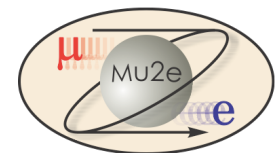




U.S. DEPARTMENT OF
ENERGY Office of
Science

Mu2e Uncosted Scientific Effort

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Definition

- The Fermilab policy of which effort is “on project” and which is “uncosted” is described in this memo
 - “FNAL Labor Charging Practices for Projects” (mu2e-docdb-763)

“It is the policy of the laboratory that the cost of all labor used by a project should be charged to project funds with the following specific exceptions:

- 1. Ph.D.-holding physicists from a collaborating university whether in a management or technical role.*
- 2. Ph.D.-holding physicists from National laboratories, including research associates and post-doctoral researchers, who are acting in a technical role on the project as Particle or Particle-Astro experimental physicists. “*

Definition

- The Mu2e implementation of this policy is detailed in
 - “Scientific Salaries in the Mu2e Project” (mu2e-docdb-764)

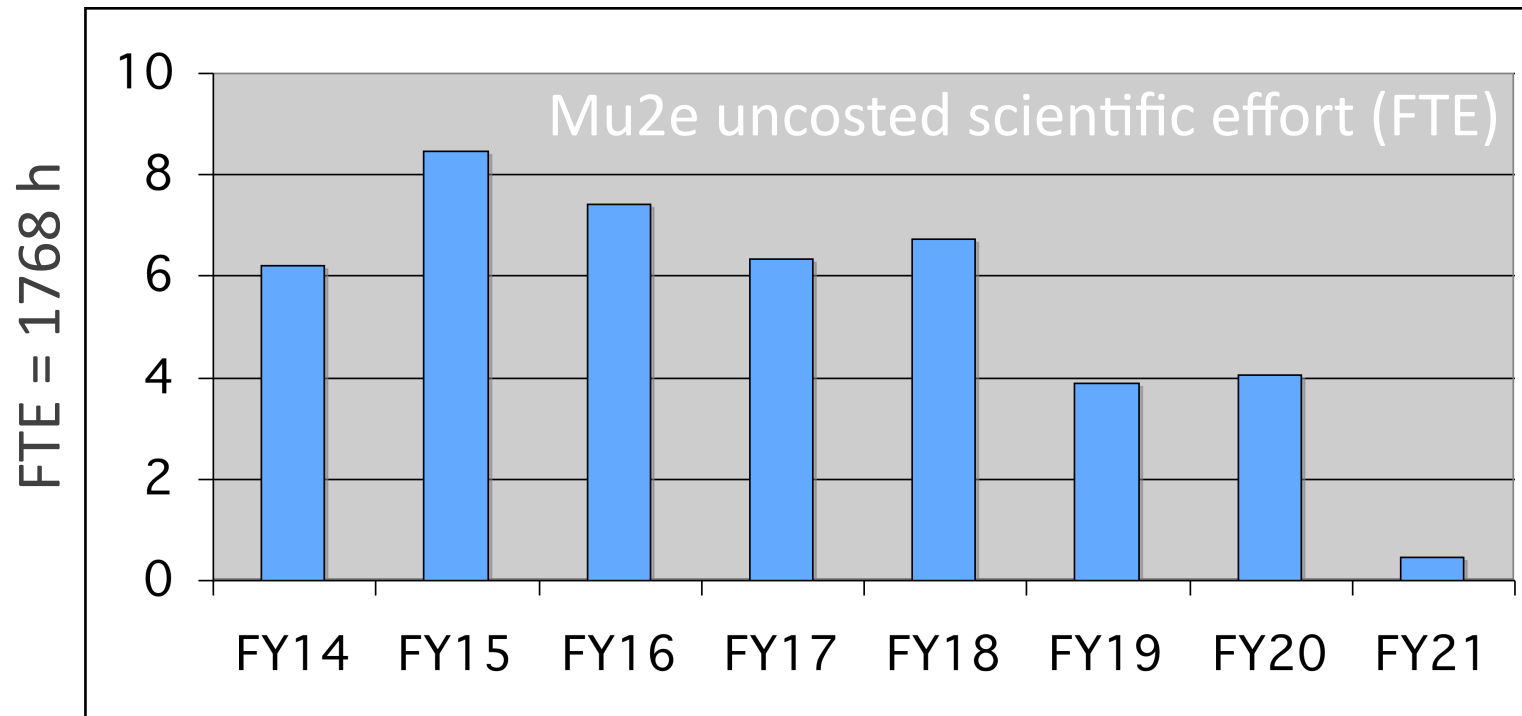
“The Mu2e Project will implement this new policy in the following way.

