

WHITEPAPER

Digital Channels – Shift in Approach

SQS Digital Channels Testing – Mobile, Performance,
Agile & DevOps Incubation



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Management summary

The banking industry has spent over a decade journeying towards a completely modernised, digital channel-based sales, service & delivery system. However, both the pace of progress and the time for the banks to change have been unpredictable. Now, given the cost pressures in the industry and global economic uncertainties, there is increased urgency (or rather an opportunity) for banks to adopt an efficient approach and go for complete digitalisation and modernisation.

However, embracing holistic digitalisation and modernisation requires a thorough understanding not only of the benefits to the banks but also of customer expectations, for example, how relevant, convenient and personalised would the product offers and services be with an enhanced user experience?

Digital banking should combine a very positive customer experience with a banking model that delivers highly effective and efficient sales and services to customers.

In view of this aim, the banking industry has also taken into consideration the facts & figures below when comparing 2014 and 2015 [1].

- Customer usage of physical location/branch has dropped by 30%
- Customer use of mobile apps for banking transactions is up by 33%
- Customer use of the web/online channels for banking transactions is up by 35%

As banks are already moving towards the next big thing, Banking 4.0 and Cloud implementation, it is estimated that by 2017, around one billion people will use mobile banking, and this has already become a way of life for many of us.

This paper looks at how the market trend is evolving with respect to digitalisation across various banking products and services, and how the digital wave is effecting changes across regions globally. As these digitalisation initiatives are fast hitting the banks, there are perceived challenges posed to the bank's IT delivery teams with respect to maintaining quality delivery and meeting customer expectations, whilst lowering costs and improving time to market. This paper also details how SQS can support the banks in overcoming such quality challenges, and looks at how to ensure end to end digital quality for the banks.

Keywords

DIGITAL TRANSFORMATION

DIGITAL QUALITY ASSURANCE

DEVOPS

AGILE

CHANNEL AUTOMATION

CHANNEL PERFORMANCE & SECURITY

DIGITAL CUSTOMER EXPERIENCE

Introduction

Redefining banking to survive and thrive in a digital world explores how digital technologies are transforming the banking business. While the rise of digitalisation will not completely change traditional branch banking, people around the world are clearly embracing digital channels such as PC/online, ATM and mobile – and banks need to do so as well. Indeed, if they fail to change, they risk being swept aside by other, digitally enabled competition.

Today's banking businesses face the challenge of ensuring customers can access their services and products through whatever channels they choose. Channel shift moves customer transactions to the most effective and efficient channel, creating a satisfying customer experience whilst delivering savings and increasing revenue.

In times of reduced budgets and more savvy customers, channel shift is seen as an essential method of delivering better services and increasing sales to people looking to buy or seeking information.

This has led to a complete transformation in digital technology in the past decade or so, with banks moving their service delivery focus from traditional banking to more sustained digital banking channels.

Digital transformation technology is not just about slick-looking websites. Digital channels are typically built for (cf. also Figure 1 and [2]):

- **Digital Sales**
 - Deliver more sales
 - Reduce the cost of sales
- **Digital marketing**
 - Increase intelligence about customers
- **Digital Services**
 - Reduce customer service costs
 - Increase customer conversion rates

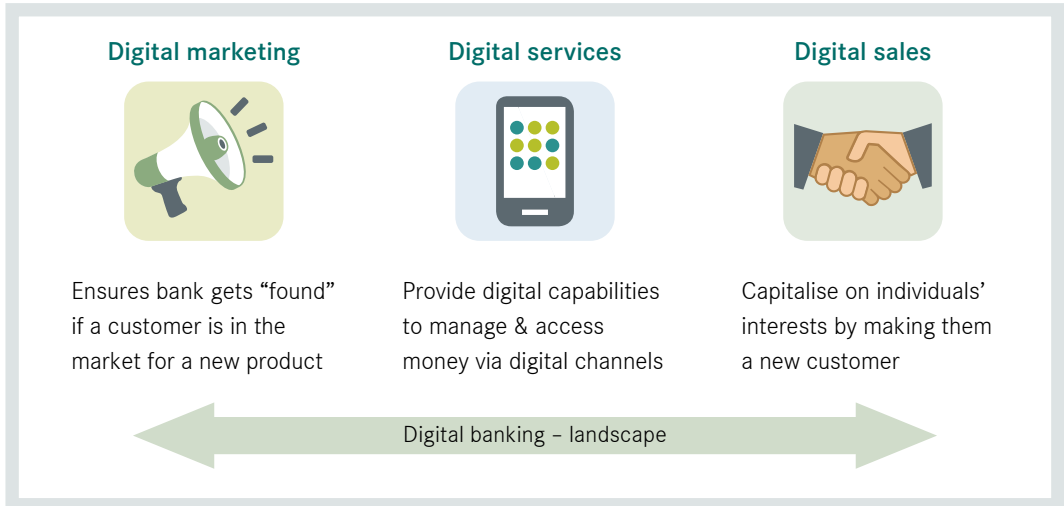


Figure 1: Scope of digital channels

Market – current status and outlook

The way in which the banking sector operates has evolved over the past 5 decades (Figure 2), starting from a traditional branch-based offering (single channel) and developing to become the omni-channel banking system that we have today [3].

