

Designing disruptive IT
for financial services:

A CIO's guide to
building a bank that
thrives on change



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Designing disruptive IT for financial services

It's probably no surprise to you that the financial services industry is changing rapidly. Digital technology is redefining the possibilities with automated processes, AI insights, customized experiences, new operating models and next-generation applications — yet global industry profits are stagnating. As the number of disruptors in the space rises, many banks are being asked to innovate while lowering structural costs and improving capital returns¹ — and many traditional banks are falling behind.

Acquiring and retaining customers in this new digital, multichannel environment requires innovation and agility. It also requires more robust and intelligent security as both IT and cyber-attacks on financial institutions become more sophisticated.

In this e-book, discover industry intelligence and direct client success cases that provide a CIO's guide to modernizing IT infrastructure and operations. You'll learn the best strategies and receive recommendations for modernizing infrastructure and IT operations to lead disruption and manage rapid change for your bank, its operations and its customers.

Personalize customer experiences by maximizing your data

With pervasive mobile access, advanced analytics and artificial intelligence enriching customer experiences, banking customers increasingly expect fully personalized solutions that are always on and delivered in near-real time.

Delivering proactively on the quality of lifestyle experience that today's consumers expect requires continual intelligence around customer needs, preferences and intentions. Not only do those insights change every day, but they also pull from many sources — like social media, mobile data and public databases.²



Modern banking recommendations

Employ artificial intelligence (AI) capabilities to extract more value from data already within reach

The financial services industry has access to vast amounts of rich data about its clients. New banking models can succeed by delivering on insights from vast stores of data, enabled through intelligent analytics and AI-driven processes at the core of their models.³

Adopt machine learning to shift to a customer-centric business model

Machine learning is a type of AI that helps optimize decisions by working with predictive analytics to create behavioral models.⁴ It is designed to deliver in-place analysis of valuable data without driving up cost.² Machine learning algorithms continually “learn”

from new data to improve the accuracy of the models. In financial services, much of the data used in machine learning can come from core banking systems. Using segmentation through daily transactions, online interactions, and demographics, machine learning can bring new intelligence to banking operations and elevate customer experiences.

Only
37%

of consumers

believe their financial loyalty programs offer rewards reflective of their lifestyle and hobbies.¹

Borrow strategies from open banking and new business models

Industry boundaries are blurring. Non-traditional competitors have raised the bar for financial institutions, creating innovative business models in a battle to win the customer. Customers are willing to consider products from non-traditional providers that they regard as more innovative than banks.



Be proactive about open banking

The drive toward open banking, resulting from the implementation of the PSD2 regulation in the European Union, has put pressure on banks around the world to begin opening their systems and data. Open initiatives are emerging around the world in a variety of forms, from banks adopting API-based strategies in partnership with third parties, to market platform providers developing cross-industry approaches that go beyond financial services.

As open banking introduces a sea change to the banking and payments industries, **your bank can be proactive by introducing next-generation applications such as mobile banking, digital payments and next-generation ecommerce models like Apple Pay and Venmo.** Or, lead the disruption by collaborating and learning from the newer players and leveraging their competencies.³

Your bank can be proactive by introducing next-generation applications such as:

- ✓ Mobile banking
- ✓ Digital payments
- ✓ Next generation ecommerce models



Spotlight on millennial customers

53% 73%

believe their own bank is offering nothing different from other banks.³

would be more excited about new financial offerings from participants such as Google or Apple than from their own nationwide bank.³

Modern banking recommendations

Explore open banking APIs

Using APIs provides the bank's connected offerings to the customer (their technology ecosystem) with two key benefits. First, new potential uses for consumers may occur by way of innovation happening through collaboration between different entities. Second, the appeal of the technology ecosystem's services also increases if complementary offerings enhance the customer benefits.³

Pay attention to the emergence of industry networks, ecosystems and platforms

"Platform" companies like Alibaba, Amazon and Apple are making inroads into banks' customers and their revenues and profits by introducing alternative payment rails and lending, as well as automated investments.³

A new generation of service providers are interacting in modern ecosystems that deliver "banking as a service",

with partners that offer true differentiation in both functionality and cost.³ By positioning themselves as the orchestrator of these customer-centric ecosystems, traditional banks can work with multiple partners and providers to cater to a range of needs beyond traditional banking services and become integral to their customers' everyday lives.

