

Experiencing Agility From Requirements to Planning

Mike Cohn

mike@mountaingoatsoftware.com



© 2003–2008 Mountain Goat Software®

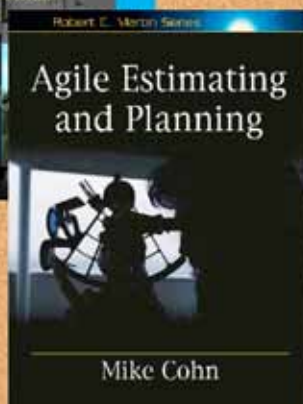
Build Better Software...Build Better Teams

October 27-30, 2008 | Boston, MA

software
development **BEST
PRACTICES**

1

Mike Cohn - background



© 2003–2008 Mountain Goat Software®

2

Course agenda



Agenda

- User stories and the product backlog
- Estimating product backlog items
- Release planning
 - The boss wants it all
 - The boss wants it in 8 weeks



© 2003–2008 Mountain Goat Software®

3

User Stories On
the Product
Backlog



© 2003–2008 Mountain Goat Software®

4

Monday, October 27, 2008

The product backlog

- The requirements
- A list of all desired work on the project
- Ideally expressed such that each item has value to the users or customers of the product
- Prioritized by the *product owner*
- Reprioritized at the start of each iteration



© 2003–2008 Mountain Goat Software®

5

A sample product backlog

Backlog item	Estimate
Allow a guest to make a reservation	3
As a guest, I want to cancel a reservation.	5
As a guest, I want to change the dates of a reservation.	3
As a hotel employee, I can run RevPAR reports (revenue-per-available-room)	8
Improve exception handling	8
...	30
...	50



© 2003–2008 Mountain Goat Software®

6

Sample user stories

As an account holder, I want to check my savings account balance.

As an account holder, I am required to authenticate myself before using the system.

As the primary account holder, I can grant access to additional users so that they can see transactions.



© 2003–2008 Mountain Goat Software®

7

Non-functional user stories

As one of 10,000 concurrent users, I would like the system to perform adequately.

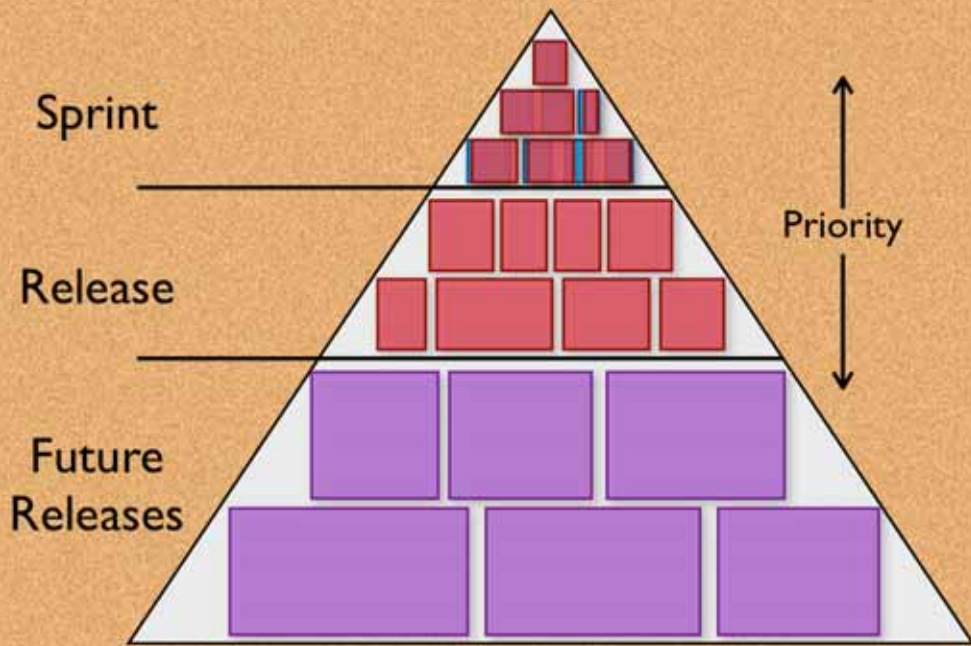
As a first-time user, I can complete common operations without using the help system.



