

Session One. Scientific Vocabularies: needs, status, validity, governance and sustainability

[Link to session one agenda](#)

[Link to session description](#)

[Link to slide-deck](#)

Session One Participants

No	Name	Affiliation	Email	Which discipline are you from?
1	Lesley Wyborn	ANU	lesley.wyborn@anu.edu.au	Earth Science
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3	Gwen Moncoiffe	NOC-BODC	gmon@bodc.ac.uk	Environmental Sciences (marine domain)
4	George Alter	University of Michigan, IUSSP	altergc@umich.edu	Social sciences
5	Virginia Murray	UK Health Security Agency	Virginia.Murray@phe.gov.uk	Disaster risk management and public health
6	Simon Cox	CSIRO	simon.cox@csiro.au	Environmental sciences
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9	Donny Winston	Polyneme LLC	donny@polyneme.xyz	Materials Science and Engineering
10	Alexandra Kokkinaki	NOC-BODC	alexk@bodc.ac.uk	Environmental Sciences (marine domain)
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				Sciences
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17	Yasuhiro Murayama	NICT, Japan	murayama.yasuhiro.r92@kyoto-u.jp	Open science policy and society, earth science
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19	Chantelle Verhey	WDS-ITO	ito-ra2@oceannetworks.ca	Earth Science
20	Rolf Krahl	Helmholtz-Zentrum Berlin für Materialien und Energie	rolf.krahl@helmholtz-berlin.de	Interdisciplinary
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22	Jeonghoon LEE	Korea Institute of Science and Technology Information	jhoon@kisti.re.kr	Computer Science, Information Science, Data Policy
23	Douglas Fils	Ocean Leadership	dfils@oceanleadership.org	geoinformatics
24	Christoph Wosniok	BGR	christoph.wosniok@bgr.de	Geoinformatics
25	Taco de Bruin	NIOZ/IODE	Taco.de.Bruin@nioz.nl	Oceanography, Polar Sciences

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27	Claudia Martens	DKRZ	martens@dkrz.de	Interdisciplinary
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30	Kai Blumberg	BCODMO, UA	kblumberg@email.arizona.edu	Ontology/Microbiology
31	Peter McQuilton	GSK	peter.x.mcquilton@gsk.com	Life/Medical Sciences
32	Paula Andrea Martinez	ARDC	paula.martinez@ardc.edu.au	Interdisciplinary
33	Richard Wessels	Utrecht University	r.j.f.wessels@uu.nl	Earth Science
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41	Marie-Claude DEBOIN	CIRAD, France	marie-claude.deboin@cirad.fr	Agricultural Sciences and related Sciences
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45	Pier Luigi Buttigieg	Helmholtz Metadata Collaboration // GEOMAR	pier.buttigieg@awi.de	Earth and environment / Biodiversity
46	Maria Teresa Cabrita	Portuguese Polar Program (PROPOLAR)	tcabrita@campus.ul.pt	Life Sciences
47	Romain David	ERINHA AISBL (European Research Infrastructure on Highly Pathogenic Agents)	romain.david@erinha.eu	Biodiversity / Ecology / life sciences
48	Melanie Lorenz	GFZ German Research Centre for Geosciences	melanie.lorenz@gfz-potsdam.de	Earth Sciences
49	Andy Henson	BIPM	andy.henson@bipm.org	Metrology
50	Mariusz Piskula	IUFoST/ Institute of Animal Reproduction and Food Research, Polish Academy of Sciences	m.piskula@pan.olsztyn.pl	Food Science
51	Geoffrey Boulton	International Science Council and University of Edinburgh	G.Boulton@ed.ac.uk	Geology and Science Policy
52	Rebecca C. Fan	Research Center for Information Technology Innovation (Taiwan)	rcfan@citi.sinica.edu.tw , rebecca.c.fan@gmail.com	Transdisciplinary (anthropology, sociology, IHRL, data science)
53	Ari Asmi	University of Helsinki	ari.asmi@helsinki.fi	Environmental sciences
54	Cyndie Found	NRC	cyndie.found@nrc-cnrc.gc.ca	RDM and Repository Librarian
55	Jenny Long	Geoscience Australia	jenny.long@ga.gov.au	Geospatial
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				scientist
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77	Corinna Gries	Environmental Data Initiative	cgries@wisc.edu	Environmental Science, Ecology
78	Robert J. Rovetto https://purl.org/space-ontology	CODER, UMD.	rrovetto@terpalum.umd.edu	Ontology, Space/Astro, Earth & environmental, Interdisciplinary
79				
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Session One Notes:

