

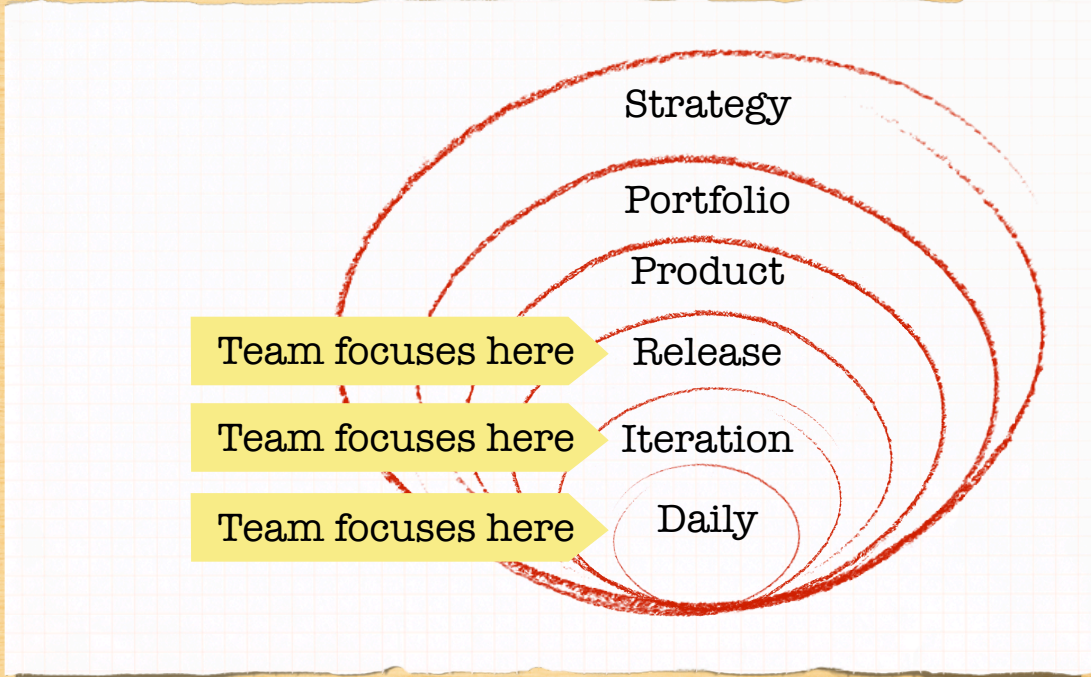


# Advanced Agile Planning

**Mike Cohn**  
Norwegian Developer's Conference  
6 June 2014

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## The planning onion



Strategy

Portfolio

Product

Release


Iteration

Daily

Team focuses here

Team focuses here

Team focuses here



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# Release and iteration planning

## Release Plan

Iteration 1



Iteration 2



Iteration 3



Iterations 4-7



## Iteration Plan

Code the ...	6	8
Decide ...	4	12
Test the ...	6	8
Automate ...	8	6



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## What's a good plan?

- A good plan is one that supports reliable decision-making
- Will go from
  - We'll be done in the third quarter
  - We'll be done in Decemb
  - We'll be done 18 Decemb

*"It's better to be roughly right than precisely wrong."*

*—J.M. Keynes*



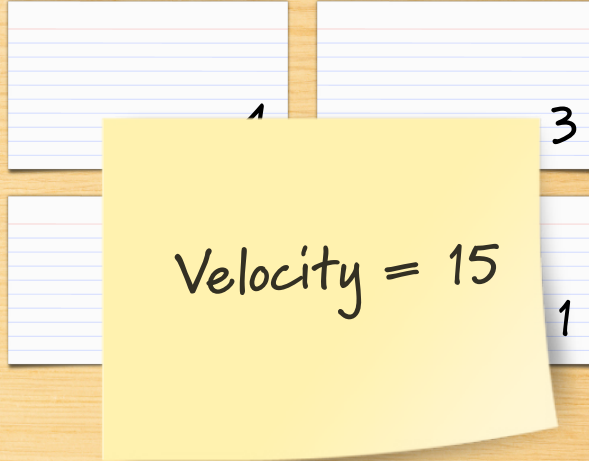
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# Velocity

