Relationship with JENDL and Expectations for Possibilities of Opening up Nuclear Data

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Profile

1958 Bone at Hakata

1977-1986 Kyushu Univ.

1986-2005 Japan Atomic Energy Research Institute

2005-2023 Japan Atomic Energy Agency

- 1986-2008 Nuclear Data
- 2008-2019 Nuclear Science
- 2019-2023 D&D and Environmental Restoration in Fukushima

Main Products: JENDL, ALICE-F, ET, PHITS, ND-web

Main Assists: EXFOR, FRENDY, JUPITER

Research

Improvement of CASTHY

Exp. and Analyses of DDX → JENDL Fusion File

Exp. and Analyses of Activation X-sec.

Improvement of ALICE-F → JENDL High Energy File

High Energy Fission → JENDL High Energy File

Photonuclear Reaction → JENDL PD File

Direct Calc. of PKA from ND

→ JENDL PKA/KERMA File, ISO

JQMD, Photonuclear Reaction, PKA/KERMA

→ PHITS

Expansion of Fission Yield to Intermediate Energy

International Collaboration

Exchange Researcher: Korea, PRC, Vietnam, Thailand, Malesia, Indonesia, Bangladesh

Dispatch: BNL/NNDC＋CSEWG (1.5 years)

IAEA: INDC, CRP（RIPL, Photoreaction, FPY）, etc.

OECD/NEA: NSC、WPEC

ISTC: Chair of SAC, Collaborator (PNPI、KRI、IPPE)

CEA: JAEA-CEA Collaborator (Nucl. Sci., Fukushima)

Int. Conf.: ND1988, ND2001, ICRS1999, PHYISOR2014

Domestic Collaboration

Sigma Committee: JAEA+AESJ, Chair (2019-2022)
AESJ/ND Subcommittee: Chair (2015-2018)
AESJ: Editorial Board, Public Information, Subcommittee Administration Committee, etc.
Secretariat of SND: 1993-2004, 2006-2007
Collaborative Work: D&D of NPP (JAPC), RIKEN, ANNRI (Tokyo Tech., Hokkaido U.),
Universities: Hokkaido, Tohoku, Ibaraki, Tsukuba, Tokyo, Tokyo Tech. Waseda, Tokyo City, Fukui, Kyoto (KUR), Osaka, Konan, Kyushu

Target Nuclides to Nuclear Transmutation?

