Using Web 2.0 to Democratize the Information Economy in Qualitative Research

David Dayton
Towson University
ddayton@rcn.com

Christopher Thacker
Towson University
sonicontroller@gmail.com

Abstract

Web 2.0 refers to a set of innovations in Internet technology that can transform the Web into a participatory medium energized by the desire of people with shared interests to exchange information and opinions. By combining instant web publishing, social networking, user-generated content, and communal tagging, rating, and commenting—all within an easy-to-use content management system—Web 2.0 websites have the potential to increase the richness, dynamism, and influence of qualitative research.

To explore this potential, we have developed a conceptual model for a research website designed to collect structured accounts from a targeted group of people about a specific topic. In our case, we plan to collect first-hand reports from technical communicators about their experiences and opinions related to single sourcing and/or content management methods and tools.

This paper describes and illustrates the main components of our conceptual model and also touches on some of the challenges we anticipate. In concluding the paper, we report our progress to date in building the site and speculate about possible implications of our model for opening up the information economy of qualitative research in diverse areas, both within academe and within other organizational contexts.

Introduction

In this paper, we present the conceptual model for an innovative type of website that we believe has the potential to alter radically the creation and exchange of information in qualitative research. Qualitative research as it is currently conducted is a closed information economy because the researchers running a particular project control access to the raw data, and they alone filter, interpret, and add value to the data in their scholarly publications.

The first-hand reports (FHR) website we have conceptualized has a much more open—though not completely open—communitarian dynamic. The FHR website's principal investigator (PI) or research team will structure and moderate the information sharing within a community of informants, each of whom will provide relevant information in sufficient depth and in a prescribed format to gain access to the information provided by other members of the community. Members of the FHR website community will have the ability to search and analyze the information collected on the website. Thus, the distillations and interpretations of information published by the site's principal investigators may be supplemented, or even contested, by participant-investigators with different perspectives.

The principal investigators will retain a degree of privileged access to the information collected on the site, and they will have more versatile and robust tools for searching and analyzing the site's multiple sources and types of information. Because informants will have the ability to amend and update information they provide in their personal profiles, blogs, and first-hand reports, an FHR website will make it possible for researchers to study changes that informants report in their experiences and opinions. That capability could add a valuable longitudinal dimension to studies on certain topics.

To explain our model for the FHR website, we begin by describing the Web 2.0 phenomenon, explaining the main component technologies being combined to usher in the era of user-generated content and online social networking. We then describe our conceptual model with reference to the three core functions of the website: data collection, data retrieval, and community building. To convey more details in a vivid and easily understandable way, we present three personas and scenarios—narratives presenting fictional characters representing primary types of users of the site and some typical interactions with the site that enable them to accomplish their goals, obtaining information and interacting with others in ways that would not be likely to occur without the social medium of the first-hand reports site. In the paper's concluding section, we briefly discuss some of the unsettled questions and issues that we will have to resolve as we move forward with the project, and we gloss some implications of our concept for academic and real-world knowledge making and knowledge management.

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Benefits of Web 2.0 for qualitative research

The Internet is rapidly becoming a more congenial medium for conducting qualitative research. First generation web technologies such as email, online chat, listservs, message boards, and threaded discussions have productive uses in qualitative research in technical communication [1]. However, researchers gathering data through these online communication methods have been hampered by issues such as a lack of visual and auditory cues, shallow responses to questions and prompts, rambling and fragmentary online discussions, and anonymity breeding dishonesty [2, para. 12]. Despite these limitations, Internet technologies hold great potential for qualitative researchers, enabling methods for gathering qualitative data that are faster and cheaper. Through the Web and email, researchers can reach informants who would otherwise be inaccessible, and the communication usually happens through asynchronous writing, eliminating the need to transcribe tapes or interpret and edit the researcher's notes.

While first generation web technologies demonstrated the pitfalls and promise of online qualitative research, a whole new generation of web features, dubbed Web 2.0, promises to obviate most of the problems associated with first generation technologies. This new wave of web applications brings increased levels of interactivity and more dynamic and far-reaching social networking. Using Web 2.0 tools, researchers will be able foster better communication with and among informants; they will be able to connect with research study participants in more meaningful ways.

Incremental changes transform the Web

According to [3, p. 16], Web 2.0 should be viewed as an incremental set of changes to existing Internet technology that transform the Internet into a truly participatory medium by combining instant publishing, personalization, social networking, and communal tagging, rating, and reviews—all tied together by template- and database-driven content management systems. Categorizing common threads of Web 2.0 technology, we find one overarching concept: the Internet is becoming more user-centric. Users are no longer passive, but instead are actively involved with creating content, setting agendas, and interacting in online communities.

