BANKING TECH

Stuck in the pasta: a legacy IT challenge

Fintech companies tend to update their software in a blizzard of improvements known as continuous integration and continuous deployment (CI/CD). Why are banks so reluctant to follow their example?

Charles Orton-Jones

'Spaghetti systems' is a catchy name for a terrible problem. The technology behind the scenes at most tier-one banks is a tangled mess. Thousands of applications are patched together, with some of the most critical platforms dating back to the 1980s. ATMs still run on Cobol, a programming language that was created in 1959.

This spaghetti leads to disasters. IT teams are terrified of updating ancient applications: systems go down; errors creep in. In one case, the Financial Conduct Authority identified that 750,000 mortgage customers were repaying the wrong amounts – calamitous for those involved. The cost of bank systems is mind-blowing: Bank of America allocated $10bn (£7.3bn) in a single year to its systems, while JPMorgan Chase spent $11.4bn.

But why are banks stuck with outmoded software? It's not down to a lack of desire – they talk a great game about the need to modernise. There's even an agreed methodology: instead of running applications with a monolithic code base, banks should chop these up into pieces called microservices. Each of these can run autonomously, operated by a team focused exclusively on its own sub-domain. This enables upgrades to be completed much more quickly.

And then there's continuous integration and continuous deployment (CI/CD). This means that code is updated regularly in a blizzard of tiny improvements, instead of a big upgrade every six months. Amazon, for instance, updates its code every 11 seconds. Each tweak can be tested individually. If it works, it's retained. If not, the version is rolled back.

If banks were to embrace CI/CD, their software would always be at the cutting edge because it would be improving constantly, according to Prema Varadhan, deputy chief product officer at banking software provider Temenos.

"It's a much quicker and more efficient way of rolling out products and services," she says. "The benefits are numerous and vast. CI/CD enables banks to innovate at a much quicker pace and respond far more rapidly to fast-changing customer needs. This in turn gives customers a much better experience and makes them a lot 'stickier', which clearly presents financial benefits."

Varadhan adds that CI/CD can end the crippling financial burden of software. "Banks can make changes in this manner at a fraction of the cost of trying to achieve the same results on legacy systems," she says.

John Lamb via GettyImages

> CI/CD enables banks to innovate at a much quicker pace and respond far more rapidly to fast-changing customer needs

"And, as the innovation becomes frequent, banks can fail fast, fix and improve. This in turn will reduce accumulating technical costs and debt in the longer run."

And the disadvantages of CI/CD? "The benefits far outweigh any of the costs or complications of adopting this approach," Varadhan says.

So why is CI/CD so under-used? Regulations are restrictive. Whereas a retail business can experiment with the stack, risking downtime in a worst-case scenario, bank regulators forbid any cavalier behaviour. This means that even fintech firms, which promote CI/CD as a practice, are ultra-cautious when they use it.

Such prudence is well founded, according to Mark Holt, chief product and engineering officer at 10x Future Technologies.

"It's important to recognise that context is everything in business," he says. "While continuous production releases – and roll-backs where features don't work – constitute the best approach for some companies, a failing feature in banking simply isn't appropriate. A failing feature being in production for only 30 seconds may be the difference between a customer's payment success and payment failure, which could mean the difference between them safely getting home that evening or not."

The answer for his firm is to retain a CI/CD philosophy, but to delay the release pattern until testing is complete and partners are prepared.

"Because of this, we balance risk by releasing and testing continuously within our development and test environments. Then we perform monthly releases into client banking environments to ensure that they have the robustness to deliver for end customers," Holt explains.

Then there's the human element. The archaic nature of bank software means that IT teams may struggle to understand newer practices.

Gaetano Ziri, a software engineer at banking software provider Auriga, says that the broad range of skills required by CI/CD is one of the main reasons why banks have been so slow to adopt the approach. He says that CI/CD specialists need: the ability to manage cloud providers such as Amazon Web Services and Google Cloud; familiarity with software packing tools (Docker, .exe, .deb, and .rpm); familiarity with version-control tools (Git, Subversion and Mercurial); and expertise in security, monitoring and code-coverage tools. And that's before the organisational culture is taken into account.

"Many businesses still prefer to use traditional methodologies when it comes to software development," Ziri says. "Implementing continuous integration means that they would have to retrain their staff and also change existing operations. Most companies want to meet their objectives quickly and may be resistant to change."

In some cases, banks are just too old to implement CI/CD effectively. Varadhan says that automated testing may not be possible in the context of a spaghetti system. "Testing modernisation requires access to consistent and quality data to be able to replicate real production-like scenarios," she says. "Yet, in many organisations, data provisioning is still a very manual process, which is both slow and unreliable, and it results in out-of-date data."

