Practical Project Management for Informatics

How to manage a project without losing your mind!

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API Session

J Mark Tuthill, MD
Division Head, Pathology Informatics
Department of Pathology & Laboratory Medicine
Henry Ford Hospital
Detroit, MI
mtuthil1@hfhs.org

Disclosures

In the past 12 months, I have not had a significant financial interest or other relationship with the manufacturer(s) of the product(s) or provider(s) of the service(s) that will be discussed in my presentation.

Goals and Objectives

- Review key concepts in project management
- Discuss the phases of the project life cycle
- Present our HFH Project Planning packet
- Provide tips for project team creation and communications
- Present practical Considerations in real world project management for systems implementation in relationship to institutional planning

The project manager walks into his boss' office and says, "Here is the bottom line budget needed for the success of the project."

The boss says, "What can you do for half the money?"

The project manager says, "Fail."

The boss says, "When can you get started?"

The project manager says, "I think I just did."

from Jokester.com

Introduction to Project Management

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What is a Project?

- A Focused effort that is temporary
  - Leads to an operational entity…
- Begins, ends and has duration
- Requires resources and planning
- Based on accomplishing a goal for a customer team
- Our discussion will be focused around laboratory software selection and implementation

What is Project Management?

- A Science:
  - Project Management is a formal profession with degrees available
    - Often businesses will fund training for professionals such as engineers or software developers to become Project Managers
    - Certified project managers
- NOT a computer program
  - People plan and manage projects not software
  - Software can help manage complex projects, but so can simple planning and communication strategies
- More than a project plan!
  - The plan is one part of the project management

Managing the Project

- Scope
- Time
- Money
- Quality
- Communications
- Human Resources
- Procurement of materials and services
- Risk awareness and mitigation
- Coordination and management

The Project Life Cycle

- Initiating the project
  - Often customer driven
  - Leadership approval and support
- Planning
  - Includes capital financial and resource plan
- Execution
  - Monitor and control
  - Iterative cycle of effort
- Project closure
  - Training, Operations, Support

Initiation

Selecting a System

Initiation Activities

- Requirements
  - Customer needs
  - Leadership's desires
- Project definition, description, and scope
  - An overview document
    - E.G. Rough order of magnitude
  - May include an early description of project plan and execution as well a budget guestimates
- The is where the RFI/RFP process fits into a project

Initiation Activities

- Project proposal
  - The business case
  - Budget analysis, required
  - Rough order of magnitude (ROM)
- Project “charter”
  - An agreement or statement of work
  - This term is often used by project managers to set the rough “rules of the road”
  - Signatures from authorizing individuals on the part of the system provider and the customer

Initiation Activities

- Project planning process and may over lap and be an iterative process
  - Initiation will lead to a plan
  - Planning informs initiation
- When is capital obtained?
  - I have seen projects funded prior to a formal initiation process
    - This is dangerous as planning is not often deep enough to understand budgets or resource requirements
- Initiation without planning and capital leads to disaster

Purchasing an LIS: The RFI

- Submit a Request For Information to vendors
- In the RFI ask for:
  - System description
  - List of features
  - List of instrument interfaces
  - Client list
  - List of system interfaces
  - Database description
  - Support policies
- Eliminate all but 3 (or so) vendors

Purchasing an LIS: The RFP

- Submit a “Request For Proposal” to the vendors chosen
- In the RFP ask for:
  - A full system user manual
  - A detailed description of features
  - Hardware and software support details
  - Hardware and software specifications
  - Customizations you would like to have made
  - Interfaces you would like to have written
  - Printout of all reports
  - A full quote and contract with deliverables
  - Ball park costs ? RFQ ?
- Set up on-site demos
- Talk to current clients and visit some sites

When does the project really start?

- Once your funded
  - When you get the capital your problems begin…
- Once you select a system
- When the system is purchased
- When you have time
- Once you have a plan in place

Planning the Project

Components of Project Plan

- Project budget (high level)
- Work break down structure (WBS)
- Project schedule
  - Gantt Chart
- Logic diagram (Network diagram)
  - PERT Chart
- Formal Project Plan
  - Supporting Documents
  - Project planning packet

