

David Brown (BNL)

Status of EG-GNDS

33rd WPEC Meeting 13-14 May 2021

Our goal: resolve open format proposals & declare GNDS-2.0

Topic	
Introduction of participants	
Welcome	D. Brown
GNDS-2.0 status update	D. Brown
IAEA Experience and deployment	J-Ch. Sublet
NNDC Library Modernization	A. Hayes, E. McCutchen
LLNL code report	B. Beck, C. Mattoon
ORNL code report	D. Wiarda
LANL code report	W. Haeck
CEA code report	C. Jouanne
JAEA code report	K. Tada
Break	
Review of bugfixes	D. Brown W. Haeck, D. Brown, B. Beck
New format proposals	W. Haeck, C. Mattoon,
Discussion on taskforces	All
Discussion on GNDS-3.0+	All
Close	

Original GNDS-2.0 Goals

- Satisfy SG-38 goals
 - `<map>` format
 - `<documentation>` format (handled in May)
 - Major TNSL rewrite (handled in May)
- Ensure “forwards compatibility” with ENDF-6
- Respond to user needs
 - TNSL Covariance

We've more than met these goals

Detailed requirements for a next generation nuclear data structure

OECD/NEA/WPEC SubGroup 38*

(Dated: June 28, 2016)

This document attempts to compile the requirements for the top-levels of a hierarchical arrangement of nuclear data such as found in the ENDF format. This set of requirements will be used to guide the development of a new data structure to replace the legacy ENDF format.

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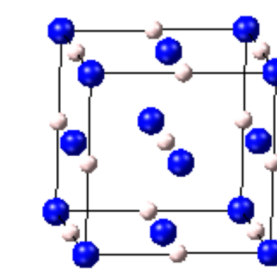
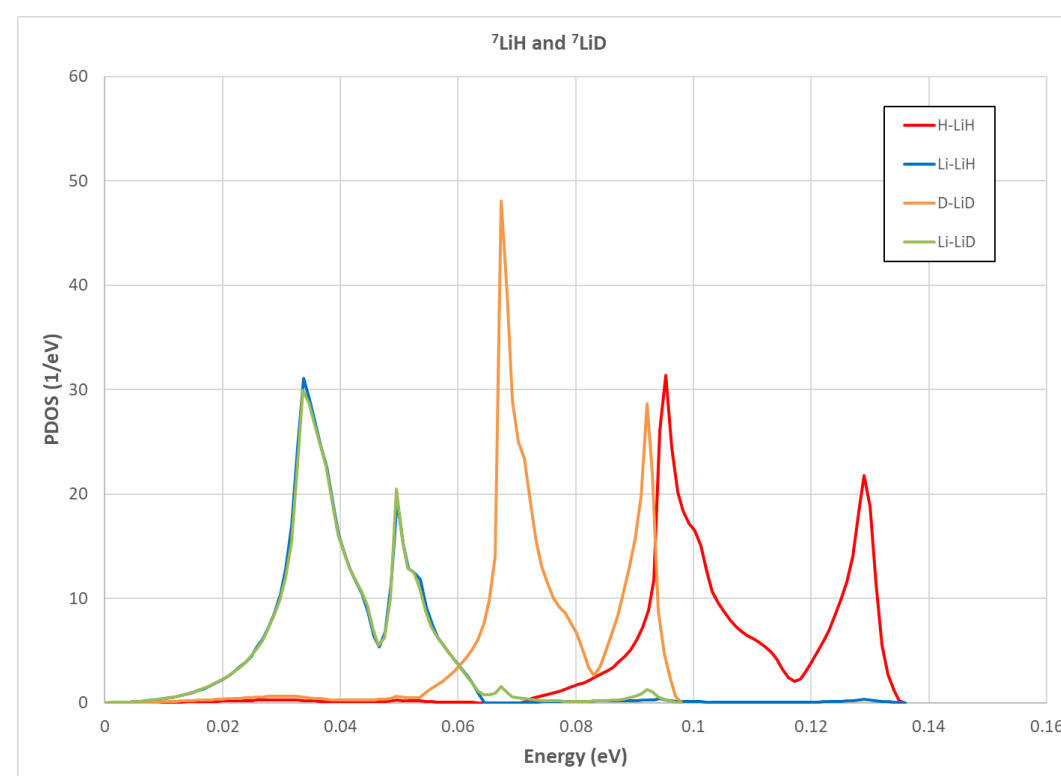
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* Edited by D.A. Brown (dbrown@bnl.gov)

