

Tanks Focus Area

Industry Partnerships for Environmental Science and Technology Conference

**(Applied Research and Development Needs,
Technology Gaps, and Long-Term Stewardship)**

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Morgantown, West Virginia**



TFA Mission



To deliver integrated technical solutions that enable tank waste remediation to be successful across the DOE-Complex

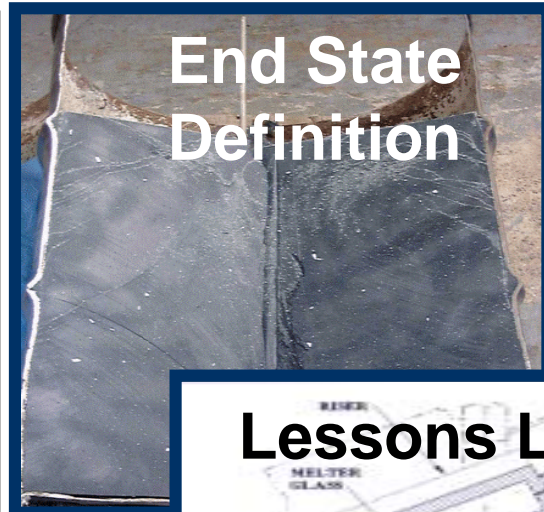
- Bring together problem owners and technical experts to define and execute the mission
 - Integrate the work across the sites and other funding organizations
 - Build teams of technology users and providers to deliver and deploy technical solutions
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Providing Solutions



