



# The Joy of Scheduling the VLTI

Nando Patat (via J.-P. Berger, sorry J.-P.!) - OPO - ESO

# in a nutshell

Scheduling the VLT, especially the ATs, is a very cumbersome operation. It requires an amount of time that is disproportioned w.r.t. the community it serves. It typically creates a high level of dissatisfaction in all parties: the guy who does the schedule (because it drives him crazy), the Observatory (because it creates idle time) and most PIs, who do not get what they want (if anything).

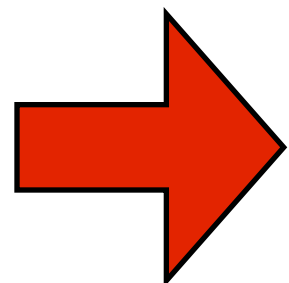
*Jean-Philippe is only an ambassador. Don't shoot him!*

# VLT scheduling constraints

- Follow OPC ranking and fulfill visibility/ST constraints;
- Minimize number of baseline re-configuration nights;
- Minimize potential idle time (at the ATs).
- Minimize observer's stay on the mountain;

## VLT specific issues

- May runs request short amounts of time with 3 different configurations. Most of the request is for Visitor Mode (partly forced by ESO)



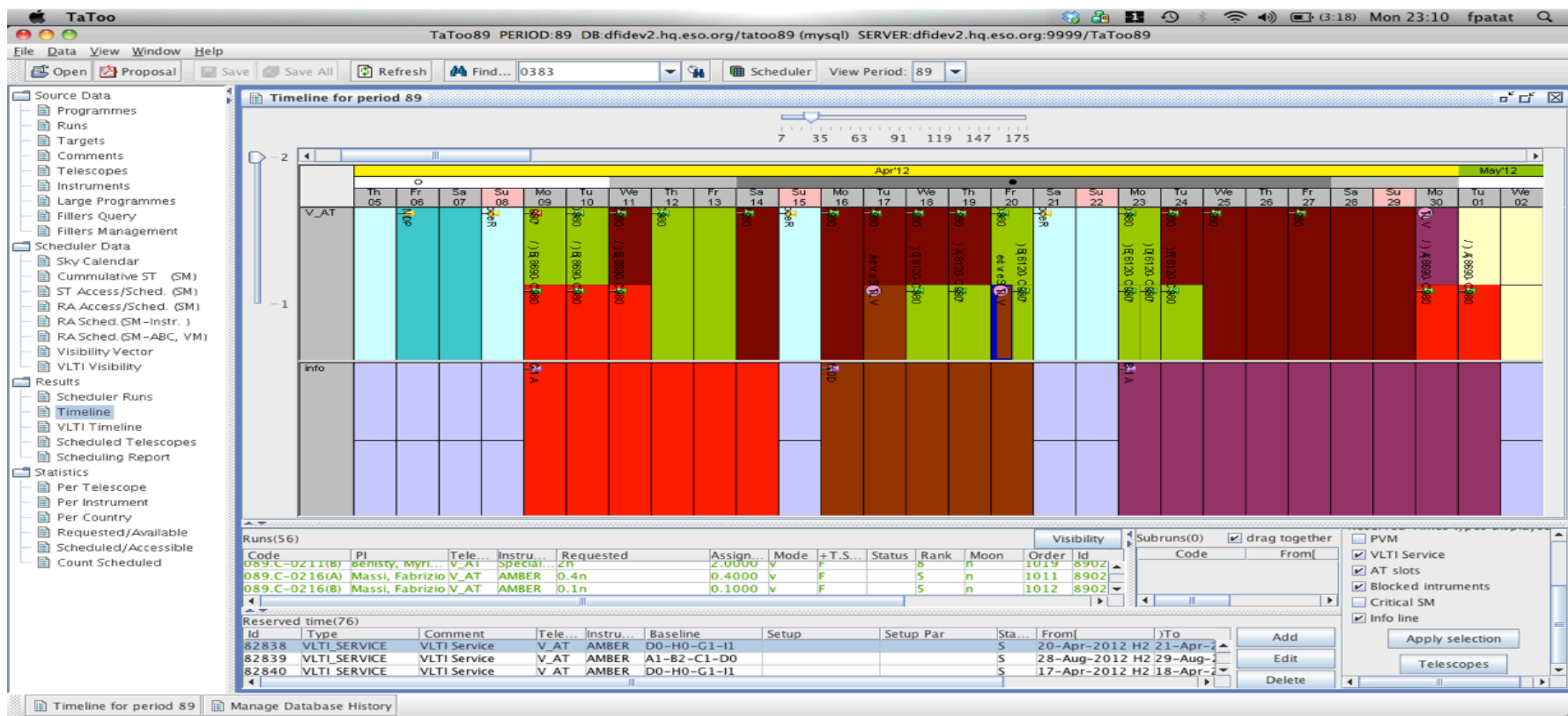
VLT scheduling is an over-constrained problem.  
TaToo(\*) does not solve it. **This is done by HAND!**

