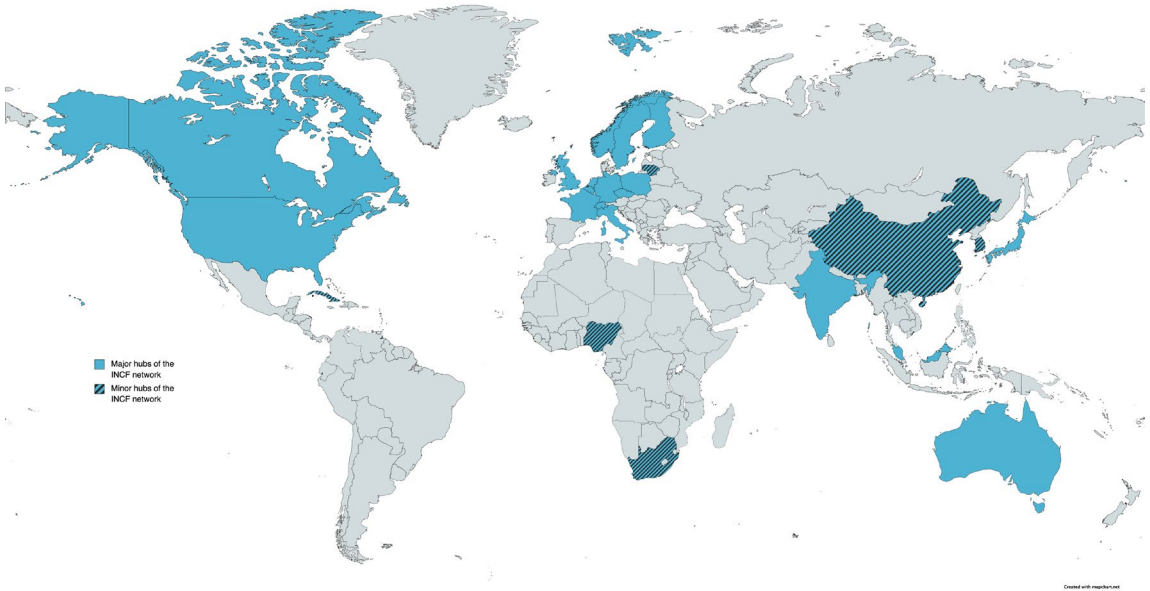
„Sparking Joy”: The role of the INCF network in the open, FAIR, and citable neuroscience movement

Mathew Birdsall Abrams, PhD, MPH
Director Science and Training
International Neuroinformatics Coordinating Facility (INCF)
Department of Neuroscience
Karolinska Institutet

Contents:

- Brief introduction to the INCF network
- Brief introduction to the role of standards and best practices in the FAIR partnership
- INCF standards framework:
  - Developing, harmonizing, and extending standards
  - Evaluation and endorsement of community standards
  - Promotion of community adoption of community standards
- Example of the FAIR partnership in practice

An international network for open, FAIR, and citable neuroscience



Community includes: Researchers Software developers Infrastructure providers Funders Industry Publishing Standards developers

Mission

To promote data sharing/reuse and infrastructure integration in neuroscience through the development of standards and best practices and the provide training in neuroinformatics

Remi Gau
@RemiGau

This needed to be done.

#BIDS is the #mariekondo for #fMRI #MRI #EEG #MEG #DataCuration.

site: bids.neuroimaging.io
specification: bids-specification.readthedocs.io/en/stable/
starter kit:github.com/bids-standard/...

The ”Marie Kondos” of the neuroscience community

Original DICOM

- dicomdir/
  - 1208200617178_22/
    - 1208200617178_22_8973.dcm
    - 1208200617178_22_8943.dcm
    - 1208200617178_22_2973.dcm
    - 1208200617178_22_8923.dcm
    - 1208200617178_22_4473.dcm
    - 1208200617178_22_8783.dcm
    - 1208200617178_22_7328.dcm
    - 1208200617178_22_9264.dcm
    - 1208200617178_22_9967.dcm
    - 1208200617178_22_3894.dcm
    - 1208200617178_22_3899.dcm
  - 1208200617178_23/
  - 1208200617178_24/
  - 1208200617178_25/

Data structured as BIDS

- my_dataset/
  - participants.tsv
  - sub-01/
    - anat/
      - sub-01_T1w.nii.gz
    - func/
      - sub-01_task-rest_bold.nii.gz
      - sub-01_task-rest_bold.json
    - dwi/
      - sub-01_dwi.nii.gz
      - sub-01_dwi.json
      - sub-01_dwi.bval
      - sub-01_dwi.bvec
  - sub-02/
  - sub-03/
  - sub-04/

BIDS is a format for standardizing and describing outputs of neuroimaging experiments (left) in a way that is intuitive to understand and easy to use with existing analysis tools (right).

Network Activities

Capacity Building

- Professional Development Workshops
- Thematic Workshops
- Training/Education courses
- INCF TrainingWeeks
- INCF TrainingSuite
- Mentorship/Internship programs:

MathWorks

Standards and best practices

incf ENDORSED

- Develop
- Endorse
- Extend
- Harmonize

Community Building

- INCF Assembly
- Working Groups:

BIDS BRAIN IMAGING DATA STRUCTURE

ARTEM-IS

- Neurostars
- Brain Summit

Consulting Services

neuromatch academy

Karolinska Institutet

Community Involvement

FUN

Neuro

SfN SOCIETY for NEUROSCIENCE

GLOBAL BRAIN CONSORTIUM

Organization for Human Brain Mapping

InTBIR International Initiative for Traumatic Brain Injury Research

SONA

FENS Federation of European Neuroscience Societies

neuromatch academy

IBI INTERNATIONAL BRAIN INITIATIVE

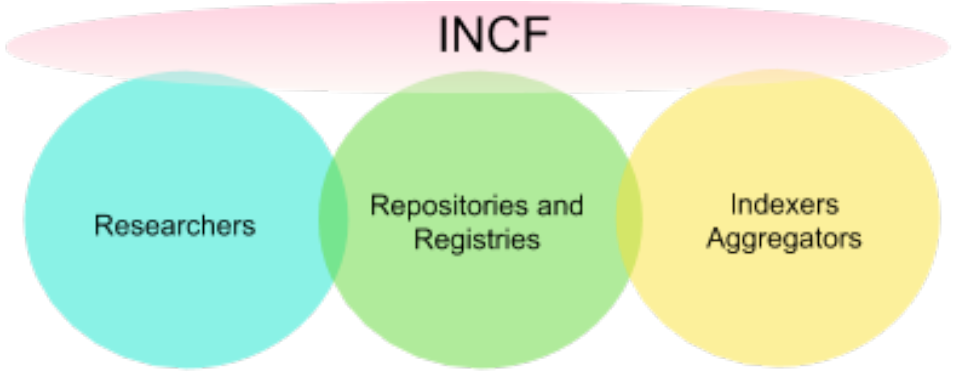
OCNS Organization For Computational Neurosciences

