Versatile Fast Neutron Source

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Timeline

- Big-Idea (Fast Test Reactor)
  - Developed at Annual NUC Meeting

- NUC Engagement with INL
  - Met with INL leadership to engage NUC in Fast Test Reactor Project (January)

- University Engagement with VFNS project
  - Washington DC (Late Spring)
  - Engage 10 Universities

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	Planning Phase	R&D Phase	Design/ Acquisition Phase
Activities	Identify activities for the R&D Phase, requires an understanding of Acquisition Phase	Identify activities for the Acquisition Phase	Execute Acquisition Phase activities
Cost	Identify cost to perform R&D ($5M)	Identify cost to perform Acquisition Phase (~$350M)	Manage Acquisition Phase costs (~$3B)
Schedule	Identify schedule to perform R&D phase (FY17)	Identify schedule to perform Acquisition Phase (FY18 – FY20)	Manage Acquisition Phase Schedule (FY21 – FY28)
Risk	Identify risks and mitigations for R&D phase	Identify risks and mitigations for Acquisition Phase	Manage Acquisition Phase Risks
Material	Identify material required for plant, including acquisition planning and testing	Acquire and test components to minimize acquisition risk	Procure material as required

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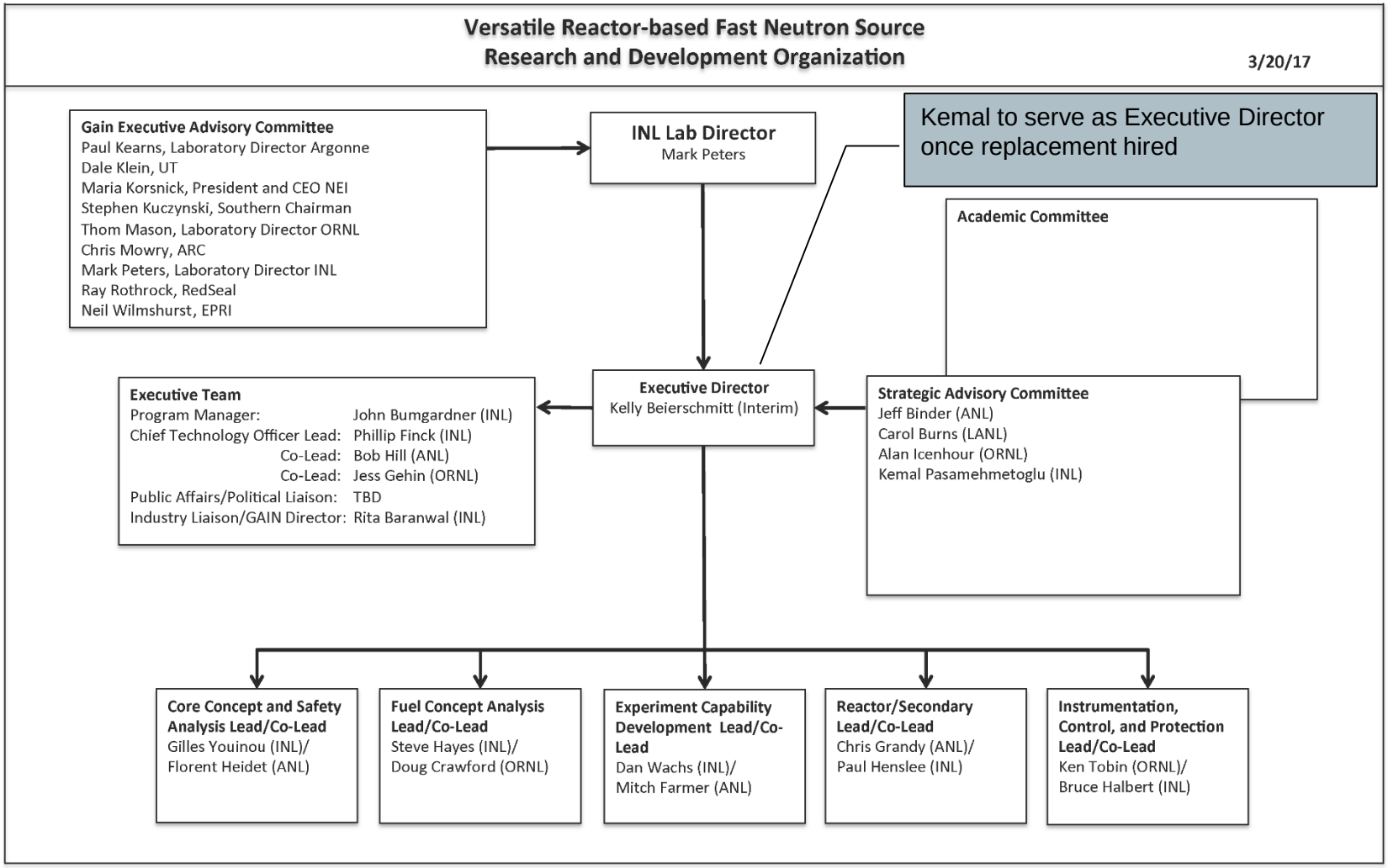
Organizational Chart



