Introduction & Nigel's Top 5

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CIO All Hands

17 Feb 2020

Top 5 from director's December 2019 all-hands meeting

- **Thank you to everyone at the lab for your hard work this year, commitment to success and performing work safety.**
  - PEMP scores from the Department of Energy were either better or the same in every category that the lab is graded on.
  - Fermilab received an award year to the FRA contract.

- **Safety remains the highest priority.**
  - It is important that everyone continues to be transparent and acknowledge mistakes.
    - We can then work to better understand our organizational and safety deficiencies and fix them.
  - Don't forget to clean up your workspace.

Top 5 from director's December 2019 all-hands meeting

- **LBNF/DUNE work continues in South Dakota and kicks off in Batavia.**
  - In South Dakota: The Ross Shaft is fully operational and ready to support LBNF/DUNE. All reliability and pre-excavation projects are on track to be completed prior to the start of excavation.
  - In Batavia: LBNF near-site work began following a groundbreaking ceremony on Nov. 14. Construction trailers are in place near MI-8.

- **PIP-II continues to progress.**
  - A baseline review is scheduled for January 2020.
  - PIP-II injector test facility retired a significant number of technical risks.
  - On track for ~25 MeV beam commissioning in April 2020.
  - We continue to strengthen our international partnerships.

Top 5 from director's December 2019 all-hands meeting

- **Fermilab receives strong support.**
  - Many dignitaries attended the PIP-II groundbreaking in the spring.
  - Congresswoman Underwood visited Fermilab to support women in STEM.
  - Senators Durbin and Duckworth and Congressman Foster continue to offer unwavering support.
  - The Fermi Site Office continues to be a strong partner and we appreciate it.

Performance Enhancement Management Plan - PEMP

- By June 2020, submit a strategic plan for CMS High-Luminosity LHC software & computing R&D activities (Objective 1.2)
- Develop a preliminary Operations plan for the Mu2e experiment, …including software and computing, including resource estimates, suitable for external review, by February 2020. (Objective 2.3)
- By February 2020, develop an initial pre-Operations plan for the DUNE … including software and computing. Include a preliminary resource estimate based where possible on extrapolations from prior comparable experiments. (Objective 2.3)
- Ensure the appropriate completion of Plans of Actions & Associated Milestones for: (Objective 8.2)
  - Email Multi-Factor Authentication
  - Web Security Implementation

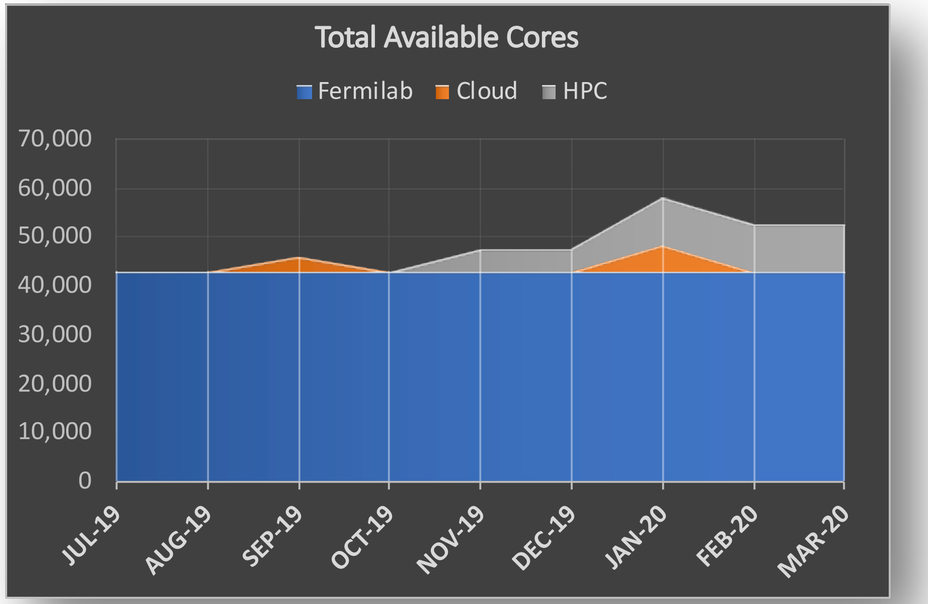
Slides from DOE Budget Briefing

High Priority Technology Projects at Fermilab

- Scientific Data Facilities are a core competency of Fermilab
- **Operating the facility for the benefit of our scientific program is our highest priority**

