CODATA Strategic Plan 2023-2027: Making Data Work to Improve our World

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Contents

Making Data Work to Improve our World: the CODATA Strategic Plan, A Brief Summary

The major global scientific and human challenges of the 21st century can only be addressed through cross-domain research that seeks to understand complex systems through machine-assisted analysis at scale. **For science to address global challenges, high quality, reliable, transparent data is essential. We need to make data work to improve our world.**

The fundamental enabler of transformative science is an ecosystem of resources that empowers the transparent, trustworthy and equitable use of data and information. That ecosystem must be global and equitable with minimal unnecessary barriers to access; it must facilitate interdisciplinary and international research collaboration; it must be ethical and governed by sound policy for science and data; it should harness cutting edge data science and cultivate the science of data; and it requires effective, maximally automated stewardship of data, and effective terminologies and metadata specifications. Achieving such an ecosystem presupposes considerable international and cross-disciplinary cooperation and it cannot succeed without substantial capacity building and education in data skills.

This Strategic Plan describes how CODATA will contribute to the realisation of that ecosystem and to the task of **enabling transformative science through data**.

CODATA's vision is of a world in which science is empowered to address universal challenges through the transparent, trustworthy and equitable use of data and information.

CODATA's mission is to connect data and people to advance science and improve our world. As the Committee on Data of the International Science Council (ISC), CODATA helps realise ISC's vision of advancing science as a global public good. CODATA does this by promoting international collaboration to advance trustworthy, equitable and transparent science and to improve the availability and usability of data for all areas of research. CODATA supports the principle that data produced by research and susceptible to be used for research should be as open as possible and as restricted as necessary.

CODATA works also to advance the interoperability and the usability of such data: research data and metadata (and related resources and services) should be FAIR (Findable, Accessible, Interoperable and Reusable)[1]. Through its activities on data policy and capacity building for data stewardship, CODATA is concerned to ensure global data equity and justice and enable the realisation of the UNESCO Open Science Core Values and Guiding Principles[2], the CARE

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[1] Wilkinson, M., Dumontier, M., Aalbersberg, I. et al. The FAIR Guiding Principles for scientific data management and stewardship. Sci Data 3, 160018 (2016). https://doi.org/10.1038/sdata.2016.18

[2] UNESCO Recommendation on Open Science, pp.17-19 https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en

(Collective benefit, Authority to control, Responsibility and Ethics)[3] principles, and the JUST (Judicious, Unbiased, Safe and Transparent)[4] principles.

CODATA enables its members and stakeholders to coordinate internationally by leveraging the expertise of the global community and through strategic, targeted and practical activities. Central to CODATA's value proposition are the benefits achieved through international and interdisciplinary cooperation and coordination. Reflecting the mandate from ISC and CODATA's relationship with its membership, the organisation takes a **strategic, targeted and practical** approach, prioritising areas of activity which are important to the ISC strategy and to the CODATA membership. The CODATA strategy comprises four thematic priorities.

1) Making Data Work for Cross-Domain Grand Challenges: a programme of activity to help deliver a specific part of the ISC Action Plan with the same name. The purpose is to provide practical guidance and technical recommendations to help ensure that the data needed for interdisciplinary research is FAIR and has maximum utility. Preparatory work has led to the flagship WorldFAIR project and the primary focus of this activity will now be to expand and sustain the vision and methodology being advanced in through that activity. That wider initiative is henceforth described as WorldFAIR+. CODATA will seek partners around the world for this initiative, to explore case studies and enable the adoption of the FAIR principles, supporting standards and specifications. In parallel, with exchange and overlap of methodology, the Global Open Science Cloud initiative encourages cooperation, alignment and interoperability across e-Research platforms in various domains and countries.

The impact of this work will be to better enable interdisciplinary science for grand challenge issues, by improving capacity to combine data and metadata across domains and ensuring that science missions for sustainability are supported by good data practices.

2) Improving Data Policy: promoting principles, policies and practices for FAIR Data and trustworthy, equitable and transparent science. CODATA has a long and respected track record of influential work in the data policy arena. The primary mechanism is the International Data Policy Committee (IDPC). The IDPC has three modes of activity: it helps CODATA respond to emerging issues and requests for advice; it provides a source of expertise for funded projects and reports; and it generates its own initiatives through sub-group activities. The new IDPC Action Plan aims to address such important issues as AI ethics and data policy, data policy for data quality and reliability, data policy for science in crisis situations and education for data policy.

The impact of this work will be to support the effectiveness and ethical dimensions of global science by advancing Open and FAIR data policies, and by ensuring that data policy is an integral part of science policy.

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[3] Carroll, S.R., Garba, I., Figueroa-Rodríguez, O.L., Holbrook, J., Lovett, R., Materechera, S., Parsons, M., Raseroka, K., Rodriguez-Lonebear, D., Rowe, R., Sara, R., Walker, J.D., Anderson, J. and Hudson, M., 2020. The CARE Principles for Indigenous Data Governance. Data Science Journal, 19(1), p.43.DOI: https://doi.org/10.5334/dsj-2020-043
[4] Magas, Michela, & Dubber, Andrew. (2020). Expanding EOSC: Engagement of the wider public sector and private sectors in EOSC. Zenodo. https://doi.org/10.5281/zenodo.4463437

3) Advancing the Science of Data and Data Stewardship: advancing the frontiers of the science of data,[5] particularly to enable interoperability and reusability. CODATA does this through the Data Science Journal, its regular international conferences (International Data Week and the CODATA/SciDataCon/FAIR Convergence series), and through specific Task Groups such as the Task Groups on Fundamental Constants and Digital Representation of Units of Measure. CODATA also curates the RDM Terminology as an important community resource.

The impact of this work will be to help improve scientific practices around data by raising the profile of the science of data and by stimulating dialogue between practitioners of data science and data stewardship.

4) Enhancing Data Skills: building capacity for trustworthy, equitable and transparent science and data stewardship by improving data skills and education. As well as its early career and alumni initiative, CODATA Connect, there are two important longstanding training activities: the CODATA-RDA Schools of Research Data Science and the regular Training Workshops hosted by CNIC CAS.

The impact of this work will be to increase capacity for data stewardship, through targeted and effective training and train-the-trainer initiatives, and by facilitating the engagement of early career researchers in data issues.

CODATA is more than the sum of its parts and achieves a substantial return on investment by leveraging voluntary effort and collaboration. Our mission is realised through various types of activity, with the secretariat playing a pre-eminent role in delivering projects, coordinating voluntary activity or supporting Task Groups and Working Groups.