- University Scientists are never charged to the Project.
- Fermilab Scientists who serve as Project Managers or L2 Managers charge their management effort to the Project. L2 Managers often engage in other Collaboration activities that are not related to their L2 management responsibilities. These activities would not be charged to the Project unless they fall into one of the categories below.
- Fermilab Scientists who are working on accelerator modifications, the external beamline, the primary production target, the proton beam absorber, extinction or any other activity generally associated with accelerator systems will be charged to the Project.
- Fermilab Scientists who are working on the solenoids will not be charged to the Project. The solenoids are logically downstream of the production target and are considered part of the detector.”

Definition

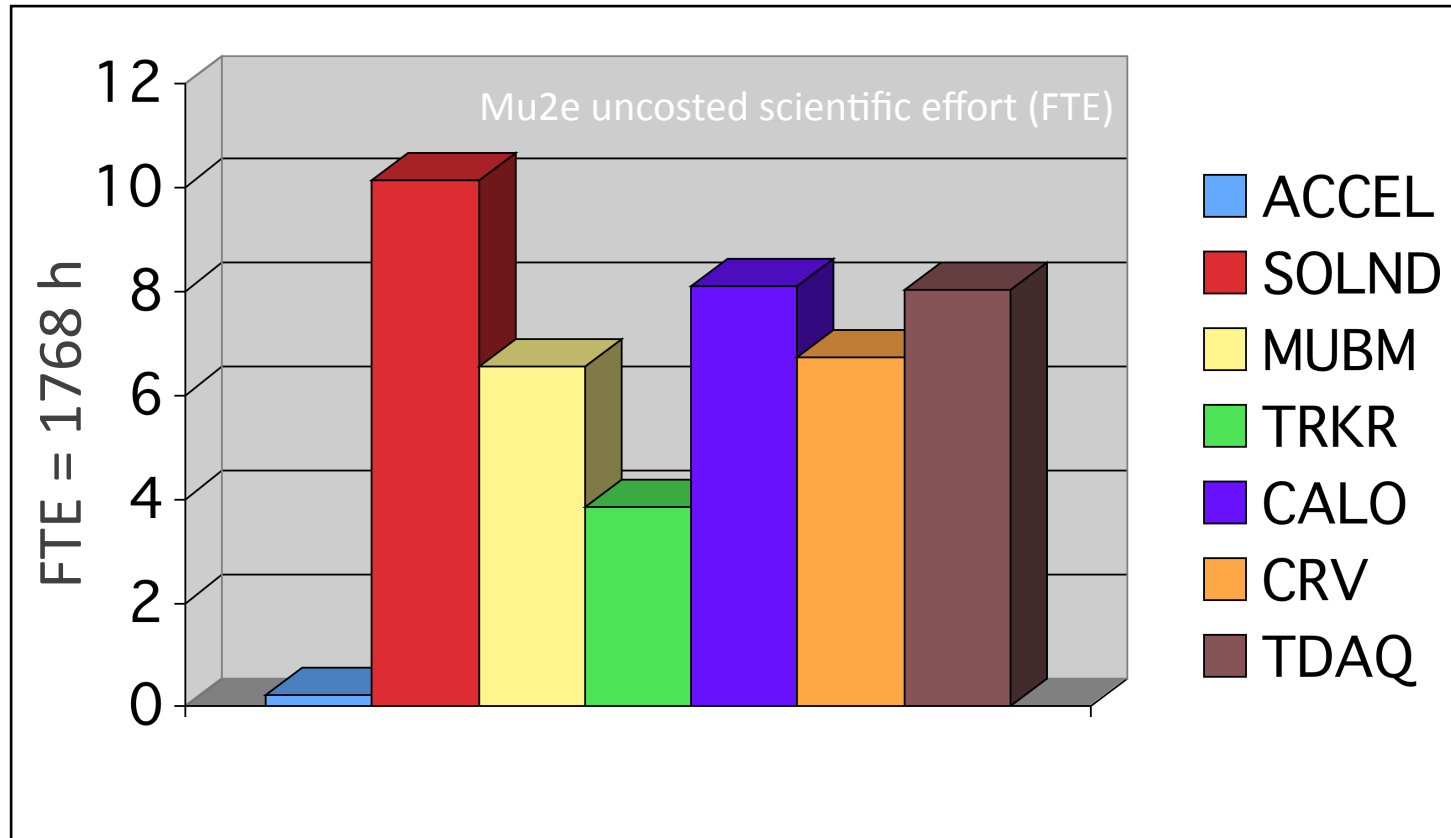
- Uncosted scientific effort is included in the RLS if any of the following is true
 - They are L2 managers from a collaborating institution
 - They are L3 or L4 managers
 - They directly report to a L2, L3, L4 manager
 - The L2 has identified their contribution as one that is required to help specify the requirements or specifications for the subproject
- By default, simulations are not included in the RLC unless they satisfy the last bullet.