Guidelines

Targeting:

- Software tool developers
- Infrastructure providers
- Standards developers
- Policy makers

The FAIR partership and the role of standards



- Develop (meta)data standards

- Good data management
- Rich metadata
- Prepare to share
- Open formats
- Adopt/align to standards
- Submit to repository

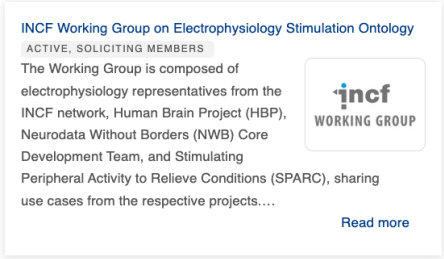
- Persistent identifier
- Machine based access
- Clear License
- Support for open, domain specific standards
- Machine readable metadata
- Future friendly formats
- Persistent metadata
- Bidirectional links
- Data citation
- FAIR vocabularies

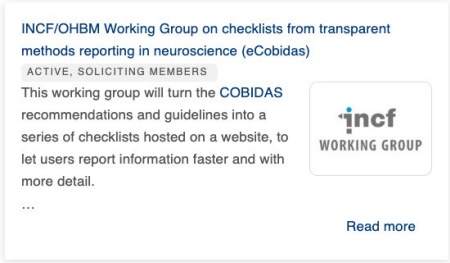
- Index
- Effective search
- Persistent metadata

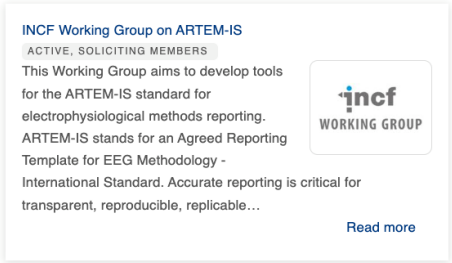
The INCF framework for developing, extending, and harmonizing community standards and best practices

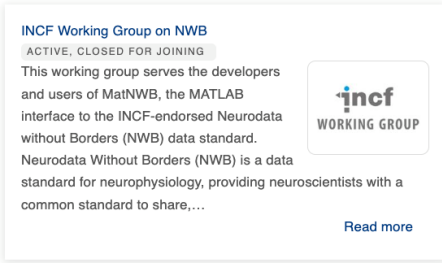
Working Groups(WGs) are composed of users and developers from across the INCF network working collaboratively to develop, refine, and/or implement community standards.

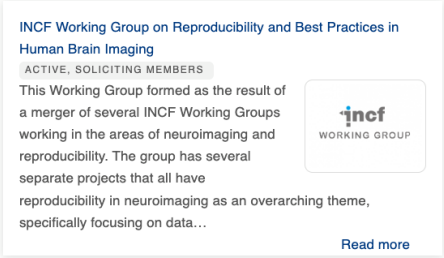
- Short-term projects that aim to achieve a concrete deliverable
- Serve as forums for getting agreement and community buy-in on the use of these standards and best practices
- All community members are welcome to be WG members, regardless of their location in the world

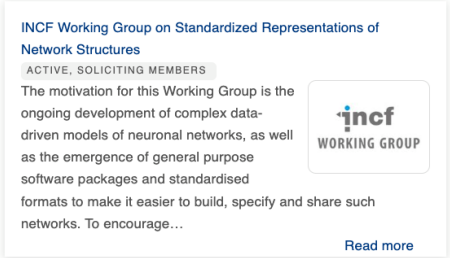


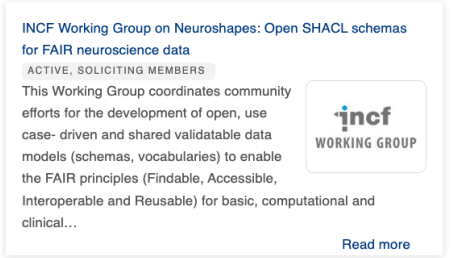


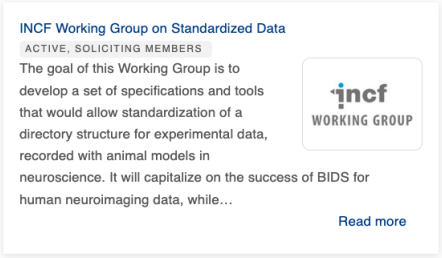












Webpage

INCF Working Group on Electrophysiology Stimulation Ontology

Tags: working group | electrophysiology | ontologies

Status: Active, Soliciting members

Chairs

Tom Gillespie, UC San Diego

Join this working group

About

The Working Group is composed of electrophysiology representatives from the INCF network, Human Brain Project (HBP), Neurodata Without Borders (NWB) Core Development Team, and Stimulating Peripheral Activity to Relieve Conditions (SPARC), sharing use cases from the respective projects.The initial use cases are from intracellular electrophysiology, with good coverage over most typical ICEPhys protocols. This schema is also useful for other 1D signals over time that are used as stimuli. In addition, the ontology defines a specification for parameterizing the stimulus templates. This is a strategy for stimulus description that should eventually be easily extendable to 2D (i.e. visual) stimuli, which is another large class of stimuli that is common in NWB.

How we work

Bimonthly virtual meetings

Members

Tom Gillespie, UC San Diego
Lydia Ng, Allen Institute
Pamela Baker, Allen Institute
Patrick Rey, Allen Institute
Andrew Davison, CNRS
Glynis Mattheisen, CNRS
Oliver Ruebel, LBL
Ben Dichter, LBL
Ulrike Schlegel, University of Oslo
Lyuba Zehl, Research Center Jülich
Stephen Van Hooser, Brandeis University
Mathew Abrams, INCF Secretariat

incf WORKING GROUP

Aims

The aim of this Working Group is to develop a small, well-scoped ontology for describing electrophysiology stimulation parameters.

