EUROPEAN SOUTHERN OBSERVATORY

VERY LARGE TELESCOPE

Phase 2 Proposal Preparation Tool
(P2PP) v2.9

User Manual

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3	15.12.02	all	migrated to LaTeX; fully revised
4	10.01.04	mainly 5 and 6	updated to P2PP 2.7, in particular: - Attaching and managing finding charts - Execution time reports
5	09.07.04	1, 5	minor updates to v2.8 figures updated to reflect new way of handling constraints
6	20.12.04	5, 6	revised to reflect v2.9 functionality, especially README file and p2pp-submit

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1 Introduction

This manual describes how to use P2PP, the ESO Phase 2 Proposal Preparation Tool that is used to define observations at all the ESO telescopes and instruments. If you have obtained time at ESO, either in Visitor or Service Mode, you will need to use P2PP to prepare your observations. The purpose of this manual is to assist you in the process of doing this.

P2PP is a Java-based application integrating a set of user interfaces that are needed to prepare the Observation Blocks (OBs) with which instruments at ESO telescopes are operated and to provide the observatory with ancillary execution information. P2PP and OBs are important pieces of the VLT Data Flow System (which is used also at other ESO telescopes besides the VLT), which we will describe at some length in Section 2.

This manual is intended for users who have obtained time at the VLT or at the La Silla telescopes and need to prepare their OBs. It is not a technical manual or an installation guide.

1.1 P2PP Version

The P2PP version described in this manual is 2.9. Please consult the P2PP Web page at:

`http://www.eso.org/observing/p2pp/P2PP-tool.html`

to check the latest version to be used in the current Period.

1.2 Supported platforms

In principle, P2PP 2.9 will work within any Java Virtual Machine that supports Java Development Kit (JDK) 1.4.0 or later. It must use version 1.4.1 of the Java Runtime Environment, and will *not* work with old versions (1.1.x). It has been extensively tested using a variety of Unix and Linux flavors, as well as Win32 and MacOS.

At present, ESO officially supports P2PP under the RedHat Linux 9 operating system. A complete installation kit for this system, including an appropriate Java Runtime Environment (JRE), is available from the P2PP Web pages in the ESO web (see Section 1.3). For this system, a separate Java installation should not be necessary.

You may also install and run P2PP under other operating systems. Although P2PP will normally work correctly on most of them, there may be configuration problems in some platforms. In such cases, ESO is only able to provide technical support on a best-effort basis.

1.3 Where to obtain help and further information

- This User Manual is not intended to provide detailed instrument-specific information. Please refer in such cases to the corresponding instrument User Manuals that can be found under the instrument Web pages:
  - VLT instruments:
    `http://www.eso.org/instruments/`
  - La Silla instruments:
    `http://www.ls.eso.org/lasilla/sciops/general/sciOp_contacts.html`
- The latest version of P2PP, its corresponding on-site installation instructions, and this Manual can be found at

http://www.eso.org/observing/p2pp/P2PP-tool.html.

- Information on observation preparation procedures and Service Mode observing policies can be found at the ESO User Support Department Web pages:

  http://www.eso.org/org/dmd/usg/

- General questions on observing programmes and time allocation must be addressed to the ESO Visiting Astronomers Section (visas@eso.org)

- For questions specifically related to Service Mode observing in La Silla, please consult the La Silla Science Operations Web pages:

  http://www.ls.eso.org/lasilla/sciops/observing/service.html.

- For problem reports or technical information on P2PP, please contact the User Support Department (usd-help@eso.org)

- For questions regarding installation, functionality, use, or any other inquiries on P2PP, please contact the User Support Department (usd-help@eso.org)

- For technical details, in particular interfacing new instruments to P2PP, please contact the Systems Engineering Group (seg@eso.org).

1.4 P2PP tutorials and test account

A special P2PP test account has been set up to allow the use of P2PP also to users who want to use it for practice purposes without working on an actual observing run. The account makes it possible to define example OBs for any of the instruments currently supported by P2PP. The details of this account are:

ID: 52052

Password: `tutorial`

Upon logging in using this account, P2PP will give you access to a test observing programme having one run defined for each P2PP-supported instrument.

In addition, a number of tutorials providing step-by-step examples of how to define OBs for a variety of instruments and observing modes are available under the P2PP Web page:

http://www.eso.org/observing/p2pp/P2PP-tool.html#tutorials.

You can use the P2PP test account to follow the tutorials. You can also use your own P2PP ID for this purpose, as long as you have current runs scheduled that use the same instrument whose tutorial you wish to follow.

1.5 Further reading

The following selection of papers give additional information about the VLT Data Flow System, its tools, and the ESO experience with Service Mode observing.

D. Silva, P. Quinn, "VLT Data Flow Operations News", 1997, The Messenger, 90, 12.

D.R. Silva, B. Leibundgut, P.J. Quinn, J. Spyromilio, M. Tarenghi, "Data flow system operations: from the NTT to the VLT", 1998, SPIE Proceedings 3349.

G. Giannone, A.M. Chavan, D.R. Silva, A.P. Krueger, G.E. Miller, "Long and Short Term Scheduling Tools in ESO", 2000, ADASS-IX, ASP Conf. Ser. 216, 211.

A.M. Chavan, D.R. Silva, C. Boarotto, T. Canavan, R. Kemp, G. Giannone, “Front-end system for the VLT’s Data-flow system”, 2000, SPIE Proceedings 4010.

D. Silva, “Service mode scheduling: a primer for users”, 2001, The Messenger, 105, 18.

P. Quinn, F. Comerón, R. Gilmozzi, G. Mathys, M. Péron, B. Pirenne, D. Silva, “VLT end-to-end science operations: the first three years”, 2002, SPIE Proceedings 4844, 1.

F. Comerón, M. Romaniello, J. Breysacher, D. Silva, G. Mathys, ’Four years of Service Mode observing at the VLT: performance and user feedback’, 2003, The Messenger, 113, 32.

1.6 Credits and acknowledgements

P2PP is a software product of the User Support Systems Group of the ESO Data Management and Operations Division, and is a part of the Data Flow System Project led by Michèle Péron. It was developed under the leadership of A. Maurizio Chavan by Carlo Boarotto, Tim Canavan, Bob Kemp, Nick Kornweibel, Cynthia Mavros, and Ron Lobo. The Project Scientist was David Silva. The External Verification Modules and the External Time Report Modules were developed by Nick Kornweibel and implemented by Stéphane Marteau for each supported instrument. The Multiple Instrument Package Support facility was implemented by Nick Kornweibel and Ron Lobo. The finding chart and README file management facilities were developed by Tim Canavan. Extensive testing of each new version of P2PP prior to its release is carried out by the Software Engineering Group led by Karim Haggouchi.

P2PP is an evolving tool whose improvements owe much to the input of numerous individuals involved in telescope operations in Garching, La Silla, and Paranal, but also and very importantly to a large number of ESO users who have continuously provided feedback and suggestions for improvement ever since P2PP was first introduced in 1997. ESO wishes to acknowledge here all the constructive input received on P2PP from its community of users.

2 Basic Observation Blocks concepts

2.1 The VLT Data Flow System

The VLT Data Flow System (DFS) is a set of protocols, interfaces and tools developed by ESO for linking together the telescope and instruments with simple observation description tools, on-line data processing capabilities, and automated data archiving. P2PP is one of the DFS tools, and it is designed to provide astronomers with the interface needed to define observing sequences that can then be executed by the telescope and instrument via the DFS. An introduction to the DFS by D. Silva and P. Quinn can be found at The Messenger, vol. 90, p.12 (1997).

P2PP must be used by both Visitor Mode and Service Mode users. Visitor Mode users are assigned specific nights and travel to the observatory to carry out their programmes. Service Mode users first define in detail their observing programmes that are then executed by ESO staff astronomers when observing conditions are appropriate, taking into account the priorities assigned by the Observing Programmes Committee (OPC).

2.2 Observation Blocks and templates

The concept of the **Observation Block** (OB) is central to the VLT Data Flow System. Astronomers specify their programmes in terms of OBs, which contain all the information necessary to obtain a "single" observation. These include the target position, the instrument and exposure setup parameters, and, in Service Mode, also the scheduling requirements and the time constraints. Such a single observation can contain in principle one or multiple exposures, or even multiple instrument configurations with multiple exposures, although this is usually discouraged. The product of the execution of an OB is normally the smallest dataset consistent with the scientific and technical goals of a given observing programme.

Science OBs can be used to obtain scientific observations of an astronomical target, as well as reference data that require the observation of a specific target (such as photometric standards).

Calibration OBs are used to acquire reference data such as lamp flat fields, biases, comparison lamps, etc. that do not require the observation of an astronomical target.

The core of the OB is composed by a number of instrument-specific **observation templates**. The templates that a typical science OB contains are:

- An **acquisition template**, describing how the target acquisition is to be performed: for example, which filter or slit is to be used in the (acquisition) observation, which exposure time the acquisition image should have, which position angle on the sky the slit should have...
- One or more **science templates**, describing the instrument setup and the exposure parameters: for example, which mask should be loaded in a MOS observation, which grism should be used, which grating central wavelength should be set, which jitter pattern should be obtained, what integration time should each exposure have...
- In some cases, the OB may end with an **attached calibration template**, such as for instance an arc lamp exposure for precise wavelength calibration to be obtained right after the last scientific exposure with the instrument in the same configuration.

  The set of science and possible attached calibration templates in a given OB compose the **Observation Description**.

In addition to the templates, a science OB contains other important, instrument-independent information:

- **Target information**, including coordinates, proper motion, and, for Solar System targets, differential motion.
- The **Constraint Set**, to be used in service mode only, specifying under which external conditions (airmass, seeing, transparency, lunar illumination...) the OB can be executed.
- The **Time Intervals** information, also to be used in Service Mode only, specifying possible intervals (date and time) when the OB can be executed.
- The **Sidereal Time** intervals (for VLTI instruments only), where the possible intervals in local sidereal time in which the OB can be executed.
- The **Calibration Requirements** information, a free text field where comments can be given to the Service Mode observer or where the Visitor Mode observer can include reminders on the calibrations needed.
- Some instruments (FORS1/2, VIMOS, FLAMES, NACO...) require the insertion in the templates of *parameter files* generated by instrument-specific observation preparation software (FIMS, VMMPS, FPOSS, NAOS PS...)
- Optionally, one or more **Finding charts**, especially for use in Service Mode.
- Also optionally, an **Ephemeris file** for moving targets.

Obviously, none of these items is present in Calibration OBs.

Figure 1 gives a schematic view of the composition of a typical science and calibration OB. Note that Science OBs can include also calibration templates for the observation of reference sources such as standards stars, as well as attached calibrations as described in Section 2.3.

In addition to *acquisition*, *science*, and *calibration* templates there are also **test** templates used for technical maintenance of the instrument. These templates are not available to users.

It is important to note that in general *the components of OBs are not shared between OBs, and that changes to one of these components in a given OB only affect that OB*. For example, although it is possible to define several OBs for the observation of a single target, changing the coordinates of the target in one of the OBs will not automatically propagate the change to the other OBs whose targets have the same name. Likewise, changing the value of any parameter within the templates that compose an Observation Description will not propagate the change to all the other OBs having Observation Descriptions with the same name. The same is true for the Constraint Set and for the finding charts. Nevertheless, it is possible to copy components of an OB to one or more OBs by means of the *synchronization* mechanism, to be described in Section 5.10.

2.3 A note on calibration OBs and calibration templates

It is important to distinguish between **calibration OBs** and **calibration templates**, as the term 'calibration' has different meanings in those different contexts:

- **Calibration OBs** were described before as those that do not require the observation of an astronomical target. For this reason, these OBs do not contain an acquisition template, and they can contain only calibration templates.
- **Science OBs for the observation of calibration sources** are different from the calibration OBs described above. Their contents are typically the same as those of normal science OBs, but instead of science templates they use calibration templates having a functionality similar

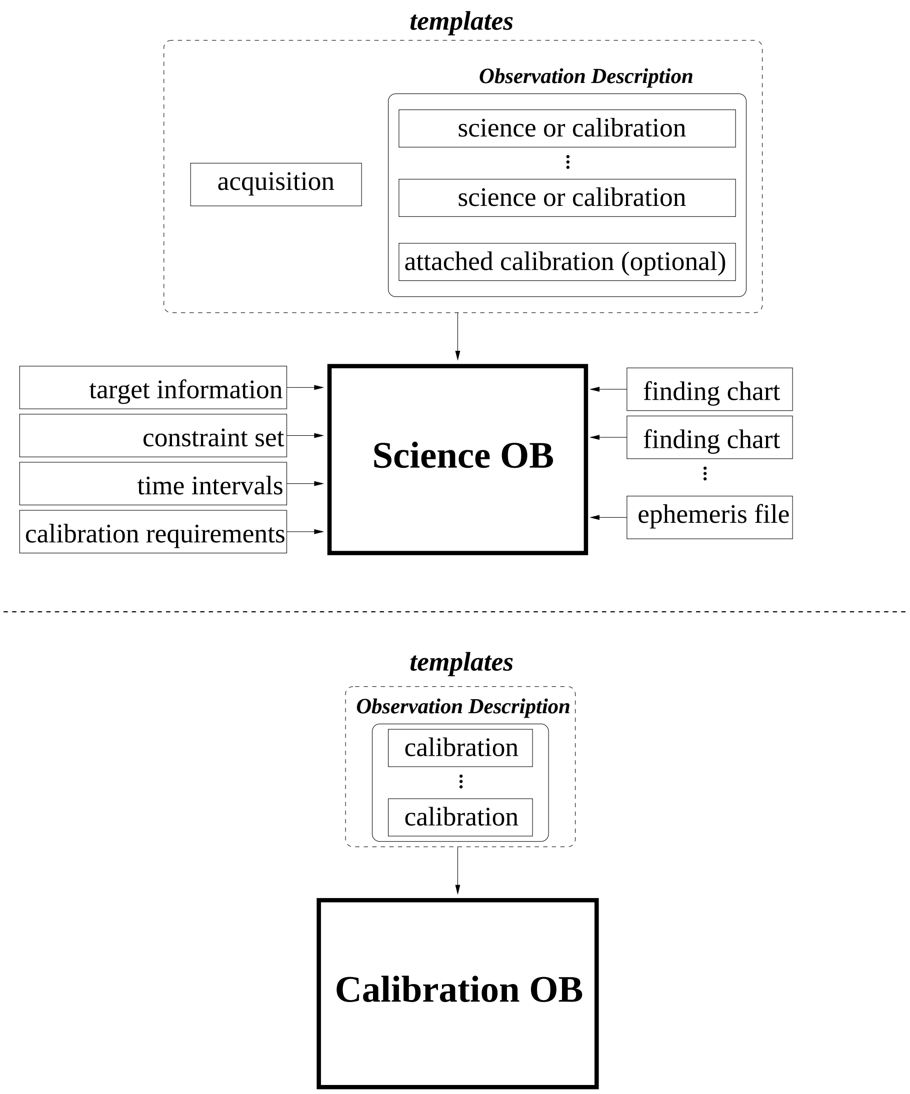


Figure 1: Schematic composition of a Science OB and a Calibration OB.

to those of the science templates. The reason for distinguishing between these science and calibration templates is that the information that goes into the headers of the resulting frames makes those intended for calibration identifiable as such by the science archive and the data reduction pipelines.

- Finally, **attached calibration templates** produce calibration frames at the end of an OB with the instrument in the same configuration as in the last science exposure obtained.

3 Installing and starting P2PP

To prepare the OBs for your observing run you need to have access to a P2PP installation. This chapter describes how to do a P2PP installation on your computer.

If you are observing at the telescope in Visitor Mode, you can in principle use the P2PP installation on the machines that the Observatory makes available to visiting astronomers to prepare your OBs. Your support astronomer will give you details on the workstations or PCs available to you for this purpose and instructions on how to start P2PP and log in. However, it is very advisable that you prepare your OBs in advance, before you arrive at the observatory. Preparing OBs in advance is a very good way to ensure that you have reviewed most technical aspects related to the actual execution of your observing run, and may help you discover subtle issues that may otherwise become apparent only during the actual execution of your run, thus leading to losses of observing time. For this reason, ESO recommends that visiting astronomers download and install P2PP at their home institutes and have at least a preliminary set of OBs ready before arriving at the observatory. Then you can always review and modify the OBs once at the observatory with the help of your support astronomer; see Section 6.1 for more details.

