Network Member Catalogue of Criteria

The ICSU World Data System

The ICSU World Data System (ICSU-WDS) was created by the 29th General Assembly of the International Council for Science (ICSU). It builds on the 50-year legacy of ICSU's World Data Centre (WDC) system and Federation of Astronomical and Geophysical data- analysis Services (FAGS). ICSU-WDS aims at transitioning from existing standalone centres and individual services to a common globally interoperable distributed data system that incorporates emerging technologies and new scientific data activities. The new system will build on the potential offered by advanced interconnections between data management components for disciplinary and multidisciplinary applications.

ICSU-WDS will enjoy a broader disciplinary and geographic base and will strive to become a worldwide 'community of excellence' for scientific data. To this end, ICSU-WDS will work closely with ICSU's Committee on Data for Science and Technology, as well as other stakeholders. Through their WDS membership, Member Organizations will contribute to ICSU programmes and initiatives.

Introduction

Networks vary greatly in their makeup and responsibilities (e.g., central bureau, coordinating committee, secretariat, or programme office), and in how they take responsibility for the competence and ongoing performance of their components (e.g., data centres, analysis centres, and products). The purpose of this application is to supply a transparent, objective base to evaluate candidates for WDS Network membership, as well as for their periodic assessment and the overall performance of ICSU-WDS. The supplied procedures ensure the trustworthiness of WDS Members in terms of authenticity, integrity, confidentiality, and availability of data and services.

The certification procedure is essentially based on a catalogue of evaluation criteria, and the procedure to evaluate candidates and monitor WDS Network Members consists of this application. All steps involved are performed by the WDS Scientific Committee (WDS-SC), which functions as a certification authority with the help of the WDS International Programme Office.

In principle, the goal is to have objective controls (criteria) against which Network Members can be evaluated. In some cases, questions can simply be answered 'yes' or 'no'. In many cases, however, evaluation will be based on nonstandardized information supplied by applicants that indicates their degree of trustworthiness. In general, the information supplied for a specific criterion can be attributed to different

levels of maturity: (0) not addressed, (1) conception phase, (2) implementation phase, (3) operational. The decision about what is a valid concept, or which service can be seen as fully operational, is the responsibility of the WDS-SC, with input from other relevant experts as appropriate.

The catalogue of criteria consists of general requirements and policies, organizational framework, and network framework description. The criteria and procedures have been defined incorporating existing standards and best practices from other organizations and projects. Applicants are encouraged to comment on the different parts of the application form. In addition, please use the comment fields if you have questions or need support for specific criteria.

The application form is structured into 5 sections: I. Role(s) and scope within ICSU-WDS, II. WDS general requirements and policies, III. Organizational framework, IV. Network framework description, V. Feedback. The application can be revisited as often as necessary, and at the bottom of the page you can save the application, request feedback from the WDS-SC, or submit it for review.

I. Role(s) and scope within ICSU-WDS

ICSU-WDS is a global federated system of long-term data archives and data-related services that cover a wide spectrum of Natural and Social Sciences and that encourage interdisciplinary science approaches. The system integrates various organizations with different scopes. A Member Organization within ICSU-WDS may cover a single discipline or be multidisciplinary. Their scope of work should be at national, regional, and global levels. Roles or functions within the federated system encompass the complete data management chain from data production to publication, and an organization may apply for one or more of the roles listed below.

1. Which role(s) are you applying for within ICSU-WDS?

☐ A. Data collection and processing (including Quality Assurance/Control)

☐ B. Long-term data repository (data library; including open access to all data)

☐ C. Data publisher (including citability; usage of persistent identifiers; and peer-review-like procedures for data and products)

☐ D. Community-related service (e.g. data-related service)

☐ E. General service (e.g. mapping; cataloguing; bibliography & bibliometrics; and data dissemination)

Other (please explain)

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2. What is the geographical coverage of service(s) supplied?