Deliverables

2023

- Prototype visualization or validation/comparison tool (expected)
  - so users can verify that the stimuli as stored in the file are as they intended
  - for archives, so stimuli can be visualized when browsing datasets
- Draft proposal best practices for use of the ontology for archives (expected)
- Draft proposal for extension for parameterized 2D visual stimuli (expected)

Completed Deliverables

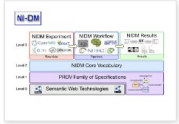
2021

- Electrophysiology Stimulation Ontology (draft version)
  - Integrating the use of the 1D waveform ontology with NWB

Index of Deliverables

Year	Outcomes	Working group
2023	• Shared JSON based notation for network specification/generation • Incorporate NetPyNE UI into OSB	INCF Working Group on Standardized Representations of Network Structures
2022	• BIDS Specification (v1.7.0) • BIDS validator (v1.9.0)	INCF Working Group on Reproducibility and Best Practices in Human Brain Imaging
2022	An app facilitating completion of the template using an onscreen interface	INCF Working Group on ARTEM-IS
2022	• NIDM specification	INCF Working Group on NIDM (NeuroImaging Data Model)
2022	• Detailed list of Quality Control tools for different modalities of neuroimaging	INCF Working Group on Neuroimaging Quality Control
2021	• Electrophysiology Stimulation Ontology (draft version) ◦ Integrating the use of the 1D waveform ontology with NWB	INCF Working Group on Electrophysiology Stimulation Ontology
2021	Brainconnects 2021	INCF Working Group on Neuroinformatics for Aging
2021	• BIDSonym application for de-identification of neuroimaging data • BIDSonym: a BIDS App for the pseudo-anonymization of neuroimaging datasets	INCF Working Group on Reproducibility and Best Practices in Human Brain Imaging
2020	"Neuroimaging and Informatics for Successful Aging" Research Topic in Frontiers	INCF Working Group on Neuroinformatics for Aging
2020	• Support for Sonata across NeuroML/PyNN/NetPyNE	INCF Working Group on Standardized Representations of Network Structures
2019	Brainconnects 2019	INCF Working Group on Neuroinformatics for Aging
2019	• NIDM viewer	INCF Working Group on NIDM (NeuroImaging Data Model)
2019	• Course on neuroimaging Quality Control 2019	INCF Working Group on Neuroimaging Quality Control
2018	• DICOM ontology	INCF Working Group on NIDM (NeuroImaging Data Model)
2016	• Training materials for learning NIDM	INCF Working Group on NIDM (NeuroImaging Data Model)
2015	• A restful API and client for NIDM	INCF Working Group on NIDM (NeuroImaging Data Model)

Notable outcomes:



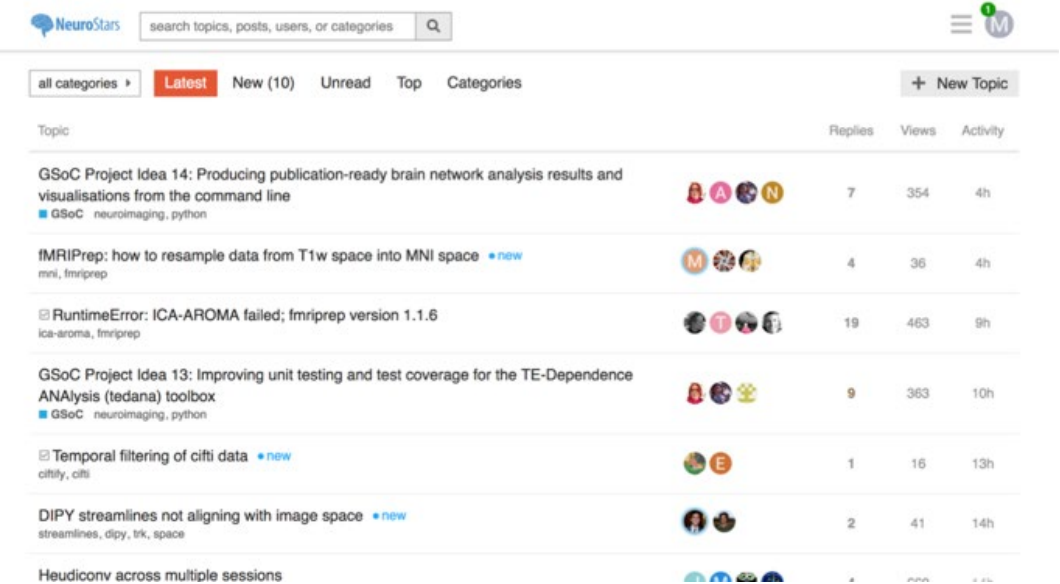
WaxholmSpace

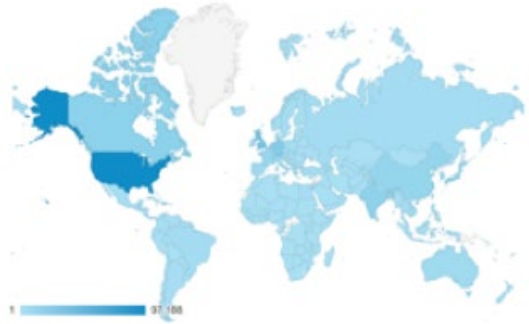
AtOM

openMINDS

INCF Principles for developing community standards and best practices

1. Create a common vocabulary. It is time consuming, but it is an essential starting point
2. Consider your standard's users and their goals (repeated analysis, visualisation, reuse parts, discover related analyses, etc…)
3. Choose an extensible data model for implementing your standard
4. Incorporate both experimental and computational processes in your standards
5. Assessing computational variability is essential for generalizability
6. Work incrementally, openly, and collaboratively
7. While consensus is the goal, disagreements will occur—remember the previous point: Work incrementally, openly, and collaboratively





- 318.658 users (2019 to present)
- 1.6 million pageviews (2019 to present)
- 707.039 sessions (2019 to present)

