Robust quality engineering strategy for capital markets in the digital era

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The operating landscape of capital markets has been continuously changing at a rapid pace over the last decade. The changes have been coming from stringent regulations after the 2008 financial crisis, upcoming innovations in technology, the rise of FinTech, multiplication of data, and the increasing focus on customer experience in other industries.

As per Everest Group, enhancing customer service and new product development leveraging artificial intelligence (AI), blockchain, cloud, big data and analytics, and regulatory compliance have become the key priorities for capital market firms[1] (See figure 1).

In capital markets, thousands of transactions are recorded every second generating massive volumes of data. The need to reduce cost and increase regulatory compliance is making data management extremely important. Capital market firms, like all other industries, have recognized the customers' and stakeholders' expectations of a strong digital presence and transformation to a digital platform.

Robust and defect-free IT applications and infrastructure are the foundation to facilitate these massive volumes of financial transactions and digital platform aspirations.

As the capital markets industry is very dynamic, IT systems are expected to be compliant in handling regulatory changes as well as growth in demand. Firms are launching innovative products to remain relevant and to keep pace with breakthrough technologies like AI, machine learning (ML), and blockchain. The quality of user experience and customer services along with defect-free launch of new products and services will be a key differentiator in this environment.

In-depth testing of applications before their deployment is crucial to deliver best-in-class services and minimize the risk of failure. This brings the focus on quality engineering and testing (QET).
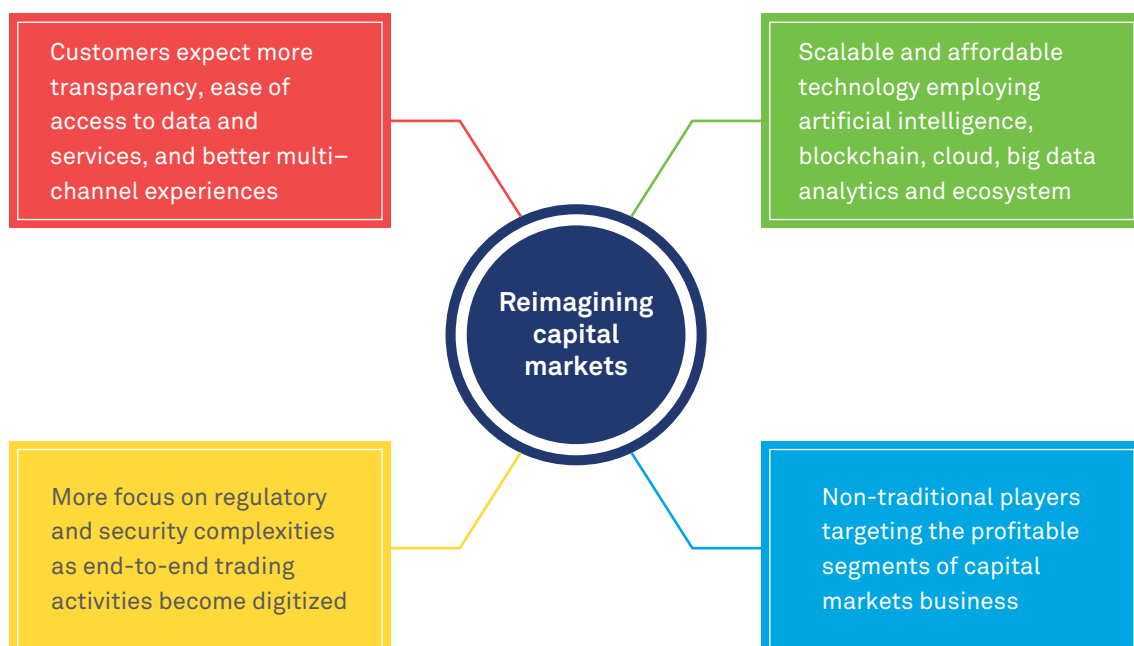

Figure 1: Trends in capital markets

Quality engineering and testing trends

One of the hallmarks of an organization that has embraced digital transformation is the agility with which it responds to changing needs of the customer and the marketplace. The pressing need is for quality engineering offerings to enable speed, an essential ingredient in the digital transformation journey. From cloud and crowdsourced testing as a service, mobile and digital applications testing, to traditional quality engineering offerings like test environment and data management to performance testing and packaged applications testing, every quality function is getting a 'speed makeover' to enhance the experience of today's connected consumer. From a non-functional testing perspective, there has been an increased demand in services for security assurance across DevOps cycles in several industries, especially in the context of cloud migrations and Internet of Things (IoT).

Overall digitalization of organizations, risk and compliance mandates, and the move towards agile development/ DevOps/ continuous integration and continuous delivery (CICD) has transformed the QET landscape. Figure 2 outlines the top trends that are on the minds of every CIO/CTO to survive the era of digitalization.

