WBS 6.2.X.4: Modules

Gerrit van Nieuwenhuizen
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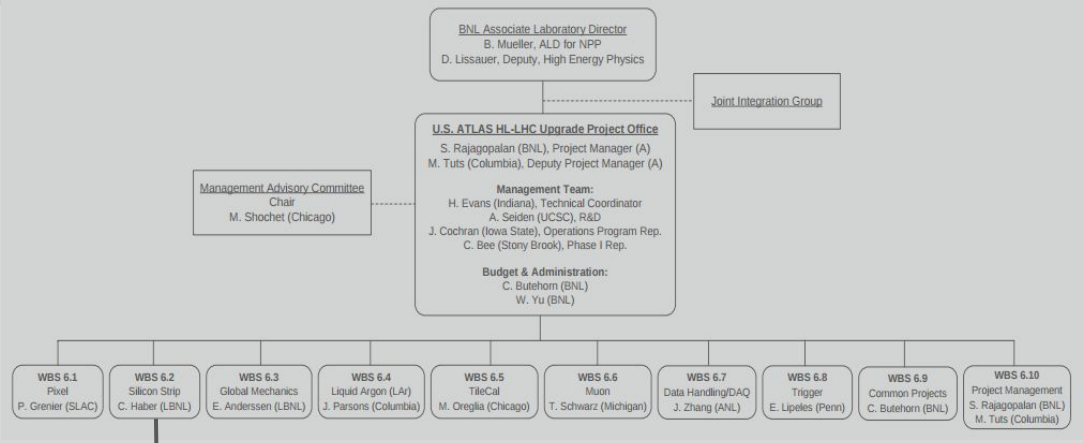
Modules: Organogram



WBS 6.2.X.4
Modules
Gerrit (BNL)

WBS 6.2.1.4.1
Module Fab
Gerrit (BNL)

WBS 6.2.2.4.1
Module Fab
Sandra (LBNL)

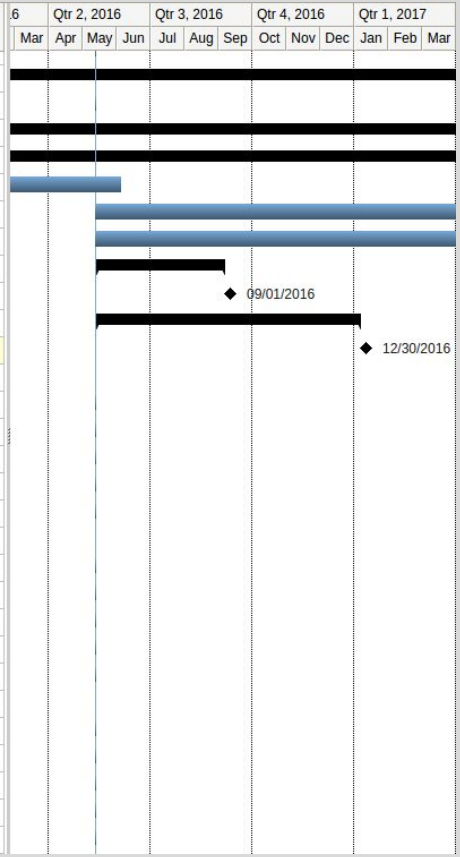
WBS 6.2.4.4.1
Module Fab
Vitaliy (UCSC)

WBS 6.2.X.4.2
Module Testing
……. (...)

WBS 6.2.1.?.?
Testing DAQ
Alessandro (BNL)

Modules: WBS & Milestones

	WBS	Name	Start	Finish	Resources
6	**6**	**Inner Tracker Upgrade**	**01/01/2016**	**01/24/2024**	
7	6.1	Pixel	05/09/2016	05/09/2016	
8	**6.2**	**Strip Barrel**	**01/01/2016**	**01/24/2024**	
9	**6.2.1**	**BNL**	**01/01/2016**	**01/24/2024**	
10	6.2.1.1	Stave Cores	01/01/2016	06/01/2016	
11	6.2.1.2	Electrical	05/09/2016	05/07/2019	
12	6.2.1.3	Hybrid	05/09/2016	01/24/2024	
13	**6.2.1.4**	**Module**	**05/10/2016**	**09/01/2016**	
14	6.2.1.4.1	First 10 TM Modules	05/10/2016	09/01/2016	
15	**6.2.1.5**	**Stave**	**05/10/2016**	**12/30/2016**	
16	6.2.1.5.1	First TM Stave	05/10/2016	12/30/2016	
17	**6.2.2**	**LBNL**	**05/09/2016**	**05/09/2016**	
18	6.2.2.1	Stave Cores	05/09/2016	05/09/2016	
19	6.2.2.2	Electrical	05/09/2016	05/09/2016	
20	6.2.2.3	Hybrid	05/09/2016	05/09/2016	
21	6.2.2.4	Module	05/09/2016	05/09/2016	
22	6.2.2.5	Stave	05/09/2016	05/09/2016	
23	**6.2.3**	**Penn**	**05/09/2016**	**05/09/2016**	
24	6.2.3.1	Stave Cores	05/09/2016	05/09/2016	
25	6.2.3.2	Electrical	05/09/2016	05/09/2016	
26	6.2.3.3	Hybrid	05/09/2016	05/09/2016	
27	6.2.3.4	Module	05/09/2016	05/09/2016	
28	6.2.3.5	Stave	05/09/2016	05/09/2016	
29	**6.2.4**	**UCSC**	**05/09/2016**	**05/09/2016**	
30	6.2.4.1	Stave Cores	05/09/2016	05/09/2016	
31	6.2.4.2	Electrical	05/09/2016	05/09/2016	
32	6.2.4.3	Hybrid	05/09/2016	05/09/2016	
33	6.2.4.4	Module	05/09/2016	05/09/2016	
34	6.2.4.5	Stave	05/09/2016	05/09/2016	



