Reprint of paper delivered at
UPA 2004, sponsored by the
Usability Professionals' Association.

Balancing Rigor, Adaptation, and Mentoring: Field Study at Customer Sites to Initiate a Corporate Usability Program

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ABSTRACT

A company that creates software for local governments across the United States redesigned the software user interface navigation and wanted to try usability research to explore how existing customers responded to the changes. This case study describes the challenges of conducting field usability testing as Manatron®, Inc.'s first usability study. The company hired a consulting firm, Tec-Ed, to lead the study and mentor internal staff transitioning to usability research. Following this study, the company launched a formal usability program.

INTRODUCTION

Manatron is a software development company based in Kalamazoo, Michigan, that has provided county governments with property administration solutions for over 30 years. From Alaska to Florida, Manatron's products automate the functions for auditors, treasurers, assessors, tax collectors, registers of deeds/recorders, clerks of the court, and other governmental officials. The product interfaces are currently Windows®-based (coded mostly in Visual Basic) but are on the move to Web-based UIs coded in C# .NET.

Upper management's interest in usability research was piqued after managers attended a usability seminar by Tec-Ed, Inc., a usability consulting firm headquartered in Ann Arbor, Michigan. An email from Manatron's CTO in December 2002 required product development teams to apply more focus to usability and begin usability testing. The Technical Communication (Tech Comm) group accepted responsibility as the leaders of this usability movement.

First Usability Study: Product Background

The most appropriate product for Manatron's first usability research effort was a beta version of ProVal Plus®. ProVal Plus delivers property appraisal functions for use by county staff performing appraisal and data entry functions as well as independent appraisers under contract to municipal governments. ProVal Plus and its predecessor, ProVal®, enable property appraisers to create a property record describing a parcel and the structures on it for purposes of tax assessments. The software handles both residential and commercial properties, and it consists of many forms with many choices for specifying property characteristics. In addition, it enables the appraiser to draw the parcel with appropriate labeling for appraisal purposes. The product requires customizing for different state jurisdictions.

Manatron had two concerns with the deployment of ProVal Plus: how easily existing ProVal customers would be able to use the redesigned user interface when they upgraded to the new version, and how easily new customers would find the product to use. As the product approached a beta release, the company engaged Tec-Ed to define a usability study to answer those questions.

Methodology Selected

A common practice when introducing a company to usability research is to conduct a usability test at the company's offices, where developers and other interested parties can observe the sessions and experience the "epiphany" of seeing real customers use their product without assistance. However, Manatron customers could not travel to the headquarters or division offices conveniently or at low cost. The solution was to take the usability testing to the customers.

Field usability testing adapts the methodology of laboratory testing by conducting the sessions in the participants' own environments, usually on their own equipment and with their own data. These adaptations make field usability testing a good method for problem identification, especially for products where customer data is important for the evaluation. Field usability testing is not normally used for performance measures or quantitative comparisons because different user environments create too many variables to be controlled.

In an initial planning meeting, Manatron and Tec-Ed discussed the goals for the ProVal Plus usability research and made the following decisions:

- The foremost usability goal was to identify any problems that users found when navigating the new user interface to find familiar functions. Once users arrived at their familiar functions, they would see the same user interface as in the previous version, with a few new capabilities. Manatron also wanted to collect usability data on the new capabilities and, along the way, on the familiar areas of the application.
- The test would focus on existing customers. It would be difficult to "catch" new users at the right moment for testing during the beta evaluation period. The software is highly specialized (as is the property appraisal field), and Manatron offers classroom and onsite training on ProVal; customers invest much time becoming expert in its use. In addition, addressing problems discovered with existing customers would improve the product for new customers. A follow-up usability study could focus on new customers.
- Customers from three locations would provide well-rounded data. Both residential property appraisers and commercial property appraisers were of interest for the study. Because residential and commercial property appraisers use different applications and processes in the product, some of the test tasks would be common to both groups and some would be specific to each group.
- The ideal customers would be those currently installing the beta version but not having used it yet.
- Tasks would be more meaningful if customers used their own county's data with the new software. That way, the participants would see familiar information and results.
- Tec-Ed would train Manatron staff on usability research techniques. To meet this goal, Tec-Ed proposed a division of tasks that leveraged these skills and provided skills transfer.

