TASKTOP®

e-book

Data-Driven Value Stream Management
Accelerate Your Market Response and Adaptability

"The most critical metric is how long it takes for an innovative idea to reach a customer. If it takes your company months, how can you compete with an organization that delivers in days?"

Adrian Cockcroft, Vice President of Cloud Architecture Strategy, Amazon Web Services[1]

1. Cloud for CEOs: Measure Innovation with one metric, AWS executive insights, Adrian Cockroft

I Introduction

In a digital-first climate, the role of IT leaders such as the Chief Information Officer (CIO) have never been more important. Yet delivering excellence has become much harder—especially in the Novel Economy where nothing is certain and where digital interaction dominates nearly all aspects of our living and working lives.

No longer responsible for "just" supporting efficient IT functionality for the business and their customers, CIOs must also deliver greater end-user experiences through innovative software products, with zero tolerance for outages or security breaches.

No easy task, especially as pressure and expectation from the business intensifies—89% of CIOs say they are more involved in leading digital transformation initiatives compared to their business counterparts, with 56% of the latter agreeing with that shift (up from 47% in 2019).[3]

Not that IT leaders are shying away from the challenge, far from it; many are taking proactive measures to respond faster to the market by adopting practices such as value stream management (VSM).

According to Gartner, "By 2023, 70% of organizations will use value stream management to improve flow in the DevOps pipeline, leading to faster delivery of customer value."[3]

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2. 2020 State of the CIO, IDG Communications, Inc.
3. Gartner, The Future of DevOps Toolchains will Involve Measuring Flow in IT Value Streams, Majunath Bhat, Daniel Betts, Hassan Enaciri, Chris Saunderson, Thomas Murphy, 14 Jan 2020

The progressively maturing practice takes a systematic approach to measuring and improving end-to-end flow that helps organizations to:

- Shorten time-to-market

- Increase throughput

- Improve product quality

- Optimize for business outcomes, such as increased revenue, customer retention and employee happiness

The rise of VSM is born out of the frustration that despite spending big on Agile, DevOps, the Scaled Agile Framework® (SAFe®) and other IT investments, most enterprises are still not adequately responsive or adaptive—only 16% can release more than once a month.[5] While the tech giants are pivoting as nimbly as jet skis, larger organizations can often feel like a cruise ship.

The question on the lips of many IT leaders is: Why am I not seeing the results I was promised?

One of the core reasons is that multi-year IT initiatives have not been governed by an agreed-upon set of outcome-based metrics and real-time visibility into the health of their value streams. And in cases where they do know what's holding them back, they don't have adequate data, analytics and visualizations to convince the business to sign off on funding and investment where it's needed.

That's where data-driven VSM comes in.

Read on to learn:

- What data-driven VSM is and why it matters

- How to continuously measure value streams to optimize flow

- How conversations around flow are enhancing collaboration between business and IT leaders

- How leading organizations are using real-time Flow Metrics to improve responsiveness and adaptability

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5. Forrester Digital Transformation Requires Development Transformation, Jeffery S,Hammon, Deigo Lo Guidice, and Christopher Condo, 13 December 2019

Value Stream Management in Software Delivery

> "A combination of people, process, and technology that maps, optimizes, measures, visualizes, and governs business value flow (including epics, stories, work items) through heterogeneous enterprise software delivery pipelines. Value stream management tools are the technology underpinnings of the VSM practice."
>
> - Elevate Agile-Plus-DevOps with Value Stream Management, Forrester Research, Inc., April 20, 2018

For many CIOs, the realization that they can't see and quantify how their investments are improving value flow is a "eureka!" moment. Abandoning a "hit and hope" mentality, they're applying a new business-oriented lens to the work their department does. They're becoming "value stream thinkers."

The term "value stream" was born of the Lean movement to describe the material and information flow to create value. A value stream is the sequence of activities an organization undertakes to deliver on a customer need. Customers may be external (customer-facing value streams) or internal (value-enabling value streams).

