

Data sharing: more science unions must act

An investigation of 41 member unions and associations by the International Science Council's Committee on Data (CODATA) has revealed sluggish progress on data sharing. Just 25 members have sub-organizations committed to open data and only a few have produced standards for machine-readable data and metadata (<https://tinyurl.com/codatawg>).

Such standards are crucial to the 'findable, accessible, interoperable and reusable' (FAIR) data movement ([Musen, 2022](#)). The International Union of Geological Sciences (IUGS) and the International Union of Pure and Applied Chemistry (IUPAC) are forging ahead.

The IUGS Commission on Geoscience Information, for example, coordinates metadata outputs and vocabularies. These have been adopted by OneGeology, Infrastructure for Spatial Information in Europe and the US Geoscience Information Network, and are being extended to the IUGS Deep-time Digital Earth initiative (<https://www.ddeworld.org>).

Researchers in other disciplines would benefit from efforts similar to the IUPAC's. IUPAC is part of the European Union-funded WorldFAIR project (<https://www.worldfair-project.eu>), which is exploring FAIR practices in 11 domain or cross-domain case studies.

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Union Acronym	ROR.org Identifier	Wikipedia/Dbpedia Identifier	Union Name	Union Alternative Name	Union Website	Member or Branch Organization on Data and Information	Member or Branch Organization Website	Union Keywords	Union Data Standard and Vocabulary Outputs, Including Catalogs, and Recommendations
IAU	https://ror.org/05nex2951	International_Astronomical_Union	International Astronomical Union		https://www.iau.org	Division B Facilities, Technologies and Data Science	https://www.iau.org/science/scientific_bodies/divisions/B/	Astronomy; Celestial Bodies	IAU Recommendations Concerning Units: https://www.iau.org/publications/proceedings_rules/units/
IBRO	https://ror.org/0040b6869	International_Brain_Research_Organization	International Brain Research Organization		http://ibro.info			Neuroscience; Brain; Nervous System	
ICA	https://ror.org/0392x6996	International_Cartographic_Association	International Cartographic Association	Association Cartographique Internationale	http://icaci.org	Commission on SDI and Standards	http://sdistandards.icaci.org	Cartography; GIScience	Guidelines of Best Practice for the Acquisition, Storage, Maintenance and Dissemination of Fundamental Geo-Spatial Datasets: http://sdistandards.icaci.org/wp-content/uploads/2014/10/MAfA_SectionC_Integrated_V10.pdf Or here: https://sdistandards.icaci.org/resources/
IGU	https://ror.org/022qvpy75	International_Geographical_Union	International Geographical Union	Union Géographique Internationale	http://igu-online.org	Commission C16.11 Geographical Information Science	http://igu-online.org/organization/commissions/	Geography; Physical Geography; Human Geography	
IMU	https://ror.org/05rg3k287	International_Mathematical_Union	International Mathematical Union		http://www.mathunion.org	Committee on Electronic Information and Communication	http://www.mathunion.org/ceic/	Mathematics; Pure Mathematics; Applied Mathematics; Educational Mathematics	
INQUA		International_Union_for_Quaternary_Research	International Union for Quaternary Research		https://www.inqua.org			Quaternary; Environment; Climate Change	
ISA	https://ror.org/05s2em157	International_Sociological_Association	International Sociological Association		http://www.isa-sociology.org	Research Committee RC35 Conceptual and Terminological Analysis	http://www.isa-sociology.org/en/research-networks/research-committees/rc35-conceptual-and-terminological-analysis/	Sociology; Social Science	
ISPRS		International_Society_for_Photogrammetry_and_Remote_Sensing	International Society for Photogrammetry and Remote Sensing		http://www.isprs.org	Commission IV Spatial Information Science	http://www2.isprs.org/commissions/comm4.html	Photogrammetry; Remote Sensing; Spatial Information Science	Various standards are released through the Open Geospatial Consortium (OGC), for which many researchers and groups from ISPRS, IGU, ICA, IUGG, IUGS and others are key members: https://www.ogc.org
IUAES	https://ror.org/035pbvf96	IUAES (redirect from International_Union_of_Anthropological_and_Ethnological_Sciences)	International Union of Anthropological and Ethnological Sciences		https://www.iuaes.org			Anthropology; Ethnology	
IUBS	https://ror.org/04h5sdx36	International_Union_of_Biological_Sciences	International Union of Biological Sciences		https://www.iubs.org	International Committee for Nomenclature	http://www.bionomenclature.net	Biology; Zoology; Plantology	The Draft BioCode (2011): http://www.bionomenclature.net/biocode2011.html
		International_Commission_on_Zoological_Nomenclature				International Commission on Zoological Nomenclature	http://iczn.org		The International Code of Zoological Nomenclature: https://www.iczn.org/the-code/the-international-code-of-zoological-nomenclature/
		International_Association_for_Plant_Taxonomy				International Association for Plant Taxonomy	http://www.iapt-taxon.org		The International Code of Nomenclature for algae, fungi, and plants: https://www.iaptglobal.org/icn
						International Commission on the Taxonomy of Fungi	http://www.fungaltaxonomy.org		A Nomenclator of Friesian Sanctioned Names: https://www.fungaltaxonomy.org/nomenclator/
						Organisation for the Phyto-Taxonomic Investigation of the Mediterranean Area	http://www.optima-bot.org/index.php/en/		
	https://ror.org/03k171441	Biodiversity_Information_Standards			http://www.tdwg.org/	Taxonomic Databases Working Group / Biodiversity Information Standards	http://www.tdwg.org		Various outputs, see: https://www.tdwg.org/standards/
IUCr	https://ror.org/00vnd65	International_Union_of_Crystallography	International Union of Crystallography		http://www.iucr.org	Commission on Crystallographic Nomenclature	http://www.iucr.org/iucr/commissions/nomenclature	Crystallography	Various outputs, for example see: https://www.iucr.org/resources/data/databases
IUFoST	https://ror.org/002e5j75	International_Union_of_Food_Science_and_Technology	International Union of Food Science and Technology		http://iufost.org			Food Science; Nutrition; Health; Food Security	
IUFRO	https://ror.org/01vpcz22	International_Union_of_Forest_Research_Organizations	International Union of Forest Research Organizations		http://www.iufro.org	SilvaVoc Terminology Project	http://www.iufro.org/science/special/silvavoc/	Forestry; Ecosystem; Environment; Biodiversity; Climate Change	
IUGG	https://ror.org/01jachm79	International_Union_of_Geodesy_and_Geophysics	International Union of Geodesy and Geophysics		http://iugg.org	Commission on Data and Information	https://iugg.org/associations-commissions/commissions/ucdi/	Geophysics; Geodesy; Hydrology; Meteorology; Seismology; Volcanology	
IUGS	https://ror.org/046mfv75	International_Union_of_Geological_Sciences	International Union of Geological Sciences		http://www.iugs.org	Commission on Geoscience Information	http://www.cgi-iugs.org	Geology; Stratigraphy; Environment; Tectonics	Various outputs including GeoSciML and vocabularies, see: https://cgi-iugs.org/misc/links/
						International Commission on Stratigraphy	http://www.stratigraphy.org/	Stratigraphy; Timescale	International Chronostratigraphic Chart: https://stratigraphy.org/chart
						IUGS Subcommission on the Systematics of Igneous Rocks (closed)		Petrology	The IUGS systematics of igneous rocks: http://jgs.lyellcollection.org/content/148/5/825
IUHPST		International_Union_of_History_and_Philosophy_of_Science	International Union for History and Philosophy of Science and Technology		http://iuhps.net			History; Philosophy	

