

ALTAIR Meeting Notes

June 11, 2008

The meeting began with a presentation by Todd Boroson (attached below) which outlined the background and charge for this committee. He also presented how ALTAIR fit into a broader process that would involve not only NOAO and NSF but also ACCORD (<http://www.aura-astronomy.org/g/ag.asp?gid=68>). During the ensuing discussion it was emphasized that we needed to look at current needs in the light of existing capabilities (both ground based and space assets), as well as needs that will be driven by new capabilities post 2010. NSF wants community & science driven recommendations and suggestions on a process for implementing those recommendations.

Peter Stritmatter represented ACCORD at this meeting and gave a presentation (attached below). A theme of his presentation was "Is the community serious about the system?"

Peter feels that with current structure we (the US) will not continue to lead in astronomy. Key points made that amplify the bullets in the presentation include:

- Funding for TSIP should include buying time with a greater "incentive factor". The current incentive factor of unity for straight time-purchase is less interesting to privates. He noted Chicago buying a Magellan time at ~1.5 incentive
- AODP (<http://www.lsstmail.org/system/aodp/>) has not been successful due to intermittent funding
- Need to contain operations costs
- Emphasized the importance of funding people with a passion for building instruments or developing software. He reminded us of this point several times during the day.

Peter relayed concerns from Shri Kulkarni (current ACCORD chair). Major points are Independents are an integral part of system, indeed control ~80% of 6-10 meter glass, and stability of funding is needed for the system to remain competitive.

Joan Najita followed with a presentation (attached below) that summarized current instrument capability on 6-10 meter telescopes. This summary of capabilities was largely structured as plots of FOV vs. resolution with separate plots for optical, near infrared and mid infrared. It was suggested that there be a clear differentiation between Gemini & "other". It was also suggested that in addition to broad categories which Joan circled on the figures, it might prove useful to have a separate figure for diffraction-limited NIR. She also presented information on over subscription & demand for specific instruments as seen from NOAO for Gemini and other telescope through the TSIP (<http://www.lsstmail.org/system/tsip/>) program.

Joe Jensen used the committee charge to present (attached below) current Gemini instrument capabilities, instrument plans, telescope usage and productivity, and those areas where he felt Gemini was most capable. He noted there will be another "Aspen" like meeting coming up. On WFMOS he laid out a decision timeline; competitive studies due early 2009, simultaneously negotiate with Japan, May 2009 board will have bid packages and Japan agreement. Joe also noted GNIRS was 25-30% of the total

time on Gemini south and it's loss is a substantial setback. GNIRS is projected to be back on Gemini north in 2009A for commissioning and Flamingos 2 on Gemini south on similar time scale.

Regarding the Aspen instruments, there was a general sense that the process of choosing instruments as funding shrank was a series of individually reasonable decisions that resulted in an undesired situation.

We then proceeded into a discussion of the types of information the committee will need for its report. This is briefly summarized as follows:

How telescopes used?

Ideally would get information from the observatories. At independents: by instrument demand or scheduled time. How far back in time should we look? 5 years, by year/by instrument w/overall oversubscription if available. It is clear that demand will NOT be reflected in the above information unless oversubscription data is also available. We noted that such a data set will not be uniform but the prevailing view was "will take what we can get". One specific request was about Target of Opportunity (TOO) interruptions on Gemini and how does TOO affect the Gemini process and what happens to data?

Impact:

Initial discussion about what to measure; number of papers, citations? What other metrics are relevant?

Oversubscription rates

What do these really tell us as some proposals should not be given time.

Time from data acquisition to publication.

Will need to identify NOAO resources to ferret out stats. Committee needs to decide what information it needs for next meeting.

In the afternoon session we began by assessing current challenges. Many points were raised in this discussion which was intentionally wide ranging. Below are notable points and are not prioritized.

- Stability is a key issue. Funding and time should be predictable. Buying time would help here. Note that the desire seems to be not just for overall funding stability but also for some degree of stability at the observatory level in terms of available time and instruments.
- New AODP roadmap is much needed. Buying time should make improvements to system— MMT adaptive secondary for example. Limit to LGS at Keck is people so buying time could add capability.
- TSIP rules need to be tweaked with incentive and stability in mind.
- For "time buy", as opposed to instrument support, does funding need to be accounted for? Probably.
- Private observatories are supportive of TSIP. For Magellan, Keck and MMT it provides leveraged gains. It also helps enable privates to maintain instrument groups.
- No high resolution optical capability on Gemini and no high res IR at all. ARIES with AO? NIRSPEC behind AO system loses a loss of efficiency; might this be improved with TSIP?.
- Should there be a "System" telescope for TOO? Is Gemini and its queue most suitable?

- Limit instrument complement on national facility, trade between Gemini and Keck for TOO time?
- Privates have opted to minimize operational expenses to maximize instrumental capabilities (queue & archive cost money).
- Does community want access to data archives in privates? The younger generation of astronomers expect that observatories produce data products; HST, Spitzer, Chandra. What is value between archive vs. new instrument? Both cost dollars.
- Compare cost of Gemini with other telescope
- \$/publication, \$/citation \$/slit; cost is key in making trades.
- Night/night trade for Keck HIRES for Gemini Michelle or NIRI

The question arose on the utilization of the Gemini archive and publications from archive. Joe Jensen will provide information on the archive use.

We then turned to getting input from community. Todd listed methods used by ReSTAR to get 160 responses. There was some concern a number like this is not enough but most agree it would be representative (some responses were on behalf of groups/departments). Additional methods are to simply to talk to people After some discussion there was a general consensus to use a ReStar-like survey.

