



WHITE PAPER

TARGETED CORE BANKING MODERNIZATION

Digitally enabling banks with
tailored transformation journeys

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Targeted Core Banking Modernization

This white paper explains why the time is now for banks to pursue targeted modernization strategies and embark on their tailored modernization journey.

Topics discussed are market outlook, along with trends, challenges, and accelerant opportunities. We will explore how componentized strategies for core banking modernization enable banks to modernize and innovate in a low risk incremental approach, while preserving their strategic IT investments.

This white paper is first in a series; a set of core banking modernization topics will be published, including *Deeper Understanding of Core Modernization Patterns*, *Enterprise Product Pricing Elasticity and Optimization to Achieve Profitability*, *The Next Level of Customer Experience 2.0*, and *Responsible and Traceable Sales & Servicing Business Practices*.

Market Outlook: Core Modernization Becomes the Norm in Financial Services

Key catalysts shaping today's banking industry include **Open Banking** — the federation of the value chain in banking — as well as **demanding and tech-savvy customers** who expect and require **great digital experiences**. Continuous, rapid change is one of the few constants, and achieving business agility is one of the key challenges. Banks and their technology teams need to address this situation in an environment characterized by low margins; the "good old days" of great margins are unlikely to return.

Most financial firms are transforming their application landscapes, and core modernization is becoming the norm. These transformations take time: Those planning to start in 2018 expect the incremental modernization to be fully realized in six to seven years (i.e., by 2025 at the latest). The typical model allows six to 12 months for planning, preparation, and pilot programs, and two to five years for implementation. Banks will be modernized and digitally transformed by 2025, or risk dying an analog-business death. The good news is that while the overall process takes years, the benefits of an incremental modernization journey accrue every step of the way.

A flexible core system built on modern technology can mean the difference between success and failure for many financial institutions. All banks, regardless of size and geographic location, need to be able to quickly launch new products, address the increasingly demanding needs of customers and regulators, and operate as efficiently and cost-effectively as possible. Effective and innovative strategies, planning, and execution are a must.

Today's core banking market is adapting to these changes in the banking industry, especially digital banking. **The leading trend in establishing these critical capabilities is componentization, and FIS™ is a market leader in this regard.** Improving on the traditional monolithic banking solution approach, the next generation banking solution offers smaller components with discrete functionality and ultimate flexibility. Componentized modules and latest fintech capabilities expand real-time digital processing enablement and the promise of compelling banking modernization opportunities — while continuing to feature the established hallmarks of outstanding core banking product innovation, processing power, security, reliability and performance.




Targeted Modernization: Pathway to the Future for Financial Services Firms

Targeted core replacement initiatives are now viewed by many banking firms as the pathway to the future. Some institutions view core replacements as a necessity that can no longer be ignored, while others (especially those in growing markets) recognize that targeted replacement initiatives may be key to capitalizing on new opportunities.

Few banks today contemplate a “big bang” replacement of core banking systems, primarily due to the high cost and associated risk levels. Bank leaders seek investments for which payback is expected in the same year. Highly targeted modernization initiatives can achieve this, with bottom-line

benefits driven mostly by front-office digitization and regulatory requirements, but also by corresponding cost savings and operational improvements. While bank IT budgets are mostly tight, they are typically adequate for an incremental improvement approach.

Common motivations for core banking modernization include business agility, compliance and channel enablement. The dominant trend in banking technology is targeted modernization, providing the ability to carry out targeted business outcome investments accompanied by essential maintenance and repair of IT assets.

 <p>Accelerated business capability</p> <p>Enriched capabilities in "bite-sized" modules with rapid deployment and immediate impact</p>	 <p>Enterprise applicability</p> <p>Fully digital-enabled APIs and core/SOR-agnostic design enable bank-wide user experience</p>	 <p>Modern architecture design</p> <p>Modern technologies and intentional framework design improve CapEx and OpEx, and future-proof investments</p>
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Accelerated Business Capability

By leveraging the inherent benefits of intentional component design, financial institutions are better able to align their core modernization strategies into incremental micro-phases that have direct impact to delivery on their most pressing business objectives and needs. Simultaneously, the banks are progressing forward with capabilities that offer short-term impact and long-term viability. Due to the more focused nature and smaller footprint of components, deployments occur in a timely and cost-effective progression which brings immediate business value, while also establishing long-term foundational capabilities for sustained growth and success.

Enterprise-class Applicability

The most effective, efficient and valuable financial services core components can be deployed universally bank wide – provided that there is a core- and SOR-agnostic architecture and fully exposed API-enabled design. This not only brings accelerated business capabilities to a specific product line

of business (LOB), for example retail deposits, but also creates horizontal institutional impact by expanding their applicability across all product LOBs and areas of the financial institution (e.g., retail, commercial, deposits, lending, wealth, insurance, etc.). Further, such enterprise-class core components can be deployed in an incremental use case-driven manner specifically aligned with each financial institution’s unique needs, objectives, budget and vision.

Modern Architecture Design

Successful core components leverage new and universally accepted technologies that are open, digitally enabled, understood and supported by ample workforce resources. Cloud-ready solutions maximize deployment and scalability capabilities, and typically yield significant costs savings for the banks. Core modernization through componentization is a highly efficient and beneficial transformation strategy that produces impactful and measurable short-term business benefits, while aligned with long-term business vision and strategy outcomes.

Development of a Targeted Modernization Approach

The FIS Enterprise Product Organization (EPO) has proactively been executing a corporate component-based strategy and architectural approach to core modernization for the financial services market for the past five years. Our component-based architecture features easy-to-configure components in lieu of functionality typically embedded in “silo” channel applications across the enterprise. This approach allows banks to preserve existing IT investments, freeing up capital for innovation and improvements that attract and retain customers for the bank.

This component-based approach to core modernization is designed to facilitate the incremental adoption of enterprise capabilities based on the objectives and challenges of the bank. Its purpose is to facilitate customer-centric, dynamic business processes; to overhaul product and servicing offerings and related pricing; and to preserve the bank's IT investments. It moves legacy core solutions from a monolithic core architecture to a component-based architecture. It is the smart strategic alternative to the risky and expensive proposition of pursuing a “core replacement first” approach.

With this model, the capabilities in the legacy core solution naturally deprecate as components take their place (also referred to as “hollowing out the core”). The transitions are transparent to customers, and bank operations are improved throughout the process. The widest range of options remains available to the bank throughout the transformation, including the choice to retain the legacy core.

Architecture and functionality enable a financial institution to:

- Adapt to changing customer expectations and experiences, some of which may not be presently known.
- Utilize the next generation real-time component core product processor.
- Offer solutions and optimized product pricing based on the total customer relationship.

