Agile Process Model: Scrum

Agile Process

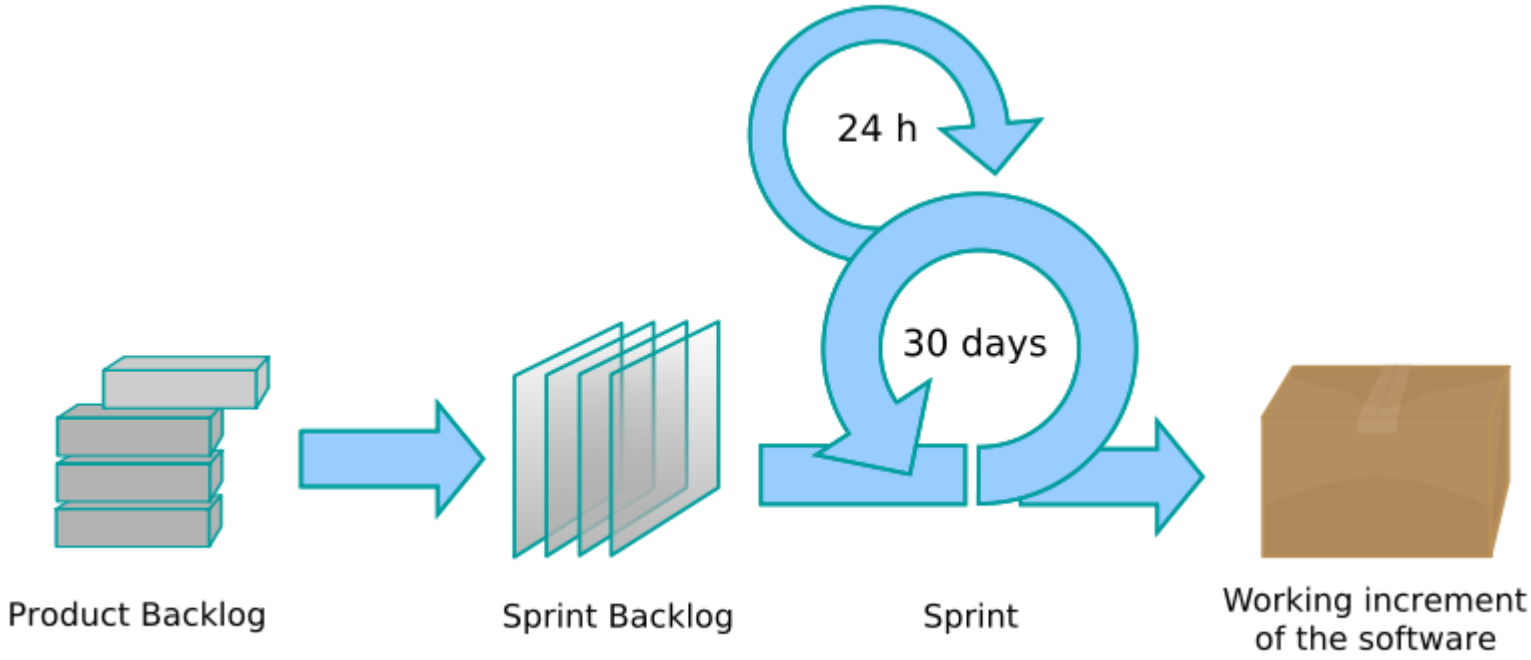
- An “Agile” process focuses on rapid, incremental delivery of software
- Agile manifesto:
  - Individuals and interactions over processes and tools
  - Working software over comprehensive documentation
  - Customer collaboration over contract negotiation
  - Responding to change over following a plan

What is Scrum?

- Scrum [Jeff Sutherland, 1993]
  - An iterative incremental process commonly used with agile software development
  - A set of practices and predefined roles.
- The main roles in Scrum:
  - ***Scrum Master*** maintains the processes and works similar to a project manager,
  - ***Product Owner*** represents the stakeholders (clients, end users)
  - ***Team*** includes the developers.

