ABSTRACT

REPORT ON A MTSC INTERNSHIP AT A MEDICAL DEVICE COMPANY

by Natalie L. Corzine Moore

This four-chapter report details the projects and work completed as an intern at a medical device company (MDC) in 2010. This report outlines the corporate structure of the company and gives an overview of my role as a technical writing intern in the packaging and labeling department. This report also outlines various projects, including the development and writing of instructions for use for a device tool, the redevelopment and writing of an internal process for the customer quality department and the writing of software documentation and development of an accompanying web site. This report concludes with a summary and reflection chapter on my writing, editing, web site development, project management, process development, and marketing communications projects at the MDC.

Note: To protect classified, confidential, and proprietary information of the Medical Device Company, product and company names in this report have been excluded. Names of employees at the MDC have been substituted with pseudonyms taken from the US Census Bureau’s list of popular baby names from 1900-1909.
REPORT ON A MTSC INTERNSHIP AT A MEDICAL DEVICE COMPANY

An Internship Report

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by
Natalie L. Corzine Moore
Miami University
Oxford, Ohio
2013

Advisor _________________________________
Michele Simmons, PhD

Reader _________________________________
Katherine Durack, PhD

Reader _________________________________
Jason Palmeri, PhD
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“I get by with a little help from my friends.” - Paul McCartney and John Lennon

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Chapter 1 | Internship at a Medical Device Company

On June 14, 2010, I began a six-month term as a technical writing co-op at a medical device company (MDC) in the Cincinnati, Ohio area, as partial fulfillment of curriculum requirements for the Master of Technical and Scientific Communication (MTSC) degree at Miami University. The MDC develops, manufactures and markets minimally invasive surgical devices and is a subsidiary of a global parent company. The parent company manufactures pharmaceutical, diagnostic, therapeutic, surgical, and biotechnology products, as well as consumer health care products including personal hygiene products, medications and first aid supplies.

The MDC specializes in developing, manufacturing and marketing minimally invasive surgical instruments and products which include gastric banding, ligation, stapling, energy, and access devices. The company supports the following medical specialties:

- Bariatric
- Breast Surgery
- Colorectal
- Ear, Nose and Throat
- Gynecology
- General Surgery
- Orthopedic
- Plastic
- Spine
- Thoracic

The MDC’s mission is to use innovation to help transform surgical and patient care. Laparoscopies are minimally invasive surgical procedures performed using a laparoscope through one or more small incisions in contrast to an open surgery that requires one large incision. This type of surgery reduces damage to human tissue.
which results in quicker recovery times, shorter hospital stays, and less scarring and pain for surgical patients.

**Organizational Structure of the MDC**

The MDC’s parent company has more than 250 subsidiaries located in over 57 countries. The company organizes its subsidiaries into three different groups:

- Consumer Health Care
- Medical Devices and Diagnostics
- Pharmaceuticals

The MDC is part of the Medical Devices and Diagnostics Division which houses ten different medical device and diagnostic subsidiaries. Though it is a subsidiary of the parent company, it operates as an independent entity with its own corporate structure. In the corporate hierarchy, as shown in Figure 1.1, the president of the MDC reports to the chair of the Medical Devices and Diagnostics group of the parent company and that chair reports to the worldwide chair of the medical devices and diagnostics division. The three worldwide chairs report to the CEO of the parent company.
As an independent entity, the world headquarters of the MDC is located in the Cincinnati, Ohio area. The MDC supports 10 educational institutes throughout the world (one of is located at the world headquarters). At these institutes, physicians, nurses and other health care professionals learn how to use the company’s devices. The MDC also has several manufacturing centers located in North America.
Organizational Environment at the MDC

The organizational environment at the MDC is highly bureaucratic. Every task has a specific corporate procedure and the company follows the Six Sigma business model, which has “a particular goal of reducing defects to near zero” (Pande, Neuman & Cavanaugh, 2002). Six Sigma, developed by Motorola in 1979, is a management approach adopted by companies to “improve their bottom line by designing and monitoring everyday business activities in ways that minimize waste and resources” (Harry and Schroeder, 2006). The main concept of Six Sigma is to minimize mistakes in every aspect of a business, “from filling out a purchase order to manufacturing airplane engines – eliminating lapses in quality at the earliest possible occurrence.” (Harry and Schroeder, 2006). Six Sigma has been adopted by many companies because of its success in improving profitability while maintaining quality. For example, Asea Brown Boveri (ABB) adopted the Six Sigma model for its power transformer plant in Muncie, Indiana. That plant alone reduced its equipment error by 83% and saved approximately $775,000 per process (Harry and Schroeder, 2006).

Under the Six Sigma process model, all tasks are considered “projects,” and every project must have a leader who outlines and manages the entire task on a project timeline. Corporate hierarchy is strictly followed and all communication must follow the official chain of command.

To fulfill my internship requirement, I was employed as a technical writer in the Global Packaging & Labeling Solutions (GPLS) department at the MDC. GPLS is housed in the same departmental area with Sterilization Sciences and Packaging Engineering. The GPLS group works closely with these other two departments as all groups are involved in the supply chain management of the MDC product lines.
The GPLS group/team consists of technical writers, graphic designers, a departmental specialist and a project manager. GPLS is responsible for providing packaging labeling for all of the MDC’s products as well as federally required instructions for using for each product. The group also manages the translation process for all packaging and labeling; currently, all labeling and instructions are translated into 23 different languages. Each technical writer within the group is assigned to a specific franchise at the MDC (e.g. energy, endoscopy, etc.).

**Figure 1.2**  Departmental Structure of GPLS

My Role as a Co-op at the MDC

As part of the MDC’s internship requirements, I had to participate in an intern group comprised of interns and co-ops from all departments. At the MDC, interns are generally undergraduates working during the summer months while co-ops work for longer periods (usually 6-12 months).
As a co-op in the GPLS department, I worked with team members to provide package labeling and instructions for use for the MDC’s products. Some of my responsibilities included developing labeling text and designing layouts for packaging components. I worked with team members to develop and manage schedules for various projects and helped identify and develop solutions for various labeling issues for several products. I learned about producing consistent, quality products based on accepted international manufacturing standards through training on Good Manufacturing Practices and International Organization Standardization (El-Haik & Mekki, 2011, 26).

As team member I participated in:

- Management training
- Educational seminars
- Process development
- Project management
- Management of a Romanian language translation project
- Group presentations and discussions of work
- Surgical lab demonstration
- Community service, marketing communication projects
- Editing of defective instructions for use (IFU).

During my time at the MDC, I was involved in three large projects:

- Writing instructions for use for new product development team for a calibration tool used in conjunction with a new generator
- Rewriting and redesigning instructions for customer to return defective equipment
- Writing software documentation and developing a team website.
Chapter 2 | Overview of Internship at the MDC

My job title at the MDC was “Technical Writer, Co-op” and while there, I spent the majority of my time managing projects and corporate processes. Though some of my tasks involved writing, there was more editing and document development. The project management skills and technical editing tools I learned during my studies in the MTSC program helped me manage the wide range of projects I developed and executed during my time at the MDC.

My tasks focused primarily on:

- project management
- process management
- document design
- technical editing
- technical writing

The following figure shows a breakdown of tasks and the percentage of time spent on those tasks.

**Figure 2.1**  Divisions of Co-op Tasks by Percentage
As a MTSC graduate student specializing in user experience design and computer documentation, I was assigned to report to Marie, the department's project manager, because of her knowledge of information technology development. In the past, the co-ops were always assigned to a Glen, a senior technical writer whose area of expertise involved medical writing only. Because of Glen's impending retirement, Anna, the department director, wanted to broaden the scope of the MDC’s technical writing co-op program. She assigned Marie to supervise my co-op because Marie’s expertise was more in-line with my area of study.