© 2003–2008 Mountain Goat Software®

8

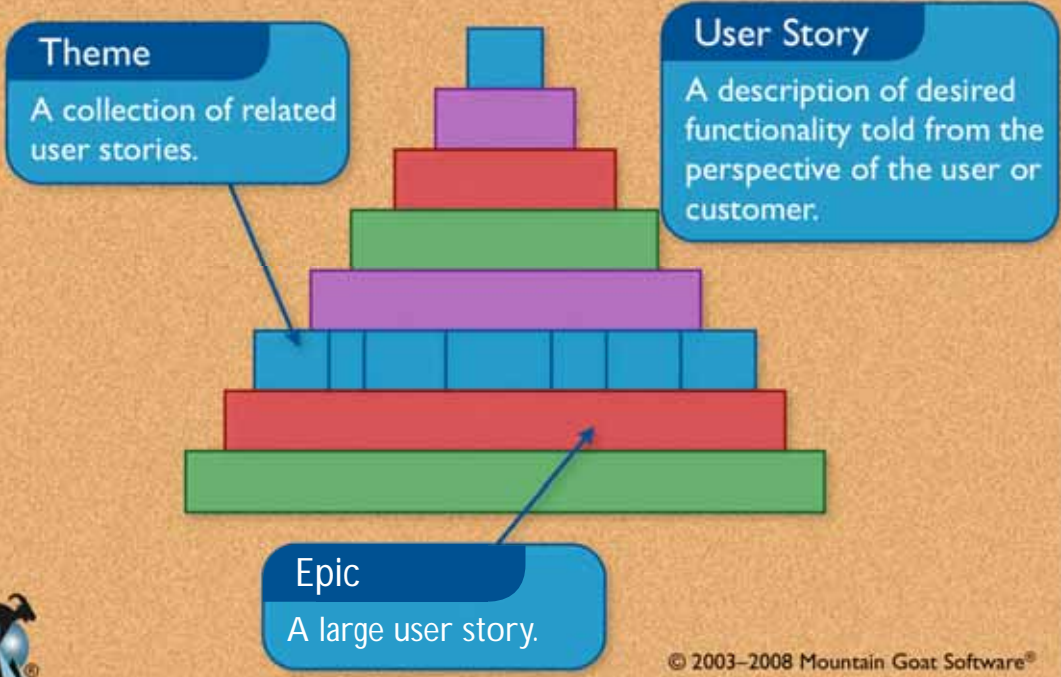
The product backlog iceberg



© 2003–2008 Mountain Goat Software®

9

Stories, themes and epics



© 2003–2008 Mountain Goat Software®

10

An example

As a VP Marketing, I want to review the performance of historical promotional campaigns so that I can identify and repeat profitable ones.

Clearly an epic

As a VP Marketing, I want to select the timeframe to use when reviewing the performance of past promotional campaigns, so that I can identify and repeat profitable ones.

Epics??

As a VP Marketing, I can select which type of campaigns (direct mail, TV, email, radio, etc.) to include when reviewing the performance of historical promotional campaigns.



© 2003–2008 Mountain Goat Software®

11

An example

As a VP Marketing, I want to see information on **direct mailings** when reviewing historical campaigns.

As a VP Marketing, I want to see information on **television** advertising when reviewing historical campaigns.

As a VP Marketing, I want to see information on **email** advertising when reviewing historical campaigns.



© 2003–2008 Mountain Goat Software®

12

Conditions of Satisfaction

- Added when story is small and is ready to be worked on
 - These are essentially tests

As a VP Marketing, I want to see information on television advertising when reviewing historical campaigns.

- Number of viewers by age range
- Number of viewers by income level



© 2003–2008 Mountain Goat Software®

13

Story-writing workshops

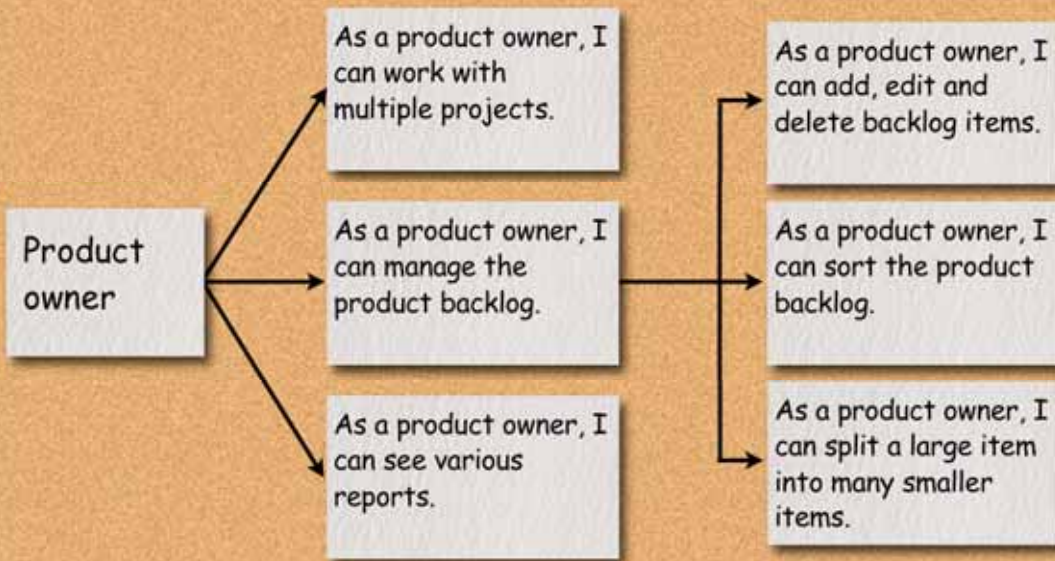
- Includes developers, users, customer, others
- Brainstorm to generate stories
- Goal is to write as many stories as possible
 - Some will be “implementation ready”
 - Others will be “epics”
- No prioritization at this point



