EUROPEAN ORGANISATION FOR ASTRONOMICAL RESEARCH IN THE SOUTHERN HEMISPHERE

FOR APPROVAL

SCIENTIFIC TECHNICAL COMMITTEE

88th Meeting

ESO, Garching, October 25-26, 2016

DRAFT MINUTES
Draft Minutes of the 88th meeting of the Scientific Technical Committee (STC) held at ESO, Garching on 25 and 26 October 2015.

The STC convened with the following composition:

**Chair:** S. Feltzing (Sweden)

**Members:**
- A. Alonso-Herrero (Spain)
- A. Finoguenov (Finland)
- P. Jáchym (Czech Republic)
- J. Jørgensen (Denmark)
- F. Kerschbaum (Austria)
- A.-M. Lagrange (France)
- A. Moitinho (Portugal)
- N. Nagar (Chile)
- L. Origlia (Italy)
- F. Pepe (Switzerland)
- G. Pietrzenski (Poland)
- I. Smail (United Kingdom)
- E. Tolstoy (The Netherlands)
- H. Van Winckel (Belgium)

**Members at Large:**
- R. Akeson (United States of America)
- W. Couch (Australia)
- J. Monnier (United States of America)
- E. Schinnerer (Germany)
- G. Wright (United Kingdom) Via VC

**Excused:**
- M. Perez Diaz (Brazil)
- M. Steinmetz (Germany)

**On behalf of the ESO Executive:**
- T. de Zeeuw
- P. Andreani (Day 1)
- R. Brunner (Day 1)
- M. Casali
- M. Cirasuolo
- C. De Breuck (Day 1)
- F. Delplancke
- R. Ellis
- E. Emsellem
- P. Geeraert
- J. C. González (Day 1)
- G. Hechenblaikner (Day 1)
- N. Hubin
- R. Ivison
- A. Kaufer

**Minutes:** R. Visser
25 OCTOBER 2016

1. **Opening of the Meeting and Adoption of the Agenda (STC-575)**
   The agenda was adopted without comments.

2. **Approval of the Minutes of the 87th STC Meeting (STC-574)**
   The minutes were approved without comments.

3. **Report of the Director General**
   The Director General was thanked for his report.

   R. Akeson asked for an update on the membership status of Brazil. Due to the delays, was there any danger that ratification by the Brazilian parliament had to take place once more?

   The DIRECTOR GENERAL replied that the treaty had to be signed by Brazil's President. There was no need to go back to parliament. ESO supported Brazilian scientists in their efforts to engage with their government. Meanwhile, ESO has moved ahead as planned with Phase 1 of the ELT. ESO would be able to afford Phase 2 if and when Brazil joined, or if another country with an economy of sufficient size joined.

   A.-M. Lagrange asked if any interesting contract options remained for Brazil, seeing that several big contracts for the ELT had already been signed.

   The DIRECTOR GENERAL replied affirmatively.

   S. Feltzing asked for details on the collaborations between ESO and ESA.

   R. Ivison answered that there was a formal exchange of letters regarding the PLATO mission between ESO's Director General and ESA's Director for Science, as well as discussions relating to the Euclid mission. There would have been an observer from ESA at this STC meeting but it overlapped with their Space Science Advisory Committee (SSAC), where R. Ivison in turn would have been present as an observer. There had been a meeting of the coordination board approximately two weeks ago, which had established the formation of three subcommittees to further guide ESO-ESA collaborations, one each for science, technical matters, and for communication, each with three members from ESA and three from ESO.

   A question from F. Pepe regarding CTA was deferred until after agenda item 5.

   R. Akeson asked if the partners with hosted telescopes at La Silla were charged part of the costs of the infrastructure upgrades.

   A. Kaufer replied that most partners paid a lump sum for the use of the La Silla infrastructure, and part of that sum was used to pay for the upgrades. Partners that used specialized infrastructure, such as advanced IT equipment, were charged extra.

   E. Tolstoy asked if the ELT Phase 2 items listed in the Long-Term Programme were ordered by priority. For example, given a choice between the LTAO module and the inner ring, what would get funded first?

