ZEPHYR

Continuous Testing Agility

2020

Which 50% will you be in?

White Paper

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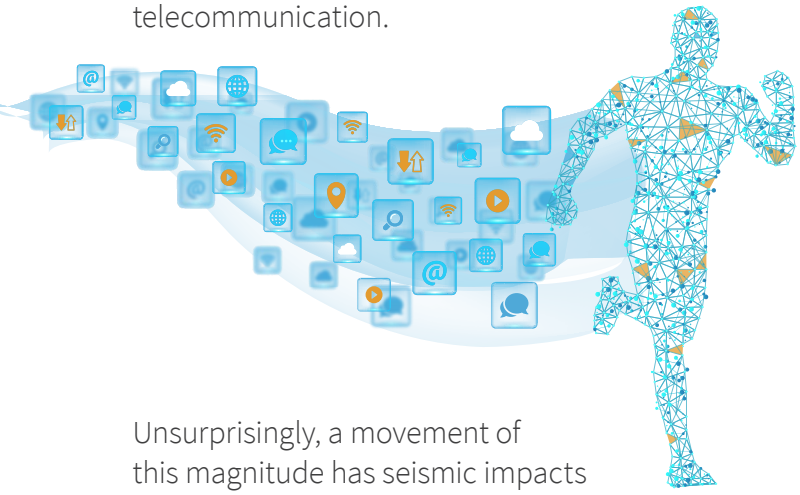
Cisco CEO John Chambers recently said the world is going through a new "digital revolution" that could add $19 trillion to the global economy and have 10 times the economic impact that the Internet has had. Breakthroughs in artificial intelligence, cloud computing, the Internet of Things, mobile computing and big data analytics have combined with robotics and factory automation to drive this revolution, which is not only boosting technology-based industries, but also retail, financial services, healthcare, transportation and telecommunication.



Unsurprisingly, a movement of this magnitude has seismic impacts on key players' operations at every level and stage. One area that's particularly impacted is software development and related processes. To stay competitive in this new digital economy, organizations must transform their turn-around capabilities. That is, they must equip themselves to rapidly develop and deploy software products that deliver business value according to new standards for timing. This means building an infrastructure that is hyper-efficient and able to quickly scale. It means perfecting a continuous software delivery pipeline that delivers progressively faster lifecycles. And that means achieving full continuous testing agility.

Equipping your organization to meet today's standards requires breaking down barriers between QA, development, operations and production to increase collaboration and productivity. To create a seamless delivery pipeline, testing has to keep pace with a faster and more agile development lifecycle.

The digital revolution is all about consumer experience, faster time to market, and consumer engagement. The price of falling short of consumers' expectations will be high: **Gartner Research predicts that 50 percent of CIOs who have not transformed their teams' capabilities by 2020 will be out of a job.**

So how do companies rise to tomorrow's lifecycle standards? How can they insure themselves against the plight of businesses that fall behind?

Zephyr provides a full suite of tools to optimize the speed and quality of your software testing, empowering you with the flexibility, visibility and insights you need to achieve continuous testing agility no matter where you are today on your agile development and testing journey.

Toyota Motor Company provides a clear illustration of what's at play and what's at stake. The car manufacturer – a Zephyr client - has a large number of development and QA teams in business units all over the world. These teams are made up of both Toyota employees and outsourced talent from Toyota's business partners. As TCOE Leader at Toyota, Neeraj Tripathi explains that some teams are further along than others on their agile transformation journey.

"We have teams in a few verticals that are really mature in terms of automation and agility, who are ready to move forward into a DevOps ecosystem. Other teams are still using traditional waterfall processes with thousands of manual test cases." Tripathi notes that Toyota treats its business partners "like they're one of us." Integrating Zephyr test management tools into all of these teams gives Toyota's management access to what's going on with any one particular team. "Visibility is hugely important, especially when you're helping teams move from waterfall and agile testing," Tripathi says.

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So where is your organization in its *continuous testing journey* from Agile to Automation, DevOps and Analytics?

SCENARIO #1:
Starting Out:

You're a QA and development team looking for an agile testing environment embedded in Jira, easy automation via APIs and structured folders to organize test cases.

SCENARIO #2:
Well On Your Way:

You're a team working on multiple projects, looking for Jira-compatible analytics, one-click automation and customizable dashboards that provide project-specific views, reporting and configurations - with room to scale up when you're ready.

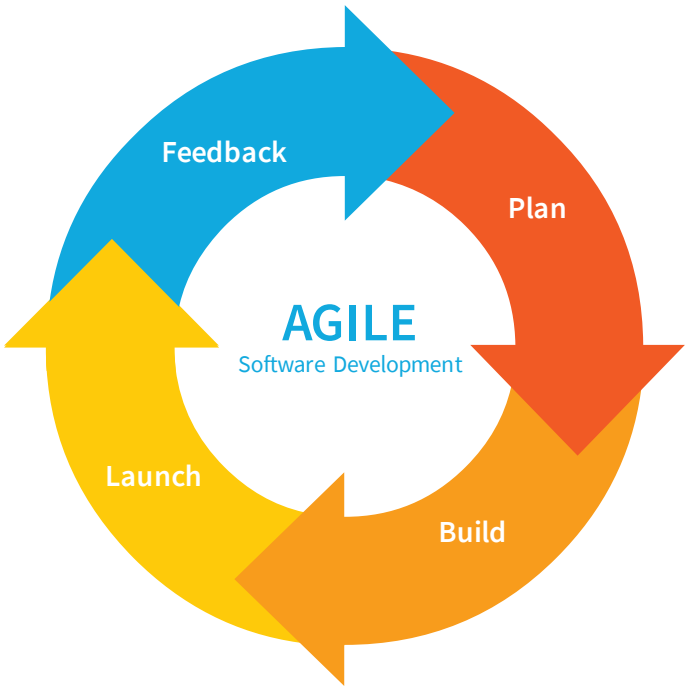
SCENARIO #3:
Agile Enterprise in Sight:

You're an agile organization that is shifting to a DevOps orientation and want to use machine learning to shift from reactive to proactive decision making and maximize automation throughout your agile software testing ecosystem.

