Nanyang Technological University
Division of Information Studies
MSc Project – Design and Development of Information Systems

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Outline of Presentation

- Introduction
- Information System Development Life Cycle
  - Phase 1: Inception Phase
  - Phase 2: The Elaboration Phase
  - Phase 3: The Construction Phase
  - Phase 4: The Transition Phase
- Writing of Dissertation
- Some Tips/Advice

Introduction (1)

Information Systems are concerned with processing of information – it is a subset of software systems which is more generic, general and can include interface to external peripherals.

Can involve:

Developing systems from scratch

Developing a prototype or add-on to test out various research issues

Introduction (2)

Can involve (continued):

Developing APIs to achieve new functionality of a system

Developing a web site (i.e. sourcing for content, organising it and use existing tool to author the system), etc.

Developing a new GUI for an existing application

Introduction (3)

Normally uses one of the following to develop IS:

Programming using 3rd generation languages (e.g. C, Java, Visual Basic)

High level languages (e.g. 4GLs, scripting technologies (ASP, databases))

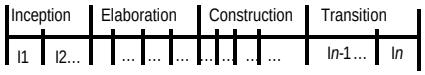
Tools/information products (Web/GUI authoring (e.g. MS FrontPage, Dreamweaver), information retrieval systems (e.g. dtSearch , DBTextWorks)

→ Can therefore be technical or less-technical but expect some aspect of IT

Information System Development Life Cycle (1)

Different methodologies available to describe life cycle of IS development work.

They basically comprises four phases: Inception, Elaboration, Construction, and Transition.



Each phase may contain iterations, *Ij*, with deliverable.

Information System Development Life Cycle (2)

Phase 1: Inception Phase

Idea of IS is first hatched. Idea may be initiated by you, your supervisor, or from a review of literature.

Discuss this idea or proposed IS with your potential supervisor for some preliminary advice. Further fact-finding is usually required (see Phase 2).

Information System Development Life Cycle (3)

Whatever the case, an initial proposal must be initiated with justifications. The proposal should include (among other things) information such as:

Purpose of the system (What?)
Proposed methodology (How?)
Project team (Who?)
Schedule estimate (When?)
Return of Investment (Why?)

Information System Development Life Cycle (4)

Phase 2: The Elaboration Phase

Information or requirements of the proposed IS are usually vague/brief at this stage.

Obtain more details to get a better understanding of the system.

Normally ends with:
Major or significant risks identified or with sufficient understanding gained

Information System Development Life Cycle (5)

Cost estimates in terms of effort

An agreed plan for construction

A candidate system architecture – identification and specification of sub-systems

With this, prepare and submit your Project Proposal to your supervisor for endorsement and registration. (Refer to existing guidelines for preparing the Project Proposal). Sometimes Phases 1 and 2 are combined as one activity.

Information System Development Life Cycle (6)

Phase 3: The Construction Phase

The development of the IS goes through a fairly standard series of activities:

Requirements Analysis → Design → Implementation → Testing

Requirements Analysis

RA elicits user requirements through both qualitative and quantitative techniques.

Information System Development Life Cycle (7)

Qualitative technique examples: brainstorming, interviews, focus group, observations, etc.

Quantitative techniques examples: surveys, formal specifications, etc.

IS requirements expressed different based on methodology (e.g. Data Flow Diagrams, Use Case Diagrams).

Develop Software Requirements Specification (SRS) document after verifying and confirming users' needs.

Information System Development Life Cycle (8)

Design

Transform the software requirements into a form that can be readily implemented or coded with a suitable programming language/set of tools.

Involve defining data structures (data design), program structure (architectural design), user - interface (user -interface design) and algorithms (procedural design).

Information System Development Life Cycle (9)

Alternatively, design the web site to be developed, etc.

As such, the work involved in this stage will depend on the nature of the IS to be developed.

Develop Software Design Specification (SDS) document at the end of activity to record the various design considerations and final choice of design.

Information System Development Life Cycle (10)

Implementation

Involves translating the design (i.e. coding) to yield the IS.

Use the defined appropriate programming language and/or tools for developing the IS.

