

EE486 Design Report

User Product Manual

General Information

- *Due Date:* This deliverable will be due at 11:59pm on Thursday May 9th.
- *Grading:* Grading will be done at a team level (see the Rubric). Individual scores will mirror the group score.

Congratulations to all on a very successful UGrads! It was great seeing your presentations and posters. I know you have all been working very hard to get to this point.

The User Manual

The User Manual is perhaps the most important document that the team will produce from the client's perspective. Previous documents like the Requirements Document and the Design Review Documents were primarily technical documents, really more for the team's use and for outside technical reviewers than for the client. The User Manual is the one document written solely and specifically for the client ... and is also the document that the client will consult most going forward. A good user manual focuses on a single goal: educating the client on how to operate and maintain the product, with enough detail that they understand the innards of the system.

Your user manual will need all of the following sections. You can use your other documents from this and last semester as a start, but don't expect to just copy-paste it all and call it good. If you think you don't need a section listed here, consult the rubric to see exactly how many points you'll miss by omitting it.

Cover Page and Table of Contents

The usual cover page, with "User Manual" as prominent title.

Include a brief Table of Contents after the title page. This should list the sections listed below at a minimum. If any section is more than four pages, please be sure to have subsections listed in the table of contents. Remember the feedback you got last semester on formatting the TOC. Don't repeat any mistakes you made last time...

Introduction

This introduction needs to be a bit more than those that you have written in the past. This time, it serves multiple functions. First, the typical pleasantries of "we hope you like the product we developed for you," but also to really demonstrate that you understand what the client needs were.

Start off with something like "We are pleased that you have chosen [team name] for your business needs. There is a strong need for [this product], as evidenced by [the need]. We provide for you here a powerful system for [overall statement of what it does] that has been custom-designed to meet your needs. Some of the key highlights include: [bullets of 3-5 coolest features]. The purpose of this user manual is to help you, the client, successfully use and maintain the [product name] product in your actual business context going forward. Our aim is to make sure that you are able to [profit | benefit from] from our product for many years to come!" Or something along those lines.

In the paragraphs that follow this, still in the introduction, also hit the following:

- Identify the overall project problem, demonstrating that the motivation and technical objectives were thorough, well-developed, and logically linked together.
- Identify each subsystem, and describe how those were associated with the project problem. The subsystems should accurately capture the behavior or structure of the important aspects of the high level system, ensuring that they were of appropriate complexity for the high level client problem.

- Identify how your team was able to create, evaluate, and synthesize a solution to the project problem. Detail how your design was both complete and innovative, specifically how the design and evaluation reflected a comprehensive understanding of the problem.

By the end of this introduction (which will probably be about two pages), the reader should be firmly convinced that you really “get” the client’s need, and have created a masterful solution that solves the problem(s) at hand.

Installation of the Widget

Here you should walk them through everything required to turn on and use the widget you have made for them. Installation can be physical, e.g., 120v AC power is required, or software based, e.g., to use our widget you will need to install the associated drivers. What are the environmental requirements for installation? What do they need to consider if they move the product from one location to another? These directions need to be very specific, so that installation can be done by just about anyone. You may want to consider asking your non-EE roommate/friend/coffee barista to help you iterate on this section, asking them to read and then actually do what you have outlined. Observe, but try not to interfere too much during this time, so that you see how they actually interpret your directions.

Configuration and Use

Assume now it’s properly installed. How do you actually use the thing?! This should cover *every* feature. If your system operates in multiple modes, you should probably include a flow chart to show how switching mode changes the operation. Oh, and how do you actually switch modes? I expect this section will NOT be short.

Maintenance

No product should be expected to operate flawlessly forever. If you have any moving parts in your system, this section is going to be really important. Likewise if you have parts that will need regular replacement. If your project involves external code, you should include a list of dependencies with a description of key software, versions, etc too. Try to think through any know changes to that software that might be published online. Should the user do an “upgrade” on the software you use, or should they stick to a specific version or set of versions? Provide links to the replacement hardware and software sources that might need to be replaced. No, don’t go so far as to say “this capacitor was from DigiKey and is part number ASDF” unless you expect this capacitor will be failing on them often...