My mentor Elizabeth was also assigned for the same reasons. The department director wanted other technical writers in the department to gain experience in managing the co-op writing program. Elizabeth is a technical writer who also has professional experience in software writing, XML, and content management. Marie led several projects involving the creation of online translations for Romanian and Chinese languages, as well as the development of a content management system for the department. Elizabeth has professional experience in helping to develop a content management system for a previous employer.

While at the MDC, I was afforded many opportunities, including:

- Management training
- Educational opportunities
- Career development opportunities

I was assigned to various projects under the advisement of each technical writer which varied in scope:

- Process development
- Project management
- Translation projects
- Surgical lab
- Community service
- Marketing communications
- Presentations
- Writing
- Editing
- Website development

The large variety of these assignments allowed me to gain experience in many different areas of management and writing.

**Management Training and Educational Seminars**

Co-ops are expected to complete several different online classes and seminars in management, the same as permanent employees. I received valuable training and company certification online in the following areas: Information Asset Protection, Careful Communication, Business Conduct, and presentation skills. Information Asset protection was required to help technical writers understand how their work was considered a corporate asset and learn their role in how to protect this proprietary information. Careful Communication taught employees how to be mindful of all communications – written, oral and digital – in the workplace and how to prevent workplace conflict and potential litigation.

Also, I was given the opportunity to attend training on Microsoft’s SharePoint software and a training seminar hosted by the American Management Association on how management can best utilize social media outlets in their departments. The seminar focused on how social media is becoming essential web infrastructure to business and how a company can utilize the micro-content it contains. That training helped me to gain employment with my current organization immediately after my contract with the MDC expired.

Another opportunity I took advantage of at the MDC was training in Microsoft’s SharePoint software. The division managers organized and offered the training to team members because they wanted the team members to use the department’s
SharePoint website more effectively for project collaboration and management. Unfortunately, the class was offered during a peak vacation time during the summer; only half of the department attended. After attending the training, I approached my supervisor with the idea to develop documentation and a web tutorial on how to use the features in SharePoint. My thought was to develop training for members who were not in attendance and to develop a software documentation project as one of my main projects to help facilitate the completion of my MTSC degree.

**Process Development**

One of the many tasks for technical writers at the MDC involves “process focus, management, and improvement” (Pande, Neuman & Cavanaugh, 2002). As a team member, I was involved in several team projects where the technical writers either reviewed current processes for redevelopment or investigated new policies to help alleviate “pain” points that existed in the department.

“Pain” is defined by Ann Rockley as areas “where processes, tools and technology are failing or inadequate and where your organization is seeing the most negative results” (Rockley, 2003). After we determined what was causing the “pain” within the technical writing process, our teams wrote up reports for management with our suggestions for alleviating this “pain.” Two process development projects that I participated in involved streamlining project and document approval processes.

**Project Green CAFé**

One of the first process development teams to which I was assigned involved members from all three departments in the division: packaging, sterilization and labeling. We were involved in a contest to improve a current process or to create a new process for the first division “Innovation Day.” Innovation Day was organized by the division managers to encourage new ideas and development by its members. My team agreed that one of the biggest “pain” points for everyone was getting approval for an internal department form called a Change Authorization Form.
CAF). The process involved more than 15 steps, gaining approval from a large number of signatories in order to make a change to any process, and creating a large paper trail in the process. Our project was named to reflect the following factors:

- Title of the process form
- Excessive coffee consumption by all team members
- Environmental improvement through paper reduction
- Team members referred to our meeting room as “The Café”

Our team explored streamlining the process which would cut back on the time involved and help to eliminate the large paper trail created by all of the necessary signatories. I was tasked with creating an outline of the process to illustrate the many steps within the process. (See Appendix CAFé for the outline of the process.) We met with several representatives from other departments for ideas on how to streamline the process and we researched technologies available for secure electronic signatures. We created a demonstration in PowerPoint and presented our idea to the contest board. Our team won the competition. Management agreed to explore electronic signature processes that would help streamline the approval process.

**Project Excellence**

Another large project involved the redevelopment of the department’s main document development process model. As written, the process would take 56-71 days for completion from beginning to end. In reality, the process could take more than 90 days because it did not take into account holidays and personal time off of team members.

The process begins with the submission of an implementation/change request to the graphics specialist who then creates the artwork numbers and assigns resources which takes 1-2 days. Next, the request, artwork numbers and assigned resources are given to the assigned technical writer who attends project meetings, writes the instructions and develops the IFU using the MDC's standard template. During this
time, the assigned graphic designer also downloads the artwork necessary for the IFU. This step takes up to nine days.

Next, the editing process occurs over two days and then the IFU is sent out for domestic review for five days. The translation process, which occurs off site, takes up to 25 days. Next, technical writers have 3-6 days to proof the translations for content and layout and to upload the files. The layout is finalized by the technical writer, artwork is proofed by the designer and the artwork is sent out for approval, which can take anywhere from 3-11 days. Once the artwork has been approved, it is uploaded for the prepress process, the graphic designer can take from 8-9 days to ready the packaging for print and then the project is closed out.

To help streamline this process, the packaging department leadership sought assistance from the parent company by conducting a “process excellence” workshop. A trained process manager from the parent company met with department members several times in four-hour blocks, to analyze the current process, dissecting each stage to so trouble spots and bottlenecks in the system could be identified.

Although I was involved at the beginning of this project, it would take several months of research and analysis by team members to determine the best practice to redesign the process. Because I was scheduled to leave the MDC in December, I was not involved in the research and implementation stages of this project. I would not make any substantial impact on streamlining this process but I did gain valuable experience on how to begin a large process revision process within a large organization.

**Romanian Translation Project**

A minor, but equally important, project I lead involved organizing the IFUs that would need to be translated into a new language edition. At the time of my employment, the MDC translated their IFUs into 20 different languages. While I was
there, Romanian was added to the list of languages into which IFUs would need to be translated.

Though I was assigned to organize a list of the MDC’s products used in Romania and identify IFUs that would need translating, the task was complicated because the department lacked a centralized content management system. For the first step of the project, I received a list of products that were sold in Romania at that time. I checked the artwork workflow system database for current product numbers. Next, I had to check the on-line instructional insert database to see if the product IFU was being revised. If the IFU was in revision, I then checked the graphics database to determine if the IFU had completed the revision process but not yet uploaded to the first database.

Third party translation suppliers further complicated this process because I had no access to a list of legacy product IFUs they were currently translating. For recent IFUs involved in the translation process, I had to check the multi-language labeling system database. If the current IFU was still not located, I had to contact the translating companies and send them my list to see if any of the IFUs that were under revision by their staff but had not yet been uploaded. This process was an eye-opener for me because it highlighted the team’s frustration with the process timeline as discussed during the Process Excellence project. The management of files within all of these separate databases created extra work and added days to the process. Databases were created as needed, and not with a unified content management strategy in mind (Rockley 2003). Though there had been a previous plan for a centralized content management system (CMS), economic factors dictated this plan be placed on hold in the mean time. However, the extra time and myriad of systems involved in this project demonstrated the need for a CMS to help streamline departmental processes.
Co-op Presentations

As a co-op, involvement with the global intern group was mandatory. The group was comprised mostly of undergraduate students (I was one of two graduate students in the group during that time). I was required by the MDC to give two group presentations during my co-op period, both with topics that were assigned to me by my department director. My first presentation was given to the global intern group and occurred at the mid-point of my co-op. It outlined my tasks plus gave an overview of my department. The second presentation occurred at the end of my co-op; it outlined my experience at the MDC to my department and to other interns.

