



## The Discovery Channel Telescope at Lowell Observatory

### *A case study of progeCAD Professional 2010 in action*

#### **Organization Background**

Lowell Observatory, founded in 1894, is the largest private, non-profit astronomical research institution in the United States. Lowell also hosts a variety of innovative educational and visitor outreach programs to share the wonders of astronomy and science with the public. The Discovery Channel Telescope (DCT) is a project of Lowell Observatory and Discovery Communications, Inc. to design, construct, and commission a state-of-the-art, 4.3-meter (14-ft) research class telescope. Valued at \$44 million, the DCT will significantly advance Lowell's research capabilities to help expand our understanding of the universe. Just as important, the partnership with Discovery Communications, whose current operations include 29 global networks in over 170 countries, will bring the fascinating world of astronomical science and education to more than 1.6 billion people every day.

The DCT is situated at an elevation of 7,800 feet atop an ancient cinder cone located approximately 40 miles southeast of Flagstaff, Arizona at a site called Happy Jack. Exceptionally dark skies, high altitude, low humidity, and prevailing southwest winds at the site make it an ideal location for the telescope. Construction of the DCT began in 2005 with completion and early science operations expected in 2012.

#### **Business Need**

At this phase of the project, DCT engineers, technicians, and contractors are engaged in integration and testing of the telescope mount and active optics system, the computer-controlled mechanism that precisely maintains the position and shape of the primary and secondary mirrors during active observing. Development of the intricate electro-mechanical interfaces among these and other major DCT subsystems is also in progress, requiring careful design and fabrication. Such detailed design work demands the use of powerful and reliable CAD software tools. The DCT engineering team recognized the need for a cost-effective solution to facilitate development of this aspect of the project.

#### **Solution**

After researching various CAD software options with respect to performance, price, custom features, and technical support, *progeCAD Professional 2010* was the obvious choice. DCT engineering and technical staff confirms that *progeCAD Professional* delivers highly reliable and robust performance thus improving the ease and speed of design work. *progeCAD Professional* has also shown to be readily compatible with other software programs in use by the DCT project team including SolidWorks and AutoCAD. Finally, *progeSOFT's* proven commitment to supporting educational institutions such as Lowell Observatory yields additional value and confidence in our choice of *progeCAD*.

#### **Future**

Lowell Observatory expects to continue using *progeCAD Professional* to support long term operations of the Discovery Channel Telescope. New instrumentation, system modifications, and electro-mechanical improvements are all likely to be developed in part via *progeSOFT* product solutions.