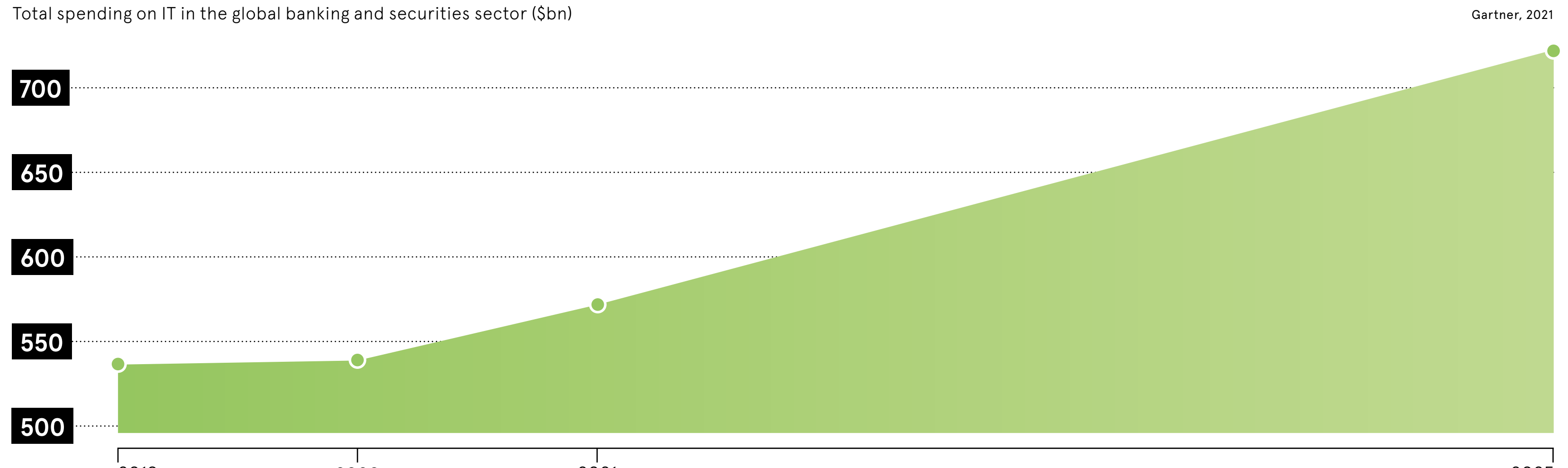
CI/CD is clearly the future for banks. Just like Amazon, Spotify Uber and other tech pioneers, they'll be able to upgrade their software element by element. It will make them more agile, able to implement improvements with minimal fuss. Digital banks are already enjoying the benefits of CI/CD. Starling Bank, for instance, is a big beneficiary. But larger banks are behind the curve. They may have neither the right skills nor the right culture to adopt CI/CD, while strict regulations preclude its rapid deployment. And the prospect of ripping out spaghetti systems is intimidating.

It's a useful issue to understand. Banks want to leave the era of spaghetti systems behind – their desire to modernise is not in doubt. But, when customers, partners and commentators scratch their heads and wonder why they don't do it immediately, it's worth remembering that there are good reasons for this.

BANKS' TECH SPENDING IS SET TO SOAR

Total spending on IT in the global banking and securities sector ($bn)

Gartner, 2021



Commercial feature

How can financial services innovate and build trust in the digital age?

The pandemic has provided a unique opportunity for the sector to both strengthen relationships with customers and better serve society. But with data privacy and cybersecurity increasingly hot topics, strategic partnerships are critical, according to an expert panel

Oliver Pickup

Q How has the pandemic affected trust in financial services?

KP KP: Before the global financial crisis in 2008, a sales-first culture had permeated the financial services sector. The implications of the crash, most notably the plummet of trust, triggered a reorientation back to a customer-centric and purpose-driven approach. Because of the culture change and regulatory work in the last decade, organisations were in a very different position when the coronavirus crisis hit. Highly capitalised banks in particular have had the opportunity to become the 'white knights' of the pandemic.

JT We have learnt a lot since the financial crash. Banks, in particular, have stepped up and supported their customers through this health crisis and demonstrated the important role they play in society. NatWest champions the potential of individuals, families and businesses – of which we bank one in four in the UK – helping them to thrive. The bank lent more than £14bn as part of government schemes, and we supported customers with mortgage and capital payment holidays. There have been softer ways we have helped people during the pandemic, such as turning an office building into a vaccine centre and our Edinburgh head office into a food bank. The pandemic has reinforced the purpose of financial services, but with the end of the furlough scheme and as the economy starts to recover, we need to redouble efforts to help the customers and communities we serve to thrive. Because when they thrive, so do we.

