Transforming Payment Systems

The evolution of payment systems
In this special supplement, PCM – in conjunction with Alaric, an NCR company and a global supplier of fraud prevention and payments processing products – outlines how banks and other institutions can embark on the path towards payment system transformation.

Payment system transformation has become a pressing need for many banks at a time when their long-standing legacy systems may no longer be fit for purpose in an increasingly omni-channel age.

Payment system transformation refers to the replacement, upgrade or outsourcing of a bank’s processing systems, comprising an integrated suite of services and functions for processing transactions and managing settlement.

For banks, these are vital business requirements which span several business units.
At its heart, payment system transformation is underpinned by the necessity to respond to internal business imperatives, such as growth and efficiency, along with new product and channel growth.

Over the last five years in particular, an increasing array of solutions aimed at different customer segments, and expanding channels such as online, mobile and ATM, have demonstrated the fast-moving evolution occurring in the payment and transaction space.

This only serves to highlight why banks are now making significant investments into overhauling their payment systems to be able to process growing volumes of transactions and payment methods.

According to Andy Brown, product marketing manager at Alaric Systems, the influx of new payment technologies, devices and channels have driven a significant transformation in the way that consumers make payments, particularly over the last five years. This transformation has immediate and game-changing impacts for banks and other financial institutions in relation to how their payment systems are structured and leveraged. Whereas traditional legacy systems were organised on a silo basis, with each business segment having its own processing unit, the demands of modern payments mean that banks are now scrambling to have integrated systems in place which can pull together all business units and operate across multiple channels, such as online, mobile, ATM and in-person.

“The mix of transactions is changing because of the types of devices being used. Mobile is a big driver of change but there is also a drive to move away from siloed systems. People expect to be able to run a service which covers multiple aspects,” Brown told PCM.

“The other element is the types of transactions that people are doing. It’s not so prevalent in the UK but if you go into other countries, the types of transactions going through ATMs are the same as those available through internet banking. There is a huge range of functions, from things like bill payments, sending remittances, transfers between bank accounts and so on. In some geographic regions, a bank may be operating across several countries, and may be making transactions like interbank payments within the same banking entity.”
This blurring of the lines between different types of payment transactions and different delivery channels may not be immediately apparent to the end user – the bank customer – so they expect to have a seamless experience and interface, no matter what channel they are using, especially when it comes down to online and mobile devices.

“There has been a massive change in the functions that banks are delivering and customers no longer make the distinction between whether it’s an ATM or an internet banking transaction – it is now the same thing. Customers will do a transaction wherever and whenever they want to do it regardless of what touchpoint they’re using,” Brown added.

Rish Yadav, a senior consultant at Capgemini, explains how payment systems and processes have evolved since their inception. “The 1970s heralded the appearance of the first payment systems which were mainly developed in-house and ran on large mainframes. During the 1980s, package-based solutions began to appear, which, while an improvement on their predecessors, were hampered in their ability to handle large volumes. As the millennium arrived, payment system solutions were developed focused on the convergence of digital channels along with increase in scalability and flexibility. These solutions enable banks to focus on enhanced customer service and achieve real-time channel processing and multichannel integration capabilities.”

Yadav explains: “As legacy systems become obsolete, banks are forced to move with the times. The introduction of these new technologies provides banks with real-time systems, flexible business process set-up, and reduced platform costs through hosted and cloud-based solutions.

“As banks look to improve internal IT efficiency in the current macroeconomic environment, they are turning to payment systems transformation as a way to gain more internal cost savings. The current crop of payment systems are aimed at consolidating several stand-alone applications and optimising existing costs associated with applications and hardware processing. This helps banks reduce the high maintenance costs associated with legacy systems.”
Bank investment strategies and priorities

Essentially, payment transformation improves competitiveness due to faster roll-out of products, product innovation and product differentiation, which results in benefits such as increase in market share and enhanced competitiveness due to reduced costs.

Over the last few years in particular, bank IT spending has come under the spotlight. Recognising the need to keep pace with emerging payment technologies, banks worldwide have embarked on long and sometimes painful system replacement or enhancement projects. But IT investment doesn’t just concern the cost of replacing the system – in many cases it is simply about making sure that ineffective, existing systems are operating normally. Banks overlook the cost of maintenance at their peril, as Brown explains.

“Banks invest a huge amount in technology, but an awful lot of that investment just goes into maintenance. It is a big step for a bank to replace a payments system. I think a lot of banks are getting themselves into a bit of a bind because they’ve left it so late to actually think about changing things. They are concerned both about the risk of actually making the change, as well as the different choices available to them. Many have traditionally relied on just one supplier, and moving away can be a daunting prospect.”

