Are We There Yet? An Examination of Where We've Been and Where We're Headed as Technical Communicators

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Abstract

This paper looks at the changes three experienced technical communicators have seen in our field due to Web 2.0 social media venues and self-service technologies. It examines the challenges faced by technical information developers today, and looks at trends we see for the future. Addressing the need to adapt to these dramatic changes, we describe new and expanded roles writers can take on, suggest skills that will help new writers succeed, and identify areas where research is needed to support technical communication practitioners. We look at changes in these areas that affect technical communicators in the workplace: writer-customer interaction, customer troubleshooting and information sharing, globalization, accessibility, documentation methods and delivery, and faster product development. Keywords: future trends for writing and technical communication, documentation for social media and Web 2.0.

Introduction

As seasoned information developers, we've seen our work environments and practices evolve over the years. This paper looks at the dramatic changes we've seen, and identifies current and future challenges. We also suggest some expanded roles that writers can take on, and skills and traits they can develop, to adapt to continuing changes in our field. Understanding these changes is important both for new writers entering the field and for experienced writers who seek to maintain a competitive edge in our profession.

Now, more than ever, there must be a robust synergy among practitioners, academics, and researchers to help us adapt to the rapid pace of change in global communication. Those in academia must be aware of the skills and abilities new writers will need to succeed in the workplace of today and in the future, and researchers must provide practical and timely results that support changes in technical writers' working environments, tools, and methods of communication.

Because a limited amount of traditional research is targeted to social media's impact on technical writing, writers must often make due with extrapolating from research carried out in related fields or based on older technologies. Increasingly, writers also turn to blogs, wikis, online forums, and other forms of social media as sources for information. There is a growing need for reputable, high-quality, timely research findings that can be put into practice by communicators immediately. This will help writers adapt effectively to the rapid pace of change in global communication and continue to meet customer needs in today's self-service society.

This paper examines our experience in these areas that affect technical communicators in the workplace: writer-customer interaction, customer troubleshooting and information sharing, globalization, accessibility, documentation methods and delivery, and faster product development and communication.

Increased writer-customer interaction

In the past, technical writers had little or no contact with customers. To understand customer needs, we relied on the results of printed surveys included in manuals that customers could return by mail, observations of usability tests, annual user conferences, and occasional site visits to observe customers using our documentation in their work environments. While these methods were helpful, the information they yield is of limited usefulness with today's global customer base and the prevalence of Web-based solutions.

Today, our Information Development department at Oracle Corporation uses additional methods to understand and meet customer requirements. For example, in addition to conducting usability tests and focus groups, we

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collaborate more with customer-facing departments such as training and technical support. We also monitor corporate e-mail groups that discuss customer issues. This helps writers identify topics that can be used to improve documentation, including troubleshooting tips and frequently asked questions. Writers also add value to discussions by pointing customers and staff to documentation that addresses issues.

Another effective method we use for interacting with customers is our Customer Partnering initiative, a series of writer-customer Web conferences that provide feedback on prototypes and ways to improve documentation [1]. Our program is based on the participatory design technique described by JoAnn Hackos in "Customer Partnering: A New Tool for Analyzing User Needs"[2]. It is "a technique used to design information products by creating a long-term relationship between representative customers and information developers" [3, 4]. To record feedback during brainstorming sessions in Web conferences, we use Tony Buzan's iMindMap tool to provide a graphical representation of the discussion [5].

Because we conduct the Customer Partnering sessions inhouse, writers have taken on several new roles to support this initiative. For example, writers act as *recruiters* to select and enlist customers, *communicators* to provide agendas and meeting information, *interaction developers* to create presentations and activities, *discussion facilitators* to lead meetings, *observers* to log customer responses, and *analysts* to distill information and present findings that address the study's goals. These new roles provide an opportunity for writers to increase their skills and abilities. This enhances morale and develops department resources.

Our department also interacts with customers by monitoring the company's online technical support forum, My Oracle Support. The forum is an online meeting place where support personnel and community members work together to address support issues. As shown in Figure 1, collaboration tools provide motivation for participation and encourage high-quality contributions.