- **Sustaining the facility:**
- Institutional Cluster & HepCloud
- Rucio Adoptions and Development
- Storage R&D
- Federated Identity

Project IC Steps



HPC Clusters

SLURM Instance #1: LQ1, lq1gwn

SLURM Instance #2: pi0, pi0g

SLURM Instance #3: Wilson

NOW

HTC Clusters: Fermi Grid, Tier-1

1. Need to have CE in front of LQ1+Wilson.
2. HEPCloud project develop Decision Engine.

Create a friendly HPC Cluster w/ outbound networking

HEPCloud project develop Decision Engine.

FUTURE

Institutional Cluster

SLURM Instance #1: LQ, Fermi Grid

SLURM Instance #2: Wilson-IC, Tier-1

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High Priority Computational Science Projects at Fermilab

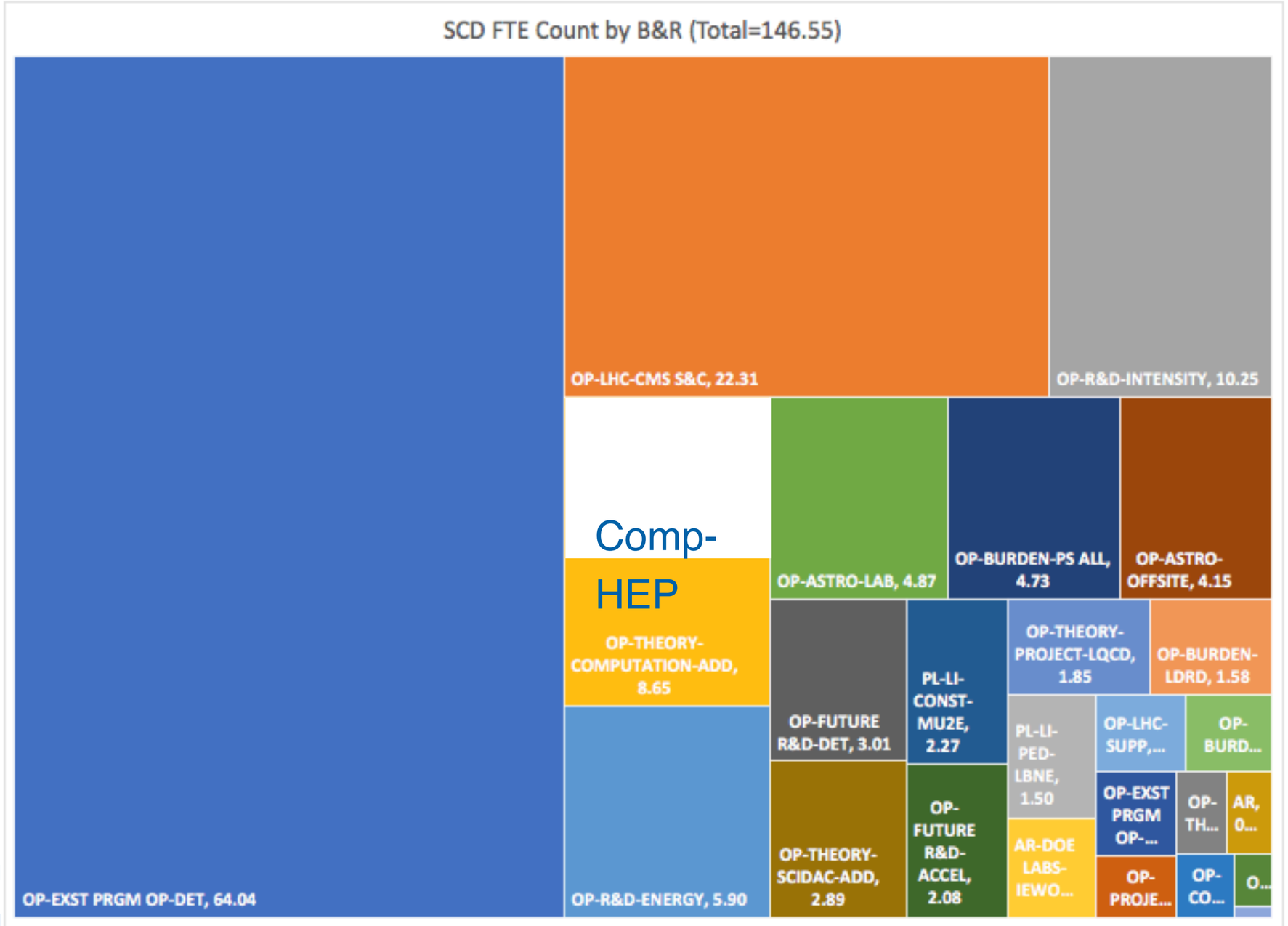
- AI / ML
  - See: https://indico.fnal.gov/event/23008/other-view?view=standard