- Provide seamless customer-centric servicing that delivers the right interaction at the right time via the right channel.
- Derive actionable behavioral insights from accessible data to attain new relevance to all customer segments.
- Improve back-office efficiency and drive front office innovation.
- Incrementally transform the existing core system so that the replacement becomes transparent to customers.
- Control customization and easily change components.
- Insert business and risk controls, including the elimination of redundant and siloed data across multiple solutions and platforms.
- Realize business results quickly throughout the modernization sequence, demonstrating immediate and quantifiable returns on the bank's business plan.

The componentized approach provides a reduced-risk targeted modernization path for financial institutions, and alleviates dependency on the legacy core platform. As part of the approach, functionality in retail and commercial banking solutions are utilized by harvesting and leveraging technology already in place. This allows clients to follow a robust upgrade path with delivery certainty.



Banking Market Challenges

Continued regulatory pressures related to Open Banking, GDPR, PSD2, and CMA are representative examples of the banking market challenges that are driving the need for core banking modernization.

To address the challenges that are in play, banks are investing in core components to transform and modernize legacy applications to deliver API/Open Banking payments and digital products and services.

Bank CIOs face numerous challenges

INNOVATION

- API enablement
- Big data
- Machine learning
- Cloud computing
- Open service architectures

EVOLVING REGULATORY ENVIRONMENT

- Complex cross-border issues
- PSD2, Open API mandates
- Impending market reforms
- Basel III and IV

CHANGING CUSTOMER EXPERIENCE

- Customers expect fully integrated digital experience
- Millennials expect personalized interactions and rewards for loyalty
- Social network impacts

LEGACY SYSTEM SILOS

- Time to market
- Integration
- Need to evolve to customer-centric approach

TIGHTER ECONOMICS

- Drive to less expensive infrastructure
- Rapid solution integration
- Increased automation
- Operation cost challenges

UNCONVENTIONAL COMPETITIVE FORCES

- Fintech companies
- Peer-to-peer lenders
- Cryptocurrency emergence
- Non-banks providing banking services (retail providers, payday lenders, etc.)



Protecting the Bank's Brand

Bank brands are at risk of becoming commodities in today's world of abundant choices. Core banking modernization can help in the mission-critical task of protecting your bank's valuable brand.

As more transactions become digital, many customers no longer make conscious decisions about which mechanisms they use for an increasing proportion of their transactions. This relegates the financial institution to the status of a commodity: If the brand of the merchant or wallet is central for the consumer, the importance of the bank's brand becomes diminished.

Financial institutions face the risk of **disintermediation** on a variety of fronts. The examples are already abundant. As payments become more and more embedded in the commerce experience, tech and fintech firms are finding ways to remove payments from the payment card rails and reduce their cost of acceptance. Online lenders have made a substantial mark on small-business lending, and now have their sights set on consumer lending. The rise of varied forms of prepaid accounts means many consumers no longer feel that they require traditional banking relationships.

Technology and regulation are also increasing the risk of commoditization. This situation is front and center in Europe, as regulations designed to increase competition threaten to reduce banking services to a set of commoditized utilities.

Internal Modernization Challenges

Banks recognize that core banking transformation is needed to effectively and sustainably respond to internal business imperatives, such as growth and efficiency. Internal modernization challenges include:

- Product and channel growth. An increasing number of products cater to different customer segments. Likewise, the number of channels keeps expanding, which amplifies the complexities of multi-channel banking. This reality necessitates investments into modern and scalable core banking systems in order to handle the ever-growing volume and myriad of product-channel transactions and payments.
- Increased need to replace older legacy solutions. As banks look to improve internal IT efficiency, they are turning to innovative technologies to facilitate core banking systems transformation as a means to gain

more internal cost savings. The introduction of new technologies provides banks with real-time systems, flexible business process setup, simplified API Integration, and reduced platform costs through hosted and cloud-based solutions.

External Modernization Challenges

Core banking transformation is also driven by the need to respond to external business imperatives, such as regulations and competition.

- Evolving regulatory burden consumes a large portion of IT budgets. New regulations and increased regulatory oversight negatively impact banks' IT spending and impede progress toward initiatives. Escalating focus and spending on compliance has crippled many institutions, especially large ones, monopolizing such a large share of their IT budgets that it forces them to prioritize or defer important initiatives, and in some cases prevents them from moving forward altogether.
- Rising customer demands and expectations regarding user experience. Traditionally, banking has been product-centric, but today banks must put the customer first, not the products. Customer-centric banking focuses on personalized customer service, requires a single view of the entire customer relationship, and establishes a relationship-based pricing model that is optimized for a market of one.
- Unconventional competition is making its mark. Banks are facing increasing competitive pressure from new entrants such as online and direct banks running on new core banking platforms. Likewise, nontraditional players are entering the banking space. Pressures are placed on banks to quickly roll out new products and services and look for ways to differentiate. This essentially forces traditional banks running legacy core banking applications to decide in favor of migrating their core banking systems to new platforms to ensure that they can compete and win.
- Fintech companies increasingly fill gaps in bank product portfolios. Banks are looking to broaden their product portfolios and potential partnerships with fintech firms. However, at the same time, some fintech disruptors are marketing their solutions directly to the banks' customers – entering the market to meet consumer and business banking needs in new and unique ways. Collectively, these factors pressure banks to modernize and transform their business models.

Banking Modernization Trends

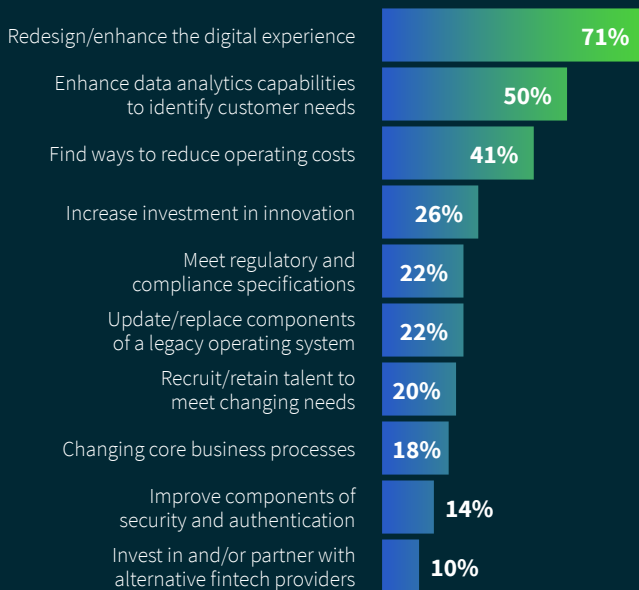
While tactics may differ, banks of every geography and asset size are modernizing, and they are experiencing gains in customer satisfaction from their modernization initiatives. These transformations continue to be fueled by NextGen Componentization and Digital Enablement.