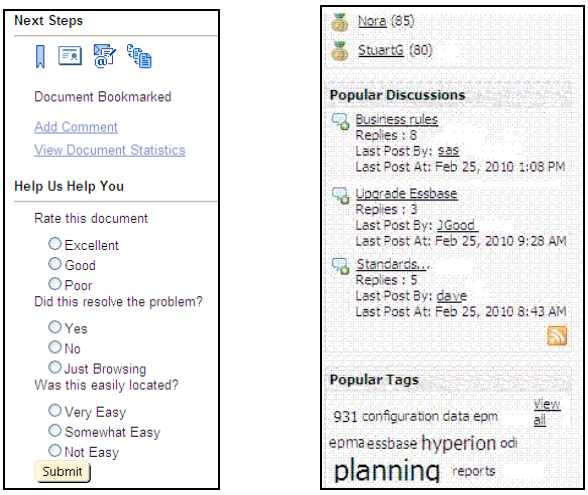

Figure 1. Examples of community collaboration tools.

For example, community members can rank contributions, and the most helpful contributors are rewarded with special icons that display next to their user names. High-quality participation creates a vibrant and helpful forum that draws more community members. It also increases search engine rankings, which helps customers find information when they search the Web.

Writers in our department can use a Web browser to log into the forum to monitor discussion topics and view dashboards and "tag clouds" (graphical representations of the most common tags used on a Web site) for the most popular discussions. They can also view lists of questions that the community has answered, and subscribe to RSS feeds and an email digest of support articles with links to solutions, tutorials, reference material, and answers to frequently asked questions. Writers can also submit content and view metrics for user ratings and the number of page views. Such data helps validate and improve the effectiveness of documentation, and uses the power of community collaboration to help writers understand and meet customer needs.

Online customer support forums are increasingly common, and technical writers can take advantage of this industry trend by adopting roles that leverage their expertise in assessing customer needs and documenting solutions. For My Oracle Support, writers can take on roles as *content managers*, to review, publish, and maintain content, and *customer specialists*, to address customer feedback and identify and fill gaps in the knowledge base. Other non-traditional roles include *IT specialist* for the Web site, and *training developer* for internal and external site users.

Other new roles available to writers are described by Chappell and Church [6], whose group provided developer documentation using screencasts, blogs, and wikis. To maintain the community personality on the Web, writers became *community members*, as opposed to isolated content developers. Roles included *managing*

editor to keep online content fresh and interesting, *watchdog* for user-generated content, and *first responder* to ensure customer issues were addressed within 24 hours. Other non-traditional roles included setting up and analyzing Web metrics that included user ratings, polls, Socialmeter scores, and the number of downloads and page views per day. Challenges reported by the writing group include learning new technologies, finding the appropriate venue for presenting screencasts, knowing when to "quash" questionable user-generated content, and effectively interacting directly with an online community.

To help writers take on these new roles, companies can provide training in skills that help writers represent their employers to customers. Such skills were previously provided only for sales and marketing professionals. Writers can also develop the expertise for taking on new roles by implementing prototypes for internal audiences. For example, writers in our department created information development wiki pages where department members can request and provide technical support for issues that arise with content management or authoring tools. Writers can also develop style guidelines for the more informal and folksy social media writing style. Numerous popular books and online articles, often targeted to sales and marketing professionals, provide tips for social media etiquette and strategies for effective blogs and tweets. [7]

Technical writing instructors can prepare students for new types of writer-customer interactions by teaching skills for developing and deploying documentation using new technologies, such as Webcasts, podcasts, and screencasts, and knowledge of tools for tracking and responding to online metrics. Technical communication curricula could be enhanced to emphasize the growing importance of public relations skills as technical writers increasingly interact with their employers' customers.

Research on improving writer-customer interactions can be extrapolated from related fields such as usability, information retrieval, and human-computer interaction. Two helpful sources include David K. Farkas [8, 9] and Ginny Redish. [10-12]. Another resource is Jared Spool's user interface engineering reports and articles such as *Designing for Faceted Search* [13] and *Web Apps: Where Business Needs and User Needs Collide*. [14]

Many writers also subscribe to Jakob Nielsen's electronic *Alertbox* newsletter, which provides guidelines on a range of topics, such as effective error messages, transactional email, online surveys, Web pages for mobile devices, support for low-literacy users, and headings and links that enhance navigation. For example, based on eye-scanning research, Nielsen provides practical guidelines for improving information retrieval through effective "microcontent" for the first 40 characters and "nanocontent" for the first two words. [15-22] To help writers understand customer needs, additional research is needed on the most effective ways to incorporate Web metrics and social media technology such as cloud tags and Twitter "hashtags" (terms preceded by a # symbol that categorize communications) in the information develop-ment process.

Customer troubleshooting

Error messages were once written by programmers. They were cryptic and often devoid of meaning for users who lacked a programmer's technical knowledge. Customers called technical support for help resolving error messages and other issues. They had little interaction with other users outside their companies except at infrequent user group meetings.

