



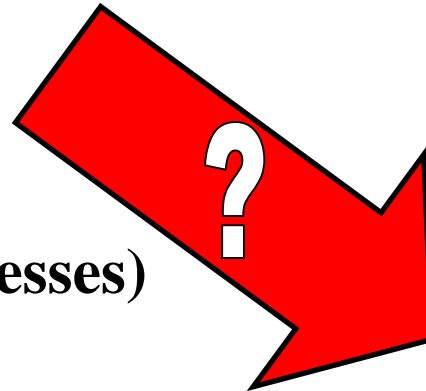
Projects and Teamwork

- What is a project?
- Planning design projects
- Controlling projects
- Project teamwork

How do we solve a design problem?

Design problem –FUNCTION
(customer & company requirements)

Activities
(decision making processes)



Make a project plan
Execute plan

Solution - FORM
(manufacturing specifications)



Why should we plan a project?

To answer the following questions

WHAT ?scope of work tasks

WHEN ?schedule

HOW MUCH?..budget

WHO?.....organization chart,
responsibilities table

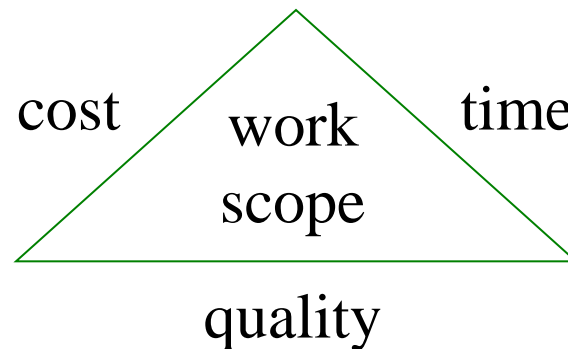
Without a roadmap.....

how will you know where you are headed?



What is a project

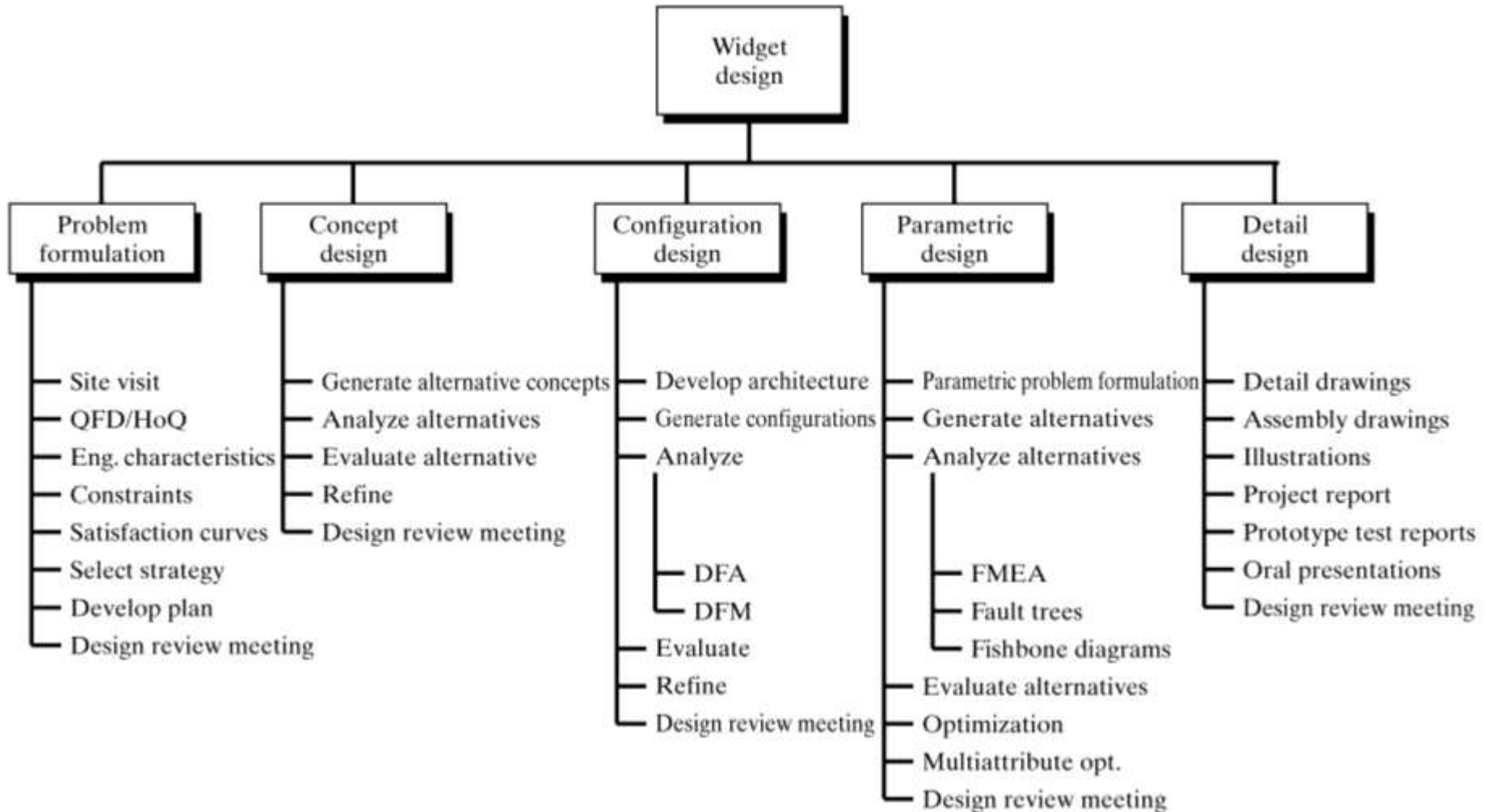
Project – Unique sequence of activities (work tasks) undertaken ONCE to achieve a specific set of objectives.