   The DIRECTOR GENERAL answered that ESO had a list of priorities for Phase 2. The priorities were being revised as needed based on recent developments, such as the
unexpected early connection to the Chilean power grid. Decisions on the LTAO module and the inner ring could be postponed for now, providing ESO with additional time to search for funding. The PST would re-assess the Phase 2 scientific priorities in early 2017.

S. Feltzing asked if the instrument PIs in the PST included the PIs of MOS and HIRES.

M. Cirasuolo replied that this was not the case, as the PST included only the PIs of the instruments approved for construction.

4. **Budget and Forward Look (R. Brunner) (Cou-1688)**

R. Brunner was thanked for her report.

I. Smail asked whether 4.5 M€ of management savings was achievable.

R. Brunner acknowledged that it would be challenging. Intended savings of 3 M€ had always been achieved in the past. Options for additional savings lay in postponing certain personnel recruitments or in benefits from exchange rates. ESO would re-consider the amount of savings, if new sources of income were found.

A question from A.-M. Lagrange regarding the budget for technology and development was deferred until after agenda item 7c.

F. Pepe asked what would happen if the exchange rate for the Swiss franc turned out to be different than the assumed rate of 1.20.

R. Brunner replied that it would put some pressure on the budget. ESO had mitigated the risks from the Swiss Franc by adopting a euro-based pension scheme for new personnel and by adjusting the calculation of the average exchange rate for existing personnel.

I. Smail noted that the staff budget for the Supernova seemed very modest.

R. Ivison commented that a higher budget would no doubt have resulted in questions as to why ESO was spending a lot of money on something that was not part of ESO’s primary mission. The Supernova would require a large volunteer effort to exploit the investment made so far, and the dedicated staff member appointed to date had a strong track record in recruiting such effort, as well as in exploiting the “educational multiplier” by which teachers could be brought to the Supernova at modest cost, each returning to their Member State to pass the message to hundreds or thousands of pupils.

S. Feltzing asked how the upcoming retirement of P. Bristow would affect the Directorate for Science.

R. Ivison answered that he had several strategies in place to minimize disruption.

5. **CTA (Director General) (Cou-1694*)**

The Director General was thanked for his report.

5a. **Discussion**

F. Pepe asked what the basis for the reimbursement of the full operational costs was.

The DIRECTOR GENERAL emphasized that the reimbursement only concerned operations on-site at Paranal. A. Kaufer added that the CTA Partnership had prepared a budget based
on the operations plan but the reimbursement would ultimately be for the actual costs made on site. The 10% of observing time for the ESO member states was considered a hosting fee.

F. Kerschbaum asked if the reimbursement would also cover the hiring of new personnel.

The DIRECTOR GENERAL replied affirmatively.

F. Pepe asked if the reimbursement would include overhead costs.

The DIRECTOR GENERAL answered that the reimbursement would be, as much as possible, a fair representation of actual costs incurred by ESO.

R. Akeson asked if the CTA Partners had identified the sources of operations funding, and if construction would be allowed to start before operations funding was fully secured. ESO’s reputation might suffer, if the project was cancelled partway through the construction phase due to insufficient operations funding.

The DIRECTOR GENERAL replied that he was not privy to details of how the CTA Partners would secure operations funding. He acknowledged the risk to ESO’s reputation but noted that the CTA Partners would equally suffer reputational damage, if they abandoned a project hosted on another organization’s site.

I. Smail asked whether ESO or CTA came up with the operations budget and to what extent the budget was split between CTA North and South.

A. Kaufer replied that both organizations prepared budget estimates, which were very similar. The CTA’s estimate was based on a much more detailed operations model than ESO’s estimate. The DIRECTOR GENERAL added that ESO did not know how the CTA Partnership would distribute its overall budget between the two sites. From ESO’s point of view, the CTA would be a Supplementary Programme with a separate budget line, balancing CTA South operations against the reimbursement from the CTA Partnership.

A. Finoguenov noted that the CTA offered many exciting opportunities. The synergy with the 4MOST cosmology programmes was of particular interest.

A.-M. Lagrange asked who would pay for dismantling the telescopes once the project ended.

The DIRECTOR GENERAL replied that the CTA Partnership would do so.

F. Pepe asked how the 10% of observing time for the ESO member states would be allocated.

The DIRECTOR GENERAL answered that the CTA Partnership would employ a centralized TAC, through which the highest-ranked ESO proposals would receive 10% of overall time. This was similar to how ALMA observing time was budgeted between the respective partners.

