Abstract

An Internship with Choice Systems, Inc., a Supply Chain Solution Software Company

By Vicki Henderson Rouse

During my internship with Choice Systems, Inc. from April until December 2005, I worked as a technical communicator, developing documentation for the company’s supply chain management software applications. This report is a chronicle of my internship and includes information about the company and the projects on which I worked. It provides a discussion of single-sourcing, a documentation methodology I investigated to determine whether it would improve the efficiency of developing and managing the large body of documentation that Choice maintains. This report also includes an analysis of the process I used to develop documentation based on the Supply Chain Operations Reference (SCOR) model from supply chain management. From this analysis, I conclude that efficiencies in documentation can be realized less by automating the documentation process than by aligning the software development and documentation development supply chains. An additional benefit would be increased availability of information, which is critical to organizations like Choice with networked cultures.
An Internship with Choice Systems, Inc.,
a Supply Chain Solution Software Company

An Internship Report

Submitted to the Faculty of Miami University
In partial fulfillment of
The requirements for the degree of
Master of Technical and Scientific Communication
Department of English

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- Janel Bloch and Rocky Newman for their participation as members of my internship committee.
Chapter 1: Introduction

About the Internship

To satisfy the internship requirement for my Master of Technical and Scientific Communication (MTSC) degree at Miami University, I worked as a technical communicator for Louisville, Kentucky-based Choice Systems, Inc., documenting the supply chain management software it develops for the health care industry. Supply chain management is a discipline within companies that is focused on improving the ways they produce products and services, and deliver those products and services to customers. During my internship, I was involved in a variety of software documentation projects: I developed user guides and online help; I investigated single-sourcing solutions for the company; and I began developing an approach to usability testing for documentation and the company’s software products. I also worked on projects not directly related to documentation, such as developing and conducting a training needs assessment.

The duration of my internship was April 1, 2005 until December 7, 2005. Typically an internship is a full-time position with a company that lasts one semester or 14 weeks. However, my previous experience with Choice and the fact that I worked as a professional technical communicator while completing the MTSC program made my internship different than that of other students. I worked fewer hours per week over a longer period of time for several reasons: 1) I already had a relationship with Choice; my position was, and had been since 1998, that of a consultant and was not intended to be a full-time position. Choice graciously agreed to sponsor me with the understanding that our relationship would not change. 2) My internship varied from the norm also, because I was finishing the coursework required for my degree. I spent time in the spring finishing an independent study and took two weeks away from Choice to take two electives during the summer of 2005. 3) I had previous commitments—projects for other clients that were already underway—that I was obligated to finish.
I chose Choice for my internship for several reasons, the most important of which was the company’s recently renewed focus on customer service and satisfaction. When my internship began, a corporate restructuring was underway, but in addition to a changeover in management, the company was also revamping its business processes to become more customer-centered. I felt the changes presented an ideal opportunity for an internship. I believed that the time was right for me to bring to management’s attention some of the concepts in technical communication that I had learned about in my graduate courses and that had customer satisfaction as their goals, such as audience analysis and usability testing. I was also interested in developing and presenting ideas on project planning and single-sourcing, two areas that I have studied during my time at Miami University.

I worked for Choice remotely from my office in West Chester, Ohio. The arrangement is not uncommon for Choice employees—the company employs sales staff, implementation specialists, and data engineers across the country.

Like other telecommuters, I was in almost daily telephone contact with developers, implementation specialists, and other subject matter experts, as well as my internship sponsor and often, members of management. I also used email as a preferred form of communication. Meetings were held via phone, often using Microsoft® LiveMeeting so that all participants could view software applications and documents being discussed. On several occasions, I drove to Louisville for face-to-face meetings. In addition to regularly scheduled meetings, I reported to my internship sponsor on the progress of my projects on a bi-weekly basis via email.

However, unlike other telecommuters, I am a subcontractor. I am not a member of the company and do not have a place on its organizational chart. Even before my internship began, I found that not being a member of the company and not being in the office physically had its difficulties. Often, responses to requests for information were delayed, and it was difficult to stay “in the loop” when it came to new information about the company’s products. But the nature of my position means that I have always been free to choose the tools I use and to create my own approach to documentation. In addition,
having some distance not only allows me to look at the company more objectively, but it also allows me to look more objectively at my projects and the products for which I create documentation.

**About my Sponsor and Mentor**

Leah Mull, Systems Assurance Manager at Choice, agreed to sponsor me for my internship. Ms. Mull joined Choice in 1999 as a training specialist. She has extensive experience in quality assurance and training and quickly moved into the role of Systems Assurance Manager, overseeing quality assurance, training, and documentation. As the company’s sales grew and the quality assurance associates she supervised were called on to provide other services, such as implementation, her role expanded to other areas. She currently oversees all new customer implementations and supervises a team of implementation specialists, in addition to managing quality control and customer support and directing documentation efforts for all Choice products.

My writing mentor was Ann Brinkmann, who holds a Masters degree in Composition and Rhetoric from Miami University and is a visiting faculty member there. I took Ms. Brinkman’s course on usability in the spring of 2003 and was impressed with the breadth and depth of her knowledge and experience in technical communication. I knew that she would be able to offer the constructive suggestions I needed to improve my writing and the structure and format of my documents.

**About the Company**

Choice Systems, Inc. began in 1989 as the brainchild of a small medical supply company that found its niche in providing a software application designed to help its customers track inventory more accurately and purchase the medical supplies they used more efficiently. In those early years, there was no charge for the software. It was a value-added benefit of doing business with Choice. In 1995, Choice became a supply chain solution provider and its primary business was developing and selling software designed
to improve efficiency in moving products from the distributor to the pharmacy or hospital
and into the hands of the hospital staff and patients who needed them.

In 1999, the company was purchased by a major pharmaceutical distributorship along
with two other companies: one company distributes automated drug dispensing units for
pharmacies; another company sells equipment for dispensing and packaging individual
doses of drugs for hospital patients. The three companies have been brought together to
form a technology group. The goal of this group is to develop and maintain supply chain
technology products that would bring a new and much-needed revenue stream to the
company.

Over the last decade and a half, Choice has grown in terms of both sales and market share
and has developed robust supply chain solutions for the desktop and the World Wide
Web, for both materials and pharmacy management. The company currently employs
approximately 30 people in its Louisville, Kentucky office, including application
developers, implementation specialists, EDI (electronic data interchange) specialists,
sales, and customer support. Today, Choice products are not only capable of inventory
tracking and automatic ordering, but now also help customers save money with new
functionality that generates purchase orders based on minimum and maximum stocking
levels; help track purchasing history so that management can make more informed supply
chain decisions; and give hospitals a tool that enables them to take advantage of
government initiatives, such as the 340B discount drug purchasing plan.

Supply chain management has become increasingly important to the medical industry,
especially to pharmaceutical distributors. Over the last several years, profit margins for
pharmaceutical distributors have been squeezed by increasing costs for research and
development and decreasing coverage by insurance carriers. Today the profit margins of
pharmaceutical distributors are so slim that they can no longer compete on price alone.
As a result, distributors are offering their customers value-added consultation services,
equipment, and software applications that help streamline processes, reduce errors, and
improve accuracy in their supply chains.
About the Organization

Choice employs individuals with different areas of expertise. A new organizational chart for the company is currently in development for the newly formed technology group. Because I am a consultant, I do not have a place on the organizational chart; however, I am the sole technical communicator for Choice, and my position has traditionally been viewed as part of the quality assurance and implementation staff.

But companies are not just about their structure or the places people occupy on an organizational chart. According to Gareth Morgan, author of *Images of Organizations*, we can also look at them in terms of their social construction. Companies are a product of their cultures and in the United States, the culture is one of independence, competitiveness, and entrepreneurship—the very reasons why Choice even exists today. Choice was started by two individuals with an idea, and that idea is now a company that serves hospitals and pharmacies of every size throughout the country.

Companies have cultures and subcultures of their own. Each person brings skills and experiences to the company, which helps shape its culture. While it is not productive to stereotype organizations based on their culture, warns Morgan, most organizations do have a predominant culture.

