



High-Level Waste Remediation Tanks Focus Area Perspective

Billie Mauss

U.S. Department of Energy,
Richland Operations Office

October 23, 1996

DOE's Tank Waste Problem

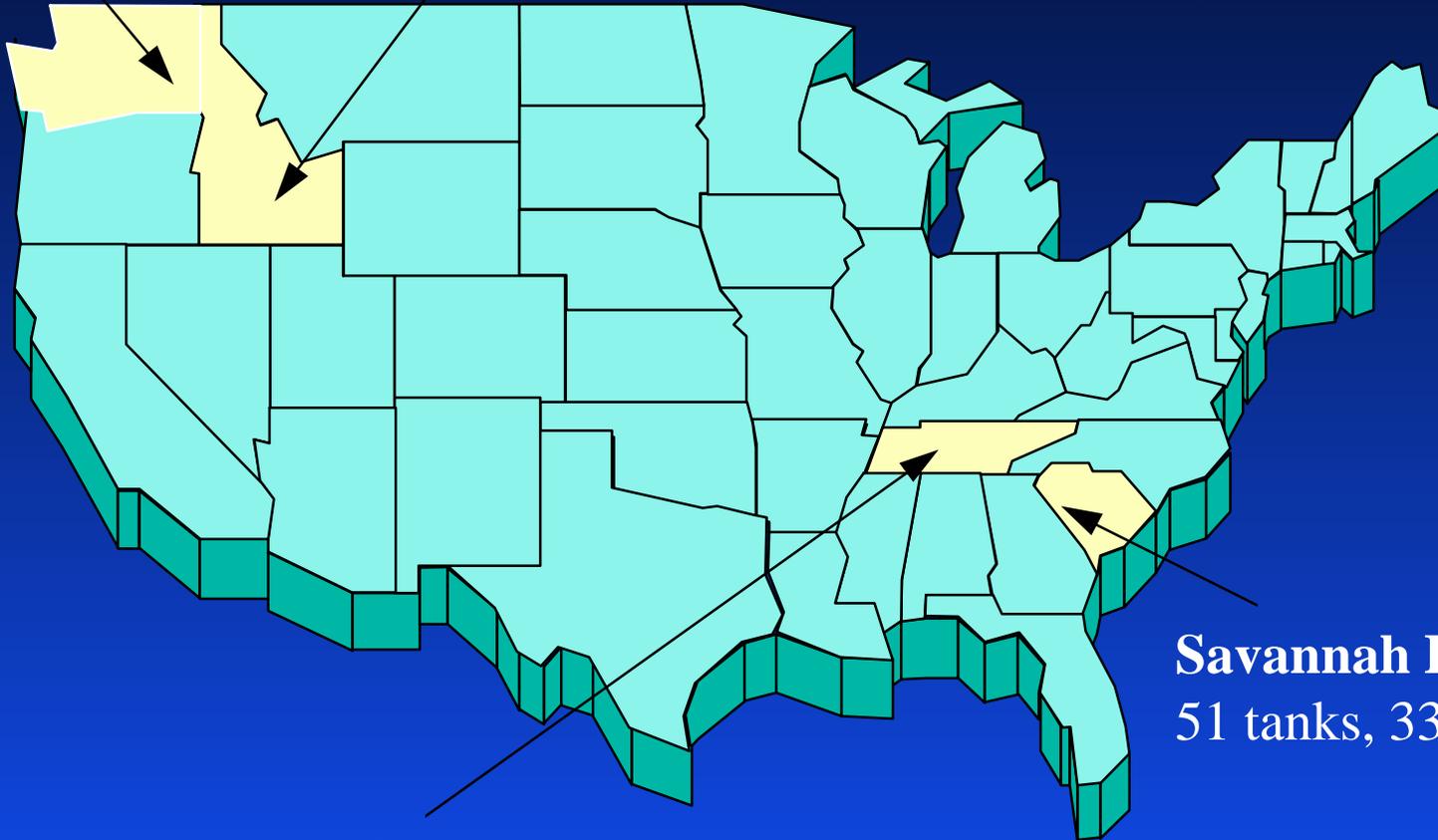
Hanford Site

177 tanks, 55 Mgal

Idaho National Engineering Laboratory

11 tanks, 1.9 Mgal

7 calcine storage facilities, 1 Mgal



Savannah River Site

51 tanks, 33.4 Mgal

Oak Ridge Reservation

56 inactive tanks, 490,000 gal

13 active tanks, 400,000 gal/yr

The DOE complex has

High-level radioactive waste

- Over 330 underground storage tanks
- 100 million gallons
- 1 billion curies

Mission: Provide integrated technology systems to meet user needs to

Tanks Focus Area



- Store waste safely
- Retrieve waste
- Pretreat & immobilize waste
- Close tanks
- Characterize wastes & tanks to support these activities

Our Vision - Clean Tanks!

