

BELMONT FORUM E-INFRASTRUCTURES AND DATA MANAGEMENT COLLABORATIVE RESEARCH ACTION

Fourth Steering Committee Meeting

December 13-14, 2014

San Francisco, United States

FULL WORKSHOP REPORT

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TABLE OF CONTENTS

- Introduction 3
- Discussion Topics..... 4
 - Interim Report 4
 - Belmont Forum Charge 4
 - Findings and Emerging Conclusions 4
 - Near-Term Recommendations..... 5
 - Lessons learned..... 5
 - Belmont Forum Review..... 5
 - Feedback on the Interim Report..... 5
 - Guidance for the Final CSIP 6
 - Guidance on Recommendations 6
- Work Package Updates..... 7
 - WP1: Data Integration for Multidisciplinary Research 7
 - WP2/3: Case Studies 7
 - WP4: Data Sharing 8
 - WP5: Open Data 8
 - WP6: Training, Security, Governance (Cross-Cutting)..... 9
- Decisions Made 9
 - Recommendations and Actions..... 9
 - Draft Umbrella Recommendations 10
 - Proposing and Finalizing Recommendations and Actions 11
 - Final Community Strategy and Implementation Plan 13
 - CSIP Outline 13
 - Approach to Reproducible Science 14
 - Timeline, Milestones, And Deliverables..... 15
- Appendix I: Participant List..... 16
- Appendix II: Updated Timeline 17

INTRODUCTION

A Steering Committee Meeting was held in San Francisco, USA, December 13-14, 2014 to decide the strategic direction of the *Community Strategy and Implementation Plan (CSIP)* to be delivered to the Belmont Forum by June 30, 2015 as the principal deliverable for the Belmont Forum E-Infrastructure and Data Management Cooperative Research Agreement (CRA). The 25 meeting participants consisted the project Steering Committee (SC) and Secretariat, as well as the Belmont Forum Group of Programme Coordinators (GPC).

MEETING GOALS

Meeting goals were to:

1. Review the Interim Report, including the content, writing and review process, Belmont Forum feedback, and lessons learned
2. Review the current status and focus area(s) of each WP, and confirm WP plans moving forward
3. Review and come to consensus on recommendations generated to-date; identify any emerging recommendations
4. Finalize the project workplan:
 - a. Review and confirm the timeline,
 - b. Review and confirm WP and SC expectations, milestones, and deliverables
 - c. Confirm SC and WP review periods of the Final Report (CSIP), to be submitted by June 30, 2015
5. Identify critical gaps in focus areas and how we will address them
6. Review data principles for inclusion in the CSIP
7. Confirm how the project will collect and compile recommendations and associated actions,
 - a. Record recommendations, including the action required
 - b. Record evidence in a standard way
 - c. Identify the unique position of the Belmont Forum to carry out the recommendation
 - d. Determine broader impacts of each recommendation
 - e. Record technical details for each recommendation
8. Determine how the project will develop the final CSIP, given Belmont Forum expectations
 - a. Format and general content
 - b. How to address Belmont Forum feedback to include reproducible science, broader impacts, and the unique role of the Belmont Forum
 - c. How to present recommendations(e.g. type and amount of evidence, technical details required)

All of the above goals were met through a series of presentations, small and large group discussions, and critical decision-making. The key decisions are summarized below.

DISCUSSION TOPICS

INTERIM REPORT

The first major project deliverable, the Interim Report, was delivered to the Belmont Forum on September 15, 2014. This report was intended to:

1. Serve as a progress report on the project overall, and provide a preview of the emerging findings, conclusions, and recommendations
2. Assess what needed to be done or changed in order to deliver the final CSIP on schedule
3. Identify any short-term recommendations identified by the community as priorities for the Belmont Forum to consider implementing in 2015. These were considered by the Belmont Forum at its annual meeting in Beijing, China, in October 2014.

All WP contributions were included as appendices to the Interim Report, while mature recommendations were synthesized in the report body.