Service Mode users must have a local installation of P2PP available, since they normally prepare OBs at their home institutes and then submit the OBs to ESO for review, scheduling and execution (see Section 6.2).

3.1 Downloading and installing P2PP

P2PP must be downloaded from the P2PP Web site:

`http://www.eso.org/observing/p2pp/P2PP-tool.html`

That site provides the most updated information on the current version, supported platforms, installation instructions, and links for downloading.

You should follow the installation instructions provided on that Web page step by step. Please pay special attention to the notes on the Local Cache; see also Section 4.1 in this Manual. It is also important that you complete the registration process at the time of downloading P2PP, as this allows ESO to keep track of the platforms in which P2PP is installed and to identify possible needs for additional platform support.

3.2 Your P2PP ID and password

When the time allocation process at ESO telescopes is finalized, the Principal Investigators (PIs) receive an e-mail from ESO's Visiting Astronomers Section containing a login ID and a password that allows them to access the Web page where the outcome of the process is described.

These login ID and password are the same that you should use to log in P2PP.

P2PP IDs and passwords are assigned to PIs, rather than to individual runs. They are generally the same from one Period to another.

In case that the letter communicating your P2PP ID and password is not readily accessible to you, you can ask the ESO User Support Department (usd-help@eso.org) to send the ID and password to you again. *Please note that, due to security reasons, P2PP IDs and passwords can be communicated only to PIs of accepted programs*, as the PI is the only official point of contact with ESO. If you intend to prepare the observations for a run in which you are not PI and you need the P2PP ID and password, please contact the PI of the program rather than the User Support Department.

Figure 2: The P2PP login window.

3.3 Starting P2PP

Once you have installed P2PP, and obtained your ID and password, you can start using P2PP. The first time you use P2PP after a new installation from scratch, or the first time that you use it in a previously existing installation but with a new ID, you need to have an Internet connection. In this way, information relative to your observing runs will be automatically downloaded from ESO and you will be able to start working on their preparation.

To start P2PP, simply type

```
p2pp
```

A login window will appear (Fig. 2) prompting you for the login and password. If P2PP has been successfully installed, your network connection with ESO is working, and you have approved programs in the ESO Database, you will get the main P2PP Graphical User Interface (GUI) after a few seconds. You can then start working on your runs, as described in the next Chapters.

4 A quick overview of P2PP

In this Chapter we describe some important concepts related to P2PP and its use with which you should have some familiarity before beginning to use P2PP for the preparation of your OBs. Then, we describe the main features of the P2PP Graphical User Interfaces (GUI).

The use of P2PP GUIs heavily relies on selecting items by means of standard GUI conventions such as mouse-driven positioning of the cursor or mouse button clicking to select elements. If you are unfamiliar with these operations, a short summary on how to perform them is given in Appendix A.

4.1 The Local Cache

P2PP automatically saves all the information in your local working area as you work on your observing runs. It also stores Phase 1 information (see Section 4.2) on all your observing runs once it has been downloaded from the ESO database. The place where all this information is stored is the **Local Cache**.

By default, the Local Cache directory is created in the P2PP root directory, this is, the directory where you installed P2PP. This can be inconvenient if your institute has a central installation of P2PP accessible to several users through the local network, as users may not have write permission in the P2PP root directory. Moreover, the information on your previous P2PP work may be lost if the full contents of the P2PP installation directory is deleted when installing a new P2PP version. *For this reason, it is strongly advised that you create a personal Local Cache directory outside the P2PP root directory.*

To use a Local Cache directory different from the default one, please follow these steps:

- In your Unix home directory, create a file called

  `.p2pp.cf` (note the leading dot before 'p2pp'!)

- This file should contain the following two lines:

  `CACHE.FOLDER` "*/home/username/cache*"
  `IMPEX.FOLDER` "*/home/username/impex*"
  `INSTRUMENTS.IPVERSIONING.IPCACHE.FOLDER` "*/home/username/cache/instruments*"

  where */home/username* must be replaced by the path of your home directory, and *cache* and *impex* can be replaced by appropriate names, such as `p2pp-cache` and `p2pp-impex`. The latter file refers to the import/export mechanism that will be described in Section 5.12.

- Finally, create the directories *cache* and *impex* under your home directory.

When starting a session, P2PP will try to open the Local Cache and will issue an error message if it cannot be found at the location specified in the `.p2pp.cf` file.

Note that multiple users with different P2PP IDs can use the same Local Cache directory.

4.2 Phase 1 information

In the process of developing an observing programme from its conception to its execution, Phase 1 corresponds to the stage of submission of the proposal that is then reviewed by the OPC. The programme is scheduled if its scientific merit is found by the OPC to be sufficiently high, if time for it is available at the telescope, and if technically feasible.

At the time of submitting your proposal (Phase 1) you provided ESO with some basic information that needs now to be used by P2PP. In particular,

- Your proposal was assigned a **programme ID** at the time of reaching ESO.
- Your proposal was submitted for a given **Period**.
- Your proposal contained one or more **observing runs**, each of them to be carried out with a given **instrument**.
- In your proposal you applied for observations in either **Visitor** or **Service Mode**. In some cases, the mode may have been changed by ESO with respect to your original request based on criteria of technical feasibility or schedulability.
- Finally, before the beginning of the Phase 2, an **Instrument Package** version (see Section 4.4) was assigned to each run in your proposal.

All these items (programme ID, Period, runs, instrument used in each run, mode, and instrument package versions) need to be known to P2PP at the time that you start working on the preparation of your observations. This information is contained in the **Phase 1 cookies**.

The first time that you start a P2PP session using a new installation of P2PP having a working network connection, P2PP queries the ESO Database and downloads to your Local Cache all the new Phase 1 cookies existing for programs defined under your P2PP ID, as well as all the instrument packages needed to prepare observations for your runs. At least one Phase 1 cookie must be downloaded so that you can start preparing OBs. If no Phase 1 cookies for your P2PP ID can be found in the Local Cache or downloaded from the ESO Database, P2PP will issue an error message and will not be able to continue the session.

If you do not have a network connection available, you can still use P2PP provided that you have previously downloaded the Phase 1 cookies for the run on which you wish to work, so that the information on that run is already available in your Local Cache. This is very convenient in case you want to prepare your OBs off-line on a laptop while travelling, for instance. *Remember however to make sure that the Phase 1 cookie has been downloaded before you take your computer off-line.*

In case that there are already Phase 1 cookies in your Local Cache, P2PP will not try to download new ones unless you explicitly want it to do so. This applies also if you have installed a new version of P2PP but have conserved the already existing Local Cache. Section 5.1 gives detailed information on how to update the Phase 1 cookies.

4.3 Possible problems with the connection to the ESO Database

P2PP installations in sites with strict security policies may encounter problems with accessing the ESO Database that prevent the normal startup of P2PP. In such case a message appears indicating that a connection is not possible, perhaps due to a problem with the local firewall. If the site where you have installed P2PP is protected by a tight firewall that does not allow direct connections through arbitrary ports, the connection between P2PP and the ESO Database is still possible by means of HTTP tunnelling, which uses the HTTP proxy server at your site to enable the connection. Enabling HTTP tunnelling requires the modification of the `site.cf` file found under the `config/` directory in the local P2PP installation. Appendix B gives technical details on how to overcome this problem.

4.4 Instrument Packages

As described in Chapter 2, P2PP works both with generic information and with information that is instrument-dependent. The instrument-dependent part is contained in the so-called **Instrument Packages (IPs)**.

An IP contains all the templates (acquisition, science, calibration) that are available for a given instrument (see Section 2.2) and they need to exist in your local installation of P2PP in order for you to start preparing OBs for that instrument. More technically, an IP contains an *Instrument Summary File* with all the available optical elements and allowed ranges for each item defining the instrumental setup, and multiple *Template Signature Files* containing the list of parameters that the user should define within each template via P2PP.

The IP also contains some other instrument-specific items:

- The **External Verification Module (EVM)** that checks the logical consistency of the OBs, as well as their compliance with a number of rules and policies set by the Observatory in either Service or Visitor Mode observing. The function of the EVM is described in Section 5.13.
- The **External Time Reporting Module (ETRM)**, which compute the total exposure and execution times of each OB; see Section 5.8.
- The **COnstraint Set MOdule (COSMO)**, containing the relevant constraints applicable to each instrument whose value needs to be specified by Service Mode users. The use of instrument-specific constraint sets is a new feature of P2PP v2.8.
- The **README file definition**, containing the entries to be be filled by the user in the README file, some of which are instrument-dependent (see 5.14). The inclusion of the README file in P2PP is a new feature of P2PP v2.9.

Each observing run has an IP associated to it in the ESO Database. At the time of downloading or updating the Phase 1 cookies (Sections 4.2 and 5.1), the association between each observing run and its assigned IP is updated in the Local Cache. If a run has an associated IP that is not available in your Local Cache, the correct IP is automatically downloaded and installed.

4.5 The P2PP main Graphical User Interface

Once you have successfully logged into P2PP, the P2PP main GUI will be displayed in your screen. The appearance of the main P2PP GUI is similar to that shown in Figure 3.

The P2PP main GUI contains the following important areas, which are indicated in Figure 3:

- A **Menu Bar** giving access to a variety of P2PP functions, described under the corresponding Sections of this Manual.
- An **Icon Bar** divided in two parts:
  - On the left-hand side, six buttons give quick access to the most common functions needed at the time of preparing OBs and the README file.
  - On the right-hand side, two icons give information on the connection to the telescope control system and to the ESO Database, respectively. The first one appears always crossed out and with the label 'no CCS' below it, except in the telescope Control Room installations that allow to directly pass OBs to the telescope for execution. The second

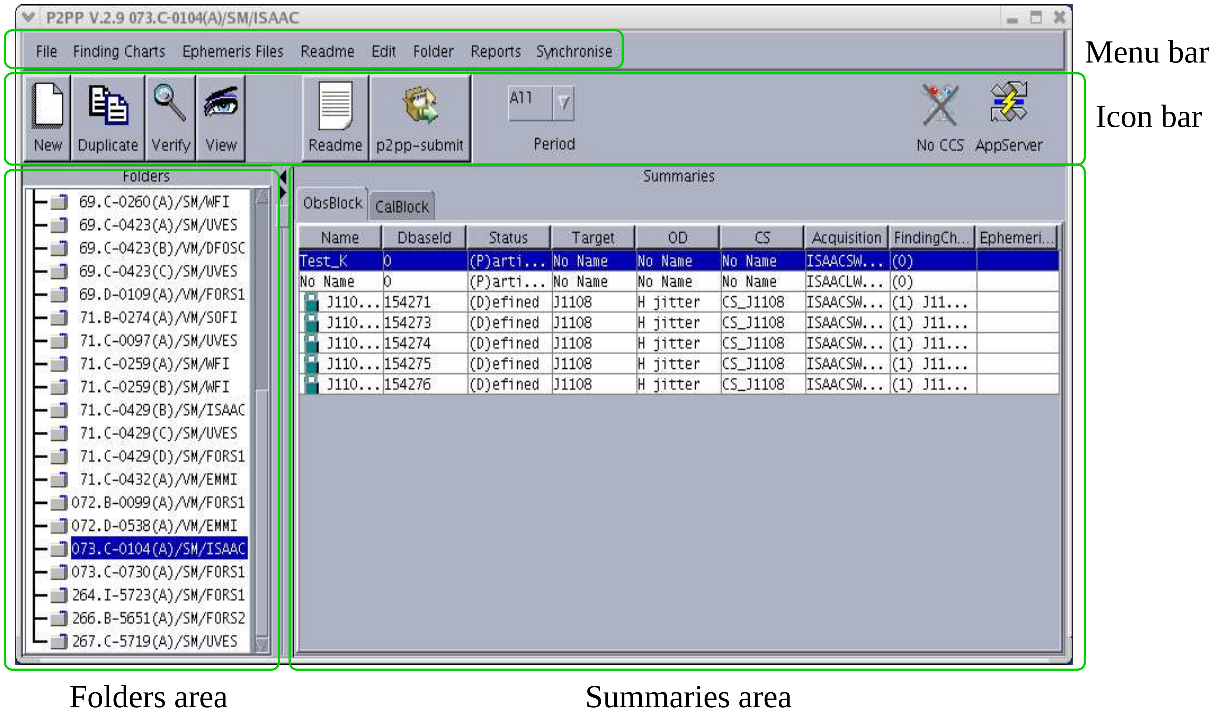


Figure 3: The P2PP main GUI.

one indicates if P2PP is set up to be able to establish a connection with the Application Server, which handles the connection between P2PP and the ESO Database. Note that this icon does *not* indicate if a network connection is available.

Between these two sets of buttons there is a drop-down menu with which you can select the Period of those observing runs you wish to be able to access. By default, access is given to runs in all periods.

- A **Folders** area. Each folder corresponds to an individual observing run, and the highlighted folder corresponds to the run on which you are working. In addition to the run ID, the Mode information (Visitor Mode or Service Mode) and the instrument used are displayed.
- The **Summaries area** where all the OBs existing in the Local Cache for the run highlighted in the Folders area are displayed, together with some summary information on each. Note that the Summaries area contains two tabs, one for Science OBs (tab name *ObsBlock*) and one for Calibration OBs (tab name *CalBlock*) as described in Section 2.2).

When you first log into P2PP using a new installation, the Summaries area is empty since no OBs exist yet in your Local Cache. Please note that this does not necessarily mean that no OBs for your previous programmes exist in the ESO Database if you submitted them in the past! OBs that had been previously submitted to the ESO Database under your P2PP ID will not be downloaded to your Local Cache, since for a number of reasons this would not be desired. The process for copying OBs from the ESO Database to your Local Cache needs to be carried out explicitly and is described in Section 6.4.1.

4.6 Exiting P2PP

To exit P2PP, select the `Quit` option under the *File* menu, and then click on `OK` in the dialog box that appears asking you to confirm your decision.

5 Creating and editing Observation Blocks and the README file

Once you have successfully installed P2PP and started it, you are ready to start creating the OBs that will compose your observing run. This Chapter guides you through the steps that you need to take to this purpose in a generic (i.e. instrument-independent) way. To follow easily the explanations given in this Chapter, we recommend that you have an open P2PP session in front of you at the time of reading it and that you work on actual example OBs for one of your existing observing runs. If you have access to P2PP but do not have your P2PP ID at hand, you still can do this by using the available tutorial account described in Section 1.4.

5.1 Updating the information on Observing Runs

As explained in Section 4.2, the first thing needed to start preparing your OBs is the Phase 1 information of your observing run. If you have approved observing runs but no Phase 1 information for any of them is available in your Local Cache, it will be downloaded automatically from the ESO Database. If you already have Phase 1 cookies in your Local Cache but wish to work on a new run that is not there yet, such as one that has just been allocated time, you need to explicitly download the Phase 1 information to your Local Cache and make it visible to P2PP. It may also be that the Instrument Package version associated to your run has changed since the last time you worked on it. For these reasons, it is convenient to start any new P2PP session by updating the Phase 1 information in your Local Cache. This is done by selecting the `Download/Refresh Observing Runs` option under the *File* menu in the P2PP main GUI. Downloading/refreshing observing runs will download all the Phase 1 cookies from the ESO Database into your Local Cache, overwriting any previous Phase 1 cookies that may exist there.

Let us stress that, as described in the previous paragraph, new runs will not be automatically visible from your P2PP installation if you are using a Local Cache that already contains Phase 1 cookies for any previous runs on which you are PI. *If ESO has communicated to you the allocation of observing time to your observing run but you cannot see it in P2PP, please make sure to use the* `Download/Refresh Observing Runs` *option before contacting ESO.*

5.2 Creating a new OB

We begin from the point at which you have started a P2PP session and logged in (Section 3.3) and selected in the P2PP main GUI the folder corresponding to the observing run on which you wish to work (Section 4.5).

