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# 2021 Laboratory Agenda

Simultaneous  
Excellence



NUCLEAR  
SECURITY

MISSION  
OPERATIONS



COMMUNITY  
RELATIONS

MISSION-FOCUSED  
SCIENCE, TECHNOLOGY,  
AND ENGINEERING

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# The Laboratory Agenda

The Laboratory Agenda provides a structured framework that identifies the critical outcomes, strategic initiatives and near-term R&D, and production and mission-support activities needed to accomplish our mission.

Simultaneous Excellence	NUCLEAR SECURITY	MISSION-FOCUSED SCIENCE, TECHNOLOGY, AND ENGINEERING
Strategic Objective (10–20 years)	Excellence in Nuclear Security	Excellence in Mission-Focused Science, Technology, and Engineering
Critical Outcomes (5–10 years)	Design, produce, and certify current and future nuclear weapons and reduce global nuclear threats	Deliver scientific discovery and technical breakthroughs that support DOE and NNSA missions
Major Strategic Initiatives (1–5 years)	<ul style="list-style-type: none"> <li>1.1 Execute LANL’s manufacturing mission to deliver 30 plutonium pits per year</li> <li>1.2 Transform nuclear weapons warhead design and production</li> <li>1.3 Anticipate threats to global security; develop and deploy revolutionary tools to detect, deter, and respond</li> <li>1.4 Support modernization of LANL warhead systems</li> <li>1.5 Assess the stockpile as it ages and project weapon system lifetimes</li> </ul>	<ul style="list-style-type: none"> <li>2.1 Refresh and refine the LANL capability pillar framework</li> <li>2.2 Advance accelerator science, engineering, and technology to enable future stewardship capabilities</li> <li>2.3 Advance the frontiers of computing to exascale and beyond</li> <li>2.4 Assert leadership in the national quantum initiative</li> <li>2.5 Develop and implement an integrated nuclear energy and nuclear materials initiative</li> <li>2.6 Implement an integrated initiative for plutonium and actinide missions based on FY20 strategy</li> <li>2.7 Implement a national security life sciences initiative</li> </ul>
Champion	<b>Bob Webster</b> 	<b>John Sarrao</b> 



**About the cover images:**

● RCTs Sean Sandoval (left) and Jason Beddeson practice safe radiological procedures in the Plutonium Facility’s cold lab. ● Dr. Sara Pasqualoni and staff from Occupational Health administer the Covid-19 vaccine to LANL employees. ● A Carlos F. Vigil Middle School student in Española works on a math puzzle at a Laboratory-supported education event held at Northern New Mexico College. ● Xiaokun (Claire) Yang optimizes chemical reactions to synthesize high-energy-density fuel from renewable biomass.

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# The Laboratory Agenda

The Laboratory Agenda provides a structured framework that identifies the critical outcomes, strategic initiatives and near-term R&D, and production and mission-support activities needed to accomplish our mission.

Simultaneous Excellence	MISSION OPERATIONS	COMMUNITY RELATIONS
Strategic Objective (10–20 years)	Excellence in Mission Operations	Excellence in Community Relations
Critical Outcomes (5–10 years)	Execute sustained operations that are reliable and responsive to mission needs	Sustain and enhance LANL’s partnership with the community across the Northern New Mexico region
Major Strategic Initiatives (1–5 years)	<ul style="list-style-type: none"> <li><b>3.1</b> Change organizational culture with an emphasis on organizational learning</li> <li><b>3.2</b> Improve integrated planning across priority mission activities and infrastructure</li> <li><b>3.3</b> Address critical issues related to NMCA, nuclear safety, criticality safety, waste, and classified enhancements</li> <li><b>3.4</b> Implement systematic process improvement to drive increased rigor and efficiency in work execution</li> <li><b>3.5</b> Enhance quality of work life, workforce planning, and training and development</li> </ul>	<ul style="list-style-type: none"> <li><b>4.1</b> Continue commitment to the community with educational, economic, and philanthropic investments of time and resources</li> <li><b>4.2</b> Strengthen pipelines and partnerships to build the workforce of the future</li> <li><b>4.3</b> Enhance small business participation in executing LANL’s scope across all directorates</li> <li><b>4.4</b> Demonstrate agility and flexibility in our partnerships, effectively balancing benefit and risk</li> </ul>
Champion	<b>Kelly Beierschmitt</b> 	<b>Frances Chadwick</b> 

Please see page 30 for a list of acronyms and their definitions.

# Excellence in Nuclear Security

Bob Webster, Deputy Laboratory Director for Weapons

## 1.1 Execute LANL's manufacturing mission to deliver 30 plutonium pits per year

- Execute projects necessary to support FPU (Leads: David Dooley, Kathye Segala)
- Work with NNSA to define all PF-4 program requirements (Lead: David Dooley)
- Update the integrated schedule for TA-55 to meet all institutional deliverables, including information to support NNSA budget submittals (Lead: David Dooley)
- Meet FY21 pit production goals, including the PRT schedule for PPI activities (Lead: Frank Gibbs)
  - Execute the 30-pits-per-year plan to include other Pu missions
  - Execute the PRT plan for pit production PPI
- Enhance the quality of the work environment (Lead: Dan Mack)
  - Expand office space and parking in the Pecos Road corridor
  - Expand training capabilities



**RESPONSIBILITY**  
DAVE EYLAR

During fiscal year 2020, 1,233 TRU waste drums were included in 41 shipments to WIPP in Carlsbad, New Mexico.



- Build the specialized workforce needed for TA-55's mission (Lead: Dave Eylar)
  - Focus on retention and hiring to support expansion of critical skills
- Execute the NGEN TRU Waste Plan to de-inventory TA-55 (Lead: Enrique Torres)
- Execute projects in support of the 30-pits-per-year plan (Leads: Kathye Segala, Paul Kreitz, Andy Tisler)
- Execute the plan to improve analytical chemistry turnaround time (Lead: Jeanne Robinson)
- Continue support to SRS pit production scope as defined in MOAs and SRPPF scope (Leads: David Dooley, Steve Schreiber)



In 2020, upgrading the aging trolley system at the Plutonium Facility was a priority for the Weapons Infrastructure Program Office.

# Excellence in Nuclear Security

Bob Webster, Deputy Laboratory Director for Weapons

## 1.2 Transform nuclear weapons warhead design and production

- Support the stockpile beyond stewardship, including
  - Advance modularity concepts for future stockpile (Lead: James Owen)
  - Advance the Next Generation Warhead through the Phase X process (Lead: James Owen)
  - Vigorously execute the Stockpile Responsiveness Program (Lead: Charlie Nakhleh)
  - Develop the advanced tools needed for certifying and qualifying future options (Lead: Charlie Nakhleh)
  - Enable rapid manufacturing of pits and cases (Leads: James Owen, Frank Gibbs, Charlie Nakhleh)
  - Develop, publish, and socialize a modern nuclear explosive package certification plan (Lead: Charlie Nakhleh)
  - Develop the non-nuclear production mission, including required strategic infrastructure and personnel; synergistic with 1.1 and 2.6 and NSE needs (Lead: Patrick Garcia)
- Develop and prototype integrated Design for Manufacture approaches in weapon design, engineering, and production (Leads: Charlie Nakhleh, Frank Gibbs, James Owen)
- Deliver on components of the Director's Strategic Resilience Initiative (Lead: John Scott)



**RESPONSIBILITY**  
BOB WEBSTER



**RESPONSIBILITY**  
CHARLIE NAKHLEH



**RESPONSIBILITY**  
DAVE EYLER



**RESPONSIBILITY**  
JAMES OWEN



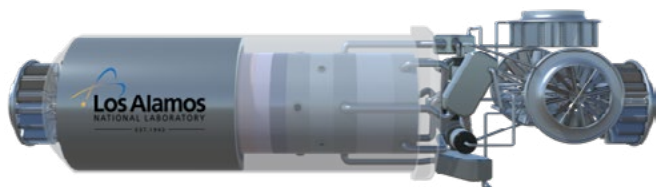
Reid Buckley, left, and John Kramer of the High Explosives and Technology group look for undissolved PETN crystals. PETN is an explosive that has reportedly been used in terrorist plots.

# Excellence in Nuclear Security

Bob Webster, Deputy Laboratory Director for Weapons

## 1.3 Anticipate threats to global security; develop and deploy revolutionary tools to detect, deter, and respond

- Deliver on NNSA and strategic partnership projects and key operational challenges that support nonproliferation, counterproliferation, and emerging threats, including (Leads: Nina Rosenberg, Eric Dors, Bill Humbert)
  - Apply expertise to nonproliferation stewardship strategy
  - Execute global security work at TA-55; synergistic with 1.1
  - Develop and transition data analytic tools
  - Continue to develop and execute programs for advanced reactors and power systems
  - Support NC3 modernization and resiliency through modeling, assessment, and technical development initiatives
  - Provide operational support to the combatant commands for enhanced effectiveness and ISR capabilities
- Support nonproliferation and cross-domain deterrence through technical leadership in the space domain with an integrated strategy (Leads: Nina Rosenberg, Eric Dors, Bill Humbert), including
  - Protection of space-based systems in both natural and contested environments
  - Resilient, space-based systems and architectures for national security missions
  - Space-based remote sensing
  - Exploitation of multi-purpose space science and technology
- Advance new virtual training concepts for operational excellence to advance global security mission goals for Laboratory, national, and international security partners (Leads: Nina Rosenberg, Kerry Habiger)



Artist's rendering of special-purpose reactor technologies developed for DOD, space systems, and humanitarian assistance and disaster relief.



