



SCHEDULE AND BUDGET

MARK MULLIGAN
UNIVERSITY OF WISCONSIN





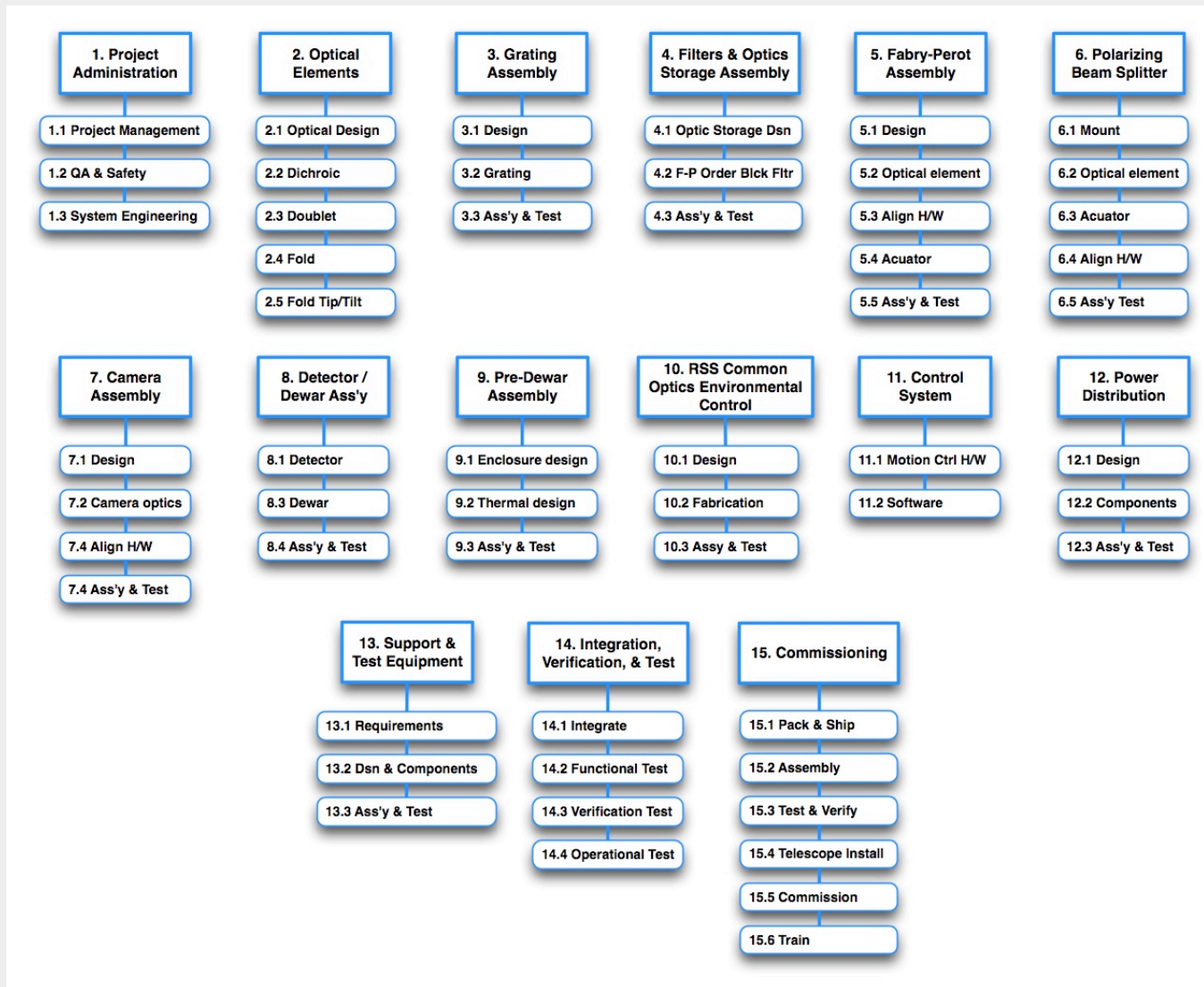
Overview



- Work Breakdown Structure
- Development Flow
- Schedule - Critical Path
- Phases & Key Milestones
- Long Lead Items
- Instrument Cost Estimate
- Contingency
- Funding