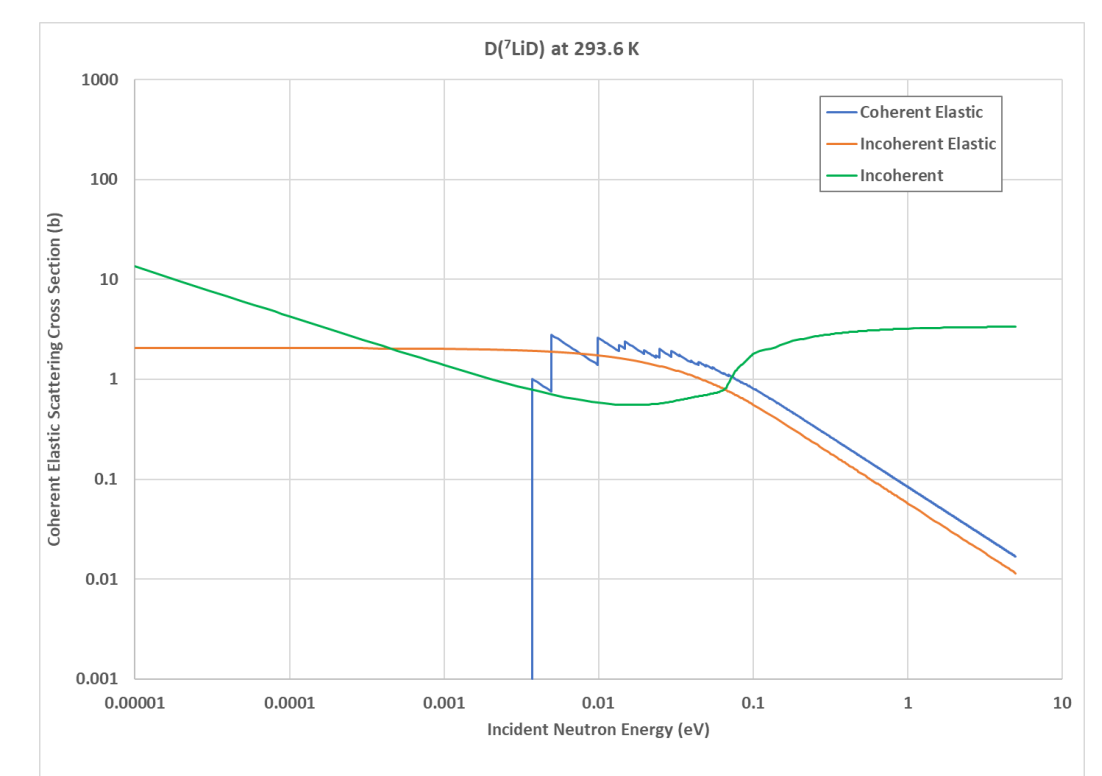
GND-2.0 Highlights

- **xmdir-like functionality:**
map file and checksum support
- **Documentation markup:**
supports all metadata needed for [DataCite.org](https://datacite.org) DOI assignment
- **Ground-up rewrite of TNSL**
 - In collaboration with SG-42,48
 - Mixed elastic scattering
 - TNSL covariance
- **Cleanups and bug fixes**
- **Full support for ENDF-6 data**
- **Met all SG-38 requirements**

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```



LiH unit cell
(4.0831 Å for LiH,
4.0684 Å for LiD)



What's left to do

At least as of now

- ~~Approve MR where have consensus:~~

- ~~Stylistic fixes~~
- ~~Documentation tweaks~~
- ~~Covariances~~
- ~~Map file~~

- ~~Review “bug fixes”:~~

- ~~RegEx fixes~~
- ~~Enumeration fixes~~
- ~~Atomic data~~

- **Discuss & hopefully resolve outstanding issues:**

- ~~All the resonance proposals: *Resonance Taskforce* *~~
- Dates, where should they be and what should they be called?
- ~~Interpolation: *Interpolation Taskforce* *~~