Mentoring Goal

Manatron had already sent two Tech Comm staff members (including this paper's co-author) to the Usability Boot Camp at Bentley College. Between them, the two staff members also had eight years of technical communication experience, some college coursework, and the co-author's internship in usability techniques—plus a keen interest in expanding their toolkit for improving the user experience. The ProVal Plus usability study was an opportunity to put to work what they learned, with the guidance of a senior usability consultant.

The usability consultant provided the project plan that divided activities between Manatron and Tec-Ed team members:

Task	Assigned To	Implementation Details
Create test design	Tec-Ed	The usability consultant created the high-level test design, interviewing the product stakeholders to determine which features were high-priority for testing, what task flow would move naturally through those features, and the issues to explore with each task.

Task	Assigned To	Implementation Details
Create session protocol	Tec-Ed began, Manatron completed	The usability consultant created a template for the session protocol and filled in some details for the first task. Then the Manatron usability team members filled in the remaining details for the first task and scripted the remaining tasks. The usability consultant reviewed the complete version and provided feedback.
Recruit participants	Manatron	Manatron identified candidates and secured their agreement to participant in the usability study. This effort required input from the Appraisal Software Division President and the ProVal Plus development manager, as well as legwork by the usability team members.
Prepare sites	Manatron	One of the Manatron usability team members, designated the logistics coordinator, made sure each site was set up and ready on the test date. All usability team members walked through the session protocol at the first site, before conducting the first session, and agreed on changes needed.
Facilitate sessions	Tec-Ed	The usability consultant facilitated the test sessions and the Manatron team members observed them. Following each session, the entire usability team (and any additional observers) discussed not only the potential findings from that session but also the specific issues with facilitating the sessions.
Develop findings	Both	The usability team jointly developed the list of usability test findings.
Tabulate data	Tec-Ed began, Manatron completed	The usability consultant performed the initial data tabulation, which the Manatron team members then reviewed and augmented.
Prepare findings report	Tec-Ed began, Manatron completed	The usability consultant drafted the findings report, which the Manatron team members then reviewed and augmented.
Present results	Both	Manatron and Tec-Ed jointly presented the study results to the entire management, development, and quality assurance organizations.

The rest of this paper provides more details about these steps and describes the outcome of this joint effort.

SITES SELECTED FOR TESTING

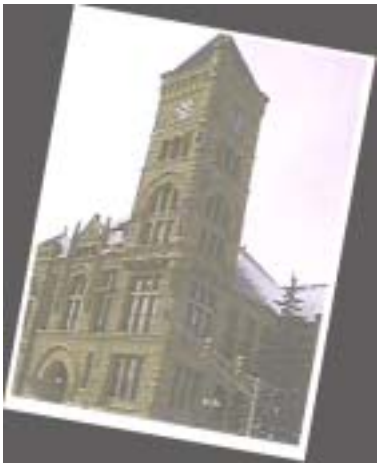
Within a few weeks, Manatron identified two sites where we could take usability testing to customers using their own data and still manage to interview customers from three different locations. One site was Manatron's division office in Beavercreek, Ohio, where customers were gathering for ProVal Plus training; the other was Wells County, Indiana, where the county was upgrading to ProVal Plus and about to receive training.

First Site: Division Office where Product Development Is Located

The Beavercreek location was ideal for having a pool of potential participants at a location where development staff could observe sessions. The training scheduled that week required that customers bring their own databases. Thus, the location met the goal of using participants' own data, although not in their own environment and not using their own equipment. Normally for field testing, equipment platform issues are a critical part of the evaluation, especially browser or operating system versions and LAN connection speeds. For the Manatron product, customer installations followed recommended system requirements, and LAN connection speed was not an issue for the current-generation product.

We scheduled usability sessions on the first day of the customers' visit, before the selected individuals received the training. A company support/IS employee imported the customer database into the new software version for each session.

