Agile Software Development for Developers

Session 5: Velocity and Release Planning

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Review

- Session 1
  - Paradigm and paradigm shift
  - Agility: An elephant in the dark
  - Agility: A definition
  - Agile values, principles, and practices
  - The Cynefin: clear, complicated, complex, chaotic, disorder
- Session 2
  - Product backlog items: feature (user story), defects, technical work, and knowledge acquisition (spike)
  - User story: title, description, acceptance criteria
  - Questions words: who, what, why
  - User story is something like order
- Session 3
  - Estimation: what and when
  - Estimation: Basic concepts
  - Estimation: Product backlog estimation concepts

Review

- Session 4
  - PBI Estimation Units
  - Estimation Scale
  - Planning Poker

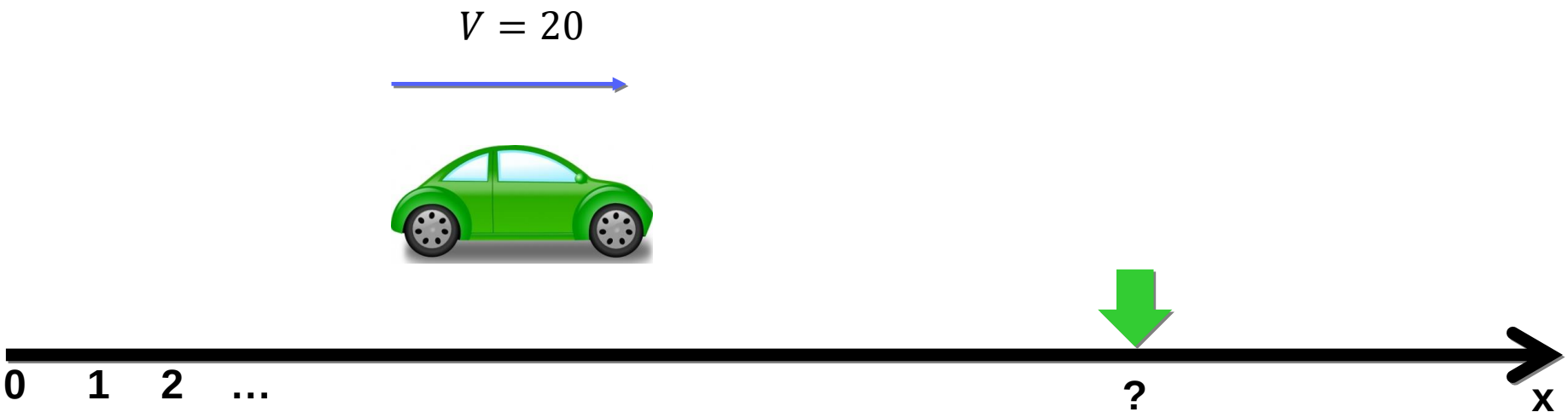
"It would be much better to assign work to established teams than to reconstitute teams around projects."

