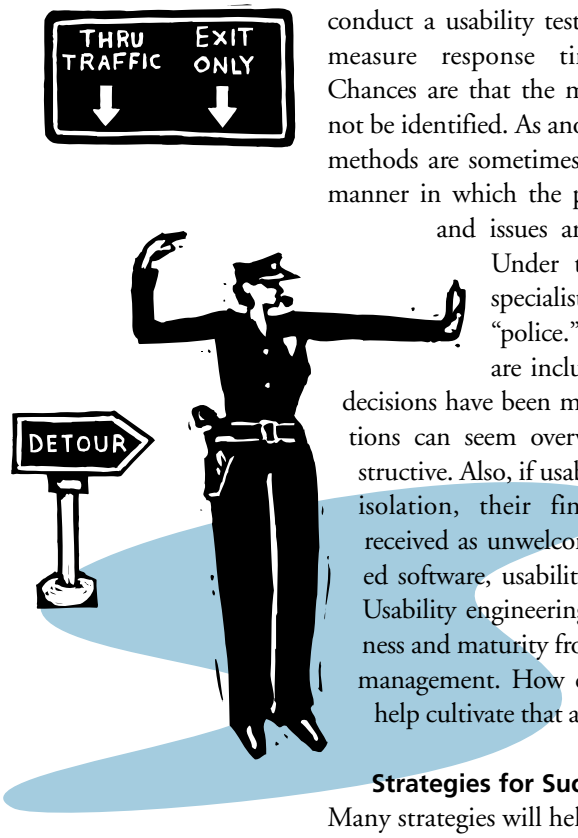
Ensuring Success with Usability Engineering

"Without a Special Object of Worship" by Jacquelyn Martino

Why are some efforts to implement usability engineering successful and others not? Usability methods have been applied in computer systems development for more than 15 years. Although much progress has been made, usability has not become a standard part of all development. Some attempts at usability have resulted in a "one-time-only" phenomenon. That is, things appear to have gone relatively well but when the projects and team members move on, no one initiates further usability efforts. Other attempts at usability have failed because the problems identified by usability methods did not influence product design.



There are many reasons why implementing usability can go awry. One reason is that usability methods are not always planned realistically. Usability plans and strategies must be feasible and based on the development environment's current maturity level, resources, and knowledge base about users and their goals. For example, let's assume a project has never been exposed to usability methods. As the project team members' initial foray into usability they conduct a usability test with a prototype and measure response time in milliseconds. Chances are that the major design issues will not be identified. As another example, usability methods are sometimes applied in an isolated manner in which the project team's concerns and issues are not fully addressed. Under this scenario, usability specialists can be viewed as the "police." If their contributions are included after many design decisions have been made, specialists' suggestions can seem overwhelming and unconstructive. Also, if usability specialists work in isolation, their findings will likely be received as unwelcome. Like object-oriented software, usability is not a silver bullet. Usability engineering requires some awareness and maturity from the design team and management. How can usability specialists help cultivate that awareness and maturity?

Strategies for Success

Many strategies will help ensure the success of a usability engineering approach, ranging from the support of a high-level manager to publicized success stories in company newsletters. The following are five guidelines that I would like to discuss.

1. Promote project team buy-in to usability.
2. Plan and budget for usability resources.
3. Work with a seasoned usability expert, especially at the beginning of the process.
4. Document the results of usability efforts and make the information available electronically.
5. Establish best practices using templates for plans, tools, reports, and other projects

Promote Project Team Buy-In

A growing trend in product development is to have a project team. For example, early in the design cycle the project team might have a half-dozen members representing marketing, documentation, software engineering, quality assurance, and usability. The idea is that team members have different insights into development, according to their own expertise. When they apply usability methods, project teams change their criteria for making design decisions. The change leads the team away from an intuitive approach, toward a user-driven, empirical approach that should include both talking with and observing users. All team members need to buy in to the methods, the data, and their design implications. Here are some ideas for promoting team buy-in.

Team Review of Usability Plans

Allow teams to review plans for conducting user surveys, making customer site visits, performing task analysis, or testing usability. How active a team should be in applying the methods will vary. In my experience, most teams like having an extra "resource." Many team members believe that their jobs would be easier if they had more help. However, they often do not have the time, experience, or motivation to carry out usability methods, especially field studies. Many factors will influence their desire to be directly involved with usability methods. Examples are how long they have worked on the project and how much control they have had in the past.

Project Team Meetings that Focus on Usability

Conduct team meetings fairly regularly to discuss usability issues and to summarize findings and observations from usability methods. Encourage team members to comment on the information collected and its implications. If they are involved in the planning, their comments are less likely to focus on distrust of the methods or the usability specialist's expertise. Communication is key. An atmosphere that encourages issues to be raised freely is important to the success of the effort.

Team Members' Initial Design

Once data from field studies are analyzed, the usability issues are raised, and alternatives are discussed, encourage each team member to prepare an *initial* design. People work through problems differently when they are alone or in a group. Working independently forces them to think about design problems differently than when they just critique existing designs. Depending on the complexity of the product, the design may cover only high-level or high-frequency functionality or task flow. This exercise often takes only several days. After individual designs are completed, hold a meeting in which each team member reviews the rationale for her choices. You may likely end up with a composite design that incorporates parts of individual team members' contributions. Products that are based on user information and have several contributors are more likely to result in "egoless" designs.