There are several imperatives for banks looking at payment transformation, according to Yadav. “Payment system transformation must have a proper business justification, such as decreasing operating cost, improving operating efficiency, and growth in business. Payment system transformation helps to standardise and streamline end-to-end business processes and also helps to improve compliance with new emerging regulations, improving time-to-market for new products,” he said.

“Banks must be clear about their objectives and long-term business and strategic goals, including targets for market share, future product portfolio, target customer base and reduction in operational costs. Transformation will happen only when there is a positive business case as well as buy-in from all internal stakeholders on the need for change. Bank decision makers will need to critically assess the need for investing into new systems based on the expected benefits, the costs involved, and the possible transformation risks to ongoing business and existing systems.”

Obviously, any project to replace a bank’s payment system, or part of the system, is not without risk. But the potential return on investment could pay off massively and also bring the organisation new business and innovation opportunities that they were unable to tap into before.

“One of the things that banks really need to think about is if they were to step away from their current technology, there is a good chance they’ll be able to reduce some of their maintenance spend over time, because it should be much cheaper to maintain a system like an Alaric one,” explains Brown.
Transforming Payment Systems

“We have worked extremely hard to make it easier to do long-term maintenance of these systems. If you can make that easier, you can save some of the costs. By investing now, organisations can save money in the long term, or they can use some of that investment in other areas. Currently, around 80% of bank IT spend is around maintenance. If that could be reduced to even 70%, that means there’s a lot more money available for new investment every year.”

Rish Yadav backs this point up: “Payment system transformation reaps cost savings through labour savings, operational savings, reduced IT maintenance and reduction in the cost of deposits. Business gains come from higher revenues through increased sales per customer and growth in customer acquisition. Operational savings come from front-to-back office integration, which enables straight-through-processing and consolidation of customer information. Due to replacement of legacy systems with a new technology platform, the overall IT maintenance costs come down.”

Another key reason for investment is the need for future-proofing in the face of rising data and transaction volumes, as new payment technologies become more widespread.

“The underlying payment engine that actually processes these transactions, as well as all connected systems such as fraud detection tools, have got to have the ability to scale to increasing volumes. Having something which can grow is crucial,” comments Brown said.

“The other element is flexibility. There are new end points, new partners – for example PayPal sending a transaction to your transaction switch – so you need to be able to add new end points very quickly without impacting the core transaction processing,” he concludes.

Making distinctions in m-commerce and m-payments

In this new era of multiple channels and increased customer expectations, banks and other financial institutions are under more pressure than ever before to deliver a seamless and integrated customer experience, which in turn is forcing them to re-evaluate their existing payment systems and capabilities.

The rising demand for real-time payments and information is a crucial consideration for any bank looking to overhaul its existing systems.

“There is more expectation from customers to perform transactions immediately. There are limitations to that because of bank infrastructure considerations, like interbank payments which in many cases are not instant payments anyway,” Brown told PCM.

“There are some limitations on what a bank can deliver against customer expectations. What consumers are expecting is to have up-to-the-minute information about what’s going on in their bank account. They’ve expected that for around 10-15 years. Where they get concerned is where they see things in one customer channel that are not reflected in another and that goes back to having a consolidated service and not having siloed services or systems.”

With mobile payments and banking now at the forefront of many banks’ growth strategies going forward, banks and other organisations need to be mindful of what it is they are trying to deliver. According to Brown, a clear distinction needs to be made between mobile banking, mobile payments and the mobile as an acceptance channel.
“People talk about mobile payments but that needs to be separated out into two areas: mobile banking, some of which will involve payments but it’s very much around emulating internet banking services on the mobile; and the other aspect which is mobile-generated commerce involving payments, such as shopping using a mobile phone.”

The third area, mobile as a point of sale (mPOS), is also often termed as mobile payments, but in most instances it is just making use of the computing power within the tablet or phone as a POS terminal, and the device has little impact on the payment process.

Even though there has been a vast proliferation of mobile-initiated payments, along with an ever-increasing array of mobile banking and payment solutions, this has served to create even more confusion in the mind of the consumer who is already confronted with a bewildering choice of payment options. Because of this, m-commerce and payments have yet to really embed themselves as mainstream consumer payment methods.

Mobile payments are being used by consumers, but they haven’t hit the sweet spot yet. Whilst there are so many different terminologies, different schemes and different ways in which they all work, it will create barriers because of the uncertainty around it.