Mary Poppendieck

Velocity

Velocity in Physics

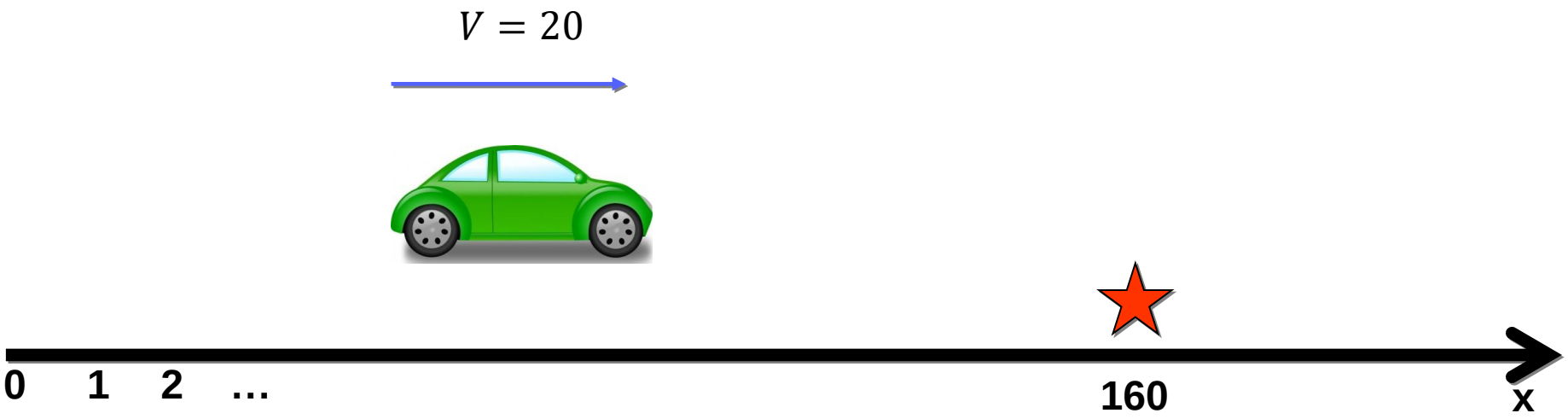
Velocity: Find X, Constant Velocity



$$\begin{cases} x_0 = 0 \\ t = 10 \end{cases} \rightarrow x_t = ?$$

$$\Delta x = v \times \Delta t \quad \rightarrow x_T - x_0 = x_T = V \times \Delta t = 20 \times 10 = 200$$

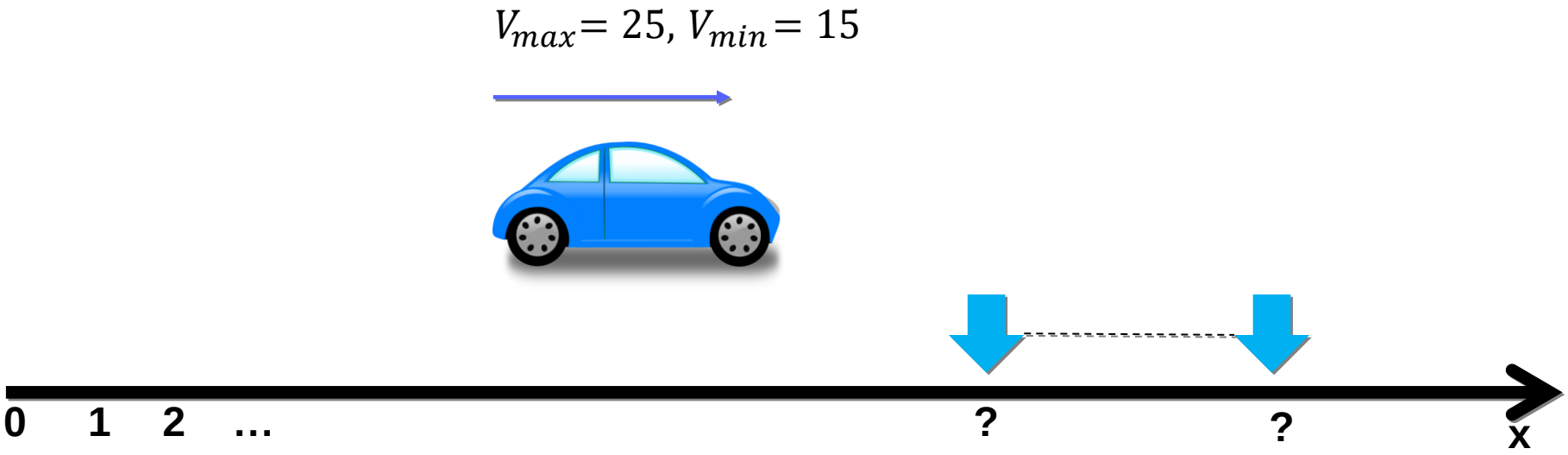
Velocity: Find T, Constant Velocity



$$\{x = 160 \quad \rightarrow t = ?$$

$$t = \frac{\Delta x}{v} \quad \rightarrow t = \frac{160}{20} = 8$$

Velocity: Find X with Variable V

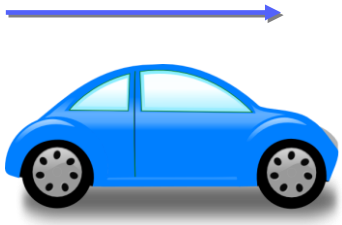


$$\begin{cases} x_0 = 0 \\ t = 10 \end{cases} \rightarrow x_T = ?$$

$$\Delta x = v \times \Delta t \rightarrow \begin{cases} x_{max} = V_{max} \times t = 25 \times 10 = 250 \\ x_{min} = V_{min} \times t = 15 \times 10 = 150 \end{cases}$$

