OPSERA

Develop a DevOps Nerve Center to Drive Continuous Improvement

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The operation and improvement of sophisticated, mature DevOps environments depend on many metrics that are generated by processes, analyzed by algorithms, and displayed in dashboards to make performance of DevOps environments visible and to support learning and continuous improvements.

DevOps Metrics Use Cases
The Key to Success

DevOps metrics are imperative for all businesses and systems that depend on software and digital information.

Not only are DevOps metrics critical, but the ultimate goal is a dashboard providing visibility across all projects and metrics - a single source of truth - improving collaboration between Business, DevOps, QA, Security and SRE-Operations team members.

DevOps metrics enable teams to benchmark and roadmap improvements to further their progress.

Intelligent assessments derived from analysis of quality and security (DevSecOps) metrics enables continuous risk mitigation and rapid response for stakeholders and resolvers.

Operational metrics are needed to achieve observability to understand the state of systems, improve issue identification, prioritize actions, and validate responses.

Metrics provide data for governance and compliance and are the primary source for continuous improvement ideas.
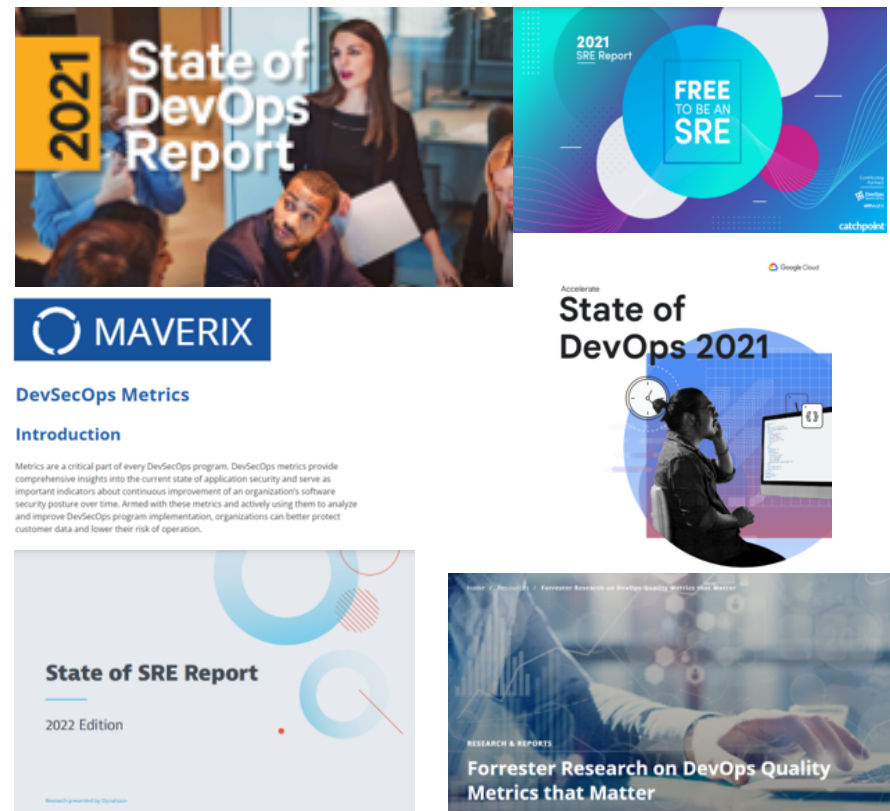
DevOps Metrics Use Cases
CI/CD Pipelines

Improve Performance with CI/CD Metrics

Highly evolved DevOps organizations have consistently demonstrated higher performance across four key CI/CD software performance metrics

Lead Time for changes

Elite performing organizations take less than one hour to go from code committed to code successfully running in production.

Deployment Frequency

Elite performing organizations deploy code to production or release it to end users on–demand, multiple times per day.