Now, technical writers at many companies are responsible for creating and editing error messages so that they identify problems and provide information on resolving them, all in clear language that users can understand. For example, our company implemented a milestone for the information development lead to review all new and updated error messages for each software release. Having writers take on the role of *error message developer* leverages their expertise to provide a valuable service to the company and to its customers.

Customers who have issues with products increasingly search for solutions online before calling technical support. Some companies maintain portals that lead users to several kinds of information about their products and how to use them. For example, Oracle customers can use My Oracle Support to search a knowledgebase that includes product documentation, bug reports, white papers, and so on. Customers can also log technical support requests from My Oracle Support.

Instant messaging is also becoming common in customer support. The Twitter Web site provides several use cases for how companies have integrated Twitter with their support efforts. For example, Best Buy now offers "Real Time Twelp," where customers can send tweets to the Geek Squad for instant technical support. Best Buy calls its Twitter support team the "Twelpforce" [23].

Customers searching for solutions online can uncover information on wikis, blogs, and other interactive sites that the vendors do not necessarily control, and where the posted solutions may not be correct. Social networking sites make it easy for a company's customers all over the world to share information spontaneously. While this phenomenon has the potential of giving quick solutions to otherwise vexing problems, it can also lead to confusion and error if the "solutions" are incorrect or are poorly expressed and therefore misunderstood.

While companies cannot expect to control external communications, they may need to monitor them with the objective of locating and correcting information that is inaccurate or misleading. Such efforts should involve technical writers and editors to ensure that the information is clear and understandable. Writers can increase their

value to the company and help meet business needs by volunteering to step up to such roles.

Technical writing instructors can prepare new writers for these tasks. For example, they can teach effective ways of moderating customer discussions on technical support sites. Students can also be taught how to help resolve customer issues by checking and responding to ratings of online content, and to identify ways of improving documentation by analyzing search engine data to determine what issues most often prompt users to seek help online. Researchers can conduct studies aimed at helping writers understand how and when to monitor external communications, and the most efficient and effective ways to maintain the highest possible quality of information on third-party Web sites.

Globalization

In the past, a company's technical writers all worked in one location, often in the same building as the developers and testers on their projects. Communication was straightforward because team members interacted with each other face-to-face on a daily basis. In addition, lengthy project schedules allowed ample time for developers to finish code and for writers to document features. After a project was finished, code and documentation files were handed off to localization teams for subsequent translation. Companies took for granted the time and costs for localization.

Now, product development teams comprise people working in many different locations and time zones. A typical team may include writers working in different states in the U.S., programmers in India, testers in China, and translators in Europe and Israel. This brings positive changes, including greater diversity within teams that matches the diverse nature of the customer base. However, with limited opportunities for real-time interaction, writers must develop new skills to collaborate effectively with a widespread group of people with differing backgrounds, cultures, languages, and accents, working in different locations and time zones. [24-26] Companies like ours now offer training on understanding different cultures and working on remote teams.

Teams increasingly use new types of media to maintain effective contact. For example, writers in our department have frequent Web and video conferences and use email and IM (instant messaging) software to interact with remote co-workers [27]. Because team members are in different IM networks, writers use software that seamlessly interconnects AIM, Yahoo!, MSN, and so on [28] Our writers also use wikis for collaborative writing [29] projects with remote team members.

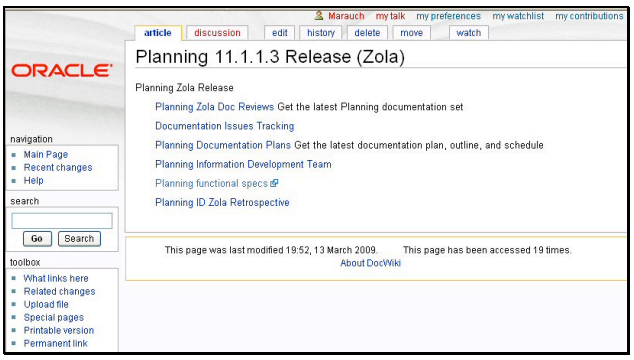

Figure 2. Project management wiki page for information development.

As shown in Figure 2, writers in our group also use wikis to manage remote projects, conduct documentation reviews, and make standards and guidelines available to remote team members. We also use an internet connection for remote access to a shared repository of files in our version control system.

In addition to using collaboration tools, writers must develop an awareness and sensitivity to cultural differences when working with global teams. For example, they should understand that some idioms in their own language might not be understood by other participants in a teleconference, and they can practice diplomatic ways of requesting repetition or clarification of statements they have not understood because of native language differences.