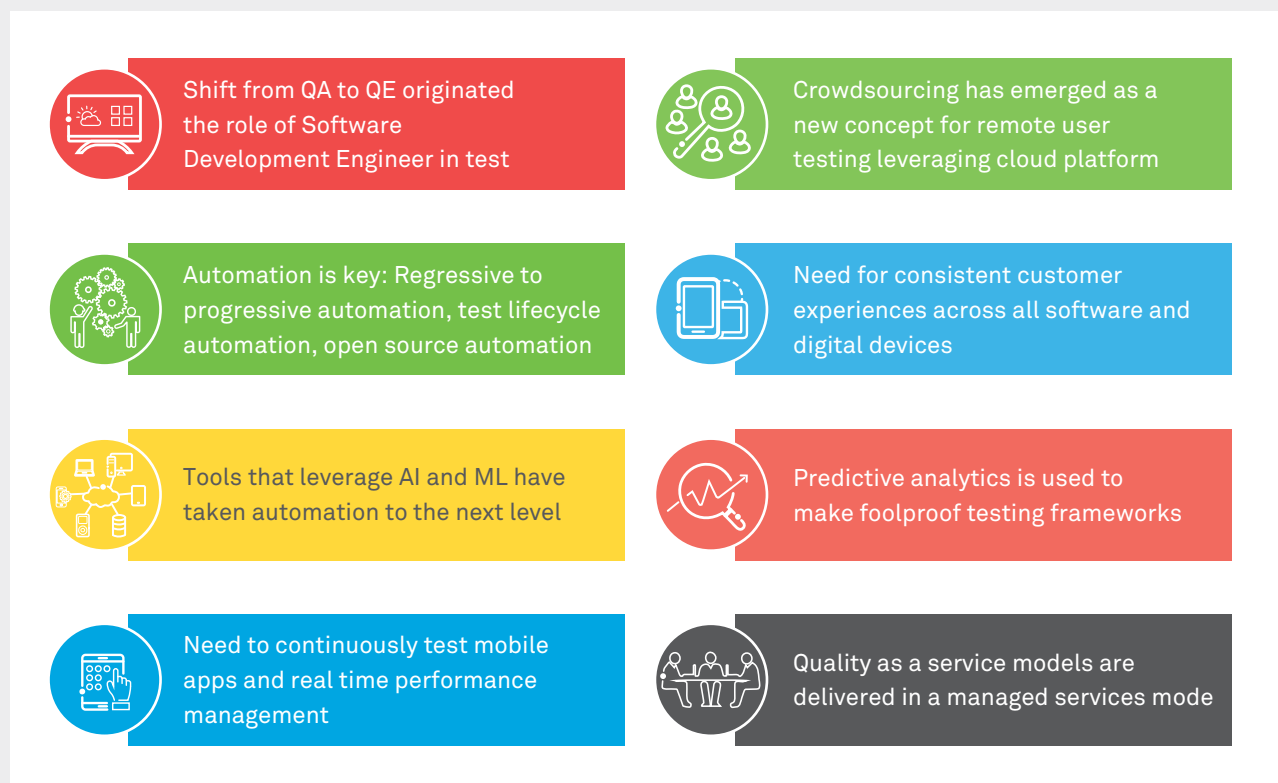|	
Shift from QA to QE originated the role of Software Development Engineer in test	Crowdsourcing has emerged as a new concept for remote user testing leveraging cloud platform
Automation is key: Regressive to progressive automation, test lifecycle automation, open source automation	Need for consistent customer experiences across all software and digital devices
Tools that leverage AI and ML have taken automation to the next level	Predictive analytics is used to make foolproof testing frameworks
Need to continuously test mobile apps and real time performance management	Quality as a service models are delivered in a managed services mode

Figure 2: Trends in QET

Topcoder – a crowd sourcing platform, gives organizations access to best-in-class QA experts readily available to deliver the highest quality solution. It is home to more than 1 million registered developers and data scientists across globe.

HeadSpin, a global testing platform with 1152 real cell networks in 72 cities and 29 countries, allows you to test and monitor instantly on global cell networks without adding any code, seamlessly integrating into your existing workflow.

Critical success factors for QET in capital markets

Fundamental to success in today's capital markets environment is the performance and reliability of the new applications and services which must provide accurate data and frictionless experience. The strategy to launch new products leveraging emerging technologies will only succeed if firms have battle-tested and robust IT applications and infrastructure.

To achieve this, capital market firms should focus on the below aspects in quality engineering and testing:

Model: Scalable and Agile-friendly operating model, communication model, etc.

Method: Industry-best practices to perform various testing activities. For example – BDD, ATDD, etc.

Machinery: Rationalized new age tool stack leveraging AI and ML

Mindset: Culture of innovation and learning. e.g. SDET academy

The road ahead

The roadmap to success for capital market firms calls for high velocity models for testing new age solutions before deployment/integration. The focus should be on:

DevSecOps: Firms should adopt DevSecOps incorporating security into DevOps to ensure defects are monitored and corrected earlier.

New ways of working: Traditional roles and job descriptions have to be refreshed with shift towards new ways of working. This requires re-skilling within the organization and recruiting the right talent from the market.

Cognitive automation: Agility is improving software testing with the implementation of cognitive automation techniques for use cases such as smart defect allocation, automation failure analysis, application log profiling, automatic data synthesis, early performance checks, etc.

'X'aaS: The focus is shifting from separate tool or license or resource. At present, everything is packaged as a service to deliver the best experience.

Below are two of the numerous examples where capital market firms have achieved success through adoption of measures discussed in this article:

- A leading US brokerage firm reduced about 66% manual efforts and generated more than 200K USD savings by adopting a software-testing tool. This automated end-to-end testing for software applications and enabled quality engineering through continuous testing.

- A large UK retail bank improved automation stability from 23% to 90% and shrunk testing from four weeks to four days by working with a cloud-based testing and automation tool. The DevOps teams achieved continuous testing and accelerated delivery of web, mobile, and IoT apps.

Reference:

[1]http://tinyurl.com/y6ztxxcx

About the author

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Arun works on developing relevant solutions/response designs for the technology proposals in the capital markets industry. He has completed a management degree from the Indian Institute of Management, Udaipur with specialization in the area of finance and strategy.

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