Time To Restore Service

Elite performing organizations restore services in less than an hour when a service incident or defect that impacts users occurs.
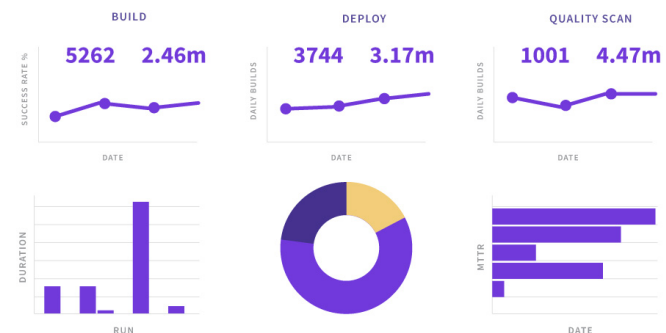
Change Failure Rate

Elite performing organizations report that changes to production or releases to users result in degraded service requiring remediation less than 15% of the time.

Deployment Frequency

SDLC Pipelines

BUILD	DEPLOY	QUALITY SCAN
5262 2.46m	3744 3.17m	1001 4.47m
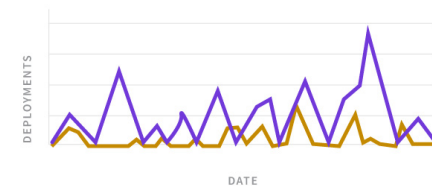
DevOps Metrics Use Cases
Quality Metrics

Quality Metrics for Reduced Risk

Highly evolved DevOps organizations focus on four pillars of contextual quality metrics. These pillars improve understanding of business risk and user experience across the pipeline stages and end-to-end transactions.

Build Metrics

Number of automated tests prioritized by risk, successful code builds, Unit test verdicts, # defects and code coverage.

Functional Validation

Requirements covered, Critical defects, Pass/Fail Rates, Defect density and Risk Coverage
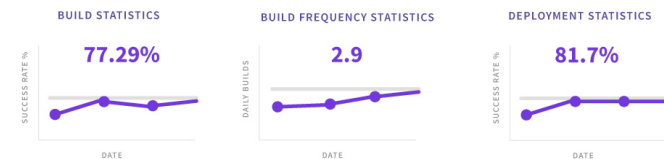
Integration Testing

Requirements covered, New Defects, Defect Density, Pass/Fail Rates, and Code/Risk Coverage.

End-to-End Regression Testing

Percentated automated tests, Requirements Covered, Total number defects, number test executed and Test Case

Build & Development Statistics

BUILD STATISTICS	BUILD FREQUENCY STATISTICS	DEPLOYMENT STATISTICS
77.29%	2.9	81.7%

Automation Test Percentage

14	14
#Automation Candidates	#Functional Test Cases
14	14
#Regression Test Cases	#Test Cases Automated
14	14
#Test Cases to be Automated	Automation Percentage
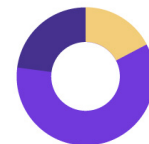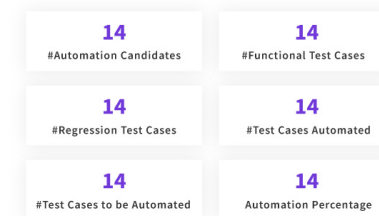
DevOps Metrics Use Cases
Security (DevSecOps) Metrics

Metrics to Secure Your Applications

DevSecOps metrics provide insights into the current state of application security and indicate continuous improvement of software security posture over time.