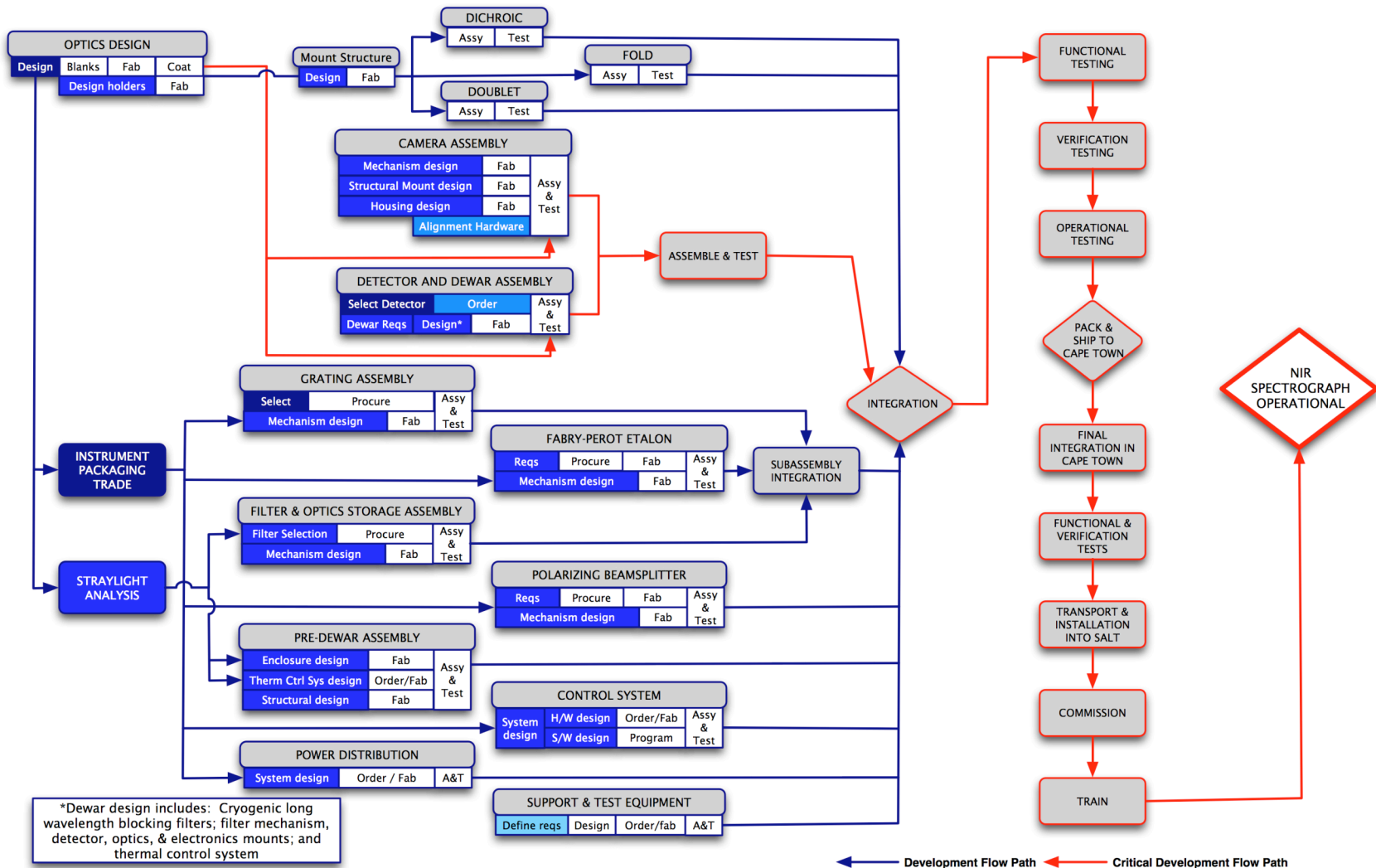


Work Breakdown Structure





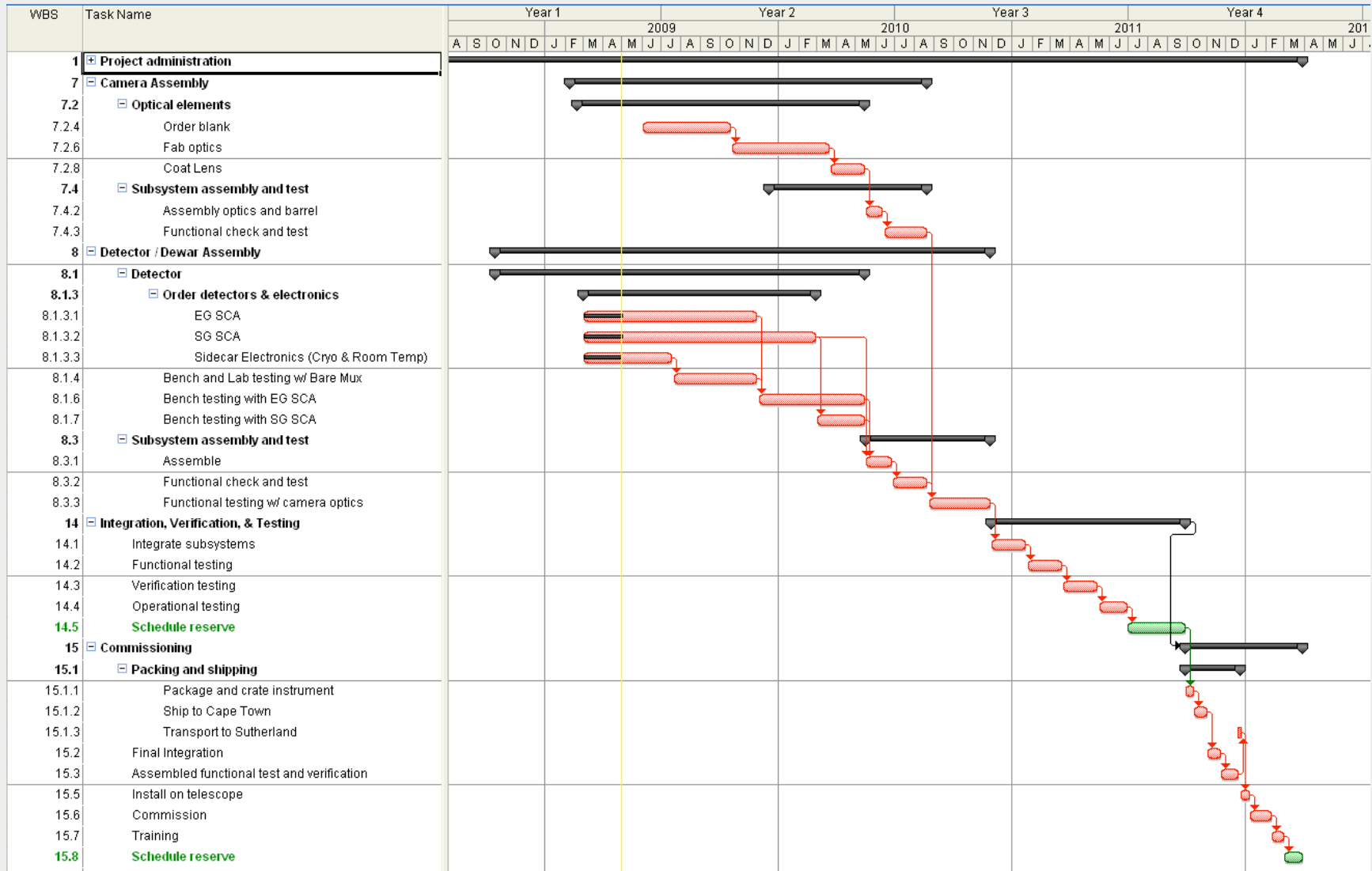
Development Flow



Status Updated 5/04/09



Schedule - Critical Path





Phases & Key Milestones



- Preliminary Design Phase
 - January 2008 - July 2008 7 months
 - Preliminary Design Review July 2008
- Design Phase
 - August 2008 - May 2009 10 Months
 - In response to panel recommendation
 - Secured funding
 - Ramped up resources
 - Mid-Term Review May 2009
- Detail Design Phase
 - June 2009 - Feb 2010 9 months
 - Complete addressing all design issues:
 - Optical and mechanical tolerance trades
 - FEA: mechanical and thermal
 - Stray light analysis
 - Produce detail drawings
 - Place long lead items on order
 - Critical Design Review Mar 2010