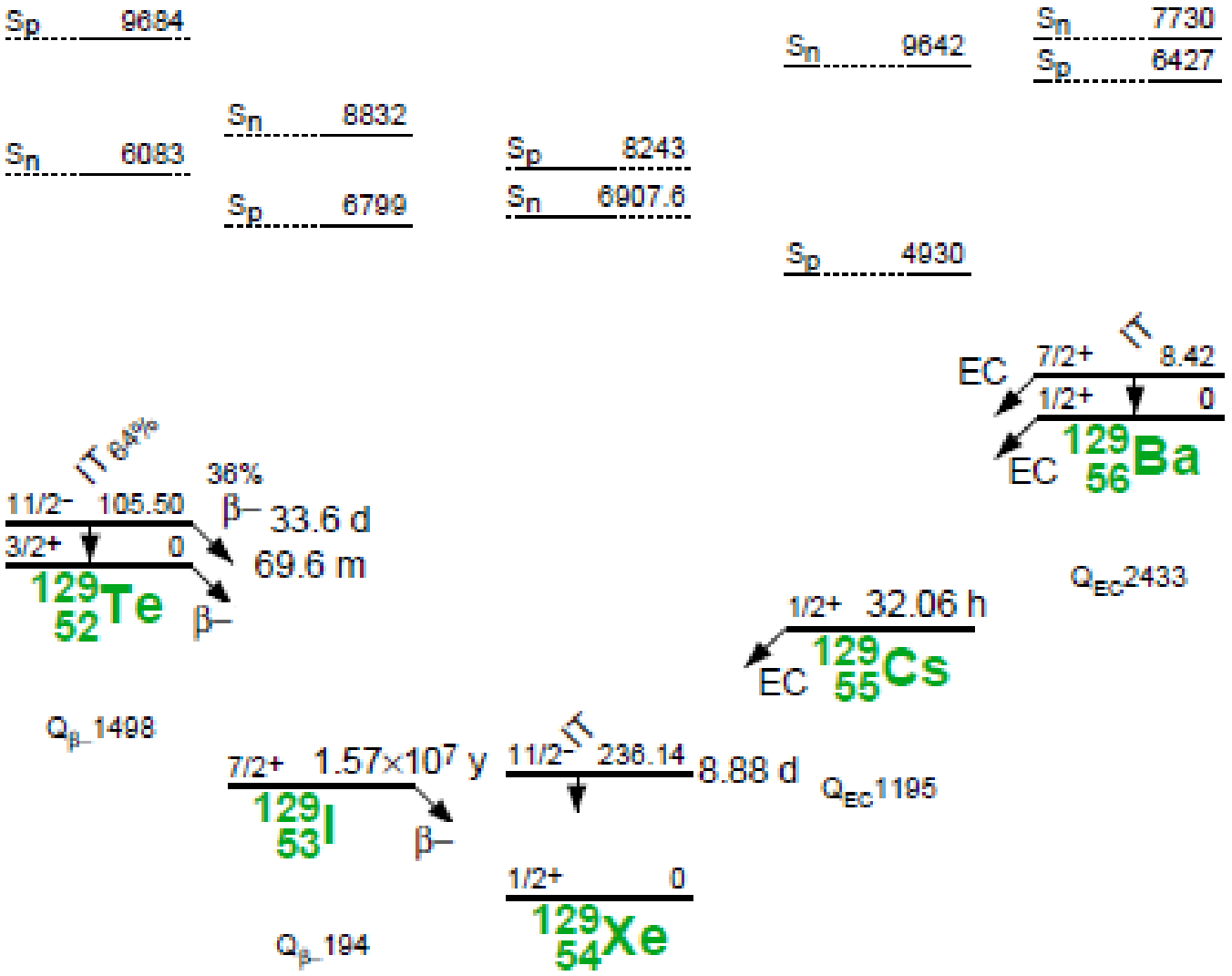
- MA Nuclides: Np-237 (2.14My), Am-241 (432y),
  Am-243 (7,370y), Cm-244 (18.1y)
- FP Nuclides: Se-79 (0.295My), Zr-93 (1.53My), Tc-99 (0.21My),
  Pd-107 (6.5My), Sn-126 (0.1My), I-129 (16My),
  Cs-135 (2.3My)

Other nuclides:

Sr-90 (28y), Cs-137(30y)
U-235 (0.7By), U-238 (4.5By)
Pu-239 (24ky), Pu-240 (6.5ky)

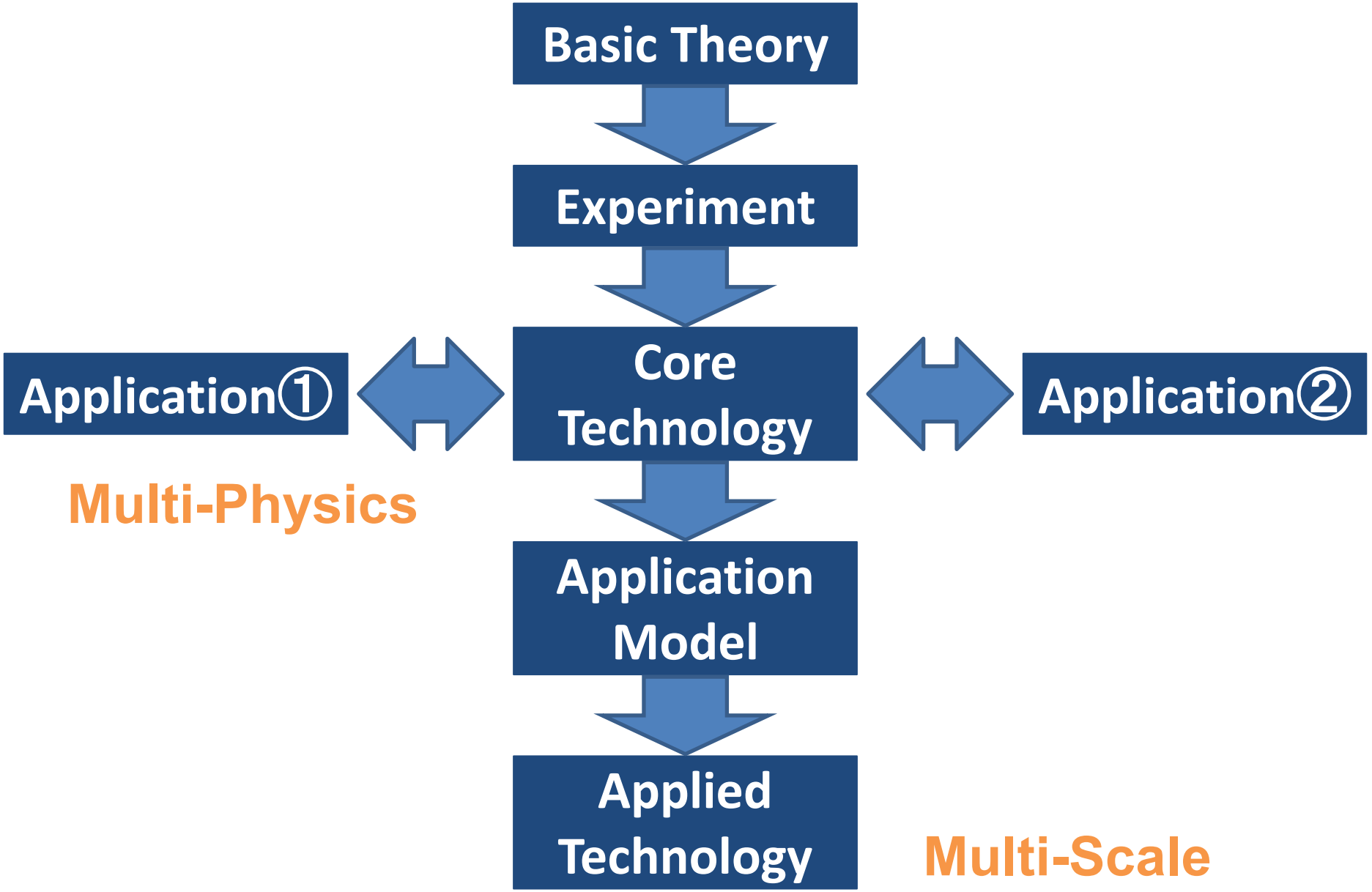
There are no FP nuclides with a half-life of 100-10,000 years!
The FPs with 10 to 100ky half-lives are only Nb-94 (20ky) and La-137 (6ky).

