

INF700

IT

for

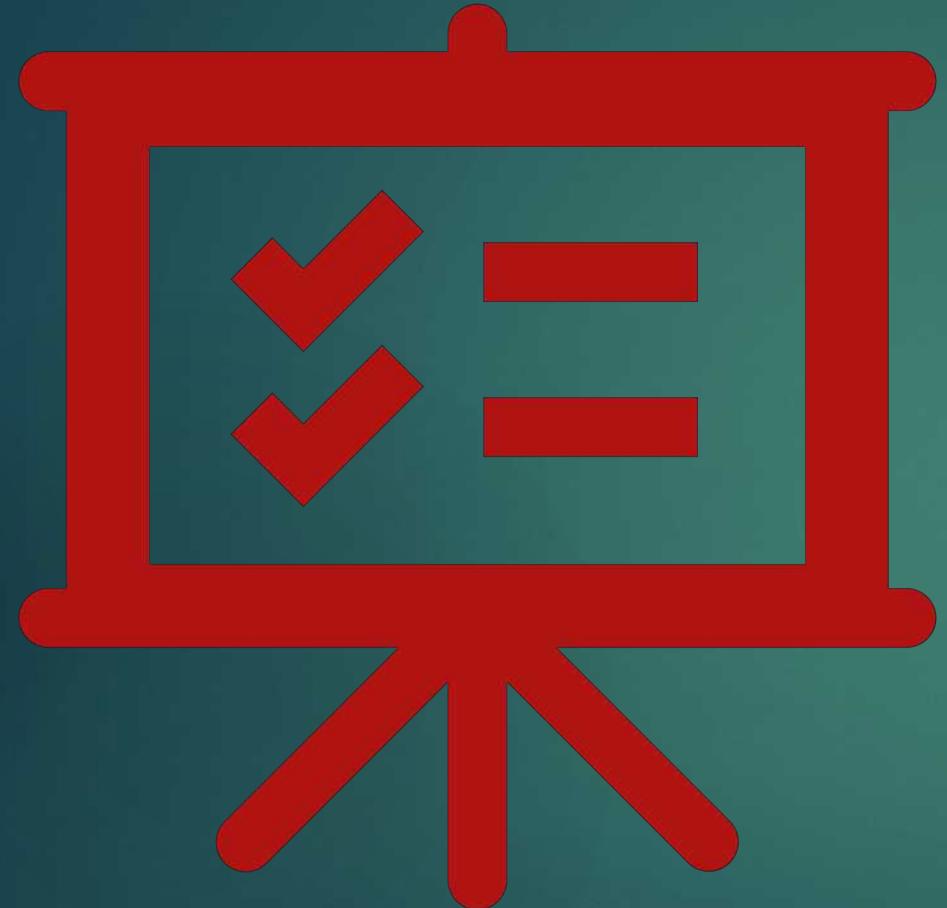
**Business and
Management**

www.andrewsai.com
11/04/2019

ANDREW ADJAH SAI

CIMA ADV DIP MA, MBA [INFORMATION SYSTEMS], PHD [MANAGEMENT SCIENCE] CANDIDATE

www.andrewsai.com



Module 3 -
13.04.2019

BIS Design, Build &
Implementation

BIS Design

What is BIS Design (systems design)?

- ▶ The design phase of the lifecycle defines how the information system will operate.
- ▶ This is defined in a design specification.
- ▶ The design specification is based on the requirements collected at the analysis stage.

Aim of Systems Design

In systems design, we are concerned with producing an appropriate design that results in a good quality information system, that is

1. Easy to use
2. Provides the correct functions for end-users
3. Is rapid in retrieving data and moving between different screen views of data
4. Is reliable
5. Is secure
6. Is well integrated with other systems

Constraints on Systems design

System design is constrained by:

- User requirements specification (the result of the systems analysis)
- Environmental constraints, including
 1. Hardware platform (PC, Apple or Unix workstation)
 2. Operating system (Windows, MAC OS, Unix, etc)
 3. Data links required between the application and other programs or a particular RDB such as Oracle or MS SQL Server, etc.

