



**Savannah River  
National Laboratory™**

OPERATED BY SAVANNAH RIVER NUCLEAR SOLUTIONS

We put science to work.™

# Savannah River National Laboratory Underpinning Critical National Missions

**Dr. Terry Michalske**

Laboratory Director

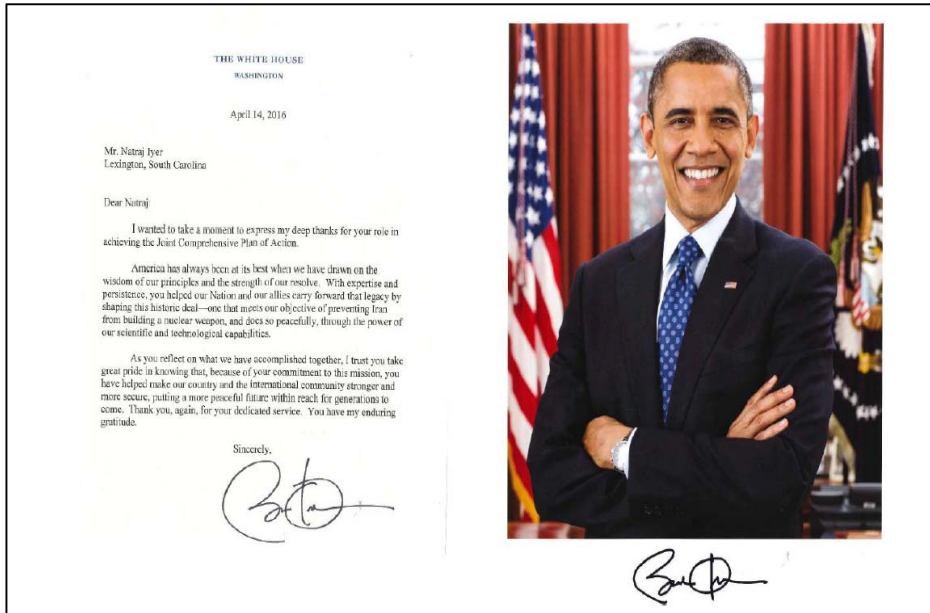
*South Carolina Nuclear Advisory Council  
January 12, 2017*

# We Put Science to Work™

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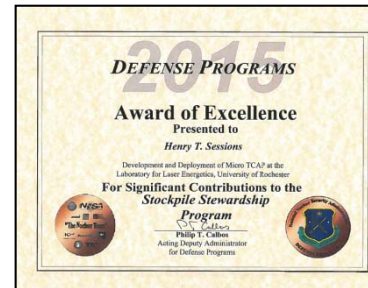


# Critical National Security Accomplishments



## Commendations

- President of the United States
- Secretary of Energy
- NNSA Administrator

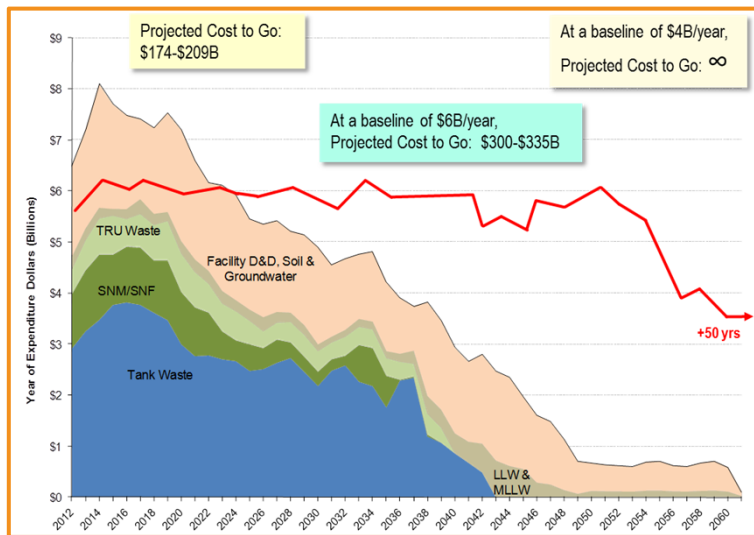


# Meeting Nuclear Waste Cleanup Obligation

“Without new chemical and manufacturing technologies, it is not clear that the cleanup can be satisfactorily completed at reasonable cost...”