☐ National

☐ Regional

☐ Global

☐ Space

Other (please specify)

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3. What is your current national or regional role?

4. What is your current global role?

II. WDS General requirements and policies

5. CRITERION: Signed Letter of Agreement, Intent to Cooperate, or similar with ICSU

☐ **A Letter of Agreement, Intent to Cooperate, or comparable agreement will be signed with ICSU**

Guidance: The WDS Constitution states that a WDS Member Organization must agree to a model Consortium Agreement, Letter of Agreement, Intent to Cooperate, or other comparable agreement with ICSU. This will describe the commitment of the Member Organization to the goals of ICSU-WDS. A template agreement can be found at: https://www.icsu- wds.org/community/membership/wds-template-agreement

6. CRITERION: Provide full, open, timely, nondiscriminatory, and unrestricted access to data, metadata, products, and information, at no cost or at the cost of dissemination

☐ **Our organization and supplied services comply with the WDS Data Sharing Principles (see Guidance)**

If you comply with these Principles, please supply a reference to a supporting document or web address. If you will be unable to comply with the Data Sharing Principles, please explain briefly why.

Guidance: A WDS Network Member must provide data in accordance with the WDS Data Sharing Principles, which state

- Data, metadata, products, and information should be fully and openly shared, subject to national or international jurisdictional laws and policies, including respecting appropriate extant restrictions, and in accordance with international standards of ethical research conduct.
- Data, metadata, products, and information produced for research, education, and public-domain use will be made available with minimum time delay and free of charge, or for no more than the cost of dissemination, which may be waived for lower-income user communities to support equity in access.
- All who produce, share, and use data and metadata are stewards of those data, and have responsibility for ensuring that the authenticity, quality, and integrity of the data are preserved, and respect for the data source is maintained by ensuring privacy where appropriate, and encouraging appropriate citation of the dataset and original work and acknowledgement of the data repository.

- Data should be labelled 'sensitive' or 'restricted' only with appropriate justification and following clearly defined protocols, and should in any event be made available for use on the least restrictive basis possible.

If a licensing scheme is in use, please provide details.

7. CRITERION: Should attend WDS meetings every two years

☐ **Representatives of the Network Member Organization will attend biennial meetings**

If you will not be able to attend meetings, please explain briefly why.

Guidance: To be fully integrated in ICSU-WDS, a Network Member must engage with other WDS Members, exchange expertise, review developments, and so on. The biennial WDS Members' Forum is one important mechanism for this Member interaction. A Member Organization's agreement to join the Members' Forum also indicates that they have the requisite resources and funds available to support their participation.

8. Repository representatives will perform application reviews as requested

☐ **We agree to conduct the reviews of up to two WDS certifications per year**

Guidance: WDS Network Members may be invited by the WDS-SC to conduct a maximum of two membership certification reviews per year as a contribution to the WDS community effort. Applications for review will be selected according to an organization's scientific domains and training materials will be provided. A Member Organization will agree to ensure confidentiality and state conflicts of interest when conducting reviews, and it may nominate specific experts or review requests may be sent through the WDS Member Representative.

9. CRITERION: Network has relevant external experts to provide advice and guidance

Guidance: Evidence of the arrangements in place for provision of expert advice or guidance should be provided. This can vary in the degree of formality. For example, advice/guidance could be provided by relevant experts in the appropriate field, perhaps by means of reviews. Such experts could be members of ICSU Scientific Unions, but this is not essential.

10. CRITERION: Promote active communication with the research community and other users

Guidance: A WDS Network Member should provide an indication of outreach and communication activities—for example, regular activity reports (annual or biennial); participation in conferences and exhibitions; production of promotional leaflets, flyers, and articles/papers. The type of information provided to the research community and other users by a WDS Member could include:

- Data products and services available.
- Links with other organizations who use the data for generation of products and services.
- Current projects aiming to increase and promote use of data and services supplied.
- Statistics/metrics indicating usage of data and services; • Availability of an enquiries or help desk.
- Details of undertaken customer satisfaction surveys.
- Training courses.