Consider the process of visiting an ATM with your card, it’s a familiar sequence – you put in your card, you enter your PIN, select your transaction, and take your card out. The mobile channel hasn’t reached that level of familiarity yet.

In order for m-banking and commerce to really take off and gain the traction that has been predicted for so long, players all along the payments value chain must, to a certain extent, put their competitive differences aside in order to foster growth.

“There needs to be more cooperation between the schemes and telco players to actually enable mobile commerce to really happen,” explains Brown.

“It’s beginning to happen on the mobile banking side because there are examples like Monitise, and also the interbank mobile payments service Zapp. They demonstrate how, if banks cooperate and work together, consumers then get something which they can use because it is a consistent service. A consumer’s own bank may vary its service slightly and enhance their competitive difference around it, but it’s still a consistent process that people understand. We haven’t got that in the mobile commerce world at the moment.”
With new payment methods come new challenges, most notably in relation to fraud. As banks and other institutions crack down on fraud in one area, it will often spring up in a newer, less protected, channel or environment.

The emergence of mobile commerce has brought with it new fraud types, such as mobile malware, and organisations need to be ever-mindful of how to combat these fast-evolving threats.

While there are many fraud prevention strategies and tools at the disposal of banks and other organisations, some may not be nearly as effective in this new multichannel age as they once were.

Banks shouldn’t depend on neural networks to fight fraud. Neural networks were good when organisations didn’t have a huge amount of computing power. However, banks still had to be able to provide some assessment of what likely fraud trends would be, and neural networks were able to identify the very strong probabilities of fraud, but they could not pick out every one.

Alaric’s Fractals fraud detection tool consists of three main components: the Adaptive Classification Engine; the Rules Engine; and case management. The Adaptive Classification Engine inspects every incoming transaction and scores it for fraud using Bayesian statistical analysis and proprietary inference techniques, and then calculates a consolidated fraud probability based on a combination of the individual strategies. The system can be trained or calibrated, with a data set derived from the financial institution’s own records to create a highly individualised set of fraud probability calculations based on the client’s specific customer usage patterns and experience of fraud attacks. Individual models can also be established for certain account types or customer segments for even greater granularity in fraud detection.

“With the Bayesian analysis, you can actually find all the different strands that are markers of fraud, and you can take them all into account, because the system is looking at probabilities across different streams of data,” explains Brown. That means that when a transaction comes along, if it’s one of those transactions that is a rare occurrence of fraud, you’ll still find it using Bayesian analysis, whereas a neural network wouldn’t identify it. It’s a much better way of detecting fraud.”

With Bayesian analysis, it is also easier to keep a system up to date. You can build strategies in a Bayesian analysis that can automatically adapt to changing fraud patterns. If you have a self-adapting strategy, as the bank’s fraud officer marks a
The challenge for many banks and organisations in fighting fraud is striking the right balance between security and providing a seamless experience to the customer.

Security, simply put, is really important as it is the wall to stop the fraudsters getting in. It is necessary to find the balance between stopping fraud and still letting your customers through. The most secure computer is the one with no internet connection.

“**You have to work on the assumption that no matter what security you have in place, a criminal at some point will be able to get past it. Banks need to know that even if the criminal gets through, the fraud prevention system will still look at the transaction and examine whether it is likely to be authentic — whether it is one that the bank expects its customer to be making, based on what it’s seen in the past, what it’s seeing right now, and what it expects to see in the future,” says Brown.**

Ultimately it’s about having a very effective fraud detection system in place, and being able to recognise whether a transaction is genuine.

Implications of cloud and Big Data

The emergence of Big Data and the cloud, and the implications for system hardware/software requirements, are also having a fundamental impact on how banks and other organisations are approaching their payment system strategies.

As more and more transactions flow through an ever-increasing array of customer end-points, the issue for banks and other organisations is how they store and secure transaction and customer data.

According to Brown: “There are some interesting things from a Big Data perspective with regards to how banks handle large volumes. Most of the data in the transaction switch is transient because banks will typically keep two or three days’ worth of data in the switch itself. Data is actually stored in the system of record. Whether it’s the core banking system, the card management system or account management system for example, the system of record will store all of the transaction data. In terms of the transaction switch, having massive volumes of data doesn’t make much difference, because it isn’t storing it all.

Big Data is more relevant for fraud systems. When looking for fraud patterns, the system looks at the history and assesses the characteristics of a particular transaction, the contextual picture around that transaction, as well as how it fits with historical accumulators or trends that it is trying to track.

