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# Digital Vision: Digital Banking

Financial Services and Insurance global opinion paper



# Atos

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**Adrian Gregory**

Global Head of Financial Services & Insurance and Global Head of Atos|Syntel, Atos

# Foreword

Digital disruption is not new to the banking industry: technologies advance and hungry market entrants are emerging all the time. What has changed, however, is the massively accelerated shift to digital channels as a result of Covid-19.

As we have seen through Atos' work with customers and our recent research into the financial services industry worldwide<sup>1</sup>, institutions have risen to the challenge of the move to digital; as recovery begins, the effects of this amplification are permanent and profound.

It's no longer enough for companies simply to keep pace in their market: banks must reinvent their business models and anticipate what lies ahead. For incumbents, there are major challenges to compete with digital natives; and every institution must meet rising consumer demands and regulatory requirements while delivering on decarbonization ambitions.

More than many other sectors, widescale transformation must be finely balanced with robust governance, risk management and compliance. Advanced security is mission-critical in the face of cyber threats that are becoming ever more sophisticated and asymmetric. The shadow of legacy still looms and has to be addressed through digital transformation. And we are at the very start of the changes that open banking is catalyzing.

This paper explores these challenges and how digital enablers and data can help to make banking smarter, greener and safer. It examines opportunities for banks to deliver standout customer experiences and operate as agile, optimized and secure digital businesses. And it looks to the horizon, at emerging technologies such as blockchain and quantum computing and how they might help shape the future.

Banks play a unique role in helping people to live safely and prosperously. And now the sector is pivotal in enabling businesses and communities through sustainable finance to transition to a net zero economy. The adaptability and innovation that characterizes this sector will help to power progress for society over the next decade.

Atos is working with our banking customers and global partners to help navigate and accelerate business and digital transformation to deliver banks' priorities and ambitions. At this pivotal time in history, we see important opportunities to collaborate to help create a cleaner, more inclusive and secure future for all.

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<sup>1</sup> Atos. Realization for change. 2021.



# Global megatrends in banking

**60%**

of banks globally have closed or shortened opening hours of branches since the onset of Covid-19 but many have also implemented new digital features, such as fully digital processes, e.g.

- a) account opening **(34%)**
- b) remote identification & verification **(23%)**
- c) contactless payments **(18%)**

**238%**

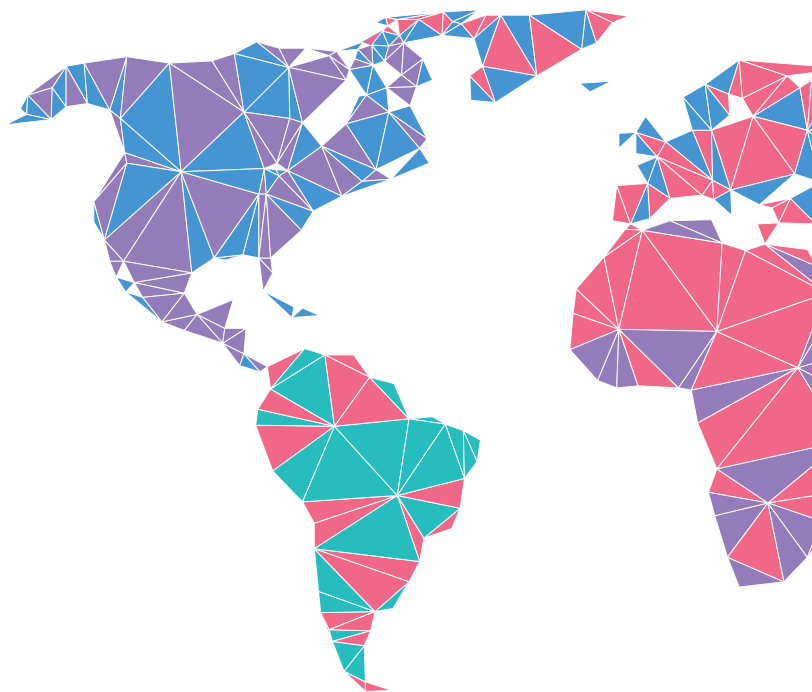
increase in cyber-attacks on banks since the Covid-19 pandemic<sup>2</sup>

**\$105 billion**

the scale of global fintech investment in 2020  
– the third highest annual total ever<sup>3</sup>

**\$6.6 billion**

the global projection for spending on blockchain solutions in 2021<sup>4</sup>

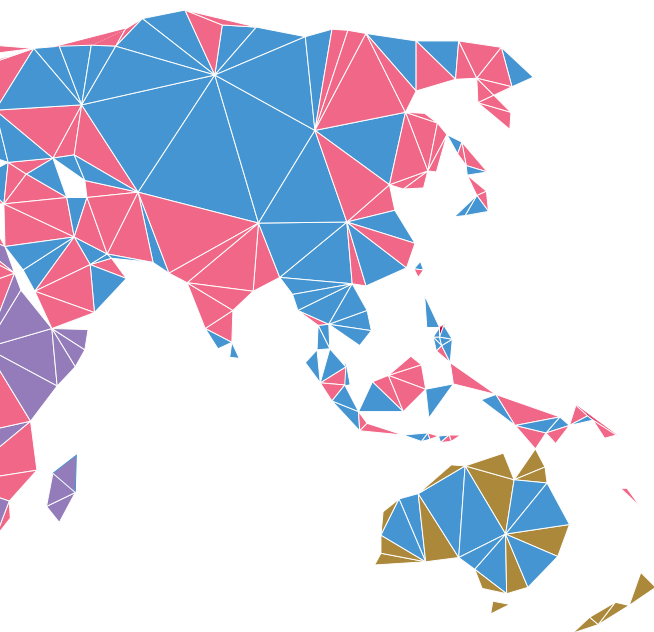


1 <https://www2.deloitte.com/ce/en/pages/financial-services/articles/digital-banking-maturity-2020.html>

2 <https://www.fintechnews.org/the-2020-cybersecurity-stats-you-need-to-know/>

3 <https://home.kpmg/xx/en/home/media/press-releases/2021/02/vc-investment-in-fintech-more-than-doubles-in-second-half-of-2020.html>

4 <https://www.statista.com/statistics/800426/worldwide-blockchain-solutions-spending/>



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## 50%

of global consumers interacted with their bank through a mobile app or website at least once a week in 2020<sup>5</sup>

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## 75%

of all in-store card payments across Europe are now made by contactless or mobile wallet<sup>6</sup>

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## 77%

of C-Suite level business banking executives believe that AI will be the most important technological change to the banking industry<sup>7</sup>

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## \$37 trillion

the amount of global banking assets represented by banks who are working together on decarbonization as part of the Net-Zero Banking Alliance

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5 [https://www.accenture.com/\\_acnmedia/PDF-144/Accenture-Infographic-Banking-Consumer-Study-2020.pdf#zoom=50](https://www.accenture.com/_acnmedia/PDF-144/Accenture-Infographic-Banking-Consumer-Study-2020.pdf#zoom=50)

6 <https://www.visa.co.uk/about-visa/newsroom/press-releases.3044294.html>

7 <https://www.weforum.org/agenda/2020/06/digitalization-is-changing-banking-these-three-trends-will-help-shape-its-future/>

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# Digital banking: The view from Atos' global Financial Services & Insurance leaders



Welcome to the digital future of banking

**David Haley,**

Global Head of Business Transformation Services & Head of Financial Services & Insurance Northern Europe, Atos

The future of banking is here – and it is digital. Trends over the past decade, away from the banking of the past, have only been accelerated by the impact of the global Covid-19 pandemic. And the way in which banking will continue to evolve in the months and years ahead is apparent in global research that Atos recently conducted with hundreds of banking leaders.

We found that two-thirds of retail banking leaders believe transforming the digital customer experience is a top 5 priority over the next 12 months. A further 80% believe that digital is essential to achieving their decarbonization targets. Almost half say account security and protection from fraud is a key priority. In short, as we head further into the 2020s, digital banking is becoming smarter, greener, and safer.

Here my Atos Financial Services & Insurance global leadership colleagues give you a flavor of the digital direction of travel and set the scene for the in-depth insights that this Digital Vision contains.



Smarter banking

**Mehul Dhruva,**

Head of Financial Services & Insurance North America, Atos

The intelligence, agility and efficiency with which banks leverage customer data is the foundation for differentiation and success – but only if you can translate it into an experience that makes your clients love you. Atos asks how every process and every business technology within banking can be exploited to contribute to better customer experience.

We see the following essentials for banks in the years to come:

- Banking will continue to shift to digital banking platforms and be integrated seamlessly into multipurpose platforms and other industries' value chains.
- Traditional banks matter, as they have the cash, the names, the trust, and the customer base. However, they need to continuously evolve to keep pace with digital evolution.
- Fintechs will function as disrupters in this market development, with the most successful of them being acquired by one of the big techs.
- Building digital business models and integration into digital platforms, superior customer experience, providing microservices incorporated into other industries' process chains, and unbundling core banking are the main principles to stay relevant.



### **Greener Banking**

**Serge Christin,**

Head of Financial Services &  
Insurance Southern Europe, Atos

Banks can lead the development of more sustainable business models for their customers and drive progress on decarbonization across the whole economy, while at the same time using digital to dramatically decarbonize their own operations. The industry-led, UN-convened, Net-Zero Banking Alliance bringing together 53 banks from 27 countries representing almost a quarter of global banking assets (over \$37 trillion) is the most vivid demonstration of what is possible through collective action.

- Big data, artificial intelligence, blockchain and the Internet of Things (IoT) now offer a range of ways in which access to sustainable finance can be expanded.
- Smart technologies can provide insights that can better inform risk assessments directly impacted by climate change, such as flooding, storms and extreme weather.
- Development of lending policies and approaches that use metrics and targets reflecting broader climate-related ESG and enterprise risks, as well as more traditional carbon risks will be key.
- A better appreciation of financed emissions and the integration of scenario analysis to review the potential future impact of portfolios will give banks new opportunities through the green transition. This will allow the development of new products and business opportunities as a result of market share development in growth markets and ultimately lead to stronger relationships with their clients.



### **Safer banking**

**Jo Sevarts,**

Head of Financial Services &  
Insurance Central Europe, Atos

Every bank must promise protection of customer data. Every bank must achieve regulatory compliance. All aspects of trust and compliance must be assured across the digital banking landscape. This is a difficult challenge in a time where banks are the subject of an ever-increasing number of cyber-attacks. The nature of threats continually and rapidly mutate – and digital security and compliance practices must be designed to anticipate this volatility, ideally with the following components in place:

- Cyber risk management: Putting in place a comprehensive policy that covers effective Business Continuity Management and enterprise-wide governance.
- Cyber security advisory: Integrating every element that relates to security processes within a complete security architecture, with full integration of IT and Operational Technology, ensuring that sensor information is also managed and protected.
- Cyber operations: Keeping the entire IT environment secure, based on a Security Operation Center (SOC) and incident and event management.
- Insider threat protection: Effective methods for ensuring that data is not lost as a result of internal attacks, routine migration, or any other factor.
- Secure cooperation: Bringing the additional level of physical security that only integrated encryption technologies can offer, including biometrics, Public Key Infrastructure or use of cards and tokens.
- Digital identity & access control: From outside and within an organization, the greatest danger often comes from unauthorized access. Atos solutions deal with this critical issue through Identity and Access Management (IAM), Role and Compliance Management and building Federated Identity for secure single sign-in.


# Smarter Banking

Hotels best booked on—

make **my** trip



**HOTEL  
LORD  
KRISHNA  
DX. INN**



How is digital transformation enhancing the banking experience for not only the banks but their customers too? We take a closer look.





**David Mullins**

Head of Consulting, Financial Services & Insurance, Atos

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# Post-pandemic banking, digital accelerator?

The pandemic has been a major disruptor for the banking sector. Before the pandemic, it's fair to say that some parts of the sector were behind the curve on digital transformation; the focus, typically, was on using technologies to drive down costs and increase efficiency rather than necessarily to grow business.

With requirements for social distancing, the effect of Covid-19 has been to accelerate the shift to digital and the evolution of a cashless society. Customers no longer make routine visits to their bank; they use cash less; and contactless payments have dramatically increased. In fact, 50% of customers globally interacted with their bank through a mobile app or website at least once a week in 2020.<sup>1</sup>

This turn towards digitalization has, by virtue, led to rising customer expectations of their banks and other providers to facilitate fast, convenient cashless payments as the norm. This has created what we might call a digital deficit for many institutions – a gap between what their customers want and what their IT and organizational infrastructures can readily and robustly support.

Those businesses – and they are not just banks, they include digital giants and retailers – who have no digital deficit, or who can rapidly eliminate it, are winning in this new increasingly cashless world. The industry has moved beyond the tipping point of new digital operating models. This is about transforming banks' whole business models, with customer experience at the heart of this transformation.

## So what's next? And how can banks respond?

This is not about clever technologies. It's about reinventing the end-to-end customer experience and applying it right back to the core of the institution.