Wikis, blogs and RSS feeds foster dynamic forms of dialogic communication

Wikis have recently garnered significant attention because of their unique design, which enables users to collaborate in the development of online content. Essentially, Wikis are basic websites run by content management systems (CMSs); an easy-to-use markup language enables users of all proficiency levels to contribute, edit, and delete content. Wikis allow users to control content while keeping the website's look and feel consistent [4].

Blogs (from the term "web logs"), which are journals published on the web through easy-to-use CMSs, have also gained an incredible level of popularity. Though most blogs go unread except by a few friends of the author, when blogs serve specific discourse communities they can become an active and participatory communication channel. For example, a citizen journalist may post a blog with opinions regarding a certain political issue or paradigm; a software developer might post about a new feature or aspect of a piece of software; or a CEO could post his views to stockholders concerning the state of the corporation. A directory of blogs by technical writers addressing technical writing topics can be found at http://www.techwriterblogs.com/doku.php.

When blogs provide the option of appending comments to blog entries, they become a forum for discussion. This commenting capability has become a standard feature of websites published by newspapers, magazines, and radio and TV stations. Another feature often provided by blogs and websites that are becoming blog-like — which is just about any website published through a CMS — is Real Simple Syndication (RSS). RSS "feeds" are analogous to a subscription service. Users can have new content from their favorite websites — such news, blogs, and threaded discussions — sent automatically to their computer or web-enabled device (PDA, cell-phone) through the use of a web-application, called an aggregator, that collects the web-content and presents it in an easily browsable format.

Social networking insights

Social networking sites such as MySpace, Friendster, and Facebook depend on Web 2.0 technologies. These sites allow users to create a web presence centered on a personal profile that can be customized using a variety of tools for interacting with friends who also have profiles on the site. All such sites feature their own version of an easy-to-use CMS that allows users to instantly update their profiles. Users can present a variety of personal and professional information in their profiles including photos, video, music, groups, interests, résumés and curriculum vitae to other people within the network. Additionally, these sites allow users to create personal blogs with RSS feeds.

Content management systems (CMSs) are perhaps the most basic enabling technology of the Web 2.0 world. A CMS separates the visual design of a website from its content; the content is stored in a database, not as web pages, but as chunks of text and multimedia objects. CMSs significantly increase the efficiency of website

maintenance by allowing users to author, modify, record, and delete data without requiring specialized knowledge of hypertext markup language (HTML) or any scripting or programming languages.

CMSs have evolved in a number of key features: (1) more intelligent search, (2) dynamic and adaptive content, (3) personalization, (4) versioning, and (5) open or dialogic authoring. CMSs now enable highly granular, context-focused searches utilizing metadata, loosely defined as data about data; metadata improves the efficiency of searches by enabling users to specify content types, keywords, and content-specific tags. CMSs also make website content dynamic and adaptive by automating the layout and formatting of pages, whose page templates are filled with graphic elements and content from a database. The content in the database can be entered manually through web forms or scripts can be written to automate the collection of certain kinds of data from other websites. Personalization is a key benefit provided by the database-foundation of CMSs. Website users create accounts that enable them to select from a menu of content options and even to create different layouts and color schemes for their personal view of the website.

Versioning allows users to update content while maintaining previous states. Updates create a record of changes, allowing authors to collaborate on content without removing previous edits. A common example of versioning (though not in direct correlation) can be found in the Versions feature in Microsoft Word (accessible from File > Versions in the top menu). The Versions tool allows users to save and store multiple versions of the same document, creating in one file a complete record of changes that the document has undergone. In the same way, a CMS application for versioning allows users to roll back changes on a website and to view older content prior to changes/updates being created by the author or webmaster.

Open authoring, which is a key feature of wikis, is collaborative writing at its most extreme; authors create web content that can be changed at will by other users within the community. Dialogic authoring, which is always a feature of discussion forums and sometimes a feature of blogs, enables community members to comment on whatever an author posts. To be successful, open authoring and dialogic authoring ultimately on the concept of community in the creation of content.

New forms of participation

Web 2.0 technologies can enhance the effectiveness of web-based research methods by providing ways to overcome or greatly lessen problems found in first generation web technologies. The technologies associated with Web 2.0 enrich the possibilities for building and sustaining social communication among groups of people with a common interest. For that reason, we believe these technologies have enormous potential to increase the richness, dynamism, and influence of qualitative research.