CODATA has four main membership categories: national members, International Scientific Unions, institutional members and partners. Modelled on the longstanding membership of ISC and its predecessors, the matrix of perspectives created by our national members and Unions representing various research disciplines is an important and notable source of insight and informs CODATA's strategic approach. CODATA engages with its national members through a National Committees Forum. CODATA requires national members to form National Committees; where appropriate they are also encouraged to establish a National Office or host an International Programme Office. CODATA engages with its Union members through a number of Union oriented activities, including the Union ambassadors to the DRUM (Digital Representation of Units of Measure) Task Group. It is proposed to extend this approach to the promotion of FAIR Vocabulaires and collaboration related to WorldFAIR+ and 'Making Data Work'.

CODATA achieves a great deal with relatively small resources. To fulfil our ambitious strategy, we aim to further grow the organisation: secretariat, members and participants in our activities. CODATA also needs to undertake succession planning in relation to all its activities.

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[5] As stated in the scope of the CODATA Data Science Journal, "we regard data science as the 'science of data' — the evidence-based study of the socio-technical developments and transformations that affect science policy; the conduct and methods of research; and the data systems, standards, and infrastructure that are integral to research."

About this document

This Plan explains CODATA's mission, vision, strategic and thematic priorities and how they will be implemented in the period 2023-2027. This plan will guide the work of the secretariat, Executive Committee, Task Groups and other CODATA initiatives.

A draft version was prepared by the Secretariat and Executive Committee and was circulated in a consultation with members in June-July 2023. The present version was improved through members' feedback, and is presented for endorsement to the CODATA General Assembly in October 2023.

Making Data Work to Improve our World

"Advancing human development within sustainable planetary and social boundaries is the most important challenge for humanity and for science."[6] Understanding how to enable sustainable development in the context of anthropogenic climate change, divergent economic interests, potential resource conflicts and geopolitical tensions is a problem of enormous complexity, and in a world of such wicked problems science is essential to inform change making. Science, as "a distinct form of knowledge based on evidence and tested against reality, logic and the scrutiny of scientific peers"[7], relies fundamentally on the transparent and trustworthy and equitable use of data.

The major global scientific and human challenges of the 21st century, including most of those relating to the Sustainable Development Goals (SDGs), can only be addressed through cross-domain research that seeks to understand complex systems through machine-assisted analysis at scale. The tools now at scientists' disposal to conduct this analysis are revolutionary and epoch-making, and the technologies on which they draw have transformed our world. Scientific infrastructures now create data in unprecedented volumes; High Performance Computing is deployed in calculations of size and complexity that are hard to conceive; in some fields it is possible to run algorithms across numerous dispersed data sets; and Machine Learning and AI suggest the potential of increasingly self-directed experiments and the extraction of coherent information from vast quantities of 'unstructured' data.

At the same time, such technologies themselves pose genuine methodological challenges for scientific transparency and reproducibility. In an age of misinformation, AI provides a tool for bad actors that risks increasing public distrust of science. The ethical challenges of AI are legion and it is an important field for science policy and for data policy.

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[6] International Science Council https://council.science/about-us/
[7] UNESCO Recommendation on Open Science, III.14.a, p.17
https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en

Furthermore, our capacity to harness science and data to address such analysis is currently constrained by the limitations in our ability to access and combine heterogeneous data within and across domains. Sub-optimal data practices are a major and costly limiting factor on research: it is estimated that 80% of research expenditures are used to prepare data for use. Solutions to complex and difficult problems require data to be assessable and actionable by machines using big data in combination with the most advanced hardware and software technologies. Data must be richly described with metadata, well-documented, transparent, comprehensible by humans and actionable by machines, in order to facilitate extraction of meaning from complexity. Science can address global challenges, but to do this high quality, reliable, transparent data is essential, a *sine qua non*. We need to make data work to improve our world.

The fundamental enabler of transformative science is an ecosystem of resources that empowers the transparent, trustworthy and equitable use of data and information. That ecosystem must be global and equitable with minimal unnecessary barriers to access; it must facilitate interdisciplinary and international research collaboration; it must be ethical and governed by sound policy for science and data; it should harness cutting edge data science and cultivate the science of data; and it requires effective, maximally automated stewardship of data, and effective terminologies and metadata specifications. Achieving such an ecosystem presupposes considerable international and cross-disciplinary cooperation and it cannot succeed without substantial capacity building and education in data skills.

This Strategic Plan describes how CODATA will contribute to this task of **enabling transformative science through data**.

CODATA's Vision

CODATA's vision is of a world in which science is empowered to address universal challenges through the transparent, trustworthy and equitable use of data and information.

CODATA's Mission

CODATA's mission is to connect data and people to advance science and improve our world.

As the Committee on Data of the International Science Council (ISC), CODATA helps realise ISC's vision of advancing science as a global public good. CODATA does this by promoting international collaboration to advance trustworthy, equitable and transparent science and to improve the availability and usability of data for all areas of research. CODATA supports the principle that data produced by research and susceptible to be used for research should be as open as possible and as restricted as necessary.

CODATA works also to advance the interoperability and the usability of such data: research data and metadata (and related resources and services) should be FAIR (Findable, Accessible, Interoperable and Reusable)[8]. Through its activities on data policy and capacity building for data stewardship, CODATA is concerned to ensure global data equity and justice and enable the realisation of the UNESCO Open Science Core Values and Guiding Principles[9], as well as the CARE (Collective benefit, Authority to control, Responsibility and Ethics)[10], JUST (Judicious, Unbiased, Safe and Transparent)[11] and FACT (Fairness, Accuracy, Confidentiality, and Transparency)[12] principles.

CODATA's Value Proposition

CODATA enables its members and stakeholders to coordinate internationally by leveraging the expertise of our global community and through strategic, targeted and practical activities. Central to CODATA's value proposition are the benefits achieved through international and interdisciplinary cooperation and coordination. **Through its mandate from ISC, CODATA brings an important and distinct strategic focus to its activities.**

CODATA provides a key avenue for supporting the transformative science that is central to ISC priorities. Such science is inherently multi-, inter- and transdisciplinary and requires engagement with and interactions between scientists of all domains, as well as expertise from practitioners and wider society. CODATA supports the ISC and its member organisations in their engagement with data and related Open Science topics by reducing complexity and building on emerging good practices and case studies. The WorldFAIR project[13] demonstrates that CODATA can coordinate such efforts, and produce a whole that is much greater than the sum of its parts; nurturing interoperability through fostering coordinated standards development.