In doing so, the banking business has successfully overcome the hurdles of being able to provide banking products and services using various different channels, first in silos (multi-channel), then via an integrated cross channel mechanism up until 2010 – 2012 [4].

Currently (since 2012) most banks are embracing the concept of “**omni channels**” that offer customer access to banking products and services across and between multiple interactive channels in a customer-focused and seamless manner.

More recently, some of the banks that have already achieved high levels of stability in their “omni channels” have embarked on a newer initiative called the “**bi-directional channel**”, which is the current big wave in digital banking.

While omni-channel focuses on the customer experience, which is 50% of the solution, **bi-directional channel** banking brings customers and employees together on a single user experience (UX) platform and completes the circle.

Though digital banking has evolved considerably, it still lacks customised interaction based on individual customer needs. Customer aversion to this lack of personalisation with the current digital/mobile channel seems to be growing.

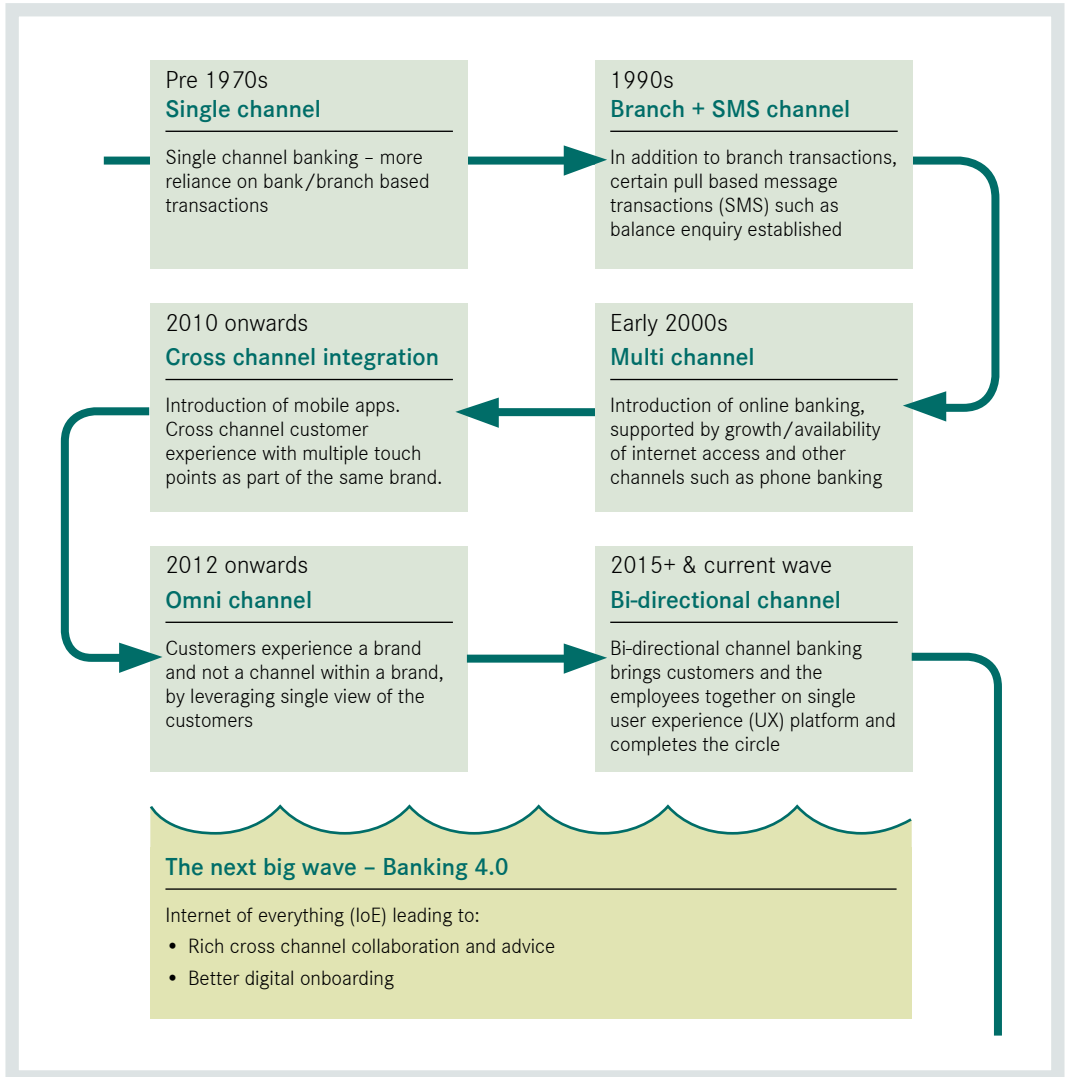


Figure 2: Digital banking evolution

Banks are attempting to address this gap in customer relations and are beginning to restore trust, thus paving the way for the next big stride in the banking business, Banking 4.0 aka the Internet of Everything (IoE), operated through digital channels. Through the new services enabled by the Internet of Everything (IoE) – networked connection of people, processes, data and things – banks can regain

customer trust and lost ground in business, and increase sales by way of better digital onboarding.