Source: http://scrum.jeffsutherland.com/

Scrum Process Flow

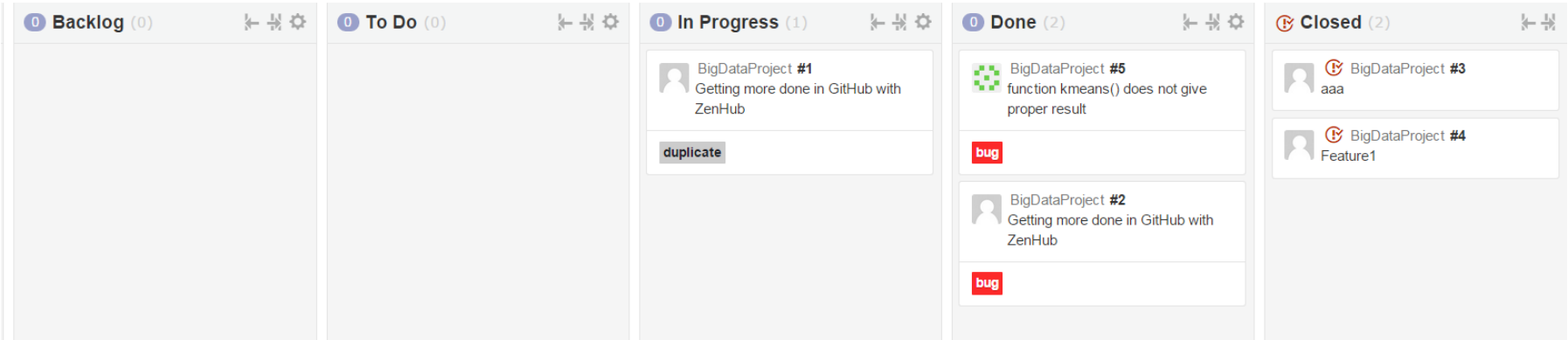


Starting Scrum

- Create Product Backlog
- Write Use Cases (or acquire stories)
- Initial estimate of effort

source: http://blog.3months.com/2010/01/10/illustrating-scrum-a-new-and-improved-scrum-diagram/

Example: ZenHub: Scrum Process



Scrum Process Flow

1. **Planning**
   Product owner and team decide which stories are actually feasible to be moved from the Product backlog to the Sprint backlog.
2. **Sprint ("increment")**
   - The team is left alone to perform the user stories which it has committed itself in the planning meeting.
   - The product owner may attend the "daily scrums" if a granular status update is desired.
3. **Review**
   The team presents its work and verifies what it has done indeed satisfies the utmost desires of the product owner.

Daily Scrum

- Short (~15 minute) meeting each day
- Everyone on team attends
- Everyone remains standing
- Each member reports exactly 3 things:
  - What they got done since last meeting
  - What they are planning to finish by next meeting
  - Any blocks or impediments

Source: http://scrum.jeffsutherland.com/

User Stories - Structure

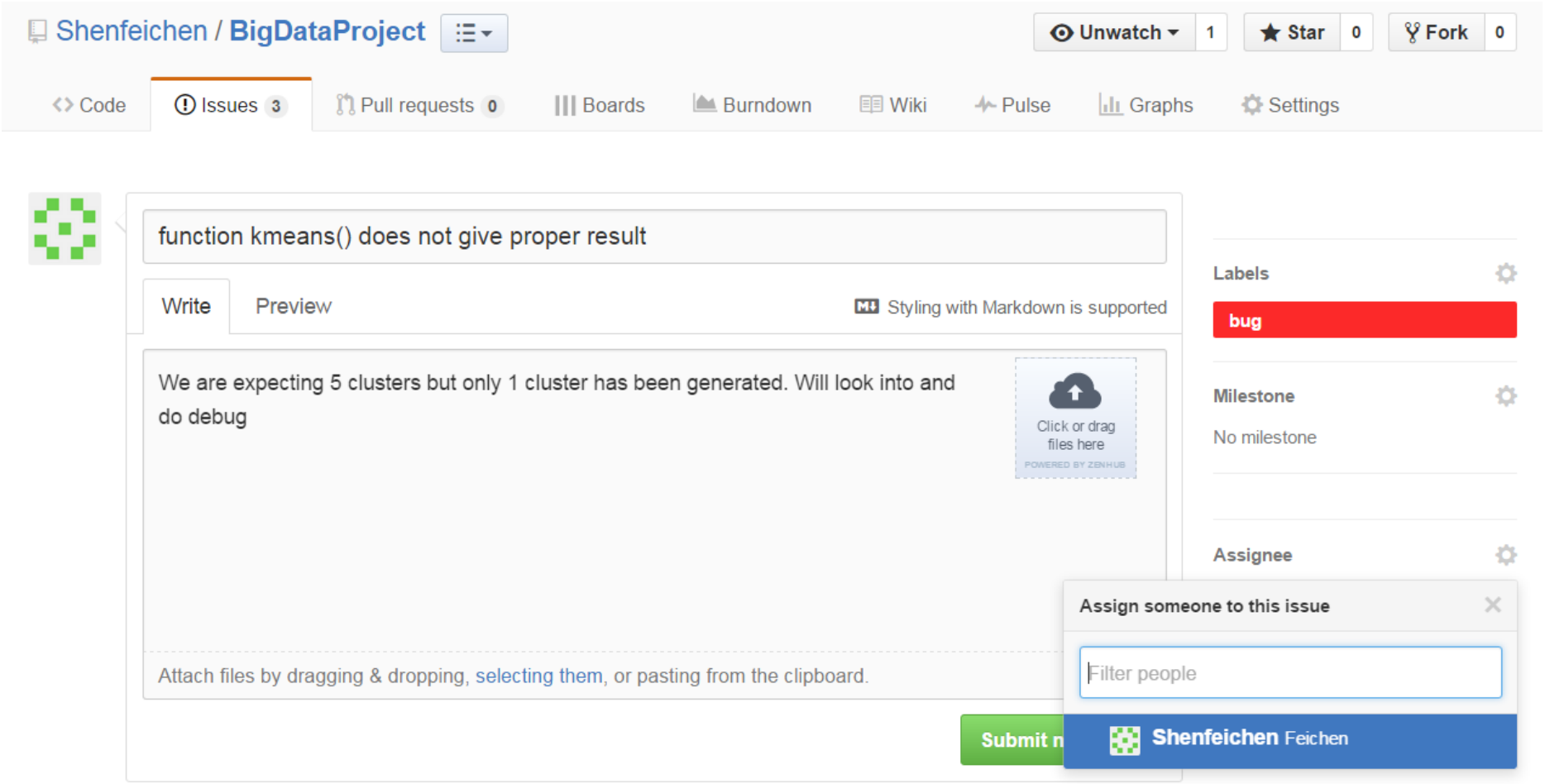
- **Who (user role)** – is this a customer, employee, system administrator?
- **What (goal)** – What is the specific functionality that is to be achieved or developed?
- **Why (reason)** – Helps the developer to understand the broader scope of the story and eliminate any ambiguities that may arise.
- Putting it all together:

As a [user role], I want to [goal], so I can [reason].

E.g., "As a registered user, I want to log in, so I can access subscriber content."

Source: http://www.agileforall.com/2009/05/new-to-agile-invest-in-good-user-stories/

Example: ZenHub: Issue (Story)



User Stories – I.N.V.E.S.T.

- **Independent** - For some systems, it's near impossible to make each feature completely independent. User Stories should be as independent as possible.
- **Negotiable** - User Stories are not a contract. They are reminders of features for the team to discuss and collaborate to clarify the details near the time of development.
- **Valuable** - User Stories should be valuable to the user (or owner) of the solution. They should be written in user language. They should be features, not tasks.
- **Estimatable** - User Stories need to be possible to estimate -- enough information to estimate, without being too detailed.
- **Small** - User Stories should be small. Not too small. But not too big.
- **Testable** - User Stories need to be worded in a way that is testable, i.e. not too subjective and to provide clear details of how the User Story will be tested.

Source: http://www.agileforall.com/2009/05/new-to-agile-invest-in-good-user-stories/

Effort Estimation (1)

Points as a *measure of effort*:

- Effort refers to amount of work
- Units are time-based, e.g., person-days
- Usual definition is

  1 point = 8 hours (perfect person-day)
- Velocity is based on number of hours available. Rule of thumb is about 75%, so ~6 hours of an 8 hour day.

Source: http://deepscrum.wordpress.com/2009/11/12/a-brief-defense-of-time-estimating-sizes-for-scrum-projects/

Effort Estimation (2)

Points as a *measure of complexity*:

- No standard means to define complexity
- Use a relative scale, sometimes compared to t-shirt sizes etc.
- Velocity is based on team history

Source: http://deepscrum.wordpress.com/2009/11/12/a-brief-defense-of-time-estimating-sizes-for-scrum-projects/

Scrum Artifacts

- Product Vision
- Product Backlog
- Release Plan
- Sprint Backlog
- Sprint Burndown
- Sprint Report (story, design, list of implementation and test cases, obstacles)

A **sprint** is a get-together of people involved in a project to give a focused development on the project. Sprints are typically two to seven days long.

