



Project Update

M. G. D. Gilchriese (LBNL)
Interim Deputy Project Director
March 8, 2021

Who Am I

- Senior scientist at LBNL
- Involved in scientific management and project management of DOE, NSF or both DOE/NSF projects for last 35 years
 - Superconducting Supercollider
 - ATLAS@LHC
 - DUSEL
 - LUX dark matter project
 - LZ dark matter project

Outline

- Key Project Goals Over the Next Year
- Project Organization
- Design Review Plans
- Configuration Control Plans
- Cost & Schedule Update Plans
- Risk Update Plans
- MOUs/MOAs/SOWs
- Reporting
- Project Documentation
- Key Project Technical Issues
- Conclusion

Key Project Goals

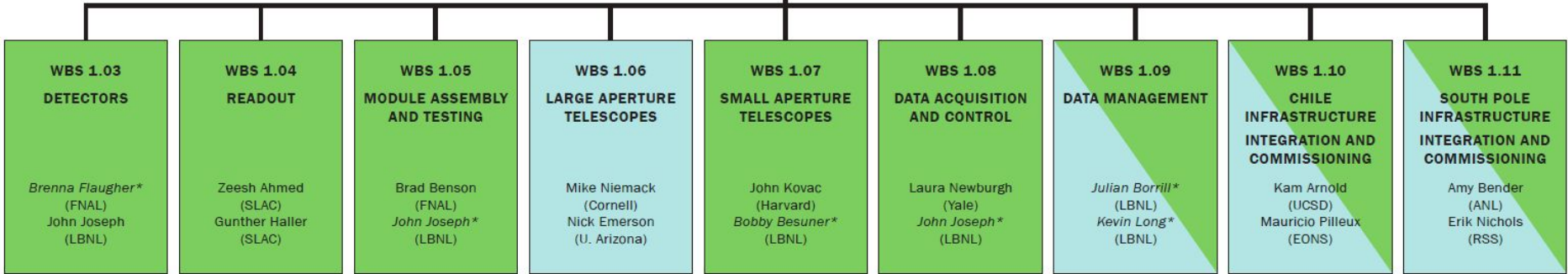
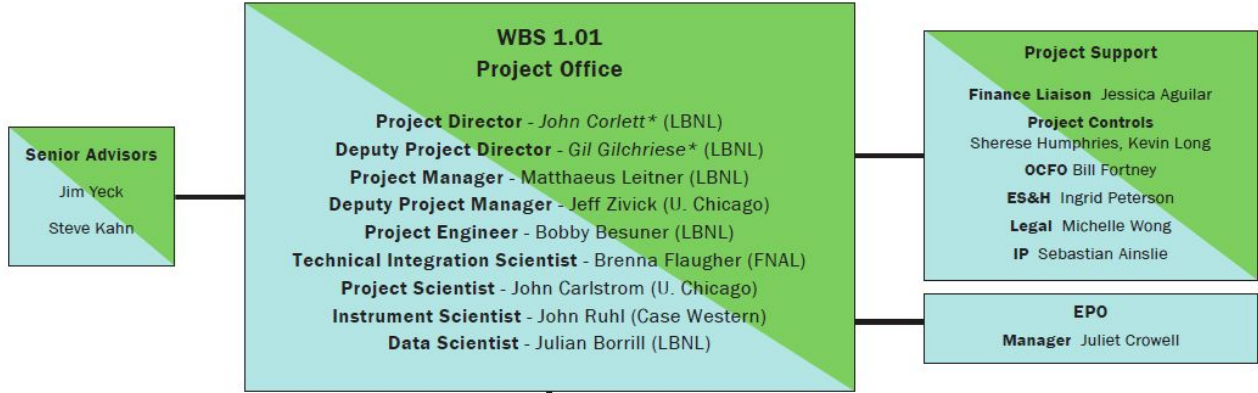
- Obtain Funding
 - DOE
 - Have \$5M(FY21) + carry-forward from FY20. Distributing.
 - Made FY22 request. Overall DOE->SC->OHEP->CMB-S4 funding not known. Stimulus?
 - NSF
 - MSIP & MSRI-1 support ongoing work through FY21
 - Proposals to support FY22 and beyond to be submitted before FY21 ends
- Complete Status and Gate Reviews
 - NSF-led MRSI-1 status review by about mid-May. Received charge, working on agenda. Tentative dates May 11-12
 - DOE-led status review? Not decided but probable in summer.
 - NSF Preliminary Design Review - CRITICAL milestone. End of CY21? Plan on this now.
 - DOE Critical Decision 1(CD-1) Review - CRITICAL milestone. End of CY21? Challenging.
 - Director's Reviews will precede(by 6 weeks or so) DOE status, PDR and CD-1 reviews
- Make Technical Progress
 - Principal subject of this collaboration meeting

