

Visit Planner Tool Requirements

(Requirements preceded with “[i]” will be included in the initial release of the Visit Planner.)

1 [i] The Visit Planner (VP) assists the user in making the visits in their proposal schedulable.

The following special terms are used in this document:

- **Observer Requirements:**
The requirements which observers place on observations to meet science goals.
- **Scheduling Constraint:**
Any Observation Constraint or combination of Observation Constraints that affects when a visit can or cannot schedule.
- **Scheduling Windows:**
The periods of time that a visit can or cannot schedule due to scheduling constraints.
- **Partial Scheduling Windows:**
A set of scheduling windows that takes into account a subset of scheduling constraints.
- **Schedulable/Unschedulable Window:**
A period of time over which a visit can or cannot schedule.

1.1 [i] The VP shall be able to determine the times when visits can or cannot schedule.

1.2 [i] The VP shall be able to identify the observer requirements that cause visits to be unschedulable.

1.3 [i] The VP shall provide access to editors to modify visits and links between visits to change schedulability.

1.4 The VP shall provide general advice on techniques to obtain desired schedulability.

1.5 The VP shall provide analyses of how particular visits might be modified to improve the schedulability over particular periods of time.

2 [i] The VP shall consist of two areas: 1) A Control Panel which controls how the VP computes scheduling windows and 2) a Schedulability Display Panel that displays calendars of the scheduling windows for visits and scheduling constraints.

2.1 [i] The VP shall compute scheduling windows for all visits in the current VP Inferred Context (cVPIC).

2.1.1 [i] The cVPIC shall include all visits in the current APT context plus all other visits that are linked to those visits in the current APT context.

2.1.2 [i] If any visit’s observer requirement for any scheduling constraint is known to be incomplete or invalid, then the VP shall report an error to

the user and will not compute or display scheduling windows for the visit and any other visits linked to it.

2.2 The Control Panel (CP) shall include controls that govern the computation and display of scheduling windows. (See Fig. 1)

Figure 1: Visit Planner Control Panel

Update Reports Links +Zoom -Zoom P

Select Visits to Display

- Visit 1
- Visit 2
- Visit 3
- Visit 4
- Visit 5
- Visit 6
- Visit 7

Select All

Clear All

Select Link Set

Select Constraints to Include

- Sun
- Moon
- Target Visibility
- Orient
- Between

Select All

Clear All

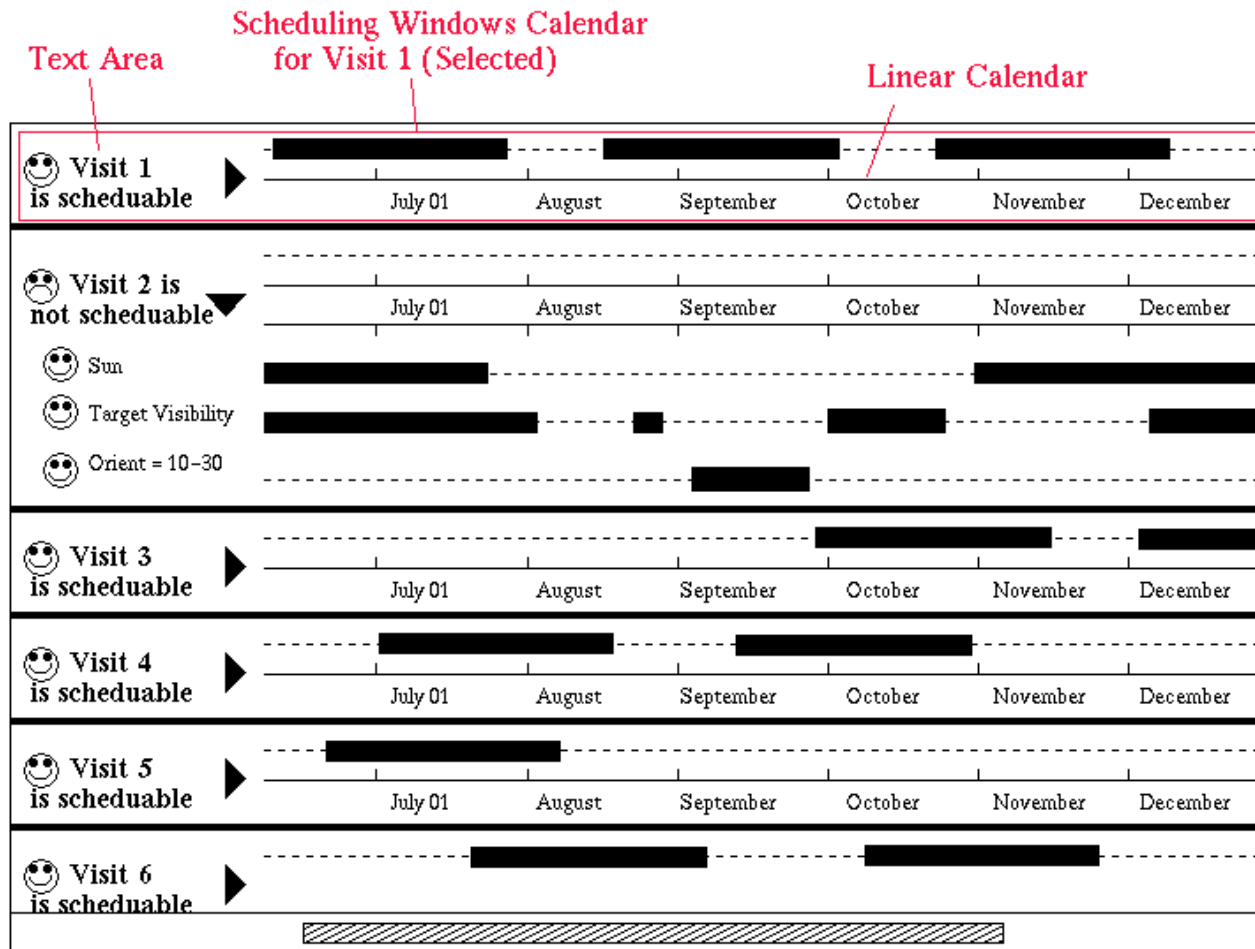
Note: Although unchecking a constraint will exclude it from the schedulability computations, unchecking a constraint will not remove it from your proposal.