The INCF framework for vetting and endorsing standards and best practices

Accepted into framework	Endorsed	Not endorsed	Ready for Community review	Expert & Committee review phase
17	9	2	2	4

POLICY DOCUMENT

International Neuroinformatics Coordinating Facility review criteria for endorsement of standards and best practices V2.0

Mathew Abrams[1], Jyl Boline[2], Samir Das[3], Ibrahima Faye[4], Wojtek Goscinski[5], Jeanette Hellgren-Kotaleski[6], Ramona Hicks[7], David Kennedy[8], Trygve Leergaard[9], Maryann Martone[10], Roman Mouček[11], Sharmila Venugopal[12], Thomas Wachtler[13]

PUBLISHED 13 NOV 2020 (https://doi.org/10.7490/f1000research.1118367.1)

Author Affiliations

Abstract

The International Neuroinformatics Coordinating Facility (INCF) is a standards organization for open and FAIR neuroscience that develops, evaluates, and endorses standards and best practices that embrace the principles of Open, FAIR, and Citable neuroscience. The purpose of this document is to describe the criteria used in INCF's formal procedure for evaluating and endorsing community standards and best practices.

Key areas evaluated:

- Open
- FAIR
- Testing and implementation
- Governance
- Adoption and use
- Stability and support
- Extensibility
- Comparison

POLICY DOCUMENT

Call for community review of the Brain Imaging Data Structure – a standard for organizing and describing MRI data sets

Maryann Martone[1], Wojtek Goscinski[2], Samir Das[3], Yoko Yamaguchi[4], Eric Tatt Wei Ho[5], Trygve Leergaard[6], Jea

PUBLISHED 31

Author A

Abstrac

The purpc
Imaging D
datasets,
data. The
review of
implemen
comparis
feedback

About BID
unifies the
metadata

Alexander von Lautz 28 Sep 2018
$comment.userAffiliation.renderToString()

A question with regards to FAIR criteria, point 7: Is there a metadata standard from psychological experiments that BIDS metadata conforms to?

COMPETING INTERESTS
No competing interests.

REPORT A CONCERN

Krzysztof J. Gorgolewski 10 Sep 2018
$comment.userAffiliation.renderToString()

There is one more relevant publication describing how MEG data is covered by BIDS: https://www.nature.com/articles/sdata2018110

COMPETING INTERESTS
I am one of the BIDS stewards.

REPORT A CONCERN

Jean-Baptiste Poline 03 Sep 2018
$comment.userAffiliation.renderToString()

An endorsement by INCF is more than deserved for the BIDS standard.

COMPETING INTERESTS
I am participating to the BIDS efforts and some of the BIDS working groups

REPORT A CONCERN

The INCF Standards and Best Practices Portfolio

The purpose of this portfolio is to provide the community with an index of robust, well-validated standards and best practices that adhere and support the FAIR principles.

The portfolio provides the community with:

- Descriptions of appropriate use cases
- Links to tools/infrastructures
- Links to tutorials for each standard and best practice indexed
- Information about similar standards

Users can search the portfolio by data type, format, or subdomain of neuroscience

BIDS

INCFSN:	INCFSN-18-01
Endorsed on:	2018-11-02
Re-endorsed on:	2021-06-29
Review comments:	https://f1000research.com/documents/7-1368
License:	MIT
RRID:	RRID:SCR_016124
Tags:	Neuroimaging Data format Metadata format Standards

About

The Brain I
organize M
between us
consistent
file metada
how other

Links

TrainingSp
Publication
BIDS webp

Similar s

OpenfMRI

Commen

BIDS and t

Supporti

POLICY DOCUMENT

BIDS and the NeuroImaging Data Model (NIDM)

Stefan Appelhoff[1], Julianna F. Bates[2], Satrajit Ghosh[3], David B. Keator[4], David N. Kennedy[2], Russell Poldrack[5], Jean-Baptiste Poline[6], Jason Steffener[7], B. Nolan Nichols[8], Franklin Feingold[5], Cyril Pernet[9], Gustav Nilsonne[10], Camille Maumet[11], Guillaume Flandin[12], Rémi Gau[13], Robert Oostenveld[14], Elizabeth Dupre[6], Arnaud Delorme[15], Christopher J. Markiewicz[5], Natacha Perez[11], Karl G. Helmer[16], Dorota Jarecka[3], Jeffrey S. Grethe[17], Dianne Patterson[18], Tibor Auer[19], Hauke Bartsch[20], Thomas E. Nichols[21], Vince Calhoun[22]

PUBLISHED 07 AUG 2019 (https://doi.org/10.7490/f1000research.1117293.1)

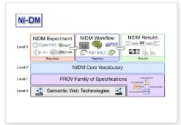
Author Affiliations

Abstract

The following statement is designed to clarify the complementary nature of the Brain Imaging Data Structure (BIDS) and the NeuroImaging Data Model (NIDM). It is not designed to be a comprehensive review of either of these initiatives, but rather to highlight the synergy of the co-application of each of these emerging technologies. The context for this statement is the preservation and communication of neuroimaging data and the additional experimental data and analytics that are associated with the neuroimaging data.

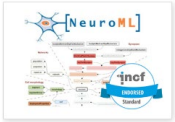
Current standards and best practices indexed

