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# Agile Estimation: The Art of Balancing Precision and Uncertainty

Barbara Roberts

# Why me?

**Barbara Roberts - Agile Transformation Coach**

- Specialises in agile in the complex corporate world
  & well known for her common-sense and pragmatic approach to agile
- Passionate about sharing her agile knowledge
  & regularly invited to speak at events around the world to share her experiences
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Signatory of the Agile Agnostic Oath
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Fellow of the Agile Business Consortium
- Previously Director of Agile Business Consortium for 20+ years
- Certified Agile Business Consultant and Trainer-Coach
- Certified Scrum Professional and Scrum Trainer
- Certified Professional Facilitator

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# Estimation – balancing precision with uncertainty

- Estimating in an agile environment
- Dealing with uncertainty and risk
- Choosing the right estimating style
  - Why, When, How across a project lifecycle

# Why estimate?

- To forecast
  - either - what it will cost to deliver a specified outcome
  - or - what outcome can be delivered for a given cost
- To understand and define
- To support
  - commercial understanding and the business case
  - forward planning
  - decision-making
- By providing
  - the right level of detail – ***and no more*** – for use in each circumstance

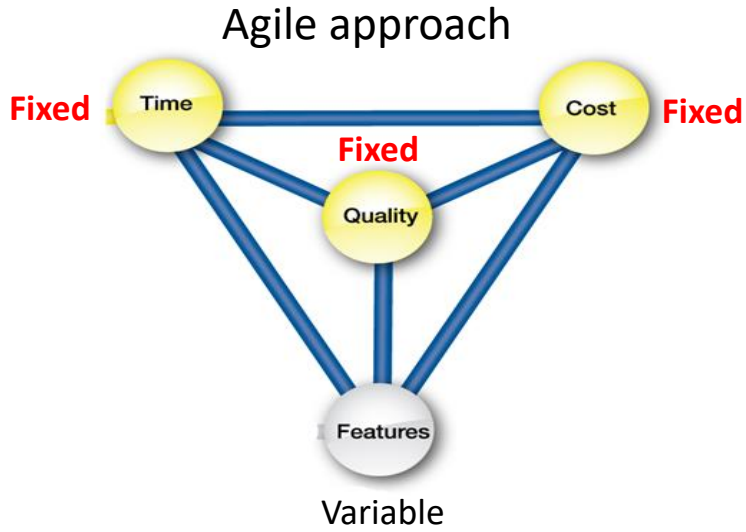
As Barbara
I need transport to the office
so that I can facilitate a workshop

# Estimating for agile needs a different approach

- Agile fixes time, cost and quality
  - less important features are dropped as necessary to meet agreed deadlines whilst delivering a quality solution

- Agile estimates and plans are created collaboratively
  - working to horizons of different sizes (more info later)

- Solution is built based around iterative development and incremental testing
  - frequent validation with short feedback loops




# Useful estimator rule #1

1. An estimate is (almost) always wrong
   - this is perfectly normal and to be expected

Misconception – “If you spend enough time on an estimate, it can be 100% accurate.”


And the reality…?

- even an estimate for the next 10 minutes can be wrong
- the unexpected / unplanned is always a possibility (“Stuff happens”!)
- there will always be some uncertainty until you are “done”

# Estimate purpose drives time to be spent

*Do **just enough** to meet the purpose **at this time***

- Early in the project use time effectively

❌ Don't waste time chasing detail that does not exist yet

✅ Time is best spent on ensuring key cost and business drivers are identified

❌ Early on, it is not helpful taking a long time to provide a very detailed estimate
(it may look precise but in reality will still be inaccurate)

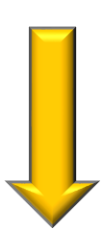
✅ It is more valuable to give a rough estimate quickly

*Studies have shown that the time spent in estimating*
*soon reaches a point*
*where the extra effort expended achieves very little improvement in accuracy*

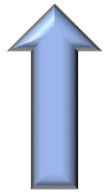
# Uncertainty and horizons are intrinsically linked

- Agile estimating and planning is based around varying horizons (timeframes)
  - The style of estimating and planning varies, depending on the horizon

- For bigger, more distant horizons, there is more uncertainty
  - confidence will be lower
  - accuracy will be lower
  - E.g. I can only guess what 2024 will look like



- For nearer and smaller horizons we know more and assume less
  - confidence will be higher
  - estimates will be more accurate
  - E.g. I have a pretty good idea of the shape of the next 2 weeks



