*RevMexAA (Serie de Conferencias)*, **24**, 125–128 (2005)



# PROPOSAL GENERATION TOOLS FOR THE GTC : PHASE II

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RESUMEN

Presentamos el ciclo que seguirán las propuestas de observacón en el GTC, así como las herramientas informáticas creadas para completar y remitir dichas propuestas para su evaluación y ejecución.

ABSTRACT

We present an overview of the life-cycle of the observing proposals to the GTC and the software tools designed to help the astronomers to create and submit these proposals for evaluation and execution.

*Key Words:* **METHODS: OBSERVATIONAL — TELESCOPES**

## 1. INTRODUCTION

The Gran Telescopio Canarias (GTC) will work in base of the proposals that will be produced by the astronomical communities of Spain, México, and the Univ. of Florida. These proposals must be evaluated by the corresponding TAC that will give a priority for each of them.

Those proposals that will be granted observing time will be used to construct the observing plans of GTC. These plans will be produced by a software tool (Scheduler) that will take in account the priority of the proposal and the actual atmospheric and observational conditions. These observing plans will be executed by the GTC support astronomers group using a control facility known as Sequencer (Pérez-Calpena, 2001a).

In order that the Scheduler works is necessary that the proposals must be separated in observing blocks taking in account the required telescope and instrument configuration, the requested integration time and the positions of the sources in the sky. These observing blocks must be created by the observer using the software tool developed by the GTC control group. We will review the life-cycle of the observing proposals to GTC in §2, and the software tool (OPMS) for the Phase II proposal generation is reviewed in §3

## 2. THE LIFE-CYCLE OF THE OBSERVING PROPOSALS TO GTC

The life-cycle of an astronomical proposal for GTC can be split in five main phases (Pérez-Calpena, 2001b). Phase I proposal preparation, Approvaling tasks, Phase II proposal preparation, Observing proposal execution, Data reduction and archiving. Each of these phases has its own times and schedules, and are designed to be executed each semester. Figure 1 gives a data flow of the science observing proposals.

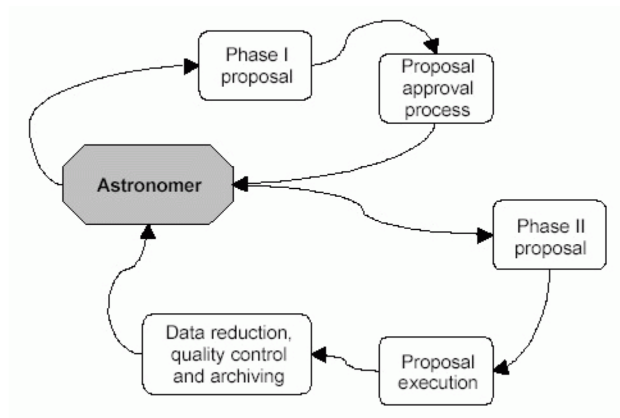


Fig. 1. Flow of the scientific observing proposal.

The life cycle of the proposals begins 6 months before (T-6 months) the first day (T) of the observing semester with the announcement to the GTC astronomical community. The proposals must be submitted with a dedicated tool (maybe a web based form) to the corresponding TAC, the limiting date will be around (T- 4.5 months). The proposals are sent to the GTC support astronomers group (T-3.5 months) for a technical review and are evaluated and approved by the TAC (T-3 months). The astronomer are informed if they have been awarded observing time at (T-2.5 months), and at that time GTC will request the information that define the observing blocks that make the proposal. This information is known as Phase II, and must be prepared with the dedicated tool (OPMS).

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| Campaign phases | Phases deadlines | |
|---|---|---|
| | Queue service observing mode | Classical observing mode |
| Call for phase I proposals | T - 6 months | |
| Phase I deadline | T - 4.5 months | |
| End of the technical evaluation at GTC | T - 3.5 months | |
| End of the TAC evaluation | T - 3 months | |
| Approval of the observing plans (astronomers are informed if they have been awarded observing time) | T - 2,5 months | |
| Classical schedule frozen deadline | - | T - 1,5 months |
| Phase II deadline | T - 1 month | - |
| Observing semester first Day | T | |

Fig. 2. Time-cycle of the request of proposals for GTC.