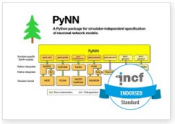
Neuroimaging



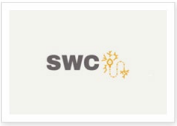
E-phys

Comp Neuro





Neuromorphology



Microscopy

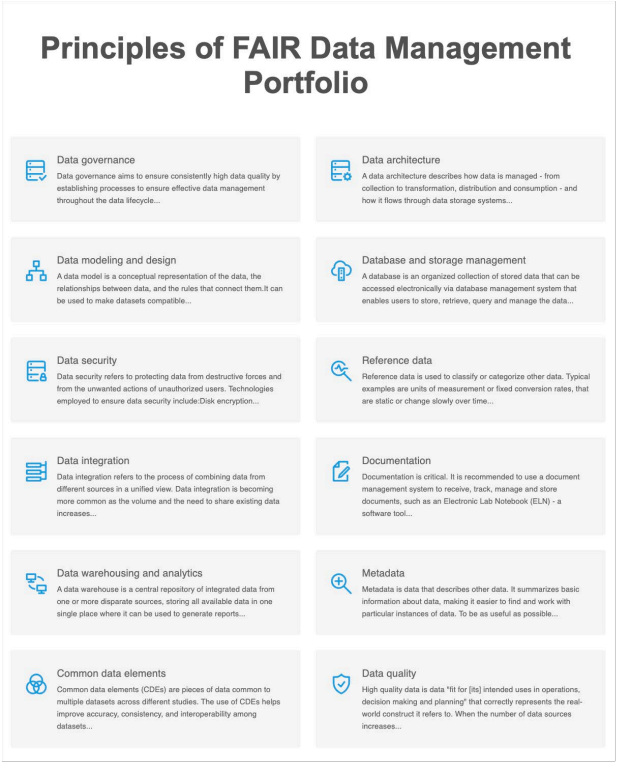
Guidelines

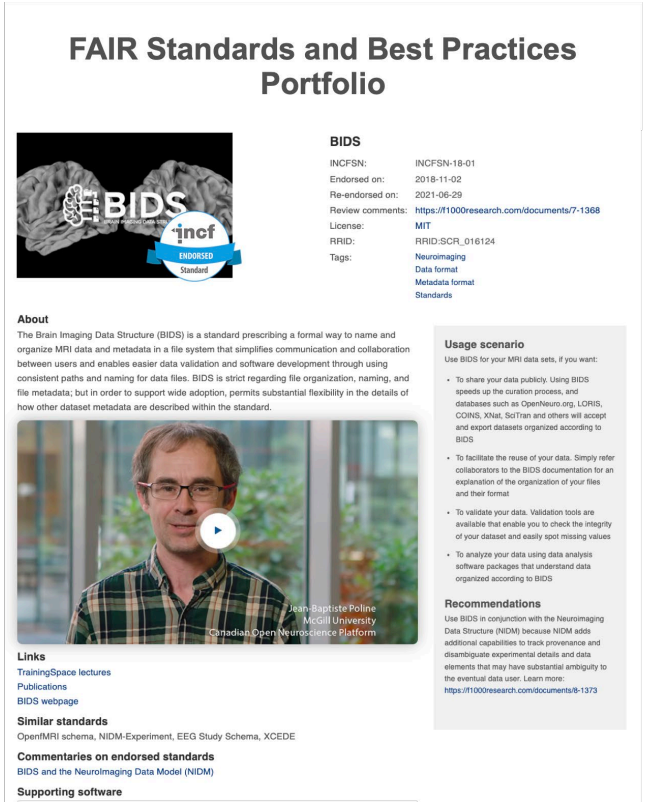
PNS

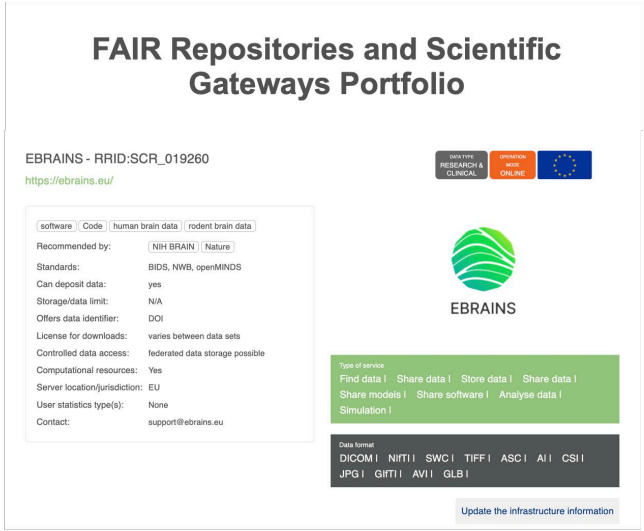
Identifiers

The INCF FAIR roadmap project

A framework for identifying current gaps, challenges, and opportunities, as well as a framework for coordinating community action

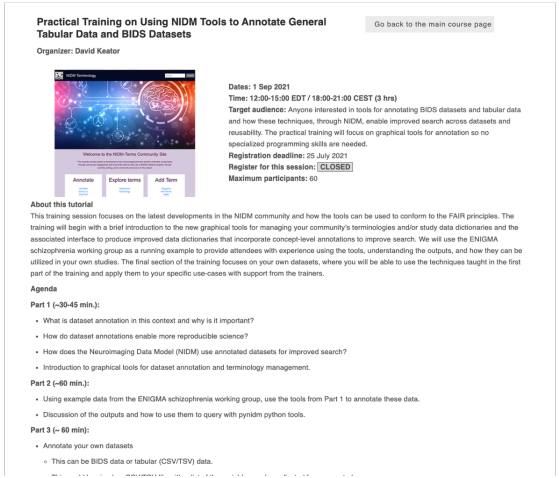






Not quite there yet standards

Capacity building activities



Practical Training on Using NIDM Tools to Annotate General Tabular Data and BIDS Datasets

Go back to the main course page

Organizer: David Keator

Dates: 1 Sep 2021
Time: 12:00-15:00 EDT / 18:00-21:00 CEST (3 hrs)
Target audience: Anyone interested in tools for annotating BIDS datasets and tabular data and how these techniques, through NIDM, enable improved search across datasets and reusability. The practical training will focus on graphical tools for annotation so no specialized programming skills are needed.
Registration deadline: 25 July 2021
Register for this session: CLOSED
Maximum participants: 60

About this tutorial

This training session focuses on the latest developments in the NIDM community and how the tools can be used to conform to the FAIR principles. The training will begin with a brief introduction to the new graphical tools for managing your community's terminologies and/or study data dictionaries and the associated interface to produce improved data dictionaries that incorporate concept-level annotations to improve search. We will use the ENIGMA schizophrenia working group as a running example to provide attendees with experience using the tools, understanding the outputs, and how they can be utilized in your own studies. The final section of the training focuses on your own datasets, where you will be able to use the techniques taught in the first part of the training and apply them to your specific use-cases with support from the trainers.

Agenda

Part 1 (~30-45 min.):

- What is dataset annotation in this context and why is it important?
- How do dataset annotations enable more reproducible science?
- How does the Neuroimaging Data Model (NIDM) use annotated datasets for improved search?
- Introduction to graphical tools for dataset annotation and terminology management.