BELMONT FORUM CHARGE

The Belmont Forum charge for the Interim Report was to focus on:

1. Actions that produce quick wins leading to recognizable results
2. Strategic leverage points that make a large impact with little funding or policy changes
3. Analysis of funding mechanisms that best sustain e-infrastructures
4. Strategic community-building initiatives around data infrastructures
5. Process to engage the Belmont Forum in the co-design of future CRAs to keep pace with changing global e-infrastructure landscape

FINDINGS AND EMERGING CONCLUSIONS

The Interim Report concluded that there is a role and need for the Belmont Forum to:

1. **Foster good practice** on data sharing in global change research
2. **Solicit, prioritize, and develop use cases/exemplars to** bring together environmental and computer scientists, as well as data centers
3. Design and implement **short educational/training courses** to start to **bridge skills gaps**
4. Support and fund activities that increase awareness of **security and legal issues surrounding data**

Additional conclusions include:

1. **The coordination of data and information** universally recognized as essential for global environmental research
2. There is much **agreement, consistency, commonality, convergence** across the WPs
3. **Funding e-Infrastructure** is very different from funding research

4. There is a need to **address cultural, organizational, and social obstacles** in tandem with technical challenges
5. **Collaboration, Coordination, and Communication** is critical
6. **Training, Knowledge Transfer and co-Development** between computer science and environmental science is needed

NEAR-TERM RECOMMENDATIONS

1. Establish e-Infrastructure Community Social Elements and Coordination
2. Create Working Groups and Promote Training Activities
3. Foster Active Data Management and Stewardship Principles
4. Provide Support for the Development of Case Studies and Exemplars

LESSONS LEARNED

The Interim Report was drafted by the Secretariat during a short writing session at US National Science Foundation Headquarters in Washington, DC, in early September. The challenging task of synthesizing the WP and SC findings into a cohesive report had to be completed quickly, leaving little time for SC and WP review prior to submitting the report to the Belmont Forum for its annual meeting in October 2014. This process generated several lessons learned that will be taken into consideration in order to improve the drafting and review of the final CSIP:

- A longer and broader review period is critical, as there needs to be sufficient time for all SC, GPC and Assembly members to provide input
- There needs to be a better process for synthesizing findings, conclusions, recommendations, evidence, etc. from all WPs into a cohesive final CSIP

BELMONT FORUM REVIEW

The Interim Report was reviewed and considered by the Belmont Forum principals during their annual meeting, located in Beijing, China, October 8-10, 2014.

FEEDBACK ON THE INTERIM REPORT

The Belmont Forum gave feedback that it:

- Accepted and **strongly endorsed** the Interim Report
- Signaled that the project should **continue to refine findings and recommendations**
- Will decide on taking actions based on the final *Community Strategy & Implementation Plan* (CSIP), to be delivered by June 30, 2015
- Believed that the Final CSIP will likely be the **first official Belmont Forum deliverable**, which may result in **greater global recognition of the E-Infrastructures and Data Management CRA**
- Was **impressed** by level of international collaboration in this project
- Indicated that it will consider **funding collaborative, rather than competitive, projects in the future**

GUIDANCE FOR THE FINAL CSIP

The Belmont Forum also gave guidance for the final CSIP:

1. Focus on how findings promote **reproducible science**
2. Make explicit the goals, deliverables and participants in the **legal, security and training** working groups (Recommendation #2 in the Interim Report)
3. Make sure WPs contribute to a **single final report (CSIP)**, with agreed and evidenced recommendations supported by each of the WP deliverables
4. Draw on increased cross-WP participation
5. Should be a document for collaboration among the Belmont Forum funding agencies, outlining how the Belmont Forum and its constituents can come together to implement the recommendations
 - a. Help GPC members understand where their individual funding agency fits in, what the gaps are, what they can/will address nationally
6. Should include an updated version of the vision statement presented in the Interim Report, which should address sustainability
7. Should be a pragmatic and focused vision for the next 2 years, and next 5-10 years that funding agencies can use
8. Should be a more concise report (4-6 pages) than the Interim Report
 - a. Evidence should be presented in supporting document(s) or on the Knowledge Hub