Carry out the actual IS implementation.

Information System Development Life Cycle (11)

Testing

Achieve IS quality control through testing. Provides a means of verifying the developed IS conforms and satisfy requirements.

Uses various testing techniques: white box testing and black box testing, etc.

Information System Development Life Cycle (12)

Develop and implement a test plan (test strategy) to systematically test and verify the IS.

Can involve usability testing for the IS and/or use of qualitative and quantitative techniques.

Hands-on project work normally ends here followed by Dissertation reporting.

Information System Development Life Cycle (13)

Phase 4: The Transition Phase

Refers to the phase after the release of the IS beta-version till the release of the final version. Normally not done in your project due to time constraints.

Involves fine-tuning, enhancement, code optimization, bug fixing, minor enhancement to functionality, etc. No major overhaul or redesign is envisaged during this phase.

Writing of Dissertation (1)

Chapters follow very closely that those prescribed in guidelines. The general contents of dissertation chapters for a typical IS project includes the following 6 chapters.

This is a guide only and the actual dissertation chapter headings/contents may vary due to the different nature of the IS developed.

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Writing of Dissertation (2)

Chapter 1 Introduction

– provide background and context information, introduce the problem, state the IS objectives, significance or usefulness of the developed system. (i.e. Why, What, When, How, etc.)

– use your SRS to assist in writing the chapter.

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Writing of Dissertation (3)

Chapter 2 Literature Review

-carry out and report a review of the related literature pertaining to your project. Involves reviewing other similar IS and describe special features (e.g. UIs, architecture, databases, programming languages, standards used, etc.).

-Provide summary of LR at the end of chapter.

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Writing of Dissertation (4)

Chapter 3 Systems Analysis and Design

-provide pertinent information about your proposed IS. Include aspects of RA, SA and SD output information (e.g. data flow, dictionaries, architecture, structure charts, database schema, languages, etc.)

– use your SRS and SDS to assist. These can also be part of an Appendix.

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Writing of Dissertation (5)

Chapter 4 System Implementation

-provide implementation details of your IS. May involve the description of system workflow.

-Highlight important features/functions/techniques. Use sample screen dumps with call-out boxes (if necessary) to explain the IS functionality.

-Do not include a User Guide here – put it into the Appendix (if required).

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Writing of Dissertation (6)

Chapter 5 System Testing

-provide information on the test plan, tests carried out, and results. Report on the Why/What/How/Who/When, etc. aspect of the tests.

-May include aspect of both qualitative and quantitative testing in addition to testing for IS correctness.

-Discuss problems faced/resolution process and other important issues (if applicable).

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Writing of Dissertation (7)

Chapter 6 Conclusion

-provide a summary and conclusion of what you have achieved. State if the project objectives are met (fully, partially?), document important lessons learnt, elaborate on future work or extensions to the developed IS.

-Avoid making very general statements but try to provide examples of how future work can be achieved.

Some Tips & Advice (1)

Having some background in the tools that will be used/familiarization of the IS environment would be beneficial. Choose a project that can be handled comfortably by you.

Choose from the recommended list of Group A and B electives pertaining to the Information Systems concentration to provide you with the fundamental and working knowledge in developing IS.

Learn and apply what you learn in your project!!

Writing of Dissertation (8)

References

Insert a list of all references using the APA citation style.

Appendices (if applicable)

Insert all supplementary information (e.g. survey questionnaire, evaluation task sheets, user guides, etc.)

Some Tips & Advice (2)

Scope your work carefully to ensure that the IS to be developed is realistic and not overly ambitious. It must be doable! Seek the advice of your supervisor if in doubt.

Derive a realistic time-frame to carry out the various activities of the IS development cycle.

Keep your supervisor informed or your progress and/or when problems occur or are anticipated. Be honest and open.

Writing of Dissertation (9)

Appendices (cont)

SRS and SDS

Insert a CD-ROM of your IS (check with supervisor). Include installation information, other requirements, user guide, test data sets, expected test results, source codes, etc.

For more information ..

For comments or more information on this module, please contact:

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