**RESPONSIBILITY**  
NANCY JO NICHOLAS

- Develop and enhance key nonproliferation and counterproliferation programs and capabilities through
  - Development and execution of large-scale field experiments and test beds used to verify scientific modeling (Leads: Nina Rosenberg, Eric Dors)
  - Development of counter-pro/counter-adversarial technologies; leverage and build on unique sensing capabilities, analysis algorithms and other tools across a number of capability areas; take complementary capabilities to the next step (Leads: Kerry Habiger, Bill Humbert)
- Be a resource to the USG and S&T aspects of Arms Control and other important nonproliferation policy issues (Leads: Nina Rosenberg, John Scott)



Artist's depiction of the GPS-III spacecraft carrying upgraded LANL payloads for nuclear treaty verification

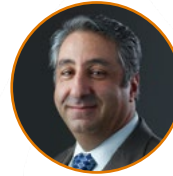


# Excellence in Nuclear Security

Bob Webster, Deputy Laboratory Director for Weapons

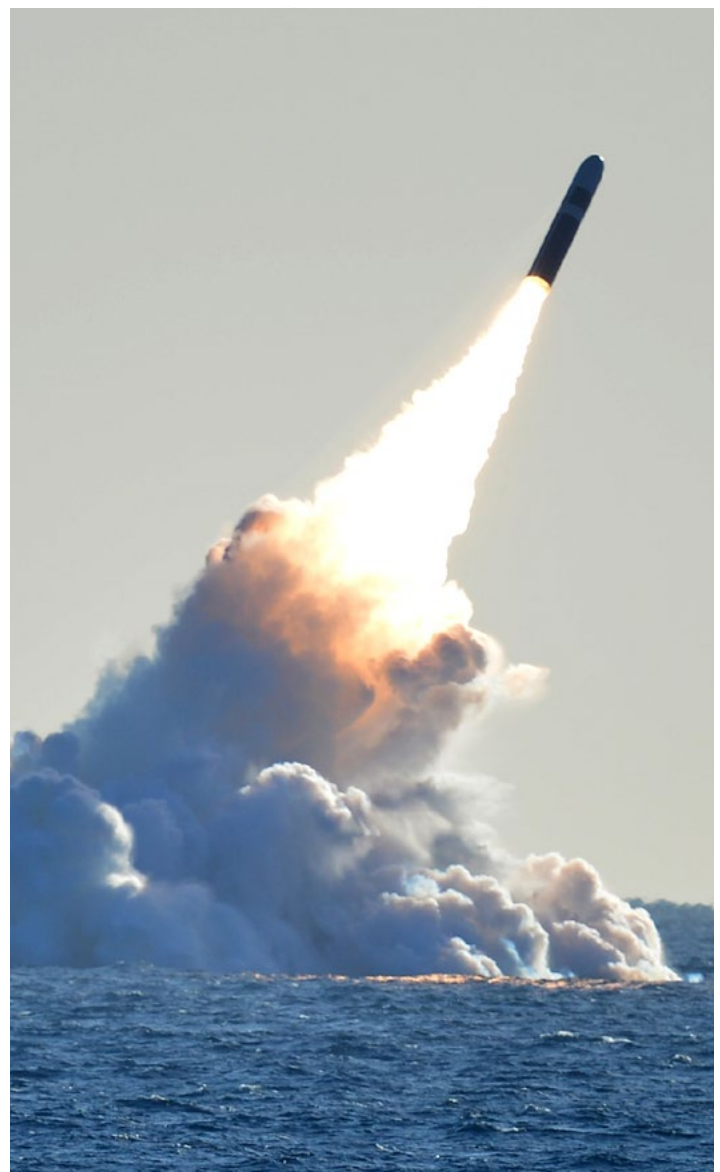
## 1.4 Support modernization of LANL warhead systems

- Accomplish all LANL activities required to meet NNSA schedules for B61-12 LEP, W88 Alt 370, and Alt 940 (Lead: James Owen)
  - Qualify the pit recertification capability at Pantex in support of FPU's
  - Establish and meet requirements to qualify Mk4B (Lead: Donald Quintana)
- Develop and advance DOD conventional and broader strategic weapons SPP portfolio that complements weapons engineering capabilities (Lead: James Owen)
  - Grow DOD conventional weapons portfolio that exercises LANL Weapons Program capabilities
  - Develop broader strategic weapons portfolio utilizing advanced systems engineering design, analysis, and testing (Leads: Rob Bishop, Donald Quintana, Jay Carnes)



**RESPONSIBILITY**  
JAMES OWEN

LANL modified the W76-2 for use on the Navy SLBM as a low-yield warhead. Production started in February 2019 and was completed in July 2020. Credit: U.S. Navy



Lt. Col. Geoffrey Steeves speaks to a Lab audience about the nuclear-capable B-2 stealth bomber. Steeves is a B-2 pilot who spent a year at the Lab as an Air Force Fellow.



## Excellence in Nuclear Security

Bob Webster, Deputy Laboratory Director for Weapons

### 1.5 Assess the stockpile as it ages and project weapon system lifetimes

- Deliver Annual Assessment Reports (Lead: Kevin Smale)
- Institute a concerted effort to assess weapons as delivered (Leads: Don Quintana, Brian Lansrud-Lopez)
- Forecast aging rates using theory, simulations, and experiments; synergistic with 1.2 (Lead: Donald Quintana)
- Reinvigorate Laboratory thinking regarding maintaining a capability to return to underground nuclear testing if directed (Lead: Don Haynes)



**RESPONSIBILITY**  
BOB WEBSTER



**RESPONSIBILITY**  
CHARLIE NAKHLEH



RCTs Sean Sandoval and Jason Beddeson pose with mockup processes in gloveboxes at TA-55's PF-38 cold lab training facility.

Provided by Los Alamos Study Group via FOIA

# Excellence in Mission-Focused Science, Technology, and Engineering

John Sarrao, Deputy Laboratory Director for Science, Technology & Engineering

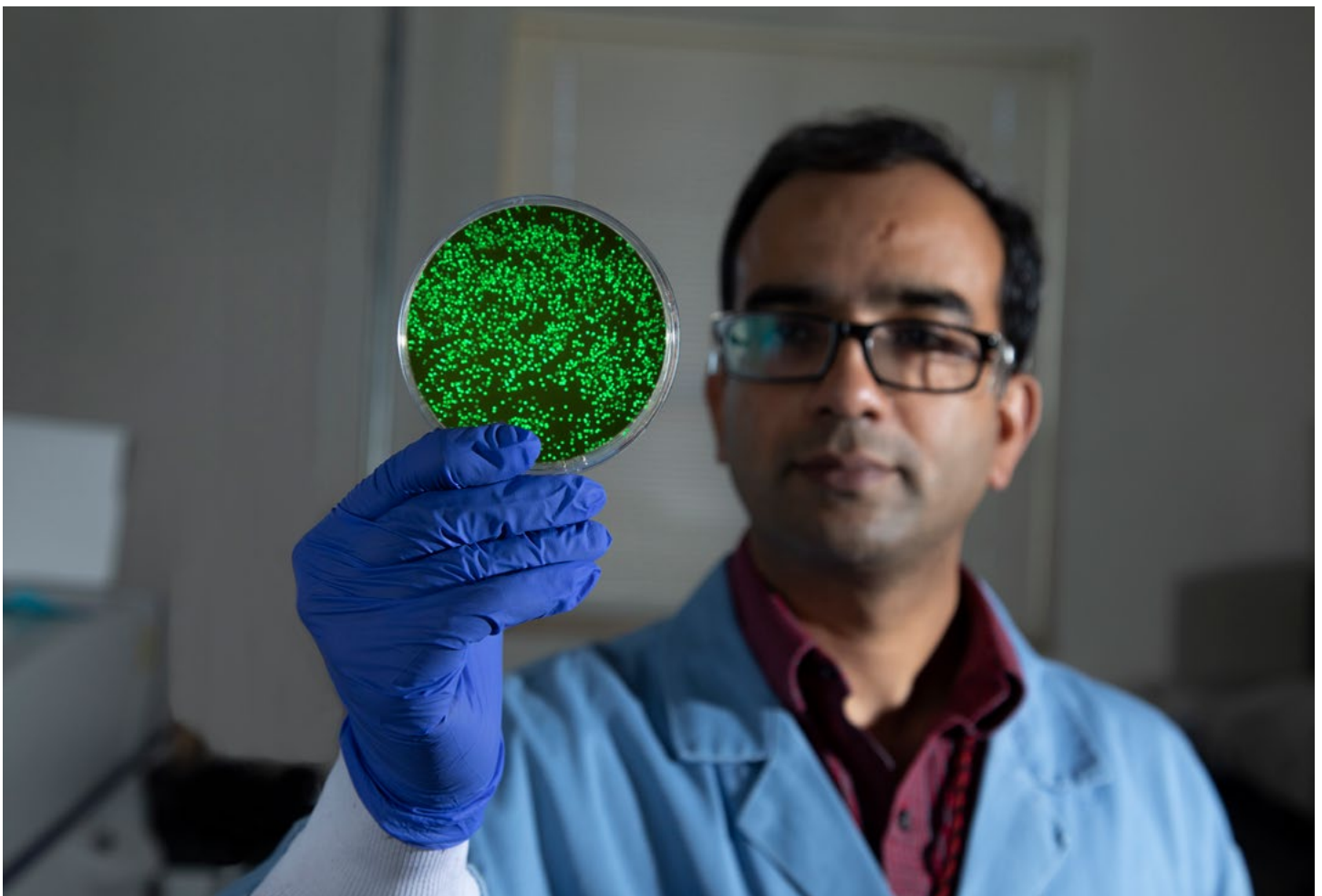
## 2.1 Refresh and refine the LANL capability pillar framework

- Advance the management of capability pillars (Leads: Carol Burns, pillar-owning ALDs)
  - Refine governance models and complete pillar strategic plans
  - Champion stewardship/sustained management model for pillars
  - Review pillar investment and internal/external communication strategies
  - Regularize capability reviews
  - Re-initiate quarterly cross-pillar coordination meetings



**RESPONSIBILITY**  
CAROL BURNS

- Identify and manage risks to pillar stewardship, including via metrics development and tracking (Lead: Carol Burns)



Ramesh Jha demonstrates the Smart Microbial Cell Technology, which won an R&D 100 Award and special recognition gold medal as a product disruptor in 2020.

