



Cartography M.Sc.

The Title of Your MSc Thesis Research Proposal

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2024-01-01

Thesis research proposal template drafted for the International MSc Cartography by Paulo Raposo, based on earlier drafts by Corné van Elzakker, R.A. de By, and Marga Koelen, University of Twente, Faculty ITC, Department of Geo-Information Processing.

This is a template file, which must be used to format your extended thesis research proposal. In your document, all numbered sections below should be visible. At the same time, you are free to add sub-sections to make the text more clear. It is expected that the proposal will have a length of 5–10 pages A4 (when printed).

To use this template, retain the header structure, and replace all text except the headers. Use figures as appropriate. This preamble, before the first section, should be deleted.

Feel free to use a different font! :)

1 Motivation and Problem Statement

In this section, you explain why your project should be done, and you define, in the most concrete way, what the problem is that you will be addressing (as well as its context). You should refrain from referring to any hint of solution. As, with your thesis research, you are going to add new scientific knowledge to what is already known, this section will already contain some references to scientific literature.

2 Research Identification

In this section, you will identify what issues need to be researched. You will do so by first stating what is (are) the overall objective(s), and then deriving from these the questions that need to be answered to reach the afore-mentioned objective(s). The research objective(s) and research questions should be as concrete as possible.

2.1 Research Objectives

Objectives can be defined as the end terms, i.e., results of your project. There is no need to mention the thesis as such, and you should identify the objectives defined as results that others

can use after your project has come to an end. In most cases, one main research objective will be formulated with, possibly, two or more research sub-objectives. Please identify the audience that is interested in your research results. It will also be good to describe the research scope and research limitations, i.e. what this research is not about.

2.2 Research Questions

It will in general not be easy to meet the objectives and, thus, to obtain the wanted results. To do so, a number of hurdles need to be taken, say ‘stepping-stones’ towards the final result(s). These ‘stepping-stones’, in turn, can be formulated as fundamental research questions; they require an answer, or your objectives will not be met.

2.3 Innovation Aimed At

There should be some type of innovative character for the domain of geo-information science to your work. In this section, you will describe what you think will be the novelty of your work.

2.4 Related Work

It is likely that you will not be the first to work on the formulated problem, and so in this section you will indicate (as much as you can) other projects that have addressed the same or a similar problem. You should spend a few words, in summary, on where your project will probably deviate from these related projects. For finding and describing these related projects you need to do a literature search using the proper keywords by creating a search strategy. As a result, obviously in this section you will make some references again to scientific literature.

3 Project Setup

Whereas Section 2 discussed the what of the project, this section describes the how. How are you going to execute the project, and why is your approach appropriate for the problem as earlier described?

3.1 Methods Adopted

This section describes your plan-of-attack. How are you going to address the research questions, and which philosophy (style) of work will you adopt.

3.2 Planned Schedule of the Project

This section describes the phases (steps, work packages) that the project will go through, more or less chronologically. An important characteristic is that the plan should be feasible and realistic, and that the time allotted to various phases of the project matches each phase’s complexity. In doing so, you will have to take into account that the thesis must be completed within the time allotted (6 months).

It is wise to relate phases to research questions identified above, as well as to indicate which results are expected from each phase, and how they contribute to the project’s overall objective(s).

In this section you must also provide the planned submission date of your final MSc thesis (before 10 September), as well as the dates on which you plan to submit your draft chapters. Also the dates must be specified on which you want to be in contact with your supervisors, although those dates will depend upon their agreement.

3.3 Risks and Contingencies

Not all work will be executed without problems, and it is wise at this planning stage to think up what kind of problem might arise at what point in time. Once that has been done, you should also indicate possible alternatives.

4 Resources Required

This section is devoted to the work environment within which you will conduct your work; essentially, the requirements that must be met to arrive at results for the project. Most resources below speak for themselves. If any complications can be expected to meet these requirements, you would be wise to signal these in your proposal.

- **Information:** *Which information sources, except for the literature, will you be needing?*
- **Data:** *Which data sets must be available?*
- **People:** *To which people do you need access?*
- **Software and hardware:** *Which computer requirements exist?*
- **Finances:** *Are any financial resources needed?*

References

Last but not least, you want to indicate the relevance of your proposed project, and the literature is a good way to do so. Submitting a consistent reference list of the used/found documents is a necessary component of each research proposal. Obviously, you also include references used throughout your argumentation above.

Using the LaTeX template, delete the above “References” section header and allow the citation package to fill this in for you with the citations you’ve used throughout the above text.

Use the bundled `biblio.bib` file to store your citation data. Replace the example data you see there with your own citations. You can export in the BibTeX format for that `.bib` file from many citation managers, including Zotero, Mendeley, and Endnote.

You can cite things inline like this: (Çöltekin, Janetzko, & Fabrikant, 2018).

You can cite the author’s name and put the year in parentheses, like this: Brodsky (2018).

Give a page number like this: (Brewer, 2005, p. 17).

Multiple citations at a time are done this way: (Biland & Çöltekin, 2016; Gehlke & Biehl, 1934; Raposo & Robinson, 2016).

References

- Biland, J., & Çöltekin, A. (2016). An empirical assessment of the impact of the light direction on the relief inversion effect in shaded relief maps: NNW is better than NW. *Cartography and Geographic Information Science*, 44(4), 1–15. Retrieved 2016-06-15, from <http://dx.doi.org/10.1080/15230406.2016.1185647>
- Brewer, C. A. (2005). *Designing Better Maps: A Guide for GIS Users*. Redlands, CA: Esri Press.
- Brodsky, I. (2018, June). *h3: Hexagonal hierarchical geospatial indexing system*. Uber Open Source. Retrieved 2018-06-29, from <https://github.com/uber/h3>
- Gehlke, C. E., & Biehl, K. (1934). Certain Effects of Grouping Upon the Size of Correlation Coefficient in Census Tract Material. *Journal of the American Statistical Association*, 29.
- Raposo, P., & Robinson, A. (2016, September). Representing Spatio-Temporal Events Across Scales. In *Proceedings of Understanding Spatial Data (Big and Small) with Visual Analytics (SpatialVA2016), workshop at GIScience 2016*. Montreal.
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