U.S. DEPARTMENT OF ENERGY | Office of NUCLEAR ENERGY

Clean. Reliable. Nuclear.

Nuclear Energy Advanced Modeling & Simulation

CINR Annual Planning Webinar - August 2020

Nuclear Energy University Programs (NEUP)
Consolidated Innovative Nuclear Research (CINR)
Office of Nuclear Energy
U.S. Department of Energy

ICSBEP (*International Criticality Safety Benchmark Evaluation Project*) & IRPhEP (*International Reactor Physics Experiment Evaluation Project*)

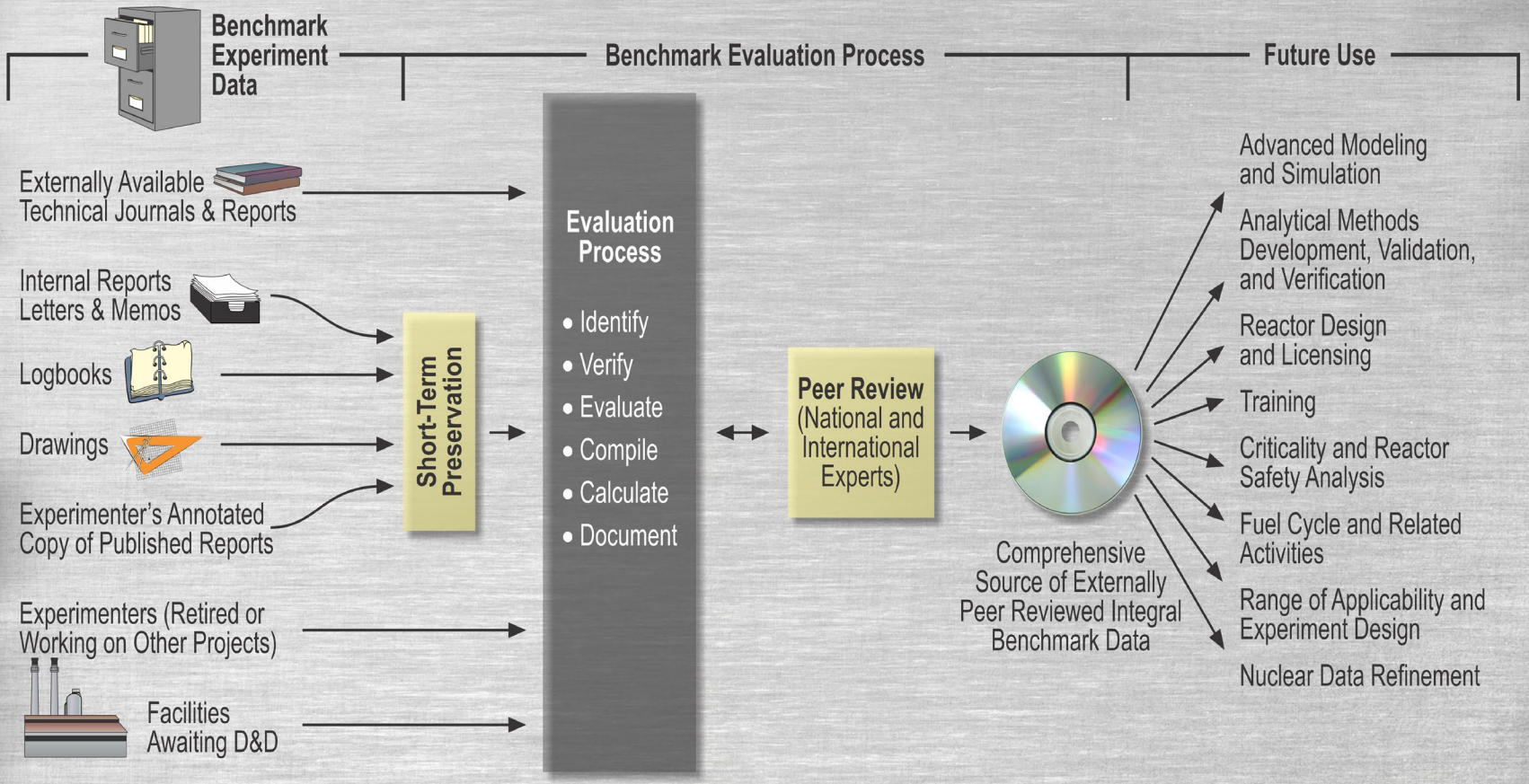
- **These are OECD NEA international activities involving expert groups focused on updating and publishing Handbooks that support:**
  - characterization of reactor core and methods
  - neutronics components of multiphysics measurements
  - validation of nuclear data; including cross sections; and
  - reactor and criticality safety, including modeling, simulation, and training
- **These benchmark development efforts:**
  - Compile benchmark-experiment data into standardized format
    - *Can be readily used to validate computational techniques and cross section data*
  - Evaluate the data
    - *Quantify overall uncertainties through various types of sensitivity analyses*
  - Eliminate a large part of the tedious and redundant research and processing of experiment data that other researchers/analysts/designers would have to perform
  - Streamline necessary step of validating computer codes and nuclear data with experimental data
  - Preserve valuable experimental data
    - *Experiments represent significant investment of time, infrastructure, expertise, and cost that might not have received adequate documentation*
    - *The opportunity to repeat most of these measurements has long since passed*

