

Software Development Process

Lecture 6

Scrum

Scrum

- In rugby, scrum is a method for restarting a play



- In software engineering, Scrum is an agile software development process that focuses on project management where it is difficult to plan ahead

Why Scrum?

Traditional methods are like relay races (work is performed sequentially)



Agile methods are like rugby (work is performed in parallel)



Loosing the Relay Race

“The... ‘relay race’ approach to product development...may conflict with the goals of maximum speed and flexibility. Instead a holistic or ‘rugby’ approach—where a team tries to go the distance as a unit, passing the ball back and forth—may better serve today’s competitive requirements.”

Hiroataka Takeuchi and Ikujiro Nonaka,
“The New New Product Development Game”,
Harvard Business Review, January 1986.

Scrum as Methodology

- Involvement of the customer
 - Onsite customer
- Planning
 - Checklists and incremental daily plans
- Reuse
 - Checklists from previous projects
- Modeling
 - Models may or may not be used
- Process
 - Iterative, incremental process
- Control and Monitoring
 - Daily meetings.

Overview of Scrum

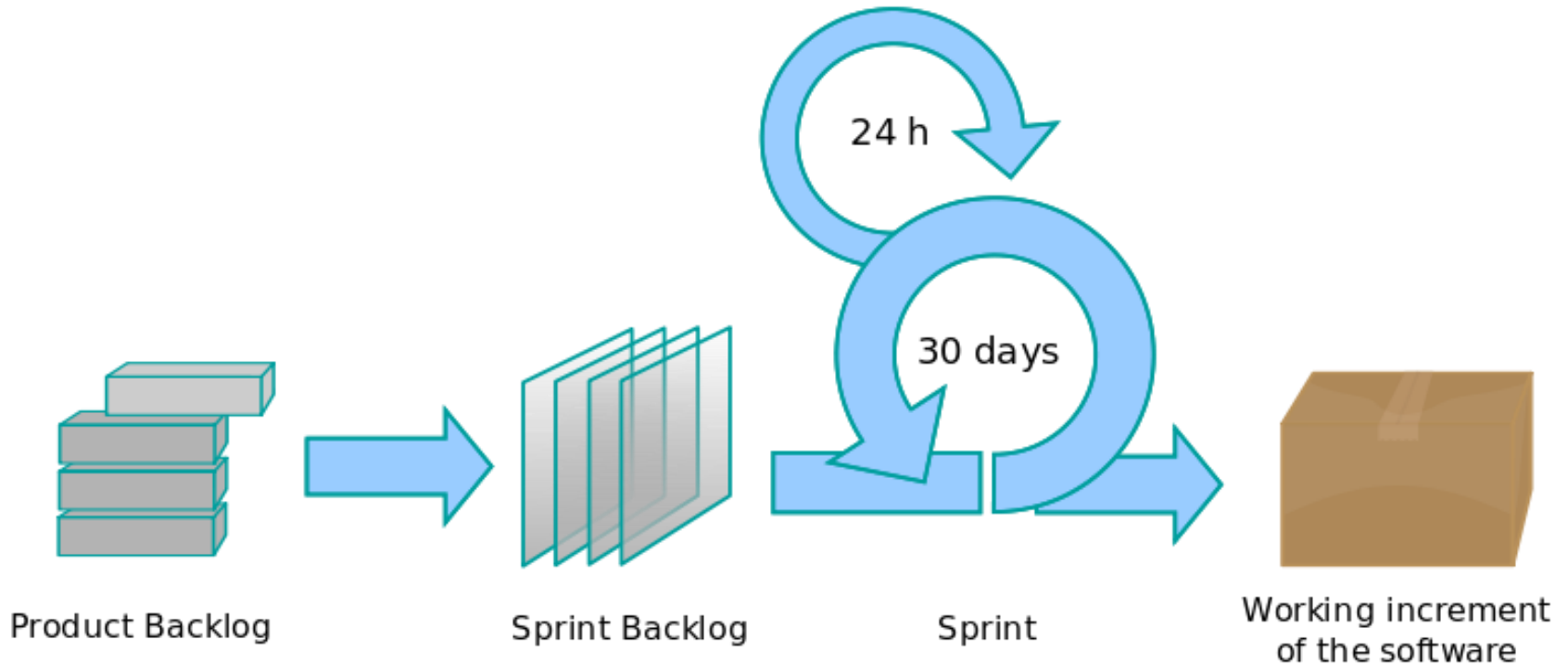
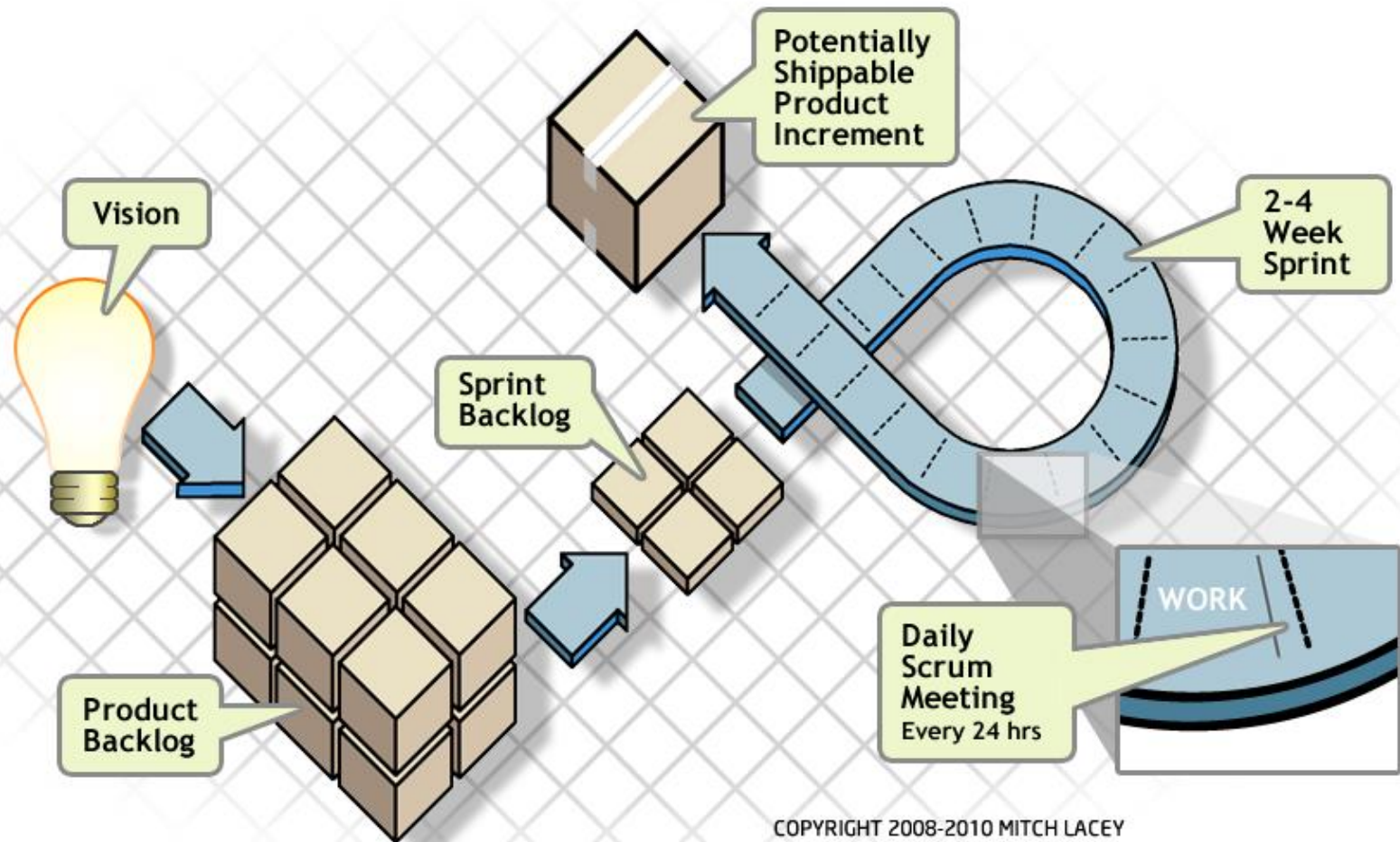


