ESTIMATION PROTIPS

ATLANTA PHP USER GROUP

SEPTEMBER 2013

ABOUT ME

- Director of Development
- 5+ years of full-time web development
- Learned estimation from the school of hard knocks


INITECH

YOUR ANSWER?

PROTIP #1:

ESTIMATES ARE NOT PROMISES

“GOOD” ESTIMATES

A good estimation approach should provide estimates that are within 25% of the actual results 75% of the time.

Conte, Dunsmore, and Shen (1986)

SEEKING CERTAINTY

Sadly, people asking for control or visibility really want certainty.

Which doesn't exist.

Dan North
https://twitter.com/tastapod/status/116271851767992320

DISTINCTIONS

Target: a stated desirable business objective

Commitment: a promise to deliver a specific product within a timeframe


TARGET
ESTIMATE

DEFINITION

A good estimate is an estimate that provides a clear enough view of the project reality to allow the project leadership to make good decisions about how to control the project to hit targets.

Steve McConnell, *Software Estimation*

PROTIP #2:

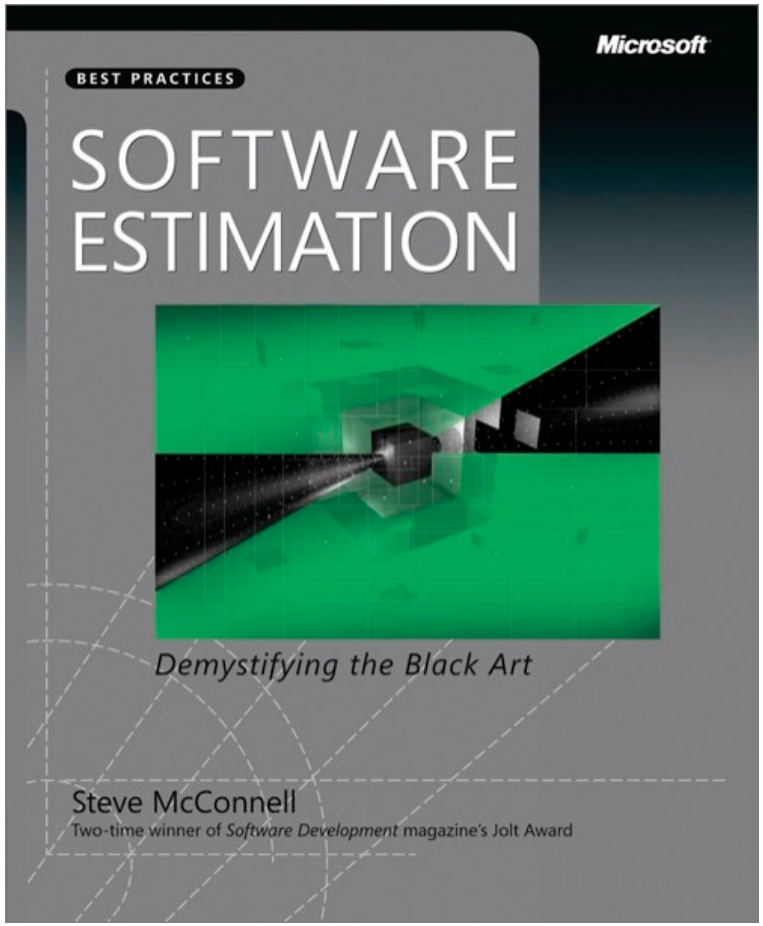
GUTS LIE

HEAVIEST BLUE WHALE EVER RECORDED

380,000 LBS

REALISTIC?

BOOK RECOMMENDATION



HOFSTADTER'S LAW

"It always takes longer than you expect, even when you take into account Hofstadter's Law."

Douglas Hofstadter
Gödel, Escher, Bach: An Eternal Golden Braid

TIME FRAMES

“With software estimation you've only realistically got a choice of 5 mins, 1 hour, 1-2 days, about a week, and then all bets are off.”

