

Technical Committee over the period during which Laurent Vigroux and then Xavier Barcons presided over Council. These last three years, I have been one of the two members of Council representing Switzerland — a time during which I could learn the inner workings of the Council and appreciate the exemplary leadership provided by its President Patrick Roche.

I don't think it will come as a surprise to anyone to hear that the organisation is facing significant challenges. These result from embarking on the building of the ELT, the largest telescope ever conceived, while at the same time keeping

the existing world-class observatories (La Silla Paranal Observatory and the Atacama Large Millimeter/submillimeter Array) operational, up-to-date and at the forefront of ground-based astronomy.

The challenges are not solely of a financial nature. Just two examples include finding staff with the specific qualifications needed, and managing large projects across the world. Furthermore, in a financially constrained environment, the workload and the associated stress on everyone, from the Director General to all the staff, including everyone's families, have risen significantly. The Director

General and I are aware of this situation and, together with Council, we will regularly revisit and monitor these issues, including the general work-life balance at ESO, over the coming years.

We have given ourselves fantastic challenges that we now must overcome. We have prepared ourselves to the best of our abilities to tackle them effectively and in a timely manner. With the organisation, the Member States and the community we have assembled a winning team. I am looking forward to working with everyone to continue building this world-leading astronomical organisation.

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Review of the Last Three Years at ESO

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I completed my three-year term as President of the ESO Council at the end of December 2017. This is therefore an appropriate point at which to review Council's activities over this period and to reflect on how ESO's programme has moved forward.

ESO is an evolving organisation, in terms of its Member States as well as its scientific and technical programmes and its organisational structure. Poland became the fifteenth Member State when the formal accession process was completed in 2015. In 2017, Australia entered into a strategic partnership with ESO, providing Australian astronomers with access to the La Silla–Paranal facilities for a decade, whilst opening up the possibility of moving towards full membership in due course. There was also good progress with the accession of Brazil through its parliamentary process in 2015, but the procedures have not been completed.



Working with the Director General, Council sets the policy and strategy for ESO while Council delegates work closely with their ministries, science communities and the ESO executive towards realising the agreed strategy. Council normally meets four times a year, with two formal meetings usually held at the Garching HQ and two less formal Committee of Council

meetings, which are often hosted by a Member State. I am very grateful to the hosts of these meetings, which afford opportunities to meet representatives of the scientific communities and funding agencies, and to learn more about national activities as well as undertaking Council business.

A real strength of ESO is the support and commitment to the programme provided by the Member States, who have agreed not only to fund the ELT construction whilst maintaining the current facilities as forefront scientific instruments, but also to provide support for the technology, instrumentation and science programmes in national institutes and organisations. This support is being provided at a time when many Member States have constrained domestic programmes, and reflects the importance placed on ESO's facilities and the close collaborations with the national communities.

In addition to the Council meetings, I have attended a number of other ESO meetings and workshops and have valued the opportunities that they provide to meet staff and learn more about the extent and depth of ESO's activities. I have especially valued attending the ESO Annual Overview, which reveals the strength and depth of activities across the organisation and the commitment of the staff to excellence.

There are many aspects of ESO's programme to note and celebrate. The ESO press releases, webpages and editions of the Messenger showcase many of the outstanding science results that have been obtained, but I want to highlight a few of them here:

- Commissioning activities of the Very Large Telescope (VLT) second-generation instruments, KMOS, SPHERE and MUSE, have been completed, and are currently ongoing for several others (for example, GRAVITY, MATISSE and ESPRESSO). These instruments equip the telescopes with an unparalleled suite of powerful instruments for astronomical discovery. The ensuing scientific results continue to push our understanding of a wide range of astronomical objects and phenomena. The development of the Adaptive Optics Facility continues to progress, and the introduction of further operational modes will be very important in gaining experience for future developments and operating ESO's Extremely Large Telescope (ELT).
- The modification and development of the infrastructure in the combined

focus of the VLT in preparation for the second-generation VLTI instruments and the Échelle SPectrograph for Rocky Exoplanet and Stable Spectroscopic Observations (ESPRESSO) have been completed. Initial results from the adaptive optics assisted, two-object, multiple-beam-combiner VLTI instrument GRAVITY indicate that precision astrometric measurements that will open up new opportunities are within reach, with new capabilities imminent when MATISSE and ESPRESSO are commissioned.

- The completion of the Residencia for the Atacama Large Millimeter/submillimeter Array (ALMA) and its handover for operations in 2017 marked the completion of ESO's contributions to ALMA construction. The stunning science results obtained to date demonstrate that ALMA is indeed the transformational facility we hoped it would be and that it will meet its design goals. A vision for the further development of ALMA's capabilities over the next decade has been agreed by the ALMA Board; it will lead to greater instantaneous bandwidth and higher sensitivity as a high priority, guaranteeing that ALMA will continue to meet community expectations.
- New instruments for the 3.6-metre and NTT telescopes at La Silla have been selected, securing their futures for the next decade and ensuring that La Silla remains the natural place to host national facilities and experiments.
- The education and Public Outreach programmes have continued to showcase the output from ESO's observatories and to encourage participation in science and technology. A very visible sign of this activity is the Supernova Planetarium & Visitor Centre. The building has been completed and the exhibits are now being installed in preparation for operation in 2018. The Supernova building resulted from a very generous donation by the Klaus Tschira foundation and is a landmark facility that will further extend ESO's reach.
- Following approval of the first phase of the construction of the ELT by Council at the end of 2014, ESO has moved forward with contracts for the infrastruc-

ture and the major optical and mechanical structures of the telescope. At the same time, Council has maintained the momentum of the project by agreeing a schedule with first light in 2024 and adding all of the primary mirror segments to the approved first phase of the telescope. The ELT is a very challenging project, but progress to date has been impressive. Council is fully supportive and is looking forward to the beginning of the site works on Cerro Armazones early in 2018.

There have been many other achievements, including instrument upgrades, anti-obsolescence programmes, software developments, upgrades to administrative processes, amendments to procurement rules and staff benefits and regulations, approval and monitoring of budgets, and interactions with potential new Member States and other institutes and organisations around the world. All of these activities are essential in underpinning ESO's mission to provide front-line observational capabilities and to foster cooperation in astronomical research. They rely on the talent, dedication and hard work of many people at ESO and at institutes and organisations in the Member States and beyond, as well as the support and cooperation of the Republic of Chile.

I would like to take this opportunity to thank everyone who has contributed to ESO's outstanding programme over the last three years. I have worked closely with many dedicated people and have benefited greatly from their support and advice. Tim de Zeeuw completed his ten-year mandate as Director General at the end of August 2017. This occasion was marked by a conference that highlighted ESO's achievements over the last decade. It was a truly impressive account of ESO's activities and its position as the world's leading observatory, as well as Tim's contributions to that. Xavier Barcons has taken over as Director General and is working hard to ensure that ESO's programmes remain on track and that the organisation continues to perform at the highest level.

I am delighted that Willy Benz has taken on the role of Council President, and I believe that the ESO programme is in good shape as well as in very good hands.