
Chapter 9

Project Planning and Project Management

Dr. Supakit Nootyaskool

Faculty of Information Technology

King Mongkut's Institute of Technology Ladkrabang



Chapter outlines

- ▶ Principles of project management
- ▶ Activities of SDLC core process 1:
 - ▶ Identify the problem and obtain approval
- ▶ Activities of SDLC core process 2:
 - ▶ plan and monitor the project



Objectives

▶ Describe

- ▶ The factor that cause a software development project to succeed or fail
- ▶ The responsibilities of a project manager
- ▶ The knowledge areas in the project management body of knowledge (PMBOK)
- ▶ The agile approach to the project management knowledge areas

▶ Explain

- ▶ The activities required to get a project approved (core process 1)
- ▶ The activities required to plan a monitor a project (core process 2)



Overview from Chapter 8

Adaptive approaches

1) How are all these activities coordinated?

2) How do I know which tasks to do first?

3) How is the work assigned to the different teams and team members?

4) How do I know which parts of the new system should be developed first?



9.1 Principle of project management

Applications

- Web App.
- Win App.
- Mobile App.

Concerned ?

- How to organize your work
- How to manage the project

Failing to organize usually causes wasted time and effort as well as confusion and many cause the project fail



Many factor cause to difficult project

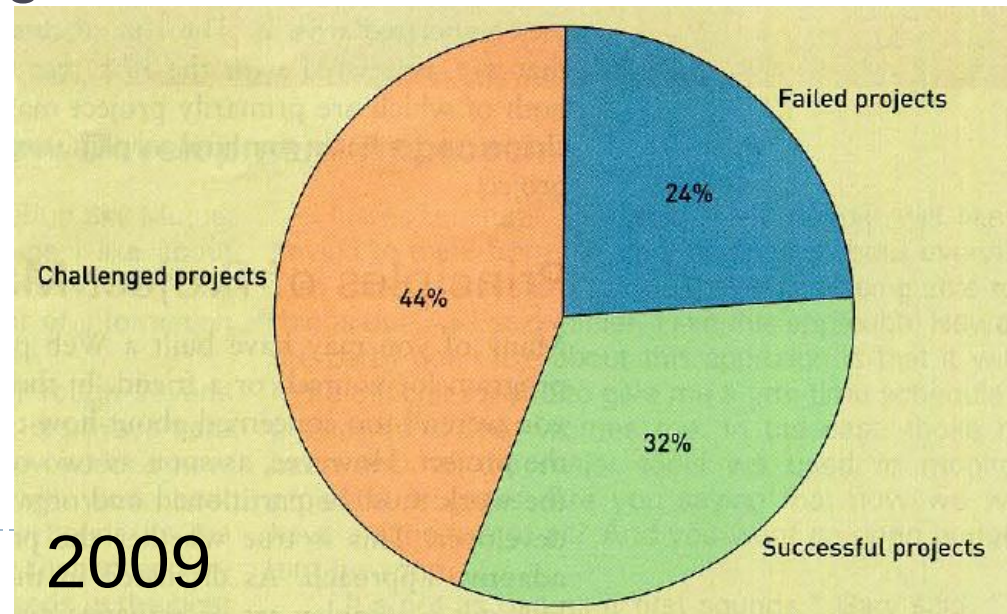
There are factor related to project and completing of project

- ▶ Different product are produced
- ▶ Different activities
- ▶ Varying schedules
- ▶ Different resources
- ▶ ...



9.1.1 The need for project management

- ▶ CHAOS show statistics of IT dev.
- ▶ 1) Successful project
 - ▶ Finishing on time
 - ▶ Finishing within budget
- ▶ 2) Challenged project
 - ▶ Some combination of being late
 - ▶ Over budget
 - ▶ Reduce in scope
- ▶ 3) Failed project
 - ▶ Cancelled



9.1.1 The need for project management

- ▶ Here are some of the reason for failure project:

Lack of executive involvement

Lack of management skills

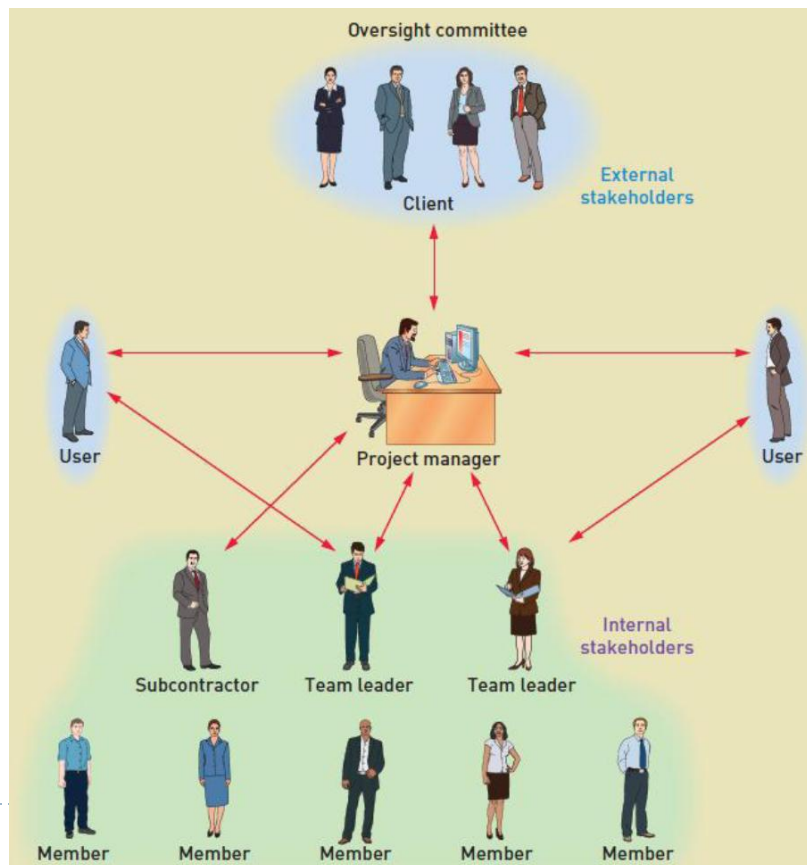
Lack of involvement by user community

Lack of programming skills

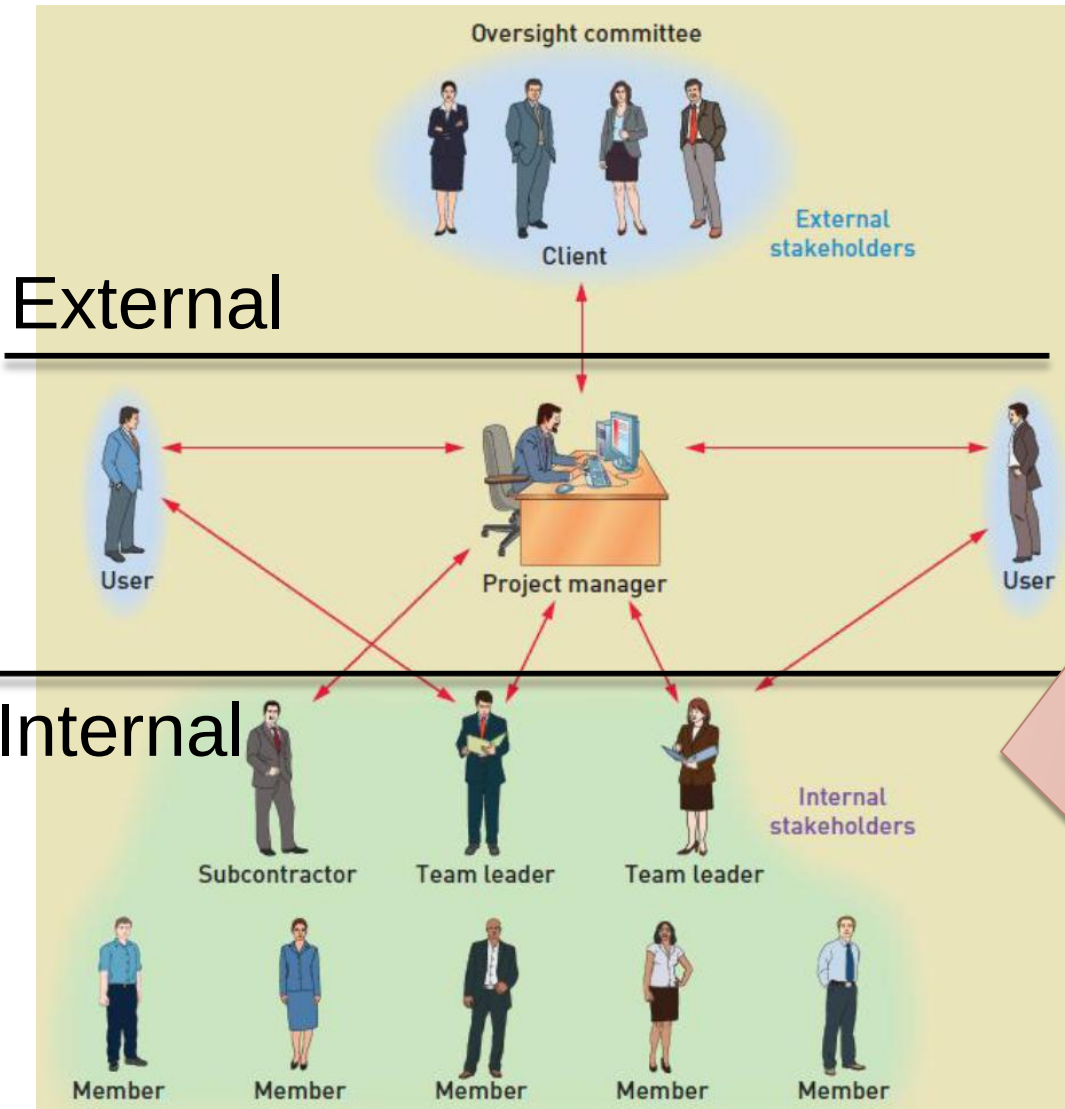


9.1.2 The role of the project manager (1)

- ▶ “Project management” is organize and directing other people to achieve a planned result within a predetermined schedule and budget.



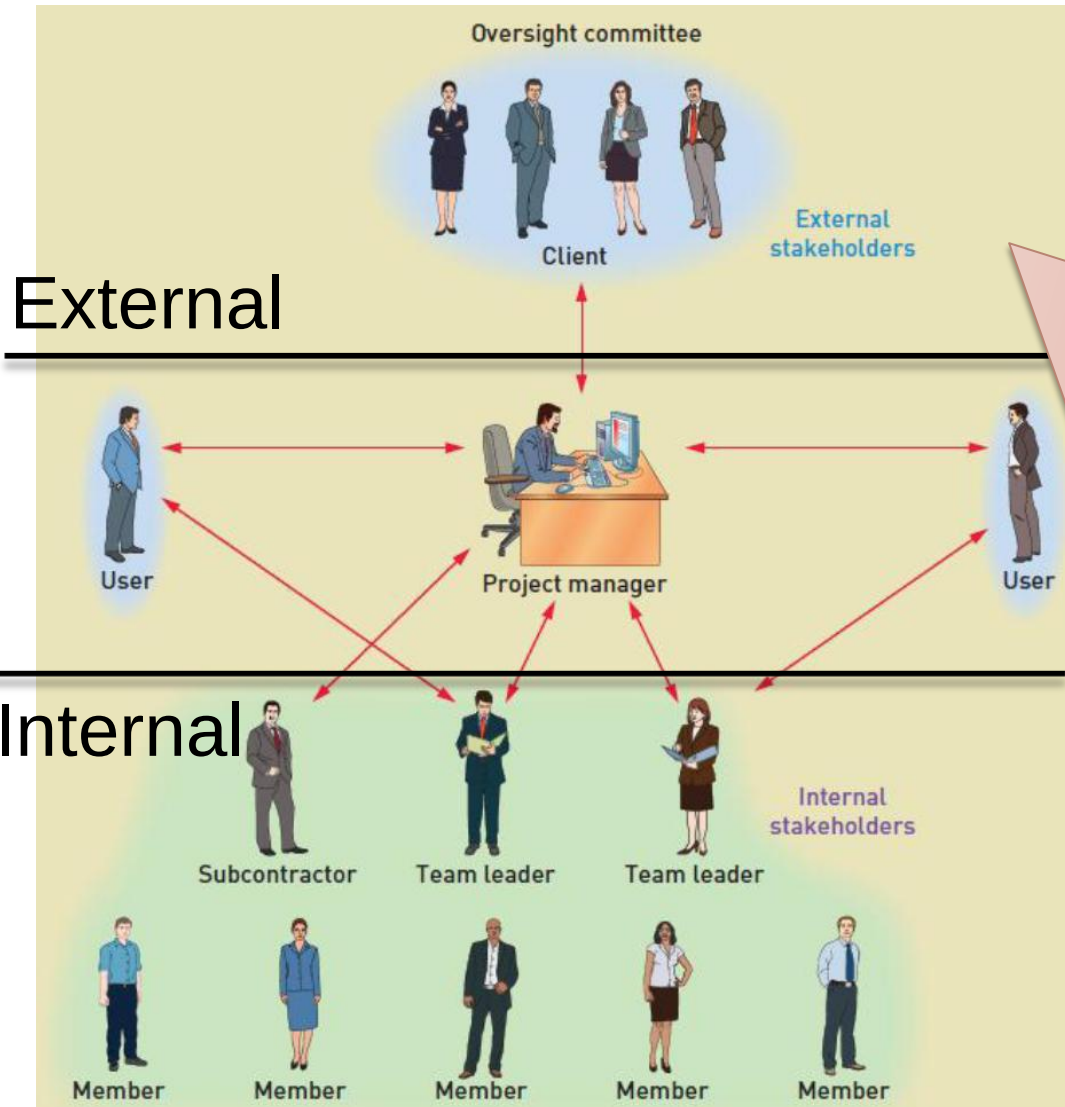
9.1.2 The role of the project manager (2)



Internal responsibilities:

- Developing the project schedule
- Recruiting and training team member
- Assigning work to team and team member
- Assessing project risks
- Monitoring and controlling project deliverables and milestone

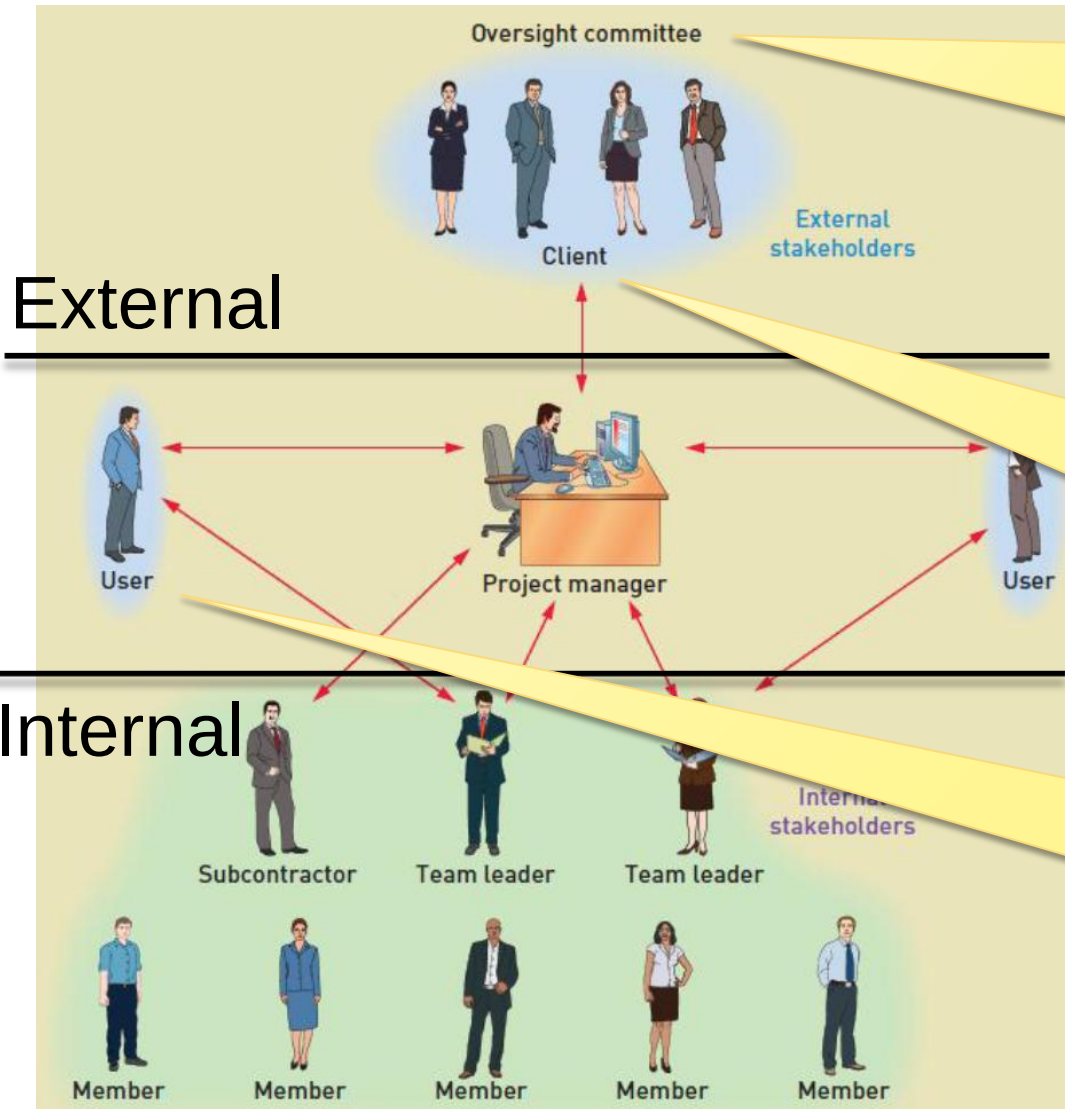
9.1.2 The role of the project manager (3)



