# European Southern Observatory

**Business**
European Southern Observatory (ESO), an organization comprising eight European countries, manages one of the larger observatories in the Southern Hemisphere. The observatory, located in the Atacama desert, 600 km north of Santiago de Chile, contains a dozen telescopes, the newest of which is a 3.5 meter diameter telescope called the NTT (New Technology Telescope). ESO's headquarters and most of its software developers are located near Munich, Germany.

**Business Challenge**
ESO is currently building one of the largest telescopes in the world, the VLT (Very Large-Scale Telescope). It will encompass 4 telescopes with 8 meter diameter mirrors which is the equivalent of a single telescope with a 16 meter diameter mirror. In comparison, the telescope at Mt. Palomar is a 5 meter (200 inch diameter) telescope.
Running a telescope the magnitude of the VLT is a significant operating and capital expenditure so learning how to operate it efficiently is critical. The cost of providing observation time at night represents an expensive financial commitment on the part of ESO's member countries; for example, on the VLT it is estimated that 1 second of observing time will cost $1-2 per unit telescope.

The NTT is one of the most modern telescopes and therefore well suited to be a testbed for some of the hardware, software and operational concepts that ESO will encounter with the future VLT. In order to better manage operational, hardware, and software problems and issues, ESO needed the help of a computer-based product.
In searching for this ideally inexpensive computer-based solution, ESO also desired a system (even if imperfect) that would allow them to get up and running quickly at some level to develop understanding of how such a system could be integrated into a high-stress telescope operations environment.

**Visible Systems Solution**
ESO searched for an issues management solution and narrowed its review to 4 products all varying in cost and complexity. After testing the 4 products in-house for a brief time period, they selected the Razor configuration and issues management product from Visible Systems.

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Razor proved to be a relatively inexpensive issue management solution and more importantly would allow ESO to utilize it's vast UNIX knowledge in configuring and customizing the system. Also the system resource requirements were minimal. Razor did not require the installation of a relational database to utilize the system as some of the other issue management products. Razor's ease of use and flexibility was another key feature and benefit. The astronomers and operations staff did not want a complicated system which could ultimately cause more problems than it would resolve. Their time is committed 150% already when they are using the NTT so the problem tracking solution needed to be simple with minimal input.

**Visible Addresses the Business Challenge**

Razor's Issue Management capabilities are enabling ESO to better understand the technical problems with a global systematic error reporting and tracking solution that encourages the telescope operator (more concerned at, for example, 2am, with working around the problem than reporting it) to report a problem, and if appropriate, to search the database of previously reported problems to see whether a solution has already been found in the past.
Visible Systems created their Global Tracking product based on input from ESO regarding the global challenge of having one's headquarters in Munich and the need for timely input (ideally within hours to a day) from their observatory in Chile. The Global Tracking product enables a copy of the issue report filed in Chile on the master data base to be mirrored on the slave data base in Munich in less than a minute. They view this as a remarkable achievement.

An additional benefit to the use of Internet standard e-mail (SMTP) in Global Track is that if the communication link is down, the electronic messages are queued up and finally forwarded to the master or slave database server when the link is reestablished.

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