- 2.2.1 The CP shall include a Visit Selector (VS) to select the visits for which computed scheduling windows will be shown in the Schedulability Display Panel.**
 - 2.2.1.1 The list of visits presented in the VS shall be the visits in the cVPIC.**
 - 2.2.1.2 The VS shall have a "Select All" option meaning to display the computed scheduling windows for all visits in the cVPIC.**
 - 2.2.1.3 The VS shall have a "Clear All " option to clear the selection of all visits from the VS.**
 - 2.2.1.4 The VS shall have a mechanism to select visits by link set.**
- 2.2.2 The Control Panel shall have a Scheduling Constraints Selector (SCS) to select which of the scheduling constraints to include in subsequent computations of scheduling windows for all visits in the cVPIC.**
 - 2.2.2.1 The SCS shall have a "Select All" option meaning to compute scheduling windows for all scheduling constraints.**
 - 2.2.2.2 The SCS shall have a "Clear All" option to clear the selection of all scheduling constraints.**
 - 2.2.2.3 The SCS shall make it clear to the user that turning off a scheduling constraint does not remove the corresponding observer requirements from the proposal.**
- 2.2.3 The CP shall have an "Update" button to update the scheduling windows for all visits in the cVPIC.**
- 2.2.4 The CP shall provide a tool for graphically editing links between visits in the cVPIC.**
- 2.2.5 [i] The CP shall support limiting the starting and ending dates for computing scheduling windows.**
 - 2.2.5.1 The CP shall support displaying an observatory specific dialog for specifying starting and ending dates.**
 - 2.2.5.2 [i] The CP shall support automatic specification of the starting and ending dates inferred from properties of the visits in the cVPIC.**
- 2.2.6 [I]The CP shall have a tool bar to provide additional functions.**
 - 2.2.6.1 [i] There shall be an Update button in the CP tool bar to update the scheduling windows for all visits in the cVPIC.**
 - 2.2.6.2 [i] There shall be a Report tool in the CP tool bar that provides access to various reports.**

- 2.2.6.2.1 [i] The Report tool shall include a report of the scheduling windows for each visit in textual format similar to the Spike Suitable Times Report for the visit of the currently selected SWC.
- 2.2.6.2.2 The Report tool shall include a report that shows the links sets in the cVPIC.