Image: http://en.wikipedia.org/wiki/File:Scrum_process.svg

© Isara Anantavasilp

Another View



COPYRIGHT 2008-2010 MITCH LACEY

[HTTP://WWW.MITCHLACEY.COM](http://www.mitchlacey.com)

Components of Scrum

- **Scrum Roles**
 - Scrum Master, Scrum Team, Product Owner
- **Scrum Artifacts**
 - Product Backlog, Sprint Backlog
 - Product Increment
 - Burndown Chart
- **Scrum Activities**
 - Kickoff Meeting
 - Sprint Planning Meeting
 - Sprint (“Iteration” in a Unified Process)
 - Daily Scrum Meeting
 - Sprint Review and Retrospective Meetings

Scrum Roles

- **Product Owner**
 - Knows what needs to be built
 - Accepts or rejects work results
- **Scrum Master**
 - Represents management to the project
 - Typically filled by a project manager or team leader
 - Responsible for enacting scrum values and practices
 - Main job is to remove impediments
- **Scrum Team**
 - Typically 5-9 people
 - Cross-functional skills (analysts, programmers, designers, testers)
 - Members should be full-time members
 - Team is self-organizing
 - Membership can change only between sprints.

Scrum Artifacts

- **Product Backlog**
 - **Definition:** Requirements for a system, expressed as a prioritized list of Backlog Items
 - Is managed and owned by a Product Owner
 - Spreadsheet (typically)
 - Usually created during the Project Kickoff Meeting
 - Can be changed and re-prioritized before each Sprint
- **Sprint Backlog**
 - **Definition:** A subset of Product Backlog Items, which defines the work to be done in a Sprint
 - Is created ONLY by Team members
 - Each item has it's own status
 - Should be updated every day
- **Product Increment**
 - Integrated version of the software product
 - Required result of each sprint
- **Burndown Chart**
 - Graph of open tasks over time
 - Used for project controlling purposes

Product Backlog Example


	Item #	Description	Est	By
Very High				
	1	Finish database versioning	16	KH
	2	Get rid of unneeded shared Java in database	8	KH
	-	Add licensing	-	-
	3	Concurrent user licensing	16	TG
	4	Demo / Eval licensing	16	TG
		Analysis Manager		
	5	File formats we support are out of date	160	TG
	6	Round-trip Analyses	250	MC
High				
	-	Enforce unique names	-	-
	7	In main application	24	KH
	8	In import	24	AM
	-	Admin Program	-	-
	9	Delete users	4	JM
	-	Analysis Manager	-	-
	10	When items are removed from an analysis, they should show up again in the pick list in lower 1/2 of the analysis tab	8	TG
	-	Query	-	-
	11	Support for wildcards when searching	16	T&A
	12	Sorting of number attributes to handle negative numbers	16	T&A
	13	Horizontal scrolling	12	T&A
	-	Population Genetics	-	-
	14	Frequency Manager	400	T&M
	15	Query Tool	400	T&M

Image: http://epf.eclipse.org/wikis/scrum/Scrum/workproducts/product_backlog_68345C16.html

Sprint Backlog Example (with User Stories)

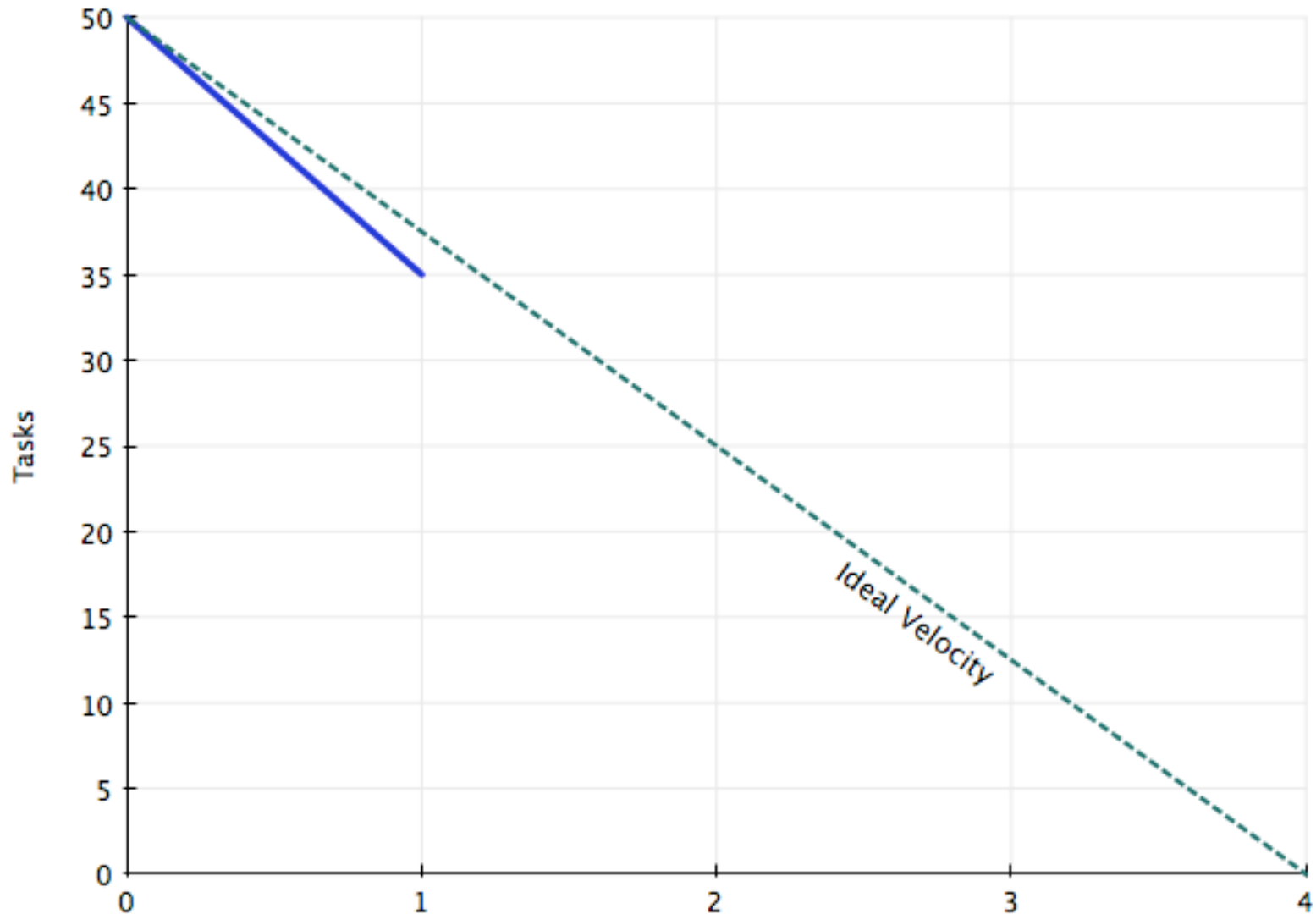
User Story	Tasks	Day 1	Day 2	Day 3	Day 4	Day 5	...
As a member, I can read profiles of other members so that I can find someone to date.	Code the ...	8	4	8	0		
	Design the ...	16	12	10	4		
	Meet with Mary about ...	8	16	16	11		
	Design the UI	12	6	0	0		
	Automate tests ...	4	4	1	0		
	Code the other ...	8	8	8	8		
As a member, I can update my billing information.	Update security tests	6	6	4	0		
	Design a solution to ...	12	6	0	0		
	Write test plan	8	8	4	0		
	Automate tests ...	12	12	10	6		
	Code the ...	8	8	8	4		

