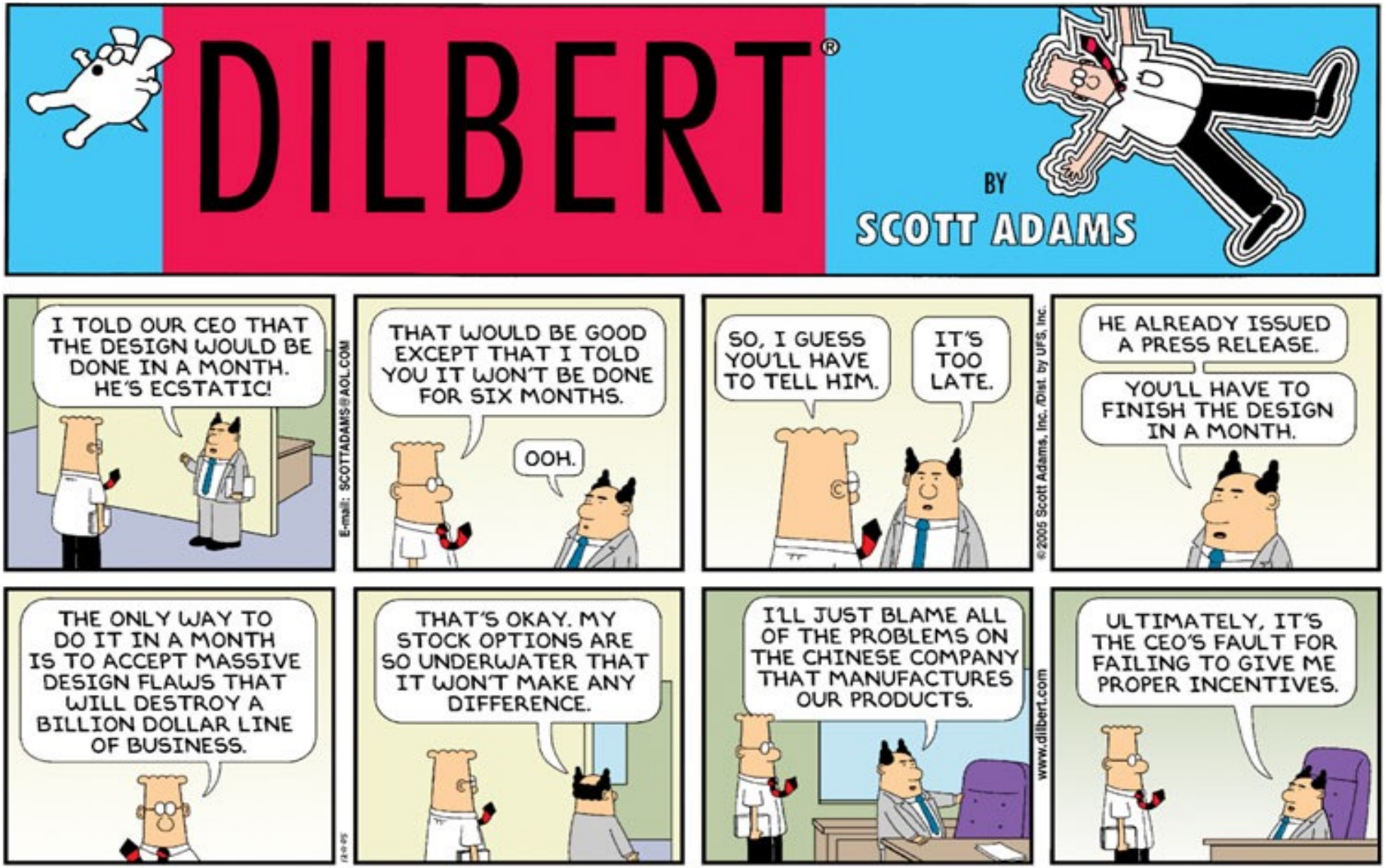
SWINBURNE UNIVERSITY OF TECHNOLOGY

SWE20001
Managing Software Projects

Lecture 5c

Estimating Part 1



http://en.wikipedia.org/wiki/Fair_use

Planning

- Split project into *tasks* or *activities* using the chosen SDLC as an anchor
- Create a *Work-Breakdown-Structure* (WBS)
  - breaks the project down into a set of well-defined, discrete tasks
- For each task or subtask, **estimate** the time for completion and assess resources required

What to estimate?

Ultimate goal

Assign a duration (usually, time expressed in working days or hours) to each problem / task / outcome identified in a work breakdown structure (WBS)

What to estimate?

Normal approach:

1. First estimate size and *complexity* of a given problem, task, or outcome
2. Then use this to estimate the effort / time required for the task

- Note that duration depends also on number of people available to do the work
- Also note that estimation is hard, and generally, for software development, is not done very effectively!

The meaning of Time and Effort

- People cannot work 100% productively, 100% of their available time:
  - Need to consider interruptions, socializing, email etc.

  - Rule of thumb: productivity of IT people ~70%
    - eg, for a 40-hour work week, assume 28 hours of productive work
    - Varies from person to person
    - FACT (borne out by serious research): productivity decreases as total hours worked per week increases above about 40

The meaning of Time and Effort – Definitions

- Ideal Time
  - fully productive time on given task without interruptions
- Ideal Effort
  - amount of ideal time it takes to complete a task
- Real Effort
  - Amount of real time taken to complete a task

The meaning of Time and Effort : Example

- If it would take 20 hours of **ideal time** to write a user manual*, then assume it will take **???** of real time

- *How do we obtain the ideal time estimate?

The meaning of Time and Effort : Example

- If it would take 20 hours of **ideal time** to write a user manual*, then assume it will take **???** of real time

- *How do we obtain the ideal time estimate?
  - Past experience
  - Measurement of actual time on a small task, multiplied to give estimate for full task
  - Measurement of task according to a reasonable size estimate
  - Magic??!!

Example

- I can mark 1 exam paper in 10 minutes
- I have 100 papers to mark
- How long will it take?

Example

- I can mark 1 exam paper in 10 minutes, on average
- I have 100 papers to mark
- How long will it take?

- Simple answer is 1000 mins = 16 hrs and 40 mins
- But I can't keep up the rate of 1 paper every 10 mins
- Although I will probably only ever take 10 mins to mark a paper, over a day's work I will have time spent away from the direct task – probably 30% of my time {estimated from past experience}
- So, in reality, it will take me approx. 24 hrs (= 1000 / 0.7 / 60) to complete the task