I. Smail asked if CTA would be a completely separate item in ESO’s budget, or if it would be part of the Paranal budget.

The DIRECTOR GENERAL replied that the CTA would be a separate budget item as a Supplementary Programme, even though operationally it would be part of Paranal.

S. Feltzing noted that the CTA Partnership intended to start observations before all telescopes were built, and asked how likely it was that all telescopes would ultimately be completed. How would the sensitivity be affected, if only a subset of telescopes was built?
The DIRECTOR GENERAL answered that it was up to the CTA Partnership to decide on the ultimate number of telescopes. A. Kaufer added that the 240 M€ threshold for construction ensured a large enough number of telescopes to do transformational science. The CTA Partnership had prepared a detailed transition plan on how to add new telescopes while operating the ones already in place. If the CTA did not reach the threshold science capabilities, then an exit clause in the contract allowed ESO to re-negotiate the hosting plan or to opt out entirely.

6. **ALMA-related business**

6a. **APEX extension (A. Kaufer) (STC-577*)**

A. Kaufer was thanked for his report.

6b. **Discussion**

L. Origlia asked if the investments in APEX would have an impact on the ALMA development plans.

A. Kaufer replied that there was no formal link between the APEX and ALMA development programmes but in practice, ALMA benefitted from testing of new technologies on APEX. C. De Breuck offered the new sideband-separating Band 9 receiver as one such example: it would be implemented first on APEX and then hopefully on ALMA. The Band 5 receivers, currently being integrated on all ALMA antennas, were also first available on APEX. W. Wild agreed that ALMA benefitted strongly from having APEX as a testbed for new technologies.

R. Akeson asked if the data from the PI instruments were archived in raw or reduced form.

C. De Breuck replied that the goal was to have all data archived in reduced form. However, for new instruments such as A-MKID, it took a while before the reduction software converged to a point where it was useful to archive the final products.

S. Feltzing asked if MPIfR was likely to reduce their proprietary period from three years to one year.

A. Kaufer replied affirmatively, assuming a mutual level of trust could be established.

I. Smail emphasized that the cost to completion of 65 M€ was spread across all APEX partners, of which ESO’s share was about 30%.

**Off agenda**

To fill the time until lunch, R. Ivison presented some possible itineraries for the upcoming STC meeting in Chile in April 2017.

6c. **ALMA operational status, incl. construction, maintenance, time allocation (W. Wild)**

W. Wild was thanked for his report.

I. Smail asked why the processing time at JAO had jumped by 30 days from February to March.
P. Andreani replied that this was due to the start of Cycle 3 pipeline processing and the need to re-image a large number of old datasets.

R. Akeson asked for more details on the actions presented to reduce the data delivery backlog. Which solutions were short-term and which ones were long-term? Was the move of the pipeline processing and review from JAO to the ARCs a temporary solution? There was a danger that that move could become permanent, if it was successful in reducing the backlog.

W. Wild replied that the re-organization at JAO would be implemented on the very short term. The two extra FTEs at ESO could be advertised immediately. However, he first wanted a commitment from the North American and East Asian partners that they would also hire new staff. Moving part of the pipeline processing to the ESO ARC had already been done, for testing purposes. To do significant processing would take at least a few months as new hardware had to be purchased. If JAO wanted to make that a permanent move, then some of their budget should be re-distributed to the ARCs. The mid- and long-term plans depended on how efficient the imaging pipeline would be and how much manual effort would still be needed. In the long term ALMA management might also have to re-assess what type of data product they wanted to deliver to the PIs.

R. Akeson noted that JAO had no users committee. So users could only communicate with JAO through the ARCs. That lack of direct access led to frustration within the community. She asked how the implementation of the aforementioned plans would be checked, given that the interval of six months to the next STC meeting was too long to go without review.

W. Wild answered that the process would be reviewed during a meeting of all stakeholders in January 2017. The ASAC meeting in February 2017 would provide additional checks. A full review of all actions was scheduled for December 2017.

