Transforming Financial Services to Meet the New Wave of Digital Adoption

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The digital trajectory of financial services

The term *digital transformation* has become a unifying way of describing a lot of recent technology trends: the rise of the cloud, mobile connectivity, the emergence of microservices, machine learning (ML) applications, and the explosion of software-as-a-service (SaaS) everywhere you look. Digital transformation is upending traditional business processes both internally and for customers, with real-time data at the heart of nearly every process today. As companies rely upon more types of technology, most businesses are measured by both customers and stakeholders on their digital capability. Microsoft CEO Satya Nadella famously quipped that "Every company is now a software company," and this is certainly becoming more and more true in the world of financial services.

Take some of the leading banks as an example. In early 2020, Bloomberg reported that "JPMorgan Chase & Co. is staking its consumer-banking strategy on digital technology." In addition to a new team of executives, the company has invested in 10x Future Technologies, which takes customer data from multiple product-led systems so it exists in one central place. JPMorgan Chase, Wells Fargo, and Bank of America are each reported to have nearly a $10B annual IT/tech spend these days.

Financial transformation applies digital technologies to solve business problems, drastically improve traditional processes, modernize middleware and front-end infrastructure, improve operational efficiency, and most importantly, better serve customers. The advent of real-time stock trading, predictive analytics and risk modeling, and integration of data with artificial intelligence (AI) to prevent fraud are all examples of the way financial services companies are innovating on a backbone of digital.

Accenture reports that retail bankers seek three core benefits through digital transformation of their operations:

43%

of retail bankers want digital innovation to improve **customer loyalty**

33%

think adopting new technologies will **increase market share**

30%

think redesigning processes around digital will improve **employee retention**

But *digital transformation* has become a catchall phrase, often misused. There's a difference between a company that uses a lot of different kinds of software in an ad hoc way and one that puts digital transformation at the center of its strategy.

In financial services, every digital interaction creates a data event. The potential inherent in all this data is enormous, but for most companies, transactions are conducted and data is gathered through a myriad of disconnected systems. It's common for financial institutions to contend with passive data silos entrenched in individual lines of business. Extracting data from one and applying it to another is often a slow batch process.

True digital transformation implies real-time capability. And while some financial institutions have integrated ways of working with real-time data, it often comes at great cost in terms of money, time, and effort when built on the backs of legacy data systems. To truly transform, data must be connected and accessible in the cloud via cloud-native data systems. Software and systems must be put in place to solve for greater company pain points, not just one-off use cases.

In other words, the emphasis needs to be on the *transformational* aspect of digital, not simply adopting a bunch of standalone services that keep datasets isolated. For this reason, event streaming is fundamentally at the center of the modern computing stack.

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Digital transformation is financial transformation

"Imagine that you are competing against a truly global, multi-service, low-cost, digital bank: customers accessing their accounts through their mobile phones, paying with a tap on their wearables, sweeping savings to an ETF portfolio... offering no-fee, cross-border payments. Imagine if you faced a competitor bank like this, with a low and nimble footprint, prototyping new services quickly, managing regulatory compliance transparently, using an AI system to limit fraud losses, and hedging currency risk using cryptocurrencies. This competitor does not exist today. But in the next few years, it is a very real possibility. Now what?"

— PwC's *Financial Services Technology 2020 and Beyond: Embracing disruption*

For years, the world's leading banks have been incrementally adopting digital channels and branchless technologies to deliver services while closing hundreds of physical branches. Going into a branch to take care of business is a dated concept. Consumers today expect to be able to conduct banking transactions almost entirely through their laptops and smartphones.

But in 2020, a year in which going into a physical bank went from being inconvenient to potentially dangerous, digital delivery of banking services became even more critical to business continuity. The pressure is intensifying for financial services companies to create a strategy at the center of their digital transformation efforts.

The core problem is that classic databases were built to store data you might need to access occasionally or sporadically—a model built assuming humans would manually access and control the data. But the modern model of banking does not rely on human intervention. Instead, data-reliant systems often work together to conduct transactions and events without human involvement at all.

Integration of real-time data with historical data to provide context and situational awareness is critical to modern banking. But, of course, there are obstacles to such a massive paradigm shift.

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Biggest obstacles to digital transformation

The danger with so much technology potential is that companies end up managing a lot of disconnected software and platforms. Data becomes profuse but siloed, often held in static repositories where it's difficult to connect to real-time events and transactions.

