# INST0031
# Systems Management

## Lecture 4

### System Migration and Data Conversion

# What we will cover today

- Systems migration - what and why?
  - Factors for system migration
  - Different types of system migration
  - Misunderstanding system migration
  - System migration phases
- Key issues in the migration process
  - Changeover options
  - Data migration/conversion
  - Special web issues
  - Change management
- Some thoughts on evaluation and upgrading

# Reading Materials

- Morris, J., 2012. Practical data migration. BCS, The Chartered Institute.
- Russom, P., 2006. Best practices in data migration. Renton/USA

# What is System Migration

- An important data movement technique. –
    - Moving from old to new platforms
    - Integrating application silos
    - Upgrade packaged applications
    - Consolidate redundant IT systems

# What is Systems Migration?

- Changing one system to another
  - From one supplier to another
  - Upgrading with the same supplier
- May involve changing
  - Hardware platforms
  - Software applications
  - Operating systems
  - Networks/Telecomms

# Why is it important?

- Ongoing development
- Corrective measurements
- Optimised business strategies/process
- New technologies/possibilities
- Necessary optimization/update

# Why treat it separately?

- Why not just as part of normal
  - systems analysis?
  - systems lifecycle process?
- Likelihood of it happening to you!
- Complexity
- More relevant detail also in G007

# Why migrate?

- To fill a need!
- As part of ongoing development
  - Monitoring performance
  - Considering new requirements
  - Considering new opportunities/improvements
- An ever-shortening cycle?
- Internal and external forces
  - "Push" and "Pull" factors
- Better in the time/manner of your choosing!

# Push factors

- Overload/Growth
- Obsolescence
  - Lack of software support/development
  - Hardware obsolescence
  - Cost of maintenance
- Supplier factors
  - Dissatisfaction
  - Viability
- Insoluble problems

# Pull factors

- Wish/need for greater functionality
- Organisational factors
  - Strategic planning
  - Compatibility/Integration
  - Merger
- Take advantage of new technologies
  - Hardware
  - Software
- Fashion/PR

# The migration process

- Basically all the elements of the normal systems development process:
  - Analysis
  - Specification
  - Selection
  - Implementation
  - Testing
- BUT highlighting some special issues

# Things to particularly consider

- Changeover options
- Data migration/conversion
- Special web issues
- Change management

# Changeover

- Value of planning (and network diagramming!)
- Scheduling issues
  - Preparation
  - Downtime
- Time criticality
- Project milestones

# Changeover options

- “Big Bang”
- Gradual/Incremental
- Turtle, belt and braces

# “Big Bang” implementation

- All at once!
- High risk, high return?
  - Need for right-first-time
  - Fallback position?
  - Problems of testing
  - Simpler?
  - Cheaper?
  - Quicker?
- Staffing/training implications

# Phased implementation

- Gradual/Incremental
- Partial implementation by
  - Module
  - Function
  - Location
- Extended timescale
- Less system criticality
- More transitional difficulties?

# TB&B

- Slooooow
- Parallel operations
- Ample opportunity for testing, training and debugging
- No danger to critical systems
- Inefficient and more costly?
- Confusing?

# Different types of system migration

- Consolidation (many-to-one):
  - Multiple instances of the same system (homogeneous) into one new system
  - Several independent but interrelated (heterogeneous) into one new system
- Procurement, warehouse, Sale into one Inventory system

# Different types of system migration

- Migration (one-to-one):
  - Old platform to new one such as hierarchical legacy systems into relational databases (heterogeneous)
  - Relational databases into noSQL (heterogeneous)
  - Moving into cloud flatforms
- New data modelling
- New business decision
- New automated systems

# Different types of system migration

- Upgrade (one-to-one):
  - Different versions of the same system (homogeneous)

- Fix the shortcomings or lack of system functionalities of the current system

# Different types of system migration

- Integration (many-to-many):
  - Different source systems feed the different target systems (heterogeneous)

- Integrating regional or local systems to prepare a general view of HR, sales, suppliers and partners

# Misunderstanding system migration

- It is NOT copying the data (data modelling, transformation)
- It is NOT a one shot task ( manageable chunks)
- It is NOT a one-way trip (iterative cycle synchronisation and verification)
- It is NOT a one off task (do it all over again)
- It is NOT temporary reassignment of resources (investment )

# System Migration Phases

- Pre-processing:
  - Requirements gathering
  - Scoping
  - Planning and budgeting
  - Data profiling
  - Data quality

# System Migration Phases

- Development:
  - Solution design
  - Data modelling
  - Data mapping
  - Validation
  - Verification

# System Migration Phases

- Rollout and Hand-off:
  - Deployment
  - Administration
  - Synchronisation
  - Monitoring
  - Retiring the old system

# Data migration issues

- What files to migrate?
  - Static and dynamic records
  - Standard and nonstandard formats
- Volumes, speeds and costs
- Data integrity
  - Verification
- Merging data
  - Record matching

# Data conversion

- Entry vs conversion
  - Options
  - Timescales
- On-the-fly conversion
- Retroconversion
- Linking records to physical entities
  - Labelling

# Special web issues

- Problem of unidirectional links
- Converting links
    - Internal linkages
        - Problems of sustaining/linking old URLs
    - Linking site identification
- Search engines
    - Ensuring action
    - Problems of old entries
- More later in the term...

# Change management

- Equilibrium and driving/resisting forces
- Negative impacts of technological change
- Communication lags and gaps
- Expectation management
  - Publicity

# Change management

- Needs during transition period
  - Of staff
  - Of end users
  - Of system managers
- Training
  - Technical training
  - Changes in procedure

# Final thoughts…

- Evaluation
  - Quality vs Quantity
  - Efficiency and Value
- When to upgrade?
  - Do you need it?
  - Real need and benefit
  - “Peer pressure”

# Questions?

# OK…

Take a break!