- **EOB:**

- Proposal/units
- grokGNDS/JSON fixes: *JSON fix Taskforce*

**Big question: are we ready for
GNDS-2.0?**

Yes

We'll be editing the specifications for a while

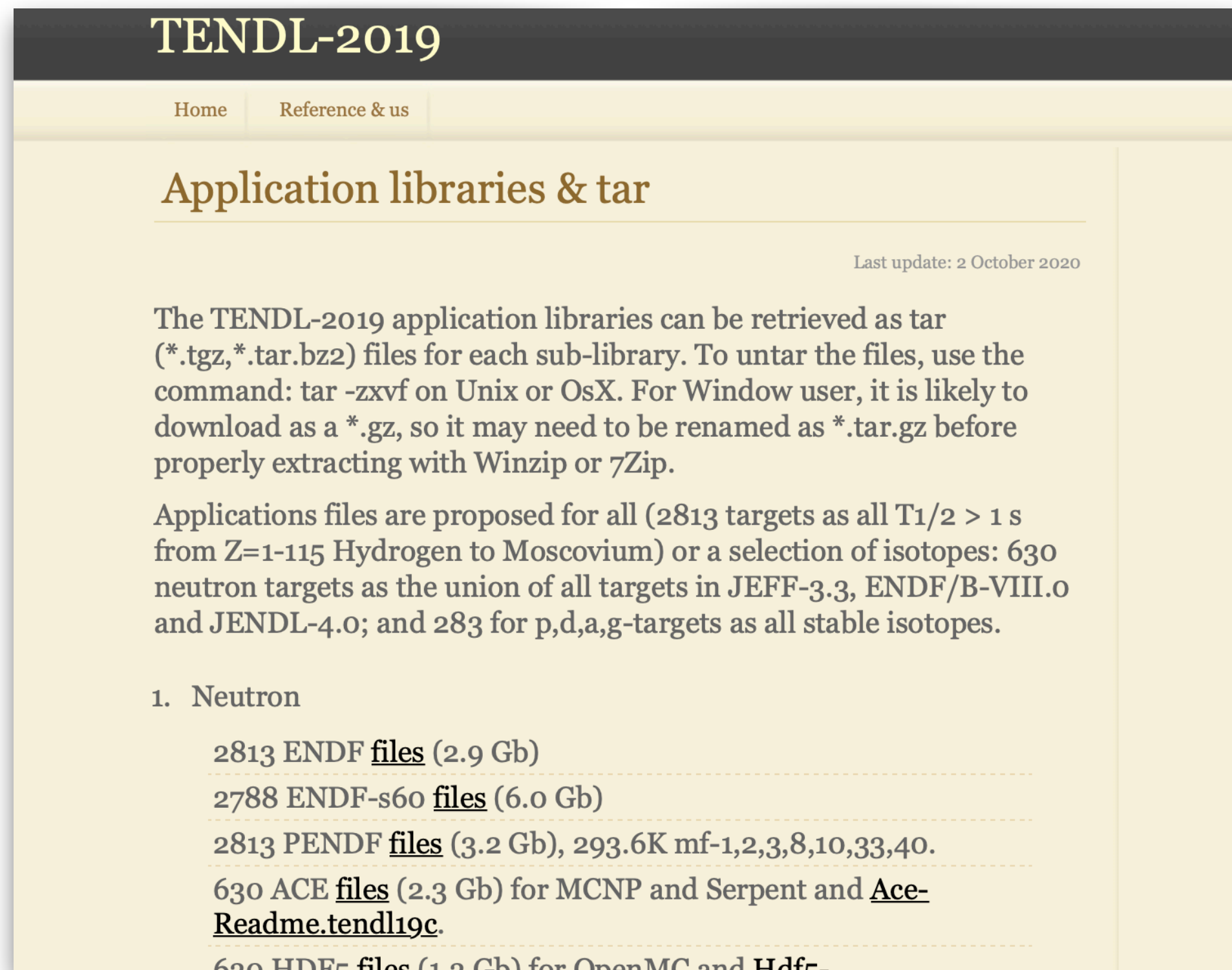
Required for final preparation of document

- Passive voice is required in all OECD publications
- British, not American spelling
- Discussion point -> Tracker conversion
- Many, many branches
- Many unclear formulations remain (e.g. interpolation)
- Update appendix with changelist

