

VSM is Observability for CIOs

Done right, VSM creates actionable insights for teams

Observability SKILup Day

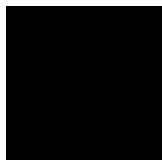
September 23, 2021

Neelan Choksi (President) and Lee Reid (Sr. Value Stream Architect)

History of Observability



- Roots in Control Theory
- 1960 – Dr. Rudolf Kálmán
 - Formal definition of system
 - Introduced the formal definition of a system and notions of controllability and observability
- “In a system, observability is a measure of how well internal states of a system can be inferred from knowledge of its external outputs.” *On the General Theory of Control Systems*
- 2013 – Observability at Twitter blog - one of the first times observability in IT context
- 2016 – Four pillars of Twitter’s Observability Engineering team’s charter:
 1. Monitoring
 2. Alerting / visualization
 3. Distributed systems tracing infrastructure
 4. Log aggregation/analytics



Value Stream Management, *Not Value Stream Mapping*

- Improves flow of business value
- Customer is in the center
- End-to-end
- Data driven systems thinking
- Makes work visible
- Allows IT to partner with the business

Observability Lessons from our Medical Peers

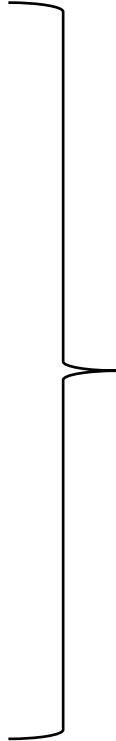
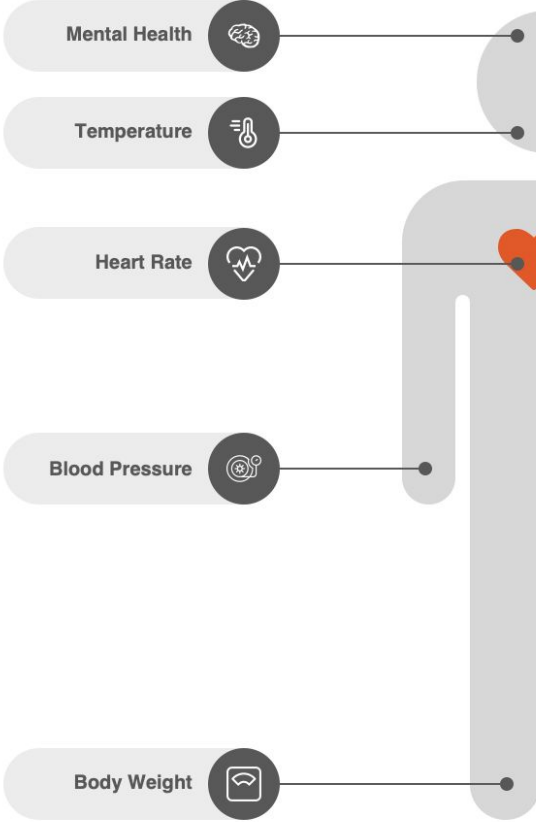
VSM: Vital Sign Measurement



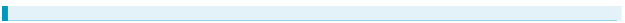
VSM: Value Stream Management



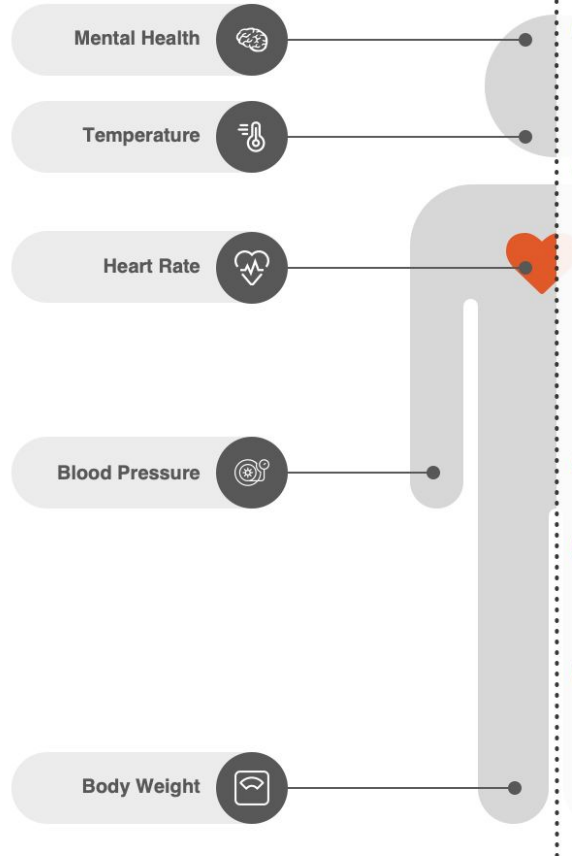
HUMAN BODY • VITAL SIGNS



Vital Signs of the Human Body



HUMAN BODY • VITAL SIGNS

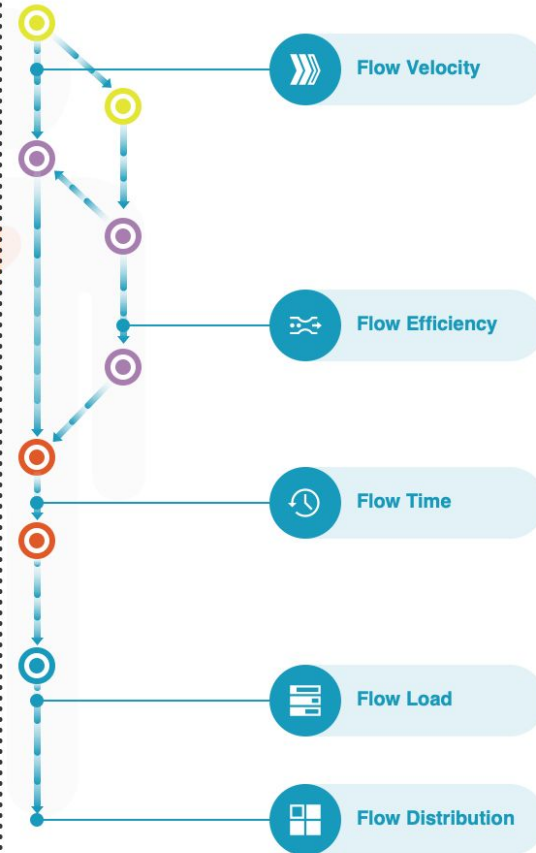


Vital signs measure the human body's basic functions.

- Vitals display a snapshot of what's going on inside the body. They provide crucial information about the organs.
- The importance of **vital signs observation** is that it allows medical professionals to assess wellbeing.
- Based on the results, a doctor may conduct further tests, diagnose a problem, or suggest lifestyle changes.

**Adapted from Infinium Medical*

VALUE STREAM • FLOW METRICS



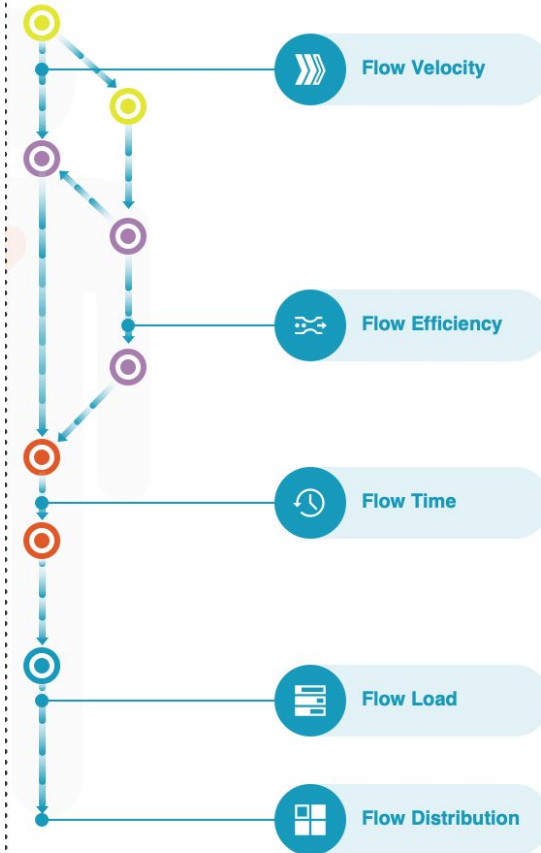
The "vitals" of value flow
in software delivery

Software Delivery - Vital Signs

Like the human body:

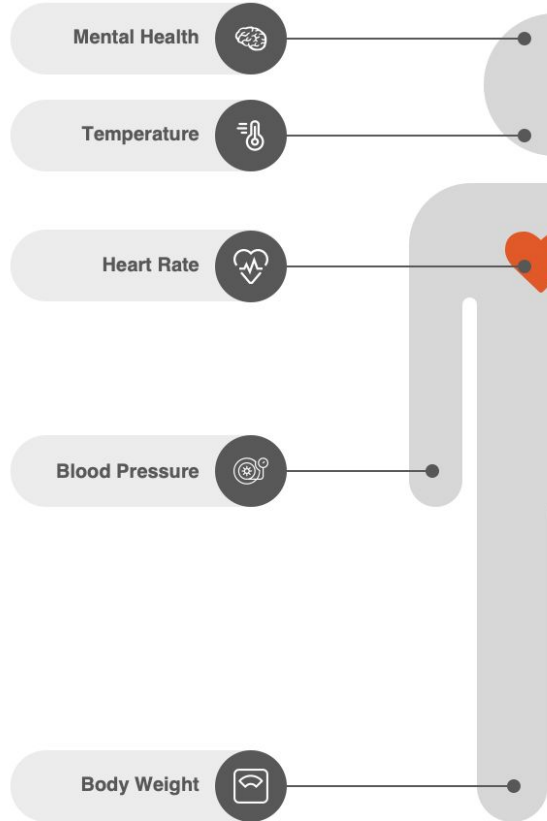
- The Software Delivery End-to-End System or Value Stream is a complex network of interconnected functions.
- The vital signs we need to measure are **Flow Metrics**

VALUE STREAM • FLOW METRICS

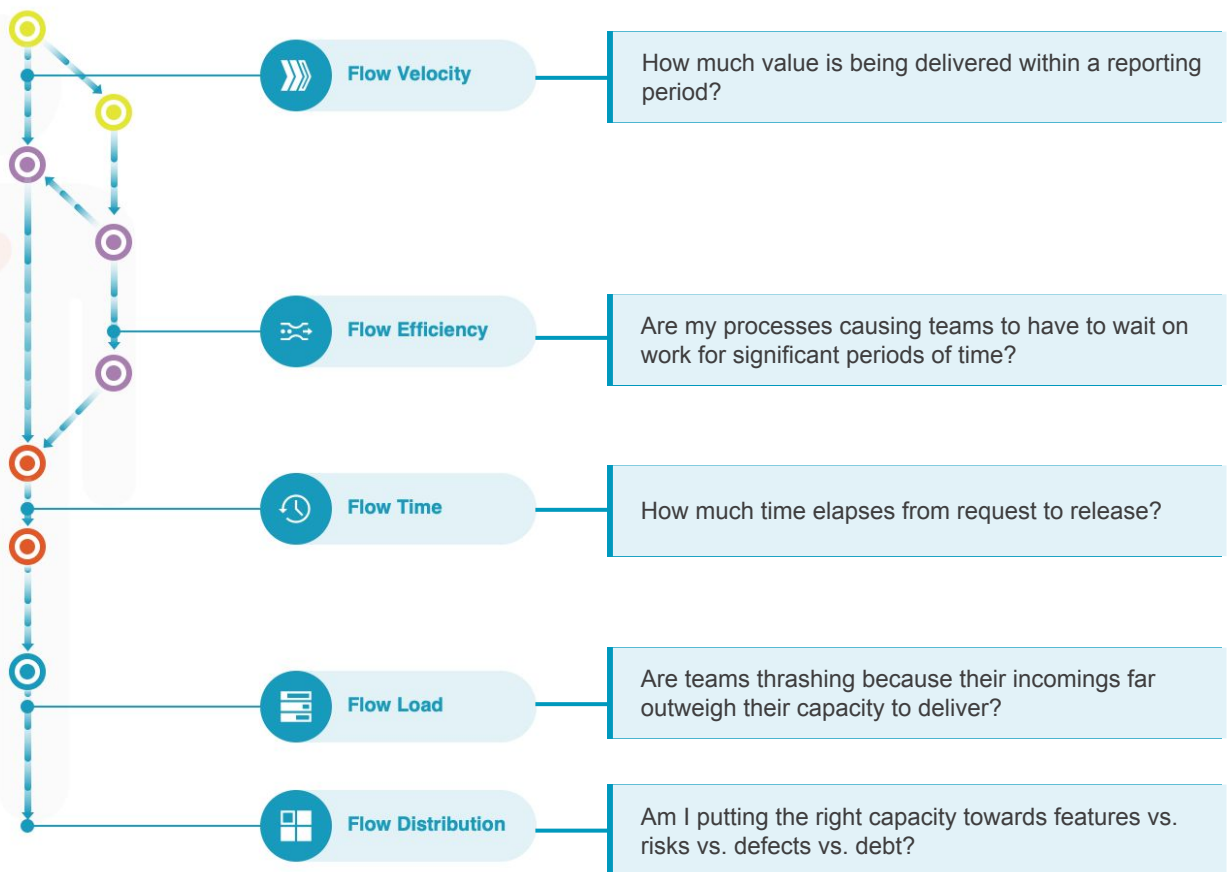


- The Flow Metrics “vitals” provide a snapshot of what’s going on in the delivery system. They provide crucial information about the flow of value in the system.
- The importance **observing Flow Metrics** is that it allows leaders to assess wellbeing.

HUMAN BODY • VITAL SIGNS



VALUE STREAM • FLOW METRICS



Patient Critical Care:

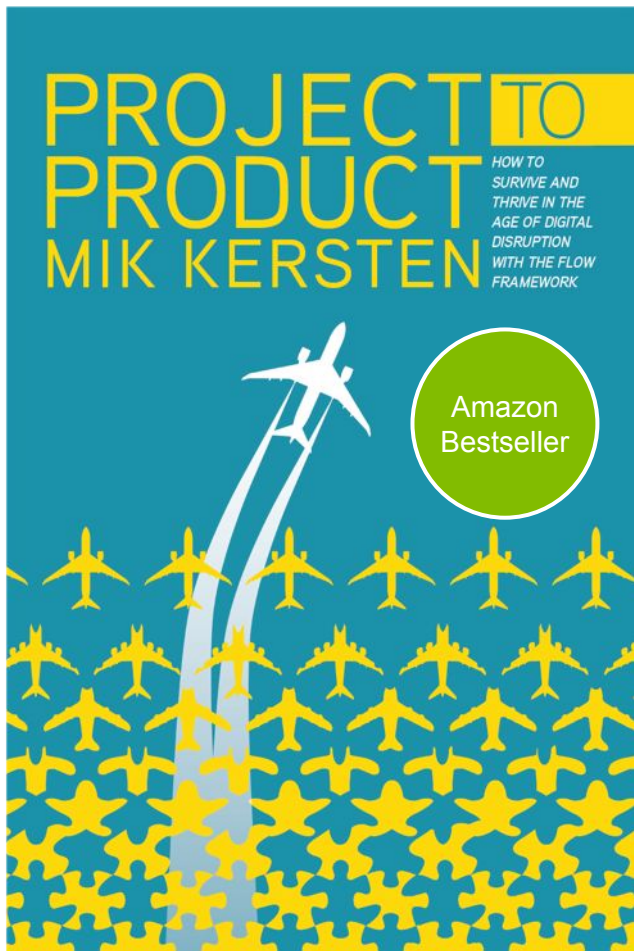
- Continuous Observation of Vital Signs of Health



Transformation Critical Care:

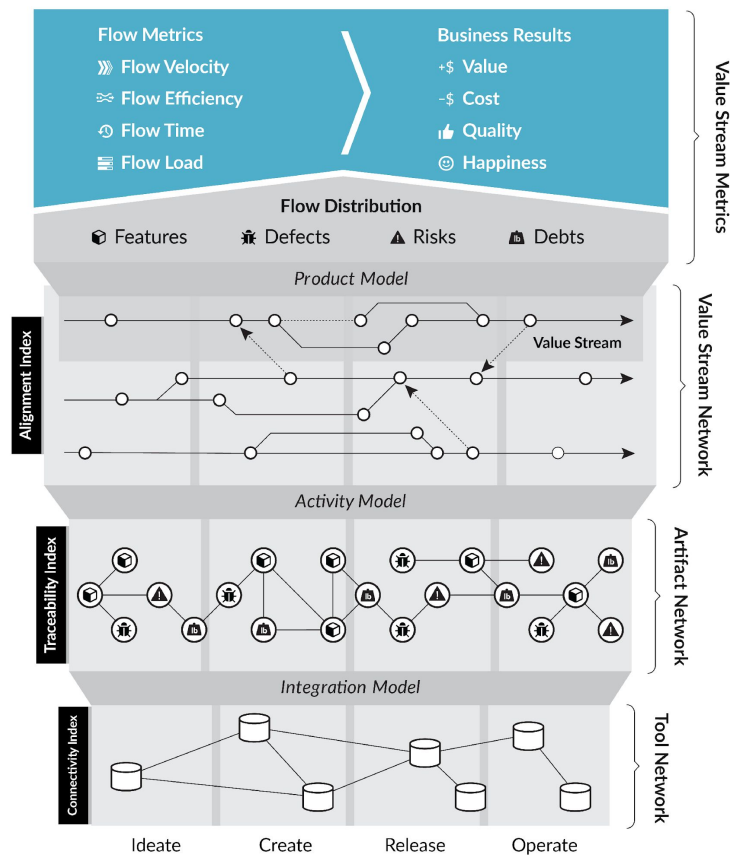
- Continuous Observation of Vital Signs of Success with **Flow Metrics**





