

Technical report writing guidelines

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plan

1. Introduction to technical writing

Purpose of technical writing and what is important to know before starting.

2. Planning a state-of-the-art (related work) report

Example of report structure.

3. Guidelines on technical writing

Writing style, conventions, illustrations, references and good practices.

introduction to technical writing

Technical writing is an exercise on effective communication of technical information, e.g., the design of a system and how it is implemented, or how results are obtained what significance they hold.

It must be simple (even simpler than other writing forms) but it is not easy.

The keywords are: relevance, rigour, clarity, organization and consistence.

the writing process

Know your audience

Technical reports can be read by people with different levels of knowledge and interests, e.g., supervisors, colleagues or senior managers.

Managing the contents, length, structure and style depend on the intended readers.

*But **no** reader wants irrelevant content...*

the writing process

Break down the writing process into stages: planning, drafting and revision.

1. Planning

Record everything (meeting notes, draft designs, bibliographic notes, measurements, etc.) in a notebook (or the electronic equivalent) and make this a routine habit.

Share information with supervisors and team members.

Play around with the organization of the report: it is not necessarily evident in which order some things should appear.

Start organizing references as soon as possible.

the writing process

2. Drafting

Get the bulk of the report written down without worrying too much about style and artistic impression.

You can give full attention to language (Portuguese / English) once the content has been committed to paper.

Reports do not have to be drafted sequentially: it is often easier to write introductory material after writing the content which it is heading.

3. Revision

This is an iterative process to improve clarity, balance and readability.

Ideally, a final draft should be finished and re-read one week after.

Ask a friend to read your draft and make helpful comments.

Your supervisor needs time to read your final draft and you need time to process their comments.

report structure (example)

Before text

Cover page

Title page

Keywords and abstract

After text

References

Text (chapters)

Introduction

Background theory and practice


Related work

State-of-the art (tools and technologies)

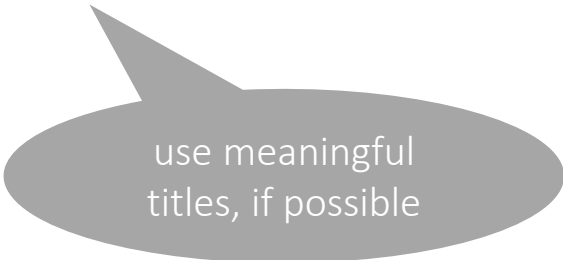
Conceptual modelling / theoretical analysis

Preliminary experiments

Conclusion / summary



select the sections
that apply to your
project



use meaningful
titles, if possible

report structure

Cover page

Report title, authors, university, department, course and date (year).

The title is very important!

Avoid long titles and do not use abbreviations or acronyms.

Abstract (120 - 250 words)

Condensed description of the report. The key points are the context of the project, the problems to be solved, the goals and the contents (what the report is about).

Do not use acronyms, abbreviations or references.

Readers look at the abstract first: do your best to make a good impression.

Use words carefully to capture reader interest and make an effort to show that the subject (problem) covered by your work is important.

report structure

Introduction

The introduction serves to help the reader understand:

Why the work was performed.

What is presented.

The most interesting 'results'.

The organisation:

Start the introductory paragraph by presenting what is generally known about the subject. Then move step by step through more detailed information, ending with a description of the problem that is covered in your project.

The next few paragraphs should refer to what has been done before. Refer only to the most relevant works in your literature review. Explain how earlier work relates to your work.

Then present the goal of your work, what was or will be done, and a general description of the expected results.

At the end, tell the reader how the report is organized.

report structure

Background theory

*Detailed information on the **background knowledge** (e.g., concepts, definitions and methods) about the subject covered in the project based on previous work (e.g., published literature, previous projects and technical reports).*

*What you (and other people) **need to know** to develop (understand) your project.*

Refer to outside sources of information.

Related work

*Presentation of related works to **demonstrate knowledge** of the area **and relate your project to other works**.*

*Describing previous work allows **to understand** the current limitations and **the need for a new project**.*

*Include the methods, projects, tools, platforms, applications, research papers etc. that addressed a central or **similar problem, or that may inspire your work**.*

*Better to **tell a story** than present a list of paragraphs independent of each other.*

Refer to outside sources of information.

report structure

State of the art (tools and technologies)

*Presentation of **the tools and technologies** that you will use to develop your project.*

***Organization by theme.** Start with a brief introduction to the theme followed by the description of the related tools and technologies.*

Provide enough information to support your technology choices.

Conceptual modelling / theoretical analysis

Describe the problem (system), requirements and details about the design procedure.

Describe all the terminology used.

*Keep the contents as general as possible and **avoid details of implementation.***

report structure

Procedure / implementation

Describe the methods used to test the idea or to implement the design presented in previous chapter.

*Provide information so **the work can be replicated**.*

*Provide **diagrams and pictures** to help in understanding the procedure.*

Conclusion / summary

It should be a concise description of the project and report contents, including its purpose.

*Explain **how the project relates to previous work**.*

*Explain the **expected results and the contribution** of the project in relation to previous work.*

*The **reader should be able to read this section on its own**.*

Do not use specific terminology, abbreviations or acronyms and do not include figures and references to them.

report structure

References

Every sources of information, e.g., books, journal articles, conference papers, technical reports, websites or other internet resources must be cited.

*Keeping **references** accurate and complete **helps demonstrating the quality of the work.***

Be sure that:

Every reference that appears in text must have a citation in the references section.

Every citation in the references section must be used in the text.

Evaluate references** (particularly websites and internet resources) **critically.