In 2002, I studied the culture at Choice as a project for my organizational communication class. Choice had recently been purchased by a large pharmaceutical distributorship. The premise of my research was mergers and acquisitions and how culture, which is often overlooked when companies come together under these circumstances, affects or is affected by the joining of two disparate organizations. As a result of that research, I gained an “insider’s” view of the culture at Choice; for in order to compare the cultures of the two companies, I had to know what the culture of each was.

To conduct my research, I used a model from *The Character of a Corporation* by Rob Goffee and Gareth Jones (1998). The authors posit that culture can be explicit, and it is
measurable. They provide a tool that enables researchers to characterize a culture as one of four types: networked, communal, fragmented, or mercenary.

Results of my research showed that the culture at Choice Systems, Inc. is “networked.” According to Goffee and Jones, there are both positive and negative points of a networked culture. On the positive side, networked organizations are highly sociable. Workers tend to associate freely and tend to be friends. On the negative side, a networked culture can be characterized as an organization with low solidarity, which means the group is as not cohesive as some organizations are. (Unions are an example of a high solidarity group.) So even though the culture is highly sociable, workers tend to work independently of each other. As a result, organizations like Choice must have processes in place to facilitate the critical information-sharing that the company needs to be successful.

The information needs of a networked culture are even greater when an organization is geographically diverse. At Choice, the sales and implementation teams reside all across the United States. This geographic diversity makes keeping the lines of communication open a challenge. A training needs assessment survey that I helped develop and that the company conducted in September 2005 revealed just how difficult making information available and accessible can be: it indicated that most people believed they did not have the information they needed to do their jobs effectively.

As a technical communicator, it was beneficial to me to learn about the predominant culture at Choice. I know, for example, that I must have an agenda for meetings in order to accomplish what I need to accomplish. Socialization is important at Choice, but that also means that meetings can be sidetracked easily. Before a meeting, I generally send attendees a list of questions I want to cover and check off each point as we progress.

Because I understand the culture at Choice, I also understand the importance of keeping information organized and available, and that means checking with associates to make sure the structure and availability of information meets their needs. An example: after
developing documentation for members of the implementation team, several team members told me that they were having trouble finding information in the document repository. I had advised implementation specialists against downloading information to their hard drives because it changes so often, but that meant they had to find documents each time they needed them. To remedy that problem, I created a document index that they could download to their hard drives. From the index they could link to the most current version of the documents in the repository. They had a simple method of access and were ensured that they had the most recent documents.

The benefit of identifying a company’s culture is that it provides insights that enable people to work more effectively within it. As a consultant, understanding the networked nature of Choice makes me cognizant of the fact that information is critical, even though it is sometimes difficult to obtain. My goal is to develop ways to make information easily accessible, and I continually look for ways to improve my processes so that information is up to date and accurate.

**About this Internship Report**

The remainder of this report chronicles my internship with Choice. Chapter 2 is an overview of the projects in which I was involved during my internship. My role extended beyond software documentation to include working on a training needs assessment, developing a variety of presentations, researching single-sourcing solutions the company might pursue, and developing an approach for usability testing the company’s products.

Chapter 3 takes an in-depth look at the single-sourcing research I undertook for the company. I describe two approaches I developed for implementing single-sourcing and discuss the conclusions I came to about single-sourcing as a method for writing documentation.

Chapter 4 is an analysis of the documentation process based on a well-known model in supply chain management—the Supply Chain Operations Reference (SCOR) model. I
use the model to suggest that Choice essentially has two supply chains—one for product development and one for documentation development—and that efficiency in the documentation process could be realized by aligning the two supply chains. I thought this final analysis appropriate not only because Choice is in the business of developing software that is a supply chain solution, but also because the single-sourcing trend is an attempt to automate the writing process to make documentation more efficient. Just as manufacturers learned that automating a single process in a supply chain has limited benefits, so, too, did I come to the conclusion that using single-sourcing to automate the writing process would not improve the efficiency of the overall software and documentation supply chains.
Chapter 2: Internship Projects

When I was originally hired as a contractor at Choice, my job was to write software documentation—user guides, online help, job aids, and other written communications that would accompany and support its products. For most associates, the perception of technical communication was limited to those projects; however, I was involved in a variety of projects at Choice that fell outside the boundaries of “traditional” documentation. These “non-traditional” projects—developing and executing a training needs assessment, for example—also required the skills of a technical communicator. My abilities to analyze an audience, to organize and present information in a structured and easily understandable way, to write reports, and to manage projects proved to be as essential to non-traditional documentation projects as they are to traditional documentation assignments.

During my internship, I participated in the projects described below, which are listed in order of the greatest to the least amount of time I spent on each. Figure 1: Choice Documentation Projects Time Breakdown and Table 1: Choice Documentation Projects Time Breakdown Definition, which are shown on the following pages, illustrate the time I spent on each project.

- I developed materials, such as PowerPoint presentations, training exercises and quizzes, and competitive analysis information for a training program designed for the sales team on the Choice Dimension21® 340B product.
- I created the user guide and online help for 340B Web Replenishment, the company’s web-based 340B application.
- I developed and conducted a needs assessment to determine the company’s internal training requirements.
- I completed online help and a user guide for Choice Dimension21® 340B, the company’s server-based 340B replenishment software application.
- I updated documentation for the new version of the company’s flagship software application, Choice Dimension21®.
I created and maintained materials for implementation specialists for Choice Dimension21® 340B installations, which include instructions, checklists, and project plans.

I updated the user guide and online help for Choice IntelliOrder®, the company’s web-based inventory management and procurement application.

I investigated and evaluated software solutions for single-sourcing documentation.

I maintained online help and a user guide for the handheld barcode reader and Mobile Materials Management software that is used with Choice supply chain applications to record inventory counts, create purchase orders, and receive products at warehouses.

Figure 1: Choice Documentation Projects Time Breakdown.
Table 1: Choice Documentation Projects Time Breakdown Definition.

<table>
<thead>
<tr>
<th>Project</th>
<th>% of Time Spent</th>
</tr>
</thead>
<tbody>
<tr>
<td>340B Training</td>
<td>24%</td>
</tr>
<tr>
<td>340B Web Replenishment User Guide and Online Help</td>
<td>20%</td>
</tr>
<tr>
<td>Training Needs Assessment</td>
<td>14%</td>
</tr>
<tr>
<td>Choice Dimension21&lt;sup&gt;®&lt;/sup&gt; Version 4.0 Updates</td>
<td>13%</td>
</tr>
<tr>
<td>340B Implementation Documentation</td>
<td>8%</td>
</tr>
<tr>
<td>340B User Guide and Online Help</td>
<td>7%</td>
</tr>
<tr>
<td>IntelliOrder&lt;sup&gt;®&lt;/sup&gt; Version 3.6 User Guide and Online Help (with Single-sourcing)</td>
<td>6%</td>
</tr>
<tr>
<td>Single-sourcing Research and Recommendations Presentation</td>
<td>5%</td>
</tr>
<tr>
<td>Mobile Materials Management User Guide and Online Help</td>
<td>3%</td>
</tr>
</tbody>
</table>

The following sections provide more detail on each project in which I was involved. They are discussed in the chronological order in which they began. Projects went on simultaneously—I worked on Choice Dimension21<sup>®</sup> Version 4.0 updates before my internship began in April 2005 and those updates are ongoing as this report is being written. The training needs assessment interrupted the progress of all other projects—my time was focused solely on that project while it was underway. Juggling multiple projects was a challenge. To stay current on the progress of the software documentation projects, I developed a “to do” list that included a description of new functions that needed to be documented, the date documentation was complete for each format—user guides and online help—and notes on the progress I had made or stumbling blocks I had encountered. I used these documents routinely, and they have proved helpful for keeping Ms. Mull updated on the progress of individual projects as well.
Choice Dimension21® Version 4.0 Updates

Before my internship started, I had been working on updates to Choice Dimension21® documentation and help text. I continued work on this project during the course of my internship. A new version of the software was due to be released in October 2005. While the product has not been officially released, interim releases have gone to current and new customers. At this writing, updates are not complete, and documentation has not been released to customers.