- First you have to decide if the OB that you want to create is a *Science OB* or a *Calibration OB* (Section 2.2). To select the option, click on one or the other tab in the *Summaries* area.
- Next, create the OB by clicking on the **New** Icon in the Icon Bar (Figure 3). A new entry will immediately appear in the Summaries area giving default information on this OB. You will notice a red dot next to the OB name: this means that the current content of the OB fails to pass some basic verification criteria, as it should be since the OB is still empty.
- To view and change the default contents of the OB, click on the **View** icon in the Icon Bar. The **View OB** window will pop up as shown in Figure 4. The example given in this Figure corresponds to a ISAAC run, hence the list of templates visible in the upper right. If you are creating an OB for a different instrument, the detailed contents of that area will differ from the one shown, although the rest of the layout will be identical.

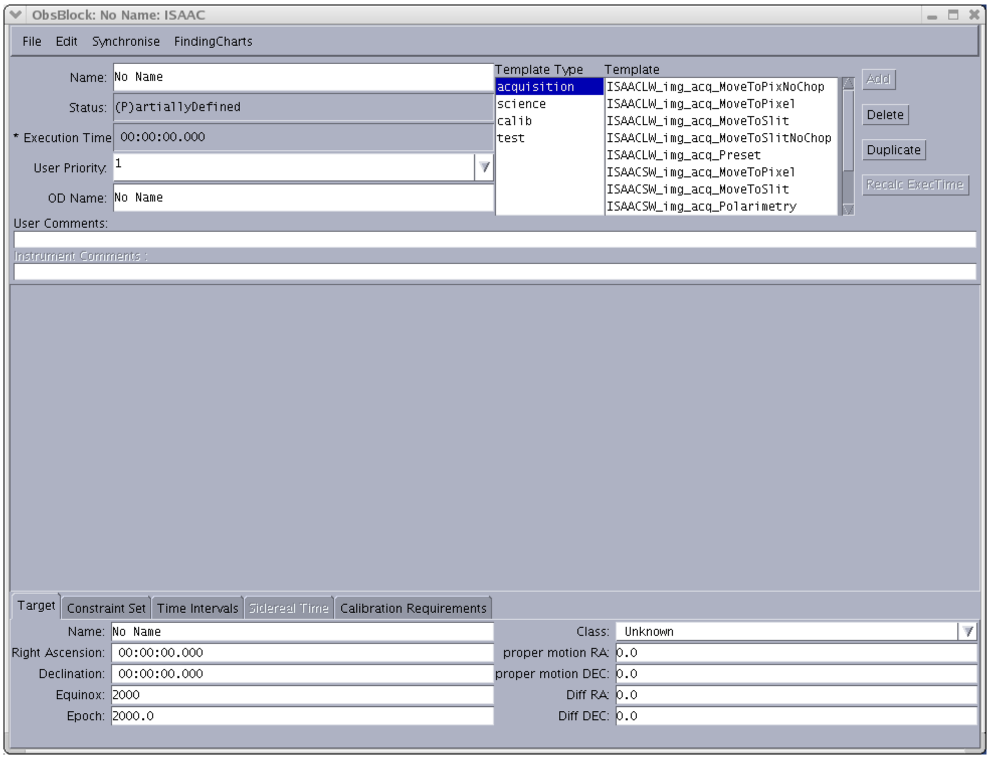


Figure 4: The View OB window as it appears for a newly created OB.

We describe in detail how to edit information in the View OB window in Section 5.4. For now, what is important is that *every change made to the OB in the View OB window is automatically saved in your Local Cache.*

- Once you are satisfied with the contents of your OB, there is no further action required. Since changes are immediately saved in the Local Cache, you do not need to click any 'OK' or 'Confirm' buttons in order to preserve the changes made.

You can now create a second OB by going back to the P2PP main GUI window and clicking again on the *New* icon. If the new OB that you wish to create is similar to the previous one, you can instead click on the **Duplicate** icon, and a new OB will appear in the Summaries area having an identical content as the original one, with the exception of the OB name to which a default number will be added. If this second OB is highlighted, the contents of the View OB window will be automatically refreshed with the contents of the selected OB.

Note that you can duplicate more than one OB at once by highlighting all of them and then clicking the *Duplicate* button. Copies of all the highlighted OBs will then appear in the *Summaries* area.

5.3 Subfolders

In some instances, particularly when working with observing runs consisting of a large number of targets or OBs that can be grouped under a few categories, you may find useful to separate the OBs under different **subfolders**.

Subfolders must be created under existing observing runs. You can do it by first clicking on the relevant run, and then selecting `New` under the *Folder* menu in the P2PP main GUI. This will create a subfolder under the specified run.

It is possible to move subfolders among different runs, provided that they use the same instrument.

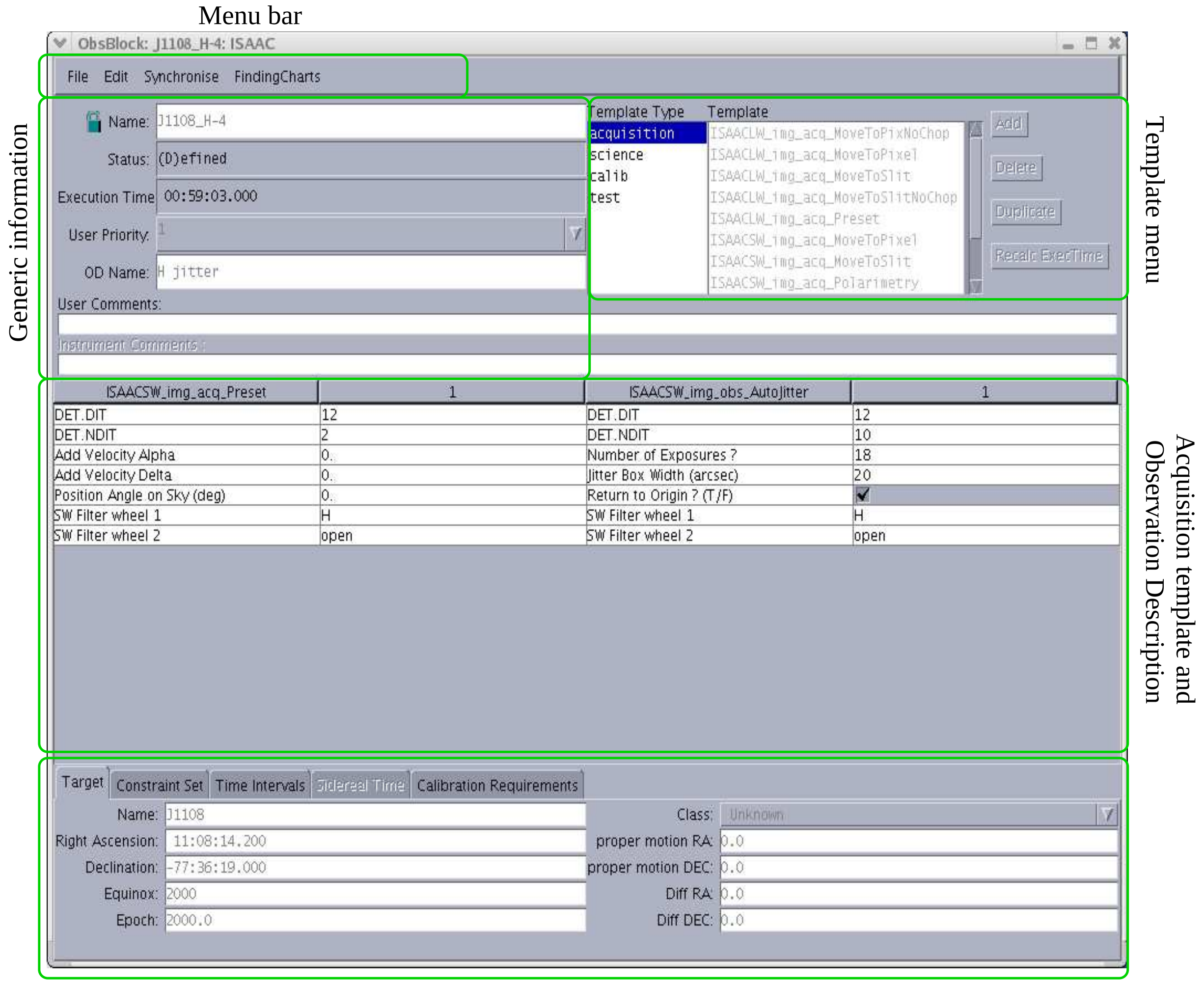


Figure 5: The View OB window with the contents of a typical OB.

To do this, click on the subfolder that you wish to move in the *Folders* area of the P2PP main GUI. Next, click on the `Move` option under the *Folders* menu. This will display the list of all the available folders (i.e., all the runs for which the current user is PI) and an arrow will appear next to those that have subfolders defined. Clicking on those will in turn deploy the list of subfolders available for the selected run. You can then click on the destination run under which you wish to place the selected subfolder.

Subfolders can also be removed by using the `Delete` option under the *Folders* menu. This is possible only if the subfolder does not contain any OBs. Parent folders cannot be removed.

A word of caution: Working with subfolders can be confusing and may lead to the partial submission of OB sets to the ESO Database if they are not handled carefully (Section 6.2). You are therefore advised to use subfolders only if really necessary.

5.4 The View OB window

The **View OB** window is used to specify or modify the contents of an OB. Its parts are indicated in Figure 5 for the case of a Science OB.

- The **Menu Bar** at the top gives access to a number of functions, described in other Sections of this Manual.

- The **Generic information** area (upper left) provides some basic information on the OB: its name, its status (Section 6.4.2), the execution time estimated from the contents of the OB taking into account execution overheads (see the corresponding instrument User Manuals), the internal priority defined by the user within the observing run (where the *lowest* numbers indicate the *highest* priority), the name of the Observation Description (see Section 2.2 and Figure 1), and a free text field for user's comments. Some instruments also allow the input of instrument-specific information: in such cases, the field *Instrument comments* becomes active and allows user input.

- The **Template Menu** area (upper right) displays all the templates available for the instrument, grouped by template types. The last type, test templates, is not included in the standard P2PP distribution.

- The **Acquisition Template and Observation Description grid** displays all the templates that have been selected to compose the present OBs, with all their user-selected parameters visible.

- The **Target information and execution conditions** area contains, in a series of clickable tabs, the positional and kinematic information of the target, the **Constraint Set** under which the OB can be executed in the case of service mode, the **Time Intervals** in which the OB can be executed if time-critical, the **Sidereal Time** interval within which a VLTI observation can be carried out, and a free-text field where the user can specify the calibration requirements for that particular OB.

The View OB window for calibration OBs is somewhat simpler, as the target information and execution conditions are not needed in that case.

5.5 Defining the contents of a new OB

5.5.1 Generic information

To start building up an OB, replace the default Name field and the Observation Description names in the View OB window by the desired values. Needless to say, it is always convenient that the chosen names are sufficiently descriptive to the user. You may also add a User Comment in the field indicated for this purpose; please always use the User Comment field in the observation of calibration soures to indicate the science OBs that they are intended to calibrate. Please note that, although the OB Name and Observation Description names are both displayed in the Summaries area of the P2PP main GUI, you cannot modify them directly there; you can do this only from the View OB window.

5.5.2 Templates

Once you have provided this generic information, you should add to the OB the templates that must compose it.

- In general, for a science OB you should begin by selecting the acquisition template appropriate to the instrument mode that you wish to use; please consult the User Manual of the instrument if you are unsure of which template to choose. Each science OB must contain one, and only one, acquisition template.

To include the desired acquisition template in the OB, go to the Template Menu area and, under *Template Type*, select `acquisition`. This will display in the *Template* box all the acquisition templates available for the instrument. Select the one to be used for this OB by clicking on it, and then click on the **Add** button. This will display in the grid of acquisition templates and Observation Descriptions a column with the list of parameters that need to be set for that specific template, followed by another column giving the default values. These default values must then be edited and set to the desired ones. This is done by either clicking on the corresponding box, deleting its content and replacing it by the correct one (such is the case for example of the exposure time of the acquisition image), by choosing in the drop-down menu that appears when clicking in the entry (such as when having to choose filters or grisms from the list of available ones), or by ticking on a checkbox (such as 'PSF Ref' for NACO). Values appearing in red characters are not allowed, and must be changed to a permitted one before the OB can be considered acceptable.

- The acquisition template must be followed by one or more science or calibration templates. The selection of the science and calibration templates that compose the Observation Description is made in a way analogous to the selection of the acquisition template, choosing the desired template after having clicked on the corresponding template type in order to display the possible choices. Once selected, the template must be appended to the OB by means of the **Add** button as before.

  As explained in Section 2.3, calibration templates may include observations of standard stars. Unfortunately, at present and for historical reasons different instruments handle the observation of calibration sources in somewhat different ways. For example, ISAAC, NACO, and UVES have dedicated templates for the observation of standard stars that can be found under the `calib` template type, while FORS1, FORS2, and VIMOS use the same templates for the observations of both science targets and calibration stars and the difference is made by selecting a flag within the template (see the corresponding User Manuals for more details). This is a feature that ESO plans to unify across all the instruments in the future.

Besides the *Add* button, two other buttons in the template menu are useful to speed up the process of building OBs and to fix possible mistakes:

- The **Delete Column** button deletes a template that has been previously attached to the OB. To use it, first click on any entry of the template that you want to delete. The number that this column occupies in the grid will be displayed within the *Delete Column* button. Make sure that this is indeed the number of the column that you want to delete, since template deletions are not reversible. Once you have checked this, you can click on the *Delete Column* button and the template will disappear from the grid.
- The **Duplicate Column** button allows you to duplicate a template already appended to the OB. This is useful when your OB must contain a succession of similar templates differing only in the values of a few of their parameters, such as for instance a succession of exposures using similar instrumental configurations and differing only in the filter. Also in this case, you must click on any entry of the template to be duplicated to select it, and the number of the selected column will appear within the *Duplicate Col* button. Clicking on the button will create a new column immediately following the one selected for duplication and with identical contents. The parameter values of the new template can then be modified as needed.

In addition to the buttons to add, delete, and duplicate templates,

- the **Recalc ExecTime** button allows to calculate or update the estimate execution time of the

OB after any changes in its templates has been introduced. Please see Section 5.8 for further details.

If your OB contains contiguous executions of the same template with only the parameter values changing from a template to the next, the column in the grid listing the parameters will appear only in front of the first template.

Note that it is not necessary to delete and append again templates if you added them to your OB in an order different from the desired one. You can move a template to any new position within the OB just by clicking on the heading of the column of values of the template that you want to move, and dragging it to its desired location within the OB.

Important note: As noted in Section 2.3, some instruments (e.g. ISAAC, UVES, NACO) allow attached calibration templates such as flat field and wavelength calibration frames in order to increase the accuracy of the calibration. In all cases, **the attached calibration templates must be located after the science template that produce the observations that they intend to calibrate**, since they inherit the same instrument configuration as the latest science template executed.

