Week 6
System Implementation and Support

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ACS-3801-050 Principles in Information Systems

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Week 6 Outline

- Reading: Chapter 6, Implementation and Support, p179– p211

    - Learning Objectives
    - System Implementation Process
    - Managing Change
    - System Support and Evaluation
    - Summary

Learning Objectives

- To be able to discuss the process HC organisations typically go through to implement HIS
- Able to assess the organisational and behavioural factors that can acceptance and use
- To be able to develop a sample system implementation plan for a HIS project
- Gain insights into the many things that can go wrong during implementation and strategies HC managers can employ to alleviate potential problems
- Able to discuss the importance of training, technical support, infrastructure, on-going maintenance and evaluation

Introduction

- Post-solution acquisition and contract signing there is still a lot of important work to do to launch the application and have it maintained

- This lecture follows the implementation of a new HIS (read book for full discussion)

- Implementing new systems are complex, this can increase if there is an existing solution that needs replacing

- Successful projects, on-time, on-budget + happy users

- Did the HIS realise its benefits – is more change needed?

- HIS like EHR are complex and do pose a patient safety risk, the also impact processes, workflow org culture, politics
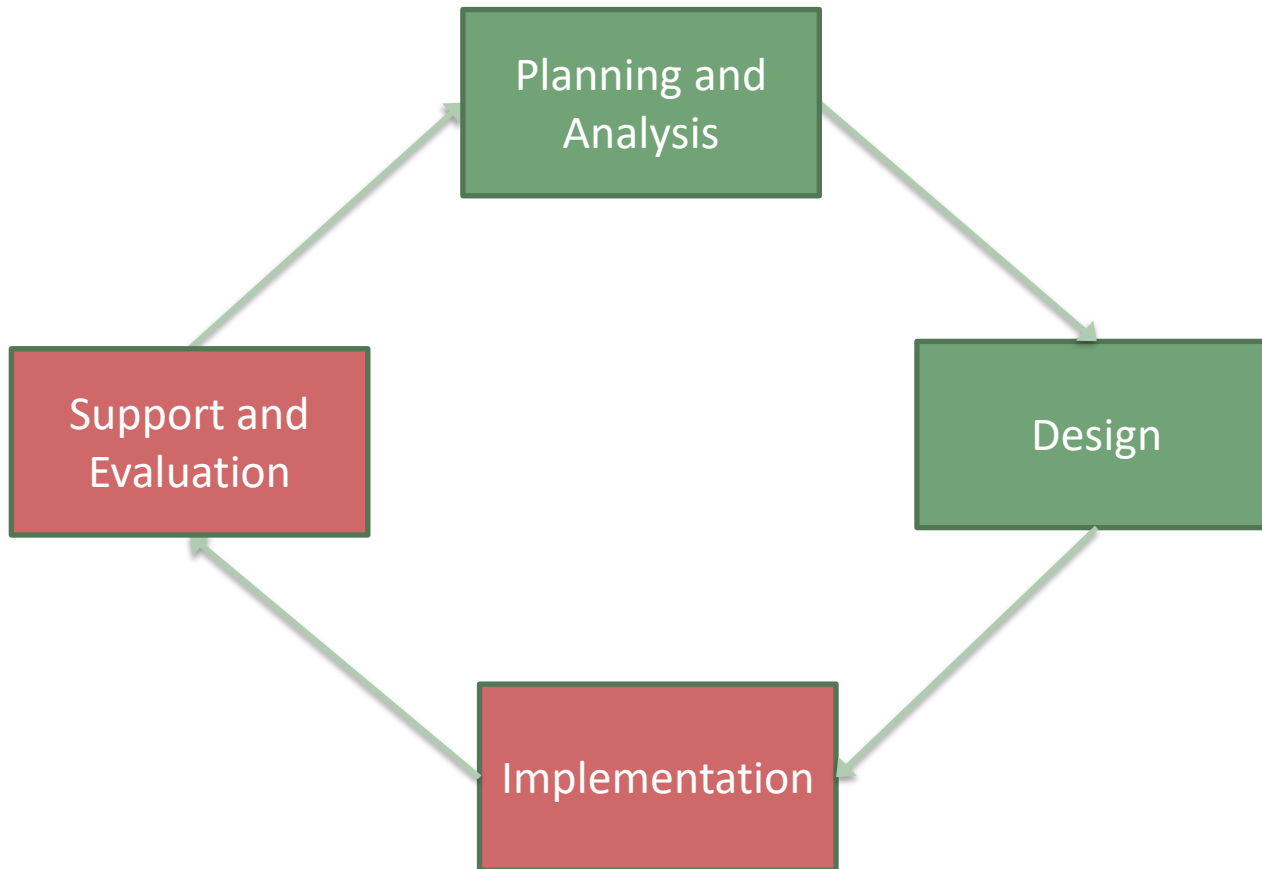
Introduction