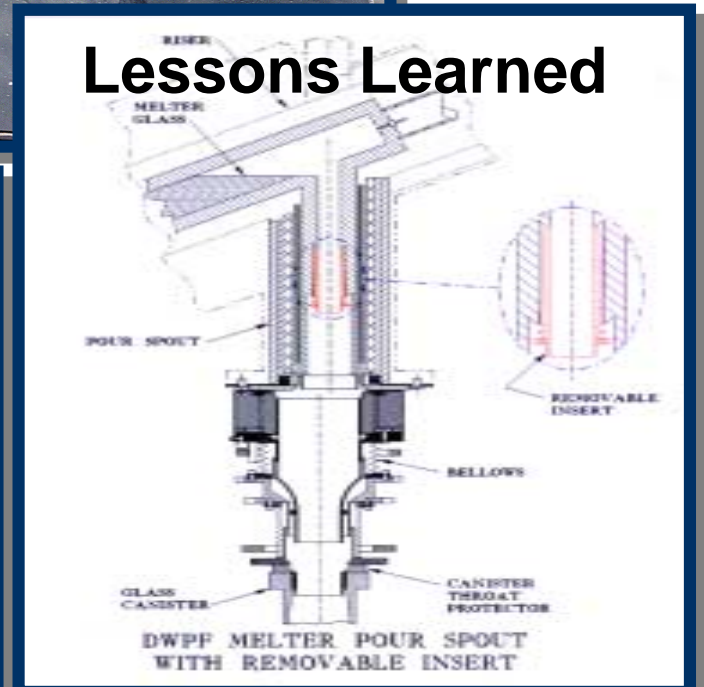
Technologies



End State Definition



Data for Key Decisions

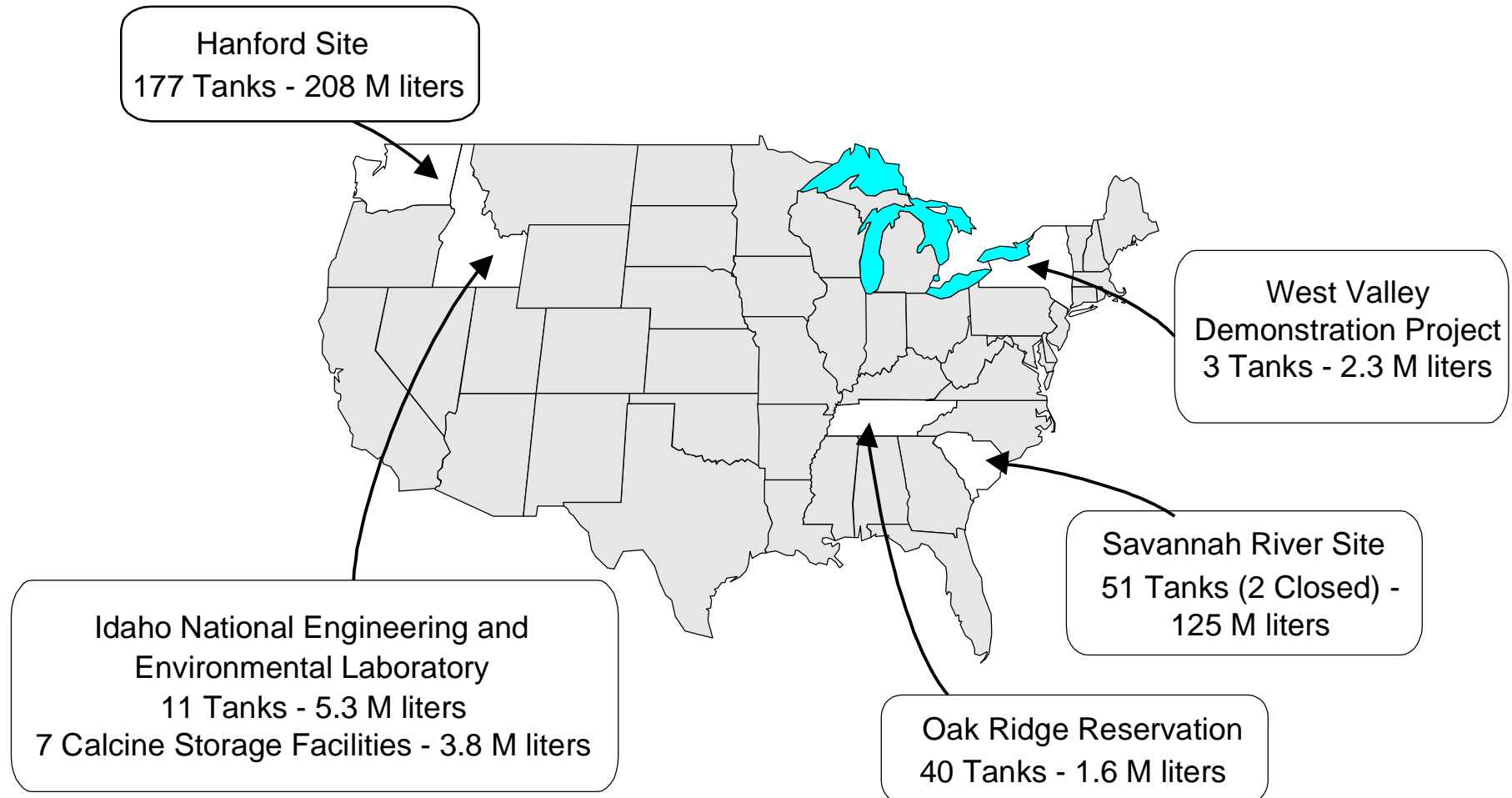


Lessons Learned

DWPF MELTER POUR SPOUT WITH REMOVABLE INSERT

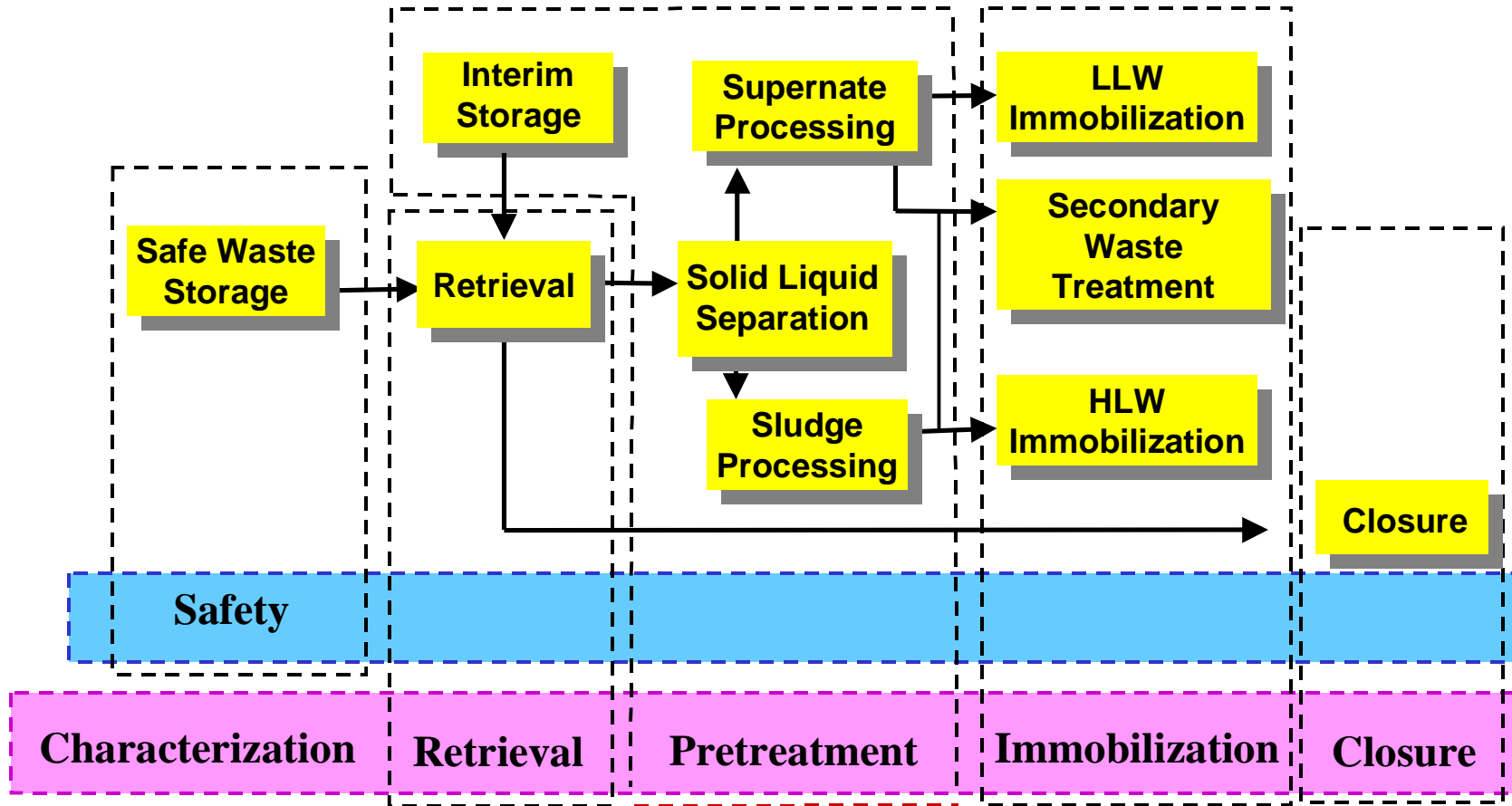


Problem Summary



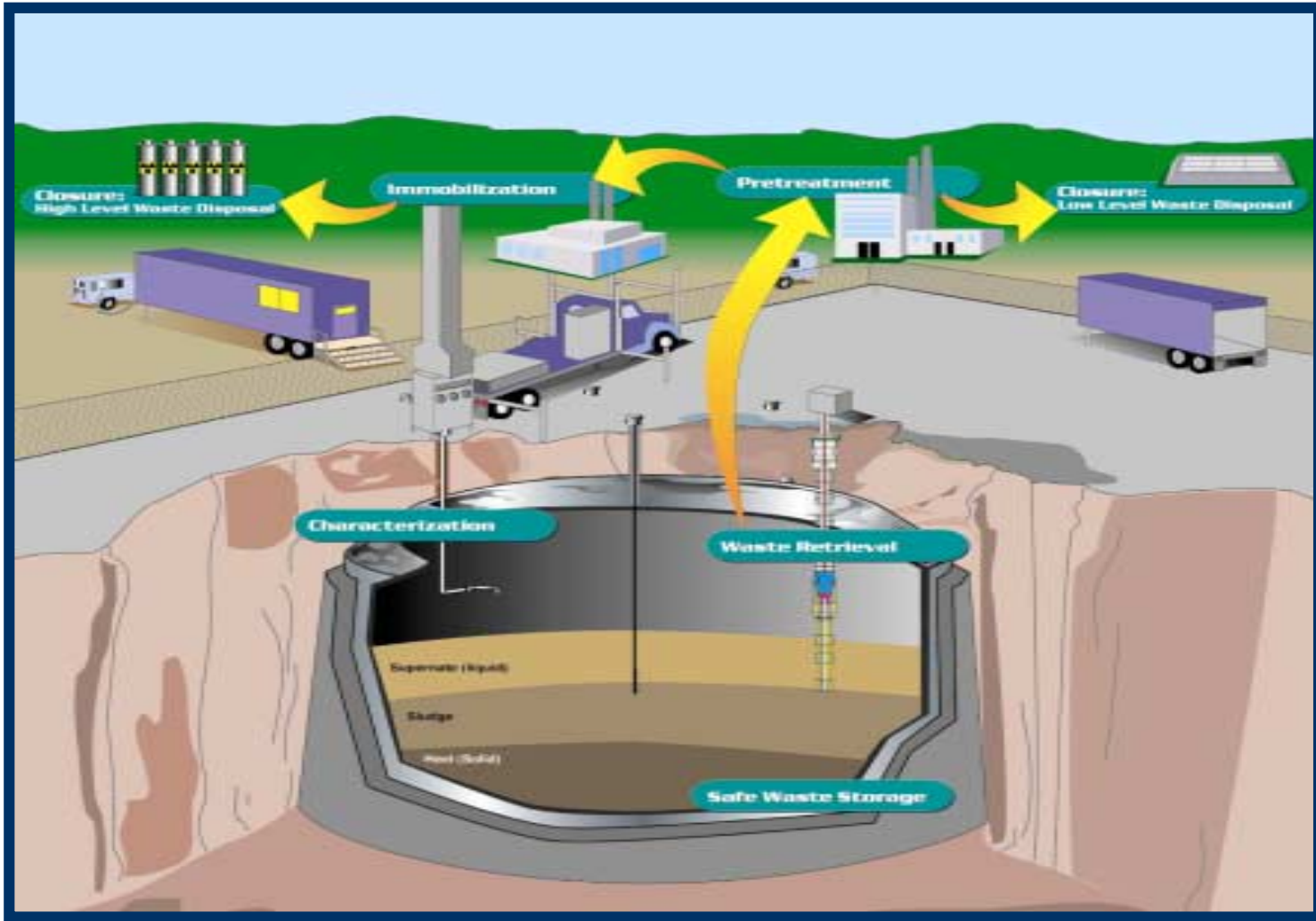


Tank Waste Remediation Flowsheet