Product Vision

- Ensure that you have a good understanding of client's goals
- Product vision is included in your requirements document ("proposal")
- Brief client and product description is also included in "proposal" and "plan report"

Product Backlog

	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
	16	Additional Editors (which ones)	240	T&M
	17	Study Variable Manager	240	T&M
	18	Haplotypes	320	T&M
	19	**Add icons for v1.1 or 2.0**	-	-
	-	**Pedigree Manager**	-	-
	20	Validate Derived kindred	4	KH
Medium				
	-	**Explorer**	-	-
	21	Launch tab synchronization (only show queries/analyses for logged in users)	8	T&A
	22	Delete settings (?)	4	T&A

Should include:
- Item description
- Priority
- Point estimate
- Name of use case or story

Many varieties, this one from:
http://epf.eclipse.org/wikis/scrum/Scrum/workproducts/product_backlog_68345C16.html

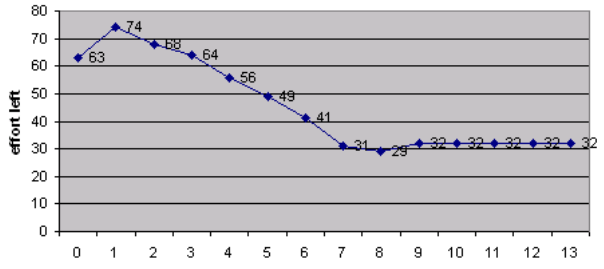
Release Plan/Sprint Backlog

- Subset of the Product Backlog in current release
- Includes additional detail about tasks

Sprint 3. Plug in the Real Weather

Story ID	Story/task	days in sprint / effort left													
		0	1	2	3	4	5	6	7	8	9	10	11	12	13
		63	74	68	64	56	49	41	31	29	32	32	32	32	32
10	**Fetch one day temperature data from the weather provider system**														
	Make our server connect and authenticate to the provider system	4	4	1								3	3	3	3
	Read provider's data directory	8	7									0	0	0	0
	Parse the current temperature out of the data	6	6									1	1	1	1
	Push the temperature data to the client	16	16	1								0	0	0	0
11	**Fetch rain, snow, etc details from the provider**														
	Parse snow/rain data from the provider's data	4	4									0	0	0	0
	Push the snow/rain data to the client	4	4									0	0	0	0
	Redesign client screen a bit											3	3	3	3
	Refactor the server code										4	4	4	4	4
12	**Fetch several days data from the provider**														
	Parse the weather data in day packs	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Push several days data to the client	3	3	3	3	3	3	3	3	3	3	3	3	3	3
13	**Auto-refresh feature**														
	Make the client ping server once per 4 hours	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	Make the server update the client	2	2	2	2	2	2	2	2	2	2	2	2	2	2

The team underestimated the difficulties of connecting to the provider's CORBA server. Even though some work has been already done, the remaining amount is much bigger, than the original estimation for the whole task