The two main categories being explored in terms of IoE-enabled concepts are: 1) Advice and 2) Mobility/branch recognition. IoE cannot be successfully implemented without having perceived a digital channel via mobile.

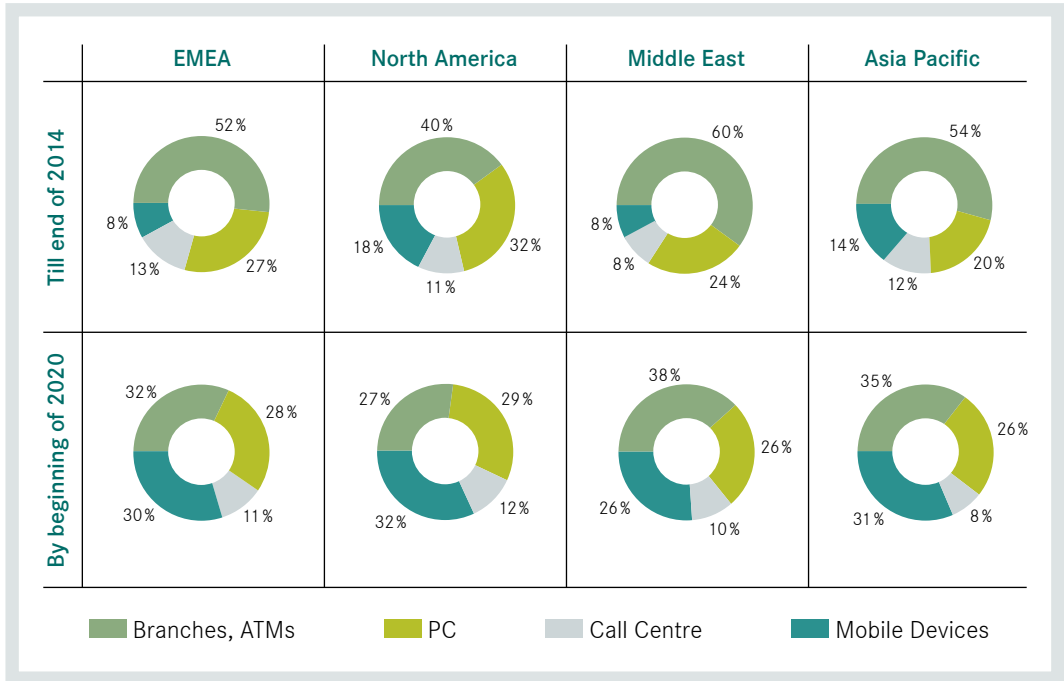


Figure 3: Regional Breakdown by Type of Channel [5]

Regional breakdown by type of channel

Within the various types of banking channels, the mobile banking channel is gaining greater prominence across all regions and is expected to increase by an **average of 20% across all regions**. The breakdown of the expected increase in mobile banking channel usage is **22% for EMEA, 19% for North America, 18% for the Middle East and 17% for the Asia Pacific region** (cf. also Figure 3).

Digital readiness statistics – banking products/sales

Overall, about 44% of banking products are available for online application in digital format. While this might sound high, this figure does not take into account the fastest growing trend to embrace

mobile banking, as only 17% of these product applications are mobile-responsive. This clearly indicates a huge improvement potential for banks in this area.

The Personal Banking and Wealth Management categories lead the way with more products (21%) offered via smartphone than for Business Banking (4%). However, there is still plenty of room for growth in all categories – especially as younger consumers, who expect to use their mobile devices for transactions, start purchasing these products (cf. also Figure 4).

This is a business opportunity for the taking: banks that are supporting mobile “Apply Now” experiences often see more than 40% of all applications for new consumer banking products coming from mobile.