Second Site: County Government in Rural Indiana



A county in rural Indiana was planning to install the new version of the appraisal software and receive training on it. The usability team scheduled the visit for the day after the county's new version of software was installed but before training began. We conducted three usability sessions at this site, a historic county courthouse.

SITE PREPARATION AND PARTICIPANT LOGISTICS

First Site

At Manatron's Beavercreek, Ohio, office, the tests were held in the Appraisal Software Division President's office. Manatron had just moved into the building, and the President had not completed his unpacking, so the office had ample floor space for setting up a small usability lab. The Manatron usability team logistics coordinator (the paper co-author) arrived a day early for site preparation and worked through the tasks with the support/IS person who helped set up the lab computer with ProVal Plus and the appropriate database specific to the county for each participant.

Manatron invited selected customers from Roanoke, Virginia, and Pekin, Illinois, to participate in the study. They were already scheduled to travel to Beavercreek for a week of training and a user feedback seminar. An established ProVal user group usually meets annually to provide product design recommendations and discuss other issues. The primary focus of the week was to expose these users to ProVal Plus, and the secondary focus was to familiarize and train those responsible for supporting the ProVal system in advanced features. The users received the week of training free for participating in the usability study at the beginning of the week.

The customers were ProVal (Release 6) users who were going to be updated to ProVal Plus (Release 7). One had seen ProVal Plus in a demo and the other three had no previous exposure. At the Beavercreek location, we conducted sessions with three residential appraisers and one commercial appraiser, for a total of four participant sessions.

We used a video camera to record the test sessions, with an audio recorder for backup. The test administrator sat to the left of the participant and the Manatron usability team observed, took notes, and operated the camera. The support/IS person attended all sessions and answered domain-specific questions about the product after the sessions were completed. The development manager also observed a session.

Second Site

The second site was a county courthouse in Wells County, Indiana. Manatron determined that Wells County was the best prospect for the test site due to proximity to the usability test team members (less than a three hour drive), size of the county, the county's current schedule, and lack of exposure to ProVal Plus. Manatron's Appraisal Software Division President, who knew the Wells County employees well, contacted the county to see if they would like to participate and asked when and where might work well for them. The Wells County Assessor was excited and very willing to offer their office for the second site of the study. Manatron had other counties in mind as backup if Wells was not able to participate.

The County Assessor identified three office employees (including herself) who would be appropriate for the study. Two participants performed commercial appraisals and one performed residential appraisals. The sessions followed the same protocol as at the first site, with some improvements based on what the usability test team learned at the first site.

The usability team conducted the sessions using the residential appraiser's desk and computer. The office was very crowded and noisy with background chatter—exactly the same environment that employees would normally experience when using the program. The logistics coordinator and the support/IS person from Manatron helped set up the site and connect the program to a copy of the Wells County database. They were also there during the testing to field questions about the program and database. To fit in the smaller space, they set up the video camera on a tiny tripod on the customer's desk with an audio recorder for backup. A ProVal trainer observed the sessions.

ADAPTATION AND RIGOR TRADEOFFS

To develop the tasks for the test, we solicited information from the Appraisal Software Division President, development manager, and business analyst for ProVal. They knew of typical tasks people use the software to perform, and they also knew of the areas of the program they were particularly interested in studying.

All participants met the criteria of no prior hands-on-use of ProVal Plus. Some had viewed demos and saw some of the new features. However, that exposure did not prepare them for navigating through the new user interface.

One challenge was that some participants had never used some key product features that were part of the task scenarios. Another issue was that each participant brought a distinct set of property appraisal and software skills and experience to their session. We learned more about each participant's background as we proceeded through the session and observed their willingness or reticence to perform certain tasks.

The rigor we applied in these sessions, with many variables affecting the outcomes, was in recording the choices participants made, noting where participants reported that they did not know how to perform a function, and tracking all of the hints the administrator made when participants became "stuck."

First Site

At the first site, participants cooperated in not attending any training until completing their usability test session, and in not talking about their session with their fellow trainees on the test day. However, because the day was devoted as much to training as it was to usability evaluation, the development manager was busy with the training activities and only had time to observe one session.

The first three participants were from the same county, and expressed concern about "performing in front of their peers." We had to make sure they understood that we were not reporting how they performed with the software to anyone other than the development team for the purpose of making improvements to the product.

