

Project Management Update

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Chief Operating Officer

for

Earned Value Management System
Review Team

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Fermilab



Fermilab's Vision and Mission

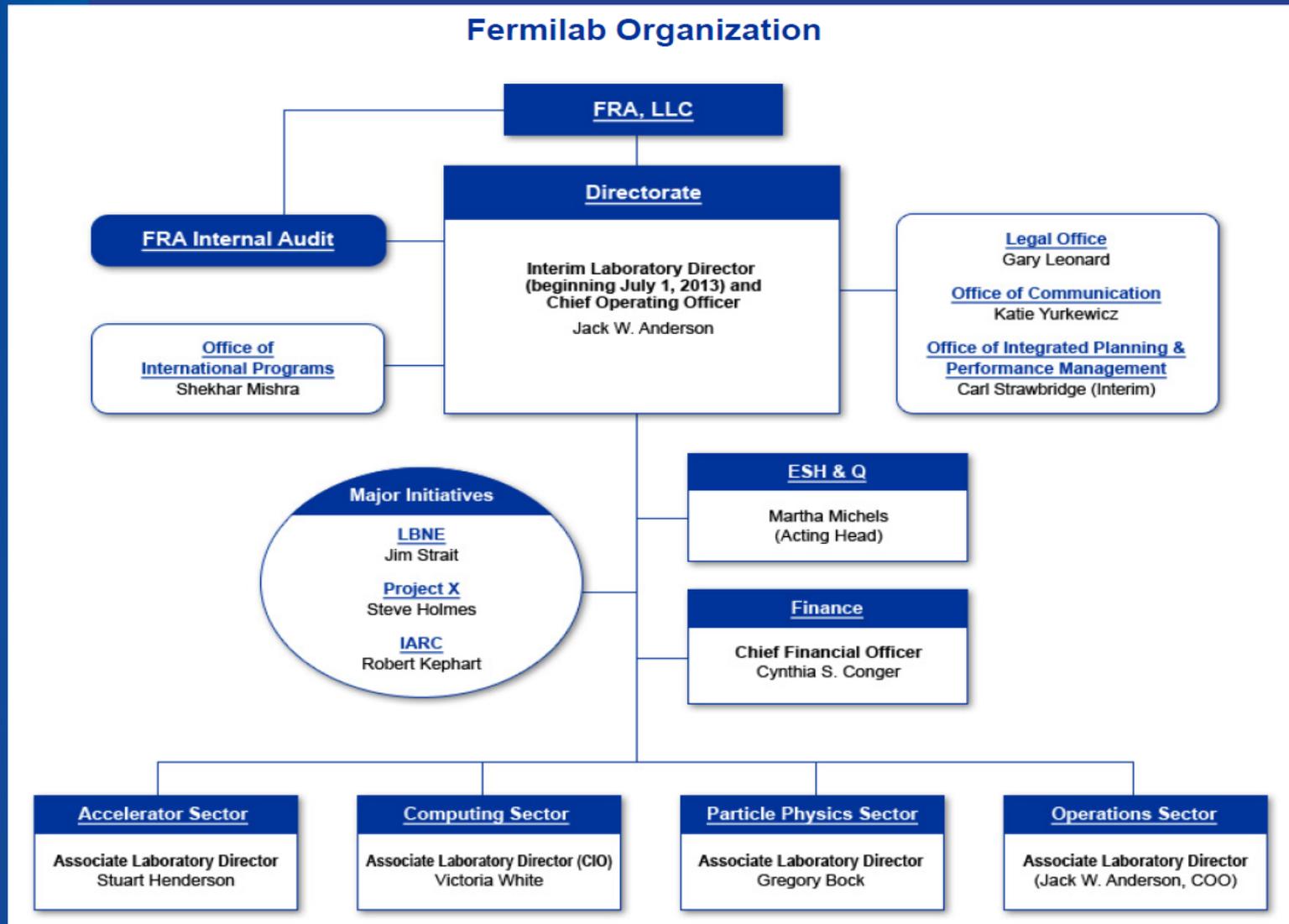
- Fermilab: America's particle physics laboratory
- Vision: inspire the world and enable its scientists to solve the mysteries of matter, energy, space and time for the benefit of all.
- Mission: drive discovery in particle physics by:
 - building and operating world-leading accelerator and detector facilities
 - performing pioneering research with global partners
 - transforming technologies for science and industry.

