

The Vision for Space Exploration

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Abstract

The US President's vision for space exploration incorporates a return to the moon, plans for Mars, and the continued exploration of our solar systems and beyond. Imaging systems have played, and will continue to play, a central role in many kinds of continued exploration and investigation of our universe. Imaging systems take us places humans will never be able to go. Telescopes like Hubble and Spitzer transport us to near the beginnings of time. The Mars exploration rovers take us to the surfaces of other worlds. This talk overviews some of the exciting discoveries imaging systems have implemented in the past and looks at the vision for new discoveries to come.

Author Biography

As Vice President, Civil Space, Mr. Crocker is responsible for Lockheed Martin Space Systems Company's line of business that focuses on space science, planetary exploration and remote sensing for Government agencies. Current major programs include Spitzer Space Telescope, Gravity Probe-B and the Hubble Space Telescope in space science; TIROS (Television and Infrared Observation Satellite) and the DMSP (Defense Meteorological Satellite Program) in remote sensing. Planetary exploration programs include Mars Global Surveyor, Odyssey, Stardust, Genesis, Mars Reconnaissance Orbiter and Mars Scout, Phoenix and the company's nuclear power programs at Space Power in Valley Forge, Pennsylvania, including the nuclear power supply currently being manufactured for the New Horizons mission to Pluto. He also is responsible for identification and pursuit of follow-on and new space systems opportunities that position Civil Space for long-term growth.

Prior to joining Lockheed Martin Space Systems, Crocker served as Program Director, Next Generation Space Telescope, at Ball Aerospace and Technologies Corporation. Mr. Crocker has led some of the world's most important projects in astronomy and astrophysics. He is noted for conceiving the idea for and leading the team that developed COSTAR to correct the flawed optics on the Hubble Space Telescope. The crew of the STS-61 Space Shuttle mission installed COSTAR on the first Hubble servicing mission, which successfully restored Hubble's vision.

As head of program management for the European Southern Observatory, he played a major role in the design and construction of the largest astronomical observatory in the world, the Very Large Telescope (VLT). The VLT was built in the high Andes Mountains of Northern Chile. It consists of an array of four 8-meter telescopes that are optically phased. It is the world's largest telescope, surpassing the dual 10-meter KECK array in Hawaii.

Crocker served as project manager for the construction of Sloan Digital Sky Survey (SDSS). Considered one of the most scientifically important projects in astrophysics, SDSS over its 10-year mission will produce a complete digital map of the northern sky, measure the distance to one million galaxies and produce a 3D map of the near universe. SDSS is answering fundamental questions about the universe and uncovering new ones.

As director of programs for the Center for Astrophysics, Johns Hopkins University, Crocker led the system design effort for the Advance Camera for Surveys (ACS). This scientific instrument was installed in the Hubble Space Telescope in February 2002 and will improve the performance of the telescope by an order of magnitude. Hubble will return more science in the year following the installation of ACS than in the total previous 10 years of the observatory's lifetime combined.

As head of the programs office at the Space Telescope Science Institute, he led the team that readied the science ground system for operation of the Hubble Space Telescope through orbital verification and science operations on orbit.

While attending the University of Alabama in Huntsville in the early 1970's, Crocker designed electronics for scientific experiments on SkyLab in support of NASA's Marshall Space Flight Center and designed experimental laser systems for the U.S. Army, Redstone Arsenal.

Crocker holds a Bachelor's degree in electrical engineering from the Georgia Institute of Technology, a Master of Science degree in engineering from the University of Alabama - Huntsville and a Master of Science degree in management from Johns Hopkins University. He is the recipient of numerous honors including the Space Telescope Science Institute Outstanding Achievement Award and two NASA Public Service Medals for work on the Hubble Space Telescope. In 2002, he was selected by the University of Alabama - Huntsville as an "Alumni of Achievement."