Lead Time for changes - Lead time based on impact of vulnerability depends on measures of impact of vulnerability exploitations and vulnerability exploitation probabilities.
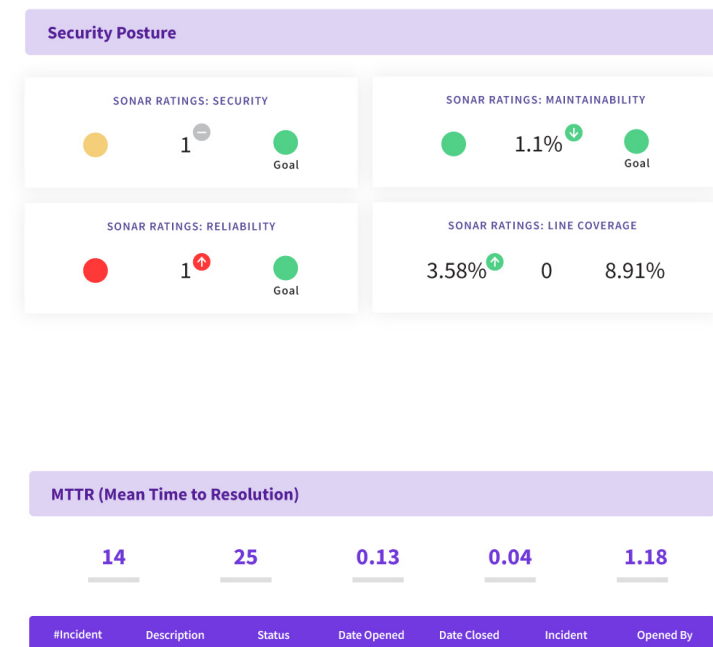
Deployment Frequency - Measure of DevSecOps controls such as scans over applications categorized as Mission Critical, Business Critical, Business Operational and Office Productivity.

Time To Restore Service - Volume of code changes.

Change Failure Rate - Security technical debt including unresolved vulnerabilities deployed to production categorized by severity and mean vulnerability age and security risk density per code base.

Application Security Risk - Based on application size, business importance, potential impact and probabilty of exploitations.

Security Posture

SONAR RATINGS: SECURITY	SONAR RATINGS: MAINTAINABILITY
● 1 ⊖ ● Goal	● 1.1% ● Goal

SONAR RATINGS: RELIABILITY	SONAR RATINGS: LINE COVERAGE
● 1 ↑ ● Goal	3.58% ↑ 0 8.91%

MTTR (Mean Time to Resolution)

14	25	0.13	0.04	1.18

#Incident	Description	Status	Date Opened	Date Closed	Incident	Opened By

DevOps Metrics Use Cases
SRE-Operations Metric

Better support and reliability with SRE Metrics

Highly mature DevOps organizations are implementing SRE practices and refining SLO/SLI metrics to better support users and reliability of operations.

Mean Time to Repair - Average time to repair a service degradation.

SLOs - User driven metrics, such as availability, response time, latency, user satisfaction, data freshness, error rates and crash rates.

Toil Reduction - Number of automation projects that result in reduced workloads or improved SLO performance.

Security Anti-Fragility - Vulnerabilities detected and mitigated in production.

**Reliability Anti-Fragility -** Production reliability concerns identified and mitigated.

Capacity Planning - Load tests and mediations that anticipate scaling concerns.

Observability - Instrumented applications and monitoring to make them observable.

MTTR (Mean Time to Resolution)

50   25   28.2   0.04   307

Insights

MTTR   DATE   # INCIDENTS   SEVERITY
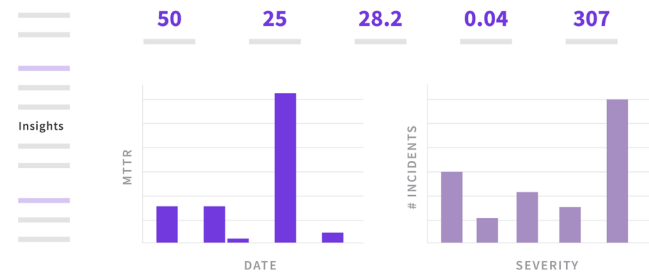
Mean Time To Acknowledge

9

239

Insights   0
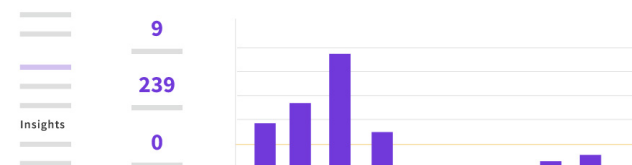
DevOps Metrics Use Cases

SRE-Operations Metric

Empowering Executives, Managers, and Developers

Executive Dashboard

The Executive Dashboard provides leaders a topdown view across all teams and projects to improve efficiencies, minimize redundancies, identify gaps, and drive continuous improvement.

