Richard P. Feynman Center for Innovation

Technology Snapshot

Technology Licensing Opportunity

Los Alamos NATIONAL LABORATORY

ReactorCast

A strategic nuclear workforce intelligence platform that de-risks deployment

Value Proposition

Workforce shortages and uncertainties have derailed nuclear projects worldwide—causing delays, cost overruns and lost investor confidence. The specialized talent nuclear needs to succeed requires years to develop. The ReactorCast platform answers human capital questions, coupled to strategic decisions and financial considerations, before the issues become crises.

Technical Specifications

- Custom developed software for system dynamics modeling
- Modular, extensible design for evolving analysis needs
- Local deployment (secure, non-cloud infrastructure framework)
- Interfaces with external data sources and planning tools
- Outputs include: regional, statewide or national mapping, workforce opportunities and competency projections, gap analyses and scenario-based deployment comparisons

Contact Information

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Overview

ReactorCast is a custom system dynamics platform that models and ties strategic decisions and investment considerations with workforce requirements across the entire lifecycle of nuclear programs—from initial planning through decades of operation to eventual decommissioning. The platform provides real-time analytics and visual dashboards that track workforce flows from identified populations to education and training programs through employment across utilities, developers, contractors, regulators and support organizations.

ReactorCast also models the impact of policy, regulatory and investment decisions on workforce development trajectories. Unlike individual HR management systems, ReactorCast operates at the strategic level—modeling the workforce potential to answer questions that matter most to executives, investors and leaders: *Can this organization or region supply the talent we need? What does workforce availability mean for our site selection? How do different technology choices impact long-term staffing costs?* These aren't HR questions—they're business strategy questions.

The underlying modeling methodology— developed at Los Alamos and licensed to the IAEA as the basis for their national nuclear workforce planning workshops and tools—has been applied internationally across numerous nuclear programs.

Challenges and Problems Solved

- In many deployment scenarios, lifecycle workforce costs can equal or exceed nuclear plant capital costs.
- ReactorCast ensures the human capital dimension receives the strategic attention it deserves, before workforce gaps derail timelines and budgets.

Technology Description

For those realizing new nuclear deployments, ReactorCast models workforce requirements across different reactor technologies and sites.

- Compare the human capital implications of a large light-water reactor versus multiple small modular reactors.
- Assess whether different reactor technologies affect your ability to recruit and retain talent in specific regions.
- Understand how workforce costs—which can exceed capital costs over a plant's lifetime—vary based on technology and location decisions made today.

ReactorCast separates serious strategic planning from optimistic assumptions, giving stakeholders the intelligence to make informed decisions about workforce-related project risk.

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LA-UR-26-23908

NNSA National Nuclear Security Administration

Advantages

Reactor Technology Differentiation: Different reactor technologies may potentially require fundamentally different workforce profiles. ReactorCast can model the varying implications and makes the trade-offs and considerations visible. This platform helps identify strategies for closing any gaps before commitments are made. With access to Los Alamos's unique technical domain and expertise, the technical nuances between these designs can be quantized, incorporated and analyzed.

Strategic Site Selection and Regional Assessment: Site selection for nuclear projects traditionally focuses on technical factors including: cooling water availability, seismic stability, grid connection and emergency planning zones. ReactorCast adds the workforce dimension that determines whether a technically perfect site can support successful project execution, and if it can't, models strategic approaches for how to mitigate this risk.

Location decisions made for workforce reasons create competitive advantages. A site chosen because it has workforce capacity that competitors overlooked becomes a strategic asset.

Cost control, schedule discipline, regulatory strategy, stakeholder engagement and workforce planning are equally essential for nuclear's success.

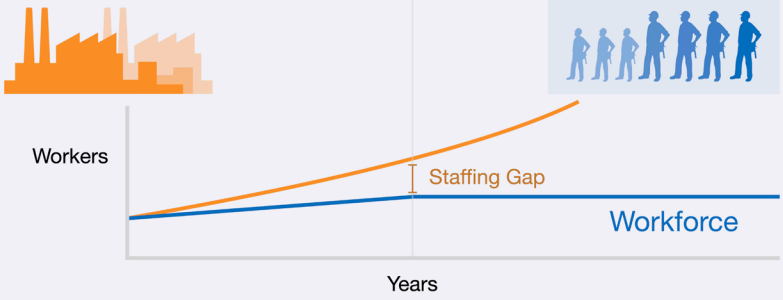
Strategic Modeling Capability Points / Market Applications

- Real-time analytics and visual dashboards derived from custom developed stock-and-flow workforce dynamics software
- Multi-reactor technology comparison
- Lifecycle cost modeling (planning through decommissioning)
- Scenario planning and risk assessment tools
- Customizable for regional, statewide or multi-site contexts

THE PROBLEM

Up to **2X** nuclear capacity by 2050

Workforce growth is flat



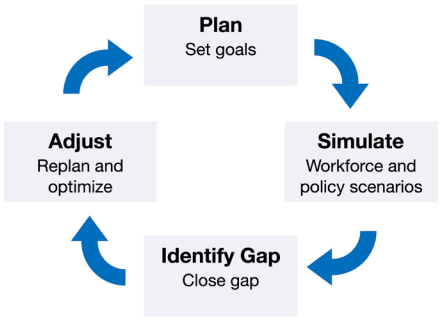
Projected demand will soon outpace workforce supply.

THE SOLUTION

ReactorCast

LANL-developed software platform for strategic workforce modeling, based on internationally validated methodology

- Predict workforce gaps across the reactor lifecycle
- Simulate technology, policy, and site decisions before deployment



WHY IT MATTERS

Prevent project delays.
Reduce cost overruns.
Ensure reactors are staffed.

LA-UR-26-23908