
Practical Reporting Metrics for Scrum Projects

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What will we achieve today ...

Presentation Goal 1:

As a Scrum Master, I want to learn about 10 practical and reliable key performance indicators that will enable me to demonstrate progress and project delivery performance of my agile project.

Presentation Goal 2:

As a Scrum Alliance Conference Attendee, I want to gain a high practical knowledge impact by attending a session that elaborates on the theory of scrum metrics which is supported by real life examples and could involve me in practical exercises that will challenge and support me in my workplace

Learning Objectives

- Understand the value of effective metrics
- Identify some useful and efficient measures for Agile project management.
- Know the difference between raw data and rate of change
- How to apply simple EVM in an agile project
- Measuring progress, quality and culture performance
- As a Scrum Master why do I need to measure?
- What are the most basic metrics that I need?
- What do I need to forecast performance trends of my Agile project?
- Can I apply Earned Value Management in Agile.
- What about quality and culture metrics?

Some rationale for using Agile methods

1. Reduce errors being delivered to User Acceptance Testing by 50%
 - Focus on Continuous Integration (CI) / Continuous Deployment (CD) with automated testing
2. Reduce Cycle Time (Concept to Cash, Time to Market) from 24 months to 26 weeks
 - Focus on requirements and project initiation
3. Improve ability to deliver business value to plan
 - Focus on product ownership, scrum and measurement of progress

Why measure at all?

If a measurement happens at all, it is because it must have some conceivable effect on decision and behavior.

If we can't identify what decision and behaviour could be affected by a proposed measurement and how that measurement could change them, then the measurement simply has no value.

“How to Measure Anything” By Douglas W. Hubbard

Agile project reporting

- Project reporting employ three categories of key performance indicators:
 - **Lagging Indicators** inform the project manager of where the project has been or how the project was doing in the past.
 - **Current Indicators** show how the project is performing today.
 - **Leading Indicators** enable the project manager to know what areas are likely to become troublesome or when a project will be complete. These attempt to act as predictors of future behaviour.
- Lagging Indicators include Defect Status (Open, Close, Deferred), Defect Aging, Sprint Burn-down (Velocity) charts, etc.
- Current Indicators include Budget reports showing costs YTD, User story delivered to MVP (Min Value Proposition)
- Leading Indicators include Defect closure rate, Project progress (burnup).

Desired Agile project reporting details

An understanding of the mid term roadmap and a view of where a feature sits in terms of readiness to execute

What for: To understand which features are ready to play or ready to deploy.

Why: Comfort that there is sufficient work in the mid range plan ready for the teams to pull into their backlogs

Number and scale of blocked features

What for: To identify constraints in the delivery system

Why: To understand the cycle priorities and impacts

Defects created per iteration as % Total Defects

What for: To establish quality standards and severity

Why: As an opportunity to remediate issues early

Defect "KILL" or resolution rate

What for: Ratio of defects created versus fixed.

Why: Focus on remediating errors and issues early

Feature view of MVP colour coded to show progress

What for: To demonstrate progress to MVP

Why: To show Value Focused delivery by prioritising the critical features & stories to deliver the value.

Unit test coverage

What for: To promote higher quality of coding standard

Why: To identify points of failure for bad code

10 useful metrics for Agile Projects

1. **Sprint goal success.**

Did we deliver to the goals?

2. **UAT Defect.**

Is the UAT defect rate / 100 story point increasing? If so, What is the rate of increase?

3. **Time-to-Market**

What is the progress towards MMP? Story Pts / sprint or % Business Value / sprint

4. **Return on Investment.**

RoI for each release

5. **Agile Readiness Culture**

Team culture performance

6. **Resource Burn Rate**

Story points delivered per FTE resource

7. **Release Burn Rate**

Cumulative Story points delivered as % of backlog baseline

8. **Product Innovation**

Number of new product features in story points that are delivering business revenue.

9. **Product Satisfaction**

Survey to gauge acceptance or product owner satisfaction for completed stories.

10. **Estimation**

Development effort per story point measured in hours categorised by complexity.

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10. **Team member turnover**

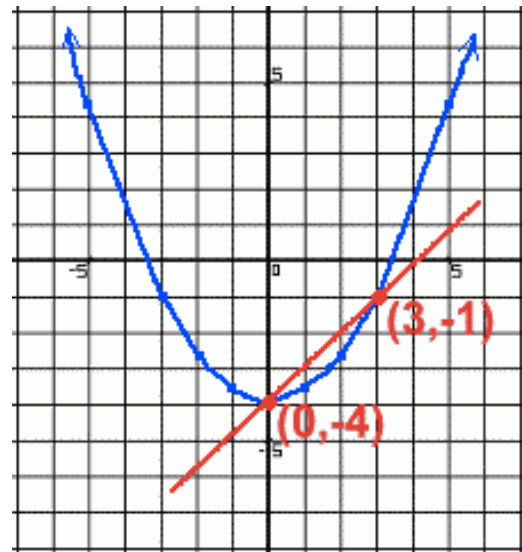
Duration of tenure

11. **UAT Defect.**

Is the UAT defect rate / 100 story point increasing? If so, What is the rate of increase?

Rate of Change or Raw Data

The Average Rate of Change function describes the average rate at which one quantity is changing with respect to something else changing.



$$\text{Rate of Change} = \frac{f(B) - f(A)}{x(B) - x(A)}$$

Raw Data:

Number of kilometres travelled

Number of litres of petrol consumed

Time to travel from Shanghai to Beijing

Kilowatts of electricity

RoC Common examples:

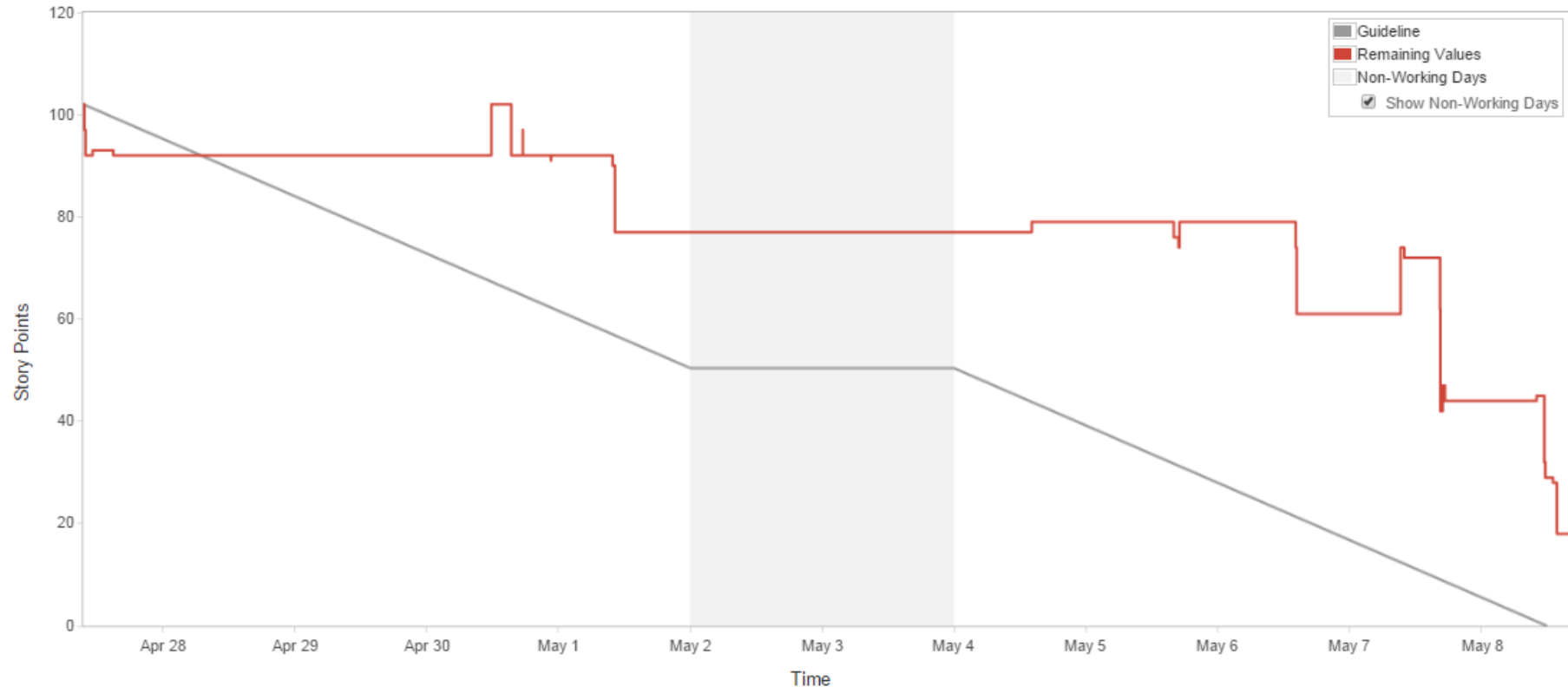
Km per litre - calculated by dividing the number of km by the number of litres used

Cost per kilowatt - calculated by dividing the cost of the electricity by the number of kilowatts used

Miles per hour - calculated by dividing the number of miles travelled by the number of hours it takes to travel them.

Lagging Indicators

Burndown Chart Sprint 8 ▾



Burn down chart

Lagging Indicators

Pros:

- Data is a reflection of what has occurred
- Reliable actual picture of reality

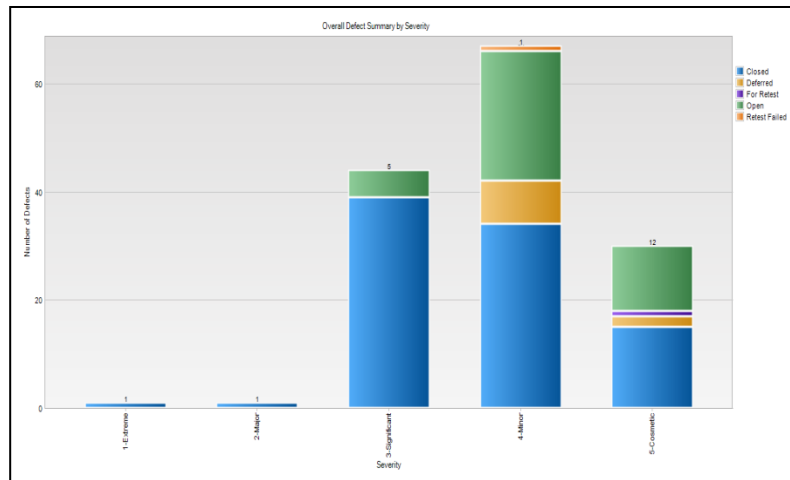
Cons:

- Do not provide information of what is likely to happen
- Do not point to the causal effects

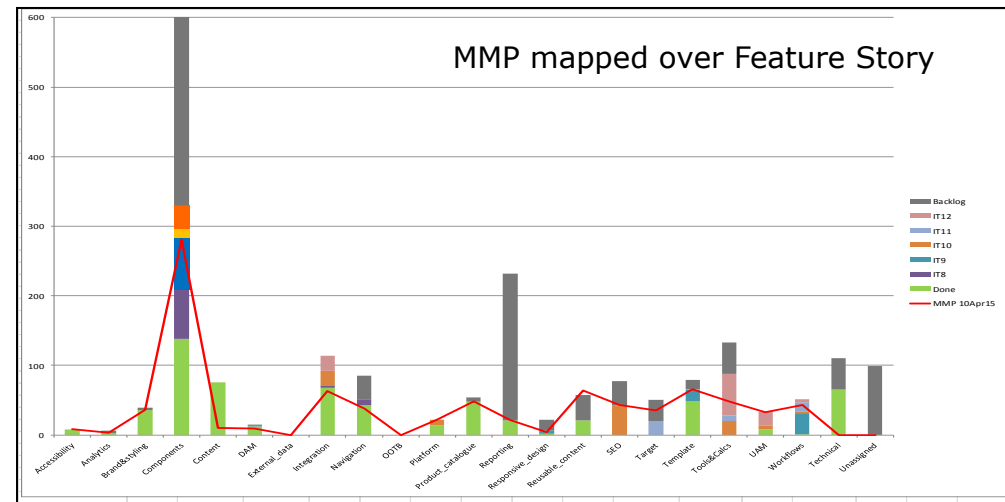
***Scrum Alliance: Global Scrum Gathering, Shanghai 14 – 16 September 2015
Practical Reporting Metrics for Scrum Projects***