GUIDANCE ON RECOMMENDATIONS

1. Outline **broader impacts** for each recommendation:
 - a. Identify the positive **impact that the Belmont Forum can** make by acting on each recommendation, including how scientists and the Belmont Forum will be able to achieve more than they could do before
 - b. Identify negative consequences of not carrying out each recommendation
 - c. Identify relationships with other initiatives, and place each recommendation in context in the world stage, including key policy issues such as UN Sustainable Development Goals
 - i. All SC members have links to important initiatives; we have a shared responsibility to make sure they are included in the final report
 - d. Make sure all recommendations are supported by sufficient evidence
2. Focus on recommendations that **best leverage the Belmont Forum process**, including recommendations that are unique or best carried out by the Belmont Forum that might be difficult or impossible to carry out any other way
3. Recommendations should be prioritized, considering both their timeline (quick wins vs. long term) whether they are policy or funding-focused, and their relative importance
4. Propose **concrete recommendations** that funding agencies can act on without prior knowledge of this project
 - a. A set of recommendations that the funding agencies can see themselves in
 - b. Step by step instructions of how to move forward

5. Identify actions to implement each recommendation
6. Identify whether a recommendation should be competitive or collaborative

WORK PACKAGE UPDATES

WP1: DATA INTEGRATION FOR MULTIDISCIPLINARY RESEARCH

Given the clarification generated this SC Meeting, WP1 will now initiate new activities in early 2015 related to data integration for multidisciplinary research. WP leads will look to WP members to validate recommendations and give direct feedback. This will reduce the burden of participation among WP members.

SciDataCon 2014, New Delhi, India

WP1 organized a panel discussion at SciDataCon 2014 about the E-Infrastructures and Data Management CRA. Panellists included funding agency representatives and WP members; participants included data and domain scientists, and practitioners. Key outcomes from this session include:

- New activities should be light-weight, in order to reduce the burden of participation—people are already over-committed and overwhelmed
- Funding agency representatives gave very positive feedback on the initial policy and strategic recommendations in the Interim Report
- In refining WP recommendations, keep in mind the **normative role of stakeholders** (funders, research organizations), and work with all stakeholders to push cultural change to achieve better data sharing and interoperability

Response to Belmont Forum feedback

Reproducibility is a cornerstone to research itself, and is part of data and scientific integrity. All the recommendations formed in WP1 will contribute to better reproducibility of science. For example, Data Management Plans (DMPs), standards, data practices, etc., will likely enable research to be more reproducible.

WP2/3: CASE STUDIES

WP2 and WP3 merged in October, 2014, and are now undertaking collaborative activities. The group has held several teleconferences since the submittal of the Interim Report, and are now working on a draft document of user scenarios and a draft framework and structure for harmonizing data centers and HPCI. The current team has also identified three new experts that they will encourage to join WP2/3 in the near future.

Response to Belmont Forum feedback

WP2/3 leads have identified two challenges in responding to Belmont Forum feedback:

1. Challenge of harmonizing given the diversity and variety of data center activities
2. Challenge of coordinating workflow for HPCI and data infrastructure

Future Activities

The joint WP2/3 goals are to:

1. Make an effort to promote coordination to address ongoing challenges in climate models,
2. Collaborate with FutureEarth, RDA, and GEO/GEOSS,
3. Collaborate with other groups and initiatives that are addressing these issues
4. Create a high-level summary to help clarify their target

Further activities are needed to address the following issues:

1. Need for fully integrated activities (currently have pieces)
2. Need for an inclusive approach to design the implementation plan
3. Need for better defined targets (e.g. earthquakes, tsunamis, climate)
4. Gathering consistent evidence
 - a. Plan to map the data activities, including DMPs, security, training (cross-cutting activities with other WPs)
5. Role of the use cases
 - a. It is essential to take the next step - at this point there are a lot of methods available in information sciences and the user communities who have immediate needs are sometimes not aware of what is technically possible
 - b. User scenarios can bridge the gap
 - c. We need to recognize the complexity of the environment in which people are working - w/ respect to harmonization, need to recognize the barriers associated with complexity
6. Harmonization
 - a. We need to avoid circular discussions
 - b. Open Reference framework allows discussions to be taken into a specific schema, which shortens the time to figure things out

WP4: DATA SHARING

Activities of WP4, as a whole, have not restarted after the submission of the Interim Report. Efforts to restart WP4 will begin in early 2015, using the conclusions and decisions made at this SC meeting as a starting point to map a path forward.

WP4 Legal Subgroup

The legal subgroup within WP4 plans to map defined legal areas within the Interim Report (executive summary, main report body, WP4 appendix) against other content in the Interim Report to ensure that all elements that might have a legal aspect are considered in the final CSIP. This group plans to coordinate with other WPs as much as possible to be aware of additional legal issues as they arise in other WPs.

WP5: OPEN DATA

WP5 drafted and disseminated an Open Data survey, made available in September 2014 and closed 60 days later. The survey was distributed by 'serendipitous snowballing', making its way onto many different types of email lists and web announcements. While it is unknown how many people saw the survey, there were 1130 responses, peaking amongst 26-30 year-olds. Participants heavily represented academia, and most had multiple roles, primarily in the Earth and environmental sciences. The survey is currently being analyzed by WP leads and participants. Results will provide evidence to support recommendations and actions in the final CSIP.

Open Data Survey: Initial Results

An initial overview of the key findings from the Open Data Survey is presented below.

1. Value of open data: Desire to publish, disseminate and receive recognition for your work, funder policy (mandate)
2. Burdens of reusing data: Paying for data, data quality, varying standards/formats, time delay
3. Issues of barriers, discoverability, and community practice that vary between different disciplines
4. Most people were unaware of any guidelines for publishing open data—this is a gap that the Belmont Forum could potentially fill
5. The BF could fund future surveys such as this one, as a method of assessing the impact of Belmont Forum efforts
 - a. One possibility is an on-going survey, with a defined and stratified sample, as part of a continued ‘mapping the landscape’ effort
6. There is a general confusion about what type of data is ‘scientific data’ (referred to in the survey) – the final CSIP can attempt to address this
7. Barriers appear to be the same for users and data providers so they have the same ideas – the final CSIP can address this
8. Some recommendations have to do with changes in practice; others in infrastructure in place
9. We need to consider the burdens: paying for data, varying degrees of data quality, formats, standards, etc.
 - a. 90% of researchers want to publish open data, but concerned about paying for data
 - b. Research will not accelerate if communities have to pay for data
10. Elements from the Open Data Survey could influence proposed BF data principles discussions later(see below)

WP6: TRAINING, SECURITY, GOVERNANCE (CROSS-CUTTING)

Security and Training groups have been formed since the Interim Report (the Legal group has been moved to WP4). These groups are making progress on work proposed in the Interim Report (draft compendiums for each of these areas).

DECISIONS MADE

RECOMMENDATIONS AND ACTIONS

Recommendations 1, 3 and 4 from the Interim Report will be developed further and included in the final CSIP.¹ However, these recommendations may be subject to rephrasing and reformatting as needed. Each umbrella recommendation will have associated actions supported by evidence.

¹ Recommendation 2 from the Interim Report (forming legal, security and training working groups) will not be listed as a standalone recommendation because these groups will initially be convened within the scope of this project. Results will be included in the CSIP as evidence in support of the recommendations and associated actions.

Actions will be in the short, medium and long-term, and short-term actions may inform medium and long-term actions (dependencies).

DRAFT UMBRELLA RECOMMENDATIONS

The three recommendations from the Interim Report included in the final CSIP were edited and refined during the meeting, and are outlined below.

