
COO Instrument Development
November 5, 2010
R. Dekany

All-Hands Meeting Outline

- COO Management Update
- OIR Group Staffing and Project Portfolio
- Recent Proposal Efforts
- New prospects / opportunities
- Laboratory update
- Group picture (2010)

COO Directorate

- Professor Shri Kulkarni has agreed, so far, to continue his Directorship through September 2011 (firm)
  - Potential for continuation beyond this under discussion with PMA Division Chair, Professor Tom Soifer
  - Shri's interest in an academic sabbatical in 2011 is a factor

OIR Group Overview

- Staffing summary
  - 17 technical staff and 4 associated post-docs
  - Working closely with 3 POMO campus staff, 3 COO business office staff, and COO Directorate
  - Expecting addition of 2-3 new staff within 6-12 months, 1 departure
    - Mechanical Engineer (open ad)
    - Electrical/Detector Engineer (to be opened soon, filled ASAP)
    - Instrument Scientist (ad soon, hire within 6-12 months)

OIR Group Overview

- Current portfolio
  - Total of 18 active, 10 proposed, and 2 external projects(!)
    - Palomar P200 - 5 active, 3 proposed, 2 external projects
    - PTF (P48 & P60) - 2 active, 3 proposed projects
    - Keck - 5 active, 2 proposed projects
    - TMT - 1 active, 1 proposed project
    - Subaru - 1 proposed project
    - Antarctica - 1 active project
    - Space - 4 active projects
  - ARRA appears to have had little impact (contributed to 1 project)
  - Mostly organic growth

Project Name:	**Palomar DBSP Red Side Upgrade**	**Palomar PALM-3000**	**Palomar Project 1640**	**Palomar Triplespec**	**Palomar / Oxford SWIFT**
Class:	Medium-resolution VIS slit spectrograph	High-order adaptive optics sytem	High-contrast NIR integral field spectrograph	Medium resolution J,H,K slit spectrograph	Medium resolution VIS diffraction-limited integral field spectrograph
IPT Lead:	Gustavo Rahmer	Jenny Roberts (JPL)	Richard Dekany	Andy Boden	Richard Dekany
Project Scientist:	Evan "I'll get you Conan" Kirby	Richard Dekany	Ben Oppenheimer (AMNH)	Terry Herter (Cornell)	Niranjin Thatte (Oxford)
Status:	Fully Funded	$7.2 of $7.5M identified; LGS mode suspended	Undergoing refurbishment at AMNH	Science	Science
FY11 budget	~$237K COO	~$450K @ COO ~$550K @ JPL	~$0K COO	~$25K COO	Unknown; ~$0K COO
Total cost	~$300K	~$7,500K incl. 25% contingency	~$800K AMNH; ~$300K JPL (CAL)	Unknown, CIT cost to date incl. construction >$400K	~$2,000K(?)
Recent Milestones:	Window, dewar base ordered	HODM AO loop closed in lab	New 2.5 um cutoff H2RG detector order placed	User interface stability greatly improved	Ongoing improvements to system at Oxford
	Control computer configuration begun	HOWFS and LODM integrated into new bench layout	5th P1640 referreed paper accepted		
Upcoming Events:	Detailed internal dewar mechanical design	HODM/LODM control in lab Jan 2011	APLC delivery to JPL for CAL integration Jan 2011		Recommissioning with PALM-3000 expected Aug / Sept 2011
	Consider mechanical upgrade for FY12	First telescope fit test Feb 2011	IFS delivery to Palomar for PALM-3000 integration June 2011		

Project Name:	**Palomar Cosmic Web Imager (CWI)**	**Palomar HARVESTER**	**Palomar East Arm Echelle (EAE)**	**Palomar Fiber Positioner Demonstration (QUIVER)**	**Palomar Prime Focus (GLAO) Imager**
Class:	Medium resolution VIS integral field spectrograph	Ultra-stable high resolution VIS spectrograph	High resolution VIS single object spectrograph	Robotic high resolution VIS multi-object fiber-fed spectrograph	0.9 - 2.5um (GLAO) Imager
IPT Lead:	Anna Moore	Richard Dekany	Anna Moore	Richard Dekany	Richard Dekany
Project Scientist:	Chris Martin	John Johnson	Chris Martin	Richard Ellis	Shri Kulkarni
Status:	Science	2010 MRI Proposal (Yale) Declined	Science; Low transmission	2010 ATI Proposal Submitted	Pre-proposal concepts only
FY11 budget	Unknown	~$5K COO	~$0K COO	~$150K	Unknown
Total cost	~$1,000K(?)	<$3,000K	Unknown	~$900K	Unknown
Recent Milestones:	Submission of recent extragalactic science result to *Nature*				
Upcoming Events:		PI and team considering funding alternatives Additional AO vs. seeing-limited trade studies	JPL to investigate optical situation *gratis*	ATI decision expected May 2011	Community polling to be conducted at Nov 2010 ReSTAR meeting