> "If you can't describe what you are doing as a value stream, you don't know what you're doing."
>
> - Karen Martin and Mike Osterling[6]
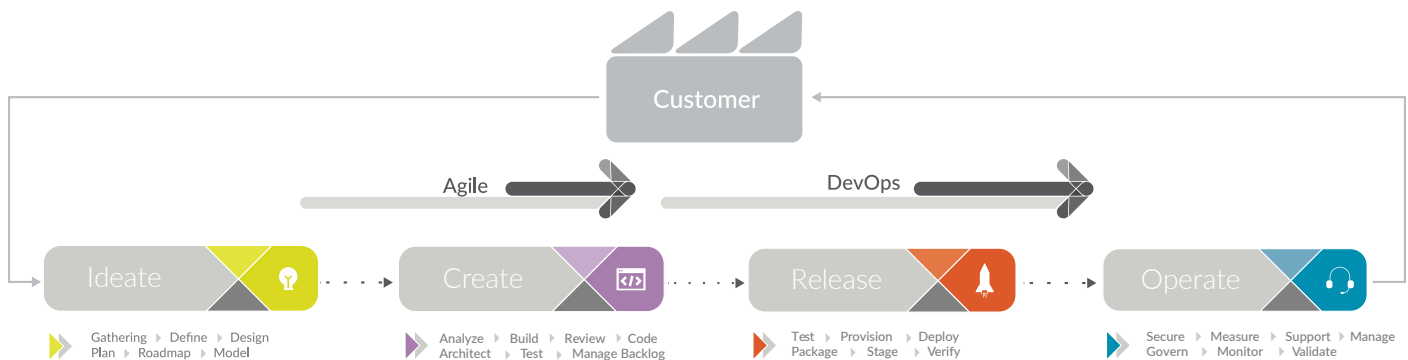
A value stream is the sequence of activities an organization undertakes to deliver on a customer request

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6 Karen Martin and Mike Osterling, Value Stream Mapping: How to Visualize Work and Align Leadership for Organizational Transformation (New York, NY: McGraw-Hill Education), Jan 2014

Software delivery organizations have a value stream for each product, application or service. Value stream thinking puts the customer at the center, which helps transition IT organizations from an internal, project- and cost-centric focus to a product operating model. That's why value streams are foundational in both the **Project to Product** movement and enterprise agility frameworks, like **SAFe**®.

Thinking in value streams enables you to zoom out of the technical details and take a macro look at business processes to identify strategic ways to improve them. Value stream thinkers ask: How can we provide greater and greater value to our customers—through innovation—while eliminating delays, improving quality and reducing cost, labor and employee frustration?

Here are some examples of product value streams:

Industry	Product Value Streams Examples	Customer
Financial Services	Regulatory Communications Delivery	External
Financial Services	DevOps Pipeline	Internal
Healthcare	Electronic Records Management System	External
Healthcare	Actuarial Reports	Internal
Financial Services	Trading Platform	Internal
Financial Services	Digital Trading Channels	External
Telecom	Digital Retail	External
Telecom	Supply Chain Logistics	Internal
Pharma and Healthcare	Telehealth	External
Pharma and Healthcare	Clinical Support System	Internal

▌ What Flows Through a Software Delivery Value Stream?

> **"Lean thinking starts not with the product, but with the value the customer pulls."**
>
> Dr. Mik Kersten, *Project to Product*[7]

Value is something for which customers are willing to exchange an economic unit (time or money). The units of value that flow through the software value stream are called "flow items." All the work, across all the people and teams within a value stream should be applied to the creation and, crucially, the protection of value.

The simplest example of a flow item is a feature that delivers a new product capability, as customers will clearly pay for it if they need it or are delighted by it. Fixes for defects that impaired product usage is another clear example of a flow item. Meanwhile, risk and debt items focus on work that safeguards against security vulnerabilities and threats to current and future performance.

Flow Items

Flow Items	Delivers	Pulled By	Description	Examples
📦 Features	New business value	Customers	New value added to drive a business result; visible to the customer	Features, User stories, Requirements
🐞 Defects	Quality	Customers	Fixes for quality problems that affect the customer experience	Bugs, Problems, Incidents
⚠ Risks	Security, governance, compliance	Security and risk officers	Work to address security, privacy and compliance exposures	Vulnerability fixes, Regulatory requirements
🅱 Debts	Removal of impediments to future delivery	Architects	Improvement of software architecture, operational architecture or ways of working	Tech debt, Upgrades, Process change

From Dr. Mik Kersten's the Flow Framework® and his bestselling book *Project to Product*

▶ **An organization's focus must be on prioritizing, optimizing and balancing the flow of these items across your software portfolio. For that, you need the right type of measurement.**

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7 Dr. Mik Kersten, *Project to Product*: How to Survive and Thrive in the Age of Digital Disruption with The Flow Framework (OR, Portland: IT Revolution, 2018)

How Do You Measure Intangible Work?

