**Quality Assurance VS Quality Control (QA VS QC): What’s the Difference?**

In software development, the terms ‘Quality Assurance,’ and ‘Quality Control’ are often thrown around interchangeably. But it’s important to understand that **Quality Assurance VS Quality Control** **(QA VS QC)**are distinct concepts that form different parts of the quality management cycle. In this blog, we delve into the significance of these three terms and explore how they can be utilized to enhance the quality of a product.

This blog discusses the differences between Quality Control and Quality Assurance. These are all essential parts of ensuring software works well, so understanding how they work together is vital if you want a great product. We’ll look at these processes and explain what makes them unique. If you’re into software testing or engineering or are just curious about software development, this blog will be super helpful! Let’s start exploring the world of Quality Control vs Quality Assurance !

**Quality Assurance VS Quality Control (QA vs QC)- Overview**

**What is**[**Quality Assurance**](https://testsigma.com/guides/quality-assurance/)**?**

Quality assurance is “A system for evaluating performance, as in the delivery of services or the quality of products provided to consumers, customers, or patients.

“Quality Assurance(QA) is a standard process set up by an organization to meet quality standards. This process helps to avoid mistakes and defects, delivering products and services to customers.

QA is the foundation pillar for quality management as it focuses on the integrity of the product. It also provides confidence to stakeholders that desired and mentioned requirements are fulfilled.

**What is Quality Control?**

Quality Control is “setting standards and testing to ensure something, like a product or service, is done correctly.”

Quality control aims to check whether the prescribed model was followed. It can be achieved by performing audits and determining whether the team followed the defined model to attain quality.

**Quality Control and Quality Assurance: Origin**

Both Quality Assurance and Quality control are interrelated. They are essential parts of quality management protocols followed by an organization. Initially, Quality control started to be followed in the 1920s by the manufacturing industry.

Quality control guidelines need to be implemented as the manufacturing industry demands the exact replicas of the original product in bulk without any variations. The Quality control process helps them check if the desired requirements were met without committing any mistakes.

With passing years, more research work and Growing technology made the manufacturing process more complex. This made the Quality control process even more complex.

This made the organization define a proper quality control process and ensure it is followed throughout that particular unit’s development.

In the 1950s, Quality Control was further extended in the manufacturing unit by performing Quality Assurance checks and Audits. The significant focus areas were the sectors related to public health and safety.

The idea behind “Assurance” was randomly selecting any manufactured piece from the batch and checking if it meets the desired requirement. If the piece is found to meet the requirement, it is passed.

It may be passed if the piece does not match the exact requirement but is within the defined range. If it is found out of the defined range, it has to be rejected and can lead to the immediate stopping of the manufacturing process and starting it all over again from scratch leading to loss of money and time.

Quality control focuses on auditing the project and checking if defined guidelines and protocols were followed while manufacturing.

**What are the Similarities Between Quality Assurance and Quality Control?**

Quality assurance (QA) and quality control (QC) are integral components of a comprehensive quality management system. Despite their distinct roles, they share several similarities:

1. **Focus on Quality:** Both QA and QC aim to ensure the quality of products, services, or processes. While QA prevents defects by establishing and implementing processes and standards, QC focuses on identifying and correcting defects through inspection, testing, and analysis.
2. **Customer Satisfaction:** Both QA and QC ultimately aim to satisfy customer requirements and expectations. Maintaining high-quality standards and delivering defect-free products or services contribute to customer satisfaction and loyalty.
3. **Continuous Improvement:**Both QA and QC emphasize the importance of continuous improvement. QA involves establishing processes for ongoing enhancement of quality management practices, while QC involves identifying areas for improvement based on defects found during inspection or testing.
4. **Data-Driven Approach**: QA and QC use data and metrics to assess quality. QA uses data to establish quality standards, measure process performance, and identify areas for improvement. QC uses data from inspections, tests, and analysis to identify defects and make informed decisions about corrective actions.
5. **Interdependence:** QA and QC are interdependent and complementary functions. While QA sets the foundation for quality by establishing processes and standards, QC ensures these standards are met through inspection and testing. Feedback loops between QA and QC enable continuous improvement by incorporating insights and lessons learned from each function.
6. **Documentation**: QA and QC require proper documentation to ensure traceability and accountability. QA documentation includes quality plans, procedures, and standards, while QC documentation includes inspection reports, test results, and corrective action records.
7. **Employee Involvement:** Both QA and QC require the involvement and commitment of employees at all levels of an organization. Employees contribute to QA by adhering to established processes and standards and participating in continuous improvement initiatives. In QC, employees are responsible for conducting inspections, tests, and analysis to ensure product or service quality.