How banks are prioritizing in response to key challenges

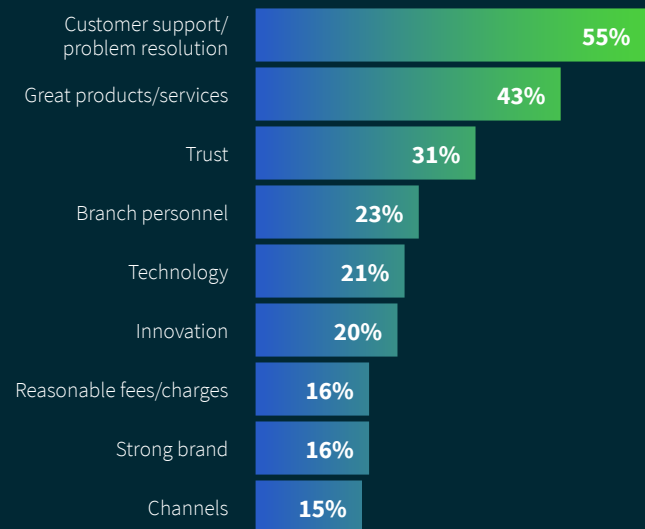
Client experience, digital, identifying client needs, reducing costs, regulatory requirements, innovation, legacy systems.

Client satisfaction = Deepening relationships, solving clients' problems well and offering value.

Top financial institution priorities for 2017

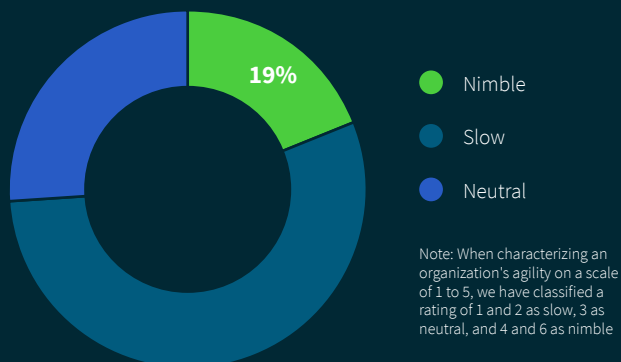


Customer experience has a sales and cost driven focus

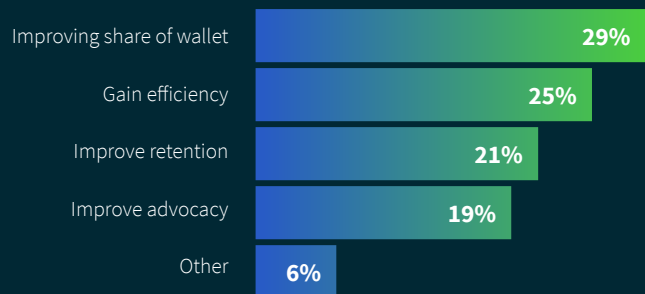


Lack of agility.

19% of FSI firms surveyed are nimble



Customer support and products seen as top drivers of satisfaction



"Banking's biggest risk is slow time to market. Through 2019, \$1 invested in innovation requires \$7 more for core execution."

- Don Free, Gartner

Banking key trends

Banking componentization

- Core banking platforms are redefined with the decomposition of monolithic core banking solutions into smaller components with discrete functionality
- Components offer open banking via a modern and flexible platform, open and extensible integration framework, and open APIs

Digital-only banks challenge retail banks at their own game

- The limitations of traditional banks to meet the customers' digital demands has opened the door to a new breed of digital-only banks

Banks strive for differentiated and timely product introductions

- Relationship and analytics-based pricing
- Flexible product and pricing creation and controls

Customer-centricity and implementing new models

- The new business model of banking puts customers front and center
- Business and operating models of banks are expected to undergo a significant change as the industry promotes API-backed openness

Banks make significant investment in advanced digital capabilities – Digital 2.0 Transformation

- Accelerated efforts of banks to invest in Digital Transformation to compete on customer experience
- Banks are investing to digitally transform as competitive pressures and customer expectations rise

Increased collaboration between banks and fintechs, through new and different models

- Increasingly, banks are collaborating with fintechs to leverage their technological expertise and create cost-effective offerings

Banks deploy AI and RPA to increase productivity and efficiency

- Increased investment in the development and acquisition of Artificial Intelligence (AI) and Machine Learning (ML) technologies, as well as access to customer and transactional data
- Banks are automating processes, and using AI and Robotic Process Automation (RPA) to increase operational efficiencies

Conversational banking

- Elevated interest in Conversational Platforms as the new interface, both device-based (such as Amazon Alexa, Apple Siri, and Google Assistant) and Chatbot via SMS and online