Tank Waste Treatment: General Process





Applied R&D Needs



TFA will transition ongoing EMSP projects into the applied research stages:

- Chemical and Physical Property Measurement
- Radionuclide Separations
- Waste Chemistry and Physical Properties
- Improved High-Level Waste (HLW) Glass Forms
- Validated Waste Form Performance



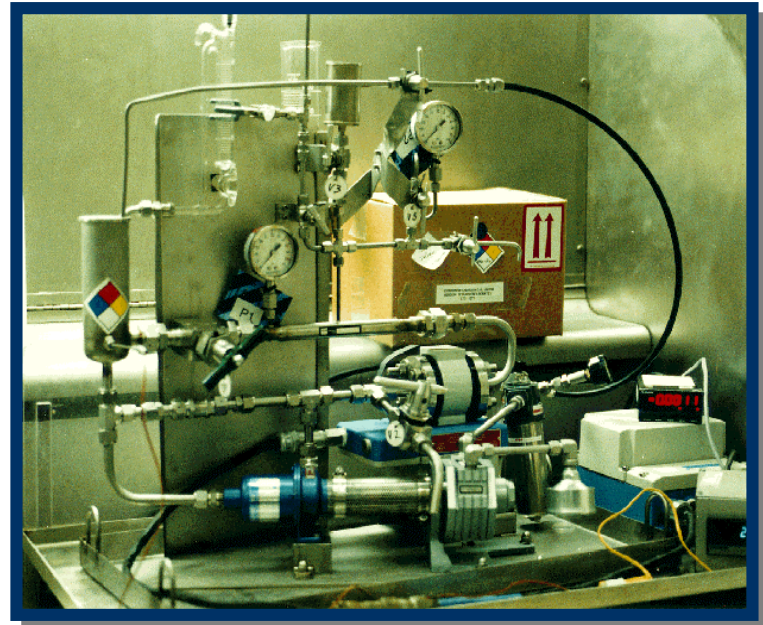


Applied R&D Needs (Cont'd)



Six Calls in FY-01:

- Multiphase glasses for increased waste loading.
- Melt rate chemistry for higher melter throughput.
- Better radionuclide (Sr/TRU) separations.
- Characterization of tank solids without dissolution.
- Higher capacity ion exchange resins.
- Waste tank plugging and repair.