**Does Quality Assurance Remove the Need for Quality Control?**

The question of whether Quality Assurance (QA) eliminates the need for Quality Control (QC) is a common one in quality management. While QA establishes strong foundations, QC remains essential for several reasons.

*Almost up to 90% of companies implement QA and QC for optimal quality management.*

**Quality Assurance VS Quality Control** **: A Proactive & Reactive Partnership**

* **Focus:** QA is proactive, preventing defects by establishing processes, policies, and standards. QC is reactive, meticulously ensuring adherence to established guidelines and identifying any issues that may have slipped through.
* **Timing:** QA is implemented throughout a project’s lifecycle, while QC often occurs after specific stages or at project completion.
* **Analogy:** Think of QA as designing a building’s blueprints and QC as inspecting the construction to ensure it follows the plans.

**The Work of QA and QC**

QA creates a framework for achieving quality, but it’s QC that actively measures and verifies its effectiveness. The results of QC can then be fed back into QA to refine processes for future projects.

Imagine QA setting the processes and QC checking the deliverable to ensure it meets expectations.

**Real-World Example:**

**Software Development:**

QA defines bug reporting standards in software testing, while QC executes those standards by testing the application and logging bugs according to the defined format.

QA can update the standards to improve future bug reports if QC identifies a need for additional information (e.g., a probable root cause).

**Real-life Scenario Examples for QA vs QC**

Let’s delve deeper into the software development scenario we described in the previous section, highlighting the interplay between QA and QC:

**QA Sets the Stage for Effective Bug Reporting**

Imagine the QA team is building the foundation for quality bug reports. They establish clear guidelines outlining the information testers must capture when encountering issues. These guidelines, essentially the **QA standards**, might specify details like:

* **Summary:** A concise description of the bug (e.g., “Login button not working”).
* **Steps to Reproduce:** Detailed instructions on consistently triggering the bug (e.g., “1. Navigate to the login page. 2. Enter valid username and password. 3. Click the login button.”).
* **Expected Result:** What should happen under normal circumstances (e.g., “User is redirected to the dashboard.”).
* **Actual Result:** The behavior observed that indicates a bug (e.g., “Nothing happens when clicking the login button.”).
* **Optional:** Additional sections like screenshots or error messages can also be included in the standards.

**QC Puts the QA Standards into Action**

The QC team, acting as the testers, then executes these predefined standards during the software testing phase. They meticulously test the application, logging any bugs they encounter. While following the QA guidelines, they fill out the bug report template, ensuring all necessary information is captured for clear and actionable reports.

**QC Identifies Room for Improvement**

Here’s where the true work between QA and QC comes into play. Let’s say the QC team encounters a bug where the menu bar disappears when scrolling down a webpage. They can successfully document the issue using the existing QA standards (summary, steps to reproduce, expected result, actual result).

Yet, the QC team might identify a gap in the standards. For example, the report might lack information about the “expected result” under normal circumstances (i.e., the menu bar should remain visible).

**QA Adapts & Improves Based on QC Feedback**

This valuable insight from QC feeds back into the QA process. Recognizing the need for a more comprehensive report, the QA team can update the bug reporting standards.

They might add a mandatory field for “expected result,” ensuring all future reports clearly outline what the normal behavior should be.

This continuous improvement loop, fueled by QC’s findings, strengthens the overall quality of bug reporting.

