

DataWeb Forum (DWF)

I. Background

Innovative information technologies are transforming the fabric of society and digital data are becoming the new currency for research, education, government and commerce. Digital data are being produced by nearly all scientific, research, education, government, society, and commercial endeavors. Data are being generated by surveys, mobile and embedded systems, sensors, observing systems, scientific instruments, publications, experiments, simulations, evaluations and analyses. The emergence of ‘data driven research’ reflects the increasing value of a range of observational, experimental, and computational data in every field of science and research.

Information and communication technology infrastructures for research data are emerging world-wide. However, in the absence of coordination mechanisms, these efforts are highly fragmented, resulting in domain-, discipline-, institution-, and country/region-specific implementations that are not interoperable. This lack of interoperability decreases the value of investments in data infrastructure since each investment may not benefit from others. It also increases the costs of data preservation, discovery, access, and re-use and re-purposing by preventing automated solutions and limiting economies of scale. The establishment of a DataWeb Forum (DWF) for global cooperation and coordination is proposed to address these issues.

The proposed DataWeb Forum combines the strengths of a “bottom up” model such as the Internet Engineering Task Force (IETF¹) with a model such as the Smart Grid Interoperability Panel (SGIP²) for governance, and also provides a means for government agencies to catalyze the launch of this community-based forum through support for founding, non-governmental structures or organizations (DWF-NGSs³). The SGIP model is community-based, and will provide a structure which can balance the voices and interests of the various global research data communities and services. The IETF model is community-based and action-oriented; the IETF mantra of “rough consensus and running code” applied to data infrastructure might be rephrased as “rough consensus and operational data bridges.” This can insure that sharing and the actual exchange of data is operational from the outset and will be driven by data practitioners. As more and more data needs to be processed in situ, the DWF should not just focus on data-data bridges, but also data-tool bridges.

NGSs will be funded to provide logistical and operational support to DWF including contributing personnel and expertise to approved data working groups (DWGs). The combination of components provides a means for a rapid launch of a community-based, results-oriented forum for digital data infrastructure.

¹ www.ietf.org

² Sgipweb.org

³ DWF-NGSs are independent, non-governmental, non-commercial organizations or entities that receive funding from government agencies to support their Council and Secretariat responsibilities.

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II. DWF Vision

The DWF envisions an open, seamless, self-regulatory global digital data infrastructure that is the foundation for discovery and progress.

III. DWF Mission

The mission of the DataWeb Forum (DWF) is to facilitate the exchange and interoperability of data across disciplines and national boundaries by producing high quality, relevant technical documents that influence the way people store, use, and manage data.

IV. DWF Principles

The guiding principles of the DWF are:

- **Openness** – Membership is open to all interested organizations, all meetings are public, DWF processes are transparent, and all DWF products are freely available to the public;
- **Balance** – The DWF is organized on the principle of balanced representation for individual organizations and stakeholder communities;
- **Consensus** – The DWF moves forward by achieving consensus and resolves disagreements through appropriate voting mechanisms;
- **Harmonization** – The DWF works to achieve harmonization across standards, policies, technologies, tools, and other data infrastructure elements;
- **Voluntary** – The DWF is not a government organization or regulatory body and, instead, is a public body responsive to its members; and
- **Non-profit** - DWF is not a commercial organization and will not design, promote, endorse, or sell commercial products, technologies, or services.