To help with my final intern presentation, my supervisor arranged for me to attend a one-on-one presentation skills class with local actor and skills instructor Shelley. My experience with Shelley taught me valuable skills that I will use for the remainder of my career. Through her, I was able to learn how to assess my audience and tailor my presentation to reach them. I rehearsed with her and learned about controlling my nerves, honing my delivery style, and concentrating on the non-verbal elements of my presentation. I learned how to use my voice effectively and how to use visual elements to support my presentation. She also instructed me to anticipate any and all technical complications and how to smoothly recover from these obstacles.

The most valuable advice Shelley gave me was on how to handle challenging participants during any presentation or in the Question and Answer segment. I utilized this advice fully during my final internship presentation after a technical writer took offense to something I suggested and challenged me in front of the entire group. I politely directed the focus back to my presentation by answering the question and tying it into my next point. [This advice also helped me deflect the technical writer when he confronted me at my desk after my presentation. I calmly pointed to my research to back up my presentation.]
Surgical Lab Demonstration
During my first week at the MDC, my co-op supervisor approached me with my first educational opportunity. She asked me if I wanted to participate in any of the training or courses offered by the educational institute at the MDC. Training involved learning how to use the medical devices either in a classroom setting or in a live surgical lab. I opted to learn how to actually use the medical devices by hand in a lab setting (and not online with a simulator). I studied and trained for the live animal lab. This involved studying several procedures and federal guidelines for such involvement and included passing an online test. Once I had passed the test, I was cleared to sign up for any of the surgical technique labs. I signed up for a cardio-thoracic lab because it involved the cutting and stapling devices that I was writing about during my internship.

Labs are one session long and scheduled for several hours. On the afternoon of my training, I attended a brief orientation with several other interns and some medical professionals. We met at the educational institute, a facility on the MDC’s campus designed for conducting seminars and educating professionals on MDC products. After the orientation, we were shown a film on safety procedures and then we changed into sterile, protective gear in locker rooms. Then we were introduced to our surgical leader who conducted the lab in a surgical suite on pig tissue. Several interns and I were allowed to test the equipment on the tissue and learn how the devices worked during surgical procedures.

Community Service
Before signing the contract to accept the co-op position at the MDC, I had a choice to make. I was initially offered another position involving usability at a company in Springsboro, Ohio. I chose the MDC over the other company because of its commitment to community service. When I interviewed for the position, the technical writing team noted my community service experience and pointed out that my intended co-op time would coincide with their community service drive. I would be afforded paid time off to lead a community service project during the MDC’s
drive. This prospect was appealing to me and was the final factor in my choosing which opportunity to pursue.

For a community service project, I teamed up with the Ruth, the department’s packaging label specialist, to lead a team. The MDC had a company-wide drive for United Way and allowed employees to take up to a week to work on a project. Ruth and I consulted the company website that outlined opportunities and we decided on a project for Bethany House, a temporary shelter for battered women and their children. We both wanted to do something for this organization as we both had known women who benefitted from their services. One of the projects for Bethany House was to paint and decorate a bedroom and we arranged some dates with Bethany House. We organized a team of volunteers, went shopping for paint, bedding, and decorating accessories, and completed all of the necessary paper work for the project.

Over three days, our team of five women from the department removed the furniture, cleaned, painted and decorated the room for a mother and infant. Though it was a simple community service project, the sheer offering of paid time off by the MDC impressed me. The MDC’s emphasis of giving back to the community by employees is aligned with my own personal philosophy of community service. I have worked for other companies that have had monetary drives for United Way, but never one that has actually paid employees to do something interactive in the community. This was the deciding factor for me in accepting this position and I was not disappointed. When I think back on my time at the MDC, I remember this project first.

**Marketing Communications Projects**

While working at the MDC as a technical writer, I was fortunate enough to interact with employees in different departments. On two different occasions, I was invited to work on projects that involved the marketing department. The marketing
department and GPLS interacted regularly on project teams because their sales professionals were out selling products during the end stage of development. Several times, the marketing department would call on the technical writers to provide language for both their sales pieces and their branding guidelines.

**VAC Packs**

Marie approached me about joining her and Dorothy, another senior technical writer, in developing a presentation to the marketing communications department. Through corporate channels, my supervisor learned that MDC sales representatives were submitting colorful sales pieces calls VAC Packs to Value-Added Committees (VAC) at hospitals. The VAC Packs were being developed from information in early IFU drafts created by a third party marketing communications supplier which was using early drafts of IFUs from our department to create the VAC Packs. The sales representatives presented the VAC Packs get a product line approved for purchase and use by a hospital. Because of the average time span for this process (a product is usually presented to the VAC 90-120 days before launch), Marie was concerned because the information in these early IFU drafts had not completed the department’s formal approval process. Our goal was to bring the development of the VAC Pack into our department to help control the flow of information and to provide the most up-to-date information to the sales team.

After several meetings with members of the marketing communications leadership, we learned that the VAC Pack process is “owned” by the product directors. Information for the VAC Pack was pulled from marketing information as well as early IFU text. We determined that because the sales timeline was earlier in the development process than ours, finalized text from our department could not be used to develop these sales pieces. We did learn that the marketing communications department had developed a template and style guide for the VAC Packs to create the MDC’s standards for the sales pieces.
A key discovery from the meetings about this project involved a joint sales/marketing communications database that contained IFUs and VAC Packs for products bought and used by hospitals. We had no previous knowledge of this database before meeting with the manager of marketing communications. We discovered that the database is accessed through a centralized information website that serves as a portal of tools for sales staff. If the hospital needs copies of an IFU, they contact their sales representative and the sales representative accesses the IFU on this site. We discovered that revisions/corrections to the IFUs were never updated within the database. This created the need to develop a relationship between GPLS and Marketing Communications for future information updating. We asked if our department could have access to this database so technical writers could keep track of what material was being used. If out-of-date material was present, the technical writers would inform the marketing department and provide updated material.

Through our meetings, we also discovered that the MDC was gathering a project team to explore and create a centralized database for all MDC intellectual property and knowledge assets. The database would contain all content created by the MDC, e.g. IFUs, drawings, industrial designs, and VAC Packs. The GPLS department would have access to this database and all departments would be expected to store information in this database. Long term, the database will prevent outdated information from being included in the VAC Packs and allow for faster updates in the sales/marketing communications database. The centralized database will act as a “compilation of knowledge” of the MDC and will “provide guidance and to be a resource for future knowledge users” (Gorelick, Milton & April, 2004). After the meetings were finished, we wrote a report of our discoveries for departmental management and informed the team that they had access to the sales/marketing communications database.
Packaging Guidelines

A smaller project that I worked on with the marketing communications department involved development of a packaging guidelines resource in print for the GPLS department and a PowerPoint presentation resource for the sales representative. The guidelines had been created by an MDC outside supplier but needed development for access by internal departments. Both departments wanted platforms that could be expanded or compressed according to individual use. For the GPLS department, I utilized Adobe InDesign to develop a printed resource that could be stored on the department’s internal website and could be downloaded. I converted the photos in Photoshop and laid out the document for print. The marketing communications department wanted a piece in PowerPoint for sales representatives to use for presentations. I took chunked information and photos from the InDesign piece and created slides for a presentation platform.

IFU Quality Assessment Project

As part of Six Sigma process, the MDC uses a quality management tool called Corrective Action/ Preventative Action (CAPA) (El-Haik and Mekki, 2011). The initial cause for this project was the discovery of non-compliance of company standards in several IFUs. As part of the CAPA, an audit to determine how many of the current IFUs were noncompliant was ordered. “Corrective active measures” determine the cause of nonconformance while the “preventative actions” are implemented to ensure future IFUs conform to standards. Once the list was compiled, I created a master list in Microsoft’s Excel program and used the program to randomly select 15% of the IFUs for audit.

