



SITEK Inc. INSIGHT – QA and Testing... Are you prepared?

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As with each SITEK INSIGHT it is our objective to provide not only interesting reading but pertinent topics that are informative, relevant and provide for actionable INSIGHT. As technology advances new trends do develop and SITEK will continue to provide INSIGHT and commentary.

One area of interest that we believe will become more of a priority rather than a trend to cite is the area of Quality Assurance and Software Testing.

...Reports suggest that more than 40% of IT budgets will be devoted towards Quality Assurance and Software Testing... ARE

YOU PREPARED?

As discussed in the Nov. INSIGHT article, application development is going through significant changes and in the very near future, 2020 those leading business organizations who keep up with this changing landscape will have an advantage over those organizations that do not!

The article went on to say... IT and Development in the enterprise must start to plan in forging a concrete organizational plan addressing technology and related software applications both strengths and drawbacks. Additionally, the focus of the enterprise must be to evaluate and question specific areas of impact, implications and future longevity. Please note (condensed version):

- **Innovate** – Legacy is old news, and new innovative approaches to App development for the enterprise will continue to evolve and prevail.
- **DevOps will Continue to Evolve** – As businesses become more integrated and multifaceted the demand to move larger amounts of data will continue, the necessity for DevOps is imperative.
- **Design for a Hybrid Future** – Developers must design Apps and systems with a hybrid future in mind.
- **Secure the Enterprise** – With the emergence of new technology, distributed systems, mobile, cloud, implementation of various scripting languages and use of cross-development platforms, etc. the enterprise becomes extremely vulnerable regarding the “attack surface.”
- **Responsive Web Design (RWD) is Here** – As technologies evolve and web design practices mature RWD will allow and provide for a more customized viewing experience by end-users when using different platforms (e.g., iOS/Android - phone, tablets, laptops, etc.).

In this new technology led era users are demanding higher standards that will be driving improved connectivity and true on-the-go access of information, in addition to a host of new services and product offerings (i.e., platforms and rapid advancements in mobile and cloud technologies). These include IoT-Big Data Analytics, Cloud Technologies, Mobility, AI and Virtualization capabilities... just to mention a few.

Therefore, the technology space will have to be focused on delivering quality based on a high degree of reliability resulting in a reduction of application errors, improved security and application performance for end-users (internal/external).

With the advancements in technology, businesses might be placing a higher priority on faster time to market, responding to competitive pressures, and establishing aggressive product development timelines and refresh cycles. The impact is simple QA and Testing can often fall by the wayside. Keep in mind that customer expectations are higher than ever. For example, in the specific case of mobile applications, customer patience is shorter than ever. QA and Testing become even more important!

“MarketsandMarkets predicts that the global security testing market will grow to \$4.96 billion by 2019 from \$2.47 billion in 2014.”

There are many new and emerging trends in QA and Software Testing. In fact, one would be surprised by the number of software technologies available that are driving these new trends at a much quicker and faster rate. So, what are the key and emerging trends in QA and Software Testing?

1. **Security** – Capgemini Quality Report 2016-17 states, “65% experts said that security is the top priority in testing.” As technology advances end-users will be the beneficiary of new capabilities and services. Providers for mobile, IoT and cloud platform/services will have increased risks and challenges. Specifically, as business enterprises have more options available (i.e., increased connectivity, data and information systems) and switch to cloud services which enable improved global integration capabilities personal information, or confidential client data at the same time could become compromised and go public. Security will become the main concern and more efficient QA and testing practices will help in avoiding and preventing costly attacks and ensure that applications and data are protected and used as intended.

While we might understand the full scope of security threats or vulnerabilities to applications. We must also set areas of focus within the development process that will eliminate potential security threats. Here are a few attack vectors to consider:

- **SQL injection** is a code injection technique, used to attack data-driven applications, in which nefarious SQL statements are inserted into an entry field for execution (e.g. to dump the database contents to the attacker). SQL injection is mostly known as an attack vector for websites but can be used to attack any type of SQL database.
- **Cross-Site Scripting (XSS)** attacks are a type of injection, in which malicious scripts are injected into otherwise benign and trusted web sites. XSS attacks occur when an attacker uses a web application to send malicious code, generally in the form of a browser side script, to a different end-user.
- **Cross-site Request Forgery**, also known as one-click attack or session riding and abbreviated as CSRF or XSRF, is a type of malicious exploit of a website where unauthorized commands are transmitted from a user that the website trusts. Unlike cross-site scripting (XSS), which exploits the trust a user has for a particular site, CSRF exploits the trust that a site is in a user's browser.

The short answer is to include employing and using modern technology, code source auditing and proper QA/Testing protocols. For example:

- **SQL Injection** – Using newer technology and careful design. SQL Injection can happen anywhere on a site. Due diligence when creating user input is key. Techniques exist in most modern languages to prevent these attacks, but proper code auditing ensures everything is protected, not just “the important stuff.”
- **CSRF** – Use up-to-date technology. Tools such as Ruby-on-Rails and MVC.Net core ship with easy to use counter measures against CSRF. Again, proper code auditing is the best way to ensure their use.

2. **Big Data Analytics and processes to engineer “Quality in”** – Engineering Quality in will become a priority. Applications driving Big Data Analytics is more than putting all data information into a format that can be easily used.