CMB-S4 Integrated Project Office

DOE funded

NSF funded

* interim position



Date: 02 / 23 / 2021

Approved: *Corlett, John N*

L2 under change control, approved by PD
L3 well advanced, expect approval this month

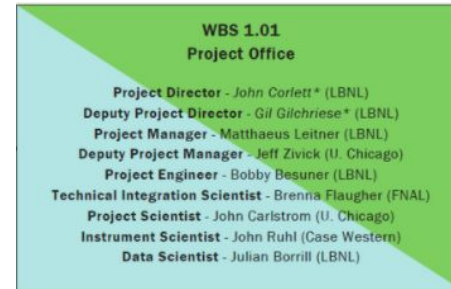
Upcoming Conceptual Design Reviews (CDRs)

L2	Review Scope	Date	(days)
Detectors	Detectors Design & Fab	6/22/21	2.5
Readout	Readout Design & Fab (Cryo)	6/16/21	2.5 total
	Readout Design & Fab (Cold/Warm)		
Module Ass'y & Test	Module hardware design	6/15/21	
	Module I&T plan		
LAT	SPLAT	5/6/21	1.5
	CHLAT		
	LATR	6/10/21	1.5
SAT	Mount	5/20/21	1.5
	Cryostat		
	Optics		
DAQ	DAQ	5/25/21	2.5 total
DM	DM	5/26/21	
Chile Infrastructure/I&C	Site infrastructure	5/13/21	1.5
	Instrument I&C		
South Pole Infrastructure/I&C	Site infrastructure		
	Instrument I&C		

- Design Review Policy/Procedure at [cmbs4-doc-673](#)
 - Describes planning/execution/closeout
 - Describes Review Manager role
 - Includes timeline before and after review
 - References [review report template](#)
 - Includes suggested charge and content of review materials
- More description at recent Technical Meetings
- Questions? Ask R. Besuner

Configuration Control

- In process of implementing database tool - [JAMA](#) - to capture requirements and point description (Current Best Estimate=CBE) in a controlled way
- JAMA training initiated
- Change Control Board (CCB) defined
- Begin monthly CCB meetings April 7
 - Start with top-level science requirements
 - Work “downward”
 - Ultimately capture CBE
 - Establish baseline and initiate Baseline Change Process
- Goals
 - Establish and exercise system prior to NSF-led status review
 - Preliminary baseline prior to NSF PDR and DOE CD-1
 - This will be challenging, but necessary this year



Proud Leaders in Customer Adoption

It started with an idea – to build an easy-to-use requirements management platform that would address ever-increasing product and software development complexities. Now, 13 years later, JAMA Software is an innovative, award-winning industry leader dedicated to helping our customers around the world shape the future by catalyzing their ideas into reality.