**Estimated
Remaining
Work**

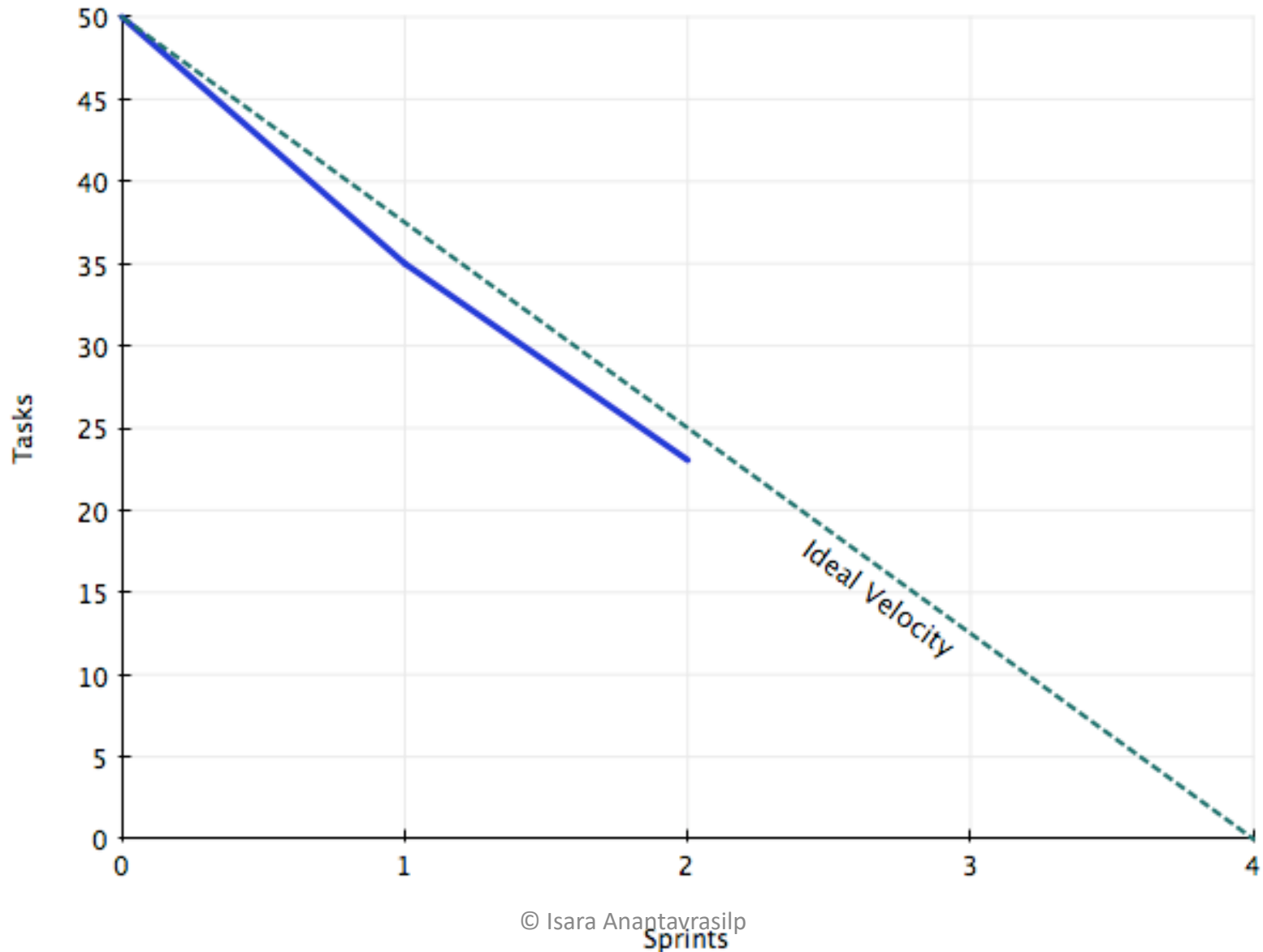


Taken from: <http://www.mountaingoatsoftware.com/scrum/sprint-backlog/>

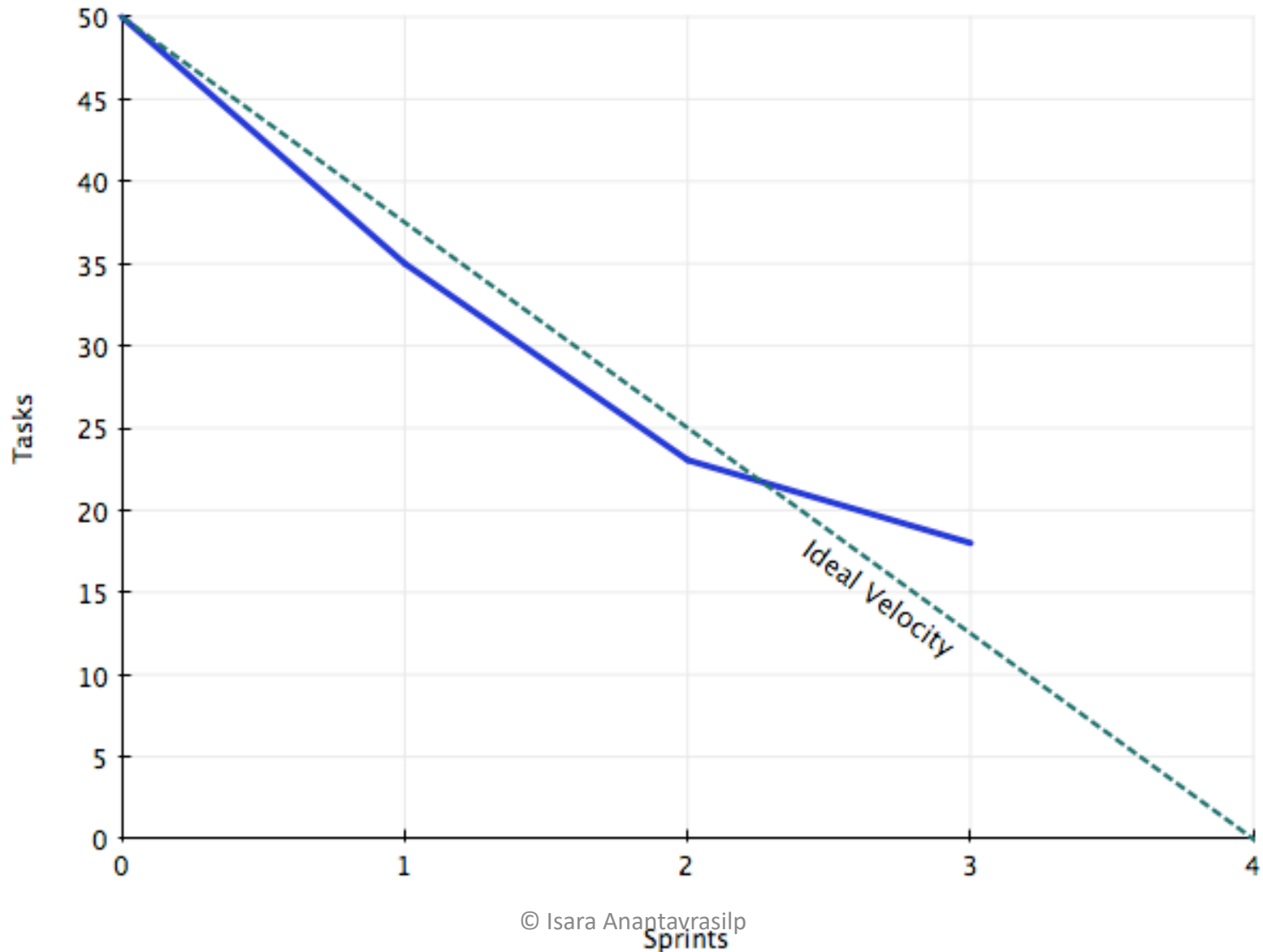
Burndown chart



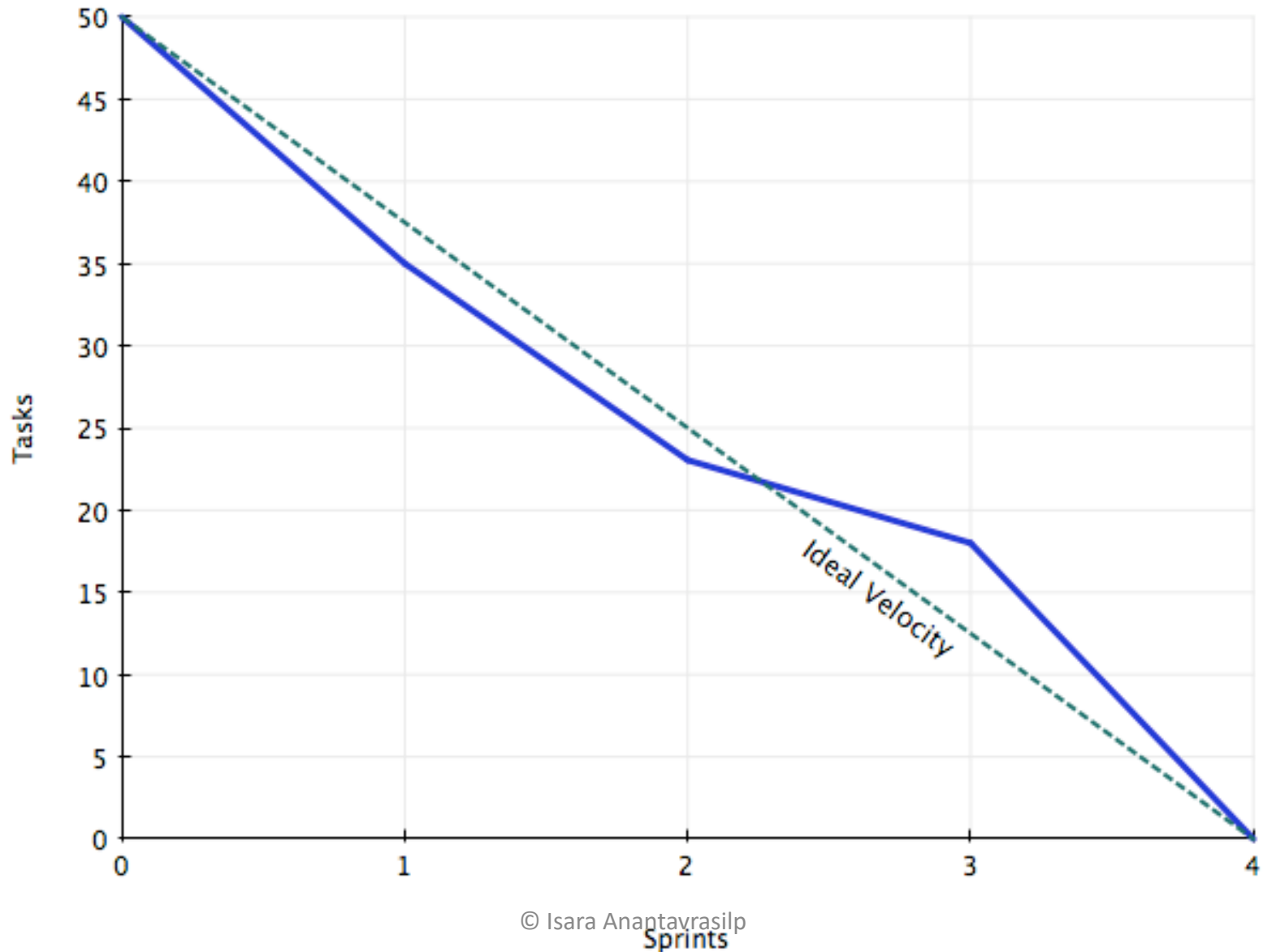
Burndown chart



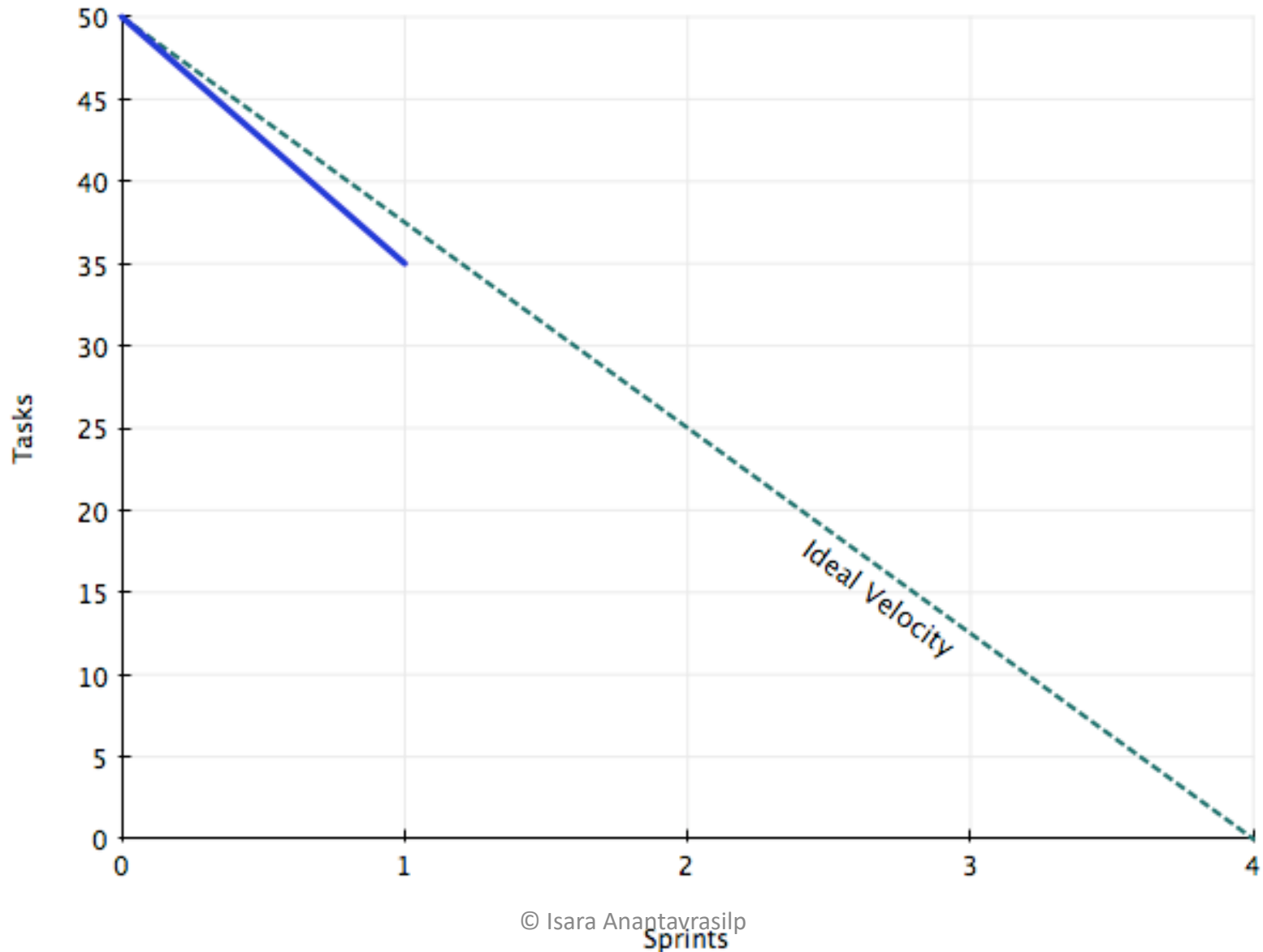
Burndown chart



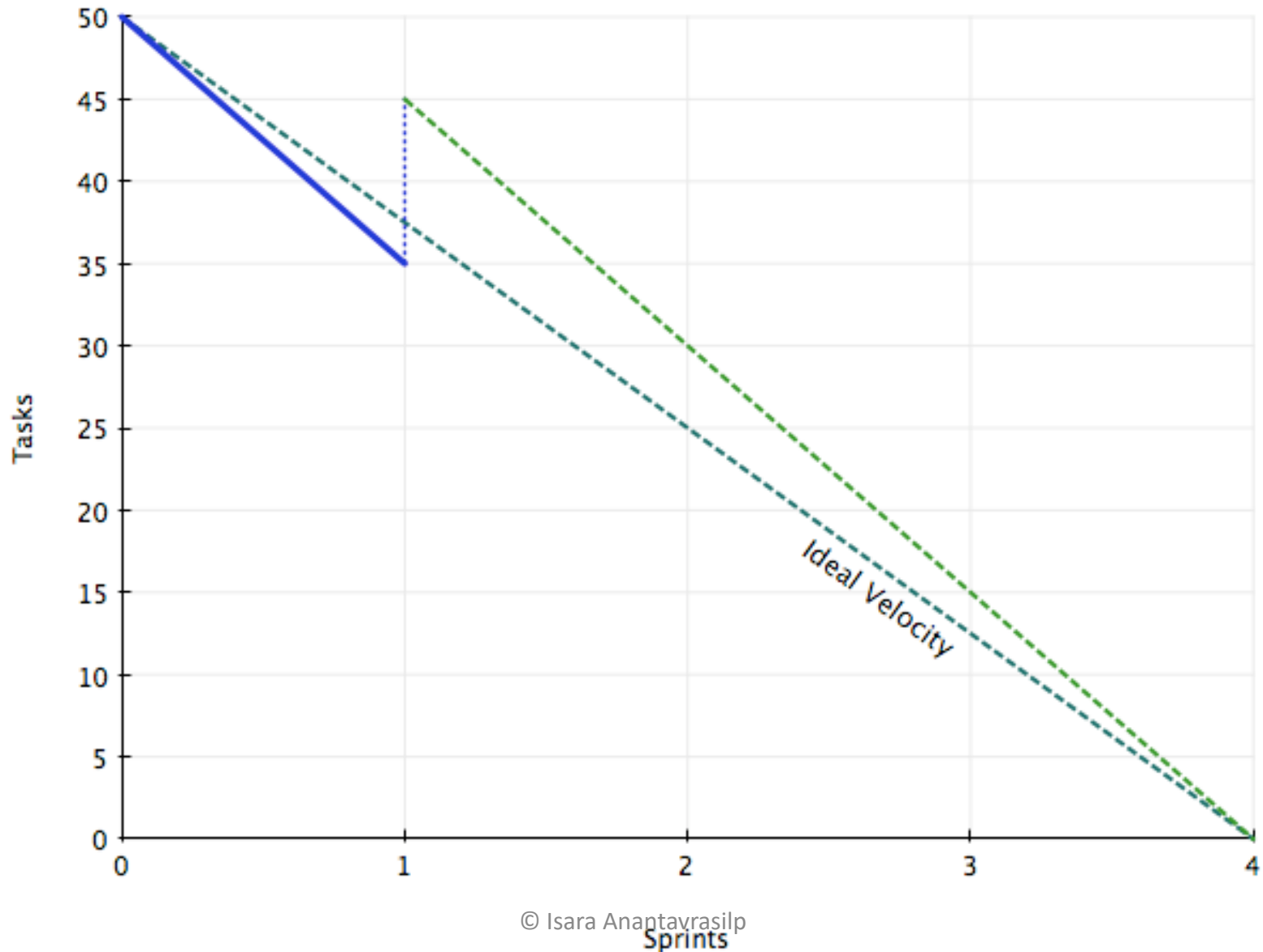
Burndown chart



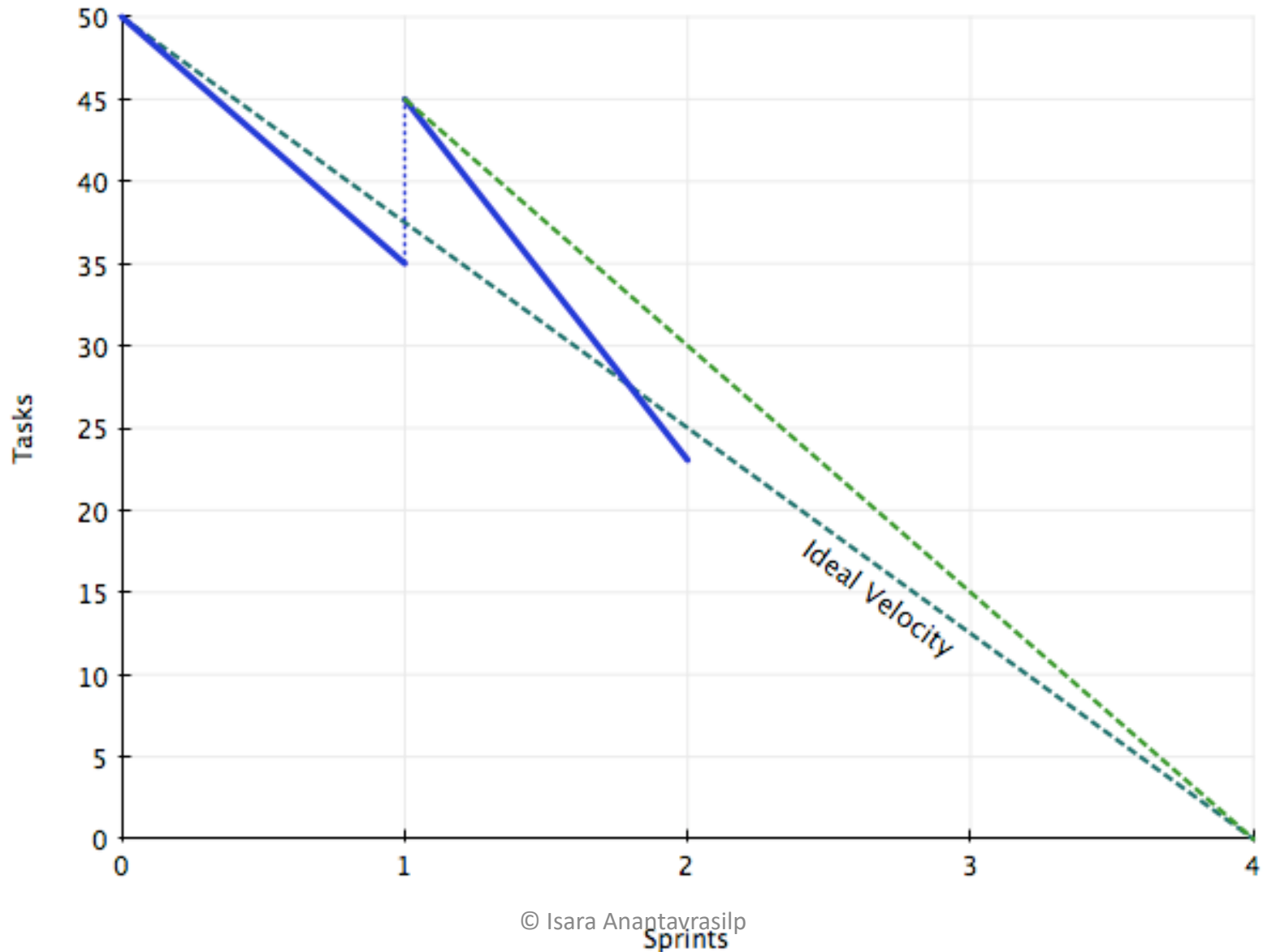
Burndown chart in real Projects



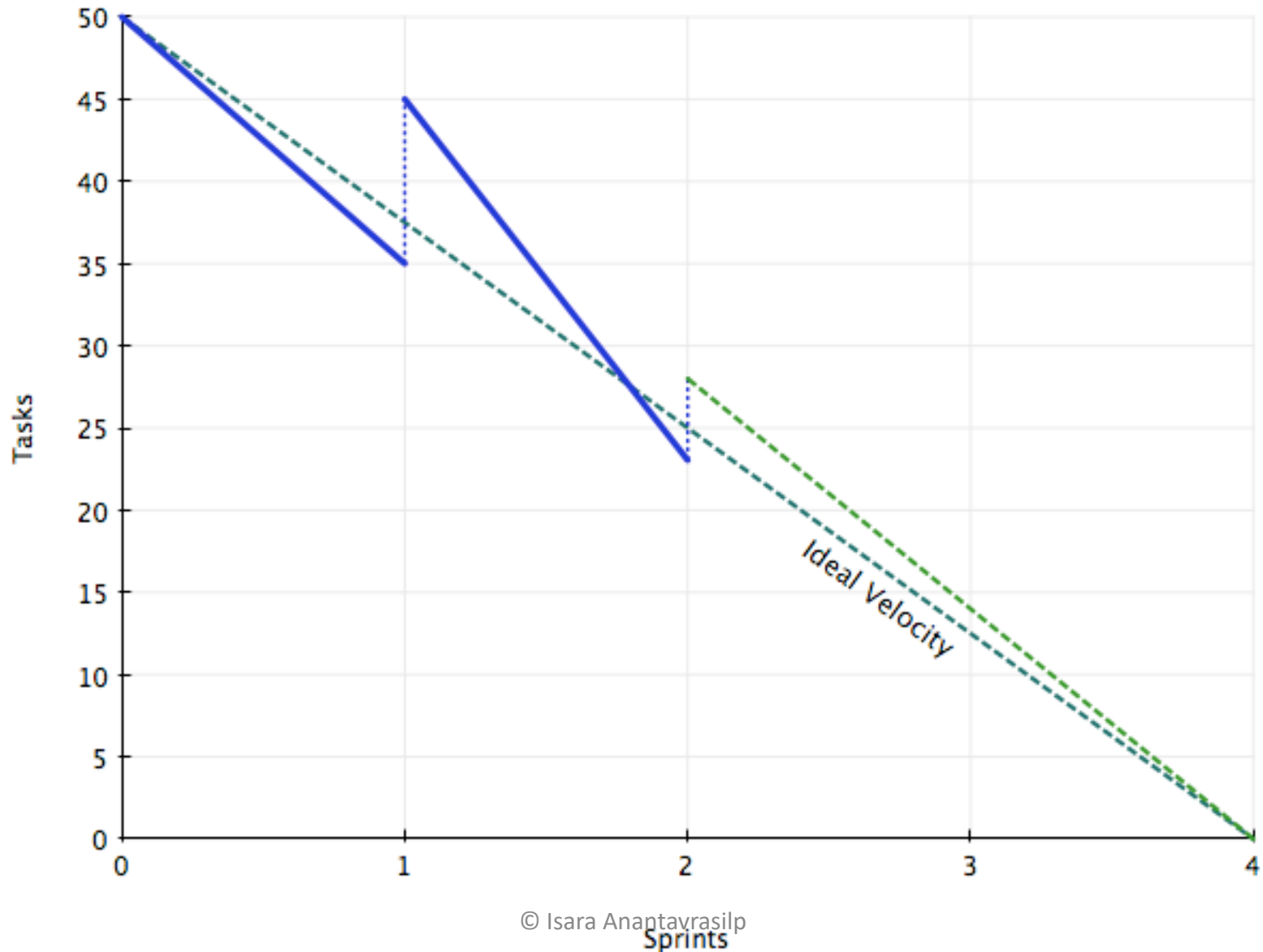
Burndown chart in real Projects



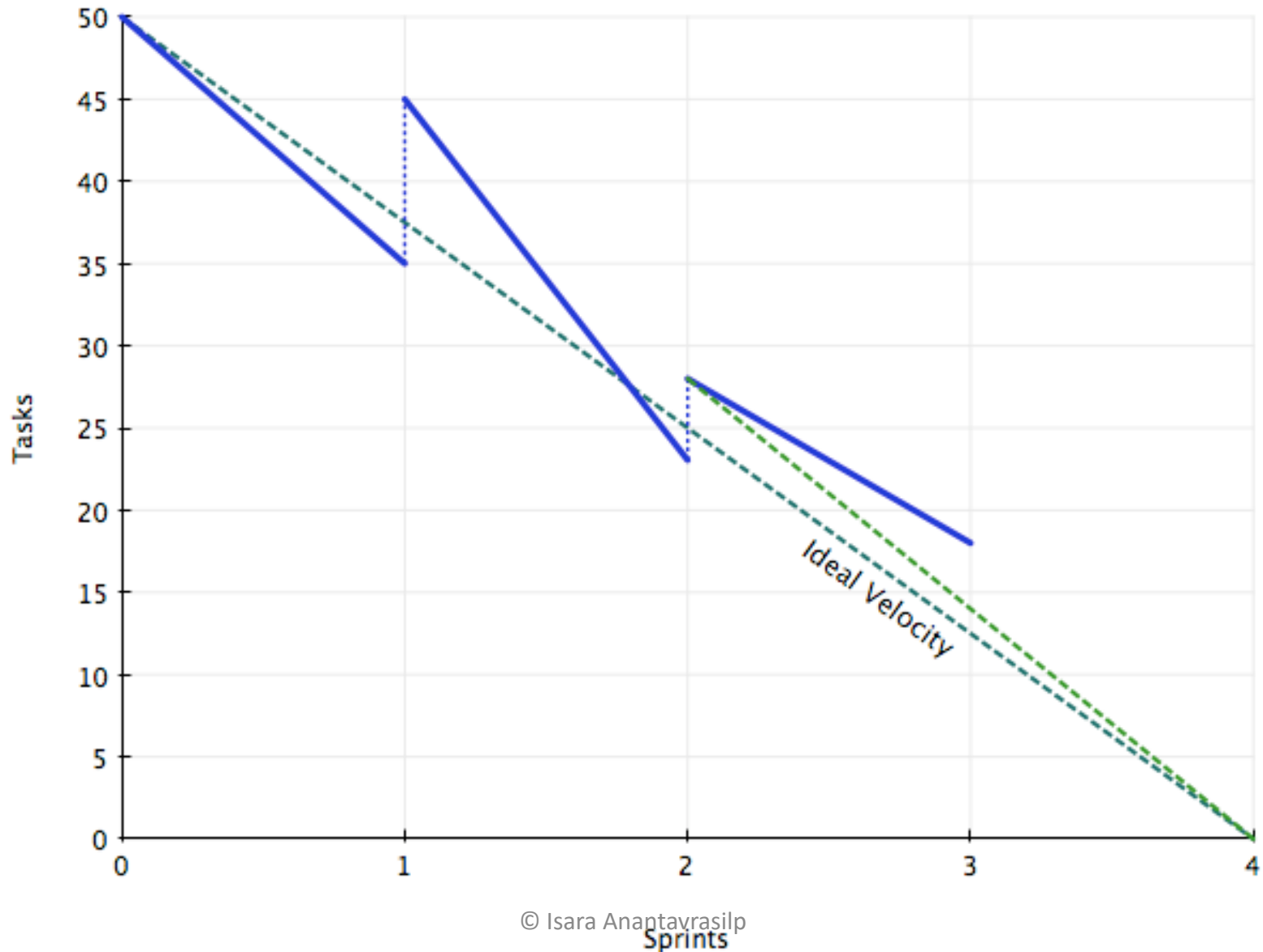