5.5.3 Target information, constraint set, and time intervals

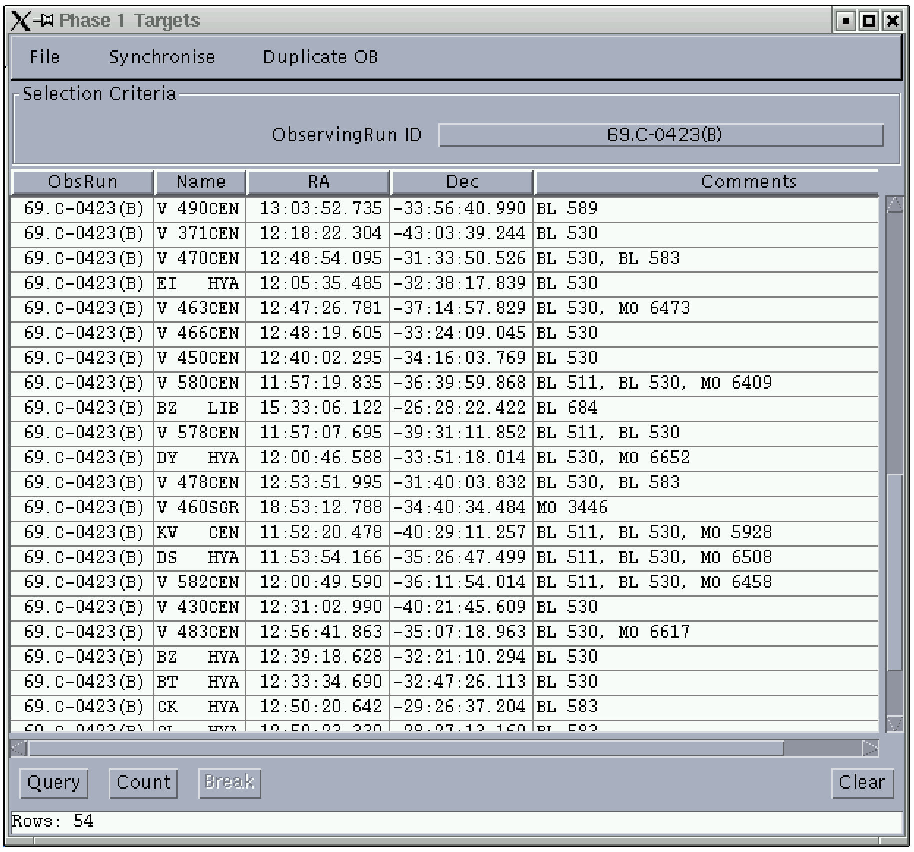
To complete the OB you need to enter the target information in the entries under the **Target** tab, including the target name, its position, its proper motion and, in case of a moving target, the differential motion in Right Ascension and Declination, called respectively *Diff RA* and *Diff Dec* in P2PP. Please note the distinction between proper motion and differential motion: the former applies typically to stars and stellar objects, and the latter to Solar System objects. Proper motions must be introduced in units of arcseconds per century, and differential motions in arcseconds per second. More information on the preparation of OBs for the observation of Solar System targets in Service Mode can be found in Section 6.5.8. Finally, you may also select the type of target from an extensive drop-down menu (*Class* field). This latter information may be used in future archive searches.

In OBs intended to be executed in Service Mode, you must also complete the entries under the **Constraint Set** tag. Here you specify the least favorable conditions under which your OB can be executed and still produce a useful scientific output. The OB will then be scheduled for execution when the seeing, the lunar illumination, and the airmass are equal or smaller than the specified values, the Moon angular distance greater, and the transparency conditions equal or better than specified.

If your OB is time-critical, you must specify the intervals of dates and times suitable for execution under the **Time Interval** tag. At present it is only possible to specify absolute time intervals, i.e., fixed dates when your observations are feasible. It is not possible to specify intervals that depend on the execution of other OBs, such as “OB number 1 must be executed between 5 and 10 days after OB 2”.

The **Sidereal Time** applies only to observations with VLTI instruments, in which observations at precisely defined sidereal time intervals are needed in order to provide an adequate *uv* plane coverage. VLTI users should specify in this area the list of sidereal times intervals in which their observations can be carried out. This tag is deactivated for other instruments.

Finally, the **Calibration Requirements** tab is a free text field where you may specify any particularities related to the calibrations needed for this OB. This may be used either in Service Mode to give indications to the astronomer in charge of carrying out the observations, or in Visitor Mode to remind yourself of the calibration needs.



ObsRun	Name	RA	Dec	Comments
69.C-0423(B)	V 490CEN	13:03:52.735	-33:56:40.990	BL 589
69.C-0423(B)	V 371CEN	12:18:22.304	-43:03:39.244	BL 530
69.C-0423(B)	V 470CEN	12:48:54.095	-31:33:50.526	BL 530, BL 583
69.C-0423(B)	EI HYA	12:05:35.485	-32:38:17.839	BL 530
69.C-0423(B)	V 463CEN	12:47:26.781	-37:14:57.829	BL 530, MO 6473
69.C-0423(B)	V 466CEN	12:48:19.605	-33:24:09.045	BL 530
69.C-0423(B)	V 450CEN	12:40:02.295	-34:16:03.769	BL 530
69.C-0423(B)	V 580CEN	11:57:19.835	-36:39:59.868	BL 511, BL 530, MO 6409
69.C-0423(B)	BZ LIB	15:33:06.122	-26:28:22.422	BL 684
69.C-0423(B)	V 578CEN	11:57:07.695	-39:31:11.852	BL 511, BL 530
69.C-0423(B)	DY HYA	12:00:46.588	-33:51:18.014	BL 530, MO 6652
69.C-0423(B)	V 478CEN	12:53:51.995	-31:40:03.832	BL 530, BL 583
69.C-0423(B)	V 460SGR	18:53:12.788	-34:40:34.484	MO 3446
69.C-0423(B)	KV CEN	11:52:20.478	-40:29:11.257	BL 511, BL 530, MO 5928
69.C-0423(B)	DS HYA	11:53:54.166	-35:26:47.499	BL 511, BL 530, MO 6508
69.C-0423(B)	V 582CEN	12:00:49.590	-36:11:54.014	BL 511, BL 530, MO 6458
69.C-0423(B)	V 430CEN	12:31:02.990	-40:21:45.609	BL 530
69.C-0423(B)	V 483CEN	12:56:41.863	-35:07:18.963	BL 530, MO 6617
69.C-0423(B)	BZ HYA	12:39:18.628	-32:21:10.294	BL 530
69.C-0423(B)	BT HYA	12:33:34.690	-32:47:26.113	BL 530
69.C-0423(B)	CK HYA	12:50:20.642	-29:26:37.204	BL 583

Figure 6: The Window displaying the target information submitted at Phase 1.

5.6 Modifying an existing OB

The steps to be followed to modify an OB already existing under the folder for your observing run are very similar to the ones described in the previous Section. In the P2PP main GUI, highlight the OB whose contents you wish to modify by clicking on it. To view its contents click on the *View* icon to display the *View OB* window. You do not need to perform this last step if the *View OB* window is open, since its contents will be automatically updated when you highlight a new OB under the *Summaries* area of the P2PP main GUI. The contents of the OB can then be changed as needed in the *View OB* window, and the changes will be instantly saved to the Local Cache.

5.7 Retrieving the Phase 1 target list

In the creation of the set of OBs for your run, you can take advantage of the information that you already provided in the target list of your Phase 1 proposal. The names and coordinates of the targets are stored by ESO in a database that is accessible from P2PP, from where they can be copied and pasted into the OB.

To access the Phase 1 target information, select `View Phase 1 Targets` under the *File* menu in the P2PP main GUI. This will open the **Target Browser** window, shown in Figure 6.

The Target Browser allows you to view and select targets for all the runs in which you are PI, if you click on the `Query` button at the bottom of the window. Alternatively, if you prefer to see only the targets of a subset of runs, you can select them first in the drop-down menu that you obtain when clicking on the button next to the *ObservingRun ID* label.

To insert the target information in the desired OBs you can use the following procedures:

- **Case 1 - Copying information from one target to a set of OBs**. This case is of use when multiple OBs share the same target:

  - Highlight in the *Phase 1 Targets* window the target to be copied.
  - Under the *Synchronise* menu, select the `Copy Target` option (the only one available).
  - In the *Summaries* area of the P2PP main GUI, highlight the OBs to which you want to paste the highlighted target.
  - Under the *Synchronise* menu of the P2PP main GUI, select the option `Paste to Selected OB`. You can also select `Paste to Entire Folder` if you wish to assign the selected target to all the OBs in the *Summaries* area.

  The *Target* column in the *Summaries* area of the P2PP main GUI will now contain the updated information on the OBs whose targets have been updated.

  Please note that it is not possible to copy more than one target at a time using this mechanism, although you can copy one target to multiple OBs.

- **Case 2 - Producing multiple copies of an OB each having a different target**. This case is of use in runs where multiple targets are observed using the same instrument configuration:

  - In the *Phase 1 Targets* window, highlight the targets to be copied.
  - In the *Summaries* area of the P2PP main GUI, highlight the OB of which you wish to produce as many copies as targets you have selected.
  - Under the *Duplicate OB* menu, select the `view Selected Targets` option. You can also select the `with All targets` option if you prefer to copy the whole set of targets displayed in the *Phase 1 Targets* window, thus overriding any highlighted targets.

  This will produce a new set of OBs (as many as targets have been selected in the *Phase 1 Targets* window) whose contents will be identical to the one that was selected in the *Summaries* window, except for the name and coordinates of the target that will be taken from the Phase 1 information.

  Please note that it is not possible to copy several targets to more than one OB at a time. If more than one destination OB is highlighted, a warning message will appear in your screen and only the first highlighted OB will be duplicated with new target information.

5.8 OB Reports and execution times

Once a group of OBs has been defined, it may be convenient to produce different kinds of reports on them without having to view their contents one by one in the *View OB* window. P2PP gives access to two such kind of reports that can be accessed from the *Reports* menu of the P2PP main GUI:

- The **ObsBlock Breakdown** report creates a pop-up window with the list of all the parameters and values of each selected OB as a plain text file.
- The **Execution Time** report creates a pop-up window listing both the exposure time and the estimated execution time for the selected OBs. The latter include an estimate of all the operational overheads. Also included at the end of the report is the sum of the exposure and execution time for all the selected OBs.

The execution time of an OB is also visible in the *Execution Time* entry on the generic information area of the *View OB* window. It is important to note that *the execution time is not automatically updated in this box whenever a change in the OB is made!* An asterisk next to the *Execution Time* label indicates that the OB has been modified since the last time that the execution time was computed, and that it should thus be recalculated. This is easily done by clicking on the *Recalc ExecTime* button on the right of the template menu, which refreshes the contents of the Execution Time box and removes the asterisk next to the label.

5.8.1 Checking the expected execution time against the time allocated to your run

The **Execution Time** report is especially useful. In *Visitor Mode* it allows you to have a fairly accurate estimate of the time actually needed for the execution of your programme, and thus allows you to predict if your observing plans based on the OBs that you have prepared will fit in the nights that were assigned to you.

In *Service Mode*, the time allocated to your programme includes the average operational overheads as described in detail in the User Manual of each instrument. These are the same overheads that P2PP includes in the calculation of the execution time. Therefore, the execution time report produced by P2PP gives you the amount of time that is to be checked against the time allocated to your observing run. Before submitting your Service Mode OBs (see Section 6.2), *please check that the total execution time reported by P2PP keeps within the limit of the time allocated to your run.*

In addition, as specified in the Service Mode Guidelines Web pages,

`http://www.eso.org/observing/p2pp/ServiceMode.html`,

Service Mode OBs cannot normally exceed one hour of execution time, unless a special waiver has been granted by ESO. The execution time report allows you to quickly check if any of your OBs exceeds this limit.

5.9 Finding charts and ephemeris files

Finding charts and ephemeris files for Service Mode runs must be submitted to the ESO Database as a part of the OBs to which they belong. Visitor Mode observers may also make use of the finding chart and ephemeris file facilities in P2PP if they wish for convenience during their observing runs.

5.9.1 Generic finding chart requirements

Finding charts for use in Service Mode must be prepared in JPEG format following a set of generic requirements that are described under

`http://www.eso.org/observing/p2pp/ServiceMode.html`

(VLT and 2.2m telescope Service Mode runs), and

`http://www.ls.eso.org/lasilla/sciops/observing/service.html`

(Service Mode runs at the 3.6m telescope and the NTT). There are also instrument-dependent requirements on the finding charts that can be found in the instrument-specific Phase 2 instructions accessible from those webpages.

In principle, any software that produces JPEG files of sufficient quality and compliant with the requirements indicated above can be used to produce finding charts. In particular, ESO provides and recommends the use of its Skycat-based finding chart tool, which provides a user-friendly interface for easily creating Service mode compliant finding charts in JPEG format starting from FITS files.

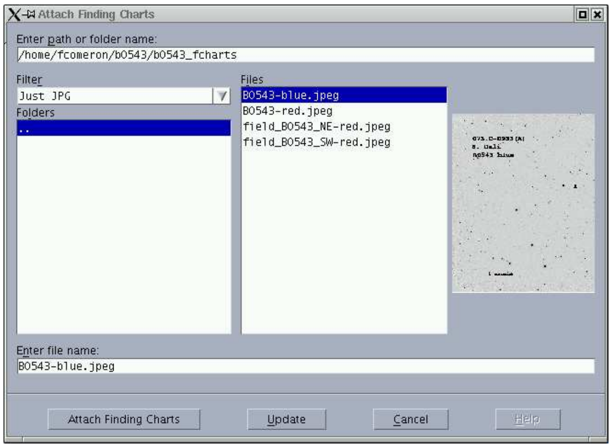


Figure 7: The *Attach Finding Chart* window.

This tool is distributed as part of the FIMS, VMMPS, and GUIDECAM packages, but can be used also for the preparation of finding charts for any instrument. It can be found under

`http://www.eso.org/observing/p2pp/P2PP-FC-cookbook.html`

Other Skycat-based, instrument-specific observation preparation tools (FIMS, VMMPS) also include the capabilities of producing JPEG output that can directly be used as finding charts.

Please note that at present the size of the JPEG files that can be submitted as finding charts is limited to a maximum of 1 Mbyte.

5.9.2 Ephemeris file requirements

Ephemeris files are plain ASCII files containing the positions and differential motions of moving targets at given dates. The detailed requirements on the contents of ephemeris files for Service Mode runs can be found under

`http://www.eso.org/observing/p2pp/moveProcedures.html`

5.9.3 Attaching finding charts

Once you have created the JPEG files to be used as finding charts you must attach them to the relevant OBs. To do this,

- Highlight in the Summaries area of the P2PP main GUI the OBs to which a given finding chart, or set of finding charts, must be attached.
- Click on the *Finding Charts* menu of the P2PP main GUI and then on the `Attach Finding Charts` option. A window like the one in Figure 7 will appear.
- Using either the *Enter path or folder name:* or the *Folders* menu in the *Attach Finding Charts* window, select the directory where the JPEG finding charts files to be attached are found. The `Update` button at the bottom of the window refreshes the contents of the *Folders* and the *Files* menu.
- Select the desired finding charts from the *Files* menu. It is possible to attach more than one finding chart at a time. A thumbnail view of the highlighted finding chart (or the first highlighted finding chart in case of a multiple selection) appears on the right-hand side of the

window. It is also possible to enter the name of the desired finding chart directly in the *Enter file name* entry near the bottom of the window. You do not need to attach all the finding charts for a given OB at once: more finding charts can be added at a later time.

- Click on `Attach Finding Charts` to attach the selected finding charts to the highlighted OBs.

The attached finding charts now appear under the *FindingCharts* column in the *Summaries* grid of the P2PP main GUI, listed with the name of the JPEG file without the extension. Since several finding charts may be attached to a given OB and the file names can be long, the number of finding charts attached to each OB is displayed in parentheses at the beginning of the entry.

The *Finding Charts* menu also allows you to *Detach Finding Charts* associated to an OB. A pop-up menu presents the list of attached finding charts, from where the ones to be detached can be selected. Note that at present it is possible to detach finding charts from only one OB at a time, even if multiple OBs are selected in the P2PP main GUI. The *Clear Finding Charts* option detaches all the finding charts associated to one or multiple OBs at once.

The *Finding Charts View* option displays a window with the image of the finding charts attached to an OB. The `Next` and `Previous` buttons at the bottom allows you to navigate among the finding charts if there is more than one.

The Finding Charts View displays the finding charts as they will be visible to the observer, and is thus extremely useful to judge on their readability. Users are thus strongly encouraged to use this facility to verify that the provided finding charts are of sufficient quality before submitting them!

The options available under the *Finding Charts* menu are duplicated in the View OB window, where they apply to the OB whose content is displayed there.

It is important to note that, once attached, the contents of the finding charts become a part of the OB, and the file that was attached is not used anymore. A consequence of this is that, if a new JPEG file is produced with different content but with the same name, the content will not be transferred to the OB unless the finding chart is detached and attached again.

A step-by-step tutorial on the attachment of finding charts to OBs is available at:

`http://www.eso.org/observing/p2pp/tutorials/tut_p2pp_fc.html`

5.9.4 Attaching ephemeris files

The attachment of ephemeris files to OBs follows steps entirely analogous to those described in the provious Section for the finding charts, using the options available under the menu `Ephemeris files` in the P2PP main GUI. The procedure to detach an ephemeris file from an OB to which it has been previously attached is also analogous. A simple ephemeris file viewing facility, displaying the content of the ASCII file, is available under the `View Ephemeris File` option under the `Ephemeris Files` menu.