Components of Project Plan

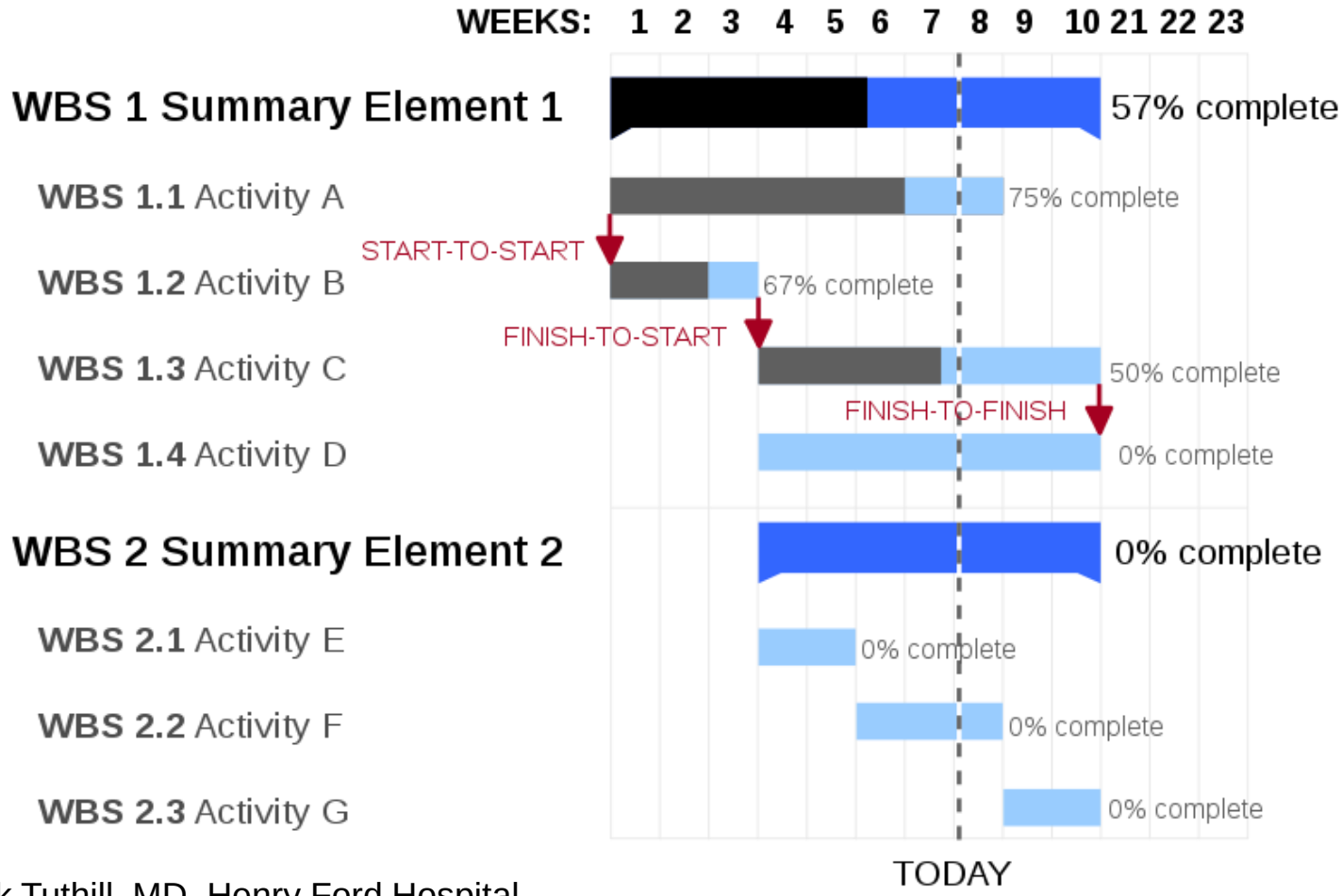
- Project budget
  - Key component to success is a realistic well planned budget
    - Beyond scope to go into too much detail
    - Challenge is to account for all aspects of a budget
  - Capital budget
  - Operational budget
  - Contingency 10-20% of total budget depending on complexity of project and overall cost
- Get help from anyone you can (mentors)

Components of Project Plan

- Work break down structure (WBS)
  - 20th century concept (Henry Gantt,1861–1919)
    - Leads to the Gantt Chart
  - In project management and systems engineering, is a deliverable oriented “decomposition” of a project into smaller components
  - It defines and groups a project's discrete work elements in a way that helps organize and define the total work scope of the project
  - WBS is not an exhaustive list rather it is a classification of project scope and activities

Components of Project Plan

- Project schedule (Gantt Chart)