> "There is nothing so useless as doing efficiently that which should not be done at all."
>
> — Peter F. Drucker[8]

When you compare traditional lean manufacturing (such as car production) with software product development, the distinct differences between the two processes—and how you measure them—quickly become clear.
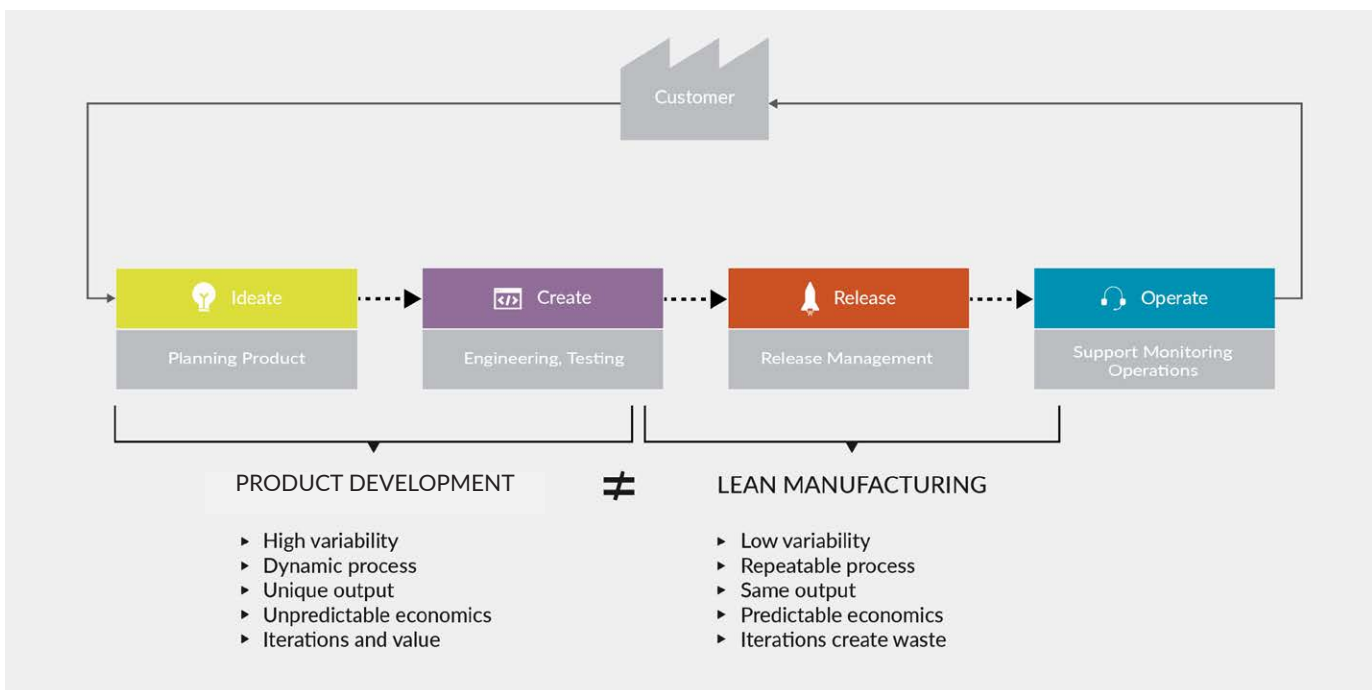

While the software delivery process may seem linear and repeatable, in reality it's an iterative creative process of software design with high variability, unique output and unpredictable economics. Work moves back and forth between contributors as it progresses through each phase, morphing, changing and converging in a highly complex process.

For example, during the release process, additional testing is executed (security, static/dynamic analysis), and if issues are found during that stage, work will go back to engineering. In another common example, while breaking down the feature in the implementation process, a glaring omission in user experience (UX) is found, and work will go back to feature design.

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8 Bob Hartman, "Peter Drucker understood agile leadership and agility before it event existed", November 2016

