SWINBURNE UNIVERSITY OF TECHNOLOGY

SWE30010
Development Project 2: Design, Planning and Management

Lecture 7b

Project Forces

Lecture Overview

- Project Forces and Concerns
  - Scope
  - Time
  - Cost
  - Quality

Before We Start……

- Assume you have to paint your bedroom
- It requires
  - ☐ removing all furniture from the room
  - ☐ cleaning & repairing holes in walls and ceiling
  - ☐ painting walls and ceiling
  - ☐ removing carpet
  - ☐ cleaning, staining and polishing the floor
  - ☐ checking existing power points, and adding two new points
  - ☐ putting the furniture back

SCOPE

Before We Start……

- The job has to be done
  - ☐ within the next 2 weeks
  - ☐ within the budget of $1000
- How would you proceed? What are the issues?

TIME

COST

What do you expect afterwards?

- Which one do you prefer?

What if……

- you are doing it all yourself?
- you have a few mates capable of working with you?
- you do some calculations and discover it can't be done for $1,000? If $1,000 is really max, what would you do?
- it really MUST be done in 2 weeks, but after thinking it seems that it will take 3 weeks to do all the work?
- getting a professional in to help would let you finish in 2 weeks, but would take the cost over $1,000?

Roadmap

- **Project Forces and Concerns**
  - ☐ Scope
  - ☐ Time
  - ☐ Cost
  - ☐ Quality

Project Forces

- Think again about the bedroom renovation project:

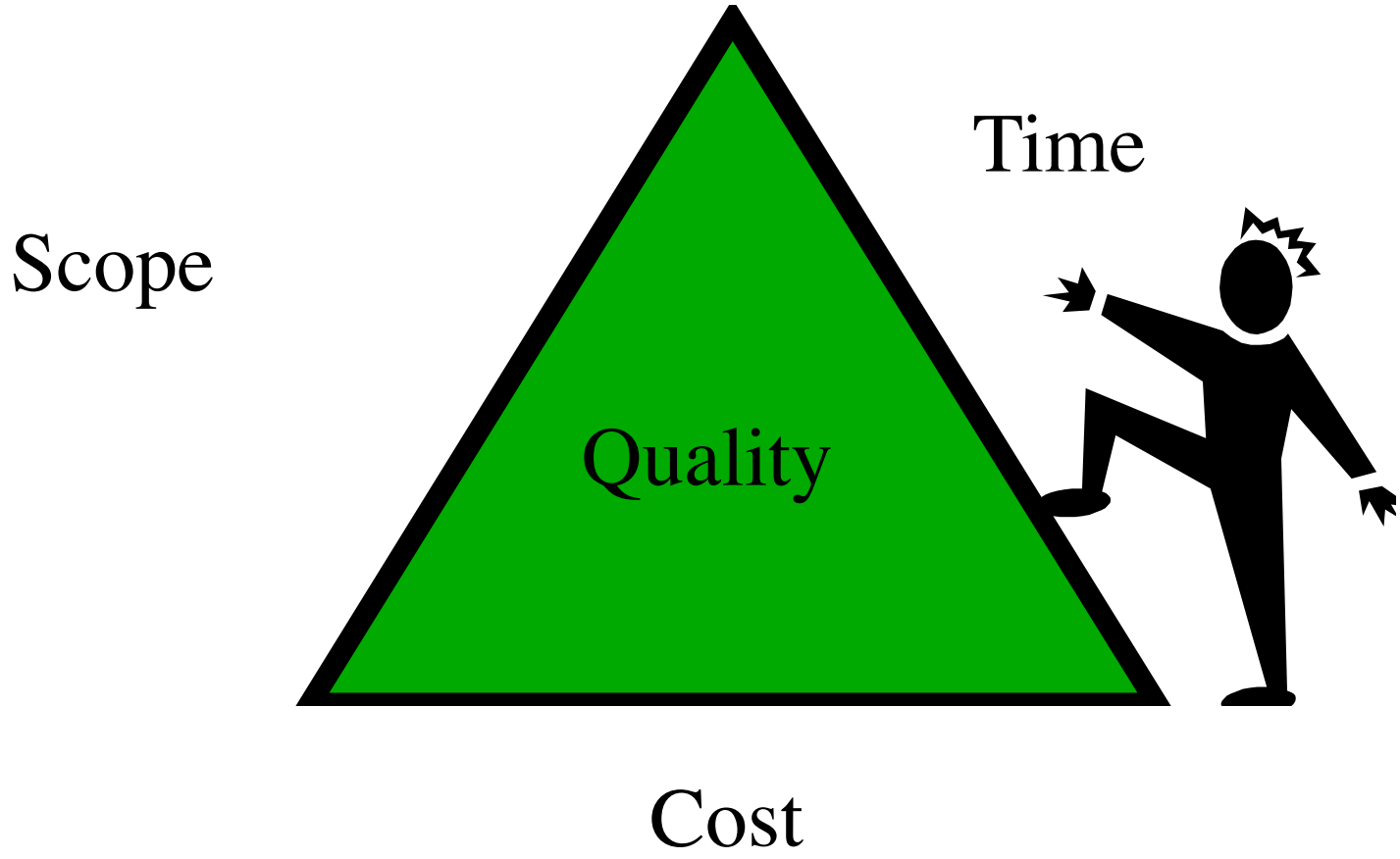
- A certain set of **requirements** are specified
- The **time** allowed for their completion is given
- The maximum **cost** is given
- If you are sensible, you will specify the **quality** of work that is required

