

Health Care Information Systems: A Practical Approach for Health Care Management

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Chapter Five

System Acquisition



Learning Objectives

- Explain the process a health care organization generally goes through in selecting a HCIS
- Describe the systems development life cycle and its four major stages
- Discuss the various options for acquiring a HCIS and the pros and cons of each option
- Discuss the purpose and content of a request for information and a request for proposal in the system acquisition process
- Gain insight into the problems that may occur during the system acquisition process
- Gain an understanding of the health care IT industry and the resources available for identifying health care IT vendors

Outline

- Systems development life cycle
 - System acquisition process
 - System implementation process (discussed further in chapter six)
- Project steering committee responsibilities
- Project management tools
- Things that can go wrong
- Information Technology Architecture

Definition

System Acquisition

- The process that occurs from the time the decision is made to select a new system (or replace an existing system) until the time a contract has been negotiated and signed
- The process can take anywhere from a few days to a few years, depending on the organization's size, structure, complexity, and needs.



SDLC

Systems Development Life Cycle

System Acquisition Process

1. Planning and Analysis
2. Design

System Implementation Process

3. Implementation
4. Support and Evaluation

SDLC

Systems Development Life Cycle

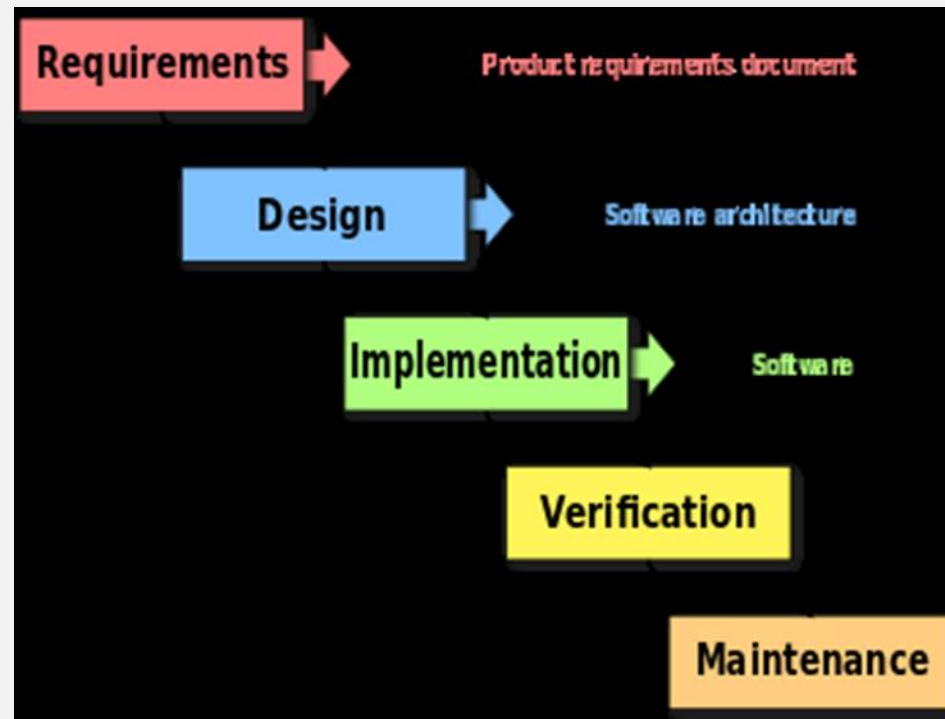
Types of Development Methodologies

- ***Waterfall Development***
 - Traditional process with major features and requirements
 - IT builds to the requirements and doesn't turn the project over to business until it is ready for testing
- ***Agile Development***
 - Quick development cycles called sprints with a demo to project team at the end of each sprint
 - Major Features are called Epics, Requirements are called Stories
 - Daily Stand Up Meeting to provide updates to the project (scrum) team
 - Project manager is the scrum master
 - Business owner is the product owner

Waterfall Development

The “waterfall” model is a sequential design process, used in software development processes, in which progress is seen as flowing steadily downwards (like a waterfall) through the phases of conception, initiation, analysis, design, construction, testing, production/implementation and maintenance.