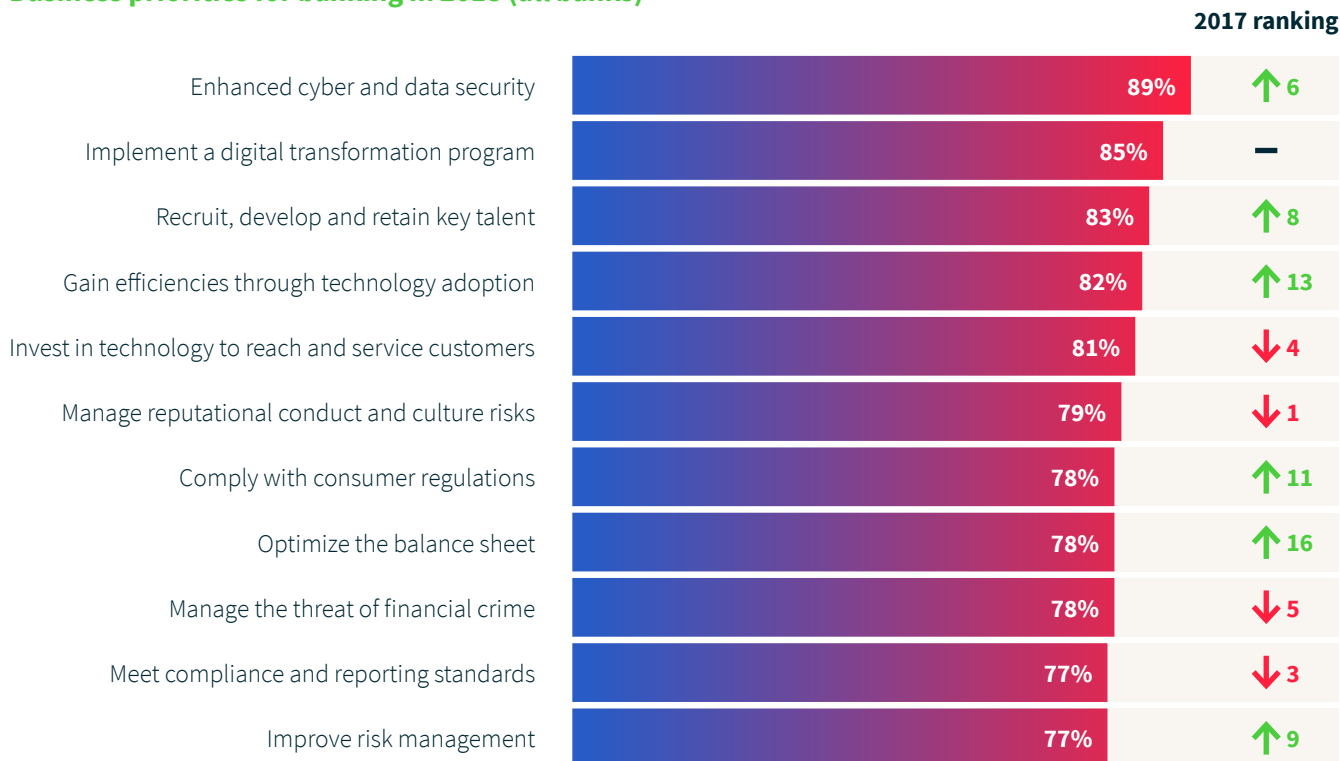
Banks using analytics to transform end-to-end customer journeys

- Analytics will play a key role as banks strive to transform isolated customer interactions into an end-to-end seamless customer journey

Banks leverage the cloud to streamline processes as security improves

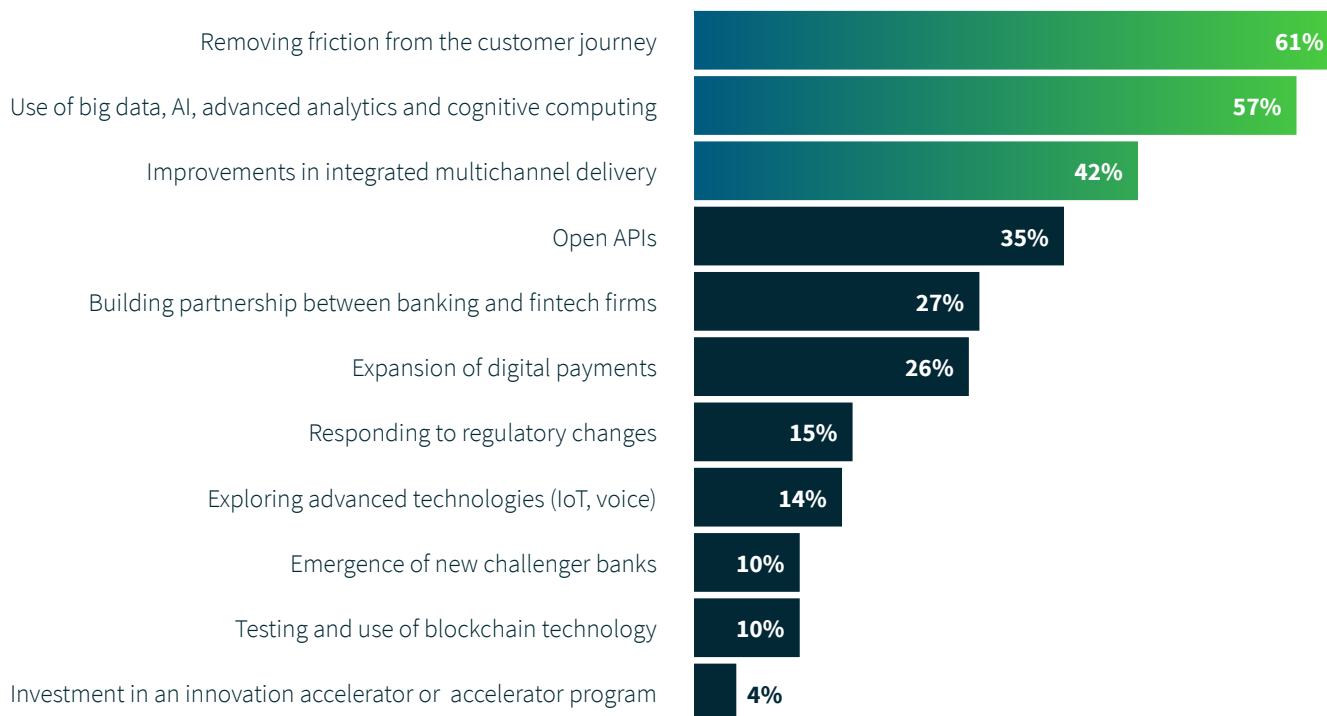
- Cloud adoption is increasing with an expectation that more enterprisewide applications will move to cloud deployments in a secure manner
- Banks are leveraging the cloud to streamline processes, and usage is increasing due to growing confidence in cloud security

Business priorities for banking in 2018 (all banks)



Source: Ernst & Young © January 2018 The Financial Brand

Three most important trends for retail banking industry in 2018



Source: DBR Research © December 2017 Digital Banking Report

Get Core Banking Ready for the Future Now!

IT plays a significant and foundational role in whether banks will succeed. Adopting multi-speed IT – while incrementally and strategically hollowing out the core on the way to true digital banking enablement. Modernizing in this manner will help banks grow cost-to-income ratio and increase return on equity; banks can continue sharpening their focus both on delivering a relevant customer experience and managing continuous business innovation which powers that experience.

Two big existential questions will play out for banks in 2018 and beyond. First, will tech firms be able to manage the burden as they increasingly undergo direct regulatory scrutiny? While there are many reasons that banks are traditionally slow to evolve, regulation is certainly one of the top two factors (legacy technology being the other). Second, will banks be able to overcome their technology hurdles and more nimbly leverage two of their greatest assets – customer data and customer trust? Not all banks will be able to do so, but those that do will not only survive, but truly thrive.

Financial institutions need to change, and the time is now. This requires fundamental shifts to mindsets, business models and operating models. Banks must be equipped and prepared to fight for the modern consumer — consumers who, because of technology, have a whole new set of expectations. Today's modern consumer has little regard for traditional branch banks, they want to quickly and easily complete transactions whenever and wherever they want, typically on their mobile devices and always in real time and on-demand – any day, any time, anywhere.