VALUE STREAM MANAGEMENT
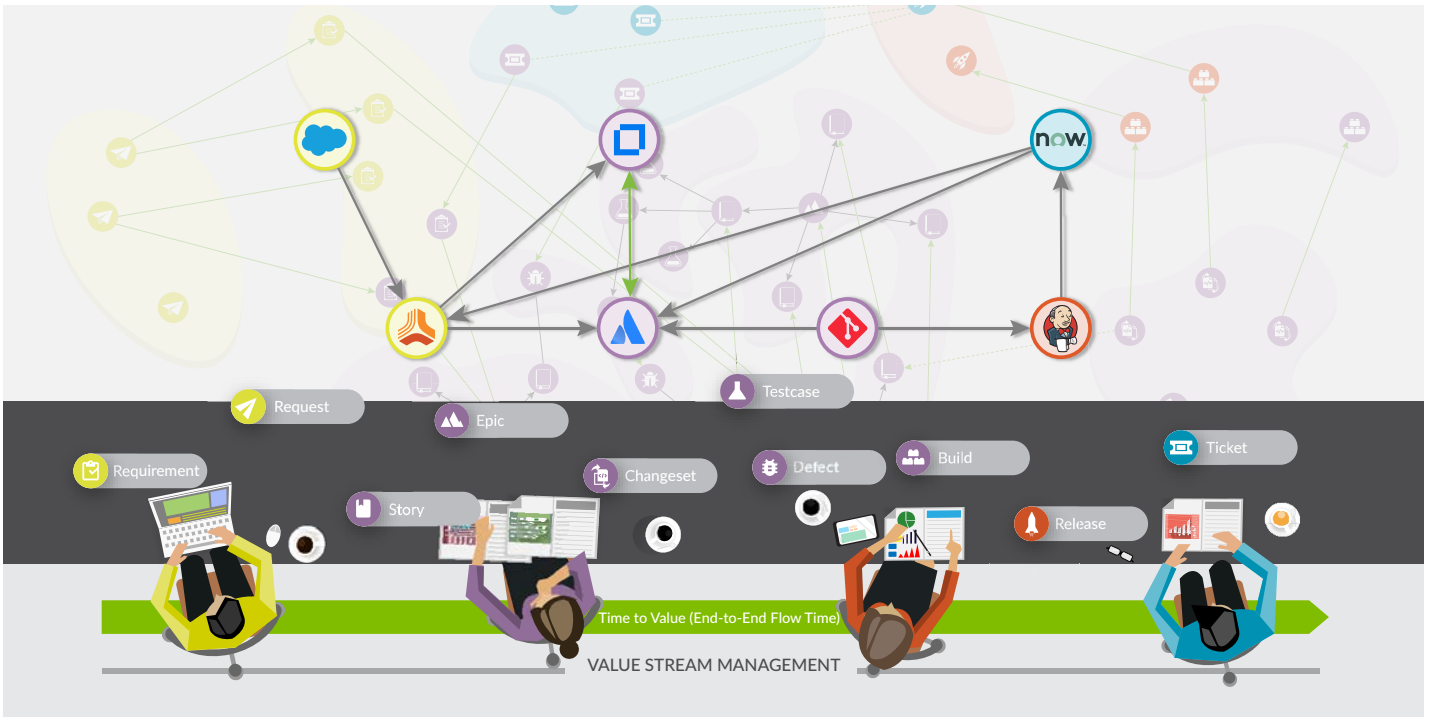
This network of activity takes place in many best-of-breed and specialized tools that have grown through the Agile and DevOps movements. Yet IT leadership understandably struggles to make sense of all that complicated activity—to see it clearly and to extract insight from it for meaningful discussions with their business counterparts—because software delivery is intangible work. It's complex and highly-technical knowledge work lives in the spiraling network of specialized tools, often used by tens of thousands of IT practitioners. How do you improve what you can't see?

Previously, Lean practices like value stream mapping has helped management and teams to analyze the efficiency of the activities that deliver customer value. The process allows them to map how work flows to better understand their current and desired future state effort. Yet once-a-year value stream mapping exercises are a paper and pen affair that is detached from the reality of continuously evolving software delivery work. And, the learnings don't provide the real-time feedback required to make rapid-fire decisions at an exec-level. Moreover, increased remote work adds to the complications of arranging such a time and cost-intensive physical undertaking.

Without this type of visibility, key questions are posed such as:

- How fast are you capable of delivering critical business capabilities?
- How do you know if you can potentially deliver 90% faster?
- How can technologists and business stakeholders get together to connect business strategy to software-driven digital assets?

> The answer is mining the ground truth from the enterprise toolchains from ideation to operation and knitting the data together to get actionable real-time visibility into the end-to-end flow of work that creates and protects business value.

Flow Metrics: Measuring the Rate of Value Delivery

> "Smart AD&D leaders know they can't improve their processes without data. VSM gives them the data they need to create baselines of current software delivery practices and set a path for improvement across each role of the AD&D organization."
>
> - The Forrester Wave™: Value Stream Management Solutions, Q3 2020

Unlike discipline metrics that focus on activities in a specific area of the value stream (such as **DevOps Research and Assessment (DORA))**, VSM requires end-to-end metrics that levitate above all practices and processes to focus on the flow of business value. Discipline metrics that measure a specific silo are only meaningful if the silo itself is the bottleneck.

