PREDICTING THE UNPREDICTABLE
Pragmatic Approaches to Estimating Project Schedule or Cost

AUTHOR OF "MANAGE IT!
YOUR GUIDE TO MODERN, PRAGMATIC PROJECT MANAGEMENT"

JOHANNA ROTHMAN
Predicting the Unpredictable
Pragmatic Approaches to Estimating Project Schedule or Cost
Johanna Rothman

This version was published on 2015-05-26

Practical ink

No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording or by any information storage and retrieval system, without written permission from the author.

Every precaution was taken in the preparation of this book. However, the author and publisher assumes no responsibility for errors or omissions, or for damages that may result from the use of information contained in this book.
Many of the designations used by manufacturers and sellers to distinguish their products are claimed as trademarks. Where those designations appear in this book, and Practical Ink was aware of a trademark claim, the designations have been printed in initial capital letters or in all capitals.

©2015 Johanna Rothman
To everyone who was ever asked, “How much will this project cost?” or “How long will this project take?”
# Contents

Acknowledgements .................................................. i

1. **Introduction** .................................................. 1
   1.1 Estimates Are Guesses or Predictions ............... 1
   1.2 Estimates Change ........................................... 2
   1.3 Estimates Expire ............................................. 3

2. **What Estimates Are** ......................................... 5
   2.1 Provide an Accurate but Not Precise Estimate ...... 6

3. **Why Do We Estimate Anyway?** ............................ 8
   3.1 Why Do You Estimate? ............................... 9
   3.2 Ask This Question Before You Estimate .......... 11

4. **Software is Learning, Not Construction** ................ 12
   4.1 Inch-Pebbles or Small Stories Show Progress ...... 14
   4.2 Learn With Spikes ........................................... 14

5. **Think About Estimation** .................................... 15
   5.1 Estimating the Unknown: Dates or Budgets ......... 16
   5.2 Determine Your Degrees of Freedom ................. 17
   5.3 Insist on a Ranked Backlog ............................. 19
   5.4 The Team Doing the Work Provides the Estimate .... 20

6. **How to Estimate** ................................................. 22
6.1 Your First Best Bet: Make Your Stories and Chunks Small ............... 22
6.2 Your Second Best Bet: SWAG and Refine .................. 23
6.3 Collect Data ........................................ 24
6.4 When You Have a Decreed Date ......................... 26
6.5 Wrap Up ............................................ 29
6.6 Estimating a Program ................................. 32
6.7 Beware of These Program Estimation Traps ......... 35

7. Rolling Wave Planning .................................. 38
7.1 Learn as the Project Proceeds ......................... 38

8. There Is No Correct Estimation Model ................. 40
8.1 We Invent; We Don’t Repeat ......................... 42

9. But I Need to Know When the Project Will Be Done ............... 44
9.1 What You Can Say to Managers Who Think They Need to Know ............... 45

10. NoEstimate or Do Your Estimates Provide Value? .... 47

11. Use All Four Parts of Project Estimation ............... 49
11.1 Part 1: Create an Initial Estimate ..................... 49
11.2 Part 2: Track Estimation Quality Factor to Understand the Project Estimate ..................... 51
11.3 Part 3: Use EQF to Manage Project Concerns .......... 52
11.4 Part 4: Update Your Estimate as You Know More .......... 52

12. Show Your Status and Update Your Estimate ....... 54
12.1 Probabilistic Scheduling ............................ 54

13. Refocusing: 90% Done Is Not Almost Done ............. 57

14. Future Fixes ........................................ 60
## CONTENTS

14.1 Plan Ahead .................................. 60
14.2 Hindsight is 20-20 ........................... 61
14.3 Track Your Estimates ....................... 62
14.4 Measure Bad Fixes ........................... 63
14.5 Manage Your Buffers ....................... 65
14.6 Incorporate Agility ........................... 66

**Troubleshooting Your Estimation Problems** 68

15. Avoid Multitasking ............................ 69
16. Avoid Student Syndrome ..................... 71
17. Estimation Units Predict Schedule Slippage .... 73
18. Edit Those Epics ............................... 75
19. What You Can Do For Estimation .............. 79
20. Estimation Depends On... ..................... 82

22. Need to Learn More About the Work You’re Doing? Spike It! ......................... 90
   22.1 How Does a Spike Work? .................. 90
   22.2 Spikes Are About Learning ................. 92
   22.3 What Happens to the Code at the End of the Spike? .......................... 92
   22.4 “Use the Code As Is...” ..................... 93
   22.5 How Many People Were Involved in the Learning? .......................... 94