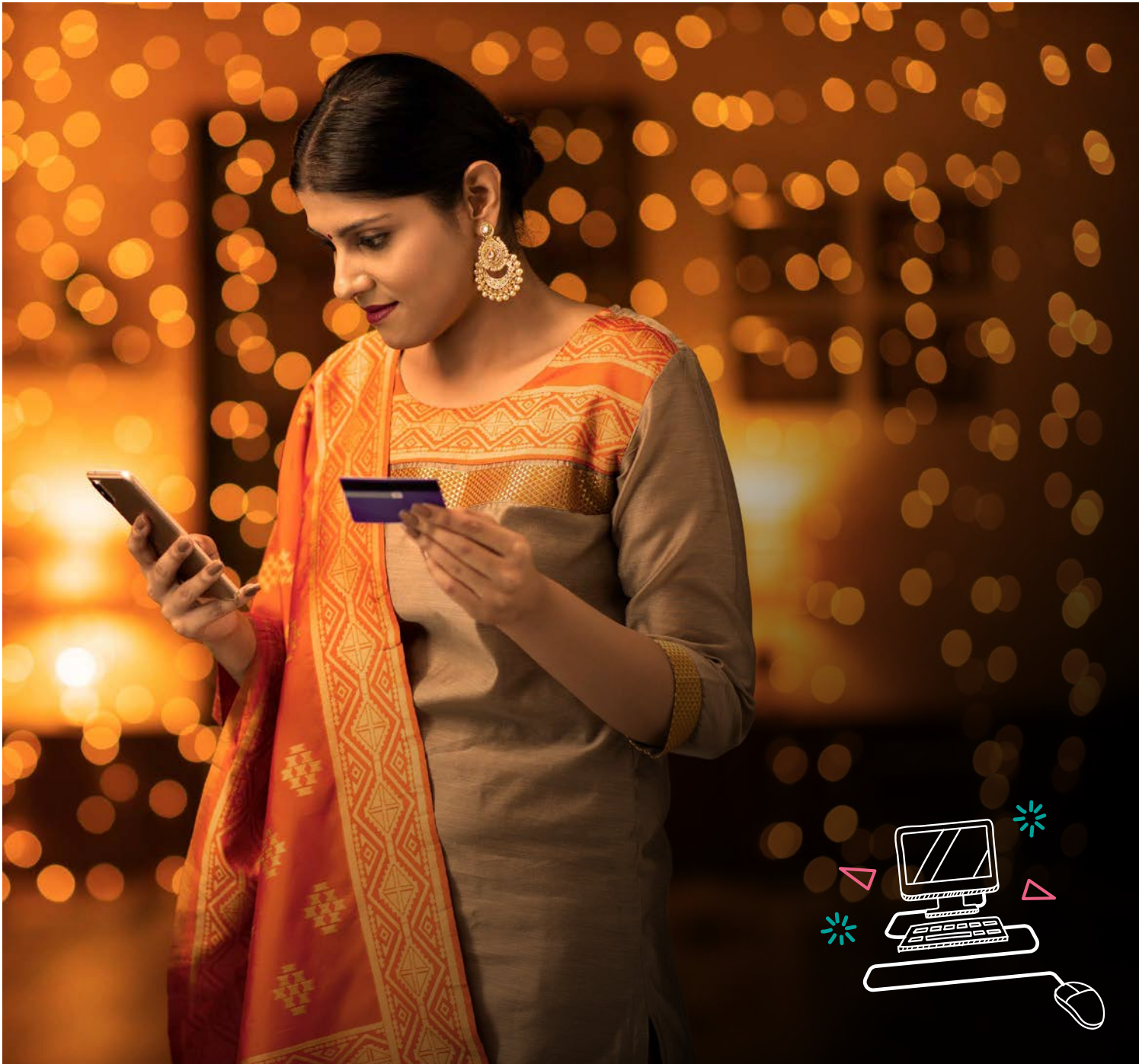
As engineer and investor Marc Andreessen famously wrote back in 2011, 'software is eating the world'. Just look at the music industry, which has gone from vinyl, to CDs, to full streaming in a few years. The same is true for financial services institutions that are increasingly software-driven. Cloud is on the critical path. The impact of legacy and the shadow it casts is front and center.

One of the principles of future transformation will be architecture: if banks don't rapidly address their legacy estates, their ability to embrace open banking platforms will be limited. Wholesale transformation of business models needs to be outcome-based.

The digital shift that's taken place since 2020 has left a permanent change on the industry. Some parts of financial services will be almost unrecognizable by the end of this decade – and perhaps even sooner. Banks need to act now to be ready.

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<sup>1</sup>Accenture. 2020 Global Banking Customer Study.



# How traditional banks can thrive in a digital world

Over the past few decades, we have seen an extraordinary digital shift in the banking industry. According to recent research by Citibank,<sup>1</sup> the strengths of new digital banks are part of the reason the traditional banking industry faces a projected \$2trillion revenue loss by 2025.

Technology has ushered in an era of both neo – digital only – and challenger banks, more recently created banking institutions with a largely digital footprint. Together they have gained over 39 million customers worldwide in the last 10 years.<sup>2</sup>

## Closing the gap

Research suggests that customers are attracted to the high-quality user experience of challenger banks. A 2021 survey found that for 81% of consumers,<sup>3</sup> the prospect of easy access and flexible banking would convince them to switch to a new-age financial provider. Neo banks are also performing well; their keen cost-income ratios present a significant threat to established institutions. Additionally, they are less likely to be the target of cyber-attacks – a threat that companies in the financial sector are 300 times more likely to face than others.<sup>4</sup>

Of course, traditional banks have always been aware of the need to keep abreast of technological changes: as early as 1994, the first US bank<sup>5</sup> offered internet banking to all its customers. But the pace of change is only increasing; a hybrid of digital and traditional will increasingly mean that many banks lack sufficient agility, scalability as well as operational fluidity, leading to the risk of dissatisfied customers when compared to fully digital and more nimble competitors.

To retain their competitive edge, no operational aspect of traditional banking should therefore be exempt from a digital audit to ascertain how and what can be improved to at least keep pace, if not stay ahead of the fleet-footed competition.

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<sup>1</sup> <https://www.mckinsey.com/industries/financial-services/our-insights/global-banking-annual-review>

<sup>2</sup> World Retail Banking Report 2021, Capgemini and Efma

<sup>3</sup> World Retail Banking Report 2021, Capgemini and Efma

<sup>4</sup> Global Wealth 2019: Reigniting Radical Growth, Boston Consulting Group

<sup>5</sup> Stanford Federal Credit Union

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## A best of breed banking model

As part of this transformation, it is imperative that banks move to an open source software and Application Programming Interface (API) model, which enables fast adoption of new partners and services into the bank, using very lean operating practices and costs. For example, Atos uses a 'hyper-agile, software defined' business model for banking – in other words, putting the emphasis on investing in agile development of software applications (not fixing on hardware or IT infrastructure) to drive change and accelerate innovation.

One component of this type of model is 'best of breed' banking, which means working with partners who are leaders in their fields to operate each area of the bank, resulting in a bank that is created by true specialists. Using multiple partners creates a 'digital ecosystem' enabled by the simple and secure exchange of information, so that every operational aspect of a bank is connected to the whole and underpinned by data analytics, enabling an agile approach. This is where the use of open source software code and open APIs comes to the fore.

APIs are the interfaces that facilitate the exchange of data between partners. They enable the hundreds of applications in a single open bank to communicate seamlessly. Open source software used for collaboration has additional benefits. Developers can quickly build applications and services around the bank, enhancing its offer. For example, banks will increasingly be able to build new services using data across partners and institutions. Open collaboration also lets customers share their banking data more easily and securely.

## Total transformation in practice

Banque Misr, one of the largest banks in Egypt, is set to become the country's first fully digital bank and a prime example of a transformative banking business model in practice. Partnering with Atos and embracing a software-defined infrastructure, the bank will build a new front to back digital bank called 'MDI Digital Bank'.

Using an open banking ecosystem, partners and external services can then deliver products to customers as they are developed. Bank customers should receive a personalized and frictionless digital experience across all channels. For example, MDI will harness advanced AI using big data management to give customers practical insights tailored to their financial needs and lifestyle.

Other digital services will support MDI in its marketing and outreach. Solutions such as social customer relationship management will foster a richer engagement with customers and prospects. This will support Banque Misr's ambition to appeal to a new demographic, with a unique set of digital products and services.

This is just one example of total transformation alongside a mindset of constant evolution to safeguard excellent customer experience, exemplary business operations and long-term growth. Banks that embrace this philosophy are set for a bright future.

# Ulster Bank

## Putting artificial intelligence at the heart of business

Based both in the Republic of Ireland and Northern Ireland, Ulster Bank forms part of the Royal Bank of Scotland Group (RBS). It's one of the traditional Big Four Irish banks, with around 3,000 staff serving approximately 1.9 million customers. Ulster Bank's ambition is to become number one for customer service, trust and advocacy by 2020. To achieve this, the Bank continually works to better understand and serve the needs of its customers.

As part of its wider digital banking strategy Ulster Bank, in line with its parent company RBS, has embraced the use of artificial intelligence (AI). One such initiative the bank has embarked on is a project using the Salesforce Customer Relationship Management (CRM) system with Atos. The bank has been using CRM since 2008 and therefore it made sense to extend the functionality to deliver a data driven approach to meeting customer needs. The AI component will empower Salesforce users with accurate, timely and relevant customer data to enhance the bank's digital journey.

## The challenge

In uncharted territory and with an aggressive timeframe, user buy-in and engagement was critical.

Success required significant organizational, technical and cultural change – in essence, to deliver the previous 27 releases of the Salesforce system simultaneously.

While also changing the look and feel, incorporating analytics and AI.

## The solution

Refine the Bank's customer and product data to ensure it was fit for purpose and robust enough to be used by Einstein.

Create one single view of each customer – a key part of Ulster Bank's Customer Service strategy.

Develop an Einstein powered 'next-best product' recommendation engine for Relationship Managers to get closer and satisfy the needs of their customers.

## Business benefit

Ulster Bank now has a one-stop-shop AI platform for CRM giving the business significant competitive edge. New opportunities can arise in an instant; with the platform, the Bank can capitalize on them in a controlled and efficient way.

The Bank is more accurately segmenting and leveraging intelligence on its customer base for strategic planning, decision-making, product development and so on.

Resources across the customer-facing teams are better allocated to serve customers' needs and wants more effectively – releasing cost savings, efficiencies and synergies across the business.

The platform is in place to improve performance, efficiency and productivity even more by using automation and machine learning to continually model, analyze and exploit rich customer intelligence.



**Carol Houle**

Global Head of Consulting and Marketing, Financial Services & Insurance, Atos

# Digital transformation in action: Atos in North America

Banking in North America is increasingly digital. And that means that the demand for digital solutions is ever growing. This trend has only been accelerated over the past 18 months with the changes that the Covid-19 pandemic has instituted across the sector. Atos in North America works with several leading banks on a wide range of projects with a common thread: using digital technology to get the best possible results for our clients and their customers in a way that delivers cost savings and improves operational efficiency.

In each of the case studies that follows, the breadth of our offer is apparent: from managing the transition from LIBOR via a bespoke digital platform; to monetizing financial data through the latest machine learning and AI techniques; through to leveraging automation to modernize our client's IT services – Atos expertise can be brought to bear across the full range of a bank's digital requirements. And there is more upcoming:

- We are working on a business value monitoring framework that will allow our clients to connect the value delivered to teams' product backlogs to improve the ability to prioritize development efforts around what is valuable.
- We are rolling out the concept of a Transformation Squad in how we instrument and orchestrate digital transformations.
- We have defined a contractual model to enable us to deploy pre-configured Agile Pod teams to quickly deliver outcomes to our clients.

Our clients work with us because they know we have the expertise to deliver the results they require. They also value the wider offer we bring to the table: our scientific community, our marketing and customer intelligence, our thought leadership, our client innovation labs and design thinking and our R&D expertise to name but a few.

There has never been a time when world class expertise in operational excellence and digital transformation has been more necessary – and Atos is here to take our clients with us on that journey.

## Managing the transition from LIBOR for a San Francisco-based top-four bank

### Challenge

With the transition away from LIBOR to Risk Free Rates, the bank had to intelligently assess the impacts on contracts and remediate the impacted documents accurately. To do this, it needed to digitize and decompose vast volumes of bank-wide contracts. Risk Free Rates are structurally different to LIBOR/IBOR, so significant effort was needed to profile, transform and manage contract-related data.

### A scalable contract intelligence platform

Working in an agile, business value driven way, Atos collaborated with the bank's users to develop, rigorously test and validate a modular and scalable contract intelligence platform. Blending microservices, data management, artificial intelligence (AI)/machine learning (ML) and workflow technologies, the platform can ingest, decompose and enrich large volumes of contract data for a wide range of contracts, not only for LIBOR transition but also for future business requirements.