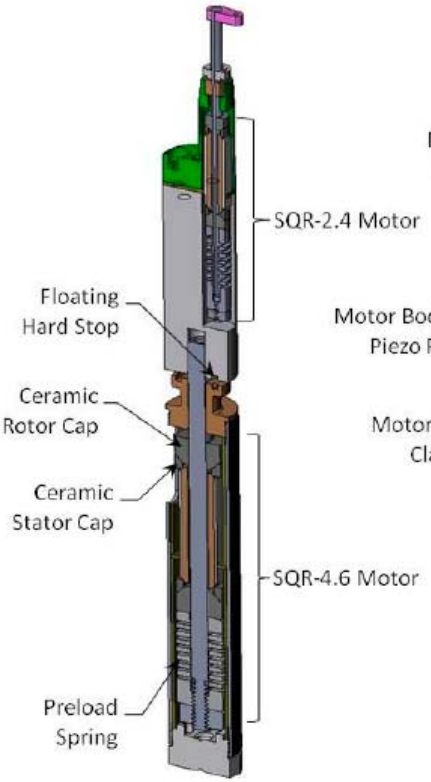
Project Name:	**Palomar Transit Factory (PTF)**	**Robo-AO**	**Robo-AO Pomona College Support**	**Spectral Energy Distribution Machine (SEDM)**	**Robo-AO IRCam**	**Next Generation Transit Factory (NGTF)**
Class:	High-cadence, wide-field VIS survey imager	Robotic 0.4 - 1.7u SCAO Imager	Software support for Pomona Robo-AO testbed	Low-resolution VIS integral field spectrograph	0.9 - 2.5u imager and AO tip-tilt sensor	High-cadence, ultra-wide-field VIS survey imager
IPT Lead:	Richard Dekany	Christoph Baranec	Christoph Baranec	Nick Konadaris	Christoph Baranec	Richard Dekany
Project Scientist:	Nick Law PI: Shri Kulkarni	Nick Law	Nick Law	Shri Kulkarni	Nick Law	Shri Kulkarni
Status:	Construction	Fully Funded	Fully Funded	2010 ATI Proposal Submitted	2010 ATI Proposal Submitted	Feasibility Studies
FY11 OIR budget	~$0K COO	~$500-600K ATI and IUCAA	~$100K	~$660K	~$100K ATI	~$20K COO
Total cost	~$950K instrument (less than original ~1,150K est.)	~$1,000K	~$100K	~$660K	~$650K	~$5M(?)
Recent Milestones:	Window contamination issue solved PTF discovered transients enter 4th character: 10PTFaaaa	Laser projector successfully tested at P60	Initial software release delivered to Pomona	Exploration of Taiwan UST partnership	Exploration of Taiwan UST partnership	Initial 'open issues' list identified
Upcoming Events:		Cass instrument fab through winter Second LGS test Jan 2011	Subsequent releases in support of NGS AO functionality	Presentation to ReSTAR committee	Partnership Exploration	Partnership Exploration