If Your Organization is Just Getting Started with Agile

An agile process is any approach that promotes frequent interaction between an IT department and business users, and tries to regularly build, test and deliver software that meets business users' ever-changing requirements. Agile development is done in short, flexible development cycles that respond quickly to customer demand. The pace of most Agile projects demand efficiency in all testing techniques and processes. The test-at-the-end approach of traditional development runs counter to this efficiency and needs to be changed during your Agile transition.

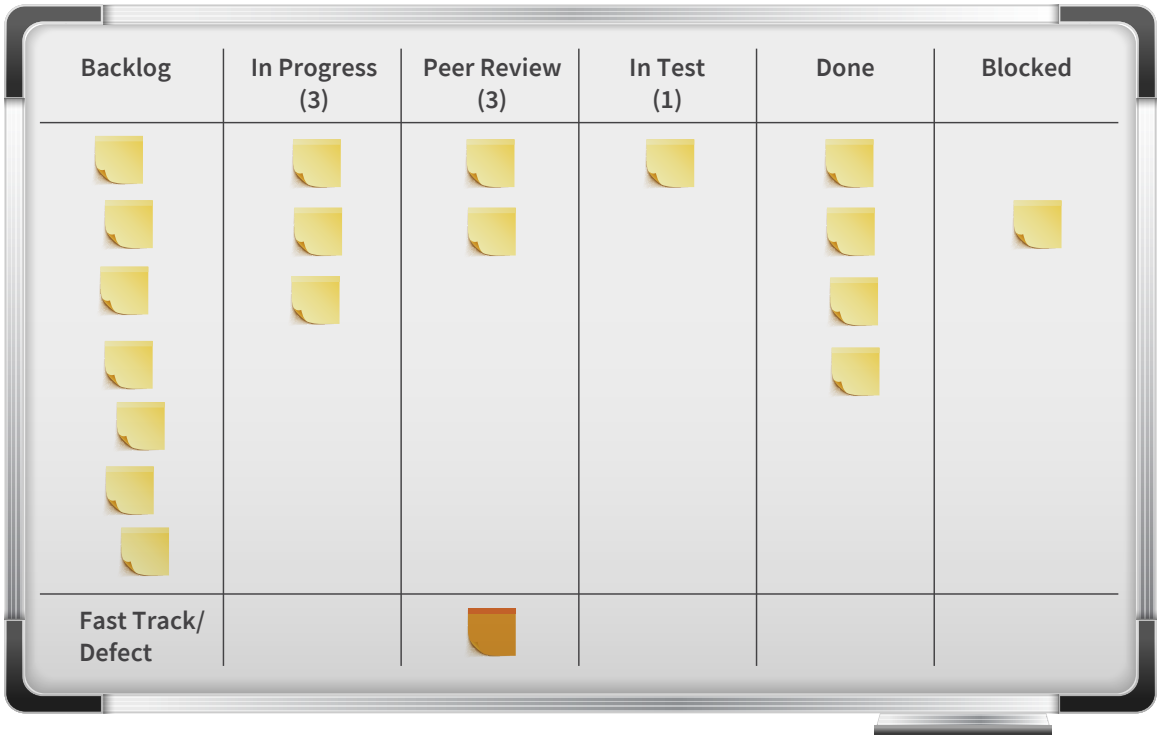
Agile culture is all about collaboration. As Hamesh Chawla, Zephyr's Chief Product Officer explains: "Agile means breaking down the wall between your QA, Dev, Operations and Production teams.



This type of culture strives to eliminate handoffs between departments so that soon the whole culture will embrace the idea of distributed Dev, QA and Ops teams working as one unit. This allows you to bring the power of one team, one culture across every discipline to how you build products and ship them out the door." To do this effectively, you need to use the right tools.

Jira is the default environment with modern agile teams. Jira is an agile project management tool that supports any agile methodology, be it Kanban, Scrum or your organization's own unique methodology.

Example of a Kanban Board



Early agile teams used Kanban boards, or a physical board with Post-it notes or cards to represent work items. Modern agile teams are more likely to use Jira software because Jira has virtual Kanban boards that contain all necessary details for each work item, while only displaying the most pertinent information on the board itself.

Under development since 2002, Jira is the most popular bug tracking, issue tracking and project management tool among agile teams. It allows your teams to plan, track and manage all agile software development projects from a single tool.

How Zephyr Can Help

Zephyr was the first test management tool to work natively inside Jira and remains the foremost, offering a seamless user experience and extensive breadth of functionality. Zephyr's look and feel is modeled after Jira's, making it easy for teams to immediately realize the benefits of full featured test management inside Jira. Test issues can be created, executed, tracked and reported just like any other Jira issue, allowing you to track software quality and make empowered go/no-go decisions.