Flow Framework®

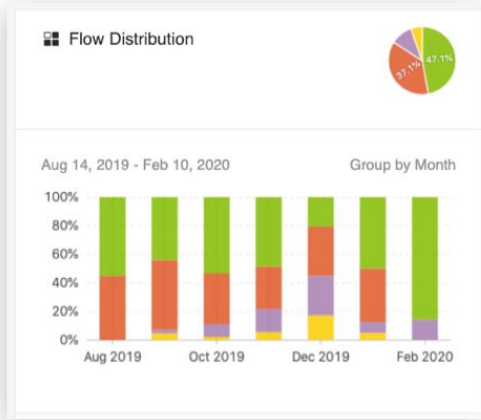
v1.0



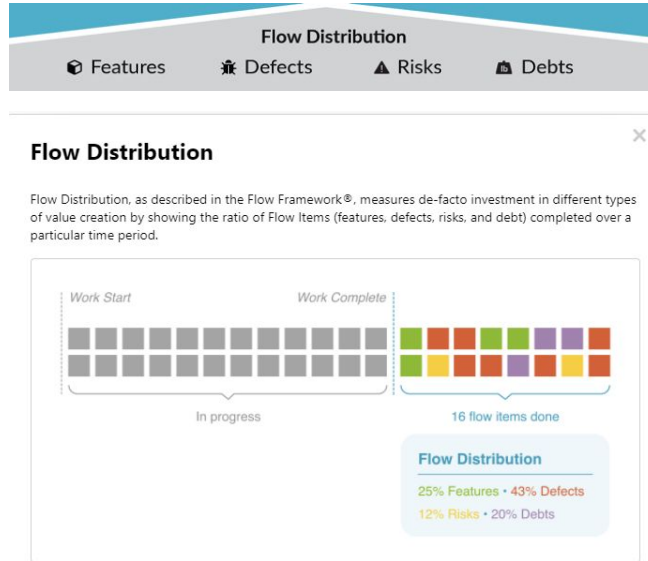
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Flow Distribution



Are our outcomes aligned with business priorities?



Note: Healthy Flow Distribution includes appropriate levels of risk and debt

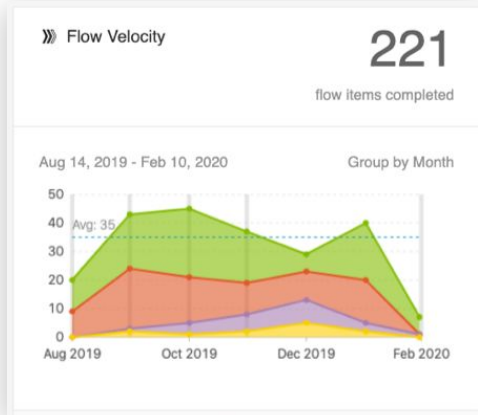
You can use this metric to:

- Understand whether resource allocation is in-line with business priorities and if not, make adjustments.
- Drive prioritization discussions with business stakeholders by making work distribution visible
- Assess how the distribution of work on technical debt impacts future Flow Velocity -- does tackling 20% debt each release ensure that feature work does not slow over time?
- Proactively plan Flow Distribution such that it matches current business priorities: for example, as a value stream nears the public release of a new product, the distribution may include a higher feature distribution and a lower defect distribution. Once the product is released and widely used by customers, the distribution of defect work may increase.

How is it Calculated?

Flow Distribution is the relative distribution of Flow Velocity across the four Flow Item types (feature, defect, risk, debt).

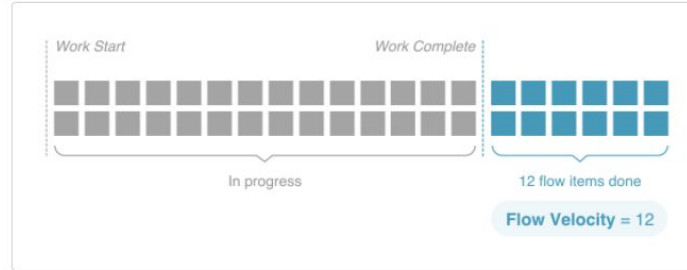
Flow Velocity



How much customer value are we delivering over time?

Flow Velocity

Flow Velocity, as described in the Flow Framework®, measures productivity by showing how many Flow Items of each type were completed over a particular time period. It is a throughput measure that helps you understand the rate of value delivery over time.



Note: High Flow Velocity translates into more value delivered.

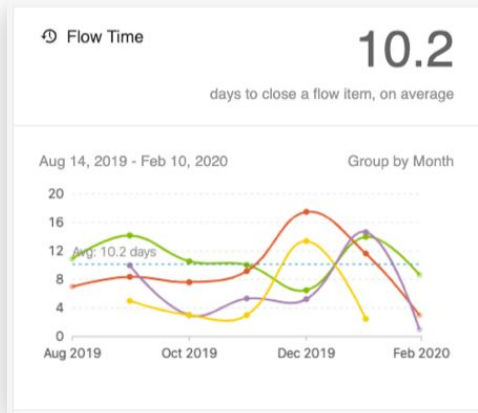
You can use this metric to:

- Identify whether value delivery is accelerating, decelerating, or staying constant.
- Prompt investigation into how to increase Flow Velocity when it's too low, for example, by investing in talent, architecture, or infrastructure. Since wait time is the largest factor that stalls Flow, efforts to increase Flow Efficiency can also dramatically improve Flow Velocity.
- Prompt research into the root cause of a noticeable change in velocity, for example, a new process, change in workflow, or staffing change.

How is it calculated?

Flow Velocity is represented as the number of completed Flow Items minus the number of re-opened Flow Items per time interval.

Flow Time



Is time-to-market getting shorter to outpace the competition and shorten feedback loops?

Flow Time

Flow Time, as described in the Flow Framework®, measures time to delivery by tracking the total time from work start to work complete, including both active and wait states. It helps you understand your actual time-to-market and inform your delivery date commitments.

Flow Time starts when the Flow Item is accepted into the product value stream and enters an active state, i.e. transitions from new to either active or waiting state. This is subjective to your product value stream but might happen when a feature is scheduled for a release, or when a customer ticket is reported or escalated. Flow Time ends when the Flow Item transitions to a done state.

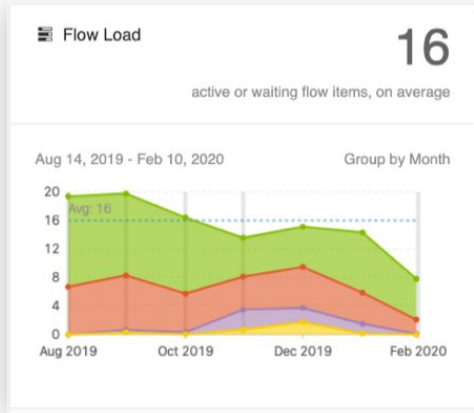


Note: Shorter Flow Time means faster time to market

You can use this metric to:

- Identify when time to value is increasing or decreasing, so you can investigate the contributing factors.
- Predict time-to-market based on previous performance.
- Assign flow time goals for each Flow Item to ensure that all Flow Items are completed within an adequate time frame. This helps to ensure that production incidents (defect Flow Items) are not the only Flow Item handled expeditiously.

Flow Load

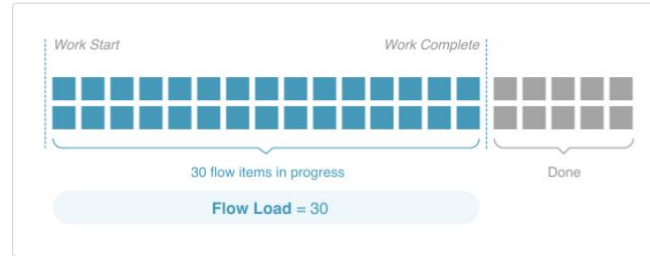


Are we balancing demand vs. capacity to ensure future productivity?

Flow Load

Flow Load, as described in the Flow Framework®, measures work in progress (WIP) by showing the number of Flow Items being actively worked on in a product value stream. It includes all Flow Items in either an 'active' or 'waiting' state.

Flow Load is the single largest predictor of Flow Velocity and Flow Time. While the ideal Flow Load will vary by product, excessive Flow Load is correlated to inefficiency. By analyzing how Flow Load, Flow Velocity, and Flow Time interact with one another, you can identify the ideal WIP limits for your product value stream.



Note: High Flow Load will negatively impact Flow Velocity

You can use this metric to:

- Discover the product value stream's optimal Flow Load, when Flow Velocity is high and Flow Time is low.
- Work with business stakeholders to balance demand vs. capacity correctly.
- Understand how WIP impacts business outcomes, like employee happiness and engagement.

How is it calculated?

Flow Load is represented as the total number of Flow Items in active or wait states recorded at the end of each day.

Flow Efficiency

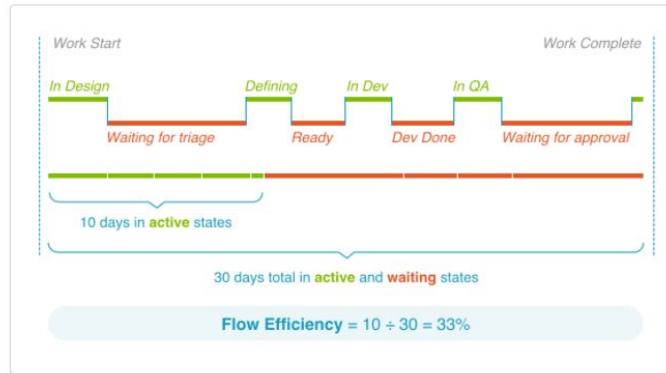


Is waste decreasing in our processes?