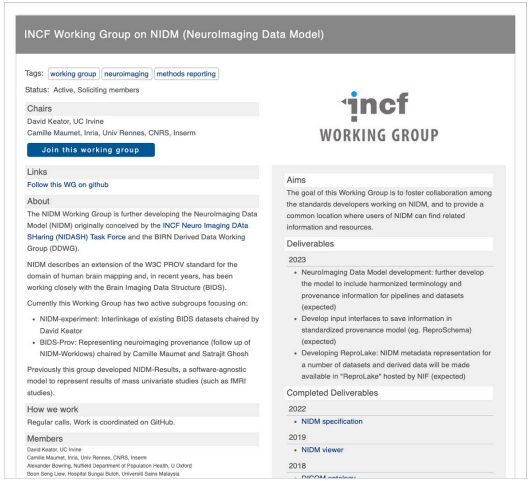
Part 2 (~60 min.):

- Using example data from the ENIGMA schizophrenia working group, use the tools from Part 1 to annotate these data.
- Discussion of the outputs and how to use them to query with pyNIDM python tools.

Part 3 (~ 60 min):

- Annotate your own datasets
  - This can be BIDS data or tabular (CSV/TSV) data.

Community building activities



INCF Working Group on NIDM (NeuroImaging Data Model)

Tags: working group | neuroimaging | methods reporting

Status: Active, Soliciting members

Chairs

David Keator, UC Irvine
Camille Maumet, Inria, Univ Rennes, CNRS, Inserm

Join this working group

Links

Follow this WG on github

About

The NIDM Working Group is further developing the NeuroImaging Data Model (NIDM) originally conceived by the INCF Neuro Imaging DAta SHaring (NIDASH) Task Force and the BIRN Derived Data Working Group (DDWG).

NIDM describes an extension of the W3C PROV standard for the domain of human brain mapping and, in recent years, has been working closely with the Brain Imaging Data Structure (BIDS).

Currently this Working Group has two active subgroups focusing on:

- NIDM-experiment: Interlinkage of existing BIDS datasets chaired by David Keator
- BIDS-Prov: Representing neuroimaging provenance (follow up of NIDM-Workflows) chaired by Camille Maumet and Satrajit Ghosh

Previously this group developed NIDM-Results, a software-agnostic model to represent results of mass univariate studies (such as fMRI studies).

How we work

Regular calls. Work is coordinated on GitHub.

Members

David Keator, UC Irvine
Camille Maumet, Inria, Univ Rennes, CNRS, Inserm
Alexander Bowring, Nuffield Department of Population Health, U Oxford
Boon Seng Liew, Hospital Sungai Buloh, Universiti Sains Malaysia

incf WORKING GROUP

Aims

The goal of this Working Group is to foster collaboration among the standards developers working on NIDM, and to provide a common location where users of NIDM can find related information and resources.

Deliverables

2023

- NeuroImaging Data Model development: further develop the model to include harmonized terminology and provenance information for pipelines and datasets (expected)
- Develop input interfaces to save information in standardized provenance model (eg. ReproSchema) (expected)
- Developing ReproLake: NIDM metadata representation for a number of datasets and derived data will be made available in "ReproLake" hosted by NIF (expected)