Choice Dimension21® 340B User Documentation

In late 2004, Choice began developing an application that would allow their customers to take advantage of savings on drug purchases as allowed by Section 340B of the Public Health Service Act. The Public Hospital Pharmacy Coalition describes the 340B legislation on its website as follows:

In November 1992, Congress enacted Section 340B of the Public Health Service Act, which requires pharmaceutical manufacturers participating in the Medicaid program, to provide discounts on covered outpatient drugs purchased by specified government-supported facilities, called “covered entities,” that serve the nation's most vulnerable patient populations. The amount of these discounts is comparable to the best price discounts to which Medicaid is entitled under the 1990 rebate program; however, covered entities could receive even deeper discounts than the best price amount.

--From www.phpcrx.org

Essentially, this legislation allows disproportionate share medical facilities—those who treat a large percentage of indigent patients—to replenish their supplies of medicines from their vendors at a reduced cost. In order to take advantage of those savings, however, the medical facilities must be able to accurately track the medicines they use, and they are only allowed to replace medicines that they have dispensed—they cannot purchase new medicines to keep in stock under this plan.
Given the legal requirements, the software Choice developed has to do several things. First, it has to track the amounts of each medicine used. Second, when a purchase order is created, the software has to determine whether enough of the medicine has been dispensed to allow for repurchase at the reduced price. For example, if a hospital stocks a bottle of aspirin that contains 100 tablets, all 100 tablets must be dispensed before a bottle of aspirin can be purchased at the reduced 340B price. Third, if the quantity is sufficient for replenishment at the 340B price, the software has to reduce the amount stored in the system by the amount purchased and create a new purchase order for the item at the reduced price.

For the 340B application, a user guide and online help were needed for end-users, many of whom were new, not only to the software, but to the 340B legislation. Documentation began in early 2005. I worked with the lead developer on the project, attempting to learn from him the law as well as the product. Because the law was changing almost daily and customers wanted to start taking advantage of the savings as quickly as possible, little could be done in the way of planning. The software and documentation evolved as the law did. That process continues today.

While I was developing documentation, intermittent training sessions for implementation specialists were also being held by developers who were tasked with programming the software. I attended those training sessions in an effort to learn more about what customers were asking and what situations and challenges implementation specialists were being faced with, knowing that I would write implementation materials as soon as the user documentation was complete. I also sat in on customer calls with implementation specialists, trying to learn the questions customers were asking; and I visited several facilities with one of the implementation specialists to see the environment first hand and to learn about the people who would be using the application. While I did not do a formal audience analysis, I was able to listen to the concerns of customers and implementation specialists. That information helped me make decisions about what to include in the documentation and how it should be structured. For example, the system uses two different units of measure when performing calculations. The concept was
difficult to grasp, so I developed a worksheet and equations that allowed implementation specialists as well as their customers to easily convert quantities in the different units of measure.

I wrote the user guide and submitted it for review in pieces. It was a cumbersome process because of the ongoing change. But again, in this situation, with the parameters of the 340B legislation in a state of constant flux, we were all shooting at a moving target, and we could not wait for it to stop. Customers—current customers as well as those who had heard about the application (Choice was among the first to market)—were clamoring for the solution.

I presented the user guide to my writing mentor, who made significant suggestions for improving the document, both in terms of its structure and presentation. Some of her suggestions are listed below.

- Write a conventions section that would explain how the system allows users to access options and functions in different ways. I could write that information one time, in one place, eliminating the need for repetition, which was making a long manual even longer.
- Break down topics into smaller sections with fewer steps. For example, my original “Adding a Location” section discussed every aspect of locations—general information, general ledger account codes, and inventory. By creating sections for each of those aspects, I could make sections smaller and easier to follow.
- Create new sections for field definitions that follow steps in a procedure. Originally, I wrote instructions for the completion of individual fields as steps—often as bullet points within a step. This structure made procedures appear extremely lengthy. Moving instructions for completing fields to a section that followed the step-by-step instructions allowed me to do two things. First, it allowed me to keep all steps together and begin each step with an action verb. Second, it allowed me to keep all field definitions together for easy reference.
- Move the “Common Terms” section to a glossary in the back of the guide. My original thinking in putting “Common Terms” at the start of the guide was to
familiarize users with terminology that they would see throughout the document; however, because user guides are rarely read cover to cover, the glossary suggestion was a valid one.

Changes to the 340B document are nearly complete at this writing. I also plan to use this approach in the next version of Choice’s other user guides.

**Choice Dimension21® 340B Implementation Materials**

After completing user documentation for Choice Dimension21® 340B, I was tasked with developing internal documentation for implementation specialists. I was asked to create materials that would help implementation specialists through a long and complicated implementation process that entails calculating unit of measure conversions, checking product codes, and developing spreadsheets to upload data to the software. A secondary goal was to develop these materials so that any new hire could review them and be able to implement the software for a new customer.

I started by interviewing the implementation specialists—those who would actually be using the documents. We met several times to develop a high level process—a checklist that implementation specialists would use as they went through an implementation with a customer. From there, I began developing individual documents for instructions for each task on the checklist and linked those documents directly to the checklist I had designed. All implementation documents are stored in a central document repository. In the repository, I created folders based on sections of the checklist so that documents appeared in the repository in the same order they would be used.

After the documents had been in place for about 30 days, I began getting calls from implementation specialists telling me that they could not find documents in the repository when they needed them. The documents were changing regularly, so I had advised all implementation specialists against downloading them to their desktops, as is their habit. Instead, I advised them to go to the document repository each time they needed a
document so that they would have the most current information. This proved to be time-
consuming and frustrating for implementation specialists. To answer that need, I created
a document index with links to the individual documents. Because the index did not
change, they could download it to their hard drives. When a linked document changed,
its name stayed the same; thus, implementation specialists could access the most current
version easily from the index. The 340B document index appears in “Appendix A: 340B
Document Index.”

The 340B implementation materials project has gone through many iterations. At this
writing, changes to software have not been reflected in the implementation materials.
Updating the implementation materials is a future project.

**Mobile Materials Management Documentation**

Choice software applications—both the desktop and Web-based products—support
handheld barcode readers. Using these devices, hospital staff can scan barcodes on
shelves where products are stored to count inventory and create purchase orders.
Hospital staff can also scan barcodes on products they receive from vendors and add
those products to their list of available inventory.

For this project, I wrote a user guide for Mobile Materials Management, the application
that supports the new handheld barcode readers that Choice was offering its customers.
The user guide explained how to install the software for the handheld barcode reader so
that data could be uploaded to Choice applications. It also explained how to collect data
for purchase orders, inventory, and receiving, and other functions for which the device
could be used. Because the new handheld barcode reader is a Microsoft® Windows-
based device, we were also able to provide online help on the unit itself, something the
previous version of handheld barcode readers Choice offered its customers did not
support.
I worked with the lead developer on the handheld barcode reader documentation project as well as the quality assurance and implementation specialists. Documentation for the user guide and online help were reviewed by both the developer and implementation specialist. During the review, the implementation specialist had visited a client site, trained the staff to use the unit, and reported back with some helpful insights. For example, the unit had several handwriting recognition functions, but most did not work for entering numbers. The implementation specialist tested several different ways to enter handwritten information, and we were able to make a recommendation for using that feature in the documentation. While this “test” was not a formal audience analysis, it is a clear demonstration of the need for user input when developing documentation.

Documentation for the handheld barcode reader and the Mobile Materials Management application has been available internally and to customers since May 2005. I completed an addition to the manual in August 2005.

**340B Web Replenishment**

In addition to the desktop 340B application, Choice has developed a web-based 340B application called 340B Web Replenishment. Using 340B Web Replenishment on virtually any platform and, with Microsoft® Internet Explorer, users can access one website where they can purchase 340B products from their vendors, receive those products, and generate reports that show how much they have saved by being a 340B participant.

340B Web Replenishment was based on the existing IntelliOrder® product, the company’s web-based procurement and inventory management application. It used a similar user interface and many of the same basic features and functions for maintaining information such as vendors and product.
Work on the 340B Web Replenishment documentation began in May 2005. A complete documentation set—user guide, online help, and quick tips—was delivered in August 2005.

**IntelliOrder® Version 3.6**

In September 2005, I began working on documentation for IntelliOrder® version 3.6, Choice’s web-based supply chain management product. The development team had reprogrammed the entire application, which included a new interface. While I was able to use some information from the previous version, I was essentially starting over, rewriting the administrator guide, user guide, and online help.