Voss and Flammia [30] advise that writers consider cultural differences in political, social, religious, and economic values, as well as issues with privacy and legality. They recommend that technical writers:

- Review documents from the perspective of the audience, and avoid stereotypical depictions of members of other cultures.
- Avoid using idioms, jargon, slang, colloquialisms, and humor.
- Use care when depicting icons and graphics, as well as maps, flags, and political symbols.
- Consider differences in monetary systems and number and date formats.

Writers must use care when communicating through electronic media because of the lack of normal conversational clues such as body language, tone of voice, and facial expressions. However, the advantage of using these media is that writers participating in dialogs are better able to focus on the message without being distracted by the messenger's appearance, accent, behavioral tics, and other personal traits. This can improve communication with remote team members.

Today, more companies are moving toward simultaneous delivery of products in English and other languages, also called "sim ship," to meet global sales and marketing requirements. This means writing tasks must now be

completed earlier in the product development cycle. Writers can adapt to this requirement by employing strategies that increase the efficiency of the writing and translation process, such as using a controlled vocabulary, writing for internationalization, reducing words, implementing single sourcing, content management, and translation standards, and authoring in XML to eliminate manual formatting. Our Information Development department implemented many of these strategies through an initiative program that achieved impressive results by reducing the time and cost for localization [31].

Writers can also improve translation results by collaborating more closely with translators and sharing tools, processes, and troubleshooting tasks. One helpful resource for understanding the translation process is the Localization Industry Standards Association (LISA™), whose publications include *The Globalization Primer: An Introduction to Preparing Your Business and Products for Success in International Markets* and best practice guides on machine translation and quality assurance[32-34]. LISA members are also looking at the impact of social media on localization. For example, a new LISA publication provides industry research on the impact of "crowd sourcing" on localization, and a recent conference included a session on globalization in the "cloud."

Writers at our company have taken on many new roles to support the translation process. For example, writers developed a single glossary for software and documentation to leverage translation efforts across the company, and implemented word-reduction to reduce localization time and costs. In March, 2006, we estimated the savings shown in Table 1 for word-reducing a 300-page document that contained an average of 240 words per page for 13 localized languages.

Table 1. Estimated localization savings for one word-reduced document.

Percent Words Reduced	Estimated Savings per Language	Estimated Savings for All Languages
10%	$2,880	$37,440
20%	$5,760	$74,880
30%	$8,640	$112,320
40%	$11,520	$149,760
50%	$14,400	$187,200

(Note that these dollar figures were rough estimates. Actual savings depend upon several factors, such as the degree to which translation memory is used, whether the document is receiving its first or second localization, and the nature of the reduction.)

Our writers also now author in XML, which allows us to automate processes and eliminates desktop publishing by translators in all languages. This greatly decreases the time and cost for delivering translated documents in different formats. Lead writers also collaborate directly with translation teams to ensure a timely response to any issues that arise for their documentation.

Moving to XML and separating content from technology provides some challenges. For example, technical communicators should work closely with their legal department to ensure that copyright information and legal statements are maintained appropriately in modular documentation, because source information may be re-used in a different order and context than in the original source document. As Lori Fisher advises, "Designing for reuse is a critical prerequisite for being able to deliver…a dynamic help system, because users will control in what sequence and what context they view the information."[35] As Ann Rockley [36] points out, "The success of dynamic documentation is dependent on the information models, metadata, and configuration of the underlying database." For writers, these challenges provide the opportunity to move into new roles, such as *information designers*, who have detailed knowledge of authoring tools, and *information specialists*, who build information models to ensure effective delivery of the appropriate type and format of information to users.

The ability to build information models is an important new skill. Kostur and Rockley [37] provide these steps for creating information models for single-sourcing:

- Identify all possible uses for the information
- Determine the level of single-sourcing required
- Create detailed audience profiles
- Conduct detailed information analysis
- Identify the level of detail for single-sourcing, such as by chapter, topic, or element
- Build models for information products and elements
- Identify structure and create tags for elements
- Formalize structure by creating:
    - Semantic structure, content models, and writing guidelines for each element
    - Style mappings
    - Metatags to describe content
    - Examples of how elements should be written

Academics can support these emerging practices by providing new writers in the field with effective strategies for collaborating on remote teams, knowledge of XML and authoring tools, the ability to build information models, and techniques for implementing localization best practices and standards. Researchers can provide data on the most effective and efficient tools and methods for real-time online collaboration, single-sourcing, content management, and localization.

