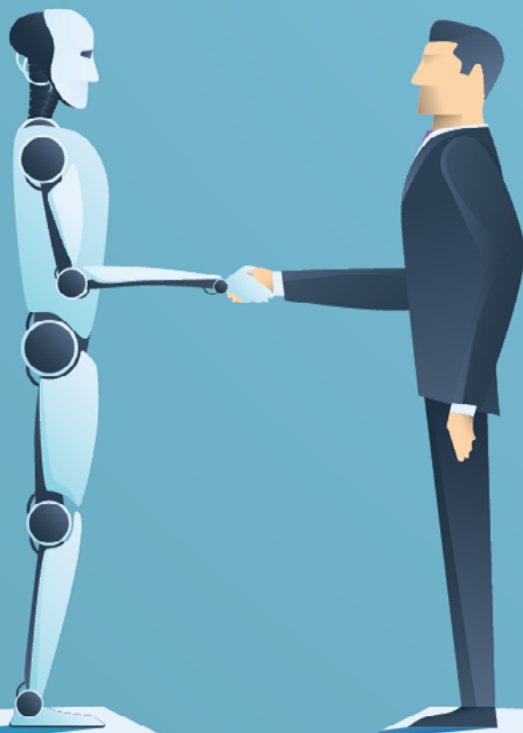


**Deliver supreme
quality productively**
with Qentinel Pace



Evolution towards an experience economy has empowered end-customers to be the ultimate judges of quality and the ultimate proponents of a continually improving user experience. Digitalization, one of the key enablers of an experience economy, has rapidly percolated to the farthest corners of our society and economy; making software not only omnipresent, rather the backbone of any business thereof. It would not be unjust to claim that a business's success is highly dependent on the quality of software running it.

In this highly digitalized, highly integrated and highly customer-driven economy, the businesses are compelled to release new products or services at an unprecedented rate, while trying their level-best to meet the end-customers' expectations. Consequently, businesses often find themselves amidst trying to reduce their time-to-market on one hand, while delivering superior quality and end-customer experience, on the other.

For being successful in the experience economy, businesses are necessitated to ensure the quality of their product and business processes. Now, quality does not happen to exist in the final product out of thin air, businesses need to keep a holistic view on their software development cycle. Consequently, businesses are left confounded on the following questions:

a) how to continuously ensure top-notch quality;
the quality of business processes, the quality of their offerings and the quality of the ecosystem in which they thrive?

b) how to get a holistic view on the software development cycle?
To understand what is going on, what needs to be fixed and predict trends.

c) how to achieve the top-notch quality and the holistic view in the most productive way?

Ensure quality by testing

A great software is always tested. Test everything, test at every level and test often, can perceivably solve the challenge of continuously ensuring top-notch quality.

Testing contributes in creating enormous value for the end-customer experience. Businesses nowadays are either already investing heavily in ensuring the end customer experience or are increasingly becoming aware of the need. They also understand that their testing costs are going to grow no matter what, however they can limit their growth by wise actions.

Regardless of how absolute necessary testing is, unfortunately and undeniably, it is time and resource consuming, repetitive and tedious.

How about automating testing?

Test automation is an essential solution in addressing the challenges in testing: time and resource consuming, repetitive and tedious, maintainability etc. With test automation businesses could answer their testing needs, get quick feedback on software quality and deliver value faster than before.

Test automation frees humans from repetitive and tedious tasks, and foolproof quality assurance from human errors. It also liberates us from constraints implied by manual resources: hours, health, efficiency etc.

A well implemented test automation yields enormous and sustained benefits. Businesses witness immense reductions in manual testing efforts, accelerated development and supreme delivered quality.

Let's deploy test automation!

Typically, you need to decide on selecting the right test automation solution for your quality assurance needs. At inception, test automation appears to be a cakewalk. There exists a wealth of handy tools, even free ones that could get a person with average technical acumen to spin up their first test case within few hours. Drawing an analogy from the world of coding. Anyone who has ever tried their luck with coding, has effortlessly spun up their first code and printed 'Hello World' on an otherwise unfriendly looking terminal. However, when was the last time a coding language, a tool or a coder was hired on its capability to push, 'Hello world' out of a ghastly looking dark colored terminal?