Constraints on Systems design

System design is constrained by:

1. **Design tools such as CASE tools**
2. **Methodologies or standards adopted by the organisation, such as SSADM**
3. **Systems development tools or development environment for programming, such as MS Visual Studio**
4. **Number of users to be supported and performance required.**

CASE: Computer-aided software engineering

SSADM: Structured Systems Analysis & Design Method

Relationship between Systems Analysis & Systems design

- **Analysis** is focused on the logical representation of data or processes
- **Design** is focused on physical representation

For example, Data analysis

- The analysis phase will be, to gather information to develop an entity relationship diagram
- The design phase will be transforming the diagram into a physical database table definition

Elements of Design

1. **Top-down:** starts with specifying the **overall control architecture** of the application before designing the individual modules.
2. **Bottom-up:** starts with the design of **individual modules**, establishing their input and outputs, and then building an overall design from these modules.
3. **Validation:** It's a **test of the design** to check that the design **fulfils the requirements** of the business users, defined in the requirements specification.
4. **Verification:** It's a test of the design to ensure that the design chosen **is the best available and that it is error-free**

Elements of Design

1. **Scalability:** the potential of an IS, piece of software, etc., to **move from supporting a smaller number of users to a larger number** without a marked decrease in reliability or performance.
2. **Data modelling and process modelling:**
 - **Process modelling:** involves the design of different modules of the system, each of which is a process with clearly defined inputs and outputs and a transformation process. **Data flow diagrams are often used to define processes in the system.**
 - **Data modelling:** involves considering how to represent data objects within a system, both logically and physically. **The entity relationship diagram is used to model data.**

BIS Build & Implementation

What is BIS Build?

- ▶ The **creation of software** by programmers involving:
 - ❖ **programming**,
 - ❖ **building release versions** of the **software** and
 - ❖ **testing** by programmers and end-user.
 - ❖ **Writing documentation** and **training** may occur at this stage.

What is a **BIS** implementation

- ▶ Involves the **transition or change-over from the old to the new** and the preparation for this such as:
 - ❖ Making sure the **hardware and network infrastructure** for a new system are in place;
 - ❖ Testing the system and also **human issues** of how best to educate and train staff who will be using or affected by the new system.

What Occurs at the Systems Build Phase (Key systems build activities)

System Development: **this involves programming and testing mainly.**

Tools for developing systems:

- **3rd-gen languages (3GLs):** Basic, Pascal, C, C#, C++, COBOL, FORTRAN (involves writing programming codes)
- **4th –gen languages (4GLs):** They avoid the need for programming.
- **Visual development tools:** Microsoft Visual Studio, Visual Basic, and Visual C++ (interactive environments). [Examples](#)

Assessing Software Quality

Some Questions about Quality

- ▶ Does the **product work**?
- ▶ Does it **crash**?
- ▶ Does the **product function according to specifications**
- ▶ Does the **user interface** meet product specifications and is it easy to use?
- ▶ Are there any **unexplained or undesirable side-effects** to using the product which may stop other software working?

Assessing Software Quality

- ▶ **Software quality is measured according to its suitability for the job.**
- ▶ **Key questions include: does it meet the business requirements? Does it work reliably?**
- ▶ **The quality of software is dependent on two things:**
 - ❖ **The number of errors or bugs in the software**
 - ❖ **The suitability of the software to its intended purpose.**

Assessing Software Quality

Software Metrics

- ▶ **Software metrics:** measure quality of software such as:
 - ❖ Analysis
 - ❖ Design
 - ❖ Coding
 - ❖ Testing

Assessing Software Quality

Software Metrics (as project)

- ▶ If approached as a project:
 - ❖ Definition, design and planning;
 - ❖ Coding;
 - ❖ Component test and early system test;
 - ❖ Full system test, user testing and operational trials;
 - ❖ Documentation, training and implementation support;
 - ❖ Overall project management;

