

1 Structuring a Document: Using the Headings Skeleton

This chapter covers:

- *TAIMRAD*: the classic structure of an experimental report.
 - When *TAIMRAD* isn't an appropriate structure for your document.
 - The basic skeleton of section headings.
 - Building an extended skeleton of section headings.
 - Using the *Outline* mode of Microsoft Word® to help organise your document.
 - The importance of overview information: building a navigational route through your document.
 - Deliberate repetition of information in the basic skeleton.
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The Basic Skeleton of Section Headings for a Technical Document

This section covers:

- The classic *TAIMRAD* structure for an experimental report.
- When *TAIMRAD* isn't suitable: choosing section headings.
- The basic set of headings forming the skeleton of a document, whatever its topic or length.

TAIMRAD: The classic structure of an experimental report

The classic, traditional structure for an experimental report, particularly a journal paper, is the *TAIMRAD* structure: *Title, Abstract, Introduction, Methods, Results and Discussion*.

When TAIMRAD Isn't an appropriate structure for your document

The classic *TAIMRAD* structure may not be suitable if you are reporting on:

- Experimental work but the structure needs to be expanded from the restrictive *TAIMRAD* form
- or*
- Work that is not of an experimental nature.

In this case, you will need to construct your own set of headings.

There is no single structure that can be applied to all reports. The following sections give guidelines for this.

Choosing a set of main headings

The basic skeleton of all professional technical documents is made up of a set of main headings. The headings don’t depend on the topic or length of the report, or whether it presents experimental or investigational work that you’ve done, or material that you’ve researched only from the literature (e.g. a generalised project report).

Documents tend to start and end with the same sections; the middle part will depend on the subject matter of your document. To show this, [Table 1.1](#) compares the basic format for a generalised short and a long document.

Table 1.1 A Basic, General Skeleton for a Generalised Short and a Long Document to Show the Similarities

A Short Document	A More Complex Document (<i>Note: You may not need all of these sections</i>)
Title Summary Glossary of Terms and Abbreviations or List of Symbols (may not be needed) Introduction or Background (Middle part of text – <i>your choice of headings</i>) Conclusions Recommendations (if needed) <i>Alternatively, placed immediately after the Summary</i> Appendices (may not be needed)	Title page Abstract or Summary or Executive Summary Recommendations (if needed) Acknowledgements Table of Contents List of Illustrations Glossary of Terms and Abbreviations or List of Symbols Theory (if needed) Introduction or Background (Middle part of text – <i>your choice of headings</i>) Discussion Conclusions Recommendations (alternative position) <i>or merged as</i> Conclusions and Recommendations Acknowledgments (alternative position) References and/or Bibliography Appendices

Choosing Section Headings: Building an Extended Skeleton

This section describes how to:

- Build up the general skeleton into an appropriate extended skeleton of sections for your document. This covers every type of document that is not of a strictly *TAIMRAD* structure.
- Use the standard sections frequently used in longer documents.

Steps to take

Step 1: Working from the basic skeleton, plan an enlarged skeleton for your document. Use [Table 1.2](#) for help: it does the following:

- It lists many standard sections used in postgraduate science and technological documents in the approximate order in which they would occur in the document.
- It gives the purpose of each section.
- It cross-refers you to the pages of this book that give guidelines on how to write each section described in [Table 1.2](#).

Step 2: Work out your own headings for the central part of the document. Think about what the reader needs.

- Ask yourself: *What does the reader need to be able to assess my material most readily? How can I best tell this story for the reader?*
- Don't ask: *How do I want to present this material?* This is quite different; it is looking at it from your point of view, not the reader's. Documents that are written from the writer's point of view run the risk of being difficult for a reader to readily understand.

