

Predicting Project Completion

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The Problem

- Estimates are guesses
 - But senior managers want them to be commitments
- Even if the estimate is close, Murphy's Law still happens
- How do you estimate the project, and as the project unfolds better your prediction?
 - And avoid the guillotine/commitment problem?

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Estimation Differs by Project Type

- Projects you can plan because you know enough about them to be able to plan
- Projects you can't plan because you don't know enough
- Projects you plan to iterate because the requirements will unfold or the requested date is highly risky

Projects You Can Plan

1. Estimate the project well
2. Monitor project state
3. Update metrics, use those metrics to better your prediction
4. Know what done means, so you know when you've met done

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When You Don't Know

1. Guess based on what you do know about the project
2. Build in feedback loops
3. Update the estimate
4. Know what done means

Projects You Plan to Iterate

- Agile projects supply self-correcting estimate feedback
 - Run charts and velocity charts
- For other adaptive lifecycles (Staged-delivery, design to schedule), you replan and adapt as you proceed

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Estimation Problems

- How do you estimate something when you've never done it before?
- Schedule games
 - Schedule Chicken: No one admits they are behind -- but they all are.
 - Bring Me a Rock: No matter what schedule you develop, it's too long.
 - 90% Done: No idea how to assess state, so it's 10%, 25%, 50%, 90%, 90%, 90%, 90%...
 - Hope is Our Most Important Strategy: We've never done anything like that before, so we'll hope we can plan it and deliver it...
 - Queen (or King) of Denial: You can't be serious about not meeting *my* date. Of course we can complete the project by then...

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Common Solutions to the Estimation Problems

- Planning forward solution:
 - Generate a gross estimate* within a range (Q1)
 - Break project down into smaller tasks
 - Plan when to re-estimate
 - Periodically refine the estimate (Q1, Feb 8-Mar15, Week of Mar 3, Mar 8)
- Planning backward solution:
 - List all the features/requirements
 - Generate a gross estimate*
 - For this amount of time, can complete this much work (above the line), and if we have time, we'll do the work below the line

*Gross estimates: wideband Delphi

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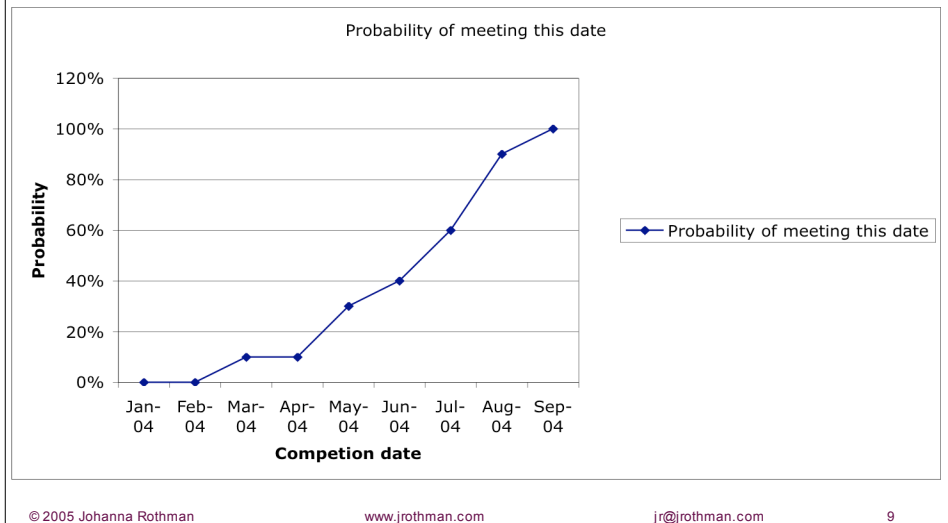
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Estimates with Confidence Ranges

