Essential features of a research plan

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Essential features of a research plan

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What is a research plan?

- It is really a plan, and an **explication** 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 summary is 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
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.
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
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 always 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 always 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