Secretary of Energy Advisory Board Report  
Taskforce on Technology Development for Environmental Management  
December 2014

## Nuclear Waste To-Go Cost and Schedule



\$335B + 100 years



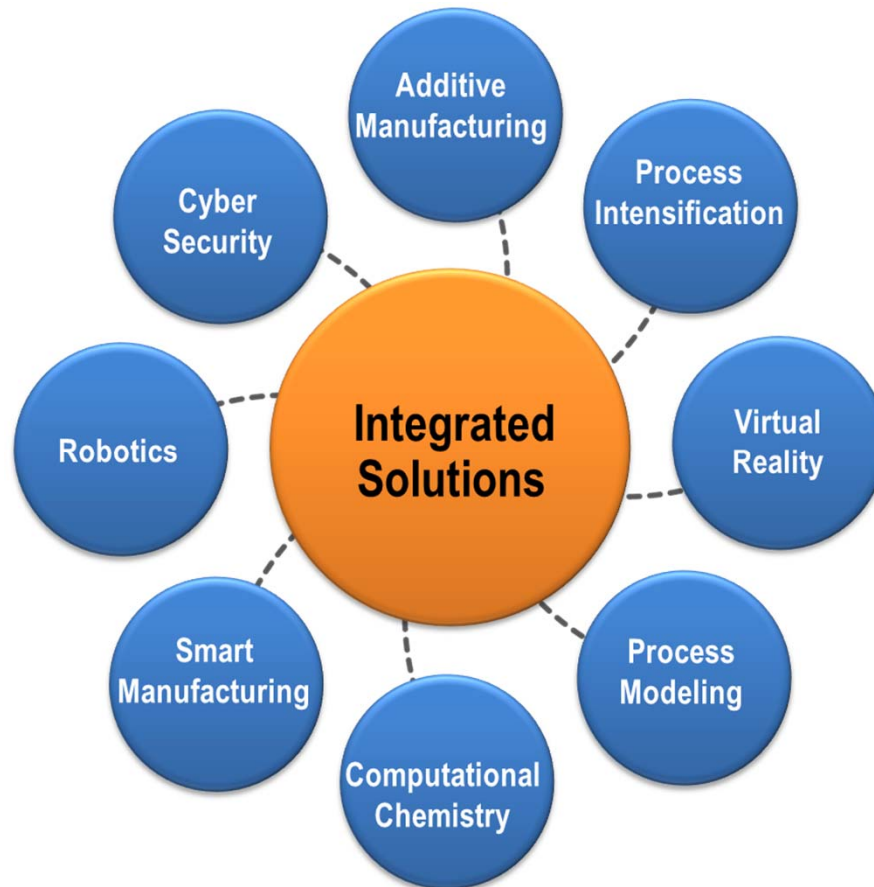
- Reduce capital and operating expenses
- Shorten the life cycle
- Enhance intrinsic worker safety
- Reduce environmental risk
- Meet regulatory requirements



# Industrial Manufacturing Undergoing Transformation

Applied research, development and deployment of

## Technologies



- Reduce Risk
- Reduce Cost
- Improve Safety





# Decommissioning Contaminated Facilities Across the Complex

Visionary technologies for

## Dose Reduction

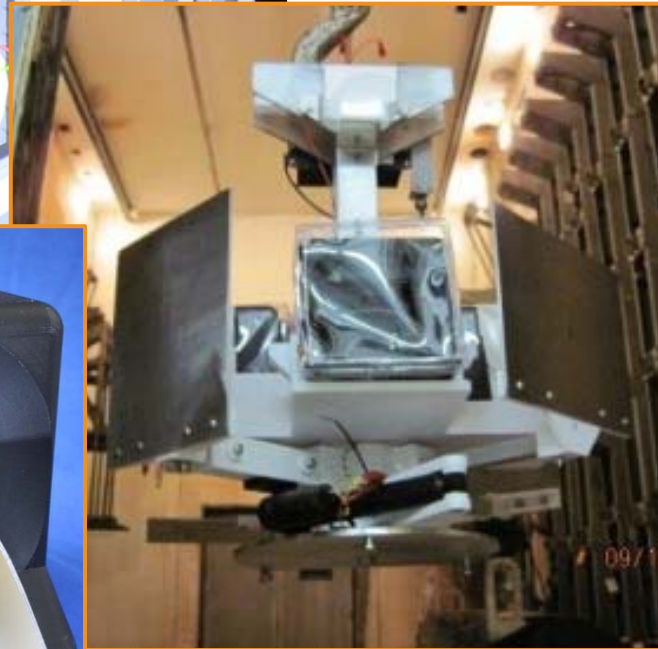
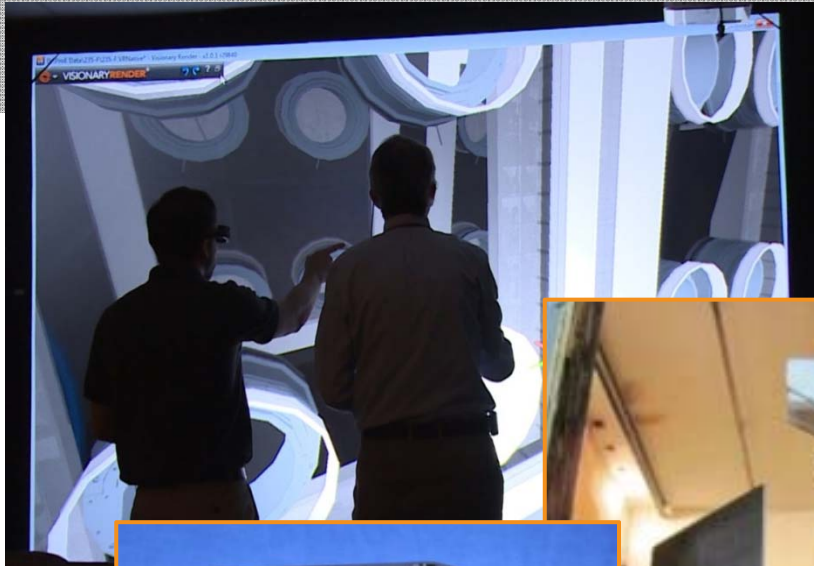
### Impacts