### The results

- Faster digitization and remediation of legacy documents
- Successful transition from LIBOR rates, impacting over 25% of the bank's balance sheet

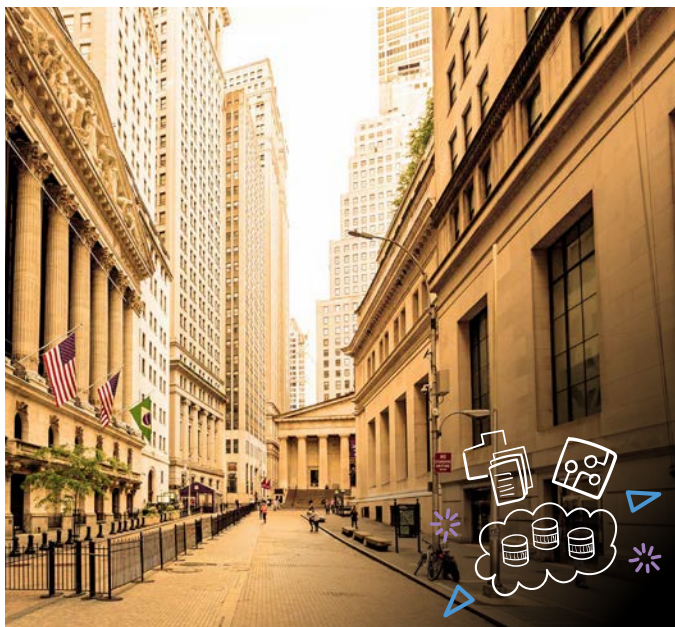
## Monetizing financial data for a Boston-based global custodian

### Challenge

The institution increasingly needed to utilize data insights for its multi-asset class investment strategies. Sourcing data and applying analytics from diverse systems was costly; a new solution was needed for robust data aggregation, management, reporting and governance.

### A next-generation data monetization platform

Atos drove a new digital business model and value innovation, developing a platform to extract and combine large volumes of data from multiple sources into a single consistent data warehouse supporting near real-time data. Providing a fully hosted 'data-as-a-service', the platform creates a holistic and integrated view of customers' holdings. Simple and intuitive for business users, the platform offers advanced AI/ML analytics that generate actionable insights for the institution's investment strategies.



### The results

- New business, with 25 clients onboarded
- 40% reduction in effort spent extracting/developing reports
- Faster regulatory compliance
- 30% cost reduction

## Modernizing IT services for a global financial institution

### Challenge

This New York-based institution was looking for end-to-end ownership of application development, support and maintenance services for its Cards and Payments lines of business. It wanted to leverage automation to address infrastructure performance issues, while standardizing toolsets and optimizing knowledge management to drive performance, efficiency and agility.

### Automated and integrated service management

Onboarding 68% of applications through DevOps, Atos implemented an end-to-end best practice Continuous Delivery Operating Model. Applications are developed using Agile and Kaban methodologies, with automated testing and continuous integration. Deployment of ServiceNow includes automated ticket creation and closure. With a global Rapid Response Team, the service includes intelligent automation of integrated 24/7 monitoring and remediation, with an 88.3% problem resolution rate.

### The results

- Prevention of \$30+ billion merchant payments impacts
- 64% reduced cost per application
- 40% faster time to market
- Application availability up from 96% to 98.6%
- 33% improvement in early detection
- 97% projects delivered with zero errors



# Moving from the investment to utility phase in the cryptoeconomy

Since their inception, cryptoassets have primarily been seen as an investment opportunity, with their value fluctuating as people speculate on their future role within the financial system. But it is ultimately the utility case for cryptoassets that will determine their long term value. We have always thought about adoption in two phases: the 'investment phase' and the 'utility phase'.

Today, the majority of interactions happening in the cryptoeconomy still largely involve retail and institutional investors speculating on the price of assets. We are, however, seeing increasing signs that the cryptoeconomy is moving past this pure investment phase into the utility phase, as more crypto and blockchain-based projects are maturing and finding product market fit.

But what does the 'utility phase' actually mean? Can businesses and individuals unlock the potential of cryptocurrencies, and other cryptoassets including utility tokens, stablecoins and security tokens, and can that adoption improve the financial system and empower economic freedom?

## The power of blockchain

These are both big questions and we believe the answer is yes, but to see how we get there it is important to understand the technology underpinning cryptoassets - the blockchain.

Put simply, the blockchain is a system for recording information; essentially a public database that records transactions in a distributed, decentralized way across many computers. This ensures that the record is permanent and cannot be altered in any way. It removes the need for an intermediary (like a bank or land registry) by passing responsibility for maintaining and validating the database to cryptographic algorithms.

While primarily used for digital financial assets, blockchains have a myriad of use cases, from recording property transactions, to selling art, and even the NHS' Covid-19 vaccination programme. But we believe that it is cryptoassets that will unleash the full potential of blockchain.

## Emerging use cases for cryptoassets

Broadly speaking, there are four types of cryptoassets, and they all serve different functions:

1. **Exchange tokens** - (or digital / crypto currencies) - these are the most widely known and allow value to be transmitted by users quickly & securely, with minimal friction & cost.
2. **Utility tokens** are used to fund the development of a project; holders can use them in exchange for access to a company's products or services.
3. **Stablecoins**, digital tokens replicating the value of a stable underlying asset or basket of assets (e.g. the US dollar), taking advantage of blockchain technology.
4. **Security tokens**, a class of assets aiming to be the crypto equivalent of traditional securities like stocks and bonds. These are the least developed today.



The inherent use cases within these assets are starting to be realized. **Exchange tokens** are making an increasing impact on payments and remittances, removing much of the friction involved with transactions in the traditional banking system, and we have seen this make it far cheaper for people to send money abroad (reducing the costs from 5% or more to under 1%). The wider efficiencies provided for businesses and customers are seeing payments giants such as VISA, Mastercard and Paypal now incorporating crypto more directly into their networks. It is also increasingly possible to earn a passive yield on a number of different assets by simply holding them in your portfolio.

Elsewhere, **utility tokens** are powering blockchain networks by allowing businesses to fundraise directly from customers rather than banks, one example of 'decentralized finance' or 'DeFi'. And networks such as Ethereum are providing infrastructure that enables developers to build and launch decentralized applications (Dapps) and smart contracts. These can remove middlemen, reduce fees and improve privacy, and their potential has led to the network's token, Ether, reaching a market value that is second only to Bitcoin.

And as we move further into the utility phase, it's exciting to see the ongoing shift to 'proof of stake' blockchains enabling holders to earn a return on their holdings. The validation networks of these blockchains rely on people 'staking' their existing assets to validate transactions, rewarding them for doing so. Companies like Coinbase are able to simplify this very complex process, enabling more people to benefit and facilitating wider adoption into the cryptoeconomy, and we were excited to recently open our waiting list for staking rewards on ETH2.

### Moving into 'Finance 2.0'

We believe that today's progress in crypto adoption can also power greater change in the future. Instantaneous, low cost, cross border payments, smart contracts and public ledgers can all play a role in improving property rights, providing easier ways to start a business and ensuring freedom from corruption, as well as powering greater financial inclusion for the unbanked.

At Coinbase we fully embrace these developments, as they play firmly into our own mission to increase economic freedom in the world. By offering our customers not only the ability to trade assets, but also the ability to use them for a wide range of applications, our goal is to act as a gateway for 1 billion people to access the benefits of the wider cryptoeconomy.





**Andrew Dunmore**

Managing Director, Financial Services, Maven Wave, an Atos Company



# Old systems, new world: How to transition legacy banking systems

As financial institutions evolve for the digital age, becoming cloud-enabled is increasingly important for the agility, resilience and efficiency they need. At the same time, the reality is that most banks have a significant legacy of data and applications running on old platforms. So, what should institutions do about their legacy estates on the transformation journey to cloud?

While banks may adopt digital by default and cloud-first strategies, it makes little sense to move an entire legacy estate to the cloud. Taking cloud-first too literally can result in avoidable issues including increased operating costs, delays to digital transformation, and under-investment in critical business functions served by legacy. There will be some applications that are not cloud-capable or cloud-ready. What's more, simply moving current applications to the cloud can mean perpetuating old problems and possibly creating new ones.

## Unlocking the value of legacy

Of course, one of the challenges of legacy systems is that they can be costly and slow to change or update thanks to manual build, deployment, test, and integration methods. This may also affect cyber security given the increased time needed to patch, upgrade and test legacy systems as threats evolve. Yet many of these applications have considerable locked-in value in terms of the data they hold, the core functionality they provide, and the deep knowledge often associated with them.

The question, therefore, is how best to unlock this value so that it can be readily and rapidly exploited to support the bank's wider business and digital transformation agenda. This requires a shift away from the typically application-centric nature of legacy to model a data-driven enterprise.

## A nuanced approach

Fully understanding the legacy landscape and its future role is critical. If there are gaps in knowledge, they should be closed through a targeted discovery program framed against the bank's digital vision and transformation strategy. Structured analysis of the existing IT estate is essential, with assessment of short-term and long-range business requirements, and identification of opportunities to enhance or reuse applications.

Ensuring that the latent value of legacy is unlocked and sustained requires balanced decision-making on a case-by-case basis. Not all workloads can or need to be moved to the cloud, nor should they necessarily be moved immediately. Legacy may be more easily and rapidly exploited in-situ, with associated processes optimized through targeted interventions.

## Legacy treatments

When considering legacy in the context of cloud, treatments traditionally fall into six main categories:

<b>Retire</b>	Decommission applications that are obsolete, redundant or will become so as a result of a planned replacement or policy/process change.
<b>Retain</b>	Leave the application as is, either as a result of other priorities, dependencies, levels of investment, or compatibility.
<b>Migrate</b> Rehost	Entry-level move to cloud IaaS (Infrastructure as a Service) with minimal change or 'lift and shift'.
<b>Modernize</b> Refactor/ rearchitect/ replatform/ encapsulate	Mid-range move to cloud addressing some application component level concerns such as exploiting cloud PaaS (Platform as a Service) in addition to the underlying IaaS migration activity above.
<b>Redevelop</b> Replace/ rearchitect/ refactor	Re-instantiate on cloud using cloud-native technologies.
<b>Standardize</b> Replace/ repurchase	Simplification and standardization to an industry-standard SaaS (Software as a Service).

Making sustainable and proportionate decisions about legacy systems and data is not straightforward; setting over-ambitious targets, for example, can have a damaging impact on cloud implementation.

There are a range of alternatives to having to retire and replace legacy. Application programming interfaces (APIs) and microservices can be implemented to open up access to legacy systems; data-scraping can be used to create new data-centric platforms; and application virtualization and containerization can offer banks increased cost-efficiency and agility. If legacy applications need to be redeveloped or retired, protective measures for legacy as the System of Record may still be needed in the interim.

## Outcome-based returns

The evolution and exploitation of legacy, and its associated data, is fundamental to outcome-based transformation, given that the costs and timeline constraints of legacy are critical to any cloud-forward strategy.

While cloud, as the engine for transformation, is a significant proportion of the overall cost base, it is far outweighed by the cost of people and processes. The full benefits of cloud are fully realized by reengineering and automating business processes and underpinning these with cloud and other enablers such as artificial intelligence, edge and IoT.

Measuring progress and returns on investment based on business efficiency (cost, throughput of change, quality, availability) aligned to growth and innovation are key to making evidence-based decisions for developing the right cloud strategy and roadmap.

## Accelerating Virginia-based bank holding company's journey to cloud

### The challenge

Early on, this bank holding company recognized the opportunities to design and deliver great customer experiences using software, data and algorithms. The bank had comprehensively reimagined its talent and culture, ways of working and technical infrastructure, which included an all-in commitment to cloud. Existing on-premise infrastructure did not offer the agility, scalability, reliability, or broader ecosystem needed to turn its vision into reality.

### A transformative journey to become all-in on cloud

Atos was a strategic partner on the journey, delivering cloud-native application development and modernization, enterprise APIs, data engineering, machine learning, and analytics which laid the foundation for personalized customer experiences. The bank embraced a broader community through open source adoption and contribution, accessing the rich world of third-party innovation through its partner ecosystem.

### The results

In 2020, the bank became the first major United States financial institution to exit its on-premise data centers. Applications and data are in the cloud, with cross-region resiliency. As a result, the bank has gained the benefits of a more available, reliable, scalable and agile infrastructure, with success unlocking the benefits of AI and ML.





**Frederik Kerling**

Senior Quantum Expert and member of the Scientific Community, Financial Services & Insurance, Atos

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# Quantum computing in banking, a disruptive opportunity?

December 2014 marked a significant point in the timeline of quantum computing, with the Commonwealth Bank of Australia (CBA) becoming one of the earliest commercial organisations to significantly invest in its emergent capabilities. In April 2017, CBA increased its \$5 million investment with an additional \$14 million. November 2017 saw Allianz and Royal Bank of Scotland join the \$45 million investment group for quantum computing, which also included Fujitsu, CME Group and Accenture.

Since 2020, we've seen uptake by Goldman Sachs, JP Morgan, HSBC, BNP Paribas, Cr dit Agricole, Japan Post Bank, Citigroup, Wells Fargo, Barclays, Royal Bank of Canada, BBVA, ABN Amro, and ING. Not only did these banks make investments, they have achieved results in calculating stock and mortgage portfolio risk, for example.

So why is the financial industry the fastest growing market for quantum technologies, and what can we learn from this?

## Tangible benefit for banks

CBA initially wanted to replace the work done by high performance computing for customer analysis. This is because classical binary computers – even powerful ones – aren't the best when they need to handle statistics, especially not for large sets of possible outcomes.

Quantum computers, working with a superposition of bits or 'qubits', work statistically from their very core, and hence are better at handling complex, interdependent and time-specific statistical calculations such as causality and Bayes theorem. These statistical laws are a knowledge gap rarely considered in human-generated algorithms. And as a problem's complexity

increases, it becomes impractical for classical supercomputers. Quantum computers can do this naturally with only a handful of qubits. Though each calculation step is slower in a quantum computer than with a classical one, they require exponentially fewer steps to arrive at the same answer, and hence become beneficial for large calculations.