This helps agile teams visualize all test executions by story, get a better sense of what has been tested and its level of quality, link features between the Test Cycles and Sprints, and track status and quality metrics with burndown charts and test boards.

Zephyr + Jira = a holistic agile software testing ecosystem.

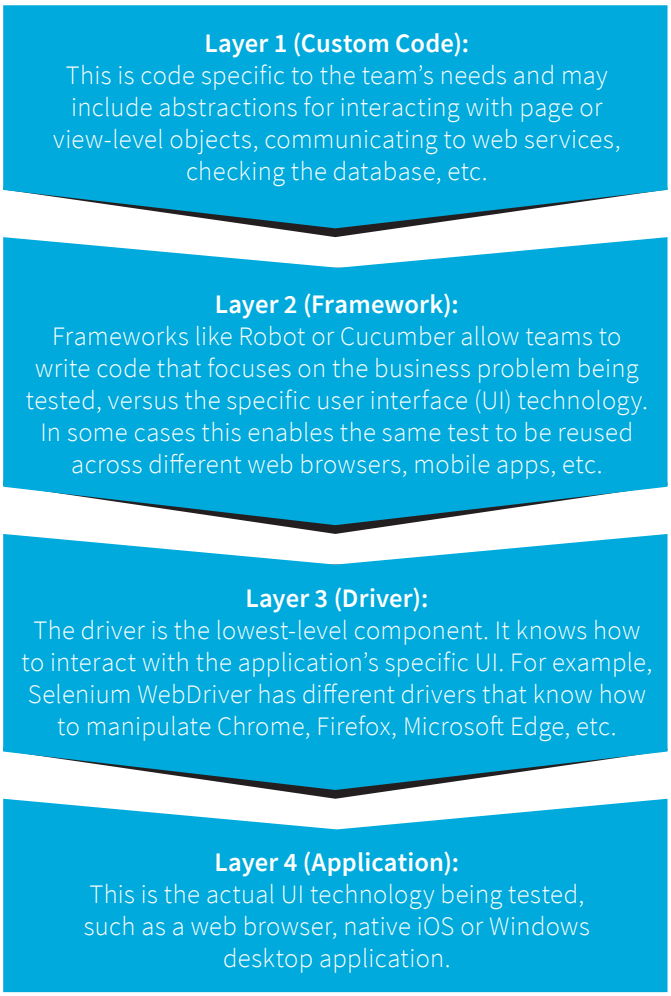
If Your Organization is Well on Your Way to Continuous Testing

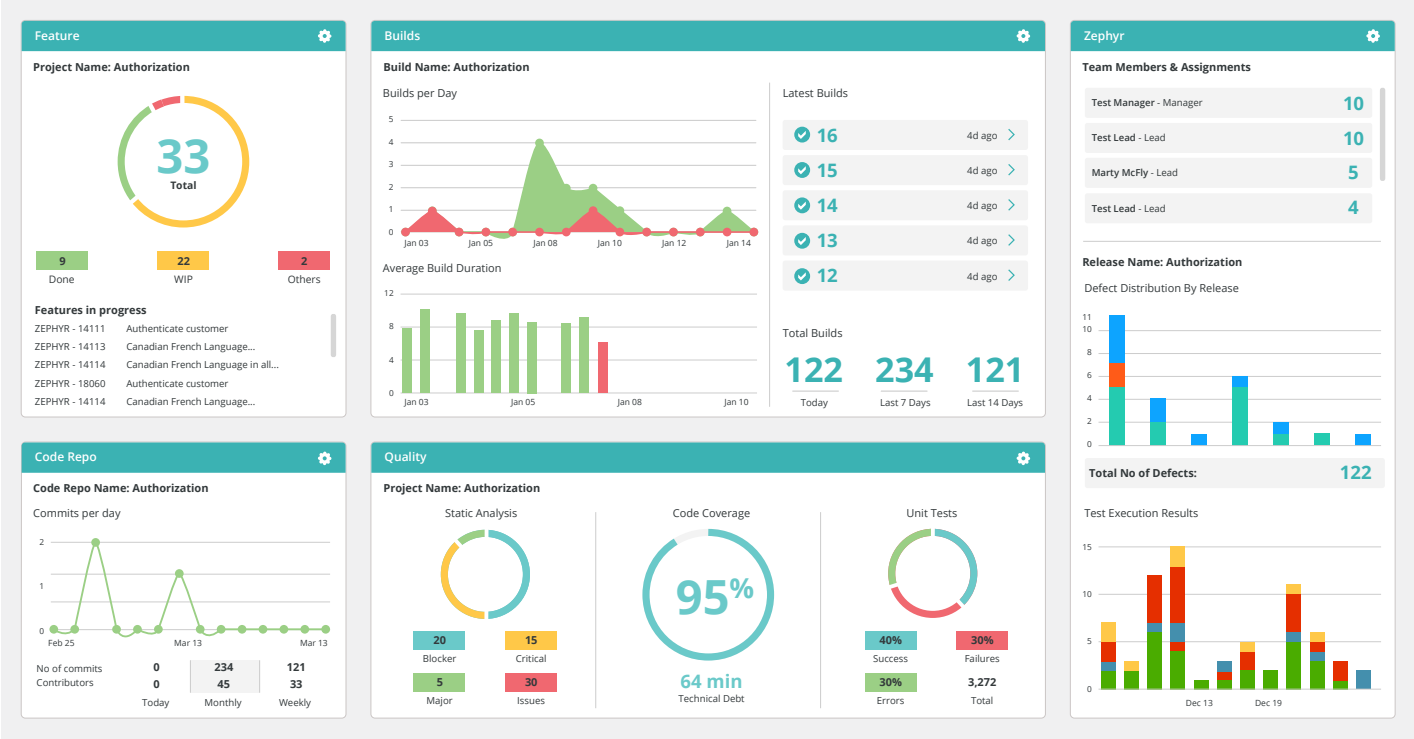
The goal of most Continuous Delivery (CD) projects is to automate as many manual processes in the software development process as possible. Among the roadblocks in a CD pipeline that lead to slow deployment are error-prone manual processes such as handoffs from a development group to a QA group, including ones that require signatures or bureaucratic approval. These kinds of handoffs mean there is a lack of shared ownership of the end product, which runs contrary to the basic agile software testing and development methodology that says all members of a cross-functional agile team are equally responsible for the quality and success of the project. Because of this, testing on an agile project is done by the whole team, not just designated testers or quality assurance professionals, including team members whose primary expertise may be in programming, business analysis, database or system operation.