Accessibility

In the past, when product guides were distributed as printed manuals, documentation was designed as if all

users could see well enough to read the manuals. Even as online help began to augment and supplant printed documents, help systems also were designed for fully sighted users. Moreover, early help systems—and the software they supported—assumed that every user had the physical ability to read and to manipulate a keyboard and a mouse.

Vendors must now meet government-mandated standards of accessibility. For technical writers, this has meant mainly that their documents must be designed to work with accessibility tools such as programs like JAWS that convert printed or online words and graphics to speech, for use by people with vision disabilities. Our department has implemented rigorous accessibility guidelines for documentation that dovetails with accessibility guidelines for product code. Writers also include accessibility appendices, and submit documentation to an "online accessibility checker" before delivery.

As baby boomers age, the elderly make up a larger percentage of the population (and customer bases). Because aging often brings disabilities, including loss of vision, the aging of the population can only magnify the current emphasis on accessibility.

Among software vendors, there is movement to provide less documentation as user interfaces become more friendly and obvious and users become more sophisticated. This trend can create obstacles for people with disabilities, especially those with physical or cognitive impairments, who continue to require very explicit instructions on using products. Also, as Internet applications become more feature-rich, they introduce new and unusual controls, and accessibility standards require extensive documentation to explain them [38].

Mary Frances Theofanos and Ginny Redish suggested in a February, 2005 article [39] that, instead of building Web sites first and then adding technology to make them accessible, assistive technology could be designed from the bottom up. In their vision, information about users' needs would be collected independently of any access mechanisms, and intervening technology would then translate that information into changing Web sites and other programs dynamically to meet those needs.

The authors explain that, "We are talking about technology that can take an individual's specifications for color; type size; graphics or text; number of columns; sound or not; animation or not; control by speech, eye-gaze, special device, and so forth—and probably many other variables—and present a usable and useful Web site."

Theofanos and Redish assert that "serving up Web sites in individualized versions from the same source through technology that understands each user's specific needs and adjusts the Web site to meet those needs" is the "real challenge of universal access." Meeting this challenge will require collaborative efforts among writers, information designers, and technology specialists. This will certainly provide many new roles for writers in the effort to make content accessible to meet customer needs.

With Web 2.0 sites allowing people to author content and upload photos and videos, anyone can become a "content developer." The U.S. Access Board says that its upcoming changes to Section 508 standards will address the fact that ensuring accessibility is no longer an issue only for professional user interface developers: Web 2.0 sites may be obligated to instruct users how to author content in a way that meets the accessibility standards. W3C Authoring Tools Accessibility Guidelines call for authoring tools that are more accessible and help Web developers produce content that conforms to W3C Web Content Accessibility Guidelines.[40]

To ensure that documentation meets these requirements, departments must train or hire writers with expertise in accessibility techniques and standards. Writers can use personas—representations of a user group based on data about these users—for accessibility purposes [41]. Technical writing instructors should ensure that students have an understanding of government standards and are familiar with authoring tools and techniques for creating and testing accessible documentation in all types of media. Researchers can provide data to support the most effective means of developing, testing, and delivering accessible documentation.

Documentation methods and delivery

Not many years ago, technical writers used Microsoft Word and other document-based tools to create manuals that were printed for distribution to customers. Writers used other software tools, such as RoboHelp, to create online help files.

Now, PDF files and online help systems have all but replaced printed manuals, providing dramatic savings in production time and cost. Writers create PDFs from markup languages such as XML, using tools that can also create HTML for online help from the same source files. As shown in Figure 3, our department also makes documentation available to customers on an online technical library.

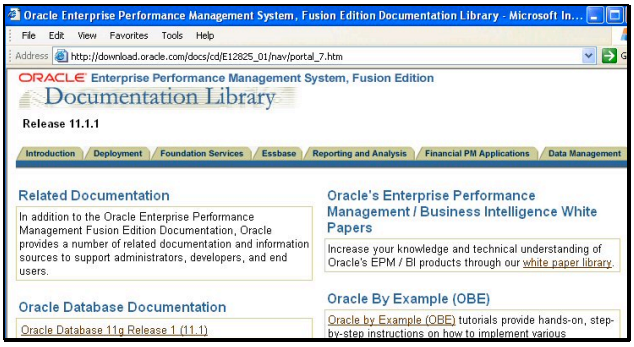

Figure 3. An online documentation library.

For technical writers, markup languages are replacing old documentation tools such as Word. In general documentation content is becoming more modular, so that a single module can be used in many documents and distributed over a variety of media, such as smart phones and other new devices. Markup languages facilitate the development of modular content. For example, a single unit of information in an XML file might serve as a section in a product user guide PDF, an online help topic, a link on a marketing website, a paragraph in a brochure, and even more. Writers in our department use Arbortext Editor to create different deliverable formats using one set of source files.