To explore that potential, we developed a conceptual model of a research website designed to collect structured accounts from technical communicators sharing their experiences and opinions related to single sourcing and/or content management methods and tools. The next section of this paper describes our conceptual model and then, through narrative design artifacts called personas and scenarios, illustrates typical users interacting with the site we are in the process of building.

Description of the first-hand reports website

Our first-hand reports (FHR) website combines and re-configures technologies found on most popular social networking sites (MySpace and Facebook, for example). The FHR site will have three distinct functions: (1) data collection; (2) data retrieval and, (3) community building. All three functions are facilitated by a customized content management system. For our site, these functions will be controlled by a principal investigator (PI) or by a team of researchers.

Function 1: Data collection

Data collection entails the collection and storage of first-hand reports in each contributing member's information-sharing space on the website. The content management system will allow users to create information-packed web pages without the use of HTML. The PI/administrator will present newly registered informants with a series of prompts. A prompt is a question or series of questions accompanied by a text-entry box and rich-text editor like those found in popular web-based e-mail applications. This interface will enable informants to fill in factual information and compose narratives that will have a common structural framework. The information thus recorded will be stored in the first-hand reports database along with meta-information identifying applicable keywords established by the administrator.

To meet our data collection goals, we will combine first-generation and Web 2.0 technologies such as message boards (also known as discussion boards), wikis, and blogs. Message boards will play a particularly important role, providing both public-facing and intra-site discussion forums that enable users to create threaded discussions moderated by site administrators and appointed moderators. These systems can be public and private with varying degrees of user access. Message boards have been an extremely useful form of information

sharing on the web, and they have been user-tested throughout the preceding generations of web technology.

The most important aspect of our message board concept is that it will serve as a programmatic foundation for our website's user-interface. Our website's primary function is data collection, so the interface has to be functional and utilitarian. Most message boards follow a simple, easy-to-use threading structure. Users can create threads and elicit comments from other users based on the subject of the discussion forum. The interface prompts users to input data into an input field that can be configured—depending on the level of sophistication—to use either simple text or rich text. Rich-text editors can be installed to allow users typographic formatting options similar to those found in programs such as Microsoft Word.

Function 2: Data retrieval

Data retrieval is the second major function of the website. Researchers will want the data retrieval function to be highly efficient so they can filter, find, and extract information as quickly as possible in a way that is easy to analyze in-depth. Granularity is the key to efficient data retrieval; the back-end application must be robust enough to sort information based on multiple variables such as keywords, type of technology/method, brand name of tools and technologies, industry type, company/workgroup size, and so forth. The data retrieval system must allow a researcher to combine such variables to generate data sets fitting the research question(s) motivating the database search. The PI and any others sharing administrator access to the site must be able to access data in a highly efficient and fully customizable way.

The data retrieval function will also be designed to allow members of the community to search the site's database for specific information they need for personal reasons or to help someone find information on a particular topic. For community members, data retrieval will be based on a back-end application and an open search engine on the front-end of the site. The capabilities provided will be useful and usable, but not as robust as those provided to the PI and designated site assistants, who will use a more complex and feature-rich interface for site administrators.

Data reporting options in the site will encourage researchers to create hypotheses and seek non-obvious patterns within the first-hand reports and other forums on the site. Reports will present hyperlinked snippets of information blocks from the database that are sorted and presented in a meaningful way based on a search query. The purpose of our data retrieval application is to help sort data based on the conditions set by the user. For instance, a researcher might want to generate a report of all the responses by a particular user. Perhaps after looking through the data, the researcher wants to refine the search down to a particular user referenced by a period of time. After examining this information, the researcher might want to cross-reference the previous search with results from the same set of search conditions applied to other informants.

The data retrieval application must be able to meet the needs of researchers. This means that the design must allow for a high level of granularity. The system must be flexible enough to easily retrieve data in fashion that allows for cross-referencing against a number of keywords. The researcher must be able to examine different responses against a number of keyword sets so that the researcher can begin to create hypotheses. These reports will support the researcher's exploration of the data in the most flexible way possible.

Academic and practitioner researchers who are members of the site community and who are given access to the data retrieval application will be able to use the data to formulate new ideas for scholarly discussion. Other community members will be able to use the front-end search engine to conduct data retrieval with less robust granularity, but this will allow them to explore specific questions, search for patterns in the first-hand reports, and formulate questions for discussion in their blogs on the site and/or in the general discussion forum. The ease of data retrieval will be one of the cornerstones of community building. We want users to be able to explore the rich qualitative data provided by community members and generate their own questions for further exploration and discussion.