QA and software testing will be a focus and area of impact in software development and engineering. Therefore, developing applications will take on a new dimension as “Big Data” analytics grow in terms of providing strategic advantage for the enterprise. This is why developers will have to understand the importance and priority given to developing new QA and testing processes designed to build “quality in” that will provide faster releases and reduction of costly time-to-market life cycles. QA and testing teams need to employ new strategies for Big Data and software testing because it requires a higher grade of analytical techniques, tools and frameworks. Additionally, as new types of Big Data platforms (i.e., smart devices) are developed the possibilities to connect the enterprise with clients will potentially grow exponentially.

Employing a comprehensive development/engineering strategy around “Quality” is important as it supports and enables seamless and daily interaction by users. Big Data requires a much different QA and testing approach. The Priority is to reduce risks related to compliance, security, performance and use issues.

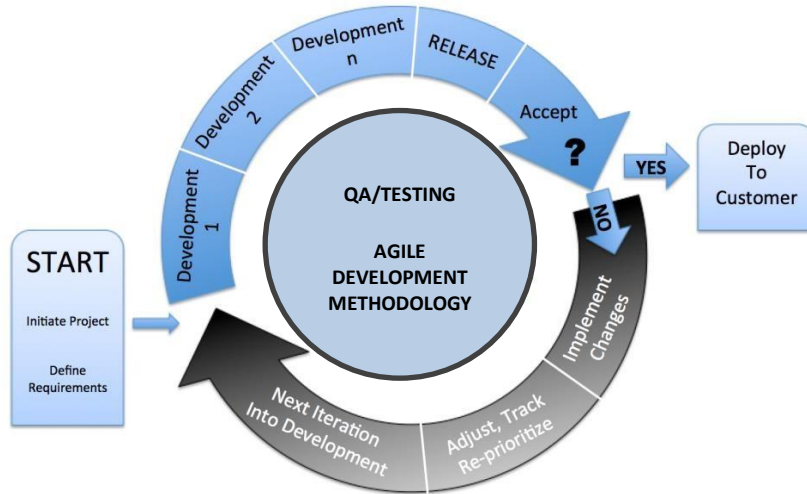
3. **Changing Role of QA/Testing in DevOps** – According to Forrester... *“Organizations are not looking at having centralized Test Centers of Excellence anymore... The erstwhile testing arena is making a shift towards quality engineering, and testing is intended to become more iterative, progressive, and seamlessly integrated with development.”*

In short, organizations must plan to ensure that the integration of development processes (e.g., Agile Development Methodology), QA/Testing and DevOps becomes not only a seamless function but will be designed in creating a defined “inner core” or cycle structured to create value (i.e., improved development cost structures, aligned QA/Testing and reduced time-to market release cycles etc.).

Usually, QA/Testing would include in some cases multiple build versions of software outside of the development environment and then be designated their own environment in which to conduct QA/Testing, to include functional and regression testing etc. This would take time and could have much iteration before sign-off on the final software/system build.

QA/Testing and DevOps now call for a higher level of coordination between all stakeholders upfront and throughout the entire development process. As the diagram below suggests in an Agile development environment QA/Testing becomes part of an integrated, automated and concurrent “inner core” of the development cycle and process.

This changing role now allows for QA/Testing to align with DevOps and development methodologies (e.g., Agile) designed to integrate all the software development functions from development to operations to QA/Testing.



At SITEK we know how to best leverage technology to deliver competitive advantage for your business.

With our experience in the software development field, SITEK can provide an extremely valuable third-party perspective, when brought in to QA/Test another vendor’s software. System testing is fundamental to the quality of any software. Although many developers take short-cuts and settle for only testing their software during development (Alpha-Testing), we at SITEK always encourage our clients to include a distinct testing phase in any software project. This testing phase allows the system to be tested as a completed unit, and is usually done by someone other than the developer. Using this strategy, additional user feedback on the functionality and usability of the software can be integrated prior to initial release. Completion of the testing phase is accomplished through preliminary use by actual end users of the software in the real world conditions at the client's site (Beta-Testing) **SITEK Can:**

- Provide specialized** QA and Testing capabilities that will ensure seamless software release success
- Provide dedicated and trained** IT application/solution support services whether remote or on-site
- Provide alternative** solutions designed to support your key business strategies, goals and objectives
- Provide scalable** development expertise meeting your business needs utilizing the latest technologies

About SITEK Inc., founded in 2006 and headquartered in Lexington, Kentucky, SITEK provides technology-driven solutions for clients large and small. SITEK has delivered solutions for global clients in diverse industries including; Healthcare, Manufacturing, Utilities, Insurance, Government and Education. SITEK also provides innovative solutions to technology staffing needs. SITEK has the experience to place qualified candidates in the U.S. and internationally, delivering the right resources for any company.

SITEK – Core Competencies

- System Architecture and Design
- Application Development
- Project Management
- Document Management (SharePoint/ImageNow)
- Testing and Quality Assurance

SITEK – Key Differentiators

- Proven track record
- A decade of customer satisfaction
- Complete software life cycle experience
- Experienced in diverse technologies
- 100% Minority owned small business
- Located centrally with global reach

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