Please note that, unlike for finding charts, only *one* ephemeris file can be attached to a given OB. Like in the case of the finding charts, once an ephemeris file has been attached to an OB its name will appear under the corresponding column in the *Summaries* area of the P2PP main GUI.

Finally, also in the case of ephemeris files their contents become a part of the OB once attached. As a consequence, if a new ephemeris file is produced with different content but with the same name, the content will not be transferred to the OB unless the finding chart is detached and attached again.

5.10 Copying and pasting information among OBs: the Synchronize mechanism

In previous Sections we have described how to create and modify individual OBs, and how to speed up the process of creating the set of OBs for an observing run by duplicating entire OBs. It is also possible however to copy information on specific parts of an OB into another OB or group of OBs by means of the **Synchronize** mechanism.

The *Synchronize* mechanism allows one to select the *Target information*, the *Acquisition template*, the *Observation Description*, the *Constraint Set*, or the *Finding Charts* from a particular OB and to replace it in one or more destination OBs.

Let us assume in the following example that your observing run contains 15 OBs, consisting of the observation of 3 targets in 5 different instrument setups that are identical for the 3 targets. You have defined OBs in each setup for the first target, and now you need to produce two additional sets of OBs identical to the ones that you have produced but having different target information. In principle, you can do this by duplicating the first set of OBs twice, then editing the target information fields in each OB to introduce the name and coordinates of the second or the third target as needed. In this way, you would have to type the target information for the second and the third target five times, one for each OB. The *Synchronize* mechanism allows you to save time and to minimize the chances of typing mistakes by letting you type the target information only once for each target, and then copying it to other OBs as needed.

To do this in the example outlined above, you can first duplicate the five OBs that contain each of the setups to be used, and in one of the copies you can replace the information on the first target by that of the second target. Then, under the `Synchronize` menu in the View OB window, select the `Copy Target Information` option. Next, go to the *Summaries* grid under the P2PP main GUI and highlight the rest of the OBs that were duplicated and in which the target information needs to be replaced. Under the *Synchronize* menu in the P2PP main GUI, select `Paste to Selected OBs`. This will copy the new target information to the highlighted OBs. The preparation of the set of OBs for the third target can be carried out in an analogous way.

As explained at the beginning of this Section, other items of an OB can also be copied and pasted to another OB or set of OBs. Typical examples in which this mechanism is useful may be for instance when you decide to replace a grism by another one in a group of OBs with the same instrumental setup, or when you change the transparency conditions acceptable in the execution of a Service Mode programme, or when you realize that a slightly different slit width may be more adequate than the one that you initially set in your OBs, or when you decide to attach the same finding chart to a group of OBs sharing the same target. In the first of these examples, the *Synchronize* mechanism would apply to the Observation Description; in the second, to the Constraint Set; in the third, both to the acquisition template and to the Observation Description, since the slit width normally must be specified in both; and in the third, to the finding chart.

5.10.1 Synchronizing OBs belonging to different observing runs

The *synchronizing* mechanism also facilitates copying information across OBs belonging to different runs. Common examples in which this capability may be useful is when adapting OBs from a run that used similar setups or targets in a past period, or when multi-run programs with the same instrument in a given period use similar OBs.

The procedure to synchronize information from OBs belonging to different runs is very similar to the one described in the previous Section, with the caveat that the different runs are under different folders in the *Folders* area of the P2PP main GUI. Thus, you need to first select the folder corresponding to the program that contains the OB from which you want to copy the information, then select the OB information to be copied, and then select the folder corresponding to the program containing the target OBs where the information can then be pasted.

Almost all the components of the OB (acquisition templates, observation description, target package and constraint set) can be synchronized among OBs belonging to different runs. *The only exception concerns the finding charts and ephemeris files*, which cannot be copied from one run to another. For a variety of operational reasons, finding charts and ephemeris are run-specific and thus cannot be shared or copied without modifications from one observing run to another.

5.11 Moving OBs between runs

It is possible to move OBs from one run to another, an option that can be useful if you wish to reuse OBs originally defined for a past programme for a new one. To do this, select the run containing the OBs that you want to move, and highlight the desired OBs in the *Summaries* area. Then, under the *File* menu, select the `Move` option. This will display a list of all the existing runs. Select in this list the destination run under which you wish to move the OBs. The OBs will now appear under the new run.

Moving OBs from one run to another will remove the OB from the original folder. In case you wish to keep a copy of the OB under its original run, you are advised to use the *Impex* mechanism instead (Section 5.12). Also, please note that OBs can be moved only among folders corresponding to runs that use the same instrument.

Although it is possible to move OBs containing finding charts between runs, the finding charts and ephemeris files will *not* be moved together with the rest of the OB. Instead, the new copy of the OB will have the same content as the original one, but without the finding chart or ephemeris file. This is due to the fact that these elements are always specific to the run to which they belong, and thus should not be reused without changes for a different run.

5.12 Importing and exporting OBs in ASCII format: the IMPEX mechanism

The OBs that are automatically saved in your Local Cache are in binary format, and are always associated to the observing run under which they were created. This is convenient as long as OBs are created from scratch for a given observing run and generated one by one. However, on some occasions you may find it useful to exchange with a collaborator OBs that each of you have prepared under your own installations. Similarly, survey-like programmes containing OBs for a large number of targets observed with a similar instrumental setup may be tedious to prepare if each OB needs to be individually defined using P2PP, even taking into account the convenience offered by the synchronization mechanism defined in Section 5.10.

The **Import/Export** mechanism in P2PP, or **IMPEX** mechanism for short, allows you to save and retrieve OBs from P2PP as human-readable lists of template parameter names and values in ASCII format. The names of the ASCII files containing the parameters of *exported OBs* are taken from the OB name followed by the `.obx` extension, and thus allow their easy identification.

The advantages of the import/export mechanism can be summarized as follows:

- An *exported OB* contains all the information defined in it except for the run ID and P2PP ID of the PI, and can thus be *imported* under a different folder from P2PP, thus allowing the exchange of OBs between different runs. Exported OBs in ASCII format can also be easily exchanged among the coauthors of observing programmes.
- ASCII files in the format of *exported OBs* are easy to generate by external applications without the need to use P2PP. These ASCII files can then be *imported* from P2PP and thus transformed into actual OBs.

Consider for example a survey program in which 200 stars from a catalog that lists their coordinates and magnitudes need to be observed under a single instrument configuration, with exposure times varying according to the magnitude. Preparing the OBs for each individual star using P2PP, typing by hand its coordinates and needed exposure time, would be an extremely time-consuming and error-prone task. The **Impex** mechanism allows you to greatly simplify this process by following these steps:

- Using P2PP, create one sample OB for one of the targets with the desired *Acquisition Template*, *Observation Description* and, if applicable (Service Mode), *Constraint Set*.
- *Export* the OB as described in Section 5.12.1. This will produce a sample OB whose content will be very similar to that of all the other OBs needed for the program, in which only the file name, target name, coordinates, and exposure time will have to be changed.
- Write a program or script that reads the catalog of target names, positions and magnitudes; calculates the exposure time based on the magnitude; determines the name of the output file based e.g. on the target name (followed by the `.obx` extension); and produces this output file with the same format as the sample file that was produced in the previous step, replacing the target name, coordinates, and exposure time by the desired values.
- Again using P2PP, *Import* the files created in this way. This will turn them into actual OBs, which can then be submitted to ESO in the case of a Service Mode program (see Section 6.2) and will be automatically saved in your Local Cache in binary format as any other OB created from inside P2PP.

5.12.1 Producing exported OBs and importing them

The *Import/Export* mechanism is accessible from the P2PP main GUI under the *File* menu. To export an OB to ASCII format, you should follow these steps:

- Select in the *Summaries* area the OB that you wish to export. It is possible to select multiple OBs at once (see Appendix A).
- Under the *File* menu, select `Export`. A window like the one shown in Fig. 8 will appear.
- Select the directory where you wish to store the exported OB. A default root directory for storage of exported files is normally defined in the `.p2pp.cf file` (see Section 4.1). This directory can contain multiple subdirectories, typically to store the exported OBs belonging to different observing runs.
- If applicable, select the subdirectory where you wish to store the exported OBs, either by clicking on it in the *Folders* area or by typing it in the *Enter File name* area.
- Click the `Select Export Directory` button. This will produce and save the exported OB in the desired directory.

The subdirectory where exported OBs are saved must exist before the `Select Export Directory` button is clicked. Otherwise, it must be created from outside P2PP and, once created, the `Update` button will make it appear in the *Folders* area.

The steps to follow in order to *Import* OBs are similar:

- First, make sure that the folder selected in the P2PP main GUI is the one corresponding to the observing run in which you wish to import the OBs.

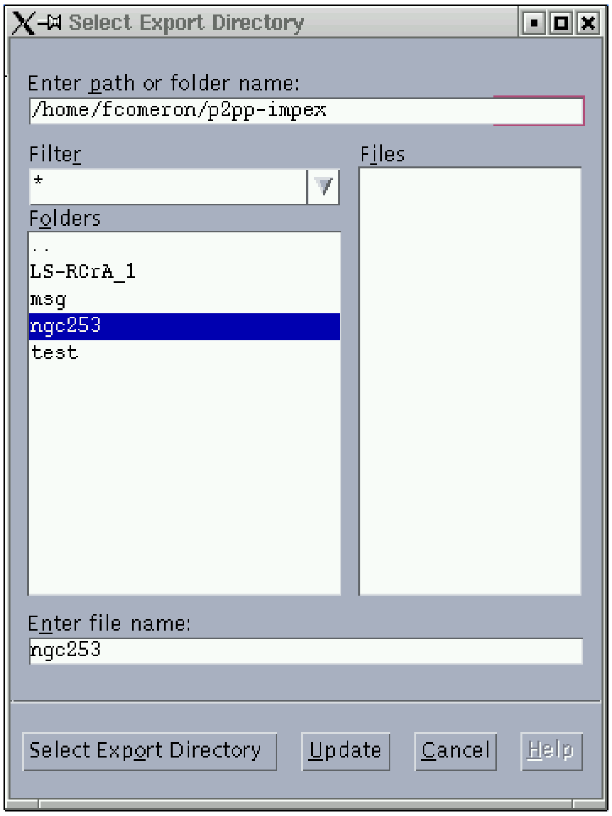


Figure 8: The *Export* window.

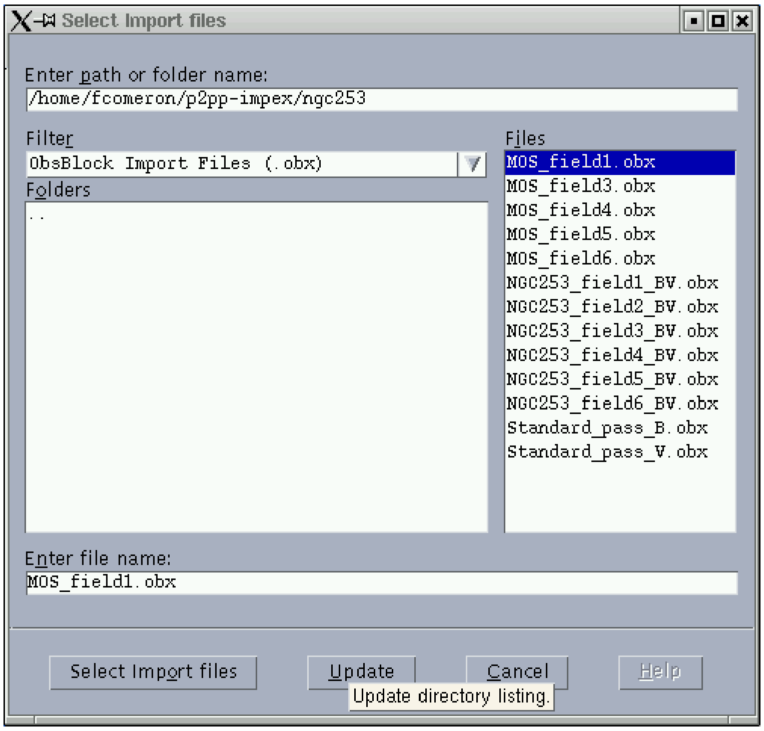


Figure 9: The *Import* window.

- Under the *File* menu, select `Import`. A window like the one shown in Fig. 9 will appear.
- Click in the *Folders* area to select the directory where the ASCII files to be imported can be found. The list of OBs in `.obx` format existing in that directory will be displayed in the *Files* area.
- Highlight the `.obx` files that you wish to import.
- Once the selection is complete, click the `Select Import files` button. The `Update` button in the same window refreshes the contents of the *Files* area in case that `.obx` files are added to or removed from the selected directory.

If the files to be imported have not been created with P2PP, please be careful not to include special characters like `[` or `]` in their names, since they would cause a failure at the time of importing the files. Such characters cannot be entered when naming an OB from P2PP, but it is possible to do it when creating `.obx` files from scratch.

5.12.2 Import/Export and attached files (finding charts, ephemeris, and configuration files)

If the OBs to be exported contain attached files such as configuration parameters files, finding charts, or ephemeris, these files will also be automatically saved to the selected export directory. Similarly, at the time of importing an OB its attached files will be automatically imported as well. P2PP will search for the files originally attached to imported OB in the same import/export directory where the .obx file resides. In case that the files cannot be found there, P2PP will display a warning message and will import the OB alone.

Note that the P2PP import/export mechanism allows passing finding charts from one run to another, as OBs exported from one run can be imported from another conserving their full contents. This is due to the fact that run-specific information is removed at the time of exporting OBs. Moreover, the import/export mechanism can be used within the same run, thus causing no conflict when finding charts are imported. Users should thus be cautious when exporting/importing OBs that contain finding charts, as the run-specific information in the finding chart (in particular, the label with the observing run that must be included in each finding chart) will lead to inconsistencies if the OB is moved from one run to another.

5.13 OB verification

Once you have completed your OBs, P2PP offers you two options to verify their contents and ensure that they will be executable at the telescope.

- The first and most basic level of verification is run automatically as you build up your OB. If a science OB does not contain its mandatory acquisition template, or if any parameter in a template of a science or calibration OB contains a non-permitted value (such as no grism selected or a parameter value outside the permitted range), the OB will appear in the *Summaries* area with a red dot next to it indicating that the OB cannot be considered as complete. If the reason for the failure to verify is a non-permitted template value, viewing the contents of the OB will display such problematic values in red.
- A higher level of verification is offered by the **External Verification Modules (EVMs)**. The main purpose of the *EVMs* is to perform a number of consistency checks across the templates in an OB, as well as to ensure the compliance of Service Mode OBs with a rather extensive set

of rules that Service Mode users need to follow so that their runs can be scheduled. An example of the first category of external verification is the check that the slit width in the acquisition template of a long-slit OB is the same as in the ensuing science templates. An example of the second category is the check that the duration of the OB does not exceed a certain limit imposed by the needs of flexible scheduling. The EVMs can also be used to verify the contents of OBs prepared for Visitor Mode observations.

The *EVMs* are instrument dependent, as different instruments have different sets of verification rules.

Users can perform the verification anytime during the preparation of their OBs. To do it, simply highlight the OB or group of OBs to be verified, and select the `Verification` option under the *File* menu in the P2PP main GUI or click on the *Verify* icon. A verification report will then appear in a pop-up window. In addition to information messages on the checks performed on the OBs, the Verification report also issues error and warning messages mainly related to Service Mode policies (Section 6.5). Error messages will prevent OBs from reaching the ESO Database unless a *P2PP Waiver* has been submitted and approved (see Section 6.2), while warning messages are intended to call your attention on rather unusual setups to confirm that they are really wanted. However, some of them are also relevant in the preparation of Visitor Mode OBs. Both Visitor Mode and Service Mode users are thus encouraged to make use of this facility.