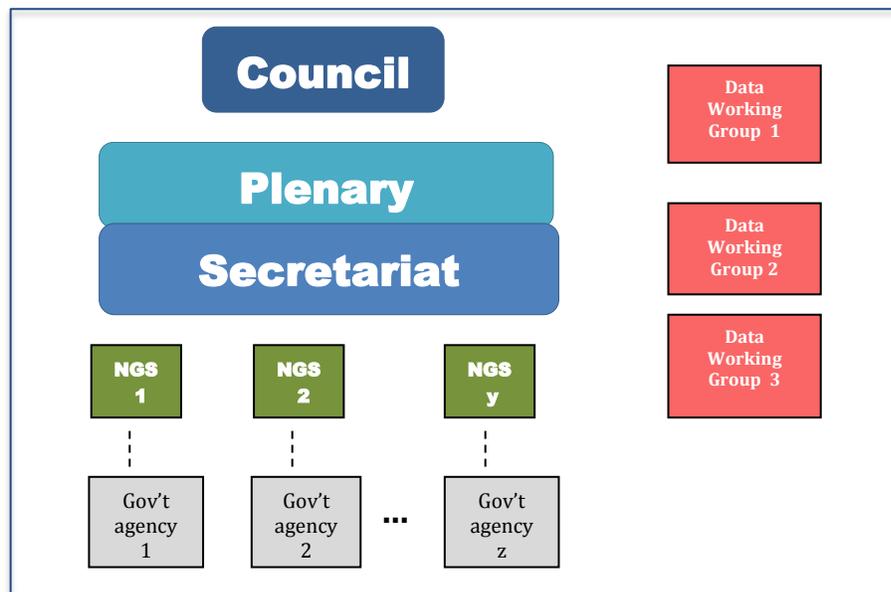
V. DWF Scope

The DWF will initially focus on digital scientific and research data, defined as data that are appropriate for use or re-purposing for research and educational applications when used under conditions of proper protection and authorization and in accordance with all applicable legal and regulatory requirements⁴. Membership in the DWF is open to all organizations with an interest in achieving the DWF vision.

VI. DWF Organization

The organization of the DWF is outlined in the figure below. The key elements of the organization are as follows. The forum consists of a Council, Plenary, and a Secretariat.

⁴ Harnessing the Power of Digital Data for Science and Society, 2009 report of the U.S. National Science and Technology Council's Interagency Working Group on Digital Data; see www.nitrd.gov/About/Harnessing_Power.aspx



- The Council is the decision-making body, receiving and deciding on recommendations from the Plenary. Evidence of a rough consensus in support of an action is a key factor in Council decision-making. Council members will be “statespersons⁵” committed to enabling broad and robust international scientific and research data infrastructures rather than promoting any special interests, domains or disciplines.
- The Plenary is responsible for approving and establishing data working groups, analyzing needs, identifying gaps, and proposing action plans to the Council. The Plenary is composed of 1 voting representative from each working group and participating organization, and an unlimited number of other observers who do not vote but participate in Plenary activities. A majority of Plenary votes cast is sufficient to approve an action.
- The Secretariat supports the activities of the Plenary and Council, including logistical, scheduling, and other support. The Secretariat will initially be funded by the supporting DWF- NGSs but may broaden its base of support to include stakeholder group contributions if a dues model for membership emerges at a later date (subject to Plenary and Council review and approval). The organizations contributing to the Secretariat will prepare an annual budget proposal for Council review and approval.
- Data Working Groups carry out the technical work of the Forum and are established by the Plenary through approval of a charter including a description of the Group’s organizational structure, provisions for participation, assigned tasks, expected deliverables, and timeline (see Section VII below).

⁵ “Statesperson” is defined here as an individual who is participating in a non-governmental capacity, experienced in international interactions, widely respected for integrity and promoting the common good, and acknowledged as a leader in the data domain.

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- The role of government agencies is as follows.
 - Government agencies provide support for the DWF-NGSs that participate in the Council and support the Secretariat.
 - Government agencies participate in the Plenary with all of the rights of a “Participating Organization” as defined below.
- The non-governmental structures (DWF-NGSs) are independent, non-governmental, non-commercial organizations or entities that receive funding from government agencies to support their Council and Secretariat responsibilities. A role of the NGSs is to ensure the DWF remains a public body and is not a government entity.
 - The DWF-NGSs collectively have one voting representative on the Council.
 - DWF-NGSs contribute (proportionate to their agency funding) to the costs of the Secretariat.
- A Participating Organization is any organization with an interest in achieving the DWF vision.
 - Active participation in DWF activities is a condition for membership; any organization missing two consecutive Plenary meetings or votes will be removed from the membership list.
 - Each Participating Organization will have one voting representative on the Plenary and observers as appropriate.
 - Each Participating Organization will be able to participate in various working groups
- The Nominating Committee gathers input from the Plenary on candidates for the Council and selects the members of the Council. Provisions for the initial establishment and continuing operation of the Nominating Committee are provided below.

VII. DWF Action Mechanisms

The DWF will pursue its mission for harmonizing standards, policies, technologies, and other implementation elements primarily through the development of action plans and associated working groups. The DWF is not a formal standards or policy body. It will work through achieving consensus for voluntary implementation and by coordinating with appropriate standards and policy bodies.

