

Large Binocular Telescope Observatory

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The Large Binocular Telescope Observatory (LBTO) is the world's most advanced optical telescope. Its mission is to image planets outside of our solar system and provide new insight into a number of fundamental cosmic questions, including how the first stars and galaxies formed and whether our solar system is unique. This is done by taking spectra of galaxies and quasars at the most distant parts of the universe and looking at comets in the outer parts of our solar system.

Construction of the 500-metric-ton telescope, the largest in the world, cost approximately \$120 million. It is situated atop Arizona's Mount Graham, 10,500 feet above the Chihuahuan desert. The telescope is a complex marvel of modern engineering, with a pair of 27.6-foot primary mirrors, adaptive optics secondary mirrors and image correcting electronics. Together, these technologies provide a resolution that is unmatched by any other optical telescope on Earth or in space, including the Hubble Space Telescope.

The telescope is an international collaborative project between the Italian astronomical community, The University of Arizona, Arizona State University, Northern Arizona, the LBT Beteiligungsgesellschaft in Germany, Ohio State University, Research Corporation in Tucson and the University of Notre Dame.

A simple, hassle free ticket tracking application

Given the operational cost of the telescope, prompt issue resolution is a critical daily activity. With the technological complexity, design, construction and operational longevity of the LBTO project, the details of a hardware or software problem must be documented, communicated, tracked and managed. A system was needed that could be utilized by a diverse set of personnel in numerous locations around the globe. It had to be quick and easy to use, and low maintenance.

In order to unite the far flung community IssueTrak was emplaced across the extended organization during the summer of 2006. To ensure IssueTrak would be easy to use, the minimum number of features offered by the system is actually utilized.

To make the administration of the system easy for us, we employ IssueTrak to provide the hosting and to manage the database and servers. We have not implemented any custom forms, features, or processing logic. The only customization has been to upload the LBTO website logo banner so it is displayed to the tool's user. Tool setup is performed by the software team located at the observatory in Tucson, Arizona.

The logical problem of issue management has been divided into two camps (hardware and software). An issue manager for each logical set has been established. This person's role is to identify

who is the best person in the organization to handle a specific issue.

Issue management through groups

The project utilizes groups to manage user privileges and to create email notification to specific teams of personnel. For example, users primarily function as *Issue Submitters*, *Issue Resolvers* and *Inquiring Minds*. All users can submit issues but not all users will be expected to resolve issues. There are many groups of *Issue Resolvers*, including telescope hardware and telescope software groups, a group for each instrument team and a system administration group. Using groups in this way we are able to notify the entire group with an email when an issue is levied against their area of responsibility. This is most useful when the specific individual best suited for solving the task is not explicitly known by the issue manager or when you want to get input on a problem from a broader audience rather than a single individual. And, we can still send it to a specific user if that makes the most sense.

The *Inquiring Minds*, i.e. our Executive Management, group is for individuals such as the Project Director, Project Manager, Technical Director, and others that will not be directly resolving problems but who want to be notified when an issue is submitted. Receiving a submit notification helps keep them informed of what is being addressed by project personnel.

Creating new users is simple using groups

User privileges are not assigned to individuals but rather to groups. New users are placed into the appropriate group and

then, depending upon the group their role as *Issue Submitter*, *Issue Resolver*, or *Inquiring Mind*. This allows for quick and easy user privilege management and provides consistency of privileges for all users in the same group. A user can be a member of more than one group thus inheriting privileges from all groups for which the user is a member. We decided the project's *Issue Resolvers* should be able to get their job done quickly and with minimum procedure and oversight. Therefore, all *Issue Resolvers* are given full privileges to facilitate the resolution of an issue such as to "action" and "close" an issue. The project does insist that an issue not be closed until it has been demonstrated to pass operational testing following the emplacement of a solution. Our goal is to have the issue closed by the submitter after they verify the correctness of the solution; therefore all submitters have the close privilege.

A classic Issue Tracking system – no physical "help desk"

Although the LBTO hardware and software development and engineering teams are not co-located our numbers are quite small. Because of our low head count, it was decided to allow all personnel and visiting scientists to have access to IssueTrak for the purpose of entering problems, (i.e., there is no help desk support that gets called to enter the problem.) All technical personnel are allowed to be "action-ed" and can "action" an issue for the purpose of reducing middlemen and achieving faster response time.

Minimal training required

Due to the fact that we have provided

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privileges to all personnel in our organization, we require a well-trained workforce and the organization to indoctrinate and train all staff on the usage of IssueTrak. We created in-house training materials based on our usage and held a training session for all local staff and visiting partners in the fall of 2006.

Overall, IssueTrak works very well for our organization because it is easy to learn and use from any of our numerous partner locations throughout the world.

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