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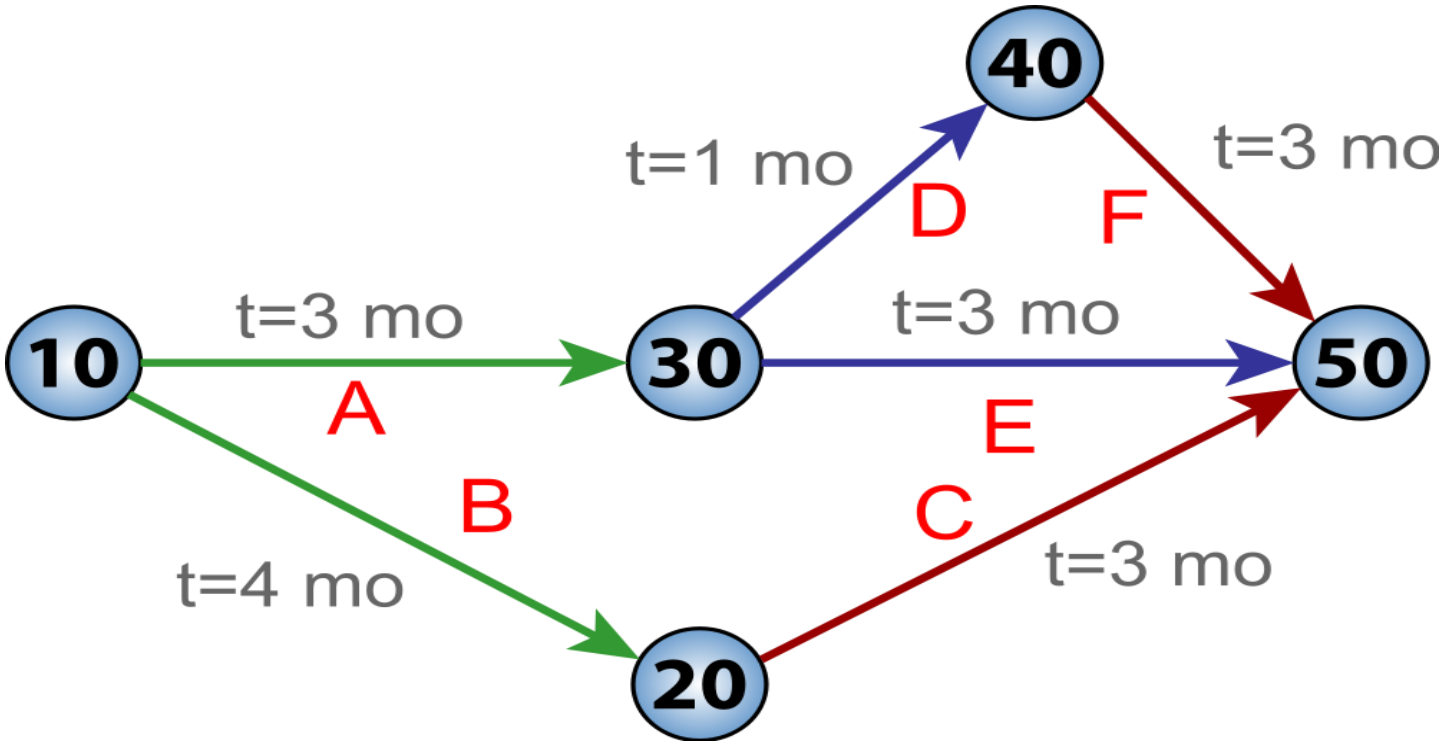
Problems with Gantt Charts

- Gantt charts are oversimplifications
- Managers try to define the project work breakdown structure at the same time that they define schedule activities
  - WBS should be fully defined, then the project schedule can be designed
    - No matter what we do, reality intervenes and schedules are always impacted
- WBS can change if project changes: **Scope Creep**
  - This changes resource requirements and timelines
- Timelines can be impacted by factors outside the project
- Focus on managing the Gantt chart versus the actual project
  - This is very common with managers who use complex software to manage projects
  - Watch out for revisionist history to the dates in the Gantt Chart

Components of Project Plan

- The Program (or Project) Evaluation and Review Technique, commonly abbreviated PERT
- a tool designed to analyze and represent the tasks
  - Commonly used in conjunction with the critical path method (CPM)
- PERT charts can better demonstrate the critical path timelines within a project
  - Aka: Logic diagram (Network diagram)
- Not all projects require PERT chart level analysis
  - Depends on whether a project is mainly serial steps or whether a project has many parallel tasks with dependencies
  - A network diagram better outlines interrelated activities

PERT Chart



PERT network chart for a seven-month project with five milestones (10 through 50) and six activities (A through F).

Components of Project Plan

- Formal Project Plan: "Project Planning Packet"
  - Use a template that includes (available upon request):
    - Narrative description
    - Budget
    - Team members and roles
    - Schedule
    - Issue tracking
    - Training
    - Links to all associated documents
    - Activation plan

Project Execution

Project Execution

- Purchasing and contracting
  - When the project really starts
- Progress “evaluation”
- Project change notices
- Project status reports
- Project plan updates
  - Project plans are NOT static

Project Execution

- Really about managing communications
  - Planning, scheduling, and working tasks is easy
  - Communication across teams is a challenge
    - When communication fails, projects fail
- All aspects of execution should be captured
  - Use meeting minutes
  - Add documents to project plan packet
  - Update the project plan
  - Think about training early

Project Closure

Project Closure

- Dash board, task lists (Punch list)
    - As project come to completion remaining tasks become very clear
- Training
  - Easy to forget training requirements
    - Many project fail do to poor training plans and emphasis
      - Training requires user involvement
- Operations
  - Updating design documents, support documents
  - Transferring responsibility

Project Closure

- The Launch
  - Command and control center
  - Communications plan
  - Back-out and contingency planning
- Summation to leadership
  - Opportunities for improvement
  - Reward for team members and customers
    - Celebrate success for the best future projects