Modern databases can conduct this analysis very quickly, aiding...
the identification of fraud. Banks tend to keep three months’ worth of fraud detection data in their system (and some will have up to a year’s worth of data) and still keep up to date with that without a problem.

“Finding fraud can be akin to trying to find a needle in a haystack. It’s trying to analyse a particular transaction against massive amounts of data and see whether it matches other types of fraud occurring,” says Brown.

Alaric’s solutions enable organisations to gain a much more granular view on transaction data, enabling them to be processed at a greater speed. If a transaction has parameters around geography, value, merchant category code or others, then it needs to be handled in a certain way.

“You may run a different series of checks on it, you may put it through different processes in your system,” Brown explains. “For example, if a transaction is from one of your gold cardholders and it’s below a certain value, provided you run a fraud check on it and the PIN is correct and the card hasn’t expired, it can be processed through more quickly. However, if it comes from a location where the bank would not expect the cardholder to be, a different country for example, or with a higher than normal value, we may run it through a series of different checks.”

Traditionally, the authorisation of a payment was quite straightforward, and the process was the same for most transactions – checking the available balance, ensuring that the card hadn’t been reported stolen etc. Nowadays there is a lot more context around the payment, and different transactions can be handled in different ways, including fraud checks. The issuer may have to update a partner service like a telco or other organisation who this transaction involves. They need to plan for every transaction, and every transaction is different.

Many banks worldwide have adopted the approach of having their own cloud inside the bank, meaning that the bank’s data centre will often be hundreds or thousands of miles away from where the transaction is taking place. But some banks are now trying to leverage that structure in order to provide more services and functionality – and new opportunities.

The emergence of Cloud is allowing banks to see whether they can make use of a service-type infrastructure where there is an independent organisation providing that service. For example, one of the French banks is opening up its API to its transaction processor and allowing app developers to create apps making use of that service.

“That will be more of the model appearing in the future, where service providers are making use of the bank transaction processing system,” says Brown. “The banks themselves are going to become the cloud, providing a service to other service providers who will then provide something to the consumer. It could be linked into other things as well, such as profile tracking, predicting spending or balance checks and so on,” he concludes.
When banks or other organisations are looking to overhaul their payment systems, there are a number of guidelines or best practices that can be adopted to smooth the path and ensure a successful migration.

“One of the challenges of replacing existing systems is that they are huge and they are very complex,” Brown told PCM. “Certainly, one of the things we’ve been proposing to clients is taking off a certain slice of that system. Some people start projects with the intention of replacing the whole lot, but what may be more beneficial is replacing a certain element of it. For instance most players connect with many end points (interbank systems, core banking systems or card management systems for example). That’s an example of a piece that could be hived out and replaced with new technology, leaving the rest of the system intact.

“So long as they can link the new piece and old piece together and ensure data and transactions are passing through seamlessly, banks can then look at whether there is another piece they can replace. In the case of mobile banking payments, a bank could opt to place that capability entirely within the new system or technology. Thus they start moving things on a piece-by-piece basis. But banks do have to think about what their end-game is, where they are headed and where they want to get to. By taking that piece-by-piece approach, they’re not taking as much of a risk as doing it all at once. They can then also build their project and adjust it over time. Many projects will take two to three years – banks can opt to focus on a specific area for a specific amount of time, and then they can evaluate where they are in terms of the business requirements of the bank. It could be the case that the business requirements of the bank are changing and the systems have to be re-evaluated.”

According to Yadav: “Payment systems are mission-critical in nature, and transforming them can cause business disruption during the implementation or deployment stages. Banks have been running non-integrated back-office legacy applications on various platforms, which increases the technical complexity of integrating these diverse applications to a common payment system platform. During a payment system transformation project, the risks and potential losses are very high due to data migration, integration of multiple processes, and the consolidation of multiple systems.

“Payment system transformation projects usually have long timeframes over a few years and therefore there are inherent risks of slippages and cost over-runs. They also usually have long payback periods and therefore sometimes do not justify large up-front costs. Because of all that, it’s important to measure a payment system’s return on investment by measuring efficiency ratios, business process improvement, and strategic gains.”

Brown added: “In terms of best practices, banks shouldn’t have to feel like they have to do it all at once. They should be realistic about their existing infrastructure: how much it is restricting the bank’s innovation, what it costs to maintain and how easy it is to make changes. If it’s causing problems and costing significant money every time they want to change something, then they should think about what they can replace to ensure their technology isn’t holding them back. But there is no need to change everything all at once. Take a phased approach to it, consider which pieces are causing problems and plan how to replace them, and don’t panic!”
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