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TESTING IN THE AGE OF DIGITAL: LEVERAGING AUTOMATION TO STREAMLINE PAYMENTS TRANSFORMATION

Finextra

01
INTRODUCTION
THE REAL COST OF OUTMODED TESTING

That the payments industry is being reshaped by unprecedented waves of change is not news. A constantly evolving regulatory landscape, fast-developing technology, an influx of innovative new entrants and an increasingly demanding customer base are all driving payments market participants to transform their businesses – and their technology – to remain relevant in the digital age.

Less well understood is the drag on payments technology transformation that the use of outdated testing methods can represent.

Some numbers provide a useful illustration. According to Capgemini's 2017 World Quality Report, quality assurance (QA) and testing budgets have grown steadily every year since 2012. This year's research, which brings together the views of 1600 IT executives worldwide in industries including financial services, shows that 31% of IT budgets are spent on testing, and Capgemini predicts this will rise to 40% over the next two years. Further, the research finds that, though test automation is vital for testing efficiency, just 29% of testing activities are automated today.

View these numbers in the context of another – that, according to analyst IDC, financial institutions will spend more than $12 billion by 2019 on the transformation of their payments systems – and it is clear that the sums of money spent on testing are very high, and the potential savings to be made through automation significant.

It makes no sense to invest so heavily in new payment systems without also investing in systems able to test them effectively. Targeting spend at the right types of automation can not only enable financial institutions to get the best out of the 40% of IT budgets that could go to testing: it can also enable them to reduce that expenditure significantly..

The imperative for financial institutions to realise the savings that are possible is strong. Payments are being commoditised, margins are under pressure, the introduction of new real-time rails requires additional investment (with a very unclear business case for banks in the short term) and regulation such as the revised Payment Services Directive (PSD2) is forcing financial institutions to open up access to their customers' accounts to make it easier for nimbler, legacy-free third-party providers to compete with them.

Intensifying the pressure on banks, cost is not the only consideration. Speed is also vital – especially given the onslaught of lithe new entrants – as is robustness, in an environment in which IT failures cause damage to customer relationships, reputations and revenues.

Payments change creates many opportunities for banks, but in order to reap those benefits, banks must ensure that their systems transformation projects are implemented as efficiently, safely and rapidly as possible. In turn this means ensuring that every aspect of their technology delivery – including testing – is fit for the digital age, optimising every point on the triangle of cost, speed and risk, and ensuring the best bang for buck through the application of the most up to date testing capabilities.

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02
MANUAL TESTING:
A SOURCE OF COST AND RISK

According to the Capgemini 2017 World Quality Report, the top five factors contributing to increasing test budgets are more developments and releases (52%), a shift to Agile and DevOps causing more test iterations (41%), increased challenges with test environments (36%), businesses demanding higher quality IT (33%) and detection of more defects which leads to more/longer test cycles (31%).

There is more testing to be done, but, as the Capgemini report shows, automation rates are running at less than 30%. This means there is far too much manual testing, often facilitated by a confusing maze of standalone simulators, in-house developed tools and code created on an ad hoc basis. In a manual testing environment, hours of time are wasted, as testers wait for access to devices or schemes to complete their work – with the waste exacerbated by the time it takes to re-set hardware and software environments when they do become available.

Automation eliminates this waste, enabling multiple teams globally to test concurrently. By contrast, manual approaches are clearly outmoded and out of step with the over-arching drive to digitalise, and more importantly they impede banks' ability to keep pace with new competitors and the demands of increasingly exacting customers.

In addition, of course, manual processes are hard to scale, since throwing people at a problem typically adds confusion, cost, inefficiency and management overheads.

Manual approaches also make it more challenging for banks to leverage the latest testing techniques. Historically, testing has almost always been a necessity undertaken at the end of a project. Decision-makers and leaders want their test teams to give them the 'thumbs up', and the reassurance that the new technology works and is ready to go. More modern thinking puts the focus not just on proving that software works, but on trying to break it, in order to identify, and then eliminate, weaknesses in the systems being tested. In an automated environment, this is easier to do. Tests are consistent, can be run faster – and run

over and over again with fewer overheads – and more tests can be run each time. The results are not subject to interpretation by manual testers, and no short cuts can be made.

In other words, automated testing is more effective and manual testing less so, which means that where automation is present, firms can not only get more bang for their buck from their IT investments, but testing is safer. Where testing is absent, the danger of releasing into the market an inadequately tested payments solution is higher. The risk of reputational damage, rapidly and widely amplified by angry customers through social media, rises as a consequence.

