



WHITE PAPER

THE RACE TO REAL TIME

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What is real time?

All computer systems are subject to response constraints, but real-time systems feature ultra-low latency where response times can be guaranteed within the order of milliseconds or microseconds. In software engineering terms, real-time computing is used to describe systems that are subject to a real-time constraint; in other words, from the time of an action or event taking place to the time of the system's response to that action or event. So, if a system can effectively guarantee its response within the specified time constraints, then it can be described as a real-time system.

In banking the goal of real-time technology is to decrease the time between data transmission (e.g., a customer withdrawing funds from an account) and the action that could emanate from it (e.g., the system reducing that account's available balance by the amount of that withdrawal) to being essentially instantaneous.

Financial markets and exchanges have long been interested in the advantages of real-time data and have invested heavily in real-time technology to drive competition, boost innovation, reduce potentially fraudulent activity and ensure an orderly market. Banks are now moving to real time for those same reasons, and to align banking with today's always-on 24/7 world. This white paper considers the case for real time in the context of the benefits to banks, their customers and the wider economy.

Cash – The original real-time payment

In banking, real-time value exchange has been around as long as money itself. As the original medium of exchange, notes and coins offer immediate, irrevocable transfer of value. In many ways, the move to real-time processing seeks to replicate an analog past when cash was the main means of payment.

The general acceptance of cash means that it offers payment certainty. People trust cash and it enables trade to take place with relatively low friction. Individuals and businesses can also hold on to cash as a means of deferred payment or as a store of value, perhaps as a hedge against a rainy day or unforeseen contingency. Physical money also has the appeal of being portable – people can carry it with them and use it to pay for virtually anything, anywhere.

These basic characteristics of cash explain why its appeal has endured for so long and also why it has been difficult to replicate. However, cash has downsides too, and its portability is also a weakness when it comes to security - especially when large sums are involved. People are increasingly adopting digital payments and the COVID-19 pandemic is accelerating uptake as people often do not want to handle cash.

Checks, credit cards and deferred payments

It is perhaps ironic that as financial services became more advanced and sophisticated, delays were introduced. New financial instruments, such as checks, promissory notes and credit cards meant that settlement was delayed: checks had to clear and payments scheduled. Although new payment instruments offered benefits, many did not offer the irrevocability of cash and were not direct substitutes.

Computing made new things possible, such as electronic payments and funds transfers, but most computer systems were batch based, so electronic payments and funds transfers had to be scheduled in advance. In addition, business processes mimicked those of a manual world that revolved around ledgers and the concept of a normal working day, part of a typical 5 day work week (whereas in real time, a bank can move to 7-day processing). The batch processing setup has remained the mainstay of bank processing for many decades, but bank digitalization calls for a new approach.

WHY IS THE WORLD RACING TOWARD REAL TIME?

In our fast-paced and impatient 24/7 world, there are many drivers of real-time processing:

- **Customer expectations:** Tech giants have redefined the customer experience. Once a leading adopter of technology, banking is now often found to be lagging in an increasingly digital world. According to Accenture¹, 87% of banking executives acknowledge that customization and real time will set the tone of competitive advantage in the future.
- **Technology:** Improved communications, including superfast broadband and mobile, make real-time processing from anywhere a reality. Low-latency data transmission and exchange is approaching ubiquity and becoming mainstream in everything, from ordering food to streaming a movie or transferring money from your bank or credit card to pay for the food and the movie.
- **Mobile payments:** For mobile payments to operate as a credible cash replacement, real-time processing is essential to fulfill the obligation of an immediate irrevocable transfer of value, as well as portability and convenience.

The combined forces of bank regulation and the emergence of mobile and contactless payments have compelled most banks to deliver real-time payments. But, for banks with legacy technologies and batch-based processing, this has been a challenge.

There have been many workarounds, such as parallel databases and data lakes to deliver instant payments that sit on top of an inherently batch-based infrastructure. But, for nearly all banks, the move to real time remains a strategic obligation that promises a new dawn in processing efficiency. So, what are the benefits?

Real-time benefits for banks

Although instant payments have become mainstream, they demonstrate only the most obvious benefits of real-time processing that accrue to bank customers. In practice, real-time processing also offers quantifiable benefits to a bank. With a single line of sight along the entire financial value chain, a bank can forecast cash requirements more accurately and manage cash more efficiently. Moreover, a real-time processing infrastructure offers a strategic foundation on which to build a better bank.

Boosting back-office efficiency

With real-time processing, there is less time spent on remediation. When transactions fail, they do so instantly so there is no need to look for the source of failure. The order of posted items is consistent and, unlike memo postings that can be deleted and reprocessed, the record does not change. With real-time processing there is no need to go offline while a database is prepared for the next day's business.