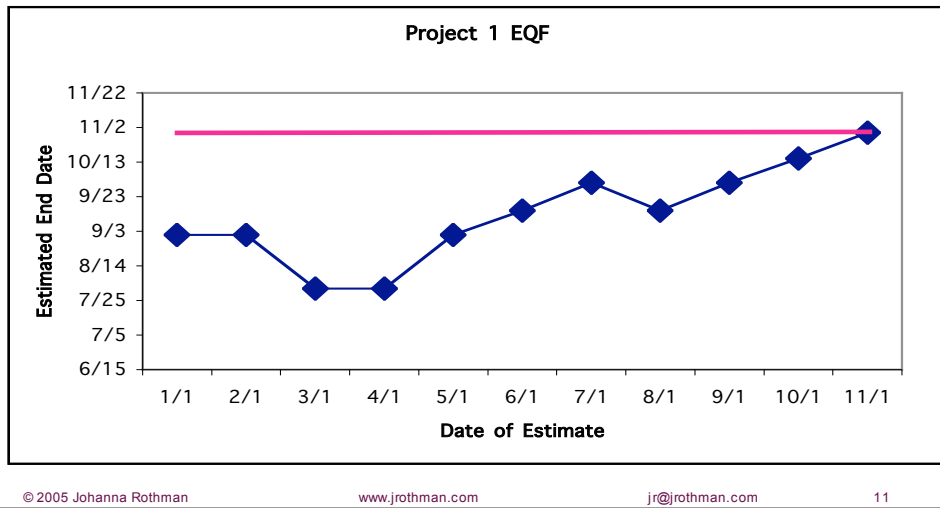


Ongoing Measurements

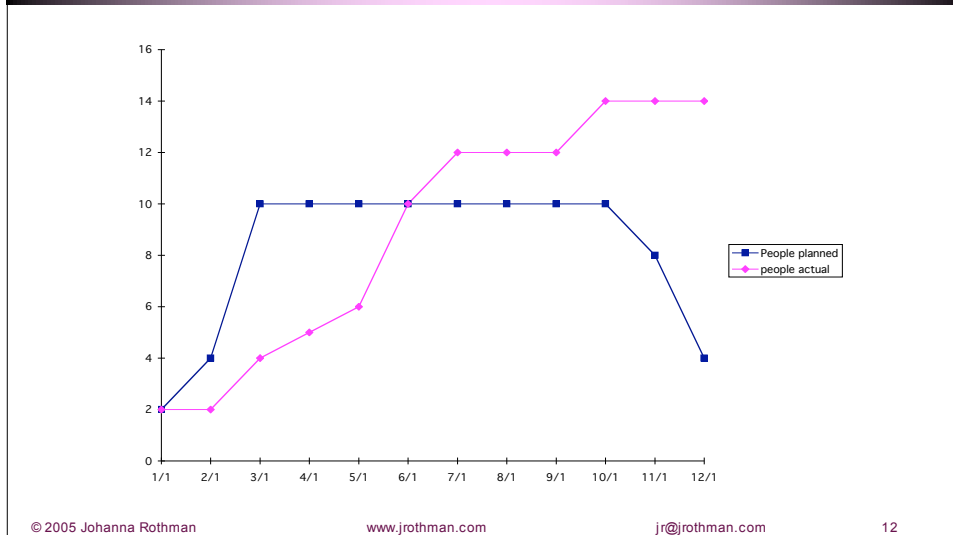
- Starting early and throughout the project
 - Estimation Quality Factor
 - People assignment
 - Earned value (if possible)
 - Cost to fix a defect (average so it doesn't interfere with the project's progress)
- Later in the project
 - Fault Feedback Ratio
 - Defect trends (especially for predicting volume of rework)

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EQF Example



People Assignment Example



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Improve Estimates with More Data

- Once you've started the project, use whatever data you can gather to improve your estimate
- The practices your project team follows on the project will also affect the estimate

Activity

- At each table, please select a project manager, a timer, 2-4 project staff people and at least one observer.
- You have three minutes to estimate how long it will take to complete this project. Here's the project description:
 - Sort the cards by deck
 - Sort the decks by spades, hearts, clubs, diamonds, from A, K, Q, J, 10, 9, ...2
 - Place the cards face down with one deck on top of the other. When I pick up the top card of the top deck, I should see the A of spades. When I look at the bottom card, it should be the 2 of diamonds, the other deck

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Activity, continued

- Observer: please note what you see and hear, not your interpretations of what you see and hear
- Timer: time the sorting
- Project manager: your can start you team when I say go

Debrief

- What stood out for you?
- Where were you challenged? Surprised?
- What insights do you have?
- What might you do differently the next time?

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Discussion

- Take a few minutes and discuss this at your table:
- Assume you now had to sort ten decks of cards. You can have as many people as you need. What's your estimate and why?

Summary

- Predicting project completion is not a science
 - Know what you have to do
 - Assign the people to the project when you need them
 - Measure what will help you know project state
 - Update your estimate

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- I have a number of articles on my Managing Product Development blog,
<http://www.jrothman.com/weblog/blogger.html>