F. Kerschbaum asked what ESO’s position on the delivery of raw data to PIs was.

W. Wild replied that that question was continuously being discussed among the ALMA partners. Delivery of raw data would mean a shift in paradigm because ALMA had promised at the beginning that it would provide science-grade products to every PI. If raw data were delivered and the ARCs still provided full support, then the overall workload for the ARCs could increase from what it was at that moment.

R. Akeson noted that the delivery time had only gotten worse over the last year. Some PIs had partially-delivered data that had become public before they received the rest of their data.

W. Wild acknowledged the severity of the situation. ALMA's goal was to deliver data within thirty days. The bottleneck was the processing time at JAO.

E. Schinnerer asked how long it would take for the backlog and the delivery time to be reduced to acceptable levels. If the situation had not improved before the proposal deadline in April, there could be a lot of potentially unnecessary re-submissions.

W. Wild answered that the goal was to get rid of the backlog in less than a year but it would still get worse in the few months to come before the aforementioned actions would take effect. The DIRECTOR GENERAL added that the backlog and delivery timescale would be discussed at the next ALMA Board meeting, where ASAC could exert further pressure on JAO.

I. Smail asked how many FTEs at JAO were involved in data processing at that moment and how many FTEs would be added by the proposed solutions.
W. Wild and M. Zwaan replied that the team consisted of about ten people. However, they got assigned so many additional tasks that they only spent 28% of their time on data processing. Effectively, this was about three FTEs. The proposed solutions, including better management of these ten people, would add about nine FTEs for a total of twelve.

6d. ALMA development, incl. long-term plans, future projects, B5 update, recommendation for studies (L. Testi) (STC-578*/STC-582*/STC-583)

L. Testi was thanked for his report.

I. Smail asked what the budget for the various development studies was.

L. Testi replied that the budgets ranged from 10 k€ for the digital front end to 150 k€ for the MMIC LNAs. The other project studies were in the 80-100 k€ range.

J. Monnier asked what wide-field imaging meant for ALMA.

L. Testi answered that it could be either a large single-dish antenna with panoramic detectors or multi-beam receivers for interferometry.

6e. Report from ESAC (E. Schinnerer)

E. Schinnerer was thanked for her report.

There were no questions or comments.

6f. Discussion

H. Van Winckel asked if ALMA was already performing solar observations.

L. Testi and P. Andreani replied that the solar mode had been commissioned and science verification data had been obtained. PI observations for Cycle 4 would start in December 2016.

7. E-ELT-related business

7a. E-ELT project overview (R. Tamai)

R. Tamai was thanked for his report.

E. Tolstoy asked how the change request process worked. For example, why were the change requests for M4 rejected?

R. Tamai replied that change requests were classified as minor or major. For M4, the contractor wanted a different way of accepting a verification method but ESO decided not to grant that request.

A follow-up question from E. Tolstoy on the weight of the instruments was deferred until after agenda item 7b.

A. Finoguenov asked why the scheduled loan re-payment date had changed from 2026 to 2030 and if ESO would like a scientific recommendation on the benefits of various re-payment schemes.
The DIRECTOR GENERAL replied that the date of 2026 reported a year and a half ago was based on information available at that time. Current circumstances favoured a later date of 2030. Details of the loan remained to be discussed with the Member States. The suggested scientific recommendation was not yet needed because R. Tamai and M. Cirasuolo first had to finish their internal review of the impact the lacking of Phase 2 items would have.

F. Pepe asked if the co-phasing of the M1 segments was completely mastered and how long it would take for complete co-phasing, if one started from scratch.

R. Tamai answered that the co-phasing was indeed completely mastered. The baseline also covered how to deal with missing segments due to maintenance. J. Gonzalez added that co-phasing from scratch would take very long but normally that would not happen. On-sky phasing updates would take about half an hour every two weeks.

7b. **E-ELT science and instruments update (M. Cirasuolo)**

M. Cirasuolo was thanked for his report.

E. Tolstoy asked what happened if all instruments were overweight. Could the Nasmyth platform be strengthened?

M. Cirasuolo replied that further strengthening of the platform was very difficult. The current design allowed for some extra instrument weight but obviously not a factor of three. HARMONI appeared to be within 5% of its design limit. J. C. González clarified that a significant fraction of MICADO’s weight was due to the interface structure to the platform. The instrument team was looking at re-design options. The weight allocations were based on the Phase A studies and it was unlikely that all three instruments went over the weight budget by as much as MICADO’s current estimate.