ENDF, JEFF and TENDL data project releasing data in GNDS format

https://tendl.web.psi.ch/tendl_2019/tar.html

<https://nds1.gitlab.io/nds/jeff4t0.html>



TENDL-2019

Home Reference & us

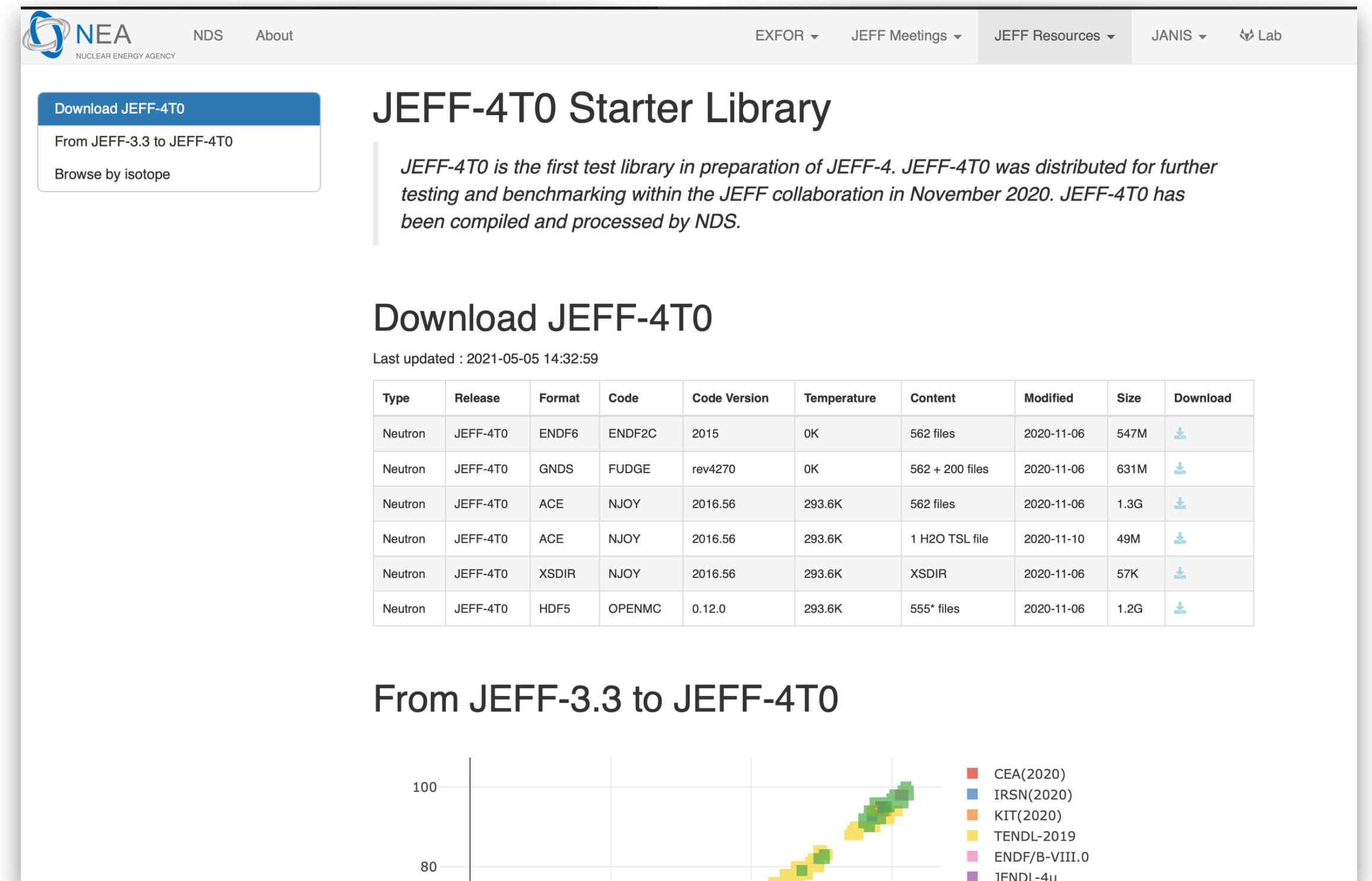
Application libraries & tar

Last update: 2 October 2020

The TENDL-2019 application libraries can be retrieved as tar (*.tgz, *.tar.bz2) files for each sub-library. To untar the files, use the command: tar -zxvf on Unix or OsX. For Window user, it is likely to download as *.gz, so it may need to be renamed as *.tar.gz before properly extracting with Winzip or 7Zip.