The IntelliOrder® documentation project coincided with my single-sourcing research. I decided—with approval from Ms. Mull—to attempt to “single-source” documentation for IntelliOrder® using RoboHelp®. Details of how I approached this project and the progress I made by the end of my internship are in Chapter 3 of this report.

**Single-Sourcing**

During my last semester of coursework at Miami University, I had researched and presented information on single-sourcing. Because Choice maintains such a large volume of documentation—more than 3,500 pages—I thought single-sourcing might be a way to make the documentation development process more efficient.

I researched three products and presented my findings to Ms. Mull in early September. My PowerPoint presentation is in “Appendix B: Single-Sourcing Presentation.” Our current plan is to develop all content for the administrator guide, user guide, and online help for IntelliOrder 3.6. The IntelliOrder 3.6 single-sourcing project is discussed in more detail in Chapter 3.
Training Needs Assessment

As part of her role in a restructuring initiative that began earlier in the year, Ms. Mull was tasked with identifying training needs within the company. The goals of the training needs assessment were to evaluate what training was available to the technology group, to identify training needs and gaps in the current programs, and to develop a training strategy that would move the company forward in a positive and productive direction. In September 2005, the survey was distributed to all employees in the companies that comprise the technology group.

The survey consisted of 25 questions that ranged from information about associates, to the type of training they received as new hires, to training they had completed in the last year, to their opinions about the training the company provided. The survey asked respondents to rank the training the company offers by a variety of criteria: it asked for specifics in terms of what the best and worst aspects of the training had been; and it asked what specific courses associates would like to attend. Survey questions appear in “Appendix C: Training Needs Assessment Survey.”

I assisted Ms. Mull in both developing and distributing the survey. We used SurveyMonkey, an Internet-based survey tool. The survey was made available to associates during a two-week period: September 6 to September 19, 2005.

When the survey closed, I analyzed the results, prepared a report of the findings, and distributed it to the reorganization team. We had more than 150 pages of data and decided that including all the information in a single report could make the report overwhelming, especially to busy managers and executives. We decided to distribute the report in two parts. The analysis portion of the report was printed, bound, and mailed to leaders of the reorganization team. The results portion of the report—the raw data—was printed and bound as a separate document and made available upon request to those who were interested.
340B Training Program

The project that occupied the majority of my internship time was one of the last projects I undertook. The project was developing materials for the Choice Dimension21® 340B training program that was presented to the sales staff in November 2005. The training program was a direct result of the Training Needs Assessment that was conducted two months prior. Management concluded from the needs assessment analysis report that the education of those who set expectations for customers—the sales team—should be the first to be trained. And because the sales team is dispersed throughout the country, they tend to be the farthest away from the source of information.

The training included presentations from nine individuals from offices throughout the country: managers, implementation specialists, and data engineers. My role in this project was to coordinate the development of a sales “toolkit” that would contain information about the product, the competition, and future software development in the area of 340B. The toolkit also included reference information about changes to 340B legislation, an analysis of competitive products, an overview of the implementation project plan, the 340B User Guide, as well as quick tips, exercises, and quizzes that would be covered during training and that could be taken away for later reference.

To make information portable and easily accessible, most documents were burned to a CD. Participants were given a thin folder that contained an agenda, a product ad slick, a 340B process diagram, and a training evaluation that was turned in on the last day of class. A photo of the materials developed appears in “Appendix D: Choice Dimension21® 340B Sales Toolkit.”
Chapter 3: A Single-Sourcing Solution for Choice Documentation

In July 2005, I began investigating single-sourcing as a way to make the development of Choice documentation more efficient. Choice maintains more than 3,500 pages of documentation. Currently, I maintain a documentation set for each of Choice’s products that consists of three basic types of user documentation: user guides, online help, and quick tips. I also write and maintain implementation documents for implementation specialists. Further, Choice is interested in developing training workbooks for its products.

Much of the information within each documentation set is similar; however, each document is designed to address a different audience. Thus, the mantra of single-sourcing—“write once, publish many”—led me to investigate single-sourcing for Choice. From the research I did for my presentation at Miami University, I learned that single-sourcing is a method for “automating” the writing process. Documents are broken down into content elements, which are small, logical chunks of text that can be reused, such as a title, introductory paragraph, or steps in a process. For each type of content element, a writing structure is developed so that the same content element can be assigned to different deliverables or output types—a user guide or online help, for example. Content elements are then tagged so they can be used in different documents. A Document Type Definition (DTD) for each output type stores information about which content elements should be included in a document and what the output should look like. For example, the style for body text in online help might be 10-point Verdana, while the style for body text in a .pdf that may be printed might be 11-point Century Schoolbook.

Content elements are stored in a central repository where they can be maintained by multiple authors. When the final output for each document is generated—and with most single-sourcing software applications, this can be done simultaneously—changes are retrieved and added to all the documents.
An Evaluation of Single-Sourcing Software Solutions

Being familiar with the concept of single-sourcing, but unfamiliar with the products designed to implement it, I asked for product recommendations from other writers I know and from members of the Society for Technical Communication, the professional organization to which I belong. I evaluated three products that ranged in price from affordable to mid-range to expensive.

I contacted two companies for demonstration versions of their products and talked at length with members of their respective sales teams. I already owned the third application I planned to evaluate for single-sourcing—RoboHelp®—and was able to find information about using it for single-sourcing in the knowledge base the software development company provides.

I used each application to convert a chapter of an existing document to a single-sourced file that could be used to output online help or a printed manual. I broke the chapter down into simple, obvious content elements: title, purpose, steps, field definitions, and screenshots. I tagged the content and attempted to generate a .pdf (Portable Document Format) using Adobe® Acrobat Reader for electronic and print documentation and a .chm (Microsoft® Compiled Help file which can be viewed using most Internet browsers) for online help. At this point, I was not concerned about the writing structure; my focus was on the capabilities of each tool.

Through this testing, I found that each product has its strengths and weaknesses. The most expensive product, was, of course, the most robust, but offered more functionality than I felt Choice would possibly use. The product was designed for large conglomerates, such as those in the auto and aerospace industries, to maintain voluminous parts lists and procedures.

I found the mid-priced product difficult to navigate. In my opinion, it had serious usability issues that I was not willing to learn to overcome.
All products, regardless of price had similar drawbacks in functionality in terms of online help. None of the products support context-sensitive help, a feature that allows a user to press F1 on any window in an application to access online help for that window. Choice spent nearly a year implementing context-sensitive help and was not willing to give it up. Another feature that the single-sourcing solutions I investigated did not support is DHTML (Dynamic Hyper Text Mark Up Language) features, such as expanding text and dropdown text. I use expanding text for definitions in online help; it allows users to click a term in text, reveal the definition to the right of the term, and then, with another click, hide the definition. I use dropdown text for field definitions; again a user can click the field name, text “drops down” or appears below the field name, and with another click the user can hide the text. I use these features extensively in online help to keep pages short to minimize scrolling for users.

I felt that the context-sensitive help and DHTML issues were significant, but I continued my research anticipating that the benefits of a more efficient process might outweigh the drawbacks I had discovered. I did decide at this point, however, that the purchase of a single-sourcing product would not be prudent. Any further testing with single-sourcing would be done using RoboHelp®, the product I already own and use.

**The Single-Sourcing Decision for Choice**

I presented my findings to Ms. Mull in early September 2005. The PowerPoint presentation is in “Appendix B: Single-Sourcing Presentation.” In that presentation, I recommended a plan to test single-sourcing with documentation for one product. I would develop all content for the IntelliOrder® 3.6 user guide and online help in RoboHelp®. We chose this option for several reasons, the most important of which was financial. But more than that, I believed that by getting started with a familiar document and a familiar authoring environment—one that would not force us to lose some of the features we had worked to implement, such as the use of DHTML and context-sensitive help—I could concentrate on the principle of single-sourcing, which is creating content elements for
reuse and developing a writing structure that would allow me to “repurpose” those elements.

I decided to attempt the implementation of single-sourcing in three phases: 1) updating existing documentation with new information; 2) further testing the technology; and 3) developing a writing structure. I chose this approach because, regardless of the success or failure of my single-sourcing attempts, I still needed up-to-date documentation on the designated due date.