Waterfall Development



Agile Development

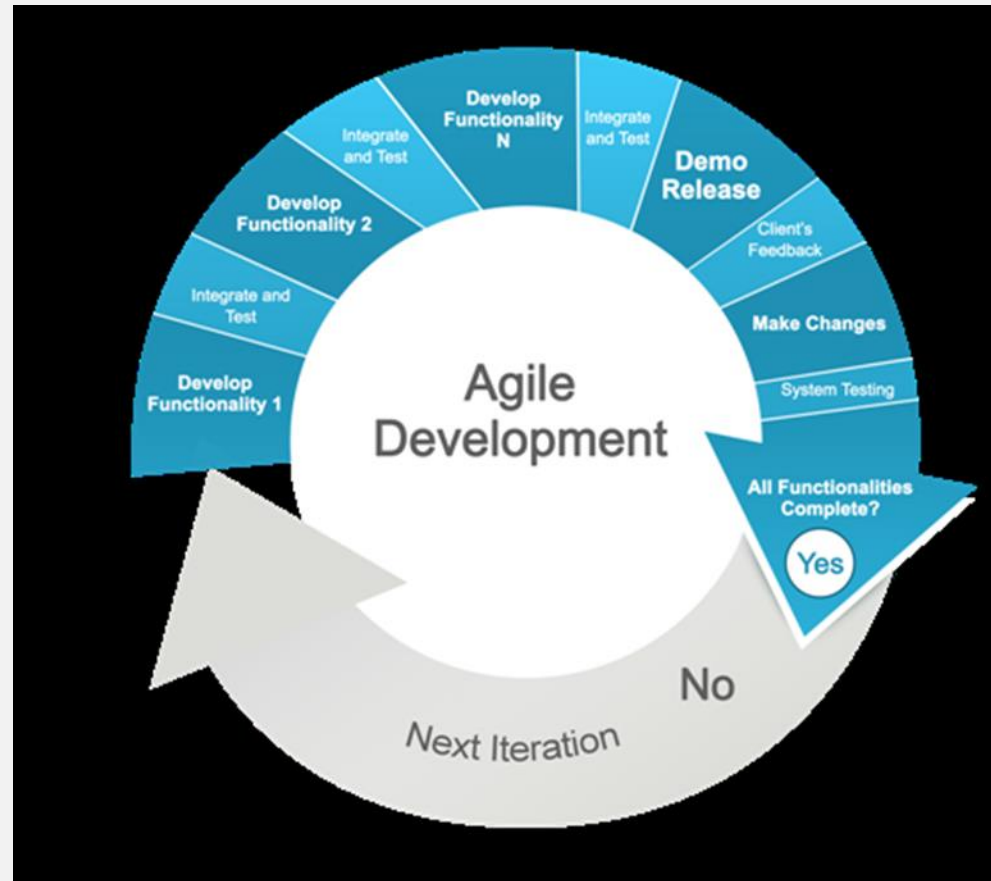
- “Agile Development” is an umbrella term for several iterative and incremental software development methodologies. The most popular agile methodologies include Extreme Programming (XP), Scrum, Crystal, Dynamic Systems Development Method (DSDM), Lean Development, and Feature-Driven Development (FDD).
- Agile Manifesto (2001)
 - Twelve Principles of Agile Development

Agile Development

Twelve Principles

1. Satisfy the customer through early and continuous delivery
2. Welcome changing requirements, even late in development
3. Deliver working software frequently
4. Business people and developers work together daily
5. Build project around motivated individuals
6. Convey information via face to face conversation
7. Working software is the primary measure of progress
8. Maintain a constant pace indefinitely
9. Give continuous attention to technical excellence
10. Simplify: maximizing the amount of work not done
11. Teams self organize
12. Teams retrospect and tune behavior

Agile Development



Project Steering Committee

- Primary function is to plan, organize, coordinate, and manage all aspects of the acquisition process
- Appoint project manager
 - Strong communication, organizational, and leadership skills
 - Brings passion, interest, time
 - Someone who is well-respected by the organization's leadership team
- Pull together a strong team
 - Representatives from key constituent groups in the practice
 - At least one person knowledgeable about IT

Committee Responsibilities

1. Define project objectives and scope of analysis
2. Screen the marketplace and review vendor profiles
3. Determine system goals
4. Determine and prioritize system requirements
 - Focus sessions or small group interviews with various users
 - Surveys
 - Hold product demonstrations
 - Visit sites using the EHR system

Committee Responsibilities

5. Develop and distribute the **RFP** or **RFI**

– Request for proposal (RFP) :

- Organization provides comprehensive list of system requirements features and functions
- Vendor indicates whether its product or service meets each need; submit a detailed and binding price quotation for the applications and services

– Request for information (RFI) :

- Less formal, shorter, and less time-consuming than an RFP
- Often used to obtain basic information on a vendor's background, product descriptions, and service capabilities