- Community Common tools:
  - LarSoft
  - LHC and Neutrino Generators
  - Geant
  - Frameworks
  - Software Development Tools and Packaging
  - Accelerator & Beam Modeling

- Support for Bridge Scientists and Professionals

Lab S&C FTEs by BNR Funding

- S&C funding is pieced together from many sources
- Even with almost (98%) optimal ops funding the cuts in others add up.
- Makes it harder to absorb inflation.
- CompHEP was cut the most 2.4M$ -> 1.3M$ with 1M$ arriving in Dec. and Jan.



Summary

- For FY21-22 we would like to get back to 2019 staffing levels. That will require 3M$ in base-like funding.
  - This funding would sustain the investment in common software needed for the experimental program.
- Fermilab Software & Computing has made progress in many areas as confirmed by our review committees. https://indico.fnal.gov/event/22491/contribution/8/material/0/0.pdf
- In FY20 there was a significant decline (2.4->1.3M$) in funding causing software tasks to be understaffed.
- Getting the planned funding for Center Computation Excellence helped with our goals and budget situation
  - but overall software investments are behind where they need to be.
- For FY20 we will delay work on community software.

Information Systems Project Management Team

- The goal of the ISPMT is to gather the computing needs that supports the strategic direction of business computing at Fermilab
- 5-year roadmaps are being updated and will be presented upcoming ISPMT meeting
- Chart below is the data used by the Project Management Team (ISPMT)

Badging Data Service and
Strategic Workforce Planning
2 High Priority Projects

Cost/Effort

Projects

Name	Weighted Score	Decision	Lab effort range	Computing effort range	Support effort range	Duration range	Technical difficulty range
Data Service for the Site Access and Badging project	36	Approved 11/18/2019	Very low: < 1 FTE-yr.	Very low: < 1 FTE-yr.	Very low: < .5 FTY-yr.	Low: 3-6 mos.	Low: Minimal technical issues
Strategic Workforce Planning System	37	Approved 11/18/2019	Low: 1-2 FTE-yrs.	Low: 1 FTE	Very low: < .5 FTY-yr.	Low: 6 mos.	Moderate: Some technical issues that are reasonably understood
Applicant Tracking	33		Low: 1.5 FTE year	Very low: .8 FTE year	Very low: < 1 FTE / year	High: 10 months	Low: Consultants should be able to bridge gaps in understanding
BPS - Release 3	31		Moderate: 2-4 FTE-yrs.	Very low: < 1 FTE-yr.	Low: Finance support: 0.25-0.5 FTEs, IT support: 0 FTEs	High: 9-12 mos.	Moderate: Some technical issues that are reasonably understood
Facilities Computerized Maintenance Management System Migration	29		High: 4 FTE	Low: 2 FTE	Low: .5 FTE per year	Very high: 18 mos.	Moderate: Some technical issues that are reasonably understood
Modernize Quality Tools	13		Low: 1 FTE year	Low: 1 FTE year	Low: .5 FTE	High: 10 months	Moderate: Some technical issues that are reasonably understood
Enterprise Governance and Compliance tools	34		High: 4-6 FTE-yrs.	Moderate: 2-4 FTE-yrs.	Low: .5-1 FTY-yr.	Very high: > 1 yr.	Moderate: Some technical issues that are reasonably understood
Learning Management System	16		Moderate: 2-4 FTE-yrs.	Moderate: 2-4 FTE-yrs.	Low: .5-1 FTY-yr.	Very high: > 1 yr.	Very high: Large technical issues that are not understood
Time and Attendance Modernization	25		Low: 1-2 FTE-yrs.	Moderate: 2-4 FTE-yrs.	Very low: < .5 FTY-yr.	Moderate: 6-9 mos.	Moderate: Some technical issues that are reasonably understood