Flow Efficiency

Flow Efficiency, as described in the Flow Framework®, is a measure of waste in a product value stream, where work is waiting. It tracks the ratio of active time vs. wait time out of the total Flow Time. Ideal Flow Efficiency is above 40%.

Tip: If your Flow Efficiency is very high, for example over 40%, we recommend validating that your state mappings are accurate. For example, if your 'new' state identifies work that is past the line of commitment, that state should be re-mapped to either 'waiting' or 'active.'



Note: The higher the Flow Efficiency, the better. Ideal performance is 40%.

You can use this metric to:

- Measure wasted time and delays: the lower the Flow Efficiency, the longer work is stagnating in a waiting state. This points to the existence of bottlenecks, inefficient processes, dependencies, or lack of resources.

The Impact of Flow Metrics

Stories from the real world



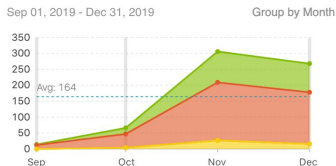
All Feature Defect Debt Risk

2019-09-01 ~ 2019-12-31 Group by Month

Optimize Flow for Business Results

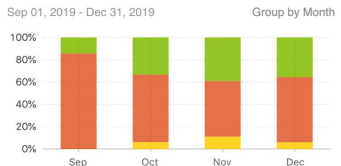
- Value** (+\$) Benefit to the business produced by the value stream
- Cost** (-\$) Cost of the value stream to the business
- Quality** (iB) Quality of the product produced by the value stream
- Happiness** (😊) Engagement of the staff working on the value stream

Flow Velocity **270**
flow items completed



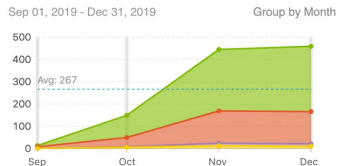
Help Explore Throughput →

Flow Distribution



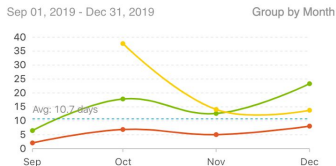
Help Review Allocation →

Flow Load **267**
active or waiting flow items, on average



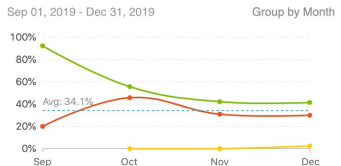
Help Find Bottlenecks

Flow Time **10.7**
days to close a flow item, on average



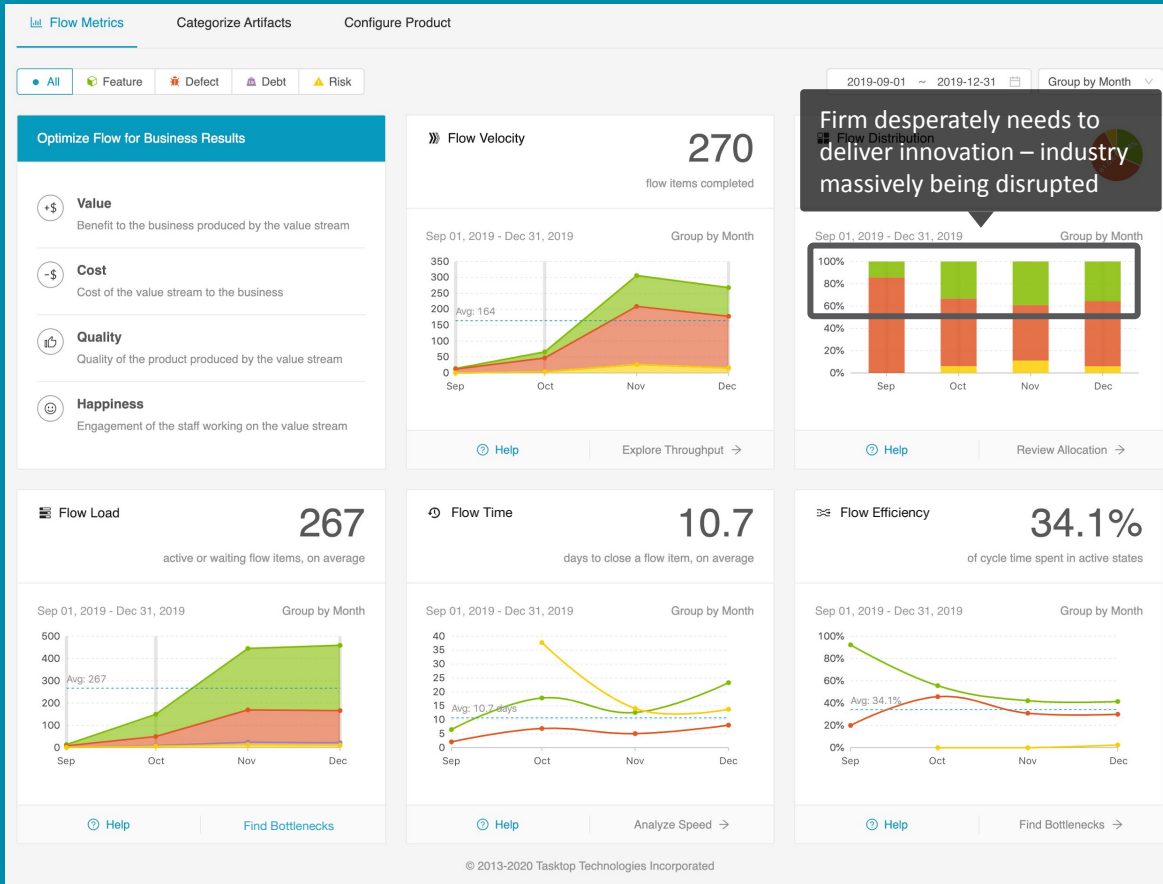
Help Analyze Speed →

Flow Efficiency **34.1%**
of cycle time spent in active states



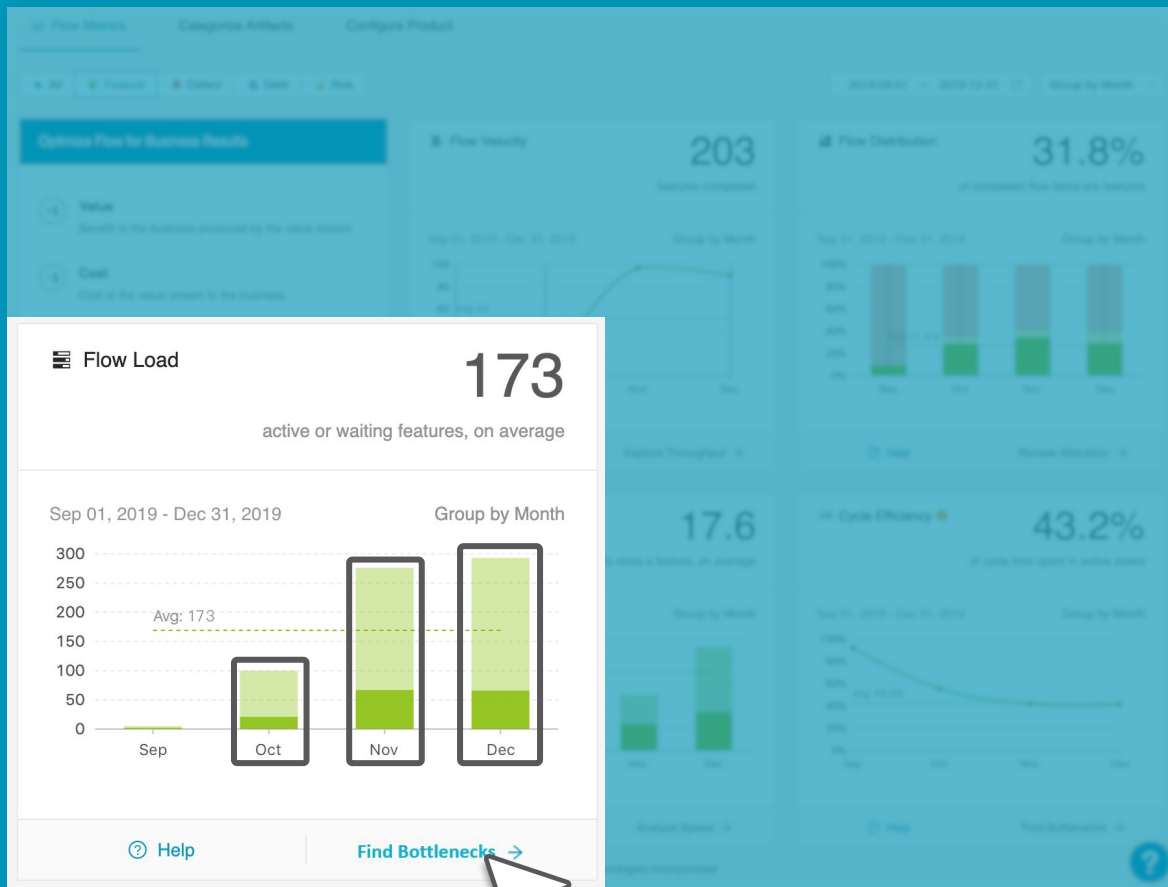
Help Find Bottlenecks →

Financial Services
Revealing the hidden costs of tech debt



Where is the purple (debt)?