Nuclear Decay

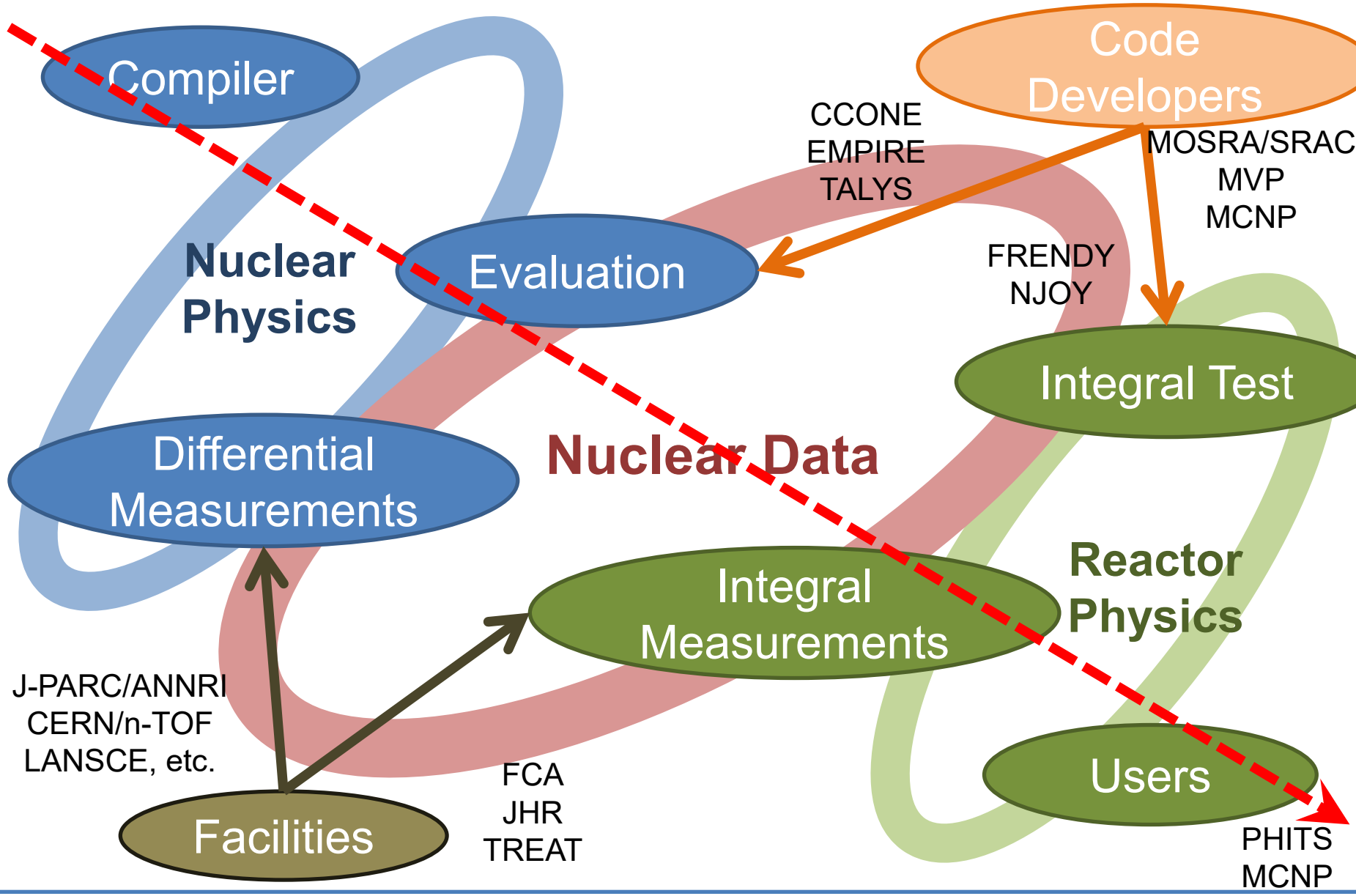


出典：(Editor) R.B. Firestone, V.S. Shirley, (CD-ROM) S.Y. Frank Chu, (Assistant Editors) C.M. Baglin and J. Zipkin, Table of Isotopes (CD ROM Edition, Version 1.0, March, 1996)

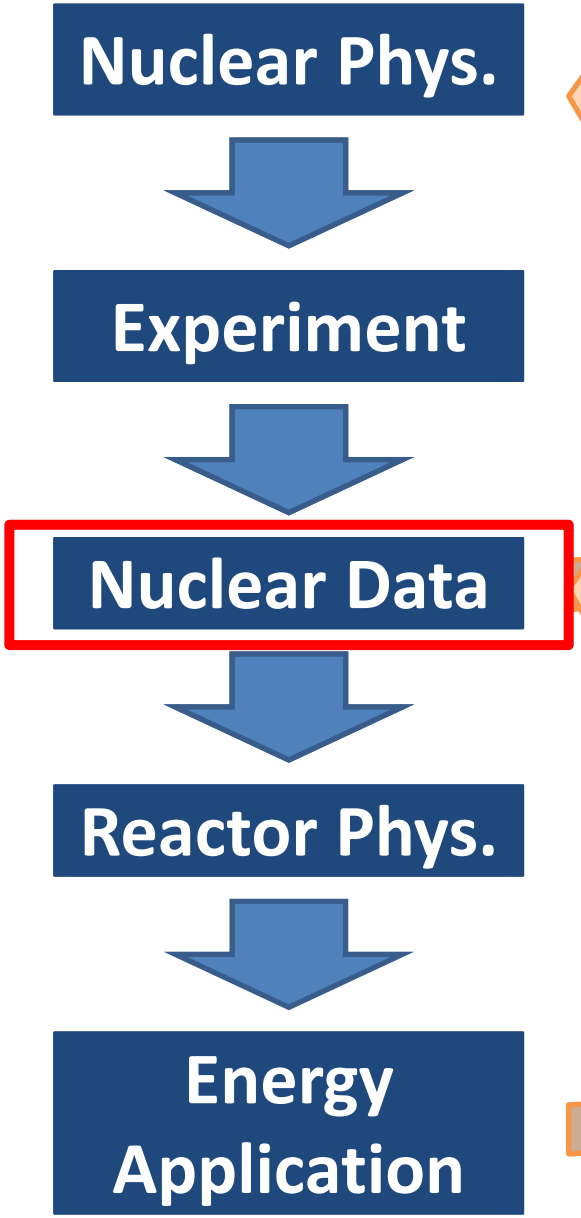
Nuclear Data and Reactor Physics



Nuclear Data and Reactor Physics



Future Appearance of Nuclear Data



- Feedback
  - Is it OK to use the current library format?
  - What form should it take, if change?
  - What is the feedback from applied fields?

- Expansion of applicable fields
- Reduce response time
  → Timely delivery

- Feedback

Future Appearance of Nuclear Data

CIELO Approach?