F. Pepe asked why all three first-light instruments were put on the same platform.

The DIRECTOR GENERAL answered that doing otherwise would require a second pre-focal station, for which money was not available. J. C. González noted that the main structure was designed to handle one empty and one fully populated platform.

A. Finoguenov noted that MAORY was designed to support a second instrument and asked what instrument that would be.

M. Cirasuolo replied that that remained to be decided. MOS and HIRES were not compatible with MAORY’s second port but perhaps the sixth instrument would use it.

G. Wright noted that some of the instrument designs considered AO to be part of the instrument. In the longer term, would it not be better to separate out the AO and standardize it for broader use?

M. Cirasuolo answered that that was essentially why MAORY was designed to serve two instruments. The current AO designs already strived for a maximum of standardization through the use of common modules, such as the real-time computing and the cameras. The wave-front sensors had to be optimized for each instrument’s science case.

A.-M. Lagrange asked if there was room in terms of space and weight to connect a second instrument to MAORY.

M. Cirasuolo replied that space was no problem and the weight depended on how heavy the other instruments ended up being.
7c. **Technology development update (M. Casali)**
M. Casali was thanked for his report.

A. Finoguenov asked if future ELT instrumentation would benefit from these developments.

M. Casali replied that the laser work and the wave-front sensing cameras were essential for the first generation of ELT instruments. Other developments, such as the scientific detectors, would be of benefit in the longer term.

7d. **Report from the E-ELT Subpanel (A.-M. Lagrange)**
A.-M. Lagrange was thanked for her report.

M. Cirasuolo noted that the obscuration was on the order of 15 to 30%.

7e. **Discussion**
L. Origlia asked if there was a cost estimate for the second pre-focal station, as needed for MOS and HIRES.

R. Tamai replied that there was an estimate based on building a replica of the first PFS but the final cost would be higher, if HIRES and MOS required a different PFS.

L. Origlia suggested that the HIRES and MOS consortia were involved in future discussions together with the STC and PST.

M. Casali replied that ESO would meet with the PIs in February or March 2017 to discuss alternative funding and other matters.

F. Pepe asked what the impact on the first three instruments would be, if the ELT was initially constructed without the inner ring and LTAO module.

M. Cirasuolo answered that ESO had just started looking into that option. A preliminary report was expected in half a year and a full report in one year.

The DIRECTOR GENERAL emphasized that Phase 1 represented 90% of the ELT and the project was on track for first light in 2024. Even without Phase 2, there was plenty of reason to be optimistic. Performing a broad-brush analysis of the impact of starting operations without the LTAO and inner ring was a good idea but until it was certain that those and other Phase 2 items would not be available for first light, it would be a waste of resources to come up with detailed plans. ESO still had a couple of years to explore options for extra funding to build the inner ring before 2024.

26 OCTOBER 2016

8. **LSP-related business**
8b. **LPO Operations (A. Kaufer)**
A. Kaufer was thanked for his report.
S. Feltzing asked on what timeline INAF would decide when to go forward with SOXS beyond Phase A. Would the PDR be ready by July 2017?

L. Pasquini replied that the Phase A study would take about one year, after which INAF would consider the next step. Phase A would be ready in July 2017 and not the PDR.

E. Tolstoy asked if the impact of small hosted projects on site operations had been smaller or larger than expected.

A. Kaufer answered that such small projects barely had an impact on operations at Paranal. Individual hosted projects at La Silla had an equally small impact, although cumulatively they represented a considerable effort. ESO was, of course, compensated for that.

F. Pepe asked if the new web-based OB tool could be developed further into a tool to allow remote observations.

A. Kaufer replied that it might be possible and some prototype projects were underway to study options for remote observing. S. Mieske added that ESO was developing a tool to allow screen sharing from Paranal to anywhere in the world, which would be demonstrated to the Users Committee in May 2017. The DIRECTOR GENERAL noted that remote observing was also discussed in the long-term plan.

