CELENT

RETAIL BANKING CORE BANKING SYSTEMS: NORTH AMERICAN MID-LARGE BANK EDITION

2023 xCelent Awards, Powered by VendorMatch

Craig Focardi and Daniel Mayo

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EXECUTIVE SUMMARY

A traditionally slow-moving and staid market, core banking platforms in the last five to ten years are emerging as one of the key components of long-term transformation initiatives.

It used to be that one could revisit the market for core platforms every few years and find that not much had changed. Banks had little appetite to substantially evolve the capabilities of their core, and vendors were more than happy (and able) to provide solutions which worked around the constraints of heritage systems. Financial institutions, especially those in the largest asset-size tiers, were able to kick the can down the road.

While technology adaptations have allowed banks to stave off full-blown core replacement, some institutions are reaching the breaking point. The rise in digital engagement and other emerging ways of banking (e.g., open finance) continue to stress the ability of legacy platforms to deliver, while the cost burden of maintaining legacy cores grows unabated. For some institutions, the time to transform is now.

Transformation continues to take many new forms. Ripping out and replacing old cores is largely a thing of the past. Vendors are pushing for either progressive renovation or vertical implementations, where a bank only transforms a specific vertical technology stack. The cloud, componentization, and containerization are breathing new life into progressive renovation, where the traditional cost concerns of running multiple systems in parallel move to usage-based pricing and more favorable long-term economics.

With banking cores reaching a tipping point, vendors have been increasing the speed at which they enhance their solutions.

This report provides in-depth overviews of the main core platforms in the market today, helping financial institutions better understand the market for incumbent core platforms. Within each profile, Celent provides insight into functionality and features that are strong or present opportunities for improvement relative to the market. The report focuses on core banking systems for mid-large banks operating in North America that provide full banking platforms and have a minimum number of live clients in this region in the tier four or above banking segments (i.e., above $20bn assets). These systems typically provide broad banking functionality to address the complex and diverse needs of major institutions operating in this region and size bracket.

Celent recently published the report Continuous Digital Transformation in the Cloud: Next Generation Core Platforms that Will Future-Proof Banking, which examines the next-generation cloud-native providers, as well as Retail Banking Core Banking Systems: International Edition, which covers platforms that target

banks in other regions. Note that while some vendors and platforms are present across these other reports, vendor evaluation for this report is weighted specifically to presence in, requirements of, and client feedback from the North America mid-to-large banking market.

Figure 1 shows the core banking platform vendors included in this report. This includes the main US core vendors for mid-large US banks as well as international vendors that have gained traction in the mid-to-large banking segment in recent years. Note that some vendors offer multiple platforms; these have been evaluated individually.

Figure 1: Core Banking Platform Vendors in this Report

Source: Celent

Celent also set out to award vendor platforms in this report based on its proprietary ABC scoring methodology. It includes (**A**)dvanced architecture, (**B**)readth of functionality, and (**C**)ustomer base and support. See the Methodology and ABC Analysis section for details. FIS solutions won XCelent awards for each of the ABC dimensions as shown below in Figure 2, being joint winners for Advanced Technology and Breadth of Functionality.

Figure 2: XCELENT 2023 Winners for North American Mid-Large Retail Core Banking Systems: FIS Awards

Source: Celent

Contrary to what some may think, there is no "best" core banking platform. Each has strengths and weaknesses, and decisions about which platform to deploy should be made based on geographic market, institution size, resource availability, current technology environment, internal culture and capabilities, and existing core vendor products. The ABC methodology provides a broad

market assessment based on Celent's market-wide criteria. Scores are often very close, and each platform in this analysis was deemed a competent offering. Each bank will need to decide whether a platform is right for its needs, and Celent's advisory and consulting work can provide assistance in this area.

OVERVIEW OF THE NORTH AMERICAN BANKING MARKET

The unique structure of the US banking sector has created an insular core banking systems market, but this has been opening to a broadening competitive landscape.

This report focuses on mid-large banks, which Celent defines as banks in Tiers 1 to 4 based on their institution's asset size (see figure 6), effectively including banks above $20bn in assets. These banks tend to operate at least regionally across the US and are the largest providers of corporate, commercial, and business banking. By comparison, small banks (Tiers 5 and 6) and credit unions tend to be present predominantly in the retail and small business markets (although community banks may also provide commercial banking capability).