Real World Experiences

Some Practical Concerns and Examples

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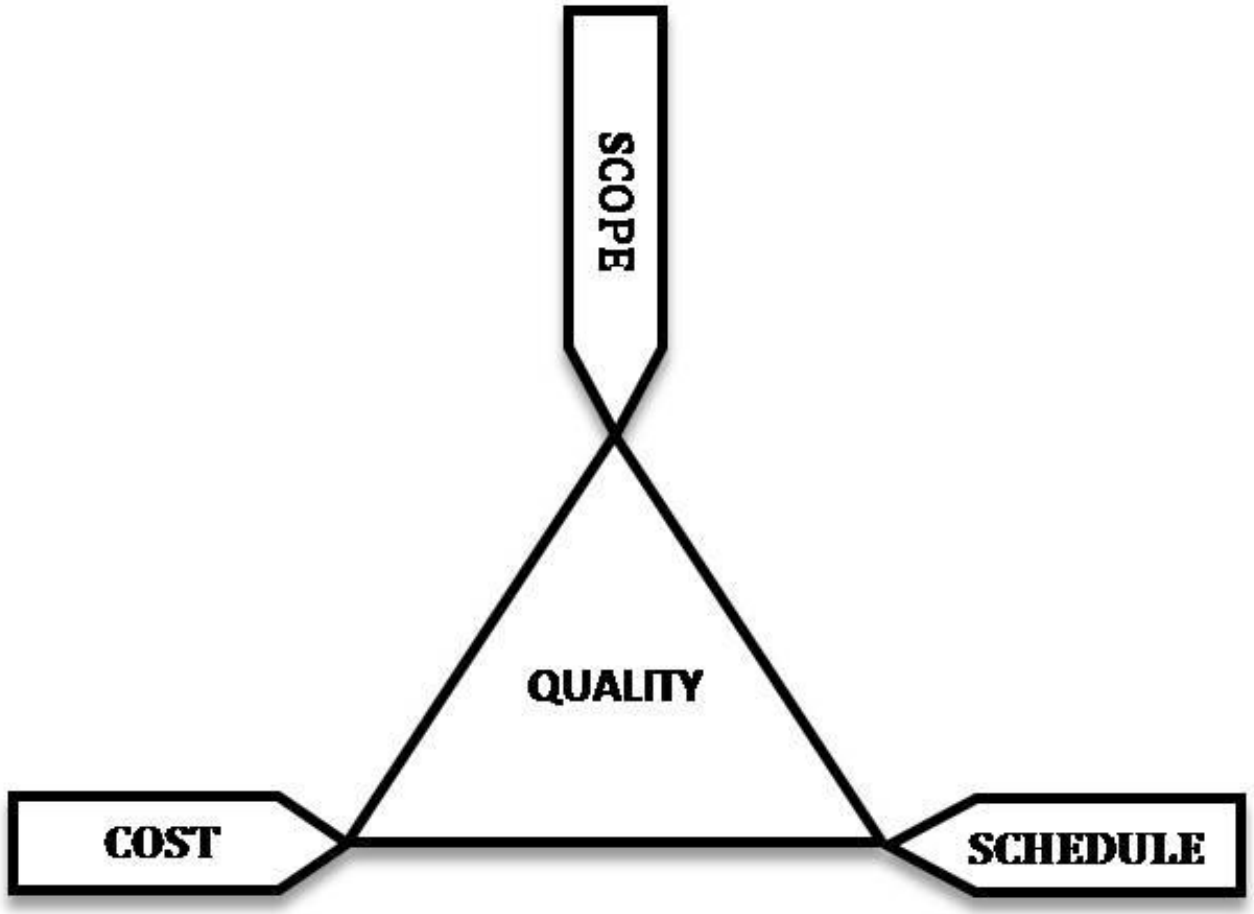
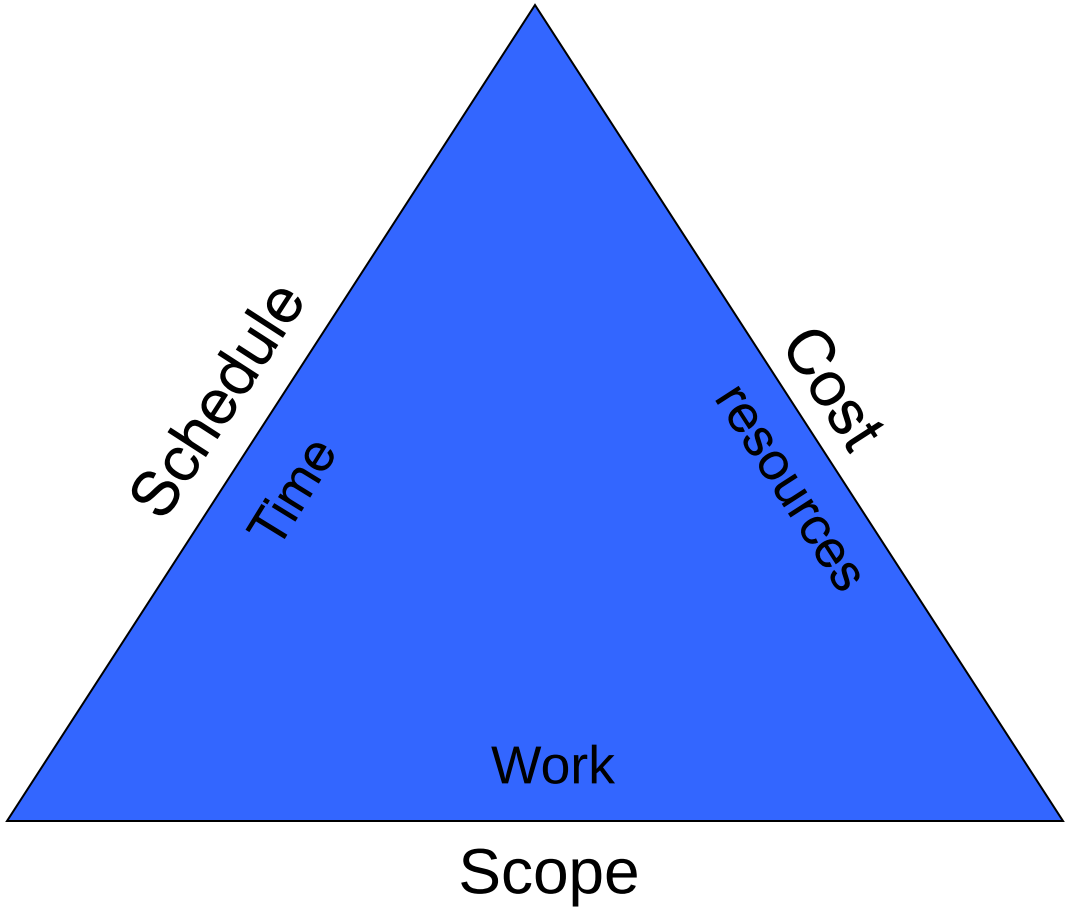
Managing Change

