

Welcome

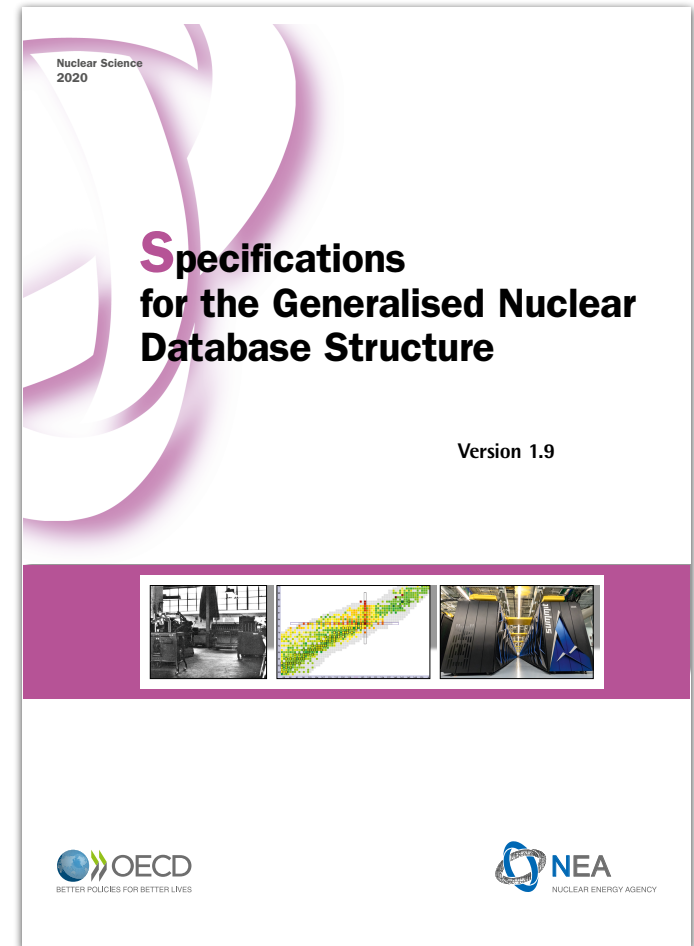
WebEx EG-GNDS Meeting 9-10 Nov. 2020

D.A. Brown (BNL) — 9 Nov. 2020

Yea us!

GNDS-1.9 specifications published Summer 2020

- Specifications: <https://oecd-nea.org/download/wpec/documents/7519-GNDS.pdf>
- XML Schema for GNDS-1.9: <https://www.oecd-nea.org/download/wpec/gnds/gnds.xsd>
- GNDS Webinar: <https://www.youtube.com/watch?v=h9Byrkxr8LE&feature=youtu.be>



Thank you webinar participants

<https://www.youtube.com/watch?v=h9Byrkxr8LE&feature=youtu.be>

The NEA hosted an expert roundtable webinar on GNDS on 8 July 2020. The discussion was moderated by William D. Magwood, IV, NEA Director-General and Dr David Brown (BNL), Chair of the NEA Expert Group on the Recommended Definition of a General Nuclear Database Structure (GNDS). The panellists included:

- Dr Osamu Iwamoto (JAEA)
- Dr Jean-Christophe Sublet (IAEA)
- Dr Dorothea Wiarda (ORNL)
- Dr Caleb Mattoon (LLNL)
- Dr Fausto Malvagi (CEA)

Nuclear data are the "secret sauce" that enable our understanding of nuclear systems

Nuclear reactions are too complex to model from first principals and must be tabulated for use in simulations

The size and complexity of reaction data has increased markedly in the last 20 years

Year	Energy weight distribution	Energy distribution	Angular distribution	Cross sections	Resonance	Interactions
1980	1	1	1	1	1	1
1985	2	2	2	2	2	2
1990	4	4	4	4	4	4
1995	8	8	8	8	8	8
2000	16	16	16	16	16	16
2005	32	32	32	32	32	32
2010	64	64	64	64	64	64
2015	128	128	128	128	128	128
2020	256	256	256	256	256	256

