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TITLE

Guaranteed time for PI Instruments on the GTC

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List of acronyms and abbreviations

GCS	GTC control system
GOC	GTC Oversight Committee
PI	Principal Investigator
SAC	Science advisory committee
TAC	Time allocation committee

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1. SUMMARY

The overall astronomical success of a telescope depends heavily on the availability of a suite of first class instrumentation. However, producing scientific instruments for large telescopes is a challenge, in terms of both complexity and cost. Principal Investigators (PI) of front line instruments devote huge energies to pool a team of scientists and engineers capable of delivering, in a timely and cost effective fashion, state of the art instruments. Observatories often use Guaranteed Time (GT) as a way of compensating for these efforts.

Furthermore, often an Observatory can increase temporarily the capabilities it can offer its community by using instruments originally built to be used on other telescopes. These instruments are commonly called visiting instruments and GT is frequently claimed by the instrument PI as a payment for offering its instrument to the community.

In what follows, the GTC policy on Guaranteed Time is presented. This policy has been approved by the GTC Overseeing Committee (GOC) on its meeting of 24th November, 2004.

2. INTRODUCTION

Producing state of the art instrumentation for large telescopes is a difficult task. Not many astronomers are capable and/or willing to invest their time and effort into building instrumentation. Nonetheless, state of the art instrumentation is key to the success of a telescope. This applies of course to the GTC.

Guaranteed Time is often used to compensate the instrument PIs for their effort and vision in producing the instruments. GT is mostly meant to compensate for those aspects difficult to quantify that form an important part of building instrumentation. For instance, the time devoted to the instrument by that personnel whose salary is paid by the institution independently of their involvement in the instrument, e.g. university professors, or state employees.

An amount of GT is also often used to compensate for the efforts made by the PIs in bringing additional funds to the instrument project over and above what is paid by the Observatory for a given instrument. Indeed, bringing in additional funds may result in better and often, unfortunately, more complex instruments.

Finally, the GT is used to maintain the scientific expertise of the PI team in the best interest of the instrument being built so that the instrument is truly competitive.

Observatories often restrict to PIs from their member countries the possibility of participating in Announcements of Opportunity for building facility scientific instruments. The rationale behind this is that normally it is thought that with new instruments there will come new possibilities for discovery.

3. CONSIDERATIONS

Several factors should be taken into account when discussing GT as partial compensation for the development of both new science instruments or the use of private existing ones (the so called visiting instruments).

- GT is an important incentive for instrument builders. As such, a wise use of the GT encourages good instrument builders to devote time to produce first class instruments that are later widely used by the community.

- On the other hand, observing time is a highly priced commodity. Besides, the community is large and expect a fair amount of observing time open for competition based on scientific merit.

- The GTC Partners are investing a lot of money to guarantee to their communities the access to observing time on the GTC. Careful use of the GT is thus required to avoid damage to the GTC Partners rights.

4. GTC STRATEGY FOR PROCURING SCIENCE INSTRUMENTS

So far, the strategy that the GTC has followed for developing science instruments consists in signing contracts with research institutions, mostly from the GTC Partners community, for providing the required instruments. Under these contracts only marginal costs are covered. Marginal costs are those that the contracted institution will face due exclusively to its involvement in the construction of the GTC instrument.

Finally, as the GTC has a limited budget for the science instruments, hence a maximum amount of funds is agreed upon in the signed contract.

In this respect, the GTC will use GT as an additional payment to the contracted institution to compensate, full or partially, those aspects that are not paid in cash by the GTC budget. This include:

- The interest and dedication of the PI and the science team involved in the development of the instrument,

- The actual manpower provided by the research institutions from its own staff, or the use of its own facilities to develop the instrument,

- Additional funds required to develop the instrument, not covered by the GTC, that are provided by the PI research institution from its own budget or from third parties.

Additionally, GT could be used to cover the following issues:

- Encouraging a timely delivery of the instrument

- Discouraging late delivery of the instrument through a penalisation

- Rewarding the success of the instrument measured as the satisfaction of the user community using it or requesting its use.

