

**Towson University's Web Based Work Request System**

**Tom Durange**

**MT Supervisor; Towson University Facilities Management**

**Troy Lingelbach**

**MT Supervisor; Towson University Facilities Management**

**Warren Riefner**

**Maintenance Manager; Towson University Facilities Management**

**ABSTRACT**

*Towson University has a FTE of 13,354 students of which 3,500 live on campus. For the past thirteen months residents have been able to access Maintenance, Housekeeping, Contract Services and Housing Departments, over the internet to resolve issues from clogged drains to fruit flies to needing a new desk.*

*A web based work request system developed by the Maintenance Department staff, available to any student with campus email accounts, provides the user with access to request work 24 hours a day from their room securely over the internet. All requests are simultaneously captured to a database, delivered to the appropriate shop supervisor, and automatically printed. This system maximizes efficiency of existing manpower and compiles all data necessary to enhance service levels provided, by simply reducing the time between the request and completion of the work. All emergencies are still called to a staffed work control for immediate dispatch but they are no longer overwhelmed by routine requests for squeaky doors etc.*

*All requests are tracked from date and time of request through close out in the data base status report. Simple searches can be performed by requestor, work type, bldg room#, etc. To date we have received 6665 requests.*

## **Introduction of Organization**

The Facilities Management Department at Towson University is a diverse group of professionals charged with the planning, operation, maintenance, and enhancement of the University's physical assets that are valued in excess of 600 million dollars. The department is part of the University's Division of Administration and Finance, and is comprised of four units: Planning; Architecture, Engineering and Construction; Operations and Maintenance; and Finance and Administration. The Department employs over 120 people and has an annual operating budget of about 20 million dollars.

The Auxiliary Services Maintenance Department provides operation and maintenance support services to its customers through a decentralized system. The Auxiliary facilities are divided into 4 main areas: Area A, consisting of 8 residential buildings and 1 parking garage; Area E, consisting of 5 residential buildings and two parking garages; the University Union; and the Towson Run residential apartments.

Staffing for each area consists of 1 Chief II and 1 senior mechanic plus 4 maintenance mechanics. Each Area also has a supervisor that reports to the Maintenance Manager. Facilities Management provides additional support as required through electricians, plumbers, HVAC, locksmiths, carpenters and painters etc.

Based on the staffing described above, there is less than 1 person per building even though several resident halls house more than 400 residents.

## **Problem/Initiative**

Prior to the WEB based system, students in residence halls used the traditional “pass the paper” system to request work. The students would complete a request slip and place it in a drop box at the Front Desk Community Center or give it to their Resident Assistant (RA’S). All paper requests were then forwarded to Facilities. Students or RA’s could also call the staffed Work Control Center for emergency items.

Most paper requests would be for minor routine work orders that the mechanics could respond to and complete quickly. Students would not typically have to pay for these requests and they could be completed in one visit. Occasionally, there are some requests that need additional parts ordered, or ones that need to be passed on to supervisors to be further investigated, such as reoccurring problems, major plumbing or roof leaks.

Manually collecting request slips and then reissuing them to the mechanics often meant that even the simplest request might not be released to a mechanic until the next day. If these requests came during the onslaught of move-in periods it could be days! In cases where the work could not be completed immediately the requestor often would not even know the status of the work order (either received or parts ordered). Basically the time between the request being made and the work getting done was completely unpredictable even for simple tasks. Student and Residence Staff frustration was understandable and unacceptable for the department.

It was clearly time to develop a more efficient way for the requestor to contact us for service, one that required little effort on the part of the student and one that did not require our staff to sit in front of a terminal entering data. The University was using a

program for preventive maintenance and inventory control for building equipment as well as project requests, however it was far too complicated to be user friendly and system hardware issues would preclude most students from accessing the system.

## **Design**

After studying and trying several different work request systems, we found that no “off the shelf” system had all of the features that we desired for an easily functioning system. At this point we decided to try and build our own system. With limited programming knowledge we needed something to build our ideas around. The first question was what is the most solid electronic information exchange system that the University owns. The answer was the e-mail system. We decided at this point that basing the system around e-mail would be a prudent thing to do.