Figure 6: Celent's Tiering Structure for US Banks

Celent Tier	Assets	Description	Illustrative Examples
Tier-1 "Global's"	>$500B	• Large-scale banks with nearly national geographic coverage and complete balance sheet and product capabilities • Seven (7) in the United States (12/31/22); national (digital), regional, state, and local presence in many markets • IT budgets $5 - $15 billion;	JPMorgan Chase & Co. Bank of America
Tier-2 "Super Regionals"	>$100-$500B	• The largest regional banks (aspiring to be national) with excellent regional coverage and strong market share in select markets • About 12 in the United States; state and local presence in 10-20 state markets; tend to dominate in their region • IT budgets in the hundreds of millions to low billions	KeyBank Fifth Third Bank
Tier-3 "Large Regionals"	<$50-99B	• Regional or local universal banks with strong market positions in the markets they operate • Former systemically important FI threshold; regulator, risk management, security, and capital requirements increase • IT budgets in the tens to low hundreds of millions	Webster Bank Comerica Bank
Tier-4 "Regionals"	$20-49B	• Need to grow organically and/or through acquisition to achieve financial and operational economies of scale • Begin shifting from line of business technology applications to enterprise-level applications • IT budgets in the low to mid-tens of millions	BOK FINANCIAL UMPQUA BANK
Tier-5 "Super-Community Bank"	$1-20B	• Second largest tier segment based on number of institutions • Also includes 270+ "large" credit unions • Heavier reliance on large core banking system providers • Regulatory, risk, capital, and IT requirements increase at $10 billion in total assets	ThirdFederal Bremer Bank First Midwest Bank
Tier-6 "Community Banks" and Credit Unions	<$1B	• Local financial institutions (banks, credit unions, and savings institutions) with nearly all customers located within the branch geographic footprint • Buy (not build) virtually all technology • Some technology vendors segment Tier-6 further at $100M-$1B and under $100MM	Bank Midwest First Commerce Bank
Specialty institutions		• Consumer lenders (2,866) • Agricultural (1,346) • Independent mortgage banks (401) • Other specialized (226) (including captive auto finance) • Credit card banks (12) • International (5)	PENNYMAC Ford

Source: Celent

While this tiering structure can be used across North America, the structure of the banking sectors is quite different between the US and Canada. Celent has tweaked the tiering approach for Canada to reflect its financial sector structure (see Figure 7), with this report focused on core banking systems for Tier 1–3 institutions. Both markets do have banking and credit union sectors, but the number of institutions and market concentration of the deposit base across institutions is notably different.

In Canada, while there are close to a hundred federally regulated bank and loan companies, the top six large domestic banks account for around 90% of total assets among Canada's federally regulated deposit-taking institution base. Complementing this, particularly in Quebec, there are also a sizeable number of credit unions / caisses populaires institutions (with around 220 operating outside of Quebec). However, while a few of the largest credit unions have reached asset bases over $10bn and the collective size of the Desjardin Group is en par with Tier 2 banks, the effective pool of mid-large deposit-taking institutions in Canada is relatively small (~20).

Figure 7: Celent's Tiering Structure for Canadian Financial Institutions

Celent Tier	Assets	Description	Illustrative examples
Tier-1 "Global's and Nationals"	>$500B	• Large scale banks with nearly national geographic coverage and complete balance sheet and product capabilities • Five tier one banks in the Canada (12/31/22); national (digital), regional, state, and local presence in many markets • IT budgets in $1bn - $5 billion;	CIBC, Scotiabank
Tier-2 "Super Regionals"	$50-499B	• Small segment in Canada with two banks (National Bank and HSBC Canada) and one Caisse Populaire Group (collectively) • IT budgets low hundreds of millions to $1bn	NATIONAL BANK OF CANADA, Desjardins
Tier-3 "Regionals and Top Credit Unions"	$10-49B	• Regional or local universal banks/ Credit Unions with strong market positions in the markets they operate • 7 banks and circa top 10 Credit Unions • IT budgets in the tens of millions to low hundreds of millions	ATB Financial, LAURENTIAN BANK FINANCIAL GROUP, Vancity
Tier-4 "Large Foreign Subsidiaries and Large Credit Unions"	$1-9B	• Includes large Credit Unions (circa from top 10 – 40) • Also includes most large foreign-owned subsidiary banks operating in Canada (outside of HSBC Canada) • Just under 50 institutions • IT budgets in the low millions to tens of millions	Cornerstone CREDIT UNION, SCU, citi
Tier-5 "Community Banks and Credit Unions"	$<1B	• Predominantly Credit Unions, although some small foreign subsidiary banks	KHALSA CREDIT UNION, Diamond North CREDIT UNION