## Quantum and banking

In traditional Monte Carlo methods to calculate capital optimization, we use a unique small set of parameters applied billions of times; but the outcome is again just a small set of numbers. And this is what makes quantum computers so relevant now. A capital optimization calculation has a small input, a small output, and extremely large sets of intermediate unused values.

For smaller sets of assets, the classical computer is still faster and cheaper. But as asset portfolios are becoming larger, the requirement for precision is higher, and the prediction time periods are becoming longer; this is why quantum computers, while still early in their evolution, become the more desirable and cheaper alternatives.

Of course, this presents an interesting challenge; when is it best to use classical and when quantum? The solutions are hybrid computing platforms primed to a business application that can use both methods. Once these applications are tested and implemented, we will start to see quantum computing become part of day-to-day business.

## Securing quantum computing

One key challenge around quantum – especially for the banking industry – is to ensure tight security. Financial services center on risk management. Whoever manages to minimize their risk whilst maximizing their profits dominates the market. While becoming quantum safe as a company is technologically simple, it is a long-term challenge that cannot be sped up purely through investment; starting early is advisable and not too costly, but can easily be overlooked among other pressing challenges.

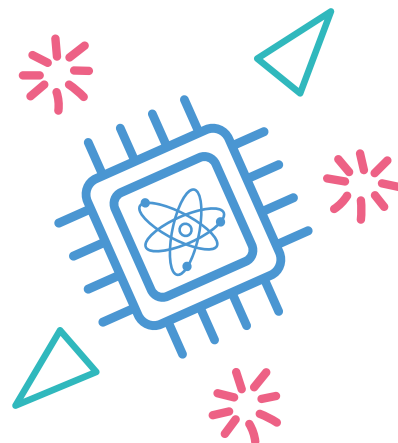
Another challenge is the usage of crypto-currencies and distributed ledger technologies. These are often not quantum safe. However, most banks don't use public blockchains and they have the trust and influence to evolve to quantum-safe trust technologies independently. With exception of the public ledgers, the impact for banks is expected to be low.

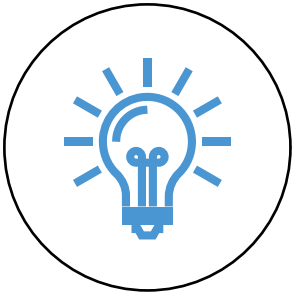
Getting public networks quantum safe is important and time-consuming. A lot of the financial trading data is run via low-latency networks. These are likely to be privately owned, and so fixing encryption in these networks is more straightforward than securing public networks.

## Bright futures

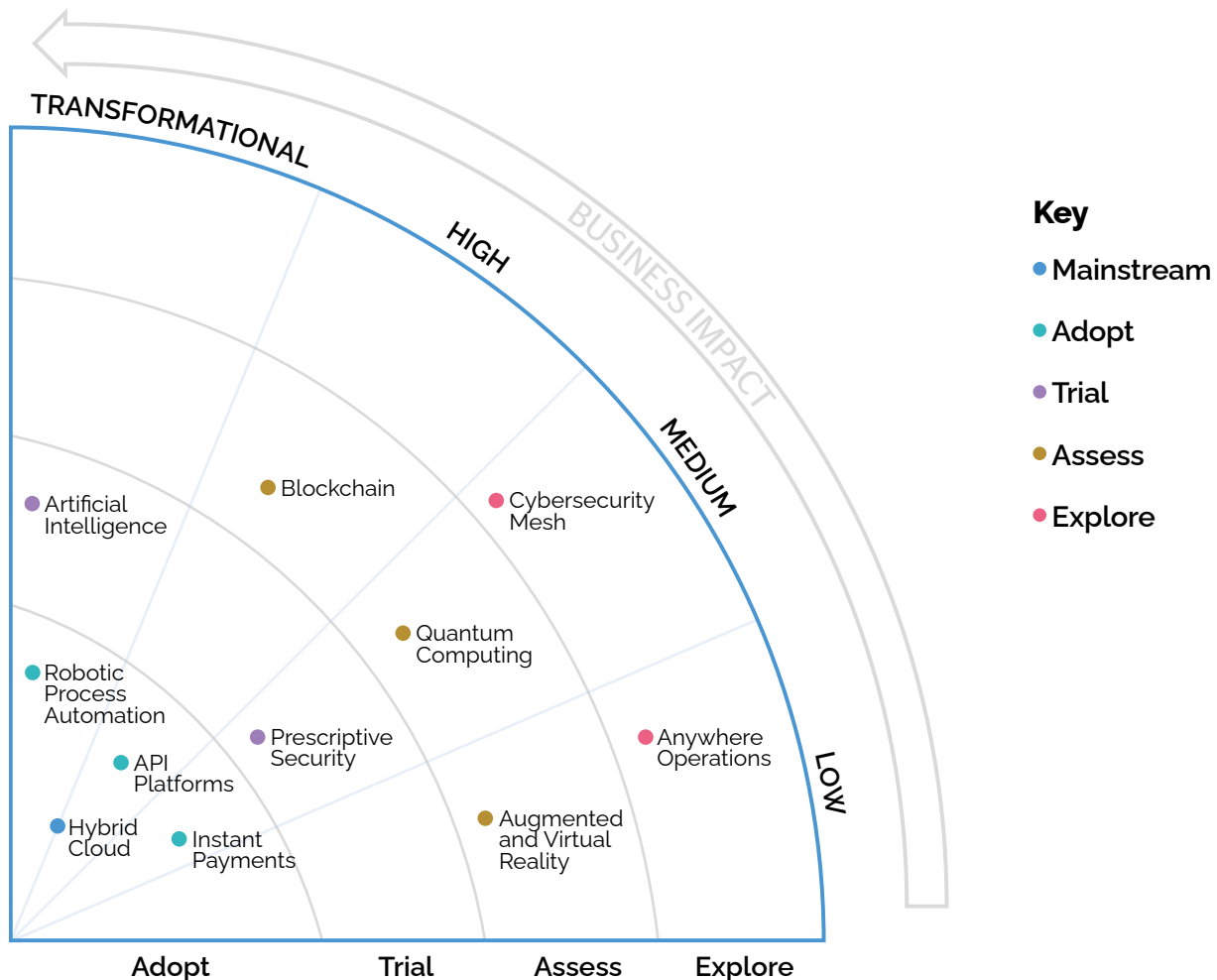
Over time, financial institutions will grow their quantum technology capacity and ability and will grow the number of specific business applications. As a result, the hybrid quantum-HPC computer will lie at the basis of their core business. Those that don't join in could be running serious commercial risk and financial organisations know this.

Quantum has a bright future, with the potential to make the sector more profitable and less risky. One day it might even make the global economy more stable, as fiscal risks can be better predicted with quantum computers. But quantum computing is not the only quantum technology. What would Finance look like once we have a quantum internet that allows for instantaneous, faster-than-light, correlations? Will we again change the statistics of algorithmic trading, as the rules of the game change? Nobody knows, but it is interesting to consider.





# The disruptive technologies shaping the future of banking



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**Hybrid Cloud** is reviving cloud initiatives by enabling secure and seamless integration of private and public cloud platforms, thus exploiting the benefits of public cloud (pay-per-use, 'infinite' bursting resources, agility and innovation) as well as taking advantage of the flexibility and power of cloud-native applications. Banks should urgently assess their data and applications to define a consistent classification allowing to guide their cloud-first strategy.

**API Platforms** allow financial products and services to be distributed and serviced across third parties. Banks should put API platforms at the heart of their digital strategy to attract ecosystem partners.

**Robotic Process Automation** will bring virtual workforces to manage repetitive tasks, reducing the cost of administrative and regulatory processes by at least 50% while improving quality and speed. Banks need to standardize processes to facilitate automation and engage in ambitious change management programs.

**Instant Payments** - with the move towards a cashless society and ever more connected devices - is making the payments sector evolve rapidly, driven by data and better customer experiences. Banks must explore Instant Payments and other game-changing technologies launched via social networks, chatbots or virtual assistants to offer new P2P, B2B and even M2M services.

**Artificial Intelligence** promises to replace human cognitive capabilities with robo-advisors, virtual assistants, chatbots and knowledge engineering. It will impact customer service, trading and compliance. Banks should prepare for the human, security and legal impact.

**Prescriptive Security** uses big data analytics, real-time monitoring including the dark web, AI and automation to detect potential threats and stop them before they strike. Applications range from cyber protection to fraud management and compliance. Banks should explore integrating it into their Security Operation Centers.

**Blockchain** is a potential game-changer for conducting business with parties without prior trust relationships. Beyond payments or cash management, it could revolutionize audit trails, automated contracting and the microservice economy.

**Augmented and Virtual Reality** are blurring real and virtual worlds, allowing customers and employees to engage with financial services within the context of their current environment. Financial services should explore potential use cases in retail banking.

**Quantum Computing** promises to break traditional combinatory analysis limitations, bringing advances in risk analysis and high-frequency trading within ten years. This will elevate risk by potentially breaking current cryptographic standards, threatening to cause a 'crypt-apocalypse.' Banks must start preparing for quantum-safe cryptography.

**Cybersecurity Mesh** is a distributed architectural approach to cyber control at scale which is flexible and reliable. The mesh switches the focus from defending a typical IT perimeter to a more modular approach that centralizes policy orchestration but distributes enforcement of cyber security policy.

**Anywhere Operations** can provide round-the-clock access to all aspects of a bank's IT requirements for customers and employees alike from any given location regardless of where people or assets are physically located.

# Greener Banking

The background of the slide is a photograph of a city skyline, likely London, with various skyscrapers and buildings. In the foreground, there is a lush green park with many trees. A large, semi-transparent blue circle is overlaid on the lower half of the image, partially covering the park and the city skyline.

From decarbonizing operations to pioneering green finance, banks have a unique role to play in the transition to a net zero future, so what's next?







**Sandra Ariza Molina**

Head of Banking and Financial Services Sub-Industry Operations, Financial Services & Insurance, Atos

# How banks can lead the way on the race toward net zero and make decarbonization banking sense

As a society we are driving towards a decarbonized future in order to safeguard our planet. In doing this, banking can set the industry example and plot the path for others to follow by committing to a digital approach and transitioning to net zero

Banks are in a unique position to make significant strides towards decarbonization within their own operations, while also supporting decarbonization through their investments. The establishment earlier this year of the industry-led, UN-convened, Net-Zero Banking Alliance bringing together 53 banks from 27 countries representing almost a quarter of global banking assets (over US\$37 trillion), is the most vivid demonstration of this. For many in the sector, the starting point has been to analyze and change what the enterprise can most closely control. This can involve setting targets for reducing paper, energy and water consumption, along with efficiency goals for our buildings and data centers.

## Enabling decarbonization across the economy

Harnessing digital finance, big data, artificial intelligence (AI), mobile platforms, blockchain and the Internet of Things (IoT) to deliver products and services offers ongoing opportunities for decarbonization. More can be done to pioneer decarbonization along the value chain, such as through Decarbonization Level Agreements to set measurable targets with suppliers and partners. In addition, banks can learn the lessons of the pandemic to move their operations further towards a lower-carbon way of operating, embedding some of those changes adopted rapidly in response to Covid-19 to deliver ongoing sustainability benefits.

Yet still, at face value, it may seem that banking has less to do around decarbonization when compared with companies operating in the energy and manufacturing sectors for example. However, given the nature of the role that banks play in most people's lives, they have huge potential to drive progress towards delivering net zero. This is an exciting opportunity to lead change in decarbonization, responding to changing public expectations, regulatory requirements and the needs of investors.

Banks can become part of a wider decarbonization ecosystem, with mutual value around integrating environmental, social and governance (ESG) criteria into business or investment decisions. Again, digital technologies and data have a role to play, for example with the application of artificial intelligence algorithms to identify more sustainable investment strategies.

At Atos, for example, we have worked with DreamQuark, a French start-up specializing in AI applied to the finance and insurance sectors. Together, we've launched the Sustainable Investment Brain, the first digital platform for banks and insurers that is both dedicated to socially responsible finance and compliant with the principles of transparent artificial intelligence as set out in new proposed European regulations.

## Leading the transition to net zero

Supported by a growing interest in ESG issues, global sustainable fund inflows were up 88% in the fourth quarter of 2020 to more than \$152bn. Their success has since continued to build, supported by the growing demand for meaningful investments during the health crisis. The Sustainable Investment Brain helps to accelerate this trend by combining AI and deep learning, leveraging financial and extra-financial data, including accurate and standardized ESG data. This can be used to identify potential investors most interested in responsible investment and to recommend the most suitable assets and investment products, taking into account their individual profile and objectives.

The sector can build on the progress made in recent years by embracing new digital tools to become a key enabler and catalyzer of a greener society. The combination of digitally-enabled banking and innovative sustainable finance can help to power economies while supporting the transition to a net zero future.



### Developing a data-driven approach to energy management for NatWest

#### Challenge

NatWest Group (formerly RBS) needed a comprehensive way of managing its energy performance and environmental reporting. Key objectives were to reduce energy consumption and costs while enhancing environmental engagement with internal and external stakeholders.