- Action plans may focus on analyses of needs and gaps, evaluation of emerging technologies and other trends, recommendations for standards, and other efforts that contribute to the DWF mission. Action plans are proposed by the Plenary based on technical work conducted in Data Working Groups and reviewed for approval by the Council.
Data Working Groups will operate on a finite timeline and defined tasking based on a charter approved by the Plenary. A DWG is formed after an inception phase in which technical goals are presented and discussed with an audience of experts with the objective of gathering the necessary commitment to pursue and deliver the DWG objectives. If the inception phase is successful, the DWG organization,

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structure, participation, and assigned tasks define a charter that is presented to the Plenary for comments and approval. Upon completion of the original tasking, a working group will be disbanded or re-chartered with a new tasking. Working group members are volunteers supported by their sponsors (as are all members of the Plenary and Council with the exception of the paid staff of the Secretariat). The products of working groups may include documents, web resources, software code and applications, tools, data sets, etc. The work of the DWG will be facilitated by a communication mechanism ensuring high quality standards for verifiable and reproducible results.

VII. Next Steps

The start-up of the Forum will be accomplished in three phases: (1) Start-up planning, including DWF-NGS identification and resourcing; (2) Initial launch; and (3) Transition to continuing operation. This phasing allows government agencies to catalyze a timely launch followed by a quick transition to full, community leadership. Each of these phases is described below.

- **Start-up Planning:**

1. Representatives of government agencies that self-identify as interested in furthering the DWF concept will form a DWF Agency Working Group. The Agency Working Group will develop plans for creating an appropriate, funded DWF-NGS framework that enables a coordinated launch and initial operation of the DWF.
2. The Agency Working Group will establish a small Steering Committee to meet on a regular, intensive basis to flesh out details on DataWeb Forum plans based on the provisions of this document. The Steering Committee will be composed of eight members agreed by the Agency Working Group that would represent both agency and infrastructure provider perspectives. The Committee is likely to draw on DWF-NGS resources but would need to be agreeable as a whole to the agencies of each of the participating countries. The Committee would complete its work on the event of the first plenary and then disband.

- **Initial Launch:**

1. The Initial Nominating Committee will consist of a small group of people agreed to by the participating government agencies and their DWF-NGSs. This committee will be charged with coming back to the participating Government agencies and their DWF-NGS within 3 months with a suggested list of statespersons that would be acceptable to a wide range of stakeholders including: participating government agencies, research data infrastructure providers, research data generating facilities, data intensive research disciplines, research service providers, research institutions, commercial providers of research data services, and – very importantly – be credible to researchers. The list would be either ratified by the participating government agencies and their DWF-NGSs, or their work would be undertaken again. The Initial Nominating Committee will be disbanded upon completion of the selection of Initial Council Members.

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2. The DWF-NGSs and Initial Council will then work together to plan and conduct the inaugural meeting of the DWF. The Inaugural DWF Meeting will be held within 4 months of the completion of Initial Council Member selection. Among the goals for the Inaugural DWF Meeting are to: (i) review the bylaws and charter developed by the Steering Committee; (ii) collect input on the designation of Stakeholder Groups (see below); and (iii) identify an initial set of Data Working Groups.
- **Transition to Continuing Operation:**
 1. The purpose of Stakeholder Groups is to provide for balanced representation on the regular Nominating Committee and ensure that DWF cannot be dominated by one or a subset of sectors. The sole function of a Stakeholder Group is to elect a representative to the Nominating Committee. The number of Stakeholder Groups shall not exceed ten (10). An initial set of Stakeholder Groups will be established by the Initial Council with input collected at the Inaugural DWF Meeting. Stakeholder groups should be selected to be representative of the range of sectors and interests across the scientific data landscape. Examples of possible Stakeholder Groups include hardware and software vendors, data services providers (including cloud services and ISPs), scientific and professional organizations (including disciplinary organizations), data centers and network operators, academic and research institutions, standards organizations, DWF-NGSs, etc. Each Participating Organization and DWF-NGS will self-identify affiliation with one Stakeholder Group and will have one vote in electing the Group representative to the Nominating Committee. The number and designation of Stakeholder Groups will be regularly reviewed by the Council with input from the Plenary.
 2. The Nominating Committee will comprise one elected representative from each Stakeholder Group. The Nominating Committee will meet within six months of the Inaugural DWF Meeting to begin the process of identifying candidates and selecting members of the Council to replace the Initial Members. This prevents Initial Council members from steering transition processes toward their re-selection. Members of the Initial Council are not eligible to serve on the first, regular Council. The timing of selection and the terms of service for Council Members will be determined by the DWF charter and bylaws.

Comments on this concept paper are welcome and can be forwarded to the authors at:

Alan Blatecky – ablateck@nsf.gov

Chris Greer – chris.greer@nist.gov