INTERNATIONAL BENCHMARK PROGRAMS

NEA NUCLEAR ENERGY AGENCY

OECD BETTER POLICIES FOR BETTER LIVES

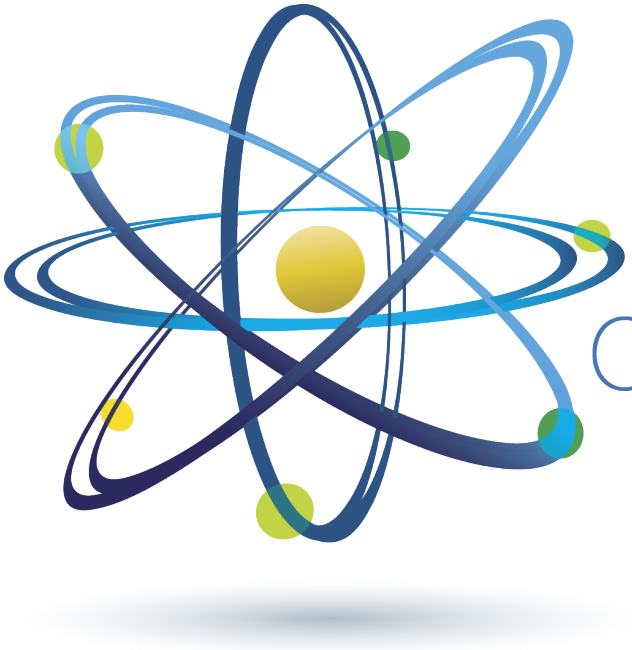
INL Idaho National Laboratory



MS-NE-1 – Integral Benchmark Evaluations
Work-scope Description

- MS-NE-1 – Integral Benchmark Evaluations for inclusion in the International Reactor Physics Experiment Evaluation Project (IRPhEP) and International Criticality Safety Benchmark Evaluation Project (ICSBEP) Handbooks (TPOC – John Bess, john.bess@inl.gov)
  - Benchmark evaluation proposals are sought which would use existing experimental data, and would **support NE programs** (e.g., TREAT, VTR, LWRS, FCT, ART, and NE's Advanced Modeling and Simulation Program)
  - Measurements of interest include critical, subcritical, buckling, spectral characteristics, reactivity effects, reactivity coefficients, kinetics, reaction-rate and power distributions, and other miscellaneous types of neutron and gamma transport measurements
  - A growing area of interest includes evaluation of transient benchmark experiment data for light water reactor systems, such as PWRs and BWRs
  - To **avoid duplication**, please take into account ongoing work in these recent projects:
  - All evaluations **must be completed according to the IRPhEP and ICSBEP requirements, including peer review**
  - Multiphysics benchmarks are allowed
  - **Clearly identify (and support with documentation) the importance of your proposal to industrial needs**

Questions?



Clean. **Reliable. Nuclear.**