Scoping to Fit
Necessary BA skills for setting realistic project expectations

Robert Merrill
Senior Business Analyst
Division of Information Technology (DoIT)
Application Development and Integration

Learning Objectives

- Facilitate SME ranged estimates
- Negotiate realistic expectations
- Estimate from BA deliverables
“I just need a rough estimate. I won’t hold you to it.”
—Pinocchio

A Better Educated Guess

• Keeps the experts calm
• Minimizes planning fallacy
• Quantifies the uncertainty
“The Stretch”

1. Draw blank graph
2. Describe project
3. Describe team and tools
4. Propose crazy low number
5. Ask for odds, or chances
6. Repeat until you have a curve

Estimate to achieve Outcome

Project Concept

GreenRide promotes carpooling.

A user admin creates employee accounts.

Employees enter their address, work start and end times, and vehicle info.

Employees see everyone on a map, marked as being a carpool member or not.
Project Concept

Employees can join a carpool or start their own.

Employees mark days when they carpooled, and see how much they saved on fuel and CO₂ emissions.

Team and Technology

Team: Two strong programmers, used to working together, with always-on-call product owner to make decisions

Technology: PHP, MySQL, jQuery

Methodology: Scrum + phpUnit & Selenium automated tests

Let’s Estimate!
Done in a month?

How about nine months?
Do I hear two months?

Five, maybe?
Three? Let’s draw a curve

Add Percentile Lines
Drop to get values

Now that’s an estimate

4 months 50%, 80% between 2-8 months
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What’s to Negotiate?

We Demand
Realistic Scope, Schedules, & Budgets!!!

They’re stupid jerks!

We Demand
Unrealistic Scope, Schedules, & Budgets!!!

They’re babbling geeks!
Grasping the Problem

What’s a “Good” Estimate?

What’s a “good” baseball player?
What Should We Expect?

The Range Taboo

Show-of-hands poll

What’s an acceptable estimate range?

a) +/- 100% (0.5x-2x)
b) +/- 50% (0.67x-1.5x)
c) +/- 25% (0.8x-1.25x)
d) +/- 10% (0.9x-1.1x)
e) Ranges aren’t allowed
I know! I know!

![Diagram showing variability in estimate of project scope with variability in the estimate of project scope (effort, cost, features)].

**Requirements Complete**

**UI Design Complete**

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**Cost of Accuracy**

<table>
<thead>
<tr>
<th>% of Project Cost</th>
<th>Estimate Range, low to high</th>
<th>Buffer, % of 50/50 estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>~2-4%</td>
<td>~4x</td>
<td>~100%</td>
</tr>
<tr>
<td>~4-6%</td>
<td>~3x</td>
<td>~70%</td>
</tr>
<tr>
<td>~8-12%</td>
<td>~2x</td>
<td>~40%</td>
</tr>
<tr>
<td>~20-25%</td>
<td>~1.5x</td>
<td>~20%</td>
</tr>
</tbody>
</table>

_Hunch: most projects commit with 1/2 to 1/3 of the buffer needed._
The Estimation Problem

- Estimates are ranges
- Ranges are larger than we think
- Ranges cost more to reduce than we think
- Ranges are too big to live with

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Understand the Estimation Problem
What Comes Naturally

- How about four? OK, three.
- We’d like GreenRide done by Widget World, in three months.
- Avoid conflict! Optimism bias!
- We want your best deal, with an option to share blame

Obstacles we face

- Ranges are taboo
- Doom Loop? What’s that?
- Scope is the one true foundation
Vocabulary

• Target: What they ask for
• Estimate: Range or probability
• Commitment: What you agree to

Principled Negotiation

1. Focus on the Problem not the People
2. Focus on Interests, not Positions
3. Invent Options for Mutual Gain
4. Use Objective Criteria
5. Know your BATNA

Getting to YES
Ury and Fisher
Principled Negotiation

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*Getting to YES*
Ury and Fisher
A Tragically Mistaken Belief

We demand schedule slips, We demand schedule slips, We demand schedule slips, We demand schedule slips, cost overruns, quality cost overruns, quality cost overruns, quality cost overruns, quality problems, and turnover!!! problems, and turnover!!! problems, and turnover!!! problems, and turnover!!!

We demand realistic expectations!!!

Why don’t they get it? Idiots! Exploiters!

Excessive schedule padding?

Trains should always be on time, or early. Is that happening? I’ve yet to see it. Isn’t this more common?
Doom Loop

Behind!

PRESSURE!
Doom Loop

Behind!

PRESSURE!

Misteaks!

More To Do!