An iteration

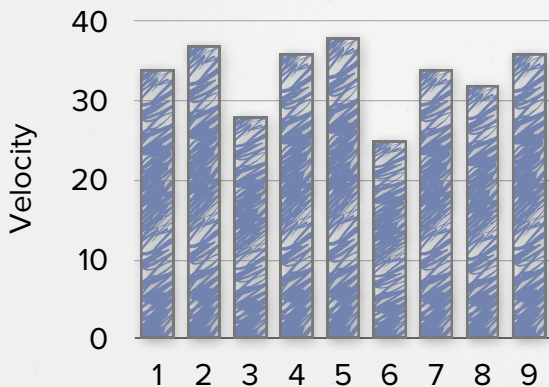


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# Velocity

- A useful long-term measure of the amount of work completed per iteration
- Most useful over at least a handful of iterations



Velocity is measured in the units you use to estimate product backlog items

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# Five Planning Scenarios

- A team with historical data
- Fixed-date plans
- Fixed-scope plans
- A team with no velocity data
- A team changing size



Calculate a confidence interval from historical data

27
34
35
38
39
40
40
41
45

Sorted Velocities

90% confidence interval

# of historical iterations	Iterations to throw out from each end
0-7	0
8-10	1
11-12	2
13-15	3
16-17	4
18-20	5
21-22	6
23-25	7
26+	8





# Extrapolate from the velocity range


Product Backlog

← We'll almost certainly get here ( $5 \times 34 = 170$ )

← The most we can realistically expect ( $5 \times 41 = 205$ )

Assume there are five iterations left



**VELOCITY RANGE CALCULATOR**

← Return to Tools List

**VELOCITY CONFIDENCE CALCULATOR**

**Velocities From Completed Iterations**  
27, 41, 40, 39, 34, 35, 45, 40, 38  
velocity numbers, comma-separated

**Planned Iterations (optional)**  
5

**Calculate**

For velocity values of 27,34,35,38,39,40,40,41,45

You have a median velocity of **39** and there is a 90% likelihood that your actual velocity will fall between **34** and **41**

With 90% confidence you can expect to complete between **170** and **205** more units of work with a median value of **195**.

Use the online velocity range calculator at [mountaingoatsoftware.com/tools](https://mountaingoatsoftware.com/tools)



## Five Planning Scenarios

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## Fixed-date planning

### Three steps

1. Determine how many iterations you have.
2. Estimate velocity as a range.
3. Use that range  $\times$  the number of iterations to partition the backlog into Will Have, Might Have, and Won't Have.