Project Forces (cont)

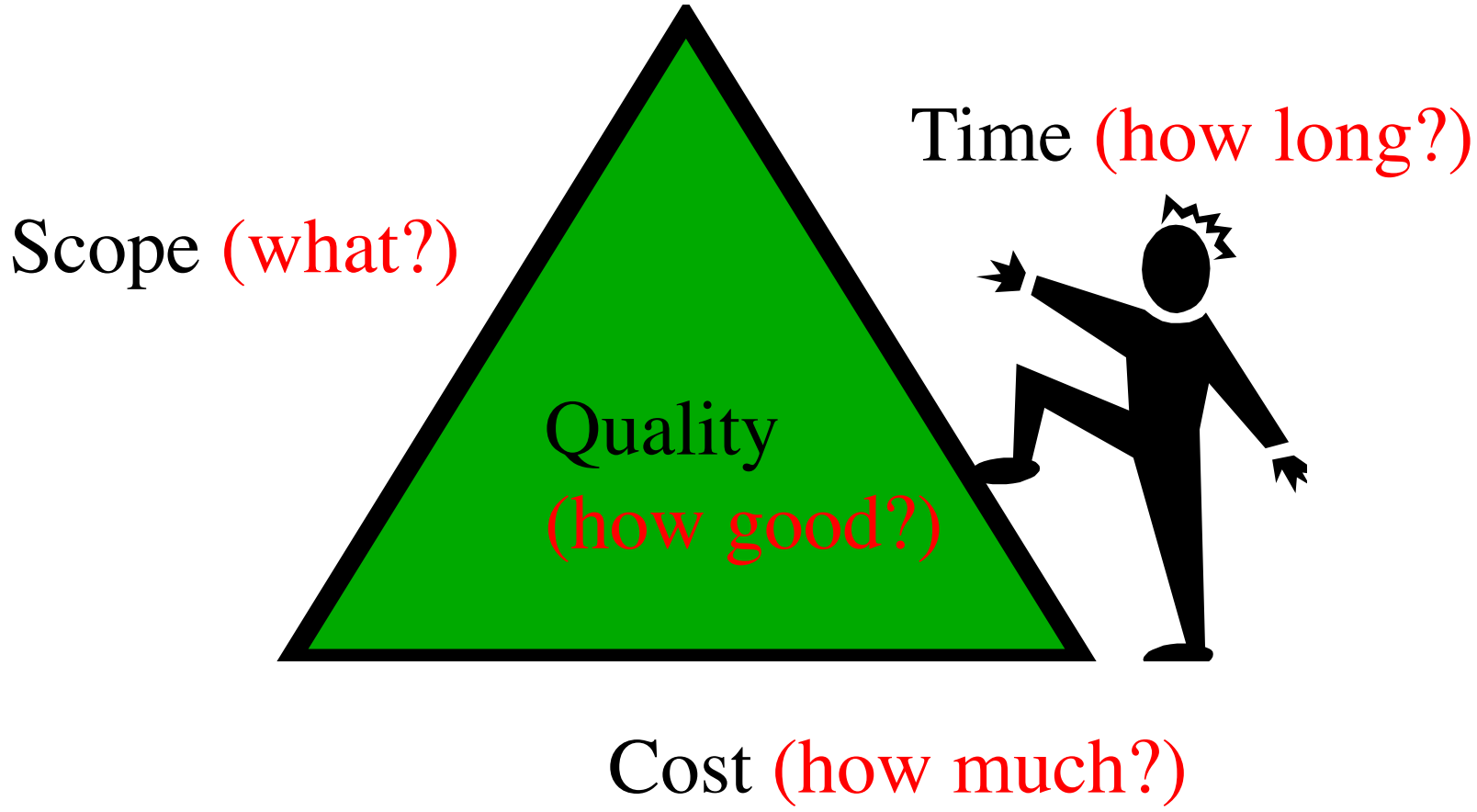
Project Concerns =

Deliver the right stuff
to the desired quality
on time and
within budget

Project Forces (cont)



Project Forces (cont)



Project Forces (cont)

"The way the software development game is played is that stakeholders can pick the values of three of the four forces. The fourth value is a consequence of the choice of the other three values."

Kent Beck,

eXtreme Programming Explained, 2000.

Scope and Objectives

In order to start a project, you must set clear *scope* and *objectives*.

- Objectives : *general goals* of the project, not how they will be achieved.
- Scope : *primary functions* software is to accomplish, bounded in a quantitative manner. It also includes the range of things that the project is to consider.

Goals must be *S.M.A.R.T.*

- Constraints, performance, reliability must be explicitly stated
- Customer must set *priorities*

Scope : From wikipedia

- **Scope statements** may take many forms depending on the type of project being implemented and the nature of the organization.
- The scope statement details the project deliverables and describes the major objectives. The objectives should include measurable success criteria for the project.

As a baseline, scope statements should contain:

- project name; project charter; project owner, sponsors, and stakeholders; problem statement; project goals and objectives; project requirements; project deliverables; project non-goals (what is out of scope); milestones; cost estimates; approved change requests; project assumptions and risks; project acceptance criteria

Scope and Objectives : Example

Think about the scope and objectives for a system to allow students to apply for assessment special consideration on-line

Software Quality

What is Software Quality?