- Combines radiological and optical imaging
- 3D printed
- Robotic placement
- 25% reduction in exposure hours

Virtual Reality

Robotics

Additive  
Manufacturing

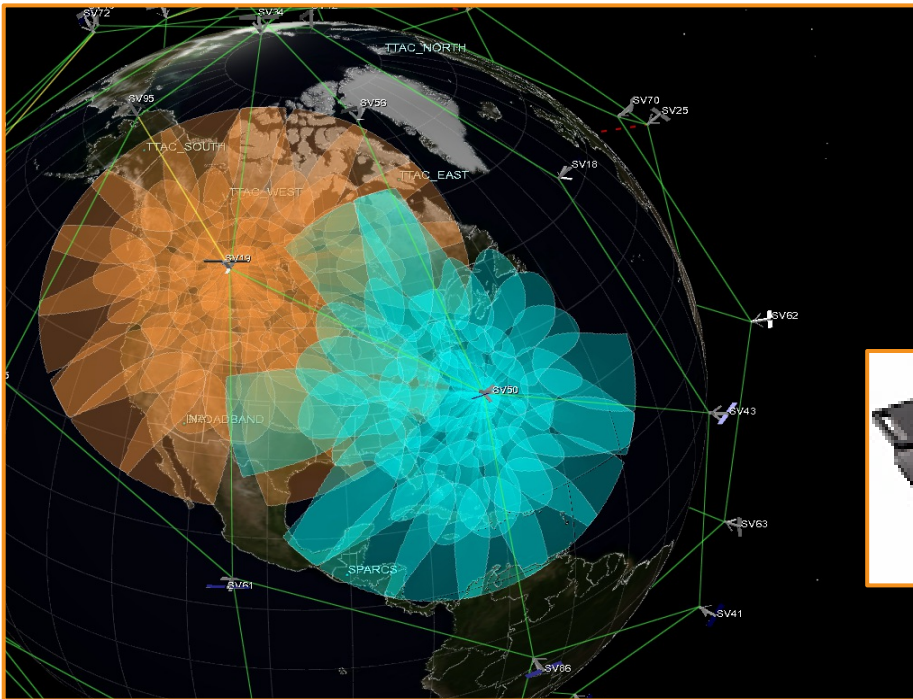


# Cyber Secure Supply Chain and Operations

World-wide nuclear material tracking for a

**Secure World**

## Rapid Deployable Global Sensing Hazard Alert System



Iridium/GPS Receiver

## Impacts

- Dual GPS / Iridium
- Highly resistant to jamming
- Virtually impossible to spoof
- Remote worker safety
- Penetrates buildings further

Cyber Security





# SRNL Leading the National Manufacturing Institute



New technologies for

## Process & Energy Efficiency

### Rapid Advancement in Process Intensification Deployment



- 10<sup>th</sup> Manufacturing USA Institute - \$140M
- \$10M in South Carolina Matching Funds
- 75 Companies, 34 Universities, 7 National Labs

### Impacts

- Transformational for SC and the nation
- Chemical process efficiencies
- Reduced facility capital costs

Process Intensification

Smart Manufacturing

Process Modeling



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# Advanced Manufacturing Collaborative is Key

Bridging the gap between Technology and **Implementation**

- MOU's with 16 companies
- 5 University partners
- Aiken Scholars Academy high school at USCA
- Home for RAPID Manufacturing Institute



# Our workers and U.S. taxpayers **deserve** the best approaches

- Better
- Faster
- Smarter
- Safer

