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Decision Table - Document Specification

Kevin Nickels

Trinity University, knickels@trinity.edu

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Decision Table - Document Specification

Most versions of the “design cycle” include a phase where you brainstorm different solutions to your problem, then model and analyze several before making a final choice to prototype. This report documents these steps in your design.

Target Audience

Your targets for this memorandum are your group advisor and the course administrator. You need to explain concepts that either may not be familiar with (mostly the administrator), and avoid the extensive use of jargon. However, you don't need to introduce or explain well-known engineering principles.

Nongoals

In this report, you should not present a detailed design proposal. In other words, the “winning” design need not be any more well-developed than the other design alternatives.

You shouldn't go into the design process with a “pet solution” – in other words, you shouldn't have one strong alternative and several strawman proposals.

Goals - what readers will know after reading report

After reading the introduction/background sections, the reader should understand the needs of the client, and should know what related work has been done on this problem before your group took it up. Readers should be able to assess the quality of the sources of information about alternative solutions as well as the quality of those solutions for your problem.

Readers will be able to see what strong alternatives emerged from your background research and brainstorming sessions. They will be able to see what modeling and analysis was performed on the potential solutions, including proof of concept testing and simulation, if any was done. Finally, if a design alternative has been chosen for development, it will be clear why that one was chosen.

A good model for this report would be the *decision briefing* from the military. One good description of how to give a decision briefing can be found in (Horstmann & Auzenne, 3/12/2010)

Length

The table itself will be about half a page. With introduction and conclusions, this memorandum could perhaps be as short as 3-5 pages or as long as your advisor wants.

Formatting, Tools and Output Media

You may utilize MS-Word, as it is ubiquitous on campus. You may utilize other word-processing software as well, such as LaTeX. If you have equations, they are to be properly typeset. If you have figures or tables, they are to be properly referenced (and have numbers and captions).

Please review the report template provided for formatting guidance.

Outline

This report is in a short-formal report format (Faculty, 2009). It is expected that it will have the following sections:

- Introduction
- Options
- Comparison
- Recommendation
- Bibliography

The introduction orients the reader to your specific problem and presents previous work that has been done on the subject. The most relevant advice from our textbook is in the chapter on Lab Reports (Rosenberg, p. 217). You should utilize a variety of types of sources for your background research.

The options section explains the alternative solutions that you propose for comparison. In the options section, the various alternatives are presented *without comparison*. The goal of this section is for the reader to understand, at a high level, what your design would look like utilizing this design alternative.

Following the options, the comparison section defines the working criteria as described in the 10 step process for design (Kelly-Zion, 2007). Finally, the decision table itself is presented. Following the table, there should be some descriptions supporting and describing the numerical rankings of the analyzed alternatives.

Some projects lend themselves to multiple independent decisions instead of a single monolithic decision (e.g. a robot may have a locomotion system, a computing system, chassis/mechanical, and a sensing system). If this is the case for your project, it may make more sense to present options and decision tables for each subsystem.

Finally, the most important part of this report is clearly the recommendation, where the design team is proposing a design direction to pursue for the next phase.

Reviewers

After the report is complete, you should have a minimum of two people who didn't write it review it. You can "trade reports" with other groups if you wish. Your group advisor should be given a chance to review the document before submission.

Bibliography

Faculty, E. S. (2009). *Survival Guide*. (K. Nickels, Ed.) From EngrStudents TLEARN:
tlearn.trinity.edu

Kelly-Zion, D. P. (2007). *10 Step Process for ES Survival Guide*. From Survival Guide:
tlearn.trinity.edu

Mark, H., & Michael, A. (Composers). (3/12/2010). How to give a decision briefing.
On *Manager Tools* [PodCast].

Rosenberg, B. *Spring into Technical Writing*.