23. Use Targets as Estimates ..................... 95
   23.1 How to Use Targets ......................... 95
CONTENTS

23.2 When the Target Is a Trap ................ 96

24. How to Avoid Three Big Estimation Traps ... 97

25. Understanding Multitasking and the Cost of Delay on Estimation .................. 100

26. What You Know About Estimation Now .... 106
   26.1 Transition to an Agile Approach or an Incremental Approach for Your Projects .... 106
   26.2 Make Your Features Small ................. 107
   26.3 Iterate on your Estimate .................. 107
   26.4 Don’t Multitask ............................ 108
   26.5 Don’t Let Defects Dictate Your Estimate . 108
   26.6 Final Thoughts ............................. 108

Glossary ............................................. 109

References ........................................... 112

More from Johanna ............................... 113
3. Why Do We Estimate Anyway?

We estimate for these reasons:

- To provide an order-of-magnitude size/cost/date about the project, so we have a rough idea of the size/cost/date for planning purposes. An order-of-magnitude size means we want to invest just enough time in the estimate that we believe in the accuracy of it for planning purposes.
- We want to know when we will be done, because we are close.
- We need to allocate money or teams of people for some amount of time.
- Someone wants to know who to blame.

Creating a gross estimate can be useful. See Estimating the Unknown: Dates or Budgets to learn how. You can iterate on that estimate, especially as you get closer to completion.

A gross estimate with deliverable milestones can help the organization allocate money or teams for a while. The deliverable milestones help you know when you have completed enough value. The value is a compilation of features, something you can demo.

In fact, back when phase-gate (serial) life cycles were developed, estimation was key to a project’s success.
Why Do We Estimate Anyway?

After you completed a phase, you were supposed to re-estimate, in order to change what you did with the project.

Now, if you are using an incremental approach or an agile approach, you see completed work. And you don’t have to re-estimate. However, you should be aware that many managers may be thinking about a serial life cycle when they ask for estimates.

3.1 Why Do You Estimate?

Why do you estimate? If you’ve estimated because you always have, think about it. If you estimate because your money people want to do once-a-year money allocation, well, you know that’s fiction. You can do it without detailed project estimation.

For money allocation, decide how valuable the project is to you. When does the project have to deliver the value? Now, tell the project team when the value has to be delivered. That’s all.

Remember, you hired these people because they were smart, responsible human beings. Stop with the phases and all that nonsense. Tell them what you want. Remember, the phases
exist because management wanted to be able to cancel the project before it got too far along. You were supposed to show a deliverable and re-estimate at each phase. If you don’t cancel or deliver something and re-estimate at each phase, your phases are not working for you.

Buy your team a copy of Manage It! Your Guide to Modern, Pragmatic Project Management, (RO TPM), which explains how to manage projects in any life cycle. Give them a ranked backlog. Let them deliver. If they can’t deliver in the money or date frame, they will tell you. They are responsible humans.

If you need an order-of-magnitude estimation, fine. That doesn’t take days to determine. That takes hours. It will be precise-wrong and order-of-magnitude-right. Timebox your estimation effort. It’s an order of magnitude. Don’t hold anyone to that estimate. (Remember, estimates are guesses. They are not “The One and Only Truth.”)

If you want to know when you’ll be done because you think you’re close to the end of the project, ask yourself this question: Is it worth the time to estimate versus the time to finish? It might be. But know you are taking time away from finishing.

And if you want to play the blame game, remember that management is the one who needs to shoulder the most blame. Why? Because management set the constraints. Don’t believe me? Read Estimating the Unknown: Dates or Budgets now.

I can sympathize with management’s need for estimates. I like order-of-magnitude estimates for many things. I even like specific estimates as we get closer. But creating software is not like driving somewhere or like constructing a building. When I drive somewhere, I do want step-by-step instructions. When
constructing a building, I do want an estimate. And even then, I am pretty sure the estimate is optimistic.

When creating software, I want to see working software as we create it, because with working software, we learn. The learning is what’s most important. Because once we’ve learned enough, we can stop. That’s what’s most valuable. Not the estimate.

3.2 Ask This Question Before You Estimate

When people ask you for your estimates, they are trying to determine the value of the project to the organization.

You can ask them to articulate their desires with either of these questions:

- How much do you want to invest before we stop?
- How much value is this project or program worth to you?

Start a conversation with your sponsor, so you can understand what is important to your sponsor. Once you do, you can decide what to do next. You may want a gross estimate, as in Estimating the Unknown: Dates or Budgets. You may want to change your project approach, and do some up-front work to generate a more detailed estimate. You have choices.