DRIVING TEST INSIGHTS WITH SAUCE ANALYTICS

As software development has moved to Continuous Integration, Continuous Delivery, and DevOps, releases have accelerated—but at the expense of visibility. Using best-of-breed tools provides flexibility, but often sacrifices your integrated view into the process as a whole. Analytics brings visibility back by surfacing issues into your release process, allowing you to make informed decisions to optimize development costs and improve business outcomes. This article explores some of the key metrics to consider when factoring analytics into your testing strategy, and how these decisions dramatically impact your teams' software delivery processes.

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WHY ANALYTICS?

As customers continue to expect better software and faster updates, the need for modern engineering practices has become critical for development organizations of all sizes. With the advent of continuous testing practices, many teams have been able to integrate testing into every step of their pipeline, and are executing tests at a higher rate than ever before (from once a month/quarter to multiple times a day!). With this increase in frequency comes larger sets of data showing the performance and efficacy of these tests. However, many businesses are struggling with how to best use this data to help deliver the most value. This is why analysis tools have become an important component of the modern software delivery pipeline. By taming the data beast, analytics allows organizations to better understand where the bottlenecks and gaps might lie in their pipeline, and informs them on how to continuously improve their processes.

Test analytics can best be utilized to help teams in the following key areas:

- Provide high-level organizational visibility to help understand test trends - ensure consistent test coverage across teams, and understand how your teams are improving over time.

- Evaluate testing efficiency and costs across teams and projects via KPIs - optimize your strategy, coverage, and resources to reduce test errors and flakes.

- Easily identify and troubleshoot inconsistent tests - speed debugging and reduced overall build time.

- Identify areas where automation can create more efficient workflows-accelerate the release process.

All the above points help teams cut expensive debugging efforts, and more importantly help those organizations focus their valuable time on the highest-value deliverables. The goal of analytics is to discover and use key knowledge to improve the software delivery process—and therefore, the business.

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Critical business decisions can be greatly enhanced when developers, management and executives can quickly get answers to the many questions that arise when determining the efficacy of a testing strategy. To address these, Sauce Labs Test Analytics contains a number of features that allow teams the visibility to understand their test trends, evaluate efficiency, and easily pinpoint holes in their coverage.

VISIBILITY - TEST TRENDS

Understanding your test or build test history at a macro level provides important insights into your applications. The patterns that can arise when viewing these high-level trends often help drive well-informed decisions on how to spend your teams' resources (both money and time). Often these insights are presented in long reports that are difficult to conceptualize, and aren't flexible enough to filter for key metrics that have been determined critical to the business needs. Even more, while reports can offer data for a particular group, it becomes more difficult to compare across multiple testing teams.

The Sauce Analytics dashboard visualizes key metrics that can help you understand where your testing practices are working best, and where there might be room for improvement. Additionally, you can easily filter test data by a number of key factors, such as team, browser or OS version, owner, time period, and more.

This organizational visibility can help you understand a number of different factors:

- Quality trends across teams within an organization - get the macro view of how tests are performing across all of your teams and applications

- Pass/fail rates by team - gain visibility into which tests and teams need to focus resources into better development/test practices

- Sauce concurrency usage - see if your team is getting the most out of your capacity, or if you need to prioritize parallelization

- Performance indicators across teams - understand which teams are testing most efficiently so you can share their practices across the organization

EFFICIENCY - OVERVIEW DASHBOARD

Key Performance Indicators, or KPIs, are tactical-level metrics that allow you to understand how to prioritize resources. For testing, metrics to consider include (but are not limited to):

- Test coverage across different browsers, OS versions and devices

- Error/failure rates over time to help identify potentially flaky tests

- How quickly/slowly tests are running and builds are passing

- Tool usage across different teams to better allocate concurrency and avoid tests from queueing up

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The Sauce Analytics tool gives you insights into a number of these KPIs, allowing you to continuously improve the speed and efficacy at which you deliver your applications. By visually representing your highest impact metrics in clear and customizable dashboards, you receive actionable insights that matter most to your team, allowing you to make informed decisions on where to focus time and money. In turn, this gives your teams the ability to accelerate the debugging of your code, which means quicker releases.

TROUBLESHOOTING - TEST INSIGHTS

Overall test trends provide a critical view into the overall health of your app, but it is also critical to understand how each individual test is performing at the micro level. By understanding how a test varies run after run you can begin to identify problems and take immediate action to not only troubleshoot that test, but incorporate better practices into how your teams write and maintain their tests.

Take for example the common problem of inconsistent, or flaky tests. Only by looking at a test's results over a period of time are you able to identify a test as flaky. On the Sauce Analytics platform, Test Insights gives you this long view of a test's results and performance, see where it passes and fails, and quickly determine if it's flaky. Once flaky tests are confirmed, there are other tools like Extended Debugging that allow you to dig into browser console logs and networking information to pinpoint the problem.

By prioritizing your highest value tests, you can also use the Test Insights tool to:

- Review result trends for a test to view inconsistencies which indicates a flaky test

- Select several tests to receive a list of failures and understand root causes

- Identify platforms with performance issues for a test to indicate what to fix first.

WHAT'S NEXT - MACHINE LEARNING AND PREDICTIVE ANALYTICS

Test analytics will change drastically as the advent of Machine Learning continues to evolve. By nature, these technologies can consume large swaths of data much larger than humans can, and make recommendations based on uncovered trends - leaving your teams free to apply their own intuitive judgement and prioritize based on its suggestions.

Using aggregate data across multiple teams and over a long period of time, predictive analytics using machine learning can proactively identify anomalies in

tests to help your teams narrow their focus where they are needed, rather than chase down common test failures. With this technology in place, you are able to:

- Identify dubious tests based on previous known issues or patterns

- Use data clustering to differentiate between common failures versus anomalies

- Pinpoint the area of the application where failures are occuring

- Make data-driven decisions on where to spend your resources

CONCLUSION

Analytics tools can give teams full visibility into their fast-moving pipelines, helping them become more productive developers and testers. Using macro and micro data to tell the story of how your tests are performing allows engineers to quickly identify which issues to address first. This speeds up not only the time it takes to uncover and debug issues with your testing strategy, but also the amount of time it takes for your applications to get to market.

From the level of the single test, to the larger organizational trends, analytics helps every level of the business to ensure that they are meeting critical business value propositions for all of their users, all of the time. By quickly surfacing issues through data, everyone in the organization can own quality and take the steps necessary to provide their customers the best possible experience.

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Learn more at saucelabs.com

ABOUT SAUCE LABS

Sauce Labs ensures the world's leading apps and websites work flawlessly on every browser, OS and device. Its award-winning Continuous Testing Cloud provides development and quality teams with instant access to the test coverage, scalability, and analytics they need to deliver a flawless digital experience. Sauce Labs is a privately held company funded by Toba Capital, Salesforce Ventures, Centerview Capital Technology, IVP and Adams Street Partners. For more information, please visit saucelabs.com.

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