1. Feature delivery is painfully low, and no investment in debt

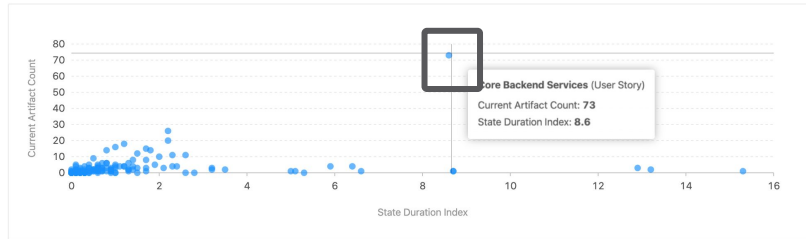


1. Feature delivery is painfully low, and no investment in debt
2. Worse – when you look into the Flow Load, features are just sitting and waiting for very long periods of time

Analyze Load

Include artifacts where Flow State is New

Sep 01, 2019 - Dec 31, 2019



1-50 of 319 items < 1 2 3 4 5 6 7 >

Artifact State	Artifact Type	Tool	Project	Artifact Count (Current)	Artifact Count (Max)	State Duration Index
Dev Test Complete	User Story	JIRA	Core Backend Services	73	70	8.6
Dev Test Complete	User Story	JIRA		26	18	2.2
On Hold	Bug	JIRA		20	14	2.2
Ready for Dev	User Story	JIRA		18	18	1.2
Ready for Dev	Bug	JIRA		16	22	1.0
IN DEVELOPMENT	User Story	JIRA		15	16	1.7
Release Certification	User Story	JIRA		14	13	1.8

1. Feature delivery is painfully low
2. Worse – when you look into the Flow Load, features are just sitting and waiting for very long periods of time
3. Tasktop Viz instantly reveals the core bottleneck in Core Backend Services, a painful legacy constraint

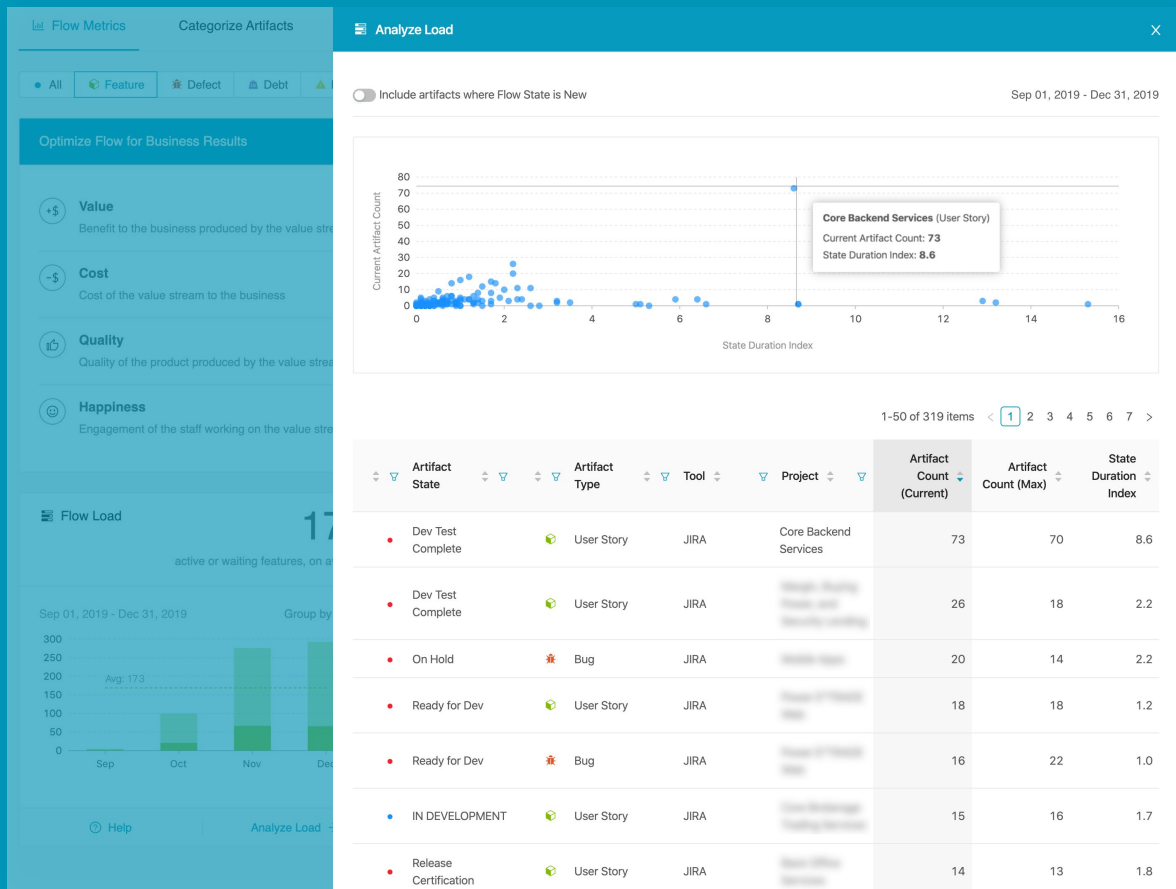


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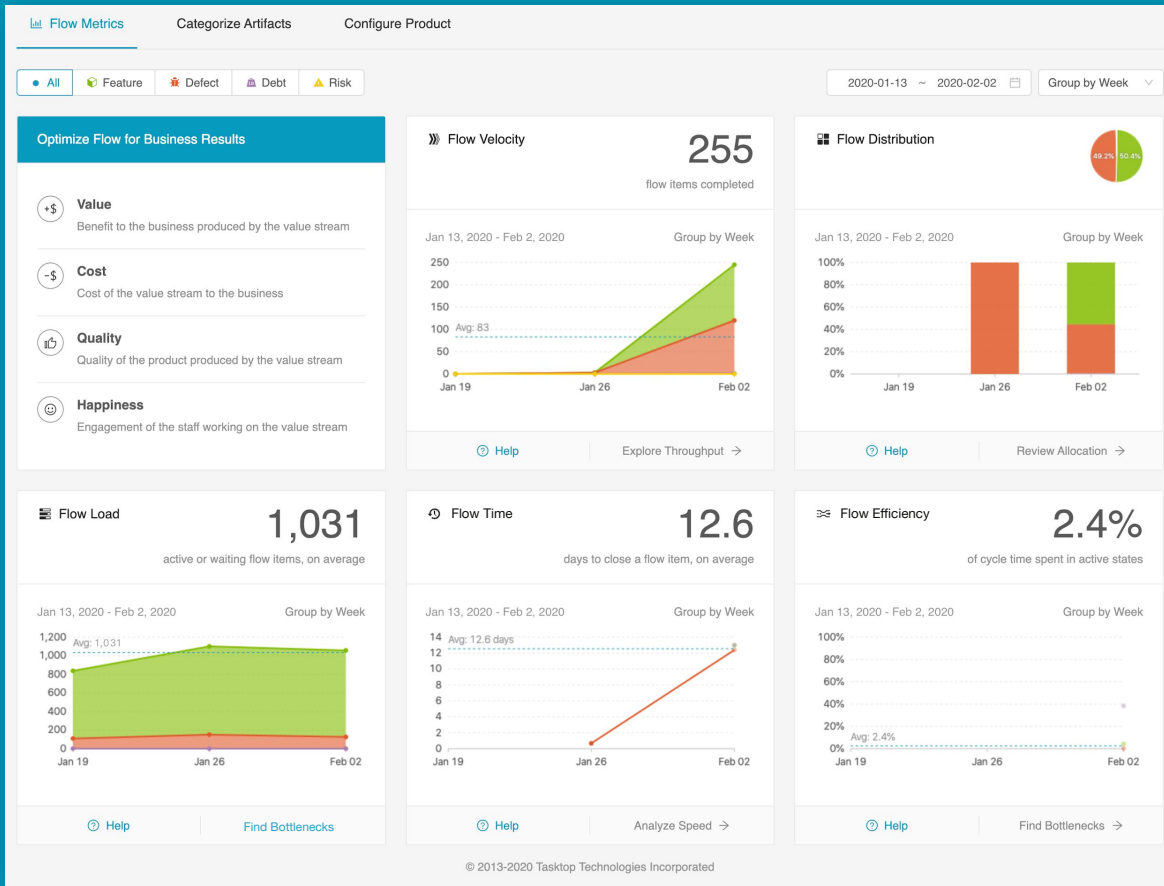
4. Forcing the conversation on the reality that if they don't "slay the monolith" they will never be able to compete