You also need to foresee or contemplate on how the selected test automation solution would in long term provide you with a significant return on investment. More often than not, the widely available commercial or free tools not only fall terribly short on scaling, they actually do end up being notoriously expensive. Businesses often end up replacing x number of manual testers with x number of expensive test automation experts who typically spend 70% of their time in maintaining x number of test automation environments, tools and scripts. Not to mention the colossal amount of money spent on procuring IT infrastructure for test automation purposes.

Practically, you should also be preparing for the scalability and maintainability aspects of the selected test tool. Diving deeper into maintenance saga, let's take a case of multiple teams doing test automation. Now, every individual has its own understanding of the right level of abstraction of a test automation script. Consequently, it starts from a library development at a team level, which suits their needs. In a well-structured test automation project this library is centrally maintained by a team and provided to other teams. When the teams grow profusely, the standard process of using the library turns into every team member making a local copy of the library and adding an abstraction layer on top of it. Sooner than later the number of copies of the same library grows out of hand. Maintainability and scalability shatters at this point.

Be very careful with burdening the IT department with

a number of test automation tools each addressing a specific test automation need. In larger companies, a testing tool is adopted with some customization to match a specific team's needs and different tools are needed for different teams. Eventually, companies end up loading the IT departments or other dedicated team with the task of maintaining numerous different test automation tools intending to address the various quality assurance needs. And time after time, the test automation efforts become obsolete due to minor changes in the system under test. A test automation project transforms into a test automation maintenance project.

If by hook or by crook, such a test automation project is nevertheless working and producing an ample amount of significant data, it is of utmost importance that the selected tool provides access to the quality of the product, processes and business as a whole. Typically, and sadly enough, even after investing enormously into test automation or rather test automation maintenance, business owners still remain deprived of visibility.

Back to white board

Unfortunately, test automation is quite narrowly perceived as only automation of execution of test cases. Although it is obviously the core of test automation, notwithstanding that, test automation encapsulates; automating the setup of test tools and environments, automating the installation and configuration of system under test, automating the preparation of test data, automating creation of test cases, automating the test reports and automating the analysis of the test reports.

It is important to note that deploying a comprehensive test automation should also be cost-effective. Now cost-effective does not necessarily mean it is cheap, rather it means that the solution should, scale, address majority of a business's quality assurance needs, enable high productivity and low maintenance costs. Simultaneously, the test automation should keep its usability and robustness. Not to mention, it should integrate well with the system under test.

Test automation along with software development produce a wealth of data; however, data alone is

futile. Data alone does not create value. Intelligence is derived when the measured data can provide you with the current state of quality of your product, identify the right levers to be pulled in order to meet the targets, enable you to make more informed decisions and predict trends.

Quality assurance with Qentinel Pace

Briefly, Qentinel Pace is a cloud based robotic software testing platform available as a SaaS product. And it is developed to precisely address the challenges of delivering fast and delivering with quality, faced by businesses in the era of digitalization.

We at Qentinel have developed Qentinel Pace to be the most productive testing solution for your end-to-end business processes. It is a single product answer to solve all your testing needs. While doing so, Qentinel Pace provides you with a holistic view of your

product or process quality, along with deeper insights into specific processes.

Create the most readable and expressive test cases with PaceWords

PaceWords enable you to write test cases with high readability, usability and robustness. You can use the same PaceWords to write test cases which can test mobiles, browsers or native operating system applications. The flow of a test case using PaceWords is strictly in line with work-flow of a tester's actions, freeing you from maintaining a separate documentation.

Let's test Slack using PaceWords. Slack has a web app, a mobile application and a native application for windows and mac. Slack also has a pretty coherent process of sending a message across its different platform.