RECOMMENDATION 1: ESTABLISH E-INFRASTRUCTURE COMMUNITY SOCIAL ELEMENTS AND COORDINATION

This recommendation proposes to:

1. Build international coordinated networks of contributors that will
 - Map the dynamic landscape of interoperability, architecture, organizational efforts and expertise across global e-infrastructure efforts/Identify people, projects, programs, organizations working toward interoperability
 - Increase and support coordination across science/user-driven e-infrastructure efforts
2. Establish (or support existing) capabilities to
 - Develop reference frameworks issues, including **legal, security, training and others** around data
 - Formulate specific plans for **training**
 - Coordinate both between these efforts and with worldwide efforts in e-infrastructure
 - Support legal, security and training working groups (proposed)
3. These elements may need to be coordinated by an international secretariat, preferably coordinated by existing organizations such as ICSU, GEO and similar.

RECOMMENDATION 3: FOSTER ACTIVE DATA MANAGEMENT AND STEWARDSHIP PRINCIPLES

This recommendation proposes that Belmont Forum funding agencies adopt the following guidelines for all research projects:

1. Create and implement Data Management Plans (DMPs)
 - Belmont Forum member agencies monitor and evaluate DMP implementation; factor in future funding
2. Identify additional DMP costs
 - Funders could provide infrastructure including data repositories to reduce overall data management costs
3. Make datasets publicly available by default
 - Restricting access requires appropriate justifications
4. Place datasets into trusted data repositories with appropriate metadata
 - Datasets are given data quality indicators, provenance, etc.—see Interim Report

5. Make data interoperable and accessible
6. Comply with minimum standards for international programs, such as Future Earth, to ensure usability and compliance across disciplines and activities internationally (rephrase)

Secondly, individual Belmont Forum members should adopt, monitor, and evaluate the implementation of a **harmonized** DMP template.

DRAFT DATA PRINCIPLES

An additional recommendation for the Belmont Forum to adopt data principles developed by this project (drawing on work already completed around the world) will be included in the final CSIP, once the data principles are finalized. The draft principles, along with an updated vision statement, are currently being circulated among SC members, and will be sent to WP members in early February.

RECOMMENDATION 4: PROVIDE SUPPORT FOR THE DEVELOPMENT OF RESEARCH-DRIVEN E-INFRASTRUCTURE CASE STUDIES

This recommendation proposes to invite proposals for research-driven case studies that demonstrate best practices to researchers and infrastructure experts:

1. Research projects under Future Earth to test data management policy recommendations
2. Research projects as a tool for determining benefits of cross-disciplinary approaches by the users of harmonized e-infrastructure.
 - Where appropriate, these funding calls could focus on interface between HPCI and data infrastructure, ensuring they are harmonized and enable stakeholders to work through end-to-end cooperation
 - WPs will identify other focus areas as appropriate

General criteria:

- Case studies should demonstrate social, natural science, and data management integration (as appropriate)
- Early case studies could be drawn from existing projects funded under earlier Belmont Forum CRAs.
- Case studies should demonstrate tangible outcomes that are quantifiable/describable
- Case studies should be strategic, diverse, and balanced
- Additional criteria will be identified by WPs before this recommendation is finalized

PROPOSING AND FINALIZING RECOMMENDATIONS AND ACTIONS

Actions proposed by the WPs will be shared with the SC and Secretariat by SC members, entering them on a shared spreadsheet in the project Google drive. These actions will be discussed and confirmed at each of the monthly SC telecons. The Secretariat will flag potential redundancies throughout the process, and arrange virtual meetings to harmonize actions across the WPs. SC

members are encouraged to discuss draft actions with the Secretariat and other WPs as they develop. SC members will then fill out and submit each action using the Actions Template by March 23, 2014.

Should they arise, additional umbrella recommendations can be proposed to the SC during the monthly SC teleconferences.