After creating the list, I conducted several meetings with the technical writers on the team. The meetings had two purposes: 1) to determine which outside supplier would conduct the audit, and 2) to establish criteria for the audit. After several team meetings, the technical writers created a list of items as criteria to be used for the audit. (See Appendix Audit.)
After the criteria was established, I contacted the lead project manager and business owner of the selected outside supplier, located in Wales. I emailed the supplier a proposal and the criteria for the audit. The supplier emailed back a proposal and once the proposal was accepted by the departmental leader, a contract was initiated. Through email correspondence, I sent a list of IFUs and used File Transfer Protocol (FTP) to send the files and the MDCs process documents for the projects. I managed the project and wrote the assessment report once the QA was completed, and presented findings to the GPLS team.

**Major Projects**

During my co-op period at the MDC, I accomplished three major writing tasks: writing an IFU for a calibration tool to be used with a new generator that was under development; rewriting and designing customer instructions for a shipping kit; and writing software documentation and developing an online tutorial for the departments SharePoint site. These projects incorporated the majority of skills I learned during the MTSC program: project management, document development, technical writing, technical editing, information design, Web site design and software documentation development. Chapter 3 takes an in-depth look at these projects and outlines them more thoroughly.
Chapter 3 | Major Projects

Verification Key IFU Project

My first large assignment was to write the IFU for a tool (called a verification key) to be used to calibrate a new energy device that was under development. At my arrival, I was assigned to the product development team in charge of launching this new product. Though this was the main project for my co-op and my primary focus while there, I am unable to disclose any specific information about the project as a whole, nor include any of the deliverables from the project in this report. The information is deemed confidential and proprietary by the MDC’s parent company. Therefore, I can only outline the generalities of the project in this section.

The verification key is a tool for use for bio-medical equipment technician (BMET) in the hospital setting. BMETs “maintain, adjust, calibrate, and repair a wide variety of electronic, electromechanical, and hydraulic equipment.” (http://www.bls.gov, Retrieved Feb. 26, 2012) BMETs would use the verification key to log in into the energy device, check its energy output, verify its settings, and calibrate it for proper use. The energy device under development was a complete overhaul of a previous device. The MDC had two main product lines but each line used a different energy device in the surgical setting. The new device was designed for greater efficiency and so it could be used with all of the MDC’s current product lines and future lines in development.

When I began the project of writing the IFU for the verification key, I was assigned to work with the Helen, a senior technical writer in the department who had worked on this project from the very beginning of development. The project manager conducted weekly meetings that I was expected to attend. The product development team consisted of design, computer electrical, industrial, manufacturing and packaging engineers, a marketing manager, a legal representative from quality and assurance review, and two technical writers.
At the beginning of this assignment, I was given a Microsoft Project file that consisted of a large, very detailed timeline in Gantt chart form. Each team member’s responsibility for the project was outlined in detail in the file and each task was given a specific date for completion. Any adjustments to the timeline had to be discussed in the weekly meetings and approved by the project leader. Every member took “ownership” of their responsibilities listed in the chart. Any deviation or adjustment had to be managed or “owned” by the assigned team member and that process owner was responsible for any corrections. If any of the deviations or adjustments impeded on another team member’s timeline, the project manager was also responsible for that correction. This is part of the Six Sigma management process that heavily influences all processes at the MDC. (This process is outlined and discussed thoroughly in Chapter 4.)

Because of delays in the engineering and testing process for the device, my project timeline was delayed several times. This resulted in pushing the dates back several times for my portion of the project. After waiting for three months for information about the verification key, I consulted with the senior technical writer assigned to the team. I was concerned that any more delays would jeopardize my main project for my internship. My portion of the project timeline was for 10 weeks in duration which did not include translation time, an additional two weeks.

We consulted with the project manager who swiftly informed the team of the impending time constraints. The project manager decided that the IFU for the verification key had to begin immediately. Any delayed information or revisions after my departure would be managed by the senior technical writer on the team. Working collaboratively on such a large project was new for me and a departure from my previous experience as a journalist. Journalists work independently in a silo with little or no collaboration. Having to depend on others for information and to make deadlines as part of a team was a new process for me. MTSC coursework prepared me for this adjustment and this was my first experience applying it
professionally. I had to learn to trust the experience of my mentor and team members that this collaborative process would work and would help me produce a quality document.

After receiving information from the engineering team, I began writing the IFU for the verification key in alignment with the MDC’s technical writing procedures as shown in the figure below.
Figure 3.1  GPLS Document Development Process
The first step in the document development process had already been initiated at the beginning of the project, many months before I arrived at the MDC. The form to initiate the project process was filed with Ruth who entered the project into the departmental system. Ruth then generated all of the necessary paperwork and binders for the project.

The second step of the process is for the technical writer on the team to develop the information into a draft of the instructions for use for the product. Once I received the technical information from the engineers and the graphic designer received the drawings from industrial design, I began to write the IFU based on the document development process model. The graphic designer approved the drawings from the industrial designer and I inserted those drawings within the document.

Once written, the IFU was submitted to the senior technical writer on the project who sent the document to the other process owners on the team. Any changes and suggestions for revision were sent directly to me and I made all changes accordingly. Any revisions at this point were preliminary. The team offered suggestions and changes in an advisory capacity at this point to help me move the document to the next step which involves official approval. Any changes to the instructions and usability issues are resolved during this part of the process.

Usability testing is not part of the process at the MDC. A project team had been initiated to institute a usability plan throughout the MDC. Called the “Creating a Culture of Usability,” the team was focusing on making usability a part of design and implementation. When I asked the project manager about incorporating the document development process into the usability plan, he noted the usability team’s focus was on industrial design, not documentation. They had not figured out a way to incorporate technical writing into their usability plan. “Documentation usability testing was viewed as a nice thing to do if you had the time” (Postave-Davignon, Kamachi, Clarke, Kushmerek, Rettger, Monchamp & Ellis, 2004).
Once all changes were made and agreed upon, I initiated the third step in the process: the process of gaining approval signatures from key process owners. These included signatories from these departments: Medical Technology, Legal, Regulatory Affairs, Quality Engineering, Marketing, Packaging Engineering, Sterilization Engineering, and the project sponsor.

This step proved more difficult than it appears because of the position of the key process owners. One process owner was located in Germany and was in charge of managing European Union compliance regulations for the MDC. When planning the circulation of the document, I had to be mindful of the time difference and turnaround time from overseas. Also, my internship began during the summer months but the completion of my portion of this project coincided with the US and European Union (EU) holiday season. I had to keep track of vacation time of several signatories while trying to complete my process.

After gaining all of the necessary signatures, I had to submit the document to the translation supplier. For this project, the senior technical writer and I chose a supplier in Great Britain over one located on the west coast. The team in Great Britain was noted for their quick turnaround time; plus, they were chosen because of their familiarity with E.U. regulations. We hoped this would also speed up the completion time so I could view the final project. Once the translations were returned, I reviewed/edited the document for formatting before sending it off for final review and approval.

Upon receiving final approval, I completed all of the paperwork and uploaded the document for printing so it could be included with the packaging. Unfortunately, because of time constraints and the end of my co-op contract with the MDC, I never did get to see the final IFU once it was printed.
Customer Quality Shipping Kit Project

While I was working at the MDC, my mentor Elizabeth was approached by George, the manager of the Customer Quality Department (QCD), about writing an IFU for a process he was bringing back in-house from an outside supplier. George determined that by bringing the project back to his department, he would save the MDC close to $150K per year. He needed the procedural IFU written internally because the current IFU was copyrighted by the outside supplier that had previously handled the process. Elizabeth decided this project would be perfect for me as it would be short-term, it would not need to follow federal new product compliance regulations, would only need one approval for completion, and I could manage the project entirely on my own.