First, using the previous version of IntelliOrder® online help as my starting point, I rewrote the documentation to include information about new and changed functions, working with just a few topics. I imported screenshots and corresponding callouts (lines and text that point to a specific portion of the screenshot) that would go into the printed document but that were not currently maintained in online help.

Next I tagged elements that I knew would go into printed documents. For example, screen shots and callouts would be tagged to go into printed documents only. I generated both .chm and .pdf files to test my system of tagging. The .chm worked well. It included all the elements I intended; however, the following are the issues I discovered that I believed would impede implementation of a single-sourcing solution.

- Callouts presented a problem I had not anticipated; they had to be embedded in the graphic file with the screenshot, which would make updating callouts a multiple-step process. To change the field name that a callout referred to, for example, I could no longer rely on the “Search and Replace” function in RoboHelp® to make the change. I would have to change the text in individual graphics files, adding another step to my current process and introducing the potential for inaccuracy.

- In printed documentation, the format of the headers and footers did not appear as I intended, and I was not able to change the template that RoboHelp® uses when it generates a .pdf to update the style. That meant that for every document I produced, I would have to generate the printed document as a Word file, change the header and
footer manually, and then create a .pdf. Again, this is another multiple-step process that single-sourcing is designed to eliminate.

- I would have to re-index the document manually in Word. All index entries appear just after the heading in each section when the print document is generated. So if text for a topic spanned more than one page, the index entries would be inaccurate.
- Cross-references did not convert to the .pdf. I would have to re-link all cross-references manually in Word and then generate a .pdf from that document. This would need to be done every time I generated a new document.
- I would have to write a macro to reformat field definitions from the DHTML expanding text format to the table format that I typically used in print documents.

When the project was put on hold in October 2005, I was still working on solutions to the problems I encountered. And I had decided that some of the technical difficulties I encountered may have been solved by using a different product.

I was ready to move into phase three of my plan: developing the structure of my content elements. The suggestions that my writing mentor gave me for restructuring my documents and elements within them seemed to be the start. For example, she suggested that each numbered step be a single action-oriented sentence and that any additional information related to the step be separated into a subsequent paragraph. I thought that perhaps this was one step toward a writing structure: the numbered steps could be tagged for all documents, while the subsequent information could be tagged so that it appeared only in user guides and online help, but not quick tips.

But as I thought more about how I would approach this task, issues about audience came to mind. In the MTSC program, we learn that audience is a critical consideration in document development. As writers, we must consider not just what we write about, but who will read what we write. Understanding the needs of our audience is the key to effective writing. But in a single-sourcing environment, content would have to be so structured that it would not allow for differences in audience that we address in our current documentation set.
I became concerned about how important audience considerations might make single-sourcing difficult to implement. The list below shows that each genre of user documentation has different audience considerations.

- **Job aids**—what Choice refers to as “Quick Tips”—are generally written for novice users who need to know the steps for performing a task, but not necessarily why they are performing the steps or what effect performing those steps might have in other parts of the system.
- **Help text** provides information on the steps required to perform a task, but also provides some conceptual information and cross-references to related information. If a user wants more information, it is available, and usually only a click away.
- **User guides** are designed to be used as reference documents and include more in-depth information about processes along with examples, flow diagrams, and other information that helps users gain a better understanding of not only what task they are performing but what the effects of that task will be.

In thinking about my different audiences and how documentation would have to be structured for a single-sourcing authoring environment, I considered the following example. In Choice Dimension21®, Choice’s desktop supply chain management application, there are several ways to create a purchase order: a user can create a purchase order manually by selecting products and entering quantities on a window in the application; a user can click a button to have the system generate purchase orders automatically based on minimum and maximum stocking levels; or the system may generate purchase orders with no user intervention at all if certain settings are defined to enable that functionality.

Considering the different audiences, an introductory sentence to the steps for creating a purchase order by entering products and quantities on a window in online help and a user guide might be: “To create a purchase order manually, follow the steps below.” But for a job aid, the introductory sentence might be: “To create a purchase order, follow the steps below.” The word ‘manually’ is important to advanced users who know that there are several different ways to create a purchase order; however, ‘manually’ has no
significance in a job aid and could confuse a purchasing clerk whose sole function is to enter purchase orders. Yet the word ‘manually’ would be part of the single-sourced text and would have to be tagged to be eliminated for that audience. Alternatively two different paragraphs would need to be maintained—one for the user guide and online help and one for quick tips. Could I create a structure for content elements to accommodate such nuances in my writing?

Development of IntelliOrder\textsuperscript{®} was delayed and so was the documentation project. I have not pursued the development of the structure of content elements and thus have still not determined whether single-sourcing is a viable solution for Choice. But the technical issues and concerns about developing a writing structure cast doubts. I also know that the benefits of single-sourcing are not in original document creation, but are realized more in document maintenance.

Later in my internship, I encountered another project that made me look at the implications of a single-sourcing solution at a higher level than that of coding of text. I was in the beginning stages of developing training documentation for another product—Dimension21\textsuperscript{®} 340B—and had begun work on a training model, which is shown in Table 2: 340B Training Model. This model was intended to identify the audiences we needed to reach with information about the product, to identify the types of training each audience needed, and to define the outcomes expected from the training we would deliver.

As I looked at the different types of training we planned to deliver, I noticed the overlap among audiences; however, even though the types of training were the same, the expected outcomes were different. The “conceptual/high level” overview training would likely be different for sales than it would for a newly hired associate in another department. Whereas the sales staff needs to understand the product at a high level from a customer’s perspective—how that product would satisfy the customer’s needs—the expected outcome for a new hire who received “conceptual/high level” overview training was to understand the purpose and use of the software. Perhaps some of the
“conceptual/high level” information written for sales could be repurposed for new-hire training, but the end result would ultimately be different.

Table 2: 340B Training Model.

<table>
<thead>
<tr>
<th>Audience</th>
<th>Types of Training</th>
<th>Expected Outcomes</th>
</tr>
</thead>
</table>
| Sales          | • Conceptual/high level¹ | • Qualify prospect for sale  
|                |                   | • Sell right features (i.e. right # accumulators/systems, hosted/non-hosted)  
|                |                   | • Spec customization requests  
|                |                   | • Successfully convey data requirements/needs to customer                         |
| Implementation | • Conceptual/high level | • Demonstrate system setup for hosted/non-hosted                                 |
|                | • Data setup²      | • Demonstrate data setup for various scenarios                                   |
|                | • System setup³    | • Demonstrate go live                                                           |
|                | • Go live⁴        | • Customer training                                                             |
|                | • User training⁵  |                                                                                  |
| Support        | • Conceptual/high level | • Demonstrate ability to use all features/functions                              |
|                | • Data setup       | • Troubleshooting various scenarios                                             |
|                | • System setup     |                                                                                  |
|                | • User training    |                                                                                  |
|                | • Troubleshooting⁶|                                                                                  |
| Development    | • Conceptual/high level | • Demonstrate system setup for hosted/non-hosted                                 |
|                | • Data setup       | • Demonstrate data setup for various scenarios                                   |
|                | • System setup     |                                                                                  |
|                | • User training    |                                                                                  |
|                | • Troubleshooting  |                                                                                  |

¹ Conceptual/high level training includes concepts, terminology, purpose/use of system, process flow.
² Data setup training includes assessment of customer data, and data cleansing process.
³ System setup training includes system settings, user settings, interfaces settings and related maintenance functions (i.e. product maintenance).
⁴ Go live training includes ability to test data integrity and connectivity.
⁵ User training includes instruction on system features and functions used to complete tasks for business processes (i.e. placing orders, generating reports).
⁶ Troubleshooting training includes ability to solve data-related issues (data set up wrong), user issues (user did not retain training), and technology issues (hardware/connectivity).
<table>
<thead>
<tr>
<th>Audience</th>
<th>Types of Training</th>
<th>Expected Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trainers</td>
<td>• Conceptual/high level&lt;br&gt;• Data setup&lt;br&gt;• System setup&lt;br&gt;• User training&lt;br&gt;• Troubleshooting</td>
<td>• Can train all types of users — customers, development, support, etc. in all areas of product</td>
</tr>
<tr>
<td>New Hires</td>
<td>• Conceptual/high level</td>
<td>• Understands product purpose/use&lt;br&gt;• Understands product as part of overall technology solutions</td>
</tr>
<tr>
<td>Customer</td>
<td>• Conceptual/high level&lt;br&gt;• System setup&lt;br&gt;• Data setup&lt;br&gt;• User training</td>
<td>• Understand how to perform tasks pertinent to position</td>
</tr>
</tbody>
</table>

Through my experiences in trying to implement single-sourcing and considering its application at different levels of documentation development, it occurs to me that there may be different degrees of single-sourcing. After testing single-sourcing with real documents, I think that single-sourcing could apply better to some parts of documentation than others. For example, field definitions may lend themselves better to single-sourcing because every user must enter the same data or type of data. Perhaps we can gain some efficiency by picking and choosing the content elements we want to single-source instead of trying to single-source documents from start to finish.