Automation Frameworks

To simplify the automation effort, many agile teams rely on test automation frameworks made of function libraries, test data sources and other reusable modules that can be assembled like building blocks, so teams can create automation tests specific to different business needs.

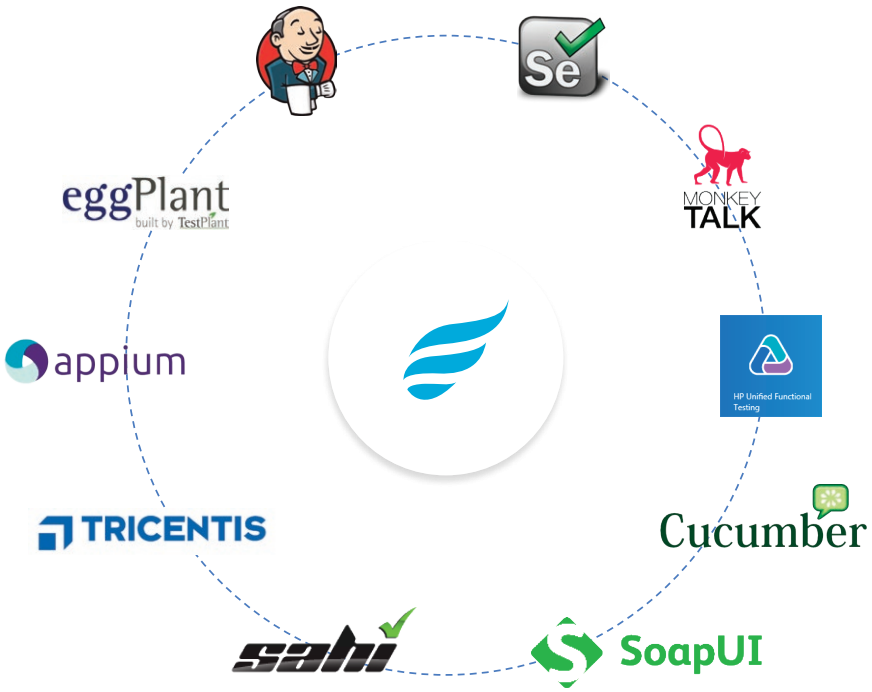
In addition to automating as many GUI, API, integration, component and unit tests as possible, it's important to increase communication and collaboration across organizational boundaries on agile CD projects, especially among analysts, developers and QA testers. This can be a challenge on larger agile teams working on multiple projects or using multiple Jira instances. Zephyr offers two solutions to help you manage quality initiatives that scale across multiple projects and Jira systems: Zephyr Teams (for agile teams of 10-50 members) and Zephyr Enterprise (for 50,000+ users). Both of these solutions allow you to easily create highly customizable dashboards to display real-time information about things like defects or status across all of your Zephyr projects.



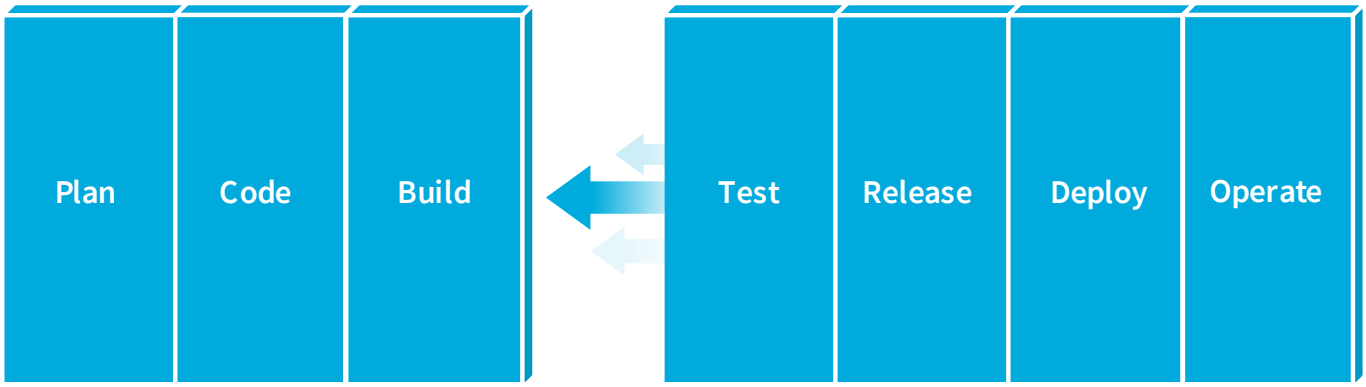


Zephyr's DevOps dashboard accelerates decision making by bringing together a unified view across departments.

