Guidelines in Preparing the Information Systems Capstone Project

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Introduction

This document is designed to help you get started with your Information Systems Application Project, one of the final requirements for you to earn your Master in Information Systems at UPOU. It is not exhaustive, as you can see, and in fact is a work-in-progress designed to grow and respond to your needs as you undertake IS 295.

To better prepare you for the work ahead, you first have to understand what graduate-level research is all about.

Graduate research is an academic activity whose distinguishing mark is "an original contribution to knowledge" (Chinneck, 1999). The manuscripts you prepare and the resultant Information System you produce for a target clientele are proof of your original contribution to knowledge. In your case, contribution to knowledge may come in the form of an incremental improvement in an area of knowledge, or the application of known techniques in a new area. Failure to prove that you have indeed made such a contribution generally leads to failure.

Now that you have that in mind, you are now ready to move on.

IS 295 is divided into 2 major undertakings: 295a and 295b. In 295a you are expected to come up with a project proposal that needs to be approved by your adviser and the Faculty of Information of Communication Studies before any subsequent work is started. Approval of your proposal does not necessarily mean that your work already is an original contribution to knowledge as described above. You are just halfway through, and any approval at this point means that your initial work shows innovative ideas and promise that may lead to that desired significant and original contribution.

IS 295b is where refinements to your original idea are done and where the actual information systems development takes place. This is the other half of the entire course and therefore the amount of time, energy, and other resources you need to get the job done is also roughly half the total amount of time required. The expected output is a bug-free Information System that will be stored in the open-source repository of researches and academic work of UP Open University.

The following section details the prescribed content of your project proposal. The outline is exhaustive insofar as the entire IS project is concerned, and it is expected that the same will be seen in your submitted proposal.
**Project Proposal**

Your project proposal should be representative of your ideas and the project of you are proposing. The following guidelines specify what you are to include in your proposal and suggest how you might present them.

**Cover Page**

The cover page should contain the following:

- Title (subtitle Optional)
- Name of Project Proponent
- Date Submitted

**Disclaimer**

The following disclaimer should appear on the page following the cover:

“This project is submitted to the Faculty of Information and Communication Studies in partial fulfillment of the requirements for the degree Master in Information Systems at the University of the Philippines – Open University, Los Baños, Laguna. It is the product of my own work except where indicated in the text. The project report or any portion thereof including the source code or any section may be freely copied and distributed provided that the source is acknowledged.”

**Acceptance Sheet**

The acceptance sheet should contain the following:

- Introductory paragraph

  This project proposal entitled “<Insert the Title of the Proposed Project Here.>” submitted to the Faculty in Information and Communication Studies, University of the Philippines – Open University, Los Baños, Laguna in partial fulfillment of the requirements for the degree Master of Information Systems is hereby accepted.

- Signature of Adviser
- Date
- Signature of the Dean
- Date
Abstract

This section gives an overall view of your project in not more than 300 words. The contents must mention the following:

- The project output;
- The problem domain;
- The project output (What you propose to develop);
- Objective and significance of the project;
- Identity of project sponsor;
- Description of setting and institutional background;
- Description of the system development process you plan to follow;
- Design Studies you plan to do during development; and
- Proposed project assessment scheme.

I. The Problem Domain

This chapter should be able to elaborate on the following sections in not more than 900 words:

A. Statement of the Problem
   1. What your project will address

B. Background and Objectives of the Project
   1. What initiated the project. Could be:
      a. Current relevant institutional gaps
      b. Improvements/enhancements to the current running systems
      c. Requests by users/clientele for systems development initiative

C. Significance and Scope of the Project

D. Documentation of Existence and Seriousness of the Problem
   1. Documentation of current system/s (if any)
   2. Problem/s identified with the existing systems
   3. Process models of existing systems contributing to the problem
   4. Data models of these existing systems
   5. Data (or any form of statistics) that may be relevant to prove existence and seriousness of the identified problems
II. Review of Existing Alternatives

This chapter should be able to present the following in not more than 600 words:

- Description of how users/clientele currently cope with the problem.
- Assess the best available resources for addressing the problem.
- Describe how you propose to take advantage of existing and current best practices in your project.

III. Approach to be taken in this subject

This chapter should be able to present the following in not more than 900 words:

A. Theoretical Framework
   1. Information Systems theories you intend to use
   2. Systems design principles you intend to use. These include relevant process and data models

B. Rationale for the framework
   1. How it fits the problem domain and goes beyond the existing alternatives

C. Technologies you plan to consider or use
   1. Why these technologies are appropriate
   2. What they add to the most promising existing alternative

IV. Project Plan

This chapter should contain the following sufficient detail within 1200 words:

A. Concept
   1. Description of the design as you currently envision it
   2. Process model, data model, and other schematics to visually present your concept.
   3. List of key features of the proposed design with brief explanation and rationale for each feature.