CODATA's Mandate and Place in the Global Data Ecosystem

CODATA has a unique and specific role. As the Committee on Data of the International Science Council, CODATA has a specific **mandate** to act on behalf of the ISC on specified data issues and is **entrusted** to deliver parts of the ISC strategy and Action Plan. **CODATA is a key resource through which ISC can address data-related issues.** CODATA is

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[8] Wilkinson, M., Dumontier, M., Aalbersberg, I. et al. The FAIR Guiding Principles for scientific data management and stewardship. Sci Data 3, 160018 (2016). https://doi.org/10.1038/sdata.2016.18

[9] UNESCO Recommendation on Open Science, pp.17-19 https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en

[10] Carroll, S.R., Garba, I., Figueroa-Rodríguez, O.L., Holbrook, J., Lovett, R., Materechera, S., Parsons, M., Raseroka, K., Rodriguez-Lonebear, D., Rowe, R., Sara, R., Walker, J.D., Anderson, J. and Hudson, M., 2020. The CARE Principles for Indigenous Data Governance. Data Science Journal, 19(1), p.43.DOI: https://doi.org/10.5334/dsj-2020-043

[11] Magas, Michela, & Dubber, Andrew. (2020). Expanding EOSC: Engagement of the wider public sector and private sectors in EOSC. Zenodo. https://doi.org/10.5281/zenodo.4463437

[12] van der Aalst, W.M.P., Bichler, M. & Heinzl, A. Responsible Data Science. Bus Inf Syst Eng 59, 311–313 (2017). https://doi.org/10.1007/s12599-017-0487-z

[13] WorldFAIR Project https://worldfair-project.eu/

considered **an extension of the ISC** and works closely with the ISC secretariat. CODATA is concerned to advance the data dimensions of the global scientific priorities that are the concern of ISC, and in doing so works closely with the other data organisation under ISC (the World Data System), as well as other ISC members and initiatives.

CODATA and its members

CODATA has a specific membership structure which reflects its role as the 'Committee on Data of the International Science Council'. International Scientific Unions and Associations (ISUs and ISAs) that are members of the ISC are also automatically invited to be members of CODATA: it is therefore a priority of CODATA to collaborate closely with the ISUs and ISAs on data issues. The relationship with ISC and the ISUs and ISAs means that CODATA is in a unique position to bring disciplines together; to raise the profile of data activities and issues with the ISC community; and to address issues of cross-domain interoperability that are essential to interdisciplinary research areas.

CODATA also has national members, which are requested to establish National Committees and (where appropriate) National Offices. The National Committees Forum is a mechanism CODATA uses to engage with national members, to discuss their strategy and activities and to understand the various priorities regarding data. Above all, CODATA seeks to foster cooperation among its national members and identify where national (funded and resourced) activities can be coordinated to help address international, disciplinary and interdisciplinary data issues. The structure of its national membership and the relationship with ISC, means that issues of data equity and justice, particularly in the global south, are essential to its mission. In addition, CODATA has established a collaborative platform of institutional and partner membership through a series of MoUs.

Reflecting its relationship with ISC and its membership, CODATA takes a **strategic, targeted and practical** approach, prioritising areas of activity which are important to the ISC strategy and the CODATA membership. Under this rubric, the following areas are particularly important: the data dimensions of cross-disciplinary global scientific priorities (ISC); data concerns of research disciplines as represented by ISUs and ISAs; national data strategies and priorities as articulated by CODATA National Committees; and, realising the benefits of sharing and collaborating across disciplinary and national boundaries.

CODATA and its partners

CODATA has been mandated to contribute to the ISC's Action Plan in two specific and related areas (Making Data Work… and Open Science). CODATA works both for and with ISC in relation to data and Open Science issues in the UN System. Maintaining and expanding areas of collaboration with UNESCO, UNDRR, UNStats, UNECE, UN World Data Forum and so on, is important for CODATA's mission. Similarly, CODATA prioritises engagement with international and intergovernmental science and data platforms, such as GBIF (the Global Biodiversity Information Facility), GEO (the Group on Earth Observation), and ODIS (the Oceans Data and Information System). In the context of WorldFAIR+, it will

be essential to extend and deepen collaboration with organisations that maintain (meta)data standards and specifications—such as the Data Documentation Initiative (DDI) Alliance, Biodiversity Information Standards (TDWG), the Open Geospatial Consortium (OGC), and the World Wide Web Consortium (W3C)—as well as organisations that can represent important domain or cross-domain research areas. In this context, CODATA pursues collaboration with regional consortia (like CESSDA), or research data commons or platform initiatives (such as the Australian Research Data Commons and the African Open Science Platform).

CODATA collaborates with the three other major, international, interdisciplinary data organisations: GO FAIR, the World Data System (WDS), and the Research Data Alliance (RDA). Where appropriate, and in a targeted, selective way, it will be valuable to move beyond the good intentions stated in Data Together, and identify concrete, productive joint activities and projects.

Both through its secretariat and its International Data Policy Committee, CODATA has played and continues to play an important role with GEO, OECD, the European Commission and UNESCO in the development of data policy and advice.

As a central part of its mission, CODATA helps address fundamental issues of data in science, through its Task Groups and other activities. Notable examples include the longstanding Task Group on Fundamental Constants and more recently through the Task Group on Digital Representation of Units of Measure and the partnership with the Bureau International des Poids et Mesures (BIPM).

With its mandate from ISC and working in the ecosystem described, **CODATA's strategy is to promote international collaboration to advance trustworthy, equitable and transparent science and to improve the availability and usability of data for all areas of research.** CODATA takes this forward through four thematic priorities.

Structure of the plan: CODATA's Four Thematic Priorities

CODATA's thematic priorities comprise the new Decadal Programme, as part of the ISC Action Plan, and three long-term priority areas.

1) Making Data Work for Cross-Domain Grand Challenges: a programme of activity to help deliver areas of the ISC Action Plan. The primary focus of this activity will be to expand and sustain the work of the WorldFAIR project. That wider initiative is henceforth described as WorldFAIR+.