ACTIONS TEMPLATE

The process of completing an Actions Template for each proposed action will make the final CSIP more strategic by setting priorities, identifying sequences/dependences, emphasizing resources required to carry out each action, and putting each action into a timeline (short, medium or long-term). The Actions Template will be edited and finalized in early 2015, and will likely be similar to the following outline agreed upon at the SC meeting:

1. Action Title
 - Associated recommendation number
 - Dependencies
2. Action Summary
 - Description of the action
 - Timeframe: Short, medium or long-term (2 years, 5 years, 10 years)
 - Identify, where possible, relationships with other organizations
 - Collaborative project or competitive funding call
3. Justification in Context - Why is this relevant to the Belmont Forum?
 - What individual agencies need to do to participate at a global level
 - Why it needs to be done in general, why it needs to be done through the BF
 - Has this recommendation (action?) been made before? (To whom? When? How e.g. mechanism for advisory action? Was any action taken? Was the action successful? Etc.)
4. Anticipated impact
 - Impact scale (local, regional, national, international, etc.)
 - Influence on policy, practice, economics, collaboration, communication, wellbeing, trust-building, etc.
 - Expected outcomes of implementing versus not implementing the action
 - How does this support Reproducible Science?
 - How does this support our vision and Data Principles?
5. Evidence Bank
 - 5.1 Supporting publications, engagement, reports, data, external validation etc.
 - 5.2 New data collected during/for this CRA (e.g. The Open Data Survey, Interviews, Scoping papers etc.)
6. Other information
 - 6.1 Authors, technical details, institutions and affiliations

PROCESS FOR SYNTHESIZING THE DRAFT CSIP

The Secretariat will compile the proposed actions and send them to the SC and GPC no later than one week prior to the last SC Meeting in Tokyo, Japan, April 9-11, 2015. Final decisions on recommendations and actions for inclusion in the final CSIP will be made at this meeting. Lastly, the Secretariat will write a first draft of the CSIP immediately following the Tokyo SC meeting.

WRITING AND INTERNAL REVIEW PROCESS

The Secretariat will disseminate the draft CSIP to the SC and GPC after completion. After sufficient review, and inclusion of SC and GPC feedback, the draft CSIP will be disseminated to the WPs for a month-long review. WP member comments and feedback will be incorporated into the final draft, which will be reviewed one last time by the SC, GPC and Secretariat before it is submitted to the Belmont Forum by June 30, 2015.

Belmont Forum member consultations on the draft CSIP will take place in May 2015; their feedback will inform the final CSIP.

EXTERNAL REVIEW

It is likely that the Belmont Forum will make available the final CSIP for public comment and review after the final version is submitted on June 30, 2015. Outside input will complement the final CSIP and will be considered at the next Belmont Forum annual meeting in October 2015.

FINAL COMMUNITY STRATEGY AND IMPLEMENTATION PLAN

CSIP OUTLINE

The SC agreed on a general outline for the main body of the CSIP. The exact format and content of any appendices will be decided at the April 2015 SC Meeting in Tokyo.

1. Length: 4 pages - Summary page may or may not be needed
2. Content:
 - a. Vision statement
 - b. Principles
 - c. Generic recommendations that lead to specific Belmont Forum actions that funding agencies can implement
 - i. What individual agencies need to do to participate at a global level
 - ii. Why it needs to be done in general, and why it needs to be done through the Belmont Forum
 - iii. Each recommendation will have an associated series of actions (supported by evidence in appendix)
 1. Identify whether actions should be done through competitive proposals or collaborative projects
 2. Prioritize actions in the short, medium and long-term

3. Short-term actions might inform medium and long-term actions
 4. Identify, where possible, relationships with other organizations
3. Appendices
- a. Detailed instructions where applicable (step by step, if needed)
 - i. Identify instruments needed to carry out actions and budget
 - ii. Indicate budget range - what the Belmont Forum would need to contribute (not at a national level)
 - b. Rationale behind each recommendation - quantitative and qualitative evidence generated by WPs
 - c. Relationship to other initiatives
 - d. Legal, security, training and any other frameworks/compendiums produced by this project

ADDITIONAL MATERIALS

If consolidated reports are generated in WP deliberations (reference documents, scoping papers, white papers, etc.) they will be made available on the Knowledge Hub. This process will help promote traceability of ideas included in the Final CSIP. Results of the legal, security, and training groups will likely be in the appendix. During the Tokyo SC Meeting the group will make decisions on additional materials, including what content will be in the appendices, and what needs to be preserved on the Knowledge Hub.