Phases & Key Milestones



- Instrument Development
 - Mar 2010 - Nov 2010 9 months
 - Receipt of Science Grade Detector Mar 2010
 - Receipt of Camera Optics May 2010
 - Fabricate machined parts
 - Place orders for components
 - Complete figuring, polishing and coating of lenses
 - Commence subsystem assembly and checkout
- Integration, Verification, & Test
 - Dec 2010 - June 2011 7 months
 - Test Readiness Review (post integration) Jan 2011
 - Schedule Reserve: July-September 2011 3 months
- Final Integration & Commissioning - South Africa
 - October 2011 - February 2012 5 months
 - Arrive in Cape Town: Nov 2011
 - Integrate with RSS-VIS in Cape Town
 - Pre-install Review Dec 2011
 - Schedule Reserve: March 2012 1 month
 - Commissioning Review Jun 2012



Long Lead Items



<i>COMPONENT</i>	<i>PLACE ORDER</i>	<i>DURATION (MONTHS)</i>	<i>SLACK (MONTHS)</i>
Science Grade Detector	Mar 2009	12	0
Camera Optics	June 2009	11	0
Gratings	Jul 2009	12	0.5
Fabry-Perot Etalon & Controller	Aug 2009	12	0.5
Polarizing Beamsplitter	Jul 2009	12	1
Fabry-Perot Order Blocking Filters	Sep 2009	8	4



Estimated Instrument Cost



Spending to date (3/31/09)	\$446,216
Budget Estimate (04/09-03/12)	\$5,364,831
INSTRUMENT COST	\$5,811,047

- WBS-based, grass roots developed budget based on:
 - RSS-VIS experience
 - Formal bids for the detector and the camera and doublet optical blanks.
 - ROM cost estimates from vendors
 - Experience of Astronomy, SAL, and SSEC staff on similar project development efforts.
- Does not include the Fabry-Perot etalon and controller.



Estimated Instrument Cost with Fabry-Perot Etalon



- The budget total does not include the Fabry-Perot etalon and controller. Andy has submitted a supplemental funding request to the NSF MRI program for an additional 10% funding (~\$2.0M). ICOS provided a ROM estimate of the F-P etalon and controller at ~\$272k. Ted Williams has informally agreed to purchase the controller if the NSF funding is approved. Together, the NSF funds and Rutgers contribution will cover the cost of the etalon and controller.

Total Instrument Cost	\$5,811,047
Fabry-Perot w/ controller ROM	\$271,920
INSTRUMENT W/ ETALON	\$6,082,967



Contingency



Spending to date (3/31/09)		\$446,216
Budget Estimate (04/09-03/12)		\$5,364,831
		<hr/>
	INSTRUMENT COST	\$5,811,047
Contingency	15.2%	\$710,728
		<hr/>
	TOTAL INSTRUMENT COST	\$6,521,775

Instrument cost w/contingency		\$6,521,775
Fabry-Perot w/ controller ROM		\$271,920
		<hr/>
	INSTRUMENT W/ ETALON	\$6,793,695

- At PDR, the project had 11.5% contingency. The panel recommended increasing that to 15-20%.
- We have currently set it at just over 15% of our estimate to complete. The percentage does not include the detector (already on order) nor the camera and doublet optics (formal bids received).



Funding



WARF		\$3,300,000
NSF		\$1,996,775
SALT		
Received	\$145,000	
Committed	\$155,000	
Requested	\$925,000	
		\$1,225,000
TOTAL FUNDING		\$6,521,775

- WARF funding has been fully received.
- The first two years of NSF funding has been received (~\$1M)
- The \$155k commitment from SALT was contingent upon the NSF funding. It has not yet been received.
- Requested SALT funds:
 - Formally requested to Board Executive Committee in Nov 2008.
 - On the New York SSWG agenda next week.