**An Alternative Approach to Single-Sourcing**

During my single-sourcing test with RoboHelp® and IntelliOrder® I learned about another single-sourcing alternative that I am considering for future projects. An article in the December 2005 issue of *Intercom* discusses ways to manage content that I believe can be a way to implement single-sourcing using applications that authors currently use—Microsoft® Word and Windows Explorer, in my case.

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7 Data setup procedures are intended for system administrators only.
Following the advice in the article, my approach might be something like the following.

- I can use Microsoft® Word to author my content elements by creating an individual file for each and using templates to define different styles for different documents.
- I can use Windows Explorer as my document repository to store content elements as individual files. I can store and organize those files in some order—perhaps by window name or function. For example, I might have a file for steps in a process and a file for field definitions for that same process.
- In Word, I can then create documents that contain links to the appropriate content elements in addition to text that addresses audience needs. For example, I can create a link to a file that contains steps in a process to a document that contains a purpose statement written for a particular audience.
- I can import content elements as individual topics into RoboHelp® for online help.

I have started testing this type of single-sourcing with the 340B User Guide. I hope to develop a system that allows me to single-source information that can remain static, while still addressing the needs of the different audiences for whom I write.

One important note: My internship lasted nearly nine months and I am still testing single-sourcing solutions. Regardless of the type of single-sourcing I decide to implement, the implementation process will be long. All documentation for Choice will need to be reformatted and rewritten for single-sourcing. As mentioned earlier, the benefits of single-sourcing are in the maintenance of documents, and the payback for any investment of time and money will not be realized for many months.
Chapter 4: Analysis

My goals in investigating single-sourcing and the attempts I am making to incorporate it into my work are to improve the efficiency of developing documents as well as to ensure the consistency of information across documents. It occurred to me that my goals are the same as those of supply chain management. I began thinking about documentation as a process and concluded that the document development process can be considered its own “supply chain.” Thus, I thought it would be beneficial to look at the documentation process in terms of a supply chain model that considers the development of the end-product from its beginning. Doing so would allow me to segregate the process into well-defined steps, each of which can be analyzed for efficiency improvements.

The Supply Chain Operations Reference (SCOR) model provided a useful archetype for analyzing the documentation supply chain at Choice. During my analysis, it occurred to me that the documentation supply chain at Choice is really one of two supply chains that comprise the entire product development cycle for the complete software package: the software as well as the accompanying documentation. It made me think that improvements in product development would not come from changes to one supply chain alone. I thought back on the course I took on supply chain management. I remembered that when manufacturing companies began adopting supply chain principles, they learned early on, that the real efficiencies in the supply chain came from improving communication between members of the supply chain, and between the supply chains that make up a “supply web”—the interconnected group of supply chains that can be departments within a company or companies within an industry.

Manufacturers also learned in the early days of supply chain management, that automating a single process did not necessarily yield benefits for other members of the supply chain or other supply chains in a supply web. I reasoned that the same would apply to the documentation supply chain. Implementing a single-sourcing solution would automate one process and would potentially benefit only one department. I concluded that in a networked organization like Choice, getting current information to customers—
both internally to sales, implementation, and customer support, as well as externally to customers who purchase Choice software—requires a solution that is broader and much deeper than single-sourcing can provide. I believe that putting processes in place to align the supply chains of both software and documentation development would help facilitate communication between departments—which manufacturers learned is one of the keys to improving supply chains—and the benefit would be realized by all supply chains that comprise the product development lifecycle.

**An Analysis of the Software Documentation Process using the SCOR Model from Supply Chain Management**

In 1966, a group of 69 companies formed the Supply Chain Council, an organization of manufacturing companies that was dedicated to improving supply chain management—the process of producing goods from an idea on a drawing board to the final production and sale of the product. Since then, the council has worked to define “best practices” for the industry and to develop a common language through which supply chain dialog can take place. The culmination of those efforts is the SCOR model, a continually evolving tool designed to help companies discover ways to make their supply chains more efficient and ensure consistent product quality.

At its very highest level, SCOR defines the supply chain as the series of events listed below.

- **Plan**: deciding what to produce.
- **Source**: gathering information and raw materials to produce the product.
- **Make**: producing the product.
- **Deliver**: sending the product to the customer.
- **Return**: taking back or repairing faulty products.

If we think about the documentation process, technical communicators go through the same steps for producing their end products: user guides, online help, and a host of other documents.
During the “Plan” stage, technical communicators, often with input from development teams, marketing personnel, and others in the organization, define what needs to be documented, which audiences need to be reached, and the format the end product should take. Ideally, the team develops project plans that include tasks, such as audience analyses, meetings for information-gathering, due dates for first drafts, usability testing, revisions, and the editing cycle.

In the “Source” stage, technical communicators do not procure raw materials or assemblies as manufacturers do; for technical communicators the “Source” stage involves gathering information from subject matter experts (SMEs), their audience, and sometimes from sales and marketing. They might also gather information from suppliers, such as printers or e-learning development companies, depending on the deliverables defined during the “Plan” stage.

The “Make” stage in the documentation process is the actual writing. Technical communicators develop documents, online help, and other forms of documentation. The “Make” stage in the documentation process includes capturing screens and developing flow diagrams for use in the end-products and indexing. This stage also includes usability testing, technical and copy editing, and revisions.

The “Make” stage is where single-sourcing could play a role. It is a methodology that might help technical communicators “make” content elements that would go into end products and to compile those content elements into .pdfs, online help, and other formats. At this juncture, it is important to point out, the difference between the single-sourcing methodology I have discussed throughout this report and sole-sourcing, which is a concept in supply chain management whereby a company commits to purchasing all of a particular good or service from a single vendor. The benefit of sole-sourcing is that the vendor becomes part of the buyer’s design team and the companies can more readily and confidently share information and expertise that can help improve products and processes. While the goals of these two concepts—process and product improvement—are the same, single-sourcing does not imply a single vendor. On the contrary, single-
sourcing may involve several vendors: a company that provides word processing software; a company that provides word illustration or diagramming software; a company that provides single-sourcing software; and other companies that provide the tools that technical writers use to create documents.

In the “Deliver” stage, technical communicators distribute documents in a variety of ways. For example, a .pdf file may be added to the company’s document repository or intranet for internal use; CDs may be burned so that documentation is portable; documents may be made available on company websites; online help files may be compiled into the software applications; or documents may be printed for those who prefer traditional paper manuals.

While technical communicators do not have a “Return” stage in the traditional sense—that is, they are not asked for refunds or replacements for defective products—they do hear from their audiences about where documents fall short, either formally through customer satisfaction surveys or informally through comments brought to them by customer support departments or help desks. Technical communicators must have a method in place for updating documentation so that those issues can be addressed and resolved in subsequent releases.

Software development also goes through the plan-source-make-deliver-return process; however, today, the documentation development supply chain at Choice operates independently of the software development supply chain, and vice versa. Typically, a software application, or a change or enhancement, is programmed and ready for release before a technical communicator is made aware of the new development effort. As a result, user guides, online help, and job aids are not ready when development is ready to release the software to customers. My analysis of the two supply chains based on the SCOR model showed me how aligning the documentation and software development supply chains can have mutual benefits.
A Supply Chain Solution for Improving the Efficiency of the Documentation Process

At the beginning of this section, I noted that the technical communication supply chain is one of two supply chains needed to produce the complete software product. In analyzing the documentation supply chain and the tasks that are performed at each stage, I thought about how aligning the supply chains could provide opportunities for communication between software developers and technical communicators that would improve both supply chains. I considered each stage of the supply chain model and how bringing the supply chains into closer alignment would provide opportunities to share information on new development early in the process to help ensure that products and documentation were delivered at the same time; it would eliminate rework because technical communicators would have information about development as it was happening; and it would offer opportunities for usability testing that would result in a higher quality product.