Strategy for the Future

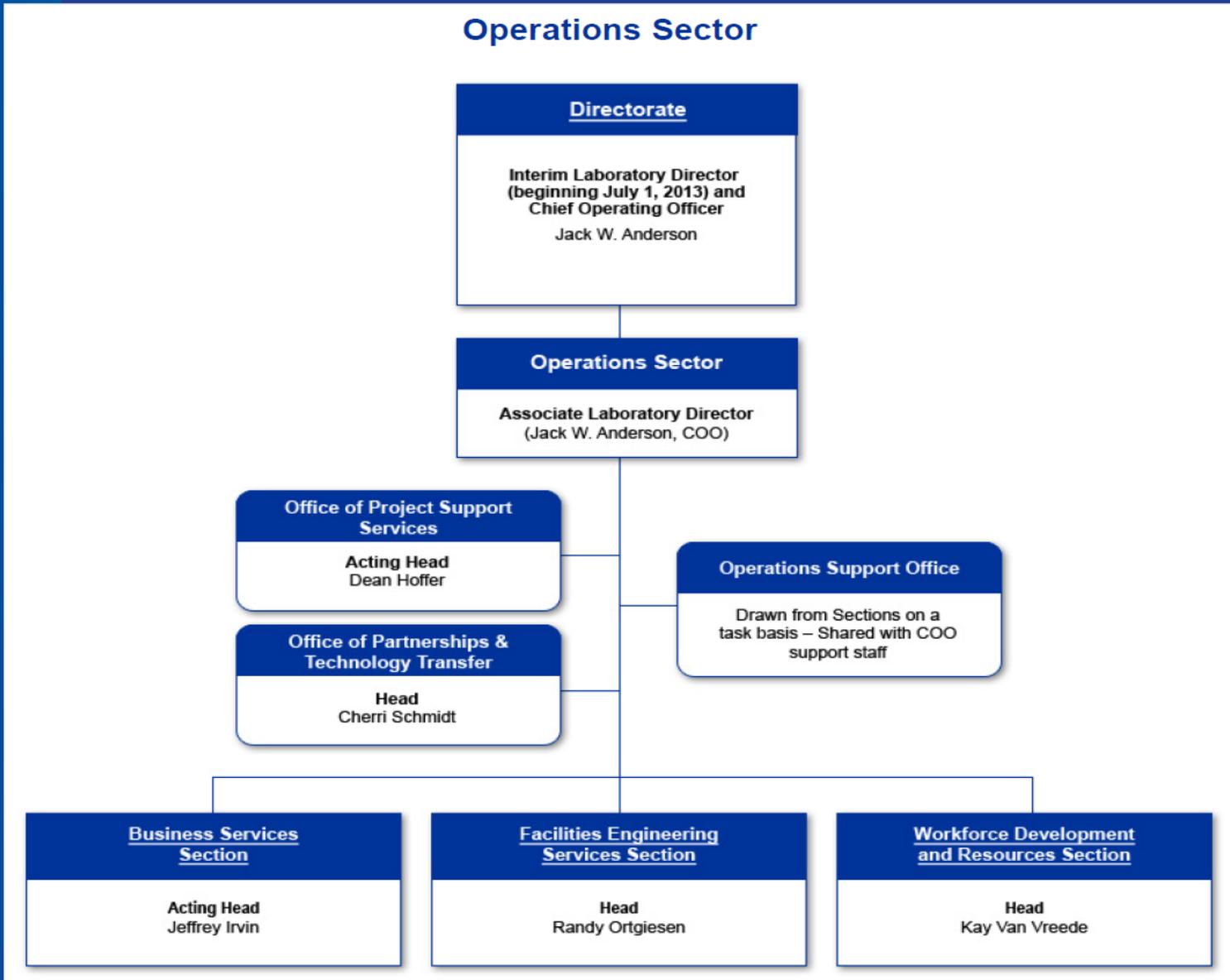
Meets the following criteria:

- Address critical and exciting scientific questions
- Is bold and establishes world leadership
- Leverages the laboratory's expertise and existing facilities
- Attracts international partners
- Fits within a global strategy for the field and within reasonable U.S. funding
- Is focused, yet broad enough to be resilient in the face of unexpected physics discoveries and funding fluctuations

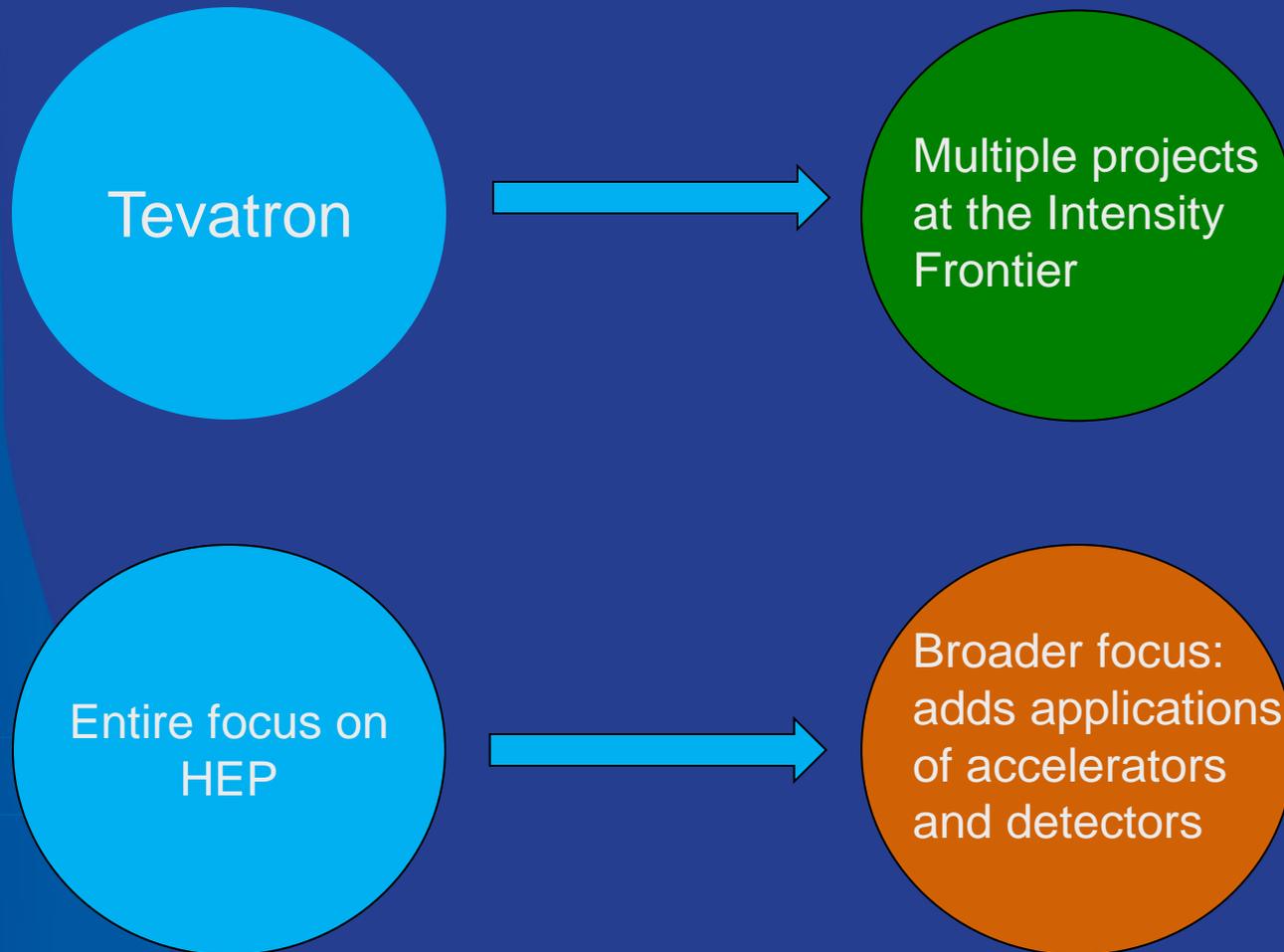
Fermilab organization



Fermilab organization



Two important “pivots” for Fermilab



Challenges...