- There are many different activities involved in implementation, just as important though is how we manage "change"

- Over 50% of projects fail
  - Political (internal)
  - Cultural
  - Behavioural
  - Ethical

- We must throughout the project and within the organisation welcome and endorse change

Systems Development Life Cycle

Planning and Analysis → Design → Implementation → Support and Evaluation → Planning and Analysis

Health Care Information Systems, Fig 5.1 p144

System Implementation Process

- Once contracts are signed, the implementation phase has already began, people begin to think about the future, how to deploy and support

- Resources (a project?) are assigned to begin the implementation planning activities

- The implementation needs proper levels of resources to implement and equally the operational teams need the resources to support effectively after go-live

- While these can be seen as two separate tasks they are interrelated, successful operational support depends on a successful launch and inclusion

System Implementation Process

- Fundamental Activities
  - Organise the implementation team
  - Clearly define project scope and goals
  - Identify accountability for the successful completion of the project
  - Establish and institute a project plan

- Failure to do so will impact implementation: increase costs, dissatisfied customers, delays, more costs….

- Example 20,000+ impacted users, broken processes impacting patients treatments and care plan, health care performance degraded, we cannot afford this!

System Implementation Process

- Given we know what the fundamental initial activities are we can begin to put together our project team and their first document, the Project Initial Document (PID).

- The PID defines, scope/objectives, resources, control process, ownership, accountability and implementation budget

- The project team will evolve as more detail is developed and activities and tasks nee execution

- A skilled PM in a particular PMO delivery practice like Prince2 is advantageous

- The PM begins to create the PID and accrue resources

System Implementation Process

- The Project Team
  - Steering Committee (owners)
  - Project Champion (or sponsor - main business owner)
  - Project Manager (Project Management Office)
  - Technical subject matter experts (SMEs)
    - Infrastructure
    - Applications
    - Business/Clinical
    - Database
    - Network
    - Security
  - Business/Application Analysts
  - System architect
  - Quality Assurance

Define goals and objectives

- Clearly define Goals and Objectives,

- Make headline statement and communicate

- Becomes the PID objects, if not met, then project did not succeed

- What is that is to be achieved? Revisit objectives from the business strategy

Clearly document and limit ability for scope to increase and if change is needed it must be controlled, e.g. steering committee must agree to change the scope of the project

Identify Accountability for Successful Delivery

- **Project Sponsor** has overall accountability for the project and operational support
- The sponsor represents the business function that is the receiver of the output of the project
- The sponsors position in the organisation is relative to the service that is being implemented and will vary depending on the decisions that have to be made
- The more significant the project then the higher level sponsor is required

Identify Accountability for Successful Delivery

- **Business Owner,** this person normally has the day-to-day operational responsibility for a business unit or department that will support the service
- The Business owner works closely with the project team, responsibilities include
  - Represent their department to the steering committee and project meetings
  - Securing and coordinating the necessary business and departmental resources
  - Remove business obstacles to meeting the project timeline and producing deliverables and artifacts (documentation)
  - Works jointly with the PM on many tasks

Identify Accountability for Successful Delivery

- **Project Manager,** provides the day-to-day direction setting, conflict resolution (critical path activities as well as people) and communications

  - Identify and obtain resources
  - Deliver the project on-time and on-budget (to plan)
  - Communicate progress (status) to the steering committee and business owner
  - Risk monitoring and management (time, resources, delays)
  - Issue resolution
  - Maintain project scope
  - Manage project plan
  - Issue escalation

