Insights
by Broadcom

Evolving from Standard DORA Metrics to Enterprise DORA Metrics

for Everyone in Value Stream Management

Introduction

DORA metrics are a ubiquitous measure of DevOps performance that are used by practically all enterprises engaging in software development. These metrics are used in a variety of different ways, such as measuring DevOps maturity (relative to published benchmarks), identifying bottlenecks, and driving quality and process improvements.

Despite the popularity, we find that DORA metrics are generally considered difficult to measure, and are primarily used by technical teams (such as development and operations teams) in the context of their respective teams (or components).

With the profusion of DevOps tools that feed data for the DORA metrics—and with different teams across the enterprise using a variety of different tools of their choice—it is increasingly challenging to consolidate such data across teams (and components) in a consistent manner to create enterprise views of DORA metrics spanning thousands of teams, hundreds of products, and higher level portfolios and divisions. This process of data aggregation is typically manual, time-consuming and erroneous, and the data is often out of date by the time it is compiled.

For example, one of our delivery partners reported that a large financial services organization invested about 50 resources for two years to build an in-house DORA metrics collection and reporting system across hundreds of applications. This is a significant investment that indicates not only the value of enterprise DORA metrics, but also the difficulty of implementing them.

Note that most enterprises do not rely on DORA metrics alone. They also need to measure and track a variety of other metrics (such as Agile and Flow metrics) that combined provide a holistic measure of the health of a software product value stream.

This means that such metrics are typically used for driving local optimization (in teams or products) rather than driving global optimization across product value streams, portfolios, and divisions. This lack of effective measurement at scale can lead to misleading conclusions. In turn, organizations will take action based on isolated data that may optimize these individual silos, but risks doing so at the expense of the holistic value stream.

Further, senior managers and executives (who oversee these portfolios and divisions) typically find it difficult to interpret metrics such as DORA and Flow in the context of their business needs and outcomes—especially for non-"digital born" organizations. However, with organizations increasingly transforming themselves into digital enterprises—and becoming producers of software—the ability to measure and track DORA metrics at scale and with ease is vital—especially for senior executives. Years of DORA research have indicated that organizations with high DORA maturity are 2X more likely to exceed profitability, market share and productivity goals, and have achieved 50% higher market cap growth over 3 years (compared to less mature organizations).

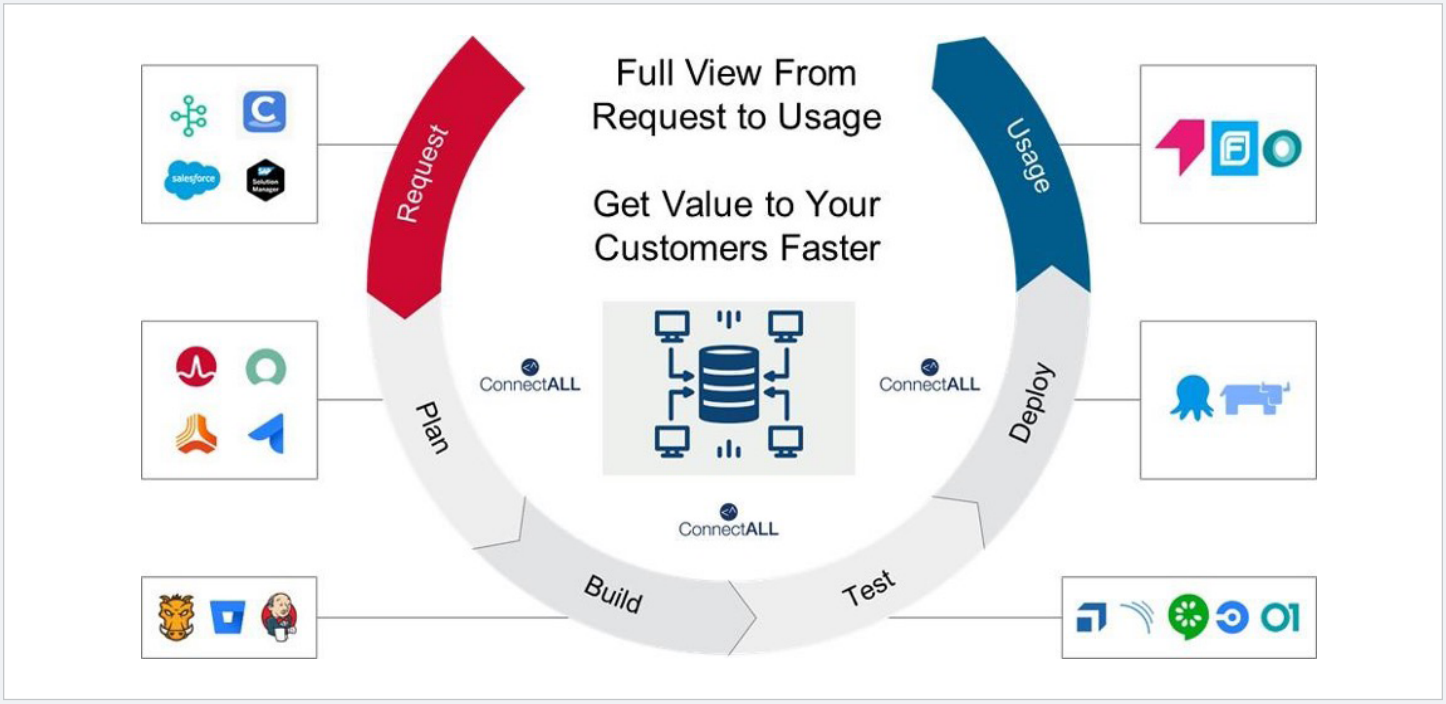
In addition, there is a need to help such organizations to easily interpret DORA metrics in the context of their business needs, so that they can drive better business outcomes—not just technical maturity.