External responsibilities:

- Reporting the project's status and progress
- Working directly with the client (the project's sponsor) and other stakeholder
- Identifying resource need and obtaining resources

9.1.2 The role of the project manager (4)



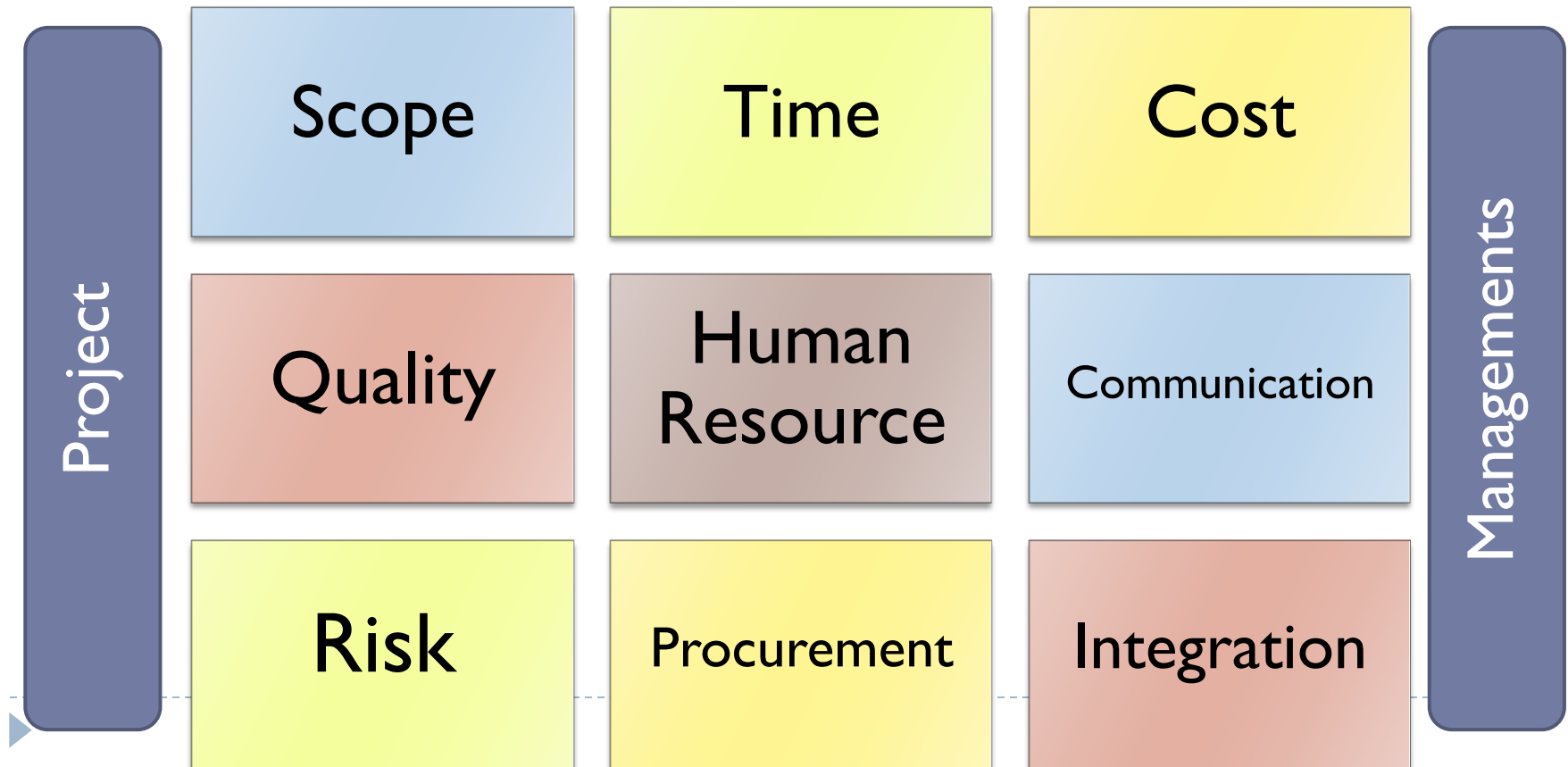
Client is the person or group that funds the project.

Oversight committee is client and key managers who review the progress and direct the project.

User is the person or group of people will use the new system.

9.1.3 Project Management Body of Knowledge (PMBOK)

- ▶ PMBOK is a project management guide and standard of fundamental project management principles.
- ▶ Nine knowledge areas for organization