- Lead Time
- Deployment Frequency
- MTTR
- Quality Compliance
- Security Compliance
- Commit Statistics
- Connected Assets
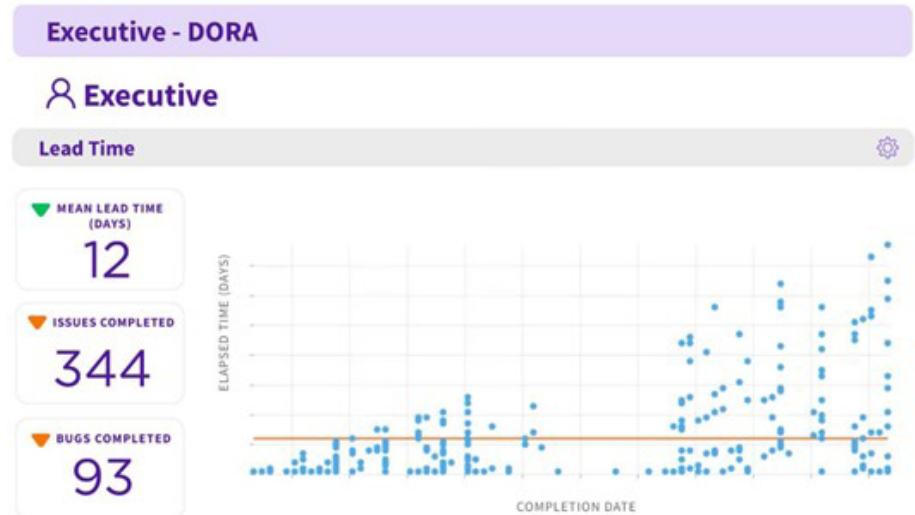
Manager Dashboard

This dashboard enables managers to view the performance metrics of their team, team members and projects. This allows them to take a proactive approach to quality, security, and velocity.

- Recent Pipeline Status
- Sprint Planning
- Sonar Ratings
- Twistlock Ratings
- Github Commit Statistics
- Most Active Contributors
- Time taken to complete PR
- PR by Maximum Time
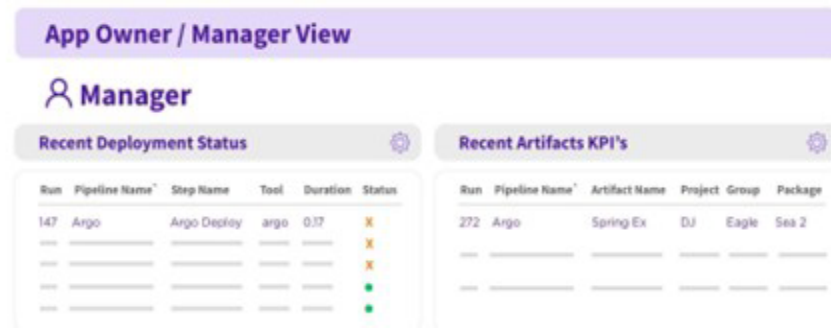
Developer Dashboard

Team members need metrics and KPIs to respond to issues rapidly and proactively as well as holistically understand the health of their projects. Additionally, collaboration through shared metrics between teams is critical to a successful project.