In this blog, we will discuss how we have implemented DORA metrics in the ValueOps Insights product to address all of these challenges—measurement and tracking at scale, automated correlation with other metrics, as well as their interpretation in the context of business needs in correlation.

The ValueOps Insights Introduction

ValueOps Insights is an analytics solution that aligns the enterprise by measuring and improving the performance of their digital value streams resulting in better business outcomes.

A key goal for ValueOps Insights is to provide increased visibility into product value stream performance (such as DORA metrics) for all the stakeholders involved—from engineers up to executives—and to make it easy to collect, normalize, correlate and analyze the data from multiple processes and data sources across the product value stream—from strategy to operations (see Figure below). It does so by aggregating data from these sources (using ValueOps ConnectALL adapters and other techniques) into a centralized data warehouse on top of which analytics and visualizations are built.



The ValueOps Insights Approach to Enterprise DORA Metrics for All

DORA metrics today are primarily consumed by technical (i.e. DevOps) folks who generate these metrics for their respective teams. ValueOps Insights democratizes access to DORA metrics so that senior leaders and executives can also benefit from these metrics by automatically synthesizing the data for them at the appropriate levels.

Six Key Reasons Why Enterprise DORA Metrics Are Essential for Improving Business Outcomes

01

Standardized Information Model for DORA Metrics

As mentioned before, DORA metrics are not only difficult to measure, but are also specific to the CI/CD tools being used. This makes it difficult to aggregate DORA metrics across teams (that use different toolsets). ValueOps Insights defines a standard information model for DORA (and other metrics) into which data from a variety of CI/CD tools can be mapped and normalized to enable easier aggregation and synthesis. Use of ValueOps ConnectALL adapters enable this mapping and normalization out-of-box in a scalable manner.

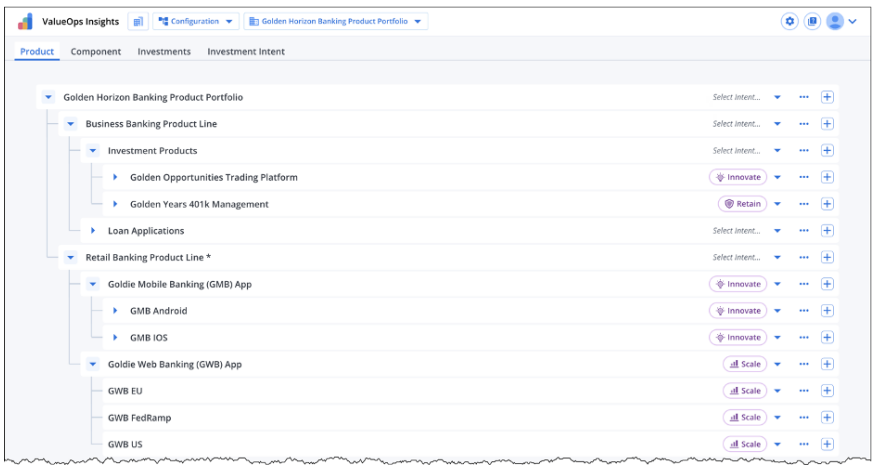
02

Shifting to a Product-Centric Mindset

As mentioned before, most tools compute DORA metrics at the team level by collecting data from their Continuous Integration (CI)/Continuous Delivery (CD) pipelines. This is very specific to the CI/CD (and other tools) being used by the team. This works well for localized measurements within teams, but not easily scaled across teams that use different sets of CI/CD tools.