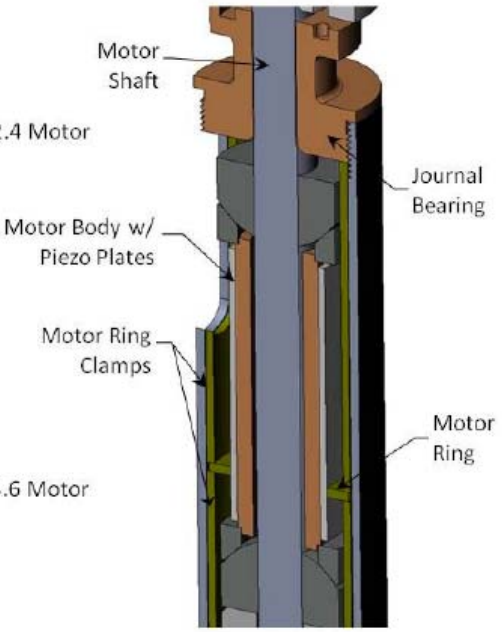
Project Name:	**Keck MOSFIRE**	**Keck NGAO**	**Keck NIRES**	**Keck NIRES EDP**	**Keck Cosmic Web Imager (KCWI)**	**Keck TRICK**	**Keck NIRC2 Upgrade**
Class:	Medium resolution NIR multi-object spectrograph and imager	High-order LGS AO system and NIR IFS	Medium resolution J,H,K slit spectrograph	Medium resolution J,H,K slit spectrograph	Medium resolution VIS integral field spectrograph	NIR AO tip-tilt Sensor	Polarimetry mode addition to NIRC2
IPT Lead:	Bob Weber	Richard Dekany	Keith Matthews	Andy Boden	Anna Moore	Richard Dekany	Keith Matthew
Project Scientist / Principal Investigator:	Chuck Steidel	Claire Max (UCSC)	Keith Matthews	Keith Matthews	Chris Martin	Tommaso Treu	Mike Fitzgerald
Status:	Construction	Passed PDR	Construction	2010 TSIP Proposal Submitted	Preliminary Design	Fully Funded	2010 ATI Proposal Submitted
FY11 OIR expected budget	Needs updating	~$50K (TBC)	Unknown	Unknown	~$617K (TBC)	~$679K	Unknown
Total cost	~$13,000K	~$43,000K AO ~$15,000K Davinci	Unknown	~$1000K		~$1,800K	~$200K
Recent Milestones:	7th cooldown underway	Endorsed at Oxnard Keck Retreat			2010 TSIP Proposal Submitted		
Upcoming Events:	Pre-ship review soon First telescope light Spring 2011	Discussion of mid-scale NSF instrument proposal planned for SSC and Board Nov 2010		Possible placement of new H2RG detector order	Prepare 2011 ATI Proposal (?)	SDR Dec 2010	ATI Decision Expected May 2011

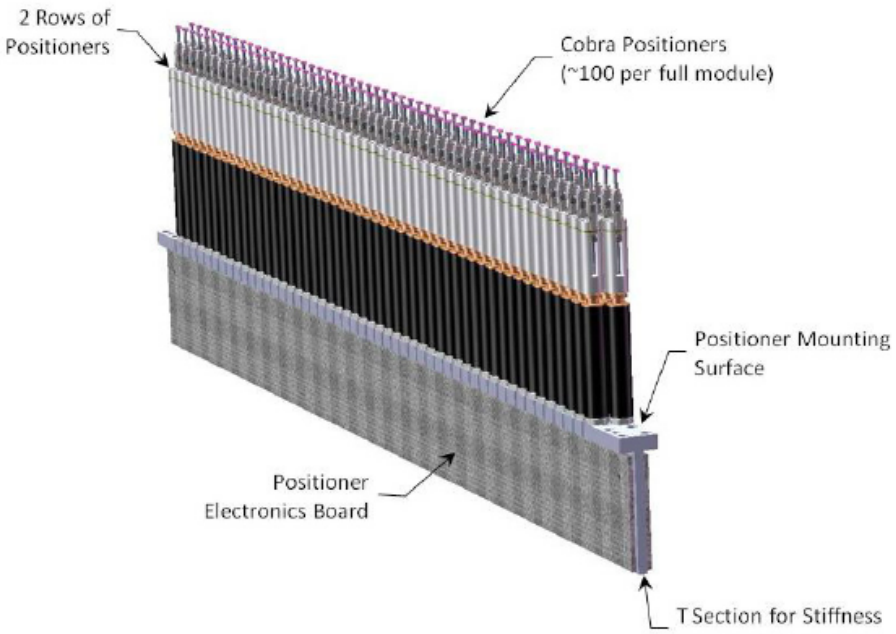
Project Name:	**Subaru PFS**	**TMT IRIS**	**TMT IRMS**	**Antarctic GATTINI**
Class:	Massively-multiplexed fiber-fed VIS spectrograph	Medium resoultion NIR integral field spectrograph and imager	Medium resolution NIR multi-object spectrograph and imager	Ultra-wide-angle sky monitor camera(s)
IPT Lead:	Roger Smith	Anna Moore	Robert Weber	Anna Moore
Project Scientist / Principal Investigator:	Richard Ellis	James Larkin	TBD	Anna Moore
Status:	Passed PDR; Funding hiatus	Conceptual Design	Hiatus	Construction / Lab Testing
FY11 OIR expected budget	Unknown	~$100K-200K (TBC)	~$0K (TBC)	~$50K
Total cost	$50,000-60,000K (?)	~$26,000K (TBC)	~$15,000K (?)	Unknown
Recent Milestones:	Significant Japanese stimulus funding for SuMIRe in hand		Design requirements document posted (DRF05)	Successful cold test to -75C
Upcoming Events:	On-going funding discussions	CoDR Jan 2011 (TBC)		Delivery through to Antarctica Dec 2010