Geoffrey Boulton

Chemistry - Stuart Chalk -

Social Science - George Alter

Scientific vocabularies for health - Jim Todd

Earth Science - Mark Rattenbury

Vocabularies emerge through short project-focussed investment more than steady development.

Enduring governance can ride the development crests and troughs but vocabularies need to refresh to maintain authority and promotion to ensure uptake.

Sustaining vocabularies requires:

\$ to keep the server going

\$\$ to enable content updates and improvement

\$\$\$ to embrace new information technologies

Commitment enshrined in enduring organisational charters

Cross domain - Gwen Moncoiffe

Virginia Murray - Hazards

With disasters increasing in intensity, severity and impacts across the globe, improving risk information across all types of hazards is critical to enhance our capacity to anticipate, prevent and respond to disaster risks from the local to the global scales. One barrier to sharing and using risk information effectively has been the lack of standardized definitions of hazards and a lack of guidance on the full range of hazards from hydrometeorological, extraterrestrial, geological, environmental, chemical, biological, technological and societal that need to be addressed in risk management.

The UNDRR/ISC Hazard Information Profiles Supplement

<https://www.undrr.org/publication/hazard-information-profiles-supplement-undrr-isc-hazard-definition-classification> to UNDRR-ISC Hazard Definition & Classification Review: Technical Report (2020)

https://council.science/wp-content/uploads/2020/06/UNDRR_Hazard-Report_DIGITAL.pdf is the first ever compilation of definitions of over 300 hazards that are relevant to the 2015 United Nations landmark agreements of the Sendai Framework for Disaster Risk Reduction, the Paris Agreement on climate change and the Sustainable Development Goals.

The last two years have shone a light on the need for a more holistic approach to understanding risk with countries facing multiple and compounding disasters such as heatwaves, cold waves, wildfires, floods, locust invasion, pandemic and others. Many of these hazards are defined in multiple ways

which can hinder the sharing and integration of information. Improving hazard definitions needs to be built on scientific evidence and collaboration across institutions and sectors.

With more than 100 authors and over 130 reviewers involved in the development of the hazard information profiles, this work has stimulated a process of multi-disciplinary and multi-sectoral collaboration on using science-based information to better define hazards and the data requirements to measure them effectively.

This compilation of existing information provides a starting point for bringing together information on hazards that will need to be regularly reviewed and updated by the relevant international institutions in partnership with the scientific community in order to build an information ecosystem better suited to the risks of today and tomorrow.

Simon Cox - Soil Vocabularies (making them FAIR, Australia)

Simon Hodson - CODATA -

Questions posed by Simon:

1. How are things in your domain?

Social sciences in Europe: long-term vocabulary governance and management is challenging as funding comes often from projects, difficult to get funding for sustainable cross-national infrastructure efforts like vocabularies. +

Soils - coordination needed re sharing and discovery of vocabularies across Nations, regions etc - leveraging off/raising awareness of existing domain specific - eg GLOSI/FAO current ontology <https://github.com/rapw3k/glovis> . Need to understand governance/maintenance schedule of these, how contributions can be made (or not!), revision schedule. Need to promote existing trusted/authoritative collections from other domains eg geosci, chem, general (eg UoM) (how do we define what is trusted and authoritative?) and National (e.g. the Australian ones Simon presented) and local soil vocabularies

2. Are there drivers for FAIR vocabularies in your work and for sharing vocabularies across domains?

RDAVID: we need decision trees to help us to choose vocabularies and to decide how to privilege a term from one or another

Problem is not drivers (there are many, especially in data intensive research) - it's the neverending question of *sustainable* funding! Vocab constantly develop, but when they are not *maintained* it's just some code somewhere that soon does not work anymore

A driver is when the vocabulary used stops working (not persistent) and your platform functionality disappears!

