



TMT Forum – Washington D.C. – June 2015 – N. Patat & F. Primas

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# ESO in a Nutshell



- Founded in 1962;15 Member Countries (+)
- 4 x 8.2m x 3 foci, VISTA (4m), VST (3.5m), NTT (3.5m/ SOFI-EFOSC2), 3.6m (HARPS), APEX, [ALMA]
- MUSE, KMOS, SPHERE (GRAVITY, ESPRESSO...)
- Two calls per year
- ~900 proposals per semester
- ~750 distinct Principal Investigators
- 3000+ distinct co-Investigators from ~50 countries
- 2000+ nights of request/semester
- Service (queue) and Visitor (classic) mode
- For more, see Patat & Hussain, 2013, Organizations, People and Strategies in Astronomy Vol. 2, Edited by Andre Heck, Venngeist, Duttlenheim (2013) pp. 231-256



## ESO's growth

Number of Proposals/PIs



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#### Clustering around proposals





#### Clustering around proposals





#### VLT oversubscription



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## Are we successful? (\*)



#### (\*) It depends on whom you ask...

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# A variety of proposal types

- Normal (<100h): majority of request
- Target of Opportunity (+RRM)
- Guaranteed Time Observations (GTO)
- Surveys (from special calls for proposals)
- Monitoring programmes (on multiple semesters)
- Calibration programmes
- Large Programmes (>100h, up to 4 semesters at the VLT)
- Director's Discretionary Time (DDT, 5%)
- Distinct review processes





#### Service vs. Visitor request





#### The proposal selection - Now

- The bulk of proposals is reviewed by the OPC in a twopass procedure. Special procedures are in place for special programme types (e.g. Large Programmes). Each panel member reviews between 60 and 80 proposals. OPC members may have to read up to ~100 proposals.
- Public surveys are reviewed by an external panel that gives a report to the OPC, which finally makes a recommendation to the DG.
- The DDT is reviewed by an internal committee that makes a recommendation directly to the DG.

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# The Observing Programmes Committee

- 13 panels, 6 members each (78 referees)
- Load: 60-80 proposals per referee (up to 100 for OPC)
- Primary referee on ~20 proposals
- Pre-meetings grades used for triage
- Final deliverable: ranked list per telescopes
- Panels focus on science
- Technical feasibility run by the Observatory
- Final recommendation submitted to the DG, taking into account ranking and op. requirements.



# Main issues

- Cumbersome recruitment (25-35 new members/semester).
- It is very difficult to cover all fields while fulfilling a set of other requirements (rejections, conflicts, gender, country).
- Heavy load on reviewers (4 weeks to read and grade all assigned proposals). Triage (bottom 30%) has helped.
- Most frequent criticism: the level of comments is not adequate.
- Issues are inherent to the peer-to-peer concept
- Similar at other facilities observatories
- Unless we choose a 'random' approach ...

We want to make sure that the best science cases are sent to our telescopes.





# It is difficult to move on... but we need to...

- Within the peer-to-peer paradigm (P2P<sup>2</sup>), alternatives were proposed: Merrifield-like, panels plus external experts, distributed revision [journal-like],...
  - All aimed at decreasing the n. of proposals per referee and increasing the n. of referees per proposal (beat with statistics the lack of expertise).
  - Some variations being tested (e.g. Gemini)
- Outside of the  $P2P^2$  there is not much one can think of:
  - > A. Random selection (less easy than you would think)
    - Markov chains may help, but the system needs to be able to judge whether the proposal makes sense or not → hybrid approach (PI chooses for P2P<sup>2</sup> or random)

B. Submission restrictions (min. time, max. n. of proposals per country, ... less popular than you would hope)



# Should ESO steer or be steered?

- Although we may want to keep a fraction for the short brilliant proposal, we may want to move towards a different approach.
- Should we aim at major breakthroughs? Can we achieve them with a myriad of small allocations?
- Shouldn't we rather encourage larger projects?
- The other question to ask: Is the request so fragmented because this is what the community wants or is it because they have the impression that is the only way to get time?



#### Time request distribution





#### Time request distribution/2



# Since the start of VLT operations we have given one night to each of the 10000 Members of the IAU



# Beyond proposal selection

- Win inertia? Open a continuous submission channel (on top of a annual/bi-annual channel)?
- The publication delay is large. Astronomers do not seem to be in a hurry. But maybe it is the other way round and we are hindering fast publication (loss of interest, aging of ideas, loss of competitiveness, ...).
  - Not sure this would help, but we have never really tried. For the DDT channel (duty cycle ~2 weeks) 50% of the papers are published within 1.5 years. Can we do better than this?



### The crazy channel

- All TACs tend to be conservative, and prefer to give time to programmes that promise certain and possibly mild scientific return than risky and probably extraordinary return. Especially if they require large amounts of time.
- There should exist a non negligible fraction of time, fully reserved to crazy ideas that would never pass any TAC, under the direct control of a few people, external to ESO and to the OPC.





# The Time Allocation WG

- As part of the scientific prioritization of ESO, Rob Ivison has asked FPA to chair a Time Allocation Working Group (TAWG).
- TAWG being formed. Possible members are most likely in this room today. Beware.
- ToR: analysis of possible scenarios to change the time allocation process at ESO, also considering radical solutions.
- The TAWG mission will be set as a research project, which may require experiments.



# The E-ELT Era

- Operationally, yet [just] another telescope, but...
- Does it make sense to have the majority of time allocated in small chunks?
- Shouldn't it be run more like a particle-physics facility? Few big experiments.
- Still, there should be room for exploratory/risky expeditions...

