MSc project plan template

Use thesisauthor to insert your name here.

NTNU
Norwegian University of Science and Technology

Use this class with options
“medieteknikk,” “mediatechnology,” “informasjonssikkerhet” or “informationsecurity”.

Use this package with options
“medieteknikk,” “mediatechnology,” “informasjonssikkerhet” or
“informationsecurity”.

Revision history

Version #	Description of change (why, what where - a few sentences)
0.1	First version made available via Fronter
0.2	Corrected some spelling mistakes and added 'control questions' to Abstract, chapter 1 and 2
0.2.1	Removed the reference to a dead link in chapter 1 (keywords).
0.2.1	Replaced HIG logo by NTNU logo and removed references to information security

Abstract

Abstract (1/2 page) This document provides format and guidelines for the MSc project descriptions. The document has been produced using MikTeX and TeXnicCenter.

The objective of the abstract is to provide the reader with an understanding of the work to be done and put him in the position to make a 'correct' decision regarding reading/not reading the report.

The abstract of the project description *must* include

- a summary of the problem description,
- motivation and
- a summary of the planned contribution from the master project in terms of *new* results.

Control questions

1. Does the abstract have a 'reasonable' length?
2. Is it clear to a non expert (e.g. a typical reader of a newspaper) what problem is addressed?
3. Does a person that has been working in the field find the text informative?
4. Do the results that might be obtained have the potential to be interesting to a lot of people? How interesting to how many and why?
5. Would a decision maker/manager be willing to pay NOK 400.000 to have the project completed (estimated salary costs + overheads) after having read the abstract? Why/why not?

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1 Contents of the project description

The project description must use the gucmasterproject class file and contain the following elements/chapters:

Front page

Table of contents

Abstract

1 Introduction

1.1 Topic covered

1.2 Keywords

1.3 Problem description

1.4 Justification motivation and benefits

1.5 Research questions

1.6 Planned contributions

2 Related work

3 Choice of methods

4 Milestones, deliverables and resources

5 Feasibility study

6 Risk analysis

7 Ethical and legal considerations

Bibliography

Appendix

A Acronyms and abbreviations

Each chapter must contain the information specified in this document and further explained in lectures or included in lecture notes.

2 Introduction (1-2 pages)

The introduction chapter should not include detailed information on how you intend to solve the problem, what you're going to do etc. This belongs more in the 'method' and 'feasibility study' section of the research proposal.

Make sure you read several of the past project proposals. Make your own judgment on how 'good' they are.

2.1 Topic covered by the project

This section specifies the general area of the project. It should preferably be understandable by everybody, also those not familiar with the field. (e.g. all your relations and friends).

The purpose of the topic section is to:

- Very quickly give the reader some idea of the perspective taken with respect to problem addressed.
- Help a reader to decide if the project is within the readers area of interest and scope.
- Help the author (you!) to see if he has the necessary skills, if he/she needs to get access to specific expertise etc. Do you have the right skills/ background/ knowledge to be able to carry out the project?

Control questions:

1. Does it have the right length?
2. Is it focused or is it just a non-focused brain dump going all over the place?
3. Is it clear from the text what skills would be required/beneficial in order to do/participate in the project?

2.2 Keywords

There are several sources of keywords. Rather than 'inventing your own' you should select an appropriate set of keywords from a reputable source such as the one published by the IEEE computer society (IEEE Computer Society - Keywords) or ACM (ACM Computing Classification System). The taxonomy by Avizienis et al[**?**] provides an overview of of the subject area and an alternative set of keywords/classifications.

Control questions:

1. Does the collection of keywords 'pin down' the project or is it to 'wide'?
2. Are the keywords too specific, making it difficult for people with a closely related interest to recognize the keywords?
3. Why is it likely that a person working in the field would use the keywords you have selected when doing a search in this area?
4. Is the number of keywords appropriate?

2.3 Problem description

What's 'wrong' with the world we're living in? E.g.

- Something is currently too difficult.
- Something is broken/doesn't work properly.
- Something is currently to expensive, difficult, costly etc.

Control questions:

1. Does it have an appropriate length?
2. Would it be possible to explain the problem description to a non-expert/expert in say 2 minutes in such a way that it was understood?
3. If explained to different people, would they have a common understanding?
4. If you were to check if your problem description was understood, what question(s) would you ask?
5. What is the information density of your text and why?