2) Improving Data Policy: promoting principles, policies and practices for FAIR Data and trustworthy, equitable and transparent science;

3) Advancing the Science of Data and Data Stewardship: advancing the frontiers of the science of data,[14] particularly to enable interoperability and reusability;

4) Enhancing Data Skills: building capacity for trustworthy, equitable and transparent science and data stewardship by improving data skills and education.
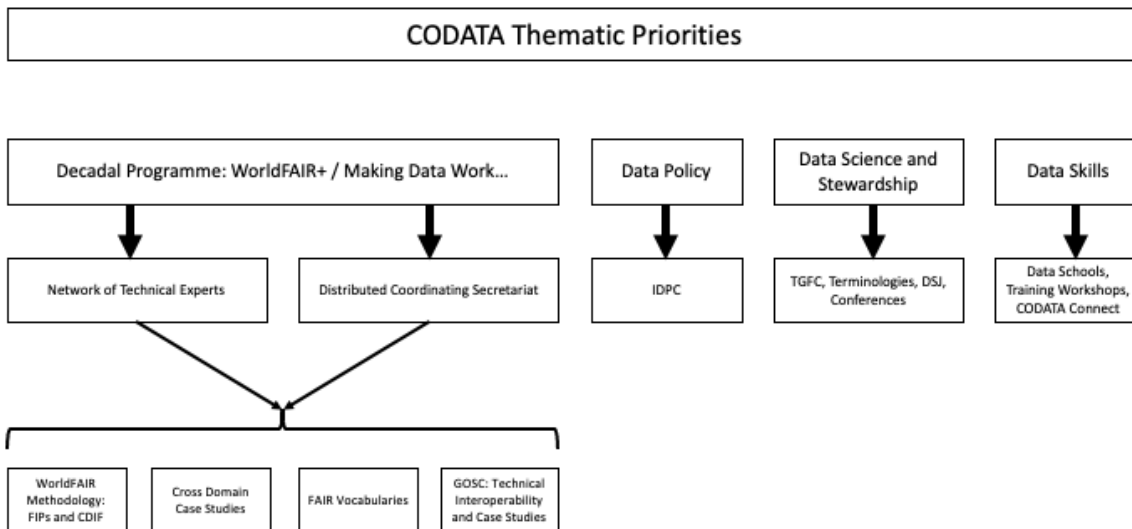
The diagram above shows CODATA's thematic priorities, the main delivery agents and areas of activity.

Priority 1: Making Data Work

What do we aim to achieve and how?

The purpose of this strand of activity is 'to make data work for cross-domain grand challenges'. This means addressing issues of interoperability and reusability (the relatively neglected I and R of FAIR) in the context of cross-domain research and most importantly, those international scientific activities that are a priority for ISC (including but not limited to climate change mitigation and adaptation, the sustainability science and the SDGs, disaster risk reduction, and measures of human development). This is an important and distinct role for CODATA as an extension of the ISC executive and in support of the ISC mission.

This strand comprises two linked activities: a set of activities on cross-domain interoperability, now centred around the WorldFAIR project; and the Global Open Science Cloud initiative. Both of these activities contribute to specific areas of the ISC Action Plan.

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[14] As stated in the scope of the CODATA Data Science Journal, "we regard data science as the 'science of data' — the evidence-based study of the socio-technical developments and transformations that affect science policy; the conduct and methods of research; and the data systems, standards, and infrastructure that are integral to research."

Under the working title, WorldFAIR+, a major priority for CODATA in this Strategic Plan is to expand and sustain a suite of activities that take forward the WorldFAIR vision and methodology.

The impact of this work will be to better enable interdisciplinary science for grand challenge issues, by improving capacity to combine data and metadata across domains and ensuring that science missions for sustainability are supported by good data practices.

WorldFAIR and WorldFAIR+

'WorldFAIR: Global cooperation on FAIR data policy and practice' is a two-year project (launched on 1 June 2022) to advance implementation of the FAIR principles,[15] particularly in relation to interoperability. Funded by the European Commission with **an explicit objective of advancing global collaboration and including partners from outside the European Union**, WorldFAIR is coordinated by CODATA, with the Research Data Alliance (RDA) Association as an important partner.

The project was conceived as responding to Recommendation 4 of the *Turning FAIR into Reality* report, which identified the need to 'Develop interoperability frameworks for FAIR sharing within disciplines and for interdisciplinary research'. The Recommendation states that 'Research communities need to be supported to develop interoperability frameworks that define their practices for data sharing, data formats, metadata standards, tools and infrastructure. To support interdisciplinary research, these interoperability frameworks should be articulated in common ways and adopt global standards where relevant.'[16]

WorldFAIR is working with a set of eleven domain and cross-domain Case Studies[17], carefully chosen from existing CODATA and RDA activities to provide maximum impact. Furthermore, the partners directly include, or have strong links to, a number of authoritative international organisations or initiatives that directly maintain data and metadata standards or have considerable influence on their adoption. The Case Studies, whilst drawn from diverse domain and cross-domain research areas, are clustered in connected themes in order to maximise scope while retaining a critical mass of activity and allowing shared learning and cross-fertilisation of ideas.

Each Case Study is developing an interoperability framework, recommendations, and/or a description of FAIR best practice for their discipline or interdisciplinary research area. Led by CODATA, a coordinating and synthesis activity has been supporting each Case Study in understanding their requirements through the completion of FAIR Implementation Profiles (FIPs). In turn these insights will be incorporated into the development of a Cross-Domain

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[15] Wilkinson et al, 2016, Ibid.
[16] European Commission, Directorate-General for Research and Innovation, *Turning FAIR into reality : final report and action plan from the European Commission expert group on FAIR data*, Publications Office, 2018, https://data.europa.eu/doi/10.2777/1524; p.29.
[17] Listed at https://worldfair-project.eu/case-studies-of-worldfair/

Interoperability Framework (CDIF) and more domain-sensitive recommendations for FAIR assessment and benchmarking. The CDIF development is being supported by a Working Group and Advisory Group, including experts from outside the project. An initial Advisory Committee has been established for the WorldFAIR project that will be extended to a wider initiative with the purpose of refining and extending the WorldFAIR approach.

With the working title 'WorldFAIR+', CODATA aims to expand and sustain this work, and discussions are being undertaken with members and partners to achieve the following objectives:

- Refining the WorldFAIR methodology, particularly the use of FIPs and the CDIF.
- Expanding the number of case studies (or petals in the WorldFAIR flower diagram and logo).
- Exploring and enabling implementations of CDIF, improving the model and demonstrating the benefits of the approach.
- Securing funding in various countries of a suite of projects implementing the methodology.
- Establishing one or more International Programme Offices to coordinate the activities and provide secretariat support and expertise.

WorldFAIR Related Activities
A number of CODATA activities, projects or Task Groups, are closely related to WorldFAIR and the themes of 'Making Data Work…'. Particularly important in this regard are initiatives relating to FAIR Vocabularies (notably the IUSSP-CODATA WG on FAIR Vocabularies), the OneGeochemistry WG, the DRUM TG, the FAIR for DRR TG and CODATA's participation in the INSPIRE suite of projects. Priorities will include:

- Exploring other opportunities for collaboration on FAIR vocabularies and related work with International Scientific Unions.
- Continuing and extending the Task Groups most closely related to WorldFAIR and Making Data Work…
- Maintaining and expanding the collaboration with APHRC, LSHTM and others in relation to the INSPIRE projects.