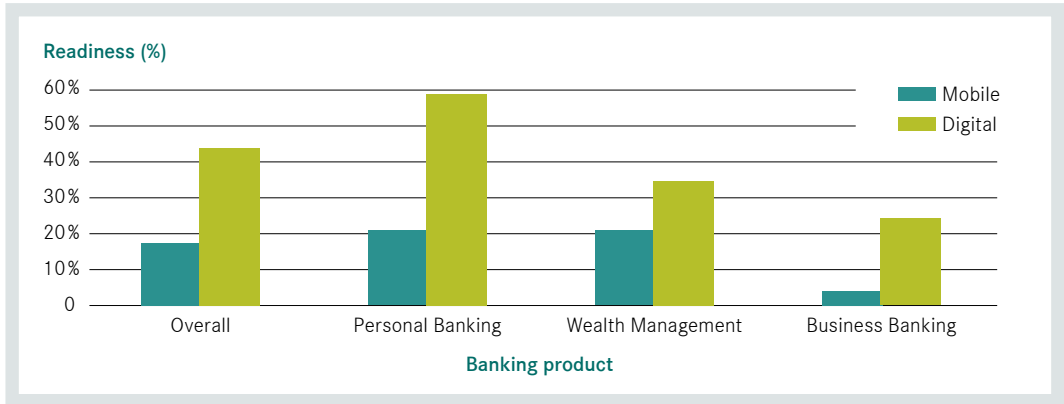


Figure 4: Digital readiness – banking products/sales [6]

Digital transformation challenges

Most of the banks & financial services institutions are also facing channel shift challenges in the following areas (mainly in their predominant digital channels, namely online/web & mobile):

- Eluding security/vulnerability issues especially in customer-exposed channels
- Providing performance efficiency and acceptable response times across all channels
- Continuous delivery by way of continuous quality assessment and integration amongst all the channels to achieve a real time omni-channel experience for the banks; this includes delivering quality/functionalities & uninterrupted services via online & mobile channels
- Reducing time to market by deploying Agile/Dev Ops methodologies
- Meeting user experience expectations

Also, emerging threats and advances in technology make digital banking fragile, which impacts customer trust in the banks. In business environments, software developers (Dev) are concerned with the speed and quality of application development, while IT operations (Ops) are held accountable for response times, stability and efficiency, with a focus on reducing business disruptions at the lowest possible cost.

DevOps refers to the technology which bridges the gap between Dev and Ops through communication, collaboration, and integration of an end-to-end delivery mode as a real-time integration of development and operations. As DevOps is still in the early stages of adoption and only partially understood, only one-third of companies are in the process of or planning to implement the technology, with close to **44% still trying to figure out what DevOps means.**

Obstacles preventing more frequent use of digital channels are (cf. also [7]):

- **49%** of online banking customers have security concerns
- **31%** of customers have application performance issues
- **22 to 26%** have issues with poor functionality resulting from the complex integration of digital channels with potentially old/legacy systems used by the bank
- **14%** of customers do not obtain the required services – which means there is scope/opportunity for the banks to introduce new services using prevailing channels

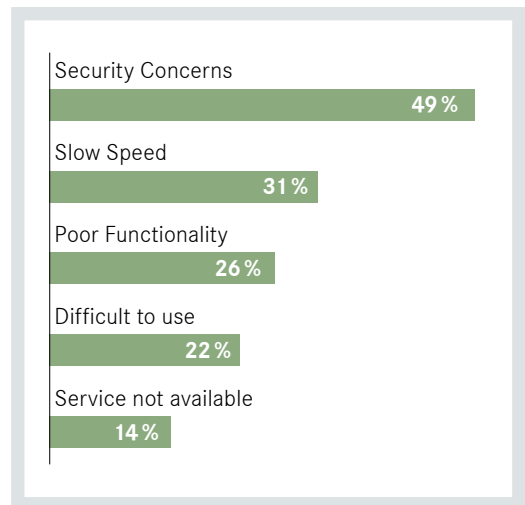


Figure 5: Key figures

SQS digital banking quality assurance solution

To ensure quality delivery of digital transformation, the following critical success factors must be taken into account:

1. Maximise automation & continuous integration across all channels
2. Adopt faster delivery capabilities such as Agile & DevOps
3. Ensure a technically advanced automation framework to cover multiple channels
4. Robust methodology and approach to ensure that non-functional requirements in terms of performance & security testing are met
5. Omni-channel assurance for seamless service across combinations of channels, platforms, OS and devices
6. Focused testing on customer experience & journeys

SQS follows comprehensive approaches & methodologies towards achieving “**Digital Quality Assurance**” by way of (cf. also Figure 6):

1. SQS’ security testing services, covering:

Security & vulnerability assessments for various channels as per OWASP security standards, as below:

- a. Application security testing
 - i. Dynamic
 - ii. Static
- b. Mobile application security testing
 - i. Application
 - ii. Backend services & infrastructure
- c. Device reviews
 - i. System hardening
 - ii. Configuration reviews
- d. Scanning services
 - i. Network
 - ii. Application

2. SQS’ non-functional testing processes & best practices, such as:

- a. End-to-end performance testing – ensuring performance quality from core to all channels and vice versa
- b. Use of cost effective (low cost or open source) alternatives for usually costlier commercial non-functional testing tools

3. SQS’ DevOps – incubation to deliver faster time to market

- a. Agile delivery & continuous integration using a combination of open source and/or commercial tools
- b. DevOps – using the most common BDD & TDD approaches

4. SQS’ one-stop test automation framework, that is

- a. Robust and scalable to various digital channels
- b. Adoptable for Agile/DevOps
- c. One-stop framework for various technologies (such as web, mobile, ATM/PoS)
- d. Coverage both from functional & UX level

5. SQS’ focus on customer experience and the journey, via

- a. User experience-focused assurance strategy & testing deploying user feedback
- b. Automated coverage across platforms/OS, devices, channels
- c. Specific focus on accessibility & content presentation from user experience perspective
- d. Coverage & assurance using real world behaviour emulation