- Pending Pull Requests
- Recent Pull Requests
- Commits by Project
- Sonar Ratings & Twistlock Report
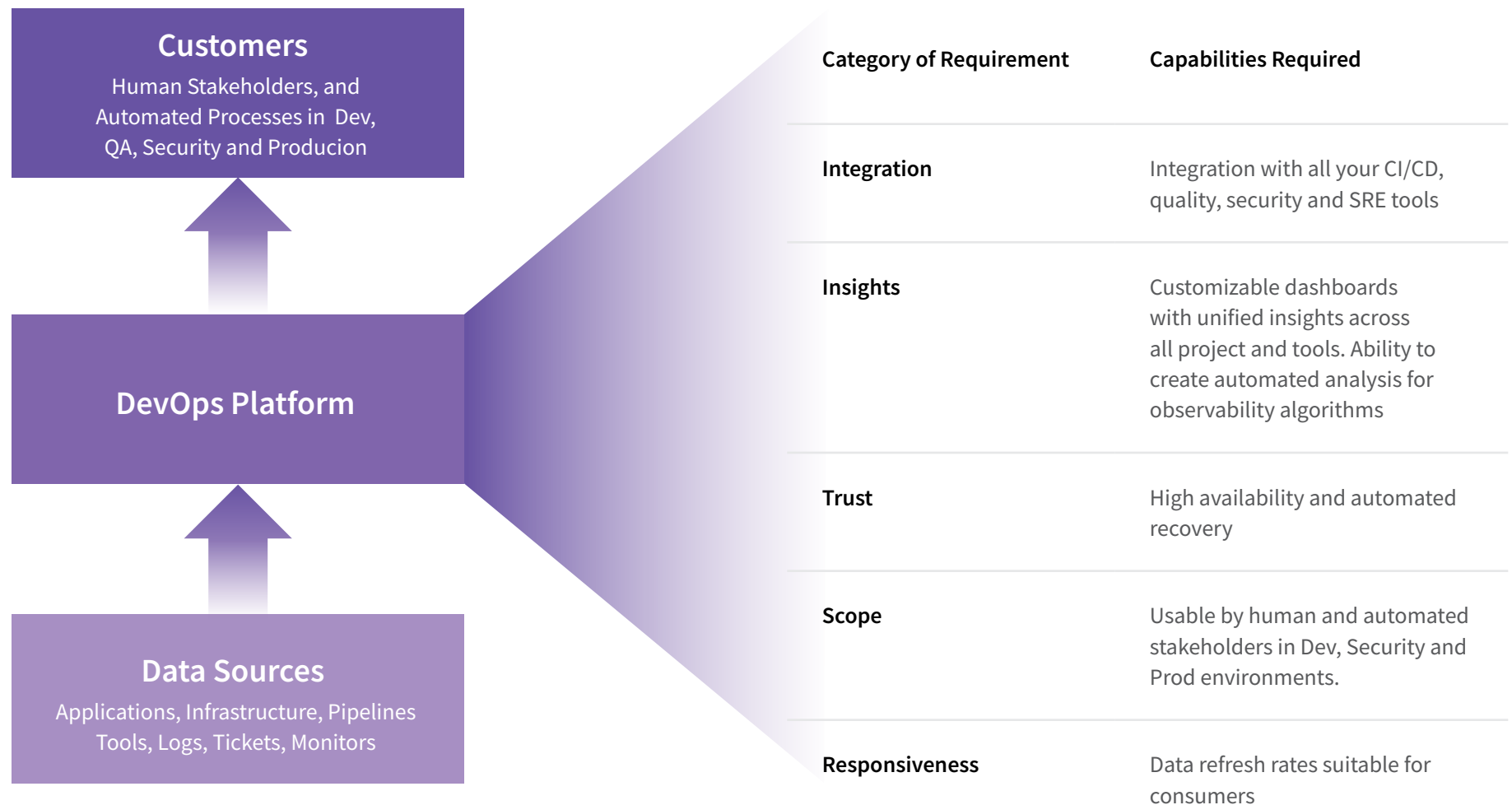- Code Coverage & Test Metric