Our approach is to complement these localized measurements by shifting the focus to measurements around long lived tangible digital assets that are key to generating value from digital transformation—i.e. products and their underlying components—regardless of which teams are involved in their development, and the underlying tools they are using. This is key for supporting the project to product orientation typical in digital transformation initiatives.

We provide the ability to define a product hierarchy (see Figure below)—with components at the lowest level and rolling up to products, product lines, product portfolios, product divisions, and so on, all the way to the enterprise level. We also provide the ability to map Products to teams (and investments, more on that later) so that DORA metrics can be aggregated at different levels of the product hierarchy.



03

Democratization of DORA Metrics

As mentioned before, DORA metrics are typically measured and used by teams using data from their respective CI/CD tools. By aggregating this data up and down the product hierarchy, ValueOps insights allows different personas tied to the hierarchy to view and analyze DORA metrics appropriate to their level. For example, product teams view DORA metrics for the specific components they own, a Product Manager (or Product Owner) views the metrics for the specific product (that spans a set of components), and a Portfolio manager views the metrics for the specific portfolio (that spans a set of products), and so on. At each level, the persona is also able to progressively drill down into the metrics at successive levels below.

This automated aggregation and reporting eliminates the problem of having to manually consolidate, normalize and reconcile data across teams/tool-sets, which is typically a laborious and error-prone process. But more importantly, it democratizes access to the DORA metrics data for everyone in the organization—from executives to engineers, enabling automated visibility and transparency into organizational maturity. This makes it easier to identify and address opportunities for improvement at all levels—beyond just the team. For example, it helps to identify systemic issues at the enterprise or portfolio level (across products) that can be addressed at broader levels to drive performance optimization.

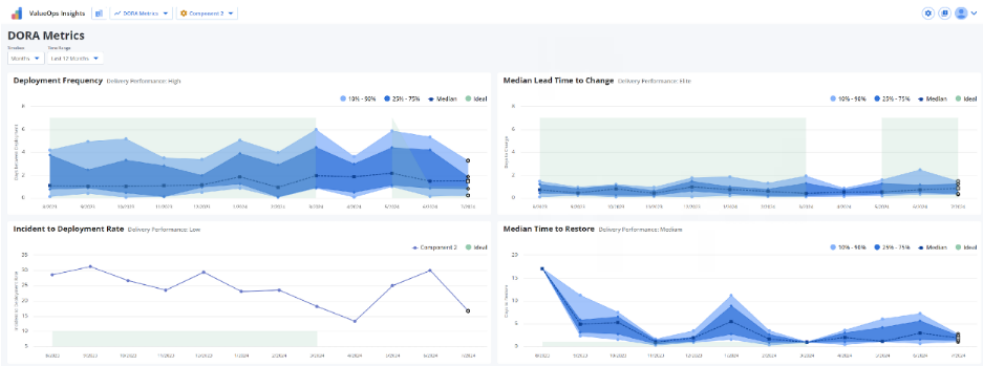
04

A Better Understanding of Process Maturity at Different Levels

As mentioned before, measurement and tracking of DORA metrics at the team level allows them to drive local process optimizations. Metrics visibility at higher levels allows organizations to identify and drive improvements more broadly, for example across portfolios or even entire divisions.