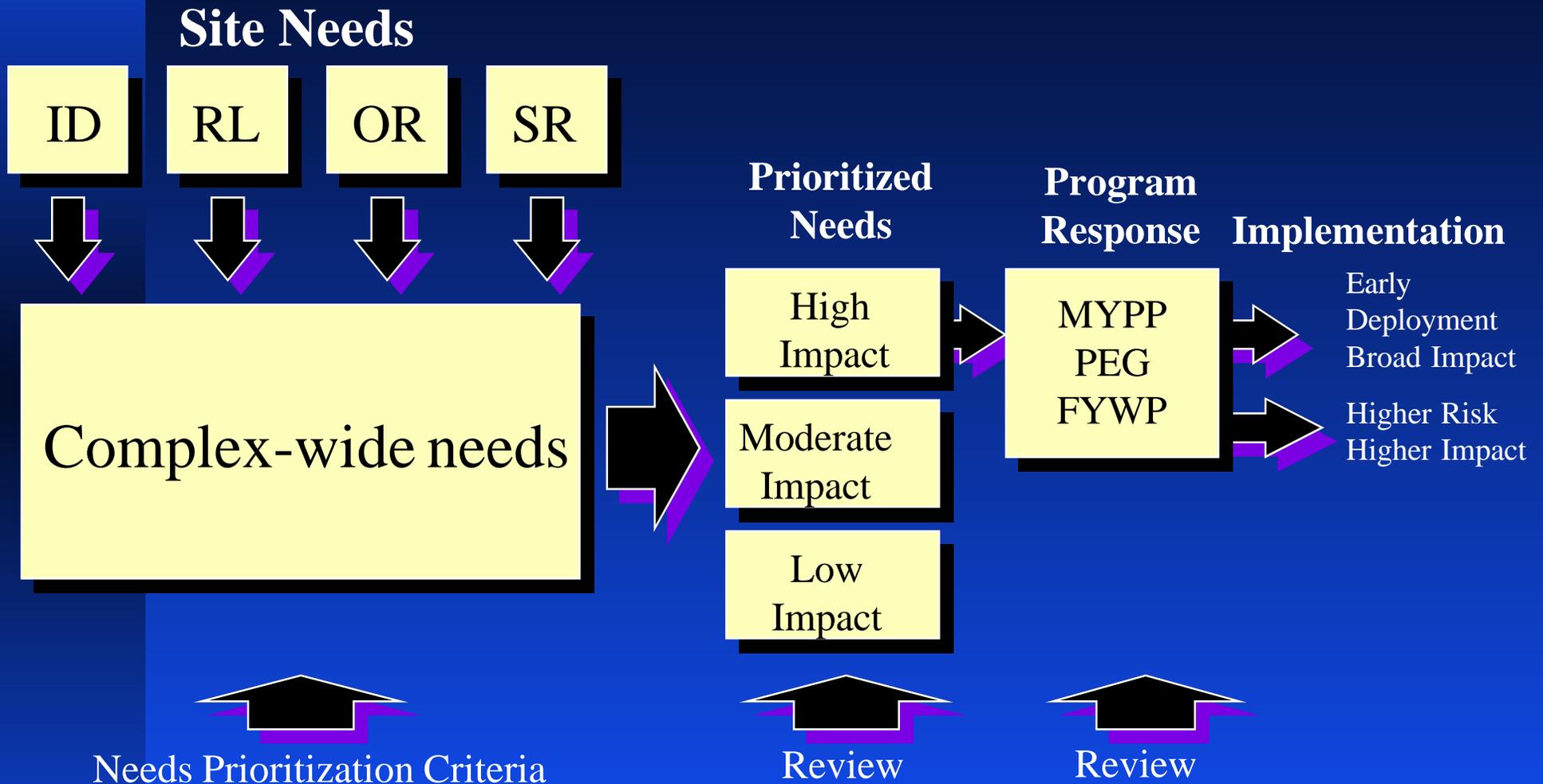
In a timely and cost-effective manner

- ◆ Identify the best solutions to tank remediation