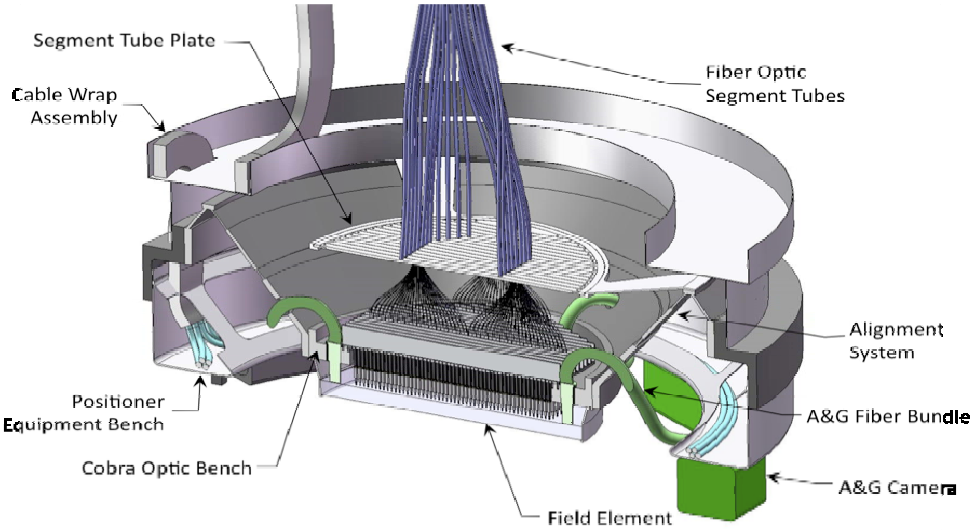
Project Name:	**DoE SNAP Detector Study**	**DoE / JPL Precision Projector**	**DoE Annual Test Dewar (ATD)**	**JPL ASTrO**
Class:	Investigation of NIR detector noise properties	Ultra-stable optical relay testbed	Test dewar(s) for 2 x 2 mosiac of H2RG detectors	Wide-field NIR space transit photometry mission
IPT Lead:	Roger Smith	Roger Smith	Roger Smith	Roger Smith
Project Scientist / Principal Investigator:	Richard Ellis	Richard Ellis	Jason Melbourne (?)	Chas Beichman
Status:	On-going	Construction	Funded	Explorer-Class proposal due Feb 2011
FY11 OIR expected budget	~$180K (TBC)	~$180K (TBC)	~$128K	~$40K
Total cost	~$2,300K to date	~$2,300K to date	TBC	Unknown
Recent Milestones:		Demonstrated excellent detector dimensional stability		
Upcoming Events:		Improvements to static image ellipticity		Referreed paper to be submitted on NIR array stability