In the very first session, the participant said he had never used a specific feature of the product that we wanted to test (and he had taken a long time with more familiar features). The test facilitator decided to skip the task for that feature. After reviewing our notes about the session, the usability test team decided to ask subsequent participants to try all tasks, even if they had never used the features before. That way, we would learn how easily participants could figure out at least how to *start* the tasks, even if they did not know enough to complete them.

The fourth participant was driving from far away, and the usability team extended the test day to await his late arrival. Fortunately he was a person of abundant energy who could participate in a one-hour usability session after driving a car for many hours, and his session was worth the wait—and the drive.

Second Site

We began sessions at this site with the lessons learned at the previous site: ask participants to try all tasks and set aside concerns that we were evaluating *their* performance. The new challenges at this site were:

- Whereas we conducted the Beavercreek sessions in a quiet private office, we conducted these sessions at a small-town county courthouse, with a high ambient noise level. The desk at which we conducted the sessions was a dual desk, with the other side occupied by an Assessor's Office employee who was not participating in the study. She agreed to take her work to a different desk for the duration of the sessions. It was clear that the study was interrupting the normal flow of business and the usability test team expressed acknowledgment of this fact.
- The connecting of the county database to the beta program was not perfect; processing errors occurred when participants attempted cost allocation and posting using ProVal Plus with the Wells County database. We did not have time to debug the problem, but we made sure participants knew the problem was the test configuration, not them. This problem resulted from not stepping through the tasks before sessions started, as we had done in Beavercreek, because we did not expect any surprises.
- The trainer who attended the sessions was very eager to help the participants succeed at their tasks. He understood he was to observe and not affect the sessions, but it was a challenge for him, and he did affect participants' behavior in at least one case.

LESSONS LEARNED

Rigor: For usability testing in the field with customers, maintaining rigor is a great challenge. Companies with strong, personal customer relationships tend to reverse the normal recruiting process. Instead of identifying characteristics and then screening participants for those characteristics, recruiting starts with identifying desirable individuals, looking at their characteristics, and sometimes trading off desired characteristics in the interest of the enhancing the customer relationship. It reduces rigor, but we still collect valuable data.

Regardless, the usability test planning would have been improved if we could have obtained more specific information about participants' familiarity with the functions to be tested. There was a slight mismatch between some of the functions of interest to the development group and the uses that our participants were making of the program. No doubt those functions would be of great future interest, but participants were not even aware of why the function would be useful for them. However, it would have been difficult to obtain this information without "tipping our hand" or even unintentionally dissuading people from participating.

Adaptation: With software that customers use differently from one installation to another, a set of task scenarios can be less realistic in some situations, requiring adaptation of the protocol. The usability team must decide—sometimes "in the moment"—which activities will generate useful data and then persevere, potentially with a revised task scenario. This requirement was not only site specific but also participant specific. It was helpful to have a product expert—the support/IS person—present to bridge the gap between the customers, with their deep knowledge of specific parts of the program, and the usability test team, who had generalized knowledge about the whole program.

Mentoring: Performing a "model project" to transfer usability skills to people who are expert in their own profession requires a diplomatic approach on the part of the usability consultant. Instead of assuming a "teacher-student" set of roles, the consultant must identify factors and justify decisions in terms that the stakeholders and people investing their time and budget understand and value. Adding customers to the equation creates another layer of necessary diplomacy—making sure customers feel valued while they are placed in a vulnerable position of facing something new in situations that feel "public".

POSITIVE OUTCOMES

What the Development and Product Teams Learned

After the tests at the two sites, we presented the study, the findings, and our recommendations to the development and product teams. Development managers, programmers, and analysts from all of Manatron's product lines attended the presentation, not just the ProVal teams. We organized the findings into the following categories for familiar functions and then again for less familiar functions in ProVal Plus:

- Show-stoppers and impedances
- Annoyances and deficiencies
- Keepers and info-only findings

What Has Happened to ProVal Plus

After the presentation of the results of the ProVal Plus usability study, the development group has made about 10 improvements in the show-stopper and impedance categories. In addition, the development team added another approximately 10 issues to the Manatron Change Control (MCC) system—the "problem" database. These will be further reviewed and worked into future development schedules.