While DORA's four metrics—Lead Time (from code commit to deploy), Deployment Frequency, Mean Time To Restore (MTTR) and Change Failure Rate— have set the gold standard for operational efficiency for releasing new code, they are not sufficient on their own. While you must become more proficient at releasing code rapidly, securely and confidently, they are now table stakes across the industry. Your organization will remain competitive only if it can deliver business value—not code changes—at an ever-increasing clip.

By the same token, we must all be cautious of only using Agile metrics like sprints completed, story points and t-shirt sizing, or the ceremonies and certifications associated with SAFe®; they only mean something if you can correlate such activities and processes with business outcomes. That's why VSM metrics—known as **Flow Metrics**—are so significant. They measure the rate of business value delivery for software products through the lens of your customers (whether internal or external) enable you to understand your current state.

These outcome-based metrics abstract away details like team structure, technical architecture and tool implementations to create a clear set of metrics that can be shared by both IT and business leaders. They hone in on business value, namely how much business value you are delivering today, and where you can invest your dollars and talent to deliver more value faster tomorrow.

This common language around flow enhances collaboration between leadership to help them make critical business decisions around priorities and trade-offs. Instead of stories and intuition, dreams and hopes, leaders have access to the truth of what is really going on. If a Line of Business wants that shiny new feature sooner, they will understand that it will come at a cost. Future features may take longer, due to the accumulation of technical debt.

The Flow Framework® presents the Flow Metrics and Flow Distribution to measure individual product value streams and product portfolios:

Flow Metrics and Flow Distribution		
	Flow Velocity	Is value delivery accelerating?
	Flow Efficiency	Is waste decreasing in our processes?
	Flow Time	Is time-to-market getting shorter?
	Flow Load	Are we balancing demand vs. capacity to ensure future productivity?
	Flow Distribution	Are we investing in both business value generation and business value protection?

Don't Wait Months For Answers:
Get Answers Today

There may be some temptation to build your own Flow Metrics from a data lake, however, bear in mind that a homegrown approach can take many months or years to produce, for the sheer effort of culling, normalizing, selecting and visualizing the right data.

Add to that the cost of data replication and storage, the expertise one must develop on each tool's APIs and data schemas, the care you must take to prevent bad queries from impacting tool performance, and the break/fix work following every tool upgrade. Many enterprises have found that even after all that time and effort, they couldn't use any of the data.

Just as you would not build your own Enterprise Agile Planning tool — your own Atlassian Jira from scratch — you should not be building your own Flow Metrics tool. You simple do not have time; your digital-savvy competitors already have the right data to continuously improve and pull further away from the pack. **The cost of delay increases by the day**.
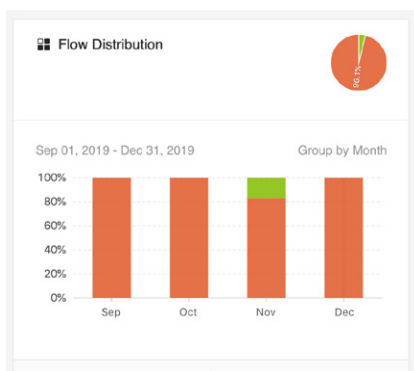
To be truly meaningful and impactful — and to drive true business agility — metrics must be retrieved fast and in real-time. As **the Forrester Wave™: Value Stream Management Solutions, Q3 2020** report recommends:

"Provide useful and extensible OOTB metrics to create a system of visibility. AD&D leaders often need a crystal ball to predict software delivery dates and discern process trends, but that's not good enough anymore. Look for VSM tools with out-of-the-box (OOTB) metrics that inform leaders on velocity, capacity, types of work being processed, and work in progress to enable leaders to create baselines and determine how well they are executing against plan."

Consider this: if your competitors already have flow insights to help them innovate faster, can you really afford to wait?

▌Shifting Gears with Flow Metrics

## Exposing the Outsourcing Black Hole

Using Flow Metrics, <u>one wireless carrier</u> was able to make strategic decisions on outsourcing to change the way they were spending tens of millions of dollars with suppliers.