To begin the project, I arranged to meet with George. One of the responsibilities of his department is to field complaints from customers about the different devices and products of the MDC. Upon taking the call, the CQD sends a shipping kit to the customer. Upon receipt, the customer follows the procedure contained in the kit and sends the device/product back to MDC for replacement. The actual kit was manufactured and managed by an outside supplier. George brought the manufacturing process back into the department because existing materials and processes would create a greater cost savings to his department and the MDC overall. I met with George to get the specifics of the project, to review the current procedure and to gain samples of the then-current shipping kits.

The IFUs for the kits were fairly simple to follow. George determined, however, that I would need to re-write them since they were copyrighted. I would also need to take photos of the procedure and work with a graphic designer to lay out the document. Also, George wanted a combined procedure for both domestic and international shipping. When the process was handled by the supplier, there were two separate procedures; different IFUs and shipping labels were sent to the customer depending on their location. My main task was to write one procedure to
cover both domestic and international shipping. Since the MDC used FedEx for shipping, the cost of using two labels within the kit was not the issue. George wanted to be able to provide a single sheet of instructions within the kit.

After meeting with him, I analyzed both sets of instructions and determined they were essentially the same up to the point of affixing the shipping label to the return box. I rewrote the instructions and the legal liability description for shipping and submitted the draft to Elizabeth, George, and the legal department. After one set of revisions, I arranged a photo session with Alice, a graphic designer who assisted me in taking photos for the IFU.

After taking the photos, I tried to arrange a time with Alice to turn over the layout of the IFU for the CQD. Again, because of the holiday schedule and an impending timeline to complete another project, Alice would not have any chance to work on the project until after I left the MDC. Because of my professional experience in newspaper design and my academic experience in information design, I offered to lay out the project under Alice’s supervision. She agreed and would give final approval of my final graphic design.

To lay out the IFU, I used the approved wording and photos and designed the document in Adobe InDesign. I managed to fit the entire document onto the 11x17 tabloid size paper perimeter set by George. Once completed, I sent the document for approval by Elizabeth and the Alice. They approved it with no revisions necessary and I emailed a PDF file of the form to George who approved the document the next day. (See Appendix Shipping.)

**SharePoint Documentation and Training Site**

At EES, there is a main company internal website that is accessible to all employees. Also, each department has its own individual site hosted on the company’s server. All of the sites are created with Microsoft’s SharePoint software. During my time at
EES, I attended a training seminar on how to use Microsoft’s SharePoint software and on how to create workgroups and sites (pages) on the department’s website.

SharePoint is a program written by Microsoft that was first launched in 2001. It is used for web content and document management. Users can set up web sites to share information with others involved in a project, manage documents from start to finish, set up user groups for a project, and publish reports.

The training was offered to any employee in the GPLS department. Because the seminar was offered in the summer, attendance was light. During the training, several members of the department not in attendance approached me with questions on how to use SharePoint or with questions about the department site. Because of this and the light attendance, I approached my supervisor with an idea.

I proposed writing training documentation from my notes and the training sides provided by the instructors. This documentation would help train employees in the department on how to better utilize the department site. After writing the instructions for use (IFU) for the software, I proposed creating an online training site that would be accessible from the department’s home page. My supervisor thought this would be a great use of my technical communication skills in computer documentation and she verbally approved my project. She even offered to allow me to use her notes for the project.

**Writing the documentation**

On setting out to write the documentation, I decided to follow the steps in Barker’s documentation writing process as outlined in his book *Writing Software Documentation* which I had studied as part of the MTSC program. Barker’s steps are:

- Analyze your users
- Plan and write your documents
Analyze Your Users

In accordance with these steps, I analyzed my users in this phase. I interviewed my team members and determined what they needed from documentation on the site. I asked what tasks they would perform on the site, and what their motivation was for using it. The general consensus was that they would use the site for project collaboration. The site was set up for document collaboration and discussions. I asked team members to determine what types of information they thought was necessary for the site. Being technical communicators, they knew how to use the basic features of the site but they did not know all of the features available to them. Because of this, I decided to write a tutorial based on the features they wanted to know more about and to utilize more.

Plan and Write Your Documents

According to Barker, there are three main types of documentation:

- Tutorials (writing to teach)
- Procedures (writing to guide)
- Reference (writing to support)

From the user analysis, I determined I would need to write a tutorial on how to use SharePoint and to write procedures and quick references for those who had already taken the class. The very first step was to write the documentation, which took several weeks of organizing notes and writing. The end documentation was 43 pages in total. (See Appendix SharePoint.)

Because of time constraints, the last three steps of Barker's documentation writing process were completed along with the development of the website. Ideally, a technical writer would complete the documentation through all of the necessary
steps and then move on to develop the website. However, I did not have that luxury and I did the last three steps during the Analyze, Improve and Control stages of the Sig Sigma DMAIC process.

**Combining Six Sigma Process and Barker’s Software Documentation Process**

To begin my project, I decided to follow the DMADV (Define, Measure, Analyze, Design, Verify) steps within the Six Sigma process because that is the project management approach used by the MDC. However, I aligned these steps with Thomas Barker’s Software Documentation Process because it is the process I was with which I was most familiar from the MTSC program for writing documentation. For example, Six Sigma’s first step calls for “defining the problem” while Barker calls for user analysis. For my first step, I determined the problem for my users (unfamiliarity with site features) and then analyzed my users (technical communicators who were familiar with the site). I worked both methodologies side-by-side while writing the documentation and working on the site, focusing on Six Sigma because it was the preferred methodology at the MDC.

The Six Sigma process was created by Motorola in 1979 as a way to prevent deviations in manufacturing; it is the preferred business management strategy at EES. There are two main methodologies within the Six Sigma process. Both processes are referred to by their acronyms, DMAIC and DMADV.

DMAIC is used for projects when the goal is to improve an existing business process. The acronym stands for:

- **Define** the problem
- **Measure** the key aspects of the current process and collect data
- **Analyze** the data to verify cause and effect relationships, analyze all factors of these relationships and then seek out the root cause of the process defect.
- **Improve**/optimize the current process based on data analysis of the process
- **Control** the future state of the process to ensure that any deviations are corrected before another defect occurs (Pande, Neuman & Cavanagh, 2002).
DMADV is used for new product development or to create a new process. The acronym stands for:

- **Define** design goals that are consistent with customer needs
- **Measure** and identify characteristics that are Critical to Quality (CTQ)
- **Analyze** to develop design alternatives, create high-level design and evaluate to select the best design
- **Design** details, optimize the design and plan for design verification
- **Verify** the design, test for usability and implement the production process and hand over to process owners (Pande, Neuman & Cavanagh, 2002, 16).

This project presented a small dilemma – was this an existing process or a brand new one? From one perspective, my proposal was to expand the current SharePoint training offered by the instructor from the parent company. I could follow the DMAIC methodology for this project. However, since there was no formal departmental process for how to create a SharePoint site, I determined that I had to follow the DMADV model for creating a new product for the department.

**Define**
First, I had to determine what the goals were for the documentation/new site and then define them for my supervisor. I had to outline these goals, present my plan of action and write an informal proposal.

My supervisor and I agreed on the goals early on in the process. The department leaders had set up the initial training because the departmental site and all of the functionality within the SharePoint software was not being fully utilized by team members. Their goal was to provide training for all members. However, because of the timing (summer vacation months), only half of the department members were present for the three-day training session. My documentation and online site would serve as training for those unable to attend the initial seminar, to serve as a tutorial for those needing a review, and to serve as an online manual.
The department’s goal for initiating the training was to teach employees how to use the department’s SharePoint site more effectively. My initial proposal outlined the creation of both online tutorials and procedures for how to use the site effectively. Later, I added a quick links reference section for employees who had attended the training but who wanted to refresh their training or to look up specific pieces of information.