B. Methods
   1. Brief description of the methods you will use to develop the project. Include all important steps you have taken and plan to take such as:
      a. Design studies
      b. Review of existing systems
c. Literature review
d. Assessment of existing alternatives
e. Production of prototypes
f. Tryouts of prototypes with users
g. Development of assessment instruments
h. Analysis of assessment data
i. Revision of prototypes
j. Preparation of final project documentation/report

C. Plan for user testing and project assessment
1. How will you determine if the problem identified has been successfully addressed?
2. What questions do you plan to focus on answering?
3. What kinds of evidence will you collect?
4. What methods of inquiry will you use to collect this evidence?
   What users, occasions, treatments, and outcomes will you study?
5. How will you analyze and interpret your findings?

D. Plan for collaboration (For collaborative projects only)
1. How will the work and responsibilities by divided?
2. How will individual contributions be integrated into the group product?

V. References

This chapter contains the list of articles, books, and websites that will be useful to this project.

VI. Appendices

This chapter contains any material that impedes the smooth development of your presentation, but which is important to justify the initiation and the subsequent results of the project.

A. Deliverables and Milestones
1. Proposal
2. Prototype
3. User testing and assessment plans
4. Report of results from user testing and project assessment
5. Suggestions for revisions of the prototype for the next version
B. Budget

C. Qualifications
1. Knowledge, skill, and experience you bring to this project.
2. Brief summary of accomplishments that shows your preparation for undertaking this project.
3. Learning agenda: Knowledge, skill, and experience you plan to gain during your work on this project.
4. Educational background

C. Contributors / Collaborators
1. Others who will bring additional knowledge, skill, and experience to the project.

E. Resources
1. List of resources needed for the project, including access to technology, project sites, testing environment, materials, and others.

Style and Layout of Project Proposal

This is scientific work and therefore all writing involved must follow a “dissertation-style” of writing. Following are some general tips that may be of help to you:

- Always keep the reader's background in mind (Chinneck, 1999). Put in mind the expected audience and stakeholders of your project. The expected ones are your professors, and your target clientele. Once you have the mental picture, imagine that you are explaining your ideas directly to that person or to the group.
- Dissertation-style writing is not designed to be entertaining, nor is it a story. Avoid flowery rhetoric and/or lengthy philosophical discourses. Go straight to the point.
- Writing must be clear and unambiguous.
- Write using the third person's point of view. Only in the preface (if any) is a first person's point of view allowed.
- Terms must be consistent throughout the document. Do not use two or more terms to refer to the same idea. You will end up confusing which would result to outright rejection of your proposal.
- Information presented in figures/tables/graphs must have preceding introductory paragraphs. Following the figure/table/graph, make sure that you discuss it.
- Figures/Tables/Graphs where no discussions can be made, or the inclusion of which may derail the flow of discussion must be relocated to another section or may be placed in the Appendices.
- Terse sentences are encouraged rather than long expository ones.
• Avoid phrases like “Clearly, this is the case..”, “Obviously, it follows that...”, et cetera which imply that if the readers do not understand, then they must be stupid (Paraphrased from Chinneck, 1999).

• Stay away from getting your opinions on paper. Make sure that literature or the solution you have presented should substantiate whatever claims you make.

• Logical organizations. The structure and flow of your manuscript is very important. Remember, each paragraph begins with a topic sentence and the entire content of the paragraph must relate to this topic. Paragraphs must follow a logical sequence.

• Before submitting your work, in any form, to your adviser for perusal or for approval, make sure that it has been edited for any grammatical, spelling, and punctuation errors, or any composition-related shortcomings. You may also subject it to professional scrutiny by somebody who is from the ICT industry to check for proper word/term usage.

**Final Project Documentation**

The chapters of the project proposal constitute the first chapters of the final project documentation. Insert an Acknowledgment page before the Abstract and a Table of Contents after the Abstract.

Rewrite the chapters in your proposal from future tense to past tense and insert the following chapters before References.

1. Results and Discussions
2. Conclusions

Include any additional references that helped you complete the project to your existing list. (You may also do some editing of your document to streamline the presentation of ideas and substantiate the weaker spots.)

For the Appendices, insert the following:

1. **Complete program listing**
   - The program listing must be complete such that compilation of the source code would lead to fully functional computerized system
   - Any 3rd party tools embedded or used in the development of the computerized system must be fully and completely documented.

2. **Technical reference**
   - Final system specifications
     - Hardware
     - Operating Systems
• Programming Language
• Server applications used
  • Maintenance plan for the software system
    o List of the location and content of all relevant files and instructions for installing, compiling, and configuring the software
    o Dependencies on hardware and software systems should be described

3. User manual
  • User manual must empower the intended users/clientele to use the system with minimal to no technical support.
  • Screen shots must be captured and embedded in the document to facilitate faster assimilation of the inner workings of the system.