© 2003–2008 Mountain Goat Software®

14

Start with epics and iterate



© 2003–2008 Mountain Goat Software®

15

Product Vision

Your new company, *Agile Tool Builders*, is considering developing a tool for agile teams to use in managing their product and iteration backlogs.

1. Identify the main users of such a tool.
2. Write 20 or so epic user stories covering the breadth of functionality you anticipate in the product.
 - An example: *As the product owner, I can manage the product backlog.*

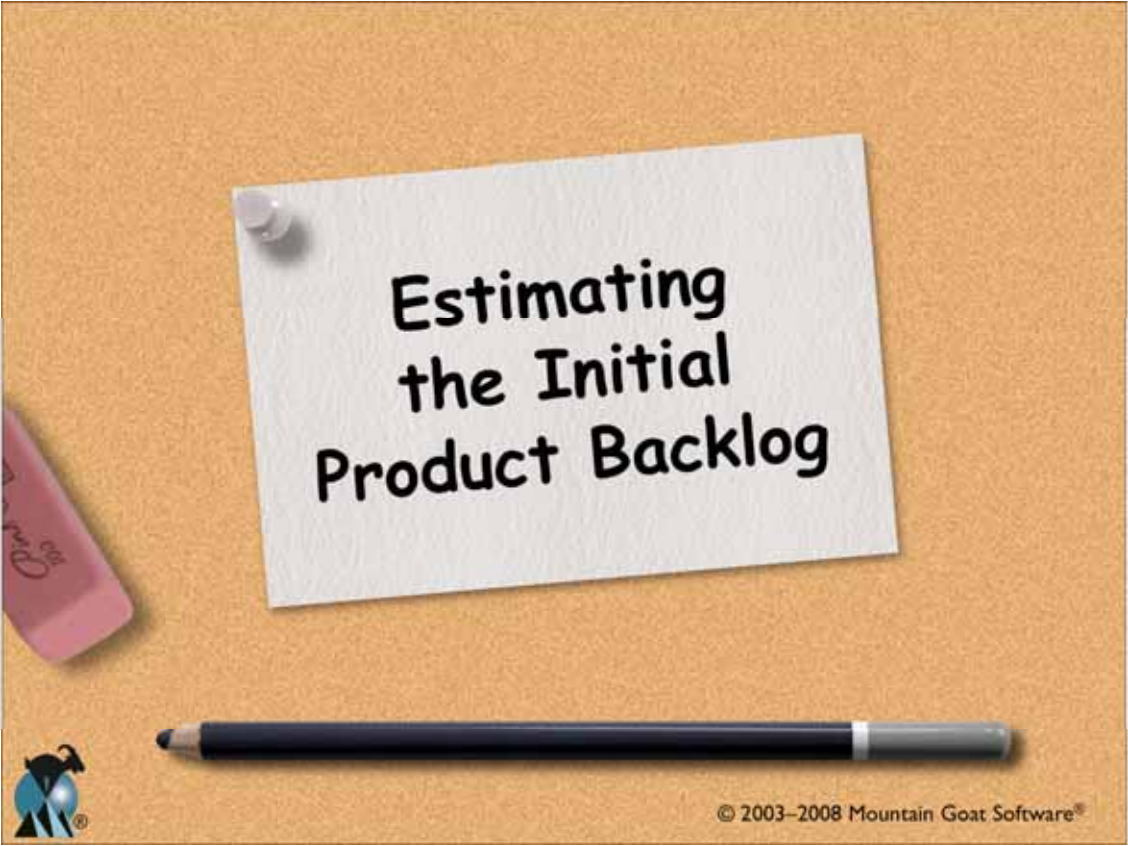
Use this template

“As a <user role>, I want <goal> so that <reason>.”