Changing the length of any leg of the project triangle affects the other legs!

Work breakdown structure

Quick,
1 page graphic



Project schedule (Gantt Chart)

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	W
Task	1/22-1/26	1/27-2/2	2/3-2/9	2/10-2/16	2/17-2/23	2/24-3/2	3/3-3/9	3/
Design Problem Formulation								
1.1 Site Visit	■							
1.5 Benchmarking		■						
1.6 Contact Customers		■						
1.7 Determine PDP/DV/SEP		■						
1.10 Outline Work Scope		■						
1.8 Determine Schedule		■						
1.9 Calculate Budget		■						
1.4 Create EDS		■						
1.3 Satisfaction Curves		■						
1.2 Complete QFD/HOQ		■						
1.11 Report 1		■						
Conceptual Design			◆					
2.1,2,5,6,9 Generate Concepts			■	■				
2.7 Determine Physical Principles			■	■				
2.8 Conceptual Drawings					■			
2.3,4 Evaluate Concepts						■		



Project Budget

TABLE 14.4 Example Project Budget Listing Major Work Tasks, Time, and Expenses Required to Complete the Project Tasks

Project Name: Snow Blower Attachment Design

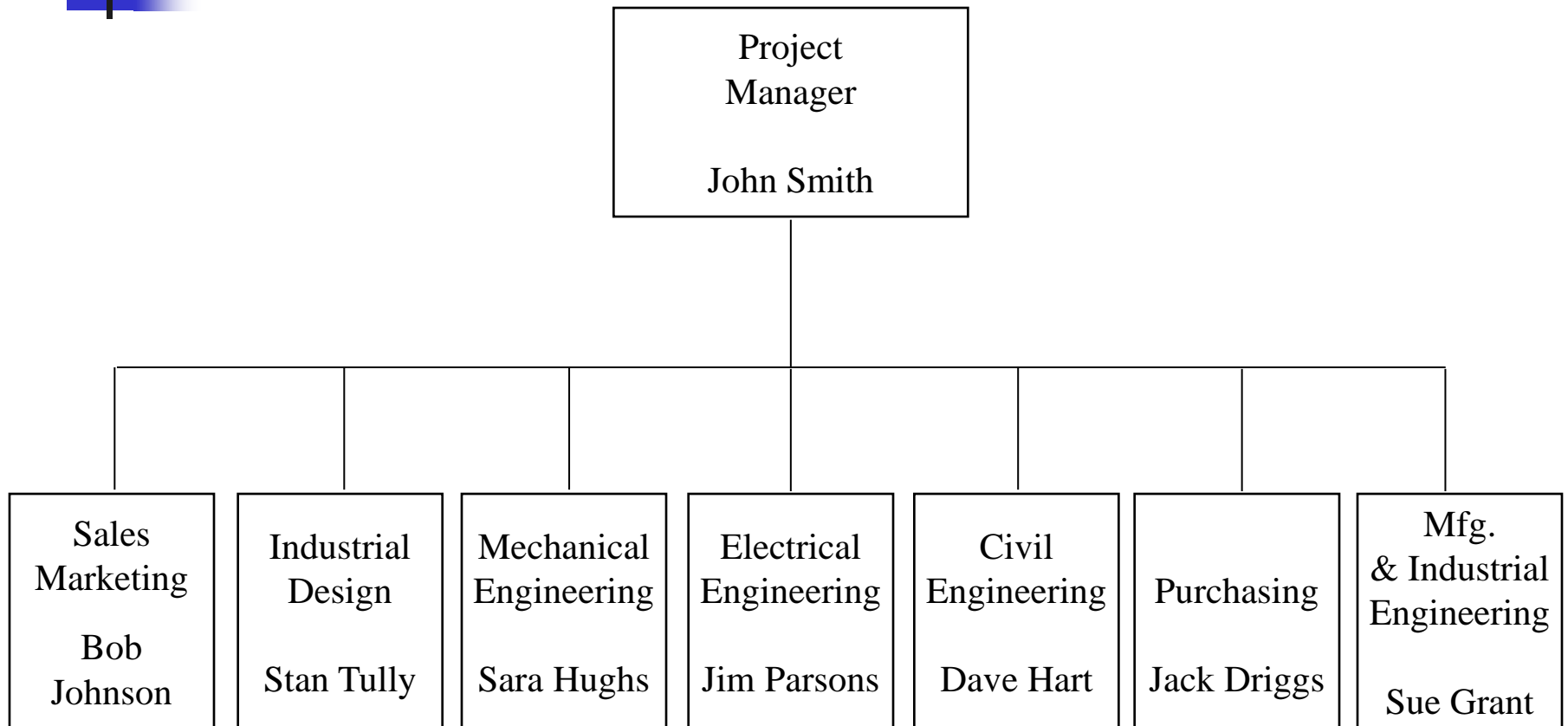
Date: 2/7/04

Project Budget

Task	Description	Sr. Engineers	Admin.	Hours	\$
1.0	Design Problem Formulation	91	2	93	1900
2.0	Conceptual Design	96	6	102	2160
3.0	Configuration Design	97	8	105	2260
4.0	Parametric Design	160	9	169	3560
5.0	Detail Design	202	10	212	4440
	Total Hours	646	35	681	
	Rate: \$/Hour	20	40		
	Total Labor Cost	\$ 12,920	\$ 1,400		\$ 14,320
	Materials/Supplies				\$200
			Total Costs:		\$ 14,520.00



Organization chart for a design project





Project Proposal Outline

Design Project Proposal

- Cover letter
- Title page
- Table of contents

Introduction

- Problem statement
- Mission statement
- Engineering design specifications (QFD)
- Project objectives

Scope of work

- Work breakdown structure (WBS), 2-level diagram
- Work scope describing work tasks
- Project deliverables associated with tasks

Schedule

- Gantt chart
- Critical path network diagram
- Milestones

Budget

- Responsibilities table
- Budget
- Other resource requirements

Project management

- Organization chart of project stakeholders
- Project budget and schedule control system
- Risk assessment
- Design change notice (DCN's) procedure

Appendix

- Site visit data



Success = Comprehensive Project Plan

Successful project teams develop comprehensive project plans.



What defines a “team”

A *team* - is a group of people that:

- have complementary skills and knowledge
- work together toward common goals
- hold each other mutually accountable.

How does this compare to a soccer team for example....?



Teamwork Skills

Collaboration	<ol style="list-style-type: none">1. Understands and commits to team goals2. Participates actively in team activities3. Respects individual viewpoints/differences4. Accepts criticism5. Assists other teammates
Communication	<ol style="list-style-type: none">6. Listens attentively to others on team7. Provides constructive feedback8. Communicates clearly and concisely