Involving multiple suppliers, data sources and a reliance on spreadsheets, the company knew that its reporting was slow, with problems around the integrity of data. It wanted a more robust approach, using digital tools and a complete repository of reliable data.

#### An innovative partnership

Embedded within the NatWest Group's own team, EcoAct was uniquely placed to understand the day-to-day challenges and work closely with the company to engage with stakeholders and achieve its goals. The team implemented a data and analytics platform that captures, integrates and analyses data from over 5,000 locations in 57 countries, facilitating and driving expense management, reporting and energy management activities.

#### The results

The NatWest Group's foresight in deploying an innovative embedded service and digital platform has balanced climate action with improvements in efficiency and significant commercial returns:

- £2.4 million in savings and cost avoidance delivered during the first 11 months
- A more efficient billing validation has generated over £1.8 million in cost avoidance
- Energy consumption is lower, keeping the bank on track with its energy reduction targets
- Insightful exception reporting has realized at least £128,000 of energy savings beyond business-as-usual energy savings so far.
- The platform is in place to improve performance, efficiency and productivity even more by using automation and machine learning to continually model, analyze and exploit rich customer intelligence.



# The journey of voice assistants in digital banking

## Lessons from deploying a Retail Banking Voice App

Natural communication, it's speech. Our larynx has evolved for voice, while our thumbs have also evolved, but, not for smartphones. Smart assistants are therefore becoming integral parts of our homes: playing hit songs, turning bedroom lights on, even turning the thermostat down. And, they are also entering the business world, with ownership of voice activated speakers growing rapidly.

Voice interaction is simple, right? Consider, while I'm making a cup of earl grey, my wife with her always impeccable timing says, "don't forget, it's your brother's birthday!". Now, caught in the perfect storm, do I stop making the drink that we all so desperately crave, or do I keep on and forget, again? I know the way forward, easy. I call out my home voice assistant and order a gift to be delivered tomorrow.

We've had to learn a number of lessons at Atos having supported the arrival of the first retail banking voice applications in the market. Here are a few:

### Designing voice app user experience with digital banking in mind

When prioritizing user experience in voice interactions, we create significantly different challenges to that of designing a user experience for web or mobile devices. When we use mobile or web, we in turn are forced to use language which the device we are using understands. Whereas difference in language and the understanding of intent are crucial elements of voice app user design; yet understanding the context of how and what a customer is looking for is vital. Lessons learned included:

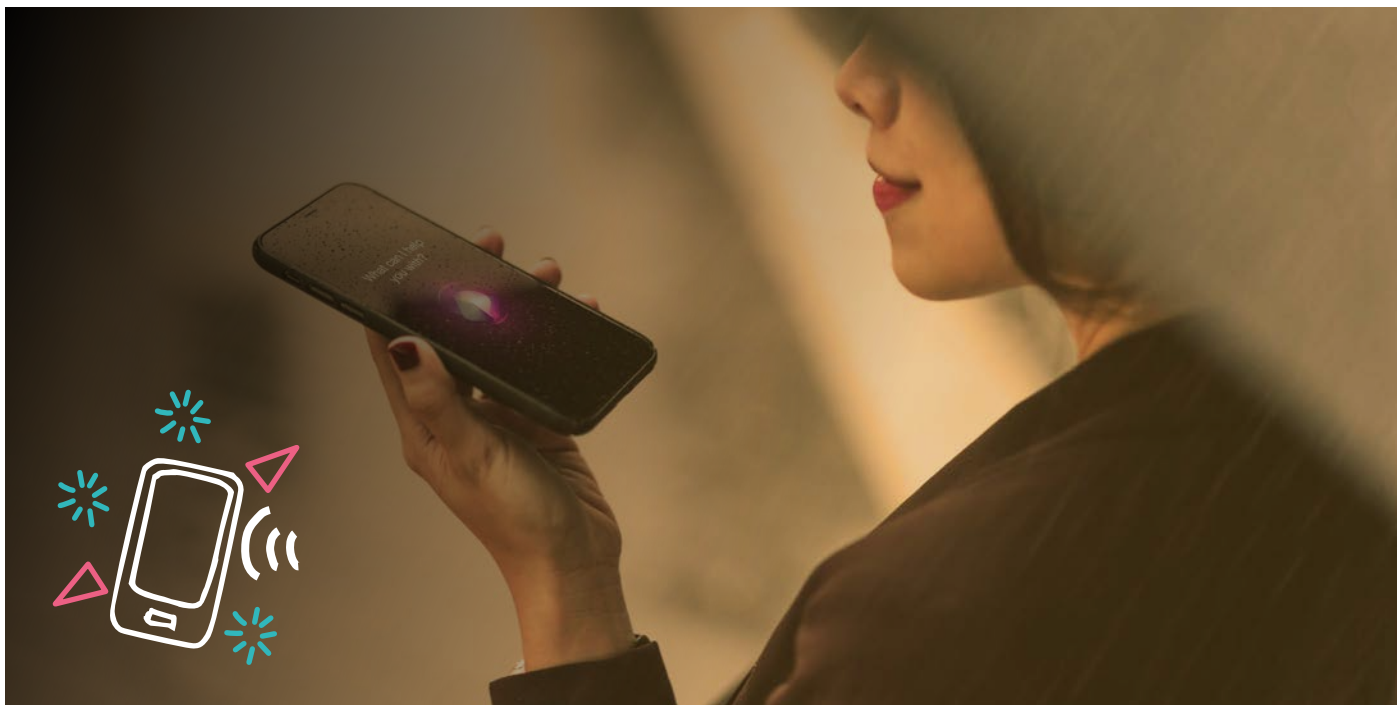
- Clarity. Why build the app?
- Do we need a visual user interface? If so, we have to have a thorough understanding of the device landscape (e.g. for multi-factor authentication).

- A consideration of hardware and intent is key. As people will interact uniquely, so too will hardware. How can we ensure that the parameters within the hardware define how a device hears? Ask anyone learning a language, how can we differentiate 'where', 'were' and 'we're'?
- Understanding details and flushing out complications, using process maps and conversation flows.
- Simplicity. For every addition, we must take into account error and silence handling, along with systems and development checks.

### Familiarity is key to breeding success in customer experience

With our familiarity with online banking, we're now accustomed to certain expectations. Go to login to your bank account, the login button should be top right, we should be able to click through to the next login page, and the button to take us back should be on the left, correct?

If we don't manage to meet these 'familiarity standards', then the customer satisfaction of our digital banking journey will be impacted. In voice applications, these shared standards are wholly left to be defined. Early movers will either find themselves leading the charge, or quickly knowing how to pivot to meet these new standards. There's an early bird advantage.



Was Voltaire correct? Is perfect the enemy of good? Should we release quick and learn, or spend years cashing perfection? I'd say that agile is the mandatory delivery method. I'd also suggest using a simple prototyping tool when designing. It's quick to add text to an online tool and to then hear it. Paramount to this is devising an early test strategy. How should we test? What data should we use? What about test environments? How can we best represent use cases and various customer journeys?

The definitive route to understanding what does and doesn't work? Trial and error. Multi-variant testing is a common principle employed by many with an online presence. We should expect an increase in this kind of testing if we are to fully understand if voice channels can meet the often-competing needs of different demographics.

## Diversity and inclusion in a digital age

If banks are to fully serve customers via voice assisted channels in the longer term, there will rightly be concerns about how best to address authentication (end point and multi-factor), registration and logging, and redaction of data.

However, let's not lose sight of the huge benefits that voice activated applications can give us. For a huge number of retail banking customers, an app is by far the preferred method of choice - it's available on demand and 24/7. Yet, for those who live with sight loss, there is far more at stake.

Treating customers fairly, and in particular the digitally underserved segment of the population, there is a clear use case for voice apps on voice-controlled speakers.

The popularity of voice activated apps in recent years goes some way to point to their importance for retail banking. Ultimately, I expect that the user experience and the underpinning technology will harmonize on anything that can use voice as the means of customer service, given the clear advantages that voice can offer.

# Unleashing investment for a sustainable future

The sustainable finance agenda continues to develop at pace, with increasing numbers of financial services companies and their clients using sustainable finance principles as a framework for investment decisions.

This is framed within wider expectations among the public and policymakers for businesses to be active in helping to meet societal challenges - from climate change to modern slavery - and creating a fair, safe and prosperous society as we build back from the pandemic. This is underpinned by range of environmental, social and governance (ESG) criteria.

Innovative new technologies such as big data, artificial intelligence (AI), mobile platforms, blockchain and the Internet of Things (IoT) are also enabling many banks to overcome some of the barriers that have previously prevented sustainable finance from being mobilized at scale.

This sustainable digital finance can enable emerging technologies to be deployed to analyze data, direct investments and create new enterprises in those parts of the economy supporting a transition to net zero.

## Green Finance

Green finance is the provision of finance for investments that take into account environmental considerations. Yet while the urgency of climate change is clear, sustainable finance policy must be proportionate and effective in supporting a just, inclusive, and sustainable transition to a decarbonized economy.

To support this transition most effectively, the Confederation of British Industry (CBI) made five recommendations in its Green Finance Paper.

1. **Smarter regulation that provides long-term clarity to support the move to net zero.** This should include a formal collaborative framework between government, regulators, financial services firms, and wider industry to ensure the business voice is heard in developing regulations that promote the use of green finance in a progressive and proportionate way.

2. **More clarity on data and climate-related disclosures.** Given the plethora of definitions and standards, policy-makers should work with regulators to ensure availability of data to inform firms' climate-related disclosures and ensure common reporting standards. Recommendations made by the Taskforce for Climate-Related Financial Disclosure which form the basis of disclosure requirements for all firms across the UK are a good starting point, with government taking a phased approach.
3. **A long-term approach to developing a usable taxonomy** that keeps flexibility and dynamism at its core, meeting the different needs of different sectors across the whole economy to support a durable transition. A sustainable route map and system is required for developing the most effective framework.
4. **Effective incentives to encourage industry to move towards green financing.** Existing financial legislation should be examined to identify where incentives can be built in to encourage green finance. Banks have capital requirements that could be exchanged for green financing. There are many green taxation opportunities; for example, to incentive companies to move to green vehicle fleets.
5. **Clarification of fiduciary duties in relation to climate-related risk.** A clear definition would ensure that the relevance of green issues to investment decisions are considered in a systemic way as part of firms' fiduciary duties. This will drive the green finance agenda at board level to ensure the necessary changes throughout industry.

The CBI has continued to build on these recommendations, exploring the social and governance aspects of the sustainable finance agenda alongside environmental considerations. It is notable that the CBI's *Sustainable Finance Discussion Paper* has been our most downloaded report of the year and we are now working with members on a position paper. We are working with members to accelerate progress, helping to ensure access to a balance of green finance products, generating a resource of case studies of businesses which have been on the journey, as well as promoting understanding of green finance.

### Sustainable Finance Agenda

The sustainable finance agenda is expansive, with different sectors and layers progressing at different speeds. The global climate change agreements at the United Nations Climate Change Conferences, with the latest COP26 in Glasgow this year,

and the UN's Sustainability Goals set the principles and direction for responsible investment that must be reflected at every level. That's one reason why developing common reporting standards and incentives as quickly as possible is so crucial to operationalize and embed sustainable finance. This will replace the fragmented regulatory landscape, with a clearer set of regulatory incentives that expand access to sustainable finance and power the adoption of the technologies that will enable our transition to a net zero future.

While great progress has been made, there is significant work to do to ensure finance can be a lever for sustainable outcomes that deliver on UN and global climate change ambitions.



# Decarbonizing through digital: business transformation at National Savings & Investments

National Savings & Investments (NS&I) is a unique organization. We are one of the largest savings organisations in the UK, offering a range of savings and investments to 25 million customers. All our products offer 100% capital security because NS&I is backed by HM Treasury.

Like other financial services institutions, we continue to face major market disruption and competition. Yet as a publicly-funded body, we must also balance the needs of taxpayers and our customers. As an incumbent with a traditional customer base, some of our core products have remained largely unchanged over our long history. Yet, our digital transformation is profound and ongoing – and it is helping us decarbonize our operations.

Back in 2014, we made a stand to achieve a shift of 82% of our customers to digital by 2021. Atos, our transformation partner, was even bolder and set the target at 92%, which we have achieved. The world has changed significantly since then. Our customers' use of digital has evolved and the appetite for decarbonized operations and products has grown; and as for many other organisations, this has been hugely accelerated during the pandemic.



## Customer Focus

Customers want convenience, security and simple-to-use services, with the mobile app now our baseline channel for customer service. Our service design has evolved to be customer journey-based instead of product-based. The guiding principle of our digital transformation has been to be 'easy to do business with', which is increasingly linked directly to operational resilience. Cost, control and the fight against fraud and financial crime are still critical drivers. The culture of the financial services sector, like others, is placing even greater emphasis on continuity and resilience.

The transactions side of our business is still in the transformation space. With values of up to £1 million per transaction, we are naturally cautious about balancing seamless access with regulatory and security frameworks. On the product side, we are now in the era of digital-native, decarbonized products. Our new Green Savings Bond and its forerunners are all online only.

## Decarbonized Digital

Decarbonization is now at the forefront of our business, which is why the launch of our Green Savings Bond is so important. This is particularly attractive to younger customers as the biggest green advocates. We're focusing on how we communicate about the Bond through the website, explaining that with every pound our customers invest, they are helping to cut carbon footprints and making a contribution to green projects.