Function 3: Community-building

The community-building function will be aimed at fostering social networking within the membership of the site. We will use social networking sites such as MySpace and Facebook as points of reference. Our goal is to balance the needs of the researcher with the needs of the community. Social networking sites often use a combination of web technologies to facilitate rich forms of communication. Our site will attempt to use a similar set of technologies so that users can create in-depth profiles and personally controlled communication spaces. The profiles should increase the level of trust within the community by providing a way for users to display and authenticate their credentials. Moreover, we hope to provide tools that encourage users to interact with the larger community. Such tools should include a private messaging system, blog, and public commenting on each user's blog and first-hand report, which will be under the control of the member who owns his or her own communication space.

Profiles will be created using a back-end utility that will be integrated with the application utility that site visitors will use to request membership in the site, either as a provider of a first-hand report (which status might be dubbed "contributor") or as a member participating in discussions and contributing public-identity information but not a first-hand report. (Perhaps "participant" would be he label given to this other category of membership.)

Upon becoming members, both contributors and participants will be prompted to fill out a set of data-entry fields to build their site profiles. Contributors, but not participants, will be allowed to create a disguised-identity profile, but these applicants must provide real-identity information to the PI/administrator so that their identity can be verified. Disguised-identity members will be able to choose a comparatively general level of granularity when inputting information for their publicly accessible profiles. Members electing to provide real-identity profiles will also have some flexibility in the level of detail they provide for some parts of their profile. For instance, these users might choose to include or omit certain demographic information, e.g., age, sex, postal code, and education.

The administrator will be able to set the minimum requirements for self-identification within the profiles of both types of members, real-identity and disguised-identity. Each user will have their own unique user profile, which is created with an assortment of options that will range from educational history to work experience to published works, and so forth. All such information will be presented with a high degree of uniformity and integrated in the front-end design. Users will be able to search and explore the profiles of other users within the community and compile reports based on this information.

Members will have access to a number of communication options within the back-end application: first-hand reports, private messaging, blogs, and commenting. The private messaging system will work much like a traditional e-mail, except that all correspondence will be stored within the database. The messaging system is simply another means for users to interact. Messaging systems are inherently private, and ours will guarantee users that only they will have access to the messages stored by the system.

The blog connected to each member's profile space will allow members to record their thoughts, questions, and opinions regarding issues raised within the site. Access to the blog-building utility will be conditionally available to contributors after they have responded to the first-hand report prompts from the administrator. Participants will have access to their blog immediately after their membership has been granted and their account created.

Contributors may want to reflect on questions and issues raised in their first-and reports.. Participants will be encouraged to use their blog for telling the community more about their interest in single sourcing and content management and their related questions and concerns. The idea behind blogging is to create another form of expression beyond the first-hand reports, the discussions on the reports carried out through appended comments, and the public discussion board. The blogs could serve as a valuable resource for community members to sum up their evolving opinions about particular issues and to articulate insights that emerge as they learn more from others' experiences and discuss their own experiences.

Commenting and versioning systems that have been a popular feature of wikis will be employed track changes in members' first-hand reports. These changes would be recorded by the database and accessed by researchers according to version number, time, date, and user name. Allowing users to add additional information to their reports through responses to other members' comments could also have implications for research. Comments could provide the researcher with an additional source of data. Furthermore, comments could allow users to debate issues and create a better understanding of the experiences and contexts underlying differences of opinion about the methods, tools, and technologies that are the focus of the entire site.

Identifying users and their goals

The FHR website will be created based on the principles of user-centered design. Indeed, to a great extent, our design process to date has been a special case of participatory design because one of us (Dayton) is intended to be the first client and PI/administrator of the FHR website and the other (Thacker) is the site's designer and lead developer. To make ensure that we shared a detailed understanding of the interaction design goals we had discussed off and on for some months, Thacker drafted a set of personas and scenarios representing his understanding of the site's purpose, audience, and context of use. Dayton responded to the drafts with comments and questions and additional ideas, and Thacker revised the personas and scenarios, which we present here to illustrate the conceptual model we described above in more vivid and, possibly, more clearly understandable terms.

Personas and scenarios are interrelated user-centered design artifacts for defining a web site's primary audiences. User-centered design (UCD) focuses on the end-users of an information product. During the UCD process, information designers develop products that meet or exceed the wants and needs of an end-user. Such specificity is impossible to achieve when designing products for a broad user base. Understanding this,

information designers identify user profiles for several niche audiences considered to compose the audience for which the website will be designed. Based on these user profiles, designers create personas, which are detailed archetypes of the niche audiences [5, p.4]. According to Alan Cooper:

Personas are not real people, but they represent them throughout the design process. They are hypothetical archetypes of actual users. Although they are imaginary, they are defined with significant rigor and precision. Actually, we don't so much "make up" our personas as discover them as a byproduct of the investigation process. We do, however, make up their names and personal details. [6, p. 124]

These archetypes allow designers to envision the distinct characteristics of their primary audience in terms of demographics (age, sex, education, marital status, and income) as well as psychographics (attitudes, opinions, and concerns). Once a persona is created, an information designer can begin to envision a set of scenarios depicting that persona interacting with the website to achieve the goals that drive the persona's relationship with the website.