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Current Indicators



Open defects by Sprint



Feature Epics Progress against MMP

Current Indicators

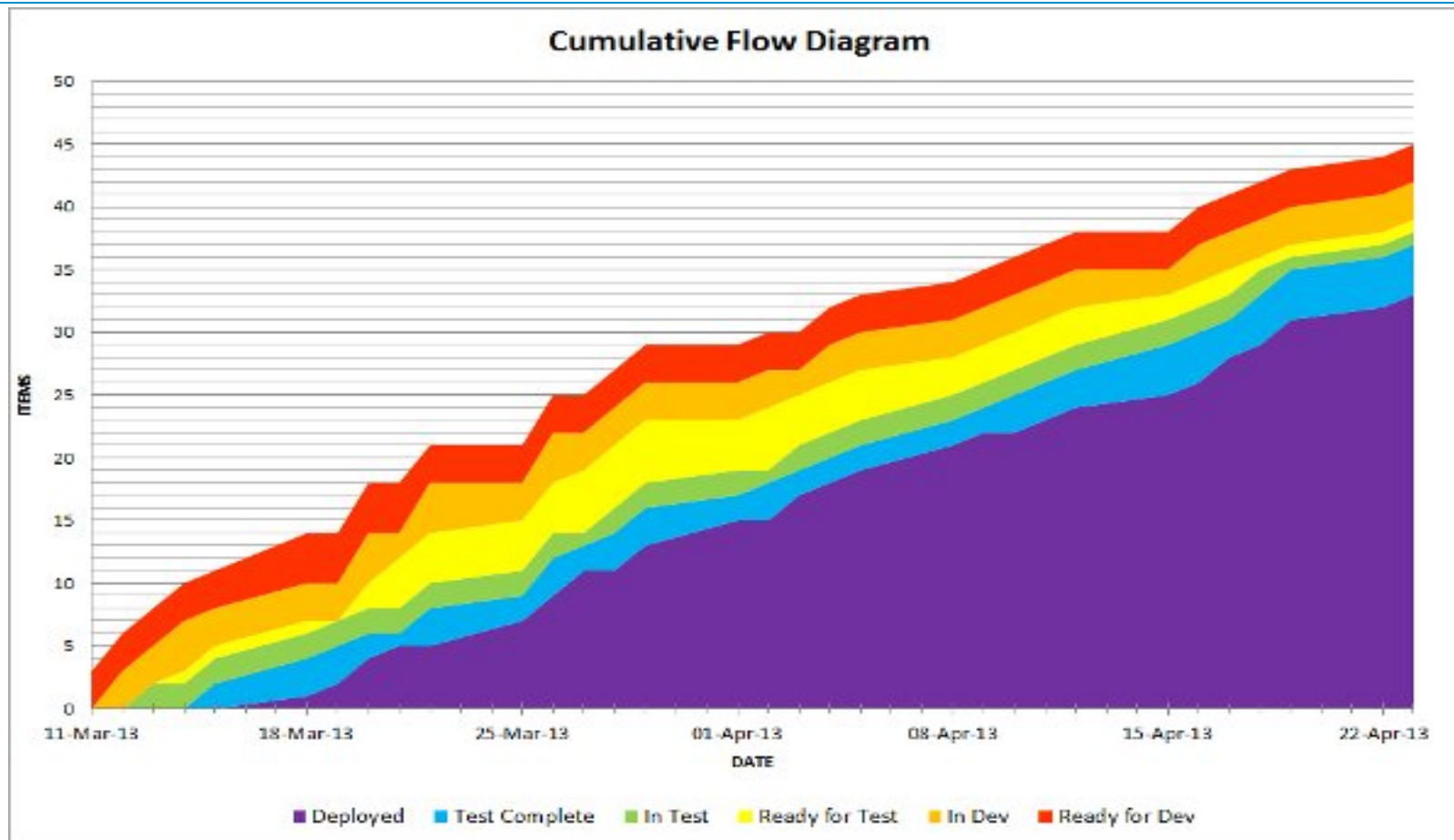
Pros:

- Data is a reflection of what is occurring
- Highlight issues and areas of concerns
- Reliable actual picture of reality

Cons:

- Do not provide information of what is likely to happen
- Do not point to the causal effects

Cumulative Flow Diagram



Current Indicators

Pros:

- Data is a reflection of what is occurring
- Identify potential areas of concerns
- Reliable picture of reality

E.g. Cumulative Flow Diagram

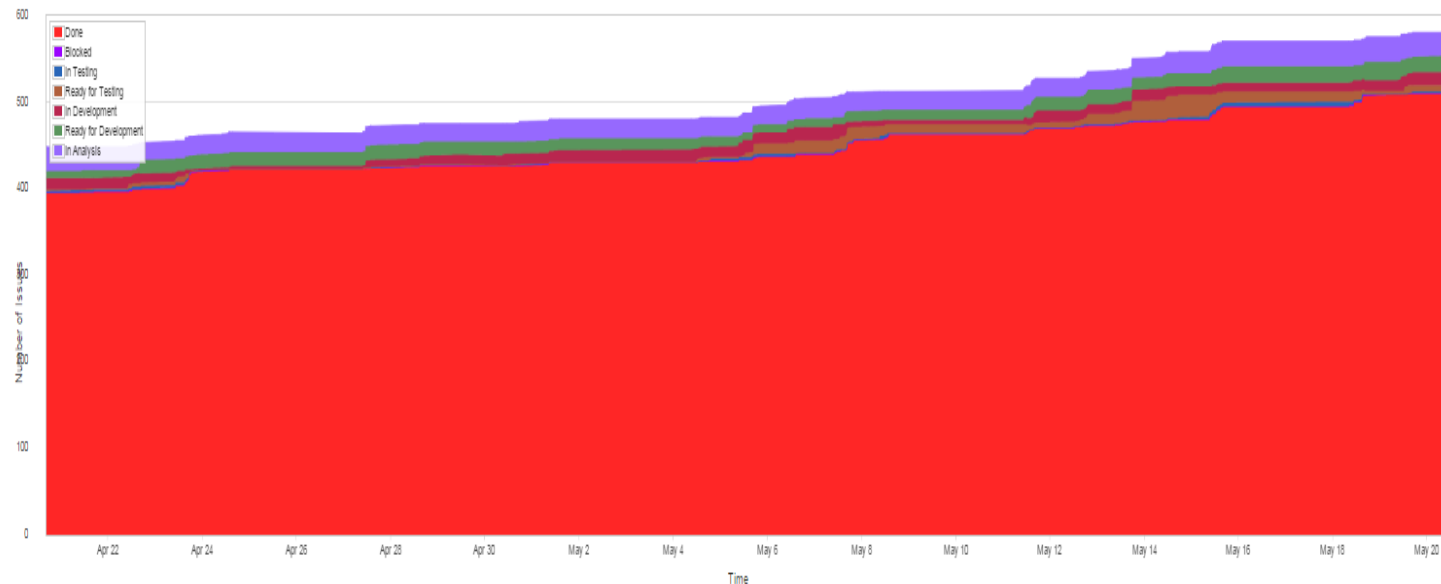
Cons:

- Do not provide granular details of each causal effect.

Cumulative Flow Diagram

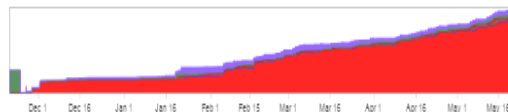
Cumulative Flow Diagram

21/Apr/15 to 21/May/15 (Past Month) • [Refine report](#)



Overview

Click and drag cursor across chart or chart overview to select date range (double-click overview to reset).