1,250

review sessions daily



480 Million

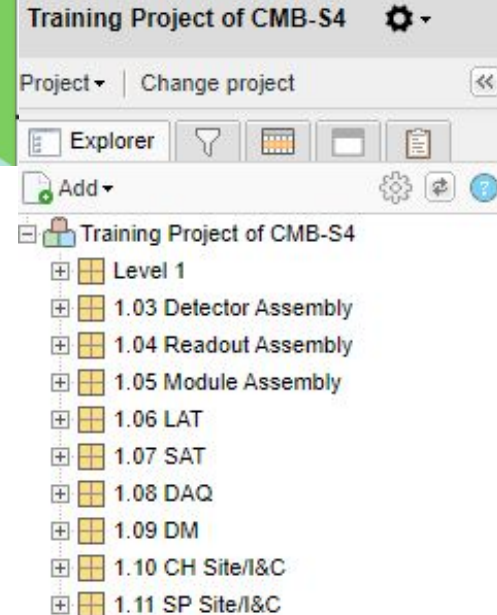
Items managed by our clients



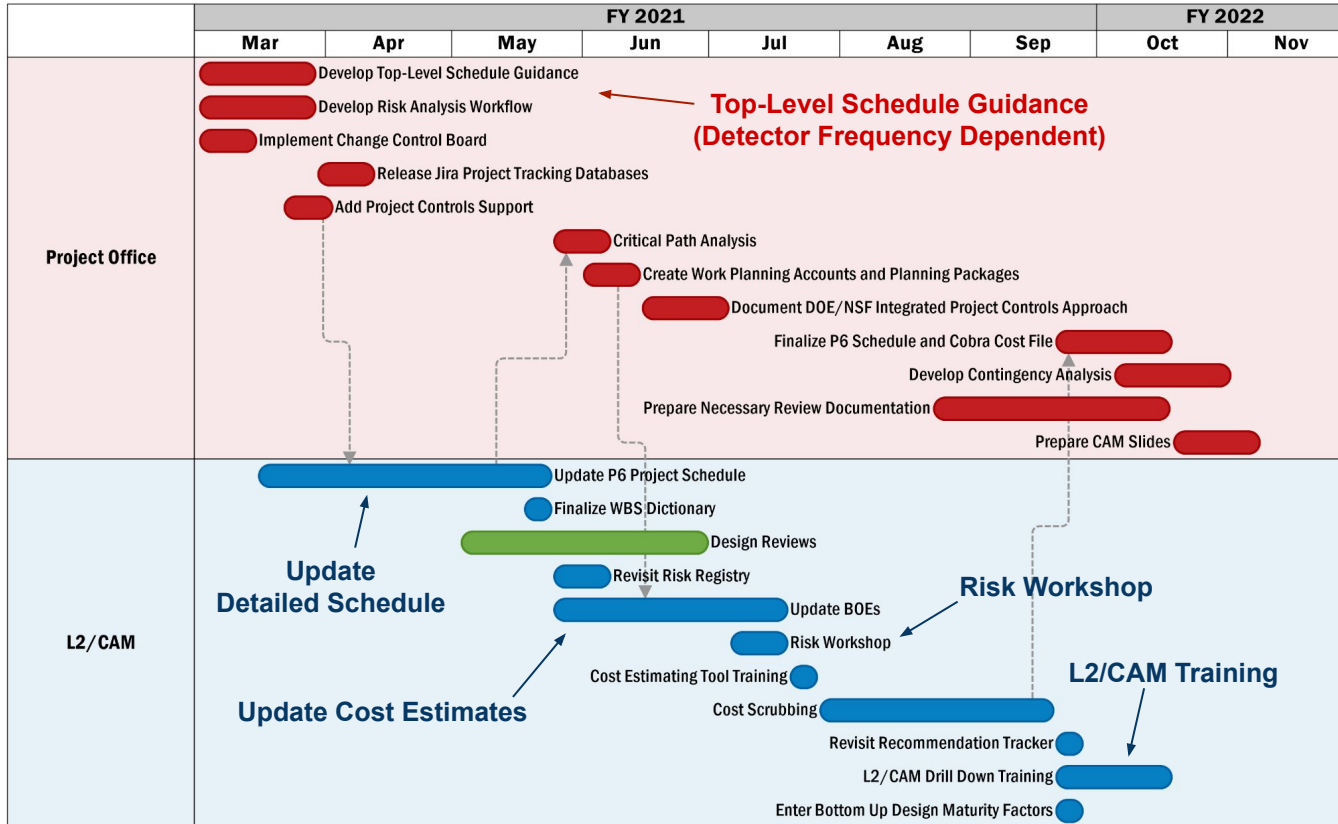
12.5 Million

active users

Questions? Ask
R. Besuner
J. Zivick
M. Leitner



Spring/Summer: Update Cost and Schedule Documents To Prepare For Potential Reviews By End of CY2021



- **May:** NSF Progress Review
 - Top-Level Schedule Defined
 - Risk Analysis Software Implemented
 - Schedule Logic Improved

- **April/May:** L2/CAMs Update Project Detail Schedule

- **May/June:** L2/CAMs Update Cost Estimates

- **July:** Risk Workshop

- **Aug/Sept:** Cost Validation

Schedule likely to be tweaked to match actual agency review schedule

Questions? Ask M. Leitner, J. Zivick

A Risk Registry Database Linked To Monte Carlo Analysis Software Will Establish NSF and DOE Contingency Requirements