Identify Accountability for Successful Delivery

- **IT Manager(s),** there may be one or more IT manger assigned to a project depending on the IT departments that are needed with the project, e.g. Infrastructure, DBA, Clients Services

  - Represent their ICT functional area
  - Has function final decision making and sign-off accountability
  - Helps remove IT roadblocks that impact delivery
  - Promotes the project internally/externally and ensures staff engagement

Institute a Project Plan

- The PM will initiate the project plan and identify key or often termed major tasks that have to be executed successfully in order for the project to succeed
- Set milestones (key delivery/decision points)
- Assign expected durations to each activity
- Include activity dependencies
- Add resource and budgets, understand impacts of resource shortages and contingencies
- Activity resource assignments
- Target Dates
- Measures for evaluating completion and success

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Project Plan Review

- As activities, resources, budgets and scope changes it is essential to assess the impact of change to the project

- What is the critical path to success?

- How do we create "slack" and manage it?

- Much "what if" analysis required when resource (time as a resource) constraints

- Identify project delivery risks and document, create a project risk register and develop mitigation plans, understand risk, expectation, likelihood worse case scenario etc.

18

Project Plan Common Activities

- Workflow and Process Analysis
- System Installation
- Staff Training
- Data Conversion
- Communications
- Release Management (prepare for go-live)
- System Downtime procedures
- Go-live ⭐
- Transition to Operations ⭐

Project Plan Common Activities

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Workflow and Process Analysis

- One of the first activities to take place, the analysis of current state (workflows, processes, applications)

- Meet with current users, follow through their workflow

- Understand weaknesses, problem areas...

- Evaluate future state requirements that will lead to goal realisation

- Challenge, not to automate current weaknesses

- Document users concerns and make them part of the project team (get buy-in, have them help with the new)

- Understand downtime procedures, what are they, do they exist, walk through

Workflow and Process Analysis

- Think beyond just software
  - Include infrastructure requirements
  - Connectivity to network
  - Electrical power
  - Security (physical access)
  - Physical layout of workstations and equipment
  - Crash carts and specialised medical devices
  - Connecting to other systems and services

System Installation

- There are several sub-activities that encompass Installation (will depend on how the app is to be hosted, SAAS, on-premise)
  - Infrastructure: Servers, network access points, wifi, cabling, computers and medical equipment
  - Users access and account management
  - Software installation(vendors?)
  - Electrical services
  - Software customisation/configuration (vendors)
  - Pilot system, trial use in actual workplace
  - Follow vendor best practices

Staff Training

- Successful implementations require users and technical staff to be properly trained
- Large projects will have a dedicated Training team
- Need to plan:-
  - How much training is needed?
  - Who need training ?
  - When is it needed - need a training plan!
  - Approach to training – in person, computer based, on-line, train-the-trainer vs one-on-one, SMEs?
  - Vendor training, what services does the vendor offer?
  - Training process, recording completions, no training, no account to use system
  - Long term training (new staff on-boarding)
  - Training environments
  - During and post go-live - make sure trainers are available

Data Conversion – Load Application Data

- Extract from existing systems and transform for load
- May need to manually enter a lot of data from paper based systems
- Automate if possible and validate data
- Clean data, fill in as much missing data as possible
- Sanitise, transform with business rules, cross reference to standards
- When managing huge volumes of data. do complete data load then delta updates until system is live
- Test new system with loaded data, evaluate reports
- May require multiple data load mock tests and evaluations

Communications

- Projects need an effective method (plan) for communication of project status
- Define how – tools, email, status reports, periodical updates
- Coordinate Communications, often communications lead
- Meetings with steering committee and project team
- Generic updates to business/technical communities
- Verify communications is being received, ask community
- Be consistent with messaging

Release Management

- Formal processes (ITIL) to manage the deployment and activation of computer based information systems
- Set of IT practices which support IT applications and services
- Release Management ensure the right things are done before go-live and that formal reviews, documentation and support practices are in place:-
  - Support Guides
  - Test plan and approval
  - Patient Information Assessment (PIA)
  - ORA sign off (operational readiness)
  - Solution Design
  - Risk register

ITIL: Information Technology Infrastructure Library

System Downtime Procedures

- Plan for worse case that services are not available
  - Planned and unplanned outages – communicate!
  - How can people still do their job without access to the information they need?
  - Once systems are returned to normal service, how to update
  - Use manual methods to capture patient data and information then input into system once available
  - Infrastructure backup and recovery systems in place
  - Procedure/process documentation
  - What to do with hand written reports after updating system?