1. Feature delivery is painfully low
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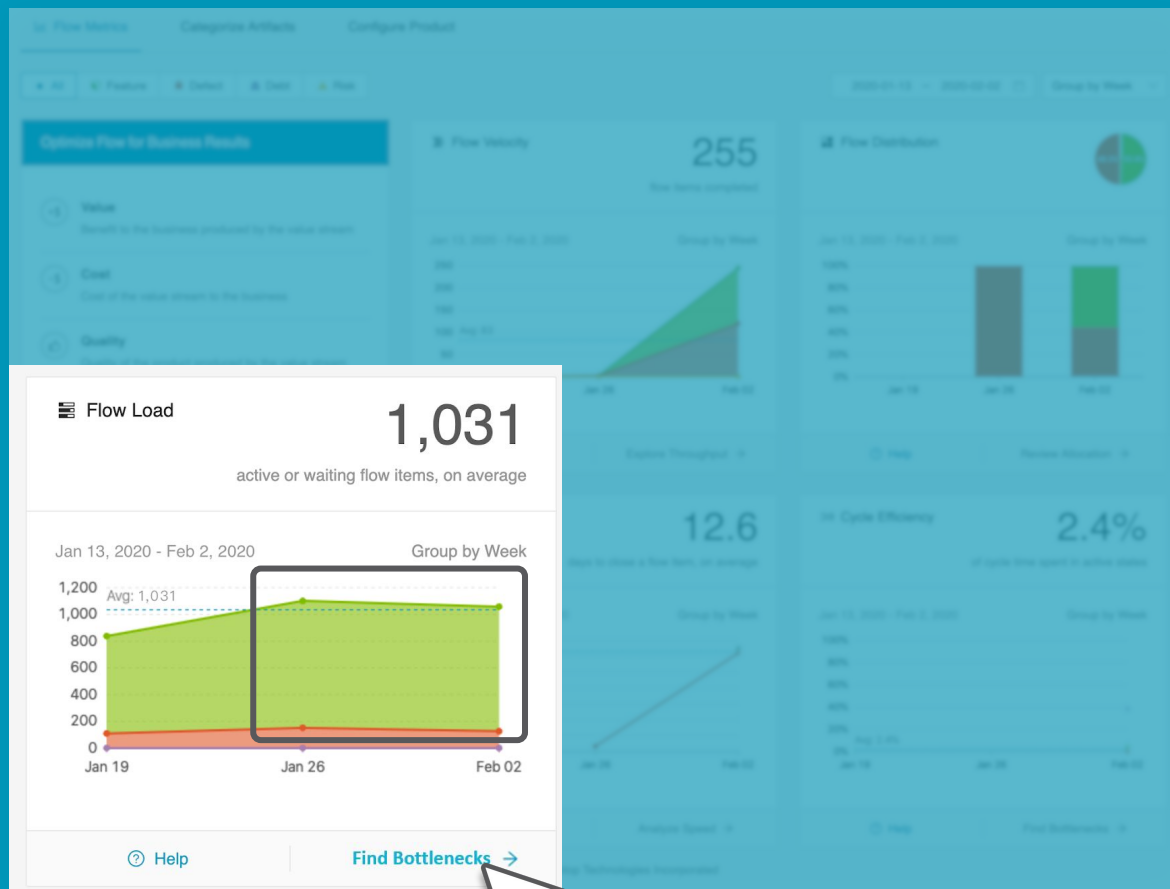
"One of the reasons we brought this tool in is that we'd lost credibility... Not a lot of people want to put money into something [debt] without seeing demonstrable improvements."

-- VP DevOps



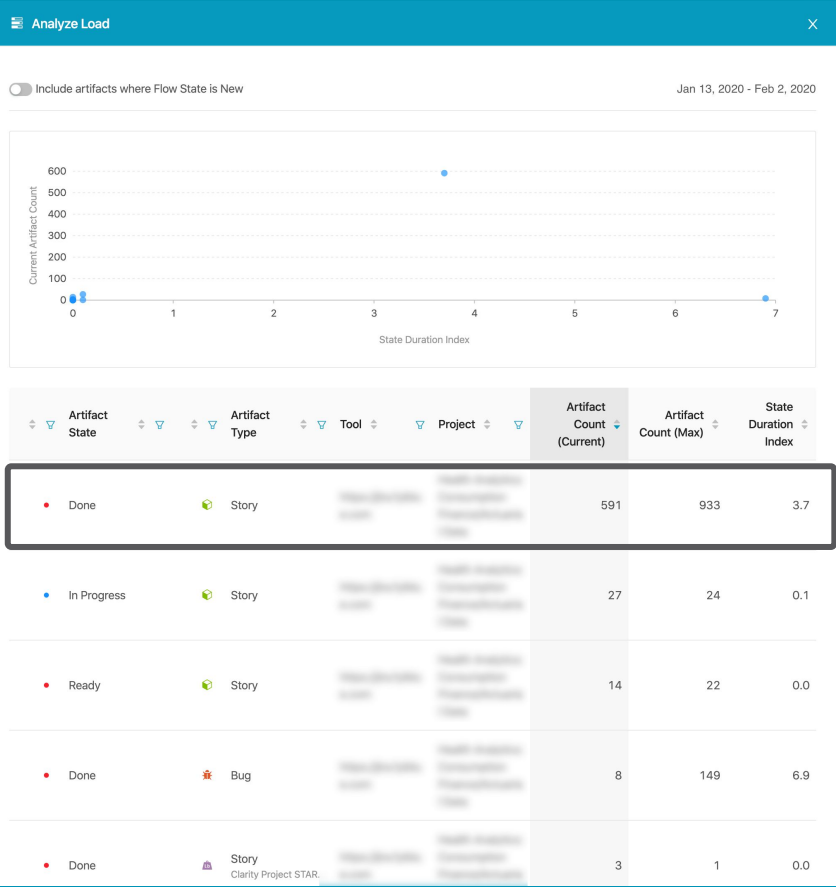
Health Insurance

Importance of flow modeling and 'what if'?



After 11 days of data...

1. Hundreds of work items in progress, mostly features



1. Hundreds of work items in progress, mostly features
2. Done doesn't mean done?



Flow Metrics Categorize Artifacts Configure Product

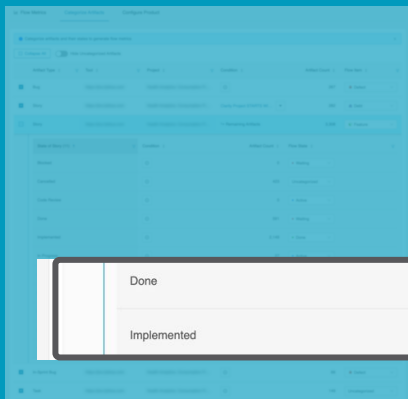
Categorize artifacts and their states to generate flow metrics

Collapse All Hide Uncategorized Artifacts

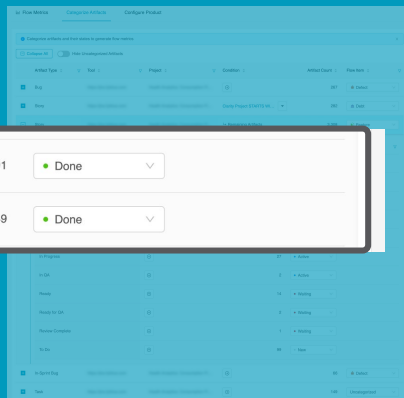
Artifact Type	Tool	Project	Condition	Artifact Count	Flow Item
Bug				267	Defect
Story			Clarity Project STARTS WI...	282	Debt
Story			Remaining Artifacts	3,308	Feature
State of Story (11)					
Blocked				0	Waiting
Cancelled				423	Uncategorized
Code Review				0	Active
Done				591	Waiting
Implemented				2,149	Done
In Progress				27	Active
In QA				2	Active
Ready				14	Waiting
Ready for QA				2	Waiting
Review Complete				1	Waiting
To Do				99	New
In-Sprint Bug				66	Defect
Task				149	Uncategorized

1. Hundreds of work items in progress, mostly features
2. Done doesn't mean done?

According to the work process, Done is a wait state, followed by Implemented. But the process isn't being followed, creating a measurement black hole between Done and Released, a suspected bottleneck.