2.3 [i] The VP shall include a Schedulability Display Panel (SDP) to display computed scheduling windows in Scheduling Windows Calendars (SWC) for Visits and Individual Scheduling Constraints. (See Fig. 2)

Figure 2: Schedulability Display Panel



- 2.3.1 [i] Visit SWCs shall have an icon on the left side to expand or collapse the display of the visit's scheduling constraints' SWCs.**
- 2.3.2 [i] SWCs shall include a text area that identifies the scheduling windows and whether or not there is at least one schedulable window.**
 - 2.3.2.1 [i] For visit SWCs, if there is at least one schedulable window and all scheduling constraints have been included, then the text area will say "Visit <visit identifier> is schedulable." and will include visual cues which indicate the visit is schedulable.**
 - 2.3.2.2 [i] For visit SWCs, if there are no schedulable windows, then the text area will say "Visit <visit identifier> is not schedulable." and will include visual cues which indicate the visit is not schedulable.**
 - 2.3.2.3 For visit SWCs, if there is at least one schedulable window, but not all scheduling constraints have been included, then the text area will say "Visit <visit identifier> is schedulable with the selected subset of scheduling constraints." and will include visual cues which indicate that the scheduling windows are only partial.**
 - 2.3.2.4 [i] For scheduling constraint SWCs, if there is at least one schedulable window, then the text area will say "<scheduling constraint name> has at least one schedulable window." and will include visual cues which indicate that the scheduling constraint has at least on schedulable window.**
 - 2.3.2.5 [i] For scheduling constraint SWCs, if there are no schedulable windows, then the text area will say "<scheduling constraint name> has no schedulable windows." and will include visual cues which indicate that the scheduling constraint has no schedulable windows.**
- 2.3.3 [i] SWCs shall include a linear calendar indicating the periods of time that have schedulable windows.**
 - 2.3.3.1 Linear calendars for Visit SWCs shall have a mechanism to display an analysis of the visit's schedulability over any period of time.**
 - 2.3.3.1.1 The analysis shall display whether the visit is schedulable at the time of interest.**
 - 2.3.3.1.2 The analysis shall display the list of constraints that are schedulable at the time of interest.**
 - 2.3.3.1.3 The analysis shall display the list of constraints that are not schedulable at the time of interest.**
 - 2.3.3.1.4 If the visit is unschedulable at the time of interest, the analysis shall display suggested changes to observer requirements, if**

any, which would allow the visit to be schedulable during a particular period of time.

2.3.3.2 Linear calendars for scheduling constraint SWCs shall have a mechanism to display values of the associated observer requirements, if any, that would allow the scheduling constraint to be "schedulable" during a particular period of time.

2.3.4 Visit SWCs shall clearly indicate if the computation of the scheduling windows is partial because not all scheduling constraints were selected in the SCS.

2.3.5 SWCs shall be selectable.

2.3.5.1 Selecting a SWC shall cause the corresponding visit row in the APT spreadsheet to become selected.

2.3.5.2 Selecting a visit row in the APT spreadsheet shall cause the corresponding visit SWCS to become selected.

2.3.6 There shall be a mechanism to save a copy of the SWCs to a file format suitable for printing.

3 [i] The VP shall support specific requirements for HST visits.

3.1 [i] The VP shall support scheduling constraints specific to HST.

3.1.1 [i] Scheduling windows for HST scheduling constraints shall be computed using the current version of Spike.

3.1.2 [I] The VP shall support physical constraints.

3.1.2.1 [i] The VP shall support the Sun constraint.

3.1.2.2 [i] The VP shall support the Moon constraint.

3.1.2.3 [i] The VP shall support the target visibility constraint.

3.1.2.3.1 [i] Orbit Filling shall be obtained from the visit data as computed by the Orbit Planner Tool.

3.1.2.3.2 [i] If Orbit Filling is not available, the Sched Parameter shall be used in its place.

3.1.2.4 The VP shall support moving target constraints.

3.1.2.5 The VP shall support the Guide Star constraints.

3.1.3 [i] The VP shall support absolute user constraints.

3.1.3.1 [i] The VP shall support the Between constraint.

- 3.1.3.2 [i] The VP shall support the After constraint.**
- 3.1.3.3 [i] The VP shall support the Before constraint.**
- 3.1.3.4 [i] The VP shall support the Phase constraint.**
- 3.1.3.5 [i] The VP shall support the Low Sky constraint.**
- 3.1.3.6 [i] The VP shall support the Orient constraint.**
- 3.1.4 [i] The VP shall support relative user constraints.**
 - 3.1.4.1 [i] The VP shall support timing link constraints.**
 - 3.1.4.2 [i] The VP shall support Save/Use Offset constraints.**
 - 3.1.4.3 [i] The VP shall support the Orient From constraint.**
 - 3.1.4.4 [i] The VP shall support the Same Orient constraint.**
 - 3.1.4.5 The VP shall support the Ephemeris Correction constraint visits.**
- 3.2 [i] The starting and ending dates for computing scheduling windows for HST visits shall be inferred from the cycle of their parent proposal.**
- 3.3 [i] The SDP Report tool shall include a Roll Range Report similar to what is currently available in RPS2 for the visit of the currently selected SWC.**