According to [7, p. 14], scenarios are "fictional stories, with characters, events, products and environments"; scenarios allow designers to test the suitability of their information products against real and imagined conditions and to view their products through the use of role-play. In the following section, we present three distinct personas, each with an accompanying user-experience scenario that will help create a vision for the design and function of the website. As this website will be designed to meet the needs of Dayton's STC research project, the personas and scenarios are based in large part on the users and uses described in his proposal [8].

Persona 1: PI, John Alexander, Ph.D.

Education: B.S. in Psychology; M.S. in Educational Technology; Ph.D., Technical Communication, University of Washington, 1999. Dissertation: Survey and interview study of single-source publishing practices in technical communication. Two articles from the dissertation study were published in *Technical Communication Quarterly.*

Work Experience: 19 years in the field; 11 years of full-time or dominant part-time practitioner work—wide range of technical editing and writing assignments for audiences ranging from the general public to technical experts and members of the U.S. Congress; 8 years as full-time faculty member at a Research I state university in the Southeast.

With a grant of $10,000 from the Society for Technical Communication, Prof. Alexander conducted a multimodal study of STC members' usage of and attitudes toward single sourcing and content management systems. He gathered data from an online survey of 1,000 randomly selected STC members and supplemented that data by conducting a dozen semi-structured interviews in-person and by telephone.

Prof. Alexander also worked with a graduate student to create an interactive database-driven website that invites technical communicators to create profiles and user accounts, giving them a single-purpose blog space; the blog has but one topic: their first-hand reports of experiences using single sourcing and/or content management technologies. The working name for the website is "the first-hand reports website," or FHR website. The first-hand reports are composed by site members in response to a series of prompts that give all the accounts a roughly parallel structure, organized into text blocks focused on the same subtopics.

The site was launched two months ago and now has 50 members, 28 of whom have created first-hand reports. The other 22 members are either representatives of companies that sell software or web applications related to the focus of the site, or they are technical communicators who have not used either single sourcing or content management but who want to participate in the site to have access to much of the information recorded in the first-hand reports and in the site's discussion board.

Early on a Monday morning in October, Prof. Alexander logs into the FHR site to see what new tasks are pending. As the PI/administrator of the site, after logging in, he is immediately brought to the back-end control panel of the site. The default page of the control panel presents him with a global view of the website's content—the dashboard. He sees that he has new messages in his PM (Private Messaging) utility. Clicking the inbox he reads through these messages one at a time, typing quick responses—answers to questions and comments about features of the site or about aspects of the prompts for the first-hand reports. After clearing his PM inbox, he clicks to the site's Help Wiki and posts a message that clarifies a question regarding how FHR contributors can adjust the access permissions to their profiles and first-hand reports.

Returning to the administrator default screen, Prof. Alexander clicks the link to open up the user list utility to show all the options for searching and manipulating the data in the user list. The utility includes a function that allows Prof. Alexander to quickly approve new users after reviewing and authenticating their profiles. The utility also flags each user's confidentiality settings. Due to his role as PI/administrator, Prof. Alexander can access the profiles of all community members regardless of this setting. Today, he has a number of new members requesting confidentiality. To authenticate these users for full membership, he will contact them using one of his

personal email accounts or by calling them, depending on the preference they have indicated.

Setting aside the new member authentication task, Prof. Alexander returns to the default screen. He clicks on the search function and generates a list of reports that were posted since his last session. He finds that five members have commented on the most recent first-hand report, which was authored by Susan Cook. Susan has detailed her frustrations regarding the implementation of a single sourcing system in her workplace. Before posting a comment to the thread that has developed in response to Susan's report, Prof. Alexander takes the opportunity to explore the profiles of the members who have commented on Susan's report.

Prof. Alexander reads through Susan's report He has several somewhat complicated questions to ask Susan; using a PM, he asks if they can set up a phone call for sometime this week to talk further about the experience she wrote about in her report. He then opens a text-entry box by clicking a link titled "Notes." He fills out the subject line with Susan's name and words related to the questions he wants to make a note about.