Burndown chart in real Projects



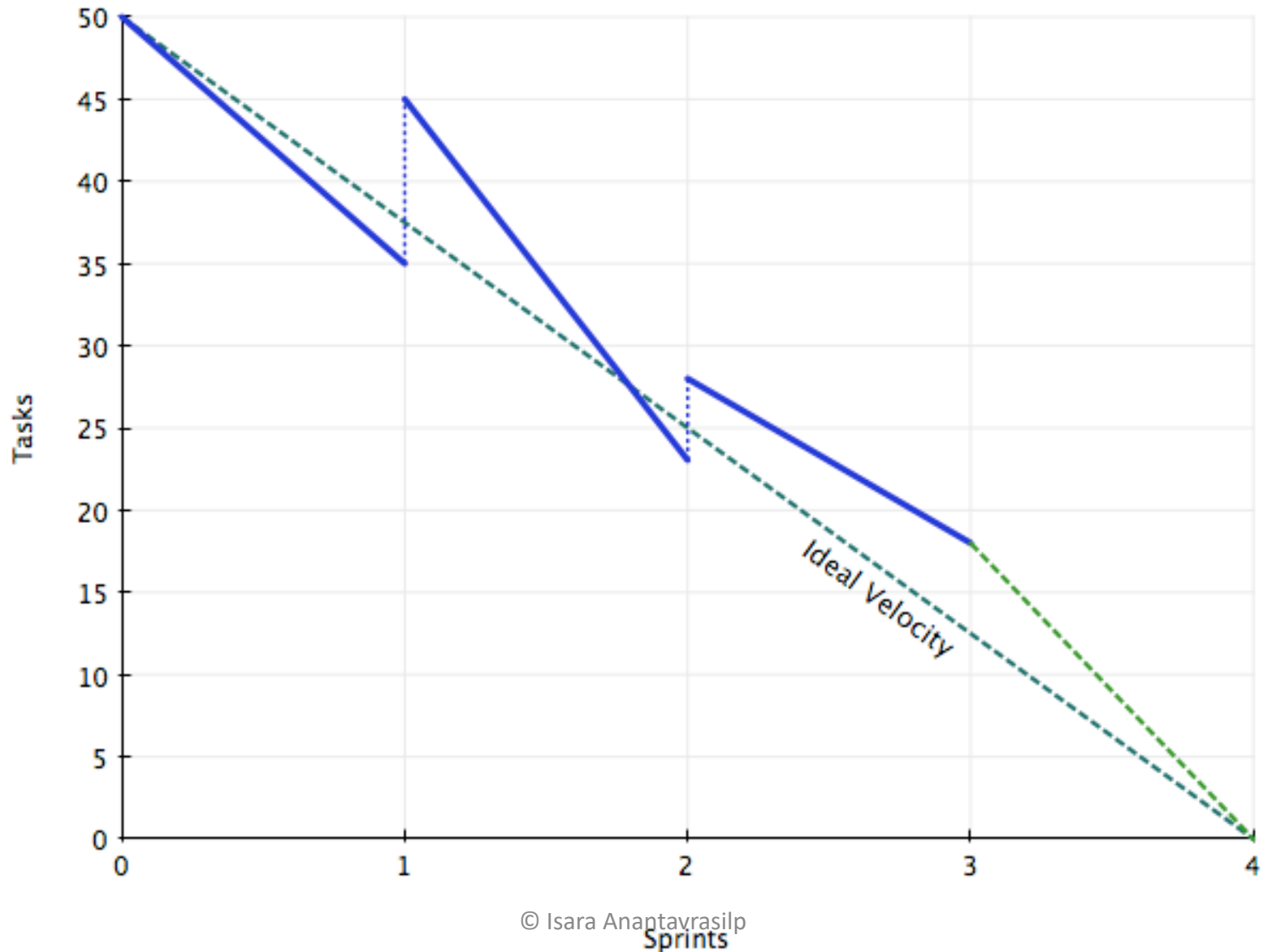
Burndown chart in real Projects



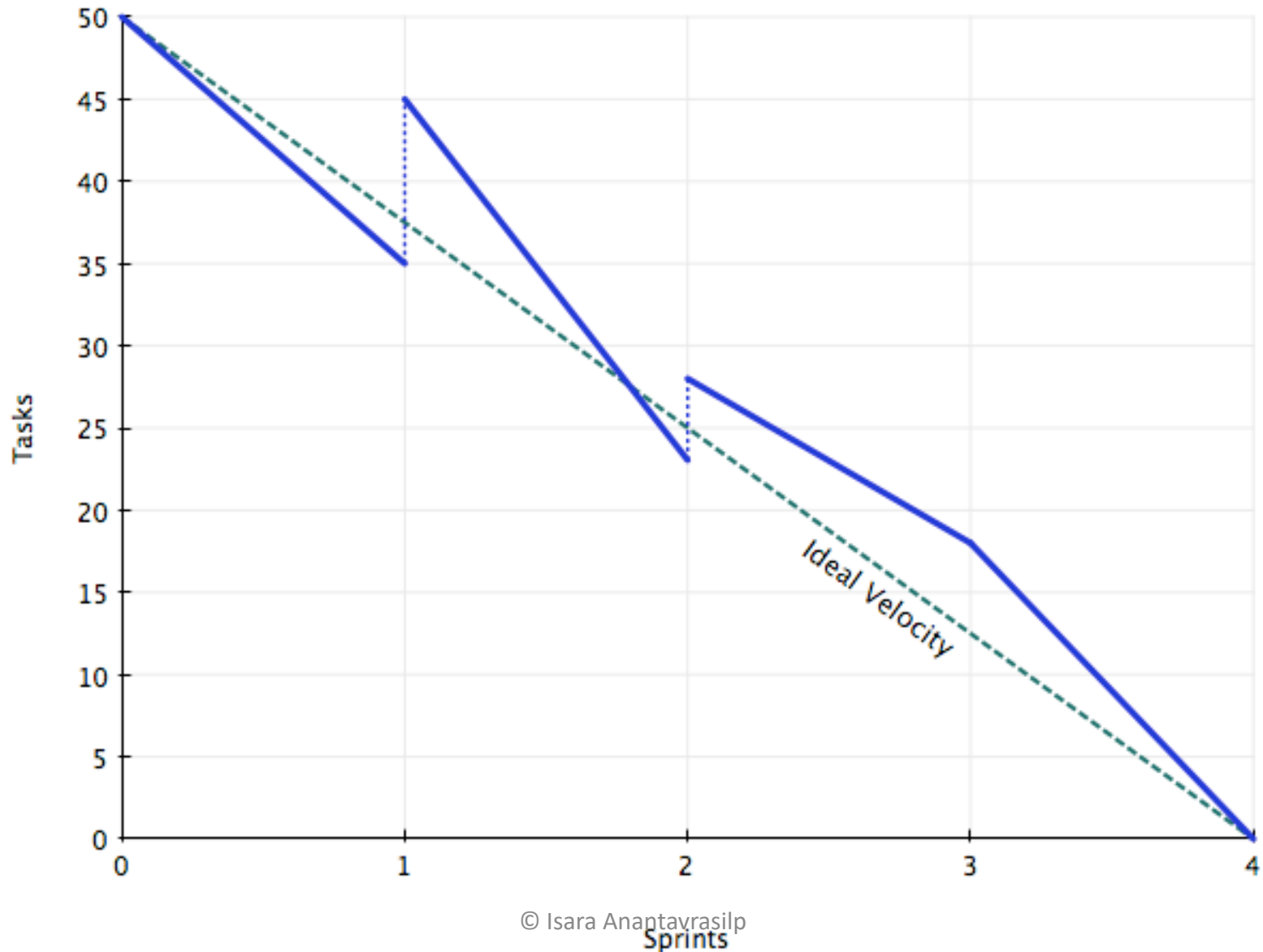
Burndown chart in real Projects



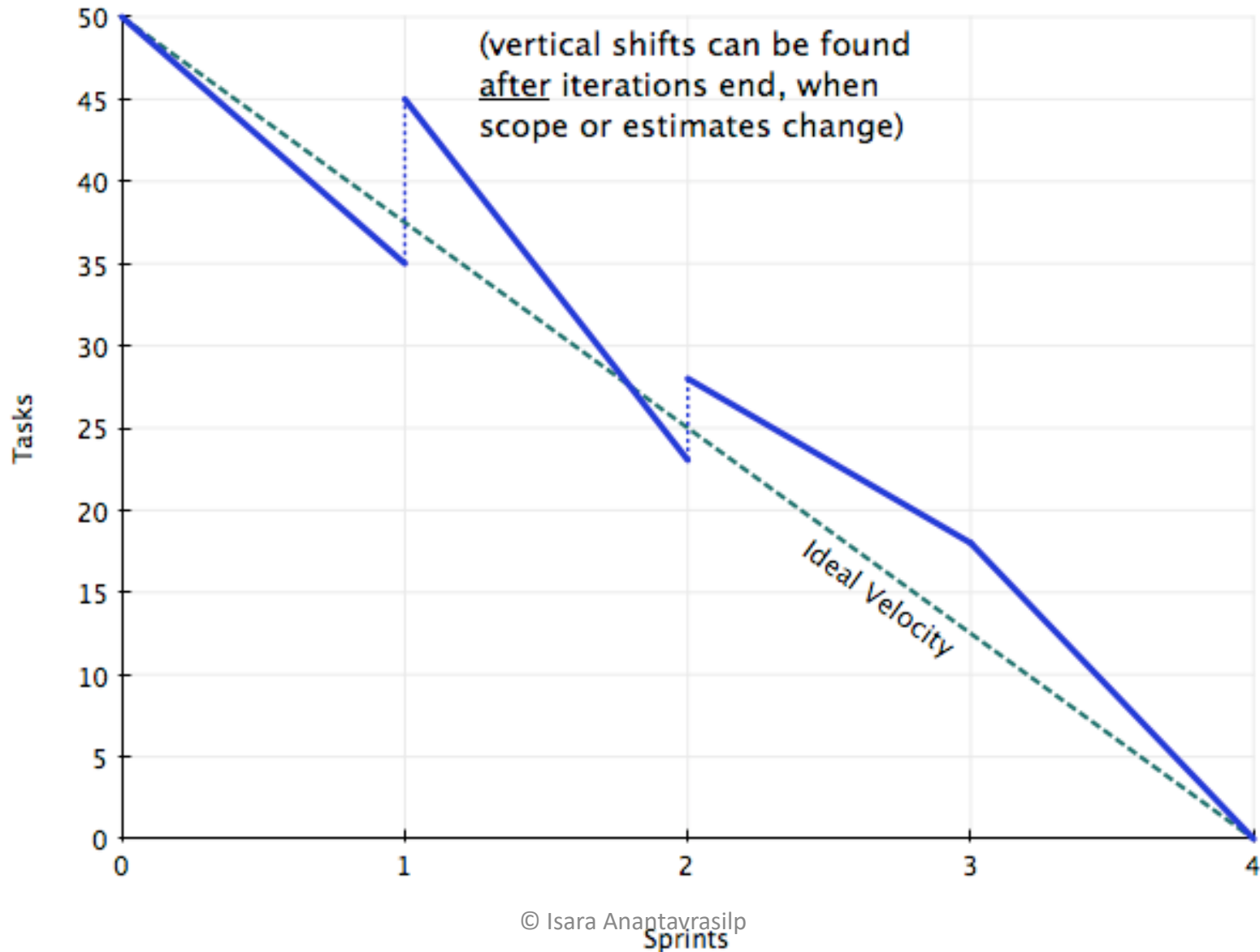
Burndown chart in real Projects



Burndown chart in real Projects



Burndown chart in real Projects



Scrum Activities

- Four Types of Meetings
 - **Sprint Planning Meeting**: Produces list of prioritized tasks
 - **Daily Scrum**: Informal status meeting, about 15 min, standing up
 - **Sprint Review Meeting**: Demonstration to management and customer