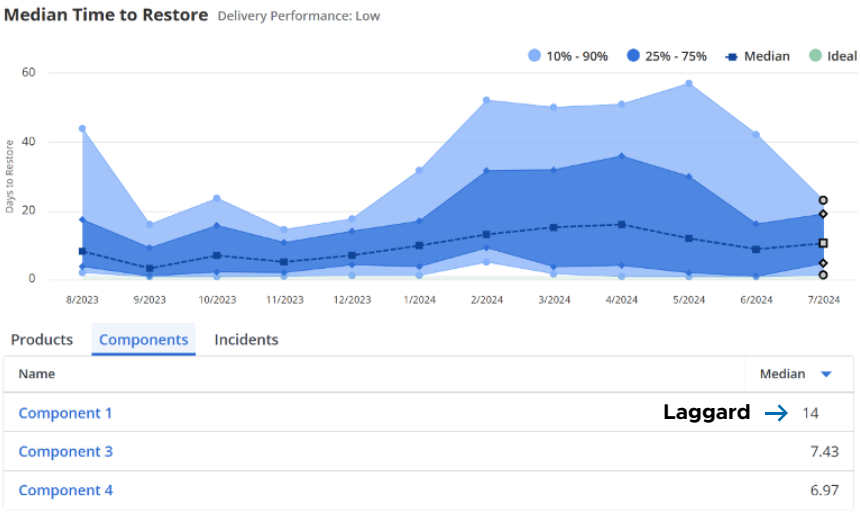
At each level, the stakeholder is able to understand the maturity of the underlying DevOps processes based on the industry standard DORA benchmarks (e.g. Elite, High, Medium, Low).

Each of the DORA metrics charts in Insights also provides additional analytics (see Figure below) that can be used to drive process improvements, including:



(a) Statistical variance in metrics data. In addition to the median trends for each metric, we also provide indicators for data that lie within the 10-90 percentile and 25-75 percentile ranges. This helps customers understand the level of control over the underlying process and the trend over time. A “wide” band suggests less control, while a narrow band suggests greater control and predictability in performance. Improving both the median performance while narrowing the variance are both important in the context of process improvements.

(b) Analysis of the outliers, laggards and leaders. Each chart identifies the best and worst performing contributors. This helps us with identification of candidates for harvesting of best practices (leaders) and recognizing any candidates that need help (the laggards), see Figure below.



(c) Insights will shortly support additional analysis on cycle time, which is one of the top metrics most customers want to improve. This will help to break down cycle time into individual processes (and their lead times) to help identify bottlenecks. It will also identify the frequency of underlying processes that will further aid process improvements. For example, a process that incurs a smaller overhead, but occurs more frequently is probably a better candidate for improvement compared to a process that has a larger overhead, but occurs infrequently. More to follow on this at a later time.

05

Alignment Based on Business Context and Outcome

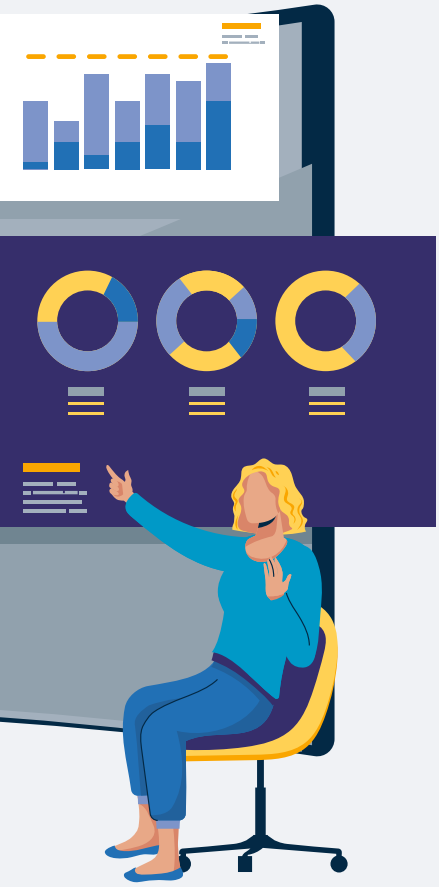
The DORA benchmarks provide a “one size fits all” type of maturity rating regardless of the business context. Our view is that DORA metrics targets should be based on the intended business outcomes tied to the investments made in the respective products (and portfolios), because we believe that targets require some level of nuance based on business context. As an example, a new product that requires rapid changes should be targeting a higher deployment frequency than a more established product that favors stability.