- ◆ Involve the best talent to produce those solutions
- ◆ Provide and coordinate the mechanisms to deploy solutions

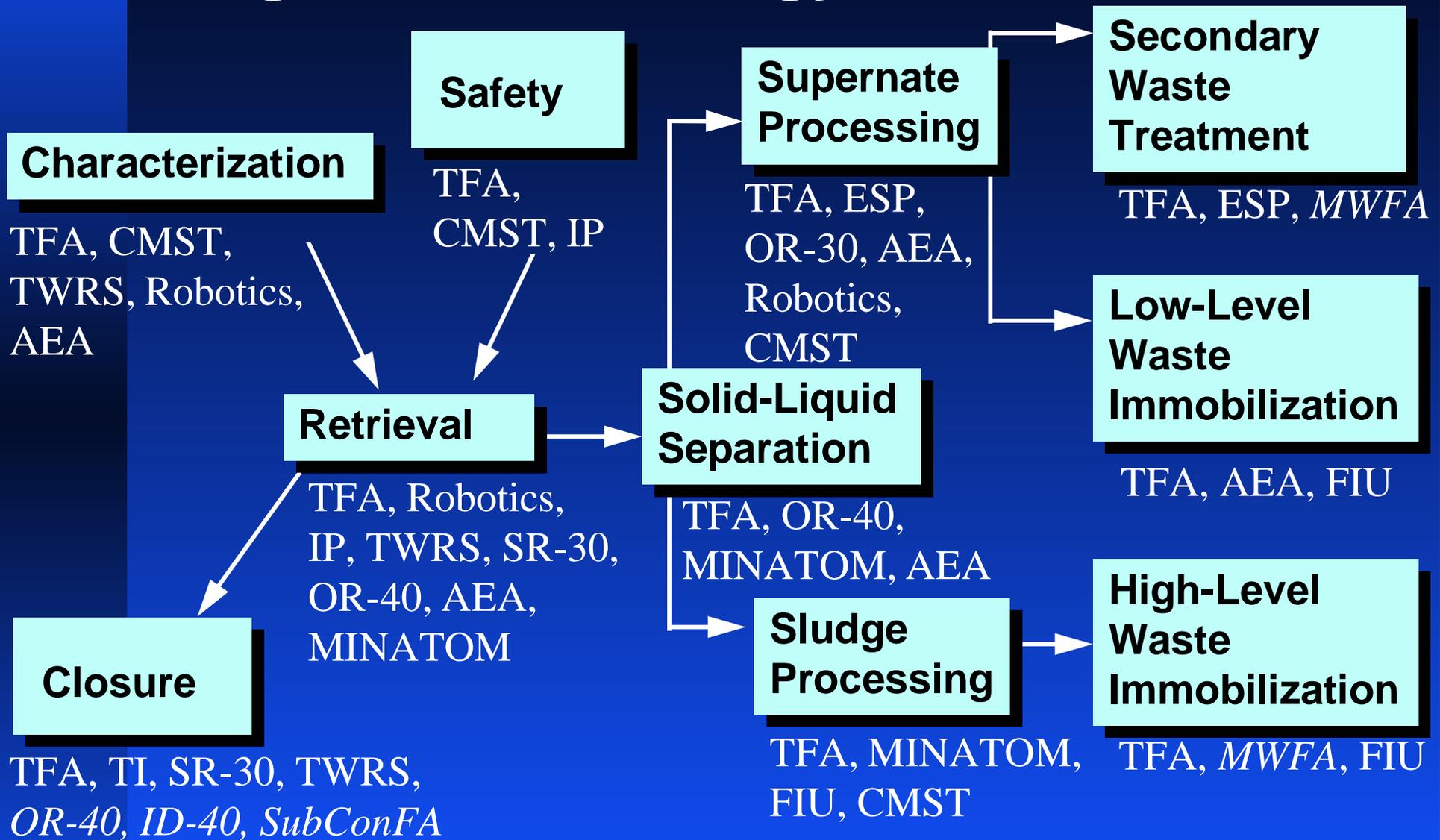
How?