- Choose the appropriate estimating style to match the level of uncertainty

# Horizons, confidence and uncertainty

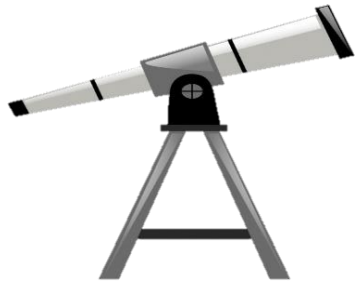
Typically agile works to 4 horizons

1. Long-term horizon – limited knowledge, low confidence
   - E.g. the whole project / the full delivery

2. Medium-term horizon – better knowledge, more confident
   - E.g. the current or next increment / release, or intermediate delivery

3. Short-term horizon – good knowledge, confident
   - E.g. the current sprint – typically 2-4 weeks

4. Immediate horizon – detailed knowledge, very confident
   - E.g. the next 24 hours, at the daily scrum (stand-up)



# Dealing with the unknown

*Assumptions – a key way for estimators to move forward, despite unknowns*

- Assumptions are informed guesses about factors that may influence the estimate
- The estimate must always clearly show all assumptions on which it is based
  - the estimate and assumptions are intrinsically linked - ensure they don't get separated



**Estimate**

Time

*or*

Money

**Assumptions**

1. xxxxxxxxxx ……..
2. xxxxxx ……..
3. xxxxxxxxxxxxxxxx

# Assumptions and risk

- Major assumptions underpinning an estimate = major risks to the project
  - an invalid assumption can significantly affect an estimate
- Validate major assumptions as soon as is practical
  - this aligns with best practice for dealing with risk
  - this also aligns with agile's "fail fast" approach
    - If you are going to fail, find out as early as possible


*For example*
*A proof of concept or architectural "spike" may be critical part of Feasibility or Foundations in order to support better informed decisions in these early stages or a Go/No-Go decision*

**Top Tip **
Always present the major assumptions before presenting the figures
This highlights that they are the foundation for the estimate, not an afterthought

# Business risk – making it visible

- Present the estimate in a way that reflects the estimator's level of confidence in the figures
  - Early estimates will always contain more uncertainty
    - At this point there will be more unknowns

**Confidence level**

- The estimate is created to support informed decisions by the business based on a current realistic assessment of
  - level of uncertainty
  - risk (e.g. probability, impact)
- Only the business can decide what level of risk they are willing to carry based on the information they are given
  - It is NOT the estimator's responsibility
- This decision often depends on specific business circumstances e.g.
  - *"Loss leader, get a foothold in this market"*
  - *"Deal with a competitor threat"*
  - *"Do we need this business?"*

# Choosing the appropriate estimating style

# Long-term horizon – “big picture” / full delivery

- Limited knowledge, very limited detail
- Will include many assumptions
  - estimate precision is impossible
    - despite what is often demanded of the estimator!
- Confidence level - **LOW**
  - a lot of uncertainty
- Only possible to provide
  a reasonable rough idea of what is needed
  - enough for “big picture” planning
    - i.e. a route map towards a future position
- A real life (unreasonable) example…..

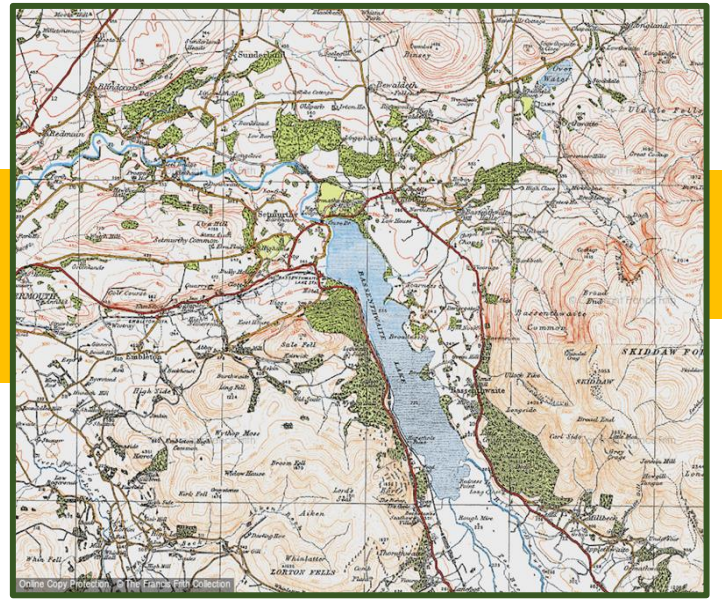
*Significant uncertainty*

*Low confidence*

# Medium-term horizon – increment / release planning

- The view becomes clearer
- Better knowledge, more detail is available
  - assumptions typically less critical
    …timeframe is smaller
- Confidence level - **IMPROVING**
  - compared to long-term horizon
- We know enough to plan delivery of the increment
  - e.g. number of sprints, and likely sprint objectives
  - low level detail still unclear