Using Flow Distribution, they were able to see a crippling lack of visibility into the productivity of a managed service partner who carried out development and testing work for the company. Reviewing the distribution of work over a three-month period, it appeared like only defects were being delivered. Yet at the same time, Flow Load (a measure of work-in-progress) showed many, many features in flight. Where was the disconnect?

The analysis confirmed what they had always suspected — but seeing is believing —that outsourced work was a black hole. **The findings provided the catalyst to take action to resolve the issue. They adjusted the Jira implementation to better capture the flow of work through the value stream to highlight wait states impacting Flow Velocity.**

When Defects Aren't Actually Defects
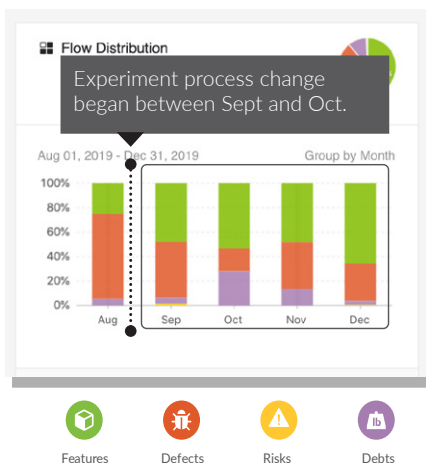

Flow Distribution, Aug–Dec 2019

A small IT team at a leading <u>U.S. healthcare company</u> was facing a battle on two fronts. While the business was complaining that feature delivery was too slow, their developers were either drowning in unplanned work or blocked because they were waiting on input or approval from the business.

The company turned to Tasktop and Flow Metrics to better understand where work was slowing down. They sought clear data visualizations to show leadership and peers where investment was needed to go faster.

During their flow analysis, they identified a key insight. Their Flow Distribution, which shows the ratio of business value creation work vs. business value protection in a given time period, showed high levels of defect work (shown in red on the graph). Nearly 70% of what this value stream delivered was defect and support work, with only 25% on features (in green).

Further digging found that most of the tickets were not actually software defects, rather a misunderstanding of new capabilities that could be resolved through conversations. However, this overhead was consuming a lot of team bandwidth and slowing down their ability to develop new business value-adding features.

They created a simple experiment whereby they would unveil new features once every four weeks coupled with proper training and communication. **The result of this simple process change was that 95% of the tickets were eliminated, valuable development time was recovered and feature velocity improved significantly; instead of 80% defect work,**
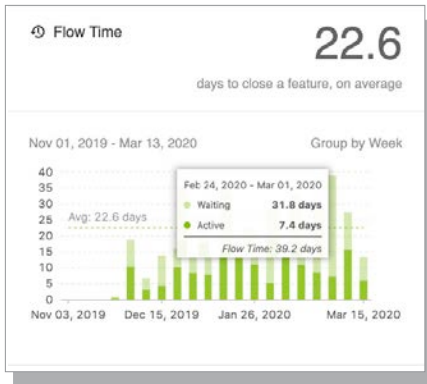
they got 80% feature work. These results were shared with other product value streams who soon adopted the same release schedule to similarly favourable results.

The Hidden Costs of Tech Debt

One investment giant sought to improve time-to-market across its digital channels to prevent a mass exodus of customers to startups and unicorns. The company needed to know which investments in people, process and technology would help them go faster. The IT teams also wanted clear data visualization to share with leadership and peers to advocate for those investments.

