Essential features of a research plan

Veikko Surakka

Research Group for Emotions, Sociality, and Computing,

Tampere Unit for Computer-Human Interaction, TAUCHI,

Department of Computer Sciences

University of Tampere

Tampere University Hospital, Department of Clinical Neurophysiology

Essential features of a research plan

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What is a research plan?

- **It is really a plan, and an <u>explication</u> of your research**

- **There can be different levels of plans**
  - **General level**
    - **Our focus today**
  - **Very detailed**
    - **E.g. in experimental research there are tens of details of how to carry out each individual study**
    - **Actually these are implementation plans, but NOTE that you must have them!**

What is a research plan?

It has several functions:

- Forms the basis of your research project and the subsequent work leading up to the preparation of
  - your thesis or
  - your manuscript for a scientific publication
- It should clearly communicate your research ideas to **other** people
  - Evaluators
    - **Note** that they may not be experts in your specific area of research

What is a research plan?

- **The central aim is to get funding and/or positions with the planned research**
- It will be a central tool for the rest of your life
- After your PhD you really start to write money applications, that is, research plans
  - Most probably several by each year
    - The Academy of Finland, Tekes, companies, EU, …
- Moreover you will start to supervise other students and so you have to have strong skills for supervision, evaluation, etc.
  - These are not possible without having good own skills!

What is a research plan?

How to prepare?

- In your early career this should be done in close collaboration with your supervisor
- In order to be competitive today it is like writing a manuscript for a scientific journal
  - Write > revise > rewrite > revise > etc.
  - So there is also a lot of responsibility for the supervisor as well
- It is very wise to update the plan continuously

What is a research plan?

- The requirements of a plan may have some variations depending on the source you are applying the funding from

- REMEMBER TO FOLLOW THE REQUIREMENTS

- However, some (and many) requirements are common to many instances
  - Remember the talk of Ari Jaaksi!

Structure of a research plan?

- In science there is a sort of a ”holy” triangle consisting of
  - Problem
  - Method
  - Result

- The same applies to a plan of research

- How to convert the ”holy” triangle into a research plan?

Structure of a research plan?

In the plan

- first, you often have two pages
  - Cover sheet (invent a good name)
  - Content page (keep it simple)
  - In many cases an abstract or a sort of executive summaryis required separately (or as the first section)

- **THEN** the most important and challenging task is the presentation of the research problem to **the reader**

- This is usually done by breaking it somehow to the following types of parts

Structure of a research plan?

1. Introduction

   – This part immediately tells to the reader in a concrete, comprehensible language what the study is about

   – Ideal length is one page

   – Central aim is to motivate the reader to the topic so that she wants to go further

   – Can be quite close to the abstract and/or executive summary

Structure of a research plan?

2. Background and aims

- In this part you introduce the background of the study so that you logically go through the essential related literature here

- In this section you also show and prove the significance and originality of your research idea

Structure of a research plan?

2. Background and aims

- This part can be broken in two (i.e. 2. background, 3. aims) as well

- In many cases you can create a nicer SCIENTIFIC story if you do not break it into pieces

- The story ends smoothly converging into the presentation of your research problem(s) or question(s)

Structure of a research plan?

3. Method(s)

- Here, depending on your research area you describe the central methods to be used

- Describe the methods in respect to your research questions

Structure of a research plan?

3. Method(s)

- Remember to keep yourself from going into too much details, that is, the level of the implementation plan
- You can say, for example, that the research questions will be investigated through a series of carefully controlled experiments
  - In experiment 1 I will study the differentiation of 10, 25, 50, and 100 Hz haptic feedback while using a touch enabled computer mouse.
  - In experiment 2 I will investigate the emotional experiences evoked by these same haptic feedback frequencies.
  - Etc.

Structure of a research plan?

4. Expected results

- Even though, you do not know your results in advance you should be able to say something about your expectations

- For example, I expect the series of experimental research to produce necessary/fundamental/imperative findings required for the future development of haptic interfaces

Structure of a research plan?

5. Collaboration

- If your work is somehow dependend on collaborative work with other researchers, research institutes then you need to tell here
  - Partners
  - Their roles
  - Timing
  - Other relevant information

Structure of a research plan?

6. Time schedule

- Here you need to somehow explicate the idea of when you expect to defend your thesis

- Here you can explicate also the status of your other doctoral studies

Structure of a research plan?

7. Resources

- In this section you give the relevant information about the resources of your project consisting of
  - The status of your funding
  - The status of access to laboratories and other equipment
  - Information of the research group you are working in
  - Information of your supervisor

Structure of a research plan?

8. Dissemination

- Publishing is a must in science
  - If you do not publish nobody will know your results
  - You will have nothing to say!

- Inform the reader of how you are going to publish your results
  - Is the thesis going to be a compound work or a monograph

- You can say, for example, the results will be published in good quality journals and conferences of your research area

Language

Expertism versus clarity

- There is no need to use expert language
  - ”The more educated the audience the simpler the language” ;)
- The people who are evaluating your plans and applications may not (and most likely are not) be experts of your research area
  - If they are, they are happy to read clear text
- Avoid repetition but remember and make sure to use identical conceptual language throughout the text
  - Creates clarity, improves readability significantly

Language

- Take extra care that you write language that is understandable to (nearly) everyone
- Write short sentences
  - Use of subordinate clauses makes it difficult to follow the text
  - With long sentences you loose easily track of what you are trying to say
- Especially avoid the use of abbreviations
  - For example EEG, EMG, and ECG has not been used in HCI to analyse user's ability for CHI via these methods. I will not use these not so much but EEG could be used.

Language

- Write allways how things are, were, or will be
- Writing through negative sentences creates negative implications in the reader
- In science we are to say and find how things are and were, instead of how they were not
- It is not critical thinking to say that my results did not show this and that and moreover they especially did not show that...

Summary

The central parts of a plan are

- Cover page
  - Title, your name, affiliation
- Content page, keep it simple like e.g. below
  1. Introduction
  2. Background and aims
  3. Methods
  4. Expected results
  5. Collaboration
  6. Resources
  7. Time schedule
  8. Dissemination

Summary

1. Introduction
   - Clearly state the focus of your research and motivate the reader
2. Background and aims
   - A scientific ”story” with literature review, significance of the research and a bit more specified aims than in the introduction
3. Methods
   - A relatively general overview of your methods
4. Expected results
   - You can allways say something

Summary

5. Collaboration
   - If needed
6. Resources
   - Labs, equipment, financing, supervisor
7. Time schedule
   - Status of your doctoral studies and the expected date of your defense
8. Dissemination
   - Where and how you are going to publish