© 2003–2008 Mountain Goat Software®

16



Estimating the Initial Product Backlog


© 2003–2008 Mountain Goat Software®

17

How long will it take...



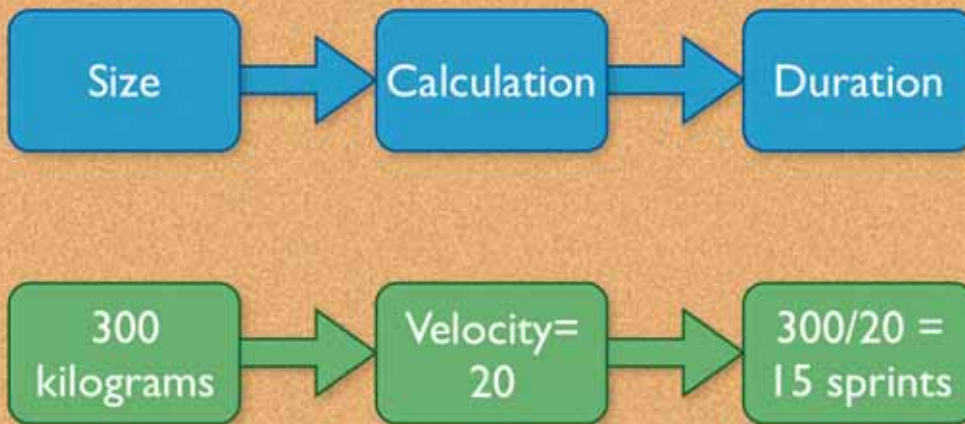
- ...to read the latest Harry Potter book?
- ...to drive to Minneapolis?



© 2003–2008 Mountain Goat Software®

18

Estimate size; derive duration



© 2003–2008 Mountain Goat Software®

19

Story points

- The “bigness” of a task
- Influenced by
 - How hard it is
 - How much of it there is
- Relative values are what is important:
 - A login screen is a 2.
 - A search feature is an 8.
- Points are unit-less

As a user, I want to be able to have some but not all items in my cart gift wrapped.

5



© 2003–2008 Mountain Goat Software®

20

An example

Story	Points	Done
As the site editor, I can add an article to the site.	5	✓
As a site visitor, I want to read a new article on the front page about once a week.	5	✓
As the site editor, I can include a teaser with each article.	3	
As a site member who has read a teaser on the front page, I want to read the entire article.	2	
As a site visitor, I can do a full-text search of article body, title, and author name.	13	
As a site visitor, I can subscribe to an RSS feed of articles.	5	
As a site visitor, I can post comments about articles so that others can read them.	13	

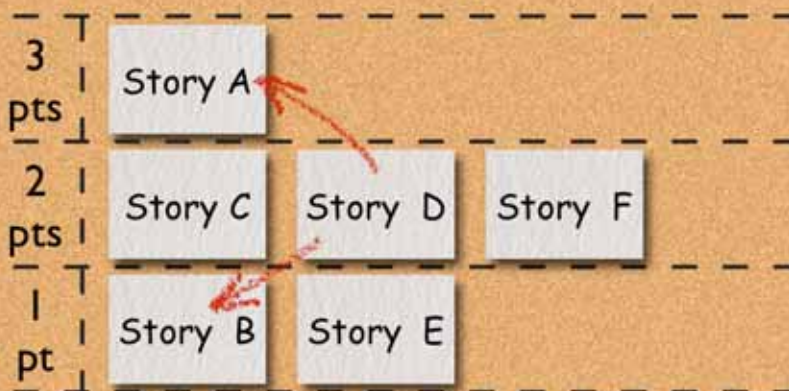


© 2003–2008 Mountain Goat Software®

21

Triangulation

- Confirm estimates by comparing the story to multiple other stories.
- Group like-sized stories together



© 2003–2008 Mountain Goat Software®

22

Use the right units

- Can you distinguish a 1-point story from a 2?
- Can you distinguish a 17 from an 18?
- Use units that make sense, such as
 - 1, 2, 3, 5, 8, 13, 20, 40, 100
- Stay mostly in a 1-10 range

Include 0 and
 $\frac{1}{2}$ if you
want



© 2003–2008 Mountain Goat Software®

23

Planning poker

- An iterative approach to estimating
- Steps
 - Each estimator is given a deck of cards, each card has a valid estimate written on it
 - Customer/Product owner reads a story and it's discussed briefly
 - Each estimator selects a card that's his or her estimate
 - Cards are turned over so all can see them
 - Discuss differences (especially outliers)
 - Re-estimate until estimates converge



© 2003–2008 Mountain Goat Software®

24

Planning poker - an example



Estimator	Round 1	Round 2
Susan	3	5
Vadim	8	5
Ann	2	5
Chris	5	8



© 2003–2008 Mountain Goat Software®

25

Estimate these



Product backlog item	Estimate
Install a new hardwood floor	
Remove, sand, re-paint the cabinets.	
Replace tile countertop with granite.	
Repaint entire kitchen.	
Lay shelf paper.	
Install recessed lighting.	
Install built-in refrigerator.	
Replace existing oven with a new one.	
Run a water line to existing island and add a sink.	
Replace existing simple window with a bay window.	