Velocity: Find T with Variable V

$V_{max} = 25, V_{min} = 15$



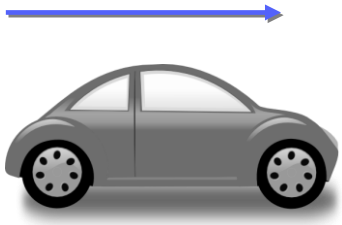
$$\{x = 200 \quad \rightarrow t = ?$$

$$v = V_{min} \quad \rightarrow t = \frac{200}{15} \cong 14 = T_{max}$$

$$v = V_{max} \quad \rightarrow t = \frac{200}{25} = 8 = T_{min}$$

Average Velocity (1)

$V_{max} = 25, V_{min} = 15$

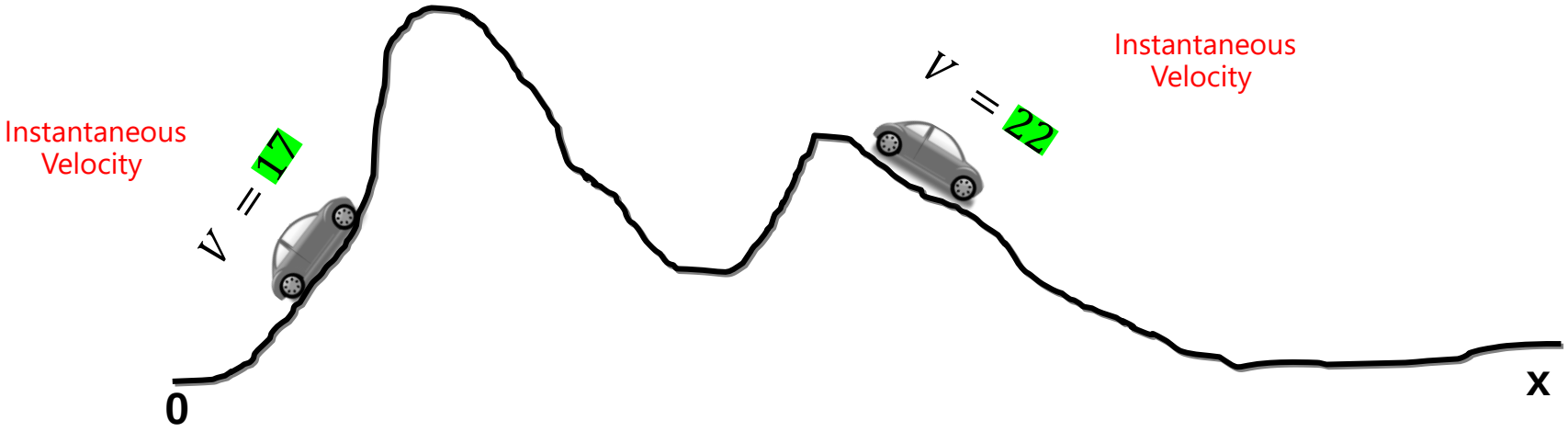


$$\{x = 185 \quad , t = 10$$

$$v_{avg} = \frac{\Delta x}{\Delta t} \quad \rightarrow v_{avg} = \frac{185}{10} = 18.5$$

Average vs Instantaneous Velocity

$V_{max} = 25$, $V_{min} = 15$



$$v_{avg} = \frac{\Delta x}{\Delta t} = \frac{185}{10} = 18.5$$

Velocity

Velocity for An Agile Team

Velocity in Agile World

$$t = Unit\ of\ Time = \ Sprint$$

$$x = Size\ of\ PBI;\ \ if\ PBI\ is\ Done$$

$$\Rightarrow V = \frac{x}{t} = \frac{\sum Sizeof\ Completed\ PBIs\ \ in\ Sprint}{1} = \sum Size\ of\ \ Completed\ PBIs\ \ in\ Sprint$$

Velocity is the amount of work completed each sprint.

Note: It is instantaneous velocity of a team (velocity in N^{th} sprint)

PBI	Size	Status at the end of Sprint
#1	8	Done
#2	5	Done
#3	3	Done
#4	5	Committed
#5	2	Committed

Velocity of this Sprint is: ?