Balance of Funds

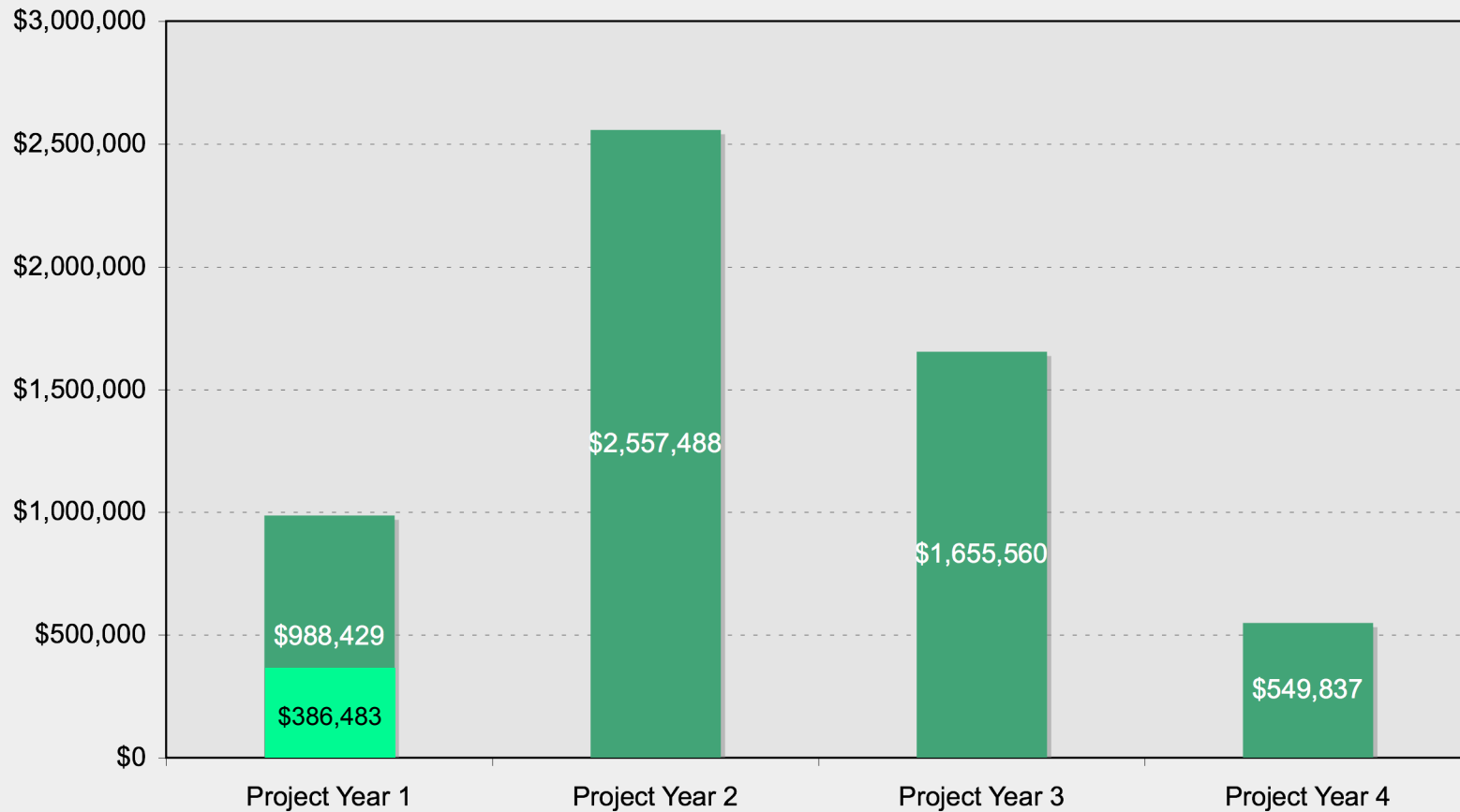


Funding	\$6,521,775
Spending prior to 7/1/08	\$59,733
Spending post to 6/30/08	\$386,483
	<hr/>
BALANCE	\$6,075,559
Estimate w/ Contingency	\$6,075,559

- Prior to July 1, 2008, Astro/SAL tracked the project spending. Since then, SSEC has been accounting for project spending.
- This marks the start of Project Year 1.
- The project is 45 months long including 4 months of schedule reserve.