The external verification is automatically executed also when Service Mode OBs are submitted to the ESO Database (see Section 6.2). If a verification error is encountered at the time of submission, the OB will not be accepted by the ESO Database and an error report will be sent back to the user explaining the cause of the error, unless a waiver request to allow an exception to that error condition has been submitted and approved beforehand (see the P2PP Web pages for a detailed description of the Phase 2 Waiver Request procedures). Since this verification is performed at the time that the OB reaches ESO, the error report can take several seconds before being received, or even minutes if a large set of OBs is submitted. This can become very inconvenient if large sets of OBs are sent to the ESO database. For this reason, *Service Mode users are strongly encouraged to perform the Verification of their OBs before submitting them to ESO.*

At present, *EVMs* are available for VLT and VLTI instruments only, as well as for TIMMI2 at the La Silla 3.6m telescope.

5.14 The README file

An important part of the Phase 2 package is the README file, where the user provides the observatory with a variety of ancillary information items regarding execution conditions of the observations, indications on special observations such as preimaging or Target-of-Opportunity runs, etc.

Starting from Period 75 the README file is prepared and submitted from within P2PP. Therefore, P2PP is now used for the submission of the entire Phase 2 package.

5.14.1 Preparing the README file

The README file preparation facility is accessible via the `Readme` icon in the icon bar of the P2PP main GUI (see Figure 3), or through the `View/Edit Readme` option under the `Readme` menu in the menu bar of the same window. This opens the README Edit window, whose layout is shown in Figure 10.

The structure of the README file is fairly simple. A header, non-editable section contains generic

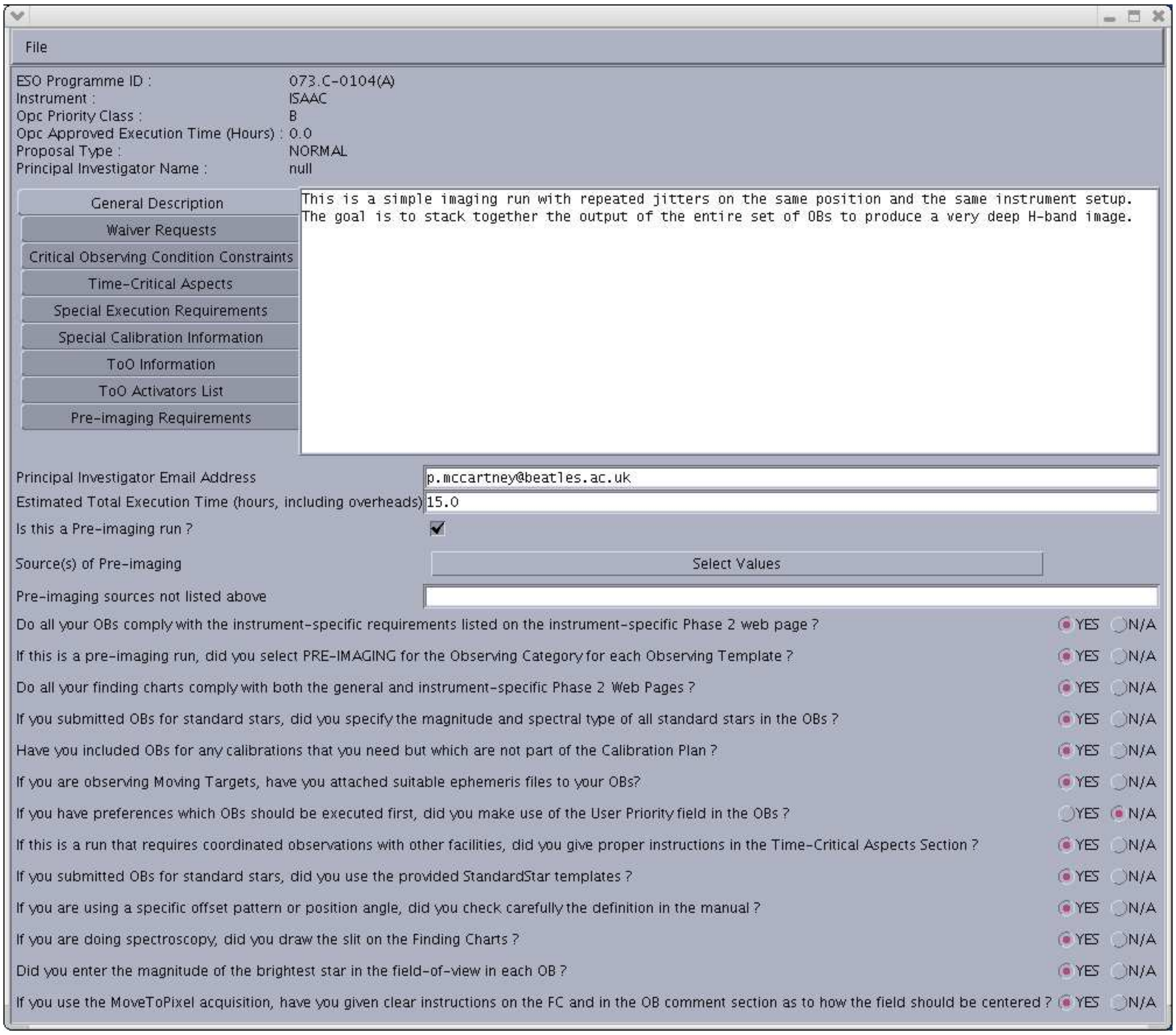


Figure 10: The README Edit window.

information on the run (its ID, the assigned instrument, the priority class A, B or C, the approved time, the proposal type -normal, GTO, DDT, Large...- and the name of the PI. Following it is a number of fields to be filled by the user providing details on multiple aspects of the run. To maintain the appearance of the window compact, each of these fields is accessible by clicking on its corresponding tag. The content that must be entered in each of these fields is described in the README file section of the Service Mode guidelines:

`http://www.eso.org/observing/p2pp/ServiceMode.html#README`

Note that some of these fields are optional and must be filled only when relevant to the run. However, the fields *General Description*, *Critical Observing Conditions Constraints*, and *Time-Critical Aspects* are mandatory, to ensure that the proper information is not missing. In case that the question does not apply (for instance, if there are no time-critical aspects associated with the run) this must be explicitly indicated.

The next entry, `Principal Investigator Email Address`, must be given to ensure that the most recent contact information on the PI is available to ESO. Only the address of the Principal Investigator must be entered, even in the case that the person preparing the Phase 2 package is not the PI.

The entry `Estimated Total Execution Time` must be manually filled with the output of the execution time report (see Section 5.8). The purpose of requiring a manual input, rather than automatically populating this field, is to ensure that the user has verified the total amount of time required for the execution of the OBs and its correspondence with the allocated time.

The next three entries, `Is this a Pre-imaging run?`, `Source(s) of Pre-imaging`, and `Pre-imaging sources not listed above`, flag pre-imaging runs whose early execution is necessary for the preparation of further spectroscopy, so that this high-priority information is properly transferred to the observatory. The source of preimaging is occasionally needed by the observatory in order to assess the accuracy of the astrometric information.

The last section of the README file contains a fairly complete checklist of aspects that must be taken into account when preparing a Phase 2 package for the assigned instrument. This part is instrument-dependent, and the example given in Figure 10 corresponds to a ISAAC run. In general, all questions must be answered with either *yes* or *N/A (not applicable)* for the Phase 2 package to be acceptable, although in some specific cases a negative answer can also be accepted. In such cases, the *N* option is also selectable by the user.

5.14.2 Verifying the README file

Like in the case of the OBs (see Section 5.13), a verification facility is available for the README file to ensure that its content is technically correct at the time of its submission to the ESO Database. Once the README file has been completed, clicking the `Verify` option under the `Readme` menu in the P2PP main GUI will check that all the mandatory entries have been filled and that no questions in the instrument-dependent checklist have been left unanswered. This verification is carried out locally in the users' machine.

As with OBs, the README file will be automatically verified by ESO at the time of submitting it to the ESO Database, and it will be rejected if the verification check finds it to be non-compliant, sending back a report to the user. This may take up to some minutes depending on network traffic. To prevent it from happening and ensure that only valid README files are submitted to the ESO Database, *users are strongly encouraged to locally run the verification of the README file before submission.*

5.14.3 Importing and exporting the README file

The README file can also be imported and exported in a way similar to that described in detail for the OBs in Section 5.12.1. The README file is exported using the `Export Readme` option under the `Readme` menu in the P2PP main GUI, which opens up a window prompting the user for the directory where the exported README file must be stored. Please note that the `Enter file name` entry in that window does *not* prompt for the name to be given to the exported README file, but rather for the directory where it will be stored. The exported README file has a default name formed by the name of the run and the `.rdx` extension.

The content of the exported README file is fairly simple. It consists of rows with the name of each of the entries to be filled by the user in a compact form, its defined value between quotes, and a short help legend. As with the exported OB files, the exported README files can be exchanged among collaborators or imported from a different run. Obviously, being instrument-specific means that an exported README file can be imported from a run that uses the same instrument. Also, taking into account that the detailed content of the README file may change from one period to another, README files can be imported/exported only between runs that use compatible README definition files (see Section 4.4).

6 Making OBs reach the Observatory

After reading the previous Chapters, the appropriate instruments' User Manuals, and the documents on observing run execution policies, you should be able to prepare the complete set of OBs and, in Service Mode, the README file that will compose your observing run. The OBs (and eventually also the finding charts, ephemeris files, and README file) are now stored in your Local Cache, this is, they reside on your own machine. In this Chapter we describe what you should do in order to make this material reach ESO so that they can be finally executed at the telescope. In addition, we provide some insight on what happens to your OBs in the case of Service Mode observing after you have submitted them. We also describe Service Mode procedures to resubmit OBs and README files in case that problems requiring modification are discovered during the review of Phase 2 submission or at execution time.

6.1 Submitting your OBs in Visitor Mode

If your programme was scheduled in Visitor Mode, making your OBs reach the Observatory is fairly straightforward. If you have prepared your OBs before your arrival at the observatory (as strongly encouraged by ESO!), your support astronomer will give you instructions on how to transfer them to the workstation from where you will be conducting your observations. Normally, the steps are as follows:

- *Export* your OBs to a directory on your machine, or to a data storage media such as a DAT tape or a CD-ROM. The *Import/Export* mechanism in P2PP is described in detail in Section 5.12.
- Transfer the exported OBs to the appropriate workstation in the control room, which will be indicated to you by your support astronomer. For security reasons, this step can be done only from the control room itself.

Once transferred to this workstation in the control room, the OBs will be *imported* from an Observatory version of P2PP running on that workstation. During your observing session you will select the OB that you wish to have executed using that installation of P2PP. From there they will be fetched by the *Broker of Observation Blocks* (**BOB**), which is operated by the support astronomer or by the Telescope and Instrument Operator.

In case you wish to modify your OBs or create new ones at the time of execution, you can do it from the P2PP installation that you are using in the control room; it is not necessary that you do it from your own P2PP installation and then transfer the modified OBs to the control room workstation. If you modified your OBs during your observing run and want to keep a copy of the OBs that were actually used, you can export them from the P2PP installation in the control room and then import them onto your local disk. You may also save the exported OBs to a storage media.

If you could not prepare your OBs before your arrival at the observatory, you can always do it once you are there before the beginning of your observing run. Your support astronomer will indicate to you where you can find appropriate machines on which P2PP is installed, and will make available to you a visitor account so that you can prepare your OBs. Normally this will *not* be the workstation in the control room referred to above, but an off-line workstation or PC in a computer room at the observatory. Once you have prepared your OBs on that workstation, you will have to follow the same steps described earlier in this Section to transfer your OBs to the corresponding workstation in the control room.

6.1.1 Notes and advises for Visiting Astronomers

- The procedure outlined above is the only one to be used by observers conducting their programs in Visitor Mode. *With the only exception of VIMOS MOS spectroscopy runs (see below), observers in Visitor Mode should not follow the procedures described elsewhere in this Chapter for the submission of Service Mode OBs.* OBs corresponding to a run scheduled in Visitor Mode will be automatically rejected in case they are submitted using Service Mode procedures.

- *ESO strongly advises visiting astronomers to arrive at the observatory some time in advance to prepare and review their observations.* This time depends on the telescope or instrument to be used, and more precise indications are given under:

  `http://www.eso.org/observing/visas/visas-instruc.html`

  Please note that this applies also in case that you have prepared your OBs before you arrive at the observatory! Reviewing your OBs and your observing strategy with your support astronomer before your run begins can often increase the efficiency of your observations.

- *Visiting astronomers may need to prepare backup programmes.* In the event of poor external conditions preventing you from obtaining the desired scientific goals for your programme, you should execute the backup programme that you specified in your Phase 1 proposal instead, as explained in the ESO Call for Proposals. It is thus convenient that you produce as well OBs for the backup program as a part of the preparatory work for your Visitor Mode run.

- *Important note for VIMOS Visitor Mode observers:* Due to the demands of the mask preparation and manufacturing process, VIMOS observers planning to carry out their MOS observations in Visitor Mode must submit at least a part of their OBs in advance following Service Mode procedures. Please consult Section 6.2, the VIMOS User Manual, and the VIMOS observation preparation Web pages:

  `http://www.eso.org/observing/p2pp/VIMOS/VIMOS-P2PP.html`

6.2 Submitting your Phase 2 package (OBs and README file) in Service Mode

If your observing time has been allocated in Service Mode, your OBs and README file must be submitted to the **ESO Database**. This is done directly from P2PP, once you consider your OBs and README file to be in their final form, and after running the *Verify* process (see Section 5.13) to ensure that they are correctly defined and compliant with Service Mode rules.

It is very important to remember that *the submission of your Phase 2 package must always be finished by communicating it to ESO by means of the* `p2pp-submit` *button (see Section 6.3).*

6.2.1 Submitting OBs to the ESO Database

To submit the OBs to the ESO Database, highlight them and select the `Check-in` option under the *File* menu in the P2PP main GUI. This will send the OBs through the network to the *P2PP Application Server* at the ESO Headquarters in Germany. Please be sure when preparing your OBs that any exceptions required to service mode procedures have been submitted and approved as a *Phase 2 Waiver Request*. The Waiver Request process is described in detail in the Service Mode Guidelines Web page:

`http://www.eso.org/observing/p2pp/P2PP-tool.html#Waiver`

Please be careful if you used different subfolders to define your OBs (see Section 5.3). If you select the parent folder in the *Folders* area, only the OBs directly under the main folder will be checked in. To save the OBs under the subfolders, you must highlight OBs in each subfolder and click in the OBs belonging to it.

At the time of submitting OBs, any finding charts and ephemeris files attached to them are automatically submitted to the ESO Database in a way that is transparent to the user. Therefore, you do not need to separately submit them.

Upon arriving at the Application Server, and if the *EVM* for the instrument used is available (see Section 5.13), the submitted OBs will be verified and stored in the ESO Database if no errors are identified in them. If the OBs produce verification errors, you will receive a report and will have to correct their causes before resubmitting them. OBs that produce verification errors can not be checked into the ESO Database. As stressed in Section 5.13, *it is important that you run the verification procedure in your local P2PP installation before checking in your OBs.* This ensures that your OBs do not contain errors that would prevent their entry in the ESO Database and can save much time, as the error report of the verification performed by the P2PP Application Server can take from several seconds to minutes to reach back to the user, depending on the load of the Application Server, the number of OBs to be verified, and the network traffic. Most critical times are those approaching the Phase 2 deadline.

6.2.2 Submitting the README file to the ESO Database

The README file is submitted to the ESO Database in a separate step. *Please note that using the* `Check-in` *option under the* `File` *menu in the P2PP main GUI only submits the highlighted OBs, but not any non-highlighted OBs or the README file!.*

To submit the README file, simply use the `CheckIn Readme` option under the `Readme` menu. This will send the README file of the currently active run (this is, the one highlighted in the folders area of the P2PP main GUI) through the network to the ESO Database in a way analogous to the one described in the previous Section for the OBs. Also, the content of the README file will be automatically verified once it reaches the P2PP application server in Garching. The README file will be checked in the ESO Database once verification is passed. As already stressed earlier, please use the `Verify Readme` option under the `Readme` menu to ensure that the README file that you are submitting will not be rejected upon reaching the P2PP application server.