Velocity in Agile World

Reports: Velocity Chart

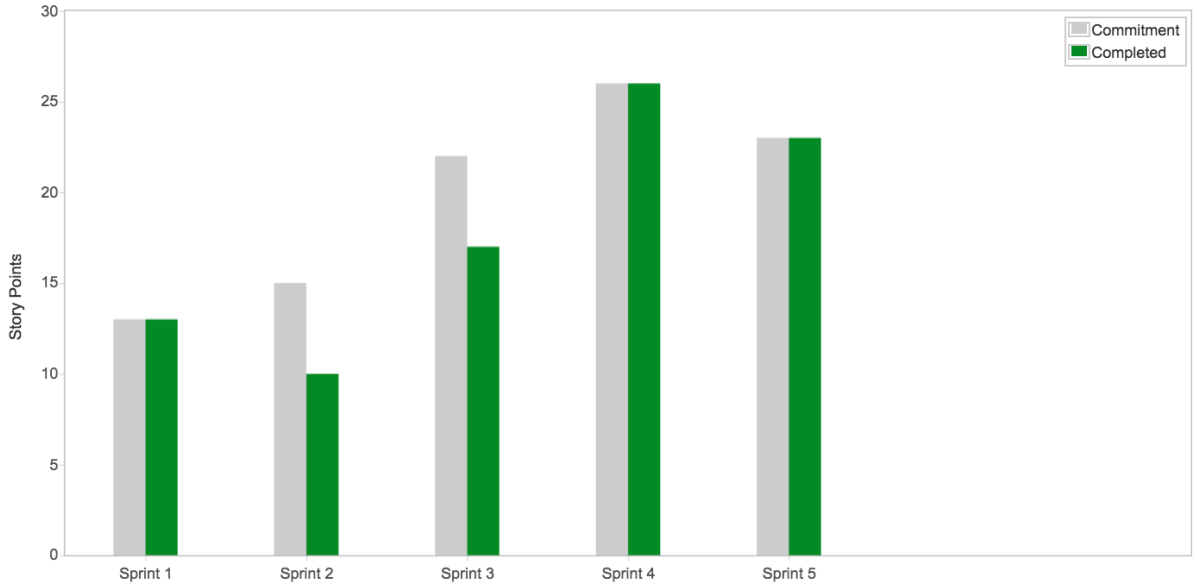
Board

How to read this chart

Track the amount of work completed from sprint to sprint. This helps you determine your team's velocity and estimate the work your team can realistically achieve in future sprints.