Before logging out, Prof. Alexander visits the public discussion forum. He has been pleasantly surprised that the forum has attracted many within the community to discuss a variety of issues with both site members and visitors. The form interface shows that several guests are reading messages; he wonders who the lurkers might be. He scan-reads several new messages in the Community Feedback topic. After a half hour of reading and replying to messages, Prof. Alexander logs out, but not before revisiting the administrator search interface to generate and print several reports to read the following day.

Persona 2: Informant, Susan L. Cook

Education: Bachelor of Arts in English, East Carolina University, 1995; Master of Science in Technical Communication, North Carolina State University, 1998

Work experience: 9 years of technical writing experience with four different companies in North Carolina: two national banks, a small software company, and her current employer, an investment management firm that is a subsidiary of Wachovia Bank.

In her current job, Susan works in a knowledge management group that integrates customer learning, documentation, and support for the company's investment advisors and institutional investment fund managers. She mainly uses an authoring tool popular with technical writers in conjunction with another software tool to produce PDFs, Web Help, and context sensitive HTML Help, relying on the use of conditional text in her authoring tool to create multiple outputs from a single document source. She has been feeling frustrated for over a year with this system because the number of conditions in her source documents have expanded to the point where she feels that the system is no longer efficient, and the situation has only gotten worse because a reorganization six months ago has led to a more collaborative workflow that the single sourcing system does not accommodate very well because the workgroup has a kludgy versioning control system. Susan has bought books on XML and content management and has joined the listserv of the single-sourcing SIG of the Society for Technical Communication. She has passed one of the books to her manager, urging her to read it and to begin thinking about investigating the feasibility of re-engineering the group's information development process around a content management system.

Two weeks ago, Susan received an email from a fellow STC member, Prof. Jonathan Alexander, who invited her to join a content-managed website in which technical communicators would share experiences and opinions about single sourcing and content management methods and tools. Prof. Alexander's email outlined the purpose of the research and basic information regarding the capability and structure of his new research website. Susan jumped at the opportunity to discuss the problems with her group's single sourcing system and to seek information about content-management solutions for small documentation groups like hers.

The day after she received her invitation to join the first-hand reports website, Susan logged in as a new user, ready to complete the site registration. She was surprised to be presented with the option of setting up a disguised identity, which would hide her real identity on the site from everyone except Prof. Alexander. She was not interested in that option, so she skipped the link to detailed explanation about that option. She filled out the web form with her real name and gave all the required contact information, checking options that made her phone number invisible to site members. For her username, she used the same handle she had created on the single-sourcing listserv, figuring that many of the members of that SIG would also try out this site. She created a password and entered an email address, then switched to her email client to look for the confirmation message. It arrived within a minute, and she clicked the link that took her to a welcome message on a page with a series of dropdown menus for site navigation. The navigation menu consisted of the following: Profile, First Hand Report, My Blog, Discussion Board, Global View, Site Search, Site Directory, Site Mail, Help Wiki.

Susan opened the Profile page and saw that the information she had entered to join the site was already entered. It reminded her of her LinkedIn profile page. She clicked the link to the First Hand Report. The interface was clean and simple; the page presented a series of hyperlink questions grouped under headings; it reminded her of an FAQ. She clicked one of the questions, and a

text entry box appeared with two rows of icons above it—familiar formatting options and other functions she recognized as a standard HTML text editor. She clicked the Cancel button, and the page reverted to the list of questions, which she read more closely, starting from the top.

She saw the questions asked for quite a lot of detail, and she was momentarily put off by the thought that this was going to take more time and effort than she had anticipated. She thought she would read through some other reports before getting very far into writing her own, but she clicked the first prompt, which was a statement identifying as the focus some basic information about her company and work group. She was surprised when a survey-like series of questions appeared with fixed choices, but she realized quickly that this made sense: she clicked answer choices that quickly got her past filling in some basic details about her company and workgroup without her having to type anything — including the names of the software applications her group used for single sourcing. The final question on the screen asked her to indicate how satisfied or dissatisfied she and her coworkers were with their information development tools and process, and she picked the neutral point on the scale for her co-workers, but picked "somewhat dissatisfied" to indicate her attitude. She then typed an explanation in the comment box under the question and pressed the Save button.

The next screen contained one prompt asking her to describe the workflow for information products that she was involved in developing, including both coworkers and the software tools that each person in the process used to complete their work. Susan took a couple minutes to mull over the prompt and then began to type rapidly. She spent about five minutes typing and reading by turns. Then she clicked the Review button. Another web page appeared displaying the text she had just typed. She reviewed it, and then clicked the Edit button so she could re-word one of the sentences that had gotten too long. She clicked Save, and then, after the page had refreshed, again showing the text she had entered, she clicked the Next button.