- ...in the first pivot
 - Bringing the community along
 - Convincing sponsors of the need for multiple projects
 - Bringing the world to invest in a major global facility hosted in the US: LBNE followed later by Project X
 - Managing multiple projects while we are operating the largest accelerator complex in the country, and while budgets are shrinking
- ...in the second pivot
 - Make Fermilab capabilities applicable to all Office of Science projects that would profit from our specialized expertise and test facilities (SC magnets and RF)
 - Develop the capability of working effectively with industry as part of the accelerator stewardship mission of HEP
 - To accomplish this, it is very important to finish the infrastructure that allows us to do this effectively:
 - The Illinois Accelerator Research Center (IARC)
 - Advanced Accelerator Test Facility (ASTA)

Improving our game on project management

- Good progress on NOvA and MicroBooNE: They should both finish on budget and on schedule. This would be 3rd and 4th projects after MINERvA and DES to finish on budget and on schedule
- Thorough review by the best managers in the system: we are implementing recommendations to improve our systems, training, qualification of managers
- Organizational changes to highlight integrated planning and performance management.
- An opportunity to develop a cadre of project managers both for DOE needs and positioning of our young people in a difficult job market

The “*Fermilab Agenda*”

A planning & communications framework that:

- aligns Lab strategic objectives, critical outcomes and major initiatives in major mission areas of science & operations;
- provides top-level focus for Program Execution Plans that flesh out annual actions and performance plans to make progress toward the strategic vision; and
- stimulates improvement (sustain good ideas, end those not working out, innovate new ideas).

Emphasis on the importance of project management

Strategic Fermilab Agenda FY 2013 – FY 2018

Mission	<i>Fermilab's mission is to drive discovery in particle physics by building and operating world-leading accelerator and detector facilities, performing pioneering research with global partners, and transforming technologies for science and industry.</i>				
Strategic Objectives	Excellence in Particle Physics, Accelerator Science and Technology, and Large-Scale User Facilities				Excellence in Laboratory Operations
	Science			Facilities	
	Intensity Frontier	Energy Frontier	Cosmic Frontier		
Critical Outcomes	Intense particle beams reveal new physics through neutrino, muon and rare-decay experiments.	High-energy particle colliders discover new particles and probe the architecture of nature's fundamental forces.	Underground experiments and ground-based telescopes uncover the nature of dark matter and dark energy.	The Fermilab complex efficiently and safely delivers the highest levels of performance to worldwide users. Theoretical insights and new technologies support a future particle physics program.	World-class scientific, engineering, computing and support staff use well-integrated, efficient business and management systems to operate a safe, modern suite of facilities and infrastructure.
Strategies	Establish a world-leading program by leveraging international partnerships. Fully exploit the scientific potential of Fermilab's accelerator complex.	Exploit the full scientific potential of LHC, and support CMS and LHC upgrades. Prepare the scientific case for future Energy Frontier exploration.	Exploit the full scientific potential of dark energy and dark matter experiments. Compete for next-generation dark matter experiments. Prepare to play a key role in next-generation dark energy experiments.	Modernize the Fermilab accelerator complex to support future world-leading physics research. Strengthen US and international partnerships in advanced accelerator and detector technology development and construction. Compete for funds and establish CRADAs and WFO agreements to strengthen core competencies.	<p>Become universally recognized as a successful manager of large science construction projects.</p> <p>Invest in infrastructure, and streamline and modernize business processes to support the laboratory mission and strategic goals.</p> <p>Optimize the cost of doing business.</p> <p>Provide an outstanding environment for staff, users and collaborators</p>
Major Initiatives and Deliverables	<p>1. Deliver NOvA project within baselines.</p> <p>2. Plan and execute LBNE, Muon g-2, Mu2e and MicroBooNE projects within baselines.</p> <p>3. Exploit neutrino physics programs: NOvA, MicroBooNE, MINOS+ and MINERvA.</p> <p>4. Develop Project X physics program.</p> <p>5. Develop concepts for future experiments: ORKA, nuSTORM and pEDM.</p>	<p>1. Plan and execute LHC upgrades including CMS and LARP.</p> <p>2. Exploit physics from CMS.</p> <p>3. Complete the Tevatron physics program, deliver results, and preserve knowledge and data.</p>	<p>1. Initiate physics program from DES.</p> <p>2. Develop strategy for next generation of dark matter experiments.</p> <p>3. Establish major roles in future dark energy experiments LSST and MS DESI.</p>	<p>1. Build the Muon Campus.</p> <p>2. Deliver the Proton Improvement Plan.</p> <p>3. Develop Project X pre-conceptual design and demonstrate PXIE.</p> <p>4. Grow world-class accelerator science and technology programs including ASTA.</p> <p>5. Complete IARC construction and establish an applied technology program.</p> <p>6. Plan, authorize and execute the (IUUP) SU project.</p> <p>7. Produce MAP feasibility studies.</p>	<p>1. Enhance performance through broad implementation of HPI principles.</p> <p>2. Initiate and deploy enhanced support for Fermilab projects.</p> <p>3. Fully implement CAS.</p> <p>4. Develop process and organizational framework for integrated planning and budgeting.</p> <p>5. Establish strategic and critical hires list from OHAP.</p> <p>6. Develop Site Master Plan.</p> <p>7. Develop roadmap and execute projects to transform and modernize business processes and information systems.</p> <p>8. Initiate an optimization study to reveal streamlining, cost-reduction and business system innovation opportunities.</p> <p>9. Unify core IT services and maintain ISO20000 certification.</p>
Enabling Capabilities	<ul style="list-style-type: none"> A premier detector R&D program and expanded test beam capabilities. Computing facilities, technologies and architectures that enable scientific output. A world-class theory program. 			<ul style="list-style-type: none"> Construction projects that are planned and executed within baselines. Partner laboratory relationships that support work for others. 	