There will be 2 types of awarded observing modes, *classical* with the presence of the astronomer and with complete (or part) nights awarded, and in *queue* mode where all observations are performed by the support astronomers group that will distribute the observational data to the astronomer. The schedule of the observations in classical mode will be released at (T-1.5 months) and at that time the observers will be notified. These observers must prepare the Phase II submissions prior the beginning of the semester.

For the observers with awarded observing time in queue mode the deadline to prepare the Phase II information will be at (T-1 month). It must be noted that this Pase II information will be reviewed by the GTC support astronomers group and at the deadline all problems with submissions must be clarified. Figure 2 gives a resume of the lifecycle of the observing proposals.

Those observing programs approved in queue modes will be approved for 3 semesters, that means that the observations start to be in the observing queue at the beginning of the semester they were approved and remains in it until they are executed or until the third semester ends. While any observation of a particular observing program remains in the observing queue, the PI could contact the GTC to request changes in the observations.

For observing programs approved in classical mode, the PI must prepare the observations using the OPMS. These observations are carried out as in the queued mode, but only one observing program is active, and the astronomer has full control over the queue and can modify the order of execution or add new observations generated during the night. In any case, the classical observers will be encouraged to prepare and submit to GTC their Phase II information in advance of their observing seasons.

## 3. OPMS

OPMS (Observing Programs Management Subsystem) is the tool to prepare and submit the observing proposals with granted time by the TAC. This tool must create the observing blocks that the Sequencer will handle to perform the observations required for each observing proposal. The tool has several characteristics that we will review.

OPMS is written in *Java* to assure that it will run in several operating systems. It uses ESO's *JSky* a library of Java components for astronomy (Brighton et al. 1999). At the GTC web pages will be available the Time Exposure Calculators (TEC) for the available observing modes, with the latest information available about the performance of the telescope and the instruments. A copy of the TEC will be included in the OPMS with new versions released every semester in order to reflect the latest measurements.

The structure of the OPMS is based on the observing tool of Gemini, and follows the same tree distribution of layers. In the first screen (see figure 3) appears the information about the observing program (Title, status, PI and contact address). From this initial level there are several branches, the first one with the information coming from the Phase I form (Abstract, science justification, etc) where the comments from the TAC will be included.

The observations that form the observing program appear below. Each observation corresponds to one telescope acquisition. There will be as much observations as different configurations are needed by the observing program (see figure 4).

The observing conditions must be those which was asked in the Phase I tool and can not be changed. The schedule is orientative in most cases and must be defined only in the case of critical timing observations (periodic phenomena, simultaneous observations, etc).

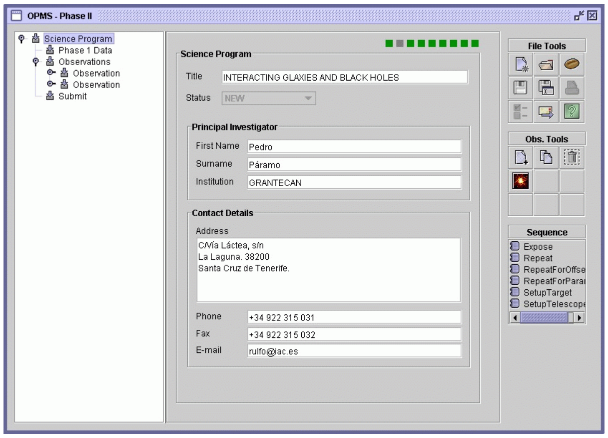


Fig. 3. Front screen of OPMS with information about the observing program.

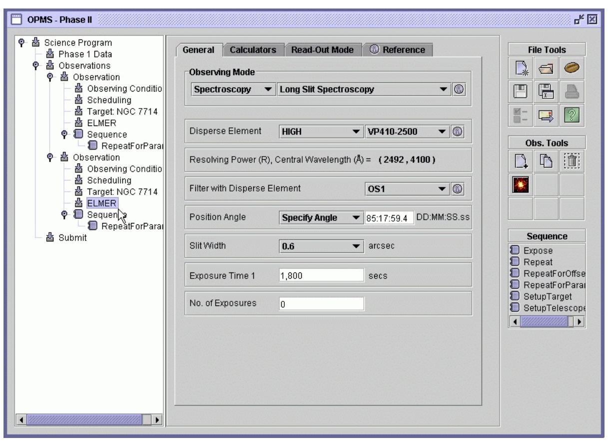


Fig. 4. Each observation will be defined by the instrument's configuration needed.