2.4 Justification, motivation and benefits

This section should be understandable by everybody including your family and relatives. In particular, it should be understandable to those who will benefit. NOTE : 'I want to do zz' does not count as a legitimate motivation!

- Why is important to solve the problem you have identified?
- Why would 'mankind' benefit from a solution to the problem identified?
- Who would benefit (the stakeholders)?
- What are the primary and secondary benefits - what's in it for the stakeholders?

You should try to find a journal, conference or newspaper article identifying the problem you will be adressing. This can be used to substantiate your claim that the problem you are adressing is significant.

Control questions

1. For each of the issues listed above, has the issue been addressed properly/thoroughly?
2. What is the information density of your text and why?
3. If the project results was to be put in an auction when the project was completed - what price would it fetch and who would put in what bids?
4. What would be the overall ROI (Return On Investment) of your project if carried out?

2.5 Research questions

Describe the types of information you need in order to solve the research problem, e.g. We need to find out

- what factors affect xx (where xx is the 'parameter' you want to improve, e.g. cost, time, usability, security, etc.)
- to what extent will activity/ method/procedure yy (where yy is some method of improving the parameter, e.g. a program for simplifying access) improve factor xx?

- have somebody solved this or some closely related problem?
- how well has the problem been solved?
- what is the theoretically 'best' one can achieve?

Control questions:

1. Are there any questions at all? Look for '?'...
2. Why are the research questions relevant to the research problem?
3. What other research questions might also be relevant?
4. why/why not are the chosen research questions the most relevant?

2.6 Planned contributions

A short summary of what kind of *new* results the master thesis will produce. Ideally, the potential novelty of the results should be justified by means of references provided. E.g. if an article describes the problem you will be adressing as *unsolved*, you should include this reference. Similarly, if you e.g. have some ideas on how an authentication method can be improved in terms of FAR/FRR, you should specify the best FAR/FRR figures published and a reference to where this was published. The goal of the master thesis will be to produce the new results identified in this section.

Control questions

1. Is the length of the section appropriate and why?
2. Why/why not are the contributions 'significant'?
3. Why/why not is it realistic that the planned contribution can be achieved? You may want to have a look at relevant literature/ other completed master thesis to answer this question.

3 Related work (3-10 pages)

The purpose of this chapter is to explain to the reader what knowledge is already available from the literature.

The purpose of the related work chapter is to:

- Identify to what extent information identified in the 'Research questions' section is provided in the literature.
- Give an overview of why/how the literature provides the answer to the research questions identified.
- Identify areas/ research questions where the literature appears to be weak or non-existent.

The Related Work Chapter is NOT:

- A list of abstracts and summaries of more-or-less-relevant literature.

If you have

- found some relevant literature
- made summaries of what you have written

you should

- reorganize these summaries to focus on the research questions you have identified.

This chapter should include one subsection for each of the research questions identified in section 2.5.

3.1 Handling Potential problems

When searching for literature, you usually get too many hits or none at all...

Question 1

I don't find any relevant literature.

Answer 1.A

Make a list of words, phrases, applications, abbreviations, organizations, terminology etc. relevant for your area of interest. Ask a librarian to sit with you for 20 minutes to formulate relevant queries to available databases. Record your findings.

Answer 1.B

Go to the ACM (www.acm.org) or IEEE (www.ieee.org) web pages. Identify the SIGs (Special Interest Groups) of these organizations. Select the SIGs which looks the most interesting. Most SIGs publish one or more journals and/or organize workshops or conferences. Get hold of a few journals or proceedings and see if they're any interesting.

Question 2

I've found a lot of papers. They all look interesting, but I don't have time to read them all.

Answer 2.A

Narrow your search. Be more specific in your search. Read the abstracts of the relevant articles before you read the full papers.

Answer 2B

Find a citation index (e.g. `http://citeseer.ist.psu.edu/`. Read those papers with a high citation score first (a citation index rates papers according to 'academic popularity'). Alternatively, read those papers published in 'prestigious' conference proceedings or journals first.

Control questions:

1. Why can we have confidence that the most relevant literature has been identified?
2. is the related literature grouped in a sensible way such that the reader gets a good understanding of 'existing knowledge' relating to th research questions/problem description?
3. Is the chapter sufficiently comprehensive?