Provided by Los Alamos Study Group via FOIA

# Excellence in Mission-Focused Science, Technology, and Engineering

John Sarrao, Deputy Laboratory Director for Science, Technology & Engineering

## 2.2 Advance accelerator science, engineering, and technology to enable future stewardship capabilities

- Execute the Scorpius project successfully, including through integration with other NNSS activities (Lead: David Funk)
- Sustain and enhance operational excellence and mission impact of DARHT and LANSCE while implementing the integrated strategy for LANSCE and DARHT (Leads: Michael Furlanetto, Jonathan Morgan)
- Nurture world-class, accelerator-based R&D, enabling responsive solutions to emerging national security needs (Lead: Stephen Milton)

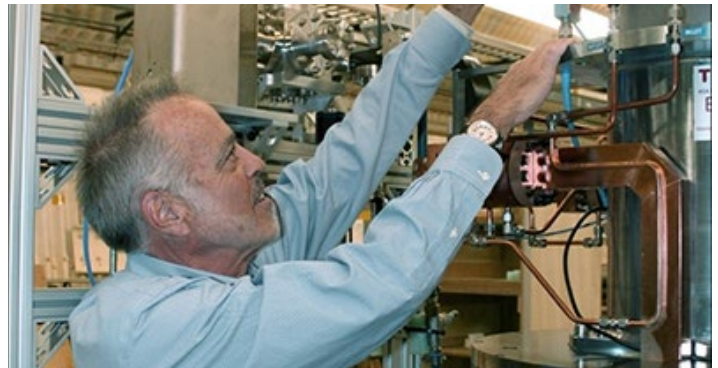


**RESPONSIBILITY**  
TONI TAYLOR

LANL is poised to assume a leadership role in the emerging field of high-power RF accelerator research with the commissioning of a high-power C-band test facility underway at LANSCE. Here, Mark Kirshner is adding a directional coupler to measure klystron input power.



Alex Scheinker stands at the low-energy beam transport section of LANSCE. His project will develop advanced adaptive control systems for compact accelerators.



- Strengthen and expand our accelerator ST&E workforce with a focus on personnel development and cross-training the overall accelerator workforce (Leads: Stephen Milton, Jonathan Morgan)
- Develop an integrated implementation plan, consistent with our institutional vision, and a refreshed accelerator strategy, leading through our three major accelerator facilities to the future DMMSC (Lead: Michael Furlanetto)
- Develop and deploy new accelerator-based capabilities, starting with Scorpius at NNSS, in support of current and future national security missions (Leads: David Funk, Michael Furlanetto)
- Advance our ability to use light sources to perform transformational materials science in anticipation of DMMSC (Leads: Dana Dattelbaum, Toni Taylor)

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# Excellence in Mission-Focused Science, Technology, and Engineering

John Sarrao, Deputy Laboratory Director for Science, Technology & Engineering

## 2.3 Advance the frontiers of computing to exascale and beyond

- Participate in national-level strategy and planning efforts for ECP and beyond; provide multi-institution leadership within the ECP (Lead: Irene Qualters)
- Shape ASCR post-ECP planning and ASC Next Generation Platform strategies; reflect in an integrated LANL Computing Strategy (Leads: Charlie Nakhleh, Irene Qualters)
- Respond to, and initiate opportunities for, research and development of mission-relevant novel computing technologies, including development of industrial/academic/Laboratory partnerships (Leads: Gary Grider, Ed Dendy)
- Assess and adjust institutional computing to meet a more diverse and innovative portfolio of emerging computing models and platforms at LANL (Leads: Charlie Nakhleh, Irene Qualters)



**RESPONSIBILITY**  
IRENE QUALTERS

- Establish LANL as a visible national leader in AI by accelerating development of mission-relevant, AI-enabled capabilities and partnerships (Lead: Aric Hagberg)
- Successfully deploy and operate the Crossroads Advanced Technology System and Infrastructure, demonstrating Efficient Mission Centric Computing (Leads: James Lujan, Gary Grider)



In 2020, LANL began the installation of Chicoma, a next-generation HPE Cray EX computing platform that will serve as a state-of-the-art resource for unclassified computational science.

Provided by Los Alamos Study Group via FOIA

# Excellence in Mission-Focused Science, Technology, and Engineering

John Sarrao, Deputy Laboratory Director for Science, Technology & Engineering

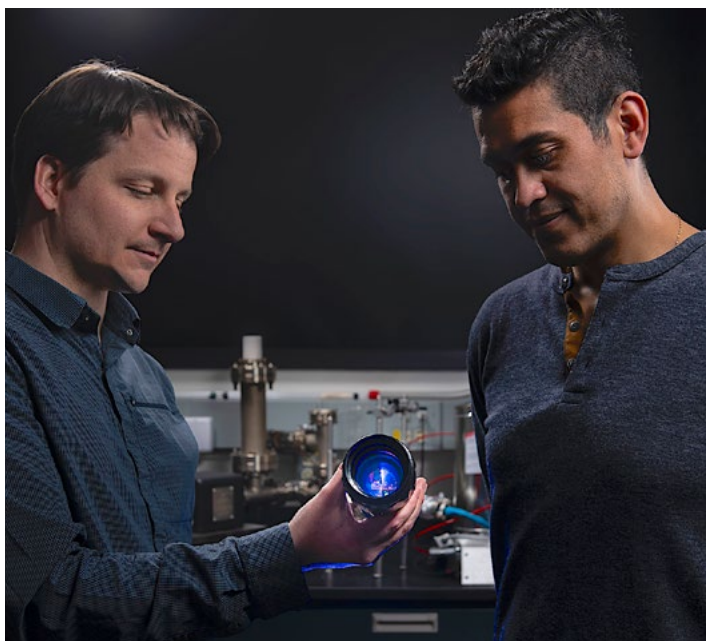
## 2.4 Assert leadership in the national quantum initiative

- Develop and nurture the Laboratory's quantum information sciences capabilities, supporting R&D at the frontier of quantum information sciences to enable responsive solutions for emerging national security needs (Leads: Toni Taylor, Irene Qualters)
- Strengthen and grow our workforce in quantum information sciences through education and training and the enhancement of inter-laboratory, industrial, and academic partnerships (Leads: Filip Ronning, James Ahrens, Candace Culhane)
- Continue to advance CINT as the leading Nanoscale Science Research Center for quantum information sciences (Lead: Adam Rondinone)
- Play a leadership role in the National Quantum Information Sciences Research Center: Quantum Science Center (Leads: Toni Taylor, Irene Qualters)
- Expand funding in basic and applied quantum information sciences that leverages our capabilities and underpins our national security mission (Leads: Srinivas Iyer, Stephan Eidenbenz)



**RESPONSIBILITY**  
TONI TAYLOR

The Laboratory will lead one of three major research thrusts in a collaboration charged by the DOE with developing quantum technologies as part of the Quantum Science Center.



Michael Martin and Leonardo de Melo inspect a high-numerical aperture objective for imaging single trapped atoms.

Provided by Los Alamos Study Group via FOIA

# Excellence in Mission-Focused Science, Technology, and Engineering

John Sarrao, Deputy Laboratory Director for Science, Technology &amp; Engineering

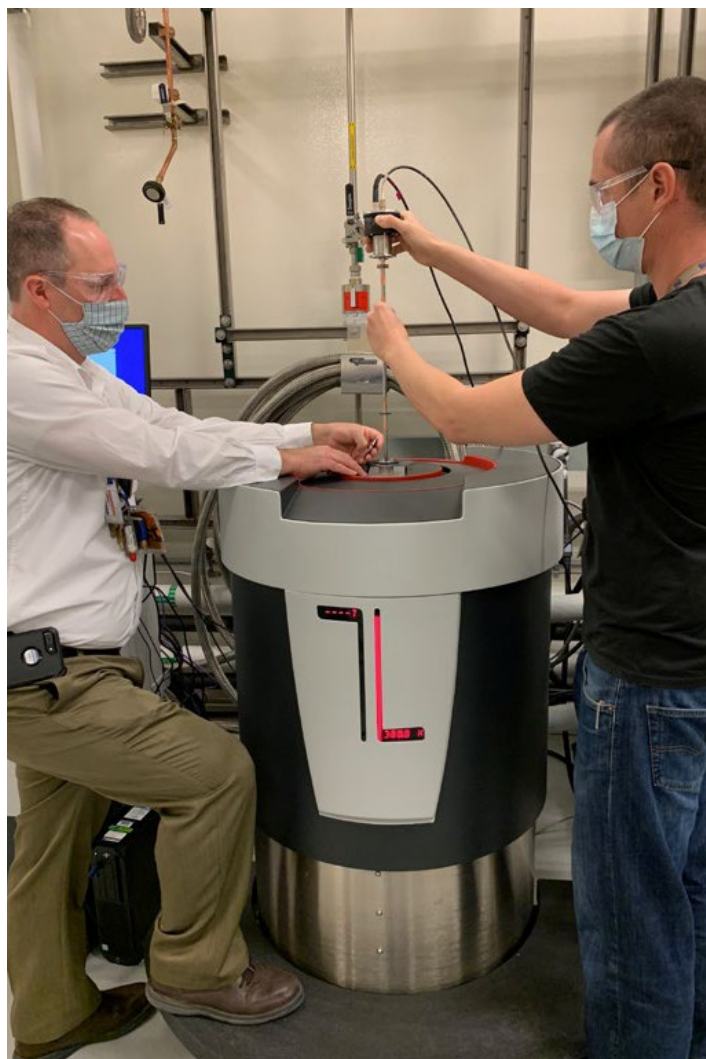
## 2.5 Develop and implement an integrated nuclear energy and nuclear materials initiative