Critical questions

- ✓ Are you collaborating with the right partners and establishing the right networks to enable all partners to benefit?
- ✓ Do all partners understand the key requirements for building, operating and co-owning the network?

Step up your security game

As fraud and cyber-attacks become more frequent and sophisticated, banks need better solutions for security management, fraud detection and risk mitigation.



Navigating an increasingly sophisticated cybersecurity landscape

Breaches have become more expensive for banks

All CIOs worry about security; yet banking CIOs are justified in the extra layer of concern. Highly regulated industries, such as financial services, tend to have the most expensive breaches. The average total cost of a data breach is USD 3.86 million,⁵ and direct charge-offs alone can account for more than seven base points of revenue.⁶

Industry changes — driven by smartphone usage, cloud-based solutions, new channels, digital platforms, partner ecosystems and 24x7 services, along with rising costs of malware and fraud — have significantly increased the need for banks to address their security strategy. If you're like most financial institutions, you might be wondering how to define and deploy a security architecture that is effective in these new operating models.

IT security is evolving

In response to these challenges, the industry has evolved with new IT solutions and best practices such as:

- End-to-end encryption (pervasive security beyond just encryption of data)
- Limiting data movement
- Protection of data in flight
- Increased monitoring (of applications, employee conduct, networks and digital devices)
- Blockchain applications
- Digital asset custody

The industry changes are driven by:

- ✓ Smartphone usage
- ✓ Cloud-based solutions
- ✓ New channels
- ✓ Digital platforms
- ✓ Partner ecosystems
- ✓ 24x7 services
- ✓ Rising costs of malware and fraud

Modern banking recommendations

Aim for end-to-end encryption

Data encryption is a core piece of any security strategy. For banks, the ideal IT security schema should go all the way to the firmware level, with workload isolation and encrypted keys protected by hardware. It should be pervasive and always-on, protecting from both external and internal threats, ideally with the ability to encrypt everything (including data in-flight and at rest) without changing applications or impacting service level.

Limit data movement

Data movement drives up cost and can limit the effectiveness

of insights. Enterprise server platforms have an advantage here — since core banking systems are touchpoints for every customer interaction, predictive analytics can be baked into all transactions without affecting SLAs.²

Stop sophisticated cyber-attacks in real time

Artificial intelligence can make the detection of fraud attempts more precise, using always-on auditing mechanisms to detect behavioral patterns and deliver insights in real time. Modern machine learning capabilities can interface with transactional systems to score transactions “in flight” for fraud and alert

administrators in time to contain the breach. Software-defined security products that support high availability, low latency and vastly improved authentication have also helped banks in addressing cybersecurity.

Get ready for blockchain

Many banks are turning to blockchain for transactional security, digital identity, digital assets, currency and payment infrastructure. Blockchain has the potential to radically change how financial transactions are conducted.

If you’re confused about what blockchain really is or unsure of what your strategy will be,

you’re not alone. However, you should understand what it could potentially do for your bank:

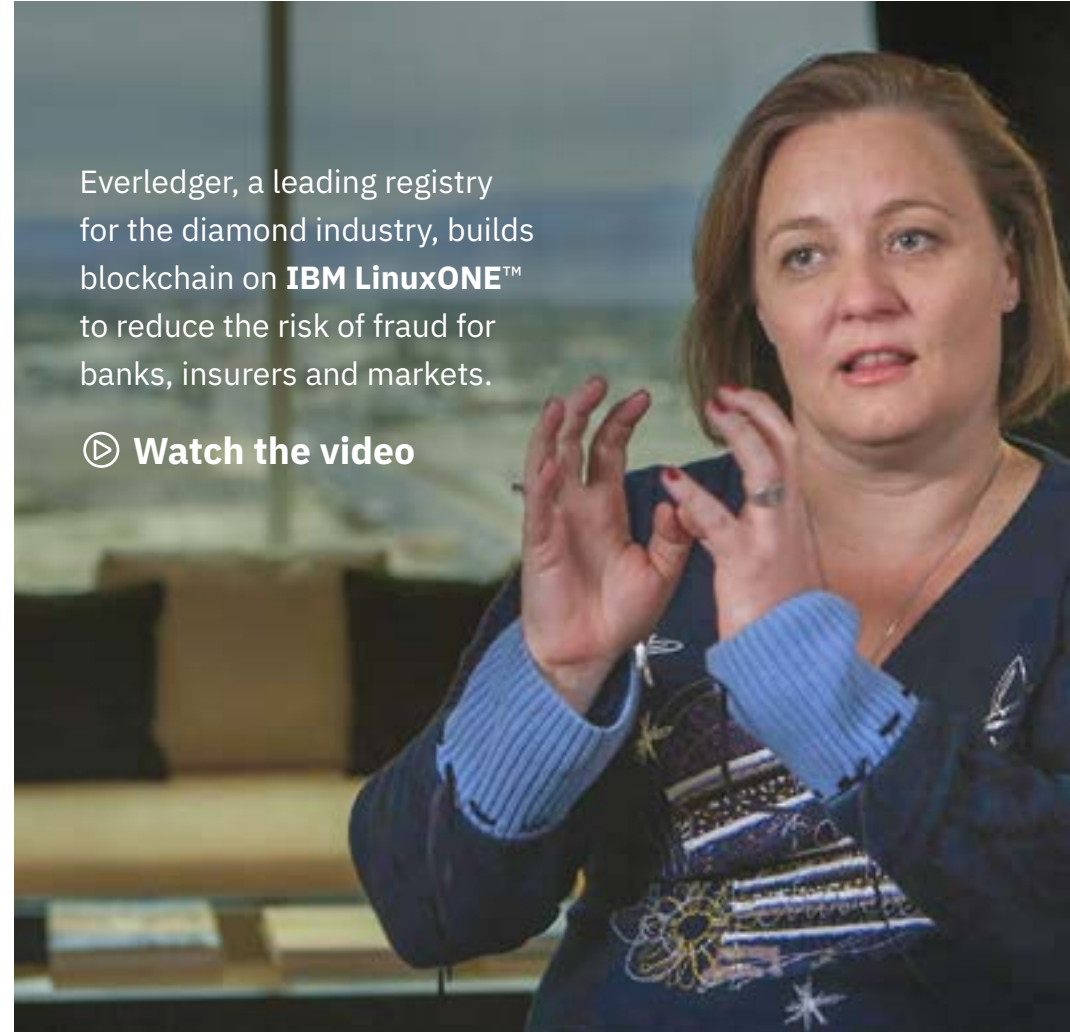
- Simplify accounting and regulatory compliance
- Speed and streamline business processes
- Modernize near real-time trust, insight and transparency to all parties in clearing and settlement, payments, trade finance and syndicated loan functions
- Accelerate identity governance and management capabilities
- Act as a mechanism for distributing compute workloads

What is blockchain?

Blockchain makes the exchange of data vastly more efficient through a distributed ledger that runs across a secured peer-to-peer network, recording digital transactions in real time. It works as a shared form of recordkeeping, eliminating delays of third-party verification for transactions – and produces a complete, auditable and indisputable system of record that each permissioned member of the network can access.

Everledger, a leading registry for the diamond industry, builds blockchain on **IBM LinuxONE™** to reduce the risk of fraud for banks, insurers and markets.

▶ **Watch the video**



“As we started to think about what we needed to provide in terms of a high security network, we had to think just beyond the cool tech of blockchain. We had to think about how we could take this technology, deploy it into a cloud and ensure that it is scaled securely and that, of course, it was tamperproof. So, that is why we chose IBM.”