Source: Celent

US Banking Institution Trends

While the US market is larger than Canada given the banking populations and GDP sizes, the number of deposit-taking institutions is a couple of orders of magnitudes higher, with close to 10,000 financial institutions. In terms of number of institutions, this is split approximately 50:50 between credit unions and banks / savings banks (with savings banks around 6% of total institutions).

Figure 8: Number of US Financial Institutions, 2007–2022
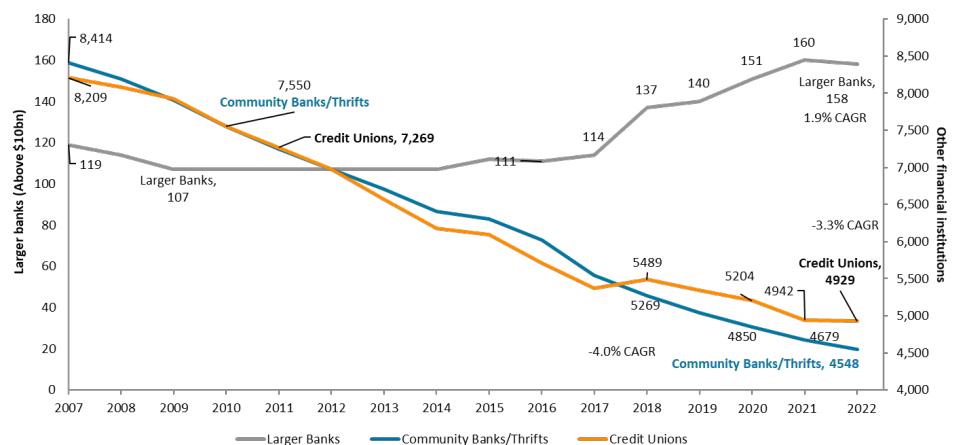
However, as shown in Figure 8, while the number of institutions is numerous, the number of financial institutions has decreased significantly over the last two decades, with a negative compound growth rate of 3.7% over 2007 to 2022, continuing a negative trend seen since the 1980s. This is driven by both a decline in the number of community banks, thrifts, and credit unions, albeit with a slightly stronger decline of community banks/thrifts (−4.0% versus −3.3% for credit unions). In contrast, the number of larger banks (above $10bn assets using FDIC definitions) has risen over the period, particularly since 2017. This has been driven chiefly by the growth of commercial banks, with the number of large savings institutions declining. The primary driver here is banks looking to expand through acquisition, with consolidation outstripping new entrant growth in most years.

While the number of larger banks is small relative to the overall number of institutions, because of their respective size these banks still represent a significant proportion of the banking market. The Tier 1 banks have around 35% of total domestic deposits, with Tier 2 having around 31%, and Tier 3 and 4 banks having around 18% collectively (FDIC data as of end 2022). Collectively, mid-large US banks have around 85% of overall domestic deposit base (including retail and corporate). The Tier 5 and 6 segments therefore represent a very long tail of institutions.

North American Core Banking Systems Vendor Landscape

From a global perspective, the core platform market in the US has traditionally been one of the slowest moving in recent decades, with many mid-large banks running decades-old systems that have had a lot of customization built around them. This has generally made it challenging for banks to upgrade and work with modern platform equivalents, even when running on (at least initially) vendor-built platforms. To understand why, it is worth reviewing a bit of the market dynamics of the previous decades.

The market for third party software in the US started earlier than in many countries, with mainframe-based banking platforms appearing in the early 1960s

and 1970s. Whereas other regions such as Western Europe relied on proprietary in-house core platforms, banks in the US were relying on the likes of HPE (Hogan), FIS (Systematics), IBM, and others. While these vendors were able to establish and maintain significant domain expertise, over time they reinforced some of the many challenges inherent to legacy systems in the region. The size of the US market, given the high number of institutions, did support entry of many new CBS entrants (particularly targeting lower tier institutions), but also entrenched early leaders who were able to scale to meet the significant servicing and support demands of the US market, with its complex regulatory demands. This created an environment where competitor CBS products were more often acquired than left to grow.