4 Choice of methods (2-5 pages)

This section is to include a description of the methods to be used, including references to literature describing the methods to be used (e.g. qualitative, quantitative, interviews, surveys, questionnaire, model building etc.) For each of the research questions to be addressed, the chapter is to explain why the method is

- appropriate
- likely to provide the desired knowledge/information.

5 Milestones, deliverables and resources (2-5 pages)

The purpose of this chapter is to convince the reader that you know exactly what to do. This chapter gives a description of how the project is to be broken down into smaller parts and activities.

1. What is it you have to do in order to obtain the desired knowledge?
2. What deliverables are to be produced (MSc thesis report, software,...)
3. When are the various deliverables going to be available?

For each deliverable, identify 4 versions, having an 'increasing' degree of completeness/quality. Students are strongly recommended to review each others drafts. For each version of a deliverable explain why and how this version is to be better/more complete. E.g. v1.0: my first draft - chapter text includes 1/2 page summaries only. v.2.0: Like v1.0, but comments by NN(who? fellow student) has been incorporated. v3.0:....

This section is to include a preliminary table of contents for the MSc thesis (only include 2 levels).

For each of the activities identified, specify

1. the time you need to complete each activity both calendar time and 'man-hours'.
2. hours needed by you
3. things you need to buy (consumables)
4. equipment, lab space or facilities you need access to
5. contributions from others (e.g. survey/interview participants) and how much each will have to contribute in terms of resources (probably time)

At the beginning of this section, provide a 2-3 line summary of the resource requirements. This is particularly useful if you have broken down the task into a lot of small tasks.

6 Feasibility study (1/2-3 pages)

An analysis of why it is likely that the desired results can be produced within the given time and resource bounds. This may include a description of

- similar projects completed by others and their 'resource consumption',
- an attempt to answer parts of the research questions
- the 'difficult' elements of the work and an explanation of why/how these problems can be solved. Alternatively you can explain an 'approximate' solution.

7 Risk analysis (1/2-2 pages)

- What can possibly go wrong when you do your project?
- How do you intend to reduce impact of/solve these problems?

8 Ethical and legal considerations (1/4-1 page)

The purpose of this chapter is to convince the reader and your self that your project activities are

- legal
- ethical, e.g. don't use/distribute/collect etc. data in such a way that individuals may suffer.

For example, if you are planning to do reverse engineering activities, surveys, PENTESTING- (both technical and based on social engineering techniques) you need to be particularly careful and check with the appropriate experts and authorities if the activity is permitted. An explanation of why your project is both legal and ethical should be given in this chapter.

If you need permission (e.g. because you will be collecting or processing privacy related information), you should include the appropriate applications/application forms and ensure that these applications are submitted well before you need the permission.

9 The bibliography

References/bibliography Reference to other peoples work MUST include:

- Name of author(s) or name of responsible organization (if the document does not have a named author.
- Title of document.
- Where published.
- Year of publication.

There are many different types of documents (article, book etc.). In many cases, the required/optional fields may differ. See e.g. the BibTeX entry of wikipedia (`http://en.wikipedia.org/wiki/BibTeX`). The bibliography file `imt4441.bib` contains an example.

NOTE: A url on its own is no good! It must be possible to locate the reference even if a link goes dead!

A Known problems with MikTeX and TeXnicCenter

A.1 Hig logo xor url's

Problem

Using MikTeX (version 2.6) in combination with TeXnicCenter you may experience the following problems:

You have to choose between being able to get the HIG logo on the front page (Use the TeXnic translation LaTeX => ps => pdf) and getting visible url's (use the LaTeX => PDF translation option).

Possible solution 1

use `\usepackage[dvips]{graphicx}` in combination with TeXnicCenter translation LaTeX => PS, and use Adobe distiller to convert from PS to PDF. This should give both logo and URL (but no line breaks in URL's).

Possible solution 2

Use `epstopdf.exe` to convert `higlogo.eps` to `higlogo.pdf`. Modify the file `gucmasterthesis.cls` to include `higlogo.pdf` instead of `higlogo`. Select the TeXnicCenter translation `LaTeX => PDF`.

A.2 LaTeX/AFPL Ghostscript crashes

Problem

The build window prints out operand stack, execution and dictionary stack before concluding with the message '`Unrecoverable error, exit code 1`'.

Possible solution

Use the TeXnicCenter translation 'LaTeX => PDF'.