- Deliver on priority projects—power sources, isotope production, special-purpose reactor efforts, modeling and simulation, and fuels
- Identify, influence, and respond to changes in program strategies in the broader national security and energy security context (Lead: DV Rao)
  - Elevate NE/NNSA strategic partnership and serve as a key NNSA laboratory
- Enhance partners' abilities to demonstrate technologies by using LANL's unique facilities, skilled personnel, and capabilities (Leads: Carol Burns, Matt Griffin, Jerome Garcia)
  - Streamline partnering mechanisms
- Strategically align staffing and infrastructure for identified long-term nuclear energy/materials capability needs (Leads: Ellen Cerreta, Mary Hockaday, Jay Carnes)
  - Support remaining key roadmaps—e.g., advanced fuel qualification, heat pipe technology, and nuclear demonstration capability
  - Develop and implement strategic plans for enduring infrastructure
  - Ensure appropriate staffing plans, recruiting and development of new talent, and leadership succession planning



**RESPONSIBILITY**  
CAROL BURNS

Paul Tobash and Mark Wartenbe load a sample into a PPMS DynaCool system, used for measuring low-temperature physical properties.



Gio Romero fabricates one of many unique plutonium experimental sample holders.

Provided by Los Alamos Study Group via FOIA

# Excellence in Mission-Focused Science, Technology, and Engineering

John Sarrao, Deputy Laboratory Director for Science, Technology & Engineering

## 2.6 Implement an integrated initiative for plutonium and actinide missions based on FY20 strategy

- Update and implement the ST&E Roadmap, deliver on components of Director's Initiative projects, and define areas where research is needed to further advance mission capabilities (Lead: Franz Freibert)
- Establish an Actinide Operations and Pit Program Strategy Team for weapons production and actinide operations (Lead: Stacy McLaughlin)
- Draft and finalize an updated Radiological Campus Strategy for small scale science (Lead: Drew Kornreich)
- Develop a real-time capability for measurements for Criticality Safety and Safety Basis using nuclear measurements, modeling, and data science (Lead: Bob Putnam)
- Initiate a Nuclear Enterprise Science and Technology program for workers (Lead: Steve Schreiber)



**RESPONSIBILITY**  
FRANK GIBBS



Actinide Director Frank Gibbs, ALDWP, interacts with next-generation Actinide Scientist-Engineer Alissa Tatro and Erika Esquivel on a laboratory/manufacturing floor.




Provided by Los Alamos Study Group via FOIA

# Excellence in Mission-Focused Science, Technology, and Engineering

John Sarrao, Deputy Laboratory Director for Science, Technology & Engineering

## 2.7 Implement a national security life sciences initiative

- Continue to provide timely scientific and technical assistance to key regional and national government stakeholders; identify and assess Laboratory capabilities that support national security life sciences, including those contributing to pandemic science and response (Lead: Pat Fitch)
  - Assert leadership and participate in national biodefense and international-level bio-economy strategy and planning efforts; benchmark planning scenarios in support of national security mission needs (Leads: Kirsten McCabe, Srinivas Iyer)
  - Develop internal roadmaps for core capabilities that achieve scientific and scenario-driven goals and demonstrate synergisms across multiple goals; identify how systems can be used and maintained between emergencies; leverage LANL Pillar processes, including CNES, SoS, and IS&T (Leads: Elizabeth Hong-Geller, Cathy Wilson, Ben McMahon)
- 

**RESPONSIBILITY**  
PAT FITCH

- Identify the partners needed to implement the roadmaps and to provide integrated national and global plans that address data sharing and infrastructure requirements (Leads: Eric Dors, Bill Humbert)
  - Leverage mission success and intramural investments to enhance key Laboratory capabilities and partner engagement in areas of infectious diseases, biodefense (terrorist and nation-state), the bio-economy, and Earth and environmental change (Leads: Kirsten McCabe, Srinivas Iyer, Elizabeth Hunke)



Alina Deshpande explains how a set of web-based software tools developed by the Lab can help public health planners obtain actionable information and rapidly respond to disease outbreaks and re-emergence events. The capability, called RETRO RX, won an R&D 100 Award in 2019.

## Excellence in Mission Operations

Kelly Beierschmitt, Deputy Laboratory Director for Operations

### 3.1 Change organizational culture with an emphasis on organizational learning

- Advance LT leadership
  - Continue to develop and communicate a compelling strategic vision
  - Lead using our shared values focused on integrity, competence, and service
  - Integrate existing programs and support operations to achieve simultaneous excellence
  - Make SCoR principles integral to ISM, ISSM, and Conduct of Operations
- Develop a culture of accountability and ownership with clearly defined roles and responsibilities, defined timelines, and deadlines (Lead: Kelly Beierschmitt)
  - Participation by key Lab staff in relevant Battelle Communities of Practice (e.g., planning, conduct of research, conduct of operations, metrics)
  - Provide coaching on proper planning, hazard identification, and work control
  - Mentor key first-line supervisors, including LOSA and LOMA training
  - Leverage communities of practice and peer-review processes for continuous improvement
- Empower our managers and staff (Leads: Kelly Beierschmitt, John Sarrao, Bob Webster)
  - Provide LOSA training to all first-line managers and supervisors
  - Continuously monitor and adjust through culture survey tools
  - Involve workers directly in process improvement efforts
  - Foster staff development of critical-thinking skills for risk assessment
- Continue to strengthen LANL's relationship with NNSA and DOE (Leads: Kelly Beierschmitt, Frances Chadwick, John Sarrao, Bob Webster)



**RESPONSIBILITY**  
THOM MASON

SCoR is a growing initiative at LANL, with more than 700 managers who are trained to use SCoR's eight principles as the basis for a strong safety culture. These principles are reinforced through SCoR-in-action stories, followed by recognition emails from champions Toni Taylor and Bret Simpkins.

#### SAFE CONDUCT of RESEARCH PRINCIPLES

- 1 Everyone is personally responsible for ensuring safe operations.
- 2 Leaders value the safety legacy they create in their discipline.
- 3 Staff raise safety concerns because trust permeates the organization.
- 4 Cutting-edge science requires cutting-edge safety.
- 5 A questioning attitude is cultivated.
- 6 Learning never stops.
- 7 Hazards are identified and evaluated for every task, every time.
- 8 A healthy respect is maintained for what can go wrong.



#### Report Incidents

For fire or medical incidents, call 911 first, then call the Operations Center (EOC) at 7-2400.

For other safety and health incidents, call 7-2400. For more details about reporting incidents, call 7-2400.

**Note: If your facility has a local operations center (e.g., TA-55), call that number first. No response? Then call 7-2400.**

## Excellence in Mission Operations

Kelly Beierschmitt, Deputy Laboratory Director for Operations

### 3.2 Improve integrated planning across priority mission activities and infrastructure

- Develop a comprehensive site plan that includes needs for future mission-relevant facilities, space, decontamination and decommissioning, support infrastructure, and associated systems (Lead: Bret Simpkins)
  - Continue to advance the Laboratory’s vision for a future advanced characterization, qualification, testing, and experimental campus (Lead: Tri Tran)
  - Develop and deliver an integrated decontamination and decommissioning plan (Lead: Ed Keith)
  - Incorporate long-term deferred maintenance planning into the comprehensive site plan (Lead: Ed Keith)
  - Support NA-50 MAP process (Lead: David Teter)
- Improve facility and operational functions for small projects management, maintenance, configuration management, and operations management (Leads: Kathy Segala, Bret Simpkins, Michael Hazen)
- Improve integration of planning for mission-essential acquisitions with procurement processes (Lead: Drew Fuller)
- Integrate long-range financial plans with production plans (Lead: Aaron Menefee)
- Implement an operational telework pilot to address space needs and timeline for the plutonium mission (Lead: LeAnne Stribley)

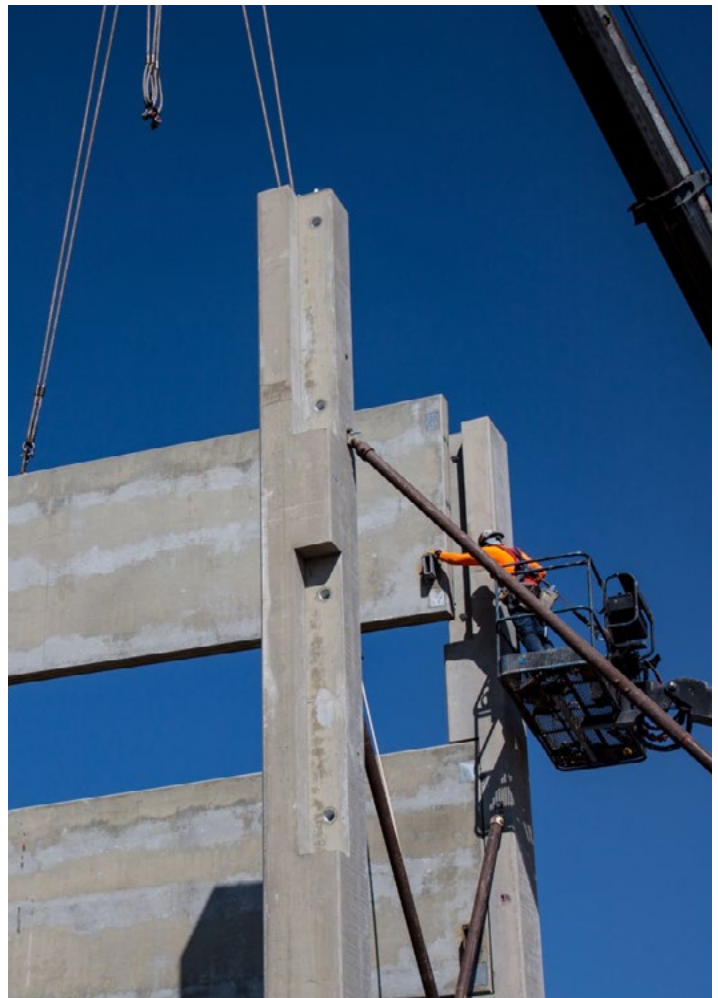


**RESPONSIBILITY**  
KELLY BEIERSCHMITT



**RESPONSIBILITY**  
BRET SIMPKINS

In October 2020, crews installed precast panels for the TA-50 parking garage.