Rob Bowley
https://twitter.com/robbowley/status/11543096982518169 6

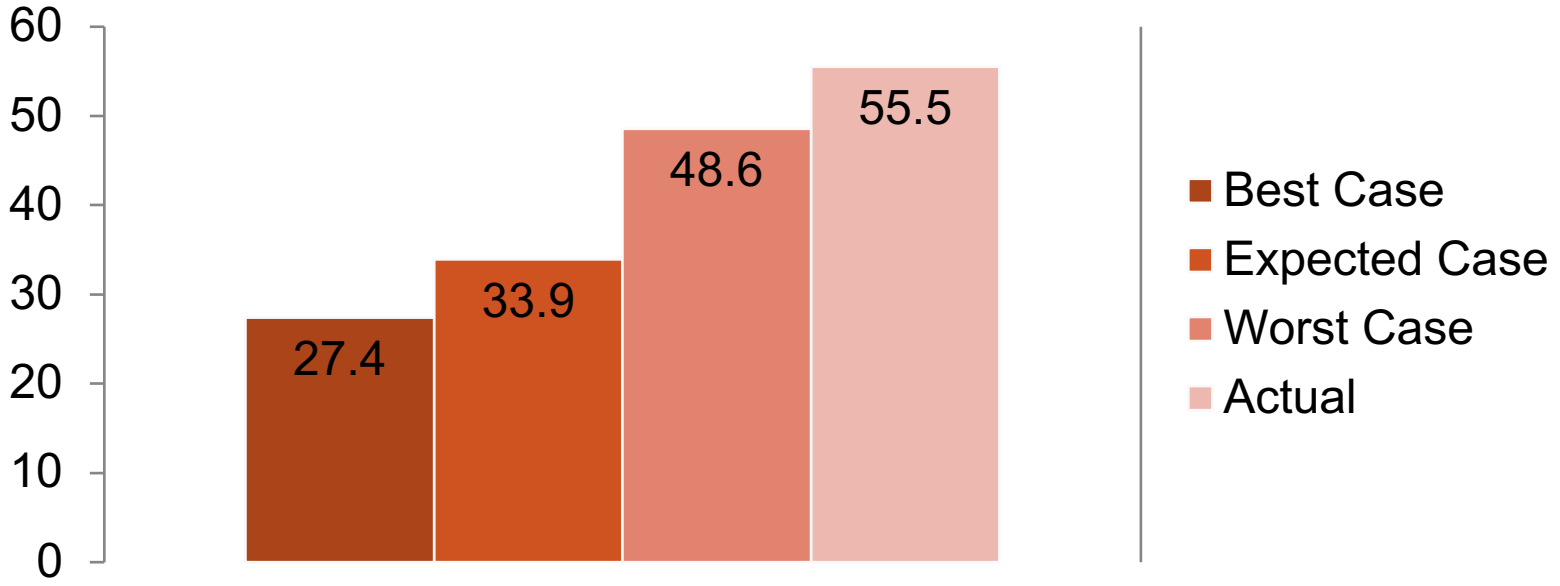
WHY ARE ESTIMATES SO HARD?


Optimism Bias
"I think we'll be okay..."

IT'LL BE DIFFERENT THIS TIME!

THE PLANNING FALLACY

Students estimated their senior thesis completion time in a 1994 study:



Source: Wikipedia

ESTIMATE THIS!

PROTIP #3:

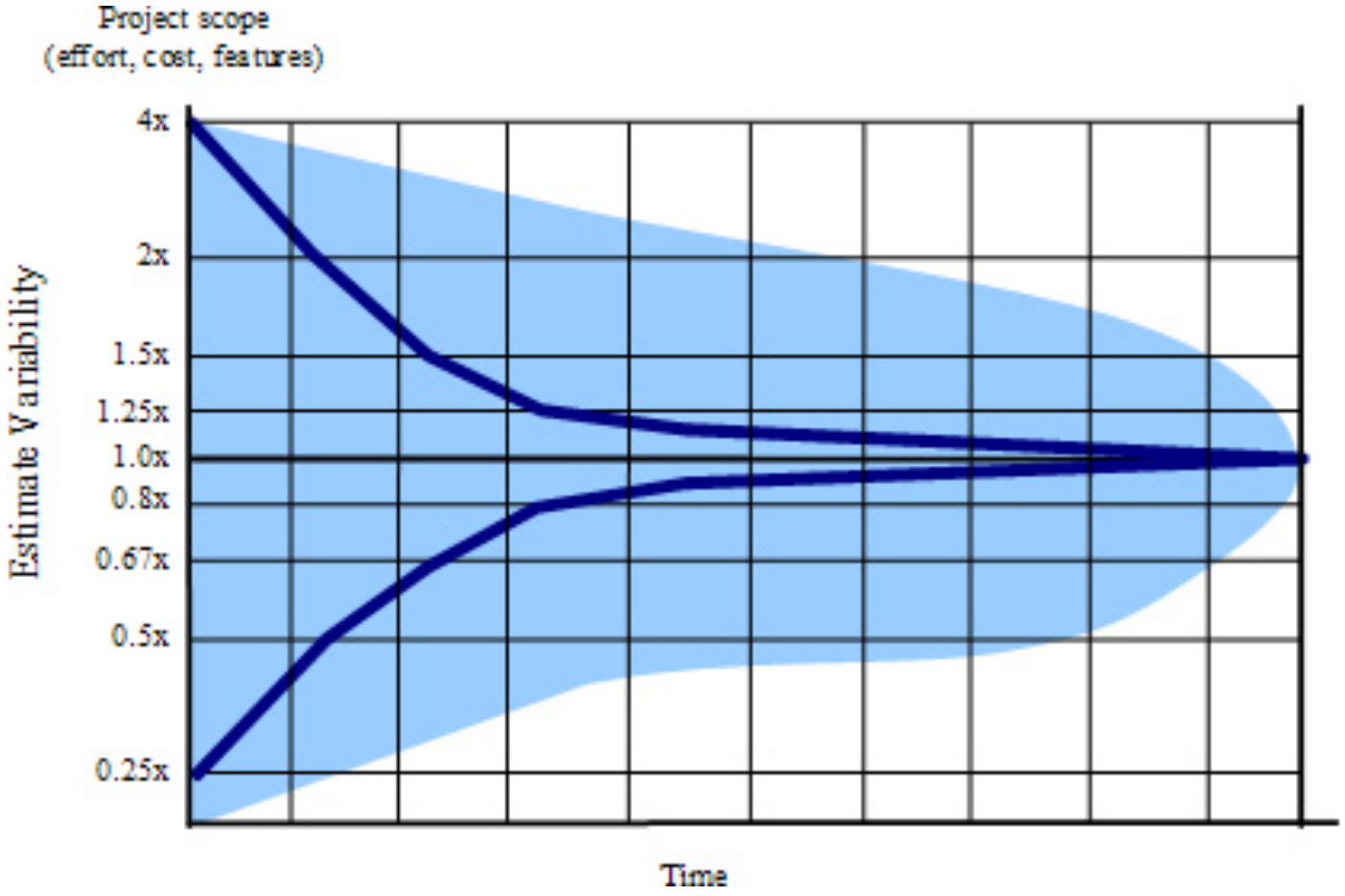
PREMATURE ESTIMATION IS SABOTAGE

DON'T ESTIMATE

If there's as much chance of you coming up with something meaningful by rolling some dice or rubbing the estimate goat then what purpose are you satisfying by doing so?

Rob Bowley

CONE OF UNCERTAINTY



OVERESTIMATION

- Inflated prices – might lose the job
- Lack of urgency – project time fills up the estimate when it could have been done faster
- Procrastination

UNDERESTIMATION

- Inadequate planning
- Missed deadlines
- Overwork, burnout
- More bugs
- Technical debt
- Damage control
- Unplanned interim releases
- Meetings proliferate

PROTIP #4:

BIG TEAMS ARE SLOWER THAN SMALL ONES

TIME

=

ESTIMATE

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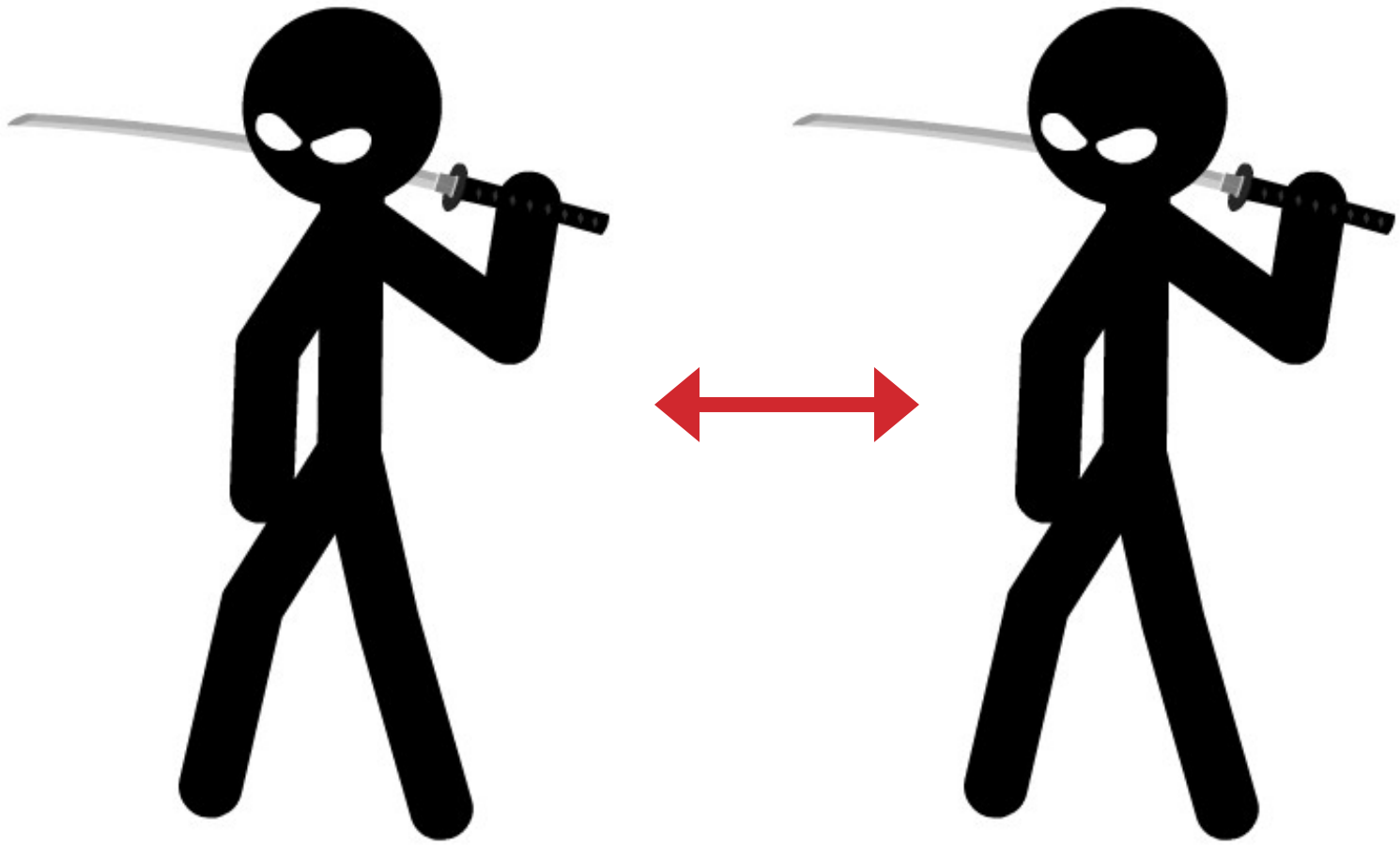
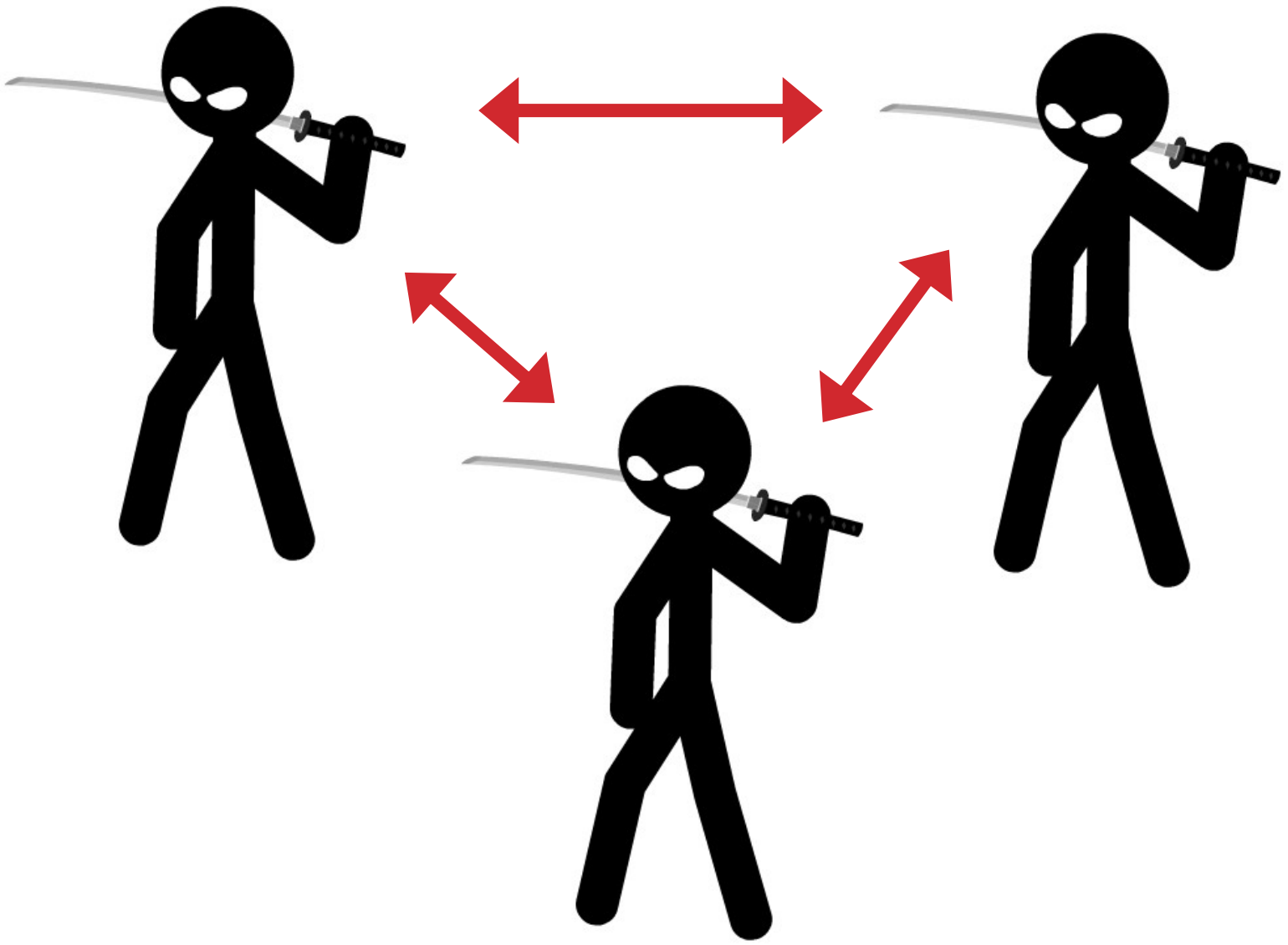
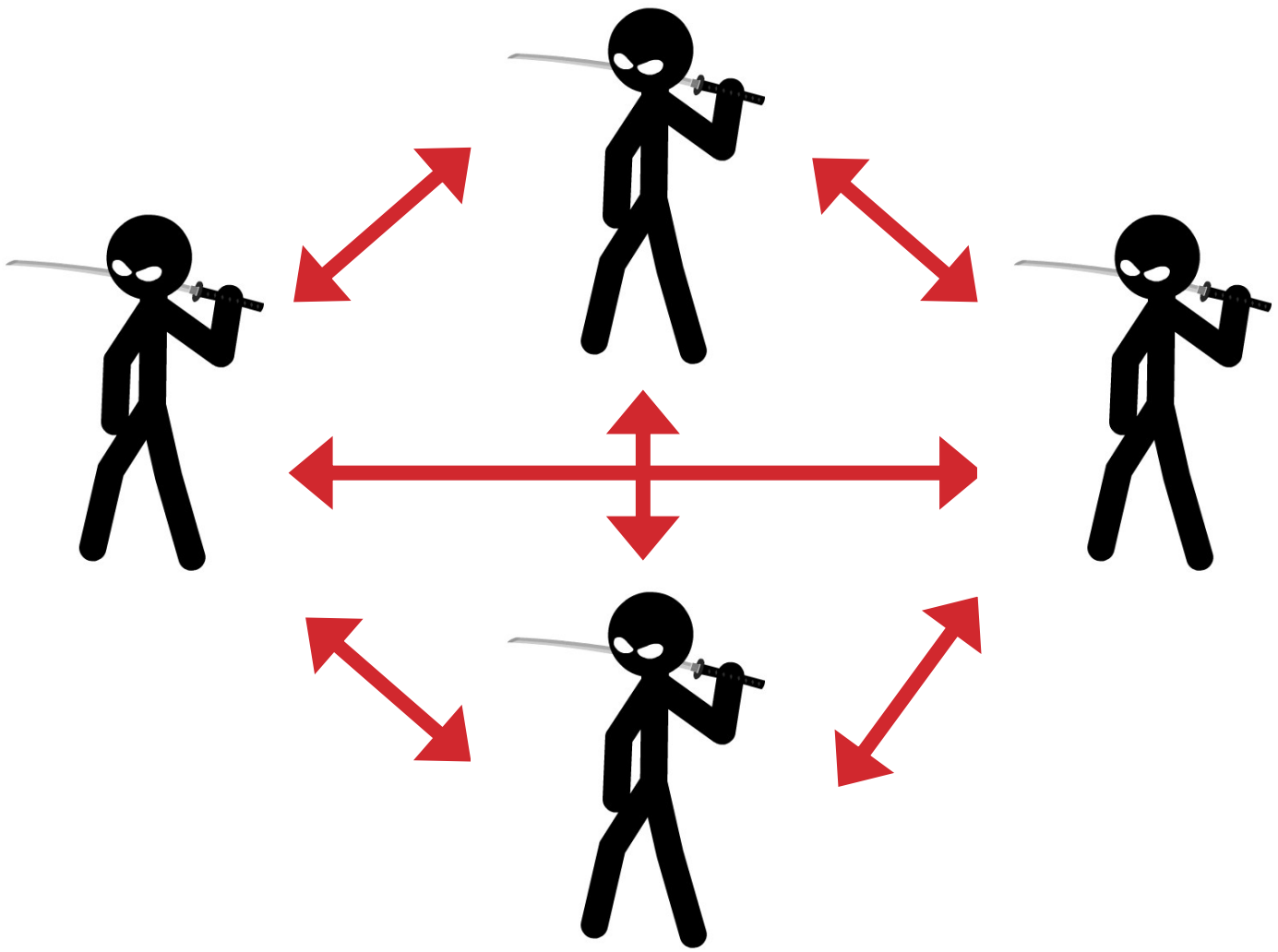
AVAILABILITY