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IUIS	https://ror.org/02exzyx31	International_Union_of_Immunological_Societies	International Union of Immunological Societies		http://www.iuisonline.org	Nomenclature Committee	https://iuis.org/committees/nom/	Immunology; Clinical Immunology	Databases of Approved Nomenclature: https://iuis.org/committees/nom/databases/
IUMRS	https://ror.org/05sthtz60		International Union of Materials Research Societies		https://www.iumrshq.org [broken]			Materials; Material Science	
IUMS		International_Union_of_Microbiological_Societies	International Union of Microbiological Societies		https://www.iums.org	International Committee on Taxonomy of Viruses	https://ictv.global	Microbiology	Various outputs, see the list under menu 'Taxonomy' on the committee website: https://ictv.global
						International Commission on Taxonomy of Fungi	http://www.fungaltaxonomy.org		
IUBS	https://ror.org/04h5sdx36	International_Union_of_Biological_Sciences	International Union of Biological Sciences		http://www.iubs.org	International Committee for Nomenclature	http://www.bionomenclature.net		
IUNS	https://ror.org/05f5aj854	International_Union_of_Nutritional_Sciences	International Union of Nutritional Sciences		http://www.iuns.org			Nutrition	
IUPAB	https://ror.org/01x63ge73	International_Union_for_Pure_and_Applied_Biophysics	International Union for Pure and Applied Biophysics		http://iupab.org			Pure Biophysics; Applied Biophysics; Biophysics	
IUPAC	https://ror.org/03ne2zw20	International_Union_of_Pure_and_Applied_Chemistry	International Union of Pure and Applied Chemistry		https://iupac.org	Division VIII Chemical Nomenclature and Structure Representation	https://iupac.org/who-we-are/divisions/division-details/?body_code=800	Pure Chemistry; Applied Chemistry; Chemistry	
						Interdivisional Committee on Terminology, Nomenclature and Symbols	https://iupac.org/who-we-are/committees/committee-details/?body_code=027		IUPAC Color Books: https://iupac.org/what-we-do/books/color-books/ Principles of Chemical Nomenclature: https://iupac.org/what-we-do/books/principles/
						IUPAC-IUBMB Joint Commission on Biochemical Nomenclature	https://iupac.org/body/028/		IUPAC Digital Standards: https://iupac.org/what-we-do/digital-standards/
						Committee on Publications and Cheminformatics Data Standards	https://iupac.org/body/024/		
IUPAP	https://ror.org/01gy1fk68	International_Union_of_Pure_and_Applied_Physics	International Union of Pure and Applied Physics		http://iupap.org	C2: Commission on Symbols, Units, Nomenclature, Atomic Masses & Fundamental Constants	http://iupap.org/commissions/commission-on-symbols-units-nomenclature-atomic-masses-and-fundamental-constants/	Pure Physics; Applied Physics; Physics	Various outputs, see: https://iupap.org/who-we-are/internal-organization/commissions/c2-commission-on-symbols-units-nomenclature-atomic-masses-and-fundamental-constants/#additional-information
IUPESM	https://ror.org/04aekkh13	International_Union_for_Physical_and_Engineering_Sciences_in_Medicine	International Union for Physical and Engineering Sciences in Medicine		http://www.iupesm.org	IUPESM Data Committee	https://2018.iupesm.org/committees/	Medicine; Medical Physics; Medical Engineering; Biological Engineering	
IUPHAR	https://ror.org/012f5yc65	International_Union_of_Basic_and_Clinical_Pharmacology	International Union of Basic and Clinical Pharmacology		http://www.iuphar.org	Nomenclature Committee	http://www.guidetopharmacology.org/nciuphar.jsp	Pharmacology; Basic Pharmacology; Clinical Pharmacology	IUPHAR/BPS Guide to PHARMACOLOGY: https://www.guidetopharmacology.org
IUPS		International_Union_of_Physiological_Sciences	International Union of Physiological Sciences		http://www.iups.org	IUPS Initiative on Data, Models, and Methods	https://www.iups.org/physiology/data-models-methods/	Physiology	
IUPsyS		International_Union_of_Psychological_Science	International Union of Psychological Science		http://www.iupsys.net			Psychology	
IUSS		International_Union_of_Soil_Sciences	International Union of Soil Sciences		http://www.iuss.org	Commission 1.4 Soil Classification	https://sites.google.com/a/vt.edu/iuss1-4_soil_classification/	Soil; Soil Science; Pedology; Edaphology	Soil Publications: https://www.iuss.org/publications/soil-publications/
						Working Group on Soil Information Standards	https://www.iuss.org/organisation-people/organisation/working-groups/		ISIRC Soil Data Hub: https://www.isirc.org/explore
IUTAM		International_Union_of_Theoretical_and_Applied_Mechanics	International Union of Theoretical and Applied Mechanics		http://iutam.org			Mechanics; Theoretical Mechanics; Applied Mechanics	
IUTOX	https://ror.org/03yqtg69		International Union of Toxicology		https://www.iutox.org	World Library of Toxicology	http://toxipedia.org/display/wlt (broken link)	Toxicology; Health	
URSI	https://ror.org/03esfes81	International_Union_of_Radio_Science	Union Radio Scientifique Internationale	International Union of Radio Science	http://www.ursi.org			Radio Science; Telecommunication; Radio Astronomy; Radiation	
IASSA			International Arctic Social Sciences Association		http://www.iassa.org/	Extractive Industries Working Group	http://www.arcticcentre.org/EN/research/Projects-and-Research-Networks/networks/EIWG		
WAPOR		World_Association_for_Public_Opinion_Research	World Association for Public Opinion Research		http://wapor.org/	Standard Definitions	https://wapor.org/resources/standard-definitions/	Public opinion	Standard Definitions: https://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions20169theditionfinal.pdf
4S	https://ror.org/003cs9s68	Society_for_Social_Studies_of_Science	Society for Social Studies of Science		http://www.4sonline.org/				