Both solutions include Zephyr's VORTEX product, which integrates with 30 popular automation frameworks and allows you to set up one-click test automation as part of your DevOps approach.



According to Chris Bland, CEO of BDQ, a London-based software services company, DevOps involves automating tests and running those tests as early and often as possible. "This is part of the shift-left approach to software testing where you conduct more testing earlier in a product's lifecycle." In fact, Bland says the left-to-right flowchart of planning, coding, building, testing, etc. is outdated. "All these activities are now continuous," Bland says, "which is why a product like Zephyr's Vortex is so useful because it integrates with all of the test automation frameworks and lets our clients choose and control the amount of automation they want to use as they build their DevOps pipelines."



If Your Organization is in the Homestretch of Achieving *Continuous Testing Agility*

DevOps is not a methodology or a suite of tools but a cultural shift to remove the barriers between development and operations in order to meet the need for shorter and more frequent software deliveries. This allows an organization to respond in a more agile manner to changing business requirements. In a DevOps culture, systems engineers, release engineers, DBAs, network engineers and security professionals in the "Ops" branch seamlessly integrate with developers, QA, business analysts and product engineers in the "Dev" branch, becoming a single value IT entity.

The primary focus in implementing a DevOps pipeline is to automate everything, including the following:

1. Build automation

The software build happens automatically, using tools such as Makefiles or Ant, rather than when a developer manually invokes the complier.

2. Continuous integration

In Continuous Integration (CI), developers check code into a shared repository several times a day. Each check-in is then verified by an automated build, allowing teams to detect errors and conflicts as soon as possible. Automation framework and CI tools such as Jenkins and Bamboo are used to build, test and deploy applications automatically when requirements change to speed up the release process.

3. Test automation

Another step in the DevOps deployment pipeline is test automation. In addition to performing automated regression testing in a development tool like Jira, many agile DevOps teams also practice test-first approaches such as test-driven development (TDD), acceptance test-driven development (ATDD) and behavior-driven development (BDD).

4. Deployment automation

Once an application passes all the required tests, it is released into production. When needed, deployment automation delivers new functionality to users within minutes, as well as instant feedback to the DevOps team that allows them to respond rapidly to customer demand. This is often done using cloud resources and virtual infrastructure.

5. The final stage of a successful DevOps implementation

Uses machine learning to continually optimize your software delivery pipeline. Because machine learning systems can accept and process data in real time, they are invaluable in formulating answers that DevOps teams can use to improve processes and better understand the behavior of their applications.