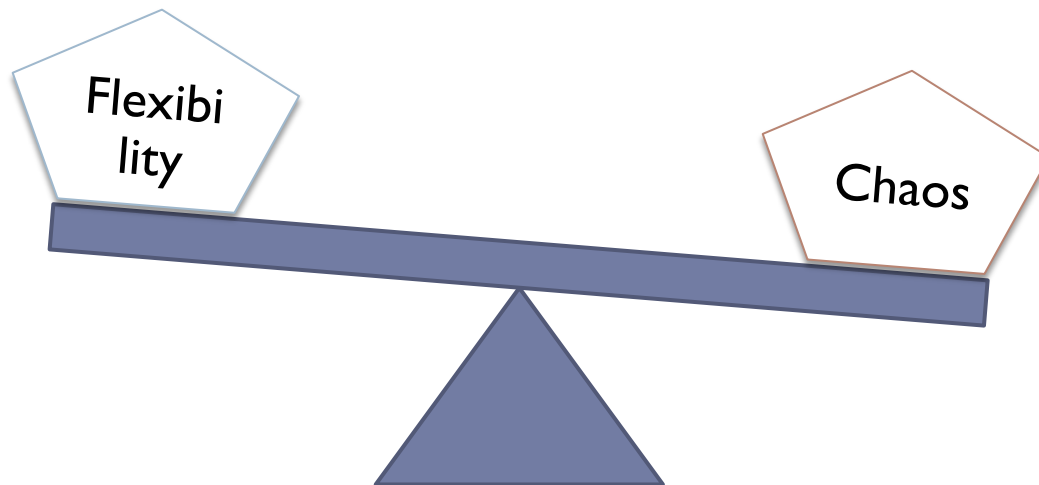


9.1.4 Agile Project Management

► Remember 4-value of Agile development

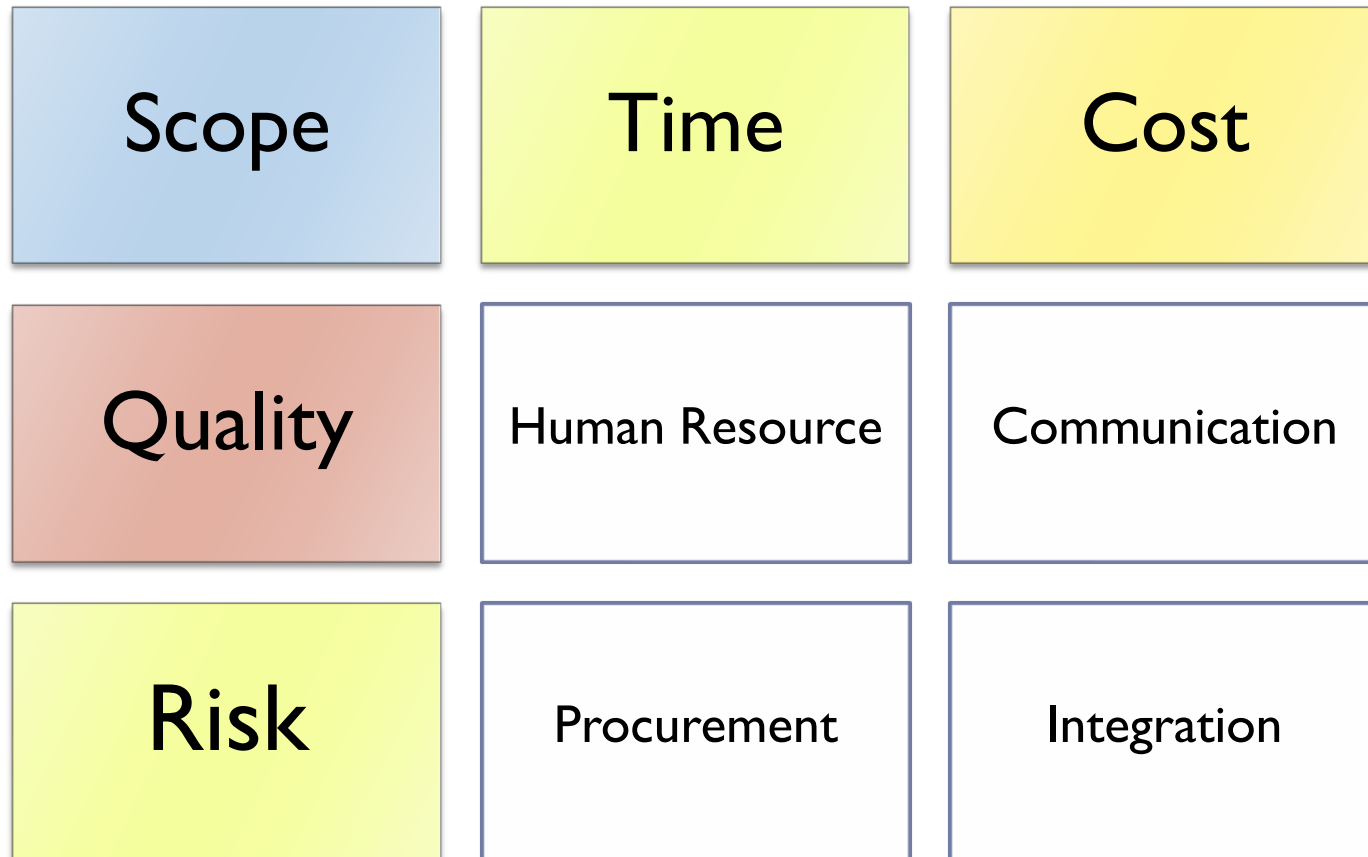
- Value responding to change over following a plan
- Value individuals and interactions over processes and tools
- Value working software over comprehensive documentation
- Value customer collaboration over contract negotiation

► **Chaordic** = Chao {*unpredictable, disorder*} + Order



9.1.4

Agile Project Management VS PMBOK



9.1.4

Agile Project Ma

Scope

Quality

Risk

Traditional predictive
project



9.1.4

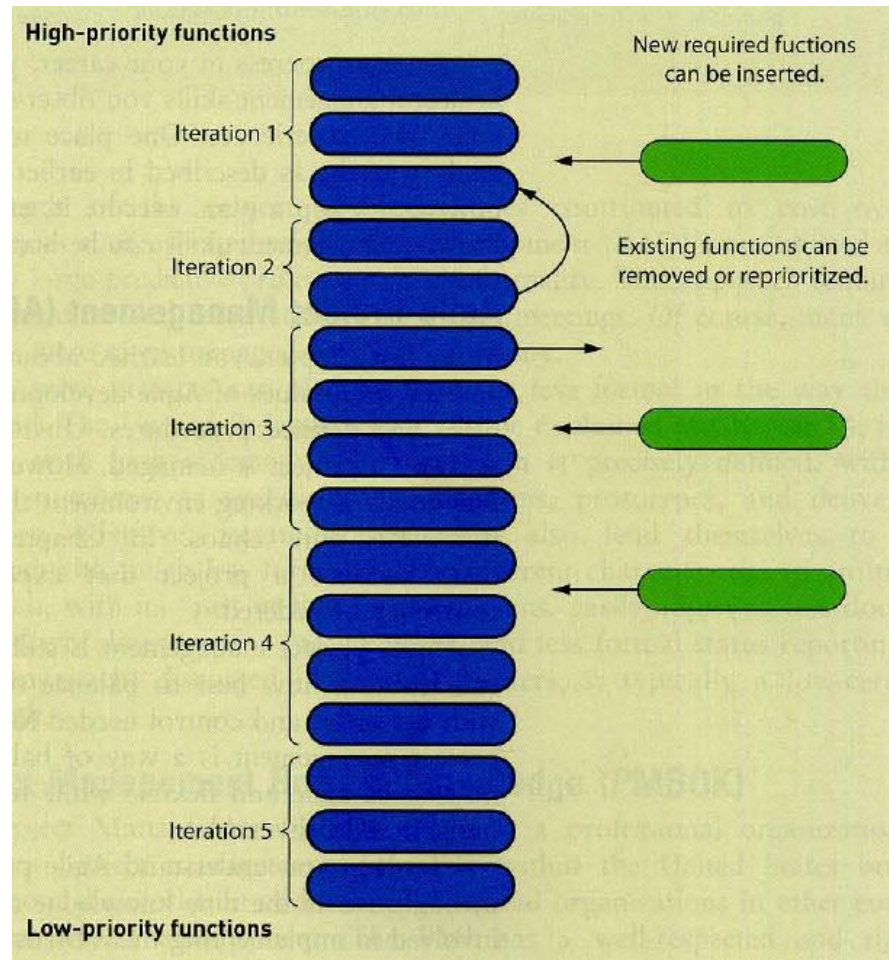
Agile Project Ma

Scope

Quality

Risk

Agile philosophy



9.1.4

Agile Project Ma

Scope

Quality

Risk

Predictive project

- The system test
- The integration test
- The user acceptance test

Agile project

- Each iteration test
- The integration test

9.1.4

Agile Project Ma

Scope

Quality

Risk

Predictive projects

The separate prototypes are build.

Adaptive projects

The high-risk portions of the new system are build first.

9.1.4

Agile Project Management VS PMBOK

Scope

Time

Cost

Predictive projects

The schedule is created during initial planning phase.

Agile projects

- Divide project into iterations (priority ordering)
- an iteration = 2 to 4 weeks

9.1.4

Agile Project Management VS PMBOK

Scope

Time

Cost

Predictive projects

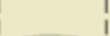
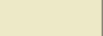
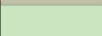
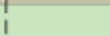
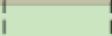
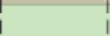
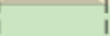
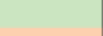
The project manager gives estimation cost.

Agile projects

Agile project manager admit more readily that time and cost estimates.

9.2 Activities of core process 1: Identify problem and obtain approval

- 1) Identify the problem
- 2) Quantify project approval factors
- 3) Perform risk and feasibility analysis
- 4) Review with the client and obtain approval

Core Processes	Iterations					
	1	2	3	4	5	6
Identify problem and obtain approval.						
Plan and monitor the project.						
Discover and understand details.						
Design system components.						
Build, test, and integrate system components.						
Complete system tests and deploy solution.						

9.2.1

Identify problem and obtain approval

The factors relate to identify the problem for the project.

- ▶ **Strategic plan**

- ▶ Short term
- ▶ Long term
- ▶ Some plan gives the schedule to create a project .

- ▶ **Specific of project**

- ▶ To Solve the business problem
- ▶ To respond to outside directive
 - ▶ Change in Tax
 - ▶ Changing minimum wage (Salary) → 300Baht

- ▶ **Check and ensure for the new project is the business need.**



9.2.1

Identify problem and obtain approval (2)

► Define the problem is to develop from a system vision document that consists with

- The problem description
- The system capabilities
- The anticipated business benefits

Consolidated Sales and Marketing System
System Vision Document


MINISTRY OF EDUCATION
OUTFITTERS

Problem Description
Sales and marketing on the Web has changed drastically since the CSS system was built. Customers are more sophisticated, and they are used to catalog and sales systems that are easy to use and provide many services, such as one-click ordering, deferred-purchase tracking, simplified searches, and comparison shopping. In addition, research has shown that sales increase dramatically when social media marketing tools are combined with basic sales functionality. Hence, the new CSMS is needed not only to respond to today's competition but to launch RMO into today's world of social media and mobile computing. The longer RMO delays in starting this project, the more opportunities it misses.

