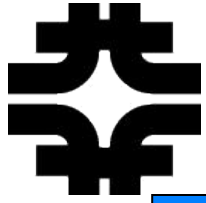# Mu2e Change Control Procedures

Hank Glass
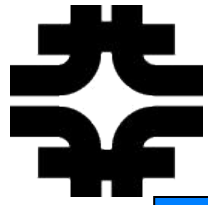
Presented at Tech Board Meeting

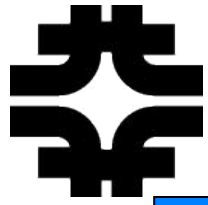8/9/2013

Change Control - Outline

- Background

- What's been done:
  - Procedure document
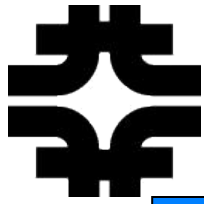 - Change request web form
  - Change control database

Background on Change Control

- Mu2e has a Change Management Plan <u>document</u>
  - Describes what types of changes need managing, specifically, changes to project baseline
  - Implementation details are left unspecified

- Fermilab is working on a lab-wide change control system, to be released in the (near) future

- I looked closely at change control systems already in use by NOvA and LBNE; then produced a system that could be used by Mu2e right now, while allowing for migration to lab-wide system

Mu2e Change Control Procedure Document
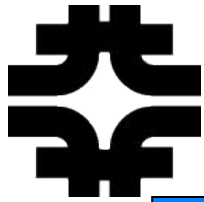
- New procedure document (Mu2e-doc 2971):

    1. Prepare supporting documentation [CAM]
    2. Fill out and submit Change Request (CR) Form [CAM]
    3. Enter data into CR database [Config Mgr]
    4. Obtain approvals – depends on CR Level [Config Mgr]
    5. Update cost & schedule information in Primavera and Cobra and finalize CR database entries [PLC]
    6. Then actually do the changes…

- Who's Who:

    – CAM = Requestor; PLC: Project Lead Controls
    – Configuration Manager or designee
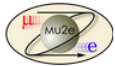
Change Request Levels

	Deputy Director for Science Programs	Associate Director of Science for HEP (Level 1)	Federal Project Director* (Level 2)	Fermilab as defined in Muon g-2 PMP (Level 3)	Mu2e L2 Manager (Level 4)
Scope	Any change in scope and /or performance that affects the ability to satisfy the mission need or is not in conformance with the current approved PEP Section 2.1 and PDS.	Any addition to scope as described in PEP section 2.1 or major changes in technology or approach to Level 2 WBS components as shown in Section 2.4.	Major changes in technology or approach to Level 3 WBS components as shown Appendix 2.	Major changes to WBS below Level 3.	Minor technical changes to single subproject
Cost	Increase in TPC, TEC, or OPC as shown in Table 2.2.	One time use of contingency usage of $5M or the larger cumulative change of greater than 50% or $25M of Level 2 WBS as shown in Table 2.2.**	Cumulative contingency use of $1M**	Cumulative contingency use of $100,000**	Changes to cost of single item or task > $25k
Schedule	Any change to CD-4 date as shown in Table 2.3.	Any changes to Level 1 milestone as shown in Table 2.3.	Any changes to Level 2 milestone shown in Table 2.3.	Any changes to milestone below Level 2.	Delay of Level 5 or Level 6 Milestone by > 1 month.
Funding		Any changes to funding profile as shown in Section 2.5 that negatively impacts the Performance Baseline.			

Levels 0 – 3 are from the Project Execution Plan

Level 4 is from the Configuration Management Plan

Change Request Form

http://mu2e.fnal.gov/cgi-bin/change_request.pl

Mu2e Change Request Form

This form must be used whenever requesting changes to the Project Baseline schedule or cost. Before filling out this form, please post supporting documentation to DocDB. Fields indicated by * are required. Additional information on the change request procedure is found in the Change Control Plan in DocDB. See Table I of this document for Change Level threshholds.

Requestor Name: * [_____]   Requestor Email: * [_____]

Change Level (if known): [___▾]

Change type: * ☐ Technical ☐ Cost ☐ Schedule ☐ Other *(at least one item must be checked)*

WBS / Activity ID: * [_____]

WBS Description / Activity Name: [_____]

Supporting information found in DocDB number(s): * [_____] *(use comma-separated list if more than one number)*

L2 sub-project affected:
```
Project
Accelerator
Conventional Construction
Solenoids
Muon Beamline
Tracker
Calorimeter
Cosmic Ray Veto
Trigger and DAQ
```
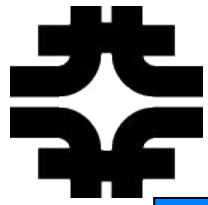*(multiple selections can be made using control-click)*

Form asks for base cost & schedule impacts. Submitted form data is emailed to Configuration Manager (CM) with copy to requestor

Brief description: * [_____]

Brief justification: * [_____]