(\*) Time Allocation **TOOL**



# V\_AT scheduling

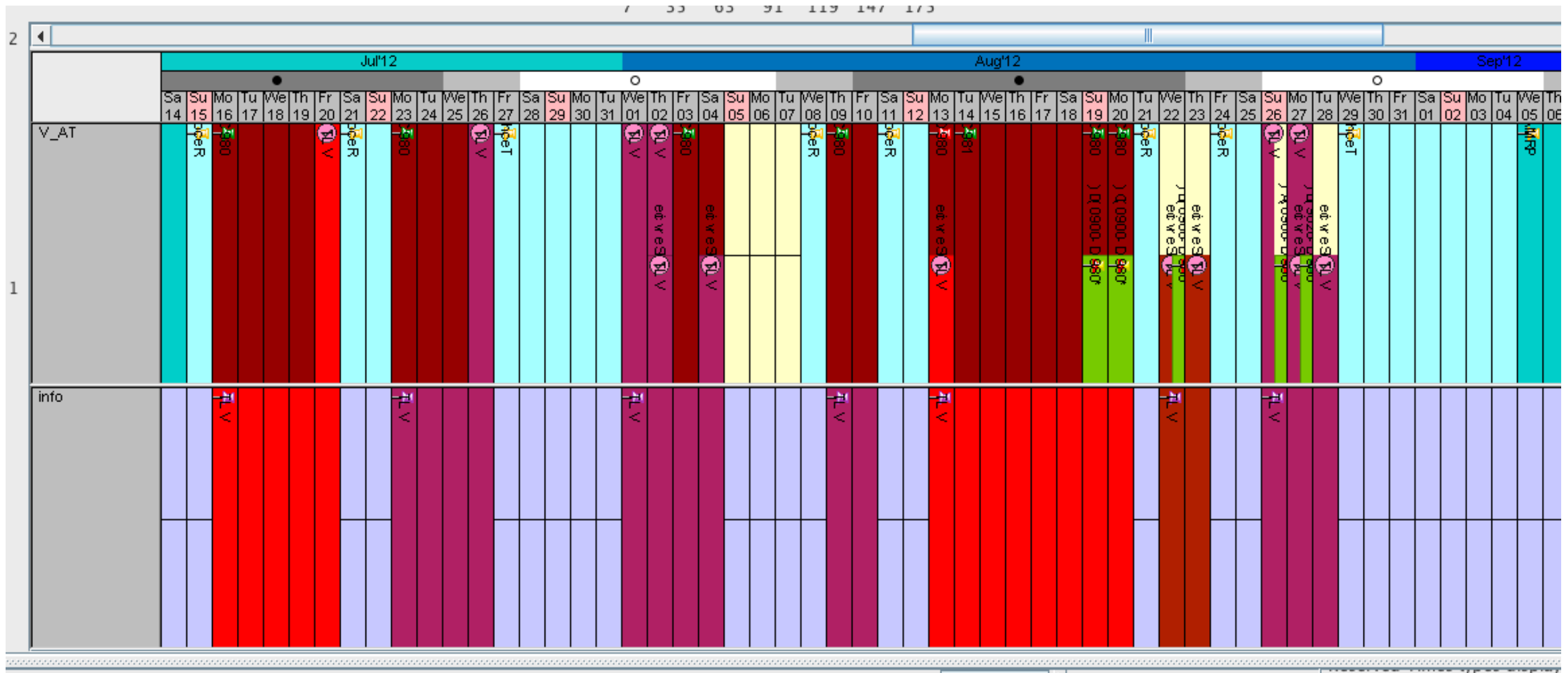
- Time distribution/RA bin/Baseline (down the rank)
- Review of V\_AT Technical Feasibility
- Creation of tentative V\_AT slots
- Scheduling VM V\_AT time critical runs
- Scheduling of VM V\_AT remaining runs