The Global Open Science Cloud Initiative (GOSC)

GOSC aims to encourage cooperation, alignment and ultimately interoperability among regional and national Open Science Platforms or Clouds. It proceeds through thematic Working Groups addressing shared challenges (governance and sustainability, data policy and legal issues, technical infrastructure, and data interoperability); and Case Studies for data sharing and collaboration across platforms (namely, Incoherent scatter radar data fusion and computation, Biodiversity and ecology information platform, SDG-13 climate change and natural disasters, Sensitive data federation analysis model in population health, Open reproducible raw diffraction data for access in pandemics, and From raw biodiversity data to operational indicators through the Essential Biodiversity Variables). GOSC is overseen by a Steering Group, and an International Programme Office has been established, hosted at CNIC, CAS.

Over the next few years, CODATA's strategic priority in relation to GOSC will be to:
- Ensure that GOSC activities contribute to the ISC and UNESCO agendas.
- Encourage greater engagement from the Open Science Platforms and from WDS.
- Secure additional support and funding from partners, perhaps through further IPOs or secretariat support from Open Science Platforms.
- Communicate progress of the Working Groups and Case Studies through participation in ISOSC and other events.

Context and background

Since 2017, CODATA has been exploring a number of issues relating to domain and cross-domain FAIR (with particular attention to interoperability) and developing a methodology which insists on the involvement of concrete case studies. The 2017 Workshops led to the development of the vision of a Decadal Programme and the inclusion of 'Making Data Work…' in the ISC Action Plan. Generous support from the ISC allowed the expansion of the CODATA secretariat, and engagement with a number of case studies: notably infectious diseases, resilient cities and disaster risk reduction. The 2017 workshops also led directly to the work on FAIR vocabularies and the collaboration with the DDI Alliance on DDI-CDI and a series of Dagstuhl Workshops examining these issues. These activities and collaborations laid the foundation for what became WorldFAIR.

Current activities

- Testing and refining the WorldFAIR methodology, in particular the use of FIPs and the development of CDIF.
- Supporting the 11 WorldFAIR Case Studies.
- Exploring cross-domain case studies, including infectious diseases (INSPIRE Network and INSPIRE-PEACH projects), resilient and healthy cities, DRR and SDGs.
- Contribution to the FDO Forum and vision for FDOs.
- Collaboration with the DDI Alliance on use cases for DDI-CDI implementation.
- FAIR vocabularies, including the IUSSP-CODATA WG
- GOSC currently comprises four thematic working groups and six domain focused case studies. Overseen by CODATA secretariat and a dedicated International Programme Office at CNIC.

Priority future activities

As listed in the three sections above:
- Resourcing and sustaining an expanded WorldFAIR+ initiative by securing funding in various countries for a suite of projects implementing the methodology.
- Refining and advancing the WorldFAIR methodology, particularly the use of FIPs and the CDIF.
- Exploring and enabling implementations of the CDIF, improving the model and demonstrating the benefits of the approach.

- Increasing the number of case studies or WorldFAIR 'petals', while ensuring there is sufficient expert and coordination support to maintain the WorldFAIR approach.
- Establishing one or more International Programme Offices to coordinate the activities to expand and sustain the WorldFAIR initiative and provide secretariat support and expertise.
- Exploring other opportunities for collaboration on FAIR vocabularies and related work with International Scientific Unions.
- Continuing and extending the Task Groups most closely related to WorldFAIR and Making Data Work…
- Maintaining and expanding the collaboration with APHRC, LSHTM and others in relation to the INSPIRE projects.
- Ensure that GOSC activities contribute to the ISC and UNESCO agendas.
- Encourage greater engagement from the Open Science Platforms and from WDS.
- Secure additional support and funding from partners, perhaps through further IPOs or secretariat support from Open Science Platforms.
- Enhance the GOSC Working Groups and Case Studies through participation in ISOSC and other events.

Milestones and measures of success

- Funded projects building on the WorldFAIR vision, approach and methodology.
- Successful call for IPOs to increase capacity to support WorldFAIR activities.
- Further activities with ISUs on FAIR vocabularies.
- Increased engagement of the emerging Open Science Platforms with GOSC, including additional effort and support.

Priority 2: Data Policy

What do we aim to achieve and how?

CODATA promotes principles, policies and practices for FAIR Data and services for Open Science. The main mechanism is through the International Data Policy Committee, which develops policy research, strategy, and guidance for CODATA in support of its role in advancing the International Science Council (ISC)'s vision of science as a public good.

This is a critical time for developing data policy in the context of advancing frameworks for data sharing, Artificial Intelligence, Data Diplomacy, digital economies, the revision of Research Assessment in universities, and the drive toward Open Science. Data policy lies at the intersection of science, public policy, and enterprise in the rapid advancement of the digitalization of societies across the world. The achievements of science in society increasingly rely on the purposes to which data is put and how it is managed for the achievement of private and public goods. CODATA's International Data Policy Committee (IDPC) will focus on developing pathways to data policy that promotes leadership in data integrity, data ethics, FAIR data, and data leadership and diplomacy. Identifying new areas

of concern for data policy, such as AI, the use of Large Language Models (LLMs) and Generative Pre-trained Transformers (GPTs).

Through three modes of activity, the IDPC:
1. Helps CODATA respond to emerging issues and requests for advice, particularly from the ISC community. An important recent example is Open Science for a Global Transformation: CODATA-coordinated submission to the UNESCO Open Science Consultation (2020).
2. Provides a source of expertise for funded projects and reports. Recent examples include the CODATA Twenty-Year Review of GBIF (2020) and Opening Big Data for a Sustainable Future: Review of the CASEarth Program's Data Policy (2022).
3. Generates its own initiatives through sub-group activities. For example the Beijing Declaration on Research Data and the related Workshop on Open Research Data Policy and Practice (Sept 2019), or the recent focus on the topic of data policy for crisis situations as explored in the UNESCO hosted event 'Towards a FAIRer World' (March 2023).

Target audiences include science policy makers and funders, as well as organisations with influence on science policy, in the UN and international space. We also aim to engage with the leadership of International Scientific Unions and other bodies in the ISC space.

The impact of this work will be to support the effectiveness and ethical dimensions of global science by advancing Open and FAIR data policies, and by ensuring that data policy is an integral part of science policy.