Applications files are proposed for all (2813 targets as all $T_{1/2} > 1$ s from Z=1-115 Hydrogen to Moscovium) or a selection of isotopes: 630 neutron targets as the union of all targets in JEFF-3.3, ENDF/B-VIII.0 and JENDL-4.0; and 283 for p,d,a,g-targets as all stable isotopes.

1. Neutron
 - 2813 ENDF files (2.9 Gb)
 - 2788 ENDF-s60 files (6.0 Gb)
 - 2813 PENDF files (3.2 Gb), 293.6K mf-1,2,3,8,10,33,40.
 - 630 ACE files (2.3 Gb) for MCNP and Serpent and [Ace-Readme.tendl19c](#).
 - 630 HDF5 files (1.2 Gb) for OpenMC and Hdf5-



NEA NUCLEAR ENERGY AGENCY

NDS About

EXFOR JEFF Meetings JEFF Resources JANIS Lab

JEFF-4T0 Starter Library

Download JEFF-4T0

From JEFF-3.3 to JEFF-4T0

Browse by isotope

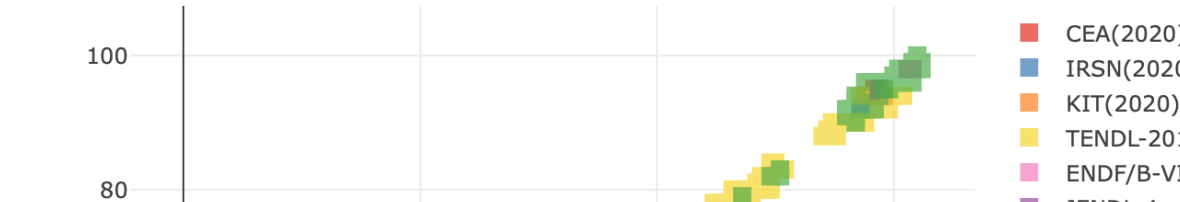
JEFF-4T0 is the first test library in preparation of JEFF-4. JEFF-4T0 was distributed for further testing and benchmarking within the JEFF collaboration in November 2020. JEFF-4T0 has been compiled and processed by NDS.

Download JEFF-4T0

Last updated : 2021-05-05 14:32:59

Type	Release	Format	Code	Code Version	Temperature	Content	Modified	Size	Download
Neutron	JEFF-4T0	ENDF6	ENDF2C	2015	0K	562 files	2020-11-06	547M	Download
Neutron	JEFF-4T0	GNDS	FUDGE	rev4270	0K	562 + 200 files	2020-11-06	631M	Download
Neutron	JEFF-4T0	ACE	NJOY	2016.56	293.6K	562 files	2020-11-06	1.3G	Download
Neutron	JEFF-4T0	ACE	NJOY	2016.56	293.6K	1 H2O TSL file	2020-11-10	49M	Download
Neutron	JEFF-4T0	XSDIR	NJOY	2016.56	293.6K	XSDIR	2020-11-06	57K	Download
Neutron	JEFF-4T0	HDF5	OPENMC	0.12.0	293.6K	555* files	2020-11-06	1.2G	Download

From JEFF-3.3 to JEFF-4T0



Legend:

- CEA(2020)
- IRSN(2020)
- KIT(2020)
- TENDL-2019
- ENDF/B-VIII.0
- JENDL-4u

The GNDS community

Who are we?