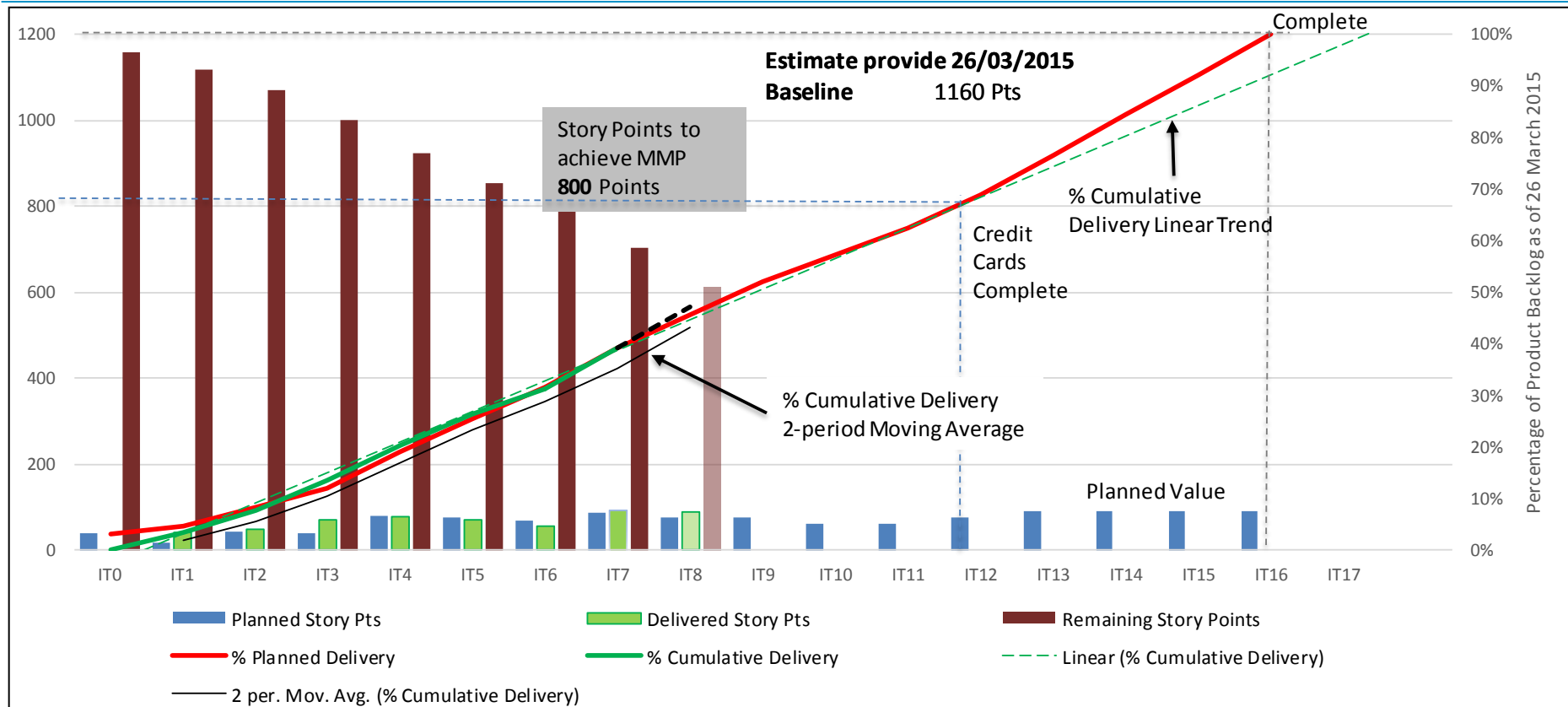
Commentary: First thing to remember when looking at a CFD:

Check if the work in progress area grows or rather stays constant over time. If it is constant or decreasing, you are most likely doing good, and if it is growing then you need to dig deeper. If work conditions (team size, project type, company environment) have not changed, but work in progress is growing, you may have an issue to deal with.

Second thing to remember when looking at a CFD:

Check how your average Lead/Cycle times are changing over time. Just draw a horizontal line between the To Do / Done or In progress / Done and take the delta in time. If they are growing, you are in trouble. If they go down, your customers are probably the happiest people on earth.

Release Burn Chart



Release Burnup Chart with % Cumulative delivery Trend

Leading Indicators

Pros:

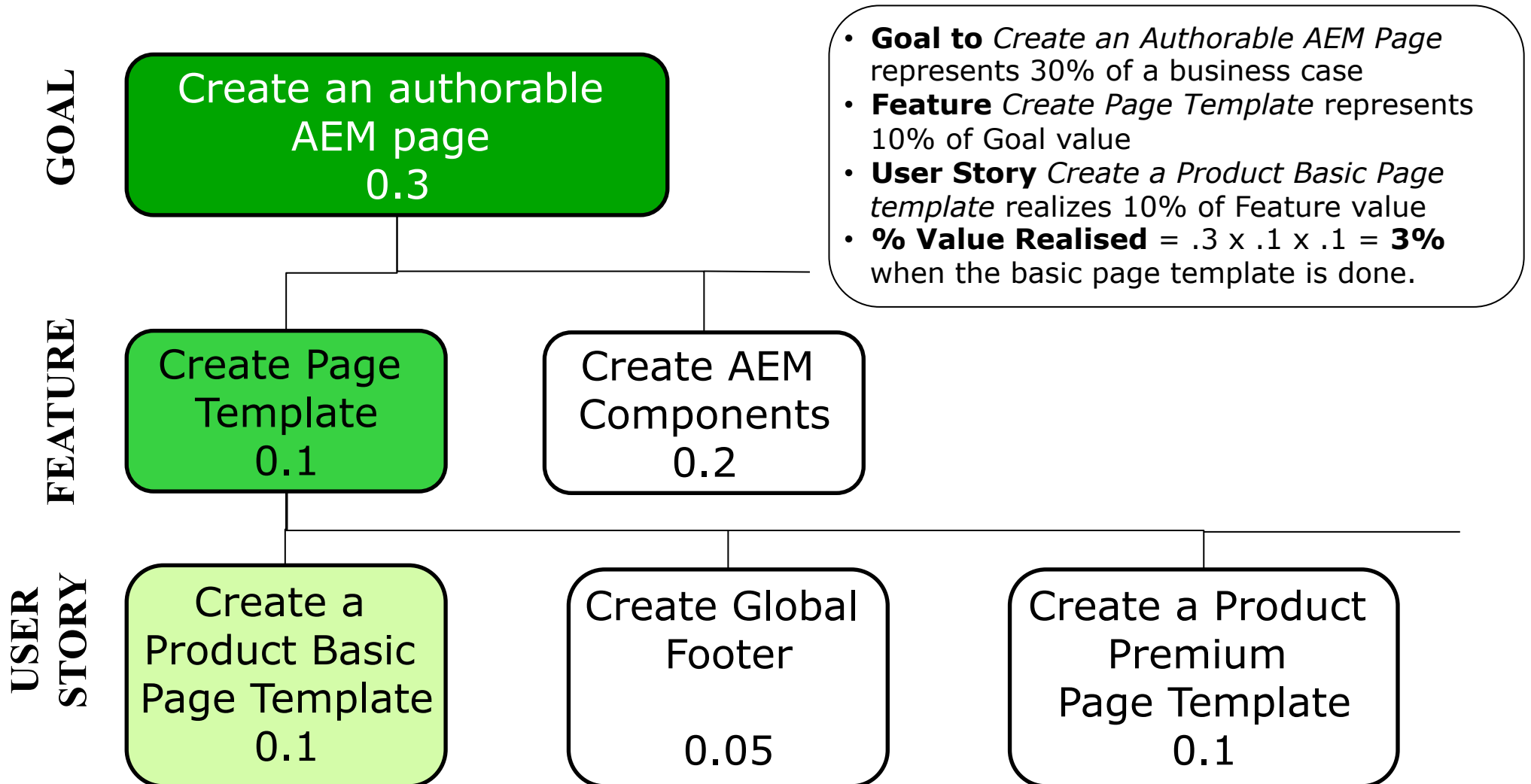
- Data is a reflection of what is occurring
- Highlight issues and areas of concerns
- Reliable picture of reality
- Identifies future risks

E.g. Moving Average & Linear Trend lines

Cons:

- Do not provide granular details of each causal effect.