Applied R&D Needs (Cont'd)



Ongoing Applied R&D Work Includes:

- Selective Chemical Dissolution of Tank Heels to Improve Retrieval
- Removal of Key Non-Radioactive Elements from Tank Waste
- Pre-Closure Interim Tank Maintenance
- New Melter Technology
- SST Retrieval from Potentially Leaking Tanks





Technology Gaps



HLW Steering Committee Gap Analysis and Conclusion:

- HLW represents one of EM's largest mortgages
- Short-term focus has been good
- LTS issues/alternative technologies need more focus
- Continuity of R&D transition of Hanford HLW privatization to new contractors
- Investment in R&D presents opportunities to achieve cost savings

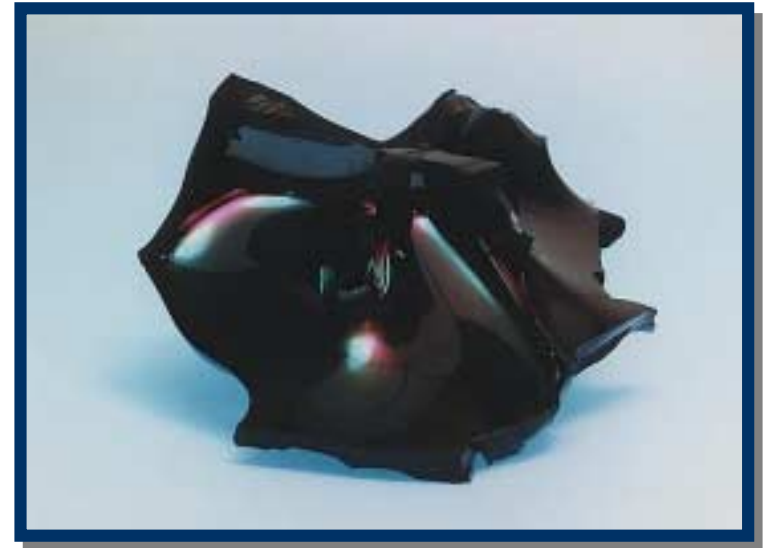


Technology Gaps (Cont'd)



Four Major Gaps in HLW Management:

- Retrieval of HLW from single-shell tanks and obstructed tanks
- Development of treatment processes for the Phase II of the Hanford HLW treatment
- Development of a treatment process for INEEL calcined waste
- Technical solutions to extend tank life





Long-Term Stewardship



TFA is developing a set of specific needs for post-closure management of tank-related issues. Closed Tanks and Immobilized Waste:

- **Closure Criteria**
- **Information Management**
- **Material Science Performance**
- **Monitoring and Characterization**
- **Modeling and Simulation**
- **Physical Maintenance**