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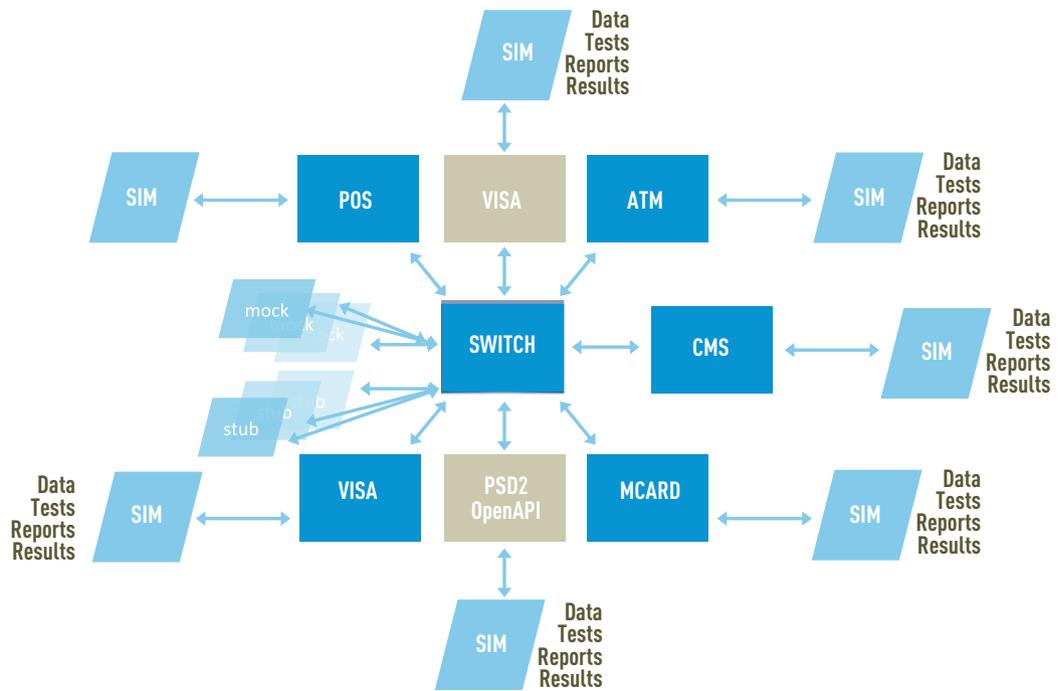
03
THE CHALLENGES:
LEGACY AND COMPLEXITY

A typical Payment Switch testing challenge
A testing environment more complex than the payment switch itself

The payments industry is transforming, driven to increase the safety, speed and efficiency of transactions, but this is a work in progress. The transition from legacy systems to new technology is challenging, leads to unpredictable and often delayed implementation timelines, and adds a further layer of complexity to an already highly complex landscape.

Ever-evolving standards, proprietary interfaces and formats, cryptography, the evolution of new messages and tokens and the ramping up of external pressures such as crime and fraud all add yet more layers of complexity, which need to be managed and controlled.

Overall, payment systems have evolved to contain more and more interdependencies, all of which need to be tested in different combinations, and in which each component must remain resilient in the event of another failing.

In other words, these interdependencies mean that it is no longer sufficient to test elements of the payment process flow individually and in silos. The payments cycle incorporates all aspects of the payment process, from initiation all the way through to settlement and reconciliation, and test environments should have the capacity and capability to test this as if in the real world.

This in itself implies a demand for automation, as does the necessity to keep pace with regulation. The constant cycle of mandatory, regulatory-driven change that has been a feature of the financial services industry for almost the past decade is set to remain a feature in the future. From a testing perspective, this creates a clear need for an easily accessible audit trail to record what changes have been made to meet regulatory requirements and why.

Regulatory compliance also creates a need for easy regression testing. Even minor changes to a payment system could create problems but often assumptions are made that they won't, and therefore only lip service paid to testing. To be robust, banks should have a set of regression elements they run against the system every time a change is made. This evolving regression test capability should get better every time it is run.

A further significant increase in the complexity of the payments systems landscape will come as a result of one particular piece of regulation, PSD2. As financial institutions comply with this, they will expose multiple open APIs to enable other players to integrate with their services, starting with the payments APIs they are mandated to expose by the regulation and, over the next couple of years, extending to others related to additional banking services, off the back of which banks will seek to deliver additional value to customers, and of course generate new revenues.

