Complex-wide Beamline Strategic Plan

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Master List of BES Facilities Beamline Capabilities

- What have we done so far?
  - Using Erik Johnson's list for the NSLS II transition as a starting point distributed list to facility contacts (Fritz, Hulbert, Kevan, Mills, and Pianetta) to suggest additions, edits, etc. to the list of beamline techniques.
  - After a first cut at the list of techniques was completed, facility contacts filled in the spreadsheet with their facility's beamlines.
  - Not surprisingly, once contacts started filling in the spreadsheet, there was the realization that a few more/different techniques needed to be added to best characterize the facility's beamlines.
  - All contacts have now provided me with at least FY17 data (some contacts provided out years as well).

- Next
  - I will circulate the updated list of techniques to the facility contacts to see if they would like to re-categorize any of their beamlines under the new headings.
  - If we all agree that this list of techniques adequately defines all the beamlines, begin on the out years; FY19, FY21, FY23 (after the APS-U).

High Level Beamline Summary for FY17

Technique	APS ID	APS BM	ALS ID	ALS BM	LCLS	NSLS ID	NSLS BM	SSRL ID	SSRL BM	Total
Low Energy Spec	0	0	3.0	0.75	0	0.3	0	1.33	0.8	**6.18**
Soft Spec	1.3	0.5	2.5	4.5	0.2	0.8	0.2	2.0	1.75	**13.75**
Hard Spec	7.2	4.0	0	0.5	0.3	1.5	0.5	5.45	1.0	**20.45**
Optics/Metrol	0	0.5	0.75	2.25	0	0	0	0	0.2	**3.7**
X-ray Diffraction	9.2	8.3	1.0	2.0	0.2	0.85	0	2.5	1.6	**25.65**
MX/Footprinting	12.0	4.0	3.0	4.5	0.1	1.0	0.5	4.0	1.0	**30.1**
X-ray Scat.	9.6	0.7	0	1.5	0.1	1.95	0.6	1.0	0.5	**15.95**
Soft X-ray Scat.	0.7	0	1.75	0.75	0	0.9	0	0.33	0	**4.43**
Hard Imaging	5.9	4.0	0	1.0	0.05	1.4	0	1.05	0.9	**14.3**
Soft Imaging	0.1	0	1.0	5.0	0.05	0	0.45	0.34	0.25	**7.19**
IR Imaging	0	0	0	1.75	0	0	0	0	0	**1.75**
TOTAL	**46**	**22**	**13**	**24.5**	**1**	**8.7**	**2.25**	**18**	**8**	**143.5**

The Devil is in the Details…

05 X-ray Diffraction (ordered systems)			
	05.1 Hard X-rays **(5000 eV < E < 30000 eV)**		
		05.1.1 General Diffraction	
		05.1.2 X-Ray Powder Diffraction	
			05.1.2.1 Monochromatic Powder
			05.1.2.2 Energy Dispersive
		05.1.3 Micro-Beam Diffraction	
		05.1.4 Extreme Conditions/In-situ	
			05.1.3.1 High Pressure
			05.1.3.2 High Mag Field
			05.1.3.3 Surface/Interface
			05.1.3.4 Shock Physics/HED
			05.1.3.5 Operando
		05.1.5 Resonant/Magnetic Scattering	
	05.2 High Energy X-rays **(E > 30000 eV)**		
		05.2.1 General Diffraction	
		05.2.2 X-Ray Powder Diffraction	
			05.2.2.1 Monochromatic Powder
			05.2.2.2 Energy Dispersive
		05.2.3 Micro-Beam Diffraction	
		05.2.4 Extreme Conditions/In-situ	
			05.2.3.1 High Pressure
			05.2.3.2 High Mag Field
			05.2.3.3 Surface/Interface
			05.2.3.4 Shock Physics/HED
			05.2.3.5 Operando

Other Actions

- Once the list of beamline capabilities is completed, a clearer picture may emerge on where BES investment into beamlines at ALS, NSLS II, and SSRL could yield the biggest bang for the buck.

- Yet to be looked into in any detail:
  - Is there hardware that could be loaned to other facilities that would help support APS Users?
    - Beamline Hardware/Sample environments?? (furnaces, battery cells, load cells, robotic arms/sample changers…).
    - Detectors??
    - Ancillary support capabilities?? (chem lab hardware, gas loading cells, other off-line support hardware...)
  - APS staff effort for support of additional users, increased capacity, and/or hardware mentioned above.

- For MX, see discussion led by Fischetti/McSweeney.

- Obviously, any longer-than-normal planned shutdowns of the other BES facilities should be scheduled around the APS-U shutdown. Final slide shows relationship between planned APS shutdown compared with EBS/ESRF planned shutdown.