PaceRobotChrome Sends Slack Message

```
AppState    SlackApp
ClickText   general
ClickText   Message
TypeText    Pace is awesome!
ClickText    Send
```

PaceRobot2 Reads & Replies Slack Message

```
AppState    SlackApp
ClickText   general
VerifyText  Pace is awesome!
ClickText   Message
TypeText    Yeah, I know!
ClickText    Send
```

PaceRobotMobile Reads Slack Messages

```
AppState    SlackApp
ClickIcon    Slack
ClickText   general
VerifyText  Pace is awesome!
VerifyText  Yeah, I know!
```

Scenario 1:

PaceRobotChrome sends a slack message on channel *general* over browser application.

Scenario 2:

PaceRobotWindows launches its slack application over windows OS, reads the message sent by PaceRobotChrome and replies to it.

Scenario 3:

PaceRobotMobile, who is a social media stalker and maintains an iOS and an android device, launches Slack app on both the devices and reads the messages sent by PaceRobotChrome and PaceRobotWindows.

PaceWords using computer vision alongside other technologies keeps the test automation robust against minor changes in the interface.

Execute test cases with highly scalable, productive and maintainable PaceRobots

PaceRobots are cloud entities which are dynamically born in clouds, scale with need, execute efficiently and then disappear.

PaceRobots free you from worrying about investing in procuring and maintaining IT infrastructure. They also reduce idle costs and delays in urgent need-based procurements. It takes a few seconds to create a PaceRobots and execute the test cases, and even lesser to kill it.

You can practically spin up numerous PaceRobots, which in turn are spinning numerous parallel test executions across different platforms at the same time; infinite parallel execution capacity. On the other hand, a tester can spin up one PaceRobot running one testcase every day.

Remember PaceRobots do not get tired, fall sick or need annual vacations.

Quality Intelligence® for DevOps

Quality Intelligence® enables you to understand how different processes interact with each other as a system to meet your business objectives and assists you in making data-driven QA related business decisions.

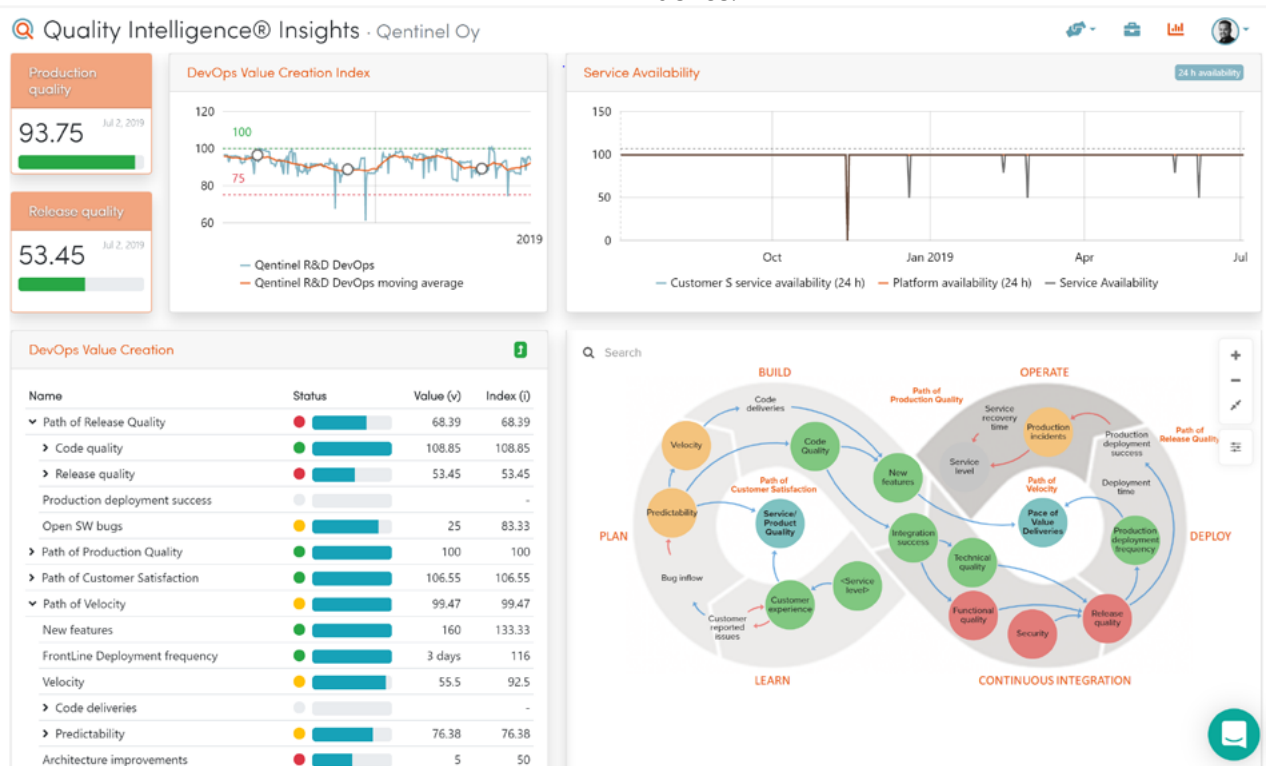
Ample amount of data is generated at different phases of software development and that is where Quality Intelligence® comes into play. It structures all the data in an intelligible way and provides you the overall quality, while pin-pointing precisely at processes that need immediate attention.