System Capabilities
This document identifies the required system capabilities at a high level. Later documents will specify the detailed requirements. These capabilities are required:

- Provide a shopping cart capability.
- Support customer sales with high automation (one-click, etc.).
- Recommend related product purchases and comparison shopping.
- Allow customer ratings and recommendations.
- Include "friend" network capability.
- Include comprehensive order fulfillment.
- Support multiple and split-order shipping and tracking.
- Support back-ordering and tracking.
- Allow customer comments and feedback.
- Provide customer account and billing capability.
- Provide individualized customer accounting.
- Support electronic billing and many electronic payment methods.
- Accumulate customer "points" and allow transfer and sharing.
- Include marketing functions for promotions and specials.
- Provide flexible promotions and sales.
- Accumulate and track "points" from suppliers directly to customers.
- Interface with social marketing media for advertising and social marketing activities.
- Support mobile devices for social marketing and sales.

Business Benefits
The primary business benefit of these capabilities will be to increase sales by connecting with customers and improving the customer experience. The specific benefits include:

- Increasing the size of customer purchases
- Increasing the frequency of customer purchases
- Increasing customer satisfaction
- Increasing product recommendations from customers to friends
- Attracting new customers through recommendations and social marketing
- Building customer loyalty with recommendations and service
- Increasing speed of product availability
- Eliminating shipping delays and outages

Vision document (1): Problem description

Consolidated Sales and Marketing System System Vision Document



Problem Description

Sales and marketing on the Web has changed drastically since the CSS system was built. Customers are more sophisticated, and they are used to catalog and sales systems that are easy to use and provide many services, such as one-click ordering, deferred-purchase tracking, simplified searches, and comparison shopping. In addition, research has shown that sales increase dramatically when social media marketing tools are combined with basic sales functionality. Hence, the new CSMS is needed not only to respond to today's competition but to launch RMO into today's world of social media and mobile computing. The longer RMO delays in starting this project, the more opportunities it misses.



Vision document (2): System capabilities

System Capabilities

This document identifies the required system capabilities at a high level. Later documents will specify the detailed requirements. These capabilities are required:

- Provide a shopping cart capability.
 - Support customer sales with high automation (one-click, etc.).
 - Recommend related product purchases and comparison shopping.
 - Allow customer ratings and recommendations.
 - Include “friend” network capability.
- Include comprehensive order fulfillment.
 - Support multiple and split-order shipping and tracking.
 - Support back-ordering and tracking.
 - Allow customer comments and feedback.
- Provide customer account and billing capability.
 - Provide individualized customer accounting.
 - Support electronic billing and many electronic payment methods.
 - Accumulate customer “points” and allow transfer and sharing.
- Include marketing functions for promotions and specials.
 - Provide flexible promotions and sales.
 - Accumulate and track “points” from suppliers directly to customers.
 - Interface with social marketing media for advertising and social marketing activities.
 - Support mobile devices for social marketing and sales.

Vision document (3): Business benefits

Business Benefits

The primary business benefit of these capabilities will be to increase sales by connecting with customers and improving the customer experience. The specific benefits include:

- Increasing the size of customer purchases
- Increasing the frequency of customer purchases
- Increasing customer satisfaction
- Increasing product recommendations from customers to friends
- Attracting new customers through recommendations and social marketing
- Building customer loyalty with recommendations and service
- Increasing speed of product availability
- Eliminating shipping delays and outages



9.2.2

Quantify project approval factors

The criteria must frequently be considered to obtain project approval:

- ▶ The **estimated time** for project completion
- ▶ The **estimated cost** for the project and system
- ▶ The **anticipated benefits** from the deployment of the new system



9.2.2

Quantify project approval factors

The criteria must frequently be considered to obtain project approval:

- ▶ The **estimated time** for project completion
- ▶ The **estimated cost** for the project and system

Time Estimate for the New CSMS Project			
Subsystem	Functional requirements	Iterations required	Estimated time
Sales subsystem*	15	5	20 weeks
Order Fulfillment subsystem*	12	5	20 weeks
Customer Account subsystem**	10	4	15 weeks
Marketing subsystem**	6	3	13 weeks
Reporting subsystem**	7	3	12 weeks
Total development time (2 teams)			40 weeks
Final hardening and acceptance testing		2	8 weeks
Total project time			48 weeks

*Assigned to Tiger team

**Assigned to Cougar team

Oper. Cost

Summary of Estimated Annual Operating Costs for CSMS	
Recurring expense	Amount
Connectivity/hosting	\$156,000.00
Programming	\$75,000.00
Help desk	\$90,000.00
Total	\$321,000.00

- ▶ The **estimated cost** for the project and system
- ▶ The **estimated cost** from the deployment of the new

Dev. Cost

Summary of Development Costs for CSMS	
Expense category	Amount
Salaries/wages (includes benefits costs) (1 PM, 8 analysts, 1 support)	\$936,000.00
Equipment/installation	\$308,000.00
Training	\$78,000.00
Facilities	\$57,000.00
Utilities	\$97,000.00
Travel/miscellaneous	\$87,000.00
Licenses	\$18,000.00
Total	\$1,581,000.00

Est. Benefit

Estimated Annual Benefits for CSMS	
Benefit or cost saving	Amount
Recapture/prevention of lost sales	\$200,000.00
Increase sales to existing customers	\$300,000.00
Sales to new customers	\$350,000.00**
Increased efficiency in order processing	\$50,000.00
Reduction of data center and equipment costs because of hosting	\$146,000.00
Total	\$1,046,000.00

**plus 8% annual growth

- ▶ The **estimated benefits** from the project and system
- ▶ The **anticipated benefits** from the deployment of the new system

- Opening up new markets with new services, products, or locations
- Increasing market share in existing markets
- Enhancing cross-sales capabilities with existing customers
- Reducing staff by automating manual functions or increasing efficiency
- Decreasing operating expenses, such as shipping charges for “emergency shipments”
- Reducing error rates through automated editing or validation
- Reducing bad accounts or bad credit losses
- Reducing inventory or merchandise losses through tighter controls
- Collecting receivables (accounts receivable) more rapidly

9.2.2

Cost/Benefit analysis

- ▶ Use present value (after discount factor)
- ▶ Estimate the useful life of the system
- ▶ The **net present value (NPV)** after 5 years is \$1,713,097
- ▶ Payback period is 2 years and 128 days

	A	B	C	D	E	F	G	H
1				RMO Cost/Benefit Analysis for CSMS				
2		Category	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
3	1	Value of benefits		\$1,046,000	\$1,074,000	\$1,104,240	\$1,136,899	\$1,172,171
4	2	Development costs	-\$1,581,000					
5	3	Annual expenses		-\$321,000	-\$321,000	-\$321,000	-\$321,000	-\$321,000
6	4	Net benefit/costs	-\$1,581,000	\$725,000	\$753,000	\$783,240	\$815,899	\$851,171
7	5	Discount factor	1.0000	0.9434	0.8900	0.8396	0.7921	0.7473
8	6	Net present value	-\$1,581,000	\$683,965	\$670,170	\$657,608	\$646,274	\$636,080
9	7	Cumulative NPV	-\$1,581,000	-\$897,035	-\$226,865	\$430,743	\$1,077,017	\$1,713,097
10	8	Payback period	2 years +	226865 / (226865+430743) = .35			or 2 years + 128 days (.35*365)	

Develop and deployment project

	A	B		D	E	F	G	H
1				RMO Cost/Benefit Analysis for CSMS				
2		Category	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
3	1	Value of benefits		\$1,046,000	\$1,074,000	\$1,104,240	\$1,136,899	\$1,172,171
4	2	Development costs	-\$1,581,000					
5	3	Annual expenses		-\$321,000	-\$321,000	-\$321,000	-\$321,000	-\$321,000
6	4	Net benefit/costs	-\$1,581,000	\$725,000	\$753,000	\$783,240	\$815,899	\$851,171
7	5	Discount factor	1.0000	0.9434	0.8900	0.8396	0.7921	0.7473
8	6	Net present value	-\$1,581,000	\$683,965	\$670,170	\$657,608	\$646,274	\$636,080
9	7	Cumulative NPV	-\$1,581,000	-\$897,035	-\$226,865	\$430,743	\$1,077,017	\$1,713,097
10	8	Payback period	2 years +	226865 / (226865+430743) = .35			or 2 years + 127 days (.35 * 365)	

Break-even point

Payback periods

9.2.2

Tangible / Intangible benefit

▶ Tangible benefit

- ▶ A benefit that can be measured or estimated in term of dollars.

▶ Intangible benefit

- ▶ A benefit that accrues to an organization but that can't be measured quantitatively or estimated accurately.

Intangible benefits

- Increased level of services
- Increased customer satisfaction
- Survival
- Need to develop in-house expertise

Intangible cost

- Reduce employee morale
- Lost productivity (Not be able to estimate it)
- Lost customer or sales



9.2.3

Determining project risk and feasibility

▶ Potential risks:

- ▶ Determine organizational risks and feasibility.
- ▶ Evaluate the technological risks and feasibility.
- ▶ Assess the resource risks and feasibility.
- ▶ Identify the schedule risks and feasibility.