Timelines

ESB Master Plan and Major Milestones

01/10/2017 – Start of assembly phase

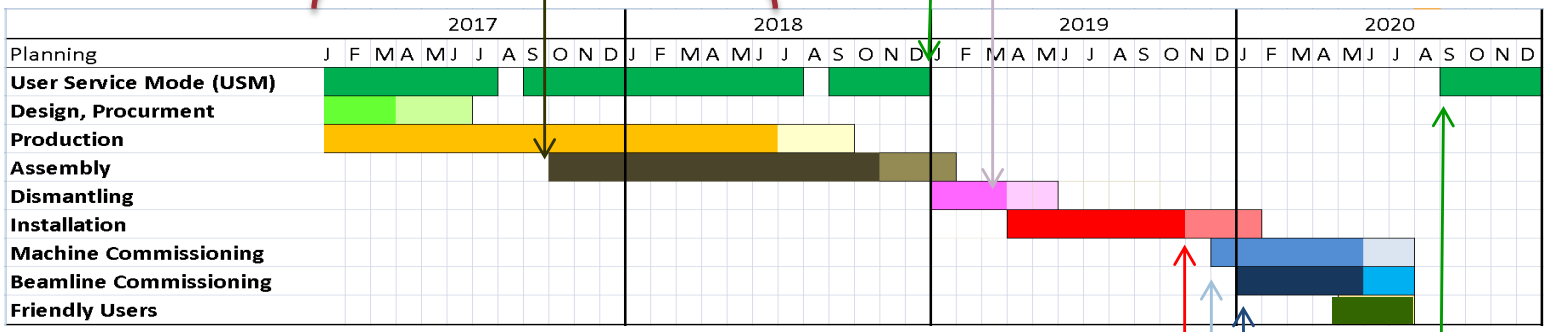
17/12/2018 – Start of shutdown

– Start of dismantling phase

18/03/2019 – End of dismantling phase

– Start of installation phase

January 2017-June 2018 – Delivery of components



Current ESRF/ESB Schedule

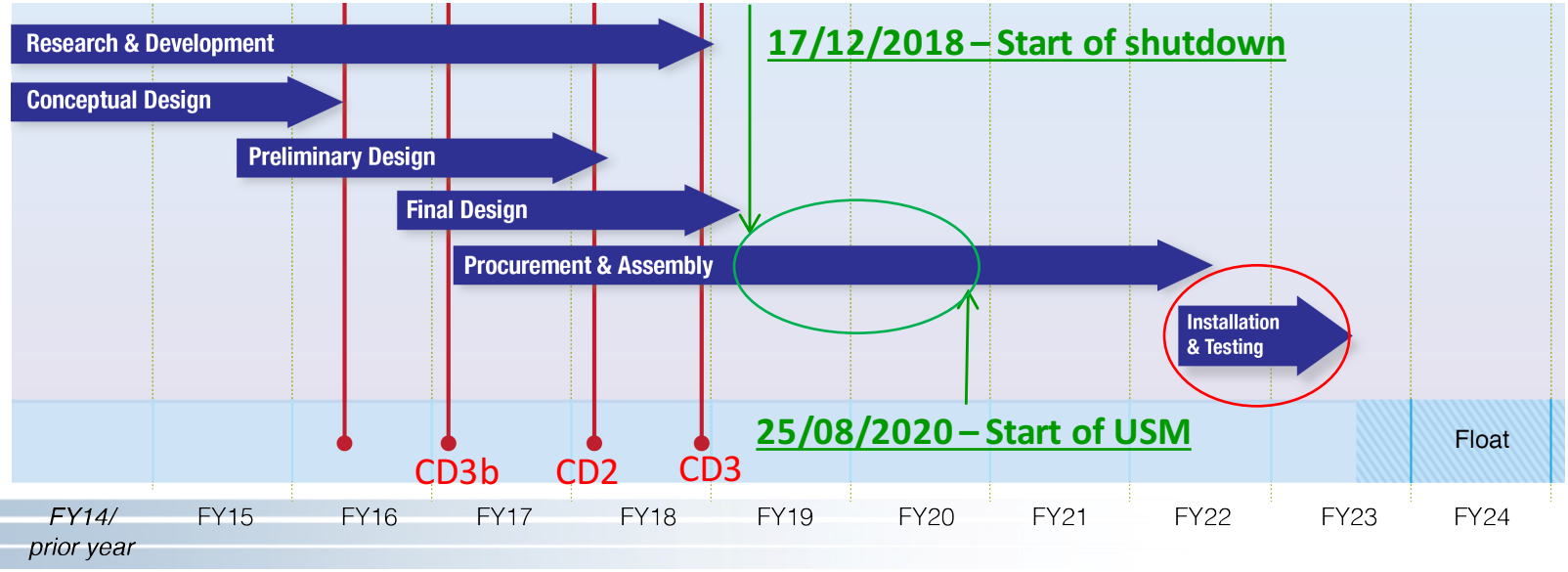
Pantaleo Raimondi

25/08/2020 – Start of USM

04/11/2019 – End of installation phase

02/12/2019 – Start of storage ring commissioning phase

09/01/2020 – Start of beamline commissioning phase

May-July 2020 – Friendly Users

Current APS-U Schedule