

A GUIDE TO WRITING A COMPARISON ASSESSMENT REPORT*

The Cain Project in Engineering and Professional Communication

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Abstract

This guide may be used in preparing reports in which a client or manager has requested a comparison of equipment or other solutions. The guide may also assist in preparing the Flowmeter Report for the Rice University Mechanical Engineering Laboratory in Heat Transfer, Thermodynamics, and Engine Cycles (MECH 431).

NOTE: Please refer to the Assignment Requirement and Rubric of Flowmeter Report¹.

1 Overview

A recommendation report has the same overall structure as most technical reports: a summary and a discussion. The **summary** reminds readers of the situation, problem or issue, action taken, and conclusion or recommendation. The **discussion** elaborates on the summary, explaining the agreed-on analysis of the situation, the problem or issue identified, and the problem's technical definition. It also specifies the criteria that must be satisfied for any proposed solution to be accepted. It then presents the recommended solution, followed by sufficient information to enable the reader to appreciate why the other options were not chosen. A table comparing all options may be attached as an appendix.

2 How to Write the Report

2.1 Plan or Write the Introduction

Your first step in preparing the report is reminding yourself of the client's situation, specific request, and goal or purpose for your technical work. You may write the introduction to the discussion of such a report right away, even before you actually begin the technical work. Preparing the introduction to the discussion at an early stage helps you clarify your work schedule, identify specific criteria for testing solutions, and uncover any tasks or components needed in the technical work that require special scheduling or collaboration with other people.

In an unfamiliar or non-routine situation, you might want to send an e-mail to your manager or supervisor at this point, making sure that you've converted the client's request into the appropriate and specific technical objectives. Clients sometimes are vague or imprecise in their requests, saying, for example, "get me all the

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¹"Assignment: Central Plant Flow Meter Report" <<http://cnx.org/content/m17127/latest/>>

information you can on an electronic transfer system that will speed up the processing here.” You might spend hours of time unnecessarily if you searched for “all the information” when a much more limited software solution was appropriate. Sometimes you will need to obtain more information from the client, such as the sizes or model numbers of equipment in its existing system with which your recommendations must be compatible.

NOTE: In the flowmeter report, the client has three purposes and wants flowmeters compared for all three purposes, which is an unusual business situation. In industry you will more often write a recommendation about a single problem or need.

2.2 Create a Comparison or Decision Table

After you have applied the criteria appropriate for the comparison to the possible solutions, decide which option meets the most criteria without failing some critical condition. Before writing, many engineers like to make a table showing the criteria in one column and the data for each option in parallel columns that allow easy visual inspection. Putting the most critical criteria or the “must haves” at the top of the column can facilitate visual scanning. A familiar example of this type of table is the kind that testing organizations such as Consumer Reports prepare with either symbols or numerical data. Occasionally a device will pass all the tests but one—such as the device may not work in a corrosive environment or it may be too costly or it may not be available in time for the project. If the failure is critical, you will need to mention it in your report.

2.3 Organize the Discussion of Solutions

In industry, managers usually want to know the outcome or “bottom line” solution right away, so engineers discuss the recommended solution first, followed by the reasons and evidence for that choice. Next, the engineers explain why other options were not chosen and refer to the decision table in the appendix. The comparison of solutions may be organized in either of two patterns described below, but it is more common to use an “All about A” pattern in which the engineer provides a more detailed discussion of the recommended choice and a less extensive discussion of the other options.

International Tip: However, in some countries and in companies that share a non-US culture, recommendations occur only at the end of the report, after all the data have been presented. Mexican firms and other Latin American firms that have not switched to a US-based report style may prefer complete presentation of the data before conclusions are drawn. Since this is a period of rapid globalization, you cannot count on applying stereotypes in international business. You can make the right organizing choice either by looking at reports from the client to determine that firm’s preferences in organization or by asking for advice from your manager.

2.4 The Two Basic Patterns for Comparisons

All comparisons can be grouped into two types: Those that are organized around individual options (“All about A, All about B, and so on”) and those organized by criteria, points, or bases of comparison (“Point by Point”).

2.4.1 All About A, All About B, . . .

This pattern is best for providing the reader a comprehensive understanding of each option. For example, if you were comparing models of equipment, such as automobiles, you might present all the information about the Ford model, then all the information about the GMC model, then all the information about the Honda model, and so on. Similarly, you might use this pattern to compare individuals you were considering for a particular role in a project.

2.4.2 Point by Point

This pattern highlights the model of analysis and the crucial criteria. It is used more in research reports where the thinking is emphasized more than the data or where data merely validate the model. Organize the criteria, starting from those most vital to the decision to those less vital, and provide information on the recommended option at the beginning of each section. In the case of the auto, if the maintenance record and safety record were more important than cost, your headings might appear in that order and under each one you would list your findings for each of the autos.

2.4.3 Illustration

All about A, All about B, . . .	Point by Point
Ford	Maintenance Record
Maintenance Record	Ford
Safety Record	GMC
Cost	Honda
GMC	Safety
Maintenance Record	Ford
Safety Record	GMC
Cost	Honda
Honda	Cost
Maintenance Record	Ford
Safety Record	GMC
Cost	Honda

Table 1

2.5

2.6 Write the Conclusion and Recommendation

Summarize the outcome of your analysis and add any comments that may be needed for the reader to act on your recommendation, such as how to contact you if there are questions, any suggestions about implementation (for example, “these prices are expected to be good only through September 31st”), or recommendations for future testing or analysis.

2.7 Write the Summary

Read through your report and write a brief form of it as a summary. Include just enough background to remind your readers of the situation that required your work. In some companies, a reference to the project title or the project number and a phrase about the work done, “Flowmeter Comparison for Rice University,” may be enough. The summary may then begin with the specific claims about what you did. If the report is going to a client, a slightly more lengthy and formal statement of the request for your work may be needed. Include a summary statement of work done, for example, “We evaluated four samples of the product in two-week and four-week trials.” Present your conclusion and add the recommendation, if appropriate. Include any key information the reader needs to take timely action, such as, “If you approve this choice, please contact Jane Jenkins in purchasing to submit the order before the price change goes into effect.”

2.8 Create the Title Page or Transmittal Information

Use a title page (if the report is going outside the company) or appropriate headings (for example, memo headings if the report is to be submitted inside the company). Reports are sometimes sent from one company to another company, in which case the engineer may be writing for a manager or company official's signature. In that situation, the engineer may be referred to as the contact person or the preparer of the report. If the report is to be sent outside the engineer's company, transmittal information may include

- primary audience (company name or officer or manager receiving the report)
- address of the client audience
- project title and project number (if any)
- date of submission
- submitting organization to which the writer belongs (if the report is going outside)
- submitting executive, officer, or manager
- name of person who prepared the report or the name of the person to contact
- contact information: e-mail or phone

If the report is to be submitted to a manager inside the company, addresses may be omitted, and in the most routine situation, no more than the usual memo or e-mail heading will be used. Some companies have templates in their document management systems that require specific information in addition to ordinary e-mail, such as version numbers and approval spaces.

2.9 Final Review

Proof-read the entire report not only to check for grammatical correctness and stylistic consistency (Did you use the same type of heading for all equivalent sections? Did you switch from bold to italic unintentionally?) but also to ensure that your conclusions really match the criteria for choosing a solution and that you have supplied sufficient information to support your conclusion. Many people discover errors or clumsy sentences by reading the report aloud at this point. Make any final corrections and submit your report with confidence.