- Understand site needs and priorities
- Define responsive technical solutions
- Leverage resources to get the job done
- Do it!

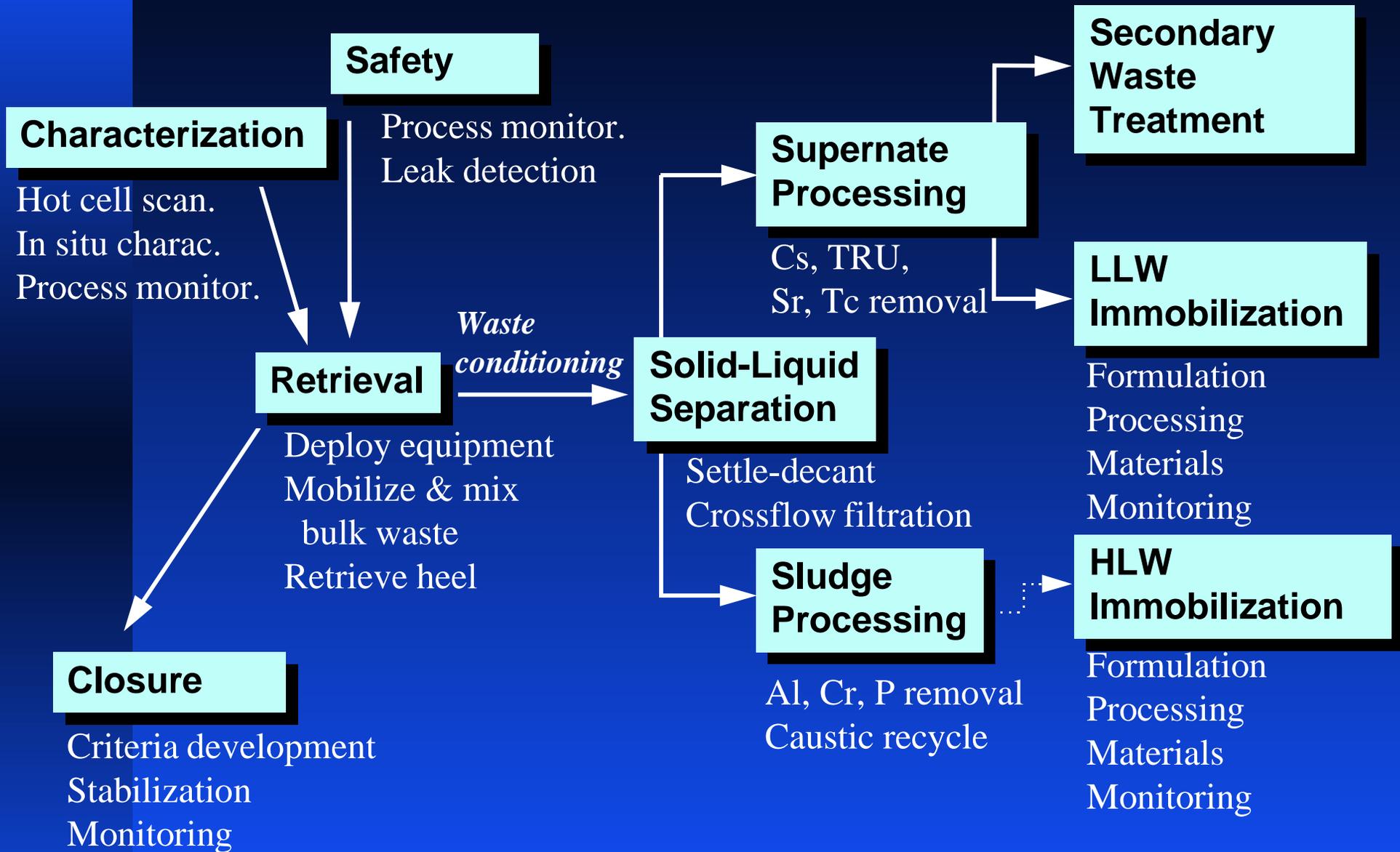
TFA Program Development



Integrated Technology Investments



Integrated Technology Investments



Keys to Success

- ✓ Maintain strong site user commitment to needs development and technology deployment
- ✓ Focus efforts to create definable and useful products
- ✓ Use competitive bid and industry strategy
- ✓ Performance success = implemented technology solutions

In FY96, the TFA...

- Completed out-of-tank evaporator demo
- Started cesium removal demo
- Deployed Light-Duty Utility Arm
- Deployed NIR in hot cell
- Deployed LA/MS in hot cell
- Installed Raman probe package in TWRS Cone Penetrometer
- Deployed overview camera system in 3 tanks and 1 tank pit

In FY96, the TFA also...

- Completed engineering-scale demo of transuranic extraction
- Demonstrated borehole miner and extendible nozzle system
- Tested prototype Confined Sluicing End Effector; designed production unit
- Procured Houdini vehicle
- Supported tank closure
- Established Hanford Tanks Initiative

In FY97, the TFA will deploy...

- Modified Light-Duty Utility Arm at Oak Ridge
- Confined Sluicing End Effector at Oak Ridge
- Two retrieval technologies for saltcake removal from Tank 41 (SRS) to prepare tank for HLW processing
- Characterization tools and decision frameworks to close Tanks AX-104 (Hanford) and 19 (SRS)

In FY97, the TFA will complete...

- Cesium removal in compact process unit
- Vitrification of cesium-loaded sorbents to meet Nevada Test Site waste acceptance criteria
- Crossflow filtration demos on INEL and Hanford wastes
 - ◆ Provide engineering data for process design
- Engineering-scale demo of strontium extraction on INEL waste
 - ◆ Provide engineering data for process design