*Still some uncertainty, but more is known*

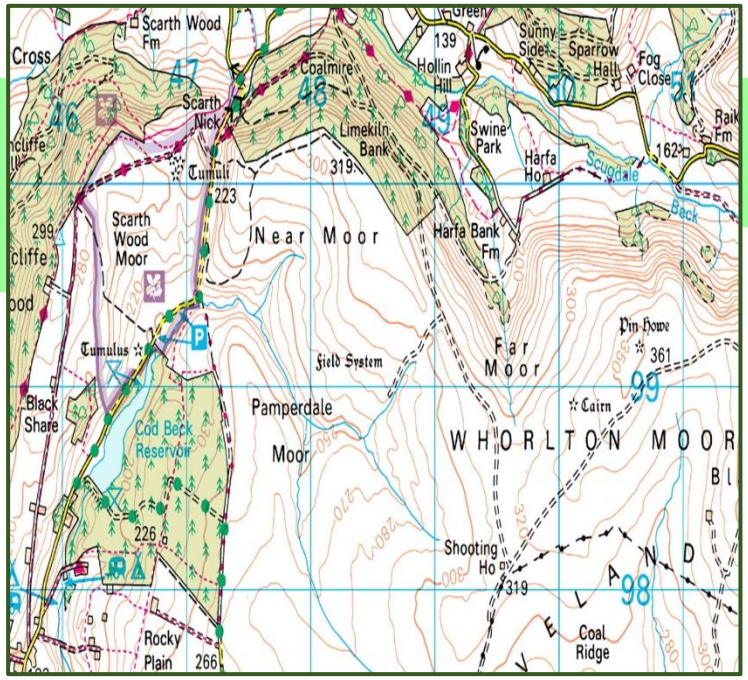


*More Confidence*

# Short-term horizon – e.g. sprint planning

- A clear view of what is close to us
- Good knowledge of low level detail is available
  - Minor assumptions only
- Confidence level - **HIGH**
- We know enough to agree the sprint plan
  - i.e. next 2-4 weeks

*We know what we have to do, we know how to do it*




*High confidence*

# Immediate horizon – the next 24 hours

- A very clear view of what is in directly in front of us

- Very good knowledge
  - full detail is available

- Confidence level – **VERY HIGH**

- We can plan exactly what we intend to do today
  - the only risk now is the unexpected !
  - “Stuff happens!”

*We know exactly what we intend to do*


*Very high confidence*

# Style, uncertainty & confidence in a project lifecycle

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Very early thinking

Rough ideas

Planning for development (planning is iterative)

Agreeing basics

Developing the solution (development is iterative)

Building

Deploying the solution (Incremental deployment)

Releasing

**Objective**
To support early decision-making

**Objective**
To build high-level plans

**Objectives**
1 & 3 Prep for what comes next –
Rough sizing to ensure enough potential work is ready for planning next sprint and / or next deployment

Typically Top-down estimating by Analogy or large groupings (Story points not ideal here)

Top-down estimating by Analogy or large groupings (Story points often used here)

1.Top-down (story point) estimating to prepare for next Sprint Planning event

2.Bottom-up estimating to estimate hours per task for each story, to create Sprint Plan

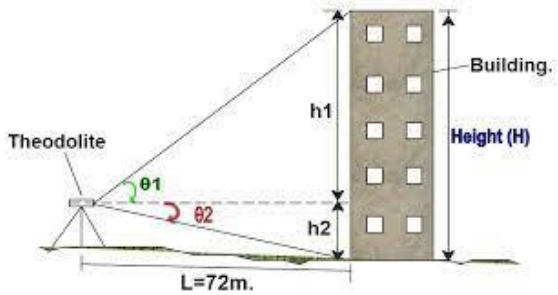
3.Top-down estimating to estimate next Increment (Story points commonly used for this)

4. Bottom-up estimating to plan tasks for deployment

Decreasing uncertainty

Increasing confidence / accuracy

# Estimating …and finally … always remember




There are known knowns

*These are things that we know we know*

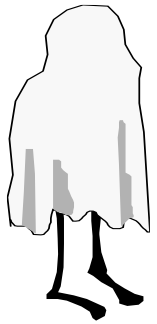
***Just estimate***

There are known unknowns

That is to say…

*We know there are some things we don't know*

***Investigate, then estimate***



There are also unknown unknowns

*These are things we don't know that we don't know*

***Can't estimate. So add contingency based on risk***

*Former US Secretary of State - Donald Rumsfeld*

# Your questions

# Further information

## Agile courses

- AgilePM®
- AgileBA®
- Scrum Master
- Scrum Product Owner
- PRINCE2 Agile®
- PMI Agile
- Lean Six Sigma
- Kanban
- Scaled Agile Framework® (SAFe®)

## Project Management courses

- AgilePM®
- PRINCE2®
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- P3O
- Beginners' course
- PMI Project Management

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