Currently, documentation efforts begin during the “Deliver” stage of the software development lifecycle at Choice, as illustrated in Figure 2: Current Development and Documentation Supply Chains.

![Figure 2: Current Development and Documentation Supply Chains.](image-url)
I propose that the two supply chains be brought into alignment, as shown in Figure 3: Proposed Development and Documentation Supply Chains. The benefits of doing so are described in the next section.

<table>
<thead>
<tr>
<th>Software development</th>
<th>Plan</th>
<th>Source</th>
<th>Make</th>
<th>Deliver</th>
<th>Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documentation</td>
<td>Plan</td>
<td>Source</td>
<td>Make</td>
<td>Deliver</td>
<td>Return</td>
</tr>
</tbody>
</table>

**The Benefits of Aligning the Product Development and Documentation Supply Chains**

The benefits of aligning the product development and documentation supply chains can be realized at every stage of the SCOR model. By aligning the “Plan” stages of product development and documentation development, technical communicators would be informed of new functionality and could help develop a project plan for the software and the documentation development so the development schedules would coincide and the software and documentation could be released at the same time. Having documentation that does not mirror the application is an issue for Choice. In customer satisfaction surveys conducted in 2003, one of the complaints that was cited most often was that documentation was out of date—the user guide and online help did not “match” the software. Having a project plan that included both software and documentation development would help ensure that the scope of the project was well-defined and that both software and documentation efforts were geared toward completing work on the same features and functionality. It would also ensure that time would be built in for a technical review of documentation, which is currently done by developers, and is often overlooked.
If the “Source” stages of the two supply chains were aligned, as shown in Figure 3: Proposed Development and Documentation Supply Chains, technical communicators could be in touch with developers to learn about and ideally help write functional specifications. Bringing technical communicators into the software development process at this stage would serve two purposes. First, it would delineate in clear terms, what should be programmed; second it would give the technical communicator a start on the documentation. The “Source” stage would also be an ideal time to conduct usability tests on the specifications, prepare paper prototypes of the user interface, and perform preliminary validation testing, all of which a technical communicator has skills for and could provide assistance to do.

By aligning the “Make” stages, technical communicators could conduct usability testing on the documentation and software in tandem. If the “Make” stages in software and documentation development happened concurrently, documentation could be revised and any issues with the software could be corrected, if needed. Both would be ready for retesting or release at or near the same time.

The “Make” stage is currently a difficult phase in the documentation lifecycle at Choice and requires much costly rework for two reasons. First, planning documentation projects is difficult because they typically do not begin until software development is in its “Make” stage. Developers are busy programming and, justifiably, do not want to be sidetracked with documentation issues. Second, changes in development happen continuously during the “Make” stage as issues arise. Programming is changed or completed, often without the knowledge of anyone outside the development department.

If the software and documentation supply chains were aligned as shown in Figure 3: Proposed Development and Documentation Supply Chains, I believe we could also improve the “Deliver” stage of the supply chain. Software applications and documentation could be delivered at the same time, thus increasing customer satisfaction.
I believe that the positive effects of aligned supply chains outweigh the argument against this approach. The criticism of involving technical communicators early in the product development cycle is that the additional tasks they would perform would lengthen the time it takes to get a product to market. I believe a technical communicator can make contributions at every stage—from helping to name fields, to ensuring the consistent use of terminology from window to window, to creating, executing, and reporting on usability testing, to writing instructions. The skills a technical communicator can bring to the product development process can help make the entire end-product—not just the documentation—more usable.

There is no traditional “Return” stage for software or documentation as there is in a manufacturing environment, where dissatisfied customers return a product for a refund or replacement. However, returns might come in the form of customer issues that occur after implementation. Customer satisfaction surveys about the software and documentation can help facilitate the flow of information from customers to Choice and can then be used in the “Plan” stage for the next release of the product.

Development and documentation are two supply chains that make up the product development lifecycle for software at Choice. If we look at other departments in the organization, we may find others as well. But, both the application and the documentation should be delivered to customers together, as a single package, and I believe that aligning the supply chains of these two independent efforts would bring Choice closer to accomplishing that goal.
Conclusion

My experience as a technical communicator with Choice Systems, Inc. has offered me a multitude of benefits. My professional experience, coupled with my coursework at Miami University, has opened my eyes to the wide range of projects that can benefit from the expertise a technical communicator can offer. In addition to writing documentation, I can develop new ways to structure documents for improved usability, and offer suggestions for improvements that need to be made and issues that need to be resolved.

I believe I am well-equipped for the future: I have the foundation in technical communication theory that I was in search of when I started the MTSC program; I possess practical skills that have helped me improve my writing by looking at it from not just a content and accuracy standpoint, but from the standpoint of users; and I have learned to apply design principles that have improved the appearance of my documents. Armed with this knowledge and experience, I have the confidence to offer sound recommendations and advice to my clients.

When I began the MTSC program I had no formal training as a technical communicator, although I did have a degree in journalism that had led me to a career in technical communication. As I conclude this internship and leave Miami, I take with me a personal and educational experience that will serve me well in terms of the quality of my work and the transferability of skills to other paths that my technical communication career might take.
References


Rouse, Vicki Henderson (November 26, 2002.) *When Cultures Collide. Do mergers and acquisitions succeed or fail?* Presentation for Organizational Communication, Miami University.


Appendix A: 340B Document Index

The 340B Document Index is a document designed for the Choice implementation specialists. It provides easy access to documents stored in a document repository and ensures that the most current information is accessible. Document titles, which appear in blue underlined text, are hyperlinked to the index. Implementation Specialists can store the index on their hard drives and then access individual documents in the repository using the hyperlinks.
340B Implementation Document Index

Dimension 21 340B Implementation Procedure

- 340B Implementation Project Plan (60 days)
- 340B Implementation Checklist
- Systems Implementation Project Planning Instructions

New Customer Info

- 340B Hardware Requirements
- 340B Usage/Dispense File Specifications
- 340B User Guide
- Charge Units and Charge Multiplier
- Choice Product Catalog Import Template
- Creating a Product Catalog (non-ECHO users)
- Creating a Product Catalog from ECHO Reports (ECHO users)
- Initial Customer Contact Interview Checklist
- Initial Customer Contact Interview
- Introductory Email
- Vendor Information Request Form

Product Catalog

- Customer Review Checklist
- Implementation Specialist Data Review Checklist
- Requesting 832 Product Catalog
- Submitting Product Catalog Files to Development

System Setup and Testing

- 340B Go Live Testing
• 340B Setup Checklist
• 340B Usage Import Interface Information Checklist
• Providing Choice Dimension21 Software/Access to Software
• Setting up ECHO for the Choice Dimension21 340B Interface
• Setting up the 340B Import Interface to Create the Accumulator

Training

• 340B D21 Quick Tips
• 340B ECHO Quick Tips
• 340B Training Agenda
Appendix B: Single-Sourcing Presentation

Single-Sourcing

Is a single-sourcing solution the right solution for Choice Systems, Inc. right now?

What is single sourcing?

- Write once, publish many
- Way to “automate” documentation
- XML-based
What are the benefits of single-sourcing?

- Consistency
- Easy updating
- Reduced rework/reformatting

What are the drawbacks of single-sourcing?

- Structured approach eliminates audience considerations
- Requires new tools
- Requires new skills
- Long learning curve and ramp-up
- Expensive in terms of products and time it takes to implement
How is single-sourcing implemented?

- Develop document structure
- Develop output styles
- Convert current documentation to new application

What is the state of Choice documentation today?

- Currently maintain 3,129+ pages of documentation across product lines
- Not widely publicized internally
- Not easily accessible
- Out-dated, according to customer satisfaction survey
- Incomplete - doc set is not complete for any product
Which of these problems will single-sourcing solve?

- May help reduce the time and cost associated with maintaining 3,129 pages of documentation
- Will not solve problems of accuracy, availability, accessibility

What are single-sourcing solutions?