In terms of our operational impacts, through our Paper Reduction Scheme, which began in mid-2018, we have removed 421 tons of CO<sub>2</sub>e (23.02%) from paper communications processes. This would take a single mature tree 19,136 years to absorb the equivalent level of CO<sub>2</sub>e that we have saved from paper reduction. Based on volume forecasts for 2021, we anticipate reducing our carbon footprint by a further 31.52%.

Elsewhere, as a result of lockdown during Covid-19, carbon emissions from business travel by exception was reduced by 31,066 kgCO<sub>2</sub>e (90.6%). We are continuing with our strategy to widen and accelerate on decarbonization with our customers and across our business and supply chain. While a key characteristic of NS&I is the stability and continuity we can offer our customers, it is imperative that we stay agile and continuously innovate to deliver on our corporate social responsibility, remain relevant to our customers, and retain our unique role in raising cost-effective financing in the UK.





# Safer Banking

Safety and banking should always be synonymous. The digital world of banking creates new opportunities but new threats too – banks and their customers need to be protected.







**Kulveer Ranger**

Global Head, Strategy & Communications for Financial Services & Insurance,  
and Senior Vice President Strategy & Communications for UK&I, Atos

# Smarter, contactless and digital: The evolution of payments and the revolution in banking

Around five years ago, on a trip to Kenya, like any tourist on safari I was lucky enough to meet local people and learn more about the Masai culture and way of life. Looking to purchase a rungu – a symbolic wooden club – I started a conversation with the chieftain about a possible sale. He lightly scratched onto his arm the price he was looking for and, in turn, I scratched a number onto mine to agree what I might pay. Yet when it came to moving the money, we each took out our smartphones and used MPASA – the digital point-to-point payment platform. It was a moment for me that encapsulated a remarkable leap from long-held traditions for setting up the transaction, to its very 21<sup>st</sup> century execution.

## Development of Digital Payments

Closer to home, I've witnessed the more linear progression of digital payments and been involved in some of the developments. One of most notable is the emergence of contactless cards. Back in 2000, I was part of a large team working on the Prestige Public Finance Initiative for Transport for London (TfL) with the primary objective of establishing and ringfencing a secure ticketing infrastructure across the London Underground and into the city's bus network.

With the technical and financial frameworks and systems in place, TfL passengers could then use a completely new ticketing medium – a contactless card to act as their virtual wallet and record of entry and exit onto the transport network.

This was revolutionary for western cities, preceded in size only by the Octopus card in Hong Kong. And it was a huge feat of technological engineering, with delivery and cultural challenges to address in designing, developing and delivering the necessary infrastructure. In 2003, when the Oyster card was launched, it was adopted seamlessly and – in addition to significant revenue protection for TfL – generated immeasurable confidence in and acceptance of a new technology.

## A Contactless Society

In the years since, the Oyster card has evolved as the gateway to a plethora of other devices and platforms. Even the physical entity of a card is beginning to disappear in favor of digital formats. According to UK Finance, contactless payments now account for 49 per cent of all credit card and 65 per cent of all debit card transactions.

This represents an increase of 102.3 per cent from May 2020 and 52.8 per cent more than in May 2019.<sup>1</sup> What's been critical to this evolution has been users' trust in systems being safe, secure and accurate.

In the case of London Underground, it's fair to say that a lot of us would now struggle to identify the cost of an individual journey because we're confident that we'll have a capped fare and value for money. That level of trust is something that any financial institution seeks to engender in its customers.

Parallel to the integration of digital platforms like Oyster, established banks have had to reverse-engineer the easy, seamless, mobile digital experiences that customers have come to expect. This has, of course, been fueled by disrupters – the young bucks of the banking world such as Starling, Monzo and Revolut, who landed as agile digital natives to reinvent the banking experience: no high-street presence, fast and easy ways to open accounts, and convenient multichannel services. This is far from a niche product: Starling now has 2.2m active accounts, with Monzo at nearly 5m<sup>2</sup>.

This was all done while pushing the boundaries of product and user experience design, with friendly graphs, spending breakdowns, chats and useful offers and alerts about what we as consumers might need next. In this way, the banking customer relationship is fast becoming a 'pick and mix' service tailored to individual needs, reflecting what has felt like a power shift from banks to consumers via digital.

## A Digital Future

Where before online banking might have been for the young and adventurous, now it's ubiquitous as part of our digital society. The ONS reported in 2019 that 73% of consumers now bank online – this figure is 90% for those under 34 years old<sup>3</sup>. These numbers will only have grown throughout the coronavirus pandemic. And as we move to second and third generation digital banking, we will see ever more sophistication and richer engagement with more and more consumers.

On the horizon is the as-yet untapped potential of open banking, whereby consumers' choice of products and services will no longer be restricted to their specific bank. While a number of traditional High Street banks have started to experiment and add value through open banking, the industry is only at the start of this journey.

Yet what is clear even now is that as banks blend ever more consumer choice via digital platforms, their relationship with the customer will change significantly. As individuals, with seamless user access to a mix of services and brands that we ourselves curate, we will have ever more choice to shape our own personal digital banking services ecosystems. This will mean the balance of power moving increasingly to the customer as the revolution in digital banking starts to gather pace.

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1 <https://www.ukfinance.org.uk/data-and-research/data/cards/card-spending>

2 <https://www.comparebanks.co.uk/news/monzo-remains-largest-digital-bank-losing-market-share/>

3 <https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/adhocs/10822internetbankingbyagegroupgreatbritain2019>



# Cybersecurity in the digital banking age

With the ongoing digitalization of financial services and the shift to open banking, significant risks, as well as opportunities, must be managed. The vastly increased movement and use of data over the last decade has helped institutions to bring their customers better services and experiences. The Revised Payment Services Directive brought new stimulus to the ecosystem, enabling customers to choose to securely share their data with third party providers in return for personalized services, advice and analysis of their incomings and outgoings.

Yet as more and more data is shared, so too are bad actors increasingly enabled and emboldened. The move to cloud has been a boon for many consumers and organisations, but while cloud brings a number of agility and efficiency benefits, it also creates new vulnerabilities that can be exploited if they are not effectively managed. While cloud providers can ensure the security of cloud services, if an organization doesn't know who is accessing its network or sharing data, or if endpoints aren't secure, cyber criminals can strike and move through networks at speed.

## Shared responsibilities

Clearly, the challenges around the rise in online fraud and financial cybercrime require a rigorous approach to securing every transaction. However, security controls should be balanced with ensuring usability and accessibility of services for customers. This starts with know-your-customer processes; in the UK, for example, nearly 25 percent of all financial applications are abandoned due to difficulties in the registration process.<sup>1</sup>

So what can banks do to deliver safe, secure and inclusive banking in the digital world? Firstly, responsibility for security must be shared between banks, their customers and their cloud

providers. Regulated use of technology and other cyber security solutions must increase. Cloud providers must understand the specific demands of the financial services sector. Institutions, and their cloud providers, must work in partnership to manage compliance across different geographies and jurisdictions. Cloud computing incorporates a whole range of foundational security services and controls to manage access, and for fast detection and response, with artificial intelligence and machine learning algorithms that pinpoint anomalous activity, trigger automated responses and continue to gather threat intelligence.

## Collaboration and regulation

In addition, digital ID will be a critical tool to maintain security and trust. In fact, digital IDs can provide greater assurances to banks than paper-based processes, thanks to technologies such as biometrics. As well as deploying new technologies, a focus on collaboration is crucial, so that each actor in the ecosystem understands their role and responsibilities. In addition, the regulatory environment must evolve so that institutions understand their obligations. This evolution of the regulatory landscape can combine incentives to share best practice with mandatory requirements, such as making cyber security a condition of licensing.

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<sup>1</sup> Private sector economic impacts from identification systems, World Bank, 2018

## Modernizing with inclusion

Looking ahead, in a recent report the European Central Bank found that the risks the eurozone banking system is expected to face over the next three years are heightened by: the continued digitization of financial services; the obsolescence of certain banking information systems; and the increasing interconnection of these systems with those of third-parties.<sup>2</sup>

Of the issues identified by the European Central Bank, the thorniest of these is that of legacy systems, many of which are increasingly antiquated. Yet with the imperative to modernize these systems come new opportunities for institutions to ensure that customers are operating in a safe online environment; ensuring that technologies such as cloud are deployed to safeguard consumers (i.e. when carrying out cross-border transactions).

In creating this secure digital finance world, the sector must also ensure that inclusion is a fundamental part of every step of this journey. The pandemic has impacted societies and changed the way many of us work and access services. In the context of the global recovery in the wake of the pandemic, financial inclusion is key to delivering on inclusive growth across regions and nations. Informed by this, advancements around digital ID and accessible online banking will be crucial to bridging the digital divide and ensuring that safe, secure and accessible banking is open to all.

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<sup>2</sup> ECB Banking Supervision: Assessment of risks and vulnerabilities for 2021





**Olaf Badstubner**

Global Director, Financial Services & Insurance, Atos

# Prescriptive security for banking institutions

The potential of AI to transform business performance is only now starting to be more widely understood in Financial Services. This is nowhere clearer than in the security domain, where the fusion of big data, advanced analytics and machine learning promises to deliver startling improvements in cyber security through the introduction of prescriptive security.

This transition from a world of predictive security to one focused around prescriptive security presents huge opportunities for financial service providers, enabling them to safeguard those using their services through enhanced analytics, threat intelligence and sophisticated automated responses.

## New opportunities and new threats

As the tools used by banks and other financial service providers have become more innovative, so too have those deployed by criminals and bad actors seeking to exploit the new digital landscape.

Cybersecurity has therefore become a vital investment for the sector. This is reflected in the huge resources devoted to this area by the world's leading banks, with J.P. Morgan Chase spending nearly \$600 million each year to strengthen its cyber defences and in the face of "a constant stream of attacks." This is not surprising. Research by the Boston Consulting Group has found banks and financial institutions are 300 times more at risk of cyber-attack than companies in other sectors.

The threat posed by cybercrime goes beyond the immediate disruption cause by the crime itself, with those banks that find themselves most impacted by cyber-attacks facing the prospect of an impacted ability to refinance because they are downgraded in analyst rankings.

## Enabling a prescriptive response to the cyber threat

Identifying security risks – and sometimes even knowing when cyber-attacks are underway – presents financial service providers big and small with huge challenges. These challenges have become more acute as banks have transitioned more of their operations onto digital platforms, presenting more opportunities for cyber-attackers. The task facing banks, as they manage this digital transition, is ensuring that the tools they deploy to detect and neutralise cyber-attacks keep up with the pace of technological change and innovation. A crucial way to achieve this is by using prescriptive security technology, which can scrutinise large amounts of data to identify key indicators that might suggest a cyber-attack is taking place.

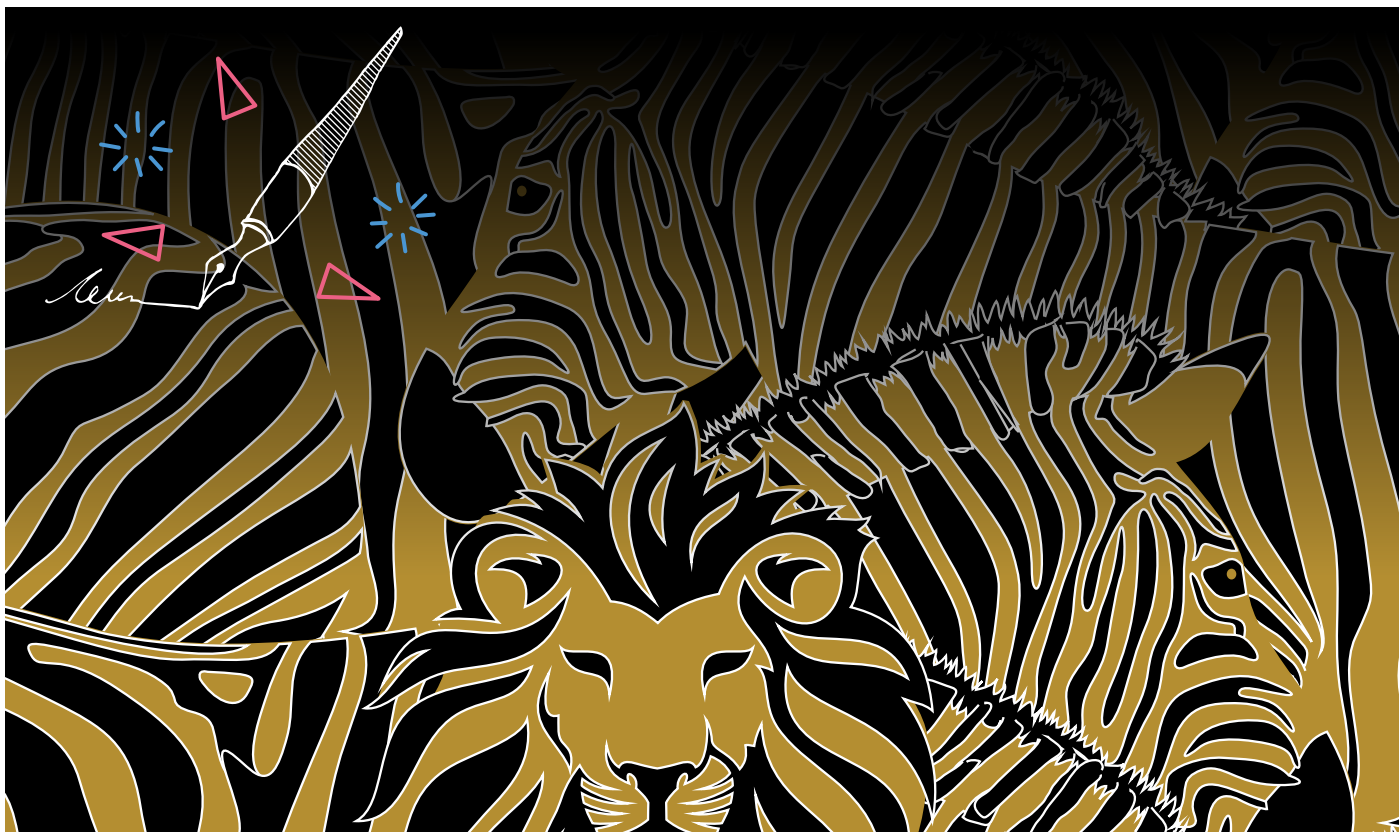
Prescriptive security is, at its heart, a fusion of technologies and processes designed to reduce the time and effort needed to detect and respond effectively to cyber security threats and incidents. A critical aspect of prescriptive security is its use of automation and artificial intelligence technologies. It is vital that the exact combination of technologies and processes – including where and at what level automation is used – is based on a thorough understanding of the organization's specific risk profile and level of risk appetite.