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IUSSP	https://ror.org/04htrme26	International_Union_for_the_Scientific_Study_of_Population	International Union for the Scientific Study of Population		http://iussp.org/	Panel on Big Data and Population Processes	https://iussp.org/en/panel/big-data-and-population-processes	Demography	Demography and the data revolution: https://iussp.org/en/demography-and-data-revolution
						IUSSP-CODATA Working Group on FAIR Vocabularies	https://codata.org/initiatives/decadal-programme2/fair-vocabularies/iussp-codata-working-group-on-fair-vocabularies/		
ISEE	https://ror.org/04zqksp15	International_Society_for_Ecological_Economics	International Society for Ecological Economics		http://www.isecoeco.org/				
IPSA	https://ror.org/05xdv6s36	International_Political_Science_Association	International Political Science Association		http://www.ipsa.org/	Research Committee 01 - Concepts and Methods (C&M)	https://www.ipsa.org/research-committees/rc1st/RC01		Working Papers: https://www.concepts-methods.org/WorkingPapers
IPRA		International_Peace_Research_Association	International Peace Research Association		http://www.iprapeace.org/				
IEA	https://ror.org/00q4mnn13	International_Economic_Association	International Economic Association		http://www.iea-world.org/				
IALS			International Association of Legal Science		https://aisj-ials.net				