CMB-S4 Your work Projects Filters Dashboards People Apps

Risk Dashboard

Inherent risk matrix: Risk

Quick Controller **Risk Registry**

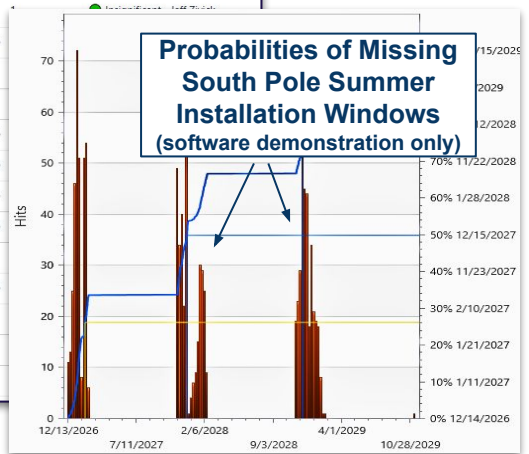
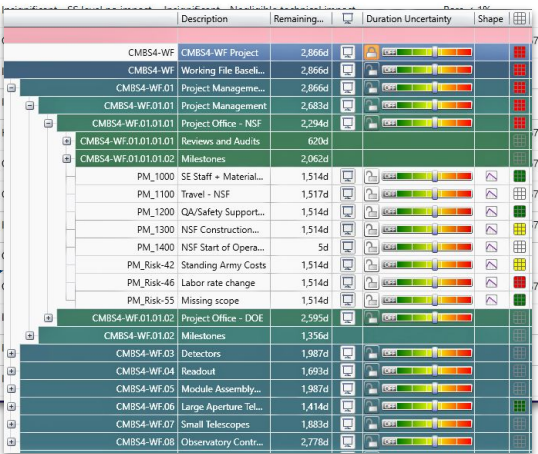
Quick Filter Results

Key	WBS L2	Summary	Activity ID	Cost Impact	Schedule
RISK-69	1.06 - LAT	CHLAT Deployment	CHLAT_3000, CHLAT_3100	High - >= 1M and < 6M	Critical
RISK-71	1.06 - LAT	LATRs parts	LATR_7100, LATR_7000, LATR_7400	Insignificant - <50K	Insignif
RISK-70	1.06 - LAT	LATRs assembly	LATR_7100, LATR_7000, LATR_7400	Insignificant - <50K	Insignif
RISK-67	1.06 - LAT	LATRs assembly/checkout	LATR_7900, LATR_7300, LATR_7500	Insignificant - <50K	Insignificant - SS level no impact
RISK-52	1.01 - PM	FFH incident	PM_1200	Insignificant - <50K	Insignificant - Negligible technical impact
RISK-34	1.01 - PM	FFH incident	PM_1200	Insignificant - <50K	Rare < 1%
RISK-42	1.01 - PM	Standing Army Costs	PM_Risk-42, PM_Risk-54	High - >= 1M and < 6M	Insignificant - Negligible technical impact
RISK-55	1.01 - PM	Missing scope	PM_Risk-55	Insignificant - <50K	Insignificant - Negligible technical impact
RISK-38	1.01 - PM	Continuing resolution	PM_Risk-A	Moderate - >= 250K and < 1M	Insignificant - Negligible technical impact
RISK-36	1.01 - PM	Funding lack NSF	PM_Risk-A	Critical - >= 6M	Insignificant - Negligible technical impact
RISK-48	1.01 - PM	M&S OH rates	PM_Risk-B	Critical - >= 6M	Insignificant - Negligible technical impact
RISK-46	1.01 - PM	Labor rate change	PM_Risk-B	Critical - >= 6M	Insignificant - Negligible technical impact
RISK-68	1.06 - LAT	SPLAT Deployment	SP4_7700	High - >= 1M and < 6M	Insignificant - Negligible technical impact
RISK-40	1.01 - PM	Procurement delays	PM_Risk-B	Critical - >= 6M	Insignificant - Negligible technical impact
RISK-50	1.01 - PM	Loss of major element during tran	PM_Risk-B	Critical - >= 6M	Insignificant - Negligible technical impact
RISK-92	1.11 - Pole	Updated by a script - Setting User Picker Field		Insignificant - <50K	Insignificant - Negligible technical impact
RISK-91	1.11 - Pole	Pole I&C plans NSF		Insignificant - <50K	Insignificant - Negligible technical impact

