

# LSST

## The Large Synoptic Survey Telescope

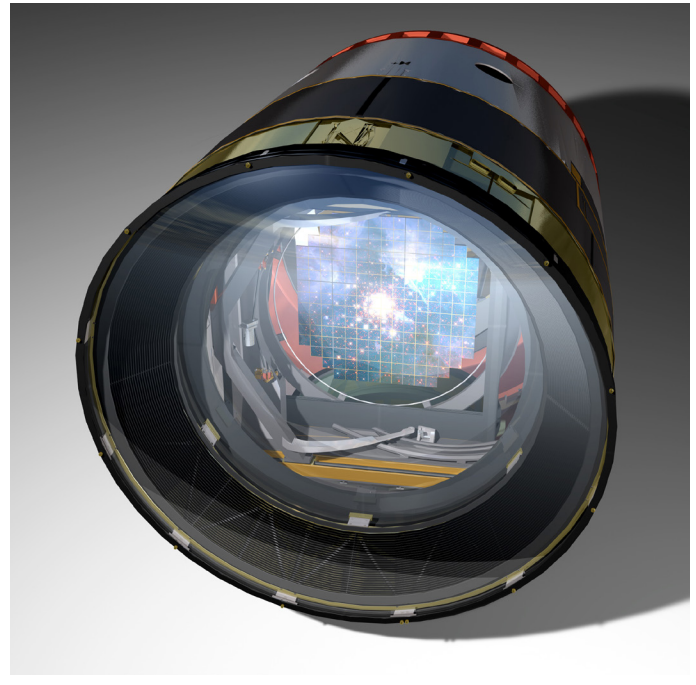
The Large Synoptic Survey Telescope will survey the entire visible southern sky every few days for a decade – the widest, fastest and deepest view of the night sky ever observed. Its vast public archive of data will dramatically advance our knowledge of the dark energy and dark matter that make up 95 percent of the universe, as well as galaxy formation and potentially hazardous asteroids.

### A National Priority

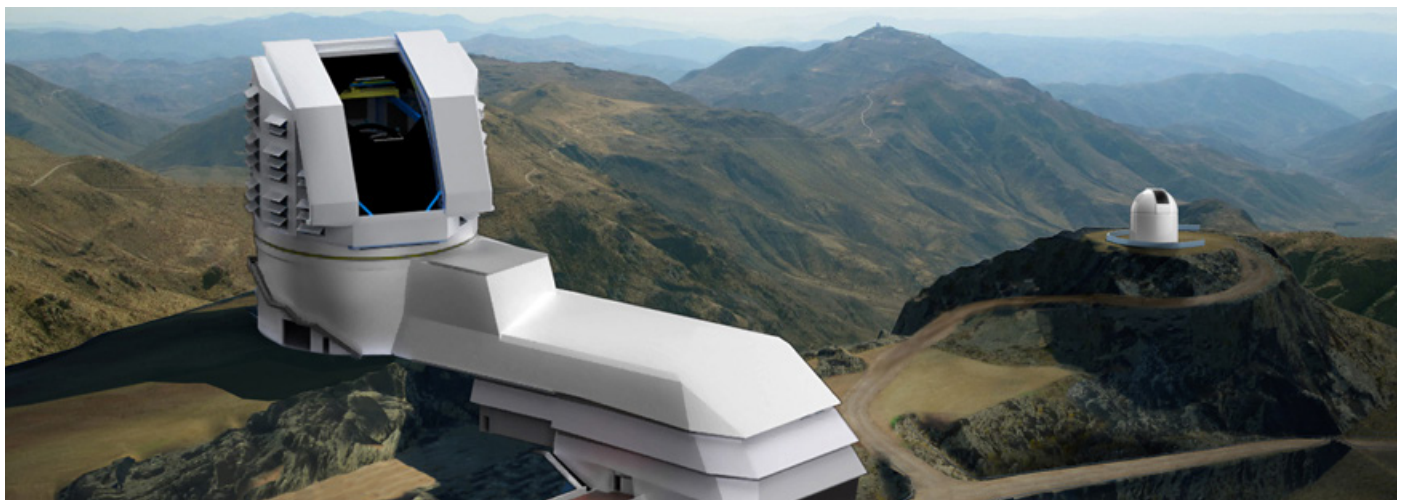
The National Research Council’s Astronomy and Astrophysics Decadal Survey, “New Worlds, New Horizons,” ranked the LSST as the top ground-based priority for the field for the current decade.