9.2.3

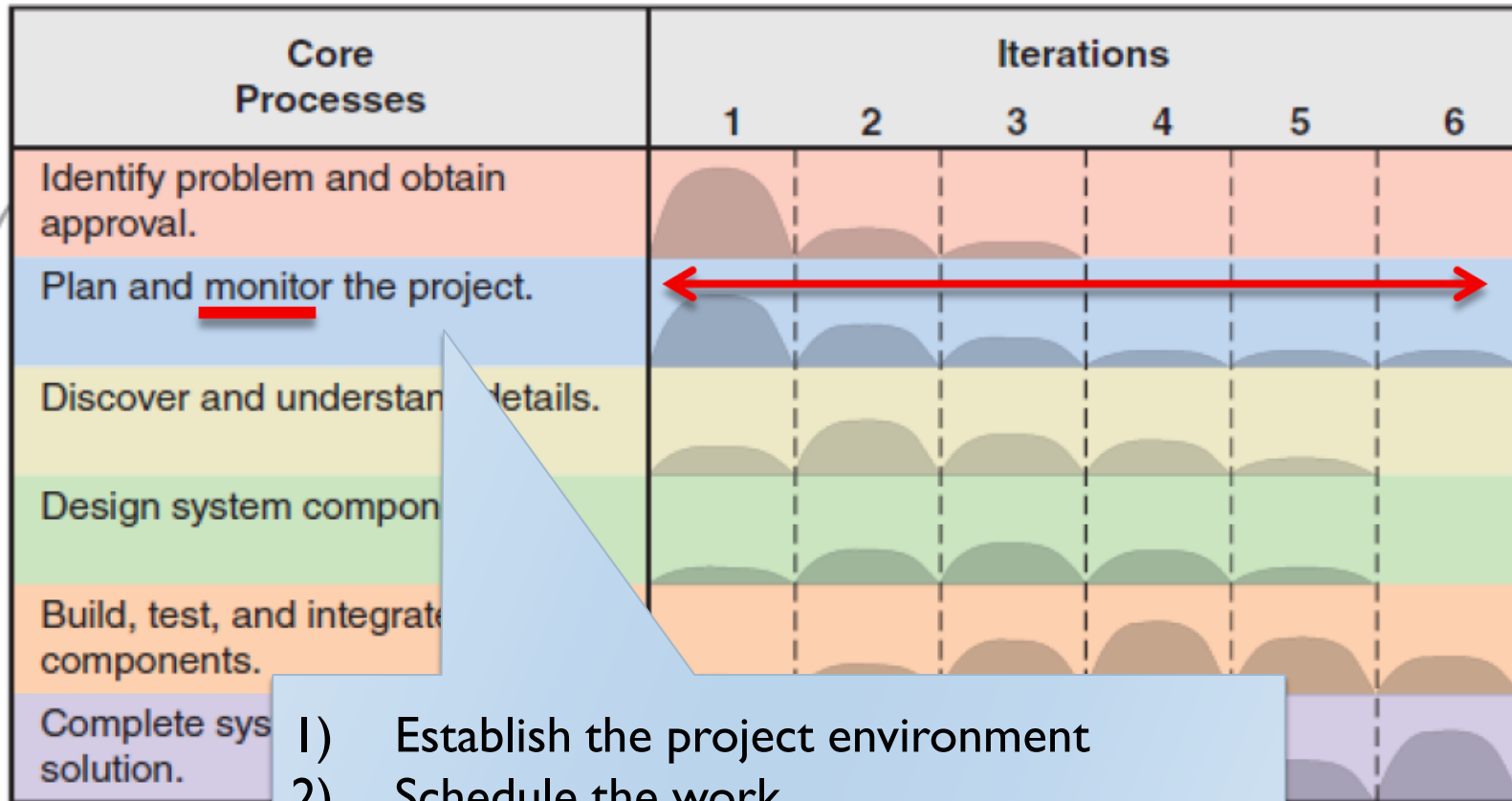
Determining project risk and feasibility

► Potential risks:

- Determine organizational risks and feasibility.
- Evaluate the technological risks and feasibility.
- Assess the human risks and feasibility.

- Substantial computer phobia
- A perceived loss of control on the part of staff or management
- Potential shifting of political and organizational power due to the new system
- Fear of change of job responsibilities
- Fear of loss of employment due to increased automation
- Reversal of long-standing work procedures

9.3 Activities of core process 2: Plan and Monitor the project



- 1) Establish the project environment
- 2) Schedule the work
- 3) Staff and allocate resources.
- 4) Evaluate work processes
- 5) Monitor progress and make corrections.

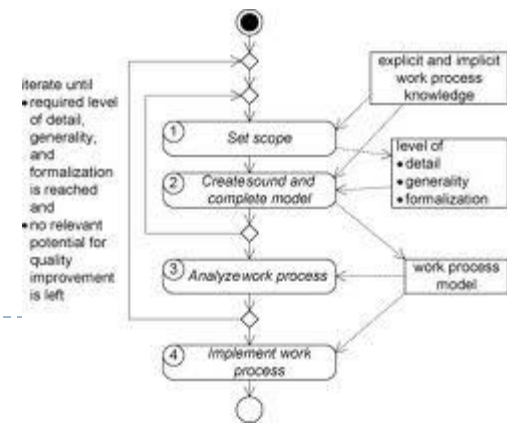
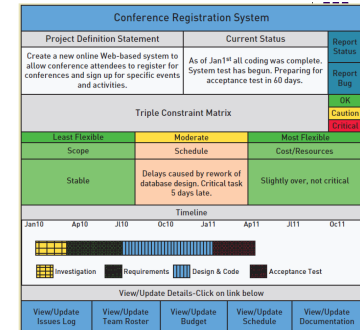
9.3.1

Establish the project environment:

Recording and communicating

Work environments

Processes and Procedures

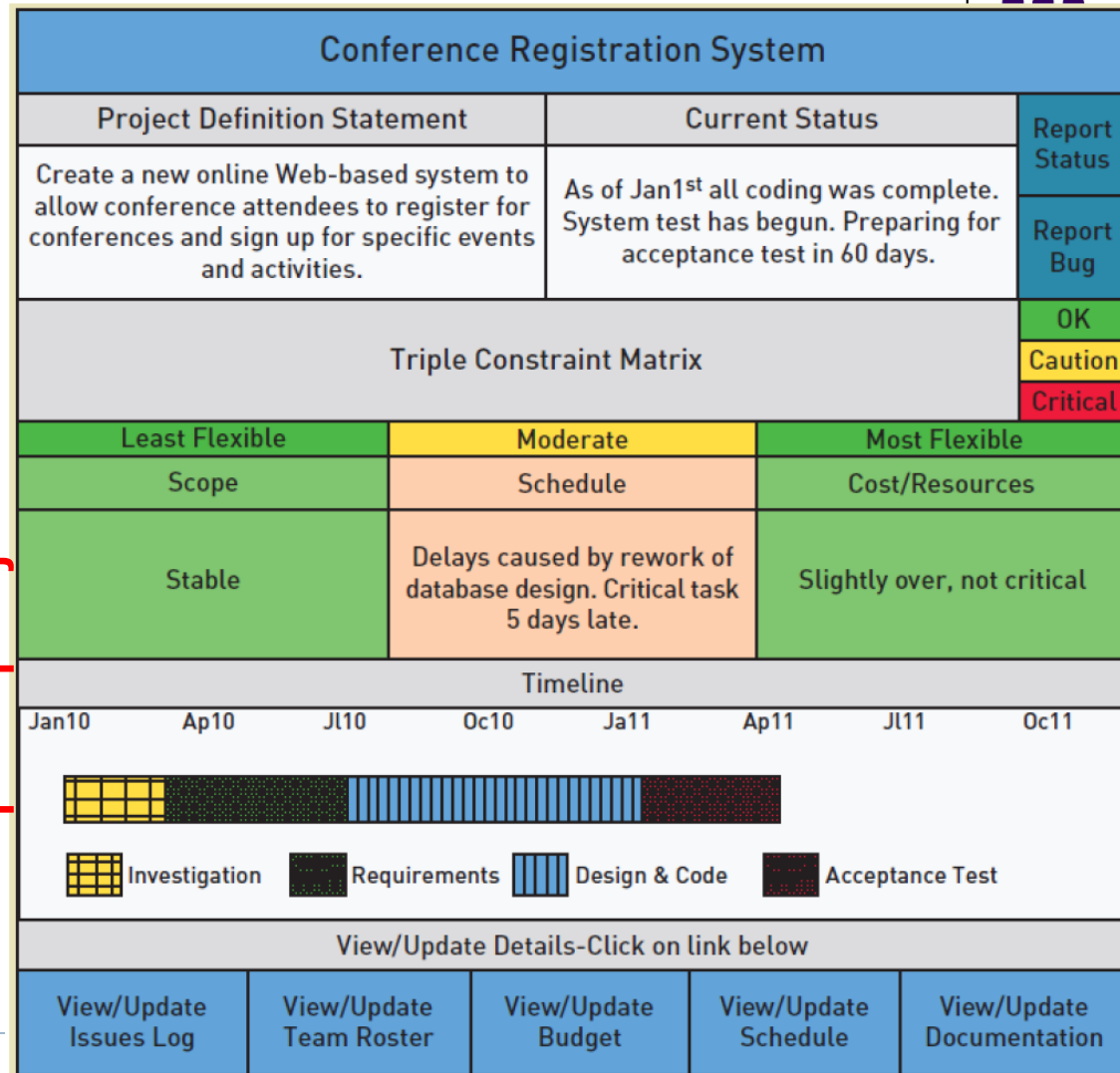


9.3.1 Establish the project environment: Recording and Communication

Example: project dash board

► Project tracking Tools

- Dash board
- Web
- Spreadsheets
- Email
- Online sharing folder
 - Dropbox



Black Sea Port Construction Project

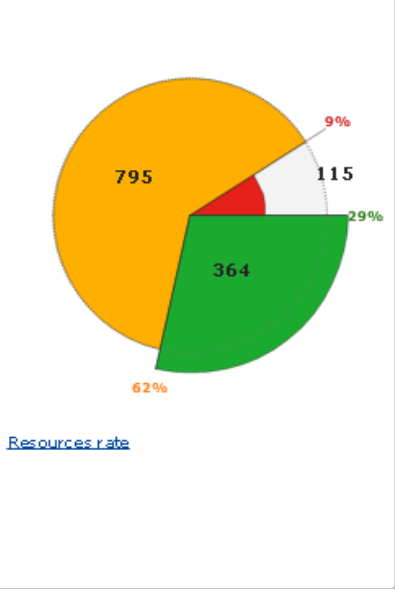
Project Summary (Passport)

Project manager:
Start:
Finish: 2009-03-03
Duration: 365 day(s)
Complete: 40%
Budget: \$6 500 000,00
Goal: Open Black Sea Port in 2009

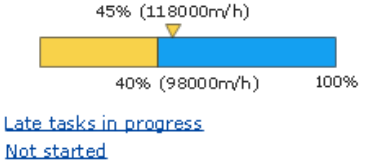
Earned Value Schedule Indicators

ACWP	\$4750000	CPI	1,01
BCWP	\$4800000	SPI	0,96
BCWS	\$5000000	EAC	6433000
SV	-200000	VAC	67000
SV%	-4%	TCPI	0,97
CV	50000		
CV%	1,04		

Resources and Tasks



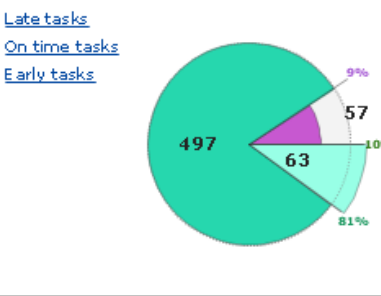
Project Complete



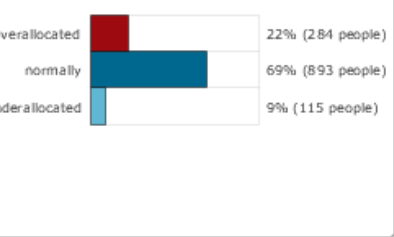
Cost and Budget



Tasks



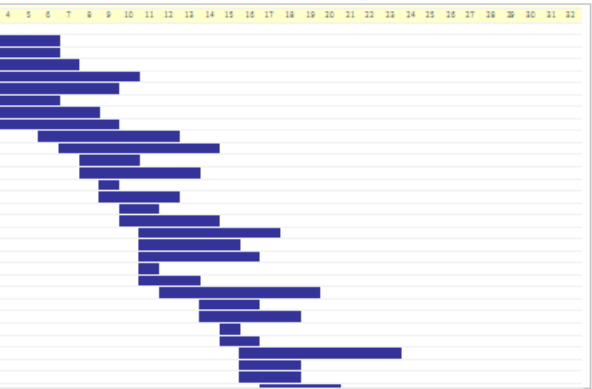
Resource Allocation



Project Status Dashboard

Outstanding Issues 3 6 4

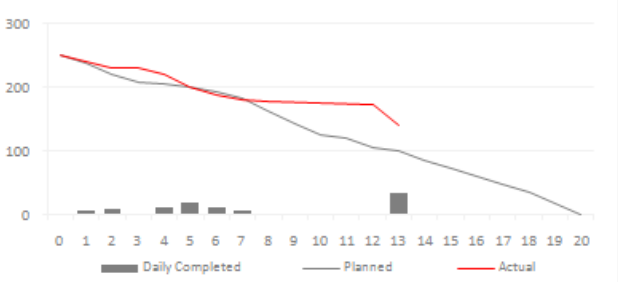
[Click on the gantt chart to see it in detail](#)



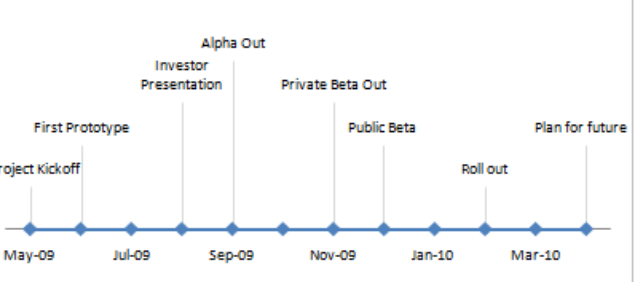
Desclope Risky Items
Start System Testing
Find more money
Demo to user group

20	Activity 20	14	5	11	6	0%
21	Activity 21	14	6	11	1	0%
22	Activity 22	14	7	11	2	0%
23	Activity 23	15	4	12	0	0%
24	Activity 24	15	5	14	2	0%
25	Activity 25	15	6	14	5	0%
26	Activity 26	16	8	15	1	28%
27	Activity 27	17	1	15	2	60%
28	Activity 28	17	1	16	6	25%
29	Activity 29	17	5	16	2	5%
30	Activity 30	18	1	16	2	15%