Trouble-Shooting Operation

We have all, at one time or another, been saved by a well done “trouble-shooting” section in a manual, so the purpose here should be clear. The idea is that the manual body says a lot about how to operate the system, but not much about what might go wrong. Thoughtfulness here is key; a trouble-shooting section that covers problems that never actually happen is only frustrating. Think about what has gone wrong you during testing, what could be broken by the client or by a change in the environment or even intended use. Think about the functional dependencies within your product, and between your product and the environment. Then give fixes for each. In real life, this section would be refined over time after product deployment, based on tech support feedback. Lacking that, you’re careful thoughtfulness will have to do here.

Conclusion

This just formally closes the document. Wish the client many happy years of productive use of the product, express your joy at having been able to help. Maybe end the section with “With best wishes from your [team name] product developers” and then list out your names. If you want to be nice, include your emails and a statement that “While we are all moving on to professional careers, we would be happy to answer short questions in the coming months to help you get the product deployed and operating optimally in your organization.”

Appendices with Schematics or Journal Papers

Many of you, though not all of you, have generated schematics of your various subsystems in your project. Include them here. If you don’t have a physical electronic device, then this schematic

should be a flow chart for the data/functions. Either way, everyone needs at least one comprehensive schematic/flow chart. If you have authored a draft of a journal/conference paper, include it here too.

What To Do

In the excitement to deliver a product and move on to the next project, it's easy to forget some of the steps above... both for you and for the client. Only later, when the excitement is over and your team is long gone, does the client discover that they are unable to actually use the product, that they know how to operate the key feature, or even that the user manual is missing. The Product Delivery Check-off sheet is designed to avoid these problems. It protects the client from ending up with a product that they can't deploy (what a waste after a whole year of effort!); and it protects the team by documenting their due diligence in delivering the product and (critically) the client's sign-off for having approved and received the product.

The Product Delivery Check-Off worksheet is posted to the Capstone website. You should bring a hardcopy of this with you when you meet with the client for the product hand-off, and use it as an agenda for that meeting, simply walking through all the tasks listed and getting the client's comments and check-off on each. Be sure to include your check off sheet in your product manual submission. You will need to upload an electronic copy of this worksheet, which can be as simple as a picture of the worksheet.

Your list of deliverables deviates from the traditional list this time, so be sure to make sure you hit all these points to get full credit:

- Create and deliver your User Manual (outlined above). Be sure that everyone in the group reads every section, not just their own. Heck, you can even ask a friend to review it too for typos and grammar (part of the points this time), and to ensure it's actually readable. You'll need an electronic copy (Word, Pages, LaTeX, etc AND pdf). Delivery of the physical product, if you have one, can be negotiated with your client on an individual basis. Any supporting code, schematics, photos, video, and the electronic copies of your manual should be provided on a thumb drive to your client. Yes, this does require you spend the \$10 as a team to buy a thumb drive.
- Send your client the pdf version of your manual and schedule a time to meet with them to discuss it. You must send this email early enough that they have time to read it before meeting with your group.
- Arrange the formal meeting (bullet point above). For those of you whose client is not local, you may coordinate a Skype/FaceTime/Google Hangouts meeting to do the delivery.
- Conduct the meeting, walking through the Product Delivery Check-Off worksheet, explaining every item on the sheet to your client.
- In one single zip file, upload to BBLearn, by the due date, your
 - final User Manual,
 - the *signed* Product Delivery Check-Off worksheet
 - your final slide deck from your UGrads presentation
 - and your UGrads poster.
- Finally, go out and celebrate with your group members with a drink of your choice! But, you might want to make this a local thing instead of all going to Rocky Point....

Remember: You've got two weeks, but you also have a lot going on during this time. No one in the group should be idle!!!

Deliverables

- **Upload to BBLearn** a single zip file with your final pdf version of your User Manual, signed Product Delivery Check-Off worksheet, final UGrads slide deck, and final UGrads poster.