© 2003–2008 Mountain Goat Software®

26

www.planningpoker.com

The screenshot shows a web browser window with the URL <http://www.planningpoker.com/games/76>. The page title is "Payroll system replacement [Planning Poker]". The main content area is titled "Write a list of definitions." and contains three user stories with associated estimates:

- Estimate: 3
As a/an unauthenticated user I would like to log in so that I can start using the application
- Estimate: 3
As a/an authenticated user I would like to change my password
- Estimate: 2
As a/an admin I would like to add new users so that they can log in

Below the stories, a question asks "How are they going to get their username and password?". The answers are shown in a grid of cards:

3	3	5	13	20
Thijs V.	Maaike S.	Mike C.	Gel N.	Angie

Below this, another row of cards shows estimates and names:

5	5	5	5
Maaike S.	Thijs V.	Gel N.	Mike C.

A "Complete" button is at the bottom of the grid. On the right side of the page, there are sections for "All games", "Estimator access (Link)", "Countdown timer" (with a "Start timer" button), "Done playing?" (with a "Complete game" button), and "Participants" (listing Angie, Gel de Nijp, Maaike Steenstra, Mike Cahn, and Thijs van der Vossen (moderator)).

Free, or I wouldn't mention it



software®

27

Release Planning



© 2003–2008 Mountain Goat Software®

28

Monday, October 27, 2008

Release planning

Purpose

To answer questions such as:

- How much will be done by June 30?
- When can we ship with this set of features?
- How many people or teams should be on this project?

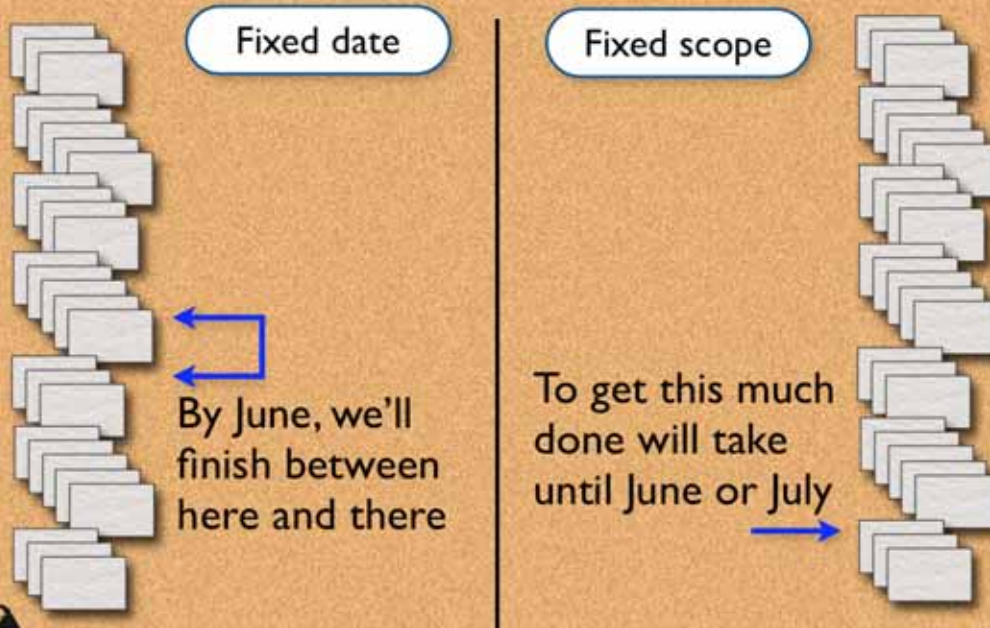
- Usually covers a 3-6 month horizon
- Useful even on shorter projects
 - Helps iterations combine into something more useful
- Very long projects can be split into multiple milestones