The target position must include proper motion (when available) or tracking details in the case of fast moving objects. One of the tools available is a Target Editor, that opens an astronomical image visor of the area of the observations. The image is obtained via internet from several places (CADC, ESO, 2MASS) and can also show images locally stored. On top of the image appears the outline of the window of the requested observing mode. Its position and orientation can be changed with the mouse. In figure 5 we can see the position and orientation of the ELMER field of view in long-slit mode.

The instrument configuration is defined in the next layer. At this time only ELMER imaging mode is included, but in the future every instrument's observing mode will be available following the guide-

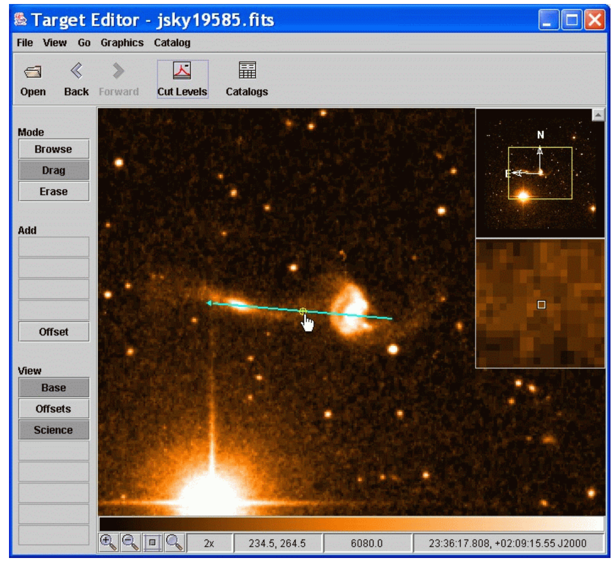


Fig. 5. The position and orientation of the requested observing window can be modified with the mouse.

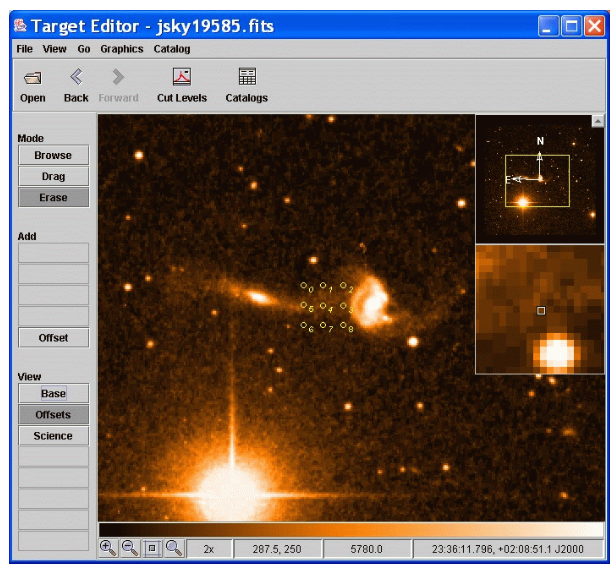


Fig. 6. The pointing positions of a 3 × 3 20 ″grid defined by the user

lines found in Macías, 2003. A TEC is included and is possible also to define different read-out modes of the detector. At the right side of instrument configuration screen (see figure 4) is a box under the title **Sequence**. Every line in this box is a tool used to create sequences of observational modes. For example, is possible to include repetition of observations changing only the filter used or to define offsets around the target with the same instrument configuration. In figure 6 are shown the pointing positions of a grid of 3×3 offsets of 20 arc sec.

A local checking is done at the final screen to assure that there are no missing data and if so it is requested. When all the required information is completed, it is sent to the GTC for a final technical evaluation by the GTC support astronomers group prior to scheduling.

## REFERENCES

Brighton, A. et al. 1999. in JSky - Java Components for Astronomy, ESO, http://archive.eso.org/JSky/

Macías, R., 2003, GTC Document NTE/CTRL/0187-R

Pérez-Calpena, A., 2001a, GTC Document PRO/OPER/0025-R

Pérez-Calpena, A., 2001b, GTC Document PRO/OPER/0024-R



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