TEAM EFFICIENCY

Developers	Communication Paths	Individual Efficiency	Team Capacity
1	0	100%	1x
2	3	75%	1.5x
3	6	67%	2x
4	10	63%	2.5x
5	15	60%	3x
6	21	58%	3.5x
7	28	57%	4x
8	36	56%	4.5x
9	45	56%	5x
10	55	55%	5.5x

Source: Paul M. Jones, http://paul-m-jones.com/archives/1591

PROTIP #5:

BEWARE UNWARRANTED PRECISION

“533.5 hours”

vs

“13 days”

vs

“3 weeks”

PROTIP #6:

COUNT ALL THE THINGS

TIME FRAMES

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Rob Bowley
https://twitter.com/robbowley/status/11543096982518169 6

DECOMPOSITION AND RECOMPOSITION

1. List all the features
2. Break the features into sub-features
3. Break the sub-features into components
4. Estimate the components
5. Add the estimates up

LAW OF LARGE NUMBERS

The tendency for errors on the high side and errors on the low side to cancel each other out.

i.e.,

The accuracy of the sum is greater than the accuracy of the individual estimates.

PAUL JONES' METHOD

1. List all the controllers required for each feature
2. List all the methods required for each controller
3. Estimate 1 dev-pair day per controller method

BRANDMOVERS METHOD

1. List all the logical features required
2. Break down each feature into small logical components
3. List all the pages and modals required for each feature
4. Estimate the back-end time required for each logical component
5. Estimate the front-end time required for each page
6. Sum up the back-end and front-end totals

Feature	BE hours		Page	FE hours	
Sweepstakes					
Rate limits	2				
Sweeps entry on registration	2				
Sweeps entry on photo upload	2				
Extra sweeps entries on share	2				
Login					
Process login form	4		Login form	4	
Process password reset form	2		Password reset form	2	
Process change password form	2		Change password form	2	
Registration					
Process registration form	4		Registration form	8	
			Registration confirmation page	2	
Photo Creator					
Upload photo	2		Upload page	4	
Image processing			Choose photo frame	8	
Resize photo	2		Add photo elements	8	
Generate preview thumbnail	2		Confirmation/share page	2	
Merge photo with frame and elements	24				
Upload to Amazon S3	2				
Display confirmation	2				
Enhanced sharing	4				
Essentials					
Project setup	2		Main site template	4	
Integrate frontend templates	4		Landing page	4	
Integrate frontend static pages	2		Promotion ended page	2	
Data export at end of promotion	2		Rules page	2	
Standard reporting dashboard	4		Privacy policy page	2	
BASE TOTAL	**72**	hours		**54**	hours