Questions From November 2020

- **Part of GNDS's justification is "inspiring younger scientists", so...**
 - How many developers are working on your project (approximately)?
 - Are they young, mid-career, or senior developers?
- **How "close" are you to full GNDS-1.9 (or whatever) implementation?**
- **What license is your code released under?**

GNDS Implementation Status Questionnaire:
<https://forms.gle/fPb21mFJbupK56wr7>

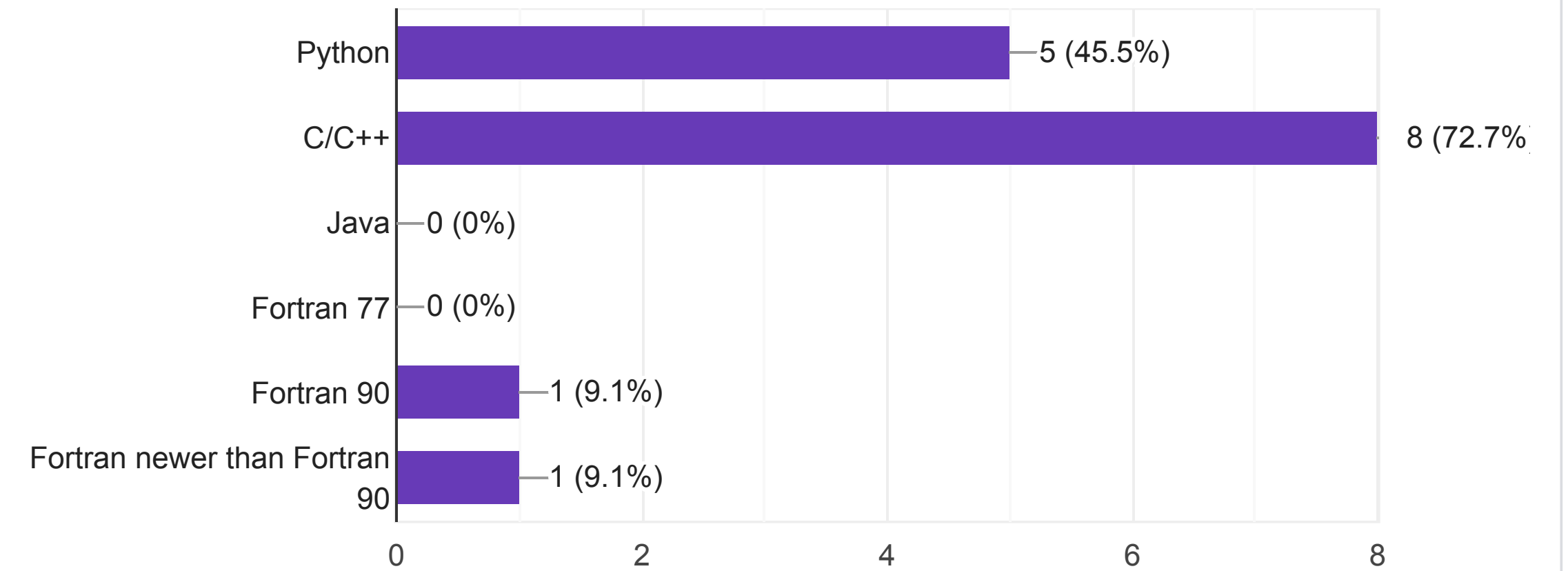
GNDS Taskforce Questionnaire:
<https://forms.gle/2QWXW8zYevKLjtJe7>

We did a little poll to find out more about how GNDS is being implemented

- AMPX
- SAMMY
- brownies (FUDGE extensions)
- FRENDY
- GIDI+
- OpenMC
- GALILEE
- TAGNDS (TALYS to GNDS)
- FUDGE
- NJOY