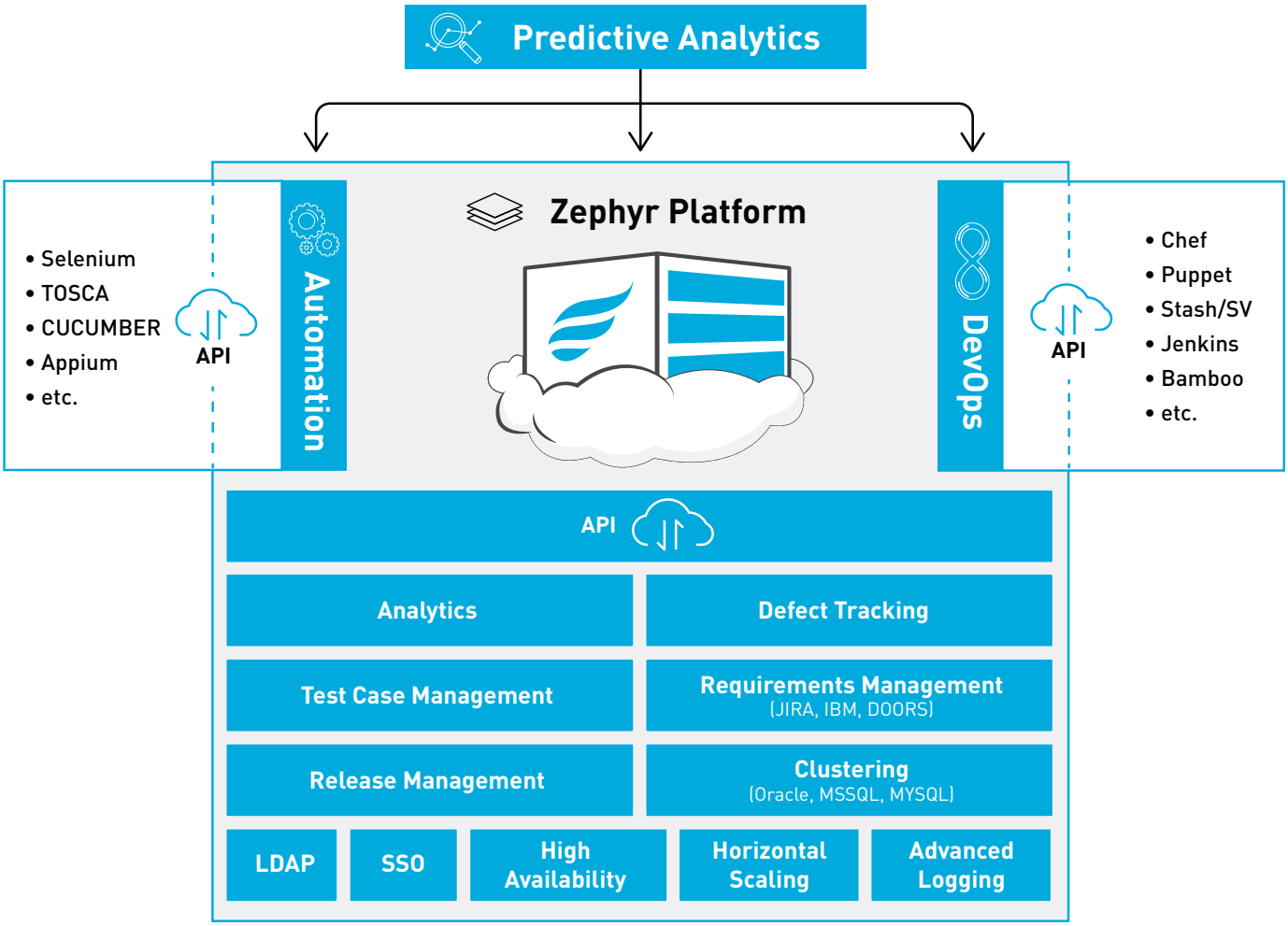
Reactive Versus Proactive Testing

Software Test Management has traditionally been focused on reactive, "after-the-fact" measurement that asks questions like:

- What's our defect count?
- How fast is our development and testing process?
- How complex is our codebase?

Organizations with an active DevOps culture generate increasingly large and diverse data sets across the entire application lifecycle, from development to testing to deployment to application performance management.

These data sets include things like server logs, error messages and transaction traces. Because of new Big Data technology that simplifies how large data sets are collected and analyzed, it's now possible to mine software defect data from several past releases and to exploit this data to improve the end-to-end automation of your organization's Continuous Delivery (CD) pipeline. This approach employs artificial intelligence (AI) techniques, including statistical methods and machine learning, which allow for better and more intelligent testing decisions right from the start.

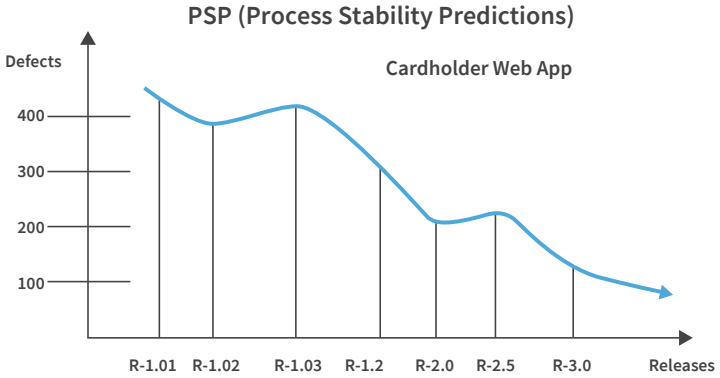


Zephyr 's predictive analytics product is a robust monitoring and analysis layer that harnesses large amounts of data for the ultimate DevOps goal of end-to-end automation.

The Zephyr platform expands on common questions like the ones asked above with a more proactive approach that breaks the usual boundaries of data analysis. The goal of this analysis is to maximize efficiency while minimizing the time, cost and risk of delivering software changes to applications in production. It does this by developing the following kinds of prediction models based on extensive data mining and iterative learning techniques:

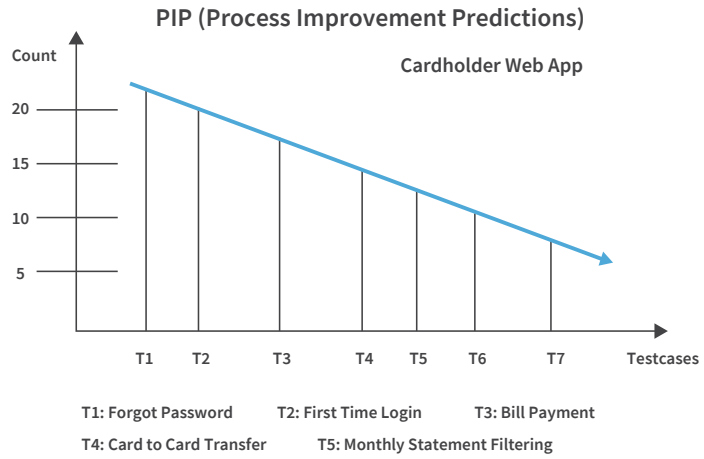
Process Stability Prediction (PSP)