Unified Insights
DevOps Metrics Summary

Category	Descriptions	Value Prop	Roles	Actionable Intelligence
CI/CD Pipeline	Lead Time for changes Deployment Frequency Time To Restore Service Change Failure Rate	Accelerate continuous deliveries, safely	CTO, Product Owner, Release Managers, Developer, SRE	Benchmark pipeline agility and identify bottlenecks for CI/CD improvements
Quality	Build Metrics Functional Validation Integration Testing Regression Testing	Assure and improve quality of software deliveries, provide evidence for governance and compliance.	SVP QA, QA Managers, Compliance Manager, Product Owner, Release Managers, Developer, QA engineer, SRE	Benchmark quality of deliverables and identify areas for quality improvements.
Security (DevSecOps)	Vulnerabilities Software Asset Security Coverage (SSC) Codebase Security Measures Software Security Risk Application Security Risk	Reduce vulnerabilities in production. Provide data and insights for security related governance and risk management.	CISO, Product Owner, Production Manager, QA Manager, Release Manager, Developer, QA Engineer, Security Manager, SRE	Identify security risks and provide data to drive improvement of security controls.
SRE Operations	Mean Time to Repair SLOs Toil Reduction Security Anti-Fragility Reliability Anti-Fragility Capacity Planning Observability	Evidence based assurance and improvements of reliability and reduce costs for production.	SVP Ops, Production Manager, Product Owner, Release Managers, Developer, QA engineer, SRE	Insights guide toil reduction and initiatives to improve reliability and security of production.

DevOps Platform Requirements

Customers
Human Stakeholders, and Automated Processes in Dev, QA, Security and Producion

DevOps Platform

Data Sources
Applications, Infrastructure, Pipelines Tools, Logs, Tickets, Monitors

Category of Requirement	Capabilities Required
Integration	Integration with all your CI/CD, quality, security and SRE tools
Insights	Customizable dashboards with unified insights across all project and tools. Ability to create automated analysis for observability algorithms
Trust	High availability and automated recovery
Scope	Usable by human and automated stakeholders in Dev, Security and Prod environments.
Responsiveness	Data refresh rates suitable for consumers

Strategies for Implementing DevOps Metrics
Seven step transformation framework

Are you "doing DevOps" but not satisfied with the results you're getting? One issue could be easily accessing metrics that provide critical insights to achieve DevOps transformation. Marc Hornbeek outlines the DevOps Seven-Step Transformation Engineering Blueprint. Because the transformational blueprint is a never-ending process to achieve continuous improvement metrics are always essential.

- **Visioning:** Develop your DevOps strategy, including choosing sponsors and partners.

- **Alignment:** Make sure that your leadership, teams are all on the same page including the goals for your applications.

- **Assessment:** Based on your current applications, discover and document your current DevOps maturity level and process gaps. It is important to conduct deep-dive assessments to understand how current value stream maps compare to the organization's goals. Routine assessments can become standard once unified metrics are easily accessible.

- **Solution:** Drawing on the assessment, develop your future state value stream maps with stakeholder alignment.

- **Realize:** Define DevOps implementation projects and then validate the solution with appropriate governance and training.

- **Operationalize:** Monitor and control your DevOps improvements with Site Reliabilirty Engineering (SRE) practices that watch Service Level Indicators (SLI), Service Level Objectives (SLO), and Service Level Agreements (SLA) metrics. The ability to easily track these across the myriad of projects and tools is typically a fundamental obstacle towards achieving continuous DevOps improvement.