We see the following types of primary investment intents (or outcomes) for software products:

(a) Innovation: the primary goal of Innovation products is to drive rapid growth of revenue and customer acquisition

(b) Scale: the primary goal of Scale products is to achieve a balanced growth of revenue and profit

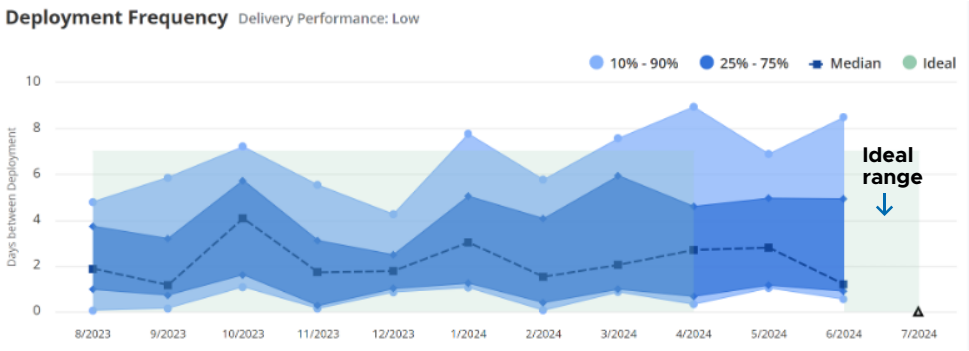
(c) Retain/Sustain: the primary goal of such products is to maximize profit while maintaining stable revenue



These outcomes may be translated to software engineering maturity expectations as follows:

Investment Intent	Key Business Expectations
Innovation	Fastest time to market (high velocity), fastest deployment frequency, highest user impact
Scale	Fast time to market, high quality and reliability (balance between velocity and quality); high delivery efficiency
Retain/Sustain	Highest quality and reliability, highest delivery efficiency

In Insights, we set “ideal” DORA metrics targets depending on the Product/ Portfolio’s investment intent, rather than use the canonical DORA benchmarks (see Figure below).



For example, for an Innovation product, we emphasize ideal targets for Lead Time to Change and Deployment Frequency. Change Failure Rate and Mean Time to Resolution are less important for such products.

Similarly for Retain/Sustain products, we emphasize ideal targets for Change Failure Rate and Mean Time to Resolution. Lead Time to Change and Deployment frequency are less important for such products.

This provides business centric targets for DORA metrics and helps senior leaders and executives better understand the alignment between business needs and engineering capability.