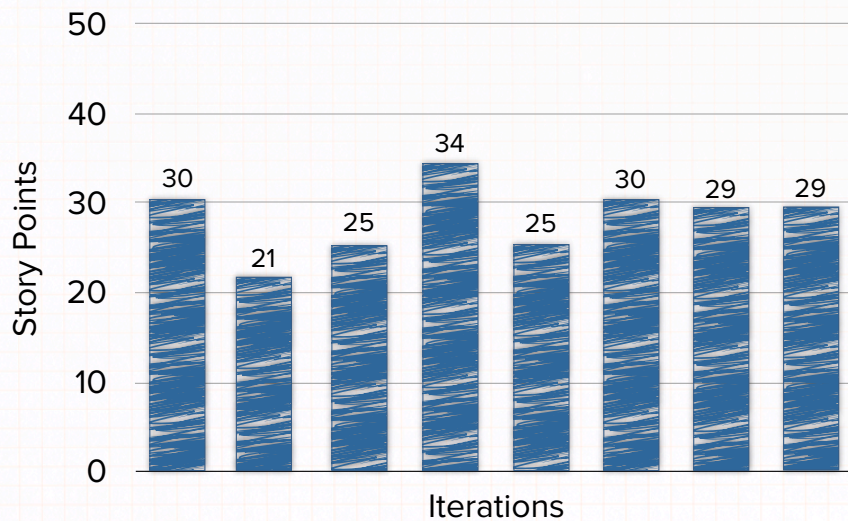




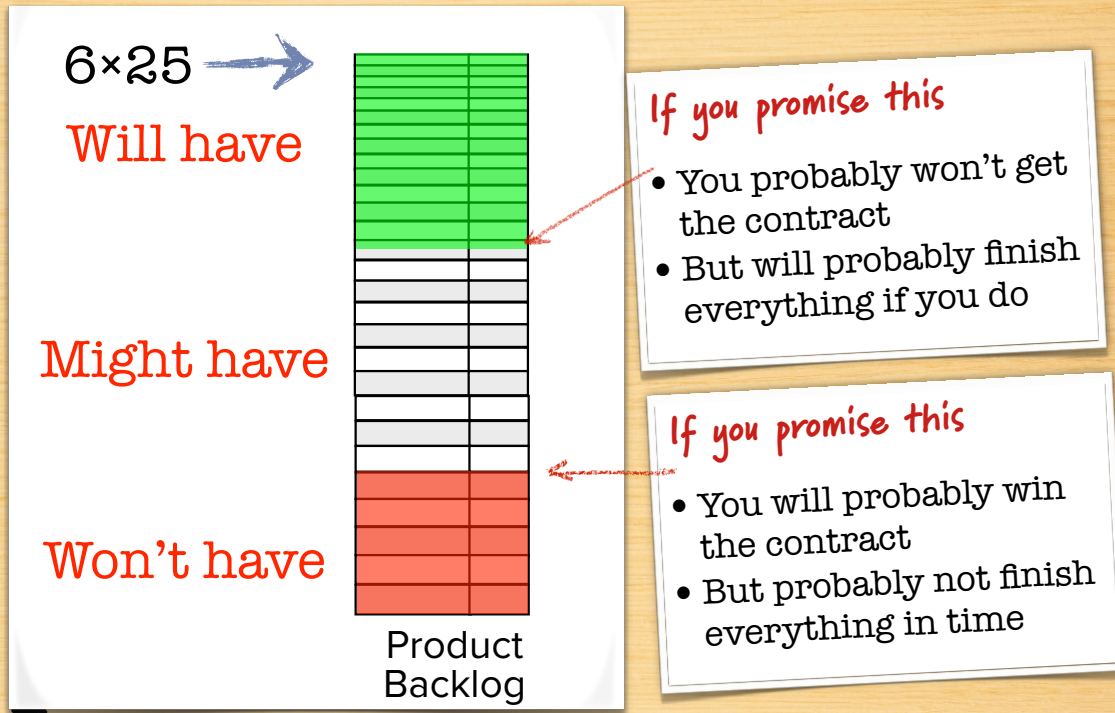
# Count the iterations



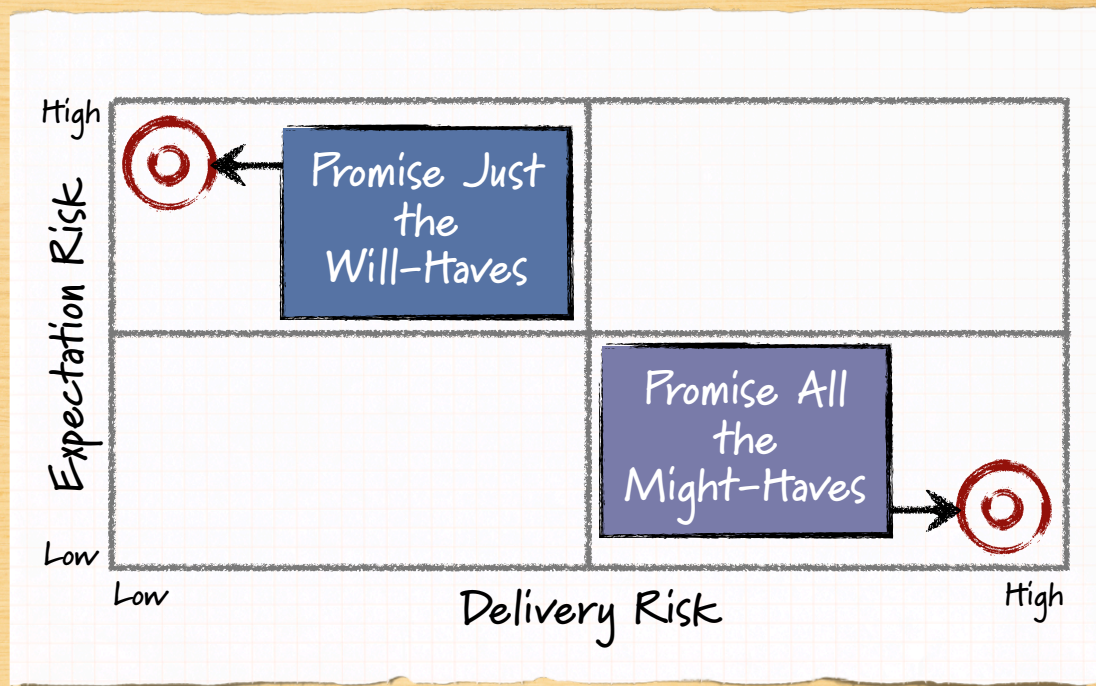
# Determine a velocity range



# Determine what to commit to



# Balancing risk





## Five Planning Scenarios

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## Fixed scope planning

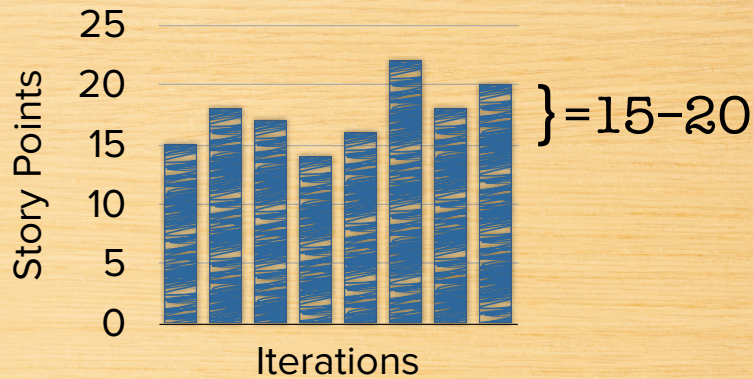
### Three steps

1. Sum the product backlog items.
2. Estimate velocity as a range.
3. Use the sum of the backlog divided by the velocity range to determine a date range.





= 120 story points



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*If you promise the short duration*

- You probably get the contract
- But may not finish everything in time

$120 \div 20 =$



$120 \div 15 =$



*If you promise the long duration*

- You probably will not get the contract
- But it should be easy to finish everything



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# Ranges

- Notice in both cases we had a range
- For a fixed date project, use a scope range:
  - “By that date you’ll have all of these features and some of these.”
- For a fixed-scope project, use a date range:
  - “It will take us between 6 and 8 iterations to deliver all of those features.”



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## The impending tradeshow

Your company develops tools for managing agile projects.

You’ve finished version 1.0 (on time, of course). Now the boss needs a new version for the big trade show that is 4 iterations away.

- Which features can you “guarantee” will be in for the trade show?
- Which features are likely to be in?