Conclusion



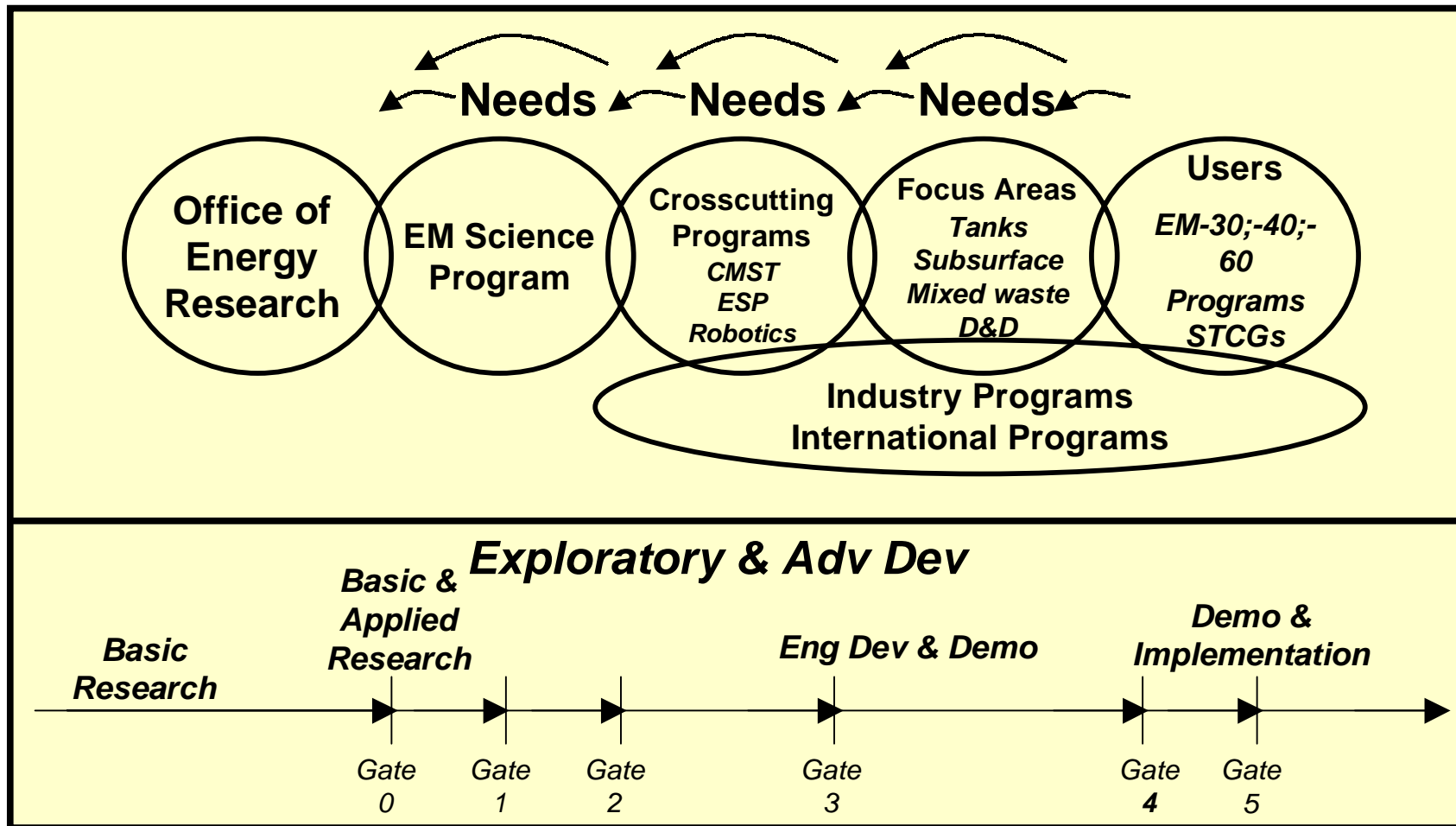
TFA is Committed to:

- Continuing to build industry partnerships
- Leveraging all available resources to solve problems and avoid duplication of effort
- Providing technical assistance, data, and technology as needed by users