Strategic Objective***Excellence in Laboratory Operations*****Critical Outcome**

World-class scientific, engineering, computing & support staff use well-integrated & efficient business & management systems to operate a safe, modern suite of facilities & infrastructure.

Strategies

- *Become universally recognized as a successful manager of large science construction projects.*
- *Invest in infrastructure, streamline & modernize business processes to support the laboratory mission & strategic goals.*
- *Optimize the cost of doing business.*
- *Provide an outstanding environment for staff, users and collaborators*

Initiative:

Initiate and deploy enhanced support for, and oversight of, Fermilab projects.

We are committed to the following outcomes:

Deploying an effective project management system that provides a high degree of confidence that Fermilab will deliver projects within the original performance baseline, cost and schedule, and fully capable of meeting mission performance, safeguards and security, and environmental, safety, and health requirements.

We are committed to the following milestones for FY 2013:

- Transform the Office of Project Management Oversight into the Project Support Services Office, which provides services and support to projects, particularly in the early stages of development. This assistance will include:
 - Orientation to a schedule of activities, suggested meetings and planning milestones required to achieve CD-1.
 - Guidance and assistance in selecting WBS level-2 managers.
 - Provision of qualified project funded projects controls staff through contracts or from in-lab resources.
 - Schedule and cost estimate development for CD-1.
 - Required document templates, reporting and progress measurement, and
 - Training and mentoring of key project team members, as requested.
- Identify, develop, select and assign strong, experienced project leadership teams in a systematic and comprehensive way. This milestone will include:
 - Identify capable project leaders from across the Lab.
 - Institute a formal selection-board approach to designating the Project Manager and Deputy Project Manager on all projects within the framework of DOE O 413.3.
 - Develop, train and professionalize Project Managers and support staff in critical risk areas (project controls, procurement, engineering).
 - Provide training and development opportunities for project leadership candidates on the general concepts of project management and on specific aspects of their future roles within the DOE and Fermilab project management systems.
- Establish and convene a Performance Oversight Group that reviews performance (trends, forecasts, vulnerabilities, significant issues, etc.) for all construction projects within the Lab.