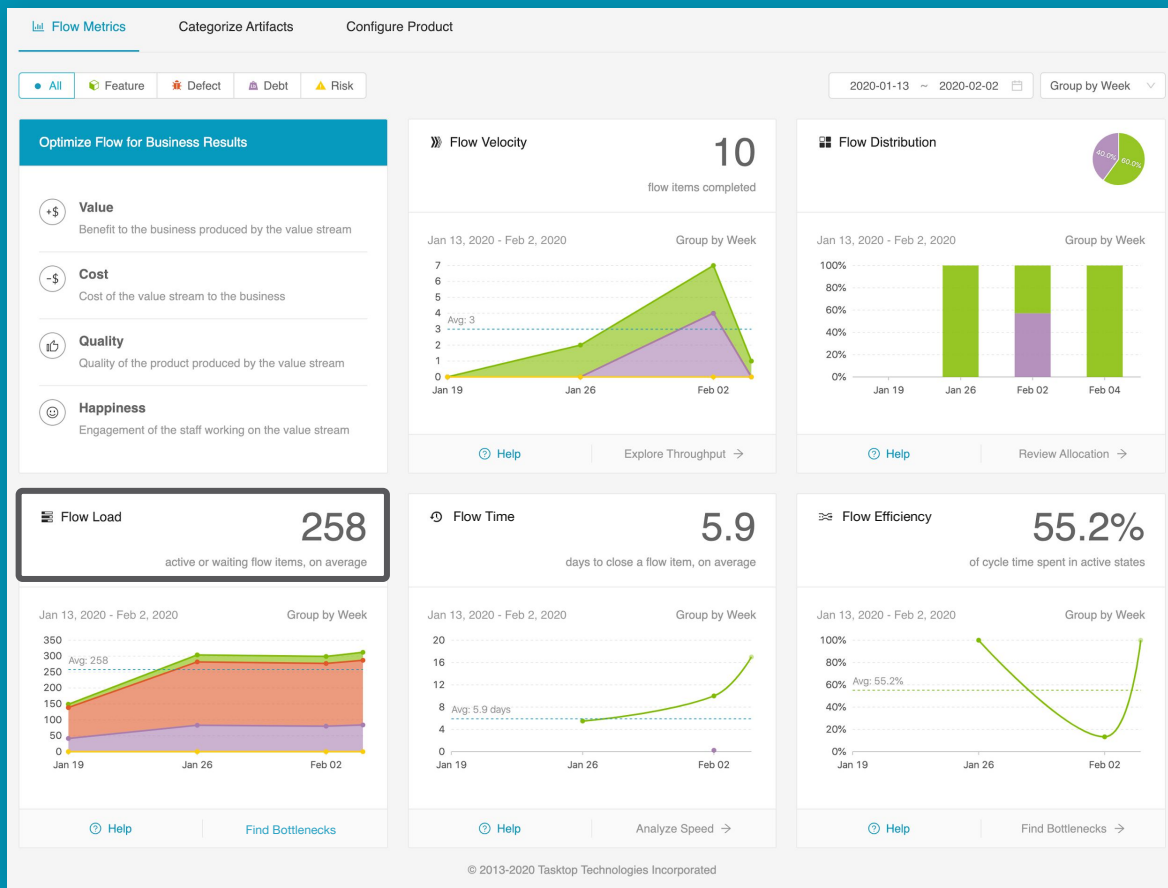


Done	591	Waiting
Implemented	2,149	Done

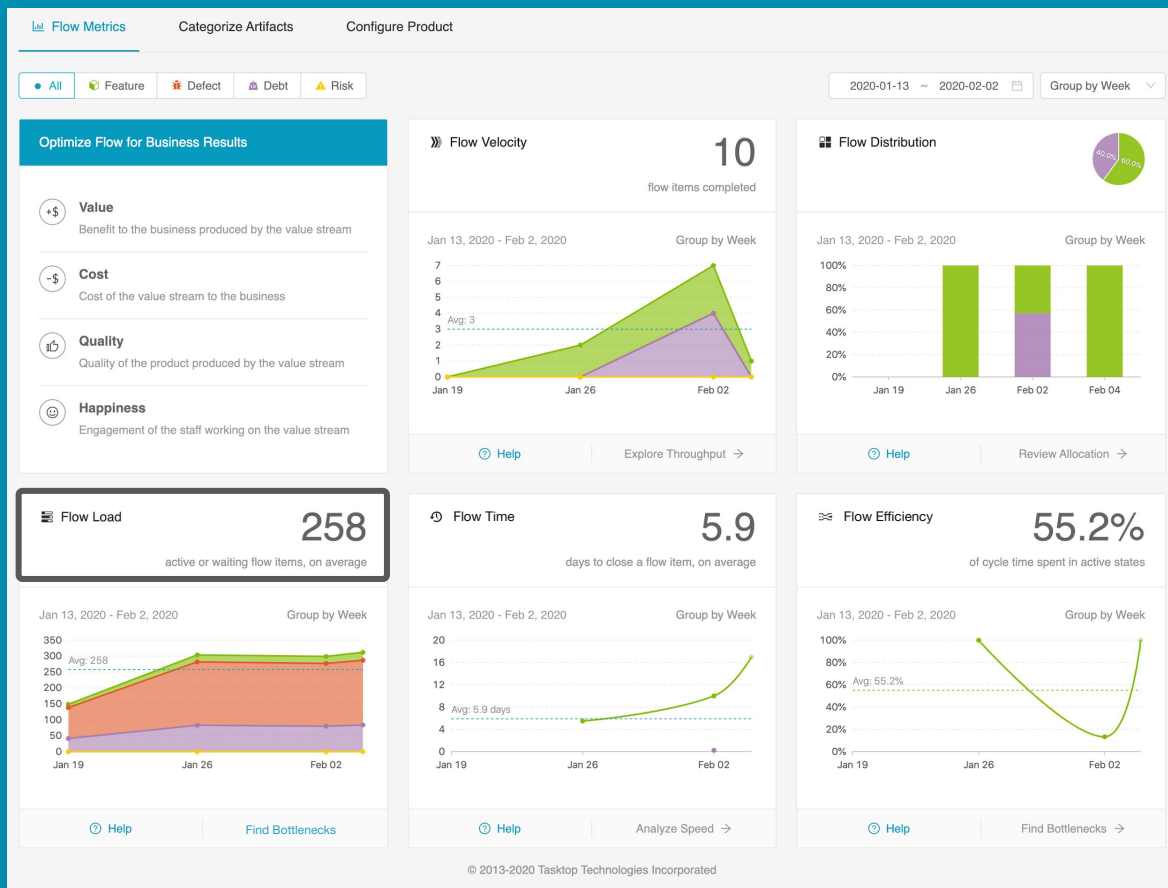


Done	591	Done
Implemented	2,149	Done

1. Hundreds of work items in progress, mostly features
2. Done doesn't mean done?
3. Changing the modeling allows you to do "what if" analysis and immediately tells a very different story



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4. "What if" clearly reveals that development is not where things are piling up



1. Hundreds of work items in progress, mostly features
2. Done doesn't mean done?
3. Changing the modeling allows you to do "what if" analysis and immediately tells a very different story
4. "What if" reveals it very clear that Development is not where things are piling up

.....

"This is amazing. I love this."

-- IT Product Manager

TASKTOP VIZ™

Implementing the Flow Framework®

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No favorites added yet

Groups (Portfolios) +

- 1. Cloud & Network Infrastructure (D)
- 2. IT Operating Services (D)
- 3. Central Service Assurance (ART)
- Insurance and Banking**
- Insurance Lines
- Platforms
- PVS's Undergoing SOC2
- RZ group 1
- SAFe Enterprise
- Wealth & Banking
- WF ALL Group
- WF CS Group

Products +

- 1 - NEW PVS
- 1 - WF - OC VS
- 1 - WF - SAFe Value Stream / Solution Train
- 1 - WF SAFe Value Stream 2
- 1 - WF Trade Group

Groups

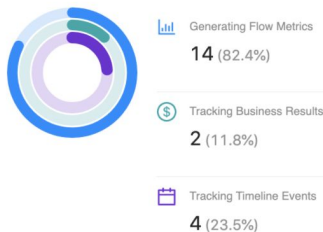
Insurance and Banking ☆

+ Add Product + Add Subgroup ...

Portfolio Insights Products (17)

Measuring Your Shift from Project to Product ?

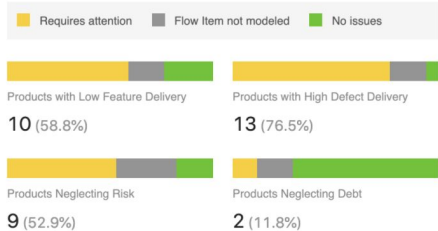
Based on Flow Metrics, Business Results, and Timeline Events



Last 90 days [See Details >](#)

Improve Your Product Management Discipline ?

Based on Flow Distribution and Flow Modeling



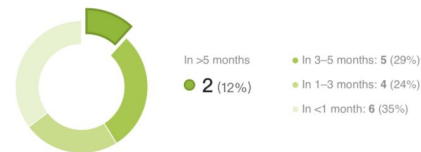
Last 90 days [See Details >](#)

Improve Agile Practice ?

Based on Flow Velocity, Flow Load and Flow Time



When will products have capacity for new work?



How many products may experience delays due to high load?

Flow Time expected to increase by at least 2x for these business processes



Last 90 days [See Details >](#)

Viz VSM Portfolio Insights

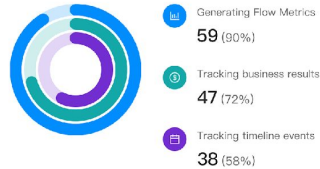
Focus your attention where it's needed most and harness exemplary value streams to mentor others

Drive Business Outcomes

- Which product teams are measuring business value flow?
- Which product teams are tracking the impact of technology on the business?
- Who is taking action to improve their flow and deliver better and faster?

Measuring Your Shift from Project to Product

Based on Flow Metrics, Business Results, and Timeline Events



Last 90 days

[See Details >](#)

Invest with Intent

- Which products are struggling to deliver new business capabilities?
- Who is inundated by quality issues?
- Where is there increased exposure to fines and breaches?
- Who will struggle to accelerate innovation?