Our team also uses a robust version-control system that provides source control while enabling remote access to source files. This enables writers from different sites to access the latest version of the files and create the required type of deliverable. In the future, more information developers will need to participate in setting up, maintaining, and using content management systems.

Currently, information developers are examining many different approaches for incorporating social media in documentation development and delivery. New types of documentation are possible, and roles for writers and communicators are expanding rapidly. In this paper, we provide a sample of several new approaches being taken.

As Janet Swisher writes in an online article for *Open Source Business Resource*, "The term 'user assistance' encompasses all the ways that users get help in figuring out how to use a product" [42]. For example, it can include video tutorials, demos, mailing lists, blogs, tweets, forum questions and answers, and live chat with experts and other users. Each of these methods has implications for documentation. For example, embedding text in the software eliminates the need for separate topics to describe the tasks. This provides more immediate assistance to users, and streamlines documentation so it can be completed earlier in the release [43].

In a recent article in the online PCS Newsletter, Sarah O'Keefe predicts that "content creation efforts will shift into the cloud and away from desktop applications…I expect to see much more content creation migrate into Web applications, such as wiki software and blogging software"[44]. According to O'Keefe, "a strategy for integrating social media and official technical communications will be critical in 2010 and beyond. Close collaboration with product experts, the user community, and others will become the norm." The author also notes challenges associated with this change: "Technical communicators must now compete with information being generated by the user community. This requires greater transparency and better content."

In a recent Webinar for the Society for Technical Communication, Rahel Bailie provided guidelines for developing effective content for the Web [45]. For example, content must now be portable, concise, findable, and standards-based, because it is used in multiple contexts. It must also be capable of delivering user-specified subsets of content.

Anne Gentle, in "Putting the User in User Assistance," describes how documentation can now include embedded comments, tagging, content sharing, syndicating, collaborating, and wikislices (sections of a wiki that can be downloaded and read offline) [46]. In her book on *Conversation and Community: The Social Web for Documentation*, Gentle describes new roles for communicators, such as *community manager*, *content curator*, and *community builder*. She explains that, "if your goal is to build and grow a wiki, you need to build and grow the community for it first." After the community is built, community members begin to share knowledge, with the result that the "community becomes a community of practice" [47].

Another new skill for technical writers, then, is creating online communities and encouraging participation. This requires an understanding of what motivates community members to participate. Andy Oram reports on a survey on O'Reilly's Web site that gathered 354 responses over three months in 2007. In "Rethinking Community Documentation," [48, 49] he suggests these reasons why people contribute to community documentation:

- Community building
- Informal technical support
- Mutual aid
- Gratitude
- Personal growth
- Payment
- Enjoyment of writing
- Reputation building, career building

Recognizing that participation is critical for the success of community documentation, Oram makes these recommendations for community documentation curators:

- Encourage community; "community building emerged as the dominant motivation for contributing to documentation."
- Maximize the efficiency of contributions by encouraging use of existing formal documentation, wikis, or FAQs. Identify different types of discussions, for example, with keywords on subject lines to help community members find information efficiently.
- Recognize contributors; for example, use sidebars to list users who make the most contributions. Implement some sort of rating system, which could include "informal reputation-building systems such as regular recognition days where people explicitly thank particular people who helped them, or vote for a roster of helpful list members."

Many information developers are experimenting with new source and deliverable formats. In "Printed Books and Online Help Using a Wiki," Rahul Mehrotra

describes using collaborative authoring on a wiki that can deliver single-sourced output for the Web (as a Wiki), as online help (HTML and CHM), and as books (PDF) [50].

Departments that use DITA for document development are examining how to deliver files on wikis that include user-contributed comments and attachments. Some approaches include a Web-enabled DITA editor, wikislices that are created with DITA maps, and wiki articles that are created from structured DITA content as an output of a DITA map [51].

Technical communicators must also consider the implications of Twitter. According to statistics provided in April, 2010 at the first Twitter developer's conference, Twitter usage is growing rapidly [52].