Context and background

CODATA has a long history of work in the data policy area, contributing substantively—for example—to the 2007 OECD Principles and Guidelines for Access to Research Data from Public Funding, and to successive iterations of the GEO Data Sharing Principles and Data Management Guidelines. CODATA has produced a series of significant data policy reports since 2015. As well as deploying the expertise in the data policy committee, the CODATA secretariat contributes to data policy activities: the Executive Director was co-chair of the OECD-CODATA study on Business models for sustainable data repositories, chaired the EC Export Group that produced the Turning FAIR into Reality report, and was vice chair of the of Expert Advisory Group to the UNESCO Recommendation on Open Science.

Current activities

Since August 2022, under the leadership of Francis P. Crawley (Good Clinical Practice Alliance), the IDPC has developed a new Action Plan, which identifies six areas of activity:

1. Data policy for data quality, reliability, and integrity
2. Data policy for science in crisis situations
3. Data policy for education
4. Data policy for AI

5. Data policy for Open Science
6. Data policy for the publication and communication of science

The most active of these, so far, has been that of data policy for science in crisis situations. Two workshops ([Data Policy in Times of Crisis](#) at the FAIR Convergence Symposium, 24 October 2022; [Data Policy for Open Science in Disaster Situations](#) at the EOSC Symposium, 16 November 2022) and a thematic strand at the UNESCO, ISC, CODATA and WDS event [Towards a FAIRer World: Implementing the UNESCO Recommendation on Open Science to address global challenges](#), 29 March 2023, will lead to a proposed collection of articles in the Data Science Journal.

Priority future activities

Through the IDPC, CODATA will seek to influence the development of data policy, by:
1. Developing a coherent and useful contribution to the issues of data policy, ethics and scientific responsibility in relation to AI.
2. Developing recommendations for data quality and reliability;
3. Continuing the current work on data policy for science in crisis situations to produce a set of principles or a framework for data policy in times of crisis.
4. Refining, testing and publishing the current draft curriculum for education in data policy;
5. Exploring the issues of data policy for open data, particularly in relation to research assessment;
6. Examining how CODATA can usefully contribute to the issue of data policy for specific populations;

In addition, the IDPC will:
1. Engage with and support, where appropriate, CODATA activities on data ethics and the GOSC WG on Data Policy.
2. Respond on behalf of CODATA, to external data policy enquiries and consultations.
3. Explore opportunities for funded activities and reports in the data policy space.

Milestones and measures of success

● Published recommendations on data quality and reliability.
● Training delivered on data policy.
● Strategy for CODATA contribution on data policy for open data, particularly in relation to research assessment.
● Strategy for CODATA contribution to the issue of data policy for specific population.
● Recommendations and framework for data policy for science in crisis situations and a collection of articles on the topic.

Priority 3: The Science of Data and Data Stewardship

What do we aim to achieve and how?

CODATA convenes a global expert community and provides a forum for international consensus and agreements around a range of data science and data stewardship issues. The objective is to enable Open Science and FAIR data by advancing the science of data and data stewardship. CODATA does this in partnership with its National Committees, institutional bodies and other related organisations, by providing the connection to best data practices and communities, organisation of global and regional events on various technical and scientific issues related to data science, publications in the [Data Science Journal](), support of the key Task Groups and Working Groups, endorsement of good practices and recommendations. As a locus of expertise and authority, CODATA now maintains the [RDM Terminology](), which it [took over from CASRAI in 2020]().

The Data Science Journal is an outlet for the scholarly outcomes from *all* of CODATA's thematic priorities. As indicated in the scope of the Journal, the focus of CODATA activities in this area is on 'the science of data' — i.e. ' the evidence-based study of the socio-technical developments and transformations that affect science policy; the conduct and methods of research; and the data systems, standards, and infrastructure that are integral to research' — rather than data science in the common general sense. CODATA thus works to advance the frontiers of the science of data. Priority issues in the science of data include transparency and reproducibility, data policy and ethics, data community practice, interoperability, stewardship and preservation. The mechanisms are Task Groups and Working Groups, the Data Science Journal, the maintenance of authoritative resources such as the RDM Terminology, and conferences or workshops. In general, CODATA Task Groups and Working Groups should:

- Focus on the science of data and data stewardships;
- Prioritise collaboration with Unions/Associations and programmes in the ISC family, or with international data organisations and standards authorities;
- Address cross-cutting issues highlighted by National Committees and other members.

The impact of this work will be to help improve scientific practices around data by raising the profile of the science of data and by stimulating dialogue between practitioners of data science and data stewardship.

Context and background

CODATA has historically made an important contribution to the science of data. In its early years this was through the TG on Fundamental Constants and through work on reference data for thermodynamics and other areas of science. CODATA Task Groups frequently collaborated with International Scientific Unions, major global data infrastructures and other authorities in the development of early standards and protocols for data, including for example, biological data banks, materials science and early work on using the DOI protocol

for data.[18] The Data Science Journal[19] has provided an important locus for discussions of the science of data and data stewardship. While research articles remain important, its distinctive contribution is providing a forum for data practitioners, through practice papers, reviews, and essays.

Current activities

Among the most important activities we lead to support the science of data:
- Task Group on Fundamental Constants and increased collaboration with the BIPM and metrology community through TGFC and DRUM
- Build on the success of the DRUM Ambassadors to increase the frequency and utility of engagement with Unions.
- Other Task Groups and Working Groups contributing to the science of data and to data stewardship
- Data Science Journal
- Global and regional conferences (International Data Week, SciDataCon, FAIR Convergence Symposium and other CODATA conferences or workshops)
- The CODATA Research Data Management Terminology
- Connection to multidisciplinary expert data community.

Priority future activities

- Maintain CODATA's contribution to fundamental issues in the science of data and data stewardship, including TGFC and DRUM.
- Identify and pursue other activities in the science of data, particularly in collaboration with ISUs, international data organisations and standards authorities.
- Support of interrelations within Task Groups and Working Groups
- Increase submissions to DSJ as well as the overall quality of the journal
- Publish the CODATA RDM Terminology as a FAIR vocabulary and maintain and publicise it as a core, authoritative reference in data stewardship.
- Building connections to data-communities, international and regional institutions, including through conferences and workshops.

Milestones and measures of success

CODATA enables better data science by better data policy, recommendations and practice. We promote best data practices for our national members and related bodies. The recognition of CODATA-approved activities could be the milestone of our success.

Among others:
- New contributions to the science of data.
- Cohesive and focussed mission for Task Groups and Working Groups.
- Improved DSJ submissions and citations.

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[18] See David R. Lide and Gordon H. Wood, CODATA@45Years: the story of the ICSU Committee on Data for Science and Technology (CODATA) from 1966 to 2010, https://codata.org/publications/codata-history/
[19] https://datascience.codata.org/

- Publication of the CODATA RDM Terminology.
- Continued success of International Data Week, SciDataCon, FAIR Convergence Symposium and other conferences.
- Success of conferences organised by CODATA National Committees and partners.