By analyzing the Flow Time of their feature delivery across two product value streams (including one for web and mobile), they discovered that on average, a
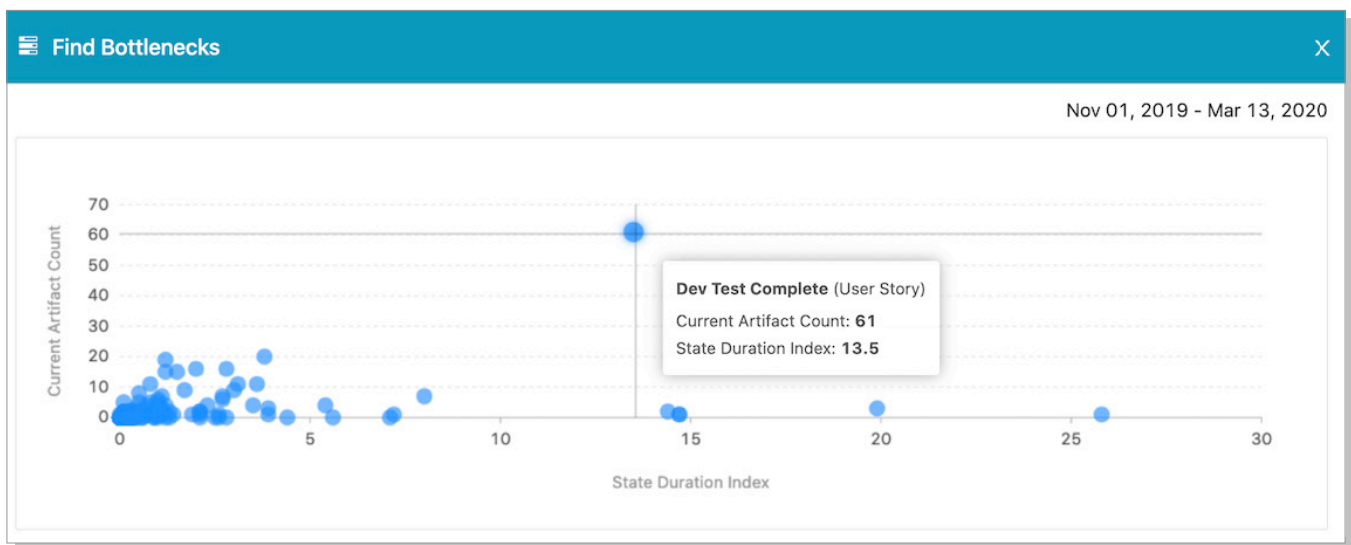
story (for a product feature) would take 22 days to complete — and in some cases up to 40 days, with work waiting in the value stream for up to 80% of that time. Tasktop Viz's Bottleneck Finder showed that work was being held up between development testing and QA testing.

Further investigation found that all these stories were involved in the Core Backend Services project, implicating a legacy component that most operations and transactions (including those on digital channels) had to go through. Due to high volumes of tech debt, Core Backend Services did not support self-service testing environments. Flow Distribution revealed the extent of the neglected tech debt, indicating that it was likely a contributing factor to the high distribution of defect work.

Product Managers were able to share the data with leadership to illustrate how their ability to compete was being crippled by the painful legacy component. **Using the Flow Metrics data, they were able to make a strong case for investing in automated testing for the next wave of digital channel features**. In the immediate term, they were able to plan around the constraint to shorten time-to-market for the new features by increasing the frequency of meetups between product managers, dev leaders and QA leaders to resolve conflicting priorities for the Core Backend Services team and ensure QA was better prepared to test new capabilities.
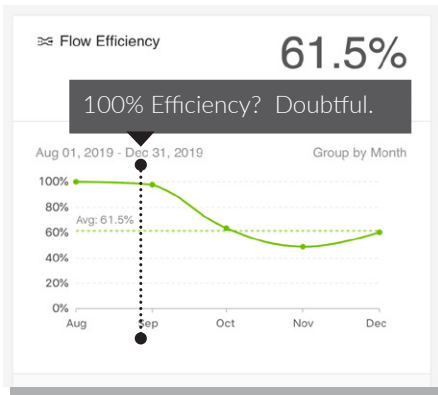
Flow Efficiency, Aug–Dec 2019

Hire More Business Analysts, Not Developers

One of the knee-jerk, go-to-solutions for poor feature velocity is hiring more developers. Yet a U.S. healthcare organization was able to use Flow Metrics to make the data-driven case for hiring more business analysts instead of expanding the development team.

Initially, the Flow Efficiency metric for feature work was 100%. The interpretation of 100% for efficiency is that feature work is never blocked and never waiting — not once — as it makes it from ideation to operation. That was intuitively wrong.

This unrealistic reading was an alarm bell: It meant that this product value stream had invisible wait states that weren't currently being captured or measured. Without visibility into those wait states and where work was slowing down, they could not identify how to go faster.

The data made the case for adding additional states to the development tool to more accurately reflect workflow. Once implemented, the Flow Efficiency metric was adjusted to show lower efficiency, around 60%. **The work was found to be waiting for business analysts, not for developers. These findings were taken to the CIO, who immediately approved the hiring of additional business analysts, knowing that this would clear the impediment to faster feature delivery**.

Pure Play VSM: A New Way to Accelerate Market Response

Accelerating time-to-market through software product value streams requires big data, analytics and integration capabilities for which individual work management tools simply were not built. And while it's feasible to build your own custom metrics and integrations, it's nearly impossible to keep up with a living and breathing toolchain, supporting product portfolios that are constantly evolving.