When a vocab goes up which is not clearly governed, licencing attached etc - domain experts become aware of and start enquiring about. Need to ensure appropriate credit, licencing etc.

When 'local' scientific work starts to move/expand across agencies or jurisdictions so difference governance, maintenance of terms is required

Sharing vocabularies across domains - driver - saving time and resources - not creating something that already exists

3. How should we work together to share lessons and good practice across domains?

context as an essential metadata to avoid polysemic issues in transdisciplinary work

Is there a common approach to vocabularies' support? (the perennial infrastructure challenge)

Metadata recommendations for FAIR vocabularies (maturity model?) would be useful to help creators consider key sustainability/governance issues

Alexander Prent: In my understanding of block chain technology each and every computer maintains a registry (copy) of the ledger with all transactions, now isn't that something we can subscribe to in terms of maintaining vocabularies and preventing duplicate efforts etc. as long as anyone and everyone has access to these ledgers it's ok.

4. How do we take this forward? Forming working groups on developing and connecting FAIR Vocabs

There is now a joint IUSSP-CODATA Working Group on FAIR Vocabularies <https://codata.org/initiatives/decadal-programme2/fair-vocabularies/iussp-codata-working-group-on-fair-vocabularies/> - we would like to work in a similar way with other international scientific unions or other representative organisations.

If you have a suggested working group, please list it below and include your name and contact details

Questions from the audience

- How do these various groups push and support adoption of the vocabularies etc? How do the organizations track usage and/or impact of the work?
- Can governance be machine-centric? It seems impossible for humans to be the principal agents reviewing vocabularies and suggesting content updates/improvements over time.
- Governance issues are central in transdisciplinaries works about vocabularies... What are the views of presenters about it?

50 years ago much/most/almost all of the material raised in our discussions were contained in the great libraries of record. They contained the “record of science” - publications, data, protocols etc etc, and they ensured sustainability. In practice, the library of record no longer exists. Digitalisation in principle should have solved this problem. In practice, it has compounded it. The big question is how do we develop a sustainable, equitably governed, distributed system, that can be interrogated by a platform agnostic discovery system across the whole spectrum of the record of science? Is that megalomania, or is it just ambitious? `If single disciplines can organise themselves as has been described, why not the whole scientific community?

- Romain David: Governance issues are central in transdisciplinaries works about vocabularies... what are the view of presenters about it?
- Ari Asmi: How should we communicate the level of fairness, “officialness” and sustainability of the vocabularies? I am specifically thinking of e.g. university library

trying to recommend vocabularies for their users. This is of course relevant to Stuarts comment on disciplinary borders

- Simon Cox: 'if you don't define it someone else will' has been an ongoing challenge with Units of Measure - BIPM (the SI people) does not provide machine-readable definitions ... so many variants have emerged. CODATA is now trying to do some coordination ...
- Pier Luigi Buttigieg: In the ESIP Semantic Harmonization cluster, we see that different national and international authorities will inevitably have different definitions for terms. There are many reasons for this (national/international mandates, regional focus, etc), and we should be prepared to create sustainable, machine-readable, and well-curated translation technology.
 - Simon Cox: @Pier - indeed. Some variation is natural and desirable. However, some is unnecessary, and modern platforms may enable us to do better?
 - Gwen Moncoiffe: Yes I agree that giving the context of the term is crucial
 - Alejandra Gonzalez-Beltran: I agree that some variation is needed across vocabularies at different levels / scales; however, we need to do much better on sharing / linking terms to enable true interoperability
 - Taina Jääskeläinen: Should SKOS format include an element where information on governance process and long-term sustainability of the vocabulary could be included? And create an international vocabulary to categorise the level of sustainability of the vocabularies??
 - George Alter: Is there a way to encourage creators of controlled vocabularies to include context as a standard element? Is context a FAIR issue?