© 2003–2008 Mountain Goat Software®

29

Two sample release plans

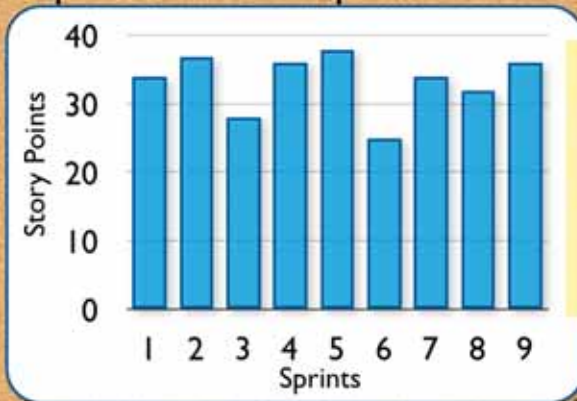


© 2003–2008 Mountain Goat Software®

30

Velocity

- A useful long-term measure of the amount of work completed per sprint
- Not a prediction of exactly how much work will be completed in *each* sprint



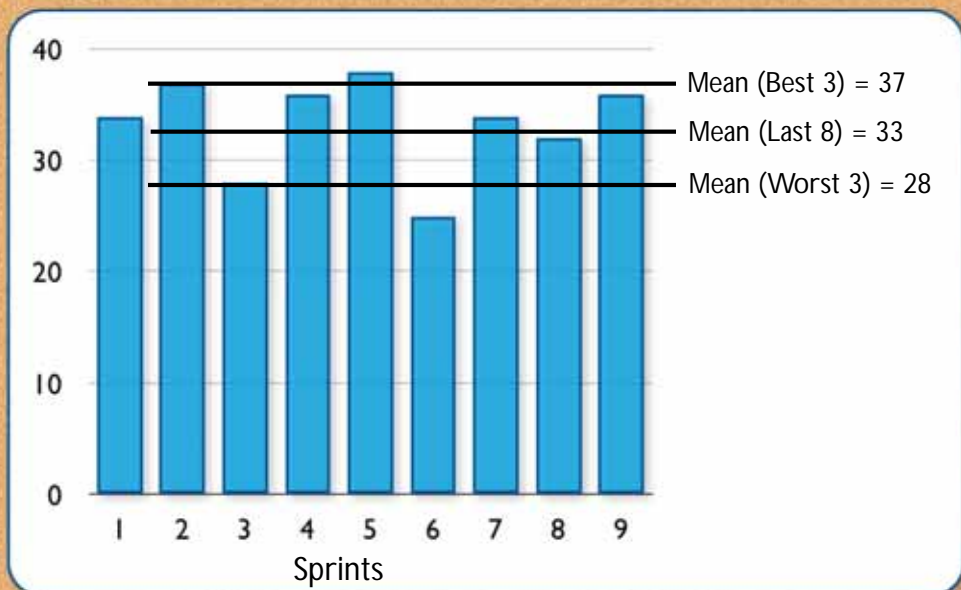
Velocity is measured in the units you use to estimate product backlog items



© 2003–2008 Mountain Goat Software®

31

Velocity is best expressed as a range



© 2003–2008 Mountain Goat Software®

32

Estimating your backlog



- Let's put estimates on all epics you wrote during the first exercise
- Pick one team member's month of birth; find it in the first column
- Use each subsequent column as the number of story points to assign a product backlog item
- Wrap back to the first column if necessary

Month	Estimates in Story Points																								
1	50	10	70	70	90	70	80	90	80	40	50	70	10	30	50	80	70	100	40	70	20	90	40	80	80
2	40	60	80	10	40	20	40	10	40	40	50	30	80	20	50	90	90	90	50	70	10	10	30	60	30
3	100	90	60	40	100	40	60	50	60	30	40	70	30	30	30	40	70	10	40	60	80	40	70	40	100
4	100	40	40	100	20	40	70	90	20	10	100	100	70	90	50	60	70	20	100	60	30	60	20	80	10
5	10	30	30	10	10	60	10	60	40	70	80	20	30	50	90	90	90	60	40	80	60	10	20	80	60
6	90	80	70	80	30	90	70	20	70	100	70	50	80	100	10	40	100	50	100	60	10	40	20	70	60
7	100	70	50	60	30	50	50	30	30	60	60	40	40	50	10	60	40	70	50	10	20	100	40	100	70
8	70	10	10	80	10	50	20	30	100	50	40	80	50	80	20	40	70	70	10	80	60	80	90	10	50
9	30	90	20	20	70	20	20	10	60	90	20	40	40	40	90	90	80	10	70	30	40	10	80	40	40
10	30	60	60	80	100	40	70	50	10	20	90	40	20	80	20	80	70	30	10	80	80	20	90	10	40
11	50	100	10	90	30	30	30	30	40	70	60	80	60	70	40	20	100	80	90	80	10	70	80	90	100
12	70	10	60	50	100	80	70	40	90	70	50	100	30	90	50	40	10	100	60	40	50	20	40	80	50