Real-time processing also reduces operational risks, such as data entry errors that can increase costs, impair profitability and damage a bank's reputation.

Improving bank channel integration

All banks must meet increasing customer expectations by offering a seamless experience across all channels. In parallel they must also tackle the cost base to remain competitive, particularly with new market entrants who are unencumbered by legacy technology and have benefited from a real-time infrastructure from the beginning.

In practice, bank channels have been added in response to customer demand and the emergence of new technologies. Most channels are managed independently, often using different technologies run by separate teams. Although this has worked satisfactorily in the past, it cannot deliver a seamless experience across channels and is unsustainable.

In reality, the technology that once drove bank success is now an inhibitor of what can be achieved. Without consistent real-time information a bank cannot harness the power of data to boost innovation and offer a blended multichannel experience. By investing in real-time solutions, a bank can put the customer at the heart of all that it does and offer an engaging "optichannel" experience (i.e., the right channel at the right time). A real-time architecture is also the perfect platform to jumpstart innovation.



Boosting innovation

All banks gather a large and growing volume of data about their customers. To remain relevant and competitive, they need to be able to analyze this data in real time to become truly customer-centric and data-driven, for example to:

- Monitor demographics and customer purchasing behavior across multiple accounts, including credit card transactions, deposit and brokerage accounts and loans to upsell, cross-sell.
- Provide real-time information for fraud prevention – such as real-time alerts to notify a customer about a transaction's amount, location and time; and that it aligns with the customer's expectations.
- Spot changes in behavior, such as cancellation of direct deposits or declining account balances, which may signal that a customer is switching to a competitor or that their financial situation has changed. Real-time data gives a bank the chance to be proactive and intervene early.
- Reach new customers. Digital technologies empower banks to reach new markets and geographies without a physical footprint. New products can be personalized, delivered in real time and offered in context. This can dramatically shorten time to revenue for new products, such as Alibaba's 3-minute loan.

Tightening fraud management

As more consumers adopt digital payments such as contactless cards and digital wallets, the risk of fraud increases. Real-time technology offers the opportunity to improve fraud detection and prevention. Traditionally, most anti-fraud solutions were rules-based, operating on specific databases or silos. Being rules-based, these solutions could only search for familiar fraud scenarios. In practice this tends to generate many false positives, leading to customer embarrassment and frustration when legitimate transactions are blocked or fraudulent transactions go undetected.

Real-time technology ushers in a new era of fraud management. A bank can stop fraud in its tracks by monitoring customer behavior and patterns using, for example, location information. By adopting modern technologies such as machine learning and artificial intelligence, banks can detect transactions that are outside of the norm for an individual customer in real-time.

Real-time fraud management is crucial to help a bank protect its brand and reputation. By detecting fraud early and reducing the number of false positives the bank will build customer satisfaction and confidence.

Real-time vs. batch processing – Complements or substitutes?

Given the strategic benefits, it seems likely that all banks will eventually want to implement a real-time system architecture. What does this mean for batch processing? Real-time and batch may be substitutes but they are also highly complementary, and each has unique benefits.

Batch processing remains a highly cost-effective way of processing large groups of items, including scheduled payments such as salary runs or check-clearing files. A real-time system operating on top of, or in parallel to, a batch system can offer many bank benefits.

- A database management system can operate more effectively with several batch processing updates happening concurrently.
- There is more flexibility than in a traditional memo post system so the bank can become more agile and responsive to customer needs.

From a strategic perspective, the sharing of real-time and batch systems is important because it offers the opportunity to align a progressive bank transformation with business benefits, to deliver a smooth transformation that controls cost and mitigates risk. Real-time technology can be introduced to address a particular bank pain point, offer a new service or deliver a combination of both.

Getting started

Although most banks have already implemented some real-time processing, for example to deliver instant payments, this is only a start. A true move to real time involves a massive transformation that changes how work gets done. The move to real time is a crucial decision that affects all areas of the bank.

Real-time processing is a major element of a bank's digital transformation strategy and can be considered in parallel with other transformational constituents, such as cloud, DevOps and microservices.

The move to real time is also a step in the direction of becoming data-driven – using artificial intelligence, machine learning and advanced analytics to give customers what they want, when they want it. With vast volumes of customer data, banks need to adopt a holistic approach to data management and the cloud is the only sustainable solution.

In practice, technology is only part of the real-time transformation challenge; digital transformation is also as much about people, processes and methods as it is about technology. All of these aspects must work in concert to achieve transformational objectives. Moving to real time is more of a journey than a destination, but with quantifiable benefits all along the way, it's worth the effort.