Leanne Kemp

CEO and Founder of Everledger

CIO action plan: security and compliance

Ask these critical questions:

- How much data is your bank encrypting and where is it?
- Can you show where regulated data resides, who updated it and when, and where it exists today?

Use encryption and analytics to ease the compliance burden

To ease the burden on your core systems and free up resources that could be better used for innovation and growth, compliance must become more automated. When regulated data is verifiably encrypted with pervasive encryption technology, for example, encryption is decoupled from classification, and the risk associated with undiscovered or misclassified sensitive data is reduced.⁴ New analytics capabilities can ease some of the compliance burden as well.

Drive innovation from the inside out

As global banking revenue growth continues to slow and digital technology increases pressure on traditional sources of income, banks must do something to offset the high structural costs associated with their existing business and operations models.³

Under pressure from investors, many have turned their focus toward radical cost reduction. But it's innovation, not efficiency, that will ultimately help banks drive more value.



Modern banking recommendations

Innovate the revenue model

Traditionally high revenue and high margin products such as fee-based mobile banking, payments, checking and savings are giving way to free alternatives or options subsidized by lower cross-value chain pricing propositions.³

Innovate the operating model and cost structure

To reduce costs and improve capital efficiency, banks need to focus on structural cost reduction in areas beyond simple cost income ratios:³

- Working agile can lower costs rapidly and improve flexibility
- Traditional risk management and human resources models are no longer effective
- Digital must be built from the front office to the middle and back office operations
- Flexible cost models must support business changes and data-driven workloads
- Transaction cost control is needed to remain competitive

IBM clients are increasing agility and driving cost reduction

by modernizing their IT infrastructure and leveraging new digital and cognitive tools, such as intelligent automation/RPA and blockchain.

Invest in a digital culture

Now is the time to make key decisions about your bank's future. To lead the disruption, banking IT professionals must rethink and rebuild their roles and activities from the ground up (across all business lines and functions) and from the outside in — incorporating

the best strategies from other industries where it makes sense.

The outcomes depend on having a secure, agile and flexible infrastructure to support change from modular innovations to complete digital reinvention; on prioritizing work on open API, risk management and governance; and most of all on the willingness of your team to adopt a digital culture.

Digital talent is in high demand within and across industries, so it's a good idea to draw from other industries and nontraditional talent pools.



Here are some successful transformation initiatives IBM clients are undertaking in the financial services industry:

- ✓ Designing flexible cost models to support business changes and data-driven workloads
- ✓ Digitally transforming operations and simplifying processes wherever possible
- ✓ Leveraging blockchain to radically transform operating models and reduce costs
- ✓ Positioning risk management to play a more proactive role
- ✓ Adopting enterprise-wide cognitive process automation³

Techcombank transforms to reach the unbanked

In Vietnam, 65% of the adult population do not have a bank account. Techcombank knew that to reach a fast-growing population of upwardly mobile consumers, it needed to go beyond conventional products and services and deliver a banking experience that would fit modern customer needs and lifestyles. To achieve this goal, the bank transformed both its IT infrastructure and the way that its people worked with that technology, including a new TCO model. **As a result, transaction volume rose by 4x and total cost of ownership decreased by 44%.**

[Read the case study](#)



“The banking market in Vietnam is rapidly evolving, and IBM LinuxONE provides the fast, flexible foundation to support our growth trajectory and the dynamic needs of the future. With IBM by our side, we are confident that we can make the most of the opportunities that the market has to offer, and strengthen our position as a banking leader.”

Chester Gorski

Chief Technology and Operations Officer at Techcombank

Design an agile infrastructure to support participation in new digital marketplaces

As you work on making your bank's operational structure more agile, your infrastructure must follow suit. The IT infrastructure you need to compete in a world of advanced analytics and customer ecosystems must be ready to:

- Support next-generation applications
- Process and store huge amounts of data
- Deliver insights in real time
- Adapt at a moment's notice
- Natively support open source frameworks



Modern banking recommendations

Scale intelligently to meet fluctuating demand

IT scalability for banks refers not only to adding servers but also to scaling processes and workloads. Horizontal scaling has benefits especially for read-only data, but it can complicate data consistency, resource utilization, and clustering.