Completed Deliverables

2022

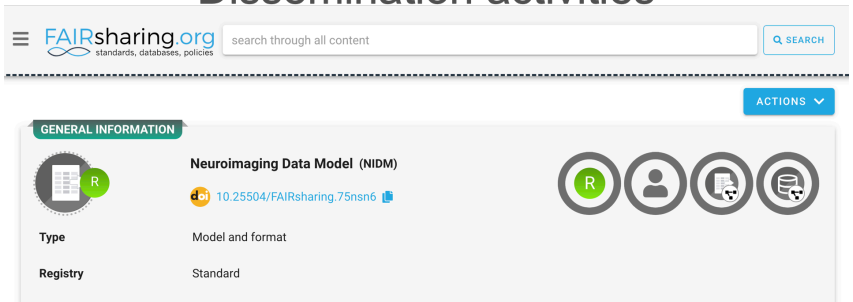
- NIDM specification

2019

- NIDM viewer

2018

Dissemination activities



FAIRsharing.org standards, databases, policies

search through all content

SEARCH

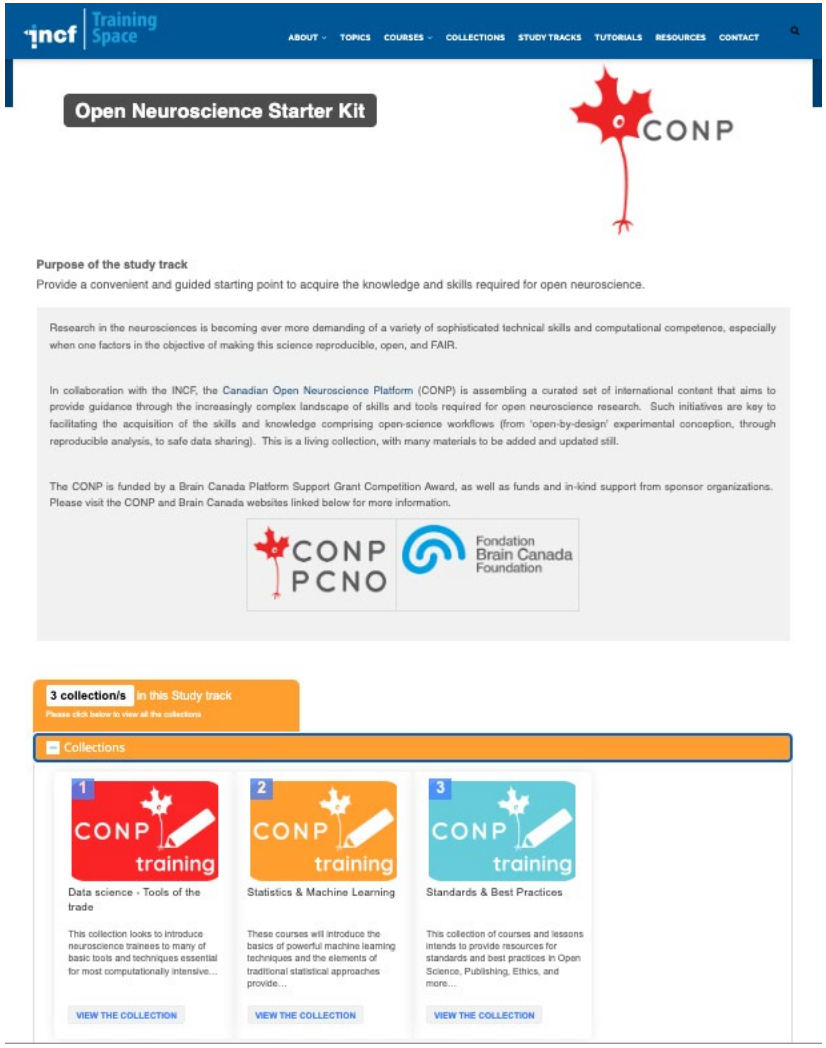
ACTIONS

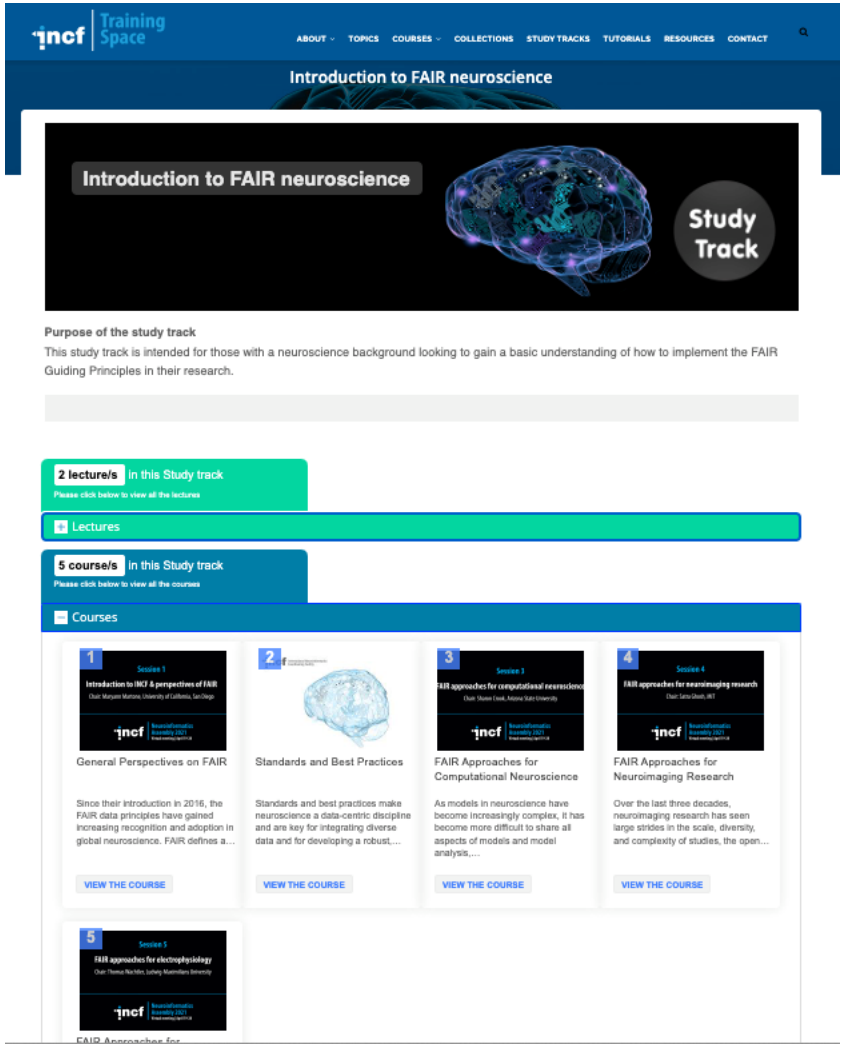
GENERAL INFORMATION

Neuroimaging Data Model (NIDM)

10.25504/FAIRsharing.75nsn6

Type	Model and format
Registry	Standard


incf Training Space
ABOUT
TOPICS
COURSES
COLLECTIONS
STUDY TRACKS
TUTORIALS
RESOURCES
CONTACT
Open Neuroscience Starter Kit
CONP
Purpose of the study track
Provide a convenient and guided starting point to acquire the knowledge and skills required for open neuroscience.
Research in the neurosciences is becoming ever more demanding of a variety of sophisticated technical skills and computational competence, especially when one factors in the objective of making this science reproducible, open, and FAIR.
In collaboration with the INCF, the Canadian Open Neuroscience Platform (CONP) is assembling a curated set of international content that aims to provide guidance through the increasingly complex landscape of skills and tools required for open neuroscience research. Such initiatives are key to facilitating the acquisition of the skills and knowledge comprising open-science workflows (from 'open-by-design' experimental conception, through reproducible analysis, to safe data sharing). This is a living collection, with many materials to be added and updated still.
The CONP is funded by a Brain Canada Platform Support Grant Competition Award, as well as funds and in-kind support from sponsor organizations. Please visit the CONP and Brain Canada websites linked below for more information.
CONP PCNO
Fondation Brain Canada Foundation
3 collection/s in this Study track
Please click below to view all the collections
Collections
1
CONP training
Data science - Tools of the trade
This collection looks to introduce neuroscience trainees to many of basic tools and techniques essential for most computationally intensive...
VIEW THE COLLECTION
2
CONP training
Statistics & Machine Learning
These courses will introduce the basics of powerful machine learning techniques and the elements of traditional statistical approaches provide...
VIEW THE COLLECTION
3
CONP training
Standards & Best Practices
This collection of courses and lessons intends to provide resources for standards and best practices in Open Science, Publishing, Ethics, and more...
VIEW THE COLLECTION


incf Training Space
ABOUT
TOPICS
COURSES
COLLECTIONS
STUDY TRACKS
TUTORIALS
RESOURCES
CONTACT
Introduction to FAIR neuroscience
Introduction to FAIR neuroscience
Study Track
Purpose of the study track
This study track is intended for those with a neuroscience background looking to gain a basic understanding of how to implement the FAIR Guiding Principles in their research.
2 lecture/s in this Study track
Please click below to view all the lectures
Lectures
5 course/s in this Study track
Please click below to view all the courses
Courses
1
Session 1
Introduction to INCF & perspectives of FAIR
General Perspectives on FAIR
Since their introduction in 2016, the FAIR data principles have gained increasing recognition and adoption in global neuroscience. FAIR defines a...
VIEW THE COURSE
2
Standards and Best Practices
Standards and best practices make neuroscience a data-centric discipline and are key for integrating diverse data and for developing a robust,...
VIEW THE COURSE
3
Session 3
FAIR approaches for computational neuroscience
FAIR Approaches for Computational Neuroscience
As models in neuroscience have become increasingly complex, it has become more difficult to share all aspects of models and model analysis,...
VIEW THE COURSE
4
Session 4
FAIR approaches for neuroimaging research
FAIR Approaches for Neuroimaging Research
Over the last three decades, neuroimaging research has seen large strides in the scale, diversity, and complexity of studies, the open...
VIEW THE COURSE
5
Session 5
FAIR approaches for electrophysiology