Uncosted scientific effort in the RLS



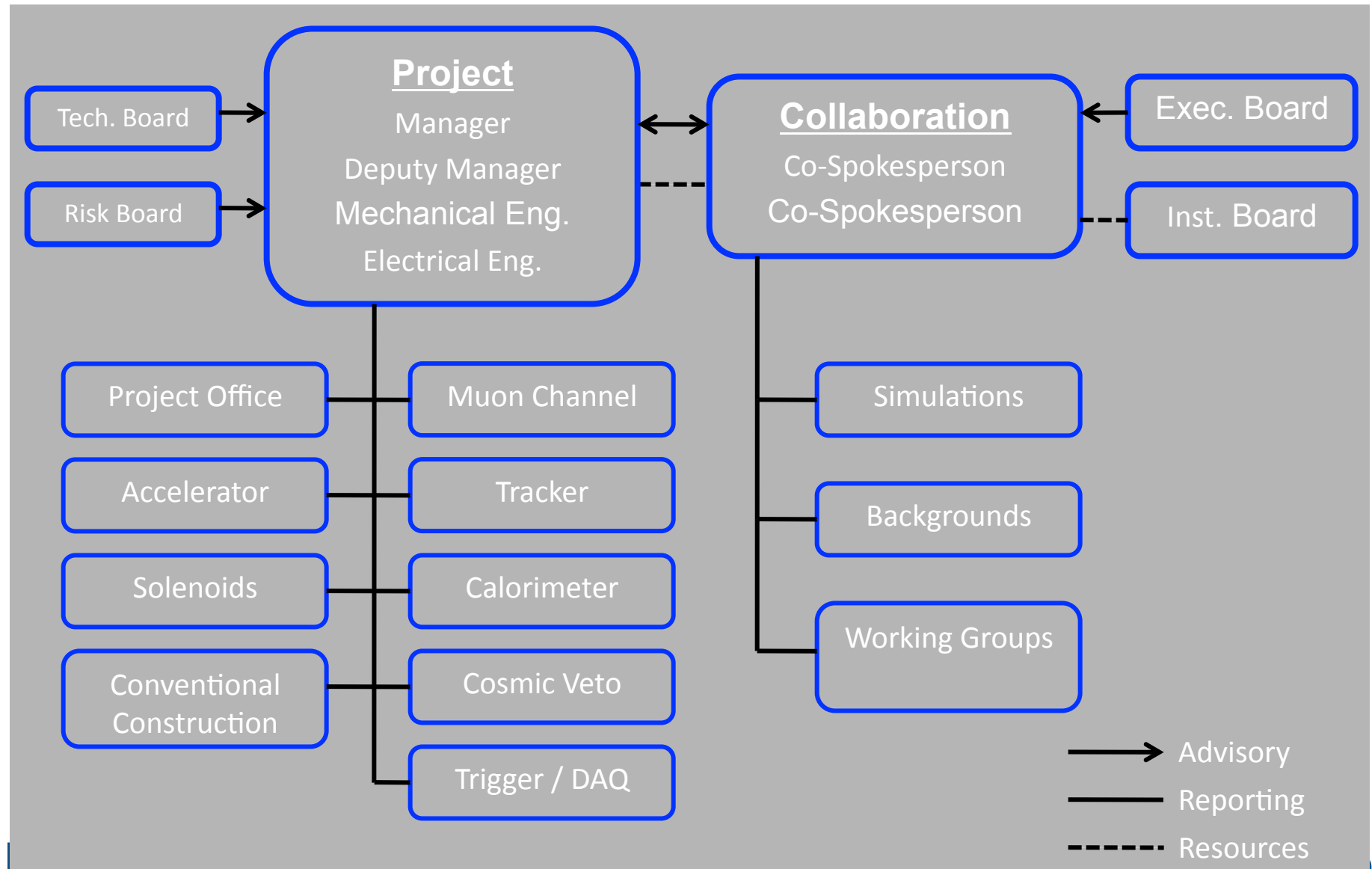
- Includes L2-L4 management efforts, simulations, test beams, DAQ development, assembly

Uncosted scientific effort in the RLS



- Includes L2-L4 management efforts, simulations, test beams, DAQ development, assembly

Project / Collaboration Organization



Collaboration and Project are closely linked.

