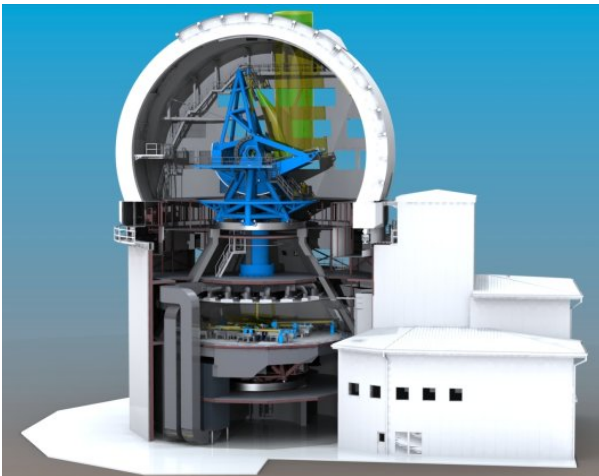




CONTROLLING THE WORLD'S LARGEST SOLAR TELESCOPE

30th July 2010.

Observatory Sciences Ltd. a scientific software consultancy based in Cambridge UK, has been awarded a contract from the US Association of Universities for Research in Astronomy (AURA) to produce the software that will control the world's largest solar telescope.



The Advanced Technology Solar Telescope (ATST) will have a 4 metre diameter primary mirror and be sited at an altitude of 10000 feet on the summit of Haleakala ('House of the Sun ') on the Hawaiian island of Maui. The total construction budget for the project is US\$298 million.

Observatory Sciences' contract covers the production of the ATST Telescope Control System software. At the heart of this is multi-axis motion control of the servo drives in the telescope mount, which requires monitoring changes in atmospheric temperature, pressure and humidity, to accurately set the altitude and azimuth of the telescope to observe the Sun. Many telescope sub-systems are co-ordinated by the software, such as

the dome, cooling systems, primary and secondary mirror positioning and wave-front sensor systems.

Philip Taylor of Observatory Sciences says: “With such a large mirror pointing directly at the Sun, cooling of the equipment is a major issue for this project and dedicated thermal management is provided for each of the telescope subsystems.”

The ATST project is a collaboration of nearly all of the American institutions involved with solar physics and is run by the United States National Solar Observatory (NSO) based in Tucson, Arizona. When completed, in 2017, it will be the largest telescope in the world dedicated to observing the Sun, with unprecedented abilities to view solar detail and allow scientists to learn even more about the Sun and solar-terrestrial interactions.

“Although the primary aims of the project are scientific,” says Philip, “studies such as mapping magnetic fields around the Sun relate to sun spots and the solar cycle. This knowledge will help predict variability, advance understanding of climate change as well as solar flares which can affect both aircraft and space satellites.”



ATST's 4-metre primary mirror will feed an advanced array of instruments designed to study the Sun at wavelengths from near ultraviolet into the far infra-red. High-order adaptive optics techniques, developed by the NSO, will correct blurring of solar images caused by Earth's atmosphere. This will allow scientists to observe features in the solar atmosphere with unprecedented sharpness, down to structures only a few tens of kilometres in size. Its unique design is optimized to allow precise measurements of solar magnetic fields,

particularly under circumstances where they have been previously invisible, allowing us to understand and predict solar variability.

Observatory Sciences has been involved in the development of software for the ATST since 2004. The Telescope Control System will be responsible for the control of the telescope's positioning and image quality. It will operate a number of associated telescope subsystems and will utilize the ATST Common Services software that provides a framework for the development and deployment of ATST software throughout the observatory.

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Observatory Sciences Limited: Notes for editors

Observatory Sciences is a leading developer and supplier of software for the control of 'big science' systems and instruments, including large telescopes and synchrotrons.

Meeting the needs of scientific, research and technical clients across the globe, Observatory Sciences is behind some of the world's high-profile astronomy and physics projects.

Observatory Sciences uses its expertise to provide a range of bespoke systems development, consultancy and project management services tailored to the needs of individual clients.

Observatory Sciences clients include the Gemini Observatory; European Southern Observatory (ESO); Diamond Light Source and UK Astronomy Technology Centre.

Contacts:

Observatory Sciences Ltd.

Philip Taylor pbt@observatorysciences.co.uk
Dr Chris Mayer cjm@observatorysciences.co.uk
Tel: +44 (0)1223 508257

Website: <http://www.observatorysciences.co.uk>

Advanced Technology Solar Telescope Project

Dr Bret Goodrich
ATST Software Manager
National Solar Observatory
950 N. Cherry Avenue
Tucson, AZ 85719-4933
USA

Website: <http://atst.nso.edu>