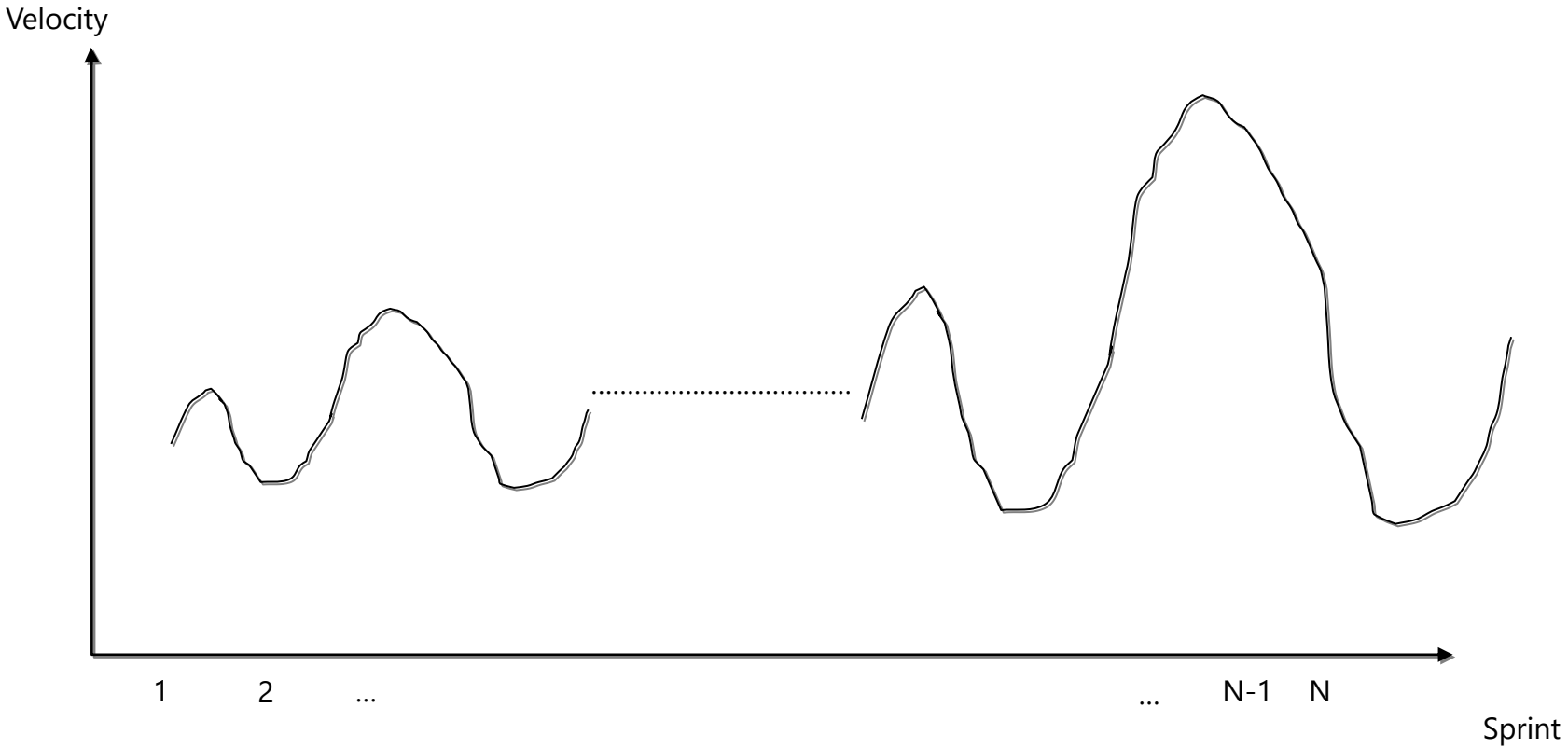
Hide this information

Velocity Chart



Sprint	Commitment	Completed
Sprint 1	13	13
Sprint 2	15	10
Sprint 3	22	17
Sprint 4	26	26
Sprint 5	23	23

V_{max} and V_{min}: How Many Sprints?

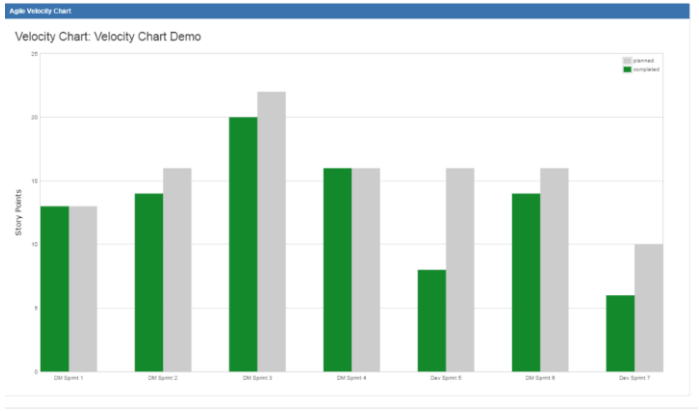


Velocity

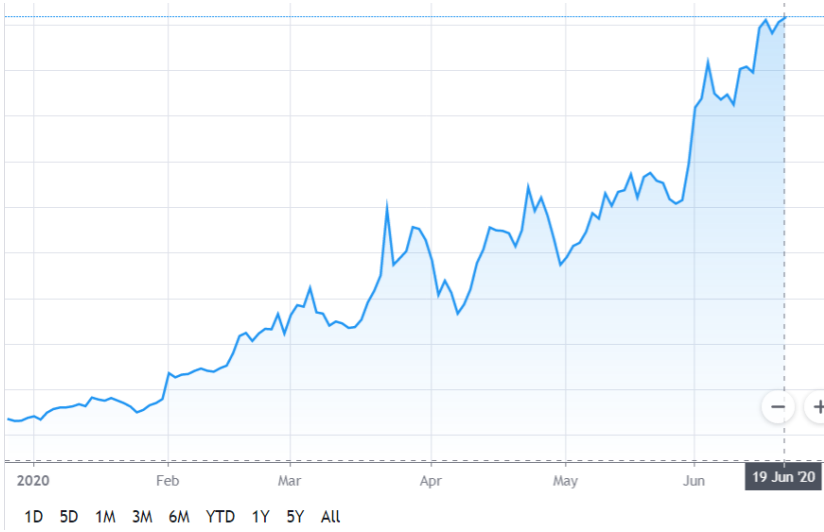
Tips

Stock Price vs. Agile Team Velocity

An Agile Team



Zoom Co. Stock Chart



What Causes Stock Prices to Change?