Table 1.2 To Determine What Sections You Will Need for a Document

Section Heading	Purpose of Section	Frequency of Use	Cross Reference (Unless otherwise stated, the material is in Chapter 2 – The Core Chapter: Sections and Elements of a Document.)
Title	To adequately describe the contents of your document in the fewest possible words	Necessary	See Title , page 19
Title page	This is usually the covering page (first page) of a document, giving the title of your document, information about yourself and your institution, and any declaration that you may need to make	Longer documents	See Title Page , page 21

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Table 1.2 To Determine What Sections You Will Need for a Document (Continued)

Section Heading	Purpose of Section	Frequency of Use	Cross Reference (Unless otherwise stated, the material is in Chapter 2 – The Core Chapter: Sections and Elements of a Document.)
Abstract or Summary or Executive Summary	<ul style="list-style-type: none"> To give readers a miniaturised version of the document, so that they can identify the basic content quickly and accurately To give readers a <i>brief</i> overview of all of the key information. Vitaly important to help the readers assess the information in the rest of the document To help readers decide whether they need to read the whole document 	Necessary	See Chapter 3 – Abstract, Summary, Executive Summary , page 53 For abstracts in a journal paper, see Chapter 6 – A Journal Paper , page 83
Keywords	A brief list of keywords relevant to your document that will be used by electronic indexing and abstracting services	Usually only for a journal paper	See Keywords , page 22
Acknowledgements	To thank the people who have given you help in your work and in the preparation of your document	If needed	See Acknowledgements , page 23
Table of Contents	Gives the overall structure of the document. Lists the headings and subheadings, together with their corresponding page numbers	Longer documents	See Table of Contents , page 23
List of Illustrations	To give a listing – separate from the <i>Table of Contents</i> – of the numbers, titles and corresponding page numbers of all your figures and tables	Longer documents	See List of Illustrations , page 26

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Table 1.2 To Determine What Sections You Will Need for a Document (Continued)

Section Heading	Purpose of Section	Frequency of Use	Cross Reference (Unless otherwise stated, the material is in Chapter 2 – The Core Chapter: Sections and Elements of a Document.)
Glossary of Terms and Abbreviations (or List of Symbols)	To define the specialist terms and abbreviations (including acronyms) that you use in the main text of the document	If needed	See Glossary of Terms and Abbreviations , page 27
Introduction	<ul style="list-style-type: none">• To allow readers to understand the background to the study without needing to consult the literature themselves. You should keep your reader adequately informed but not write an over-long <i>Introduction</i>• To point out the relationships between the various authors’ works, - the correlations and contradictions• To show gaps in the knowledge, correlations, contradictions and ambiguities• Having pointed out the gaps in the knowledge, to state the main objective of the work described in your paper (often unclear or missing)• To provide a context for the later discussion of the results• To define specialist terms used in the paper• In a longer document, to describe the structure of the document	Common	See Introduction , page 28

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Table 1.2 To Determine What Sections You Will Need for a Document (Continued)

Section Heading	Purpose of Section	Frequency of Use	Cross Reference (Unless otherwise stated, the material is in Chapter 2 – The Core Chapter: Sections and Elements of a Document.)
Background	Sometimes used as an alternative heading to <i>Introduction</i> But where a document needs both an <i>Introduction</i> and a <i>Background</i> Introduction: usually a restatement of the brief and a description of the structure of the document Background: gives the history of the subject matter and the objectives of the study. Alternatively, the objectives can be stated in a separate <i>Objectives</i> section	If needed	See Background , page 30
Objectives	To describe the aims of your study	If clear statement needed	See Objectives , page 30
Purpose Statement	To state the aims of the document (equivalent of the <i>Objectives</i> section)	These four sections are sometimes found in management reports	See Purpose Statement , page 31
Scoping Statement or Scope	To describe the topics covered in the document		See Scope statement , page 32
Procedure Statement	To describe the processes you followed in investigating the topic of the document		See Procedure statement , page 32
Problem Statement	To describe the problem and its significance		See Problem statement , page 32
Literature Review	To review the literature in your field of work. Shows that you have a good understanding of the historical development and current state of your topic	Research document	See Chapter 4: A Literature Review , page 63
A section covering your planning of tasks (suggested headings: Schedule of Tasks or Time Management)	To describe how you propose to schedule the various tasks that you will have to do	Often in management reports	See Schedule of Tasks or Time Management , page 33