Knowing that our students were comfortable using the World Wide Web, we thought the web would be an excellent place to have our system run from. The web would be accessible to all of our students right from their rooms allowing them to initiate a request for repairs at anytime of the day or night.

Next we thought about what information we needed to capture, both for getting the work accomplished, and tracking information for queries at a later date. Then we started to design the web pages. Web forms seemed to be a logical choice. Anyone who has cruised the web has run into forms to fill out for registrations of one kind or another. After studying the way the forms worked, we started designing our own. We relied on our Computing And Network Services department (CANS) to show us a way of getting the information from the forms into a readable format utilizing a pearl script on the main server. The web forms were deposited into an account on the server with WWW access.

Routing of the forms was accomplished by the requester's choice of different buildings and the building Maintenance Supervisor's e-mail addresses coded into the forms. The e-mailed form would go directly to the specified Supervisor's e-mail account specified and downloaded when the email was checked. To insure that we would have the work requests in a timely fashion we bought an e-mail pop3 program and configured it to retrieve only the student requests at an interval of 1 minute. The program allowed the e-mail from the server to go directly to the local pc printer. This allowed the request to go simultaneously from the requester to the Maintenance Supervisor.

### **Implementation**

The team decided to roll the system out slowly in order to work out any bugs. We decided to use the University Union building as the test subject. No students live in this building but it has a high usage factor by the students and generates many requests from the building manager. There were some slight adjustments made here and there, but overall it worked as expected. Several months into the testing we found that we needed a better solution for tracking work requests. We also found that even though the URL was not public knowledge, individuals had found our site and were entering information, correct or erroneous in nature, we had no way of finding out who they were. What we needed was security and a database.

We again took our concerns to CANS. They informed us that adding a database to our system would be no problem but using HTML coding would be very difficult to only let in our students and staff. CANS suggested that we let them rework our pages into Cold Fusion coding. This would give us a database to search any way we needed to and security would no longer be an issue because Cold Fusion would require the user to log in

using their University provided e-mail address and password. This information would be checked against the student and faculty/staff database, authenticated and authorized, or denied access as required. Access into the system and the successful initiation of a work request would capture the user information and put it into the request with the e-mail address being unchangeable.

After several months of successful operation and solid support from the Residence Life Department we implemented a spring semester trial where only Residence Life staff and the RA's were given access.

The required information to generate a web request was conveyed by a combination of check and drop-down boxes that eliminated all but very little typing. The spring trial proved to be received way beyond what we expected. It was so well liked that we set up the system for full student access for the fall semester. Over the summer small revisions were made in the system and we went live in August for the first time.

With the help of CANS we are continuing to improve on the system as it was first introduced. The database has been more fully developed and formatted to allow easier transfer of data to other programs already being used. The addition of requests relative to Housing and Housekeeping issues has greatly enhanced the one stop quality for the students. The introduction of color coding requests and their status makes long lists of requests during high traffic periods much easier for administrators to manage, retaining the, "at a glance" feature of the system even with over 9,000 requests logged in.

### **Benefits**

Without question the single greatest benefit for the system is the ease with which any student from their room, or almost anywhere, can request work and receive

confirmation immediately that their request was received. The system allows for intermediate status reports to the student and they receive another email when the work has been completed. The system clearly has opened a line of direct communication with our student customers literally light years beyond what was available only 18 months ago.

The efficiency from our staff, drawn from the real-time view of the workload at any moment, based on deployment of existing manpower resources has not only maximized our production capability but has greatly reduced the impact to our student customers from statewide staff shortages and hiring freezes.

Additionally the flexibility of the system and its simple operation has allowed all levels of Senior Administration read only access so they can, at their finger tip, view the status of all work requested, underway or completed. The net worth of this feature can only be appreciated by someone that can't tell an angry customer the status of their son or daughters request without first consulting with several persons and getting back to them!!