The number of firms offering core processing software and services in the United States has decreased substantially over the years, from more than 50 in the early 90s to a concentration to the "Big 3" today (FIS, Fiserv, and Jack Henry & Associates), with CSI (NuPoint) and Finastra (FusionPhoenix) also notable US domestic providers (i.e., with platforms developed for the US market), although these latter platforms are largely targeted towards the lower Tier 5 and 6 banking tiers.

Figure 9: Emergence to the "Top 3" US Core Banking System Incumbents
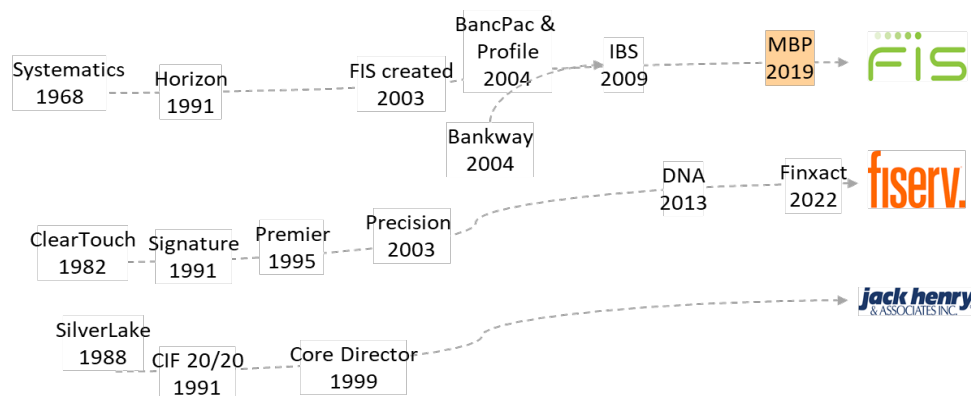
Source: Celent

Fiserv pioneered the growth-by-acquisition strategy in the 1980s and 1990s, acquiring more than 90 businesses (including multiple core banking system vendors), with DNA and more recently Finxact (a next-gen, cloud-native core provider) of note. FIS, a market consolidator that began life in the adjacent title insurance industry, led the way in bank system acquisitions during the 2000s—starting in 2003 with its acquisition of Alltel Information Services (provider of a large bank CBS called Systematics) and capped in 2009 by the acquisition of Metavante (the provider of the leading community bank CBS called IBS), which had also acquired Bankway from the Kirchmann Group). That said, note that its most recent platform (Modern Banking Platform, aka MBP) is unusual in this respect, being developed internally within FIS rather than acquired (seeFigure 8). While Jack Henry & Associates has also developed its core portfolio through acquisition, in contrast to Fiserv and FIS its acquisitions have largely been complementary rather than additive (i.e., systems outside the CBS) since 1999.

However, the competitive landscape has changed, particularly in the last five years. This is due to two trends. First, a few of the leading "international" core

banking platforms providers have started to get credible traction in the market. Ironically, while the US is one of the most attractive markets for CBS providers given the large number of institutions and size of the banking sector, it has proved inversely challenging for non-US heritage providers to get meaningful presence (particularly outside of foreign-owned bank institutions / subsidiaries). While partly driven by localization challenges of catering for US banking products and compliance at a state level, the network effect advantages of incumbents from delivery, service, and pricing perspectives have made it difficult for non-US providers to get a critical mass to be competitive and credible alternatives. Adding to this challenge is the cost and complexity of CBS replacement, which had led many FIs to hold on to their legacy systems.

While some international CBS providers have expanded client bases through acquisition (e.g., Temenos with Trinovus and Finastra (created through the merger of Misys and D&H)), a few providers have persevered, often building on relationships with parent companies of foreign-owned bank subsidiaries to now have obtained US client bases that allowed them to be considered as realistic alternatives to users of incumbent US provider core systems.

Secondly, the emergence of cloud-native, API-first, next-gen core banking vendors has provided an alternative option for larger banks—both for supporting greenfield direct banks and as a path to progressive modernization of the core platform and new development approaches. These vendors tend to provide narrower core systems functionality around the deposit product engine rather than broader banking platforms, so they are not yet quite complete replacement alternatives for the traditional CBS covered in this report. However, because some notable Tier 1 and 2 institutions are working with them, next-gen core banking vendors are a legitimate threat to incumbent CBS vendors and forced them to respond. For example, Fiserv acquired Finxact, and to a large degree the increasing success of both the next-gen and modern traditional international vendors was one of the catalysts for FIS to develop MBP. These next-gen vendors are covered in Celent's Continuous Digital Transformation in the Cloud: Next Generation Core Platforms that Will Future-Proof Banking.