Susan spent about 30 minutes composing and editing answers to two more prompts and then clicked the Quit button. It returned her to the start page of prompts, which now had lines of text under the ones she had answered, showing the last-edited date and time, along with a Revise link and a Publish link. She logged out, realizing that it was nearly time for American Idol to start.

At work the next day, Susan showed Kate, her manager, the first-hand reports website and the information she had entered but had not yet published on the site. Kate seemed a bit wary, asking a series of questions that surprised Susan. She had not thought Kate would mind her participating in the site, but she clearly was, evidenced by the sudden relief Kate expressed when Susan repeated, with more emphasis, that her none of the information she had posted so far had been read by anyone. Kate asked her to hold off on publishing any information until she could check with Jim, the V.P. of Customer Support. That afternoon, Susan met with Kate and Jim in a conference room, using an LCD projector connected to a laptop to give them both a tour of the site. They read over printouts of several pages of text by Prof. Alexander explaining the goals and the policies and procedures for the site. Jim finally declared that he thought it would be fine for Susan to be what Prof. Alexander called "an informant" for the research project, but he would prefer that she participate using a disguised identity and entering only general information about the company so that it could not be identified. Kate agreed, and offered to let Susan use a little time on the clock to complete the report using a new account.

That night, Susan used the Site Mail to contact Prof. Alexander telling him what she planned to do—cancel her current account and re-apply for an account with a disguised identity. Checking the next morning before going to work, she found a reply from Prof. Alexander, in which he pointed out that no one but him knew yet that she was a member of the site, and that she could simply go into her profile and change her account settings. He gave a link to the Help Wiki that explained that new members' accounts were only visible to Prof. Alexander until the member had completely filled out their first-hand report, which had to be vetted by the professor before it became visible to other site members. Susan was delighted to report this information to Kate, and even more so when Kate encouraged her to spend a few hours that week on completing the report.

It took Susan two more sessions adding up to nearly an hour before she had answers for all the prompts. She selected the option on the prompts index page to select all the answers and print them out. She corrected and made final tweaks that Friday afternoon and, feeling a little anxious, finally clicked the Select All and then the Publish Selected buttons. She realized that, for the moment, she was only publishing the report for the eyes of Prof. Alexander. The next day when she logged in her home page displayed a message that new comments had been added to her first-hand report. She clicked the link on "new comments," which took her to a page titled "General Comments on First-Hand Report from Simone Garamond (alias)." Prof. Alexander had a question about some details regarding the users of the PDFs her group produced and published on the customer self-help website. He asked her to send him a Site Mail if she needed clarification. He also encouraged her to review some of the other profiles and reports.

Curious about the other members, Susan took Prof. Alexander's advice. She was surprised to find that the

website's members came from very diverse backgrounds. Additionally, she was encouraged by informal approach that some members took to writing their accounts. As she read through some of the other reports and contributed comments, she started to rethink some of the content in her report.

Revisiting the prompt default page, she returned to the questions with a fresh perspective, expanding her report with more specifics about the different outputs her workgroup produced, and the needs of their different audience groups. She re-published all her answers except the initial ones with basic information, and then logged out for the evening. The next day, she returned to her account to find additional comments and discussion regarding her revised report. Some of the comments were attached to specific sections of her report rather than to the General Comments area at the end. She printed out the topics with comments and the threaded discussion that had formed in the General Comments area. She took the printout to work the next day and shared it with Kate, who seemed quite impressed. Some of the comments contained suggestions for tools and procedures that could help them address the problems Susan had described.

Persona 3: Lurker, Karen L. Thomas

Education: Bachelor of Science, Information Systems, Brigham Young University, 1991.

Work experience: Began her career as a systems integration engineer for Verint Systems, Inc. for 8 years; she has been a senior technical editor for American Eagle Alliance for the past three years.

Like Susan, Karen Thomas also received an invitation to join the first-hand reports website. However, she decided to take a wait-and-see approach before filling out a request to join as an informant. She left her job at Verint because that company was going to transition to an XML-based content management system, and it appeared that she would not only have to learn far more technical nuts and bolts about XML than she ever wanted to learn, she was also going to have to do a lot more reading on screen than she wanted to do. She has the desire to raise a number of issues about content management, but she fears that this research website, like the one email discussion list on the topic that she belongs to as an occasional lurker, will be dominated by pro-XML views.