- 
- 
- 
-
## How do solutions compare in terms of cost?

<table>
<thead>
<tr>
<th></th>
<th>Current Price (current price basic X5 version in $599); approximately $500/000/year for upgrades, $60 per incident support</th>
<th>$1,000.00 + $95.00 annual maintenance (includes all upgrades and unlimited support for 1 year)</th>
<th>$7,200.00 + $1,150.00 annual maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of Software</td>
<td>n/a</td>
<td>1-day training sessions + 2-hour Webinars sessions</td>
<td>Minimum 5 days to start</td>
</tr>
<tr>
<td>Training Time</td>
<td>n/a</td>
<td>1-day training + travel to Research Triangle, North Carolina Webinars at $250 per session</td>
<td>$1,575 + travel to Ann Arbor, Michigan</td>
</tr>
<tr>
<td>Other</td>
<td>n/a</td>
<td>Adobe Acrobat professional @ $499 to maintain electronic editing capabilities</td>
<td>Adobe Acrobat professional @ $499 to maintain electronic editing capabilities</td>
</tr>
</tbody>
</table>

9 Requires 1,000 additional licenses so that the software maintain ownership of documentation. Second license same price.

10 Requires a direct connection to the software maintain ownership of ownership. Second license $3999 (paid on initial version of application that does not include style manager or MS Word conversion program) + $150 annual maintenance.

## How do solutions compare in terms of features?

<table>
<thead>
<tr>
<th></th>
<th>Easy</th>
<th>Difficult – no search, mouse wheel navigation</th>
<th>Moderate – built-in templates helpful, but sometimes confusing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Conversion</td>
<td>Yes</td>
<td>Yes, but with difficulty, Does not convert tables, or graphics satisfactorily</td>
<td>Yes, but requires separate conversion program</td>
</tr>
<tr>
<td>Supports electronic editing</td>
<td>Yes, when converted to Word</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Supports DHTML</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Supports Content-Sensitive Help</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
How do solutions compare in terms of available output?

<table>
<thead>
<tr>
<th>Output</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Word</td>
<td>Yes – requires some reformatting and editing of index entries in order to be accurate</td>
</tr>
<tr>
<td>pdf</td>
<td>Yes – must output to Word first for reformatting</td>
</tr>
<tr>
<td>chm</td>
<td>Yes</td>
</tr>
<tr>
<td>hy</td>
<td>Yes</td>
</tr>
<tr>
<td>XML</td>
<td>Not XML-based, but allows generation of XML output</td>
</tr>
</tbody>
</table>

- Nothing to buy today
- Can output print (.pdf) and online (.hlp, .chm)
- Easiest to implement for user guides and online help
- Issues with indexing in printed output
• Word-based, which makes application difficult to use
• Styles reside in Word – can be confusing
• Limited navigability
• Immature product – released June 2005
• XML-based

• Most robust of the three applications evaluated
• Most expensive of the three applications evaluated
• Mature product
• XML-based
Which of these solutions is best for Choice?

- Today the answer is [redacted]
  - Can start developing document structure on a small scale – will translate to XML-based products
  - Can reduce reformatting time by creating/maintaining user guides and online help in Robohelp instead of Word
  - No learning curve

Is single-sourcing the right direction for us right now?

- Need to fix immediate problems first
  - Revamp eRoom
  - Create a document index
  - Assess what associates know about documentation; train them on what is available and who it is for
  - Catch documentation up to development and stay caught up
Is single-sourcing the right direction for us right now?

- Need to fix the process
  - Version control
  - Scheduled releases
  - Better tracking of support issues and communication to documentation
  - Improve communication with customers: create email address documentation@choicesystemsinc.com for feedback.

Is single-sourcing the right direction for us right now?

- Need to finish developing corporate training strategy
  - What do we need?
  - How will we develop it?
  - Do materials lend themselves to single-sourcing?
Recommendations

- Fix the process, the documentation
- Develop the training plan
- Phase in single-sourcing by using Robohelp now for user guides and help
- Look at a new product for single-sourcing when we’ve fixed the problems that single-sourcing can’t fix
Appendix C: Training Needs Assessment Survey

The following survey questions were distributed via SurveyMonkey. An “*” indicates that a response to the question is a required entry on the survey.

Welcome

Thank you for taking the time to complete this brief survey. Your input is important to us and to you for your professional development. Please click Next to begin.

Tell us about you

*1. Who do you work for?
   – Company
   – Department

2. OPTIONAL: Please provide more detail about you.
   – Position
   – Name
   – Phone
   – Email

*3 How long have you been with the company? (Menu selection)
   – Less than 1 year
   – 1-3 years
   – 3-5 years
   – 5-10 years
   – Longer than 10 years
*4. How long have you been in your current position? (Menu selection)
   – Less than 1 year
   – 1-3 years
   – 3-5 years
   – 5-10 years
   – Longer than 10 years

Tell us about the training you received when you were hired.

*5. The training I received for my current position was (Rating scale: 4 selections from Strongly Agree to Strongly Disagree)
   – thorough
   – helpful
   – easily accessible

*6. What type of training did you receive when you hired into the company?
   - Product training
     – Classroom training with others in the same or similar positions as yours
     – One-on-one with a company associates
     – Learned by doing
     – Did not receive training

Other Product training required to do your job (i.e. Microsoft® Project, Outlook, etc.)
   – Classroom training with others in the same or similar positions as yours
   – One-on-one with a company associates
   – Learned by doing
   – Did not receive training
Human skills training (customer service, Courtesy Plus, etc.)
- Classroom training with others in the same or similar positions as yours
- One-on-one with a company associates
- Learned by doing
- Did not receive training

Company policies/procedures
- Classroom training with others in the same or similar positions as yours
- One-on-one with a company associates
- Learned by doing
- Did not receive training

On company history/mission/objectives
- Classroom training with others in the same or similar positions as yours
- One-on-one with a company associates
- Learned by doing
- Did not receive training

*7. The training I received enabled me to (Rating scale: 4 selections from Strongly Agree to Strongly Disagree)
- learn and understand my job quickly.
- learn and understand my position in the company thoroughly
- understand the objectives of the company and what I could do to help achieve them
- perform my job responsibilities to the satisfaction of my superiors
- perform my job responsibilities to the satisfaction of my customers
- resolve customer issues to my customers’ satisfaction
Tell us about any training you have completed since you’ve been with the company:

8. List all skills development classes you have completed in the last year. For example, if you are a developer, list courses on new languages or frameworks you have completed.

9. List all company-sponsored training courses you have completed in the last year.

10. List all outside training courses you have completed in the last year.

11. List your current professional certifications (if applicable to your position/job description)

Tell us about how you keep current on products and technology

*12. How do you keep up to date on new [ ] product development?

*13. What materials are available to you that enable you to learn about new [ ] product development?

*14. Is information about new [ ] product development readily available?

*15. How do you learn or keep up to date on products you need to perform your job responsibilities? For example, how do you learn/update your software skills?

*16. What resources are available to you to for learning:
   – new technology
   – new industry standards
Give us your overall opinion of the training you have received from the company

*17. Rate the training the company provided for your current position in the following areas (Rating scale: 4 selections from Excellent to Poor)
   - Accuracy
   - Clarity
   - Completeness
   - Organization
   - Ease of Use

*18. In terms of new technology I believe the company invests:
   - Enough resources in training to keep me current
   - Not enough resources to keep me current
   - More than enough to keep me current

*19. In terms of professional development that relates to my position I believe the company invests:
   - Enough resources in training to keep me current
   - Not enough resources to keep me current
   - More than enough to keep me current

*20. In terms of human skills and development (conflict management, team building, customer service, etc.) I believe the company invests:
   - Enough resources in training to keep me current
   - Not enough resources to keep me current
   - More than enough to keep me current
*21. What are the best aspects of the training offered here?

*22. What are the worst aspects of the training offered here?

*23. What specifically would you do to improve the training offered here?

*24. Please list courses that you think could provide that would benefit your professional development.

*25. What other feedback would you like to provide about the training the company offers?
Appendix D: Choice Dimension21® 340B Sales Toolkit

The Choice Dimension21® 340B Sales Toolkit was developed for 340B training for the company’s sales staff. Many documents were burned to CD so that the information would be easily portable.