**Measure**
Next, I had to measure and define characteristics that were CTQ of the site. The site had to be easily accessible to all members of the team so it had to be linked on the department’s website. Therefore, I determined that the documentation had to be available on the site for download if department members wanted printed copy. Also, the process steps had to be efficiently chunked into sections for simple and quick reference and those sections had to be added to the site for easy access.

**Analyze**
The next step in the development process involved planning the design of the new site and analyzing that design. For this, I enlisted the help of the team through an informal email survey. I asked several team members which internal pages they thought were easy to use and most informative. Using the suggested sites and the documentation I authored as a starting point, I set out to design the new SharePoint information site. This coincides with the third step in Barker’s software documentation process: Getting Useful Reviews. I created wireframes of the site and asked team members to review the structure and give feedback.

Team members noted that the presentation format from the class was very helpful and that the site should be broken down into sections mirroring the seminar. From the outline structure of the class and from my notes, I begin to draw wireframes to help organize the site. First, as a variation to card sorting, I placed all of the information section names onto yellow sticky notes and divided them into sections.
By doing this, I was able to arrange and rearrange topics under headings fairly easily.

Once a structure outline was in place, I drew the wireframes on a whiteboard located in the co-ops’ section of the department. I invited all team members to give input on the structure. The drawing was left on the whiteboard during the entire project. Team members took the project seriously, and several times, they offered suggestions and requested certain features be added. The final structure of the site mirrored the wireframes in the figure below, based on the input of my GPLS team members.

**Figure 5.1** Wireframe Structure of SharePoint Tutorial Site

![Diagram of SharePoint Tutorial Site structure](image)

**Design**

After the structure of the site was decided upon, I began to design the site. SharePoint is set up so users can use a What-you-see-is-what-you-get (WYSIWYG)
platform to design web pages and sites. Some HTML knowledge is helpful but not necessary. The interface is set up like Microsoft Word. Any text formatting or photo/graphic formatting is done as in Microsoft Word.

I began with the home page and from there, I branched off each section. I based the site design on the department’s SharePoint site. There were many design options available to me for modeling the page, but because of time constraints, I simply did not have the time to create something more colorful and with more features. I would have preferred to use more of the widgets available and more color as I learned in my information design class in the MTSC program. I feel this would have made the site more appealing to my users. However, I found I needed to focus on completing the writing tasks during the last few weeks of my co-op. Had I been at the MDC longer, I would have designed a brighter, bolder site with more features. Time just did not allow for it.

For the site, I would design a page every day by taking a section of the documentation that I had written and I would lay out the instructions on the page. I would also cross reference the page back to the home page, section page, and quick reference pages. In total, I designed a site containing one home page and 20 sub-level pages.

**Verify**

Once finished, there was limited time to conduct usability testing on the new site. From the development end, I tested all links and verified all graphics and text within the pages. At a weekly team meeting, I invited all members to test the site and invited input for suggestions for improvement, criticism, any errors found or any features they wanted added. This step coincides with Barker’s fourth step: Conducting Usability Tests. Both Six Sigma and Barker call for usability testing among users at these stages. They differ in that after this stage, Six Sigma calls for the project to be turned over to process owners while Barker calls for more editing and fine tuning.
After going live, many team members were pleased because the site allowed them to use their department’s SharePoint site to better manage their projects. The GPLS department has many processes and has many documents to manage in any given project. The SharePoint site allows them to help manage these documents and procedures and allows for collaboration. Having the knowledge of how to set up groups and page-specific sites for various projects would help team members better organize their work.

To coincide with the fifth and final step in Barker’s process, Editing and Fine Tuning, I began to take feedback on the site. During a bi-weekly departmental meeting, the director suggested a Frequently Asked Questions (FAQ) page for team members who were already familiar with SharePoint but who might need a quick reference. She also mentioned the site to other directors in the division who wanted access to the site for their teams. From this suggestion, I granted permission for team members from sterilization and packaging engineering to view the site also. Other suggestions and corrections were made by team members during this meeting.

The project was completed one week before my contract with the MDC expired. Given more time, I would have completed formal usability testing. Though I was able to complete the wireframe process and involve the users from the very beginning of the project, I would have liked to have conducted actual usability testing with a formalized user test and survey. (See Appendix 4 for a chapter from the SharePoint documentation.)

After the project was finished, I did receive positive feedback from my team members. They noted the site was an informative tool and in my final two weeks, they had many suggestions for me about adding more information to the site before my departure.
After I left, I received a positive email from a team member who thanked me for the site and she said I had accomplished many impressive things while I was at the MDC. I feel my education from the MTSC program and my professional experience contributed to this and really helped me to thrive during my time at the MDC. The project management, collaboration work, technical writing and editing, information design and web design skills have helped me progress further professionally than I could have ever imagined when I started the program.
Chapter 4 | Brief Reflection of Internship at the MDC

As a co-op at the MDC, I spent my time working on project management, process management, document design, technical editing, and technical writing. While all of these tasks were outlined in my job description, I was surprised about how little technical writing I actually performed daily. I had come from a newspaper background where I wrote daily and sometimes on a tight deadline. The technical writing process for projects, though I had learned about it during the MTSC program, was a different experience for me. It moved more slowly and involved more collaboration and editing than I was used to in the newsroom.

What I learned from this experience is that technical writers’ tasks include “planning, organizing, monitoring, evaluating, adjusting, coordinating and integrating activities” (Applen, 2002). Technical writing involves more than just the act of writing technical information; it involves project management and knowledge management.

Managing Technical Writing Projects
The majority of my time was spent managing projects and corporate processes. The Verification Key IFU project was planned as a key component of the writing for my internship and it involved redevelopment of the writing by SMEs. While in the MTSC program, one of our assignments was to create metaphor for our role as a technical communicator. I proposed that my role as a technical communicator was that of a bridge – I bridged the gap between the language of SMEs and end users. This was true for my IFU project at the MDC. I would receive technical information from the project SMEs and I would rewrite and redevelop the information as easily accessible information for end users.

The Verification Key IFU project gave me valuable experience in working with SMEs and in project management. The majority of the writing came from the Research and
Development engineers and medical personnel on the project and my main task was to adapt the technical language for the IFU. The majority of my time on this project was spent managing the development of the IFU, document design, process development and managing the translation process. My project management skills were the primary focus of this project.

**Technical Writers as Project Managers**

Technical writers at the MDC focus primarily on project management because they must organize their writing projects with the input of several different departments. They have highly developed technical writing skills that are necessary to adapt the language from the research and development, engineering and medical departments; the majority of the technical writers’ time is focused on developing the documentation as a whole.

As shown earlier in the Document Development Process (Figure 3.1), project management takes up most of the technical writers’ time when a new document is being created. Technical writers are tasked with managing the myriad of details involved with the approval process. The majority of a technical writer’s time is spent working with SMEs on product development project meetings for their assigned franchises, managing documentation revisions and redevelopment for legacy products by outside contractors, corporate process development/management, and managing the translation process provided by contract partners.

**Technical Writers as Knowledge Managers**

The most striking part of my co-op was the immeasurable management experience I gained. The MDC fosters an environment of creativity and encourages employee initiative. Because of this environment, I was able to seek out and propose new projects to help enhance my internship experience at the MDC. During my second internship presentation, I proposed that technical writers have a place in knowledge
management. During my presentation, I used the following diagram by Elias Awad to explain my position.