© 2003–2008 Mountain Goat Software®

33

Your last 8 velocities



- Use a different team member's month of birth
- Find it in the first column
- Use each subsequent column as the team's velocity for one iteration

Month	Iterations							
	1	2	3	4	5	6	7	8
1	70	80	100	100	80	140	90	90
2	100	80	100	90	110	90	100	80
3	120	120	120	30	100	110	50	140
4	70	80	90	100	110	120	130	140
5	140	130	120	110	100	90	80	70
6	100	100	80	70	130	110	90	80
7	70	80	100	100	80	140	90	90
8	100	80	100	90	110	90	100	80
9	120	120	120	30	100	110	50	140
10	70	80	90	100	110	120	130	140
11	140	130	120	110	100	90	80	70
12	100	100	80	70	130	110	90	80



© 2003–2008 Mountain Goat Software®

34

Fixed-scope planning

When will all of this be done?

1. Sum all the backlog items the customer *needs*
2. Measure or estimate velocity as a range
3. Divide total story points by high velocity
 - This is the shortest number of iterations it could take
4. Divide total story points by low velocity
 - This is the “most” iterations it could take

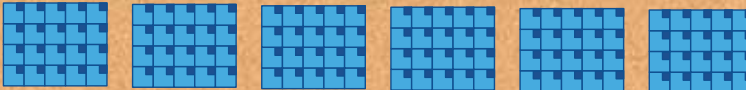


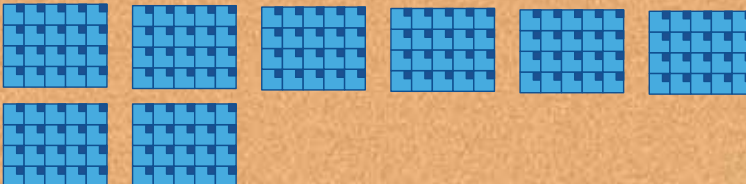
© 2003–2008 Mountain Goat Software®

35

Fixed-scope planning : an example

Total story points desired	120
Low velocity	15
High velocity	20

$120 \div 20 =$ 

$120 \div 15 =$ 



© 2003–2008 Mountain Goat Software®

36

Fixed-scope commitments

If you write a contract for to the *short* duration:

- You'll probably win the contract
- But you may not make money

If you write a contract for to the *long* duration:

- You'll probably won't win the contract
- But you'll make money if you do

It's a risk issue

Where do you want to be?



© 2003–2008 Mountain Goat Software®

37

Selling the overall plan

- You wrote epic user stories to span the overall system functionality.
- You had the team estimate these.
- You know your team's past velocities.



- Your boss wants to know how long it will take to "get it all."
 - You'll still build the system incrementally, but knowing the total size is helpful for the initial go / no-go decision
- Tip: Give the boss a range of iterations.



© 2003–2008 Mountain Goat Software®

38



Bonus Question

- If I told you that the last project was 500 story points and cost \$1,500,00 to deliver, what is a rough estimate of the cost of the new project?



© 2003–2008 Mountain Goat Software®

39

Fixed-date planning

How much can I get by <date>?

1. Determine how many iterations you have
2. Measure or estimate velocity as a range
3. Multiply low velocity \times number of iterations
 - Count off that many points
 - These are “Will Have” items
4. Multiply high velocity \times number of iterations
 - Count off that many more points
 - These are “Might Have items”

