System Analysis and Design SCD2613

Topic: System Implementation

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Overview of System Implementation

A. Software Development

B. Software Installation

C. Software Support & Maintenance

(A) Software Development

- Acquiring software & hardware
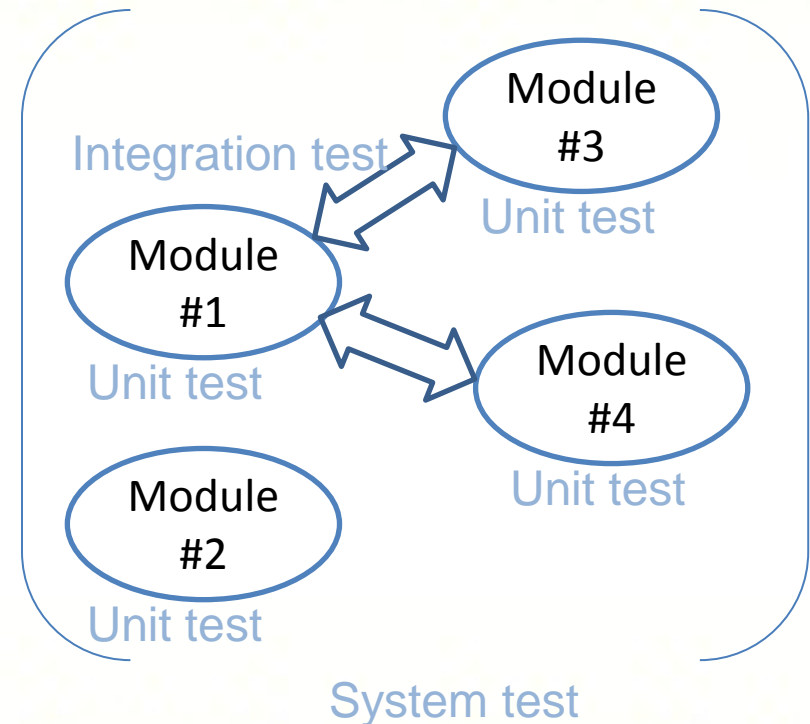 - Alternatives: Suitability & Cost

- Software testing
  - Types of testing

Acquiring software & hardware

- In house development / Outsourcing / Off-the-shelf purchase
  - The objective is to translate designs into code modules hence a system that function properly
  - Usually, involve team of developers, database and servers in house or by a third party
- Custom designed (End user programs, Open sources)
  - EUP: Less formal, solving immediate needs, by power users

Software testing

- Unit testing
  - Individual module
  - Behaviour as designed (e.g. decimals)

- Integration test
  - Group of ind. modules
  - Interaction (e.g. inconsistencies) among modules

- System test
  - The software is tested as a black box (e.g. stress test)

