Project progress

The HAWK-I project completed its Final Design Review on November 17th 2004, and is now entering the main manufacturing phase, although procurement of some long-lead time items, such as optics and detectors, has been underway for some time. The beginning of assembly and integration should be in September this year, leading to a Preliminary Acceptance in Europe in mid-2006, and Provisional Acceptance Chile at the end of 2006.

HAWK-I as a first-light Instrument for a VLT adaptive secondary mirror

ESO is currently studying the possibility of equipping HAWK-I with a Ground Layer Adaptive Optics (GLAO) system called GRAAL (Arsenault et al., 2004). Of course an AO correction over the 7.5 arcmin field of view will not deliver diffraction limited images. But as a minimum requirement, the Adaptive Optics must reduce the 50% encircled energy diameter by 15% in Y and 30% in Ks band, when the natural seeing is 1 arcsec. The ultimate goal of the AO system is to correct the atmospheric turbulence such that the instrument resolution becomes the limiting factor. That is, the Adaptive Optics system will provide the equivalent image quality to 0.2 arcsec seeing. This would impact virtually all observing programmes with better sensitivity and spatial resolution.

The feasibility of a deformable secondary mirror and laser system for the VLT is currently being investigated. The results of this study, as well as the operational impact of such a facility, will be reviewed in the third quarter of 2005, with a decision to proceed with the development, including laser tomography, to be taken possibly at the end of 2005. Although a GLAO capability would come well after HAWK-I commissioning, the requirements for AO have been incorporated into the HAWK-I design already. These include allowing sufficient weight budget and space between the cryostat window and instrument rotator for an AO module. Tip-tilt correction must be done with natural guide stars, and options exist to use either the on-chip guide star mode of the Hawaii-2RG detectors, or to have a separate NGS pickoff ouside the instrument. A Conceptual Design Review for the HAWK-I AO was held the day after the HAWK-I instrument PDR in December 2004.

References

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ESO's Two Observatories Merge

On February 1, 2005, ESO merged its two observatories, La Silla and Paranal, into one. This move will help ESO to better manage its many and diverse projects by deploying available resources more efficiently where and when they are needed. The merged observatory will be known as the La Silla Paranal Observatory.

Catherine Cesarsky, ESO's Director General, commented on the new development: "*The merging, which was planned during the past year with the deep involvement of all the staff, has created unified maintenance and engineering (including software, mechanics, electronics and optics) departments across the two sites, further increasing the already very high efficiency of our telescopes. It is my great pleasure to commend the excellent work of Jorge Melnick, former director of the La Silla Observatory, and of Roberto Gilmozzi, the director of Paranal.*"

La Silla, north of the town of La Serena, has been the bastion of the organization's facilities since 1964. It is the site of two of the most productive 4 m class telescopes in the world, the New Technology Telescope (NTT) – the first major telescope equipped with active optics – and the 3.6 m, which hosts HARPS, a unique instrument capable of measuring stellar radial velocities with an unsurpassed accuracy better than 1 m/s, making it a very powerful tool for the discovery of extra-solar planets. In addition, astronomers have also access to the 2.2 m ESO/MPG telescope with its Wide Field Imager camera. Moreover, the infrastructure of La Silla is still used by many of the ESO member states for targeted projects such as the Swiss 1.2 m Euler telescope and the robotic telescope specialized in the follow-up of gamma-ray bursts detected by satellites, the Italian REM (Rapid Eye Mount). La Silla is also in charge of the APEX (Atacama Pathfinder Experiment) 12 m sub-millimetre telescope which will soon start routine observations at Chajnantor, the site of the future Atacama Large Millimeter Array (ALMA). The APEX project is a collaboration between the Max Planck Society in Germany, the Onsala Space Observatory in Sweden and ESO.

Paranal is the home of the Very Large Telescope (VLT) and the VLT Interferometer (VLTI). Antu, the first 8.2 m Unit Telescope of the VLT, saw First Light in May 1998, starting what has become a revolution in European astronomy. Since then, the three other Unit Telescopes – Kueyen, Melipal and Yepun – have been successfully put into operation with an impressive suite of the most advanced astronomical instruments. The interferometric mode of the VLT (VLTI) is also operational and fully integrated in the VLT data flow system. In the VLTI mode, one state-of-the-art instrument is already available and another will follow soon. In addition to the state-of-the-art Very Large Telescope and the four Auxiliary Telescopes of 1.8 m diameter which can move to relocate in up to 30 different locations feeding the interferometer, Paranal will also be home to the 2.6 m VLT Survey telescope (VST) and the 4.2 m VISTA IR survey telescope.

Both Paranal and La Silla have a proven record of their ability to address the current issues in observational astronomy. In 2004 alone, each observatory provided data for the publication of about 350 peer-reviewed journal articles, more than any other ground-based observatory. With the present merging of these top-ranking astronomical observatories, fostering synergies and harmonizing the many diverse activities, ESO and the entire community of European astronomers will profit even more from these highly efficient research facilities.

(based on ESO Press Release 03/05)