In February 2020, Laboratory leaders and contractors held a groundbreaking ceremony for a new cell tower at TA-15.

## Excellence in Mission Operations

Kelly Beierschmitt, Deputy Laboratory Director for Operations

### 3.3 Address critical issues related to NMCA, nuclear safety, criticality safety, and waste

- Develop enduring waste management operations (Lead: Michael Hazen)
  - Confirm the organizational structure for waste operations and foster key relationships
- Continue progress on critical projects related to NMCA, synergistic with 1.1 and 2.6 (Lead: Michael Hazen)
  - Optimize production time with inventories that are consistently concise, effective, and efficient
  - Implement improved technology and processes to optimize efficiency while maintaining or improving material control and accountability
  - Complete corrective action plans for NMCA
  - Execute the plan to achieve in-process monitoring for NMCA (Lead: Dan Mack)
  - Develop a real-time capability for measurements for NMCA using nuclear measurements, modeling, and data science (Leads: Rollin Lakis, Jonathan Theye )
  - Address critical issues related to nuclear safety and criticality safety (Lead: Bret Simpkins)
  - Address critical issues related to classification (Lead: Michael Hazen)

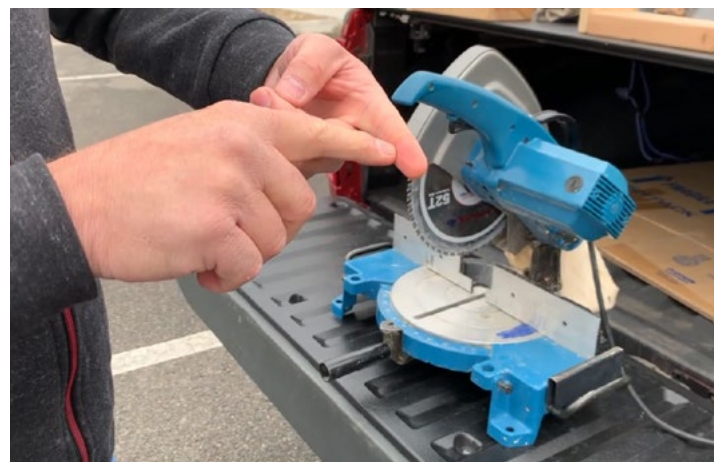


**RESPONSIBILITY**  
MICHAEL HAZEN



**RESPONSIBILITY**  
BRET SIMPKINS

In September 2020, Reed Sharp starred in a video about hand safety. Here he shows the finger that sustained an injury several years ago while working with an electric saw.



The Plutonium Facility upgrades received accolades from the NNSA in August 2020.

- Improve efficiency and reduce cycle time for the Termination of Safeguards process (Lead: Michael Hazen)
  - Address critical issues related to Lab-wide RCT support (Lead: Michael Hazen)
    - ♦ Work with HR for a competitive package to recruit and retain necessary experienced and qualified talent
  - Ensure effective continuity of operations through LANL recovery from COVID-19 conditions (Lead: Michael Hazen)
  - Drive continuous integration of safety management and safeguards and security management into leadership and work practices (at all levels, addressing all types of work and hazards) (Lead: Michael Hazen)

## Excellence in Mission Operations

Kelly Beierschmitt, Deputy Laboratory Director for Operations

### 3.4 Implement systematic process improvement to drive increased rigor and efficiency in work execution

- Strengthen Lab-wide Lean Six Sigma capabilities (Lead: Michael Hazen)
  - Improve Business Services to reduce risks through streamlining business processes, implementing automation tools/systems, and establishing clear roles and responsibilities for service delivery (Lead: LeAnne Stribley)
    - Modernize craft time entry; continue to develop and implement (Leads: Jim Strand, Steph Warren, Brian Watkins)
    - Implement classified wireless in support of Pit Production (Lead: Steph Warren)
  - Reduce IT and cyber risks; advance IT (Lead: Steph Warren)
    - Continue to work with NA-LA and CenturyLink on ongoing efforts to provide a second data line to the Laboratory and continue work to install the microwave link to Santa Fe
    - Provide enhanced computing capabilities on the classified red network to support programmatic performance; continue to improve the red network's security profile
    - Implement further segregation of network architecture to improve security; complete quarantine and printer enclaves; add Control Systems Enclave
  - Implement an institutional IT governance model that addresses mission accomplishment while maintaining compliance, optimizing internal IT investment strategy, and balancing outcomes with financial and user experience goals (Leads: LeAnne Stribley, Charlie Nakhleh)
- 

**RESPONSIBILITY**  
KELLY BEIERSCHMITT
- Continue development of System of Management Systems and associated iSoMS tool as mechanisms to strategically organize functional processes and business systems of the Laboratory (Lead: Rekha Pillai)
    - Develop and deploy improved management system processes and procedures, change management process and compliance metrics
  - Implement an integrated CAS process to transition LANL to a higher-performing organization, nurturing a robust continuous performance improvement culture toward standards of excellence (Leads: Marc Clay, Michael Hazen)
  - Leverage MSs and CAS; implement a robust institutional performance management process (including issues management) to routinely monitor performance against standards of excellence and to foster organizational learning (Lead: Michael Hazen)
  - Develop a measurable and sustained Excellence in Operational Effectiveness Program that provides value-added operations and optimizes mission capabilities (Lead: TBD)



The new combustion gas turbine generator was installed in April 2020 and conditionally accepted by the NNSA in September.

# Excellence in Mission Operations

Kelly Beierschmitt, Deputy Laboratory Director for Operations

## 3.4 Implement systematic process improvement to drive increased rigor and efficiency in work execution (continued)

- Develop and steward a strong program and project management approach and staff that support work across organizations, document requirements/expectations, and enable accountability for LANL in executing the full portfolio of projects, including infrastructure, equipment, and mission/production (Leads: Kathye Segala, Dave Eyer, Toni Taylor)
  - Develop a Lab-wide program management infrastructure integrated with a risk management system to inform the Leadership Team governance process
  - Establish common program management tools and reporting systems supported by an integrated information system(s) infrastructure
  - Expand Project Dashboard, including project status reports, increased coverage for small project progress, safety data, environmental data, and observations
- Implement a Laboratory-wide EVMS System Description—based on a tailored and scalable implementation of our certified system—to support all projects, including multiple-site, Weapons, APM Line Items, and Small Projects (Lead: Kathye Segala)
- Execute the capital projects program through project teams that represent all stakeholders and are focused on achieving compliant results (Lead: Kathye Segala)
  - Continue capital projects culture improvements based on progress made in FY20; using WESST survey and SSIP progress from FY20, develop an improvement plan, document in SSIP for FY21, and execute
  - Develop a resource-loaded schedule, including all capital projects, to enable out-year forecasting and strategic planning
  - Develop and implement an integrated program/project schedule for TA-55 scope through collaboration with the Weapons Program
- Establish a commercial construction execution model to safely deliver quality facilities within competitive cost and schedule industry benchmarks (Leads: Kathye Segala, Bret Simpkins)



**RESPONSIBILITY**  
KELLY BEIERSCHMITT

- Establish IBC plus codes and standards that include specific LANL exceptions
- Establish modular/prefabricated office and laboratory facility designs in collaboration with NA-50
- Implement a new approach to subcontracting for capital projects and small projects (Lead: Kathye Segala)
  - Work collaboratively to restore the subcontractor base, investing in contractors' safety cultures, enhancing performance, and building longer-term portfolios
  - Establish the construction MATOCs and maximize subcontract execution across the portfolio
    - ♦ Engage the subcontractors in LOSA and HPI joint collaboration sessions
    - ♦ Establish a relationship-based engagement model with construction subcontractors (expectation setting, two-way performance feedback, lessons learned, and opportunities for improvement)
- Organize operations for successful delivery of pit mission (Lead: Kelly Beierschmitt)



Subcontractors install the new combustion gas turbine generator at the TA-03 steam plant.