6.3 Notifying ESO of the submission of the Phase 2 package: `p2pp-submit`

The submission of the Phase 2 package is not completed until you have sent the corresponding notification to ESO. The way to send this notification is also embedded in P2PP with the `p2pp-submit` icon in the icon bar of the P2PP main GUI.

When you have completed the submission of the OBs and README file to the ESO Database, you must click the `p2pp-submit` button. This action will produce an automated report listing the material found in the ESO Database for that run. This report is sent by email to the PI of the run. In addition, `p2pp-submit` triggers the sending of a note to the support astronomer in charge of reviewing the Phase 2 material for your run, thus starting the process of your Phase 2 package that should eventually lead to the certification of your observations as apt for execution.

6.4 Certification of the Phase 2 package by ESO

When your OBs have entered the ESO Database, their status is automatically changed to *Defined* (see Section 6.4.2 for a detailed description of the OB status) and a lock symbol appears next to them in the *Summaries* grid. In addition, a unique identifying number (the **OB ID**) is assigned to the OB upon entering the ESO Database. Similarly, when the README file successfully enters the ESO Database a lock symbol appears superimposed on the `Readme` icon in the P2PP main GUI.

After you notify your Phase 2 submission to ESO by clicking on `p2pp-submit` (Section 6.3) a support astronomer (at the ESO User Support Department for VLT and 2.2m telescope runs, and at the La Silla Science Operations group for runs with other La Silla instruments) starts the task of reviewing your Phase 2 package, including the OBs. The support astronomer changes the status of the OB so that it cannot be checked out of the database, to ensure that the OBs being reviewed are the latest ones that the user submitted. The Phase 2 review process aims at ensuring that the Phase 2 package can be used as it is by the astronomers carrying out the Service Mode observations. It pays attention to many aspects beyond those that can be automatically checked by the P2PP verification facilities, such as the adequacy of the intended strategy to the scientific goals of the programme. Normally, you will be contacted by your support astronomer in case that any problems are identified during the review process or that any suggestions to improve the efficiency of your programme can be made. This can take up to a few weeks, given the number of runs normally handled.

Once your Phase 2 package is certified as executable, your OBs change their status to 'accepted' (see Sect. 6.4.2) and are ready to be included in the Service Mode queues for scheduling at the telescope and the auxiliary material is made available to the mountain.

6.4.1 Checking OBs out of the ESO Database: the Database Browser

Your OBs continue to exist in your Local Cache after you have submitted them to ESO, but they are locked and cannot be modified or submitted again to the ESO Database. Likewise, once the support astronomer has started the review of your Phase 2 package, you will not be able to remove OBs from the ESO Database.

It is possible however that during the certification process the support astronomer requests or suggests modifications to be implemented in your OBs. This requires you to retrieve them (check-out) from the ESO Database, make any changes needed, and submit them again (check-in).

To be able to check out an OB or group of OBs, you first need to display the contents of the ESO Database. This is done by means of the **Database Browser (DBB)**, a useful browsing utility that allows you to display a variety of information on the OBs that you have submitted to the ESO Database under your P2PP ID.

The **DBB** is started by selecting the `View ESO Database` option under the *File* menu in the P2PP main GUI. This action will display a window similar to the one shown in Figure 11.

The *DBB* contains three main areas:

- The **Selected Columns** area allows the user to select the information to be displayed for each OB by clicking on the corresponding checkbox. Most of the items are self-explanatory.
- The **Selection Criteria** area allows the user to filter out the OBs to be displayed according to a large number of criteria, such as the program to which they belong, their status (Section 6.4.2), or their contents. When a value is entered in a box, or selected in a drop-down menu, it becomes a selection criterion for the subsequent database search. Please note that the drop-down menus allow for the simultaneous selection of several options.
- The *display area* presents a grid with the results of the database query showing the selected columns for the OBs fulfilling the selection criteria specified. On the left of this area you can choose the *Sorting Criteria* defining the order in which the OBs must be displayed. Clicking on the box next to one particular criterion selects it for sorting in ascending order, placing an

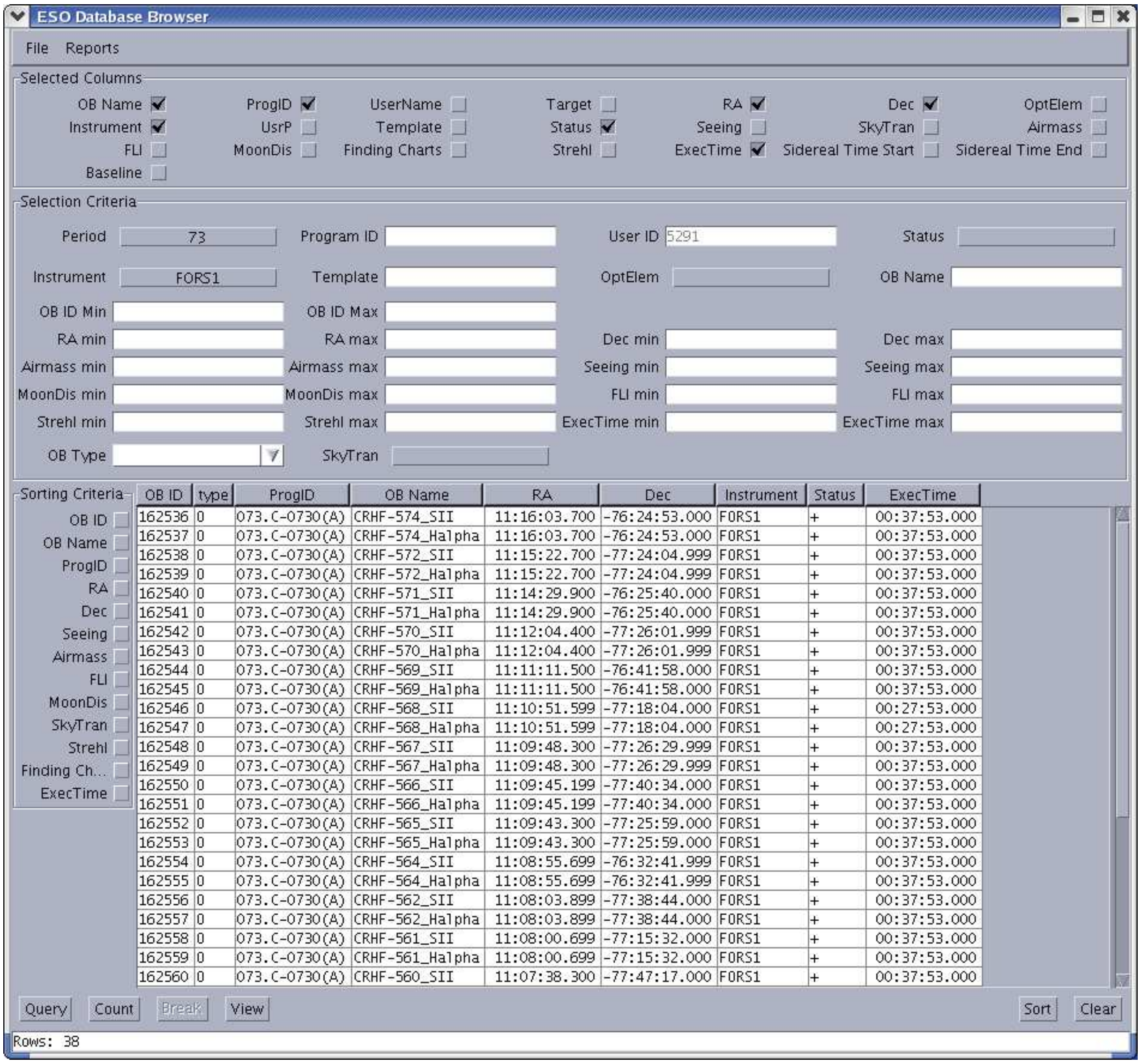


Figure 11: The Database Browser window.

upwards arrow in the box; clicking twice selects it for sorting in descending order; and clicking a third time deselects it.

In addition, there is an upper bar with the *File* menu (whose only possible choice is closing down the DBB) and a *Reports* menu offering the same choices as the analogous menu in the P2PP main GUI.

After selecting the columns with the information that you wish to display and defining the selection criteria if needed, clicking the `Query` button in the lower left corner will search the ESO Database and display the result of the search.

If you need to **Check Out** OBs, first of all they need to have a status (Section 6.4.2) that allows this operation. The OB status can be changed only by the support astronomer, who will communicate to you when the appropriate status has been set.

The steps that need to be followed to check out an OB or a group of them are:

- Select in the DBB the OBs that you wish to check out.
- Under the *File* menu in the DBB, select the `Check-out Selected` option.

This will remove the selected OBs from the ESO Database and will place them in your Local Cache. If the checked-out OB already existed in your Local Cache (as will normally be the case if you are using for check out the same P2PP installation that you used for producing the OBs), it will be overwritten.

Please note that, as mentioned above, OBs are removed from the ESO Database at the time of checking them out. In case of accidental deletion of a checked-out OB from your Local Cache, the OB is thus lost.

6.4.2 OB status

The **OB status** is a flag assigned to each OB that describes the stage of its lifetime in which it is. There are a variety of OB status flags, only a subset of which are of interest to the general user:

- **Status 'P'** (partially defined): this is the initial OB status that is assigned to the OB, and is maintained as long as it is not submitted to the ESO Database.
- **Status 'D'** (defined): an OB is considered to be fully *defined*, and its status changes automatically to *D*, as soon as it reaches the ESO Database. In the ESO Database an OB keeps the status *D* until a support astronomer starts reviewing it. OBs with status *D* can still be checked out by the user who submitted them, hence the change of status as soon as the review starts.
- **Status '+'** (accepted): the support astronomer changes that status to '+' once the OB has been reviewed and certified as valid. OBs marked as '+' cannot be checked out.
- **Status '-'** (rejected): the support astronomer sets the status to '-' when an OB presents any problems preventing their certification. OBs with status '-' need to be checked out by the user for modifications or repair.
- **Status 'C'** (completed): the OB status is set to *C* when the OB has been completed within specifications and thus will not be repeated. OBs with status *C* cannot be checked out.
- **Status 'M'** (to be repeated): this status is set when the OB has been executed but outside the specified constraints. It is also used for OBs whose execution has revealed problems that need to be solved by the user; once the repaired OB has been checked back in and certified, it status is set to *M*. OBs with status *M* cannot be checked out.

Through the OB status, the DBB thus gives you a way to check the progress of your observing run. Nevertheless, you will usually find more useful to check the Run Status Web pages:

`http://www.eso.org/observing/dfo/infopage.html`

in order to obtain the same information, as those pages contain useful links to the ambient conditions data and other ancillary information unavailable from the DBB.

As explained above, the status of an OB is automatically changed from *'P'* to *'D'* at the time of checking it in the ESO Database. The possibility of making any other status changes, which can be done only by ESO, is not available to users.

The drop-down menu that appears when clicking on the `Status` entry in the Selection Criteria area displays all the possible status of OBs in the database. Nevertheless, it should be kept in mind that some of these values are used only internally on the mountain and that some others are not currently in use. Therefore, you should not assume that the status of your OBs is necessarily incorrect if you believe that they should have another status different from those.

6.4.3 Resubmitting OBs with modified finding charts or ephemeris files

When an OB that needs modification is checked out of the ESO Database its entire contents is checked out, including the finding charts and ephemeris file that it may contain. Finding charts and ephemeris files are components of the OB and cannot be checked out and resubmitted separately. If a finding chart or an ephemeris file common to several OBs needs to be modified, then all the affected OBs need to be checked out, the conflicting finding chart or ephemeris file must be detached, a correct finding chart or ephemeris file must be attached to all the affected OBs, and these OBs need to be checked in again.

The submission of finding charts and ephemeris files takes place simultaneously with the OBs in a manner that is transparent to the user, as noted in Section 6.2. This is also the case when an OB needs to be resubmitted after a modification that does not affect its attached finding charts or ephemeris file. However, if the finding chart or ephemeris file itself needs modification, two simple rules need to be taken into account in order to keep the integrity and consistency of the ESO Database, so that there is a one-to-one correspondence between finding chart or ephemeris file names and contents:

- **It is not possible for a given run to have in the ESO Database two or more finding charts or ephemeris files with the same name but different contents.** If you try to attach two finding charts or ephemeris files with the same name but different contents to two OBs, the second one will be rejected at check-in time for this reason.

  A more common case is the resubmission of an OB with a finding chart that has been modified, but whose name has been kept unchanged. If this finding chart was not used by any other OB that has been left in the ESO Database, this operation causes no conflict and is thus permitted. However, if there are already in the Database OBs for the same run that use a finding chart with the same name but different contents (for example, an older version of the finding chart), the check-in attempt will fail and a corresponding message will be sent to the user. In such cases the modified finding chart must be given a new name so that the OB can be checked in. The exact same rule applies to ephemeris files, which must thus be renamed if a copy with the same name but different contents exists already in the ESO Database.

- Conversely, **it is not possible for a given run to have in the ESO Database two or more finding charts or ephemeris files with the same contents but different names**. If you rename a finding chart that is attached to an OB already existing in the ESO Database without changing the content of the finding chart, check-in will not be permitted for this reason. If you do want to resubmit an OB with a finding chart that has identical content as another finding chart already existing in the ESO Database, please rename it so that the name is also identical. Also in this case, the same rule applies to ephemeris files.

6.4.4 Checking out the README file

It is possible that during the review process of the Phase 2 package items are found in the README file that require modification by the user. Examples of this may be incomplete or ambiguous information on the execution of the run, or requests for actions unsupported in Service Mode. If such modifications are needed you will be contacted by your support astronomer and you will need to modify the README file accordingly.

In order to be able to modify the README file, you must first check it out of the ESO Database. This is done by means of the `CheckOut Readme` option under the `Readme` menu in the P2PP main GUI. Checking out the README file will make the lock symbol on the `Readme` icon disappear. Once the desired modifications are completed, you must check in the README file again as indicated in Section 6.2.2 and click on `p2pp-submit` as indicated in Section 6.3.

It may be interesting to note a difference between the check out process of OBs and README files regarding the contents of the ESO Database. As noted in Section 6.4.1, when an OB is checked out its content is effectively removed from the ESO Database. This is not the case for the README file: in some instances, the modifications required are sufficiently minor so that the run can continue to be executed, or may affect only a subset of the submitted OBs while the remaining ones stay executable. In those cases the previous version of the README file must be available to the mountain. For this reason, when the README file is checked out of the ESO Database a copy of it is kept there, and it is replaced only when the modified README file is checked in and accepted by the support astronomer.

6.5 Important notes on the preparation of Service Mode observations

To make Service Mode observing efficient and reliable, ESO has set up a number of policies that affect the planning of the observing strategy, the composition of the material to be prepared by users at Phase 2, and particular aspects of OB preparation, both general and instrument-related. Giving a complete description of these policies is beyond the scope of this manual; all Service Mode users are thus referred to the documents on Service Mode observing that can be found in the Web pages of the User Support Department:

`http://www.eso.org/org/dmd/usg`

for VLT and 2.2m telescope instruments, and of the La Silla Science Operations Group:

`http://www.ls.eso.org/lasilla/sciops/observing/service.html`

for other La Silla instruments), as well to the article *Service Mode Scheduling: a Primer for Users*, by D. Silva, in *The Messenger*, 105, 18 (2001). Here we give only a quick review of important general aspects to keep in mind while preparing OBs for your Service Mode runs.

6.5.1 OBs are executed only once

If your program requires an observation (either of a science or of a calibration target) to be executed multiple times, you must provide as many individual OBs as executions are needed. It is not possible to provide only one OB, and specify that it should be executed multiple times. OBs are repeated only if the first execution produced results outside specifications.

In the case of OBs for the observation of calibration targets, please use the *User Comments* field in the View OB GUI to indicate the science OB(s) for which such calibrations are intended.

6.5.2 Calibration Plans and additional calibration observations

In order to ensure a baseline accuracy of the data obtained, ESO has implemented Calibration Plans for each of its instruments. The Calibration Plan, which is described in detail in the User Manual of each instrument, specifies a number of observations that the Observatory executes in both day- and nighttime, aiming at providing the necessary data to calibrate to a certain level of accuracy all the scientific observations obtained. The calibration plan is implemented in both Visitor and Service Mode.