5. GUARANTEED TIME TO DEVELOP FACILITY INSTRUMENTS

Following are the guidelines for granting GT in partial compensation for bringing new facility instruments for the GTC. Note that the actual figures should be agreed upon by the GTC Director and the instrument PI.

Based on the previous experience at GTC, and the common practice in other observatories the following scheme is adopted:

- For the dedication to developing and building the instrument of both the PI and a scientifically experienced and reliable team, a total of between 10 and 15 nights would be granted.
- For those additional funds brought in by the PI group to produce a facility instrument over and above the funds granted by the GTC, there would be between 10-20 additional GT nights granted per M€.
- For the timely delivery of the instrument there would be an additional bonus, of up to 5 nights. This bonus will obviously be withdrawn if the instrument is late.
- Yet an additional bonus, up to 2 nights per year, could be granted after the second year at the telescope, if the user community finds the instrument useful. Rules for measuring the satisfaction of the user community should be established if this is applied.

The maximum amount of GT awarded to an instrument PI will be 60 nights or 660 hours (a mean value of 11 hours per night is assumed here).

The GT to be awarded to an instrument should be decreased in about 50% with respect to the above figures if the PI does not belong to the GTC community.

Finally, penalties for late delivery should be stated, however these should not be implemented when the instrument is late for reasons beyond their control (for example the supply of detectors). The level of penalties for late delivery should be set at the various review meetings, in light of the actual circumstances, which are causing the late delivery.

6. GUARANTEED TIME FOR VISITOR INSTRUMENTS

Existing instruments or instruments developed not with GTC funds that are offered to the GTC community to be used at the GTC are considered Visitor Instruments. The procedure to propose visitor instrument for the GTC is described in the document “Visiting instruments on the GTC” with code GEN/DIRP/0083-L.

It is understood that Visitor Instruments could significantly boost the scientific output of the GTC often by filling a niche not available with the facility instruments. It is customary to use Guaranteed Time to compensate for the effort invested in bringing a Visitor Instrument to the GTC and offering it to the GTC community.

The amount of GT used to pay for a Visitor Instrument will mainly depend, on the demand of such an instrument from the GTC user community. Additional aspects

to be taken into account are the level of integration of the instrument into the GTC standards and the level of involvement of the instrument team on the operation, support of users, and maintenance of that instrument while at the GTC.

Three cases can be contemplated:

1. The GT granted is based solely on the community demand. In this case the GT should amount to 10-18% of the observing time that the instrument is scheduled at the telescope on programmes not belonging to people from the PI's team. This will of course be on top of the time that the PI could obtain through the normal time application procedure. The actual number should depend on the complexity of the instrument, the demand that the instrument gets from the community, the amount of support required from the GTC staff to mount and support the instrument each time it is offered, and the level of integration with the GTC control system (this of course implies less effort in running the instrument by the operation staff).

2. The GT is granted as a flat amount, independent of the community demand. In this case the GT should mostly depend on the science niche that the visitor instrument may open for the GTC community not available with the facility instruments. The actual number of GT nights should be of the order of 3 to 5 nights, depending on complexity, per year that the instrument is offered. It should be taken into account that the PI team should help support the instrument at the telescope.

3. A combination of the two above could also be adopted. For instance, The GT awarded could consist of a flat amount of 1 to 3 nights per year that the instrument is mounted on the GTC, plus a varying number amounting to 5 to 10 % of the time awarded to the instrument for use by the general community other than people from the instrument's PI team.

The GT to be awarded to a visitor instrument when the PI does not belong to the GTC community would be decreased by 50% with respect to the figures above.

In no case the GT awarded to a visitor instrument should be in such an amount that it could be seen as a way of obtaining time on the GTC without the obligations of membership.

7. TIME AVAILABLE FOR THE COMMUNITY AT THE GTC

The Guaranteed Time should in any semester amount to at most 40% of the available observing time. This secures that the community has a fair chance of getting open time, especially during the first years of operation where the pressure of both the guaranteed time holders and engineering time will be highest.