The WDS-SC will also provide a template for WDS Activity Reports.

III. Organizational framework

11. CRITERION: Network has defined the scope of the data, products, and services it offers

12. CRITERION: Network has defined its responsibility for long-term preservation of data, products, and services

13. CRITERION: Network has defined its target user communities and their needs

14. CRITERION: Network has defined the rights of users to access and use data, products, and services

15. CRITERION: Network has defined its processes for responding to changing scientific requirements and to evolving technologies

Guidance: A WDS Network Member must provide evidence of its goals and objectives through a strategy document, mission statement, or so on, as well as supplementary documentation (e.g., detailing datasets, products, and services). These documents are often published in the form of a policy or contract describing the Member Organization's commitments, and should include a forward look. A note should also be made if any of the goals are beyond the remit of the Member Organization, and provide the reason for this—for example, they are not appropriate for user community, or the Member Organization is a real-time data service where the responsibility for long-term preservation of the original data lies elsewhere.

16. CRITERION: Network's organizational form is adequate in terms of funding

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17. CRITERION: Network's organizational form is adequate in terms of sufficient numbers of qualified staff

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18. CRITERION: Network's organizational form is adequate in terms of organizational structure

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19. CRITERION: Network's organizational form is adequate in terms of long-term planning

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Guidance: To become certified by ICSU-WDS, a Network must provide evidence that it is a recognized institution (ensuring long-term stability and sustainability) appropriate to its user community. It must also indicate that it has sufficient funding, including staff resources, IT resources, and a budget for attending meetings. Ideally this should be for a minimum 5-year period, and the information should be updated regularly. Evidence should include a description of the range and depth of expertise of both the Network and its staff, and any appropriate affiliations (e.g., national or international bodies) should be noted.

20. CRITERION: Network offers oversight of international repute (scientists / data specialists) to its nodes either directly or through some other mechanism

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Guidance: WDS Network Members should provide local oversight to affiliated nodes. Please explain the mechanisms. This could be done by means of an existing document.

21. CRITERION: Maintenance of a continuity plan for nodes within the Network in the event of a node's host institution shift of interests or reaction to substantial changes

Guidance: The nodes of a WDS Network Member should provide a long-term stewardship plan indicating options for relocation or transition of activities to another organization in the event of a shift of interests by their host institutions. These plans need to be reviewed by the Network Member, or another appropriate body, to ensure an orderly transition.

22. CRITERION: Network undergoes formal, periodic review and assessment to ensure its responsiveness to new scientific and technological developments

Guidance: A regular review of the network should be conducted to ensure that its technologies are up-to-date and relevant to its target scientific domains and user communities. Such a formal, periodic review should involve people external to the network and address both technical and scientific aspects. A WDS Network Member is furthermore required to provide the WDS-SC a Report every three years, following a template that covers planned responses to new scientific and technological developments. A Network Member's WDS certification will also be reviewed by the WDS-SC approximately every three years through the approved process.

IV. Network framework description

23. CRITERION: Network has systems in place to assess the capability of its nodes and (if necessary) build capacity to improve their operational performance

Guidance: Please provide information describing the systems in place to assess the capability of network components (e.g., through the Network Member's own accreditation process), information about how new component members are recruited, and—if relevant— capacity building undertaken to improve the operational performance of the network components. If component members join (or leave) the network, this should be reported as part of the Network Member's Biennial Report and when its membership is periodically reviewed.

V. Feedback

The WDS certification procedure is not seen as final, and we value your input to further improve it. Therefore, please let us know your opinion about the quality of this application form and its relevance to your organization. In addition to ranking the application on a scale of 1–5 stars, you are encouraged to leave any feedback you wish to give in the box below.

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Feedback