4. Tables and figures
  • Verbose enough to impede the smooth flow of discussions in the main body of the project documentation.

Assessment Guidelines

The following guidelines are adopted from the General Guidelines and Dissertation Guidelines to Masters Dissertation of the University of Skovde, Sweden. (http://www.ida.his.se/ida/kurser/dissertation/)

General Assessment Criteria

The following are overall minimum requirements for passing IS 295.

• There must be evidence of the student's ability to relate the subject matter of the Information Systems Project to the existing body of knowledge in the field;
• There must be evidence that the student has undertaken an individual systematic research on Information Systems theories and other relevant Information and Communications Technologies leading to a working Information System that addresses the identified organizational gaps;
• There must be evidence that the student has performed an individual formal systems analysis and design, and subsequent development of a computerized Information System.
• There must be a satisfactory level of literary presentation.
Specific Assessment Criteria

The following are specific evaluation criteria (used where appropriate):

1. **Understanding**
   - The extent to which the basic issues and arguments relating to a topic have been grasped and placed in the general context of the chosen field.
   - The field should be clearly within the areas covered by the Master in Information Systems program, or in some clearly defined overlap.
   - Selection of appropriate Information and Communications Technologies that support the identified solutions to identified organizational gaps or problem areas.

2. **Coverage**
   - Inclusion of the appropriate material and exclusion of the irrelevant material so that:
     - The research context of the project is clearly located;
     - Previous problems and solutions to the problems raised are adequately described at a detailed as well as general level.

3. **Organization**
   - Conformance to the prescribed documentation format.
   - Referencing which makes clear which elements are attributable to the work of others and which are attributable to the student.

4. **Reading Base**
   - Evidence of focused reading.
   - Evidence of exhaustive background study leading to project initiation.

5. **Use of English**
   - Good, clear, accurate English expression.

6. **Judgment**
   - Capacity to arrive at reasoned and principled conclusions, both when analyzing the problem and when presenting solutions.

7. **Synthesis**
   - The capacity to bring together a variety of ideas and research and development outputs to form them into a coherent research and development project manuscript.

8. **Insight**
   - The capacity to make meaningful and novel contributions based on information gathered.
• The capacity to enter and take on board the point of view of other people as well as generate hypothetical points of view.

9. Critical Analysis
• The capacity to exercise judgment and insight to arrive at independent, sustainable solutions.

10. Software System Accuracy
• The software system has matched the needs of the intended users/clientele reflected in the preliminary analysis and system design.
• The software system has outstanding passing results in unit/integration/systems tests.

11. Software System Reliability
• The software system produced must work the first time every time within a guaranteed reliability period and within the prescribed operating environment.
• Disaster control and recovery procedures, and underlying mechanisms must be incorporated in the software system design and associated documentation.

The preceding 11 evaluation criteria are characteristics of persons able to pursue independent academic Information Systems development initiatives. That being said, therefore, all of the identified evaluation criteria are of independent and equal importance, and are rated as either S (Satisfactory) or U (Unsatisfactory). For you to pass, you need to exhibit sweeping satisfactory performance.

About Proprietary Ownership of Results

The results of the Master's Project are public domain. This means that anyone who requests to see the project results, in general, will be allowed to do so. This can be a problem for a student who completes a Master's Project for an organization that wishes the results to remain proprietary.

If you happen to fall into the category just described, it is encouraged to discuss and settle the issue prior to committing to the project. If the project results will contain software or concepts that an organization will claim as proprietary, then the project is not an acceptable Master's Project. Any settlements facilitating the continuance of the project should be reflected in an official document and included in the appendices.
References


**Hints for Research Students.** http://www.virtospheres.de/schillo/research/tips.html


Keoford, P.E.


**Master's Project Guidelines: Guidelines for Computer Science Masters Projects.** http://www.cs.rpi.edu/grad/MSProj.html

**Msc.I.T Project Guidelines 2001.** http://nick.dcs.qmul.ac.uk/~ohearn/MScIT_Projects/


**Writing the Research Proposal.** http://nsm1.nsm.iup.edu/rgendron/proposal.shtml
Presumption of Innocence also holds true in Computer Science and stated in the (recursive) corollary: Any software released is bug-free unless proven otherwise, in the latter case, appropriate corrections need to be done to ensure that the software now becomes bug-free.

This is the proposed standard to be evaluated by the Faculty of Information and Communications Studies of the University of the Philippines – Open University.

May be taken in the context of any preliminary design / proof of concept that is intended to orient the user/clientele of what outputs are expected from the project.