Business Value Metric



Leading vs lagging Indicators

Leading Indicators

- Forward looking
- Used as a predictive mechanism
- Useful in identifying potential break points when a project may be in jeopardy or delays to completion
- Can provide a forward looking assessment of quality, cost and schedule prediction
- May indicate points at which adjustments need to be made to funding, resources and scope

Lagging Indicators

- Backward looking
- Provide a current view of progress
- Provide historical trends that may indicate potential problems
- Not useful in themselves but can be abstracted to provide predictive indicator trend lines
- Used most often to provide current project status reports.

Challenges with Leading Metrics

- Must be specifically designed to be relevant, consistent and reliable.
- Should be captured as part of normal work
- Beware that what is measured does not effect the results in a way that encourages gaming of the measure.
- Leading indicators should be designed to identify the issues and areas of risks in a consistent and reliable manner
- Comparative analysis and reporting of cost and schedule metrics can be more effective by using % ratios
 - % Cumulative Delivery
 - % Budgeted Cost

Does Earned Value Management have a place in Agile projects

- What is Earned Value Management?
- Is EVM a lagging or leading indicator?
- How can EVM be adapted for Agile?
- Can EVM be incorporated into a Release Burn charts?
- Rusk, J., DoD Software Tech News, Vol. 12, No. 1
- [http://www.agilekiwi.com/
EarnedValueForAgileProjects.pdf](http://www.agilekiwi.com/EarnedValueForAgileProjects.pdf)

What is EVM?

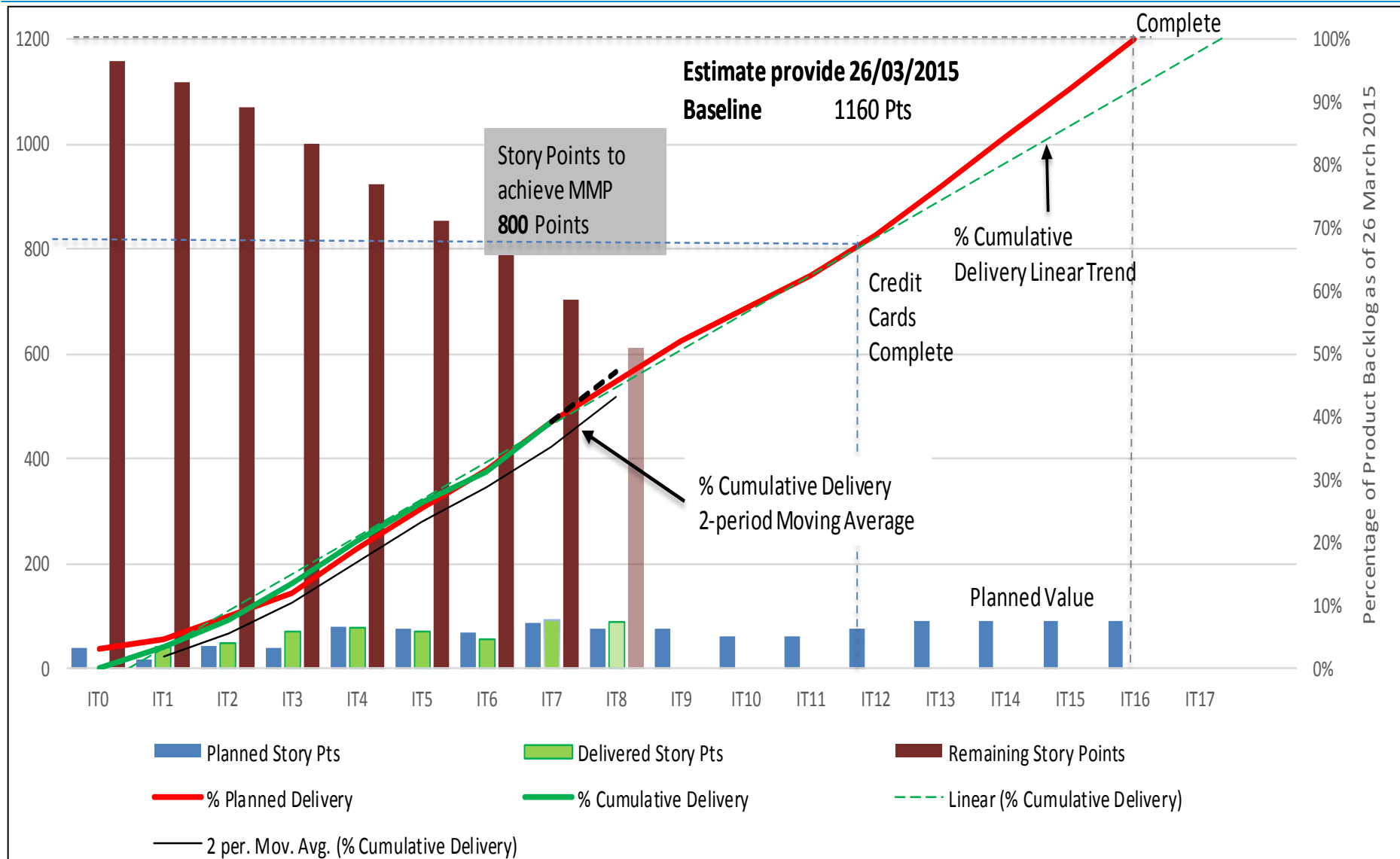
“Agile and earned value management (EVM) are a natural fit for each other. EVM implementations can be radically simplified for agile projects”

John Rusk, 2009

Earned value management (EVM) is a project management technique for measuring project performance and progress in an objective manner.