In the Forrester Wave™: Value Stream Management Solutions, Q3 2020 report, Chris Condo, the report's author, makes a useful distinction between vendor offerings. Some vendors offer VSM bundled with their existing tools, which Chris calls an **all-in-one approach**. Other vendors offer **stand-alone VSM solutions** that integrate with an existing toolchain:

- **Standalone VSM:** The vendor provides a VSM solution that is independent of any stakeholder tool. The benefit here is support for tool choice, heterogeneity and rapid time to value in deploying on existing toolchains.

- **Integrated VSM:** The vendor provides a VSM solution that builds on one or more of the stakeholder tools that they provide (e.g., an Agile development tool). The benefit here is tight integration with that stakeholder's tools.

From an ROI point of view, IT leaders should consider a pure play, standalone VSM platform that can sit on top of the existing Agile and DevOps tools where the work gets done. By being decoupled from the tools, you benefit from rapid time to value, as you don't use the VSM platform for actual software development and delivery work (which could require lengthy onboarding and training). Instead, your VSM tool can levitate about the end-to-end value stream to map and measure the flow across it.
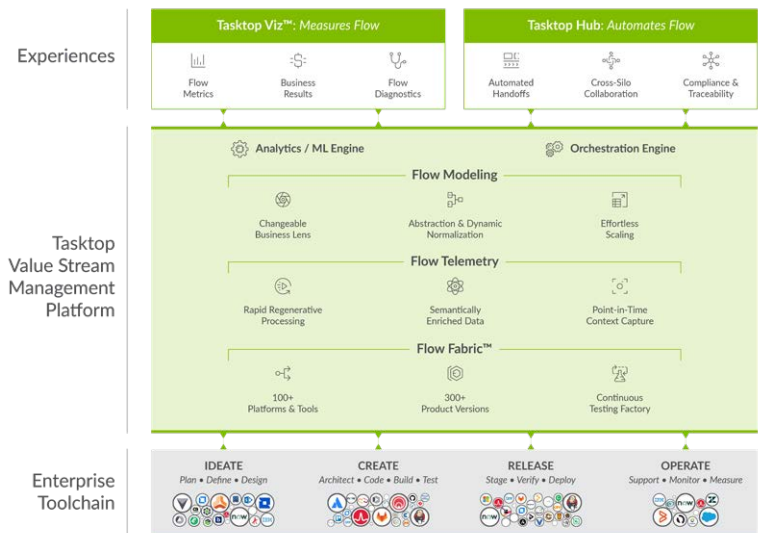
Value Stream

Pure Play with Tasktop

The Tasktop Value Stream Management Platform plugs into your organization and sits on top of the tools you've chosen to get work done. With just a few clicks, it overlays the end-to-end value stream to provide the abstractions, automations, visualizations and diagnostics you need to practice value stream management on a daily basis.

Tasktop gives you everything you need to align IT with business goals. Our VSM platform helps with every step, from connecting your teams to identifying bottlenecks and course-correcting.

Data-driven Analysis of Your Value Stream, Any Time, Any Place

> "Detached from rigorous analysis, intuition is a fickle and undependable guide — it is as likely to lead to disaster as to success"
>
> -Eric Bonabeau, leading expert in complex systems and distributed adaptive problem solving[10]

In an increasingly remote world, it's crucial to be able to easily access and discuss Flow Metrics where ever you and your team are. With access to this real-time objective data from tools like Tasktop Viz™, you can kickstart impactful discussions with your software delivery organization and business counterparts to identify your bottlenecks and next steps.

Whatever the issue, you can bring the right group of experts "into the room" to run a diagnosis and find a solution to what's slowing you down. No more theories, wishful thinking or rolls of the dice; your teams have the truth to carry out data-driven investigation that will fix issues faster. And, crucially, help cultivate a stronger culture of collaboration and continuous learning between business and IT to supercharge your responsiveness and adaptability.

Kick-start Your VSM Journey

Contact us today for a VSM workshop to:

- Identify and measure value and protection in software products
- Analyze a baseline of software delivery performance using Flow Metrics
- Pinpoint bottlenecks, reduce waste and improve velocity

About Tasktop

Tasktop catalyzes the shift from Project to Product for global enterprises and governments, enabling them to thrive in the Age of Software. Leveraging the Flow Framework® to create customer-centric value streams and measure end-to-end business outcomes, Tasktop's products close the feedback loop between the business and IT by automatically connecting toolchains and accelerating the flow of business value across the software product portfolio.

Discover More