PROTIP #7:

WHEN IN A PINCH, USE A PROXY

PROXY ESTIMATION

1. Assign a size classification to each feature
2. Compute the average time required for similarly-sized features from actual past projects
3. Create estimate ranges for each feature based on past performance
4. Sum the result

PROS

- Easier
- Faster

CONS

- Less accurate
- Requires collection and archival of project historical data on a per-feature basis

STORY POINTS

- Uses a point scale: 1, 2, 4, 8, 16
- Break down the project into epics and stories
- Assign a point value to each story
- Schedule releases at regular intervals
- The number of points completed per release is known as “velocity”
- Use the velocity to plan and estimate the delivery dates for future releases

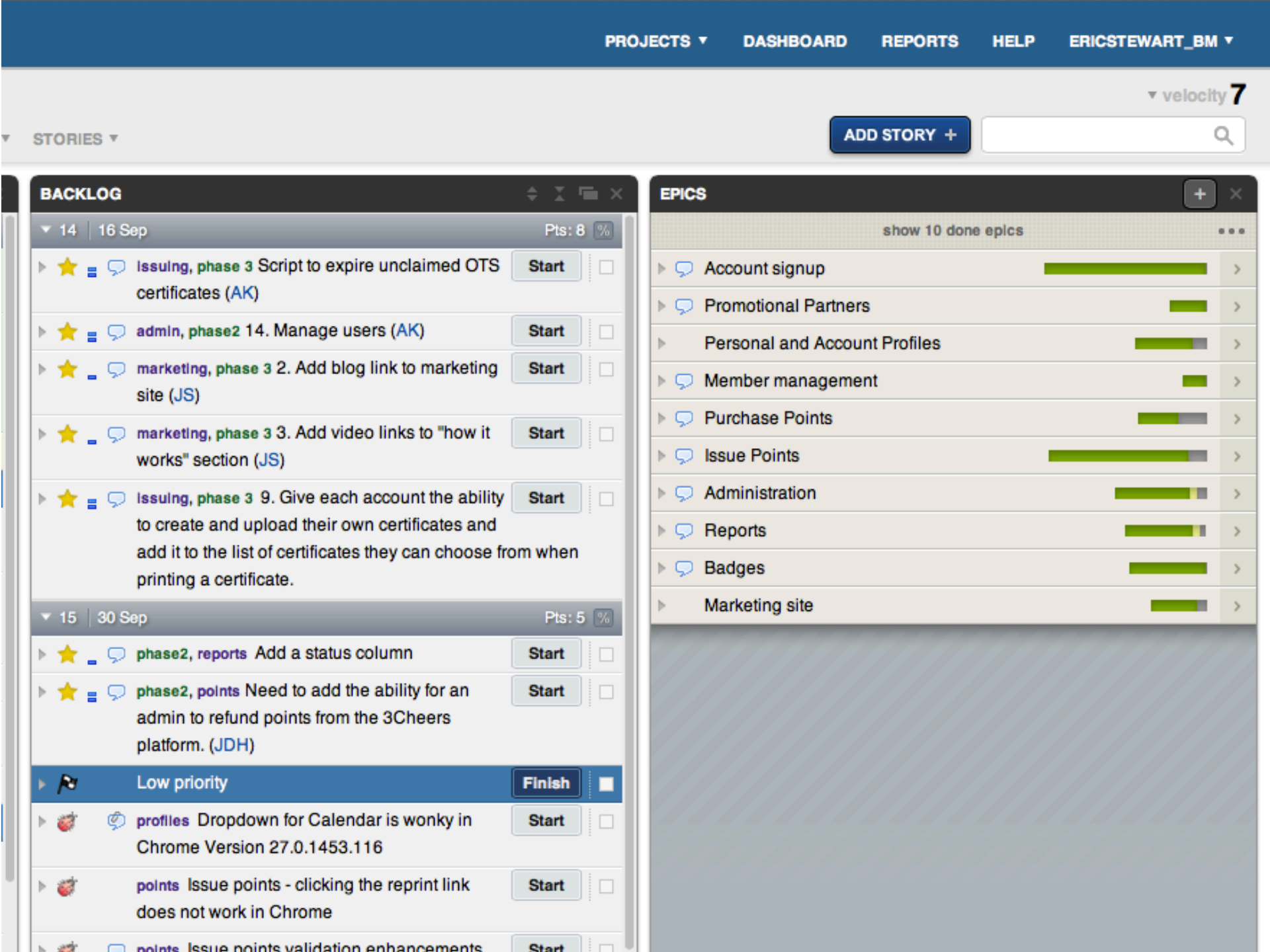
EXAMPLE

Iteration 1

- 27 story points delivered
- 12 staff weeks expended over 3 calendar weeks
- Effort = 27 points / 12 weeks = 2.25 points/week
- Schedule = 27 points / 3 weeks = 9 points/week