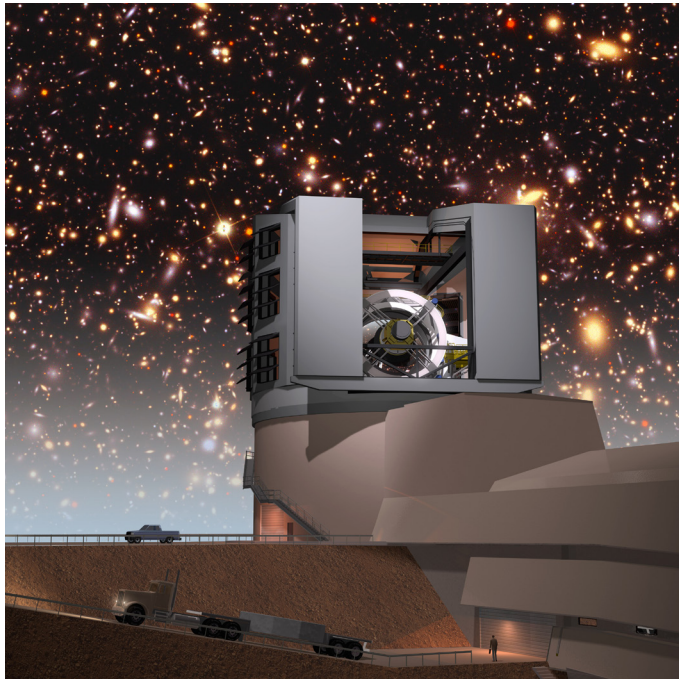
### 3-billion-pixel Camera

SLAC National Accelerator Laboratory is leading the construction of the LSST camera. The size of a small car and weighing more than 3 tons, the 3.2-gigapixel camera will be the largest digital camera ever built for ground-based optical astronomy. Displaying just one of its full-sky images would require 1,500 high-definition TV screens.



Above: SLAC is leading the construction of LSST’s 3.2-gigapixel camera, the largest digital camera ever built for ground-based optical astronomy. (T. Mason, Mason Productions Inc./LSST Corporation)  
Below: Rendering of the telescope at its future site atop the Chilean mountain Cerro Pachón. (LSST Project Office)





### Massive Data

Over its 10 years of operation the LSST will detect tens of billions of objects – the first time a telescope will catalog more galaxies than there are people on Earth. This will create an unprecedented archive of 6 million gigabytes of data per year, the equivalent of shooting roughly 800,000 images with a regular 8-megapixel digital camera every night, but of much higher quality and scientific value. The handling and analysis of all these data will drive advances in big-data science and computing.

### Public Engagement

LSST data will be available not only to professional scientists, but also to the public, including students and people involved in “citizen science” projects. This will broaden public participation in science and enhance education in STEM – science, technology, engineering and mathematics.

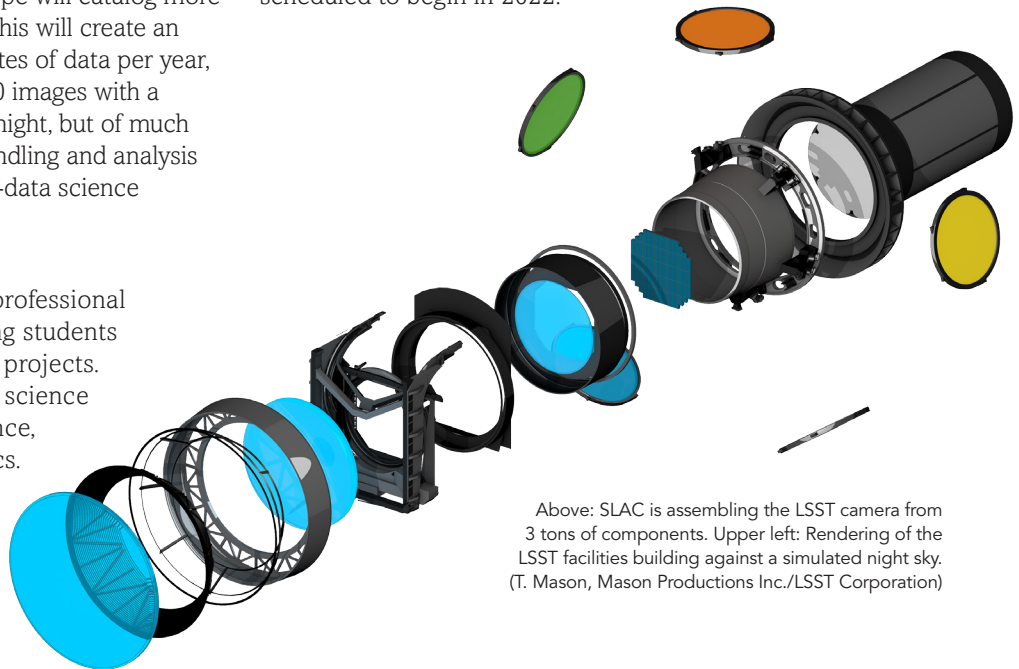
### Partners and Stakeholders

LSST is being developed as a partnership between two federal agencies. The National Science Foundation is the lead agency, responsible for the telescope facility, data management, and education and public outreach, and the Department of Energy is providing the camera.

The LSST Corporation, a 501(c) non-profit corporation dedicated to furthering the science enabled by the LSST, includes more than 35 institutional members and has received non-federal support from a number of sources, including significant gifts from the Charles Simonyi Fund for Arts and Sciences, Bill Gates, Richard Caris, the W.M. Keck Foundation, Research Corporation for Science Advancement, Wayne Rosing and Dorothy Largay, Eric and Wendy Schmidt, and Edgar Smith.

### Current Status

In February 2015, the telescope’s unique dual-surface primary/tertiary mirror was completed. In April 2015, the on-site construction of the LSST facility in Chile began with a traditional stone-laying ceremony. In August 2015, the Department of Energy gave the construction green light for LSST’s camera, whose assembly and testing in a new 2,000-square-foot, 2-story-tall clean room at SLAC will take approximately five years. Science operations of the LSST are scheduled to begin in 2022.



Above: SLAC is assembling the LSST camera from 3 tons of components. Upper left: Rendering of the LSST facilities building against a simulated night sky. (T. Mason, Mason Productions Inc./LSST Corporation)