Responsibility: Jack Anderson, Young-Kee Kim, Greg Bock, Stuart Henderson, Vicky White, Cindy Conger

Concise initiative plans provide additional context, near-term milestones and assignment of accountability

Project management initiative:

Enabling people and systems for successful project delivery

Revitalize

People &
Performance

- **People:** developing leaders & teams with appropriate experience, training and certification. Establishment of Project Management Planning Board to set standards/reconcile enterprise issues.
- **Performance:** emphasis on risk management, execution of EVMS, metrics and productive inquiry

Re-tool

Systems,
Services &
Information

- **Systems:** modernize and standardize systems & tools
- **Services:** refocused Integrated Planning and Project Support Services offices, resourcing (e.g., project controls, procurement staffing)
- **Information:** standardized, trendable information for accountable staff

Review

Accountability &
Oversight with
Transparency

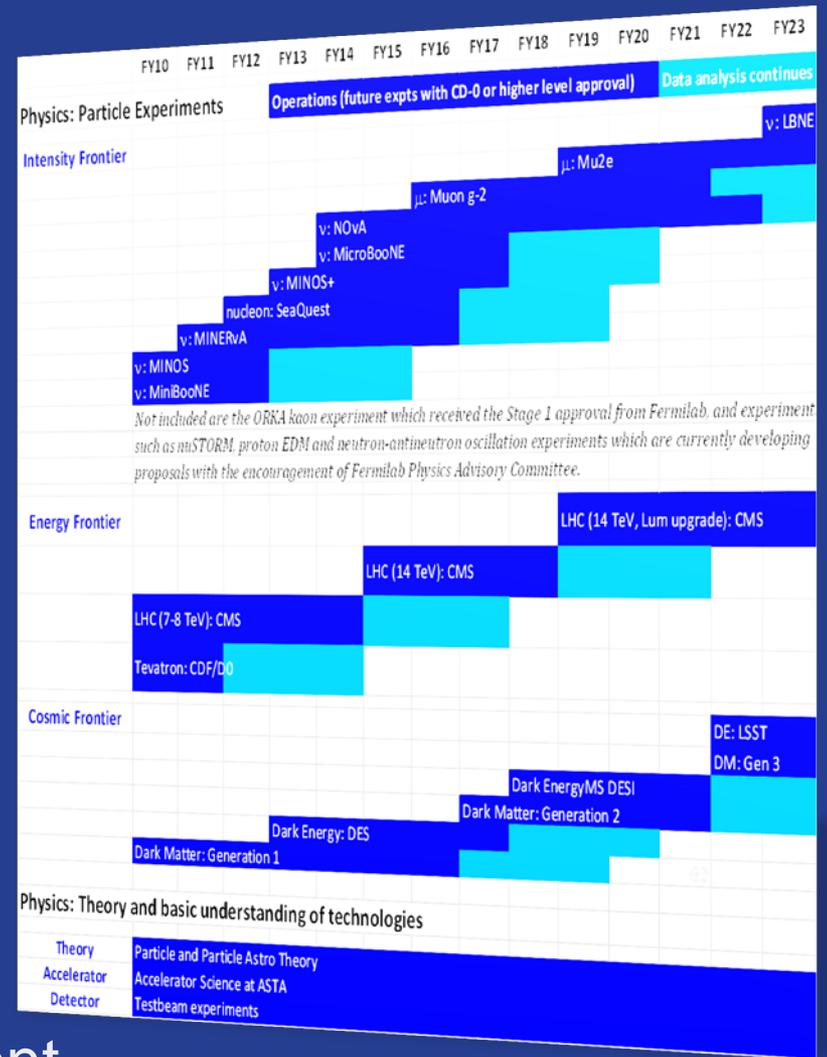
- **Accountability:** expectations expressed at all levels
- **Oversight:** engage at multiple levels (PMG's, POG) including monthly reviews w/direct interaction between project and Lab leadership
- **Transparency:** inclusive of DOE and open to independent review

Oversight

- Oversight functions continue to mature
 - Project Management Planning Board (PMPB)
 - Establishing institutional standards
 - Reconcile institutional problems
 - Evaluating Project leadership and team performance issues
 - Performance Oversight Group (POG)
 - Senior leadership engagement with Project Managers
 - Monitoring technical, cost and schedule performance
 - Constructive dialogue among/between project managers and leadership
 - Project Management Groups (PMGs)
 - structured forum for the Project Manager to coordinate project planning and problem solving with project team members and collaborators, laboratory and other interfacing organizations.