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Table 1.2 To Determine What Sections You Will Need for a Document (Continued)

Section Heading	Purpose of Section	Frequency of Use	Cross Reference (Unless otherwise stated, the material is in Chapter 2 – The Core Chapter: Sections and Elements of a Document.)
Allocation of Responsibilities	To describe the person(s) who will be responsible for each task	May be needed in a report from a project team	See Allocation of Responsibilities , page 33
Ownership/ Confidentiality	An agreement between you and the commercial organisation funding you that gives you some right of publication of your results, while assuring the organisation that you will not divulge commercially sensitive information	May be needed in a research proposal	See Chapter 5: <i>A Research Proposal</i> , page 35
Requirements	To describe what you expect to need from your funding organisation	If needed	See Requirements , page 35
Costs	To describe the expected costs that you are asking the funding organisation to cover	If needed	See Costs , page 36
Methods or Materials and Methods or Procedure	To describe your experimental procedures. Aim: repeatability by another competent scientist	Research reports	See Methods , page 36
Results	To present your results but not to discuss them	Research reports	See Results , page 37
Discussion	To show the relationships among the observed facts that you have presented in your document and their significance and to draw conclusions	Common	See Discussion , page 38
Conclusions	To present your conclusions, soundly based on the previous material in the document	Necessary	See Conclusions , page 39
Recommendations	To propose a series of recommendations for action	If needed	See Recommendations , page 40

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Table 1.2 To Determine What Sections You Will Need for a Document (Continued)

Section Heading	Purpose of Section	Frequency of Use	Cross Reference (Unless otherwise stated, the material is in Chapter 2 – The Core Chapter: Sections and Elements of a Document.)
Suggestions for Future Research	To propose directions for further development of your work	If needed	See Suggestions for future work , page 41
References or List of References	A list of the works that you have cited in the text. Strict conventions govern this process	If your sources have been cited in the text	For full details of the conventions for citing references in the text and compiling the <i>List of References</i> , see Chapter 15 – Referencing: Text Citations and the List of References
Bibliography	A list of works that you have not cited in the text, which you think will be of interest to the reader	If your sources have <i>not</i> been cited in the text	See Bibliography , Chapter 15 – Referencing: Text Citations and the List of References , page 171
Appendices	At the end of a document, complex material that would interrupt the flow of your document if it were to be inserted into the main body. For example: raw data, detailed illustrations of equipment, coding, specifications, product descriptions, charts and so on.	When complex supporting material needed	See Appendices , page 42
Index	To provide at the end of a long document, a list in alphabetical order of topics mentioned in the book and the pages where they occur	Longer documents	See Index , page 44

It shows (i) the possible standard sections of a graduate technical document, (ii) the purpose of each section, (iii) how often the section is used and (iv) the relevant cross-reference to guidelines in this book.

The *Outline* Mode of Microsoft Word®: Organizing a Document

This section very briefly describes the *Outline* mode of Microsoft Word®. This mode helps organise a document, revise it, and produce a professional-looking document.

The *Outline* mode of Microsoft Word® will:

- 1. Help organise a set of headings and subheadings of various levels.**

This is useful for the first stage of organising a document. You decide on your headings, the sub-headings and their divisions, and then assign them to their various levels (level 1 for a main heading, level 2 for a sub-heading and so on). They can be easily reassigned to different levels at any time in the writing process.

The text is then inserted under the headings to produce the full document.

- 2. Collapse the document to display only selected levels of headings.**

This gives an overview of the whole document. You can select the level of overview. By collapsing the document and selecting to display only the level 1 headings, you can check the overall structure of the document in terms of only its main headings. By progressively displaying greater levels of sub-headings, you can obtain an increasingly more detailed view of the structure of the document.