8c. Paranal instrumentation update, incl. 4MOST status (L. Pasquini) (Cou-1681)

L. Pasquini was thanked for his report.

J. Monnier asked what the scientific or operational impact on 4MOST would be, if the third spectrograph was not funded.

L. Pasquini replied that the main impact would be a longer survey time of seven instead of five years.

F. Kerschbaum suggested that some effort was being made to reduce fringe tracking on MATISSE and PIONIER to enable better observations of highly resolved objects.

A.-M. Lagrange asked how long the fringe tracker on GRAVITY and MATISSE would be frozen.

L. Pasquini answered that the current plan was to use GRAVITY for fringe tracking on MATISSE. A. Mérand added that fringe tracking on resolved targets had been disappointing up to then in GRAVITY science verification but since that was also important for some GTO projects, the consortium was motivated to find improvements. For any other applications, apart from stellar surfaces, the fringe tracking was working and GRAVITY had produced nice data sets for the science verification.

A.-M. Lagrange asked if the laser frequency comb on ESPRESSO would be ready on time, and what backup plan existed, if it was not ready on time.

L. Pasquini replied that he had to keep expectations low as up to then the company had failed to deliver what ESO wanted. There were some questions about the durability of the photonic crystal fibres produced from the initial type of glass. So ESO would work with the company to test fibres from a different type of glass. The latest fibres installed on HARPS worked fine but were not durable enough for standard operations. ESPRESSO had an intermediate solution with the thorium-argon lamp and the Fabry-Pérot etalon that gave good precision but limited accuracy.
A.-M. Lagrange asked what the ratio between participating and non-participating community surveys on 4MOST was.

L. Pasquini answered that he did not know a priori.

E. Tolstoy asked what the status of CUBES was and whether an upgrade of UVES could provide the same functionality.

L. Pasquini replied that UVES would never be as sensitive as CUBES and CUBES would never have the resolving power of UVES.

R. Ivison introduced A. Mérand as the new VLTI Programme Scientist, taking over from J.-P. Berger.

8d.  **Report from the LSP sub-panel (J. Monnier)**

J. Monnier was thanked for his report.

8e.  **Discussion**

A.-M. Lagrange asked what impact the Breakthrough Initiative would have on LSP staff and on instrument availability and what technological developments were expected.

The DIRECTOR GENERAL replied that the combination of VISIR with AO would be a one-time experiment on α Cen, budgeted from Director’s Discretionary Time. The data would be made public. A. Russell added that the ESO scientists involved in the Breakthrough Initiative were doing that in their own research time. A lot of work was being outsourced and reimbursed directly through a contract to minimize the overall impact on operations.

F. Pepe asked what kind of planet could be detected, if the project performed according to plan, and whether the same experiment could be done on SPHERE.

M. Casali replied that it would be a planet of two Earth radii orbiting at 1 AU around α Cen A.

A. Kaufer noted that ESO treated that project as a visitor instrument. ESO had to move VISIR but moving instruments was a routine part of operations. M. Casali added that the project would also reap several technological benefits for the ELT and its instruments, such as testing the Aquarius detectors for METIS.

9.  **Working Group reports**

9a.  **MOS working group (R. Ellis) (STC-579)**

R. Ellis was thanked for his report.

9b.  **Discussion**

J. Monnier asked if the facility making the segments for the ELT could be leveraged for the proposed spectroscopic survey telescope.

R. Ellis replied that it was considered but the timing would be problematic unless the facility was fast-tracked and construction began in the early 2020s.

E. Schinnerer asked if synergies with ESO’s other facilities were planned.
R. Ellis replied affirmatively, especially in the field of large extragalactic surveys. Wide-field spectroscopic surveys around deep fields observed by ALMA would enable a comparison between the large-scale structure and ALMA detections. In the future, such synergies could extend to include SKA and Athena. A wide-field sub-mm telescope would allow for further synergies.

E. Schinnerer suggested the galactic structure in the Milky Way as another example of possible synergies.

A. Finoguenov noted that the LSST faint transient programme was just included as a survey for 4MOST.

R. Ellis replied that the Working Group report discusses the complementarity of 4MOST and a future MOS facility in the field of transient science. For example, in supernovae, the proposed facility would enable important studies well beyond the redshifts accessible with 4MOST.

W. Couch asked if the US community was pursuing any concept designs in response to the report by Najita et al.

R. Ellis answered that that report listed three options: buy into Subaru PFS, upgrade Gemini with a wide field capability or set up an international partnership. ESO’s study was mentioned following the third option. It was unlikely that the NSF had funds available for its own LSST follow-up facility.