The efficient market hypothesis (EMH) or theory states that share prices reflect all information.

Yesterday's Weather: Capacity Prediction

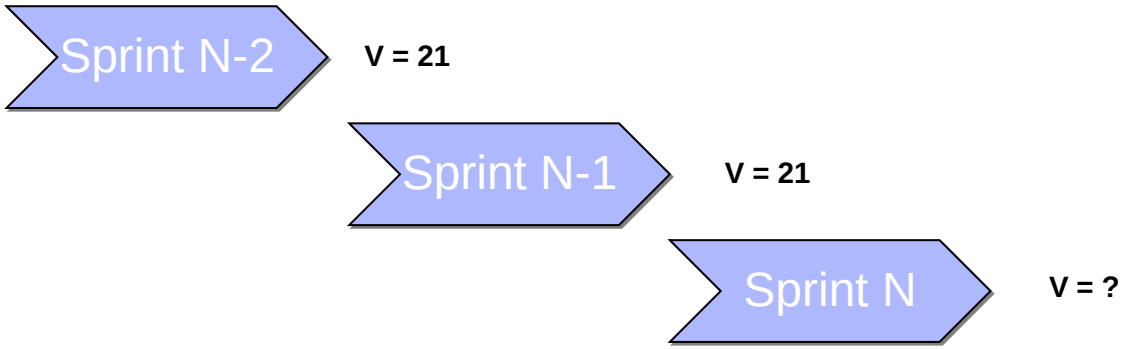
12 May 2004

Martin Fowler

This is the principle that says you'll get as much done today as you got done yesterday. In iterative projects it says that you should plan to do as much this iteration as you did last iteration.

It's full origin was when I was working on the tasteful green book with Kent. We had done this form of estimating available effort before but didn't have a good name.

The term comes from the **Extreme Programming** community



Velocity

Release Planning

Fixed Scope Release Planning: When will we be done?

Order	Work Item Type	Title	State
1	Product Backlog Item	sign-up with email	Approved
2	Product Backlog Item	recover password	Approved
3	Product Backlog Item	update user profile info	Approved
4	Product Backlog Item	manage current skills	Approved
5	Product Backlog Item	rate current skills	Approved
6	Product Backlog Item	set current favorite skills	Approved
7	Product Backlog Item	sign-up with linkedin	Approved
8	Product Backlog Item	sign-up with google	Approved
9	Product Backlog Item	Strong password	Approved

Fixed-Scope Release Planning Steps

Steps for Performing Fixed-Scope Release Planning

Step	Description	Comments
1	Groom the product backlog to include at least the PBIs we would like in this release by creating, estimating the size of, and prioritizing PBIs.	Because this is a fixed-scope release, we need to know which PBIs are in the fixed scope.
2	Determine the total size of the PBIs to be delivered in the release.	If we have a product backlog of estimated items, we simply sum the size estimates of all of the items we want in the release.
3	Measure or estimate the team's velocity as a range.	Determine an average faster and an average slower velocity for the team.
4	Divide the total size of the PBIs by the faster velocity and round up the answer to the next integer.	This will tell us the lowest number of sprints required to deliver the features.
5	Divide the total size of the PBIs by the slower velocity and round up the answer to the next integer.	This will tell us the highest number of sprints required to deliver the features.

