



OMBA 5314

MANAGEMENT INFORMATION SYSTEM

## Topic 11: Building ISs

### Learning Outcomes

By end of this topic, you should be able to understand:

- The systems development lifecycle
- Systems development methodologies
- The new approaches

#### 11.1 The systems development lifecycle

In the previous discussions, it was established that management information systems introduce an extent of organisational change. Structurally, aims at attaining four kinds of transformations; (1) Automation (2) Rationalisation (3) Business process reengineering all these have different advantages and shortcomings.

**Automation.** Automation is the introduction of technologies to replace human enabled activities. The focus is enhancing efficiency in how tasks are done.

**Rationalisation.** This approach builds on automation, after identifying challenges arising from the automation process. The concept implies the evaluation of processes by reorganising resources in order to enhance its efficiency.

**Business process reengineering.** Business process reengineering evaluates existing processes and identifies how they can be rearranged or if new tasks can be included to better produce specific business outcomes. For example, for an airline company, the business can move all check process online to minimise the contact time between the passenger and the staff. BPR efforts fail 70 per cent of the time. What if any aircraft would start only 30 times out of a hundred, would you be able to have confidence in flying anywhere? The main reasons for this failure are inadequate planning, lack of understanding of the change complexity and the expectation that any change takes longer to implement.

All these options endeavours are enabled by different types of systems which can be developed inhouse or outsourced from good system development companies. In order to determine which system to implement, a systems analysis is carried out, followed up by other steps until the final system is implemented by a business. The summary of the procedures is given in the following table.

<b>Activity</b>	<b>Function/Outcomes</b>
Systems analysis	Problem identification Propose solutions Determine system requirements- what functions will the system have?
Design	Specify the system functions
Programming	Convert the specifications into a set of software or program code
Testing	<ol style="list-style-type: none"> <li>a. <b>Implement unit testing</b> – this is testing each set of software code (instructions) separately.</li> <li>b. <b>Implement systems testing</b>- consolidates all the software code and runs the entire system to determine whether it works as intended.</li> <li>c. <b>Implement user testing</b> – the potential users verify the friendliness of the system and whether the experience enables.</li> </ol>
Implementation	<p>The actual implementation of replacing the old system with the new one, which can be phased. The implementation has to be planned, documented and users trained.</p> <ol style="list-style-type: none"> <li>a. Pilot- the first trial run as the business notices potential challenges before the full roll out.</li> <li>b. Full roll out- when the entire system is implemented where it is intended.</li> </ol>
Production and maintenance	Operating the system, evaluating the system through and respond to the needed modifications.

## 11.2 Alternative methods for building information systems?

It is important for every business to be able to understand the approaches appropriate for building ISs. Two alternatives can be considered.

### Traditional Systems Life Cycle

The **systems life cycle** is utilised for complex projects but not so much on small projects. The approach is costly, takes time and does not facilitate experts from different fields. In addition, the user is not included in the development and implementation stage of the system development process.

## Prototyping

*Fast, cheap, user-centered.* **Prototyping** is the most flexible and user centred approached to IS design. It includes the people who are to use the system in the design process allowing their buy-in at the early stage overcoming the likely resistance at the implementation stage. However, the users have to understand what they need for the approach to work, that way they can they say, “This might work” or “this is better”. The prototyping process is also iterative, with a lot of back-and-forth between developers and users as they interact continuously giving constant feedback to ensure the right system. For this reason, prototyping is applicable for both small and large complex projects.

### Steps in Prototyping

There are four steps to prototyping which are not necessarily isolated but continuously iterate.

- Step 1: Be inquisitive – Ask a lot of questions.
- Step 2: Outline an informal flowchart and decision points.
- Step 3: Ensure users make sense and try each component of the new system.
- Step 4: Keep repeating the asking, the review of outline and the testing by the users. This ensures whatever is being developed fits into the user requirements.

### Summary

The necessity of successful management transformation, as well as parts of the systems development lifecycle and techniques, were highlighted in this chapter. The discussion then progressed to a discussion of innovative ways to constructing information systems.

KEY TERMS	
✓ Classical model	✓ Traditional Systems Life Cycles
✓ Behavioral model	✓ Prototyping

### SELF- LEARNING RESOURCES

1. Leau, Yu Beng, et al. "Software development life cycle AGILE vs traditional approaches." International Conference on Information and Network Technology. Vol. 37. No. 1. 2012.

## **SELF-ASSESSMENT**

### **Tutorial Questions**

1. Compare and contrast the classical model and the behavioral model of management and their relationship with IS and decision support systems
2. Discuss two management strategies for creating business intelligence and business analytics capabilities.

### **Podcast/Videos**

#### **Video 1: IBM BPM Business Process Management Customer Story**

**<https://www.youtube.com/watch?v=u-pSk9lln50>**

#### **Case Study Analysis: Singapore Sports Institute**

Based on the Singapore Sports Institute answer the following questions:

1. Identify the technologies utilised by SSI? What were they utilised for?
2. Discuss how this technology worked in favour for Team Singapore's performance at the SEA games.
3. Search the web for SimulCam and StroMotion. Explain how these tools are essential for visual analysis.

### **Essay Questions**

1. What are the different decision making levels in the modern business? How are these and their interests served in the business intelligence environment?
2. Are these changing with the different business models? Give the different example