Integration test

Module #3

Unit test

Module #1

Unit test

Module #4

Unit test

Module #2

Unit test

System test

(B) Software Installation

- Types of conversion
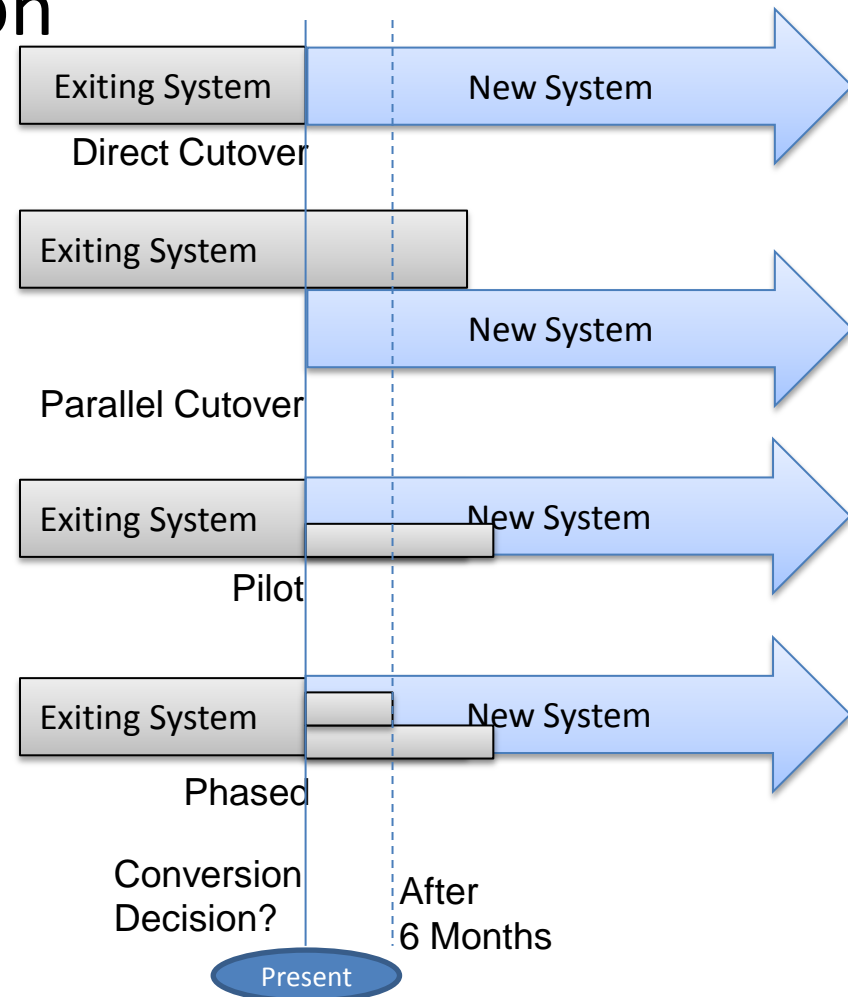 - Activities in data and system conversion

Data Conversion

- **A**cquire required data from the existing systems
  - Use data export tools
  - Develop a data extraction program
- **C**onsolidate & clean data from multiple sources
- **T**ransform data as required by the new system
- **F**eed the data into the new system

System Conversion

Choose a type of conversion

- Direct cutover

- Parallel

- Pilot

- Phased

Exiting System	New System

Direct Cutover

Exiting System

New System

Parallel Cutover

Exiting System	New System

Pilot

Exiting System	New System

Phased

Conversion Decision?

After 6 Months

Present

System Conversion

RISK		IMPLEMENTATION COST		
	High	Direct cutover		
	Medium		Pilot & Phased	
	Low			Parallel
		Low	Medium	High

(C) Software Support & Maintenance

After sign-off by the top management and celebrated over success :

- Training

- System audits & documentation

Training

- New system is installed and people are trained to use it
  - End users, managers, in house IT personnel
  - Training parties: In-house, vendor, 3rd Party

System audits & documentation

- Systems audit
  - The system's performance is compared to the original design specifications to ensure the new procedures improve productivity

- Periodic evaluation
  - The system is evaluated from time to time to ensure they still meet the goals and providing the service as specified
  - Users' needs change over time

System audits & documentation

- Documentation
  - Accurate documentation is for successful system operation and maintenance
    - Program documentation
    - System documentation
    - Operations documentation
    - User documentation

Summary of System Implementation (1/3)

- Software Development
  - Acquiring software & hardware
    - In house development / Outsourcing / Off-the-shelf purchase
    - Custom designed (End user programs, Open sources)
  - Software testing
    - Unit testing
    - Integration testing
    - System test

Summary of
System Implementation (2/3)

- Software Installation
  - Data conversion
    - **ACT-F**ast
  - System conversion
    - Cost vs. Risk
      - Direct cutover
      - Parallel
      - Pilot
      - Phased

Summary of System Implementation (3/3)

- Software Support & Maintenance
  - Training
    - Training the people and by who?

  - System audits & documentation
    - Systems audit
    - Periodic evaluation
    - Documentation