# Excellence in Mission Operations

Kelly Beierschmitt, Deputy Laboratory Director for Operations

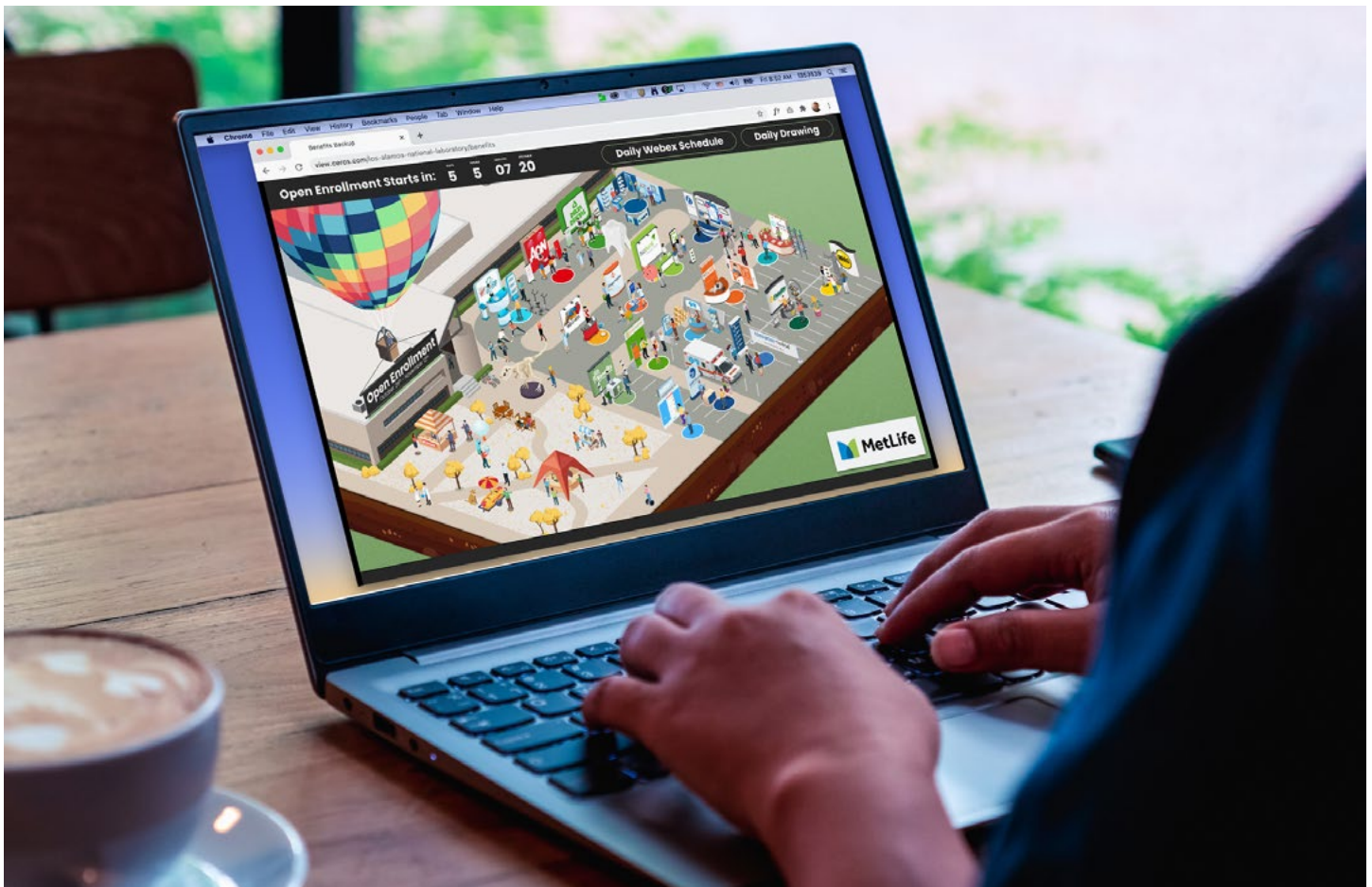
## 3.5 Enhance quality of work life, workforce planning, and training and development

- Enhance staff recruitment, retention, and development (Lead: Laurie Monfiletto)
  - Talent acquisition and retention strategy
  - Flexibility (e.g., paid leave, teleworking)
  - Formal leadership training program
- Develop and implement a comprehensive succession-planning process (Lead: LeAnne Stribley)
- Measure and communicate effectiveness and policy change requirements from telework pilot (Lead: LeAnne Stribley)
- Streamline training and qualification; evaluate effectiveness (Lead: Laurie Monfiletto)
  - Implement modern software



**RESPONSIBILITY**  
**LEANNE STRIBLEY**

A total of 3,925 employees visited the first-ever Virtual Benefits Expo in October 2020. The collaborative online adaptation was established to accommodate a largely at-home workforce. In comparison, the 2019 on-site expo participation rate was approximately 1,800.



## Excellence in Community Relations

Frances Chadwick, Laboratory Staff Director

### 4.1 Continue commitment to the community with educational, economic, and philanthropic investments of time and resources

- Work with local stakeholders—including the LANL Foundation, local schools, United Way of NNM, and the Regional Development Corporation—to further Triad’s presence as an active participant in the community according to the Community Involvement and Outreach Plan and Triad’s Community Commitment Plan (Lead: Kathy Keith)
  - Engage with and advise the Los Alamos County Economic Vitality Action Team (Lead: Bret Simpkins)
  - Initiate a pilot program to provide technical assistance to local communities using technical expertise among Lab employees (Lead: Kathy Keith)
- Communicate with and inform Triad partners and the public regarding progress, and ensure alignment with partner goals and philosophy (Lead: Frances Chadwick)
- In partnership with NNSA, establish a regular cadence of informational sessions with local stakeholders (Lead: Frances Chadwick)



**RESPONSIBILITY**  
KATHY KEITH

LANL R&D engineer Michael Middlemas volunteers at Kitchen Angels in Santa Fe, a nonprofit that prepares and delivers meals to housebound people in need. Kitchen Angels has seen a large increase in demand for their services during the COVID-19 pandemic.



Student participants who attended the morning session of the SFCC SMM Cohort overview pause for a photo outside of the RLUOB conference rooms.

- Establish trust between the Laboratory and its local and national elected officials and the communities they represent (Lead: Patrick Woehrle)
- Align the Laboratory with NNSA customers in areas of communications and public affairs (Lead: Patrick Woehrle)
- Promote LANL’s achievements and investments to the workforce, our customers, and the community (Lead: Scott Faulk)
- Implement new LANL brand throughout all communications tools (Lead: Lilly Anaya)



## Excellence in Community Relations

Frances Chadwick, Laboratory Staff Director

### 4.2 Strengthen pipelines and partnerships to build the workforce of the future

- Execute and manage partnerships with local and national institutions to provide pipelines to meet mission need; ensure alignment with HR and line organizations' required skills and capabilities (Lead: Nan Sauer)
- Improve pipeline planning in partnership with NNM colleges and NM state universities, Texas A&M University, Battelle, UC, and other institutions (Lead: Nan Sauer)
- Promote economic growth by pursuing opportunities to broaden the Laboratory's impact in the commercial sector (Lead: Nan Sauer)
- Leverage pipelines and partnerships to ensure that staffing needs for the Plutonium mission are met (Leads: Laurie Monfiletto, Dave Eyler)



**RESPONSIBILITY**  
NAN SAUER

- Continue integration of the 5-year staffing plan with staffing needs and pipeline (Lead: Laurie Monfiletto)
  - Continue to look at different mechanisms to integrate staffing with financial numbers and prepare for future recruiting efforts



Jackie Mirabal-Martinez (Neutron Science and Technology, P-23) shows LANL Summer Physics Camp for Young Women participants Zoe Martinez (left) and Ariana Garcia (right) how to solder. The free, 2-week camp—held in Pojoaque—aimed to empower local young women to explore a future in STEM by providing them with a grounding in STEM disciplines, introducing them to role models, and showcasing the wide range of STEM opportunities available at the Lab and in New Mexico.

## Excellence in Community Relations

Frances Chadwick, Laboratory Staff Director

### 4.3 Enhance small business participation in executing LANL scope across all directorates

- Continue to partner with preselected SBs (TechSource, Longenecker, Merrick) and Pueblo MOUs to build opportunities for engagement in delivering the Laboratory's mission (Lead: Drew Fuller)
- Continue to work with the Battelle network and the other UC-managed laboratories (Lead: LeAnne Stribley)
- Establish SB construction MATOCs and promote collaboration with SB MATOCs (Lead: Kathye Segala)
  - Engage the SB subcontractors in LOSA and HPI joint collaboration sessions
- Continue to support all SB initiatives (Lead: Drew Fuller)
- Leverage alliance with Ohkay Owingeh, San Ildefonso, and Acoma Pueblos to increase subcontracting opportunities for local and regional Pueblos, and provide an innovative resource for improving Laboratory operations and workforce resourcing (Lead: LeAnne Stribley)



**RESPONSIBILITY**  
LEANNE STRIBLEY

- Enhance NNM and Pueblo pricing preferences (a 10% increase adjustment factor on all businesses that are not NNM SBs, a price evaluation discount of 5% for the Pueblo business alliance)
- Seek opportunities to broaden the SB supplier base and expand regional SB capabilities to include NNM and Pueblo capabilities (Lead: Drew Fuller)



Employees from Española-based Laboratory subcontractor Performance Maintenance, Inc., celebrate winning the 2019 HUBZone Small Business of the Year in the Department of Energy Small Business Awards.

