Large Scale Systems Design
G52LSS

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http://www.cs.nott.ac.uk/~calv/G52LSS/G52LSS.html
With thanks to Dr Dario Landa-Silva for ppt slides etc

Lecture 1 – Introduction

- Overview of the Module
- Systems Analysis and Design

Learning outcomes: understand purpose/scope/administration of the module; describe the SDLC and role of systems analyst; identify types of information systems.

Overview of the Module

Aim of the Module

Achieve an understanding of tools, techniques and guidelines for analysis and design of large scale software systems.

Have an insight into the generation, undertaking and management of software development projects.

Acquire the skills for effectively:

- analyse large systems requirements
- design process models, data models, process specifications
- understand soft issues for effective project management

Module Contents

Tools, techniques and guidelines for project management and for systems analysis and design are explained and illustrated with examples and case studies.

- Introduction
- Large Systems Development
- Rapid and Agile Development
- Project Initiation
- Project Management
- Project Scheduling with PERT
- Critical Path Methods
- GANTT Charts and CPM
- Project Re-scheduling

Module Contents (cont.)

- Requirements Analysis
- Information Gathering Methods
- Defining Systems Requirements
- Use Case Analysis
- Process Modelling with DFDs
- Constructing DFDs
- Validating DFDs
- Process Specification
- The Design Phase
- Implementation and Maintenance
Teaching Activities
- Monday 12-13 hrs in B52-JBCSOUTH, Friday 15-16 hrs in LT3-JBEXGE
- Notes for the lectures are available from the following url: http://www.cs.nott.ac.uk/~cah/G52LSS/G52LSS.html
- Students are also expected to take notes in class
- Exercises and extra notes will be available for some lectures

Reading List
http://www.nottingham.ac.uk/Is/gateway/readinglists/

Other Resources
- Additional reading will be provided for some topics
- MS-Project for PERT, CPM and GANTT
- CASE Tools for drawing diagrams

Assessment
- Written examination (60%), multiple-choice style
- Coursework (40%), team assignment and involves an exercise on Project Planning and Analysis
- Details will be given in the module web page

Systems Analysis and Design
Information Systems
Information is an important factor in determining the success of business.

Decision makers must manage information effectively and efficiently in order to maximise its usefulness.

Managing large amounts of computer-generated information is particularly important.

There are various types of information systems, each one is aimed at supporting a specific level of decision-making in the organisation.

- Transaction processing systems
- Office automation systems
- Knowledge work systems
- Management information systems
- Decision support systems
- Knowledge-based (expert) systems
- Group decision support systems
- Collaborative work systems
- Executive support systems

Operational support
Knowledge support
Management support
Strategic support
Exercise 1.1 Determine what is the most likely type of information systems for the following:

- System to help a bank loan officer to verify the credit of a loan applicant or an engineering firm that has bids on several projects
- A networked system in an advertising agency to prepare written communications and strategic planning including electronic publishing, image processing, office management
- An idea generation program to allow group participants to simultaneously and anonymously exchange ideas on a specific question proposed to the group
- A system used in a hospital to diagnose infectious blood diseases and recommend antibiotics

Exercise 1.1 (cont.)

- A CAD application to design new products or improve old ones
- An order-entry system used by staff at the counter in Argos
- A web application used by a consultancy company so that developers, analysts and management staff can share information to perform their jobs
- A system providing a shared window of the same drawing displayed on various networked computers for architects to collaborate in the design
- A software system that enables ESSO to set the optimal price at each of their Petrol Stations

The Systems Development Life Cycle

Systems analysis and design (SAD) refers to the use of tools and the application of techniques, guidelines and approaches to develop computer systems more effectively and efficiently using (among other optional methods) the four phases of the Systems Development Life Cycle (SDLC).

The traditional SDLC

The primary goal of systems analysis and design:

There are 4 major undesirable consequences of not using adequate SAD when undertaking software projects of considerable size.
**The Systems Analyst**

The key player in the SAD process, being a systems analyst involves:

- Analyse the situation
- Identify opportunities for improvement
- Set objectives (£ for the organisation)
- Design the information system

The systems analyst is a **problem solver opportunist:** it makes a **continuous assessment** of the performance of the organisation and its processes.

**Being a systems analyst is interesting, exciting, challenging and requires a number of different skills.**

- Self-motivation
- Professional ethics
- Self-discipline
- Creativity
- Problem solving skills
- Communication skills
- Team-working skills
- Good understanding of technical developments

The systems analyst frequently acts as: consultant, supporting expert, agent of change.

**Exercise 1.2** Identify the main differences between being a Systems Analyst and being a Project Manager with respect to job description, responsibilities, required knowledge and skills, typical salary, etc. For example see www.prospects.ac.uk and online job adverts (maybe with different position names).

**Additional Reading**

Chapter 1 of (Dennis, Wixom and Roth, 2006)

Chapter 1 of (Kendall and Kendall, 2005)

**A Practical Approach to Recognizing and Improving Competencies in your Business Analyst.** Report from the British Computer Society. Available at the following url:

http://www.bcs.org/server.php?show=ConWebDoc.4643