This also helps in revising the first draft of the document.

- 3. Enable a heading to be dragged and dropped to a different place in the document or to a different level.**

This helps to organise and revise the document. When a heading is dragged and dropped, the corresponding text is also moved.

- 4. Automatically produce a *Table of Contents* with the corresponding page numbers.**

The Importance of Overview Information

This section describes how to help readers to navigate their way through your document. In this way, they will understand and assess the information much more readily.

This is done by using the basic skeleton and section summaries to provide overview information.

Even though technical documents have side-headings, they are very often difficult to assess and extract information from. This can be because the readers can't see a route through it, i.e. something to help them to navigate their way.

You can construct a navigational guide through your document by using the basic skeleton and building on it. Your readers should then be able to use this – probably unconsciously – to gain a much readier understanding of your material.

Building a roadmap by giving overview information throughout

Psychological studies have shown that our brains need initial overviews to better assess the full information that follows.

To use this concept, think of structuring information in the shape of a diamond (Figure 1.1).

1. First, **think of the whole document as being diamond shaped.** At the narrow ends, the information is brief, focused and concise.
 - The *Summary* or *Abstract* at the beginning and the *Conclusions* at the end each give overview information.
 - The *Summary* prepares the reader for the whole document; the *Conclusions* confirms the findings and their significance.
2. Next, **think of each section of a long document as also being diamond shaped.** It will have a title; It will also help the readers if it has a very brief summary immediately under the section's title.

This structure does two things:

1. **It helps the expert reader get an undetailed understanding of the key information in a document. The formula for this is as follows: Read only the *Title*, *Summary/Abstract/Executive Summary*, *Conclusions* and *Recommendations*.**

These sections – together with the section summaries – should form a road map that orientates the readers and guides them through the document. They also give the non-expert

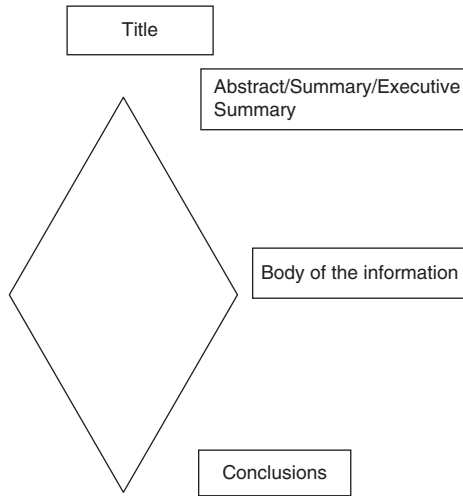
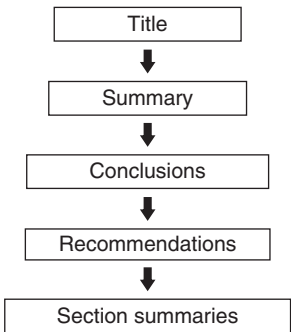


Figure 1.1 Diagrammatic representation of the structure of a complete document. The level of detail is low at the two narrow ends – the initial and final overview information (*Title*, *Abstract* or *Summary* or *Executive Summary*, and *Conclusions*).

reader a means of obtaining an undetailed overview. (For an explanation of the varying levels of detail delivered by certain sections, see [Table 1.3](#).)

- 2. It lets non-expert readers obtain an overview of the document by reading these particular sections, while avoiding the detail.

How a reader with less expertise than you would probably read a document structured in this way:



Suggested wording (placed immediately before or after the main Summary):

For overview information about this document, please read the *Summary, Conclusions and Recommendations* together with the section summaries at the beginning of each section.