VERA simulation of Xe-135 production in WR2 reactor core, from "Predictive Power" <https://www.ornl.gov/news/predictive-power> (2017)

**Thank you
Michael!**

You have mad PR skills

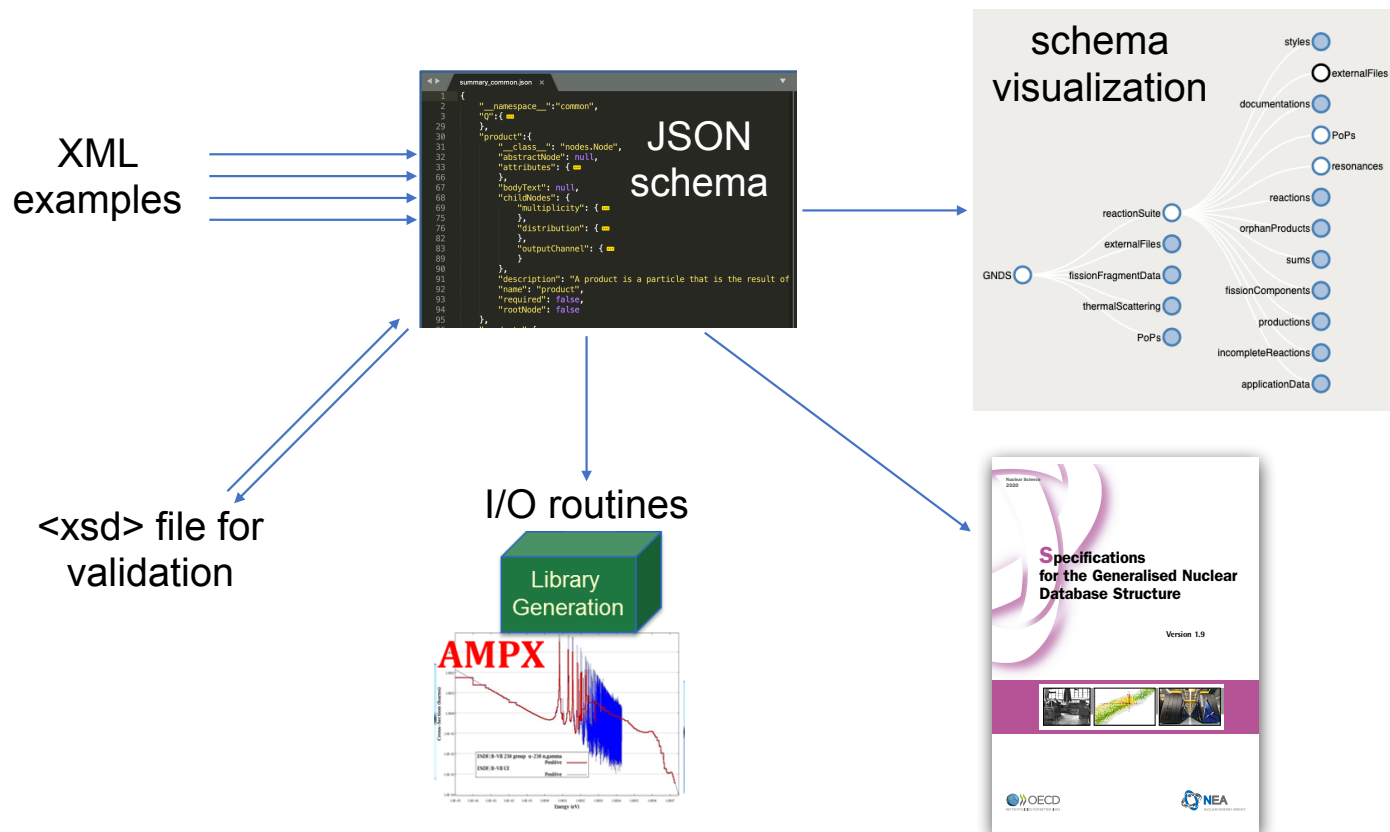
The format proposal process

Format proposal process modeled on ENDF6 manual process, updated for git

- **Required:**
 - Issue tracker containing need & rationale for format
 - Merge request implementing manual changes (this is complex, see next slide)
 - Review of merge request handled using formal process
- **Preferred:**
 - Example file
 - Reference implementation in processing code

June 27, 2019

To update the manual, you update the schema



The bug fix process

The bug fix process is the format proposal process with quick informal review

Are you OK with this process, or must it be more formal?