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Topical Areas

- Core Concept & Safety Analysis
  - Gilles Youinous (INL) & Florent Heidet (ANL)
  - Charged with:
    - Developing core concept which may be physically executed at completion of R&D Phase and satisfies requirements
    - Select Requirements
      - Fast flux ≥ $4x10^{15}$ n/cm^2-sec
      - Core Height 60, 80, 100 cm

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Topical Areas

- Fuel Concept Analysis
  - Steve Hayes (INL) & Doug Crawford (ORNL)
  - Charged with:
    - Developing reference start-up fuel concept that meets core concept requirements and may be physically executed at end of R&D phase
    - Developing fabrication and used fuel disposition schemes, with identified alternatives
    - Identification of an advanced driver fuel concept to be introduced into the reactor service after start-up, offering potential improvements in fabrication cost, fuel performance, and/or dispositions.

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Topical Areas

- Experimental Capability Development
  - Dan Wachs (INL) & Mitch Farmer (ANL)
  - Charged with:
    - Developing a concept for all experimental infrastructure, methods, and execution plan leading up to, during and after in-pile of beam-line testing within the test reactor

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Topical Areas

- Reactor / Secondary
  - Chris Grandy (ANL) & Paul Henslee (INL)
  - Charged with
    - Reviewing the experiences and lessons learned including, but not limited to design, cost, schedule, construction, regulatory framework of the most recent test reactors in the U.S. and overseas.

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Topical Areas

- Instrumentation, Control, and Protection
  - Ken Tobin (ORNL) & Bruce Halbert (INL)
  - Charged with:
    - Identifying and developing plan for in-pile operations and testing instrumentation controls and protection for the test reactors

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Academic Role

- 10 Universities Contributing and acknowledged as partners for the VFNS:
  - NUCs & Additional 5
    - U-Tenn, U-Wisc, U-Mich, U-Texas, TAMU

- 6 members on Academic Advisory Council
  - Wes Hines (UTK) [Chair]
  - Yousry Azmy (NCSU) [Co-Chair]
  - Wade Marcum (OrSU) [Co-Chair]
  - Gary Was (U-Mich)
  - Yassin Hassan (TAMU)
  - Paul Wilson (U-Wisc)

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Funding

- Planning Phase ($5M) – FY 17
  - Develop R&D Plan to be executed over following three fiscal years

- R&D Phase ($350M) – FY 18 through FY 20
  - Execute R&D Phase
    - Present Budget for FY 18
      - President $10 M
      - House $35 M
      - Senate $0 M

- Design / Acquisition Phase ($3B) – FY 21 through FY 28

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Funding

- IRP-RC-1 –
  - Up to 3 years and $3.5M
  - This is a place holder for a potential IRP work scope related to developing a university-led consortia to function as a “tiger team” to cultivate the establishment of a cadre qualified and trained in fast reactor technology.

Thank You