06

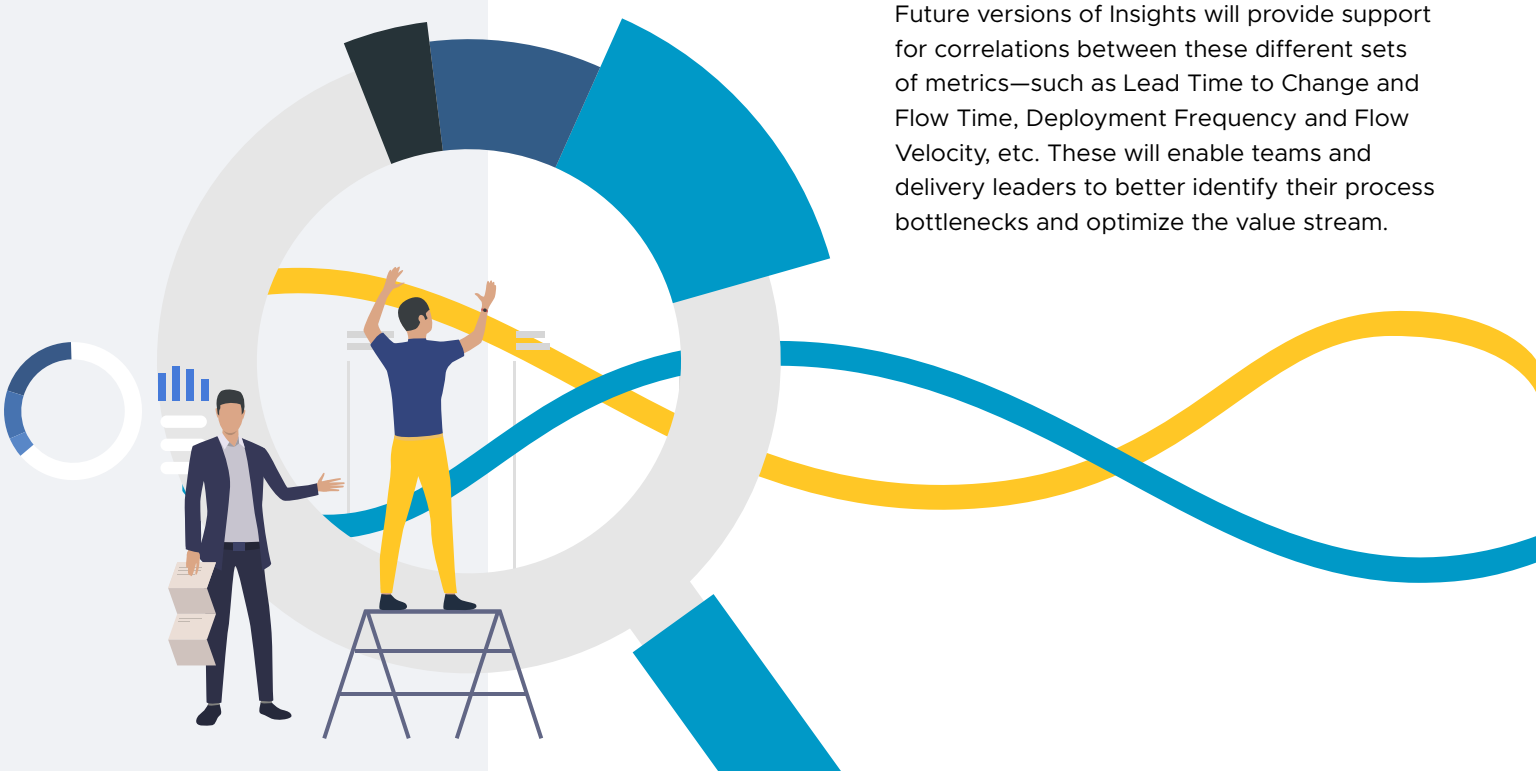
Correlation with Flow Other VSM Metrics

Insights also helps to measure alignment between business goals and delivery capability in conjunction with other VSM metrics such as Flow Metrics and Investment data. Based on the correlation of these metrics within a specific business context (determined by the Investment Intent), a single consolidated alignment score is provided. This allows leaders to quickly identify if a product's metrics align with its intent or if corrective action is needed.

See the Figure below that shows the example of alignment for a Scale product portfolio. It combines data from both Flow and DORA metrics to measure different alignment factors. It identifies key areas of mis-alignment in Resiliency (mapped to Mean Time to Restore) and Investment Focus (mapped to Flow Distribution) based on ideal targets for these metrics for Scale investments.

Similarly for Innovation products, we also consider Flow metrics such as Flow Time and Flow Distribution (skewed towards innovation features). For Retain/Sustain products, we consider Flow metrics such as Flow Efficiency and Flow Distribution (skewed toward sustain features).

Future versions of Insights will provide support for correlations between these different sets of metrics—such as Lead Time to Change and Flow Time, Deployment Frequency and Flow Velocity, etc. These will enable teams and delivery leaders to better identify their process bottlenecks and optimize the value stream.



Key Benefits from Automated Enterprise DORA Metrics for All

Enterprise DORA metrics provide the following benefits for different stakeholders.

For Portfolio leaders and executives, it provides an overview of the portfolio/ organizational delivery maturity, but more importantly helps to measure the alignment between business goals and delivery capabilities (or a lack thereof).

For senior folks, such as Product or Product-Line or Program Managers the key benefit is to provide an understanding alignment between product level business goals and product delivery capabilities. It also enables them to study variations in process maturity across underlying components, and the ability to drill down to underlying components to recognize leaders and laggards. Automating the DORA metrics reporting at this (and higher) levels saves the time and effort typically required to consolidate and correlate the data across multiple components and products.

For development teams, the key benefit in automated DORA metrics tracking for these teams is the savings in time and effort to collect and report these metrics.

Across all personas, another benefit of enterprise DORA metrics involves the reduction in friction between various stakeholders. With Insights, the entire organization now uses the same underlying data structure and data visualizations. This eliminates the friction of reporting false positives and false negatives, which occurs because data has been scrubbed and exported so many times that it is no longer accurate. Insights allows everyone to have a common—and accurate—view of the data up and down the hierarchy.

In summary, ValueOps Insights provides enterprise customers an easy to use out of box solution for measuring and tracking DORA metrics at scale for all personas—from executives to engineers—at a fraction of the cost it would take to build such a system in-house. It also helps to provide a better understanding of the alignment between business outcomes and DORA metrics by defining customized targets based on investment goals. Finally, it helps to correlate DORA metrics with other metrics (such as Flow metrics) to enable better optimization of the value stream.