Plant Modernization Research Objectives and Goals

Significantly reduce risk of modernization through:

1. Developing technology modernization solutions that address aging and obsolescence challenges
2. Delivering a sustainable business model that ensures continued safe, reliable operation at a cost competitive level
Recent Major Accomplishments in FY-21

Recent Major Accomplishments

1. Development of a new and transformative business process ecosystem, Integrated Operations for Nuclear (ION), targeting a cost reduction for plant operating and maintenance costs by over 30%.

2. Completed the conceptual design for a digital safety related Reactor Protection System to support a decision on a license amendment request for an analog replacement.

3. Developed the Route-Operable Unmanned Navigation of Drones (ROUNDS), a technology that enables commercial drones to autonomously collect critical plant operational data.
Industry Engagement – Who, What Project, and Roles

Engage – Collaborate with stakeholders to identify critical challenges faced by the nuclear industry and develop targeted research plans to address those challenges.

Develop – Create high impact technology modernization solutions that support optimized long-term operational performance (Low TRL).

Demonstrate – Demonstrate effectiveness of research solutions by conducting collaborative research with LWR stakeholders. (Medium TRL)

Deploy – Enable broad deployment and use of technical capabilities by stakeholders (High TRL)

(TERMS/ION/ARMOR/I&C Modernization/CR Modernization)
High-level Summary of Impactful Multi-year Outcomes

Plant Modernization Research Timelines and Key Deliverables:

- Validation of machine learning based diagnostic and prognostic models informing risk and economic assessment of a predictive maintenance strategy for a target plant system complete (2022)
- Demonstration results of automation of operator rounds, monitoring and diagnostics, transformer health monitoring, fire watch, and optimizing thermal performance of the plant will be complete and made available to industry (2023)
- Design Phase Results of Pilot a Safety-Related Digital I&C Upgrade (2023)
- ION developed process validated and tools available for utilities, suppliers and stakeholders implementation (2023)