As a lurker, Karen cannot access the user-interface of the back-end utility that Susan worked with. Karen has access only to the front-end of the site, which contains a navigation menu, basic search feature, and threaded discussion list. The front-end of the site is designed to be akin to a message board indexing all public discussions. There are additional features, including a news archive and a list of recent blogs whose authors have chosen to publish for public access. Karen's options in replying to messages posted on the discussion forums are also limited.

As she starts to read through the discussion forum on this, her fourth time visiting the first-hand reports website, Karen feels her desire to contribute beginning to outweigh her reluctance to expose herself to charges of being a Luddite. She decides to re-examine the option of joining the website as a private level member, which would let her create a disguised-identity profile and a first-hand report that only the PI/administrator would be able to view. As a full-fledged though private member of the site, she would be allowed to read and comment on the reports by other members and take part in the online discussion with rights equal to any full-fledged member of the site.

Summary and closing thoughts

The dominant research paradigm of technical communication is interpretivism; research in this paradigm is conducted primarily through qualitative methods. Web-based data collection methods are particularly well suited for qualitative research because they make it feasible in time and costs to gather data from many more participants than is possible with traditional methods. Recently, new technologies have emerged that enhance web-based qualitative research by increasing the intensity and quality of the conversations among researchers and informants. We believe that integrating these Web 2.0 technologies into a research website has benefits that will exceed the costs. However, we have no illusions about the effort that will be needed to build out the model we have described.

Beyond the development hurdles, setting up and maintaining an FHR site will prove enormously challenging, even with the turnkey content-management system that Thacker plans to develop. Nevertheless, we believe that many researchers will accept the challenges in exchange for the breadth, depth, and quality of data their FHR websites will enable them to collect.

We have limited resources; thus, it is important that we maximize the efficiency of our development cycle. We plan to spend considerable time in the pre-alpha phase, modeling the site using paper-and-pencil prototyping. As we approach the alpha phase, we hope to have a majority of the usability issues sorted out before we begin to create a fully functioning user-interface.

To manage the first FHR website, Dayton will be required to develop a detailed set of protocols. In order to collect high quality data and foster community trust, these protocols need to ensure that personal information is restricted based on levels of user access. Additionally, the protocols will have to protect the information of users who do not wish to be identified to the community. This may require storing the unique coded identifiers for some

site members offline. We anticipate that getting the approval of an Institutional Review Board may require an extraordinary communication effort and some negotiation to devise acceptable methods of ensuring informed consent and the full protection of participants' rights.

As the website grows or as research demands change, the administration of a first-hand reports website may change hands. Thus, the site's policies and procedures must include the procedure for transferring administration of the website to ensure that confidentiality agreements with informants are upheld. The policies and procedures will also need to spell out how a site may be closed down and what will become of the data collected on it. The site's policies and procedures will also need to anticipate how best to deal with a number of threats to validity and reliability that are unique to online communities, such as how to monitor and regulate the participation of vendors and consultants pursuing economic interests and so-called "trolls" expressing gratuitously malicious intent. PI/administrators of FHR websites in certain discourse communities may need police their sites diligently for malicious or suspect content, and for this they will need the help of trusted members of the site community.

Collaborative story mining

The FHR site is designed specifically for the purpose of qualitative research with a narrow scope: discussing single sourcing and content management in technical communication. The kind of community website we envision, however, could easily be adapted to collect first-hand narrative accounts serving a variety of purposes and groups. Organizations could use such a website to enable employees to contribute accounts of lessons learned from certain types of projects. The FHR model could also be used in a process of continuous evaluation while projects and programs are underway. A manager could require team members to share examples of strengths, weaknesses, opportunities, and threats, building a rich database of semi-structured narratives that could contribute to strategic and tactical planning.

In sum, we believe that our conceptual model for a first-hand reports website could promote knowledge creation through knowledge sharing in a wide variety of contexts. All that's required, really, is a critical mass of widely dispersed individuals with shared, well-focused interests and much to learn from one another's experiences.

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About the Authors

David Dayton has a PhD in Technical Communication and Rhetoric from Texas Tech University. He has taught technical communication at the University of Puerto Rico at Mayaguez and Southern Polytechnic State University (Georgia). He now teaches in the Professional Writing master's program at Towson University in Baltimore County, Maryland. The project described in this paper is part of a research project funded by the Society for Technical Communication.

Christopher Thacker holds a Master of Arts in Professional Studies and a Master of Science in Professional Writing from Towson University. He is the Managing Partner of Insubordination Records of Columbia, Maryland, and maintains the company's content-managed website. This paper is based on his unpublished MS thesis, which is titled *The Prospects and Challenges of Using Web 2.0 Technologies for Qualitative Research in Professional Writing.*