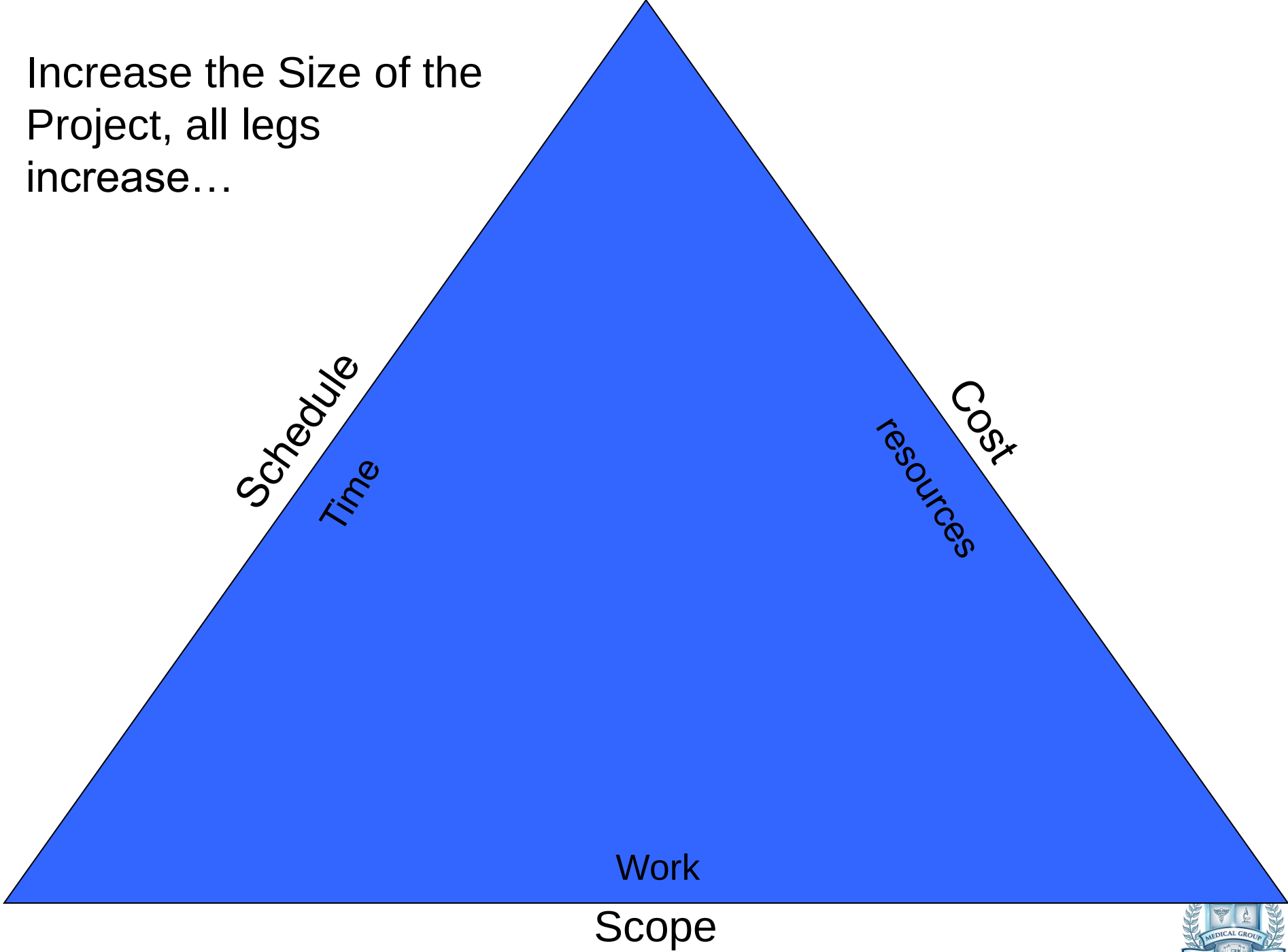
- All project have changes; it is inevitable
- Changes need to be managed or it can kill a project
- The most common changes is increased scope or "scope creep"
  - This can be due to poor project planning and analysis
  - Often due to a desire to increase functionality during a project
  - Sometime due to new technical or regulatory requirements