METHODOLOGY AND ABC ANALYSIS

For this report, Celent approached the top modern traditional core vendors targeting North American institutions. Seven vendors submitted the necessary information, client references, and met inclusion criteria for in-depth review and evaluation of 10 core system platforms.

Inclusion Criteria and Methodology

This report includes both the main incumbent US-based core banking providers and "international" vendors that provide platforms designed to support multiple geographies. For vendors offering multiple platforms, evaluation has been made for individual CBS. However, for inclusion in this mid-large bank report for North America, Celent has deliberately restricted inclusion to platforms where vendors have a minimum of five live banking clients that are Tier 4 or above in size (vendors ideally have clients in multiple tiers).

It should be noted that the scalability potential of many platforms that will be covered in the forthcoming Celent ABC report on North American community banks (including core products from vendors such as CSI, Finastra, Fiserv, and Jack Henry) mean that some could certainly support mid-tier institutions; however, a strong focus on client feedback for evaluation in Celent's ABC methodology meant these platforms do not meet the inclusion criteria for this report. Note that in addition to the seven vendors who agreed to participate, we contacted others which for a variety of reasons chose not to take part in the process. This includes platforms such as Temenos Transact and DXC Hogan.

Inclusion in this report required full participation in the study. This included detailed responses to an in-depth RFI covering components and various subcomponents summarized in Table 1, as well as briefings, demonstrations, and validation and feedback with several client references (covering technology, integration, implementation, and post-implementation aspects).

Table 1: Components of Celent's Methodology

Criteria	Subcriteria
Advanced Technology	System architecture
	Responsiveness
	Deployment options
	Standards/emerging business models
	Data management
	Integration methods

	Scalability
Breadth of Functionality	Functional availability
	User interface
	Customization
	Global regulations
	Internationalization
	Product management
Customer Base/Depth of Service	Large clients
	Midsize clients
	Small clients
	New deals
	Total clients
	Reference comments
	# of professional services staff available
	Quality of training offered
	Implementation capabilities
	SLA feature availability
	Disaster recovery process

Source: Celent

Analysis is based on granular scoring across detail provided from the multiple information sources to compare vendors, using predominantly objective evaluation across comparable areas and applying pre-defined assessment frameworks (where this made sense). This was complemented by independent appraisal by Celent analysts (where appropriate) and included vendor client (bank) feedback both to validate vendor-provided information and as a significant direct input into the final scores. Overall scoring is based on Celent's weighting of the importance of each scoring criterion. Note that weighting, particularly around functionality and client references but also technology requirements, was specific to North American mid-large banks, and thus evaluation and positioning of vendors also covered in other ABC reports (such as Retail Banking Core Banking Systems: International Edition) may be different.

Vendor Summary

Evaluation was conducted on the following vendors and platforms (Figure 10). This covered seven vendors, across ten different platforms.

Figure 10: North American Core Banking System Vendors in this Report

Company	HQ	Platform	NA mid-large clients
FIS	Jacksonville, FL	IBS	20-50
	Jacksonville, FL	Modern Banking Platform	10-20
	Jacksonville, FL	Profile	10-20
	Jacksonville, FL	Systematics	20-50
Fiserv	Milwaukee, WI	Signature	10-20
Infosys	Bangalore, India	Finacle Core Banking	5-10
Intellect Design Arena	Chennai, India	Intellect Digital Core	5-10
Jack Henry Associates	San Diego, CA	Silverlake	5-10
Oracle	Redwood City, CA	Flexcube	10-20
TCS	Mumbai, India	TCS BaNCS	5-10

Source: Vendor RFIs, Celent analysis

ABC Vendor View and X CELENT Awards

This resulted in a score for each vendor across the three main criteria shown in Table 1, with final positioning shown in Figure 11.