- **Essential improvements to the customer experience:** User interface development has moved beyond designing just for clicks, taps and screens; it now includes voice-enabled interactions and AI-powered digital assistants. In this context, banks will continue to focus on improving the customer journey and offering enhanced digital interactions.

- **Strong agile development adoption and continued increase in API consumption:** Software companies such as in Silicon Valley have been utilizing an agile development methodology rather than the more traditional waterfall approach for quite some time, developing products with incremental releases and focusing on a satisfying customer experience. To date the agile methodology has not been in wide use with financial institutions, but this is changing rapidly. The increased adoption of agile development practices will accelerate to better meet customer needs and decrease time to market. In addition, financial institutions will continue to increase API usage and consumption with their providers, partners and customers.

As more banks embark on the journey to transform, large financial institutions especially may launch digital-only subsidiary banks, partner with or acquire fintech companies, and hire strong technology talent outside of the banking industry to gain technology leadership. Forward-thinking financial institutions are recruiting talent from the digital giants to help accelerate this process, though merging these two disparate cultures is not always easy



Bank Modernization Growth Opportunities

Banks, regardless of geography or asset size, are modernizing, but their tactics differ.

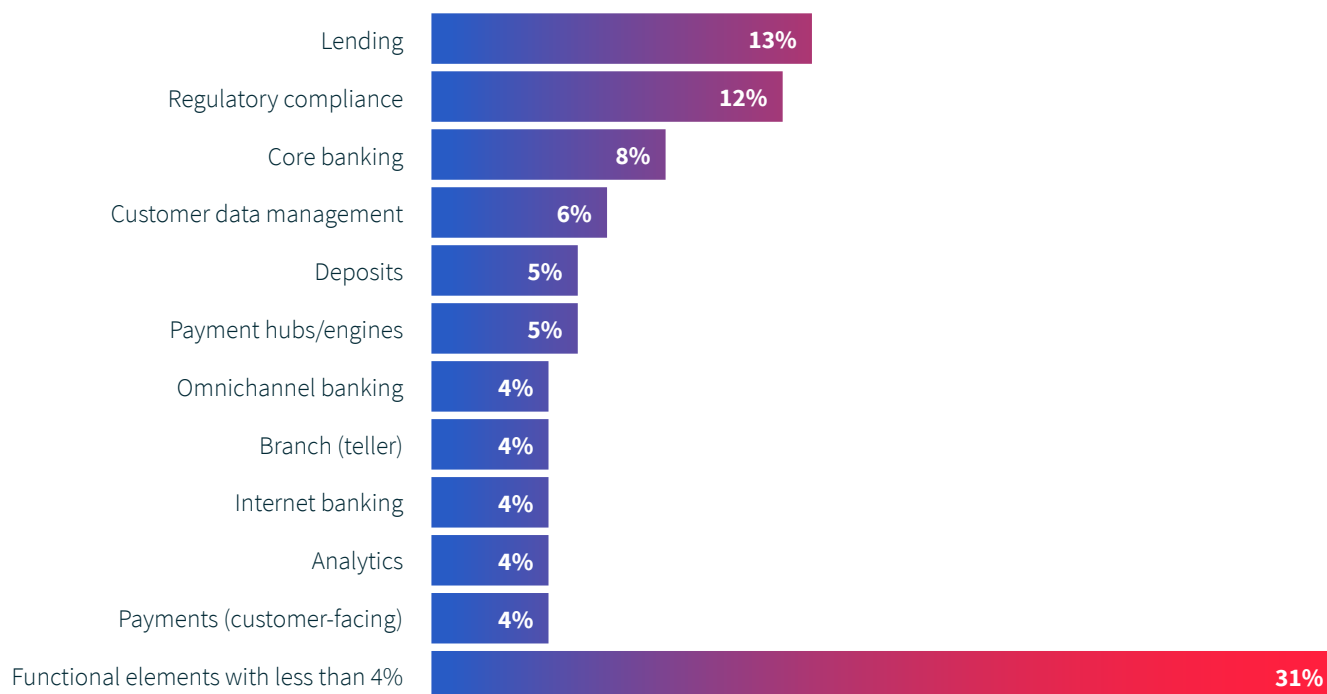
Tier 1 banks are investing in core components to transform and modernize legacy applications to deliver API/Open Banking payments and digital services. Regulations/Risk/Compliance remain a drain on resources.

- Core transformation, process reengineering, data analytics and financial applications are driving 26 percent growth in spending, leading to a \$9.2 billion spend in 2020.
- IDC estimates that banks spent nearly \$17 billion in big data and business analytics solutions in 2016. That number is expected to grow (13.3 percent CAGR through 2020).
- Big banks, such as HSBC, Deutsche Bank and JPMorgan, each spend well over \$1 billion a year on regulatory compliance and controls. BBVA recently estimated that, on average, financial institutions have 10 percent to 15 percent of their staff dedicated to this area.

Tier 2 banks are focusing on digital payments technology, advanced analytics, open banking APIs, and navigating compliance and regulations to compete with larger banks.

- Continuing to invest in digital (7 percent CAGR 2016 – 2021) to provide customers access to banking and payments solutions digitally across any access channel.
- Growing demand for analytics tools and data (13.3 percent CAGR through 2020) to anticipate and respond to behaviors and needs of their consumers.

Key areas of targeted banking growth



Base: 6,999 functional deal elements. Source: Forrester's Global Banking Platform Deals Durvey 2018

Banks must be able to innovate fast and efficiently to deliver what customers want.

Given an environment where consumers increasingly expect experiences that are convenient, engaging, value-adding and quick, a bank's customer experience must be unique and compelling. This requires a core banking platform with the agility, speed and cost structure to enable winning digital business models and deliver a frictionless customer experience.

For example, digital-ready core banking can enable a bank to:

- Originate personalized products and services— for example, a rate based on a customer's total banking relationship and characteristics.
- Deploy rich omnichannel touchpoints in real time, based on embedded analytics providing the most relevance to customers.
- Satisfy customers' banking needs with a blended workforce comprising of people and AI. Seventy-one percent of customers are willing to receive automated support.
- Connect with broader digital ecosystems to offer relevant and adaptable services that can extend far beyond banking (areas as diverse as smart cities, home/building automation, travel, health care, connected cars, wearable devices and more).

Banks recognize the urgency and necessity of transformation.