Strategic Goals for FY98 - FY00

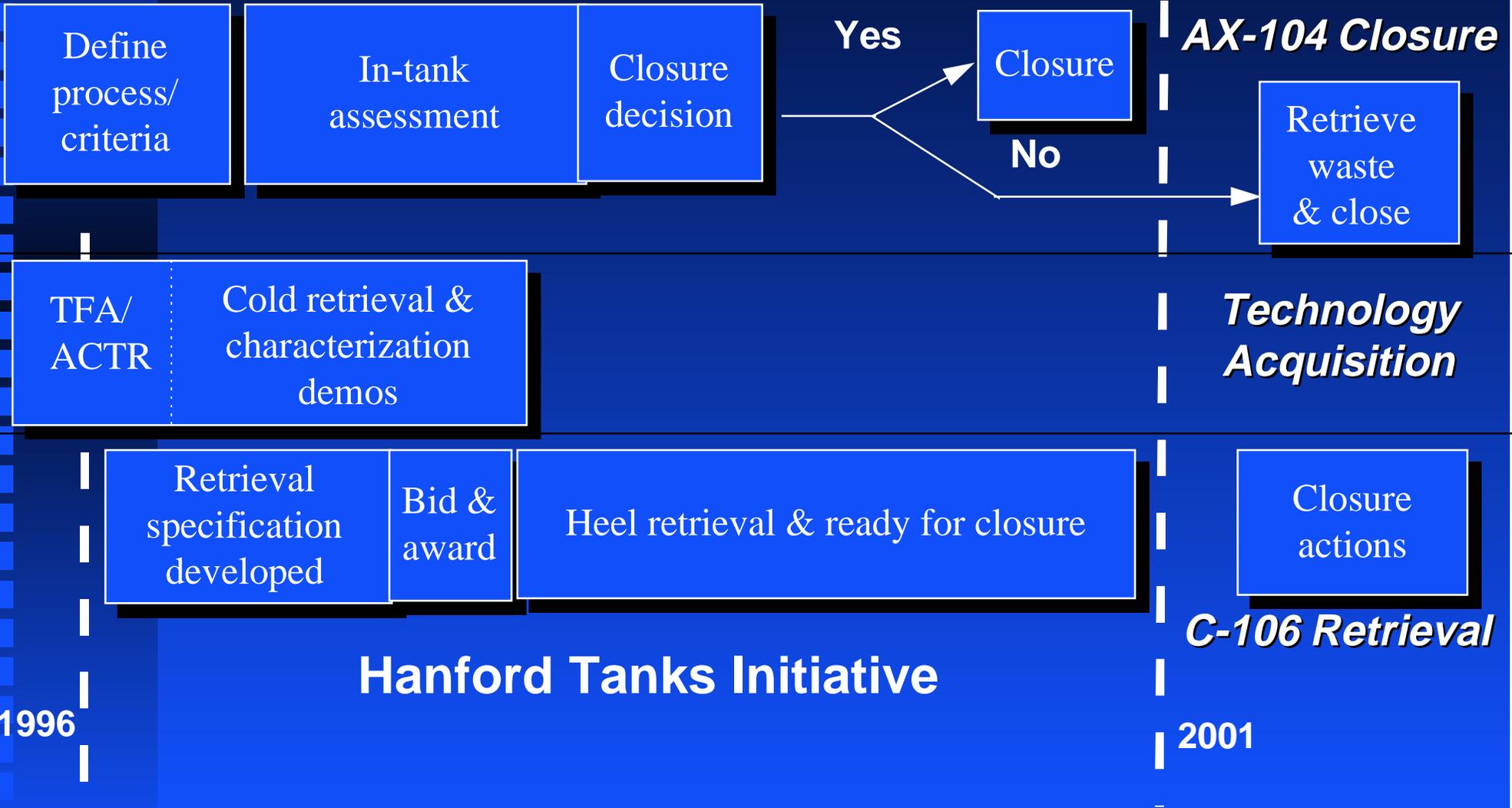
- Provide characterization and retrieval tools to allow the closure of
 - ◆ 2 Hanford Site tanks
 - ◆ ? Savannah River Site tanks
 - ◆ 10 Oak Ridge Reservation tanks
- Provide technologies that will efficiently pretreat and immobilize 80% of the HLW currently stored in tanks

FY98 - FY00 Strategic Goals

- Demonstrate and deploy 4 systems to meet EM's tank waste retrieval requirements
- Demonstrate compact processing units for HLW pretreatment and immobilization as a cost-effective alternative to large-scale facilities

HTI Project

Integrate with Other Retrieval and Closure Activities



Success = implementing integrated technical solutions to solve users' key problems

- Systems approach
- Scope definition consistent with FY98-FY00 strategic goals
- Scope leads to integrated technical solutions
- Scope includes all EM program work directed at solving the national tank problems

TFA Team

June Hennig 509-372-4025 june_m_hennig@rl.gov

TFA Senior Program Manager

Jeff Frey 509-372-4546 jeffrey_a_frey@rl.gov

TFA Program Manager

Terri Stewart 509-375-4423 tl_stewart@pnl.gov

Technical Team Manager

Roger Gilchrist 509-372-6088 rl_gilchrist@pnl.gov

Industry Lead

Billie Mauss 509-372-4512 billie_m_mauss@rl.gov

Program Development Manager

Technology Integration Managers

C. Phil McGinnis

423-576-6845

cpz@ornl.gov

Pretreatment

James Lee

505-844-6937

jhlee@sandia.gov

Retrieval & Closure

Pete Gibbons

509-376-2360

peter_w_gibbons@rl.gov

Dpty Retrieval & Closure

M. John Plodinec

803-725-2170

john.plodinec@srs.gov

Immobilization

Harold Sullivan

505-667-6231

hsullivan@lanl.gov

Safety

Tom Thomas

208-526-3086

trt@inel.gov

Characterization