Go-Live

- Penultimate phase of a project tis the go-live
- Go-live playbook, detailed activities with timing and defined resources
- Start time
- Go-live process updates
- Command Center – for critical implementations, central team that coordinates activities and acts as communication hub
- Roving staff, during go-live SMEs are on hand to deal with questions and issues over many sites
- Validation and verify services are operating as planned
- Report to Steering committee with status reports
- Close command center and hand over to operations

Transition to Operations

- As the project closes down there are many artifacts (documents, waivers, decision requests, change notices) that need to be transitioned to the operational support teams
- Why were certain decisions made, who made them?
- Scope change – who approved? why was feature 3.2.1 not implemented?
- Design documents, license agreements, ensure budget transfers are complete
- Knowledge transfer – ensure contractors share their information with the operational staff before they leave
- Testing - plans, scripts, data, results and reports

Organisational Change Management

- Implementing new systems or replacing old is fraught with challenges – change is difficult, no less so in a health care environments where patients are involved

- People have concerns and some are resistant to change as ultimately it will impact their job in some way (does it impact the way they work with patients?)

- Change need to be managed and is critical to the success of many large projects

- Projects often have OCM components

Effecting OCM

- What is the scope of change
  - Magnitude of change - fundamental or incremental
  - Organisation culture
  - Uncertainty and risk

- Aspects
  - Leadership
  - Language and vision
  - Connection and trust
  - Incentives
  - Planning, implementing and iterating

Leadership

- Stems from the organisation leadership expressing the need for change

- Define the nature of the change – what?
- Communicate the rational - how does it fit into the grand scheme of things, why change?
- Identify, procure, and deploy necessary resources
- Resolve issues and alter direction as needed
- Monitor the progress and maintain/reinforce

Language and Vision

- Staff impacted by change need to know/understand the nature of the change is to them and how it will change their world
- They need to hear (empathy) in how the change is necessary and how they (and their patients) will benefit from it
- The way the change is expressed and presented is importance to gaining acceptance
- Phrase in terms of what is important to the staff and their patients
- If cost related savings, how does that feedback into the system or allow the making of their work easier
- Careful not to use words like "must"
- "We" instead of "you" use emotional intelligence to hit the pain points that staff face

Connection and Trust

- Leadership must be able to effectively communicate their vision either in person, email, newsletters, information release, progress reposts, team meeting, town halls, organisation get-togethers
- They cannot stop communicating their vision
- Inviting feedback, criticism and the opportunity to discuss
- Trust need to grow between staff and leadership, however it evolves of a long time not just the one project, what happened in the past
- Trust is created by leaders willing to support their staff
- This takes time!

Incentives

- Motivators are needed to get staff to respond to change often excitement or fear 0or not implementing the change and the implications of that) are enough
- Retraining for those impacted by change
- Bonuses for key individuals
- What's in it for me, promotion, office, extra staff, job title
- Awards
- What happened when you have no rewards to offer?

Planning, Implementing and Iterating

- Planning, change cannot be successfully implemented without some kind of plan with associated activities, tasks are assigned to staff
- Implementation is the enaction of the plan
- As the plan is implemented, we may become aware of OCM problems that were not envisioned
- As we learn more we have to be able to change and adapt, the initial goals and objectives may not have been realistic without more change
- Iterative approach needed to achieve goals and objectives

Organisational and Behaviour Factors

- Create an environment in which expectations are defined, met and managed
- Know your culture and do not underestimate resistance
- Allocate sufficient resources to project
- Provide adequate up-front and long term training
- Manage unintended consequences, fix, correct and maintain
- Establish strong relationships with vendors