As open APIs enter the picture, the use of other types of integration method may decrease, but is unlikely to cease altogether – so while open APIs represent an important opportunity for banks to branch out into new services, new ecosystems and new business models, by further increasing payments systems complexity, they also reinforce the demand to replace manual approaches that will struggle to cope, with automated testing techniques that will cope efficiently and effectively.

04
AGILE DEVELOPMENT: A DOUBLE-EDGED SWORD FOR TESTING

The increasing pace of change in payments is clearly driving the uptake of Agile and DevOps methodologies. Indeed, research released in early 2017 from Vanson Bourne found that financial services firms are adopting DevOps approaches faster and with more decisiveness than firms in other industries. According to this survey, 45% of financial services firms have already adopted a DevOps approach, by comparison with just 32% of players in other industries, including retail, software and digital and media.
Meanwhile, the 2017 State of Testing report – the largest testing survey

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worldwide, with more than 1600 participants from more than 60 countries – shows that the adoption of agile is becoming almost universal, with close to 87% of respondents saying they work with Agile or Agile-like methodologies (up from 82% last year). The survey also shows the adoption of DevOps is a clear trend, confirmed by 26% of respondents this year, in comparison to 23% last year and only 14% two years ago.

By contrast, this survey shows that the number of testers working with waterfall has dropped to 37% from 39% last year and 42% two years ago. This reinforces the perception that the waterfall development patterns on which the computing industry has relied since the late 1970s to provide the structure around which software is created and deployed are being replaced. This old-style linear approach to project management provided a robust framework in which each element in the sequence largely depended upon the completion of the one before – and this in turn dictated a certain approach to testing, which in some quarters persists, despite the move away from waterfall, and despite its inadequacy to cope with more rapid and frequent software deliveries.

(Remember the finding in the Capgemini 2017 World Quality Report, that a key driver, cited by 41%, for the increase in testing spend was the shift to Agile and DevOps causing more test iterations.)

The new ways of working – Agile, DevOps and Continuous Development – are a response to increasing computing power and greater demands on development departments, and enable a more iterative, progressive approach to development. Through fluid programmes, development cycles are reduced and software elements can be created very rapidly. This massively increases the number of releases and code drops, and necessitates a new way of testing – making it a core part of the whole process rather than a random addition, or merely a mechanism to check a single piece of code is working.

In other words, given the shift to Agile and DevOps, it becomes a question not of whether to move to automated testing, but when: firms will not be able to keep up unless automation is in place.
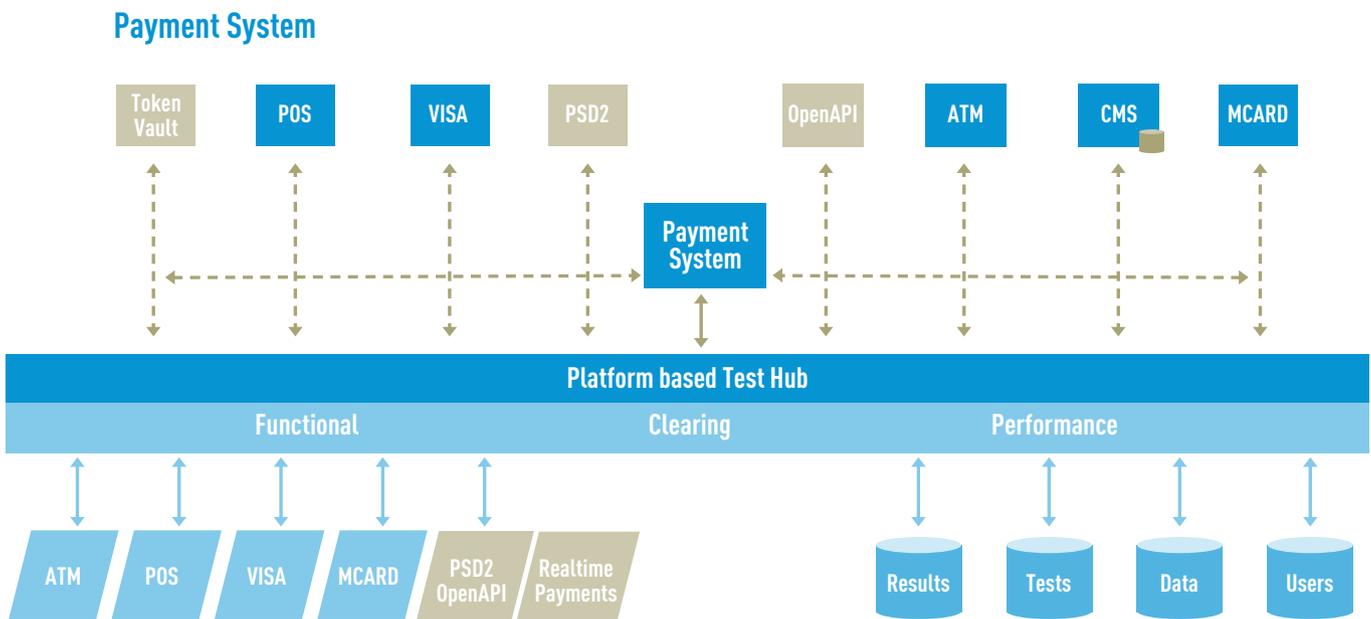
"A rethink of how to orchestrate existing test assets – including simulators and test data – is a fundamental requirement. Creating a testing hub can be a powerful approach, replacing a disparate set of testing components that don't work together."