Throw Resources At It!

Crash the Schedule!!!
From the Experts

Quality for Speed?

[Diagram with text: From the Experts, Quality for Speed?]
How did we get here?

- Large ranges
- Can’t improve enough
- Won’t pad enough
- Doom loop awaits...

Read the fine print
“In the beginning was the ship date, and the specification was without form, and void.”

–Inception 1:2

Which comes first?
Evaluation

Diminishing returns

Am I in scope?

The uncertainty wants to be in the scope!

I’m thinking of a number...

What about ME?
What if…

With Schedule Driving

What about ME?

and Cost Constraining

Am I in scope?

and Scope Uncertain

We’ve been thinking backwards?

What if…

We stopped fighting it?
Unstable Requirements?

Without a solid scope
I can't estimate!

Nope. Sorry.

Part 1: Critical Estimation Concerns

With a solid scope
You can't estimate either

Figure 4-1 The Cone of Uncertainty based on common project milestones.
This changes everything

- We can promise half the target scope, and we’ll see about the rest
- I’m not sure about this, but it might be worth a try
- They’re padding, but don’t know exactly what I want anyway...
- We’ll know so much more in two months...

Scope to Fit

1. Whole scope, estimate 50/50
2. Minimal scope, 90%
3. Positive project value at min scope?
4. Plan based on whichever is larger
5. Scope above minimal is buffer
Estimate two scopes

Check for project value

\[
\frac{\text{Value of Min Scope}}{\text{Cost of Min Scope, 90\%}} > 1 + \text{Hurdle Rate (e.g. 25\%)}
\]

Commit to *larger* effort and schedule of

- 90\% for Min scope
- 50\% for Target scope
Realistic Expectations

1. Positive-value project
2. Commit to minimal scope only
3. Minimal scope within schedule and budget
4. Likely follow-on for additional scope
5. Work done at high efficiency

*Sponsor accepts uncertain final scope, and agrees not to squeeze the goose!*

Waterfall-type method

1. Plan minimal scope, 50% estimate
2. Execute
3. Plan remaining scope to fit
4. Execute
Agile-type method

• Just do it
• “Homes in” on maximum value

What’s the Vertical Axis?

<table>
<thead>
<tr>
<th>Scope</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal</td>
<td>Target 50%</td>
</tr>
<tr>
<td>Target</td>
<td>Minimal 90%</td>
</tr>
</tbody>
</table>
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Parametric Estimation

Time = (# of Things) \times (Time per Thing)
Parametric Estimation

Time = (# of Things) × (Time per Thing)

Estimate from similar work, or Stretch

Compute from similar work, or Stretch

Example

Collect some data for similar work

Estimate the size: 6pp
Compute: 6pp × 17m/p = 1h 45m
But what about...

- Sample size?
- Other factors?
- Representativeness?

Don’t worry much. It’s Chainsaw Math.

Actual Recent Example

Target Website Release
8 Flows in ~6 months

First Flow
~8 weeks

Estimated Flows by Target Date
\[(6 \times 4.3) / 8 \text{ w/Flow} = \sim 3 \text{ Flows}\]
Weaponized Example
Custom Software Project Proposals

No Silver Bullet
Multiplier ranges over 2x-3x
Workshop time

Identify countable things
1. Naturally available early
2. Easy to get actuals for finished projects

The Parametric Good News

• Quick and easy
• No planning fallacy bias
• Making it harder doesn’t improve it
• Intangibles (later)
The Parametric Bad News

• No Silver Bullet
• You must RECORD YOUR TIME

“I love time entry!” said no one, ever.
Parametric Estimation

(# of Things) = Time ÷ (Time per Thing)

Given from business context

Estimate from past similars, or Stretch

Made-Up Reasonable Example

Target Scope, Schedule and Budget
30 LDT, 3 people, 6 months
(18 team-months)
Hours per logical database table
100 h/LDT

Estimated LDT achievable
18 tm * 150 h/tm ÷ 100 h/LDT
= 27 LDT
Made-Up Reasonable Example

Range
2.5x

Range multiplier-divisor
\( \sqrt{2.5} \approx 1.6 \)

90% confident LDT count

27 LDT \( \div 1.6 = 17 \) LDT

If 17 LDT is viable, commit with confidence

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Learning Objectives

- Facilitate SME ranged estimates
- Negotiate realistic expectations
- Estimate from BA deliverables
- The Stretch
- Projects must be variable scope
- Count, and compare from similars
The mighty oak was once just a little nut that held its ground.

Thank You!

Robert Merrill
608-692-268 cell
robert.merrill@wisc.edu