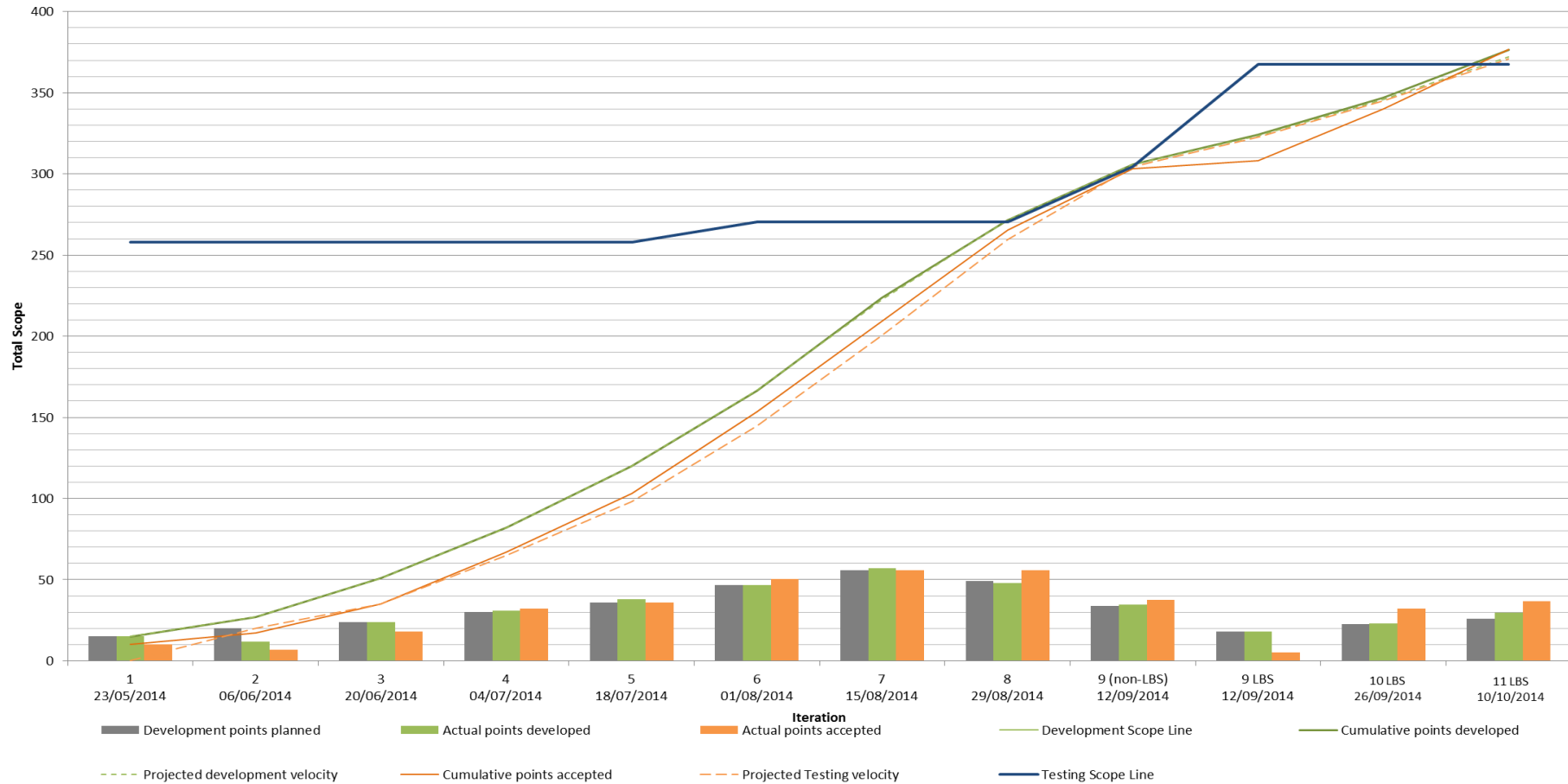
- Focuses on 3 elements: Scope, Cost and Schedule
- Agile scope is represented by your Product Backlog
- Cost for software development is measured by Time (Labour Hours)
- Schedule is represented by the Iteration or Sprint Interval (2 – 4 weeks)
- Planned Value is your forecast or planned delivery of story points
- Earned Value is represented by actual delivery achieved in story points
- Actual Cost is the effort measured in hours expended.

Release Burn Chart

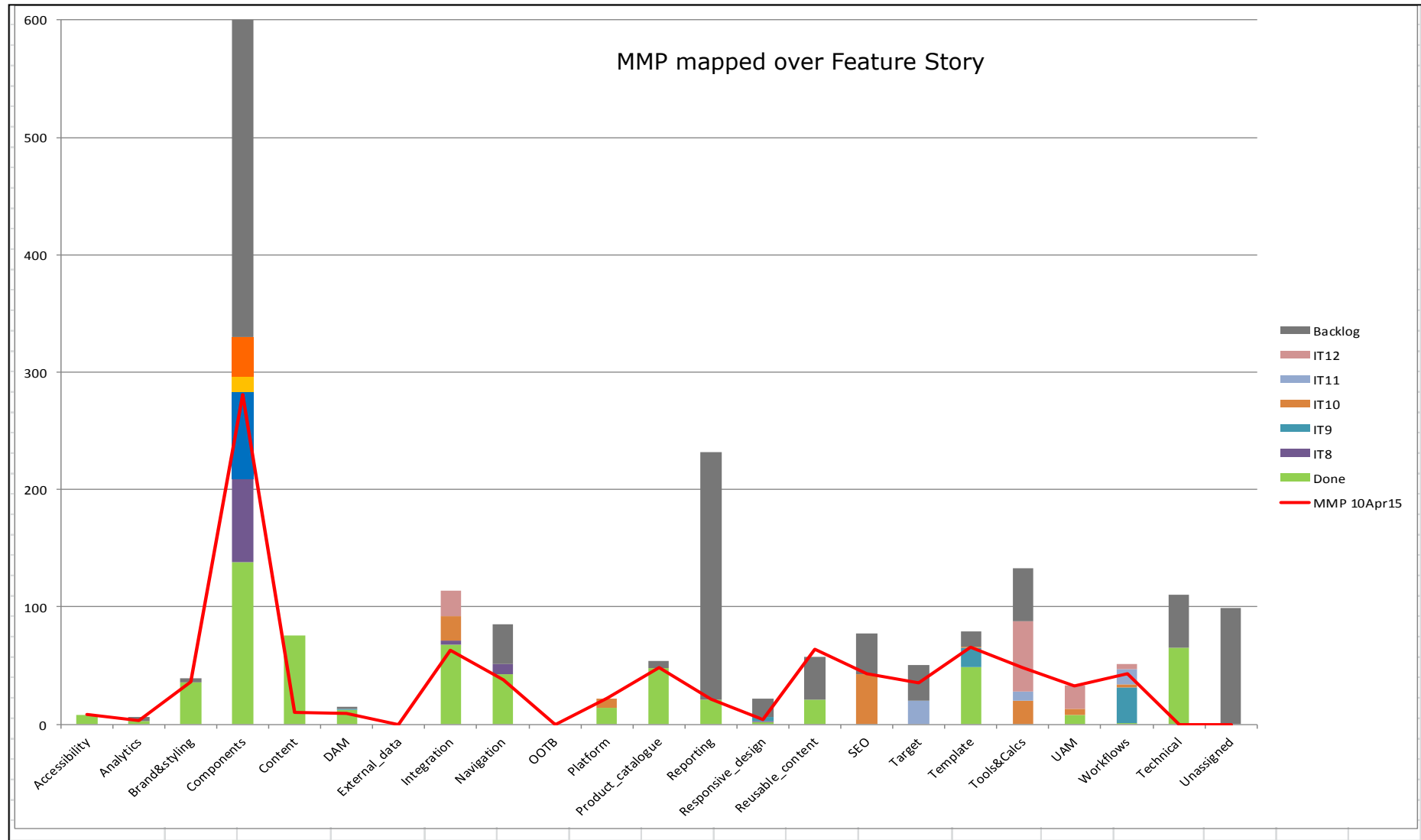


Scrum Alliance Release Burn Chart with % Cumulative Delivery Trend
 Practical Reporting Metrics for Scrum Projects