The Iron Triangle

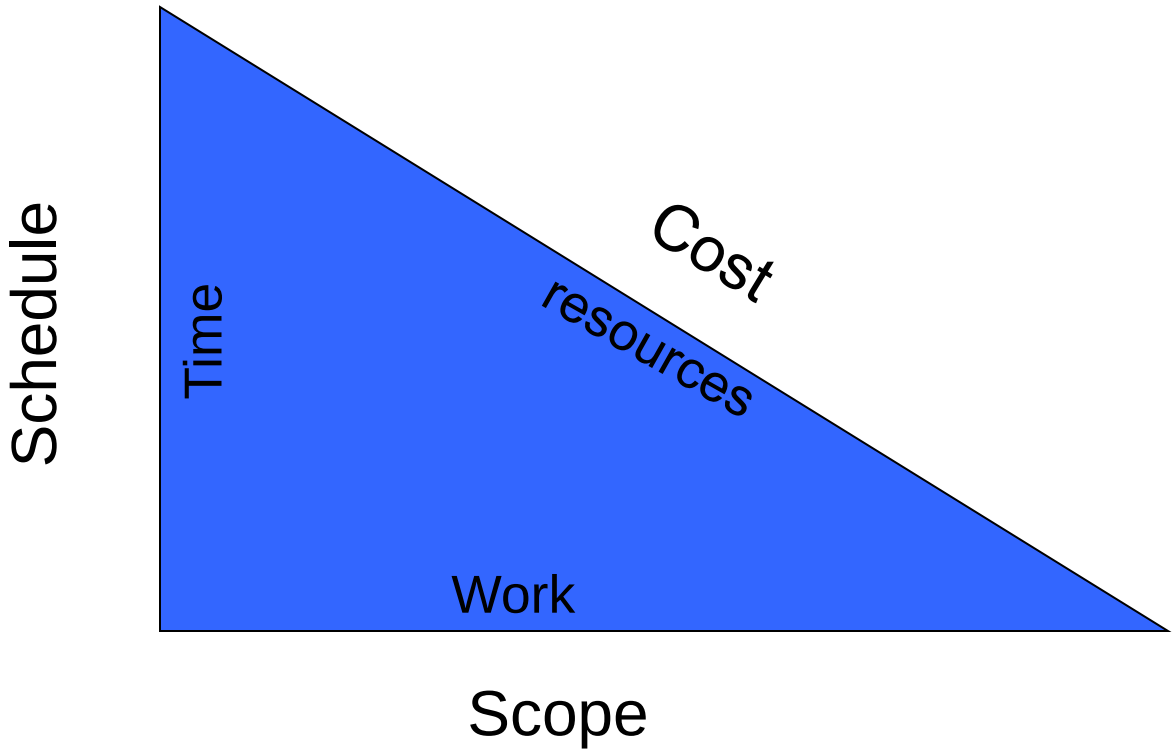



Schedule
Time
Cost
resources
Work
Scope

Increase the Size of the Project, all legs increase…



Decrease the duration of the project, but scope remains the same=increased cost



You Can Have It!

- Design something quickly and to a high standard, but then it will not be cheap.
- Design something quickly and cheaply, but it will not be of high quality.
- Design something with high quality and cheaply, but it will take a relatively long time.


Fast
Good
Cheap


YOU CAN HAVE IT:
GOOD
FAST
CHEAP
PICK TWO

Evaluating Your Needs

- Assumption: we know now what we need in the future

Wrong!

Evaluating Your Needs

Guiding Thoughts

- Functional needs
  - needs analysis
- Operational needs
  - Operations review; may relate to LEAN process
    - Workflow and work process mapping can highlight needs!
    - Service delivery: tracking for outreach
  - interface requirements
- Performance needs
  - Number of users
  - Number of institutions, geography
  - IT environment

Evaluating Your Needs

- Feature driven approach
  - Will resonate with end users
    - What features does your current LIS lack?
    - What features would improve your lab process?
- Technology driven approach
  - What technologies will work in our environment?
  - What technologies can improve LIS operations, management, functionality?