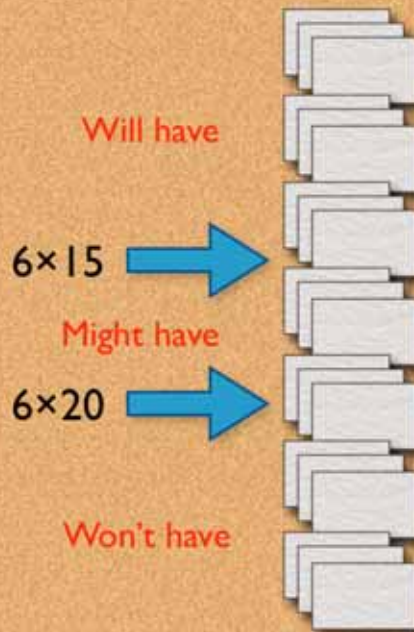


© 2003–2008 Mountain Goat Software®

40

Fixed-date planning : an example

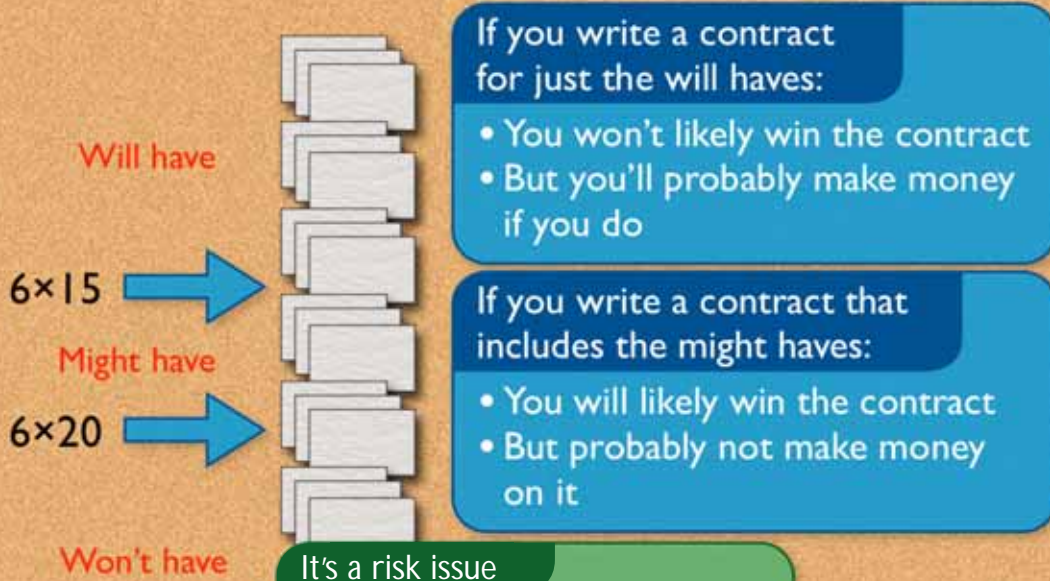
Desired release date	30 June
Today's Date	1 January
Number of iterations	6 (monthly)
Low velocity	15
High velocity	20



© 2003–2008 Mountain Goat Software®

41

Fixed-date contracting



© 2003–2008 Mountain Goat Software®

42



The impending trade show

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 and estimates



© 2003–2008 Mountain Goat Software®

43

Past velocities

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

Your Estimates	
Low	
Average	
High	



© 2003–2008 Mountain Goat Software®

44

The team's estimates



Product backlog item	Estimate
As the product owner I want to drag items onto a release burndown chart and see the impact to the release date.	20
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
As a user I would like performance to be about twice as fast as now during peak use periods.	20
As a team member, I'd like to be able to do online planning poker estimating right inside the tool.	13
As a third party, I would like an SOA interface so that I can integrate my product with yours.	8
As a team member I want RSS support for all changes to tasks or user stories so that I'm notified.	8
As the product downer, I want a new report that shows differences in the product backlog between different time periods.	3
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



© 2003–2008 Mountain Goat Software®

45

Upcoming public classes

Date	What	Where
Jan 27–28 Jan 29	Certified ScrumMaster Agile Estimating and Planning	Dallas
Feb 18–19	Certified Scrum Product Owner (with Ken Schwaber)	Boulder
Mar 31–Apr 1 Apr 2	Certified ScrumMaster Agile Estimating and Planning	Seattle
May 12 May 13–14 May 15	Effective User Stories Certified ScrumMaster Agile Estimating and Planning	Orlando
Other classes in London, Oslo and Stockholm if you're up for a longer trip.		

Information and registration at
www.mountaingoatsoftware.com



© 2003–2008 Mountain Goat Software®

46

The image shows a corkboard with several items pinned to it. On the left, there are two book covers. The top one is 'Agile Estimating and Planning' by Robert C. Martin, with a cover image of a person at a computer. Below it is 'User Stories Applied: For Agile Software Development' by Mike Cohn, with a cover image of a castle. To the right of the books is a white business card for Mike Cohn, held in place by a paperclip. The card lists his contact information and the Mountain Goat Software logo. In the bottom right corner of the corkboard, there is a copyright notice: '© 2003–2008 Mountain Goat Software®'. A small Mountain Goat Software logo is also visible in the bottom left corner of the corkboard.

Robert C. Martin Series
Agile Estimating and Planning
Foreword by An Highsmith, Ag
Cabrillo, and Jeff Atwood, Ag

The Address-Book-Integration-Team
USER STORIES APPLIED
FOR AGILE SOFTWARE DEVELOPMENT
MIKE COHN
Foreword by Kent Beck

Mike Cohn
mike@mountaingoatsoftware.com
www.mountaingoatsoftware.com
(720) 890-6110 (office)
(303) 810-2190 (mobile)


MOUNTAIN GOAT
SOFTWARE

© 2003–2008 Mountain Goat Software®

47