J. Monnier acknowledged that the NSF would likely not be able to fund a follow-up project without an international partnership. The report from Najita et al. (sponsored by NOAO) was one of several efforts. The Department of Energy was broadening its interest, as evidenced by their support for the Dark Energy Spectroscopic Instrument (DESI), and some members of the US optical/IR community were lobbying the DoE to sponsor a larger follow-up project. However, the DoE (Directorate of Engineering) was more likely to fund the next generation of CMB experiments.

9c. Data Management working group (M. Romaniello) (STC-580)

M. Romaniello was thanked for his report.

9d. Discussion

R. Akeson noted that PIs predominantly downloaded raw data rather than reduced products, and asked if the reverse was true for archive users.

M. Romaniello replied that the more complex the raw data were, the more likely archive users were to download the reduced products. A case in point was MUSE.

R. Akeson asked why PIs often downloaded the raw data. Did the ESO pipelines not produce the correct products?

M. Romaniello replied that there was always a lag in PI access to their own data, raw or processed. It had also been noticed that not all PIs were aware of the products. In an effort to publicize the products better, from October 2015 onwards the availability of processed data was being advertised on the run status progress web page. Since then, the access rate had increased by a factor of 2.5.
R. Akeson asked if ESO management would report back to the STC on their response to the Working Group’s recommendations.

R. Ivison answered that it could be done, if the STC so desired.

E. Schinnerer asked for clarification of the term “science-ready products”.

M. Romaniello replied that there were two types of processed data. The first type was where ESO got a product back from the community, specific to a particular science goal, such as redshifts from a redshift survey. The second type was generated internally. ESO processed data across programmes for given instrument modes to a point where the products were useful for a general audience. Additional processing might be needed for specialized science cases. Both types of products were equally popular with users.

E. Tolstoy asked to elaborate on action items 4, 10 and 11.

For action item 4, M. Romaniello answered that the GTO teams were most familiar with new instruments. So making their processed data public would benefit the community at large.

E. Tolstoy agreed but cautioned that the GTO teams might not be willing to do so.

R. Ivison noted that as of a year ago, GTO Large Programmes already had to submit processed data to the archive.

E. Tolstoy noted that GTO was payback to the instrument teams. So it might be unreasonable to ask them to make their data products public.

R. Ivison answered that GTO Large Programmes already had to do so. Whether they and other LPs complied with that requirement was a different matter, which he was currently looking into.

E. Tolstoy repeated her request for elaboration on detailed actions 10 and 11.

The DIRECTOR GENERAL emphasized that the report had been presented on behalf of the Working Group and clarified that M. Romaniello was not speaking on behalf of ESO management. S. Feltzing as a member of the Working Group and M. Romaniello acknowledged that.

M. Romaniello replied to E. Tolstoy that the abstracts for proposals were already publicly available. Detailed action 11 proposed to make the full content of ESO proposals public. That would serve as additional documentation to allow better archival use of ESO data.

F. Pepe suggested that ESO should only process raw data up to the point where all instrumental signatures were removed but not to a further level where the data were analyzed or information was extracted. What level of processing was still part of ESO’s mission?

M. Romaniello answered that both types of processed data were nearly equally requested from the archives, such as the 1D spectra (less processed) and radial velocities (more processed) from HARPS. For public surveys, catalogues were more popular than processed images. ESO’s mission was not to produce its own source catalogues but it did cover the inclusion of such catalogues from the community in the ESO archives.

F. Pepe asked for clarification of the word “ensure” in recommendation 2, which stated that ESO had to ensure the best use of its data.
M. Romaniello acknowledged that. He further replied that “ensure” was meant in the sense of being crucial to ESO’s mission. “Ensure that the conditions exist for an optimal use” was a better wording to reflect the intended meaning.

F. Pepe noted that “ensure” yielded a much stronger formulation than “enable” or “provide support for”.

M. Romaniello replied that “ensure” was meant in the sense of being crucial to ESO’s mission.

A.-M. Lagrange noted that action item 11 seemed unrealistic to achieve in full. Exceptions would be needed for that and many other items, which could lead to a very complex set of rules.