Finally, the Secretariat will submit a separate project report to NSF and NERC, outlining best practices, lessons learned, and how the group has functioned and been managed. This report will serve as a future reference, should the Belmont Forum decide to fund collaborative projects of this nature in the future.

APPROACH TO REPRODUCIBLE SCIENCE

The Belmont Forum meeting of Principals in October 2014 in Beijing asked this CRA to consider science reproducibility in its recommendations. The Steering Committee of the Belmont Forum on E-Infrastructure and Data Management will not attempt to craft a definition of reproducible science, because reproducibility has different meanings within different domains, and therefore should be defined by each scientific community. Instead, the SC will consider how each of the recommendations made in the final report contribute to improve reproducibility of science.

Using the Actions Template, SC members will indicate how each recommendation promotes reproducible science (if applicable). The SC will then evaluate and confirm if the final list of recommended actions support reproducible science according to a ‘common understanding’ among SC members:

“Science is considered reproducible when findings can be verified and validated using criteria agreed by the scientific community. Verification and validation are achieved using input provided by scientists in each domain and made available as part of their normal scientific

activity. Reproducible science is a prerequisite to scientific integrity and must be promoted by all stakeholders involved in scientific research.”

This ‘common understanding’ was developed at the SC meeting, but will not be included in the final CSIP. In the final CSIP, the SC will describe in a few sentences how the project chose to examine how each action promotes reproducible science instead of trying to define reproducible science.

TIMELINE, MILESTONES, AND DELIVERABLES

The following milestones and deliverables were agreed upon at the SC meeting. A full calendar is available in Appendix II.

2015

- **January – end of March:** WPs continue work
- **20 January:** SC members fill out actions spreadsheet, review Data Principles
- **27 January:** SC/GPC/Secretariat Teleconference
- **24 February:** SC/GPC/Secretariat Teleconference
- **March 23, 2015:** Templates due for recommended actions (SC members will submit to the Secretariat)
- **24 March:** SC/GPC/Secretariat Teleconference
- **25-30 March:** Secretariat will compile and disseminate actions templates
- **April 9-11, 2015:** SC Meeting in Tokyo, Japan
- **April 13-16:** Secretariat Writing Session in Tokyo, Japan
- **Late April:** SC and GPC review draft CSIP
- **May 2015:** Assembly and Belmont Forum review *CSIP*
- **June 30, 2015:** Final *CSIP* due

APPENDIX I: PARTICIPANT LIST

	Name	Organization	Project Role
1	Andrew Treloar	Australian National Data Service	Steering Committee
2	Anna Katz	Arizona Geological Survey	US Secretariat
3	Birgit Gemeinholzer	University of Giessen	Steering Committee
4	Bob Samors	GROUP ON EARTH OBSERVATIONS	Steering Committee
5	Carrie Hritz	US National Science Foundation	Group of Program Coordinators
6	Christoph Waldmann	University of Bremen	Steering Committee
7	Diego Felipe Muñoz	FAPESP	Group of Program Coordinators
8	Genevieve Pearthree	Arizona Geological Survey	US Secretariat
9	HISAYA KAKIUCHI	Japan Science and Technology Agency	Group of Program Coordinators
10	Jean-Pierre Vilotte	Institut de Physique du Globe de Paris	Steering Committee
11	Jean-Yves Berthou	French National Research Agency	Group of Program Coordinators
12	Johannes Karte	Deutsche Forschungsgemeinschaft	Group of Program Coordinators
13	Kathie Bowden	University of Reading	UK Secretariat
14	Kelly Watson	US National Science Foundation	Group of Program Coordinators
15	Kim Oakley	University of Reading	UK Secretariat
16	Lee Allison	Arizona Geological Survey	Steering Committee Co-Chair, US Secretariat Lead
17	Maria Uhle	US National Science Foundation	Group of Program Coordinators
18	Martin Visbeck	GEOMAR Helmholtz Zentrum für Ozeanforschung Kiel	Steering Committee
19	Mathieu Girerd	French National Research Agency	Group of Program Coordinators
20	Mustapha Mokrane	ICSU World Data System	Steering Committee
21	Peter Baumann	Jacobs University	Work Package 3
22	Robert Gurney	University of Reading	Steering Committee Co-Chair, UK Secretariat Lead
23	Roberto Marcondes Cesar Junior	FAPESP	Steering Committee
24	Sophie Hodgson	UK Natural Environment Research Council	Group of Program Coordinators
25	Stefano Nativi	National Research Council of Italy	Steering Committee
26	Toshio Koike	The University of Tokyo	Steering Committee