Improve Your Product Management Discipline

Based on Flow Distribution and Flow Modeling



Last 90 days

[See Details >](#)

Measure True Business Agility

- Who is capable of rapid market response?
- Which products are “doing Agile” without truly being Agile?
- Where is work aging such that time-to-market is predicted to increase?
- When can product value streams take on new work?
- Which business processes will be impacted by longer Flow Times?

Improve Agile Practices

Based on Flow Velocity, Flow Load and Flow Time



How many products will experience delays due to high load?

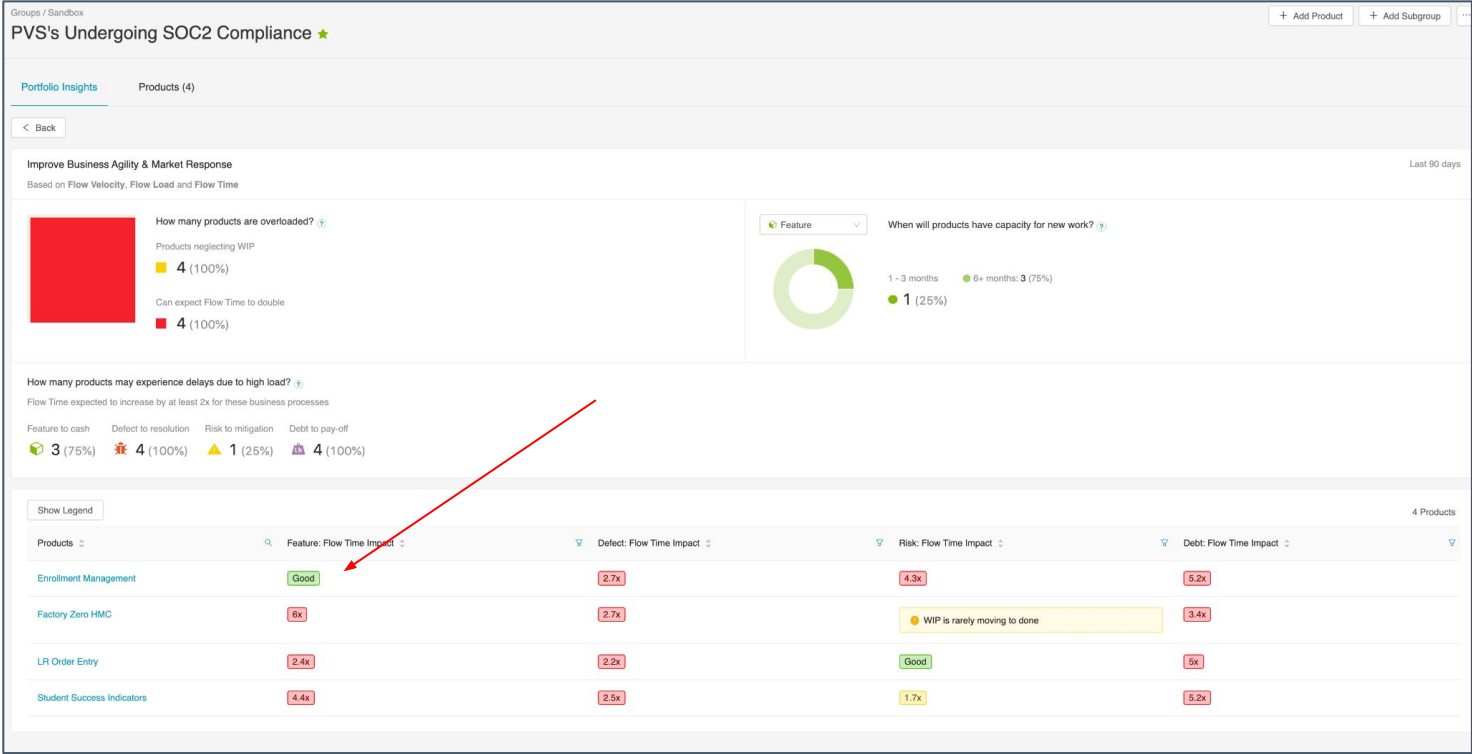
Flow Time expected to increase by at least 2x for these workflows



Last 90 days

[See Details >](#)

Portfolio Insights: Understanding Capacity based on Flow



Flow Metrics: Observability to Manage Healthy Transformations



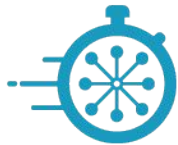
Prescriptive Metrics

Implements the Flow Framework® by the minds that created the Flow Framework



Turn key for rapid time-to-value

Out-of-the-box metrics dashboards for business users



Instant integrated visibility

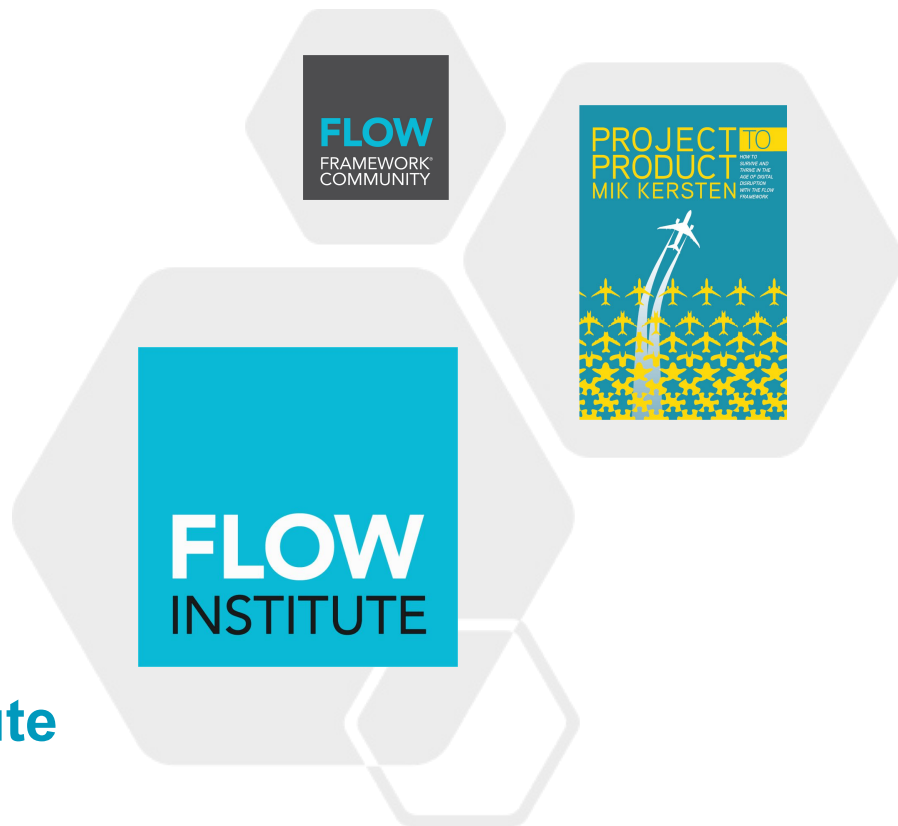
Flow Metrics that measure value from the end-to-end value stream

Start Learning with Flow Institute

Gain real-world, practical knowledge, skills and the latest thinking around Flow Metrics and VSM with:

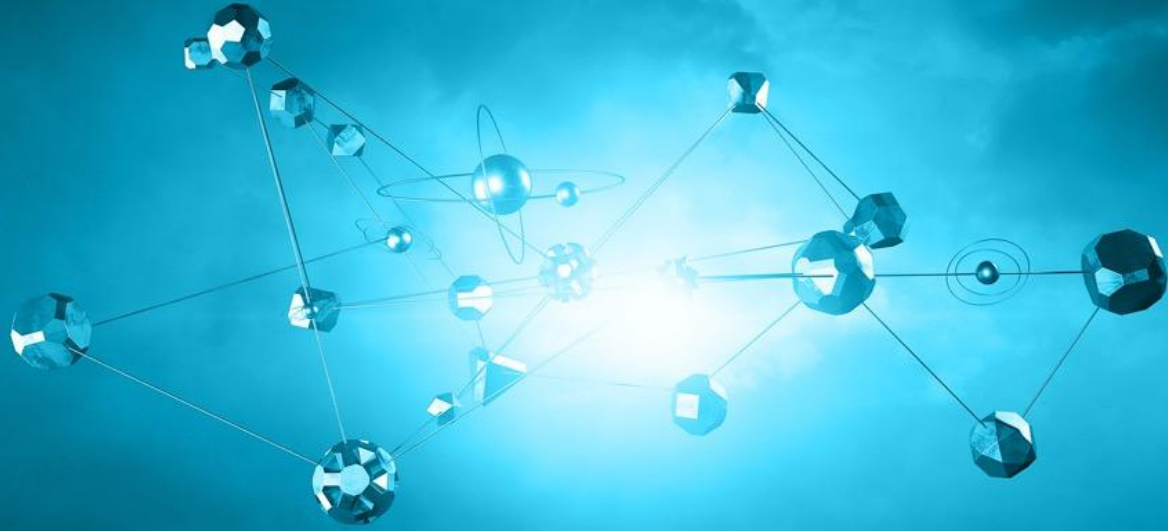
- On-demand courses
- Interactive workshops
- Executive roundtables
- Slack community

flowframework.org/flow-institute





Thank you!



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