Cost Impact: [_____]   Include Rollup M&S cost ($FY12) before and after change. Include labor resource hours, by type, before and after change. *Before change* numbers should come from the Baseline cost/schedule, while *After change* numbers should be based on the
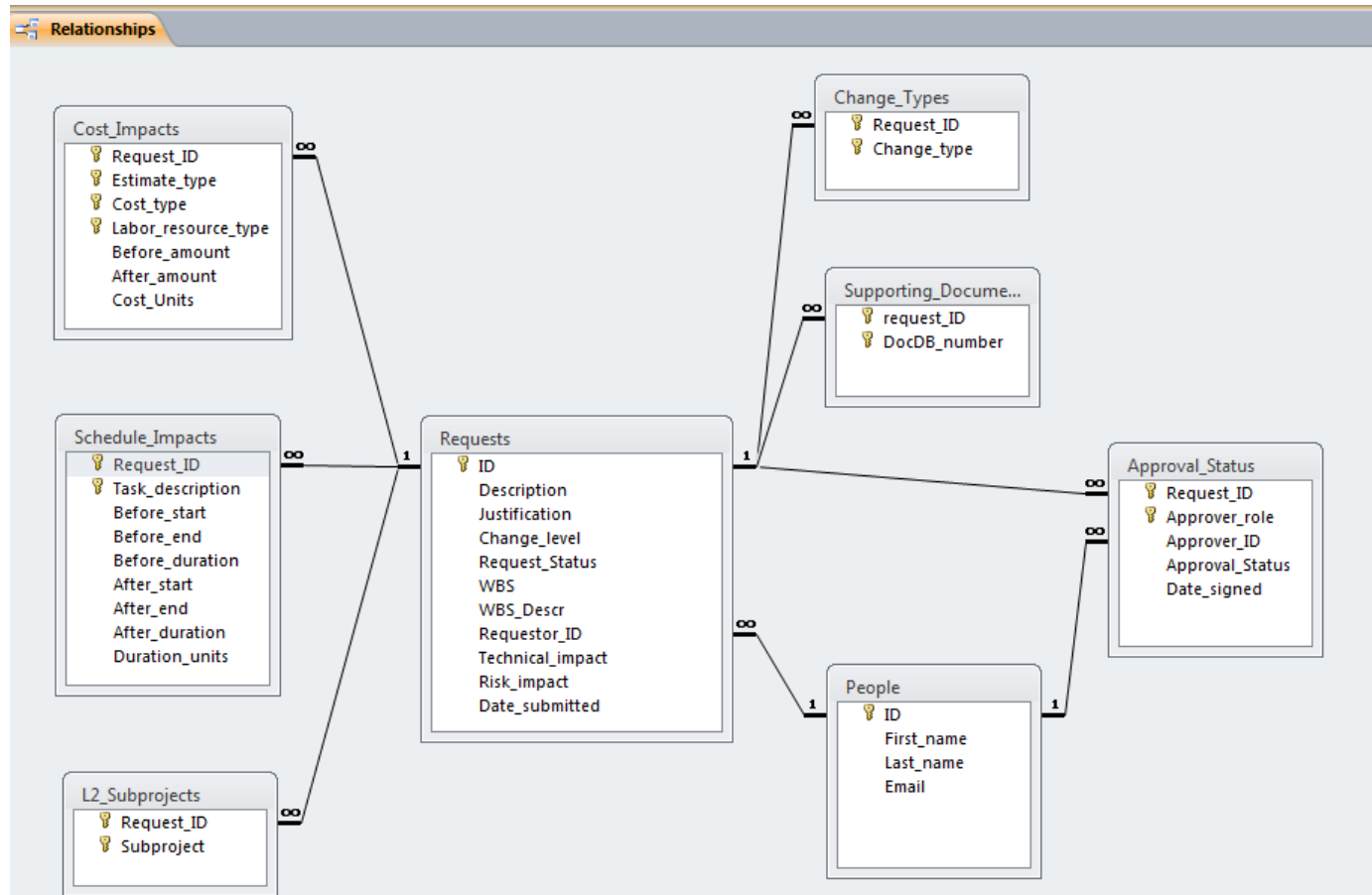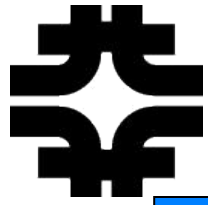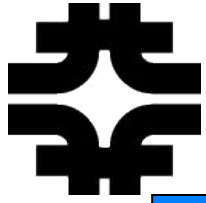
Change Log Database (Access)

Diagram of tables and relationships. "Good database design principles" used.

Change Log Database Features

- Tracks approval status
- Records cost impact (both Base and Final amounts) by type (M&S or Labor) and by Labor resource
- Also records schedule impacts by task
- Prints detailed report for each CR
- Summary report of all CRs to date (TBD)

H. Glass, Fermilab

Change Request Detail Report

This printable form is produced by Access for each CR.
- Can be stored as PDF in DocDB
- Contains signature box for approvals
- Lists cost, schedule impacts, supporting documents, change type and level, affected L2 subprojects, WBS, justification, technical & risk impacts…