....focal points for our PM System

- Re-building credibility and trust by delivering to baselines
- Delivering projects within a transformational environment
- Sustaining direct leadership team engagement and support
- Integrating and reconciling resource and skill challenges
- Aligning and communicating priorities
- Promoting productive inquiry about risks and risk management



In closing...

- Our future depends greatly upon our performance in project management.
- We are refining an integrated system that must support our Projects and Project Managers.
- Improvement initiatives are recent, will need time, patience and persistence.
- Initial indicators are encouraging.

*We look forward to your questions,
insights and recommendations*

BACKUP MATERIAL

Director's review of project management

External team of experts [BNL, PNNL, SLAC, DOE (ret.)]

- **Assessed:**

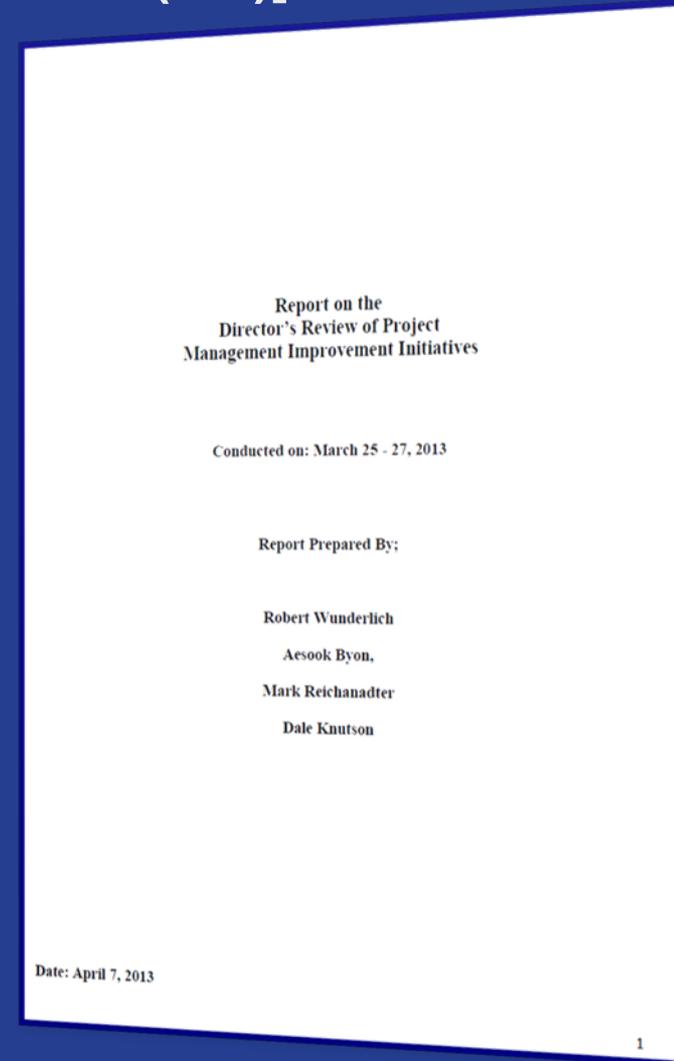
- Project managers & deputies
- Line managers
- Project Support Services
- Systems

- **Six overarching recommendations**

- 30 specific actions

- **General observations**

- *“Fermilab has made progress...improvements made over the last six months were both needed and valuable.”*
- *“Project Managers are competent and have the appropriate leadership attributes.”*
- *“The Fermilab matrix management system has an inordinate number of requirements and constraints.”*



Director's review of project management

- Plan of Action with Milestones submitted
 - Six recommendations → thirty action items
- POAM builds upon actions and momentum established over past 6 months
- Working Group under Project Management Planning Board (PMPB) formed to frame desired end state
 - Working group comprised of selected project managers, line managers, support reps
 - End-state analysis presented to Leadership Team on August 13th
- Integrate POAM into the Fermilab Agenda initiative
 - Proposed as an FY14 PEMP Notable Outcome