It was suggested the survey be short, med, long survey but after some discussion, decided to just have short survey + option to continue + options to write essay(s). Some topics that came up in discussion of what should be in the survey: MOS and single object should be distinguished, just do low or high resolution for spectroscopy, more AO spectroscopy, Integral Field Unit (IFU) science, Simultaneous wavelength coverage (high res), UV coverage. Survey questions should not bog down in detailed specification as written comments are for that. Access: used independents, if so, how was access obtained. Agreed that break between “now” and “future” is later than 2012, probably JWST launch (2014/5).

Sub-committee of David Koo, Joan Najita, Lisa Prato and Seth Redfield agreed to draft survey and send around for comment. Lisa to Dave by Sunday, Dave to committee by next Wed. Site live by end of week of 23 June.

Other topics discussed:

- Special purpose techniques: polarimetry, interferometry, fast time domain capability.
- Ask Key people in ALMA, LSST, JWST, SDSSIII, Galaxy evolution etc. for needed capabilities.
- AODP road map.
- JWST: what is role of ground based NIR spectroscopy—what promised
- White papers solicited for science from survey respondents
- Capabilities on privates that are worth trading for
- Allowed to think about new facility(ies).
- How will demand change in new (ALMA, JWST, LSST, PanStars) era?
- When GSMT comes along, how to compete.

- Discussion of need for pipelines, status of pipelines at various observatories – distinguish between pipeline and tools+recipes. Keck only has pipelines for OSIRIS and Deimos. HIRES and NIRSPEC partially so. No pipelines at MMT and LBT. Pipeline essential for MOS mode. Some pipeline for MIKE and IMACS at Magellan

Discussed incremental funding to take PI's pipelines to make user friendly. System needs to get money to passionate and talented people to do this. Pipelines should be evolutionary - modify as you learn from experience with instrument, start with adaptation from other similar instruments. How to adjust system and TSIP to meet this.

July 12

The second day began with a brief review of the previous day's proceedings. It was noted that there is a stress on the high resolution spectroscopy community who needed access to large public telescope in US in both Optical and NIR and needs to be listed under challenges. Globular cluster work demands high resolution spectroscopy behind AO. Noted low AO demand could be due to lack of community experience. Development of robust and user friendly AO is seen as a high priority by ACCORD.

We then turned to discuss the contents and depth of a science case. One suggestion was an elaboration of what science AO enables on 8 meter telescopes. Science case will need to be made for new instruments in the system where increased access is requested by community. It was suggested emphasizing new areas not around 10 years ago on large telescope but take a minimalist approach to the science case as there was widespread understanding that there were unmet needs for strong science.

It was pointed out there was precious little NIR large (20 arc min) field imaging. Also large groups proposing large projects will be more common and we need to assess how these impact demand. Space programs have large amounts of time on large "legacy" programs. The community survey should assess what community thinks is appropriate amount of time on system telescopes for surveys. We need to make sure to leave time for smaller and yet to be thought of projects. While we need new instruments now for current users, it will be important to have a strong science case for why we need new instruments on public facilities.

How to assess need for 6-10 meter time generated a wide ranging discussion perhaps pushing the boundaries of the topics. Suggestions on estimating time demand included:

- We should also consider getting white papers for LSST, PTF, PanStars
- Get data from AAS directory on full member at institutions with access
- Look at nights requested by proposers on telescopes; both public and private
- Look at papers resulting from 6-10 meter telescopes
- Those who proposed over past 5 year period represent most active 6-8 meter users.
- Number of PhD coming out of universities with access and without access

Other topics included:

- There will be an increase in large teams doing large projects ; GPI on Gemini is a large science team , as is the NICI campaign ~25 astronomers
- NASA is an example of buying for a category of science or project; time on Keck for planet work. This is a model for non-independents buying time for specific projects.
- Many people get access by bringing desired complementary data to the table.
- Get fraction of Gemini archive download which is to US. What is ratio of data in and data out?
- Many coordinated science program already being submitted by Chandra, HST & Spitzer. TACS may be harder on joint space-ground proposals.
- Look at how each new facility in play will increase demands; JWST, GIA, ALMA mean 100's of additional nights.

Prioritizing capabilities

- MOS, wide field imaging always wins over niche capabilities, polarimetry, interferometry. Breakthrough technologies: LGS technology can enable better science but community is slow to embrace. Conservatism on part of community in adopting new technology like AO.
- Instrument funding from ATI and TSIP will require continued assessment of capabilities and demand and make sure we are creating new capability.
- Committee should provide a justified assessment of priorities and a process for determining priorities.
- Our view of capability should extend beyond US.

Challenges of creating a system

- Peter Strittmatter urged the system be configured to address access and budget. ACCORD makes time available for peer reviewed access for compensation. In next 10 years all 6-10 m telescope will want AO. LBT has unique interferometric capability; an advantage for national access.
- Why do we not now have more. Mechanisms are not in place. NOAO TAC does good job with TSIP time. Has not gone on between Keck-Magellan etc. Here is were "broker" concept could come into play. Without dramatic increase in investment one can add to capability.
- Increase trading Gemini time to independents in exchange for public access. UK selling time may present opportunity.
- New & More: new 8 meter with MOS fiber feeds to low and high resolution spectrograph.
- New major instruments with significant increase capability can buy enough community time to make an impact.
- TSIP and MRI limits are ~\$2 million per year. 50% limit in TSIP process can be changed.
- Need to identify science driven instrumental needs to try to drive to change the process. Need to put concepts on the table that people want.
- Must continue to have PI's who passionately want instrument for (their) science.

Next meeting will be at NSF in Arlington in early Aug to early Sept time