APPENDIX II: UPDATED TIMELINE

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Comments
Feb 2015	23	24	25	26	27	28	1	<p>Version 2.1 - with Tokyo meeting 9th-11th April</p> <p>WP submissions for final report due March 23, 2015</p> <p>Initial assimilation by Secretariat</p> <p>Continued assimilation by Secretariat; Tokyo prep</p> <p>Secretariat travel to Tokyo (ex US 6th, ex UK 7th, arrive JP 8th); SC meeting in Tokyo (3 days)</p> <p>Sec. writing session at ICSU, Tokyo (3 days); Secretariat return home from Tokyo (all arrive "same day")</p> <p>Secretariat writing/editing/formatting (continued separately) week #1</p> <p>Secretariat writing/editing/formatting week #2</p>
Mar 2015	2	3	4	5	6	7	8	
	9 RDA, San Diego	10 RDA, San Diego	11 RDA, San Diego	12	13	14	15	
	16	17	18	19	20	21	22	
	23 WP submissions	24	25	26	27	28	29	
	30	31	1	2 Easter Closure, UoR	3 Holiday, UK	4	5	
Apr 2015	6 Holiday, UK	7	8	9	10	11	12 EGU, Vienna	
	SC meeting at JST, Tokyo							
	13 EGU, Vienna	14 EGU, Vienna	15 EGU, Vienna	16 EGU, Vienna	17 EGU, Vienna	18	19	
	Secretariat writing session at ICSU (April 13-16)							
	20	21	22	23	24	25	26	
27	28	29	30	1	2	3		
				Report sent to SC/GPC				

May 2015	4 Holiday, UK	5	6	7	8	9	10
	11	12	13	14	15	16	17
	Report sent to Assembly						
	18	19	20	21	22	23	24
25 Holiday, UK, AZ	26	27	28	29	30	31	
Jun 2015	1	2	3	4	5	6	7
	Deadline for all comments from SC/GPC/Assembly						
	8 OR2015, Indianapolis	9 OR2015, Indianapolis	10 OR2015, Indianapolis	11 OR2015, Indianapolis	12	13	14
	Possible joint final Secretariat writing session...				Final report draft sent to SC/GPC		
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	Deadline final comments from SC/GPC		...Or possible joint final Secretariat writing session				
29	30 * Delivery to BF *	1	2	3	4	5	

SC/GPC Review/Consultation week #1; Secretariat work in parallel to synthesize edits
SC/GPC Review/Consultation week #2; Continued Secretariat synthesis of edits and preparation for report to be sent out
SC/GPC Review/Consultation week #3; Assembly Review/Consultation week #1
SC/GPC Review/Consultation week #4; Assembly Review/Consultation week #2
SC/GPC Review/Consultation week #5; Assembly Review/Consultation week #3
Secretariat tidy-up, incorporation of consultation comments, creation of final report draft for SC/GPC review (separately)
SC/GPC final review week
Final Secretariat incorporation of final comments, tidy, formatting, read through etc.
Final Secretariat tidy (typos, formatting) and submission on Tuesday 30th