By implementing prescriptive security, the ever more precious human resource of analysts is freed up to focus on higher-priority, actionable scenarios. At the same time, the organization gets better not only at detecting and responding to security incidents but also at predicting, preventing and pre-empting risks and incidents.

Against a backdrop of increasingly sophisticated and diverse cybersecurity threats, prescriptive security is becoming business-critical for public and private sector organizations to protect their people, customers, systems, networks, and data from any kind of harmful breach or attack.

## Security Operations in a New Generation

Prescriptive security is paramount for banks when addressing the need for increased security complexity in our digital age, with big data and artificial intelligence being key for this new generation of security operations. This technology can leverage a growing scale and variety of information, that in turn leads to us being able to identify and react to threats before they occur.





**Nacho González**

Blockchain Research Line Expert, Research and Innovation, Atos

# Blockchain is revolutionizing the banking sector

In today's globalized environment, with regulatory demands and competition from fintechs and others, institutions that cannot meet these challenges may not be viable in the long term.

Regulatory demands and competition from fintechs, disruptors and others, especially in today's globalized environment are posing a long term viability challenge to those institutions that cannot match these agile digitally focused organisations.

With the emergence of blockchain technology, a new revolution is underway: the industry is embarking on transformation, from operational processes, to different business markets such as payment services, real estate, insurance, asset management, crowdfunding and lending to leverage the advantages it offers.

Blockchain is the first technology that offers a way to fully manage digital assets in a trusted, traceable, automated and predictable way. What distinguishes blockchain is that each 'block' is linked and secured using cryptography. Trust is distributed along the chain and relies on cryptography eliminating the need for a trusted third party to facilitate digital relationships and ledgers.

## Enhancing Digital Finance Processes

In the financial services ecosystem, the most significant business areas are clearing and settlement, trade finance, cross-border payments, insurance and anti-money laundering. This is where the Distributed Ledger Technologies (DLT) aspect of blockchain can be applied. In particular we can point to the Australian Stock Exchange, which has since moved all of its financial asset management to a DLT platform.

Within clearing and settlement, we don't currently have a common way forward regarding which stages of the lifecycle of a transaction (pre to post trade, execution to settlement) can be encompassed by the blockchain. Look at this practically, we continue to see holes such as information sharing with pre-

existing legacy systems, compliance and regulatory concerns, along with assets segregations. We need to address these issues before we can scale blockchain for such processes.

Yet in the financial processing industry, DLTs provide a compelling set of benefits:

**Traceability.** Products and assets can be followed and scrutinized in live time. Once held in a ledger, the data is then immutable; access can be given by those who participate in the system/network, whilst preventing private information from being disseminated to any other sides. In addition, any additional asset data can be provided for use in various manners going with or going from the new owner.

**Clarity.** Clear, easy to understand information regarding a transaction will help to encourage customer trust. Balancing transparency and privacy are an integral feature of blockchain. Identity is hidden within cryptography in the blockchain, therefore the connection of public key identities with individuals who use it is a hard connection to make. Combining this with the means of data structure within a blockchain (in which a transaction is linked to a public key identity), allows for an unmatched level of transparency with privacy.

**Accountability.** Within the chain of blocks, transactions are kept in sequence and indeterminably. This allows for accountability and auditability at every stage, not needing any outside players.

**Security.** Each single transaction is verified by the network using cryptographic algorithms, assuring the authenticity and immutability of the information. The users have control over their own assets and transactions also using cryptography. Blockchain is therefore innately secure. Of course, there are theoretical

scenarios where a blockchain can be counterfeit, for example modifying one single transaction in more than the 51% of the network, but technical limitations make this scenario hypothetical, rather than a real threat to data integrity and immutability.

### The beginning of the end of traditional banking?

Most key players in the industry have reacted to blockchain and are deploying DLT applications in their day-to-day operational processes and applying them to different services provided by institutions. These include JP Morgan Chase in the US (with its Blockchain Center of Excellence), Banco Santander in Spain (supporting initiatives such as RippleNet and Hyperledger or with We.trade trading platform deployment) or Mitsubishi UFJ in Japan (with the launch of a blockchain-based payments network).

The implementation and deployment of fully operational, trusted and authorized interaction networks among corporations, B2B networks, service providers and financial institutions will be highly disruptive. This does not herald the end of the banking industry as we know it but blockchain, as part of widescale digital transformation, will add significant value. The question is whether traditional players are going to lead this transformation or new players will emerge.







Franck Coisson

Group Industry Director and member of the Scientific Community, Financial Services & Insurance, Atos

# Artificial Intelligence: the new power in digital banking

Artificial intelligence (AI) is one of the modern world's most rapidly advancing technologies. Analysts predict that global investment in AI is set to hit \$98 billion by 2023. In the financial services sector, we are seeing the huge impact AI and intelligent algorithms can have on the way we live and work.

First, let's define what is meant by AI. There are many forms to choose from, but here we consider four main types: voice and facial recognition; natural language processing; machine learning; and deep learning. These can be applied through various iterations, including chatbots, document analyzing, automating processes, or predictive analysis.

## Intelligent automation

Robot process automation (RPA) is becoming commonplace, especially in banking. For automating reasonably simple, repetitive tasks, this technology is ideal. In contrast, AI can automate more complex tasks requiring cognitive or 'intelligent' processes.

This kind of intelligent automation is now highly sought after. While RPA is perfect for back office and accounting process, when combined alongside AI, all processes - including those that are customer facing - can be automated.

With this potential in mind, there is a vast scope for AI usage across banking:

- **Customer services.** This is one of the most common usages of AI in banking. Rather than client service professionals dealing with thousands of emails manually, AI can take in the emails, decipher their meaning, and then provide an appropriate answer that the client professional can review and submit with just one click. Intelligent automation is a powerful way of driving efficiencies and improvements across end-to-end processes, taking cheque cashing processes for example.

- **Sales and customer intelligence** is another fast-growing area. AI is used to gather and analyze data and intelligence from customers, providing business development teams with unique insights, sales pipeline and recommendations for the 'best next action' to develop the relationship and push sales.
- **IT services.** AI can showcase where or if an application is likely to fail, increasing usefulness and resilience of IT infrastructures.
- **Preventing fraud.** AI is becoming more and more vital in managing fraud effectively. This can be done by detection and elimination of payments with elements of fraud or claims.
- **Cyber security.** As cyber threats grow and become more complex, AI can be applied for predictive analytics that can detect cyber-attacks, even before they happen.

Although we may be told in the news that AI is due to replace human beings, take your job and take over our lives, this is simply not the case. AI is here to enhance, rather than replace human beings. Human supervision is integral to ensuring AI algorithms provide expected results, yet at the same time AI is still in a learning process and cannot be all things to all people after day one.

## Enhancing Usage

Many of the standout benefits of AI focus on customer satisfaction. For example, with AI, when we engage online with a company (usually via their website), we are provided with instantaneous, precise and specific answers to our questions. We understand that this is what the modern customer, particularly millennials, wants.

There are however a multitude of other excellent benefits. Accuracy and quality are improved significantly, because we are able to rule out the potential for human error (which again enhances customer satisfaction and service). And let's not forget that this all leads to cost savings. If you can increase accuracy and productivity by using AI, you can reallocate your workforce to higher value, more satisfying roles.

## Successful AI

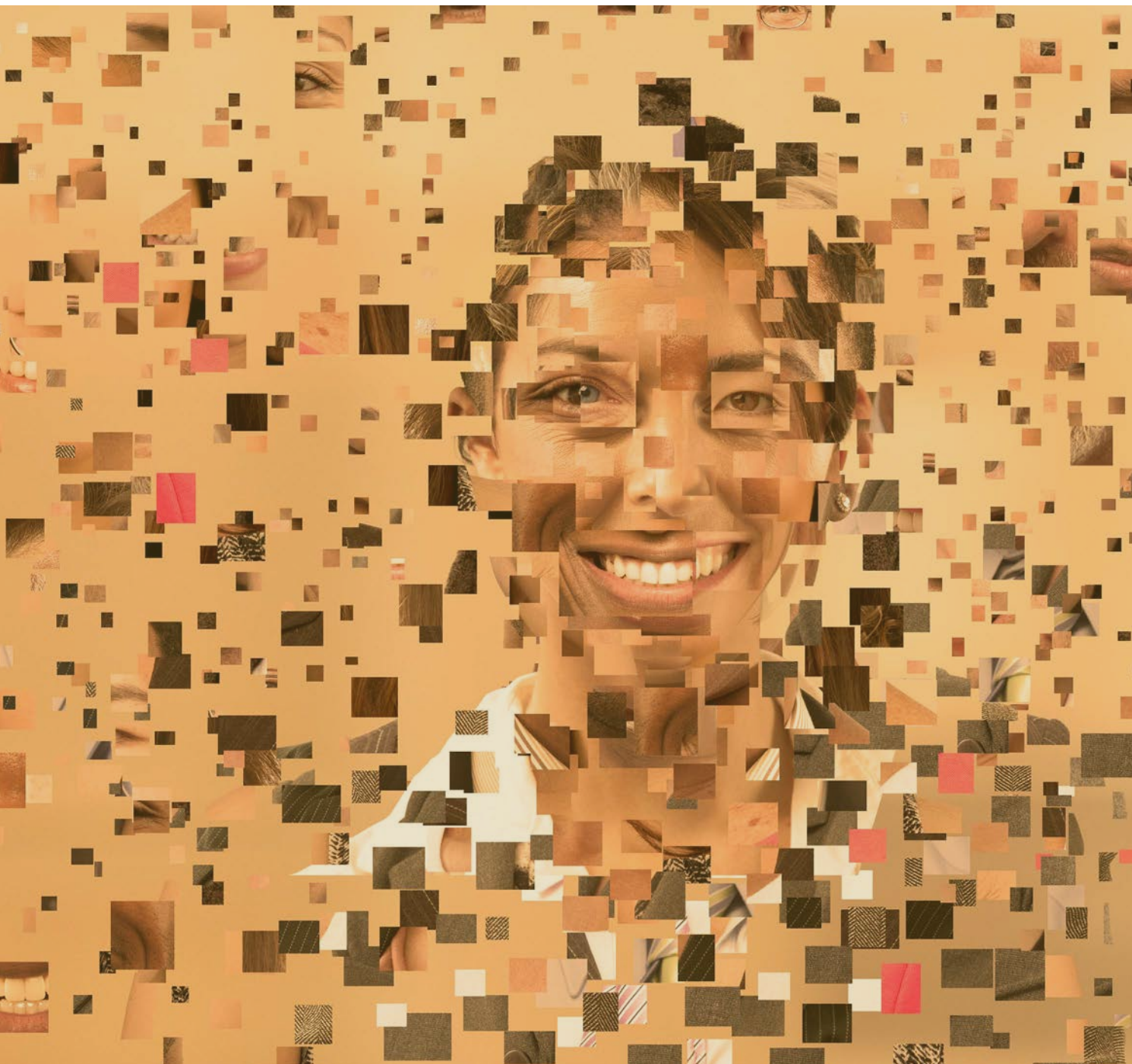
Some banks are already fully immersed in their AI journey, demonstrated by many of them building centers of excellence in AI. Meanwhile, others are still exploring the benefits, looking towards how they can accelerate delivery and identify what this tech can do, as well as what it can't. Whatever the AI maturity, here are three important learnings:

- 1. Focus on business pain points.** As with any new digital disruptor, it's important to focus on what you want to achieve rather than just the tech. You can't just build a team of AI experts, then ask them to deliver value. Instead, we need to begin with an in-depth understanding of the business and its pain points, such as, 'I have a customer service issue here'. We can then use AI to solve the problem, proving the benefits of applying AI and subsequently helping to gain much more traction.
- 2. Manage expectations.** We've got to be careful when managing internal expectations: AI is not about replacing a human brain.