- **Required:**
 - Issue tracker containing need & rationale for bug fix
 - Merge request implementing manual changes
 - Review handled by chair or chair+helpers for more complex fixes



Milestones

Started associating Issues/MR with Milestones

Is this useful?

The screenshot shows the GitLab interface for a milestone named "GNDS-2.0". The breadcrumb trail is: Nuclear Science > Expert Group GNDS > Formats > Milestones > GNDS-2.0. The milestone is currently "Open" and spans from May 18, 2020, to Dec 31, 2020. It has a progress bar at 7% complete. The description is: "Complete the required changes for GNDS-2.0 enhancements and reach consensus within the EG-GNDS to publish the specifications." There are 14 issues, 15 merge requests, 1 participant, and 4 labels associated with this milestone. The issues are categorized into three groups: Unstarted Issues (7), Ongoing Issues (6), and Completed Issues (1). The sidebar on the left contains navigation icons for Home, Issues, Merge Requests, Participants, Labels, and Settings. The right sidebar shows details for the milestone, including start and due dates, issue counts (Open: 13, Closed: 1), and merge request counts (Open: 14, Closed: 1, Merged: 0).

NEA GitLab Projects Groups More Search or jump to...

Nuclear Science > Expert Group GNDS > Formats > Milestones > GNDS-2.0

Open Milestone May 18, 2020–Dec 31, 2020 Edit Promote Close milestone Delete

GNDS-2.0

Complete the required changes for GNDS-2.0 enhancements and reach consensus within the EG-GNDS to publish the specifications.

Issues 14 Merge Requests 15 Participants 1 Labels 4

Category	Count
Unstarted Issues (open and unassigned)	7
Ongoing Issues (open and assigned)	6
Completed Issues (closed)	1

- Too many link node/href variations #41 Discussion point
- Bug fixes for <documentation> node #40 Bug Fix
- Fix date and time formats #39 Bug Fix
- Dave ranting about multiple definitions of
- Remove LLNL-specific distribution forms #47 Format Proposal
- Fix issues with Kalbach-Mann specification #46 Bug Fix
- Improve discussion of interpolationQualifier #42 Bug Fix
- Confusing use of bodyText in array
- Poor wording for [optional] things #38 Bug Fix

7% complete

Start date May 18, 2020 Edit

Due date Dec 31, 2020 (2 months remaining) Edit

Issues 14 New issue

Open: 13 Closed: 1

Time tracking No estimate or time spent

Merge requests 15

Open: 14 Closed: 1 Merged: 0

Releases None

Reference: science/wpec/gnds...

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

Problem areas

Are there others?

- **Python code cleanup & metaformat work:**
 - xml choices,
 - default values
- **Uncertainty & covariance unification**
- **Everything should inherit from abstract nodes and we are probably missing several forms of abstract nodes**
- **<style>:**
 - we are missing many,
 - many interrelate, and
 - there is little to no guidance for proper use
- **Interpolation: we need more ENUMs and descriptions of what they mean**
- **The GNDS Style Guide:**
 - General compliance
 - Composition vs. inheritance
 - Lists: are empty lists allowed? List naming (`listOfBlah` vs. `blahList` vs. `blahs`)
 - Use ENUMs
 - Physics vs. engineering notation for eg. `crossSection` ; physics vs. math notation for eg. PDFs

Problem areas

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- **Interpolation: we need more ENUMs and
descriptions of what they mean**

I recommend setting up
task forces to deal with
each issue

Guide:

iance

s. inheritance

ty lists allowed? List naming
(vs. `blahList` vs. `blahs`)

- Physics vs. engineering notation for eg. `crossSection` ; physics vs. math notation for eg. PDFs

Editing the specifications

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)