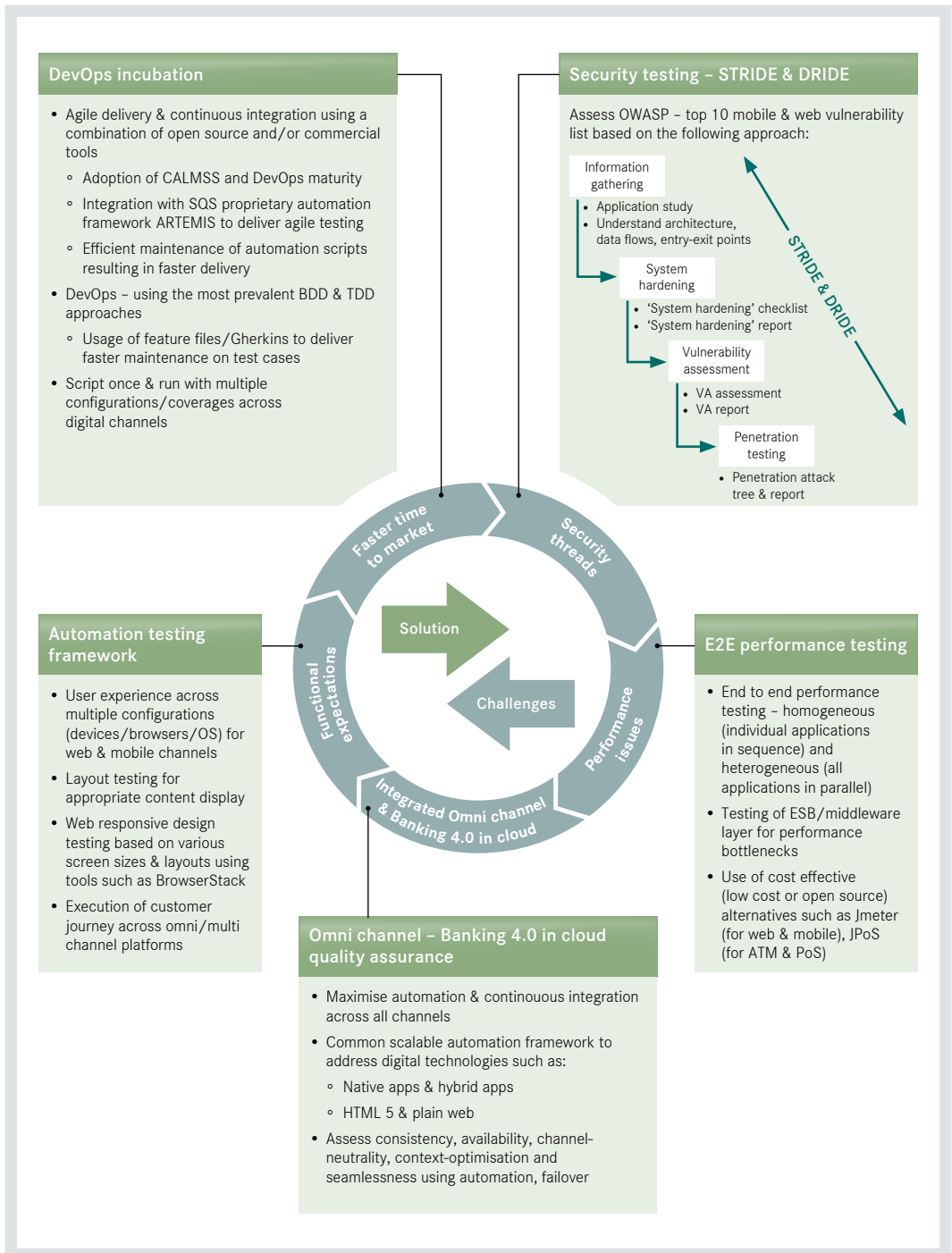


Figure 6: SQS’ digital channel testing – challenges & solution

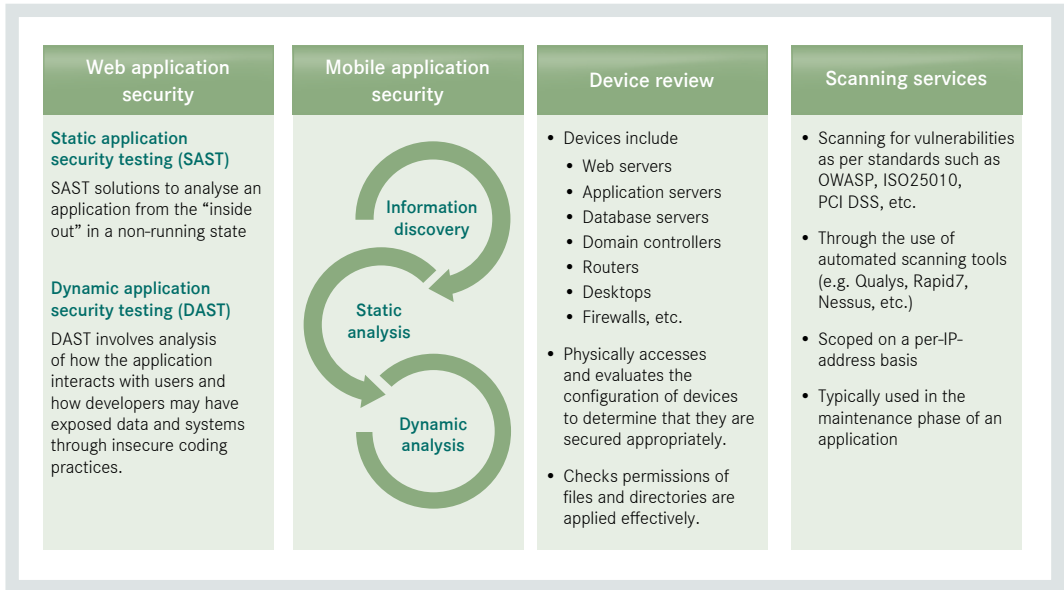


Figure 7: SQS security testing services

SQS – security testing

The testing of new smart devices and channel features is key to integrate with day to day processes and applications for digitalisation requirements. This requires a high level of technical intelligence/ skills to ensure security compliance, which is essential from a customer point of view.

The SQS solution for security testing, addressing the above mentioned challenges, is given in Figure 7.