Most banks recognize the severity of the situation: *It is time to renew and gain control over the entire core to quickly digitalize the business and focus on the modern customer.* This is the pathway to navigate a successful future. Choosing to move forward rather than "staying the course" has profound implications for the bank's market share, the relevance of the bank's brand and overall sustained success.

Key business challenges faced by banks

 <p>No single repository for customer and product information across the enterprise</p>	<ul style="list-style-type: none"> • Customer and/or product information coded in multiple systems • Unable to manage all product variations on existing core • Product catalog embedded in individual systems • Dependence on core system experts for configuration and coding • Regulatory compliance and fair disclosure constraints - need to expose uniform catalog of products/offers to channels (CMA9 initiative)
 <p>Inconsistent product information presented across channels</p>	<ul style="list-style-type: none"> • Negative impact to the customer experience • No single "source of truth" for product and pricing information • Disconnect between channels and product systems results in higher operational costs • Customer and product data that is siloed within lines of business prevents the institution from having a holistic view of the entire customer relationship
 <p>Creating product variants, bundles, packages and proposals requires major changes to underlying systems</p>	<ul style="list-style-type: none"> • Need to create and measure new revenue streams that existing cores do not cover • Product information spread over multiple applications • No single "source of truth" for product and pricing information • Multiple cores change separately • Dependence on core system experts for configuration and coding • Negative impact on speed to market launch
 <p>Products and bundles that do not fully address customers requirements negatively impact sales and onboarding</p>	<ul style="list-style-type: none"> • Banking is not personalized • Disappointing customer experience • Sluggish onboarding • Lost incremental revenues • Missed opportunities • Customer loyalty jeopardized

Targeted Modernization Approach

Unleash core banking speed, flexibility and adaptability.

Core banking modernization is a complex topic that is intermixed with many aspects of how banks are positioning to modernize their core banking architecture. A flexible and digital-enabled core system built on modern component technology can mean the difference between future success and potential failure for many banks in today's market.

Any path forward for banks begins with re-structuring core IT systems to create a more agile and innovative way to grow and compete. Capitalize on core banking IT architecture that can respond swiftly, efficiently and effectively to market fluctuations and other dynamics.

Banks can then address omnichannel, APIs, micro-services and all other aspects of their IT architecture by integrating additional best-of-breed technology applications from trusted third-party providers into the core. Now able to upgrade single pieces without uprooting the whole, banks can create an open core ecosystem and move more rapidly – adapting, going to market, and responding to consumer demand quickly and with acuity.

Build an Integrated Road Map for Incremental Business Capability and Digital Transformation

FIS works together with our banking clients to jointly build an integrated tailored road map that provides incremental business capability, targeted on achieving the bank's business priorities, with the tangible benefit of refreshing the underlying technical architecture. While most banks typically have a similar starting point of "opening the integration framework" of their core, each institution is unique, so a single modernization road map doesn't apply.

Each financial institution will have individual strategies, objectives and unique perspectives regarding their banking modernization approach and priorities. Likewise, business priorities and investment options will drive their need for, and timing of, modernization. In the case of FIS, local account teams work in partnership with each client to create a customized modernization playbook to personalize and showcase our collective ability to enable the bank's modernization initiatives. Each core modernization story is different, and client-specific tailoring allows clients to protect their investments while being efficient on timeline and costs. The playbooks are built with the current and future architecture landscape of the single specific client in mind.

Banking as a Service (BaaS) for a Differentiated Service Offering

Many banks accelerate their progressive journey to hollowing out the core by establishing a "digital attacker" subbrand. With this strategy, banks look to differentiate themselves in the market by being a first mover in a specific digital capability. Banks can keep the subbrand separate from their existing core system and run it on a next generation core. This approach progressively moves capabilities to the modern core over time, with limited disruption to the bank. In many cases the subbrand is created via a BaaS model where the application

and operation support are outsourced, allowing the bank to focus on customers rather than the underlying technology buildout.

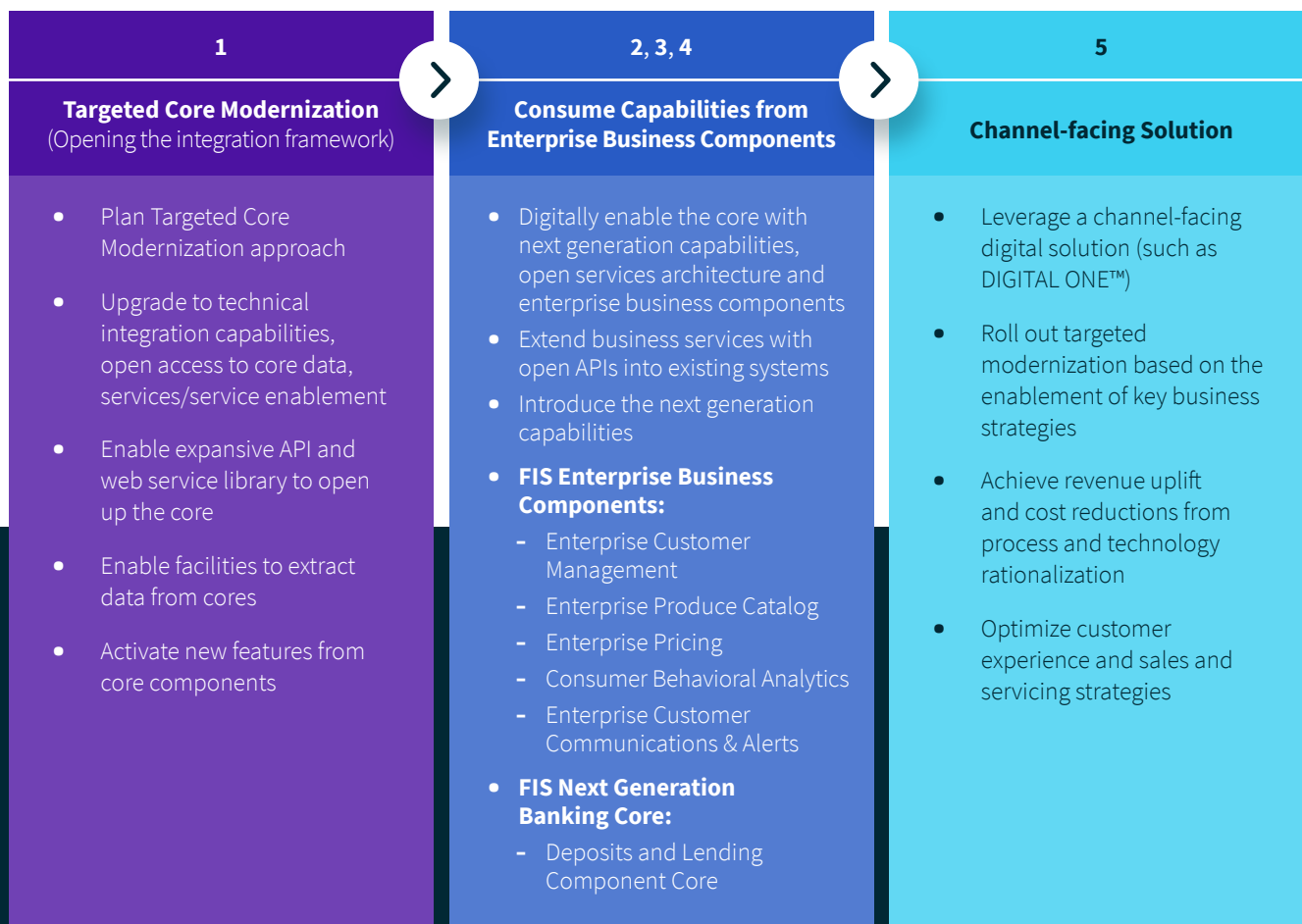
Banks can conduct these actions in a staged manner rather than all at once. This allows the institutions to take advantage of multi-speed IT to move forward with the targeted modernization progression while also effectively managing the normal day-to-day banking business operations.