It is very important at the time of planning an observing program, as well as when preparing the Phase 2 material, to check in the User Manual of the corresponding instrument the details of the Calibration Plan. In Service Mode, the execution of the Calibration Plan is not charged to the time allocated to your observing run. Therefore, if you consider that the data obtained as a part of the Calibration Plan will be sufficient for the scientific purposes of your run you do not need to produce any additional OBs for calibration and you do not need to account for the time to be devoted to such calibrations at the time of submitting your proposal.

If you plan to use instrument setups that need to be calibrated but are not supported by the Calibration Plan (such as for instance observations in narrow-band filters with WFI), you need to provide your own OBs for calibration purposes. In this case, the execution of these OBs becomes a part of the time allocated to your run and you need to include it in the overall execution time calculation.

6.5.3 Execution overheads are part of the allocated time

At the time of writing your proposal and of preparing your OBs, you must take into account that the time allocated to your run is total execution time, this is, integration time plus execution overheads, and not only integration time. The overheads thus need to be taken into account at the time of ensuring that the execution of your OBs keeps within the limit of the time allocated to your run.

The computation of the overheads is based on predetermined values that have been measured by the observatory, or on average values when the overhead is variable such as in the case of a telescope preset. *The execution overheads that must be considered in the time accounting are thus the estimated times based on these predetermined values*, rather than the actual overheads that may be known precisely only after the execution of the observations.

Execution overheads due to different actions (telescope preset, slit centering, instrument setup, detector readout, etc.) are described in detail in the User Manual of each instrument. Moreover, they can be readily computed by P2PP using the *Execution Time Report* facility (see Section 5.8), which takes into account the overhead values as published by the Observatory, and thus the official accounting of execution time as carried out by ESO.

6.5.4 Independent execution of each OB

One of the key points of the efficiency of Service Mode observing is the ability to select at short notice the OBs that best exploit the prevailing external conditions while taking into account the relative priorities of the programs in the Service Mode queue. For this reason, it is not possible to request the linked execution of OBs, such as for example the consecutive execution of OBs on a single target. Although at first sight allowing such concatenated execution may seem to improve the efficiency by suppressing preset overheads, experience has shown that the loss of flexibility implied by the scheduling of sequences of OBs severely compromises the ability to adjust to changing external conditions, and results in a higher number of OBs executed outside specifications.

As a consequence of this, users are not allowed to discount overheads by assuming that their OBs will be executed in a given order or consecutively. At the time of planning the strategy of your Service Mode run, you must assume that each OB will be executed separately from the rest, and you must account for the execution overheads accordingly.

6.5.5 OB duration limited to one hour

Like in the case of linked OBs, OBs that take a long time to execute decrease the flexibility of Service Mode observing. Moreover, the longer the OB, the higher the likelihood that the external conditions degrade outside the specified constraints during the execution. Therefore, in order to preserve the efficiency *the observatory does not allow the submission of OBs with durations exceeding one hour of execution time*. In case that the scientific case of your Service Mode run justifies it, you may submit a waiver request (see `http://www.eso.org/observing/p2pp/ServiceMode.html#Waiver`) to allow longer execution times. When such requests are approved, the observatory guarantees the fulfillment of the user-specified constraint set (see Sections 5.5.3 and 6.5.7) only for the first hour of execution, and the OB is considered as executed within specifications even if the conditions degraded afterwards.

6.5.6 Need to maintain OBs simple

An additional advantage of Service Mode observing is the possibility to increase the observing efficiency by minimizing the number of changes in instrumental setup and the number of required calibrations by executing OBs having similar setup and calibration requirements on a given night. For this reason, users are strongly advised to *use only one instrument setup within a given OB whenever possible*. The submission of OBs involving multiple instrument setups must be requested in advance using a waiver request (see `http://www.eso.org/observing/p2pp/ServiceMode.html#Waiver`) and may be denied by ESO in case that it involves an excessive load on the execution of the calibration plan.

6.5.7 The Constraint Set and its consistency with Phase 1 information

As explained in Section 5.5.3, users can specify the limits on the conditions under which a given OB can be executed. These specifications are then checked against the prevailing external conditions at the time of deciding whether or not a given observation should be started. ESO will try to execute the OBs under conditions that are those specified in the *Constraint Set* or better.

Starting with P2PP v2.8, the Constraint Set is instrument-specific. The following items are common to all the instruments:

- **Sky transparency,** for which four different situations can be specified:
  - *Photometric:* No visible clouds, transparency variations under 2%.
  - *Clear:* Less than 10% of the sky above 2 airmasses covered by clouds, transparency variations less than 10%.
  - *Variable, thin cirrus:* transparency variations between 10 % and ∼20%.
  - *variable, thick cirrus:* large transparency variations possible, essentially equivalent to no constraint on the transparency conditions.
- **Seeing:** Whenever possible, the seeing is defined as the FWHM size in arcseconds of a point source in the focal plane of the instrument. When this measurement is not possible, the FWHM

measured in the telescope's guide probe or the measurement provided by the Astronomical Seeing Monitor are used instead.

- **Lunar illumination**, expressed as the fraction of the visible lunar disk illuminated by the Sun.
- **Moon angular distance**, i.e., the angle between the center of the lunar disk and the target of the observation.
- The **Airmass**, i.e., the column density of the atmosphere in the direction to the source expressed as a multiple of the column density towards the zenith, is common to most instruments except for MIDI. In this latter case it is superseded by the local sidereal time interval of the observations.

Other constraints are instrument-specific:

- The **Strehl ratio**, for NACO observations only, as measured in a reference filter on the target used for Adaptive Optics correction (see the NACO User Manual). In the case of NACO observations, the Strehl ratio replaces the seeing as a measurement of the data quality.
- The **baseline**, for VLTI observations, indicate the combination of Unit Telescopes or Auxiliary Telescopes with which the interferometric observations must be made. Typically several baselines are offered each period and announced in the Call for Proposals.

Note that some of these constraints were already specified in the original observing proposal. This is in fact a very important factor that is taken into account when deciding which Service Mode programmes can have time allocated to them, based on the expected occurrence of any given set of external conditions at the observatory. For this reason, *ESO does not allow users to specify more stringent constraints at Phase 2 than the ones specified at Phase 1.* You can however *relax* the constraints with respect to what you specified at Phase 1 in order to increase the range of conditions under which your run can be executed, and thus improve the chances of execution:

- **Transparency constraint:**
  - If you specified *PHO (photometric)* at Phase 1, you can specify any value in your OBs.
  - If you specified *CLR (clear)* at Phase 1, you can specify *Clear*, *Variable, thin cirrus*, or *Variable, thick cirrus* in your OBs.
  - If you specified *THN (variable, thin cirrus)* at Phase 1, you can specify *Variable, thin cirrus* or *Variable, thick cirrus* in your OBs.
- **Moon constraint:**
  - If you specified *d (dark)* at Phase 1, you must specify *Lunar illumination* = 0.0 or greater in your OBs (*Lunar illumination = 0.0* is interpreted as "Moon below the horizon")
  - If you specified *g (grey)* at Phase 1, you must specify *Lunar illumination* = 0.4 or greater and *Moon angular distance* = 120 or less in your OBs.
  - If you specified *n (no restriction)* at Phase 1, you must specify *Lunar illumination* = 1.0 and *Moon angular distance* = 60 or less in your OBs.
- **Seeing constraint:**

– The *Seeing* specified in the constraint set of your OBs must be equal to that indicated in the Phase 1 proposal or larger. If you specified *n (no constraint)* at Phase 1, you must set it to 2.0 (the largest value allowed by P2PP) in your OBs. The only exception is NACO, where *n (no constraint)* at Phase 1 translates at Phase 2 into 1.4 arcseconds, the largest value allowed by the NACO Preparation Software.

Note also that a small subset of OBs may request photometric conditions even if *clear* transparency was specified at Phase 1, if this is needed for the flux calibration of observations that can be obtained under non-photometric conditions (for example, a set of identical OBs on the same field, of which only one suffices to determine the photometric zeropoint). This is allowed as long as the execution time of the OBs requiring photometric conditions does not exceed 20% of the total time allocated to the run, and as long as accurate flux calibration is mandatory to reach the scientific goals of the programme.

6.5.8 Dealing with Target of Opportunity and Solar System target observations in Service Mode

Due to their nature, it is not possible in the case of Target of Opportunity (ToO) programmes to submit in advance complete OBs with target positions specified. In this case, you must still submit to ESO a set of OBs with the instrument setup fully defined as per normal Phase 2 submission procedures (see Section 6.2), except for the target coordinates that must be left at the default values. The actual coordinates and additional information must be communicated directly to the Observatory when the target becomes known. Further information on ToO procedures can be found at:

`http://www.eso.org/oserving/p2pp/tooProcedures.html`

for Paranal, and at

`http://www.ls.eso.org/lasilla/sciops/doc/LSO-POL-MAN-000-001_v2.0_ToO.html`

for La Silla.

Likewise, since it is not possible to predict the exact time when any given OBs will be executed, it is not possible to introduce in advance in an OB the coordinates of Solar System targets to be observed in Service Mode. In that case, OBs with the approximate coordinates of the target in the middle of the observing period must be submitted, together with a file containing the ephemerides of the target over an appropriate time interval. Further details on how to prepare the Phase 2 material for moving targets are given in `http://www.eso.org/oserving/p2pp/moveProcedures.html`.

A Highlighting, sorting, and customizing column widths

A.1 Selecting items

Selecting and highlighting items in the various Graphical User Interfaces (GUIs) composing P2PP is done using standard conventions in mouse-driven events:

- *Highlighting* or *selecting* a single item is simply done by placing the cursor on it and clicking the left button of the mouse.
- *Highlighting multiple elements* is done by holding down the *Ctrl* key (or equivalent in your keyboard) while clicking with the left button of the mouse on each element to be selected. If you wish to highlight a block of elements, you only need to click on the first one of the block, and then on the last one while keeping the *Shift* (or equivalent) key pressed.
- *Dragging and dropping elements* is done by clicking with the left button of the mouse on the element of interest and, while keeping the mouse button pressed, moving the cursor to the desired position. Once that position is reached, the element can be dropped there by just releasing the mouse button.

A.2 Sorting elements in a list

The elements in tables that are displayed in grid form with one element per row (such as the list of OBs in the *Summaries* area of the P2PP main GUI, the list of OBs resulting from a query in the Database Browser, or the list of targets in the Phase 1 Target information window) can be sorted by the alphabetical or numerical order of the values entered in any column of the table. This is done by clicking on the header of the column to be used for the sorting. Clicking while holding the Shift key pressed will do the sorting in reverse order.

For example, if you wish to sort the OBs that you have produced for your run based on their name, you can click on the `Name` column header in the *Summaries* area of the P2PP main GUI (Figure 3) and they will be displayed arranged by alphabetical order.

As another example, you may also display the targets appearing in the Phase 1 Targets window (Figure 6) sorted by their Right Ascension. In that case, click on the `RA` column header.

A.3 Reshaping columns

In order to display the full contents of a table entry, it is often useful to reshape the width of its column with respect to its default width. The grid tables of P2PP (in the P2PP main GUI, the *View OB* window, the Database Browser window, and the Phase 1 Targets window) can have their columns reshaped by placing the cursor on the edge that must be moved, clicking the left button of the mouse, and dragging the edge until the desired position.

A.4 Reshaping windows

In case you find it convenient to reshape the windows of the P2PP GUIs, this can be done by clicking on the side or the corner of the window to be reshaped and dragging the cursor to the position in the screen defining the desired edge of the window.

B Troubleshooting

In this Section we describe some of the most frequently encountered problems when installing or using P2PP. If you are encountering a problem that is not described in this Section or elsewhere in this manual, please contact the ESO User Support Department (`usd-help@eso.org`).

- **My computer is connected to the network, but it cannot establish communication with the ESO Database**

  This problem may arise if your site has a strict firewall that does not allow the connection through an arbitrary port. The following paragraphs, based on a document prepared by A. Maurizio Chavan, describe in detail the cause of the problem and its solution.

  P2PP currently uses the concept of HTTP tunnelling to support user sites with strict security policies. Here we describe how tunnelling works, and how to configure P2PP to enable this feature.

  In its default configuration, P2PP makes no use of tunnelling. The P2PP client (this is, the local user's installation) communicates directly with the P2PP Application Server at ESO in Garching over ports 1222 and 1223. As long as the firewall at the users' site allows connections through these ports, or as there is no firewall at the users' site, the client and the Application Server can communicate via a direct RMI connection.

  Some remote sites have a tighter security policy and do not allow direct communications over arbitrary ports. Such sites must therefore provide an HTTP *proxy server*, which is a host allowed to make outside connections and service HTTP clients (like Netscape) behind the firewall. The P2PP client can be configured to connect to the application server through the proxy. The way in which the P2PP client obtains a service from the application server through the proxy is as follows:

  – The client attempts a direct connection, which fails because the remote firewall does not allow it.
  – The client then repackages its request as HTTP, and contacts the HTTP proxy.
  – The proxy forwards the request to a dedicated local HTTP server, using port 80.
  – The HTTP server activates a (Java) servlet, which re-transforms the request into the original RMI format, and contacts the P2PP application server on port 1206. In other words, the servlet makes an RMI request on behalf of the remote client.
  – The application server returns the requested information to the servlet.
  – The servlet packages the application server's reply as HTML, and returns it to the HTTP server; which returns it to the remote HTTP proxy; which returns it to the P2PP client.
  – The P2PP client (actually, some protocol interface) converts the HTML reply into RMI, closing the cycle.

  The expression *HTTP tunnelling* refers to the process of packaging an RMI request as HTTP, and unpackaging the HTML reply back into RMI.

  Configuration:

  The P2PP client must be instructed to try HTTP tunnelling if direct RMI connection to the application server fails. That can be accomplished by defining two keywords in `site.cf` (to be found under the `config` directory in the installation directory) or `.p2pp.cf`:

```
APPSERVER.HTTPPROXYHOST
     Full name of the host running the HTTP proxy server.
     (For instance: httpproxy.some-uni.de)

APPSERVER.HTTPPROXYPORT
     Port on which the HTTP proxy server accepts connections
     (should normally be set to 80, but it depends on the proxy
     configuration)
```

Users are advised to contact their network administrators before attempting to setup HTTP tunnelling.

- **ESO has sent me the announcement of allocation of time to my programme, but I cannot see any of its observing run when starting P2PP.**

  If your Local Cache contains Phase 1 information on other existing runs in which you are PI, no information on new observing runs is downloaded until you explicitly order P2PP to do so by means of the `Download/Refresh Observing Runs` available under the *File* menu in the P2PP main GUI. See Section 5.1.

- **I am trying to start P2PP using a password that ESO gave me some time ago, but I get a 'login incorrect' error message.**

  Due to database cleanups and security reasons, some users' IDs and passwords change over time. Please make sure that you are using the latest P2PP ID and password that were communicated to you by ESO. If still you cannot start P2PP, send a mail to `usd-help@eso.org` requesting your login/password information. Please note that for security reasons ESO communicates this information only to PIs.

- **P2PP does not allow me to check out OBs from the ESO Database, although I can see them in the Database Browser.**

  As explained in Section 6.4.2, users cannot check out OBs that have been (or are being) reviewed by ESO unless they are specifically allowed to do so by their support astronomers. In that case, the support astronomer must change the OB status to one that allows checkout by the user.

- **I cannot write data on the Local Cache.**

  This may happen in central installations if the default path for the location of the Local Cache has not been modified by the `.p2pp.cf` file. Please see Section 4.1 for more details.

C Acronym List

BOB: Broker of Observation Blocks

COSMO: COnstraint Set MOdule

DBB: Database Browser

DFS: Data Flow Systems

ETRM: External Time Reporting Modules

EVM: External Verification Module

GUI: Graphical User Interface

JDK: Java Development Kit

JRE: Java Runtime Environment

ID: Identifier

IP: Instrument Package

MOS: Multi-Object Spectrosocopy

OB: Observation Block

OPC: Observing Programmes Committe

P2PP: Phase 2 Proposal Preparation tool

PI: Principal Investigator

___oOo___