- Number of registered Twitter users: Over 105 million, with 300,000 new users per day, 60 percent from outside the U.S.
- Number of new tweets a day: 55 million.
- Number of unique visitors a month to the Twitter.com homepage: 180 million (one-fourth of the total traffic, with most of the traffic coming through third-party applications). As noted in the *Financial Times techblog* on April 14, 2010, this means many visitors are using Twitter to search the stream [53]. This could have implications on technical communication.
- Number of searches per month: 19 billion, more than Yahoo and Bing combined, and second only to Google. (Interestingly, 75% of this traffic is not on Twitter.com, but on clients such as Seesmic and Tweetdeck.)
- Number of registered applications: 100,000. As *techblog* reports, "apps are being built that integrate Twitter, sit on top of Twitter, and help business use Twitter." Clearly, Twitter is an important consideration for technical communicators.

An article in the Society for Technical Communication's *Intercom* magazine describes Twitter as "digital social interaction to the Nth degree" [54]. The article adds that Twitter, which went live in 2006, "can facilitate a more immediate, direct relationship between participants and epitomizes the interactive nature of new media technologies…It acts to democratize content so anyone can distribute information to millions of users with the click of a button."

The article cites a report by eMarketing that 21% of Twitter users (and most users in the 35–55 age group) now employ this messaging tool for work-related reasons. The same article suggests that that Twitter can be used for distributing PDFs of instruction manual updates, reminding users to make program updates, and following up on consumer inquiries.

Companies and customers have begun to use social media such as Twitter, wikis, YouTube, and other networking sites for technical documentation. For example, the user assistance for the Google Nexus One phone includes an online interactive graphical tutorial available on the Web, and a setup video that is posted on YouTube. Company Web pages now invite customers to view videos on their YouTube channel, join them on Facebook, and follow them on Twitter. Based on these changes, companies are increasingly providing corporate guidelines for social media participation, and require employees to comply with these guidelines when using media such as blogs, Twitter, YouTube, and Facebook.

Alex Blanton at Microsoft Corporation notes these main concerns facing documentation groups when considering social media [55]:

- *How to listen to customers*. The Microsoft Windows Server team "built a scenario voting tool so that customers could access the documentation related to a specific scenario, vote whether that documentation met their needs, and provide direct feedback to the team."
- *How to talk with customers*. The Microsoft Xbox team uses Twitter to "talk with customers, find answers, and take care of issues. The Xbox Support Twitter account is staffed…by a team of employees who include their initials with each tweet."
- *Managing risk*. Teams are concerned about whether the Legal department should approve all social media contributions, and the possible impact on productivity. At Microsoft, "groups are exploring many different team management models related to social media, and we don't have consensus yet on whether any of them work best…at this point we are in an experimentation phase."
- *Ensuring the company's content is authoritative*. "Instead of viewing enthusiastic content creators as competition, companies should embrace these enthusiasts and create platforms and widgets so that customer can create, discover, and promote fantastic content on your technologies." For example, the Microsoft Office Online team "built the capacity for customers to post their own templates for other customers to use. Because the templates can be rated, customers can find the best templates. And Office Online remains a great place to go to find Office-Related templates."

  Blanton states that, "the role of technical publications teams is moving from being creators of content to being curators of content. Certainly publications teams will continue to create original content wherever it makes sense, but we also have to view ourselves as managers of content portfolios that include content we create, content our partners create, and content our customers create."
- *How to measure success*. Blanton and others suggest these types of metrics to measure the results of communicating with social media:

- *Reach*—The number of people engaged
- *Sentiment*—Consumer reaction to the message
- *Volume*—The number of comments, blogs, tweets, and links about the company's brand
- *Financials*—The impact on the company's bottom line

To adapt to these trends, documentation specialists must examine how—and whether—social media such as Facebook, Twitter, blogs, and wiki pages can help them achieve their goals and better serve customers. They must also consider legal implications. If the department does become involved in creating or distributing documentation using Web 2.0, technical writers can take on new roles as they begin representing the company on social media sites.

Helen Cavender and Paul Zimmerman at Cisco Systems suggest that, "Instead of being solely responsible for content, authors transition from content *developers* to content *stewards* by facilitating the content development done by the community" [56]. The authors note these critical steps for implementing collaborative content:

1. Determine if collaborative content is appropriate for your customers and if they would want to participate.
2. Look at your content to determine what is appropriate for collaboration. For example, "dynamic areas that can benefit from the wisdom of the crowd" include software deployment, configuration examples, troubleshooting, and best practices. Recognize that some content is appropriate for traditional delivery methods, such as "legal, contractual, or regulatory requirements."
3. Plan for resources, including those who implement the tools, community participants to moderate discussion and content, and program management.
4. Plan the collaborative platform, such as a crowd-sourced documentation wiki or videos, and determine whether to use open-source tools or a proprietary platform.
5. Make an "ongoing commitment to facilitating and maintaining the environment."