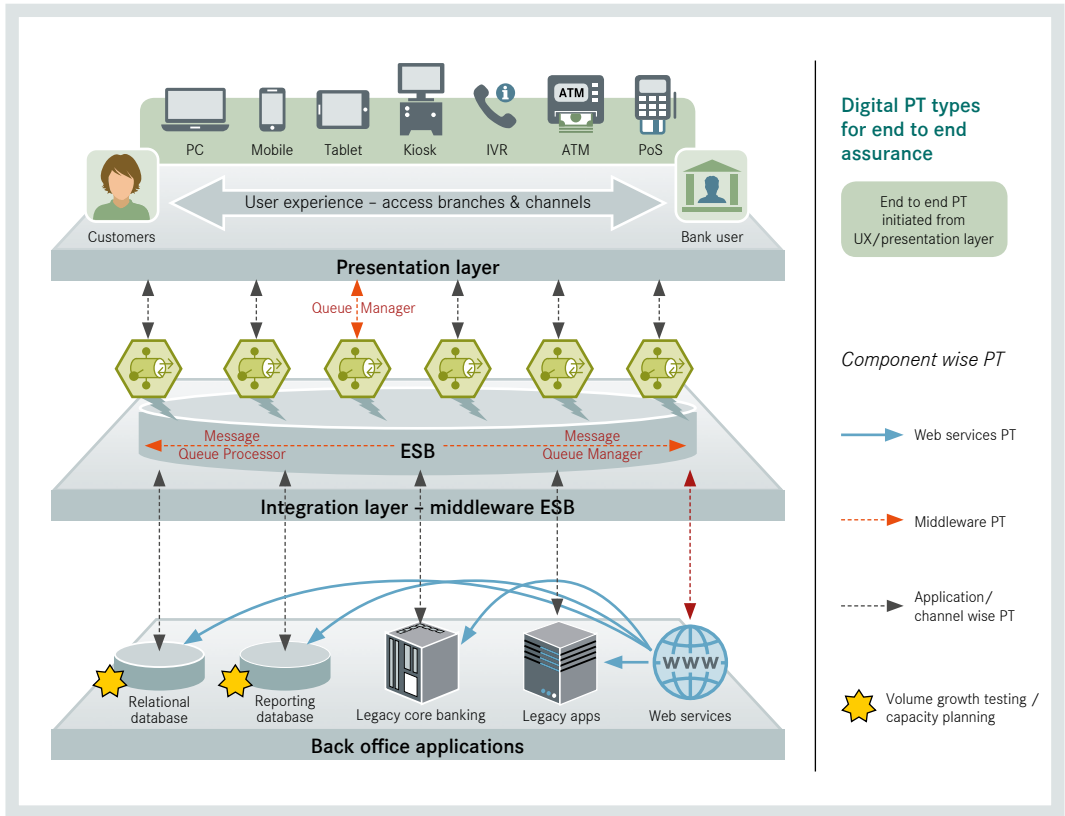


Figure 8: Typical performance testing approach

SQS – E2E performance testing

Given the wide range of choices available to customers carrying out transactions in the current banking scenario, the chances of a customer choosing a poorly performing or responding option are considerable, if all the channels are given equal importance from a performance perspective. Based on current statistics, 31% of users end up with unacceptable responses across channels in the current digital banking arena. Hence, for the banks, it is vital to ensure that non-functional requirements are defined at various levels and are also tested.

It is not sufficient to only conduct component-based performance testing on individual systems; performance testing is also required on the web service/ESB/integration layer. Furthermore, to ensure a better operational performance, end-to-end performance testing is also critical and must be certified. Figure 8 depicts the typical performance testing approach followed by SQS to ensure performance quality assurance in a complex digital architecture.

SQS – DevOps incubation

As businesses are focusing on continuous delivery through DevOps practices and becoming more dependent on Agile/DevOps software- and service-based IT models to deliver core digital offerings and achieve quicker time to market, ‘SQS’ formalised incubator teams are working hard to emulate the DevOps philosophy and achieve continuous delivery and innovation along with successful QA. This is gaining support from organisations wanting to implement DevOps.

The adoption of the CALMSS model (Culture, Automation, Lean, Management & Measurement, Sharing, and Sourcing) with a focus on “**Inter-personal Adaptability**” (Cultural), “**Functional Adaptability**” & “**Technical Adaptability**” (Automation, Lean, Management & Measurement, Sharing, and Sourcing) covering 12 fundamental principles of Agile methodology helps to evaluate and mark the differences between old and DevOps methodologies implemented by organisations/customers and shows where they are in their DevOps maturity (Figure 9).