Before moving to implement a drastic digital paradigm shift, a good preliminary step is to recognize the obstacles you have in getting there. There are a few challenges that can derail a financial services provider's digital transformation journey.

1. **Sticking to legacy technologies:** structures, and ways of doing things while implementing new ones is often the downfall of organizations that seek to transform—but are afraid to change too much.
2. **Starting the digital transformation journey blindly:** A digital innovation program takes longer than six months. It demands a sustained management effort over a longer period of time. Adding unnecessary technology during the initial phase can kill the whole process of delivering a meaningful change. Project fatigue can thwart your long-term chances of success with digital initiatives.
3. **The infrastructure challenge:** A typical large firm uses several technologies like cloud, AI, APIs, and streaming analytics. A scalable modern infrastructure is key to the success of digital initiatives.

But more than anything, the biggest challenge financial services companies face when trying to re-architect around digital transformation is integration. Typically, large organizations use multiple technologies, like messaging, ESBs (Enterprise Service Bus), SOA architectures, APIs, and other complex back-end systems. All these systems need to transfer information to and from each other either directly or through third-party apps, APIs, and solutions.

For most modern digital initiatives, which require working with real-time data at scale, these existing integration technologies simply don't cut it. Without event streaming to process and enrich real-time data, you can only get so far.

To support true digital transformation and rise to the level of consumer adoption today, data architecture must be rethought. Instead of siloed data mostly useful for isolated batch processing, true fintechs enable a platform paradigm of centralized data that enables event streaming, spanning on-premises and multi-cloud environments. This gives them the ability to deliver contextual, event-driven applications and leverage multiple, diverse sources of data to create intelligent, real-time applications that can mix past events (historical data, or context) with current events.

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Where to begin optimizing your data architecture to support ongoing transformation

Rethinking your data architecture might sound like a profound change—and it is. To be able to "think big" in fintech is critical to staying competitive on the spectrum of digital transformation. On the other hand, you also have to be willing to start small, which is why many organizations pace their conversion to digital transformation in a methodical way.

Every company takes a different path to digital transformation based on its existing digital maturity. Gartner categorizes financial services firms that go through digital transformation into five clusters.

Traditional business
26% run a traditional business and rely heavily on growth within their existing markets

Early stage digital
23% focus their digitization plans on operations, hiring, and training staff

Digital fast follower
24% use their digitization initiatives to improve business processes and adopt new technologies—without abandoning their existing core value proposition

Digital innovator
16% early adopters of new technologies—robotic process automation (RPA), AI, blockchain, etc.—and use them to enhance customer experience

Digital transformer
12% mature in their digital transformation journey—true fintech companies, using technology to unlock new areas for growth, enter new markets, and create new revenue sources

Fintech's digital transformation maturity model

There is no shortage of stories of financial services institutions on the path of digital transformation. After the outbreak of the COVID-19 pandemic, the U.S. Atlantic Union Bank used a SaaS app to disburse $1.4B in the U.S. government's loans to 6,500 businesses.

In the State Of Digital Transformation In Financial Services, 2020, Forrester identified where financial services organizations are currently investing their money. The top three areas of technology are software-as-a-service (SaaS), infrastructure-as-a-service (IaaS), and platform-as-a-service (PaaS). Other areas of investment include business intelligence technology, data and analytics software, security and privacy technologies, mobile applications, business-process-as-a-service, workforce enablement software, customer engagement software, and insights services.

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Use cases

A single use case is the best place to begin implementing modern technologies for digital transformation—a major commitment of time and money for any bank. At Confluent, as we have partnered with large financial services companies such as Euronext, BRI, and RBC, we've begun to identify the top use cases that can help fintech firms kickstart their transformation.

Customer 360°

The best place to start envisioning your digital initiatives is with your customer journey. A distributed data streaming platform plays a vital role in obtaining a single source of truth about customers. Begin to pull relevant data in the following two areas in order to gain useful insights:

- **Customer behavior:** Data from mobile apps, ATMs, your call center, your website, and even your physical branches. Tracking data in real time will help you analyze customer behavior to see where a use case might improve customer experience.
- **Core banking systems:** Payments, wealth management, retail events, wholesale events, and trade and market data all contain a treasure trove of useful information that banks can pair up with new forms of data.