- 3. Integrate knowledge.** Consolidating all intelligence in the same place within an organization, rather than spreading it across all facets is another crucial way to achieve success. Doing this accelerates the industrialization of AI, as knowledge will be capitalized and scope of use cases that it can be applied to will be expanded. AI is quickly running up the agenda for all banks as it has a simply huge effect on both operation and customer satisfaction, as well as offering a rapid return on investment.

AI technologies are presenting banks with opportunities to fundamentally improve the products and services they offer to customers. Despite this, many banks have only made a tentative progress towards incorporating AI into their operations. The truth is, for many banks these technologies remain experimental. Some banks may blame a lack of investment, fragmented data assets, or outmoded ways of working that obstruct collaboration between operational and technology teams. Despite the slow pace of change, to compete effectively in the future, banks will need to adopt AI technologies as the foundation for new value propositions and distinctive customer offerings.

As established banking providers increasingly find themselves competing with new entrants such as the big-tech firms - a trend that has only accelerated during the COVID-19 pandemic - these financial institutions need to be bold in embracing these new technologies and withstanding short term disruption. This will ensure they secure long term success in a future that is increasingly digital.



# Why banking is more vulnerable than ever - the cyber threats to defend against

While banks have always been a prime target for cybercrime, there are two critical reasons why they are more vulnerable than ever before.

Firstly, banks have dramatically accelerated their digital transformations given the need to close their facilities, send their workers home, and move their transactions online as a result of the pandemic. To do so, companies digitized many of their processes and moved parts of their infrastructure to the cloud.

These changes are very unlikely to be reversed. On the contrary, McKinsey argues that financial institutions have the highest chance of maintaining remote and hybrid work models, as three-quarters of their employees' time can be used productively out of the office.<sup>1</sup> Even more importantly, customers have come to enjoy simple, instant online services, and they will continue to expect abundant digital touchpoints.

Unfortunately, this permanent transformation has made banks bigger and softer targets for cybercrime. This is because they now operate a massive range of new applications, devices, and infrastructure components — any of which could offer cybercriminals an open door into the company's network and its data.

This leads to our second point: banks are more appealing targets than ever, and thus they face an increasing volume of attacks.

When banks went all-digital, they began to produce a lot more data than before. They leverage more applications, creating and exchanging data with every interaction — whether a financial operation or a transaction. This data is valuable to cybercriminals. They can sell it, or use it to commit fraud, or threaten to dump it during a ransomware attack.

In summary, banking now faces an increasing tide of vulnerabilities and cyber-attacks due to permanent trends. Therefore, banks must know what threats they now face and use this information to raise effective defences against them.

## Today's Threats: What Banks Must Defend Against

Verizon recently released its 2021 Data Breach Investigation Report (DBIR).

In it, they share data on 80,000 security incidents that had been reported over the prior year. They collect this data from 83 contributing security organizations, including Atos. By doing so, a clear picture emerges of what vulnerabilities and attacks are most common in today's threat landscape.

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<sup>1</sup> <https://www.mckinsey.com/featured-insights/future-of-work/whats-next-for-remote-work-an-analysis-of-2000-tasks-800-jobs-and-nine-countries>

Here is what the 2021 DBIR teaches us about the threats that banking faces:

Banks are primarily being targeted with phishing, ransomware, and credential-based attacks at a top-level. Additionally, cybercriminals primarily targeted personal data, credentials, and internal banking data. Specifically, criminals on forums were often discussing bank account and credit card-related information.

The DBIR provided additional key findings, including:

- Phishing increased by 11%
- Credentials were involved in 61% of breaches
- Ransomware is up to 10% of all breaches, likely due to new tactics utilized by the attacker

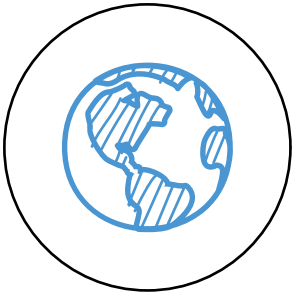
The human element was involved in 85% of all breaches. This includes many actions such as social engineering, malware, misuse, and lost and stolen assets. Web Application Attacks remain as high as they have in previous years.

### Next Steps: Defending Banking

Banks must find a way to maintain a highly productive remote or hybrid workforce, all while maintaining high defences, protecting their employees' identities, enforcing access policies, and monitoring and hunting the growing wave of threats that target them.

As the traditional network perimeter continues to change, it is necessary to establish new security boundaries that enforce the security policy at a range of architectural levels, for people and processes, as well as a technical level. It will be necessary to develop plans to adopt a Zero Trust architecture in order to have the assurance that data is only being used by entities deliberately authorized, and that all interactions are properly verified.





# Working together to achieve digital transformation



Atos has been selected by Banque Misr, one of the largest banks in Egypt, to support its transformational journey to become the country's first digital bank.

**Mr. Sherif Elbehery**  
Misr Digital Innovation CEO:

*"With the appointment of Atos we can move forward with renewed confidence in our transformation journey as we deliver Egypt's first digital bank. This launch will offer a trusted digital banking experience that better suits the modern requirements of customers and which we expect will benefit the wider economy, acting as a catalyst for renewed growth and investment across the country. We look forward to supporting our customers in the transition to digital banking."*

**dreamquark** .••

Atos worked with DreamQuark, a fintech start-up and member of its Atos Scaler accelerator programme, to create the Sustainable Investment Brain, an investment solution that utilizes deep learning and AI to encourage green finance initiatives.

**Isabelle Warnier**  
Head of Atos Scaler:

*"By combining data management, AI and ethics, the Sustainable Investment Brain solution from Atos and DreamQuark will enable our clients to maximize their returns, while respecting their environmental and social commitments, and taking into account regulatory changes. It is both a decarbonization and a competitiveness tool."*

**NORD/LB**

Under the new agreement between Atos and Norddeutsche Landesbank (NORD/LB), Atos will provide comprehensive IT infrastructure, security and workplace services as well as IT operations for the leading universal bank in northern Germany.

**Stephan Tillack**  
CIO of NORD/LB:

*"We want to enter into a long-term partnership with a stable IT provider. Atos presented us with a coherent concept. We get an IT that is based on a standardized, secure and legally compliant foundation, while at the same time offering us a high degree of flexibility and innovation and helping us to significantly save costs."*



Atos has signed a contract with Orange Bank, the 100% mobile bank of the telco operator Orange, to manage and secure the digital workplace of all its employees worldwide.

**Emmanuel Yoo**

**Chief Information Officer at Orange Bank:**

*"The work environment of our employees is now more than ever one of our priorities. We needed a trusted partner to support us in this major transformation. Atos' teams were able to provide us with end-to-end solutions that foster collaboration and productivity within our organization."*

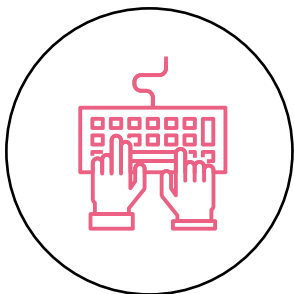


Atos has been selected by Société Générale to develop and host new mobile services allowing it to offer its customers the most comprehensive mobile banking application on the market.

**Olivier Chédeville**

**Remote Banking director at  
Société Générale:**

*"We chose Atos because of its understanding of our market, the security issues we face and its expertise in mobile onboard solutions. Atos Worldline was able to meet our requirements in terms of ergonomics, ease of use, and could offer us an innovative solution adaptable to several different terminals."*



# Lexicon

**API Platforms:** Allow financial products and services to be distributed and serviced across third parties. Banks should put API platforms at the heart of their digital strategy to attract ecosystem partners.<sup>1</sup>

**Artificial Intelligence:** Promises to replace human cognitive capabilities with robo-advisors, virtual assistants, chatbots and knowledge engineering. It will impact customer service, trading and compliance. Banks should prepare for the human, security and legal impact.<sup>2</sup>

**Augmented and Virtual Reality:** Are blurring real and virtual worlds, allowing customers and employees to engage with financial services within the context of their current environment. Financial services should explore potential use cases in retail banking.<sup>3</sup>

**Blockchain:** Is a potential game-changer for conducting business with parties without prior trust relationships. Beyond payments or cash management, it could revolutionize audit trails, automated contracting and the microservice economy.<sup>4</sup>

**Challenger Bank:** A relatively small retail bank set up with the intention of competing for business with large, long-established national banks.<sup>5</sup>

**Cryptocurrency:** A digital currency in which transactions are verified and records maintained by a decentralized system using cryptography, rather than by a centralized authority.<sup>6</sup>

**Cryptoeconomy:** A cryptoeconomy offers economic relations that are not directly mediated by the state, opening possibilities for economic organization that do not comply with the state's conception of economic order.<sup>7</sup>

**Cryptography:** Cryptography is the study of abstracting information from undesired users of the same. Cryptography techniques have long been used in the banking industries to ensure the security of monetary transactions including the security of ATM cards, computer passwords, and electronic commerce.<sup>8</sup>

**Digital Transformation:** Is the process of using digital technologies to create new — or modify existing — business processes, culture, and customer experiences to meet changing business and market requirements. This reimagining of business in the digital age is digital transformation.<sup>9</sup>

**Distributed Ledger Technology (DLT):** A database that is consensually shared and synchronized across multiple sites, institutions, or geographies, accessible by multiple people. Any changes or additions made to the ledger are reflected and copied to all participants in a matter of seconds or minutes — the foundation of blockchain technology.<sup>10</sup>

**Green Finance:** Any structured financial activity that's been created to ensure a better environmental outcome.<sup>11</sup>

**Hybrid Cloud:** Is reviving cloud initiatives by enabling secure and seamless integration of private and public cloud platforms, thus exploiting the benefits of public cloud (pay-per-use, 'infinite' bursting resources, agility and innovation) as well as taking advantage of the flexibility and power of cloud-native applications. Banks should urgently assess their data and applications to define a consistent classification allowing to guide their cloud-first strategy.<sup>12</sup>

1 [https://atos.net/wp-content/uploads/2018/07/ATOS\\_LOOK-OUT\\_BANKING.pdf](https://atos.net/wp-content/uploads/2018/07/ATOS_LOOK-OUT_BANKING.pdf)

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**Instant Payments:** With the move towards a cashless society and ever more connected devices - is making the payments sector evolve rapidly, driven by data and better customer experiences. Banks must explore Instant Payments and other game-changing technologies launched via social networks, chatbots or virtual assistants to offer new P2P, B2B and even M2M services.<sup>13</sup>

**LIBOR:** London Interbank Offered Rate, a long-standing banking industry benchmark rate for inter-bank lending, adjustable-rate loans and mortgages. Provides loan issuers with a benchmark for the interest rates they charge on different financial products. The banking industry is currently replacing LIBOR with more up-to-date pricing mechanisms.<sup>14</sup>

**Mobile Banking:** Means using an app to access banking features via mobile devices such as smartphones or tablets. These apps are proprietary, issued by the bank where you hold your account, and usually use the same login information as your online banking portal.<sup>15</sup>

**Net Zero:** Net zero refers to the balance between the amount of greenhouse gas produced and the amount removed from the atmosphere. We reach net zero when the amount we add is no more than the amount taken away.<sup>16</sup>

**Online Banking:** Means accessing banking features and services via your bank's website from your computer. You may log into your account to check your balance or pay your electricity bill. You can access additional banking features, such as applying for a loan or credit card, at many banks via your online banking portal.<sup>17</sup>

**Open Banking:** Open banking is a system under which banks open up their application programming interfaces for third parties to develop new apps and services. Open banking offers incumbent banks the opportunity to partner with fintechs rather than compete with them.<sup>18</sup>

**Prescriptive Security:** Uses big data analytics, realtime monitoring including the dark web, AI and automation to detect potential threats and stop them before they strike. Applications range from cyber protection to fraud management and compliance. Banks should explore integrating it into their Security Operation Centers.<sup>19</sup>

**Quantum Computing:** Promises to break traditional combinatory analysis limitations, bringing advances in risk analysis and high-frequency trading within ten years. This will elevate risk by potentially breaking current cryptographic standards, threatening to cause a 'crypt-apocalypse.' Banks must start preparing for quantum-safe cryptography.<sup>20</sup>

**Robotic Process Automation:** Will bring virtual workforces to manage repetitive tasks, reducing the cost of administrative and regulatory processes by at least 50% while improving quality and speed. Banks need to standardize processes to facilitate automation and engage in ambitious change management programs.<sup>21</sup>

**Smart Machines:** Are changing the nature of customers, with smart things working on behalf of their owners for smart home, autonomous transportation, concierge services and more. Likely to transform go-to-market strategies, banks must begin exploring the business, legal and compliance implications.<sup>22</sup>

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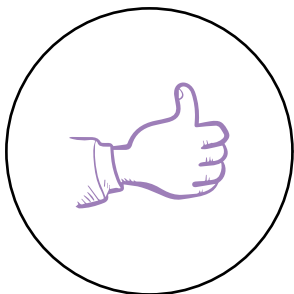
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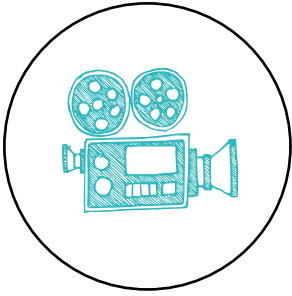


# Acknowledgements

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