A vertical scaling approach can make sense in cases where resources demand drastic change and a single source of truth is needed.

[Read blog: Three ways to intelligently scale your IT systems](#)

Consider consolidating workloads on an enterprise computing platform

Consolidation is the process of moving multiple workloads from a larger number of servers to a smaller number of more powerful servers with the end goal of reducing cost. Research by Solitaire Interglobal Limited, in a study of over 13 million IT infrastructure environmental setups, found that new applications and

systems can be deployed 3x faster[†] on enterprise computing platforms such as LinuxONE and provide superior agility to distributed architectures. In addition, users report 7.41 times better[†] resilience with LinuxONE compared to other platforms.⁷

[Discover why enterprise computing platforms provide superior agility according to Solitaire Global Interglobal Limited.](#)

[†]“Scaling the Digital Mountain: Enabling a Secure, Agile, and Efficient Organization,” Solitaire Interglobal Limited, 2018

3_x

faster deployment

7.41_x

more resilient

The benefits of an enterprise computing platform:

- ✓ Lower server footprint
- ✓ Reduced administrative costs
- ✓ Fewer cores and core license requirements

CIO action plan: IT infrastructure modernization



Take the first steps toward infrastructure modernization and open banking:

- Begin strategizing with your teams about how to safely introduce external partnerships. Do your bank's policies and IT allow the business model to be fluid enough for the changes?
- Where can you introduce cognitive operations to drive more intelligent timely insights, cost reduction, customer centricity and smarter regulatory compliance?
- How will you make your infrastructure secure and scalable enough to support larger, more data-driven workloads?



Lead the establishment with clients and other partners of compliant industry networks and common digital platforms:³

- Define and communicate the “rules of the game” for the benefit of the network and industry partners
- Draft policy and strategy before implementation to enable effective platform development
- Engage regulatory and operational leaders from the beginning of the building process to assess conditions for operating
- Build an open/neutral platform for business/technology developers to create value-driven business processes

Final thoughts

Success means being able to respond quickly to shifts in the marketplace and to the demands of digital and mobile audiences. Open ecosystems will quickly become the norm as the industry evolves to include new relationships and new ways to build financial institutions. The business decisions and infrastructure choices you make today will affect your ability to process and secure the

data you need to deliver rapid insights, real-time transactions and personalized experiences.

Now is the time to focus on transforming your core operations and technology to participate in new digital marketplaces, ecosystems and platforms, and break free of old limitations.

To meet the challenges and opportunities in today's digitally-connected world, you need a modern IT infrastructure that gives you the flexibility to respond to opportunities quickly, work across ecosystems, and scale safely as you grow. Learn how LinuxONE can help your business design disruptive IT services.

[▶ Discover LinuxONE](#)



Resources

- 1 [“Global Industry Agenda - Banking & Financial Markets,”](#) IBM Institute for Business Value, 26 June 2018. IBM Institute for Business Value analysis based on Federal Deposit Insurance Corporation (FDIC) data and other publicly available information. IBM Institute for Business Value analysis based on S&P Capital IQ, McGraw Hill Financial data of top 500 global banks ranked by total assets, 2006-2014
- 2 [“The next-generation platform for banks: Securing superior customer experience for the digital age,”](#) IBM Institute for Business Value, 2017
- 3 [“Global Industry Agenda - Banking & Financial Markets,”](#) IBM Institute for Business Value, 26 June 2018
- 4 [“The modern mainframe: A banking platform from the future,”](#) IBM Institute for Business Value, 2017
- 5 [“2018 Cost of a Data Breach Study: Global Overview,”](#) Ponemon Institute LLC, July 2018
- 6 [“Winning the face-off against fraud: How the most effective financial institutions are outthinking the bad guys,”](#) Davis, Wilson and David Dixon, IBM Institute for Business Value, January 2016
- 7 [“Scaling the digital mountain: Enabling a secure, agile, and efficient organization,”](#) Solitaire Global Interglobal Limited, 2018

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