Project - Collaboration communications

- Collaboration meetings every 4 months
 - 2d parallel sessions + 2d plenary session
- Spokespersons are members of
 - Technical Board, Project Management Group, Integrated Project Team
- Project Manager and Deputy PM are members of
 - Institutional Board, Executive Board
- Collaboration Mu2e Weekly meetings feature
 - Monthly Project updates, Frequent simulation updates
- Most project scientists are members of the collaboration and vice versa

Collaboration simulations

- Detector simulation priorities revisited every 4 months
 - Developed with input from Spokespersons, Project Manager, Deputy PM, Heads of relevant working groups
 - Circulated to L2 managers and collaboration
- Detector simulations performed by working groups
 - Simulations WG (R. Kutschke)
 - Neutron Shielding WG (R. Coleman, D. Hedin)
 - Calibrations WG (D. Brown)
 - Background WG (A. Gaponenko)
- Accelerator and B-field simulations handled within AD and TD

Simulations for TDR

Topic	Events Generated
Beamline Optimizations	1000 M
Tracker and Tracking	70 M
Calorimeter	60 M
Shielding Designs	4000 M
CR Veto	100000 M
Miscellaneous	1400 M
Total	107 B

(for 12 months ending in April 2014)

- Large-scale, high stats Monte Carlo production enabled by
 - Robust, flexible simulation and reconstruction software
 - Dedicated cpu-farm + opportunistic use of grid resources
 - Talented and committed collaboration

Collaboration engagement

Institution	Name	Position	Topics
Boston	E. Barnes	PD	Calibrations, Background
Boston	V. Logoshenko	SR	Backgrounds
Boston	J. Quirk	GS	Backgrounds
Boston	J. Mott	PD	Calibrations
Caltech	B. Echenard	PD	Calorimeter
Caltech	M. Roehrken	PD	Stopping target
UC Irvine	Z. You	PD	Ext. Mon, Background
LBNL	D. Brown	SR	Tracker, Background, Calibrations
LBNL	M. Lee	PD	Tracker, Calibrations
York	K. Lynch	SR	GEANT physics tests
Fermilab	R. Bernstein	SR	Backgrounds
Fermilab	R. Coleman	SR	Shielding
Fermilab	A. Gaponenko	SR	Backgrounds
Fermilab	K. Knoepfel	PD	Backgrounds, Geometry
Fermilab	R. Kutschke	SR	Infrastructure
Fermilab	P. Murat	SR	Calorimeter
Fermilab	V. Pronskikh	SR	Shielding
Fermilab	V. Rusu	SR	Backgrounds
Frascati	I. Sarra	PD	Calorimeter
Lecce	G. Tassieli	PD	Tracker
Lecce	G. Onorato	PD	Backgrounds
Lecce	F. Ignagtov	SR	Tracker
NIU	D. Hedin	SR	Shielding
NIU	V. Khalatian	GS	Shielding
NIU	Z. Hodges	GS	Stopping target
NIU	A. Yurkewicz	GS	Stopping target
Pisa	G. Pezzullo	GS	Calorimeter
Rice	A. Chandra	PD	Stopping target
Virginia	R. Ehrlich	PD	Backgrounds
Virginia	M. Frank	PD	Shielding
Virginia	Y. Oksuzian	PD	Shielding

- About 20% of collaboration engaged in simulations

Moving forward

- Collaboration and Project will
 - Continue working closely together to
 - Understand important issues affecting final design
 - Manage resources to complete necessary simulation work in a timely fashion
 - Identify additional effort for TDAQ work
 - About 2 FTE starting Q4FY15 through FY18
 - About half the effort is identified already
 - Developing DAQ software and controls

Summary

- Uncosted scientific effort is included in the Mu2e RLS in a well defined manner.
- Project and Collaboration have established clear lines of communication and work flow to ensure that deliverables from uncosted scientific effort are completed in a timely fashion.
- Most of the uncosted effort has been identified.
 - Missing effort lies in the out years (>FY16)
 - Recruiting new groups to address needed effort