Iteration 2 projection

- 33 story points scheduled
- Effort = 33 points / 2.25 points/week = 15 staff weeks
- Schedule = 33 points / 9 points/week = 4 calendar weeks


PROJECTS
DASHBOARD
REPORTS
HELP
ERICSTEWART_BM
velocity 7
STORIES
ADD STORY +
BACKLOG
14 | 16 Sep
Pts: 8
Issuing, phase 3 Script to expire unclaimed OTS certificates (AK)
Start
admin, phase2 14. Manage users (AK)
Start
marketing, phase 3 2. Add blog link to marketing site (JS)
Start
marketing, phase 3 3. Add video links to "how it works" section (JS)
Start
Issuing, phase 3 9. Give each account the ability to create and upload their own certificates and add it to the list of certificates they can choose from when printing a certificate.
Start
15 | 30 Sep
Pts: 5
phase2, reports Add a status column
Start
phase2, points Need to add the ability for an admin to refund points from the 3Cheers platform. (JDH)
Start
Low priority
Finish
profiles Dropdown for Calendar is wonky in Chrome Version 27.0.1453.116
Start
points Issue points - clicking the reprint link does not work in Chrome
Start
points Issue points validation enhancements
Start
EPICS
show 10 done epics
Account signup
Promotional Partners
Personal and Account Profiles
Member management
Purchase Points
Issue Points
Administration
Reports
Badges
Marketing site

T-SHIRT SIZING

- Assign a T-shirt size for development cost
- Assign a T-shirt size for business value
- Create a table of business value to development cost ratios
- Look up the net business value for each feature based on the dev cost and business value T-shirt sizes
- Prioritize the features in order of net business value

EXAMPLE

Feature	Business Value	Dev Cost
Feature A	L	S
Feature B	S	L
Feature C	L	L
Feature D	M	M
Feature E	M	L

VALUE TO COST RATIOS

Development Cost

Business Value

	XL	L	M	S
XL	0	4	6	7
L	-4	0	2	3
M	-6	-2	0	1
S	-7	-3	-1	0

BIZ VALUE EXAMPLE

Feature	Business Value	Dev Cost	Net Value
Feature A	L	S	3
Feature C	L	L	0
Feature D	M	M	0
Feature E	M	L	-2
Feature B	S	L	-3

PROTIP #8:

YOU CAN'T NEGOTIATE MATH


TARGET
ESTIMATE

PROBLEM SOLVING

When the estimate and target conflict:

- **Negotiate features**
- **Negotiate time**
- **Negotiate price**

ATTITUDE

- Try to be helpful, offer solutions
- Be creative
- Examine what can be done in parallel to save time
- Be firm – you can’t change the laws of physics

QUESTIONS?

ONE FINAL WORD

A HORROR STORY

THE SETTING

- Former employer of mine
- Start-up, naïve and inexperienced
- Needed cash bad

THE CLIENT

- Local company in Atlanta
- Had four separate systems in place for managing customer data, billing, inventory, and fulfillment
- Wanted this unified and streamlined into a web-based backoffice application
- Wanted a customer-facing portal for online ordering and bill paying

THE ESTIMATE

- Estimated at 1,039 man-hours
- Normal hourly rate was $120/hr
- We did a fixed-bid for $50k, at an effective hourly rate of $48/hr

THE FALLOUT

- 18 months later…
- 2,500 man-hours
- 1,500+ Subversion commits
- Lots of “unknown unknowns”, hidden complexities, and scope creep

THE MORAL

- Don’t succumb to pressure to be optimistic when estimating
- Use a good estimation methodology
- Try not to do fixed bidding
- Always have a thorough scope before starting

THANK YOU!

- http://brandmovers.com
- http://jonathonhill.net
- **@compwright**