Do not consider Wikipedia a credible reference because the information changes over time and authors are not necessarily people with verifiable expertise or credentials.

report layout and styling

Consistency is highly important

Define layout and styles and apply them throughout the entire document.

Use always the same spelling (e.g., online / on-line) and language (e.g., traditional / post-reform Portuguese, UK / US English), and use terminology consistently.

Begin chapters in a new odd page and leave generous blank space on the top. Number chapters, sections and subsections (3 levels, at most).

All pages after the table of contents must include a page number:

Use sequential Roman numerals to paginate the table of contents and subsequent lists (figures, tables, acronyms, etc.)

Use sequential Arabic numerals to paginate the text after introduction. The introduction starts in page 1.

report layout and styling

Illustrations

Tables, graphs and figures help to clarify the contents and can make writing easier, hence, plan illustrations early in the process.

*Be sure that **illustrations are readable** and leave some extra blank space before and after an illustration.*

Illustrations must be numbered and have a caption (use always the same format).

No need to have an illustration title (it has a caption).

*They **must be cited along text** (use always the same format) and placed near their mentions in the text.*

Cite a reference when appropriate.

report layout and styling

There are many referencing styles, e.g.:

ACM (Association of Computing Machinery), APA (American Psychology Association), IEEE (Institute of Electrical and Electronics Engineers), NP 405 (Portuguese)

For a comparison refer to: <http://dal.ca.libguides.com/content.php?pid=860&sid=11818>

Choose one referencing style and apply it consistently

Reference manager tools

Mendeley desktop & Microsoft Word plugin (<https://www.mendeley.com/download-mendeley-desktop/>)

BibTeX & LaTeX

report layout and styling

ACM in-text citation style (http://www.acm.org/publications/latex_style/)

One author: enclose the last name of the author and year of publication, e.g., [Burando 2007].

Two authors: both last names and the year of publication are included, e.g., [Burando and Lee 2007].

More than two authors, include the last name of the first author followed by an "et al.", e.g., [Burando et al. 2007].

Sequential parenthetical citations are enclosed in square brackets and separated by semi-colons, e.g., [Burando 2007; Burando and Lee 2007].

When a citation is part of a sentence, the name of the author is NOT enclosed in brackets, but the year is: "So we see that Burando et al. [2007]..."

report layout and styling

Examples of some of most commonly used ACM reference types

Article in a journal:

Patricia S. Abril and Robert Plant. 2007. The patent holder's dilemma: Buy, sell, or troll? Commun. ACM 50, 1 (Jan. 2007), 36-44. DOI:<http://dx.doi.org/10.1145/1188913.1188915>.

Monograph (book):

David Kosiur. 2001. Understanding Policy-Based Networking (2nd. ed.). Wiley, New York, NY.

Article in a conference proceedings (conference, symposium or workshop):

Sten Andler. 1979. Predicate Path expressions. In Proceedings of the 6th. ACM SIGACT-SIGPLAN symposium on Principles of Programming Languages (POPL). ACM Press, New York, NY, 226-236. DOI:<http://dx.doi.org/10.1145/567752.567774>.

report layout and styling

Examples of some of most commonly used ACM reference types

Doctoral dissertation:

Kenneth L. Clarkson. 1985. Algorithms for Closest-Point Problems (Computational Geometry). Ph.D. Dissertation. Stanford University, Palo Alto, CA.

Master's Thesis:

David A. Anisi. 2003. Optimal Motion Control of a Ground Vehicle. Master thesis. Royal Institute of Technology (KTH), Stockholm, Sweden.

Technical report:

Greg Turk and David Banks. 1996. Image-guided streamline placement. Technical Report I-CA2200. University of California, Santa Barbara, CA. 453-460 pages.
DOI:<http://dx.doi.org/10.1145/237170.237285>.

report layout and styling

Examples of some of most commonly used ACM reference types

Document / WWW resource:

Harry Thornburg. 2001. Introduction to Bayesian Statistics. (March 2001). Retrieved March 2, 2005 from <http://ccrma.stanford.edu/~jos/bayes/bayes.html>.

report layout and styling

Do not assume that the reader has prior knowledge or access to prior reports, textbooks etc.

Write a tentative table of contents as soon as possible.

Remember that the **reader cannot guess what you are 'thinking'**.

Grammar

The active voice is usually more precise and less wordy than passive voice.

Use the third person although there is still some debate. Do not use 'we' in a single author report.

You should normally use the present tense when referring to previously published work (i.e., to express general truths or facts or conclusions supported by research results that are unlikely to change), and to present the results of calculations and statistical analysis.

Use past tense when referring to your work.

report layout and styling

The first sentence in a paragraph states the main point and the remaining sentences present information related to that point.

Write in short, succinct sentences. Write precisely what you want to transmit and no more.

The **text should not be a series of sentences** but should retain a flow and continuity of expression.

Avoid remarks in parenthesis and excessive footnotes.

report layout and styling

Use correct grammar, punctuation and spelling.

Write foreign words in italic.

Avoid unnecessary **jargon** and define terms on first use.

Describe acronyms on first use and include the acronym in parenthesis, e.g., Decision Support Systems (DSS).

Do not use acronyms in abstract and conclusion sections.

Do not be judgemental: “I fell that...”, “The results were great...”.

Ground your statements on references or on experimental work.

Give your report to someone to proofread.

references

IEEE. n.d. How to Write for Technical Periodicals & Conferences. IEEE authorship series. Retrieved November 17, 2021 from <http://ieeeauthorcenter.ieee.org/wp-content/uploads/How-to-Write-for-Technical-Periodicals-and-Conferences-1.pdf>.