Committee Responsibilities

6. Explore other acquisition options

- Cloud computing services
 - Less upfront capital, fewer IT staff members required, greater scalability
 - Organization contracts with the vendor to host and maintain the application and related hardware
- Build in-house

7. Evaluate vendor proposals

- Develop evaluation criteria
- Hold vendor demonstrations
- Make site visits and check references

Committee Responsibilities

8. Prepare a vendor analysis
9. Conduct a cost-benefit analysis
10. Prepare a summary report and recommendations
 - System goals and criteria
 - Process used
 - Results of each activity and conclusions
 - Cost-benefit analysis
 - Final recommendation and ranking of vendors
11. Conduct contract negotiations

Evaluating Vendors

- Request for Information (RFI)
 - A common business process whose purpose is to collect written information about the capabilities of various vendors. Normally it follows a format that can be used for comparative purposes.
- Request for Proposal (RFP) or Request for Quote (RFQ)
 - A document that solicits a proposal by an organization interested in procurement of hardware, software, and/or services to submit business proposals.

Typical Components of an RFP

- Instructions for vendors
- Organization objectives
- Background of the organization
- System goals and requirements
- Vendor qualifications
- Proposed solutions
- Criteria for evaluating proposals
- General contractual requirements
- Pricing and support

HealthIT.gov RFP Template

- This RFP template is intended to aid providers and health IT implementers throughout the EHR vendor selection process. This template can be used to structure requests for vendors to send proposals on the specific health IT that needs to be acquired.
- <http://www.healthit.gov/node/891>

Vendor Selection HCA 447 Project Overview

- Request for Proposal
 - Imagine you are the facility or practice developing the questions and criteria of the RFP for vendors to respond to.
 - The Request for Proposal should contain the following sections
 - Section 1 – Detailed Vendor Instructions
 - Section 2 – Vendor Profile Questionnaire
 - Section 3 – Specifications Questionnaire
 - Section 4 – Implementation Plan Instructions
 - Section 5 – Hardware and Configuration Specifications Instructions
 - Section 6 – Cost Estimate Instructions

Vendor Selection Project Overview

- Vendor Contract
 - Build a Vendor Contract for the system type of your choice.
 - Identify the terms of your contract (length of agreement and structure)
 - Understand your service agreement (technical support, upgrades)
 - What is spelled out in your IT support agreement (hardware, software)
 - Meaningful use or other applicable certification (remedies for breach)
 - Warranties and under-performance (length and terms)
 - Training (how many hours, rates, etc.)
- Service Level Agreement

Vendor Selection Project Overview

- Service Level Agreement
 - Separate SLAs should be created for each IT service that needs measurement
 - An SLA must be quantitative, well researched, and authoritative
 - SMART (Specific, Measurable, Attainable, Relevant, Time-bound)
 - SLAs must be measurable
 - SLAs require periodic review and adjustment, as part of continual service improvement
 - SLAs should account for usual and unusual exceptions

Project Management Definition

- Project Management Institute, Inc. (PMI) defines project management as "the application of knowledge, skills, tools and techniques to a broad range of activities in order to meet the requirements of a particular project."
- Extreme Project Management (XPM) refers to a method of managing very complex and very uncertain projects using an open, elastic, and undeterministic approach

<http://www.pmi.org/en/About-Us/About-Us-What-is-Project-Management.aspx>

Project Management Objectives

- Define project scope and goals
- Identify accountability
- Define decision-making processes
- Identify tasks and task sequence and interdependencies
- Determine resource and time requirements
- Ensure appropriate communication

Project Management Process

1. Project conception and initiation
2. Project definition and planning
3. Project launch or execution
4. Project performance and control
5. Project close

<http://www.pmi.org/en/About-Us/About-Us-What-is-Project-Management.aspx>

Project Conception and Initiation

- An idea for a project will be carefully examined to determine whether or not it benefits the organization. During this phase, a decision making team will identify if the project can realistically be completed.

<http://www.pmi.org/en/About-Us/About-Us-What-is-Project-Management.aspx>

Project Definition and Planning

- A project plan, project charter and/or project scope may be put in writing, outlining the work to be performed. During this phase, a team should prioritize the project, calculate a budget and schedule, and determine what resources are needed.
 - This is typically the step where a Vision and Scope and Software Requirements Specifications are written.

<http://www.pmi.org/en/About-Us/About-Us-What-is-Project-Management.aspx>

Project Launch or Execution

- Resources' tasks are distributed and teams are informed of responsibilities. This is a good time to bring up important project related information.