Solving Resource Shortage → Which is the base file?

GND Approach?

Human Readable → Do you want to see cov. Data?

Can files like ENDF, ENSDF, EXFOR, etc. be unified?

TALYS Approach?

Storage as many as data

→ Infinite combination of Projectile X Target

Keeping model parameters

→ Systematic, Reproducibility: Good for AI?

→ Not always good?!

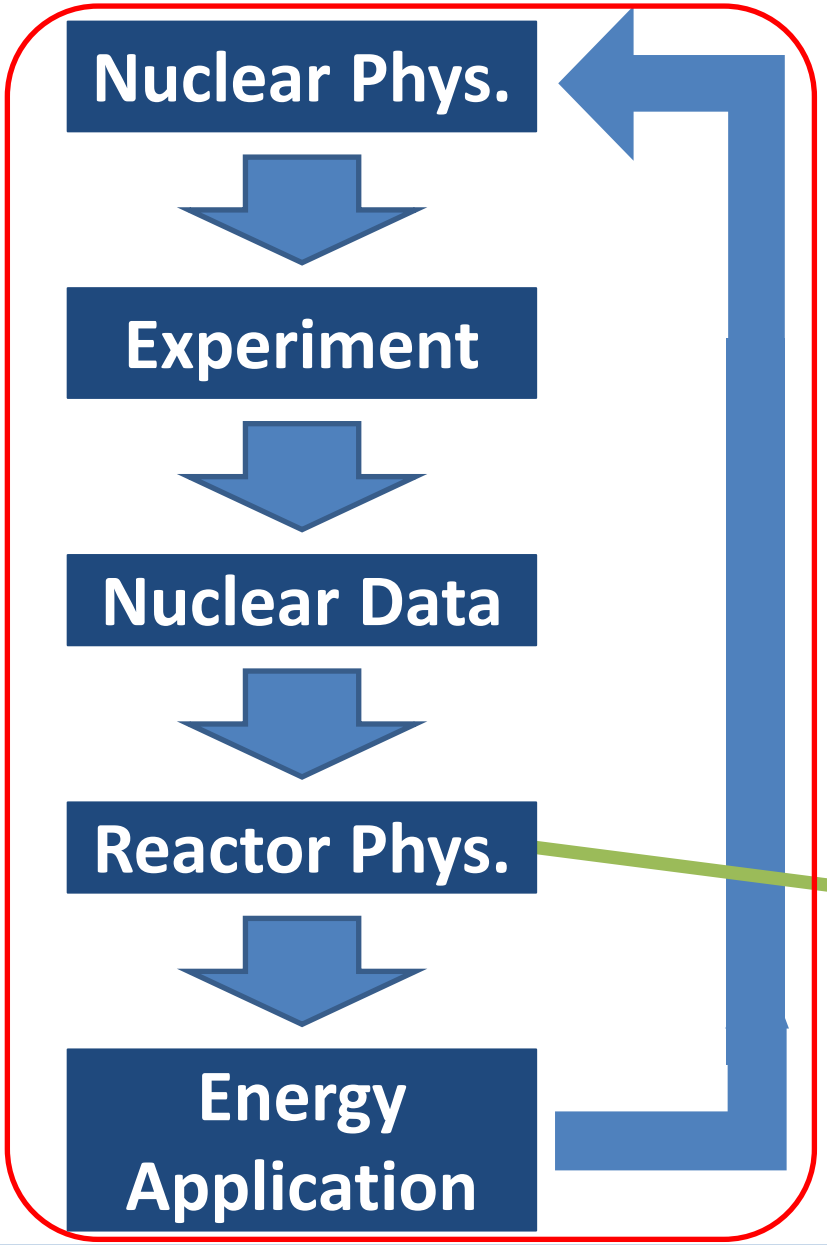
Advanced Nuclear Data File?

Realistic? Good Cost Performance? Effective?

→ Seeds see needs.