38

Create Appropriate Environment

- Many implementations fail for many reasons
- Expectations come from what people hear and see about a product and what it might do for their organisation
- During the RFR process we develop a view of the value a system will bring
- All parties (business and technical) have expectations on what the system will deliver to them and those expectations will be different between them
- Leadership must set expectations in relation to the business and what is being delivered so that individuals do not cling to their view which may not fully align to the big picture
- Choose the right metrics to measuring implementation performance
- Communication is again key to setting expectations

Know your culture and do not underestimate resistance

- It is critical to understand the culture of your organisation (and team) it may not be the same

- Understand engagement, how do people work and their attitudes

- How do your resources feel, are they overstretched, overworked, unmotivated, coasting, being held back because or red-tape? Creates resistance

- When the change is marginal to staff it likely has little resistance

- When change impact workflow and process related to patient care they may suffer much resistance because these processes are already overstretched

Know your culture and do not underestimate resistance

- As a process changes and workflow changes to clicks and screen entry can be seen as more time consuming and less efficient to them
- The nature of a physicians work is changing, more computer related tasks and less direct patient care
- Incentives may not be aligned to what the clinician seeks (how are incentives applied?) can be demotivating over time, need to re-evaluate compensation?
- Study's show that those less IT minded feel at a disadvantage to other highly tech savvy juniors
- Fundamentally - User acceptance is gained when the system improves its value to the user, e.g. makes they work easier, improves their ability to serve patients

Allocate Sufficient Resources

- Ensure that enough resources are available for implementation AND operational support after go-live

- Engage operational support staff into the project

- Create capacity in the operational team to allow then to spend time in the project

- Failure to provide resources will lead to implementation failure

- Operational resources are needed to work with the vendor with support and maintenance activities

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Provide Adequate Training

- Develop a training plan based on the needs of the users, include business (user) application training and technical support
- Users should have the proper amount of time and ability to user the system in a training environment so they become comfortable
- Have training environments available, as upgrades become available have the users assess new releases
- Longer term training plan for system expansion, on-boarding new staff
- Training tools need to reflect the best way to train staff
- Needs funding
- Allocate time for resources to be able to provide support to the team, make expectations clear

Manage Unintended Consequences

- Unintended consequences can occur during complex system implementations
- They can be positive, negative or both
  - New system has a feature that was not in scope but now available that removes the need for MS Access database
  - Lack of ability to extract report as an excel spreadsheet without executing several steps
  - Users not allowed to see some patient data because they are no longer in the same business role
- As they are collected these consequences need to be managed long term

Establish Strong Vendor Relationships

- With critical HC systems it is critical to have strong relationships with vendors (remember the contract)
- This will likely be a long term relationship with the vendor
- As the business changes there may be need to have those mimicked into the application – customise
- Very important for the long term sustainment of the application
- Ensure good communication with the vendor, understand their long term strategy for their services, how are they changing?
- Know how to escalate product/service issues with the vendor

System Support and Evaluation

- An operational support team is there to ensure an application/service are effectively maintained
  - Defect fixed
  - New reports
  - Operating system and application updates/patches
  - Data backups and restore services

- During the analysis we need to plan the operating support model for the application, where does the application fit (team), who supports, what resources are needed, skills needed, training, on-call team?

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System Support and Evaluation

- Support the business(user) community
- Answer data/process related questions
- Own the communications of support issues to business community
- Planned outages
- Un-planned outage management
- Operations Reporting (incident counts, downtime per month/year, Overtime costs)
- License management

System Support and Evaluation

- Evaluation is necessary to understand the value the application or service delivers to the business

- At some point we may need to change the application or service because its value is low

- We will talk about his week 7

50

Summary

- Implementation is a very complex problem
- It needs a project to coordinate and implement
- Needs a variety of technical and business users involved
- A formal plan is needed, there are many activities, some more critical than others
- Do not omit organisational change management, include resources, time and energy to have users and technical team engaged with the change
- Ensure all staff are adequately trained and have access to training long term
- Ensure the proper amount of resources are available for the project and providing operational support
- Leadership is required throughout the process to help make the implementation successful