Proposed Investment Plan		
	Implementation $$	Support $$
FY21	2,465,000	402,000
FY22	750,000	250,000
FY23	1,100,000	130,000
FY24	840,000	-
Total	5,155,000	782,000

- There are currently 7 IT projects in progress
- There are 7 projects requiring $5.15M between FY21-FY24
- Started 2 FY20 approved projects

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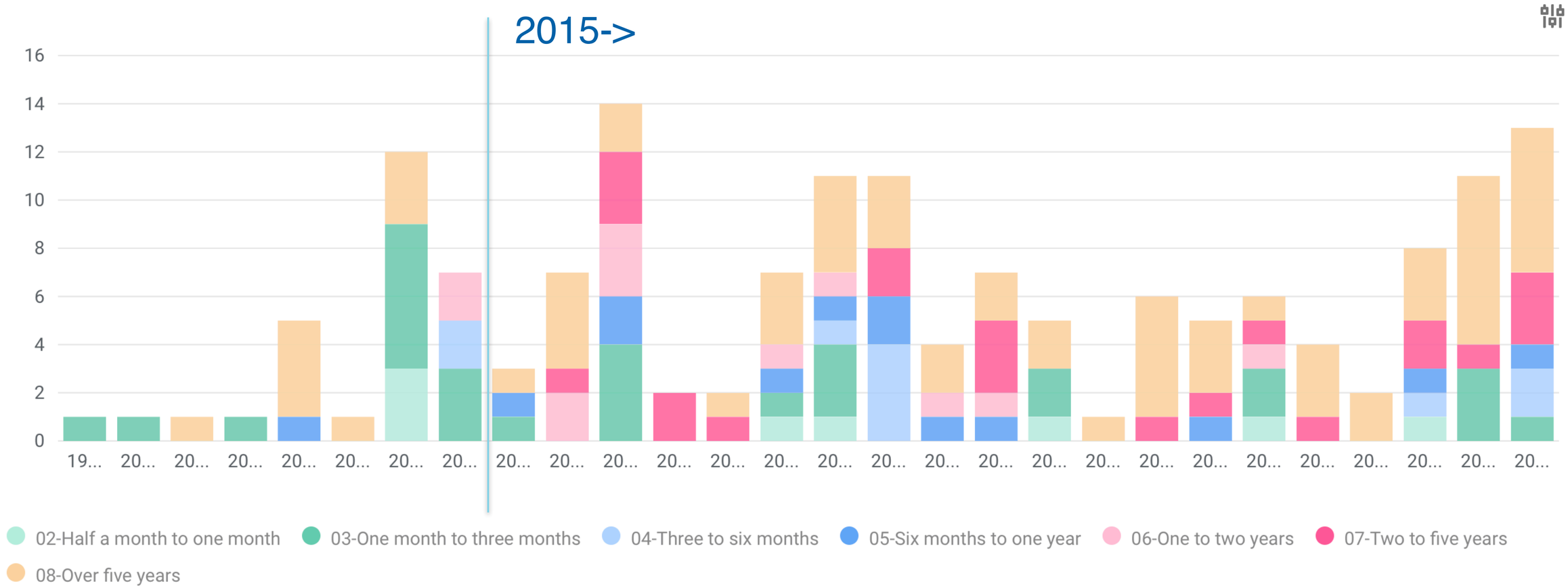
Computing Sector Turn Over

Supervisory Organization Chief Information Office (Elizabeth Sexton-Kennedy (202583))

Max Months of Service at Time of Termination 1200

Include Subordinate Organizations Yes



Count 158

CS: Today's head count is 271 includes term people

Final Comments: The Only Constant is Change

- Fermilab is a research laboratory, there will always be new projects, new systems needed to modernize operations. New skill sets will always be needed.
- Changes in funding priorities do drive the work we are asked to do.
- I am grateful to the staff who have shown flexibility in their assignments.
- I am hopeful that the next round of adjustments will be equally as successful.