Table 1.3 Explanation of How the Sections of the Basic Skeleton Deliver Overview Information at Increasing Levels of Detail

Section	Level of Detail: Increases from First to Fourth	What the Section Does for the Reader
Title	First level	Gives immediate access to the subject matter
Summary or Abstract	Second level	Gives an undetailed overview of the whole document
Conclusions and Recommendations	Third level	Gives succinct overview information about your conclusions and recommendations
Each Section Section Summary	Fourth level	<i>For the middle sections (the sections where you choose appropriate section headings)</i> Gives overviews of the material in each section If the material in the section does not lend itself to being summarised, substitute a <i>Scope Statement</i> that describes the topics covered in the section

Table 1.4 The Deliberate Repetition of Material Throughout a Document

The Section of the Basic Skeleton	The Information	The Places in the Rest of the Document Where the Information is Repeated
Abstract or Summary or Executive Summary	Undetailed overview of the whole document The main conclusion(s) <i>Possibly:</i> the main recommendation	Throughout the document <i>Conclusions</i> <i>Recommendations</i>
Conclusions	Overview of the conclusions you draw throughout the document	Elsewhere in the document; probably in the <i>Discussion</i> The main conclusion(s) will also be repeated in the <i>Abstract</i> or <i>Summary</i> or <i>Executive Summary</i>
Recommendations	A list of your recommended actions	The main recommendation(s) might be repeated in the <i>Abstract</i> or <i>Summary</i> or <i>Executive Summary</i>
Appendices		Summaries of the <i>Appendix</i> material might appear in the main body of the document

Deliberate Repetition of Information in a Document

This section describes how information is deliberately repeated in the various sections of the basic skeleton.

People are sometimes concerned because they see information repeated throughout a report. Remember, however, that this repetition is deliberate and controlled – the basic skeleton calls for it. The repeated information forms part of the navigational route described previously and guides the reader through the document. [Table 1.4](#) shows the information that is repeated and the sections where it occurs.

This deliberate restatement of undetailed information in the basic skeleton is a feature of a professional document. But information that is repeated because the document has been sloppily assembled is another matter.

Specific Types of Documents: Using This Book

This section describes how to use this book if you are writing a specific type of document.

Table 1.5 Specific Types of Documents Dealt with in this Book and the Relevant Chapter and Page Numbers

Type of Document	Relevant Chapter and Page Number
Abstract or Summary or Executive Summary: <ul style="list-style-type: none"> • A short abstract/summary (200–300 words) • A journal paper abstract • A conference abstract (about two pages) • An Executive Summary (10–25% of the whole document) 	Chapter 3, page 53
Literature review	Chapter 4, page 63
Research proposal	Chapter 5, page 75
Journal paper	Chapter 6, page 83
Progress report	Chapter 7, page 111
Consulting or Management report	Chapter 8, page 117
A project team's progress reports	
A recommendation report	
Engineering design report	Chapter 9, page 121
Formal letters	Chapter 10, page 125
Emails and faxes	Chapter 11, page 135
Procedure or set of instructions	Chapter 12, page 137
Thesis	Chapter 13, page 143
Conference poster	Chapter 14, page 155
Additional material:	
SI units	Appendix 1: page 257
The parts of speech; forms of the verb	Appendix 2: page 261
Recommended scientific style manuals	Appendix 3: page 265

Specific types of documents are dealt with in Chapters 3–14. Each of these chapters gives extra material relevant to the type of document (including a suggested structure) and is cross-referred to the material in Chapter 2 – *The Core Chapter: Sections and Elements of a Document*. Table 1.5 lists the various specific types of documents covered in these chapters and additional appendix material that may be helpful.

Checklist for the structuring of a document

- ☐ Are you using the necessary headings of the basic skeleton?
- ☐ Are the headings of your expanded skeleton appropriate to your topic?
- ☐ Are your headings in a logical order?
- ☐ Have you built a navigational route for the reader by giving overview information throughout your document: an *Abstract* or *Summary* or *Executive Summary*, *Recommendations* and *Conclusions*, and in a long report, section summaries?
- ☐ Have you deliberately controlled the repetition of information throughout the document?