Componentization Enables Targeted Core Modernization

A trend toward componentization has been growing in prevalence in recent years. Full "big bang" or "rip and replace" deployments are too risky for most banks, especially the largest ones, and this risk prevented many from moving forward with needed core system replacements. Componentized solutions, however, enable institutions to take a less risky, more phased approach to replacement

by first replacing systems/functionality supporting areas of the bank with the greatest levels of urgency. Through a progressive implementation, financial institutions can roll out their new core solutions in logical phases: Some choose a single branch, while others roll out in phases or based on vertical domains or departments.

A common five-step approach for targeted business enablement:



The first sequence of modernization (1) focuses on enhancing the core's integration capabilities.

This opens access to the bank's first party data residing in different SORs and effectively extends the core's capabilities by digital enablement.

The next sequence of steps (2, 3, 4) is based on the business value and priorities the bank wants to achieve.

A foundational suite of selected enterprise business components are assembled and sequenced to solve for the business need(s). A rich set of APIs are natively available for each enterprise business component, providing pre-integration in backend SORs, and an API platform provides exposure for channel integrations to enhance sales and servicing capabilities.

Enterprise Business Components that Accelerate the Introduction of Business Capabilities

- **Enterprise Customer Management** component provides a holistic, accurate view of the entire customer relationship to improve sales and servicing. It provides a single “version of truth” of key quality information about the customer spanning all LOBs (e.g., Deposits, Loans, Cards, and Wealth) and across international geographies. This 360-degree view of the customer allows the bank to operationalize this relationship insight in real time while interacting with customer across any of their preferred channels. The enterprise solution manages demographic contact details, preferences and permission management, extended relationships, and affiliated customer groups. Enterprise Customer also offers extensible data attributes that provides banks with a flexible data model.
- The combination of **Enterprise Product Catalog & Optimized Relationship Pricing** components improves time to market for new product introductions. These components allow for cross-LOB bundling of products into packages, and enables the bank to consistently provide the right product(s) and relationship-based pricing at the right time for the customer. Product lifecycle management capabilities in the Product Catalog provide necessary compliance reporting and rate and fee transparency to ensure responsible marketing practices.
- The **Customer Behavioral Active Analytics** component predictively provides the relevant targeted product offers based on the consumer’s behavior, key lifestyle indicators and important life events. “Always on” messaging and campaigns identify and predict customer needs, and provide personalized offer delivery across all channels and the open internet.

FIS enterprise business components leverage state-of-the-art technologies that support cloud implementations and Open API integration capabilities. All enterprise business components are API-enabled with open access to FIS solution/service capabilities via Code Connect, a managed and monetized API gateway complete with Developer portal. Code Connect offers a great opportunity for banking clients to accelerate the introduction of channel and core-facing RESTful services.

NextGen Component-based Banking Core

The next logical sequence of modernization (**4**) is to introduce the next generation Component Core.

At FIS, this is founded on a Common Arrangement Processing Engine (CAPE) in conjunction with vertical layered LOB implementations of Banking Product Processors (e.g., Deposits, Lending solutions), simplifying development, deployment, and testing. Banks benefit by being able to “plug and play” pre-integrated components to modernize and become digitally enabled according to their own schedules and business requirements.

With a flexible and extensible architecture, the next generation core supports multi-tenancy, multi-currency, multi-platform and multi-time zones. Banks can configure the next generation core with differentiating products while offering real-time transactional run-time capabilities; integration with additional components can be leveraged across solutions (for example, Enterprise Customer Management, Enterprise Product Catalog & Optimized Relationship Pricing, Customer Behavioral Analytics and more).

Channel Integration

The NextGen Core channel integration (**5**) can be with existing bank channels or via DIGITAL ONE.

The DIGITAL ONE platform allows a bank to enable a particular channel and leverage an advanced channel architecture. This platform delivers the convergence of digital banking channels onto a single platform with common channel digital APIs that promotes a new model of customer engagement. By providing one platform across assisted and unassisted channels, DIGITAL ONE provides a unified experience across all customer touchpoints.

FIS has real-world examples of client banks that have implemented a single component, or a combination of a channel solution in conjunction with an enterprise component such as Enterprise Customer or Enterprise Product & Pricing, and opening the core integration. The slim but full stack approach is often a pragmatic start that enables the required business use cases that achieve the desired business goal(s).

Depending on the bank’s priorities, the five-step modernization approach described above is tailored and sequenced according to the bank’s specific revenue growth and cost-efficiency prioritized goals.

The Path Forward: Digitally Enabling the Core – Open Enterprise Integration to Core Data



Each bank will improve and innovate its banking capabilities with a sequence and timeframe aligned to its own business and technology drivers. However, opening the integration framework and access to the core's first party data is a critical first step to modernization. Each integration approach will be bank-specific and based on the core's underlying technology. FIS has made extensive investments to facilitate this by opening access to FIS solution/service capabilities with a managed and monetized API gateway (FIS Code Connect).

This plug-and-play platform allows multiple point solutions to connect and interact with each other, creating and exchanging value to help banks define what "core" means to them. Effectively, FIS is redefining the core and supporting enterprise business components that make up Banking as a Platform. Code Connect opens up the complete ecosystem of FIS solution capabilities.

As previously stated, the first step to digitally enabling the core is opening up access to the bank's first party data. FIS has founded its componentization strategy around three key data domains: customer, product and account. These three domains exist in all FIS and non-FIS core banking solutions.

