SWINBURNE UNIVERSITY OF TECHNOLOGY

SWE20001
Managing Software Projects

Lecture 8

Estimating (Generics) Part 2

Effort Estimation – Recall (Lecture 5)

Guessing in the large

- Look at the “work” required
- Make a wild guess
- Less accurate (difficult to know what is required in a big picture)

Guessing in the small [Lecture 5b]

- Analyze the “work” required
  - □ Detailed WBS (task breakdown)
- Estimate each task (leave node of your WBS) by guessing (as well)
- Add all estimates together
- More accurate than “the large”
  - □ More detail → more accurate

Effort Estimation – Other ways

- Historical Data (e.g. “Yesterday’s Weather”)
- Analogy [Lecture 8a]
- Size Comparison [Lecture 8b]
- Expert Advice / Delphi Technique (and variations) [Lecture 8c]
- Algorithmic models (use magic formula) [*too advance for MSP*]
    - e.g., Albrecht Function Point, Bohem’s COCOMO and COCOMO II, …

Yesterday’s Weather

- It has been shown that
  if you forecast today’s weather
  (eg max temperature)
  to be exactly the same
  as yesterday’s,
  then you get it right just
  as often as
  the expert scientific weather
  forecasters!

- The only problem is
  to maintain large set of history data

Yesterday’s Weather

“As the basis for your planning, assume that you will do as much [work] this week as you did last week.”

– K. Beck, M. Fowler, Planning XP, 2001

- ☞“Yesterday’s Weather” only works if
  - ☞you **keep track** of your own work! AND
  - ☞You are **honest** to yourself / the team

Analogy

- See Lecture 8a

Size Comparison

- See Lecture 8b

Expert Advice / Delphi Technique

- See Lecture 8c

Keys to Effective Estimation

- KISS principle (Keep it simple, and short)

- Learn from experience

- Use what happened (worked) in the past

(Source: K. Beck, M. Fowler, *Planning eXtreme Programming*, 2001)

KISS (?)

KISS
TM
keep it simple stupid

Learn from Experience

EXPERIENCE IS THE WONDERFUL KNOWLEDGE THAT ENABLES YOU TO RECOGNIZE A MISTAKE WHEN YOU MAKE IT AGAIN

Repeat What Worked

Keys to Effective Estimation (cont.)

- Acknowledge that estimates are *estimates*, not actual facts
  - □ estimates can be inaccurate and have a big variation!
- Be clear what to estimate and what unit to use
  - □ also what the estimate actually means!
- Need to keep track of work and compare actual effort with estimated effort; otherwise you can’t use past experience when estimating
- Goal: estimations should improve over time
  - ☞ if not, serious problem with estimation method!

Problems with Estimations

- *Accurate* estimations are difficult!
- Generally, estimations relate to problem complexity, not solution complexity
  - mapping from problem to solution not always “obvious”!
- Effort required for activities such as problem analysis and debugging are difficult to estimate
- Are too often taken as “hard values” in planning
  - “Reality” might get into the way!
- Getting the right value for velocity of a team is hard

Recommended Reading Lecture 8

- Bob Hughes and Mike Cotterell, *Software Project Management* (5th Edition), McGraw-Hill, 2009, Chapters 5 and 6.
- Ian Sommerville, *Software Engineering* (8th Edition), Addison-Wesley, 2007, Chapter 5.
- IEEE PMBOK (3rd Edition), 2003, Chapter 6 (available from Blackboard).