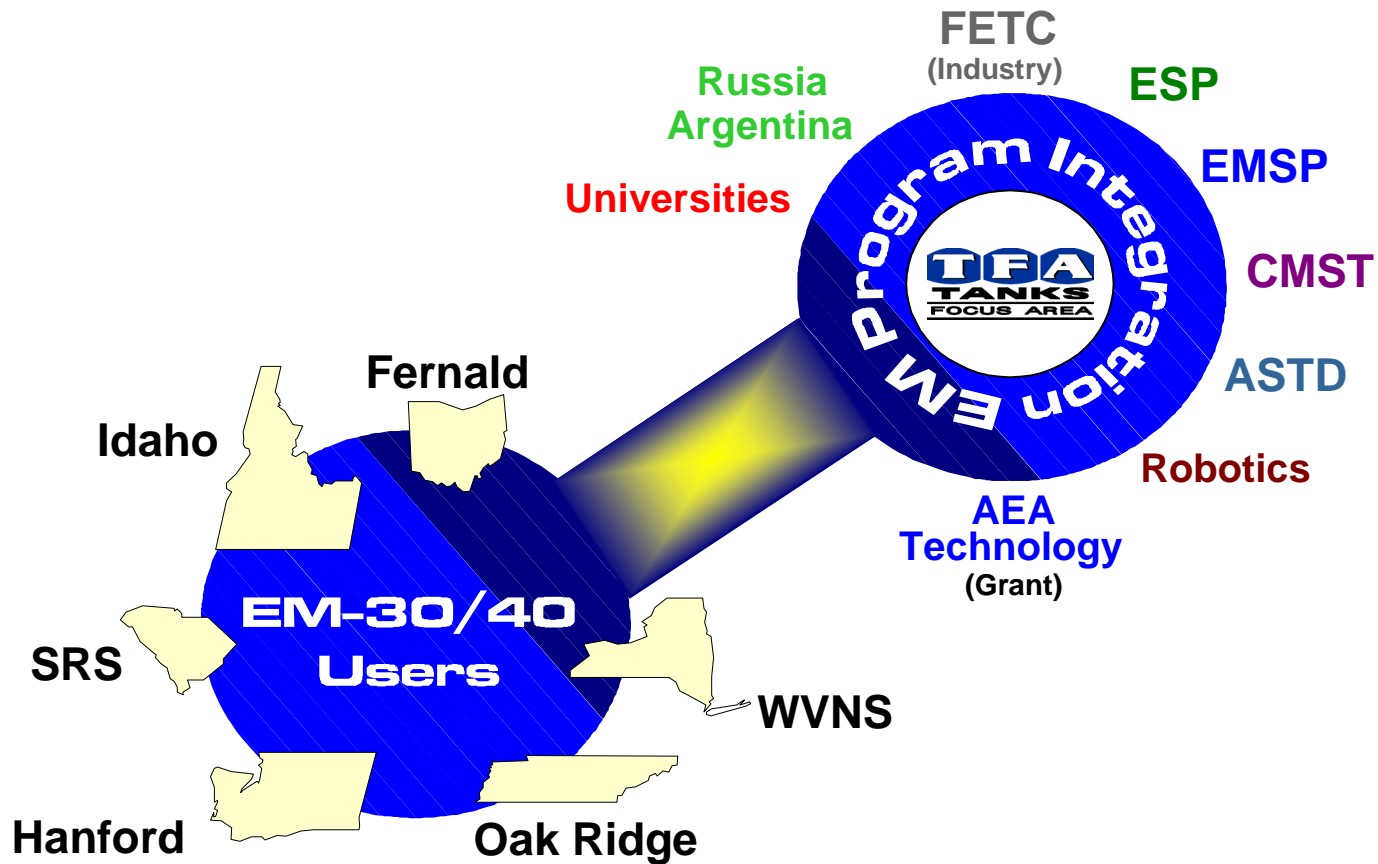


Technology Maturation Cycle





Focus Area-Centered Concept





TFA/Crosscuts Agreement of Cooperation

Matrix of Responsibilities



ACTIVITY	TFA	CMST	RBX	ESP
TECHNICAL RESPONSE DEVELOPMENT				
• Collect Site Needs	X			
• Review / Comment / Input	X	X	X	X
PERFORMER SELECTION PROCESS				
• Develop / Own Performer Selection Logic	X			
• Emulate TFA Performer Selection Approach		X	X	?
• Issue Calls for Proposal	X	X	X	X
PEG AND TTP PREPARATION				
• Technical Input into PEG	X	X	X	X
• Issue PEG to TPO	X			
• Review of TTPs	X	X	X	X
• Final Approval of TTPs	X			

? = Not necessarily agreed upon yet or other drivers such as Headquarters are affecting the appropriate role and/or responsibility.



TFA/Crosscuts Agreement of Cooperation

Matrix of Responsibilities (Cont'd)



ACTIVITY	TFA	CMST	RBX	ESP
PROGRAM EXECUTION				
• Tracking, Scope, Schedule, and Budget	X	X	X	X
• Input in Annual Performance Plan	X	X	X	X
• Gate Reviews	X	X	X	X
• ASME Peer Review Coordination	X	?		X
• Change Control Initiation (TCRs)	X	X	X	X
• Final Approval of TCRs	X	X	X	X
PROGRAM ADMINISTRATION - COMMUNICATION				
• Overall responsibility for production of communication products (e.g., Annual Report, MYPP, IPABS, CRB, ITSRs, TMS, etc.)	X			
• ITSR Development	X	?	?	?
• TMS Input / Maintenance	X	?	?	?
• Archive Technical Reports / Performance Data for Future Reference	X	X	X	X



TFA Web Site Information



For further information, please visit us at:

<http://www.pnl.gov/tfa>