Figure 11: ABC Analysis – Retail Banking CBSs: North American Mid-Large Banks
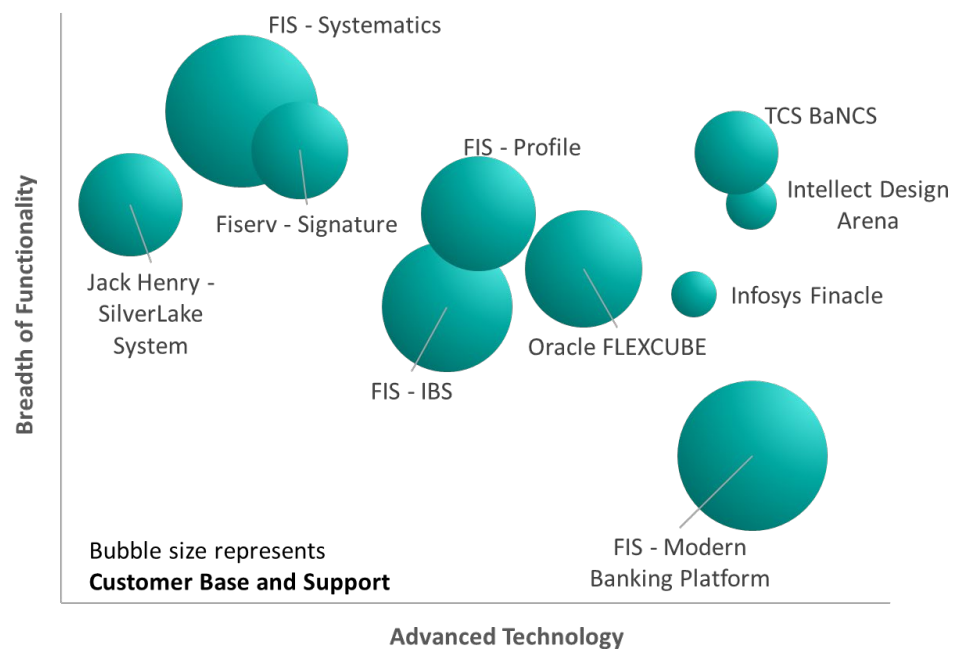
Source: Celent

Interestingly and reflecting the evolution of the core banking marketplace described in previous chapter, there is no one clear overall platform based on aggregate performance across all three axes. Based on total evaluation across the metrics, all of TCS Bancs, FIS Systematics, and FIS Modern Banking Platform could be considered leading platforms, with Oracle FLEXCUBE and FIS Profile also very strongly positioned based on overall scores totals across the three dimensions.

FIS won XCelent awards for each of the ABC dimensions shown below.

Figure 12:X CELENT 2023 Winners for North American Mid-Large Retail Core Banking Systems: FIS Awards

For the first time in a Celent CBS vendor report, the XCelent award for Customer Base and Support has been given to a company rather to a specific platform, based on the combined evaluation of multiple CBSs evaluated in this report. The winner is FIS. In terms of both client base and client reference feedback, FIS was the strongest performer across all four FIS platforms evaluated, suggesting its depth of service and support, in particular, is related to its overall company capability rather than being platform-specific. FIS was the sole winner for this award, and joint winners for Advanced Technology for its Modern Banking Platform, along with Intellect, and for Breadth of Functionality for Systematics, along with TCS BaNCS.

Celent Technical Capability Matrix

New to Celent's solution reports is the Technical Capability Matrix. We've placed each solution into one of five categories based on the sophistication and breadth of its technology and functionality (i.e., plotting the A and B dimensions). Solutions are not ranked within the assigned category; they are listed alphabetically.

The five categories are:

I. **Luminary:** Excels on both Advanced Technology and Breadth of Functionality.

II. **Technology Standout:** Excels in Advanced Technology but doesn't yet have as many features as leading competitors (low on Breadth of Functionality). Often newer, these solutions typically have chosen a focused set of functionalities to begin their journey.

III. **Functionality Standout:** Excels in Breadth of Functionality, but the technology isn't as advanced as leading competitors. Often more

established, these solutions have built out a robust set of features with technology that may not be cutting-edge.

IV. **Noteworthy Solution:** Relatively lower on both dimensions, yet still worthy of consideration by some financial institutions.

V. **Developing Solution:** Typically, new to the market and low on either Advanced Technology or Breadth of Functionality. Has the potential to mature into a more robust offering over time.