**The Benefits of Collaboration**

This example showcases the beautiful collaboration between QA and QC. QA establishes a systematic approach to bug reporting, and QC meticulously implements it. By identifying areas for improvement in the reporting process, QC empowers QA to refine the standards, leading to more detailed and actionable bug reports.

Ultimately, this teamwork benefits the entire development process by ensuring clear communication of issues and facilitating faster resolution of bugs.

**Quality Control: What Role Do Quality Audits and Inspection Play in Product Development?**

Quality Audits are the onsite evaluation of a process to ensure compliance with the requirements. They are performed under the supervision of an auditor who checks whether set guidelines were practiced during the making of the product.

Audits are not about checking the product quality but about inspecting the type of work done in making a product. It evaluates how closely the prescribed model was followed. Are there any variations? If yes, then what is the reason behind variations?

The objective of audits is to continuously improve the quality of the work henceforth increasing product quality. Inspection can be one of the aspects of an Audit.

The inspection examines the traits of a product. It checks how well the product fits requirements and whether there are any variations between the developed product and desired product. If yes, will it fit the requirement or not? How many can load/stress products handle? Which adverse situation can make it crash?

In short, the audit examines the quality of the process used while making a product. Inspection is about examining how well the product fits the requirement provided by stakeholders.

Quality and inspection are practiced in various industries, such as software, manufacturing, automobile, retail, etc., to ensure all follow a standard procedure and practice.

As in bulk manufacturing, any deviation from the standard procedure might lead to mistakes, resulting in the loss of a considerable amount of money and time.

**Quality Control vs Quality Assurance(QA VS QC)**

One focuses on finding and mixing mistakes, and the other makes sure that mistakes don’t happen in the first place; many differences make these two stand apart, and let’s take a look at the differences between Quality Control and Quality Assurance:

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| --- | --- | --- |
| **Feature** | **Quality Assurance (QA)** | **Quality Control (QC)** |
| **Focus** | Preventing defects | Identifying defects |
| **Approach** | Proactive | Reactive |
| **Activities** | Process improvement, test planning, reviews | Test execution, defect reporting |
| **Responsibility** | Entire development team | Testing team |
| **Orientation** | Process-oriented | Product-oriented |
| **Goal** | High-quality software development process | High-quality software product |
| **Action** | Defines standards and methodologies | Ensures adherence to standards |
| **Stage in SDLC** | Throughout the lifecycle | Later stages (testing) |
| **Measure** | Effectiveness of defect prevention | Number of defects identified |

**Finally, What is the Relationship Between QA and QC?**

QA, QC, are like a chain that works together to ensure a high-quality product. QA sets the standards for how it should be done, QC ensures those standards are followed, checks that everything is up to the quality standards. That way, any issues can be found quickly so they can be fixed before anyone else sees them.

QA, QC, are all crucial steps to make sure that a product is up to the standard it should be. Testsigma can help you to get precisely what you want. It’s a cloud-based testing solution that automates the testing process, so you don’t have to do it manually and waste time. It also provides a Quality Control environment to ensure everything is done right and the product is top-notch. So if you’re a software tester or quality assurance engineer, TestSigma is perfect for you! Get started and see how it can improve your software testing process and product quality.

**Frequently Asked Questions**

**What is the difference between quality assurance and testing?**

Quality assurance and testing are two critical concepts in software development. Quality assurance (QA) ensures the product meets all requirements and contains no defects. This means looking at code and designs and running tests to ensure everything is up to standard. Testing is then used to find any issues or bugs that may have been missed in QA, so they can be fixed before the product is released to customers. Specialized personnel with expertise in this field usually do the testing. Read more – [**difference between quality assurance and testing**](https://testsigma.com/blog/software-testing-and-quality-assurance/).

**Is testing part of quality assurance?**

Yes, Testing is essential for ensuring products and services are up to standards. It helps identify issues before they become significant problems so customers get the best experience possible. Testing can be done manually, automatically, or through unit testing. Doing this will help keep costs down by fixing issues before they become more significant problems.