*Use the following user stories, estimates and velocities.*

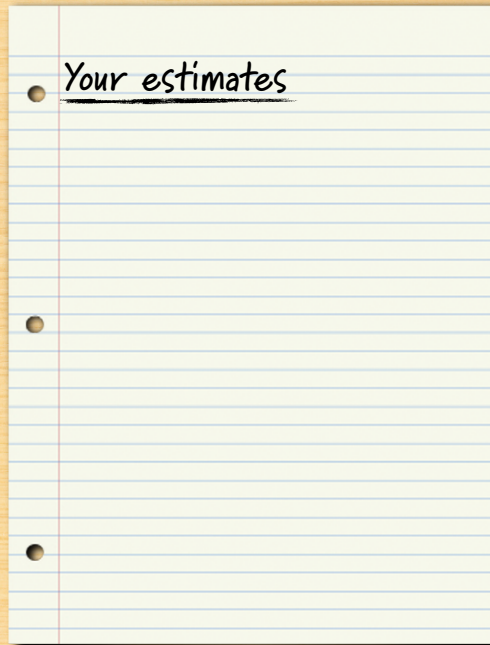


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# Past velocities

Historical Data	
Iteration	Velocity
1	20
2	14
3	23
4	18
5	25
6	30
7	12
8	22
9	15
10	23



Product backlog item	Estimate
1. As the product owner I want to drag items onto a release burndown chart and see the impact to the release date.	20
2. As a user at a company with lots of cash, I want your product to support touch screens so I can put a large one in our team room.	13
3. As a user I would like performance to be about twice as fast as now during peak use periods.	20
4. As a team member, I'd like to be able to do online planning poker estimating right inside the tool.	13
5. As a third party, I would like an SOA interface so that I can integrate my product with yours.	8
6. As a team member I want RSS support for all changes to tasks or user stories so that I'm notified.	8
7. As the product owner, I want a new report that shows differences in the product backlog between different time periods.	3
8. As a team member I'd like to define templates of tasks that recur for lots of different stories so that I can reuse them	13





## Five Planning Scenarios

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## Forecast an initial velocity

- Get the team together as though there were going to plan a real iteration (2–4 weeks)
- Iteration planning involves
  - Breaking product backlog items (features) into tasks
  - Estimating the hours for each task
  - Repeating until the iteration feels full
- See how many points are represented by the work they select
- Consider planning a second iteration this way



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# Consider this team

Person	Hours/Day	Hours / Iteration
Trond	4-6	40-60
Tore	4-6	40-60
Christine	2-3	20-30
<b>Total</b>		<b>100-150</b>



# Establishing their velocity

## Capacity

100-150 hours per iteration

Code...	12
Desi...	6
T	8
Decid...	8
Automate ...	12

46

Story	Points
As a frequent flyer ...	3
As a visitor ...	5
As a vacation planner ...	5
As a frequent flyer ...	2

Code...	8
Test	6
Desi...	12
Test ...	5

31

22	22
----	----

22

48	48
----	----

48





# Turn the point estimate into a range

- If you don't have historical data
  - Take a wild guess, perhaps:
    - +/- 10% for a known team working in a known domain with known technologies
    - +/- 50% if all that is unknown
- If you have historical data from other teams
  - Calculate the relative standard deviation of those teams