How do we specify the desired quality of a system that is to be built?

How do we check that we are achieving this?

What if we are not?

Software Quality

- Users will judge it based on *fitness for purpose* and fault frequency

- Developers will judge it based on how easily we can adapt and improve it

- Operations and Support staff will judge based on whether it is easy to install and the error messages are clear

- Managers will judge based on development cost and conflicts that it causes.

Software Quality (cont.)

Ultimately Software Quality is ***conformance to***:

- explicitly stated ***functional and performance requirements***
- explicitly documented ***development standards***
- implicit ***characteristics*** that are expected of all professionally developed software

Customer Expectations

"A [real] customer wants his/her software product to cover all current and future needs, built at no cost, and delivered yesterday. And of course the customer will change his/her mind several times along the way!"

Rick Harvey, CA Labs

- One of the key issues in any software project is to manage customer expectations!
  - this often means to help customers to define *project scope*
  - and to have realistic expectations about cost and time required to deliver the desired functionality at the desired quality level

Balance of Power

Business decisions should be made by business people

(and not technical people)

Technology decisions should be made by technical people

(and not business people)

What you should know!

- What are the four project forces?
- What is the relationship between them?

Recommended Reading

- Bob Hughes and Mike Cotterell, *Software Project Management* (5th Edition), McGraw-Hill, 2009, Chapter 1.
- Ian Sommerville, *Software Engineering* (8th Edition), Addison-Wesley, 2007, Chapter 5