 - **Sprint Retrospective**: What went well during the sprint? What could be improved in the next sprint?

Scrum Activities (2)

- Two Activities to manage the Artifacts
 - Establish the Project Backlog: List of tasks from the customers or Product Owner
 - Establish the Sprint Backlog: List of tasks to be addressed in current iteration

Scrum in 100 words

- Scrum is an agile process that allows us to focus on delivering the highest business value in the shortest time.
- It allows us to rapidly and repeatedly inspect actual working software (every two weeks to one month).
- The business sets the priorities. Teams self-organize to determine the best way to deliver the highest priority features.
- Every two weeks to a month anyone can see real working software and decide to release it as is or continue to enhance it for another sprint.

LeSS

- **LeSS (Large Scale Scrum)**: Framework or guideline how to apply the principles, purpose, elements, and elegance of Scrum in a large-scale context, as simply as possible.
- In short: How to apply scrum in large project

Scrum Summary

- Scrum is an agile software development methodology with focus on
 - Empirical process control model
 - Changing requirements are the norm
 - Controlling conflicting interests and needs
- Very simple processes with clearly defined rules
- Self-organizing teams, where each team member carries a lot of responsibility
- No extensive documentation
 - Possibility for “undisciplined hacking”
- At the end of each sprint, a “potentially shippable product increment” is produced and can be delivered to the customer.

Further Reading on Scrum

- An Introduction into Scrum, Mountain Goat Software
 - <http://www.mountaingoatsoftware.com/system/asset/file/58/RedistributableIntroToScrum.ppt>
- Bernd Bruegge and Allen H.Dutoit:
 - OOSE Chapter 12: Rationale Management
- Walker Royce
 - Software Project Management, Addison-Wesley, 1998
- Ivar Jacobsen, Grady Booch & James Rumbaugh
 - The Unified Software Development Process, Addison Wesley, 1999
- Jim Arlow and Ila Neustadt
 - UML and the Unified Process: Practical Object-Oriented Analysis and Design, Addison Wesley, 2002
- Per Kroll and Philippe Kruchten
 - The Rational Unified Process Made Easy: A Practitioner's Guide to the RUP, Addison-Wesley, 2003.
- Ken Schwaber and Mike Beedle
 - Agile Software Development with Scrum, Prentice Hall, 2002