Evaluating Your Needs

- SWOT Analysis (Strength, Weakness, Opportunity, Threats) “Needs Analysis”
  - Generic approach
  - Gather information from each area that uses or will use the LIS
    - Get to the dirty laundry
  - Meet with users outside selection team meetings
  - Share information with team members

Evaluating Your Needs

- Key factors that need to be evaluated in the needs analysis and that will drive system selection
  - System functionality
  - Compatibility and synergy with other systems and IT environment
  - Scalability
  - Cost
  - Interaction with other vendors systems and health system vendor portfolio
  - Support and maintenance costs and human resources
  - Vendor stability

Evaluating Your Needs

Challenges

- Needs analysis is poorly understood process for most labs
- Workflow and SWOT analysis of current system can help focus thinking
  - Don’t perpetuate current bad practices
  - Involve other departments and understand their needs
    - Usually this is not done!
- Technophobia can hamper progress!
- System is often blamed for poor operations or workflow design

Evaluating Your Needs
Details

- System Selection-General Issues
  - Lab Environment
    - Volume of testing
    - Number of users
    - Number of sites (geographic)
    - More than one hospital
    - Inpatient, Outpatient, Outreach mix
    - Billing processes
    - Support team
    - User sophistication

Evaluating Your Needs
Details

- System Selection-General Issues
  - IT environment
    - Data center vs. department hosted vs. ASP
    - Support process
    - Interface engine
    - EMR vendor
      - Orders versus results only
    - Hardware platform expertise
    - Software platform orientation
    - Network topology, protocols

Evaluating Your Needs
Details

- Clinical Pathology System Selection
  - List of instrument vendors and interfaces
  - Areas of laboratory currently on system
    - Desire to expand support?
  - Current vendor
    (Strength, Weakness, Opportunity, Threats)
      - Get into the mud!
  - Number of users
  - Number of locations
    - Single versus multiple hospital

Evaluating Your Needs
Details

- AP System Selection
  - Are you using an AP system?
  - Data conversion issues
  - Interfaces to equipment
    - Less of a challenge than CP system
  - Interfaces to other systems
  - Need for outreach?
  - Imaging support

Practical Concerns

- Advanced functional requirements
  - Web accessibility
  - Remote support and operations
  - Advanced interfaces to instruments
  - System monuments: back end systems
  - Tracking of samples
  - Automation
- What works well in our current LIS?
  - What doesn’t? What are we looking for?

Practical Concerns

Vendor Selection Issues

- Application features are important but may be less so than:
  - Integration across systems
  - Support
  - Innovation and creative partnering
- Single vendor versus “best of breed”
  - Complex question driven by many different players
- Historical relationships
- Upgrade versus replace
  - Hardware, software, infrastructure

Practical Concerns

- Workflow Design and System Implementation
  - Outweigh any single application feature
    - Good application will be lost in poor system implementation
  - User's must design workflow
    - To do so they must understand opportunities available to them in the "new" system
      - Develop champions for each lab area and train them!
      - Prioritize what will be addressed over time
  - Plan for the future!
    - You can't do everything at once
    - Things will change
    - Choose a vendor and system that will grow with you
  - TEST, TEST and TEST some more!

Project Teams

Selection, Implementation, Operations

Evaluating Your Needs

"Needs Inventory"

- Create a process: Team Building
  - What information needs to be gathered?
    - Dependent on species of system you're selecting
  - Who needs to be involved?
    - Key stake holders
    - What level of the organization?
      - Deeper than system implementation team
  - How long do you want to take?
    - Process is never complete
    - Laboratory is very complex
    - Needs change

System Selection Team

- Create a formal team to participate in system selection
  - Will be different than implementation team
  - Make sure there is some overlap with implementation team
    - As you form this team make sure you consider who would be involved in implementation
  - Participants should be able to marshal end user's
  - Look for members who are committed to the process
  - Include the "nay sayers"

System Selection Team

- Engage team for selection at the **beginning** of the process
  - Many times system selection is “done to you”
    - This a bad way to start a long, hard process
  - Create buy in to process
    - Make these folks stake holders in selection
    - Pay off at implementation!

System Selection Team

- Capture work!
  - Process is irrelevant if data is not captured
  - Plan for administrative support
    - Meeting minutes
    - Schedules
    - Communication of status
  - Use spreadsheet, word processing documents PowerPoint
    - More on this in evaluation of need and data gathering
  - Put data online for easy communication and storage
    - Website for system selection

System Selection Team

- Educate the team
  - Selection process
  - Technology issues
  - Feature selection issues
  - Don’t assume anything
    - People bring great ideas and talent
  - Work to separate technology, system features and workflow issues
  - Demo’s and site visits

This is a great time to “raise the floor” on computing skills and IT

System Selection Team

- Who?
  - Get the chairman involved!
    - Kick off speech
  - Pathologists
  - Medical technologists
  - Clerical staff
  - Lab administration
  - IT teams: IT steering committee? IT Integration Committee?
  - Consultant
  - Health System leadership?
- Participants can drive data collection from other personnel
  - Not every person needs to be on the team

Watch out for becoming top heavy

  - Get people who use the current system daily and really know what works and what doesn't

System Selection Team
Consultants

- The right consultant is invaluable!
  - The wrong consultant will create a train wreck
- Use consultants judiciously
  - What is your internal capacity?
- Expert consultants can save you a lot of time and money
  - Bring professional approach to process
  - Keep you on track
  - Can bridge planning and implementation
  - Can assist in compiling data gathered in response to proposals
- There are valuable expert consultants out there!
- Don’t be embarrassed to use a consultant!