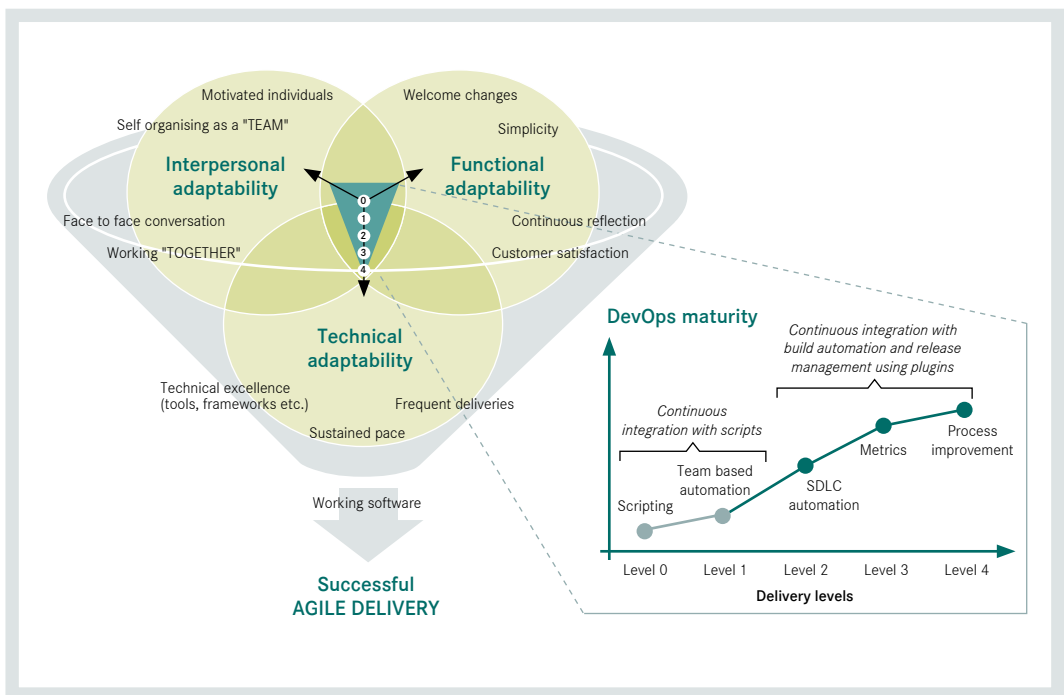


Figure 9: Evaluation of DevOps maturity using Agile principles

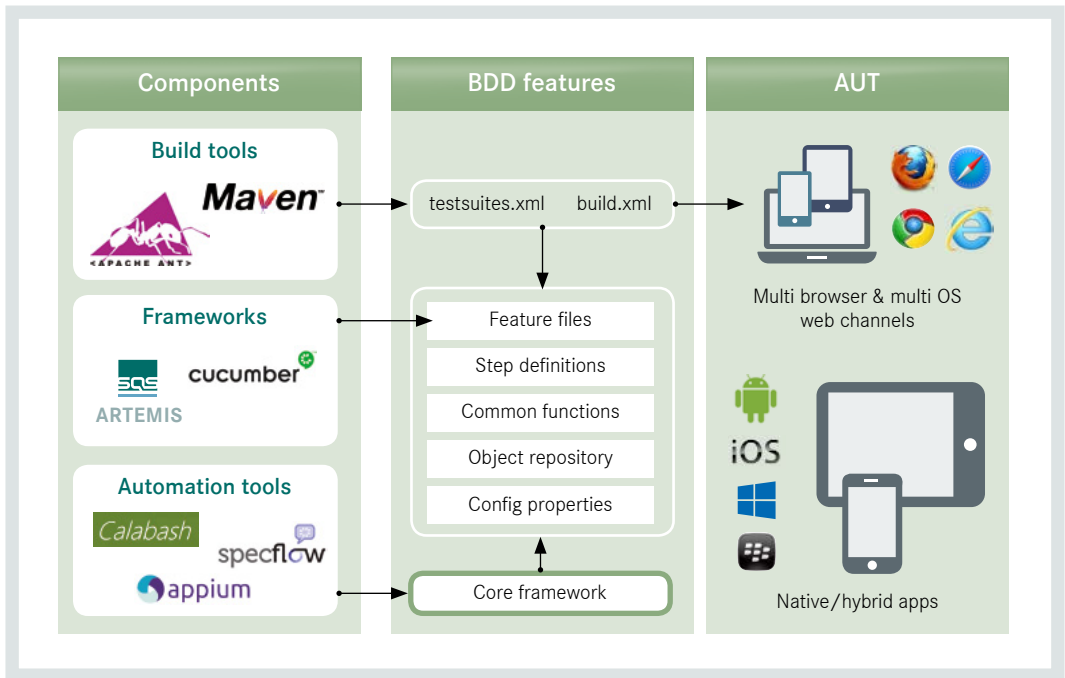


Figure 10: Typical BDD framework

SQS DevOps – one-stop test automation framework

SQS’ one-stop test automation framework supports DevOps, using the most prevalent BDD & TDD approaches. The testing framework is a solution for hybrid digital platform applications developed to support multiple channels, namely, browser, mobile apps, mobile browser, etc. The framework also helps to ensure enhanced coverage across multiple mobile configurations on emulators & real devices in multiple languages.

The unique in-house-developed automation framework uses a combination of open source and/or commercial tools integrated with the SQS proprietary

automation framework ARTEMIS and can be implemented as Software as a Service (SaaS) to successfully deliver Agile/DevOps implementation.

The framework uses a cost effective automated solution with a combination of automation tools such as:

- Selenium → Automation tool
- Gherkin → For BDD, developing feature file
- Appium, Calabash & Seetest → For mobile automation

A typical representation of a BDD framework deploying the above-mentioned tools is given in Figure 10.

Conclusion and outlook

Eventually, banks will become more digital by overcoming internal obstacles and by deploying customer-centric channel management with effective Agile and high performance IT landscapes. However, in the process, the banks will need to take into consideration what quality challenges, cost pressures and customer expectations they face on their journey to a completely modernised and robust digital establishment.

As the French playwright Molière states, **“The greater the obstacle, the more glory in overcoming it”**. The banks will gain more glory in their journey to digitalisation if, and only if, they

overcome the internal (cost reduction, faster time to market, etc.) and external (customer expectations, enhancing sales, etc.) obstacles and sustain their delivery capabilities from the marketing, sales & service perspectives.

Banks moving towards the Internet of Everything will eventually be the pioneers and architects of digital modernisation and will stand apart from other traditional banks, who may instead lose out to their competitors and become extinct.

This race to achieve glory leads to the next big thing – **virtual reality in the banking industry**.

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