Priority 4: Data Skills and Education

What do we aim to achieve and how?

In a rapidly changing world in which data intensive science, AI/ML are becoming more and more important to address global challenges, it is essential that science systems and the science/policy interface have access to data experts, practitioners, and data stewards who can promote, manage, and apply the FAIR principles and other related good practice. As the Committee of Data of the International Science Council, the world's representative science organisation and the global voice of science, CODATA is uniquely positioned to address the challenges of developing the necessary data expertise among researchers, data stewards and policy experts.

CODATA takes a full lifecycle approach to skills development for data science and data stewardship, covering definition and scope, through development of curricula and materials, to delivery, and fostering and measuring impact of the activities it oversees.

The flagship activity in data skills is the CODATA-RDA Data Schools initiative which has been successful in preparing reusable curricula and materials, and in delivering training across the globe. Initially prioritising data skills for early career researchers in any discipline and participants from the global south, the Data Schools have added material on data stewardship and run events in many different locations. To expand and continue the initiative the Data Schools team has encouraged students to continue to engage with the initiative and to progress through stages as helpers, instructors, directors (school organisers) and co-chairs of the initiative. An EOSC Future funded project helped refine and organise the process and materials, ensuring improved reusability. In collaboration with RDA and WDS, an Advisory Board has been put in place to assist the direction, governance and sustainability of the initiative. Nevertheless, the Data Schools initiative needs increased secretariat support, for example from an International Programme Office, to expand and sustain the activity: the transition from a cottage industry with labour intensive involvement of the co-chairs, to achieve the original vision of an expanding network of schools is becoming urgent. The initiative will also be encouraged to explore means of increasing its impact, including extending its partnerships with National Committees and partner institutions, as well as increased online and virtual components.

The other longstanding training activity is the series of International Training Workshops that have been hosted at CNIC, CAS in many years since 2012. These events are targeted towards early career researchers from LMICs and have been very successful in helping build the CODATA community. Where possible, the International Training Workshops have cross-fertilised materials with the Data Schools, but have often added expertise from local institutions as well as from CODATA initiatives and Task Groups, to give students an insight into practical data projects and the CODATA mission.

The CODATA Connect Early Career and Alumni Group has been an important addition to these activities, drawing its membership from the alumni of the Data Schools and Training

Workshops, as well as from ECR members of CODATA TGs and WGs. CODATA Connect thrived at its launch and was particularly active during the pandemic, producing a series of research and training webinars as well as three collections of podcasts. The current leadership will step aside in 2023 and it will be important to recruit effectively to ensure the continued vibrancy and success of the initiative.

Building on the collaboration around DDI-CDI, CODATA now has an established partnership supporting the DDI Alliance Training Webinars, raising the profile of both organisations and demonstrating how CODATA can play a constructive role in collaboration with partner organisations.

The need for capacity building and the development of skills in data science and data stewardship is frequently identified as one of the most important priorities of CODATA National Committees. It will be important to explore the issue of data education with the National Committees and other members, and determine how coordinated activity, leveraging existing initiatives, can help address members' priorities.

The impact of this work will be to increase capacity for data stewardship, through targeted and effective training and train-the-trainer initiatives, and by facilitating the engagement of early career researchers in data issues.

Current activities

CODATA activities in data skills currently includes the following activities:
- CODATA-RDA Data Schools
- International Training Workshops hosted by CNIC CAS
- CODATA Connect early careers group and its initiatives
- DDI-CODATA Training Webinar Series

Priority future activities

- Putting in place an IPO or similar to help expand and sustain the Data Schools
- Continuing and extending the International Training Workshops.
- Ensuring the continued vibrancy and dynamism of the CODATA Connect Early Career and Alumni Group. This could include inviting CODATA National Committees, Union and other members, as well as Task Groups to nominate a member for CODATA Connect.
- Scoping and defining a data skills and education activity with the National Committees: this should address the expressed needs of the National Committees, while leveraging existing CODATA activities and inter NC collaboration.
- Revisiting the workshop on Education for Data Science with the Israel Academy and with the NCs.
- Exploring other collaborations with partner members along the lines of the successful DDI webinars.

- Engaging in ISC activities on digital transition and understanding how CODATA can contribute to data skills activities in partnership with International Scientific Unions and other ISC Members.
- Exploring other areas in which data skills activities may be useful:
  - Data literacy, linking with data diplomacy to address policy makers, science advice
  - Skills for data stewards
  - Data Science Literacy.
  - Engage with data skills work in the library / information science communities.

Milestones and measures of success

- Ensuring the expansion and sustainability of the Data Schools initiative, possibly through establishing an IPO or other sustainable secretariat function.
- Expanding the International Training Workshops, with additional hosts.
- Maintaining the CODATA Connect initiative through a change in leadership.
- Initiating and delivering a successful data skills and education activity with the CODATA National Committees and other members.

The Business of CODATA

CODATA achieves a great deal with relatively small resources. To fulfil our ambitious strategy, we need to further grow the organisation: secretariat, members and participants in our activities. CODATA also needs to undertake succession planning in relation to all its activities.

Membership Strategy

CODATA currently has the following membership categories[20]:
- National Members
- Union Members
- Institutional Members
- Partner Members

CODATA engages with its national members through a National Committees Forum. CODATA requires national members to form National Committees; where appropriate they are also encouraged to establish a National Office or host an International Programme Office.

One of CODATA's strengths, perhaps still under-realised, is the network of National Committees. When National Committees undertake initiatives, projects and events they can achieve a great deal and can magnify CODATA activity. This is even more the case when they collaborate with each other: testimony to this is the remarkable series of 10 data citation and research data management events that were organised by National Committees and the Task Group on Data Citation in 2015-16.

The National Committees Forum provides an important venue to discuss matters relating to National Committees and share advice and experiences. This is particularly useful to help new members forming national committees or to encourage collaboration among national committees. The National Committees Forum and secretariat provides guidance on setting up new National Committees.

CODATA engages with its Union members through a number of Union oriented activities, including the Union ambassadors to the DRUM initiative. It is proposed to extend this approach to the promotion of FAIR Vocabulaires. CODATA will continue to engage with ISC and identify how activities with Unions on data issues may be amplified. In time, CODATA may establish a Data and Information Forum for ISUs, along the lines of its National Committees' Forum.

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[20] The category for individual members exists in the constitution, but has not been developed.