Managing Change in Implementation

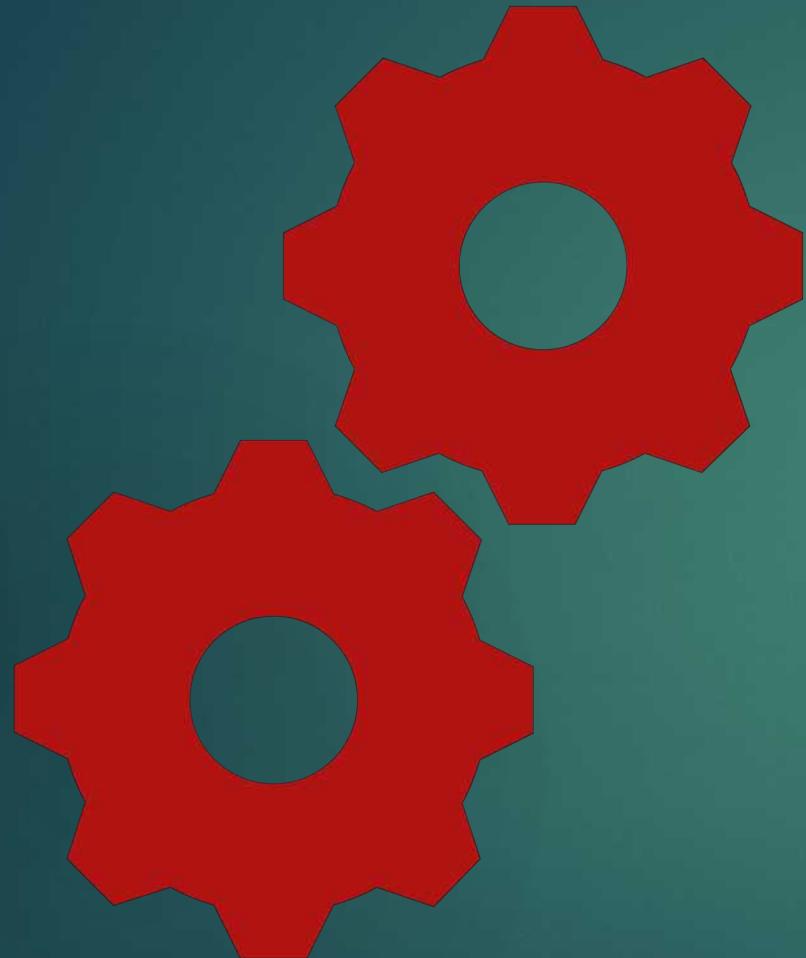
Change-over methods:

- ▶ **Immediate cutover (big bang):** when a new system becomes operational and operations transfer immediately from the previous system
- ▶ **Parallel running:** involves the old and new system operating together at the same time
- ▶ **Phased implementation:** introducing different modules of the new system sequentially
- ▶ **Pilot system:** trialling in a more limited area before extensively across the business

Software Development Process

Methodologies

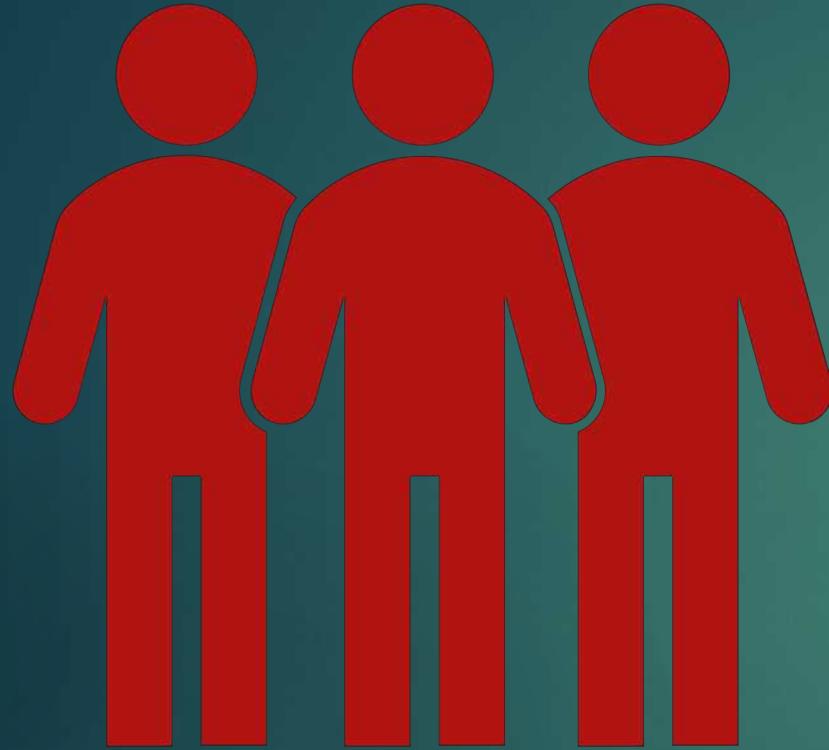
DB Design example



MySQL, SQL & Building DBs



Questions



Best of luck!

You can reach me via:

Website address: <http://andrewsai.com/>

Contact email: andrew. sai@ebs.ee

Connect on LinkedIn: [Click here](#)

Research & Publications: [Click here](#)