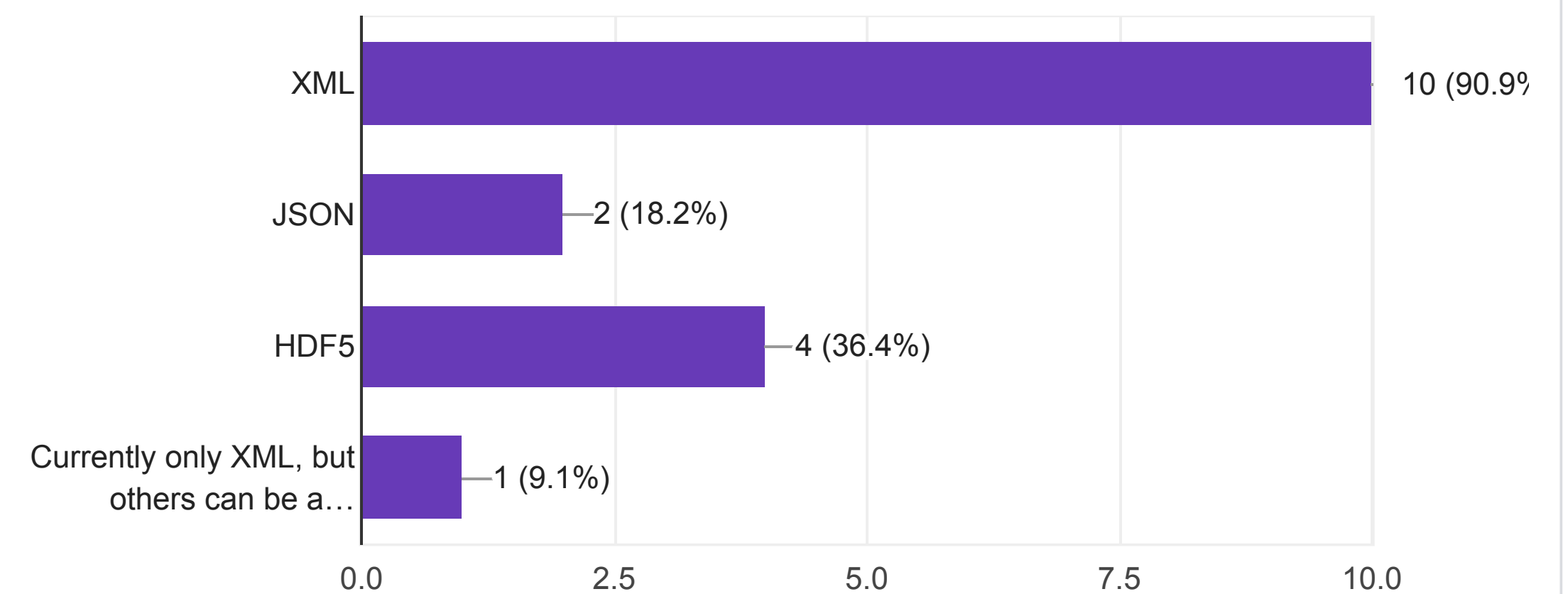
What languages is your application developed in?