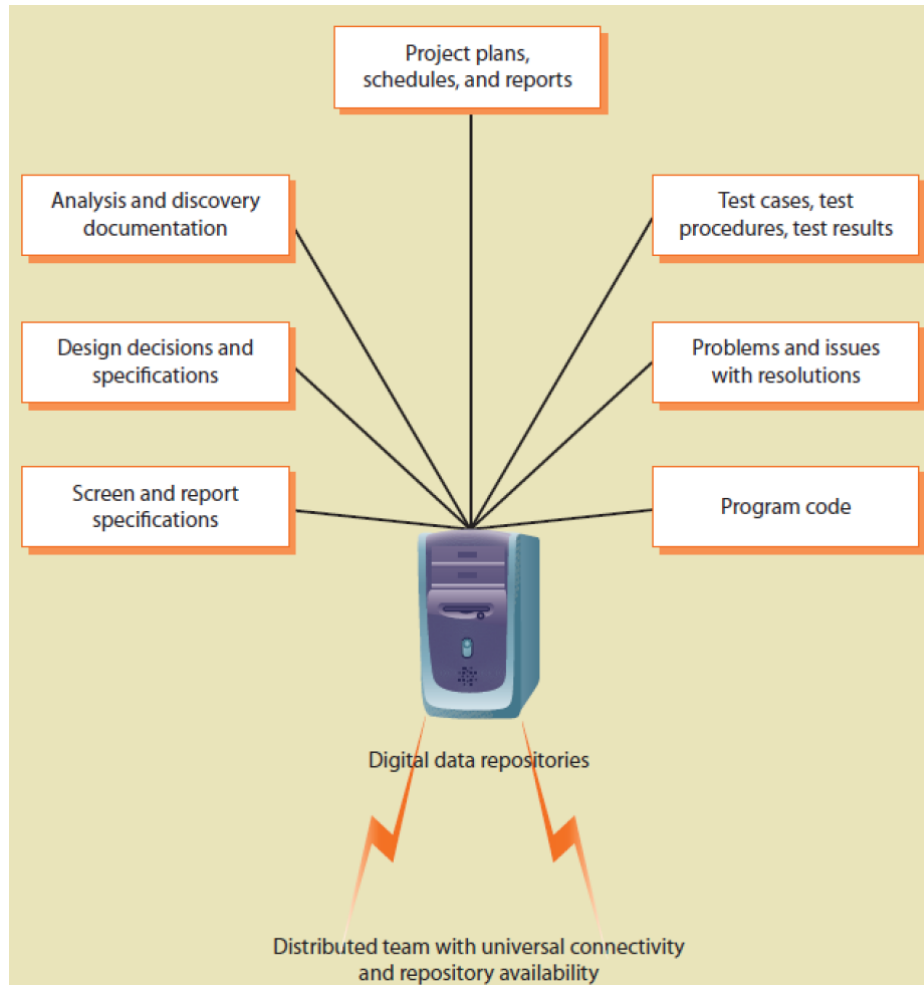
Burndown Chart



Project Timeline



9.3.1 Establish the project environment: electronic digital repositories of information



Electronic Digital Repositories		
Information captured	Electronic tools	Who can update/view
User definitions and functions User documents	Forum software Document server Scanners	Analysts, users/all
Screens and reports layouts	Web design tools Visio PowerPoint/Keynote	Analysts, users/all
Design specifications and diagrams	Wiki software Visio	Analysts/all
Issues and outstanding problems	Issue-tracking software	Analysts, users/all
Program code	Apache subversion (SVN)	Analysts/analysts
Project schedule	MS project	Analysts/all
Project status and information	Forum software	Analysts, users/all
Daily team coordination meeting	Video laptop conferencing	Project team
Distributed team communication	IM chat with video	Project team
Project update newsletter	Blog software	Project manager/all

9.3.2 Schedule the work

- ▶ **Predictive project**
 - ▶ A detailed and completed schedule that cover to entire project is usually build.
- ▶ **Large project**
 - ▶ Divided into many phases and various subsystems.
- ▶ **Adaptive project**
 - ▶ Apply to project iteration schedule

Project Iteration Schedule for the CSMS Sales Subsystem		
Iteration	Time estimate	Use cases assigned to iteration
1	4 weeks	1. Search for item. 2. View detailed descriptions. 3. View rotating [3-D] images. 4. Compare item characteristics.
2	4 weeks	5. View comments and ratings. 6. Search comments and ratings for friends. 7. View accessory combinations (images). 8. Save item + accessories as "combo."
3	5 weeks	9. Add item [or combo] to shopping cart. 10. Remove item [or combo] from shopping cart. 11. Add item [or combo] to "on reserve" cart. 12. Remove item [or combo] from "on reserve" cart.
4	4 weeks	13. Check out active cart. 14. Create and process store sale. 15. Create and process phone sale.
5	3 weeks	16. Clean up, final test, harden site, tune database, etc.
Total	20 weeks	

9.3.2 Schedule the work: an iteration = detail work schedule

► Developing a detail work schedule for a single iteration

- 1) Develop a work breakdown structure (WBS).
- 2) Estimate effort and identify dependencies
- 3) Create a schedule by using Gantt chart

Work Breakdown Structure Iteration 1 of Sales Subsystem

I. Project planning

Develop WBS and build schedule and then plan the work – 1/2 day.

II. Analysis tasks

Meet with sales department – 1 day.

Meet with marketing department – 1 day.

Define required information and data elements (share with Cougar team) – 1 day.

Model user activities – 1 day.

III. Design tasks

Design database schema (work with Cougar team) – 1 day.

Design screen layouts and cross links – 2 days.

Identify program classes and methods – 1 day.

IV. Build tasks

Build database (coordinate with Cougar team) – 1/2 day.

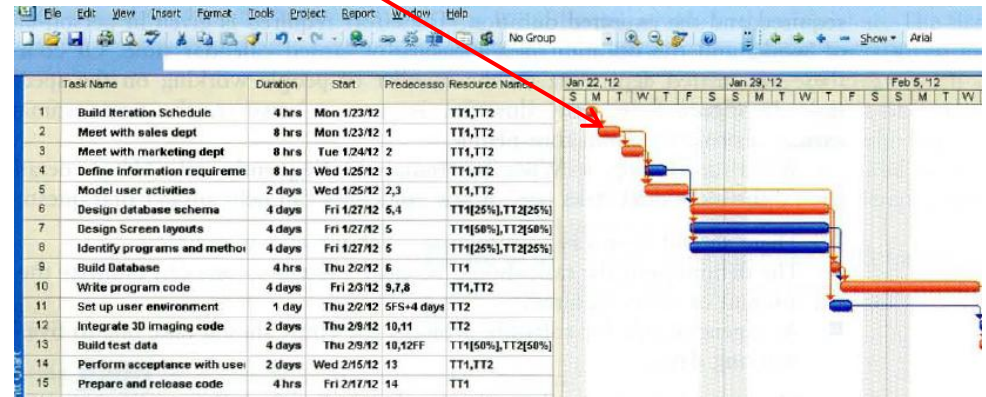
Write program code – 4 days.

Integrate 3-D imaging code – 2 days.

Build test data – 2 days.

Set up user "simulated live environment" – 1/2 day.

Perform acceptance tests with users – 2 days.



9.3.3 Staff and allocating resources

- ▶ Focus on workgroup and developing team members
- ▶ For large project, the staff activity consists:
 - ▶ Developing a resource plan for the project
 - ▶ Identifying and requesting specific technical staff
 - ▶ Identifying and requesting specific user staff
 - ▶ Organizing the project team into work group
 - ▶ Conducting preliminary **training** and **team-building** exercises



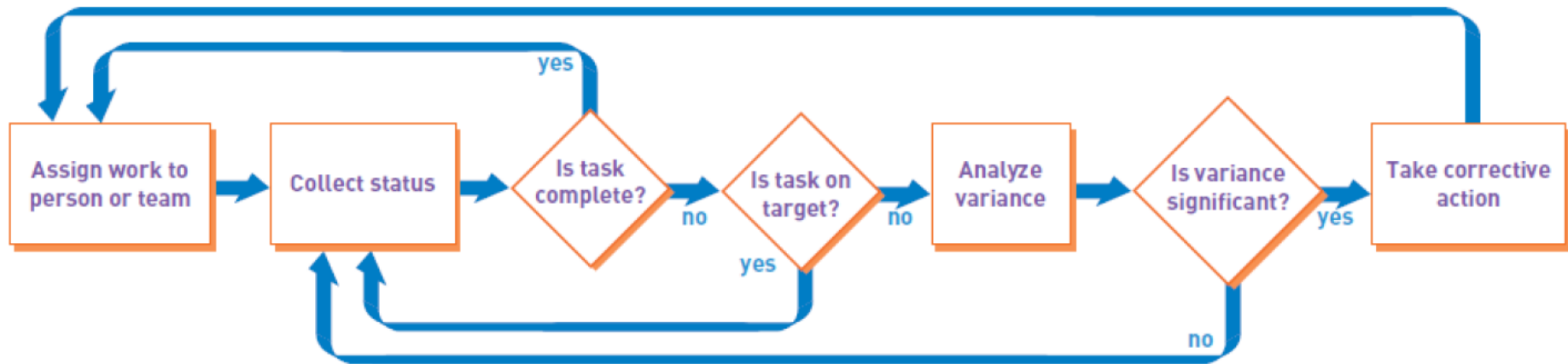
9.3.4 Evaluate work processes

- ▶ Evaluating after end of iteration
- ▶ Agile project is referred to as a retrospective that is a meeting held by the team at the end of an iteration to determine what was successful and what can be improved.
- ▶ The questions the team might want to ask.
 - ▶ Are our communication process adequate?
 - ▶ Are our working relationship with the user effective?
 - ▶ Did we hit our deadlines?
 - ▶ Did we miss any major issues?
 - ▶ What things went especially well?
 - ▶ What were the bottlenecks or problem areas?



9.3.5 Monitor project progress and make corrections

- Process to monitor and control project execution



Monitor project progress and make corrections

► Sample issues-tracking log

	A	B	C	D	E	F	G	H	I
1	Issue log#	Issue date	Issue description	Priority	Issue impact	Person responsible	Target fix date	Resolution description	Actual fix date
2		1/18/2012	Commission structure for sales promotion is undefined	Urgent	Database structure may need to be modified	William Henry	2/1/2012		
3									
4									
5									



Summary

- ▶ The principle of project management
- ▶ The activities to get a project initiated and approved
- ▶ The activates to plan the project and monitor