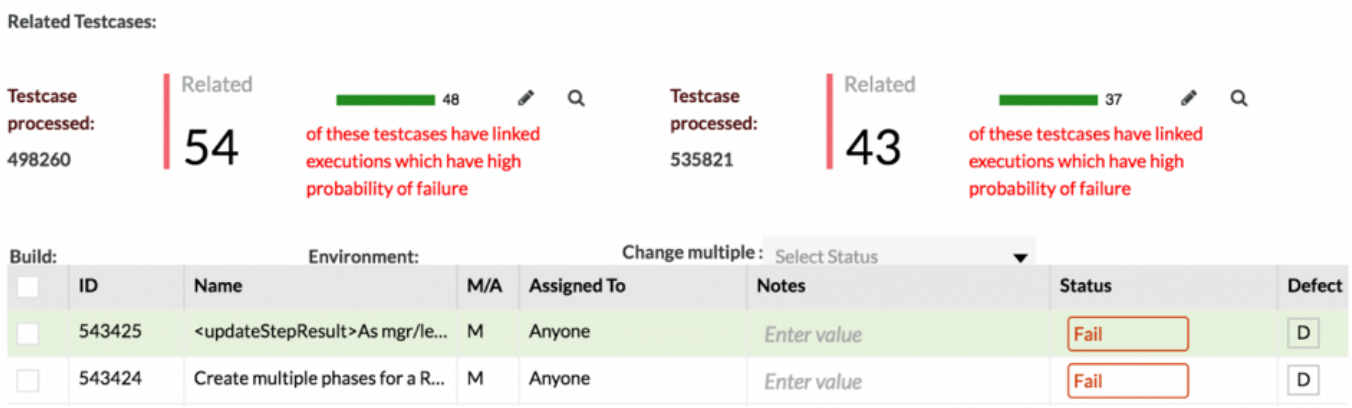
This model provides a birds-eye view of the defect management from multiples releases, which gives a sense of product stability over different lifecycles. Mapping defect trends across releases helps you better manage resources in order to keep deliveries on schedule. It also provides a status on the stability of point releases; the minor releases of a software project intended to fix bugs or do small cleanups rather than add significant features.



Process Improvement Predictions (PIP)

This dynamic model provides data on the number of test cases that have been automated for every project release. Higher test automation coverage helps reduce costs and improve efficiency. This model also helps ensure maximum gains on the automation attempted. For example, a team can use this model to choose areas to automate based on the defects/coverage across projects. It can keep the team from investing time and energy in an isolated area, which will ultimately help maximize its efficiency and productivity.



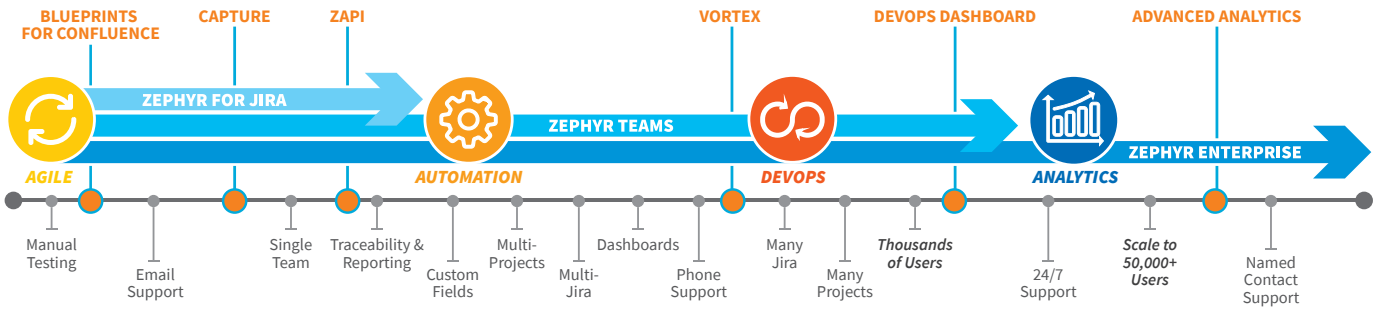


Efficiency Improvement Predictions (EIP)

This is another dynamic model that looks at the pattern of relationships across all test cases in the system. By mining historical data and analyzing similarities between tests, this model keeps customers from wasting time by running duplicate test cases. It accomplishes this by continuously searching for tests similar to those used in the current scenario, which helps teams optimize their execution strategies by reprioritizing tests based on data provided by the model. This saves teams time by offering an optimized and pruned test list that still provides full coverage in place of an entire test suite.

These three predictive engines that power the Zephyr Platform are all designed to help you automate the risk analysis and test management that are at the heart of software quality management. This is especially useful for organizations like Toyota who are looking to stay two steps ahead in their software delivery process. As Neeraj Tripathi explains, "at the moment, our team has its heads down trying to build our DevOps pipeline. We look to companies like Zephyr for help with how to use artificial intelligence and predictive analytics to optimize that pipeline. If you don't stay on top of this type of technology, you'll soon be obsolete."

Continuous Testing Agility is Your's with Zephyr



Building a successful agile continuous testing pipeline means reducing the cost, time and risk of delivering software changes by allowing for more incremental updates to applications in production. To create a seamless delivery pipeline, testing has to keep pace with a quickening development lifecycle. Zephyr provides a suite of tools to empower your organization with the flexibility, visibility and insights you need to achieve continuous testing agility. Use Zephyr's VORTEX product to set up one-click automatic testing across more than 30 popular automation frameworks. Harness our real-time dashboards for end-to-end visibility across Defect, Code Coverage, Source Control, Build and Test Management Systems in order to boost evaluations and improve resource utilization.

Room to Grow

Zephyr Enterprise can handle the workload of even the most demanding enterprises, with proven scalability to support up to 50,000+ users, an ability to stay highly responsive while capturing millions of test cases and test executions, and direct support for serious test automation workflows.

As your CD pipeline becomes automated, the obvious next step is to incorporate machine learning into the pipeline process. As described above, Zephyr 's machine learning product will help you maximize automation and optimize both test case implementation and defect trend predictions. The result is a faster, smoother software delivery pipeline and more proactive decision making.