## Excellence in Community Relations

Frances Chadwick, Laboratory Staff Director

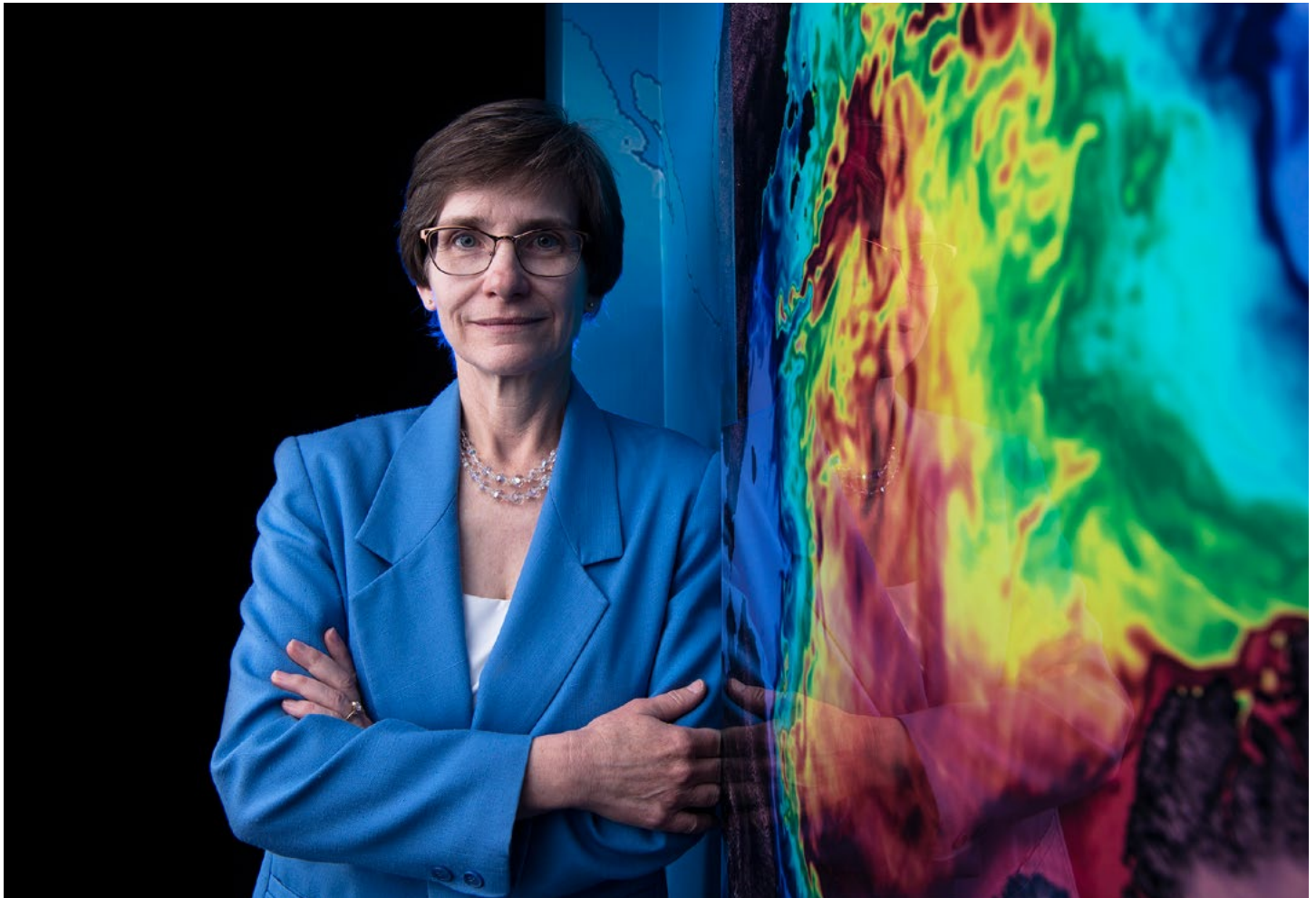
### 4.4 Demonstrate agility and flexibility in our partnerships, effectively balancing benefits and risk

- Embrace public-private partnerships and build on successes, accelerating time to successful engagement with partners, thereby benefitting LANL and NNSA (Lead: Kathleen McDonald)
- Engage proactively in multi-Lab consortia, becoming a partner of choice for our peers (Leads: Kathleen McDonald, Andrew Erickson)
- Streamline approval processes with NA-LA and NNSA through enhanced trust and systems efficiency (Leads: Andrea Martinez, Dave Sosinski)



**RESPONSIBILITY**  
JOHN SARRAO

- Champion change of station and intergovernmental personnel act assignments as means of providing needed technical expertise to the government (Lead: Nan Sauer)
  - Celebrate the success and benefit of our many partnership engagements (Lead: Frances Chadwick)



Elizabeth Hunke, CICE Consortium lead, demonstrates the power of the CICE sea-ice model developed at LANL. Since its inception in the 1990s, the CICE has been broadly adopted by the climate and forecasting community.

Provided by Los Alamos Study Group via FOIA

# Organizing for Efficient, Effective, Safe, and Secure Mission Delivery



TRIAD BOARD OF DIRECTORS

Leadership Team

Laboratory Director's Office



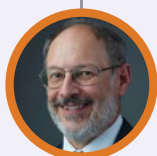
Laboratory Director  
**THOM MASON**



Director, Laboratory Staff Director  
**FRANCES CHADWICK**



Deputy Director Science, Technology & Engineering  
**JOHN SARRAO**



Deputy Director Weapons  
**BOB WEBSTER**



Deputy Director Operations  
**KELLY BEIERSCHMITT**

**Mission & Enabling ST&E**



ALD, Global Security  
**NANCY JO NICHOLAS**



ALD, Chemical, Earth & Life Sciences  
**PAT FITCH**



ALD, Physical Sciences  
**TONI TAYLOR**



ALD, Simulation & Computation  
**IRENE QUALTERS**

**Weapons Mission**



ALD, Weapons Physics  
**CHARLIE NAKHLEH**



ALD, Weapons Engineering  
**JAMES OWEN**



ALD, Weapons Production  
**DAVE EYLER**



Director, Actinide Operations  
**FRANK GIBBS**

**Mission Operations**



ALD, ESHQSS  
**MICHAEL HAZEN**



ALD, Capital Projects  
**KATHYE SEGALA**



ALD, Business Management  
**LEANNE STRIBLEY**



ALD, Facilities & Operations  
**BRET SIMPKINS**

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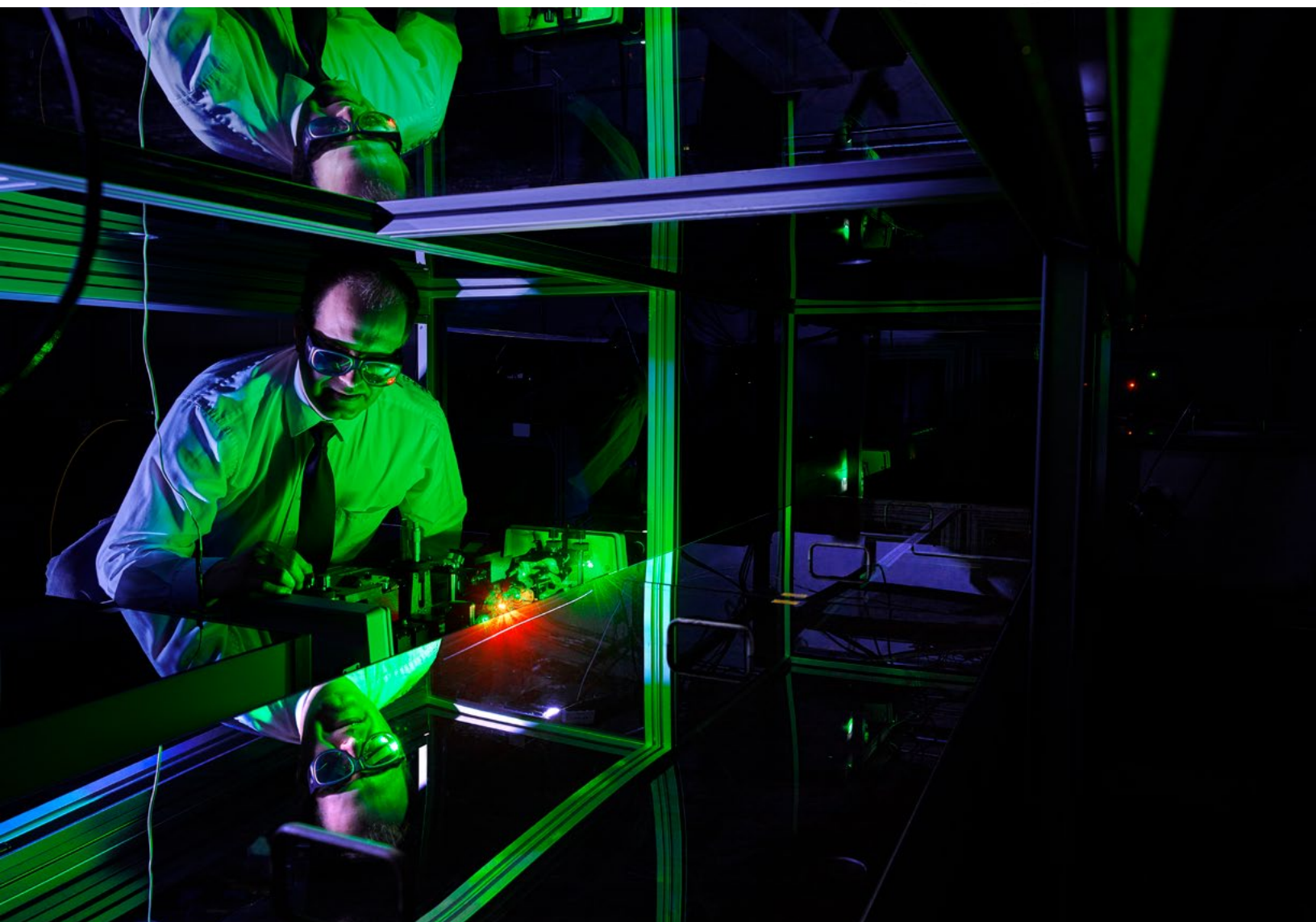
## Organizing for Success

Los Alamos National Laboratory has the longstanding aim of solving national security challenges for the U.S. To most effectively accomplish this mission and achieve sustained, simultaneous excellence, our Laboratory must operate with open communication, clear responsibilities, and close integration across our four key areas: nuclear security, mission-focused ST&E, mission operations, and community relations.