- **Expansion:** After a select set of applications have proved the optimal continuous flow, the best practices can be expanded across the organization. Once effective continuous feedback has been implemented - unified insights across all projects, and tools - the cycle can be restarted. Rinse and repeat - for continuous improvement.
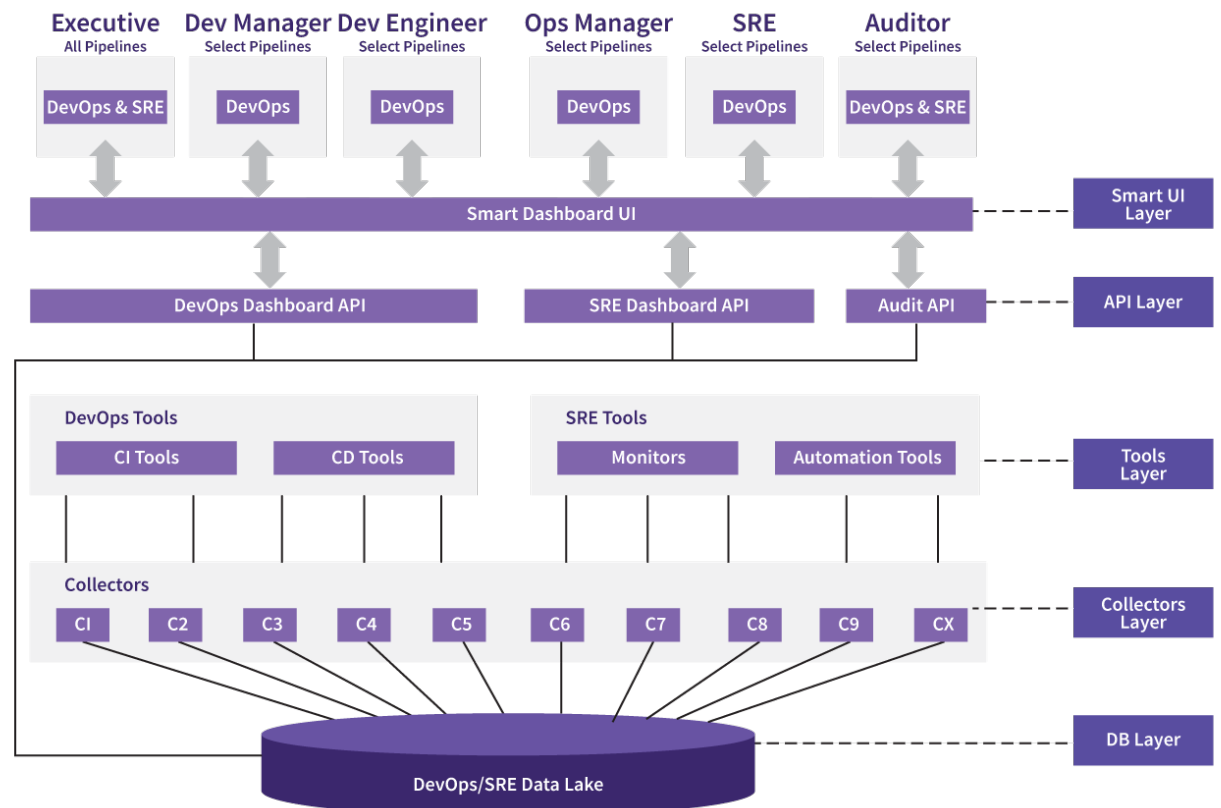
Strategies for Implementing DevOps Metrics

Observability Architecture

Keeping a constant eye on what is important for DevOps from a performance, reliability and security point of view requires an enterprise visibility strategy.

An enterprise architecture and stakeholder-specific dashboard that derive metrics data collected from DevOps and SRE pipeline sources and served from a common enterprise data lake ensure the enterprise has a consistent source of truth and can build smart monitoring and observability tools.

A DevOps Orchestration Platform such as Opsera (include hyperlink) can assist defining your architecture and implementation.

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Strategies for Implementing DevOps metrics

Roadmap to Success

Become familiar with typical DevOps metrics

1

Determine your highest priority metrics using strategic assessments

2

Build and execute using a metrics strategic roadmap which addresses your highest priorities first