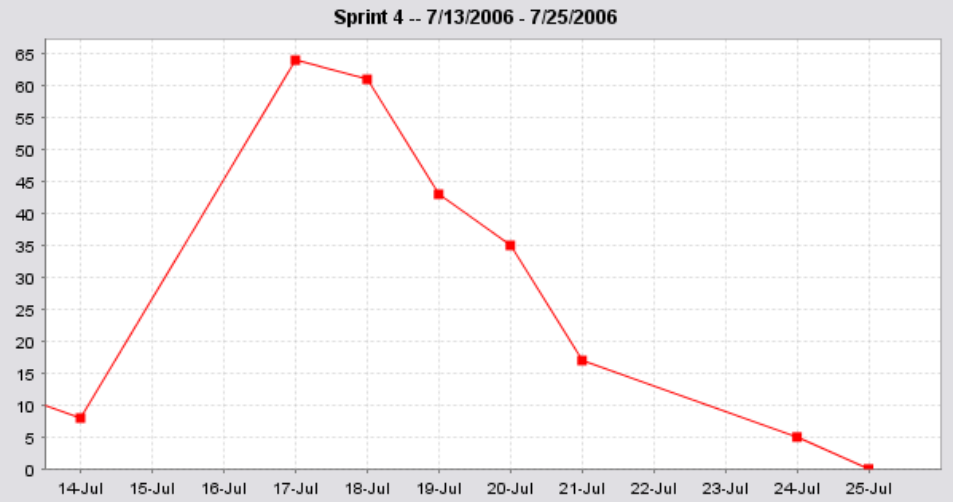
http://www.agile-tools.net/backlog.asp

Sprint Backlog – another example

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		

http://www.mountaingoatsoftware.com/scrum/sprint-backlog

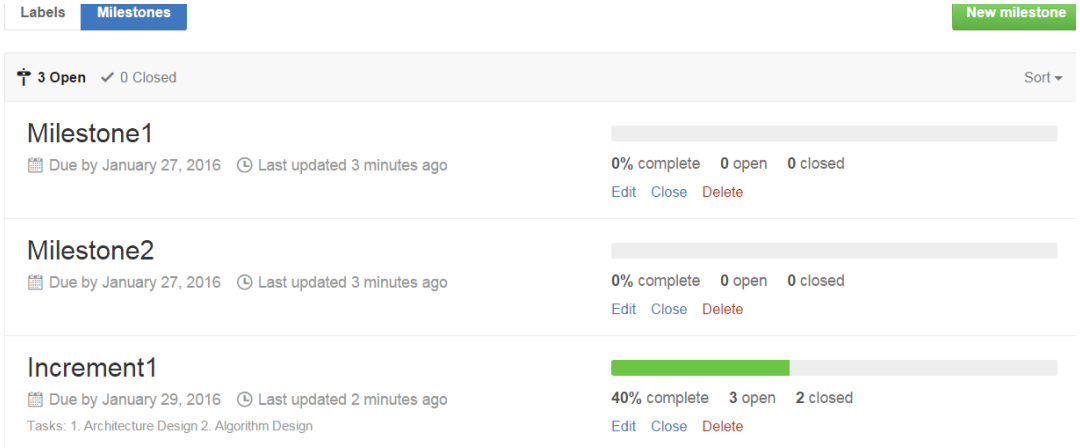
Sprint Burndown

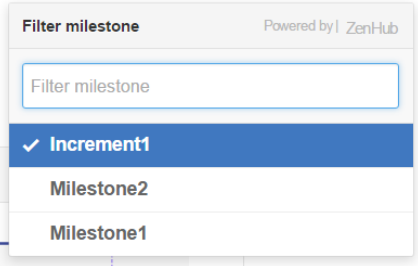


A **burn down chart** is a graphical representation of work left to do versus time. It is useful for predicting when all of the work will be completed. (measurable progress over time)

http://kanemar.com/2006/11/07/seven-common-sprint-burndown-graph-signatures/

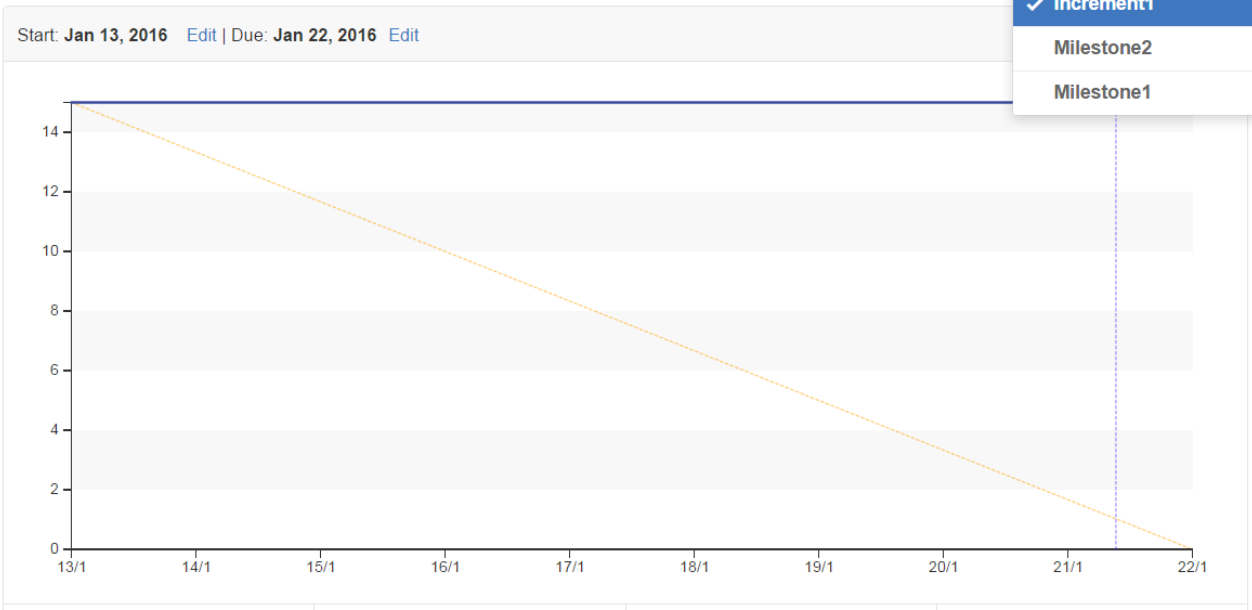
ZenHub: Milestone & Burndown Chart





Tasks:

1. Architecture Design
2. Algorithm Design



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