Copied chat record

21:48:45 From Simon Hodson (CODATA) to Everyone:

<https://xkcd.com/2470/>

21:54:14 From Rowan Brownlee to Everyone:

https://drive.google.com/drive/u/1/folders/1pilgJym8TbObriykgIulD4eCX_xr2l7J

21:58:28 From Rowan Brownlee to Everyone:

Notes document for session one:

https://docs.google.com/document/d/1Vd-_JmPVGjmDRBGo2J5Hf2WNQthPPT-ak6jVMMTKX-Q/edit

22:00:58 From Rowan Brownlee to Everyone:

Notes document for session one:

https://docs.google.com/document/d/1Vd-_JmPVGjmDRBGo2J5Hf2WNQthPPT-ak6jVMMTKX-Q/edit

22:01:45 From Lesley Wyborn to Everyone:

Please enter your name and discipline here in the session notes:

https://docs.google.com/document/d/1Vd-_JmPVGjmDRBGo2J5Hf2WNQthPPT-ak6jVMMTKX-Q/edit

22:10:43 From Lesley Wyborn to Everyone:

Please enter your name and discipline here in the session notes:

https://docs.google.com/document/d/1Vd-_JmPVGjmDRBGo2J5Hf2WNQthPPT-ak6jVMMTKX-Q/edit

22:16:09 From Lesley Wyborn to Everyone:

Please enter your name and discipline here in the session notes:

https://docs.google.com/document/d/1Vd-_JmPVGjmDRBGo2J5Hf2WNQthPPT-ak6jVMMTKX-Q/edit

22:17:12 From Rowan Brownlee to Everyone:

Please enter your name and discipline here in the session notes:

https://docs.google.com/document/d/1Vd-_JmPVGjmDRBGo2J5Hf2WNQthPPT-ak6jVMMTKX-Q/edit

22:34:59 From Girija Moona to Everyone:

Dr. Girija Moona, Physics/Engineering Sciences

22:40:03 From Simon Cox to Everyone:

Props to Mark for his smooth presentation - it's well after midnight for him

22:46:27 From Simon Hodson (CODATA) to Everyone:

Please think of any questions you may have for speakers and any comments. For the discussion, I would like to hear whether the presentations have resonances for other domains. The participant list shows that there is a remarkable range of disciplines represented here. How are things in your domain? Are there drivers for FAIR vocabularies in your work and for sharing vocabularies across domains? How should we work together to share lessons and good practice across domains?

22:47:40 From Simon Hodson (CODATA) to Everyone:

There is now a joint IUSSP-CODATA Working Group on FAIR Vocabularies

<https://codata.org/initiatives/decadal-programme2/fair-vocabularies/iussp-codata-working-group-on-fair-vocabularies/> - we would like to work in a similar way with other international scientific unions or other representative organisations.

22:49:05 From Lesley Wyborn to Everyone:

I have put those questions above into the session notes:

https://docs.google.com/document/d/1Vd-_JmPVGjmDRBGo2J5Hf2WNQthPPT-ak6jVMMTKX-Q/edit#

22:50:13 From Lesley Wyborn to Everyone:

Given that there are 104 people in the room, please consider putting your points and opinions in the notes: we want to ensure we hear from everyone!!!

23:01:16 From Lesley Wyborn to Everyone:

I think it is no 7!

23:07:34 From Simon Cox to Everyone:

<https://doi.org/10.1371/journal.pcbi.1009041> Ten Simple Rules paper

23:09:26 From Alexander Prent to Everyone:

Great slide overview

23:10:28 From Alexander Prent to Everyone:

Love the draft proposal we each can learn from the previous / connecting initiative

23:10:38 From Marie-Claude Deboin to Everyone:

@Simon Cox: A very useful paper (thanks) that I regularly read and use to apply its recommendations

23:11:16 From Romain David to Everyone:

Thanks Simon for this 10 rules paper. Really useful

23:12:39 From Geoffrey Boulton to Everyone:

I think there is a very big question that sits behind many of the problems we have been discussing. Happy to express it if it fits in with the discussion.

