Chapter 30
Information Systems and Software Development

Arshad Siddiqi
Institute of Business Administration, Pakistan

ABSTRACT

Information Systems are complex systems; the development of the Information Systems according to the business needs is a very tedious and time consuming task. These business applications, whether designed to be performed as a single task or intended to be used company-wide, integrated system, must be designed specifically for the company's unique culture, needs, objectives, and goals. Thus, the developing team must be very clear about the users, user needs, corporation goals, time frame, and financial resources allocated to the to the development project. While the Information Systems are to be using the most advanced development tools and methodology, it must be simple for the users to understand, comprehend, and use they should be capable of performing all the functions necessary to perform a tasks efficiently. While the software should be comprehensive and state of the art, it should not be unduly cumbersome. Careful attention must be given during the development process that the software system should be both functional and efficient; one must remember that an Information System is actually a combination of various software systems which are self-contained top perform specific activities on one hand and to be able to interact and perform effectively with the other software systems. Combined, these software systems become the Information System.

INTRODUCTION

Information Systems Development Life Cycle is the basic essence of the successful, timely and cost effective development of an information system. The development process goes through a number of distinctive steps from the conception of information system till the implementation; thus it's called ISDLC or Information Systems Development Life Cycle.

DOI: 10.4018/978-1-4666-4301-7.ch030

BACKGROUND

The operational computers came into being in 1940s which were very slow and had very limited

memory capacity, thus the programs were written in the Assembly Language. Assembly language was very tedious, error prone and took a lot of time and effort. Some initial languages were developed like Plankakul, ENIAC Coding System, BINAC for UNIVAC. This was the time when each instruction set was developed specifically for a manufactures and could not be used on any machines of other manufactures.

The first three modern programming languages were developed in 1950s and 1960s interestingly enough are still in use today in more advanced shape and with additional features.

These languages are:

- **FORTRAN (1955):** The "FORmula TRANslator", invented by John Backus *et al.*
- **LISP (1958):** The "LISt Processor", invented by John McCarthy *et al.*
- **COBOL (1959):** The COmmon Business Oriented Language, created by the Short Range Committee, heavily influenced by Grace Hopper.
- **ALGOL 60 and ALGOL 68:** "ALGOrithmic Language" for Burroughs large systems.

See the Appendix for the list of Language development after these initial languages.

Information System Development Process

There are various Development Processes which can be followed and deployed effectively to develop the Software Systems. We will explore some of them in this chapter.

Software Development Life Cycle: SDLC Model

Every software development process includes the phases of Planning, Designing, coding and testing before it can be implemented for operation (see Figure 1). Thus all SDLC goes through several initial phases:

- Requirement gathering Phase
- Designing Phase
- Development and Implementation Phase
- Testing/Modification Phase

Requirements Gathering Phase

During the Requirements Gather Phase, the needs of the organization are outlines by the developer; this includes extensive interviewing of the organization's stake-holders, managers and other users and in Marketing Organizations even the clients are considered and stake-holders. The wish-lists are gathered and tabulated into; far-fetched, must-have, good-to- have and future-needs. These are converted into the features of the software and it is expected to do, what type of date is to be processes, how the data would be accessed and handled; what type of reports are needed, in what frequency. How many auto generated reports, on-demand reports and occasional reports?

Software Development Phase

I this phase the Development Team goes through determining the listing of the feature and functions of the system. The wish-list is converted into the

Figure 1. Software development life cycle: SDLC model