Thank you to ALL for your hard work and dedication.

Backup

ICAC Report Highlights

- The ICAC commented on the progress SCD has made on the 14 recommendations from the Mar. meeting.

- I've posted the full ICAC report if you'd like to see the entire response to their spring recommendations.

- Overall positive review with useful advice.

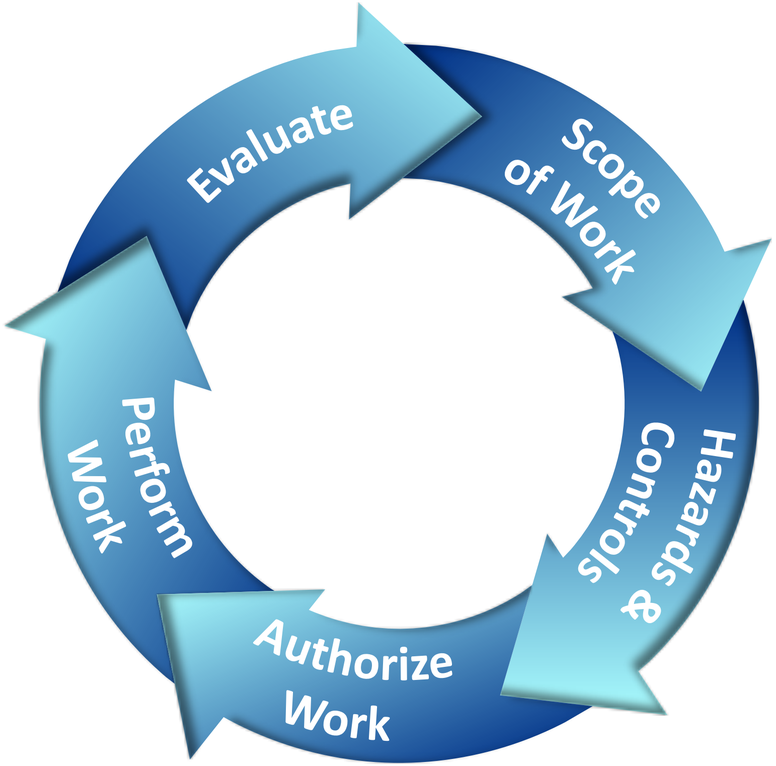
1. Resource Scrutiny Group
2. DUNE Funding
3. Funding lines for other non-LHC experiments
4. Federated Identities
5. HPC Strategy
6. DUNE Computing Management
7. DUNE Computing Model
8. Fermilab as Host Lab
9. Storage Strategy
10. Reducing Duplication
11. Software R&D Strategy
12. Facility Resources
13. Separation of Environments
14. Student Programs

Work Planning & Controls - Updates

- WPC is a process used to plan work efficiently and safely before work begins.

- WPC is required to be used by workers around the laboratory who are performing hazardous work, but it is applicable to all workers and can be used by anyone.

- Work planners utilize WPC to plan their work by:
  - Defining the scope of the work they will be performing
  - Identifying the potential hazards involved with the work and identifying mitigations to reduce the potential risks surrounding those hazards
  - Obtaining authorization to perform the work from an authorizing supervisor
  - Performing the work
  - Evaluating the work for lessons learned or potential improvement opportunities that can be applied to future jobs



Work Planning & Controls - Updates

- Fermilab is in the process of updating our work planning and controls to improve safety of personnel and increase compliance.
- Update FESHM 2060 Work Planning and Control to:
  - Create clear roles and responsibilities utilizing DOE terminology
    - D/S/P, Authorizing Supervisor, Work Planner, Point of Contact, Worker
  - Introduction of SHAPE (Scope, Hazards, Authorize, Perform, Evaluate), that incorporates DOE's Integrated Safety Management
  - Updated technical appendixes: Risk Matrix and Scope
  - Out for second review 1/10/2020 – please comment!