Thalamus

anatomical entity > Anatomical entity > Regional part of organ > Regional part of brain > Thalamus

Synonyms: Th, thalamus opticus, wider thalamus, thalamus, thalamencephalon, thalami

The thalamus is a paired subcortical brain structure joined at the midline and sitting very near the center of the brain. In the human, each half is roughly the size and shape of a walnut. There are two major components. First is the dorsal thalamus, which is comprised of roughly 15 nuclei with relay cells that project to the cerebral cortex. (By "cortex" in this account, we mean "neocortex.") Second is the ventral thalamus, the major portion of which is the thalamic reticular nucleus, which sits like a shield flush against the lateral surface of the dorsal thalamus; reticular cells are GABAergic and project into the dorsal thalamus to inhibit relay cells. The other cellular component of thalamus, in addition to relay and reticular cells, is interneurons, which are also GABAergic, sit amongst the relay cells, and inhibit them. Generally, the relay cell to interneuron ratio is between 3 and 4 to one. An exception is found the mouse and rat, in which interneurons are essentially missing from all thalamic nuclei except the lateral geniculate nucleus (Arcelli et al, 1997).

Most of the relay nuclei topographically innervate the middle layers of cortex, but a few along the midline and extended between other nuclei project rather diffusely to upper cortical layers, including layer 1; rather little is known of these latter, diffusely-projecting nuclei, and they are not further considered in this account (for further details, see Sherman and Guillery, 2006; Jones, 2006). The remaining thalamic relay nuclei each innervates one or a small number of cortical areas. Indeed, all information reaching cortex passes through thalamus, and thus thalamus sits in a strategic position for brain processing.

The major role of thalamus is to gate and otherwise modulate the flow of information to cortex. For example, visual information from the retina is not sent directly to visual cortex but instead is relayed through the lateral geniculate nucleus of the thalamus. In the macaque monkey, there are roughly 1x10^6 geniculate relay cells (Williams and Rakic, 1988), but in primary visual cortex there are roughly 1.6x10^8 neurons (O'Kusky and Colonnier, 1982), which is typical of thalamocortical relationships. Thus thalamus represents the final bottleneck of information flow before it gets into cortex. In other words, to modify information flow for processes of attention and other behavioral requirements, it is more efficient to do this at the level of thalamus before it reaches cortex. While there is still much to learn about the cell and circuit properties of thalamus in this role, what we do know supports this general view of thalamic function. For further details of thalamus, see Jones (2006) and Sherman and Guillery (2006).

Adapted from S. Murray Sherman (2006), Scholarpedia, 1(9):1583.

Literature

SEE MORE

13381 results found

Effects of intranasal oxytocin on distraction as emotion regulation strategy in patients with post-traumatic stress disorder.

Koch SBJ, van Zuiden M, Nawijn L, Frijling JL, Veltman DJ, Olff M

in *European neuropsychopharmacology : the journal of the European College of Neuropsychopharmacology* 29:266-277 · 2019 · Source: PubMed (PMID:30554861)

Post-traumatic stress disorder (PTSD) is characterized by difficulty down-regulating emotional responses towards trauma-reminders. The neuropeptide oxytocin may enhance treatment response in PTSD, by dampening excessive fear and improving fear regulation. However, oxytocin effects on (neural correlates of) cognitive emotion regulation abilities have never been investigated in PTSD patients. Therefore, we investigated behavioral and neural effects of intranasal oxytocin administration (40IU) on distraction as emotion regulation strategy in male and female...

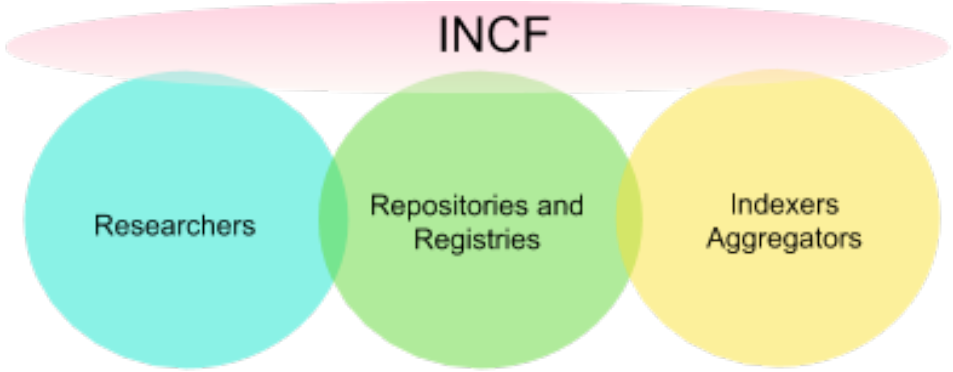
Bilateral projections to the thalamus from individual neurons in the inferior colliculus.

Mellott JG, Beebe NL, Schofield BR

DataSpace

MODELS	216 results
MORPHOLOGY	12373 results
ANATOMY	147 results
EXPRESSION	123671 results
PHYSIOLOGY	33 results
GENERAL	146 results

The FAIR partership



- Develop (meta)data standards

- Good data management
- Rich metadata
- Prepare to share
- Open formats
- Adopt/align to standards
- Submit to repository

- Persistent identifier
- Machine based access
- Clear License
- Support for open, domain specific standards
- Machine readable metadata
- Future friendly formats
- Persistent metadata
- Bidirectional links
- Data citation
- FAIR vocabularies

- Index
- Effective search
- Persistent metadata

Learn more at INCF.org