Zephyr is the go-to testing solution for 18,000 Jira QA and DEV customers in over 100 countries, processing more than 40 million tests a day. These teams are committed to building high performance DevOps cultures and Zephyr is just as committed to helping them succeed. We recognize there are multiple pathways to DevOps and Continuous Testing Agility, which is why we offer different Zephyr for Jira, Zephyr Teams, and Zephyr Enterprise solutions, as well as a full range of support plans to accommodate teams of any size team and any type of location dynamic.

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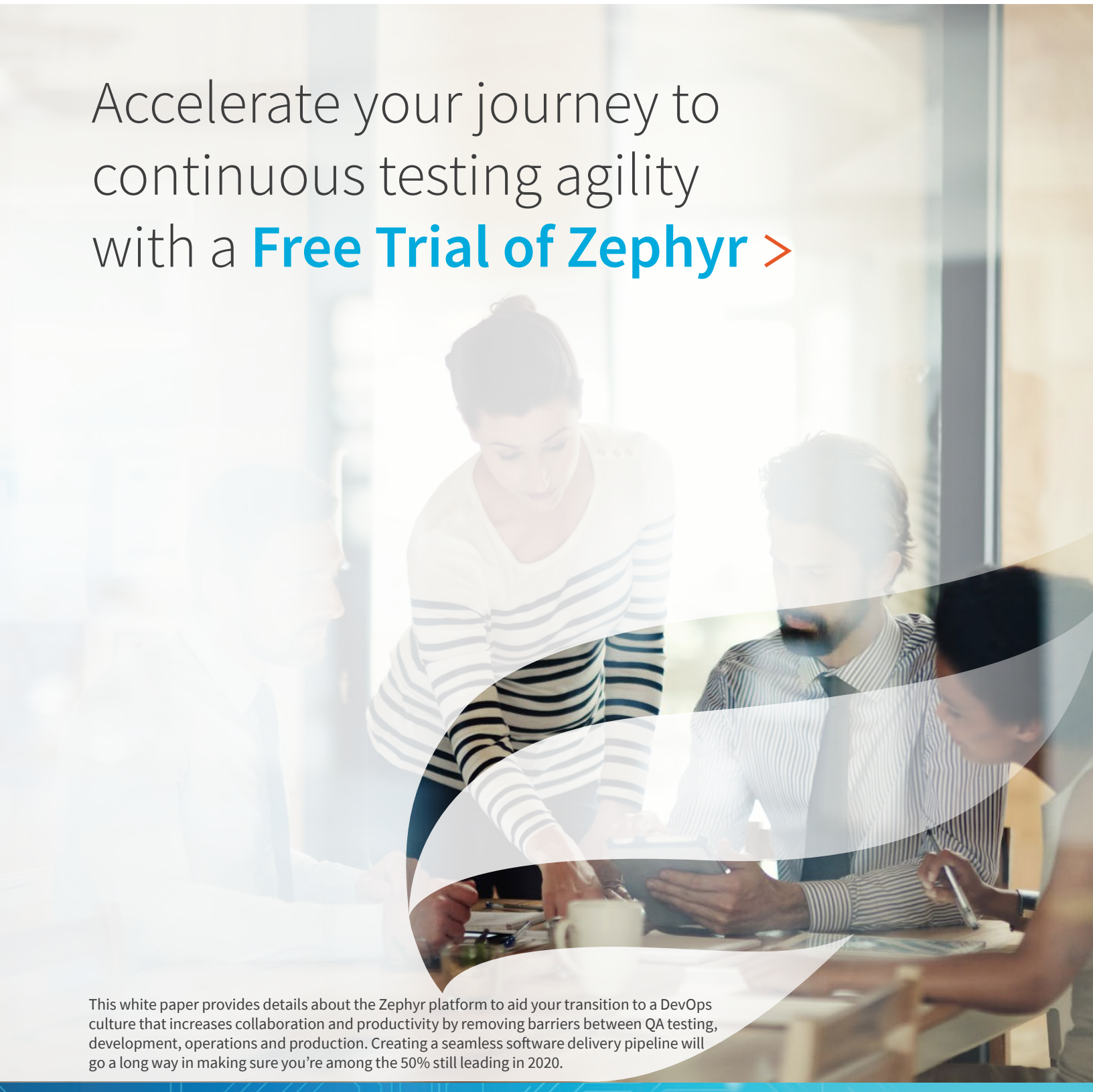
Where Will You Be in 2020?

Accelerate your journey to continuous testing agility with a **Free Trial of Zephyr** >



This white paper provides details about the Zephyr platform to aid your transition to a DevOps culture that increases collaboration and productivity by removing barriers between QA testing, development, operations and production. Creating a seamless software delivery pipeline will go a long way in making sure you're among the 50% still leading in 2020.

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About Zephyr

Zephyr provides the world's most widely used software test management solution, powering more than 18,000 customers and 5 million users across 100 countries.

Zephyr is leading a global transformation to DevOps and Continuous Testing Agility through widespread adoption of its advanced quality management, automation and analytics tools. Leading Product and IT teams in Finance, Healthcare, Media, Mobile, IT Services and Enterprise leverage the Zephyr family of products to keep pace with accelerating software delivery lifecycles. Driven by an agile company credo – to help organizations spend less time testing and more time building – Zephyr launched the first testing solution natively inside Jira nearly a decade ago. Today, companies and teams of all sizes rely on Zephyr and its end-to-end solutions, unmatched scalability and support to move from ideas to impact with increasingly greater velocity and quality of collaboration

Zephyr is headquartered in San Jose, Calif., with regional offices in Philadelphia, Europe and India.

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