**Figure 6-2** The Knowledge Organization

![Diagram of Knowledge Organization](image)

In their book *Knowledge Management*, Elias M. Awad and Hassan M. Ghaziri define knowledge as “understanding gained through experience or study. It is the ‘know-how’ or familiarity with how to do something that enables a person to perform a specialized task. It may also be the accumulation of facts, procedural rules or heuristics” (Awad & Ghaziri, 2007).

Knowledge management (KM) is an interdisciplinary business model containing “business, economics, psychology, and information management” that “involves people, technology and processes in overlapping parts” (Awad & Ghaziri, 2007). As shown, the knowledge management process includes several factors, all of which the technical writers at the MDC fulfill in their daily tasks. The whole document development process aligns with the KM process.
First knowledge is created by the technical writers from information, images, graphics, blueprints, and designs provided by the medical technologists and engineers from research and development. In their book *Optimal Knowledge Management*, Robert J. Thierauf and James H. Hoctor note that knowledge is “obtained from experts based on actual experience” (Theirauf & Hoctor, 2006). The technical writers in the GPLS department collect, refine, and manage the information from SMEs. They write in concert with these SMEs, not separate from them.

The technical writers collect the knowledge of the organization from the experts. They organize the knowledge while writing the documentation and instructions for use. Technical writers at the MDC are “translators of the information that has been generated by others” (Applen, 2002). They refine the knowledge by working with the SMEs in the MDC through the revision process. Also, by working with the translation suppliers, they refine the knowledge for use in all of the designated languages. They disseminate the information by managing the printing of the IFUs and managing the timeline for upload of the electronic versions of the knowledge. Finally, they maintain this knowledge for the organization, as they are the SMEs called up by others throughout the MDC when any revisions/updates necessary for the knowledge. Technical writers at the MDC “acquire information from people skilled in disciplines different from their own, and then synthesize, organize, and explicate this information for different audiences so that people can understand and use it.” (Applen, 2002)

The key departments at the MDC that rely on the technical writers for this management are closely aligned with the drivers for knowledge management processes in Awad’s diagram. The technology of the MDC and the knowledge developed from research and development, medical technology, and regulatory affairs departments demand knowledge management processes from the technical
writers. Unfortunately, without a content management system, they lack the tools necessary to accomplish this.

As noted in Chapter 2, the MDC plans on developing an asset database that would house all of the information and knowledge assets generated by the different departments. This would be a vital resource for the technical writing team because of all the processes technical writers manage in their own department plus the information and knowledge they manage from the SMEs. The several different systems they do have (as outlined in Chapter 2), are not unified in any way and just adds unnecessary steps to their workflow. To streamline their process, a unified content strategy is necessary.

The Need for a Unified Content Management Strategy at the MDC

Content is the “lifeblood of an organization” and is created by many different sources that “design, create, manage and distribute information” (Rockley, 2003). As noted by my experience, content was created by the technical writers, graphic designers, medical technology personnel, attorneys involved in regulatory affairs, marketers, sales representatives, industrial designers, and the quality, packaging and sterilization engineers.

At the MDC, content exists in a Content Silo Trap (CST) (Rockley, 2003, 5). CSTs illustrate what occurs at the MDC on every project. A new product is developed and a design document is written by the product’s engineers to explain the functionality of the project. Marketing Communications writes a VAC Pack to sell the piece to hospitals. Industrial Design creates drawings for different documents and these drawings are redrawn by the graphic designers in the GPLS department for the IFUs and product packaging. Ultimately, these groups wind up creating the same content, but for different audiences, contexts, and media.
This CST has negative effects on the MDC. First, is poor communication coupled with a lack of sharing of vital information and content. I witnessed this first-hand while working on the Verification Key IFU. Groups worked in isolation and information was not freely shared. “Poor communication is evident when one group fails to inform another group that something has changed, something exists, or that something has been discontinued” (Rockley, 2003). Even though we were working on a project team, changes to the Verification Key product usually came to our department late, if at all. Most of the time, the changes were not shared until a team project meeting. Rockley blames this lack of sharing on the “deadline-driven environment” that occurs in large organizations and that results in “inconsistencies,” “lack of standardization,” a “high costs of content creation, management and delivery,” and confused users (Rockley, 2003).

The need for a unified content management strategy became painfully obvious to me while working on several projects. On the Verification Key IFU project, we worked in a content silo trap, constantly trying to pry information from the quality engineers, industrial designers and the regulatory affairs team. A centralized database with one working parent document and a database to store all of the process content would have cut down on the large amounts of detail and detective work I had to do in order to complete the Romanian IFU project.

As for detective work, the research skills I gained as a journalist came in handy when working on the Romanian Translation IFU project, as I had to search three different databases and contact outside suppliers, both of which took up a lot of my time with busy, clerical work. Instead of writing, I spent the majority of the project organizing files and doing clerical work. One centralized database with status updates on each document would have alleviated this issue.

During the Marketing Communications VAC Pack project, we discovered that outdated information was being disseminated to customers during the sales process because of the lack of sharing within the CST. Also, because of what Rockley calls the
“not-invented-here syndrome,” later revisions and updates were never shared, which resulted in delivery of outdated information to customers. A unified content strategy would allow for reuse of updated, current content by all departments. And once the MDC realizes all of their departments “missions and desired outcomes are closely entwined with how they manage knowledge,” the MDC will “value the development of tools for creating and coordinating textual representations of knowledge.”

A unified content strategy would benefit the MDC by producing:

• Faster product times to market
• Better uses of resources
• Reduced costs
• Improved quality and usability of content
• Increased opportunity to renovate processes and products
• Improved workplace satisfaction
• Increased customer satisfaction

Although the team’s primary source for collaboration and file sharing was SharePoint, which has the capability to be configured as a smaller content management system, the site’s capabilities were fully utilized. For the number of information assets handled by the technical writers and graphic designers, an enterprise versioning system like Perforce or Subversion is necessary. This type of system would solve issues with their database management system, versioning, and collaboration.

**Conclusion**

When I began the MTSC program, I was certain that the major focus of my studies would be writing. I had a graduate writing certificate in business writing and journalism and expected the program to be similar. After all, "Even though technical communicators are now expected to be more than writers, writing is still central to
their jobs” (Melacon, 2009]. However, I learned so much more than just how to write differently. The experience prepared me for the co-op experience at the MDC and for my professional advancement.

The technical writing and editing classes helped me to write for the MDC’s medical professional customers and experts. I was capable of managing and writing the IFU project by with confidence, working effectively with engineers, regulatory lawyers, physicians, and marketing professionals.

Because of the organizational communication requirement, I understood how to work and communicate efficiently in a large, multinational corporation. Writing Software Documentation helped me secure both the co-op position and my current employment, and allowed me to help write the SharePoint tutorial for the MDC. Information design also played a part in the site design as well as with the shipping kit instructions and marketing communications documents. Linguistics and Organizational Communication helped me to understand the language and nomenclature of the MDC (and subsequent places of employment).

