CRAFTING AN MSc PROJECT PROPOSAL

Guidance notes

These notes provide guidelines for the preparation of an MSc project proposal. They identify a desirable set of sub-sections that the proposal should contain and for each subsection they clarify what should be addressed as a minimum in each sub-section. They are intended for use by students taking the MSc in Computing (Information Technology) at the School of Computing at the Dublin Institute of Technology. These notes should be read in conjunction with the Project Proposal assignment for the Advanced Research Methods and Proposal Writing module of this programme.

When deciding on an idea for your project it is useful to keep in mind that your final finished project will become a significant part of a portfolio of your work, so, perhaps you should choose something valuable to your future career.

When preparing your project proposal, it is important to remember that your MSc project and dissertation are different to an undergraduate project and project manual. For this MSc there is a higher emphasis on research which is underpinned by the work and seminal publications of other researchers and practitioners. Also at MSc level there is a lower emphasis on implementation than there is at undergraduate level. While implementation may be part of the project submission, a prototype or proof of concept might be sufficient. Your project supervisor will be able to advise you on this. You are especially proposing something that has not been done previously so there should be something 'new' about your proposal.

Some examples might be:

- Compare the performance of 2 algorithms
- Develop a prototype of a system and evaluate it with some users
- Evaluate and compare a number of different software platforms
- Set up selected hardware and test the performance
- A survey to gauge attitudes
- A framework (numbers and weights) to help you make a decision
- A new business model (such as a value chain, CMM, or similat)
- Interviews with domain experts

The emphasis should be on the quality of your methodology and critical analysis rather than the results.

The proposal should be prepared and formatted in accordance with the style, recommendations and advice set out in *Crafting a Research Paper*. The cover sheet should be in accordance with the recommended style and format of the project proposal document for an MSc award from the School of Computing.

Your sub-section headings should include as a minimum:

- Introduction
- Project background
- Project aim and objectives
- Intellectual challenge
- Research programme
- Project deliverables
- Resources required for the project
- References.

The following section explains what each sub-section of your proposal might address. However, before that it is necessary to mention your project title.

You will need a project title. Don't worry if you haven't a snappy title to begin with. That's normal, but you will need a general idea so that keywords are easily identified for keyword researching using tools like Google Scholar and in the ACM and IEEE publications databases. Your keywords will help you with a working title and give you a vocabulary for discussing your idea with others. Once you fully understand what your project proposal is about you will have little difficulty writing a focused title that does justice to your project.

The following sections explain what each sub-section of your proposal might address.

1. Introduction

Assume that your readers have very little knowledge of the subject and introduce the subject to them.

This is where you explain your project idea. In order to introduce your readers to the topic and to clarify the context of your project, write about each aspect of your project title. For example, if your project is about software quality for Web 2.0 then write a short introduction to software quality and a short introduction to Web 2.0 – sufficient so that your readers will understand the general area of your research. Next, clarify **what** your proposal will do and how is appropriate to an MSc in Computing (Information Technology). Then, clearly identify the challenge (**what** problem) that your project will address and the generic research (**how**) that is required to solve it.

2. Project background

Identify past and current work in the subject area.

The project background clarifies the domain of your research project and explains to your readers the academic and practitioner research and thinking in the area. So, key to this section is your literature review of other people's work. This should include seminal publications from world experts in the domain.

Explain for the most relevant of these how your proposal relates to the ideas they contain.

You should explain how your proposal is different, that is, how it will differ from existing solutions (if they exist). Clarify who your project will be of value to and perhaps indicate how.

3. Project aim and objectives

Identify the aim of the project and what objectives you will have to achieve to successfully complete the project.

The title of this sub-section is project aim and objectives. These words have been very carefully chosen. They are aim (singular) and objectives (plural). You should have **one** aim and a **number** of objectives.

Your aim should clarify what the overall achievement is intended to be and should reflect the title of your dissertation. It will probably begin with something like, The aim of this project is to investigate …, or The aim of this project is to implement …, or The aim of this project is to create …, and similar expressions, like evaluate or compare & contrast, and it should reflect the overall deliverable of your dissertation. It should be clear from your aim that there are academic and practitioner advances in what you are proposing.

You should then have a list of measurable objectives. These are the activities or tasks that you will have to successfully complete in order to achieve your aim. Typically, they might include activities like what you need to research and/or what you need to learn.

You will revisit your aim and objectives again in sub-section 5 - Research programme, and sub-section 6 - Project deliverables, where each objective should have a corresponding work plan item and a deliverable.

You should also include any difficulties (enablers/inhibitors) that you are already aware of and explain how these might be solved.

4. Intellectual challenge

Identify the nature and form of the intellectual challenge.

The intellectual challenge is concerned with you discovering new ideas, or new ways of explaining, or thinking, or analysing, or understanding the topics of your research. Or, it can be concerned with devising and implementing some new solution to a problem. That is, the intellectual challenge can have an academic perspective or a commercial perspective. Both are valid. As the proposal is for an award in computing there should be some scientific emphasis in your intellectual challenge.

Use this sub-section to clarify why this project is attractive to you. You want to convince your proposal examiners that you will successfully complete your project, so, include any special interest, knowledge or skills that you have that you can build on to achieve success. If you have any appropriate experimental prototype work already completed mention that too.

Remember that detailed research is core to differentiating an MSc project from an undergraduate project. A well thought out intellectual challenge will convince your readers that you have a project proposal that is appropriate to an MSc award.

5. Research programme

Detail the methodology that you will use in the pursuit of the research and state the timescale involved.

Explain the research methodology that you will use.

You have a set period of time to complete your project so in this section explain how you plan to allocate time to the different objectives that you will have to achieve. Provide a stage by stage plan of the work for the project showing the activities to be completed as well as the milestones along the way. Remember to include some contingency time just in case your plan doesn't work out as you intended and you have to make adjustments. A Gantt chart which illustrates your plan will enhance your proposal.

6. Project deliverables

Provide a clear list of the outputs from the project.

The overall deliverable is your dissertation and any code that forms part of that. Your deliverable should also relate to your project objectives in Section 3. For each objective in your list of objectives you should have a corresponding item in your list of deliverables. The deliverable, both academic and commercial that should arise from the work should be clearly identified. For example, if you are hoping to create something new of an academic nature as your contribution to the body of knowledge you should indicate what you think that will be.

7. Resources required for the project

Detail the equipment which is essential to completing the programme.

List the resources you will need to successfully complete your project and dissertation. These should include Information and Communication Technology resources, library requirements, and access to academics or practitioners who you might need to contact. It is especially important that you use this sub-section to alert the School of Computing of any special hardware or software that you will need for your project.

References.

List all references that you have cited in your proposal document.

Your references are extremely important as they show your reader that you have completed sufficient preliminary research in the subject area and have identified the world experts in that area. So, there is no place for Wiki sources, and other Internet references must be from authoritative researchers in the domain. You will better convince your readers of your potential to succeed if you are referencing seminal publications and the most likely place to find these will be in the leading academic journals and conference papers. You should have a minimum of ten authoritative references in your proposal, 10% of which might be Internet references.

And once again, your proposal should be prepared and formatted in accordance with the style, recommendations and advice set out in *Crafting a Research Paper*. Since your proposal will be for something new, it is unlikely that you will already have a solution at this stage.

When preparing your proposal you should talk with your lecturers. They all have research interests and you'll find them extremely supportive of what you are about.