User Communication and Problem Tracking:  
A Multi-faceted Approach to Rapid Application Development

John S. Stone, BSN, RN; Douglas A. Talbert, PhD; Antoine Geissbühler, MD;  
Dominik Aronsky, MD, PhD; Randolph A. Miller, MD,  
1Department of Biomedical Informatics, Vanderbilt University, Nashville, TN  
2Division of Medical Informatics, Geneva University Hospital, Switzerland

INTRODUCTION: To develop, implement, and maintain software applications, communication with the end-users is essential. Ongoing tracking of comments, complaints, their related work queues, and resolution of problems is equally vital. WizOrder, a clinician order-entry system with integrated decision support has been continually developed and used at VUMC since 1995. A multi-faceted approach to communication and problem tracking has enabled a successful “fast-track” approach to WizOrder enhancement and maintenance. WizOrder developers realized early the importance of being “close” to the end-users.

METHODS: Since a single channel could not be identified that effectively reached the entire user base, a two-tiered approach was applied. We examined the following communication channels over a 45-month period (4/1997 - 12/2000): 1) Direct communication: a) pizza sessions with clinical end-users, to air grievances and announce planned changes twice weekly, b) complain/ comments “button” in the clinician order entry system, c) developer meeting twice weekly for invited guests, and d) email access to the developers. 2) Indirect communication: a) Help Desk for VUMC computer operations and b) electronic suggestion box on workstations.

Table: Comparison among communication channels

<table>
<thead>
<tr>
<th>Year</th>
<th>HelpDesk/ Suggest. Box</th>
<th>Pizza Complain Button</th>
<th>Developer Meeting</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>2258 67.8%</td>
<td>1854 77.7%</td>
<td>1903 89.8%</td>
<td>80</td>
</tr>
<tr>
<td>1998</td>
<td>2386 77.0%</td>
<td>1937 87.8%</td>
<td>2011 90.7%</td>
<td>80</td>
</tr>
<tr>
<td>1999</td>
<td>2218 69.6%</td>
<td>1937 89.8%</td>
<td>1903 89.8%</td>
<td>80</td>
</tr>
<tr>
<td>2000</td>
<td>2057 71.9%</td>
<td>1854 77.7%</td>
<td>1903 89.8%</td>
<td>80</td>
</tr>
</tbody>
</table>

% change from prior year: -28.3% -11.2% -2.9%

RESULTS: For the 45-month period there were 9,889 WizOrder issues reported via all channels. The table shows the year to year frequency for the different types of communication channels.

Three significant trends can be observed:
1. Help Desk grows into the “most accepted” channel from 67.8% to 90.9%.
2. Pizza sessions show a diminishing number of issues reported each year as rapid development moved to stable system use.
3. Total reported problems decrease except for predictable transient increases after new house staff start in July of each year (figure).

Figure: Reported Help Desk problems

DISCUSSION: As the system matured, user issues were reported more frequently to the Help Desk and less often during the pizza sessions. This may be an indication for a change in the type of problems reported. However, these pizza sessions are key to the on-going relationship with the users and may have contributed to the steady decrease of problems reported each year due to the additional training available in these sessions. The trend continued despite the growing complexity of the application and the increasing base of users.

CONCLUSION: End-user feedback tracking of problems is important for a system to succeed. Users communicated with the development team through all established communication channels, which demonstrates the importance of creating a variety of reporting methods.