An informed business choice

There is no need to rip and replace the core banking system to gain the benefits of modern real-time platforms; the transformation can be incremental. Options may include a small-scale rearchitecture of the core to extend its life while implementing a progressive modernization. This hollowing out of the core has become a popular way to implement a progressive digital transformation driven by business benefits.

Application program interfaces (APIs) can play a crucial role in effecting the move to real time, by enabling disparate systems to be choreographed in real time. With the right API strategy, a bank can bring new products to market more quickly and participate in a growing financial ecosystem that's increasingly real time.

By adopting real-time solutions, a bank can adopt a data culture that harnesses the power of data to drive a range of activities, such as managing risk, compliance with regulations and offering a unified banking and payments experience to customers.



An expert partner

FIS has helped some of the world's top banks implement real-time technology. Our real-time technology is constantly proven in some of the world's most demanding banking environments. Below are some practical examples of sustainable benefits offered by adopting real-time processing:

Real-world benefits of our clients moving to real-time banking

CUSTOMERS



BUSINESS



OPERATIONS



IT



Business drivers	Estimated benefit*	Areas of impact	Rationale
Standardization and consolidation	<ul style="list-style-type: none"> 18%-31% decrease in cost per account 	Business	<ul style="list-style-type: none"> Decommissioning of legacy solutions running highly diverse, and higher cost technology platform Gain economies of scale by consolidating transaction volumes to fewer core processing systems, deposits and lending on one platform Leverage fewer key vendor partners to achieve greater discounts
Cost avoidance	<ul style="list-style-type: none"> 6%-14% decrease in cost of change 12%-15% reduction in lost accounts 	IT	<ul style="list-style-type: none"> Avoid high cost enhancement to less flexible, less adaptable, non-rules-based legacy platforms Reduce customer replacement costs by lowering attrition rates
Revenue opportunities	<ul style="list-style-type: none"> 9.5% New loan volume - number of loans 14% New loan volume dollars 51% increase in average loan size 	Customer	<ul style="list-style-type: none"> Customer-centric interactions and improved return on investment. The platform continually makes available the most current and complete view of the customer at the decision point during customer interaction Operationalized customer information at decision point of interaction Results compared against several non-digital metrics from a variety of financial institutions Consumer loan campaigns delivered via FI public website and online banking
Revenue opportunities	<ul style="list-style-type: none"> 15% uplift based on pricing structures Price realization 5-10% increase in fee revenue 	Business, Customer	<ul style="list-style-type: none"> Optimizing pricing structures beyond typical product pricing constructs and giving the bank the ability to understand the complete customer relationship and the perceived value for product features, approximately 15% uplift Discipline around discounts, promotions and fee waivers automating the tracking and governance of contractual obligations managing standard and exception pricing
Operational efficiencies	<ul style="list-style-type: none"> 23%-35% increase in operational efficiency 	IT, Operations	<ul style="list-style-type: none"> Elimination of "Day 2" processing by moving to a real-time environment Greater STP rates and automation of exception processing reduces staff headcount expenses Standardization of processes allows for creation of regional and global operational Centers of Excellence
Revenue opportunities	<ul style="list-style-type: none"> 33%-89% reduction in TTM 25%-30% account volume growth 	Business, Customer	<ul style="list-style-type: none"> Rapid design and automated launching of new products Packaged financial "solutions" marketed and priced to solve consumer needs and meet life goals Price differentiation gives the bank the ability to price customers differently with cross LOB bundling - providing a revenue lift across deposits, consumer loans and credit cards between 10-30%, allowing for "Microsegmentation", a market of one to be targeted where price sensitivity-based on customer information and pricing can be tailored to ensure bank profitability, etc.
Business Continuity	<ul style="list-style-type: none"> 1%-3% improvement in system availability 96%-99% better MTTR 	Customer, Operations	<ul style="list-style-type: none"> Improve customer self-service and satisfaction through greater system availability Adhering to growing regulatory compliance requirements around business continuity

About FIS

FIS is a leading provider of technology solutions for merchants, banks and capital markets firms globally. Our employees are dedicated to advancing the way the world pays, banks and invests by applying our scale, deep expertise and data-driven insights. We help our clients use technology in innovative ways to solve business-critical challenges and deliver superior experiences for their customers. Headquartered in Jacksonville, Florida, FIS is a Fortune 500® company and is a member of Standard & Poor's 500® Index.

To find out how real-time processing can transform your bank, please contact us at **getinfo@fisglobal.com**.



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