Everything, Anywhere, Anytime (EAA)

Future Appearance of Nuclear Data



- High Precision Theory
  → Reduce Parameter
- Comprehensive Maintenance of Parameters

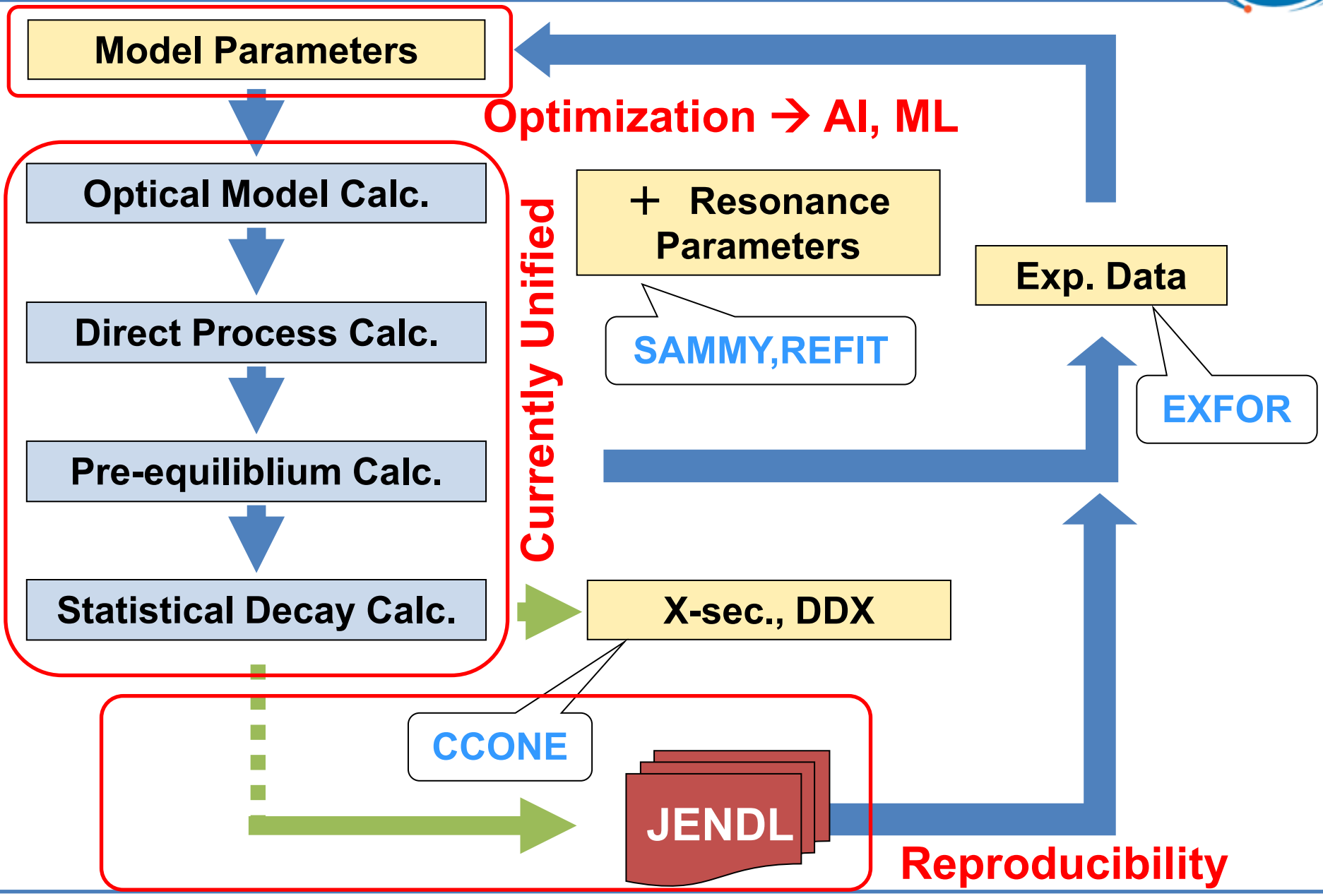
- Increasing Utilization Rate of Calculated Results
- Reproducibility of ND File
- Expansion of applicable fields
- Reduce response time
  → Timely delivery

Other Applications

- Diversification of Feedback Loop

Tool Development

Future Appearance of Nuclear Data



CCOne-driven Nuclear Data Library (CCONDL)

- ND File Production by CCONE like TENDL
- CCONE＋Best Parameters (＋ High Precision Theory)
- 3-step Plan
  - **1st-step**：Reproducing JENDL-5 by CCONE
  - **2nd-step**：Searching better model parameters
  - **3rd-step**： Producing a system that can instantly calculate any combination of incident particles and target nuclides by any forms including ENDF format.

Condl Meaning

Meaning: Talent, Care Taker, More Attractive

Gender: Boy / Girl Name

Origin: Unknown

Syllables: 1

Name Categories: Unknown

Thank you for your attention!

is your good choice.

Peace of nuclear data with you!

Have you heard **BCP?**

Please consider **NDCP!**

Thank you for your attention!