3

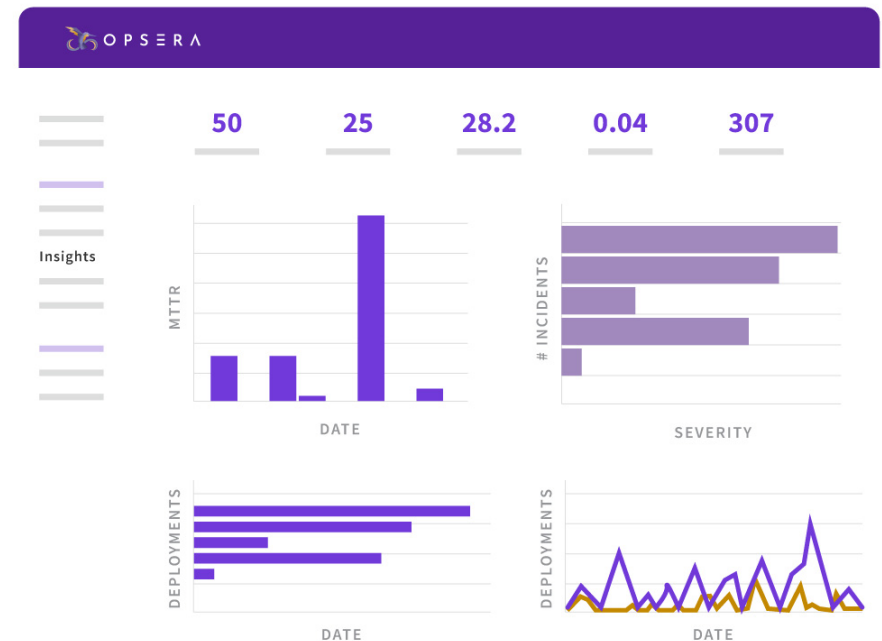Monitor your progress, compliance and performance using strategic dashboards that display the metrics

4

Track your progress and priorities with periodic assessments

5

OPSERA Unified Insights Capabilities

Opsera Platform	Capabilities
Integration	Integration with all your CI/CD, quality, security and SRE tools.
Insights	Customizable dashboards with unified insights across all project and tools. Ability to create automated analysis for observability algorithms
Trust	High availability and automated recovery
Scope	Usable by human and automated stakeholders in Dev, Security and Prod environments.
Responsiveness	Data refresh rates suitable for consumers

Summary

DevOps metrics are essential to cover CI/CD, Quality, Security and SRE-Ops use cases such as those presented by Opsera's dashboard elements.

- Identify key players including an executive sponsor to kickoff your DevOps transformation project

- Develop and Implement a strategic plan for DevOps metrics that includes a strategic approach that includes a seven-step transformation process, an enterprise dashboard and a roadmap for all stakeholders to participate.

- Investigate platforms such as Opsera to accelerate your progress and realize comprehensive and unified metrics. OPSERA accelerate your progress to realizing a comprehensive set of metrics.

References

Accelerate State of DevOps2021 by DORA at Google Cloud

2021 State Of DevOps Report by Puppet

2021 SRE Report by Catchpoint

DevSecOps Metrics by Maverix

Engineering DevOps book by Marc Hornbeek, 2019

DevOps Quality Metrics that Matter, 2020, by Forrester Research

State of SRE Report 2022 Edition, eBook by Dynatrace

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While benefits provided by well-engineered DevOps
are outstanding, the path to achieving and continuing
mastery of high performance DevOps must be lighted by
strategic metrics for CI/CD pipelines, Quality, Security and
SRE-Operations or organizations risk blindly falling off the
path at every fork in the journey into the digital abyss.

Marc Hornbeek
Author of "Engineering
DevOps from Chaos to
Continuous Improvement

www.engineeringdevops.com

Opsera Platform – Mission Control

Unified Insights is part of the Opsera platform, your DevOps Mission Control. Opsera simplifies and speeds software delivery by automating any CI/CD toolchain with zero coding, quickly building declarative pipelines that focus on business objectives, and unified insights by role across the enterprise.

You now have the flexibility to integrate any tool, cloud or analytics quickly and easily into a single point of access and truth for DevOps. Opsera improves developer productivity up to 25%, freeing up resources and budget for reallocation to digital transformation. Opsera increases velocity, reduces costs, and improves software quality for optimal customer value. Learn more at DevOps Nerve Center.

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