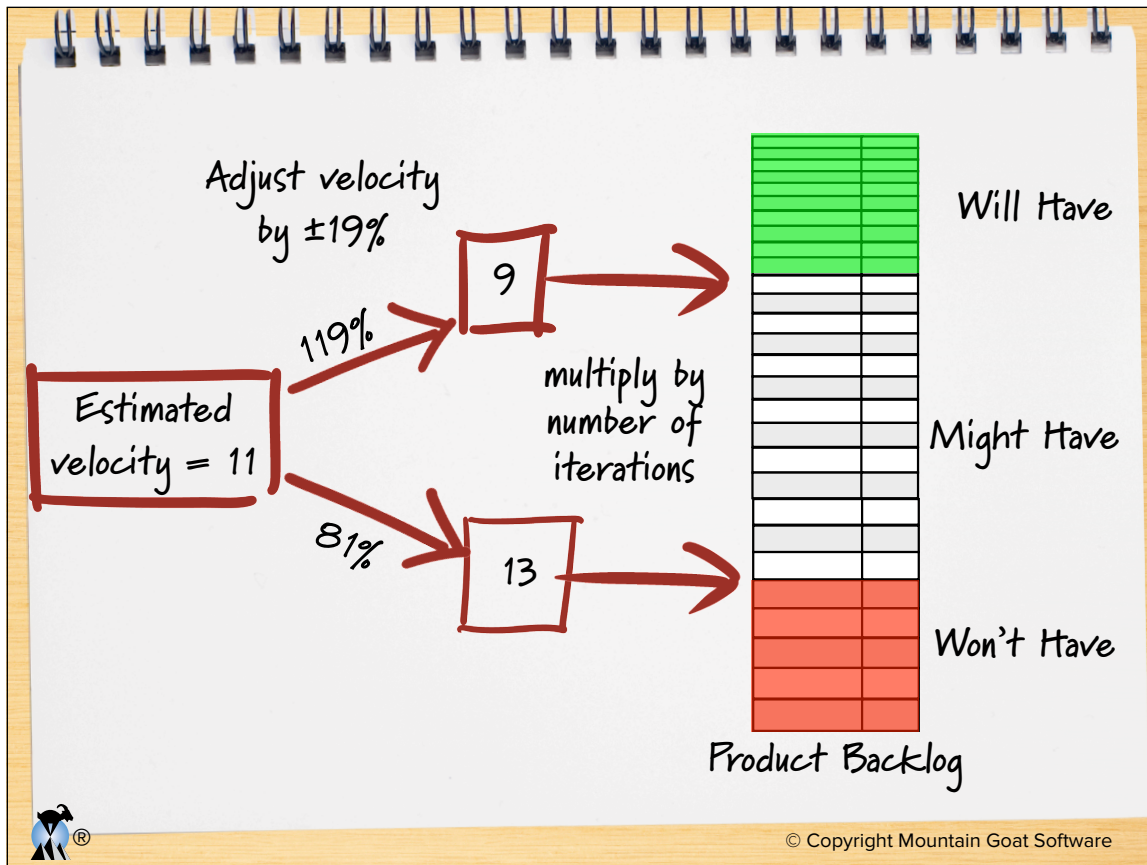
# Using data from other teams

Team A	
Iteration	Velocity
1	20
2	28
3	24
4	16
5	18
6	23
7	26
8	21

Team A	
Mean	Standard Deviation
22	3.8

Relative standard deviation  
 $3.8 / 22 = 17\%$





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# Track velocity when size changes

Initial Team Size	New Team Size	Iteration +1	Iteration +2	Iteration +3
6	7	-20%	-4%	+12%
6	7	0%	-6%	+15%
7	5	-12%	-8%	-8%
8	6	-20%	-20%	-16%
7	8	-15%		

Track across the entire organization.



# Impact of going from 6–7 people

Initial Team Size	New Team Size	Iteration +1	Iteration +2	Iteration +3
6	7	-20%	-4%	+12%
6	7	0%	-6%	+15%
7	5	-12%	-8%	-8%
...	...	...		

Iteration	Average Velocity Change
1	-10%
2	-5%
3+	+13%



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## Mike Cohn

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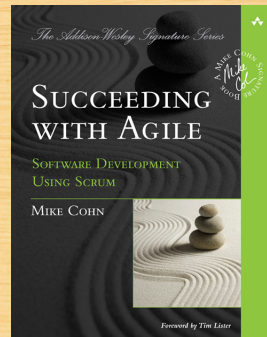
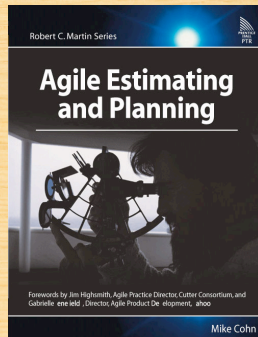
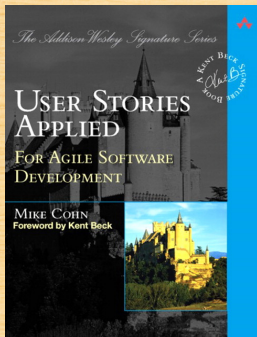
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