# V\_AT scheduling/2

- Check baseline allocation (and correct)
- Schedule V\_AT SM
- Check V\_AT potential idle time



# Open Issues on the Scheduling Side

- inadequate accounting of Visibility (u-v plane)
- no inclusion of ST constraints (missing in the proposal form)
- lack of an algorithm for automatic baseline distribution (less easy than it seems, but one may think about it...)
- There is no easy way for using “alternative” baseline configurations in case the first choice is not available. In the present system, unavailability of first choice means rejection.

# Open Issues on the PI side/ I

- Too many requests for short amounts of time with different (very often 3) baselines at the ATs.

Typical example:

3x0.5n D0-H0-G1-II + A1-B2-C1-D0 + A1-G1-K0-J3

*In these cases it is normally very difficult to fill in the gaps left by the allocation and this leads to “holes” and to the rejection of other runs that do not fit.*

Let alone the cases in which, in addition, there are time constraints or minimum run separation...



# Open Issues on the PI side/2

- Too many requests for very short amounts of time ( $0.2n-0.3n$ ), in some cases spread across many consecutive nights with the same baseline. The problem is more severe for VM.
- In many cases the PIs submit [un-necessarily] targets that are more suitable for the next period (RA-wise). This produces artificial pressures at the period edges and decreases the scheduling flexibility.
- There is not enough request for FILLER runs (in SM). This needs to be considered, as it would be very useful to fill the gaps.

# Open Issues on the Observatory side

- The VLT schedule is always hindered by the presence of large technical/reserved slots, which make the scheduling even more complex, and the results even less satisfactory.
- Too much flexibility is offered to the PIs (basically there is no limitation on what a PI can request in terms of time constraints, baselines, amounts of time, ...(\*))
- PIs are often forced to ask for Visitor Mode, because the Observatory requires the presence of an “expert” for running the observations

*(\*) PIs certainly have a different view on this...*

# Nightmares

*It is often stated that the fact that the scheduling process at ESO has never led to catastrophic effects on telescope operations is the demonstration that the system is working well. This may be right (at least on average). However, a closer inspection shows that the quality of the schedule is ensured by a large amount of human intervention.*

*F. Patat (2012)*

- VLT scheduling is a NIGHTMARE, particularly with the ATs.



# Dreams

**Push to Schedule VLTI**

# Ways out?

Since I am not here, I can afford throwing stones into the pond. J.-P. will have to collect the reactions...

- enforce a minimum amount of time in VM, e.g. one night per baseline at the ATs; (STRONGLY RECOMMENDED!)
- enforce pre-fixed baseline slots announced in the Call for Proposals;
- enforce limitations on time-constrained runs
- enable the usage of alternative configs [ \* ], ...)
- have a better scheduling tool, specifically designed for VLTI.

[\*] Not possible in the current system, but we may be able to push for it

# Message to the VLT Community

*The current sub-optimal situation of VLT scheduling is a concern for the community as much as it is for me (and, more in general, for ESO). J.-P. and I have started a joined discussion on what could be done to improve it. This presentation, although probably provocative at times, is meant to stimulate constructive feed-back. I will be glad to sit with J.-P. and consider whatever suggestions and advices you may come up with during the discussion that will follow this session.*

Best regards,  
Nando