However, it's important that your data processing platform allows low-latency performance and renders the ability to consolidate different streams into a single view of customers and business. Without that capability, comparing data from different sources is next to impossible.

Fraud detection

Banks need to have a centralized source for real-time data to detect and prevent fraud attempts, especially with growth in the number of customers using online banking. That's where event streaming platforms like Confluent, built on Apache Kafka®, can help a bank to become an event-driven enterprise. It increases a bank's ability to process and analyze fraud attempts in real time.

Some common use cases you can roll out by using an event streaming data platform include anti-money laundering (AML), payments fraud detection, internal theft, and identity theft protection.

Mainframe offloading

If most of your financial services firm's data resides in the mainframe, there's a significant opportunity to save money and time for data analysis. You can use event streaming data engines (like Kafka) to process the data faster and cheaper rather than offloading it to the mainframe for batch processing. The ultimate goal can be to replace the mainframe with new applications using in-memory processing and analytics.

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Thinking bigger in fintech

If you're only comparing yourself to what's out there right now, you're missing the very real threat of rapid fintech innovation by your competitors. True digital transformers are not just financial companies but financial technology, or *fintech*, companies.

In addition to what's already happening in financial services today, Forrester has identified the top emerging technologies that hold powerful potential for financial services as an industry. Here's why event streaming is so integral to many of these.

THE TECHNOLOGY	HOW IT'S USED	WHY EVENT STREAMING MATTERS
AI, ML, and cognitive computing	• AI-enabled chatbots to respond to customer inquiries, answer transaction-specific questions, and field customer requests • AI-enabled product recommendations • AI/ML tools to detect transaction-related fraud, risk management, equity predictions, and regulatory compliance	To work effectively, AI, ML, and cognitive computing require a stream of events, or data points, to feed learning models. An event streaming platform provides the ideal backbone on which the models can operate, in real time, at scale, to offer exceptional automated customer experiences and drive operational efficiencies. Real-time analysis is critical in arenas like fraud detection, because the aim is to detect an event as it's taking place—not after the fact.

77% of surveyed bankers termed AI to be the most innovative and disruptive technology in banking. (The Economist)

Internet of Things (IoT)	• IoT devices that connect, collect, and share data to power payments • Bluetooth beacons used to enable mobile payments • IoT-enabled security devices that allow banks to see and control every device on their network	Again, an event streaming platform provides the ideal data architecture to connect the multiple devices, offering real-time insights and actions.
Robotic process automation (RPA)	Automate human activity and free up employees to perform more human, innovative, value-add work in areas like: • Customer service • Claims processing • Accounting • Investing • Productivity	Connecting multiple existing systems with new events as they occur is a core feature of an event streaming platform—key to supporting RPA.

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Financial transformation success stories

Despite challenges, if you know where to begin your digital transformation journey, you can hit KPIs and achieve a healthy ROI rather quickly. Here are a handful of stories of financial services companies successfully maneuvering through digital transformation by putting in place strong data architecture and enabling event streaming to underlie all of their fintech efforts.

Euronext builds a high-speed trading platform

Euronext, the first pan-European stock exchange, operates a regulated securities market in Ireland and the UK. Euronext partnered with Confluent to build a new trading platform, Optiq®, with a backbone of event streaming based on Kafka. Optiq provides a tenfold increase in capacity and an average performance latency of as low as 15 microseconds for order round trip as well as for market data.

Reliability and scalability were top-of-mind concerns for Euronext when building out the trading platform. The performance requirements were stringent and the event streaming platform had to be able to ingest up to a million orders per second, with real-time latency in the millisecond range. Because entire markets at the heart of the European economy would rely on the stock exchange, the platform had to be built right the first time.

Euronext is now running the Optiq trading platform, with its persistence layer built on Confluent Platform, live in production on all its cash markets.

Read the full customer story

Bank Rakyat Indonesia's hybrid digital transformation

BANK BRI

Bank Rakyat Indonesia (BRI), Indonesia's biggest bank, with a market cap of $35B, used a three-pronged digital strategy to offer "faster, cheaper, and better" financial services to 75 million customers.

BRI used real-time analytics across all digital initiatives and relied on Confluent Platform to switch to an event-driven IT infrastructure. As a result, BRI was able to launch an ISO-certified open API, several mobile apps, cloud-based platforms, and web apps catering to the needs of multiple customer segments—all within just a couple of years, thanks to the modern IT infrastructure powering these digital innovation projects.