QUIVER, n.: A grouping of cobras









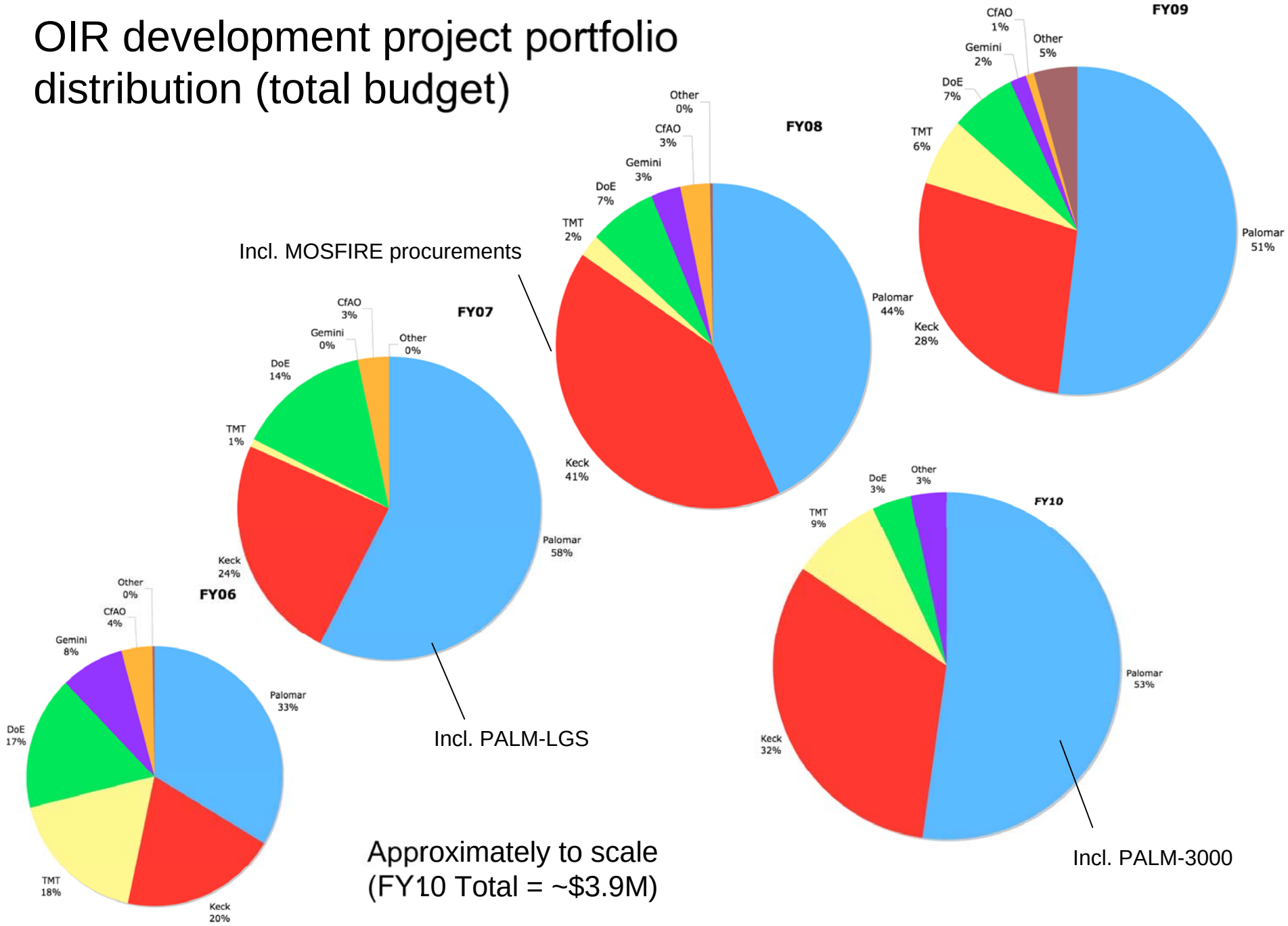
New Prospects / Opportunities I

- NYU Stony Brook has joined the Observatory as a P200 partner
  - 3-year agreement includes cash transfer to support development and operations
  - Allocation of 1/8th observing nights; primary interest is with PALM-3000
- NOAO & ReSTAR II
  - A delegation is traveling to Tucson Nov 15 to discuss the potential of partnering in proposing for a second round of NSF ReSTAR (Renewing mid-sized telescope) funding.
    - ReSTAR I added NOAO to P200 partner with DBSP and TSPEC access
    - With several elements to NOAO's program, ReSTAR I is seen as a success
- National Central University (Taiwan)
  - Based on strategic decision by Pres. Chameau, COO delegation visited NCU and ASAII, also met with faculty from National Tsing Hua University
  - Long-term collaboration targeting transient Universe science and fostering Taiwan capacity for large telescope instrumentation
  - Possible collaboration via Lulin 2-m diameter telescope (SEDM, Robo-AO, ?)

New Prospects / Opportunities II

- IUCAA partnership on Robo-AO working well
  - Interest in expanding collaborative effort within TMT umbrella exists on both sides
  - Indo-US astronomy workshop proposed for early March in Pune, India
    - Could involve funding for 3 - 6+ OIR staff (by invitation)
- TMT Caltech - China partnership likely to strengthen
- Antarctic Astronomy Roadmap for the United States
  - COO will host a national workshop to develop of coherent vision of US astronomical ambitions in Antarctica (Tony Travouillon, organizer)
  - Likely a 3-day event, to cover entire E-M spectrum
  - Interest by NSF (incl. workshop funding) and OPP

OIR development project portfolio distribution (total budget)



Incl. MOSFIRE procurements

Incl. PALM-LGS

Incl. PALM-3000

Approximately to scale
(FY10 Total = ~$3.9M)