Technical writing instructors should ensure that their programs provide new writers with skills for completing such tasks, using social media tools, and creating and sustaining online communities and collaborative documentation. Some usability research is available for social media, such as Jakob Nielsen's findings on blogs, mobile, Kindle, Twitter, and using streams, walls, and feeds to distribute content through social networks and RSS [57-63]. To more directly assist communicators, researchers can provide data to support the effective use of new types of media for developing and delivering documentation that meets customer needs. For example, researchers can look at the most effective means of creating and organizing communities and community documentation, the effective use of technology such as wikislices and Twitter for documentation, and metrics for measuring the success of social media documentation efforts.

Faster development and communication

Technology is changing how we work. The workplace used to include paper-based mail along with multiple phone calls and in-person meetings. Now, paper-based mail is almost nonexistent, and electronic communication is the norm. Instant messages—and their demand for instant responses—are speeding up communication even more, with no waiting for recipients to check their inboxes and respond to numerous messages.

We must also work faster than ever before. For example, a writer today might be simultaneously dealing with e-mail, sending and answering instant messages, and participating in a teleconference.

It's not just communication that is speeding up. Product development lifecycles have become much shorter, and writers have far less time to develop information that accompanies product releases. Subject-matter experts, working in the same shortened cycles, can be less accessible to writers who need them to review the information. The push for technical writers to work quickly can be at odds with the ongoing concern that product information be complete, accurate, and understandable. Information developers may need to come up with new processes that assure high-quality information in the face of tightened time constraints. New writers coming into the field must be able to work quickly and efficiently within these condensed development cycles.

In response to the faster pace of Web development, new documentation strategies are being developed. For example, the Twitter approach was first to provide basic procedures, then to solicit community input, and finally to update content in response to user comments and input. The Twitter Web site now includes additional resources such as a "Twitter 101" tutorial with best practices and use cases for business.

Many help systems on the Web now leverage the use of community forums. For example, online help systems for products such as Microsoft Office and Intuit TurboTax include links to forums where users can search for answers to questions or join the community to pose their own questions and provide answers.

Such changes bring changes for educators. To plan for new instructional requirements, a study was conducted by the San Jose State University Professional Development Center's Technical Writing and Communication Program [64]. Researchers analyzed trends in the literature from a variety of professional organizations such as IEEE, STC, and ACM, and surveyed experts in the field to assess industry needs for technical writing skills.

Based on this data, the authors predict these changes, among others, for the technical writing profession:

- *Positions will become more specialized.*
- *Communication specialists will perform more management communication within corporations.*
- *Mixed-specialty teams will produce more writing: For example, medical writers and financial writers will collaborate on the efficient development of assistive technology products* [such as accessible documentation that meets the needs of visually impaired customers].
- *Information architects will be part of the communications family of jobs and will require strong systems knowledge.*
- *Because of the increased need for specialized communication skills, the number of graduate programs in Technical Communication will increase, and many of them will be online.*
- *Video capture and editing hardware and software will become more common in developing instructions.*
- *Assistive technologies will need user documentation that's easy to use despite physical challenges.*
- *Single-sourcing will dominate enterprise-wide publishing, resulting in Chief Communications Officers (CCO).*
- *Communication will become a functional career track and focus, just as finance and marketing are currently.*

To help writers adapt to these challenges, researchers can target findings to the practical needs of technical communicators, such as the most effective methods for monitoring and responding to user-generated content, methods for collecting and analyzing Web metrics, best practices for community and content management, effective methods for distributing content through social networks and RSS, and metrics for measuring the effectiveness of documentation.

Conclusion

Novelist Pearl S. Buck once said, "One faces the future with one's past." In this paper, we compared our past experience with the present, focusing on changes we have seen in the areas of writer-customer interaction, customer troubleshooting and information sharing, globalization, accessibility, document development, and faster communication. We also identified challenges in each of these areas, and provided insights on some of the new roles writers can take on to adapt to changes in the environment, tools, and customer requirements.

As the late U.S. president John F. Kennedy noted, "Change is the law of life. And those who look only to the past or present are certain to miss the future." To meet the challenges of the future, our industry requires a robust synergy between practitioners, academics, and researchers to enable all of us to adapt to the rapid pace of change in global communication. Communicators must prepare to take on new roles and utilize educational and research resources [66-69]. Those in academia must prepare writers entering the field with a range of new skills and abilities, and researchers must provide practical results that writers can quickly put into practice.

Through such cooperation, those in our profession will have the best chance to adapt to change and incorporate new tools, media, and methods of development and delivery, while continuing to provide effective documentation that meets customer needs.

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