Decision Making	<ol style="list-style-type: none">9. Makes decisions based on facts10. Anticipates problems11. Contributes to meetings
Self-Management	<ol style="list-style-type: none">12. Monitors self-progress13. Completes individual tasks thoroughly14. Completes individual tasks on time15. Asks for help when needed



Stages of Team Development

project initiation

wild enthusiasm

disillusionment

chaos

search for the guilty

punishment of the innocent

promotion of the non-participants

and definition of the project requirements (Lewis, 2002).

Forming, Storming, Norming, Performing (Tuckman)

Team interaction is dynamic not static!



Team Rules

- Commit to the goals of team
- Perform assigned tasks completely, accurately, on time.
- Respect the contributions of others
- Assist other team members when needed
- Ask for help before we get into trouble
- Follow guidelines for effective meetings
- Actively participate in team deliberations
- Focus on problems not people or personalities
- Constructively resolve conflicts or differences of opinion
- Comment clearly and constructively



What is Professional Responsibility?

definition of *profession*

1. The body of people in a learned occupation.
2. An occupation requiring special education (especially in the liberal arts or sciences)

definition of *responsibility*

1. The social force that binds you to your obligations and the courses of action demanded by that force.

“obligated” to follow “courses of action.”



ASME Code of Ethics

Fundamental Cannons 1-4

1. Engineers shall hold paramount the safety, health and welfare of the public in the performance of their professional duties.
2. Engineers shall perform services only in areas of their competence.
3. Engineers shall continue their professional development throughout their careers and shall provide opportunities for the professional development of those engineers under their supervision.
4. Engineers shall act in professional matters for each employer or client as faithful agents or trustees, and shall avoid conflicts of interest.



ASME Code of Ethics

Fundamental Cannons 5-8

5. Engineers shall build their professional reputation on the merit of their services and shall not compete unfairly with others.
6. Engineers shall associate only with reputable persons or organizations.
7. Engineers shall issue public statements only in an objective and truthful manner.
8. Engineers shall consider environmental impact in the performance of their professional duties.



Summary (Continued)

- Design Project – decisions, teamwork, coordination
- Project plan – scope of work, schedule, budget
- “Teamwork” requires
communication, group decision making,
collaboration, self-management
- Teams are dynamic... expect changes
- Hold effective meetings
- Set team rules... early in project