M. Romaniello replied that many exceptions already existed. For example, the metadata describing observations immediately became public, unless the PI was granted an exception by the Director General. Allowing for exceptions as such was not a concern, other than at the practical level of how to implement them.

G. Pietrzynski echoed previous concerns about making abstracts and proposals public, as suggested in action items 10 and 11. At what stage did the Working Group suggest successful proposals were published? He would not like to see his own proposals become public immediately after they had been accepted.

M. Romaniello replied that ALMA abstracts were published immediately after acceptance. Making full proposals public represented a balance between PI and archive interests. Since the intended goal was to facilitate archive use of the data, it seemed appropriate to make proposals public together with the data.

G. Pietrzynski emphasized the difference between publishing the abstracts versus the full proposals.

N. Nagar suggested that a different proposal layout could help, such as ALMA’s method of moving the technical justification to a separate document. This would allow the technical justification to be made public, while the science justification remained private. For archival science, was it possible to re-design the SBs to be packaged into smaller units?

M. Romaniello acknowledged that this was a very good suggestion.

G. Wright asked if the Working Group had considered how to allow for citing processed data in the ESO archives, in addition to citing the corresponding papers.

M. Romaniello replied that ESO in general was looking into how to assign DOIs to archival products, as well as how to cite the documentation belonging to a given data set.

F. Kerschbaum noted that user-provided Herschel data in the ESA archive included citeable documentation.

I. Smail asked what the Working Group expected from recommendation 1 to establish a science data programme on the same level as the observatories.

M. Romaniello answered that the new programme would be devoted to ensuring the conditions for optimal use of the data generated by ESO’s facilities.
I. Smail noted that ESO already provided good support for its data archives. So what exactly was the goal of that new programme? Would it focus on the activities of the current archive team or increase their visibility within the organization?

M. Romaniello replied that the new programme was not meant to foster archive science alone but, more generally, the use of ESO data. As elaborated in the report, scientists would be faced with increasing challenges to manage the data, which the Working Group believed could only be met through a science-driven, user-oriented co-ordination of data activities. Examples included putting together data across different facilities and running a call for proposals to harness the expertise in the community by entering into collaborative arrangements with external parties.


J. Monnier asked for more information on ESO’s new Engineering & Technology Research Fellowship.

M. Casali replied that the new fellowship was aimed at people interested in technical areas, either in the lab or theoretical. It allowed such people to gain experience from ESO’s strong instrumentation programme, while at the same time helping ESO on certain projects. It was meant to complement the existing scientific fellowships.

E. Tolstoy asked what the STC was meant to get out of the DSC fact sheets. It was not always clear why certain pieces of information were included.

R. Ivison replied that the fact sheets provided an overview of what had happened in the DSC over the past six months. In part, they were also a substitute for the DSC report that previously had been part of the STC agenda. Feedback on what the STC would or would not like to see in the fact sheets was welcome.

I. Smail noted that the DSC report was helpful in providing some context and background. He added that the Engineering & Technology Research Fellowship was a very good idea.

The DIRECTOR GENERAL stressed that that fellowship was also meant to decrease the gender imbalance in the DoE.

S. Feltzing thought that it was a good idea.

R. Akeson asked what actions ESO would take following their study of the gender imbalance in observing proposals.

R. Ivison and F. Patat replied that the Working Group on time allocation would present recommendations to the STC in April 2017.

S. Feltzing asked why there were so few applications for the studentship programme and how that number could be increased. Was the studentship not known well enough among supervisors?

E. Emsellem replied that close co-ordination was required between the prospective ESO supervisor and the supervisor from the host university. ESO was trying to streamline that process by making arrangements before the student entered the PhD programme. However, that was difficult because of the differences between the master’s programmes at different universities. Members from ESO’s Users Committee might be able to help co-ordinate between ESO and their own institutes.
S. Feltzing asked why it was so hard to recruit someone for the vacant position of outreach scientist, and whether that person would work at the Supernova or internally at ESO.

R. Ivison answered that the outreach scientist would perform a broad range of outreach activities, including the possibility of some duties in the Supernova. An internal and an external job search had not produced the desired outcome. ESO was now initiating a third search, where the goal was to hire an active research scientist with a proven aptitude for outreach.