As part of its digital transformation, BRI put in place:

Big data analytics

Within its core banking operations, BRI leveraged analytics, powered by Confluent Platform, to deliver real-time credit scoring, fraud detection, and merchant assessment services. By shifting its analytics engine to process real-time data, the bank was able to detect fraud attempts in real time and predict loan defaults by applying natural language processing. Read the full customer story

A digital lending Paas app

The Pinang app is a digital lending PaaS by Bank BRI Agro. Using Confluent's real-time data processing engine to process digital verification/e-KYC, instant scoring, and digital signatures, BRI's payroll customers apply for loans digitally, eliminating the need to involve loan officers. Read the full customer story

An end-to-end lending app

BRISpot enables BRI's loan officers to carry out end-to-end lending processes. 28,000 micro loan officers have used BRISpot for the loan underwriting process. The use of the mobile app reduced BRI's loan application turnaround time from two weeks to an average of two days.

Branchless banking

BRILink Agent is a branchless banking service that helped BRI recruit a nationwide network of "branchless agents" to reach rural customers.

An open API

BRI also opened up its API for front-end partners to develop services/products for payments, corporate wallet, and credit scoring.

RBC uses event streaming to be data-driven

Canada's biggest bank and among the largest in the world, Royal Bank of Canada (RBC) has a diversified business model and a focus on innovation. Above all, though, the mission is providing exceptional experiences to 16M clients in Canada, the U.S., and 35 other countries. As part of its digital transformation, RBC built a real-time, scalable, event-driven data architecture to support the proliferation of cloud, ML, and AI initiatives.

The bank had a history of complex accumulated assets, with a data landscape that existed across lines of business. Regulation, security, and the need for auditing often led to elevated data scrutiny. To maximize the value of data without introducing risk, RBC needed to move its data from a legacy mainframe-based architecture into a much more nimble, accessible data paradigm.

Here's how they built an open source event streaming platform:

Assets moved to a cloud-native microservices architecture

Without having to rewrite systems of record, RBC moved accumulated assets to a cloud-native architecture that enabled the bank to slice large, monolithic applications into small, agile components with real-time data synchronization.

Functionality built with event processors

RBC then built new functionality with event processors rather than a database or extract, transform, and load (ETL) patterns. This was a more flexible method that did not require rewriting the entire system.

Extracted insights

Business teams were now able to perform quick data discovery and analysis for data-driven insights. These insights span transactions, decision support, and interactions in real time.

Decoupling

RBC can decouple everything to increase the speed of innovation and create new flows without impacting current operational systems, which is empowered by Confluent Platform's ability to orchestrate complex business flows.

Read the full customer story

Confluent's role in fintech's evolution

Every financial company is quickly becoming a fintech company as it builds out whole parts of the business in code. This has led software teams to modernize their data storage methods and move away from end-of-the-day batch processing toward real-time event and stream processing.

Before true financial transformation can occur, there is an important foundation that must first be laid: centralized data that can be used for real-time event streaming. On the roadmap of financial transformation, event streaming should be a top-tier strategic initiative for financial services companies. When used as an enterprise-wide platform, event streaming can truly act as the central nervous system of a business. But event streaming requires a rethinking of data architecture.

Confluent enables our fintech customers to use real-time data processing to quickly roll out new apps, IT infrastructure, and services while always providing the best digital customer experiences. In addition to the stories highlighted in this paper, Confluent has partnered with several other large-scale financial services firms to help them digitally transform their operations.

At the heart of digital transformation is real-time data. Your organization must respond in real time to every customer experience transaction, sale, and market movement in order to stay competitive. Want to learn more? Talk to us about how we've helped financial institutions like Capital One and RBC transform how they capture, process, and use real-time events to power their businesses.

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About Confluent

Confluent, founded by the original creators of Apache Kafka®, pioneered the enterprise-ready event streaming platform. With Confluent, organizations benefit from the first event streaming platform built for the enterprise with the ease of use, scalability, security and flexibility required by the most discerning global companies to run their business in real time. Companies leading their respective industries have realized success with this new platform paradigm to transform their architectures to streaming from batch processing, spanning on-premises and multi-cloud environments. Confluent is headquartered in Mountain View and London with offices globally. To learn more, please visit www.confluent.io. Download Confluent Platform and Confluent Cloud at: www.confluent.io/download

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