FH Metro Bank was founded in 2010, at the end of the financial crisis, to reach the high street market. Considering the digital-first direction others were heading, it was a bold decision, but human interaction helped establish trust. That initial concentration on stores gave us good credibility, and now, in response to customer needs, we are adopting a bricks and clicks strategy. During the pandemic there was a significant need to be always available for customers, hence why digital has become critical. By offering fast, stable, and secure products and services, we have maintained trust. People talk about an omnichannel approach to provide better customer journeys, but I think there are different levels of trust between chatbots and in-person services.

APS The starting point for trust is purpose, why you exist. Trust is now the number-one facet for customers in the market, above value for money Today customers are looking for proof points, and in the last 18 months, many financial services have moved from talking to taking action with their ESG strategies. We gave our customers refunds as thanks and also supported key workers. As an insurer, we deal with serious incidents and distressing circumstances, so our agents, empowered by the data at their fingertips, provide exceptional customer service.

Q How are trusted partners being embraced to drive innovation?

APS Figuring out who the right partners are comes back to understanding customer needs. You have to be relentlessly obsessed with the customer experience, and data must be the beating heart. Data helps you create beautiful, personalised experiences, and – because DIY solutions no longer make business sense – an ecosystem of strategic partners is crucial. The customer experience is the tip of the iceberg as it only happens because 90% of the underwater technology is working smoothly.

KP Over the last 10 years, financial services organisations have been forced to evolve for the digital age but now often suffer from a fragmented technology environment. With improving the customer journey in mind, challenges include integrating and inter-connecting solutions while scaling at speed. Many digital transformation programmes fail because of culture and a lack of effective partnership; you have to select the right partners, and once you do, be open and transparent in your interactions.

JT People often think that large organisations are not agile enough to change at pace, but in the last 18 months, we have been able to respond very quickly to meet customer demands, in part because of our technology partners. For instance, we built a fully automated platform that has enabled over £8bn of loans through the government scheme in only six days. The service that we provide customers is increasingly reliant on multiple channels and how they integrate. We need to leverage the best technology to deliver seamless customer service and deepen relationships in the digital world. That means we have to pick expert partners. But it's a two-way relationship, and the openness of the infrastructure that we're building, through APIs, makes this collaboration possible. For example, we have partnered with fintechs to verify customers quicker using selfie technology.

FH I love the open-source mindset when it comes to partnering. While products or services are not perfect immediately, iterative evolution is possible in a collaborative ecosystem of trusted partners. This approach is a departure from the old ways financial services innovated. Suppliers can no longer come to your door and ask you your requirements and offer to build it. Instead, partners are leaning in, being more proactive. Also, with the rise of cybercrime and fraud, we have to share knowledge across the financial services community, as without adequate security, trust evaporates.

Q What are the upcoming challenges and opportunities for the financial services sector?

APS The US military phrase 'vuca' – an acronym for volatility, uncertainty, complexity and ambiguity – captures the world in which we now operate. Everyone has their favourite worry. The east is leading the way in financial services. Super apps – a central application from which customers can buy most products and services – are made possible thanks to the dynamic over there. We haven't seen super apps in the west yet, but it would quickly disrupt the market if they were introduced.

FH For me, there are worries and opportunities around APIs. By design, they open us up, make our data move faster, provide quicker authentication. But as soon as they unlock that data, it is exposed. If we don't manage that security, it will be hard to maintain trust, and disruptors could take advantage. Additionally, I firmly believe that the financial services sector needs to educate people, young and old, to enable greater financial freedom.

JT I am optimistic about the future and see a huge opportunity to use data and technology to build on the good work in the last year and a half. However, financial services firms must continue evolving and adapting to the digital age and meet their customers' preferred channels. For example, before the pandemic, we had fewer than 800 video banking calls a week. Now we regularly do over 13,000 video calls a week. And we are looking into marketing on TikTok. Ultimately, we are seeking to develop deeper relationships with customers and using data to be their proactive, supportive partner.

KP The impressive way the financial services sector has supported customers during the pandemic shows that we have come full circle: firms are again genuinely passionate about helping customers and doing the right thing by their employees as well. People see straight through a lack of authenticity and transparency and, with ESG topics rising in importance, financial services must be useful to humanity. It's a hugely exciting time to work in this sector.

> Highly capitalised banks in particular have had the opportunity to become the 'white knights' of the pandemic

Roundtable attendees

- **FH** **Faisal Hussain,** CTO and CDO, Metro Bank
- **APS** **Alan Patefield-Smith,** CIO, Admiral Group
- **KP** **Keith Pearson,** head of financial services go to market, ServiceNow
- **JT** **Jen Tippin,** chief transformation officer, NatWest Group

To find out how to accelerate customer and operational workflows in financial services digitally please visit servicenow.com/finserv

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