Qentinel Pace comes with Quality Intelligence for DevOps, which enables you to have a holistic view on your DevOps health.

Quality Intelligence is implemented keeping the DevOps objective in center i.e. deliver fast & deliver with quality. It expands the way you think of testing and evaluating the quality of software by addressing the four key major concerns:

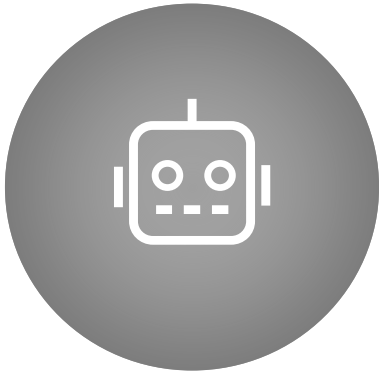
1. Is the current release candidate ready for deployment and if not, what should you fix?
2. What do you need to improve to avoid service outages and maintain good user experience?
3. How can you improve the service or product in use and customer satisfaction?
4. How can you accelerate the speed of delivering value?

Quality Intelligence advances your decision making with AI powered predictions and empowers you in making more informed business decisions with confidence.



Qentinel Pace Philosophy

Qentinel Pace's is developed keeping three key ideologies.



Efficiency is taken to a next level with Qentinel Pace. You are looking at a product which can spin up a test automation infrastructure in few seconds and set you to test your software with PaceWords. It frees you from the headache of investing in IT- infrastructure procurement and maintenance and from the resources for developing and maintaining test automation libraries. Qentinel Pace enables everyone to write superior design, highly readable and robust test automation.

And the productivity just gets better with increasing number of test automation projects or the number of people writing test automation.



Scalability is about one product answer to all the quality assurance needs your business might have. Qentinel Pace scales:

- Across automation interfaces: you can test mobile apps, web interfaces, native applications, SAP, ERP etc.

- Across variable testing needs: Qentinel Pace can scale up infinitely or scale down depending on your need, hence saving on idle costs and delay of procuring and maintain IT infrastructure.

- Across test types and test levels: You can do functional testing, performance testing, load testing, it fits-in from your development to deployment cycle.

- Across teams: many teams in an organization can work on various projects in Qentinel Pace.



Predictability and transparency powered by AI assists you in making informed decisions with higher confidence and keeping commitments. Qentinel Pace can predict the current state of quality of your product, identify the right levers to be pulled in order to meet the targets, enable you to make more informed decisions and predict trends.

You get a fast and precise feedback through detailed logs, live streaming and recorded videos of test cases. At the same time, you can figure out what is hindering the quality right now and what you can do to improve it.