Risk Entry **Impacted Schedule Activities**

Monte Carlo Simulation Software Interface

- **Implemented a Jira-based risk database**
 - Automated risk ranking calculation based on risk impacts
 - Connects to Monte Carlo simulation software
- **Implemented Acumen Risk Monte Carlo simulation software**
- **Next steps**
 - **April:** Prepare project schedule to run a full risk analysis workflow (project office)
 - **April/May:** L2/CAMs update project schedule (L2/CAMs)
 - **May/June:** Revisit and consolidate current risk entries (L2/CAMs and project office)



MOUs/MOAs/SOWs

MOU: Memorandum of Understanding
MOA: Memorandum of Agreement
SOW: Statement of Work

- MOUs(standard format) with LBNL
 - Framework for potential in-kind contributions to CMB-S4
 - Harvard-Smithsonian: signed
 - CCAT Prime Observatory, Inc: in progress
 - Legal framework for work in Chile. U of Chicago: in progress
- MOAs(bespoke format)
 - Detector fab sites + Intellectual Property Management: NIST concluded, rest in progress
 - Institutional MOAs(signed once) + FY Appendix(update each FY): all institutions receiving funds from LBNL. In progress over next few months
- SOWs
 - Key part of contracts between LBNL and DOE funded institutions
 - In progress. Driven by agreeing on technical scope and getting procurement entities engaged at LBNL(new person helping, Jessica Aguilar) and at each institution

Questions? Ask M. Gilchriese(MOUs/MOAs)
M. Leitner(SOWs)

Reporting

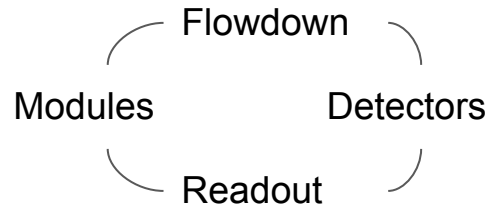
- Regular reporting to the NSF and DOE began months ago
 - [DOE](#)
 - [NSF](#)
- Quality and detail of DOE and NSF reports expected to improve as designs mature, test results come in, etc
- Financial reporting (specifically for the DOE but similar for NSF)
 - Required monthly from all institutions that receive funding
 - Experience suggests will be painful initially but it's essential
 - Down the road will feed into EVMS systems
 - Please respect this reporting need

Project Documentation Update

- Policy and procedures for using CMB-S4's official document repository, [DocDB](#), is posted to [cmbs4-doc-664](#). Accessible using your CMB-S4 credentials.
- Project Configuration Management Plan, defining approval and revision processes for project documentation is posted to [cmbs4-doc-238](#).
- Technical requirements are loaded to management tool, Jama.
 - Still a lot of work required to update and approve requirements and interfaces.
- Project Design Review Policy and Procedures posted to [cmbs4-doc-673](#).
 - L2 Conceptual Design Reviews scheduled for May and June (dates listed [here](#))
 - Review Recommendations tracked in this [google sheet](#)
- Meeting materials and links to relevant information are in [Confluence](#).
- Project CAD Policy and Procedures posted to [cmbs4-doc-661](#).

Key Project Technical Issues

- There are many, many design and technical issues to be addressed at this collaboration meeting
- Keys to moving forward with the Project are given below
- Scope. Is it right and can we, project management, defend it?
- Technical readiness => pass conceptual design reviews(or better)
- Cost containment. Cost growth at this stage of a project is a norm. Must keep costs(including risks) at forefront of technical development
 - Interplay among requirements flowdown, detectors, readout and modules
 - Manufacturability, minimize complexity of detectors/readout...think cheap



Meetings organized by B. Flaughner
Parallel sessions at this collab. mtg.

- Other area of potential concern now: cost of working at the Pole, how accounted by NSF

Conclusions

- Substantial progress in developing the CMB-S4 Project structure since August 2020 when LBNL was designated as lead laboratory
- Project “machinery” now coming together and will be used to prepare for agency status and gate reviews later this year or early 2022
- Formal technical design reviews for all major elements to be completed by this summer
- Cost and schedule to be updated this summer
- Critical to advance Preliminary Baseline Design and related Report in time for upcoming reviews