11 responses

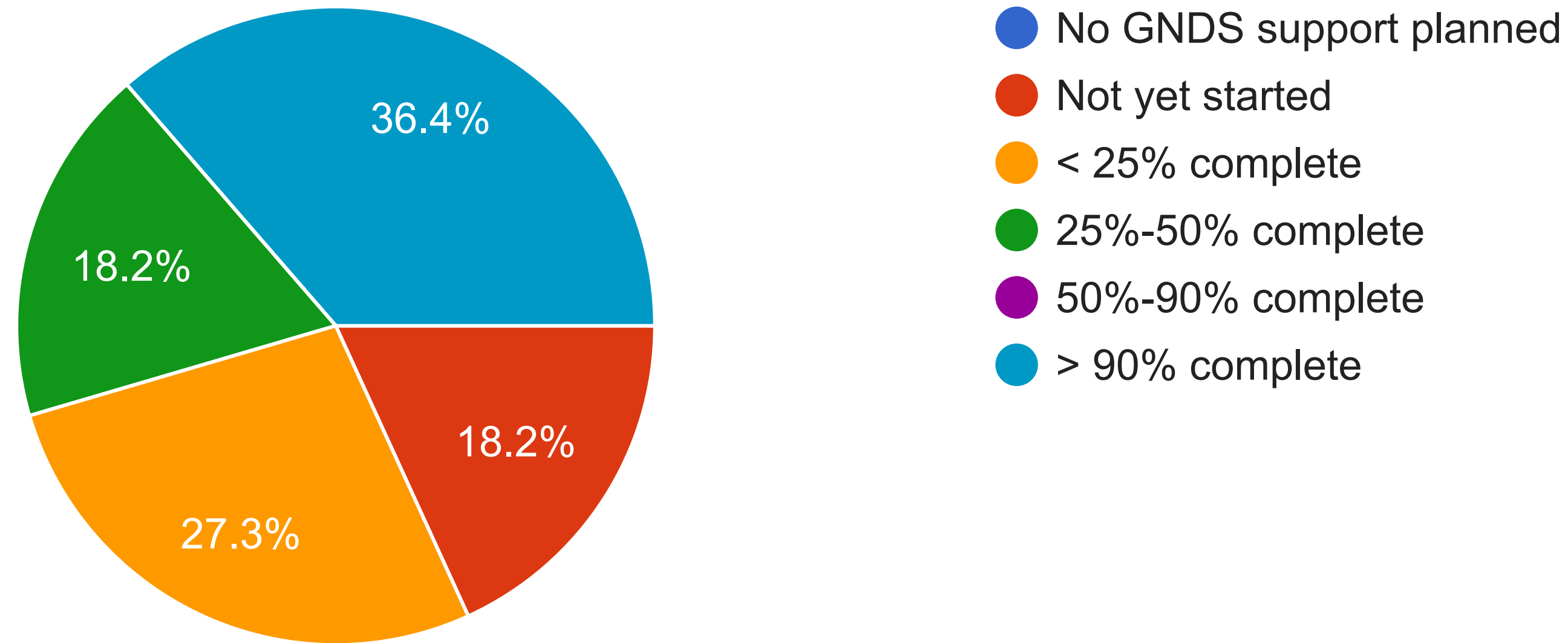


What formats will you use to interact with your GNDS data?

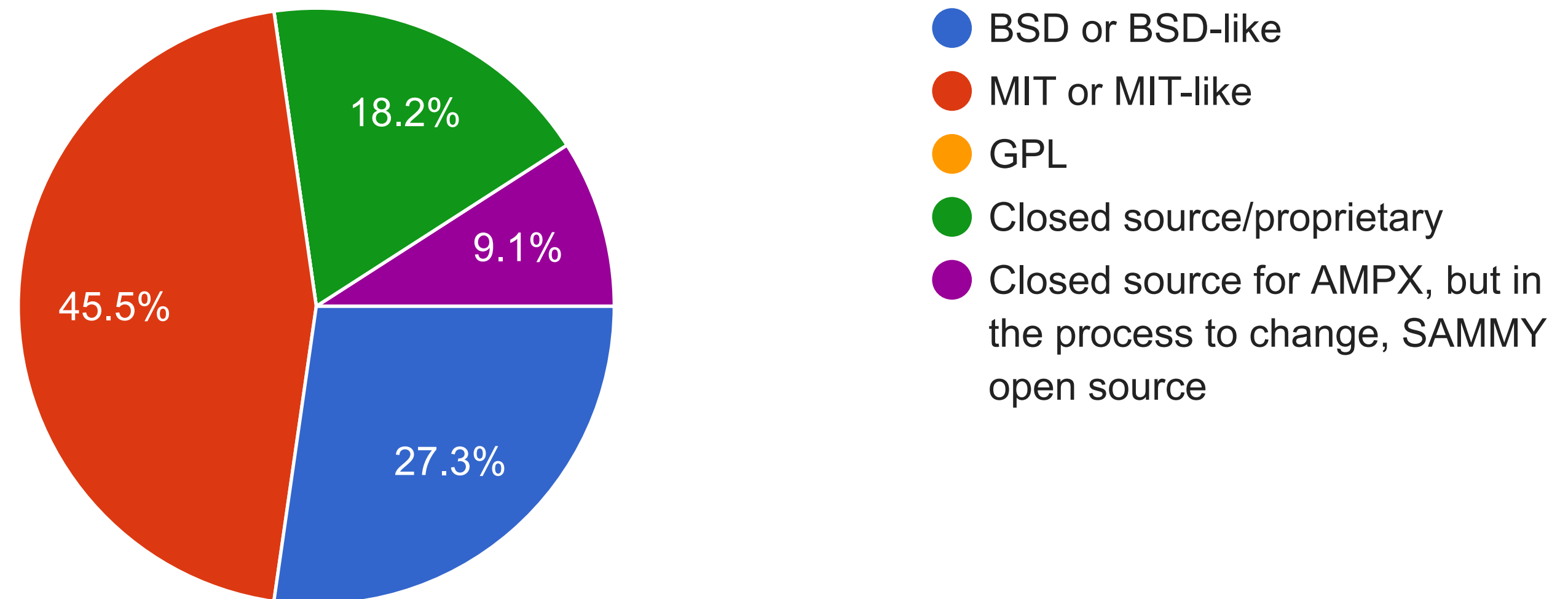
11 responses



Some projects are far along in their GNDS support



Most are open source! Only ~20% of applications are closed source



Processing Code Developer Demographics