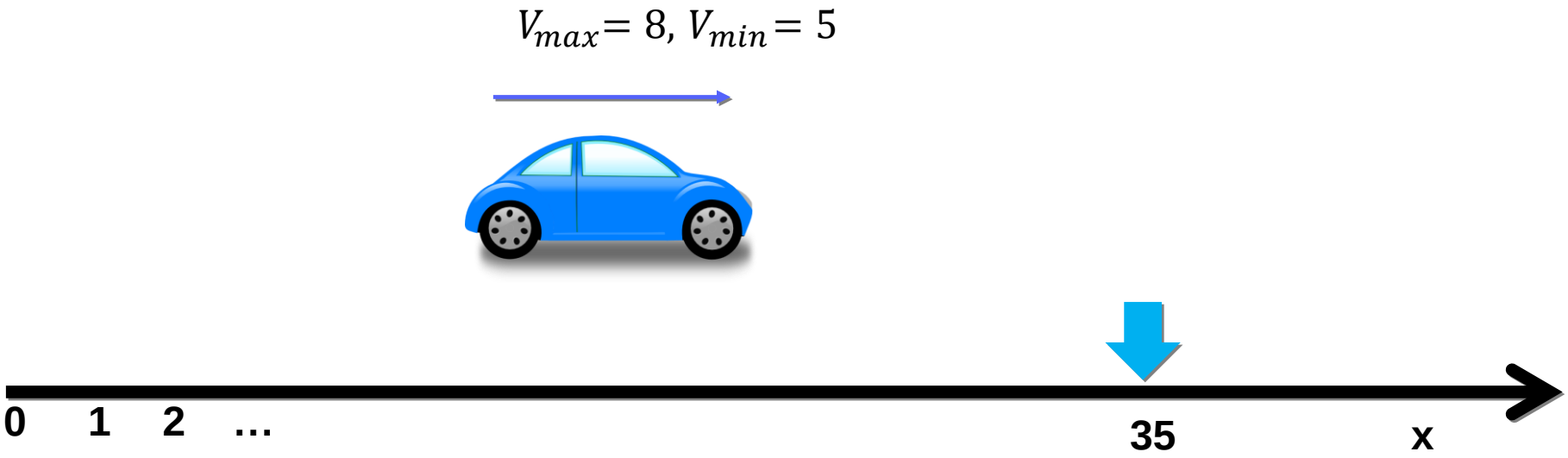
Essential Scrum, Ken Rubin

Grooming: Size of PBIs

Order	Work Item Type	Title	Size	State
1	Product Backlog Item	sign-up with email	3	Approved
2	Product Backlog Item	recover password	3	Approved
3	Product Backlog Item	update user profile info	5	Approved
4	Product Backlog Item	manage current skills	5	Approved
5	Product Backlog Item	rate current skills	8	Approved
6	Product Backlog Item	set current favorite skills	5	Approved
7	Product Backlog Item	sign-up with linkedin	3	Approved
8	Product Backlog Item	sign-up with google	2	Approved
9	Product Backlog Item	Strong password	1	Approved

Sum =35

Velocity



$$v = V_{min} \quad \rightarrow t = \frac{35}{5} = 7\ sprint = T_{max}$$

$$v = V_{max} \quad \rightarrow t = \frac{35}{8} \cong 5\ sprint = T_{min}$$

Exercise

What Goes Into a Story Point?

Steps

- Review User Stories
- Planning Poker
- http://www.pointingpoker.com/16483

Exercise 1:

- Story 1: Add personal info to profile (3 fields, name, family, address)
- Story 2: Add educational info to profile (9 Fields, university, year, ….)
- If the size of Story 1 is one, what is the size of Story 2?

Exercise 2:

- Story 1: Add city to personal info
  - Suppose: we don't have automated test
- Story 2: Add city to personal info
  - Suppose: we have automated test
- If the size of Story 1 is one, what is the size of Story 2?

Exercise 3:

- Story 1: Add Personal Info to Profile (3 Fields, name, family, address)
- Story 2: Add Personal Info to Profile (3 Fields, name, family, **credit card number**)

- If the size of Story 1 is one, what is the size of Story 2?

Exercise 4:

- Story 1: Add Personal Info to Profile (3 Fields, name, family, address)

- Story 1: Add Personal Info to Profile (3 Fields, name, family, address)
  - Definition of Done:
    - End-user documentation updated

- If the size of Story 1 is one, what is the size of Story 2?

Exercise 4:

- Story 1: Add Personal Info to Profile (3 Fields, name, family, address)

- Story 1: Add Personal Info to Profile (3 Fields, name, family, address)
  - Definition of Done:
    - End-user documentation updated

- If the size of Story 1 is one, what is the size of Story 2?

Exercise 5:

- Story 1: Add Personal Info to Profile (3 Fields, name, family, address)
- Story 2: Add AutoComplete Feature to the System
- If the size of Story 1 is one, what is the size of Story 2?

Exercise 6:

- Story 1: Add Personal Info to Profile (3 Fields, name, family, address)
- Story 2: Video Meeting with Zoom
- If the size of Story 1 is one, what is the size of Story 2?

Story Point is Influenced By

- Story points are influenced by
  - The Amount of Work
  - Uncertainty and Risk
  - Complexity
  - Definition of Done

Thanks

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- Mohammad Nadi