What has happened to Manatron:

Since Tec-Ed led the study of ProVal Plus and taught Manatron usability staff members the ins and outs along the way, Manatron has been able to conduct usability studies alone. Manatron usability specialists have conducted a full usability study, and a second study will have happened by the time of the UPA 2004 Conference. In addition, Manatron plans to conduct usability studies three to four times a year. In the big picture, Tec-Ed helped to lay a solid foundation at Manatron for this usability infrastructure.

A NEW USABILITY INFRASTRUCTURE AT MANATRON

UCD Team

At the core of Manatron's usability infrastructure is the User Centered Design (UCD) team. Manatron launched the team as a way to "raise the bar" (a company goal) and improve the development process and its products The UCD team discusses and implements ways to bring the user to the forefront and incorporate user needs into the design and development of the products. Members of the UCD team include:

- Six Technical Communications writers/analysts
- Two developers (analysts/programmers)
- One quality assurance (QA) analyst
- Two customer support specialists/analysts

Two of the members of Technical Communications are acting usability specialists, and the Technical Communications Manager is the leader of the UCD team.

The following are the main UCD goals:

- Conduct usability studies
- Solicit users' opinions for standards
- List, instruct, and roll out standards
- Implement standards into design—get buy-in from development
- Test for standards
- Maintain and review standards - how long are they valid, what is the workflow
- Identify projects to address with usability studies in order to meet company goals
- Evangelize and proselytize

Usability Testing Team

A branch of the UCD team is the Usability Testing Team. This group conducts three to four usability studies a year, usually at the customer's site. Team members' primary responsibilities include organizing the test at the customer site, devising the test script, performing the test, collecting the results, presenting the results, recommending changes, and following up on the changes.

UI Team

Another branch of the UCD team is the User Interface (UI) team. It includes three developers, two usability specialists, one customer support analyst, one QA analyst, and one education/tools specialist. The team is the developer and holder of the UI standards.

UI Evangelizing Team

The UI Evangelizing team grew from the UI team. This team promotes and educates the company about the usability research and projects that the UCD and UI teams focus on (currently a top project is UI standards). The team includes three members who perform different usability advertisements, or "missions", each week. These include creating posters and handouts for the developers, which are placed in very visible areas. We are affectionately known as "Roger's Angels" (Roger leads the UI team) – as a spoof on "Charlie's Angels".

Overall, Manatron has come a long way during the last 18 months in terms of usability but it still has a long way to go and has the difficult task of sustaining its program. However, with the past year's experiences and the help of Tec-Ed, it plans to continue usability practices far into the future.

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Laurie Kantner has defined and conducted a wide range of usability research projects as a senior staff member at Tec-Ed, Inc. Laurie has conducted numerous field usability studies using contextual inquiry and ethnographic research methods and, in the past three years, employing usability testing in the field. Studies have taken her as far as Regina, Saskatchewan, into inner-city Chicago, to the sanctum of computer company help desks and university researchers' labs, and—for this case study—to a rural Indiana county courthouse. Laurie also has experience designing and conducting "model projects" to transfer knowledge of usability practices and techniques to people with usability knowledge but no practical experience. Laurie is a member of the Usability Professionals' Association, the Society for Technical Communication, and ACM SIGCHI. She has a B.A. from The University of Michigan.

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Rebecca Shaufl has been in technical communications for the past two years, currently at Manatron, Inc., a company that provides property, financial, and judicial software solutions and related services to automate the back-office functions for local governments. Becky studied usability testing and gained hands-on exposure while attaining her Bachelor's degree in Technical and Scientific Communication at Miami University, Oxford, Ohio. In March 2003, she attended the Bentley College Usability Boot Camp, part of the Information Design Certificate program. Since then, Becky has started conducting usability studies at Manatron and is actively involved in Manatron's newly formed User Centered Design (UCD) Team and User Interface (UI) Team. Becky is a member of the Usability Professionals' Association, the Society for Technical Communication, and the International Webmasters Association (IWA).