Needs

- Input
  - New nuclear data (reactions, decay, yields, dpa)
  - Covariance data
  - Data processing
- Simulation
  - Micro (fuel kernel) to macro (whole core) physics modeling (deterministic/stochastic/hybrid?)
  - N-gamma coupled capabilities
  - Coupled multiphysics methods (neutronics/T-H/structural)
- Verification and validation
  - Benchmark recapture and evaluation
  - New benchmarks
  - Sensitivity/uncertainty methods (recapture and standardized)
- Enablers and context
  - Understanding/communicating the impact of our work, including economics
  - Licensing expectations and issues
  - Develop technical plan (international roadmap)

Khalil: “Reactor physics is not viewed as a feasibility issue for Gen IV”

So why bother?

- Save bucks (or yen, francs, euros, etc.)
  - Experiments
  - Design conservatism
  - Plant performance
- Reduce uncertainties (improve accuracy)
  - Capture all uncertainties
  - Improve fidelity of simulation
- We need to make and sell our case

Collaboration Opportunities

- ENIGMA
- ANL/KAERI I-NERI
- IRPhE
- IAEA CRP - sodium cooled FR
- ISTC - Pb and molten salt
- NEA/NSC via existing and new working parties
  - Working party on GenIV reactor physics
    - Integral experiment review
    - New benchmarks
    - Sensitivity/uncert methods/data/application ***
- GIF – common project on RP technical plan