<http://www.pmi.org/en/About-Us/About-Us-What-is-Project-Management.aspx>

Project Performance and Control

- Project managers will compare project status and progress to the actual plan, as resources perform the scheduled work. During this phase, project managers may need to adjust schedules or do what is necessary to keep the project on track.

<http://www.pmi.org/en/About-Us/About-Us-What-is-Project-Management.aspx>

Project Close

- After project tasks are completed and the client has approved the outcome, an evaluation is necessary to highlight project success and/or learn from project history.

<http://www.pmi.org/en/About-Us/About-Us-What-is-Project-Management.aspx>

Extreme Project Management

- Extreme project management is different because it is used to manage projects that feature high speed, high change, high complexity, high risk, and high stress.
- While traditional projects follow the classic model of ready, aim, fire, Extreme Project Managers succeed by shooting the gun and then redirecting the bullet while not losing sight of their moving target.

Scope Creep and Change Management

- Scope Creep in project management refers to uncontrolled changes or continuous growth in a project's scope. This can occur when the scope of a project is not properly defined, documented, or controlled.
- Change Management is a project management process where changes to the scope of a project are formally introduced and approved.

Project Management Tools

- Project repository
 - Serves as a record of the project steering committee's progress and activities
 - Project manager establishes and ensures repository is maintained
- Project Plan
- Project Charter

Characteristics of a Good Project Plan and Charter

- Charter is clear and explicit
- Leadership understands and supports the plan
- Timelines and resource needs have been thoroughly reviewed
- Accountabilities are clear
- Project risks have been assessed
- Appropriate contingency has been incorporated

What Can Go Wrong?

- Failing to manage vendor access to organizational leadership
- Failing to keep the process objective
- Overdoing or underdoing the RFP
- Failing to involve the leadership team and users extensively during the selection process
- Turning negotiations into a blood sport

Business Analysis

- Six Knowledge Areas
 - Business Analysis Planning and Monitoring
 - Elicitation and Collaboration
 - Requirement Lifecycle Management
 - Strategy Analysis
 - Requirement Analysis and Design Definition
 - Solution Evaluation

<http://www.iiba.org/babok-guide.aspx>

Business Analysis

- Five Analysis Areas
 - Stakeholder Analysis
 - Current State
 - Future State
 - Gap Analysis
 - Requirements

<http://www.iiba.org/babok-guide.aspx>

Requirements

- A well written requirement contains 5 parts
 - Who?
 - Does?
 - What?
 - Why?
 - Done When?

<http://www.iiba.org/babok-guide.aspx>

Requirements

- To Elicit Business Needs:
 - What do you have? (current state)
 - What do you want? (future state)
 - What do you need? (gap analysis)
- To Elicit Requirements:
 - What do you want the solution to do?
 - How well do you want it to do it?
 - Under what circumstances must it do it?

<http://www.iiba.org/babok-guide.aspx>

Requirements

- Major Features
 - Either he added or removed functionality between the current state and the future state
- Functional Requirements:
 - Who is the actor
 - Does one action only
 - What is the thing
 - Why does the actor do the thing
 - Done when the requirement is met (success/acceptance criteria)

<http://www.iiba.org/babok-guide.aspx>

Vision & Scope with Requirements

HCA 447 Project Overview

- Document the Major Features and Functional Requirements of an IT system that you need for a healthcare setting
- Project Scope, Executive Summary of the Project, Business Opportunity or Problem Statement, Business Risks and Benefits, Assumptions and Dependencies, Vision Statement, Success Measures, Stakeholders, Testing
- At least 5 Major Features
- At least 5 Functional Requirements for each of the 5 Major Feature
- Well written functional requirements that contains 5 parts (Who Does What Why? Done When?)

IT Architecture

Definition

- Architecture
- Platform
- Infrastructure
- “In creating an infrastructure, an organization will implement platforms and be guided by its IT architecture.”

Application Integration

Definition

- Best of breed
 - Each department picks the best application it can find and then attempts to integrate the applications by means of an interface engine that manages the transfer of data between the applications
- Monolithic
 - Applications that all come from one vendor, use a common database management system and a common user interface
- Visual integration
 - Wraps a common browser user interface around a set of diverse applications

Summary

- System acquisition process
- Project steering committee responsibilities
- Project repository
- Things that can go wrong
- Information Technology Architecture
 - Architecture v. platform v. infrastructure
 - Best of breed v. monolithic v. visual integration

Group Activity

Marshmallow Challenge

Build the Tallest Freestanding Structure



- Teams of Four People
- Eighteen Minutes
- Using the Following Ingredients



20 sticks of spaghetti

+



one yard tape

+



one yard string

+



one marshmallow