Introducing targeted integration capabilities such as web services and an API platform allows the bank to externalize specific business functional capabilities outside the core and into enterprise components. A certain level of core integration currency is required to benefit from these integration capabilities, but the bank's investment is protected with the ability to quickly leverage key foundational enterprise business components and pre-integration into the next generation core banking platform.

The addition of REST and SOAP-based services exposes functionality without sacrificing the security of the core. These services also ease the burden of real-time integration with core banking applications, leading to a shorter time-to-market. Institutions have the ability to not only create their own web services, but also to customize and tailor the extensive inventory of web services that FIS created.

One of the most significant aspects of enabling the enterprise components was developing a single point of integration. For the past few years, FIS has worked to move business logic and functionality into an enterprise business layer to ensure data accessibility and to ensure standard formats across our banking cores in order to eliminate brittleness of point-to-point solutions. This provides a low-cost architectural data access layer which reduces complexity and supports new data

structures and data definitions as they're added. Additionally, the architectural data access layer provides access to data for the configurable reporting and analytics environment that builds on top of this application data layer. Having access to customer, product and account data enables users who may be less familiar with data science to build and deliver meaningful reports quickly, yielding improved business insights and reduced operational costs.

Extended enterprise business components leverage a combination of externalizing tactical data (such as account transaction data) and enough customer and product-level data to allow consumption of this data into the enterprise business components. Components consume the data from the core, allowing the bank to externalize the business logic from the core. The business logic and complexity now resides in the enterprise component that spans multiple LOB core processing engines (e.g., Deposits, Lending, and Mortgage platforms). The benefits of an agile platform that is founded on configuration-based business rules and policies is realized by speed to market for new product introduction, enriched customer experience during sales and servicing, enhanced customer interactions across any channel, and the real-time capability to determine customer insights and opportunities during both digital and person-to-person conversations.

With today's focus on the customer centricity, FIS offers pre-integrated component bundles that consist of the following next generation components:

- Enterprise Customer Management
- Enterprise Product Catalog & Optimized Relationship Pricing
- Customer Behavioral Analytics

The customer-centric suite of components allows banks to optimally understand their customers via relationship-centric banking and behavioral life event analytics, utilizing this information to establish stronger relationships, optimized pricing, and customized products and services across all customer channels. By being able to recognize life events and consumer behavior, the bank can present targeted, relevant, relationship-based offers at any point of interaction that would be most compelling. These next generation banking capabilities are fully aligned with the mission-critical business objectives of achieving increased customer satisfaction as well as bank-defined revenue and profitability goals.

Core Banking Modernization with FIS

The result of all these market changes is a highly competitive vendor and fintech landscape that drive core banking solution renewal – a market that emphasizes business agility as an overarching priority, but also closely scrutinizes the capacity of vendors to deliver over the long term. FIS is strategically positioned to deliver modern componentized core banking solutions, tailored to our clients around the globe, with a proven capability to provide industrialized and creditable transformation program management and the necessary implementation resources.

Our next generation componentized solution represents a significant evolution in the highly successful FIS core banking systems. Banks can incrementally adopt componentized modules and latest fintech capabilities to expand real-time processing enablement and the promise of compelling banking transformation opportunities.

The capability of easy-to-configure enterprise business components and a next generation component core banking solution provides increased simplicity in terms of delivering business agility. In certain markets, standard support of regional regulation and local requirements is becoming a key capability for global retail core banking.

FIS' strong financial viability – a decision point that was largely overlooked in prior core banking renewal efforts – now bears significant weight in the decision matrix, as well as in the product viability assessment that determines whether a product will survive an acquisition.

The established FIS next generation strategy continues to be **Invest, Evolve, Transform, Componentize and Acquire** solutions and product portfolio with the aim to grow an ever-stronger market presence. We work for our clients' success, ready to **lead your bank to the pathway of the future.**



Glossary of Terms

Analytics	Business Intelligence (BI) data output including reports, dashboards, graphics, metrics, etc.
API	Application program interface.
APR	Annual percentage rate.
Artificial Intelligence (AI)	A field of computer science that emerged in the 1950s and continues to evolve today. The goal is to emulate human thinking. Early approaches produced very modest outcomes. However, recent improvements in hardware and statistical algorithms have made AI a sophisticated technology.
BaaS	Banking as a Service.
Business Intelligence (BI)	Refers to the technologies, applications, and methodologies that are utilized to collect, integrate, analyze, and present business information for the purpose of supporting the business and making better business decisions.
CAGR	Compound annual growth rate.
CAPE	Common Arrangement Processing Engine (foundation component of the FIS next generation core processing solution).
Chatbot	Chatbots support the interaction of a consumer (or other user) with an institution using a traditional chat session. With the incorporation of natural language and AI in this technology, along with proper training and orientation, it is possible for many chat sessions to be managed by an AI product.
CIO	Chief Information Officer.
CMA	Competition and Markets Authority. The CMA is a non-ministerial department in the UK that seeks to promote competition for the benefit of consumers.
CRM	Customer Relationship Management.
DDA	Demand Deposit Account (checking account).
Disintermediation	Loss of access to customers who switch to nonbanking channels.
EFT	Electronic funds transfer.
EU	European Union.
GBS	FIS Global Banking Solutions.
GDPR	General Data Protection Regulation (data protection law framework applicable across the EU).
HTML	Hyper Text Markup Language.

IT	Information technology.
LOB	Line of business.
Machine learning (ML)	A method of data analysis that automates the building of analytical models. It is a branch of AI which is based on the premise that systems can learn from data, identify patterns, and make decisions with minimal human intervention.
REST	Representational State Transfer services.
Robotic Process Automation (RPA)	<p>The automated processing of typically labor-intensive processes. The idea is that RPA tasks can be completed faster, with fewer errors, and without human involvement. An example in the banking industry is the process flow of loan request, approval, and onboarding.</p> <p>RPA is similar in nature to an earlier technology called <i>process choreography</i>, and it is different from <i>workflow</i> in that it attempts to avoid human intervention. While primarily rules-based, AI enters into RPA as a way to support better decision making and alternative processing.</p>
POS	Point of sale.
PSD2	Payment Services Directive (regulation in the EU).
SMS	Short Message Service (text messaging).
SOR	System of Record.

About FIS

FIS is a leading provider of technology solutions for merchants, banks and capital markets firms globally. Our 55,000 people 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 learn more, email getinfo@fisglobal.com or visit www.fisglobal.com.



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PAYS, BANKS AND INVESTS™**