23:13:52 From Donny Winston to Everyone:

@Geoffrey drop the question at the end of the notes doc

<https://docs.google.com/document/d/1Vd-_JmPVGjmDRBGo2J5Hf2WNQthPPT-ak6jVMMTKX-Q/edit?pli=1> ("Questions from the audience")?

23:14:29 From Lesley Wyborn to Everyone:

Please everyone consider putting your ideas and suggestions in the notes

23:15:28 From Romain David to Everyone:

Governance issues are central in transdisciplinary works about vocabularies... what are the views of presenters about it?

23:18:51 From Simon Cox to Everyone:

'if you don't define it someone else will' has been an ongoing challenge with Units of Measure - BIPM (the SI people) does not provide machine-readable definitions ... so many variants have emerged. CODATA is now trying to do some coordination ...

23:19:28 From Ari Asmi to Everyone:

How should we communicate the level of fairness, "officialness" and sustainability of the vocabularies? I am specifically thinking of e.g. university library trying to recommend vocabularies for their users. This is of course relevant to Stuarts comment on disciplinary borders

23:20:26 From Pier Luigi Buttigieg to Everyone:

In the ESIP Semantic Harmonization cluster, we see that different national and international authorities will inevitably have different definitions for terms. There are many reasons for this (national/international mandates, regional focus, etc), and we should be prepared to create sustainable, machine-readable, and well-curated translation technology.

23:20:44 From Steven McEachern to Everyone:

Major delay - I'll hold off the question
23:21:58 From Alison Specht to Everyone:
+1 Pier Luigi
23:22:00 From Simon Cox to Everyone:
@Pier - indeed. Some variation is natural and desirable. However, some is unnecessary, and modern platforms may enable us to do better?
23:22:32 From Gwen Moncoiffe to Everyone:
Yes I agree that giving the context of the term is crucial
23:23:32 From Alejandra Gonzalez-Beltran to Everyone:
I agree that some variation is needed across vocabularies at different levels / scales; however, we need to do much better on sharing / linking terms to enable true interoperability
23:23:34 From Romain David to Everyone:
+1 Pier Luigi
23:23:42 From Stuart Chalk to Everyone:
+1
23:23:55 From Romain David to Everyone:
and +1 for context as an essential metadata :)
23:24:34 From Andrea Medina-Smith to Everyone:
Does anyone have a link to the "5 stars" slides?
23:25:29 From Pier Luigi Buttigieg to Everyone:
Our Helmholtz Metadata Collaboration (HMC) thematic Hubs are convening task teams to help our infrastructures and institutes make sure their choices of semantic resources fit their usage requirements and objectives - most, even with data science backgrounds, are not able to make this determination without expert support (with domain and technical expertise)
23:25:47 From Ryan White (NRC) to Everyone:
One challenge is to educate domains on machine readability -> interpretability -> actionability. If the goal of FAIR is not understood, we may just end up with non-interoperable web pages of vocabularies. The 10-steps paper is an excellent start. Getting more (immature) domains to educational workshops.
23:27:09 From Simon Cox to Everyone:
@Andrea try
https://docs.google.com/presentation/d/14fjQc6dKGU6YrcwNA7yDdBkl_gWuOFKMZLel2YNRCUI/edit?usp=sharing
23:27:40 From Steven McEachern to Everyone:
Adding my comment that was only delay - relating to IUSSP experience, but possibly also UN DRR work and others). For some of the formal/official vocabularies they have a very clear status (e.g. some of the international economic classifications have legal status). They tend to be reasonably well-funded, as they are channelled through government/intergovernmental relations. BUT this brings a different problem, of VERY complex governance arrangements to support the classification (and it's approval and adoption).

23:27:58 From Andrea Medina-Smith to Everyone:

@Simon, thanks!

23:28:14 From Lesley Wyborn to Everyone:

Link to 5 star vocab:

<https://docs.google.com/presentation/d/1YsQf3GsSW9TdlUpPO17CbsVIZq8qeEX-mwRI4PC-j4/edit#slide=id.p>

23:28:27 From Kai Blumberg to Everyone:

See the OBO foundry a distributed network of open source ontologies for the lifesciences

23:28:58 From Kai Blumberg to Everyone:

www.obofoundry.org