Budget Profile



- \$386,483 is the spending to date in Project Year 1
- Profile does not include the Fabry-Perot etalon and controller



Budget: WBS Subsystem



<i>NIR BUDGET SUMMARY BY WBS</i>	PY01 2008-2009 APR - JUN	PY02 2009-2010 JUL - JUN	PY03 2010-2011 JUL - JUN	PY04 2011 JUL - DEC	TOTAL
Tasks					
1.0 PROJECT ADMINISTRATION	\$100,591	\$322,059	\$311,957	\$87,104	\$821,711
2.0 OPTICAL ELEMENTS	\$68,463	\$389,878	\$105,450	\$0	\$563,791
3.0 GRATING ASSEMBLY	\$3,375	\$120,225	\$12,959	\$0	\$136,559
4.0 FILTER & OPTICS STORAGE ASSEMBLY	\$6,800	\$113,396	\$178,757	\$0	\$298,953
5.0 FABRY-PEROT ETALON	\$15,801	\$50,553	\$16,032	\$0	\$82,386
6.0 POLARIZING BEAM SPLITTER	\$24,360	\$57,072	\$54,202	\$0	\$135,635
7.0 CAMERA SUBASSEMBLY	\$54,962	\$320,885	\$34,282	\$0	\$410,129
8.0 DETECTOR / DEWAR ASSEMBLY	\$236,428	\$576,046	\$76,385	\$0	\$888,859
9.0 PREDEWAR SUBASSEMBLY	\$30,709	\$166,341	\$50,569	\$0	\$247,618
10.0 RSS COMMON OPTICS ENVIRONMENTAL CONTROL	\$11,029	\$29,248	\$40,096	\$0	\$80,373
11.0 CONTROL SYSTEM	\$41,598	\$238,922	\$83,922	\$0	\$364,442
12.0 POWER DISTRIBUTION	\$7,830	\$102,005	\$44,837	\$0	\$154,672
13.0 SUPPORT AND TEST EQUIPMENT	\$0	\$70,859	\$95,595	\$0	\$166,454
14.0 INTEGRATION, VERIFICATION, AND TESTING	\$0	\$0	\$550,516	\$0	\$550,516
15.0 COMMISSIONING	\$0	\$0	\$0	\$462,733	\$462,733
TOTAL	\$601,946	\$2,557,488	\$1,655,560	\$549,837	<u>\$5,364,831</u>



Budget: Cost Categories



NIR BUDGET BY COST CATEGORY					
	PY01 2008-2009 APR - JUN	PY02 2009-2010 JUL - JUN	PY03 2010-2011 JUL - JUN	PY04 2011 JUL - DEC	TOTAL
LABOR	\$222,038	\$971,745	\$934,516	\$278,893	\$2,407,192
MATERIAL	\$40,740	\$187,020	\$58,100	\$19,000	\$304,860
CAPITAL EQUIPMENT	\$244,974	\$884,330	\$296,550	\$10,000	\$1,435,854
TRAVEL	\$18,621	\$21,729	\$4,439	\$95,303	\$140,092
SUBCONTRACTS / SERVICES	\$57,043	\$395,408	\$157,693	\$8,900	\$619,043
TOTAL DIRECT	\$523,492	\$2,101,371	\$1,351,188	\$412,096	\$4,388,147
TOTAL INDIRECT	\$78,453	\$456,117	\$304,372	\$137,741	\$976,684
TOTAL	\$601,946	\$2,557,488	\$1,655,560	\$549,837	\$5,364,831
FTE's	9.37	50.19	42.01	10.50	10.51



Project Risks



1. Schedule: critical path and long lead items
 - Critical path is understood, but a few long lead items are just off the path and easily could start driving the schedule.
 - Have assumed worse case lead times from vendors.
 - We have not fully fleshed out the details of IV&T. Schedule assumes everything must be here and in place before testing begins. Naturally, there can be some optimization.
 - Have provided schedule reserve for IV&T and Commissioning.
2. Funding:
 - \$5.4M secured
 - \$155k committed
 - \$925k formally requested.
3. Detector order has been placed. Cost and delivery came in as expected.



QUESTIONS?