05
TOWARDS SIMPLIFICATION: AUTOMATE TO SAVE TIME AND MONEY AND REDUCE RISK

Platform Based Testing

Payment System

Here's a selection of what you might be challenged with

A key guiding principle for future testing strategies in payments should be simplicity. Without this, there is a danger that test environments will become more complex than the payments environments they are designed to test and assure.

In this context, virtualisation is an important weapon in the tester's armoury. This approach enables the creation of a consistent, standardised environment, alleviates resource constraints and allows for the consolidation of skills – all of which drive efficiencies.

Creating multiple virtual images of the system being tested enables entire testing streams to be run in parallel. Each engineer, or group of engineers,

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has access to their own virtual system, without affecting the testing of others. Virtualisation enables the simulation of a real-world environment, without the impossible costs of operating – for testing purposes – multiple mirror images, set-up end-to-end.

Generic virtualisation technologies can deliver the benefits outlined above, but solutions tailored to the idiosyncrasies and specifics of payments are needed to deliver the benefits in a payments environment. Indeed, financial services firms can only safely automate testing if they have a platform with the functionality they require – such as world-class encryption – which again means sourcing specialist rather than mainstream automation tools.

Another vital component is developing a test automation strategy – one that focuses on collaborative and simultaneous learning about the software. In an environment that is designed to expose learning, share intelligence and support real-world deployments, continuous integration and testing automation are key.

The test strategy should map out the test processes that need to be automated, how this will be done, how the test assets will be maintained and what the expected costs and benefits will be. Automation does not replace the need for good planning or the writing of test cases – but it does hold out the prospect of being able to re-use test assets, easing the migration path from legacy to next generation platforms in the future.

A rethink of how to orchestrate existing test assets – including simulators and test data – is a fundamental requirement. Creating a testing hub can be a powerful approach, replacing a disparate set of testing components that don't work together, don't reflect the way transactions actually move across a business, leave valuable IP dotted around multiple systems and limit the ability to use the IP that exists.

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CONCLUSION: TESTING JOINS THE DIGITALISATION JOURNEY

The payments landscape is changing – and changing very rapidly. Regulation, technology, customers and competitors are forcing financial institutions to transform their payments systems at a speed that is unprecedented. Innovations such as instant payments and open APIs offer banks – and their customers – tremendous opportunities, but they also add complexity to an already complex landscape.

More and speedier implementations of technology require more and speedier testing, and in the vast majority of cases manual testing, supported by fragmented and ad hoc testing tools, simply cannot deliver. It is difficult to argue against taking a closer look at options to improve a function that accounts for almost half of an IT project budget.

Simplification and automation are therefore essential for any payments market participant with an ambition to keep up with the pace of change and leverage payments transformation to offer new services to customers and derive new sources of revenue.

Automating testing significantly reduces project costs, enables testing teams to work rapidly, with more control and greater visibility on results. Test results can be forensically analysed, saving time and increasing effectiveness. Perhaps most importantly of all, risk is reduced, through end-to-end testing for new deployments, enabling financial institutions to protect their brands and digital assets from high profile failures.

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07
ABOUT

Finextra

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– decrease risk through end to end testing in new deployments, which helps to protect your brand from high profile failures.

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