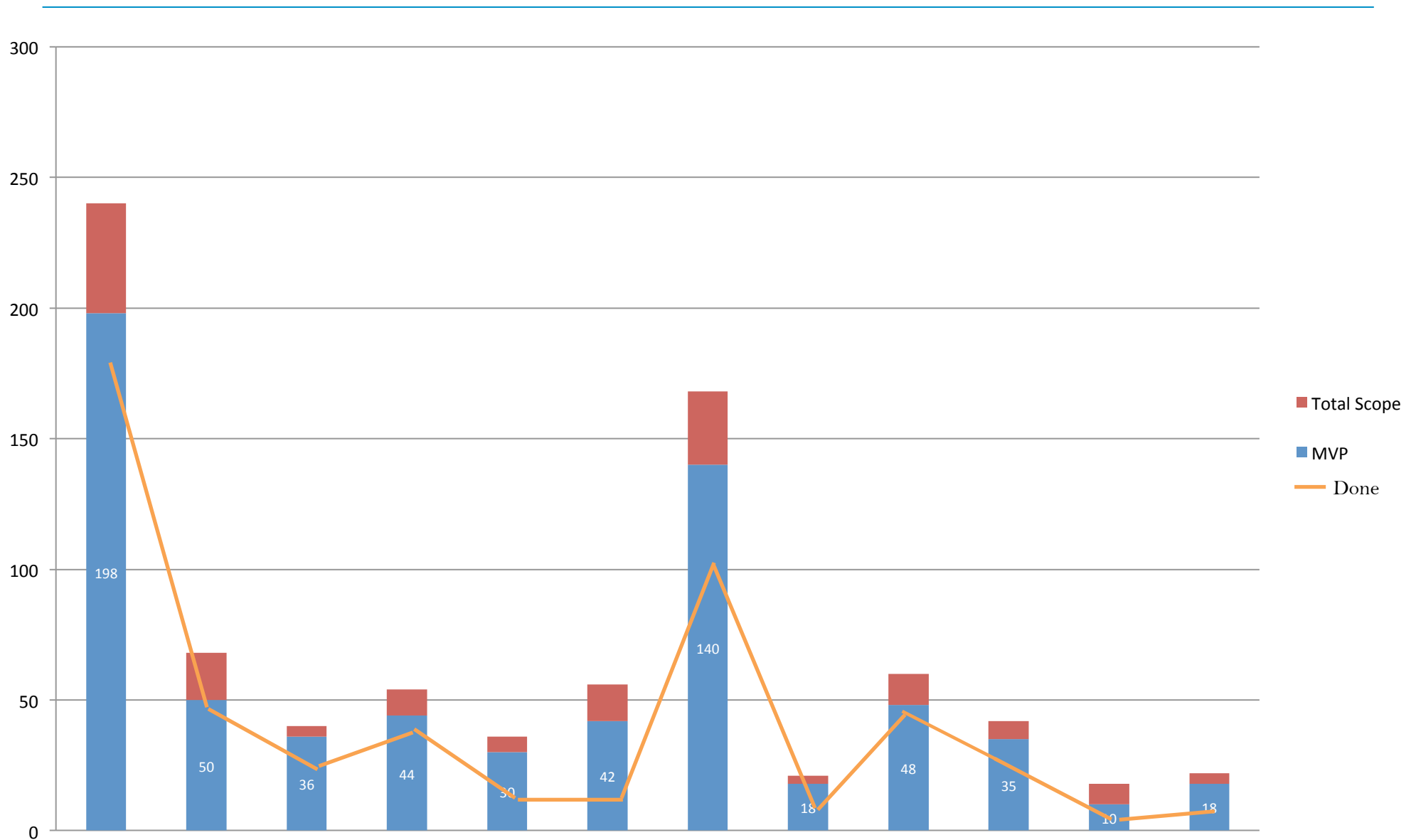
Testing Release Chart



Interpreting the Feature Epics vs. MVP

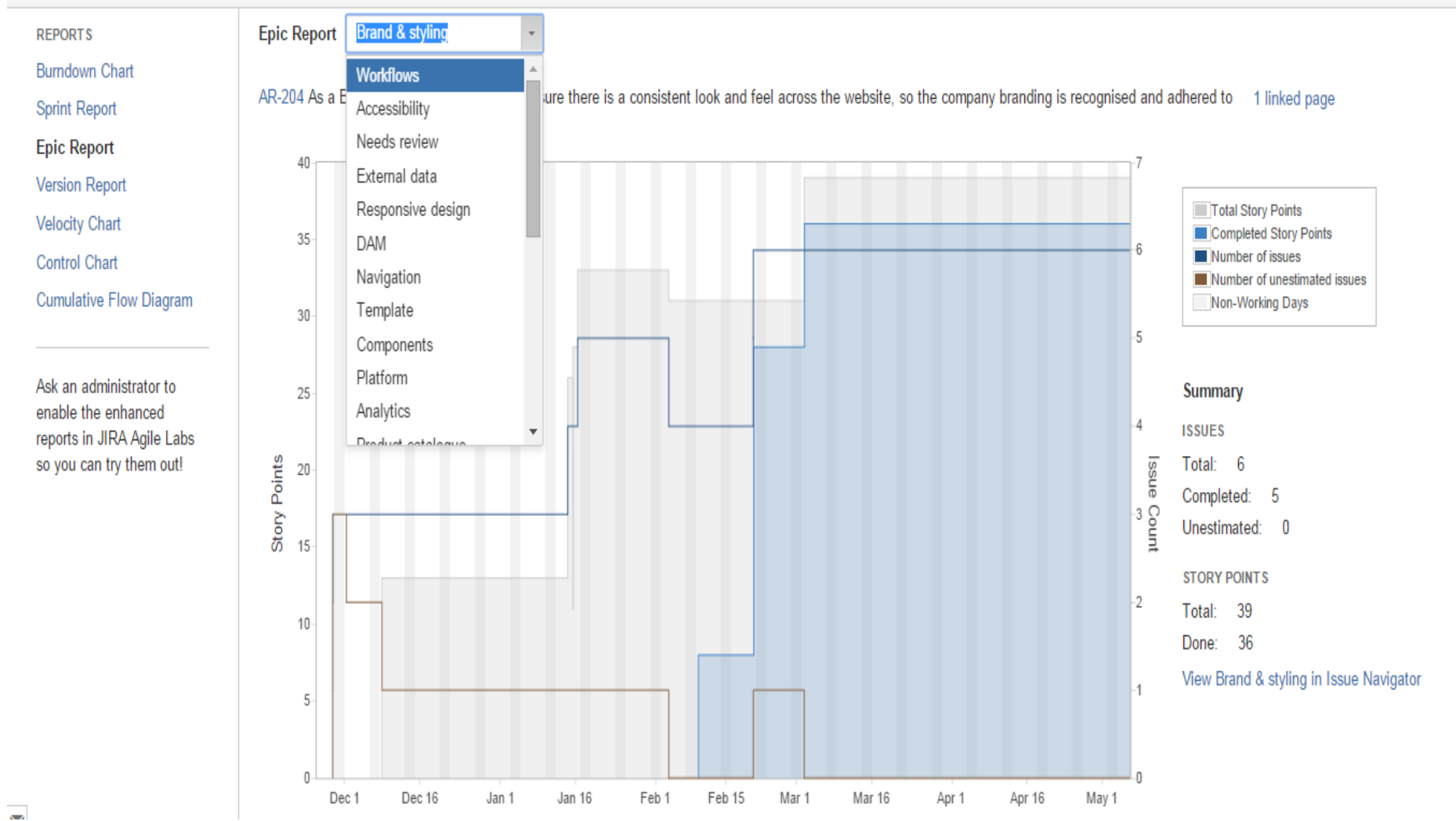


Future Dated Payments: Total Scope vs MVP Progress

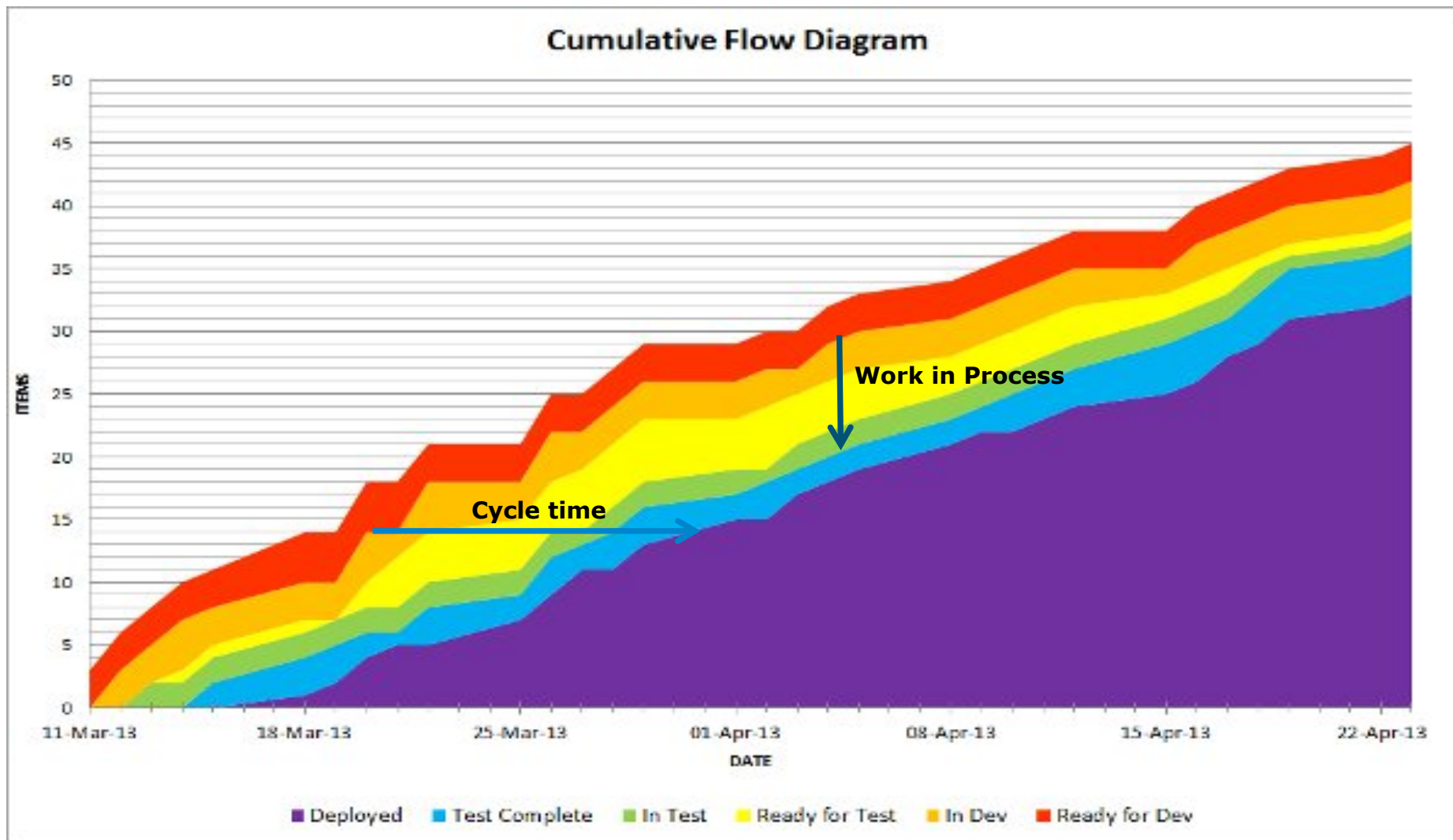