To better link these areas and the people within them, LANL organizes its people vertically and manages its programs in a way that cuts across the chain of command.

Our vertical structure is defined by organizations. Each organization has a clear chain of responsibility and is supported by peer-level coordination bodies and councils, including

- the Leadership Team that manages institutional strategic direction, planning, and decision-making;
- the Laboratory Operating Council that champions strategic institutional initiatives; and
- the Division Leader Council that leads cross-organizational information sharing, team building, and problem solving.



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# Organizing for Efficient, Effective, Safe, and Secure Mission Delivery

## System of Management Systems

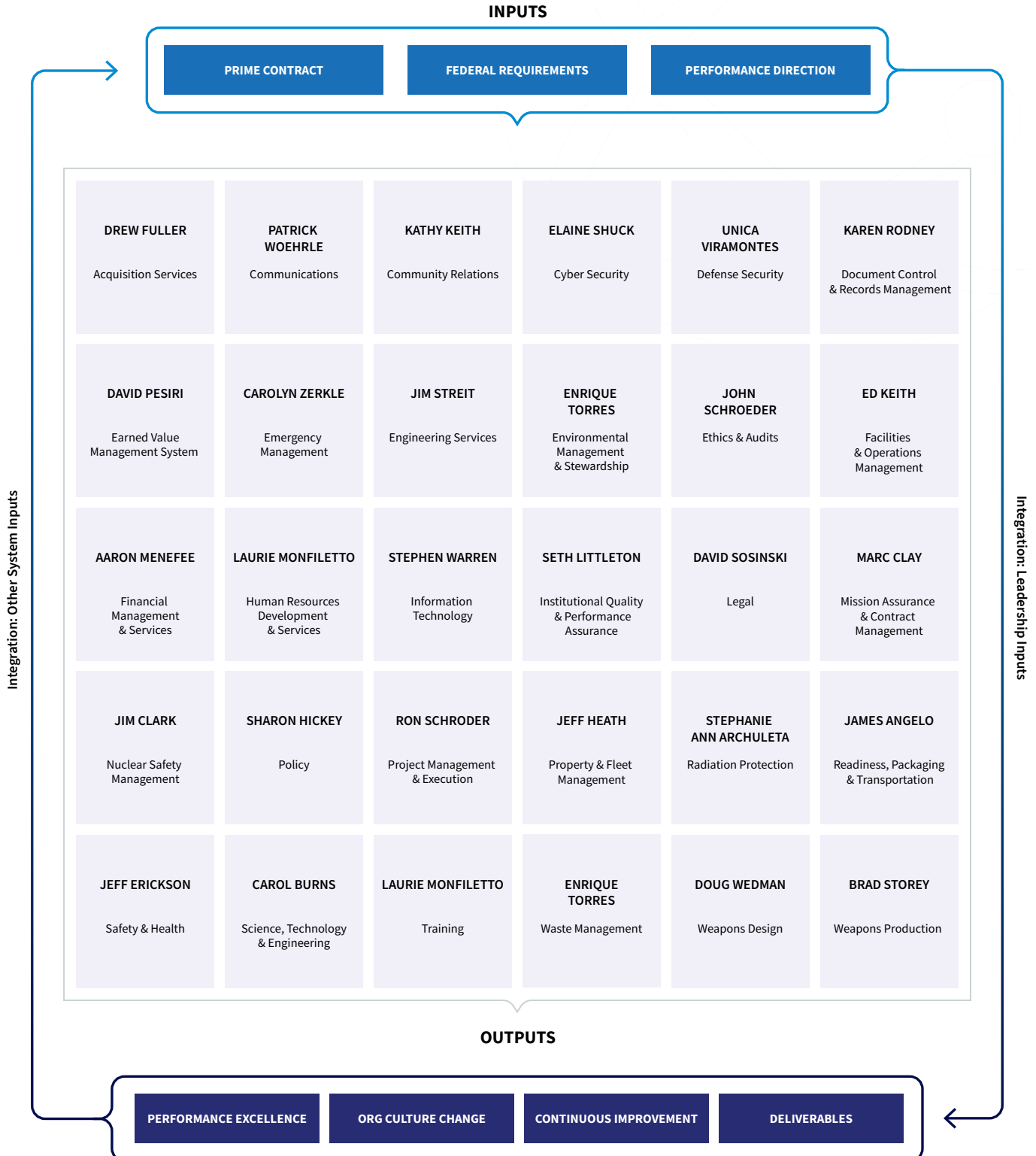
The Laboratory's cross-cutting method of management is the SOMS, which clearly defines and manages our 30 significant functions and business processes. Each management system represents a functional area of operation at the Laboratory (see chart on p. 29) such as waste management, legal, cybersecurity, and weapons design. These functional systems are not siloed; many of them include several line organizations. The lead assigned to each system is responsible for implementing a strategic direction and ensuring that the function or business process meets our institutional needs.

These different systems reflect Triad's approach to managing our complex Laboratory and underscore the fact that *how* we work is as important as *what* we do. They bring the right expertise together to encourage organizational learning, better understand the needs of our stakeholders and customers, and enable simultaneous excellence to better deliver on our national security mission.



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# System of Management Systems



# List of Acronyms

AI	artificial intelligence	MOU	memorandum of understanding
ALD	Associate Laboratory Director	MSs	management systems
ALDWP	Associate Laboratory Director for Weapons Production	MSTS	Mission Support and Test Services
Alt	Alteration	NA-50	NNSA Safety, Infrastructure and Operations
AMPs	Asset Management Programs (NNSA)	NA-IM	NNSA Information Management
APM	Acquisition and Project Management	NA-LA	Los Alamos Field Office, NNSA
ASC	Advanced Simulation and Computing	NC3	Nuclear Command, Control, and Communications
ASCR	Advanced Scientific Computing Research	NE	Nuclear Energy (DOE office)
CAS	Contractor Assurance System	NGEN	next generation
CINT	Center for Integrated Nanotechnologies	NM	New Mexico
CMRR	Chemistry and Metallurgy Research Replacement (facility or project)	NMCA	nuclear material control and accountability
CNES	Complex Natural and Engineered Systems	NNM	Northern New Mexico
COTS	commercial off-the-shelf	NNSA	National Nuclear Security Administration
DARHT	Dual-Axis Radiographic Hydrodynamic Test (facility)	NNSS	Nevada National Security Site
DMMSC	Dynamic Mesoscale Materials Science Capability	NSE	Nuclear Security Enterprise
DOD	Department of Defense	NTES	National Technology and Engineering Solutions of Sandia, LLC
DOE	Department of Energy	PEMP	Performance Evaluation and Measurement Plan
ECCCE	Exascale Class Computer Cooling Equipment	PETN	pentaerythritol tetranitrate
ECP	Exascale Computing Project	PF-4	LANL's plutonium facility
EPCU	electrical power capacity upgrade(s)	PFIB	plasma focused ion beam
ESH&Q	environment, safety, health, and quality	PPI	program production integration
EVMS	Earned Value Management System	PPMS	physical property measurement system
FPU	first production unit	PRT	Product Realization Team
FY	fiscal year	R&D	research and development
HPE	Hewlett Packard Enterprise	RCT	radiological control technician
HPI	human performance improvement	RF	radio frequency
HR	Human Resources	RLUOB	Radiological Laboratory/Utility/Office Building
IBC	International Building Code	S&T	science and technology
IS&T	Information Science and Technology	SB	small business
ISM	Integrated Safety Management	SCoR	Safe Conduct of Research
iSoMS	intelligent System of Management Systems	SDRD	site-directed research and development
ISR	Intelligence and Space Research (Division)	SFCC	Santa Fe Community College
ISSM	Integrated Safeguards and Security Management	SMM	social media marketing
IT	information technology	SoS	Science of Signatures
KO	key outcome	SPP	Strategic Partnership Project
LANL	Los Alamos National Laboratory	SRNS	Savannah River Nuclear Solutions, LLC
LANSCCE	Los Alamos Neutron Science Center	SRPPF	Savannah River Plutonium Processing Facility
LEP	Life Extension Program	SRS	Savannah River Site
LLNL	Lawrence Livermore National Laboratory	SSIP	Safety and Security Improvement Program
LLNS	Lawrence Livermore National Security, LLC	ST&E	science, technology, and engineering
LOMA	Laboratory Operations Management Academy	STEM	science, technology, engineering, and math
LOSA	Laboratory Operations Supervisor Academy	TA	Technical Area
LT	Leadership Team	TRU	transuranic (waste)
MAP	Master Asset Planning	UC	University of California
MATOC	multiple award task order contracts	USAF	United States Air Force
MDI	Mission Dependency Index (NNSA)	USG	U.S. Government
MOA	memorandum of agreement	WESST	Worker Environmental, Safety & Security Team

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is managed by Triad National Security, LLC, for the National Nuclear Security Administration of the U.S. Department of Energy under Contract 89233218CNA000001.



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## Mission

To solve national security challenges through simultaneous excellence

## Vision

To be trusted by our nation, emulated by our peers, and respected by the world

## Culture

*How we do work is as important as what we do*

## Values

### Service

Serving our nation, our partners, our community, and each other

### Excellence

Ensuring safe and secure mission delivery in nuclear security; science, technology, and engineering; operations; and community relations

### Integrity

Demonstrating honesty, ethical conduct, accountable stewardship, and individual responsibility

### Teamwork

Achieving our best by respecting diverse opinions and backgrounds, exploring alternatives, and collaborating with our colleagues and partners

## Behaviors

Collaborative Problem Solving

Shared Outcome

Commitment

Continuous Learning

Trustworthy