclusion of social data	