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Epic Report from Atlassian JIRA



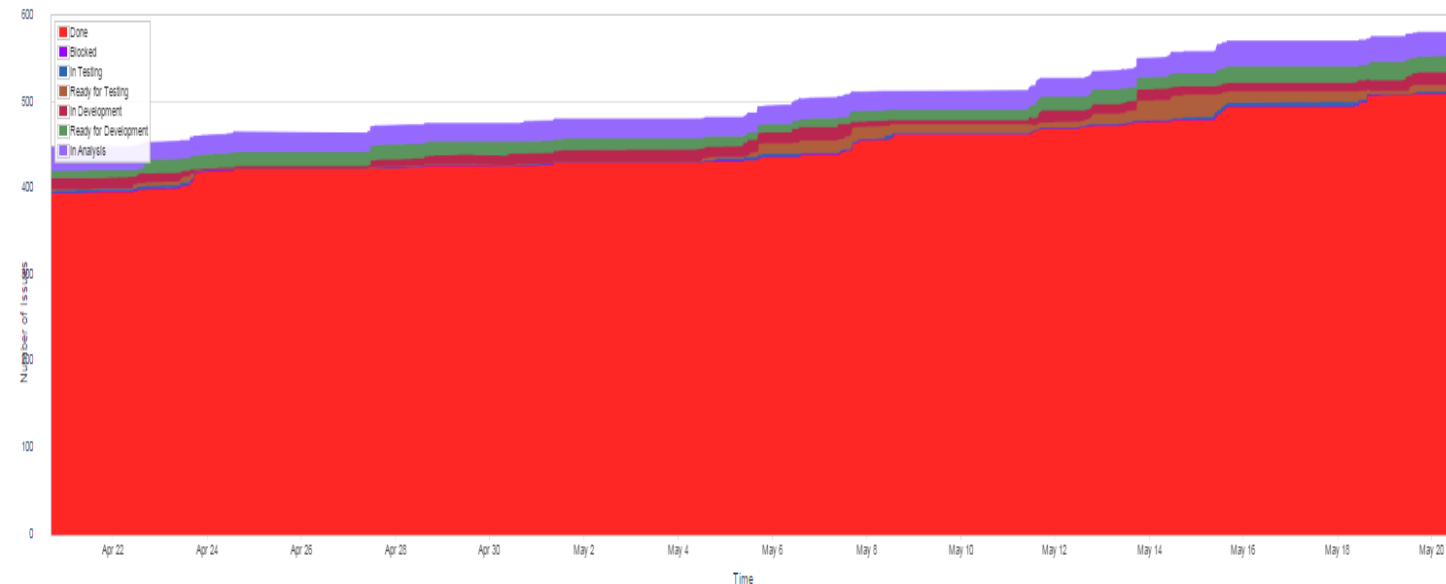
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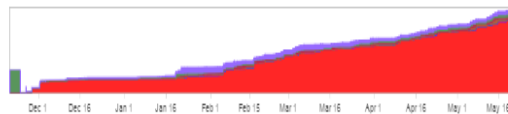
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Agile Readiness Assessment