System Selection Team

- Plan who will have final say in selection
  - Process should be formal
    - Decide in advance how vendors and systems will be ranked, compared
      - Objective
      - Subjective
      - Use both

Project Meetings

Kinds of Meetings

- Administrative
- Working
- Communication
- The concept of “scrum”
- “Touch points”

Meeting Guiding Points

- Schedule meetings
  - Plan how long you expect to engage in pre-planning
  - Schedule meetings formally in advance
    - Weekly or bi-monthly minimum
  - Adhere to the schedule
    - Canceled meetings send a message!
  - Keep and publish minutes

Meeting Guiding Points

- Over communicate process issues
  - Committee charge
  - Where in the process are we?
  - What have we done?
  - What is next?
- Time and attendance will be a problem, plan on it
- Use the correct meeting format for the task at hand
  - Don’t include administrative layer in technical meetings!
- Why Scrum?
  - The value of small focused teams working specific aspects of a project

Budgeting and Institutional Planning

Budgets

- Budgeting and resources
  - Capital budget for initial systems purchases
    - Plan and budget for ancillary systems (SLAM's Middleware)
    - Contingency
  - Operations budget
  - Development budget
  - Human Resources
    - Deployment
    - Operation
    - Continued development
    - Training resources
    - Subject matter experts
- Time and human resources are your most precious commodities
  - How will implement and design and still get the day's work done?

Institution Planning

- SWOT Analysis can lead to justification for capital purchase
  - Also creates raw material for bid solicitation
- LIS purchase is a capital request for a lot of money: who do you need to convince?
  - Does lab have its own IT budget?
    - Chairman
  - Is capital for LIS part of institutional pool?
    - CEO, CIO
- Some level of lobbying for capital should precede development of process
  - No money, no LIS

Institution Planning

- If IT budget is part of central IT group, there may be a desire for IT to select a system for you…
  - This is not a good thing
    - Get IT on the selection team
    - Show IT you know what you are doing
      - Meet with CIO early
  - IF IT is going to lead the process, make sure lab has a leadership role on the selection team

Institution Planning

- Develop a concrete budget and allocate ample funds for system design, selection, implementation
  - This may need to occur prior to submitting a request for proposal to vendors
    - Catch 22
    - Use system cost of similar colleagues to get close
    - RFQ: request for quotation?
  - Plan to revise budget as proposals come in and vendor is selected
    - Build in significant contingency money
  - Don’t forget the cost of ongoing support
- There will be budget shortfalls regardless of how you proceed
  - Contingency funds of 10-20%

Institution Planning

- Tie lab system replacement to other major institutional initiatives
  - EMR build
  - Purchase of new hospitals and clinics
  - Expansion of clinical services
    - Outreach
  - New centers of excellence
  - Patient safety
  - Customer satisfaction
  - Pay for performance
  - Process improvement: LEAN, Toyota, Six Sigma
  - All of these at once!

Institution Planning

- Be aware of institution wide projects and resource availability
  - You will come up financially short
  - Project will take longer than hoped for
  - Do it right!
    - No one remembers a system coming up a few months late
    - No one forgets a train wreck!

Concluding Remarks

Sequential List of Steps in implementing a Project

- Gather and describe goals and objectives
- Selecting a system to implement: RFI, ROM, RFP
- Financing the purchase (Capital)
- Creating a project plan ROM → PPP
- Resourcing the project as outlined
  - Time, space, personnel, capital, assets
- Organizing the project team, communications, meeting schedules
- Designing and building the project, iterative design, validation and testing
- Simulation workflow
- Training (team members, end users)
- Activation
- Operations

Key Mistakes in LIS Implementation

- Trying to automate too many of your existing processes too soon
- Weighting internal lab features too high
- Weighting core system technologies too low such as
  - Hardware
  - Database flexibility
  - Networking standards
  - Open system design
- Weighting order entry and reporting too low
- Not planning enough time to do the job
- Not involving all system users in advance

Don't forget to Plan for Updates!

- Updates, Upgrades, New systems
  - Informatics landscape is never stable!
    - Disruptive technology
  - All updates and upgrades require significant validation testing
    - Involves personnel across an institution
    - Lab is typically and comparatively very thorough about this
  - New systems require new resources
    - Rarely actualized

Why do system implementations fail?

- Flawed selection process
  - “decide how to decide” -Braley
- Poor planning
- Poor communication
- Wrong people involved
  - Too many people involved
  - Too few people involved
- Lack of alignment with institutional goals
  - Budget
  - Project collisions

The End

Questions?

J Mark Tuthill, MD
Division Head, Pathology Informatics
Department of Pathology & Laboratory Medicine
Henry Ford Hospital
Detroit, MI
mtuthil1@hfhs.org