The membership strategy will focus on:

- Expanding national membership through targeted invitations to countries where CODATA has activities;
- Engaging more with national members (through the very successful National Committees Forum);
- Encouraging, where appropriate and where there is interest, the establishment of national offices and International Programme Offices;
- Engaging more effectively with Union members (initially through the DRUM activities and through the FAIR vocabularies initiative);
- Exploring, with ISC, Unions needs for support in relation to data;
- Extending institutional membership with organisations with which we have established collaborations and shared interests;
- Extending partner membership through formal MoUs with organisations with which we have strong collaborations.

How CODATA Delivers

CODATA comprises:
- its members, including National Member, International Scientific Unions, Institutions and Partners;
- a suite of funded projects;
- standing committees and ongoing initiatives (International Data Policy Committee, the Task Group on Fundamental Constants, the RDM Terminology, the Data Science Journal, the CODATA-RDA Data Schools, and CODATA Connect);
- Task Groups (approved by the General Assembly) and Working Groups (approved by the Executive Committee);
- the Executive Committee and Officers;
- the secretariat.

CODATA is more than the sum of its parts and achieves a substantial return on investment by leveraging voluntary effort and collaboration.

CODATA delivers its Strategic Plan through various types of activity, with the secretariat playing a pre-eminent role in delivering projects, coordinating voluntary activity or supporting Task Groups and Working Groups. The modes of activity may be listed as follows:
- Strategic Executive led activities: 'Making Data Work' WGs and GOSC.
- Funded Projects: currently WorldFAIR, RDA Tiger, INSPIRE PEACH and INSPIRE Network, EOSC Future Data Schools.
- Standing Committees and Groups: Fundamental Constants, International Data Policy Committee, CODATA-RDA Data Schools, CODATA Connect.
- Task Groups: approved biennially by the GA.
- Working Groups: established by the Executive to address specific issues.
- CODATA supports the Data Science Journal and collaborates on major data conferences like SciDataCon and International Data Week.

The fundamental priority must be to increase the capacity of the CODATA secretariat and to make sure that all CODATA activities clearly and directly support the Strategic Plan and the four thematic priorities.

Appendix 1: A historical overview of CODATA's priorities

CODATA has had different priorities during the successive decades of its existence. These are characterised in the table below.[21]

1960s-70s	Fundamental constants Key values for thermodynamics Computer use Compendium of numerical data projects
1970s	Chemical kinetics Numerical data by disciplines Data dissemination Handling of experimental data Thermodynamic data systemization
1980s	Data in the biosciences & geosciences Directory of protein & nucleic acid sequencing Access to biological data banks Biodiversity international standards Materials database standards Chemical thermodynamic tables
1990s	Databases for Experimental Data Electronic Publishing Data Access Commission Data/ Information Visualization Mathematical Methodologies Knowledge Extraction Data Quality & Database Compatibility
2000s	Data Citation – DOIs Open Access Digital Data and Information OECD Data Policy GEO Data Sharing Principles International Polar Year Data
2010s	Open Data/Open Science … and then FAIR data Data Principles, Policy and Practice Advancing the Frontiers of Data Science Capacity Building: Data Education and Skills
2020s	Making Data Work for Cross Domain Grand Challenges and WorldFAIR Cross-Domain Interoperability (including: units, FAIR Digital

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[21] Adapted from a presentation by Geoffrey Boulton at the 2018 General Assembly (Gaborone), itself drawing also on CODATA@45Years, the history of CODATA https://codata.org/publications/codata-history/

		Objects, CDI, and global convergence) Working with Unions (including: FAIR vocabularies) Cross-Domain Case Studies Open Science Platforms Data, Metadata and AI
		Data Policy Data Science Data Skills FAIR Digital Objects and global convergence

The priority for the 2020s is to promote international collaboration to advance trustworthy, equitable and transparent science and to improve the availability and usability of data for all areas of research. CODATA takes this forward through four thematic priorities.

Appendix 2: List of abbreviations

AI	Artificial Intelligence
APHRC	African Population and Health Research Center
BIPM	Bureau International des Poids et Mesures
CARE	Collective benefit, Authority to control, Responsibility and Ethics principles
CASRAI	Consortia Advancing Standards in Research Administration Information (organisation ceased to exist in 2021).
CDIF	Cross-Domain Interoperability Framework
CNIC, CAS	Computer Network Information Center, Chinese Academy of Sciences
CODATA	Committee on Data of the International Science Council
DDI	Data Documentation Initiative
DDI-CDI	Data Documentation Initiative Cross-Domain Integration
DOI	Digital Object Identifier
DRR	Disaster Risk Reduction
DRUM	Digital Representation of Units of Measurement
DSJ	CODATA Data Science Journal
EC	European Commission
ECR	Early Career Researcher
EOSC	European Open Science Cloud
FAIR	Findable, Accessible, Interoperable and Reusable principles
FDO	FAIR Digital Object
FIPs	FAIR Implementation Profiles
GA	General Assembly
GBIF	Global Biodiversity Information Facility

GEO	Group on Earth Observations
GO FAIR	Global Open FAIR initiative
GOSC	Global Open Science Cloud initiative
GPTs	Generative Pre-trained Transformers
IDPC	International Data Policy Committee of CODATA
INSPIRE	Implementation Network for Sharing Population Information from Research Entities
PEACH	A Platform for Evaluation and Analysis of COVID-19 Harmonised data
IODE	International Oceanographic Data and Information Exchange
IPO	International Programme Office
ISAs	International Scientific Associations
ISC	International Science Council
ISOSC	International Symposium on Open Science Cloud
ISUs	International Scientific Unions
IUCr	International Union of Crystallography
IUPAC	International Union of Pure and Applied Chemistry
IUSSP	International Union for the Scientific Study of Population
JUST	Judicious, Unbiased, Safe and Transparent principles
LLMs	Large Language Models
LMICs	Low and Middle Income Countries
LSHTM	London School of Hygiene and Tropical Medicine
ML	Machine Learning
MoU	Memorandum of Understanding
NC	CODATA National Committee
ODIS	Ocean Data and Information System
OECD	Organisation for Economic Co-operation and Development
RDA	Research Data Alliance

RDM	Research Data Management
SDGs	Sustainable Development Goals
TG	Task Group
TGFC	CODATA Task Group on Fundamental Physical Constants
UN	United Nations
UNDRR	United Nations Office for Disaster Risk Reduction
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNStats	United Nations Department of Economic and Social Affairs Statistics
WDS	World Data System
WG	Working Group
WorldFAIR	'WorldFAIR: Global cooperation on FAIR data policy and practice' project funded by European Commission and coordinated by CODATA
WorldFAIR+	Initiative to expand and sustain the work done under the WorldFAIR project and using the same methodology.