Need to start filling WBS and Milestones

Institutional breakup makes it a bit awkward

We do not want to touch Primavera, just provide input

BUT, we need to be the keepers of our own WBS

How?

Modules: Risk assessment guidelines

Consequence						
		Negligible	Marginal	Significant	Critical	Crisis
	Cost	Minimal or no consequence. No impact to Project cost.	Small increase in meeting objectives. Marginally increases costs.	Significant degradation in meeting objectives significantly increases cost; fee is at risk.	Goals and objectives are not achievable. Additional funding may be required; loss of fee and/or fines and penalties imposed.	Project stopped. Funding withdrawal; withdrawal of scope, or severe contractor cost performance issues.
	Schedule	Minimal or no consequence. No impact to Project schedule.	Small increase in meeting objectives. Marginally impacts schedule.	Significant degradation in meeting objectives, significantly impacts schedule.	Goals and objectives are not achievable. Additional time may need to be allocated. Missed incentivized and/or regulatory milestones.	Project stopped. Withdrawal of scope or severe contractor schedule performance issues.
Probability	Very High >90%	Low	Moderate	High	High	High
	High 75% to 90%	Low	Moderate	Moderate	High	High
	Moderate 26% to 74%	Low	Low	Moderate	Moderate	High
	Low 10% to 25%	Low	Low	Low	Moderate	Moderate
	Very Low <10%	Low	Low	Low	Low	Moderate

Figure 3. Qualitative Risk Analysis Matrix.

From the DOE Risk Management Guide: DOE G 413.3-7A

In principle, not mandatory
→ In practice …..

Yes, royal PITA
→ but, useful metric

Modules: Risk assessment example

WBS	WBS description	By	Date	Description	Technical Consequence	Schedule Consequence	Cost Impact ($K)	Type of Risk	Impact low,moderate,high from table 1	Probability (table 2)	Severity (table 2)	Mitigation Strategy	Risk Expiration
	Intermediate Silicon	nieuwhzn	6/21/2011										
1.3.1.3.2	Support structure prototype	nieuwhzn	7/12/2012	More than one iteration to meet requirements	none	possible delay	increase in labor cost, $14k/mo	schedule	low	low	low		obsolete, retired. 10/1/2012
1.3.1.3.2	Support structure production	nieuwhzn	7/1/2012 (10/23/	More than one iteration to meet requirements	none	possible delay	increase in labor cost, $14k/mo	schedule	moderate	low	low	scheduling slack	Apr-13
1.3.1.3.5	Ladders	nieuwhzn	6/21/2011 (10/23	Failure to produce all ladder in time at LBNL CF	none	delay in assembly pipeline	none	schedule	moderate	low	low	scheduling slack. Establish parallel assembly process.	Feb-13
1.3.2.2.3	Prototype sensors	nieuwhzn	6/21/2011	Failure to function according to specifications	none	delay in start production	Respin, $68k NRE + $44k prototypes	cost/schedule	moderate	moderate	moderate	scheduling slack,reliable vendor	Retired May, 2012
1.3.2.2.4	Flex hybrid prototype	nieuwhzn	6/21/2011	Failure to function according to specifications	none	delay in start production	Respin, $15k	cost/schedule	moderate	moderate	moderate	scheduling slack, less prototypes	Retired May, 2012
1.3.2.3.1	Production sensors	nieuwhzn	6/21/2011(june-2	Production problems	none	delay in assembly	none	schedule	moderate	low	low	reliable vendor, stage batch production	Dec-12
1.3.2.3.3	Production flex hybrid	nieuwhzn	6/21/2011	Production problems	none	delay in assembly	none	schedule	moderate	low	low	scheduling slack by producing early	Dec-12
1.3.2.3.4	Cable production	nieuwhzn	6/21/2011	Production problems	none	delay in installation	none	schedule	low	low	low	conservative design, produce early	May-13
1.3.2.3.5	Transition board design	nieuwhzn	7/1/2012	Design issues	none	delay in installation	increase in labor cost, $14k/mo	schedule	low	low	low	conservative design	retired 10/12/2012
1.3.2.3.5	patch panels	nieuwhzn	10/23/2012	Design issues	none	delay in installation	increase in labor cost, $14k/mo	schedule	low	low	low	conservative design	Dec-12

Consider: It's what you should do anyway, just formalized.