Plan and Budget for Usability Resources

There have been many instances in which usability was a grassroots effort, that is, instituted by someone with no official role and no budget. However, if usability engineering is to become a more permanent fixture in the organization, it should be planned. Unless funds and time are allocated, usability engineering will *not* become part of the development process. By planning the effort, team members can review the potential benefits. Everyone involved with the usability effort will be more likely to cooperate if the effort looks coordinated. For example, one customer site visit project I worked on had three independent sets of "data gatherers" asking the same end users a lot of similar questions within a 2-month period. Each set represented a different product or focus and did not share or coordinate its findings. The end users were weary of repeating their story over and over and wondered why the groups were not talking with each other.

Work with a Usability Expert at the Start

Any project team that is inexperienced in usability methods should work with an experienced expert, *at least initially.* Well-chosen experts will have the education or experiences that allow them to bring the best practices and rules of thumb to the project. A crucial requirement is experience with start-up usability efforts or experience with usability efforts in a "less-than-friendly" environment. Several studies have indicated that expertise affects the quality of usability evaluation results [1, 3]. In addition, a study by Lundell and Notess [2] asked software engineers and managers about the reasons behind successful and unsuccessful usability projects. For the successful projects, the reason cited most often was the *competency* of the usability specialist. Other reasons, such as a well-defined process or quick turnaround time for results, were important but were cited less frequently.

A usability specialist's expertise will help direct, focus, and streamline usability engineering methods that can easily go off-track. For example, when initially applying a method, she can keep design issues at a high level so that the users' overall tasks and goals are supported before giving detailed attention to optimizing smaller parts. In many instances a suboptimal design is created and then improved through iterations of usability testing. However, this does not change the fact that the basic design is still not optimal because the expertise was not applied early enough. Also, if sound design alternatives are not provided as part of the analysis, nonexperts can design even more cumbersome approaches than the ones originally evaluated. Finally, experts can mentor team members so that they can act more independently of expert resources on future projects.

Document the Results

One of the prime benefits of usability engineering is that the project team can observe and measure improvements in user performance over time. Unless these improvements are summarized in writing, the effect may not be better than the existing user anecdotes that drive the design process today. Design decision-makers sometimes forget basic usability findings and principles. Documented results will help act as a reminder, because they are difficult to ignore

Also, the members of a project team will change over time. When documentation exists,

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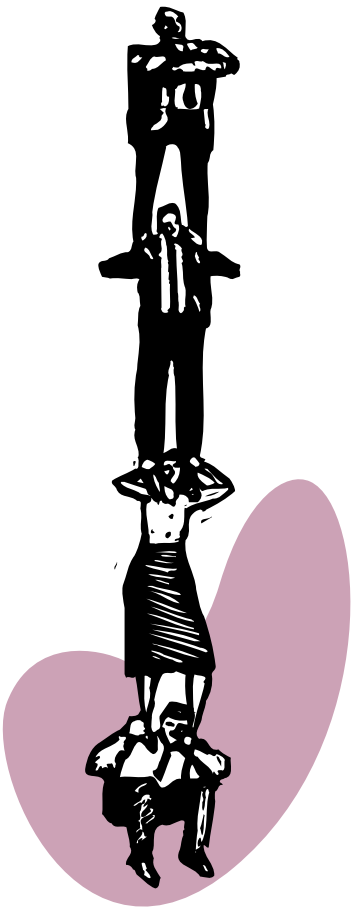

new team members can familiarize themselves about users, their tasks, and their performance. A good example of how this information might be stored electronically was described by Pernice and Butler [4]. They reported on a Lotus Notes™ database for sharing usability test information among project teams. The database stores usability test reports, bitmaps of past designs, videotape narratives, task scenarios, and user profiles for test participants. Such a system will surely increase the efficiency of a usability effort.

In addition, when a team develops best practices and templates, documentation will help guide the effort. Project teams can incorporate ideas for their best practices by reviewing past efforts.

The following information from usability engineering methods should be stored in a database and updated periodically:

- Pool of participants for usability studies, including field studies;
- User profiles; and
- Task lists, including time and frequency of major tasks and percentage of time spent on task

Establish Best Practices

Companies vary widely in their size, organization, and delegation of roles and responsibility for product development. Some projects are primarily market driven, whereas others are primarily engineering driven. Often one dominant focus drives the process, and it is not always usability. Usability engineering practices that work best for one organization may not work best for another. Implementation of usability engineering is more likely to succeed if it is customized to the existing climate.

Once a method is applied successfully, it is important to document the process.

It is easier to edit existing plans and reports than to create original ones. Sample templates can incorporate best practices so that they have an organization's "seal of approval." They can also act as a reminder to include all essential information. Once a few pilot projects are successfully completed, they can act as templates for future evaluations.

Before conducting any usability method, project teams should begin with a written plan. Plan components include purpose, objective, procedures, sampling criteria, and number of participants.

Suggested templates include the following:

Surveys
- Plan for conducting survey
- Template surveys
- Format for reporting results
- Format for presenting design implications

Field Work
- Field work plan
- Format for reporting results
- Format for presenting design implications

Usability tests
- Test plan
- Format for reporting results
- Format for presenting design implications
- Format for highlights videotape

Summary

Many factors give rise to an organization's interest in usability. They include user complaints, poor reviews in trade journals, new management with experience in usability, or a history of inefficient design meetings. Given the multitude of reasons, the impetus for usability engineering will increase. Like other forms of change management, it will be more likely to succeed if the preceding strategies are used.

References

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