Most valuable was the Managing Technical and Scientific Communication Departments, Publications, and Policies where I learned to plan and manage large projects. I was given many opportunities to act as project manager at the MDC and went on to find full time employment as the production manager for a publication after leaving the MDC. My experiences in the MTSC program and the MDC helped me further my career and gave me valuable tools to advance as a technical communicator.
References


Appendix Audit

1. Presence of translation check – i.e. that all English is translated (no missing sentences or paragraphs)
2. All figures checked
3. All measurement units checked
4. Correctness of sterile/non-sterile and clockwise/anti-clockwise checked
5. ® and ™ symbols checked
6. Section titles correct
7. Decimal separators checked (most languages have comma separator e.g. "0,1 cm")
8. Full stops present at end of each sentence.
9. No duplicate translations for different source sentences
10. No sentences start with lowercase letter
11. No letters immediately after fullstop
12. No "Trados tags" left in translation
13. Check for double spaces, double full stops, double commas, space before comma, space before full stop, space after opening bracket, space before opening bracket, and various other characters that wouldn’t be expected, e.g. "[", "]", ",", ":[, ":",
14. Correct number of bullet points in layout
15. Fonts match English (bold, italic etc)

- In addition to the above list, contractors should perform checks for the following, as determined by the team:
  - basic grammar
  - spelling errors
  - missing text
  - bullet alignment
  - sequential numbering alignment
  - illustration references
Appendix Shipping

Prior to Assembly:

Read all packaging instructions before use:

- This used healthcare product packaging system has been certified (when packaged correctly) for the safe transport of one (1) biological substance. Category II used healthcare product.
- The packaging system complies with U.S. Department of Transportation (USDOT) packaging requirements governing the transport of used healthcare products, along with the International Civil Aviation Organization (ICAO) [IATA] requirements.
- All packages are supplied complete and the shipment cannot be made as they are.
- Failure to utilize this packaging system correctly will invalidate package compliance.

Shippers Responsibility:

It is the responsibility of the shipper to follow all assembly instructions contained in this kit and to comply with USDOT/ICAO/IATA regulations. Follow all regulatory agency guidelines for maintaining chain of custody. The inclusion of labels and markings in this package is provided for convenience and not to instruct the shipper in the proper labeling and marking requirements for regulations that must be met. This packaging system may not include the appropriate shipping documents that must accompany this package. The shipper must ensure that appropriate documentation is presented to the carrier.

The assembly instructions are for the purpose of instructing the shipper in the proper assembly of this packaging system for one (1) used healthcare product. The assembly instructions are not meant to provide any training or instructions on how to transport hazardous materials. The shipper should not consider that, by following these instructions, he/she is released from any or all of his/her legal responsibilities in shipping hazardous materials. The liability for shipping hazardous materials is fully the shipper's responsibility as outlined in the code of federal regulations (CFR) title 49 and the International Air Transport Association (IATA) Dangerous Goods regulations. The use of this packaging system does not release the shipper from any of the shipper's responsibilities set forth in any local, state, federal, or international regulations. Improper assembly of this packaging system or use of the system for other than its intended purpose will invalidate the packaging system compliance.

Assembly Instructions (for both short and long packaging systems):

1. Remove all contents of the kit, which includes, the brown cardboard insert, yellow absorbent sheets, bubble wrap, rubber gloves, return shipping label, and Used Healthcare Product Declaration sheet (UHPP).

2. Verify that the product code and the P.I. number of the return device (provided by Customer Quality) matches the product code and P.I. number listed on the Product Shipping label as well as the front facing label on the back of the outer box.

3. Turn on. Take the device as received from the manufacturer (full test module) and tightly wrapping around the device, making sure to thread out any air. Secure with a rubber band.

4. Place one yellow absorbent sheet on a flat surface and make the top of the used healthcare device in the middle of the sheet, at least 2" from the edge. Fold the bottom sheet over the tip of the device.

5. Tightly fold the bottom portion of the yellow absorbent sheet over the tip and then fold the top over the tip. Secure with one rubber band.

6. Place bubble wrap on a flat surface, making sure the smooth side is facing outward. Turn device absorbent sheet and wrapped tip in the middle of the bubble wrap.

7. Fold by left side of the bubble wrap over the tip. Press down tightly on wrap to secure its place.

8. Tightly fold the other portion and then wrap tip. Fold the top tip tightly around the product. Make sure the device (tip end) is fully around.

9. Secure the bubble wrap to itself and to the product's packaging. Wrapping the rubber band just beyond the end of the wrapped tip.

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Assembly Instructions, continued from page 1.

10. Place the product inside of one of the biohazard bags. Align the product along the bottom and on a side edge of the bag.

11. Blend as much air as possible from the bag. Peel tape from top of the bag. Securely seal the bag and then wrap around the device.

12. Fold the remaining yellow absorbent sheet over the sealed end of the biohazard bag and secure with rubber band.

13. Slide the sealed biohazard bag (yellow absorbent sheet-end first) into a second biohazard bag. Repeat Step #12.

14. Lay cardboard tray with the plastic film on a flat surface. Fold the end flaps upward to release the tension on the attached clear film.

15. Insert sealed biohazard bag and center it under the retention film. To secure the device, fold the top and bottom flaps downward.

16. Fold up the sides of the cardboard tray and slide tray into the shipping carton.

17. Fill out the UHCPD Sheet as defined by Title 49 CFR, Part 173, 199 (d) (3), referenced at the top of the sheet. Place on top of the device, between the outer box and packaged device.

18. As shown above, use the provided tape strips to seal the carton in two places.

19. US Customers: Complete the sender portion of the FedEx return label. Write the PL number on the ATTN line and sign form. (International Customers, skip to Step 21.)

20. Peel the right side of the billable stamp from the backing sheet. Attach the billable stamp to the carton over the old mailing label, making sure to cover the bar code. Keep other half for receipt. The Return Kit is ready for shipping.

21. International Customers: Fill out a commercial invoice (not included in kit) and make 5 copies. Include all 3 copies in FedEx AWR pouch. Write the PL Number and Product Code on the blank label attached to the back of the outer box.

22. Complete FedEx AWR and insert in the FedEx AWR pouch. (Make sure FedEx AWR covers the commercial invoice documents and the shipping information is visible.) Attach the pouch over the old mailing label on the face of the carton.

23. Leave sufficient room to apply the following labels on the front of the carton: Biological Substance, Category B, and UN3373. The Return Kit is ready for shipping.

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Appendix SharePoint

[Note: To protect classified, confidential, and proprietary information of the MDC, screenshots of the department's internal site from the chapter have been excluded.]

Chapter from SharePoint documentation project:

Surveys and Discussion Boards

Surveys are a great tool for gathering information and input from group members. Surveys can either track a user's response or a survey can be anonymous. SharePoint can track survey responses and tally them for the survey creator. Discussion boards can be used as a tool for creating conversations among group members about a project.

Creating a Survey

1) Open the site that will contain the survey.

2) Click View All Site Content in the left-side tool bar.

3) Click Create > Survey (under the Tracking heading).

4) Type the name of the survey in the Name text box.

5) Select Yes/No to determine if survey appears in Quick Launch.

6) Select Yes/No for Show user names in survey results and Allow for multiple responses.

7) Click Next.

8) Type a survey question in the Question text box.
9) Select Yes/No for the Require a response to the question option under the Optional settings for your question section.

10) Type additional questions in the Type each choice on a separate line text box.

11) Click Finish.

Editing a Survey

1) Open the site that contains the survey.

2) Click View All Site Content > Survey name.

3) Click Settings Menu > Survey Settings.

4) Select editing option.

5) Make changes.

6) Click OK.

Responding to a Survey

1) Open the site that contains the survey.

2) Click View All Site Content > Survey name.

3) Click Respond to this Survey.

4) Respond to survey questions.

5) Click OK.
Viewing Survey Results

1) Open the survey.

2) Select one of the following next to **View** on the top, right-hand side of the page:

   a) Overview – displays the survey name, description, date, time the survey was created and the number of responses.

   b) All Responses – displays a list of all survey responses, date and time of each last survey response, which users have completed the survey, and the names of users who have completed the survey. Responses can be modified under this heading.

   c) Graphical Summary – Creates a graph of the data collected from the survey.

   **OR**

3) Click **Actions > Export to Spreadsheet** if an Excel spreadsheet is preferred over graphical information).

4) Click **OK**.

   [Note: A file download warning box may appear; click **OK** to allow download of survey information.]