Figure 13: Celent Technical Capability Matrix
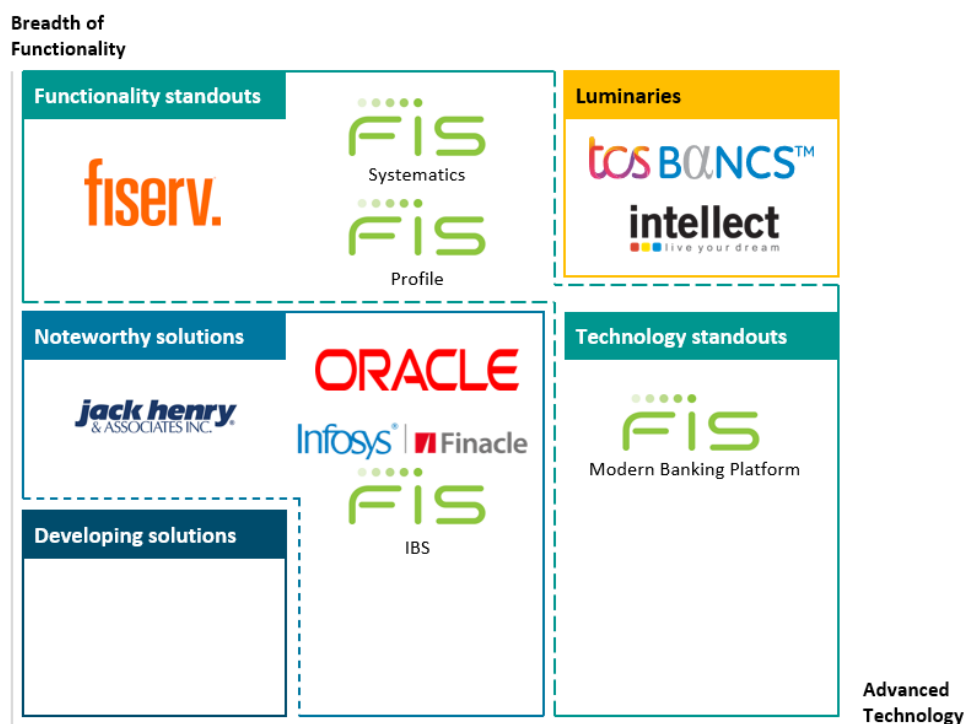
Source: Celent

On this basis, the platforms deemed luminaries are international CBS vendors, with platforms that combine strong technology architecture with a breadth of functionality. FIS Modern Banking Platform is deemed a technology standout. However, given FIS's client base and experience in US banking, with both Systematics and Profile offering deep functionality, Modern Banking Platform could shift into the Luminary bracket as FIS develops its functionality breadth and depth.

The platforms awarded Functionality Standouts (Fiserv, FIS Systematics, and FIS Profile) have a longer history in the North American market. They have established a broader client base in the mid-large banking segment, which has allowed both the creation of, and importantly evidence for, rich functionality for this market. That said, the remaining vendors that met inclusion criteria for this report all have Noteworthy Solutions. Jack Henry's Silverlake platform also has rich functionality, with a strong base in the Tier 5 segment that it has been extending into the mid-tier banking segment. Oracle FLEXCUBE offers a strong all-around platform, offering functionality, sector client experience, and

technology architecture that is benefiting from the technology strength (particularly in cloud/SaaS) of its parent. FIS IBS offers strong functionality for banks looking for a managed/hosted offering. Infosys Finacle offers a strong platform that has just started to get critical traction in this market, while benefiting from being one of the strongest platforms for the international market.

Considerations

This analysis is based on Celent's own assessment criteria, which considers the wider needs of the North American market as a whole. Platforms included in this report all had strengths and weaknesses, and each platform could be a good fit for an institution depending on its specific requirements and firmographics.

Individual banks should use the profiles in the context of their own specific situation. CBSs positioned lower in Celent's ranking may be an excellent fit for a large number of institutions for various reasons, such as price, business-specific functionality, existing technology environments, geographic footprint and expertise, or customer segment focus. The ABC analysis chart should be used in conjunction with the vendor-specific profiles.

Additional considerations:

- Score differences have been accentuated in the ABC analysis chart, with scales zoomed in to aid differentiation. It should be noted that all solutions scored well, being at least Noteworthy Solutions, and should be considered strong platforms.

- Institutions reading this report should consider the specific needs of their institution and market/customer segments. Clients can utilize our advisory service or consulting services for deeper analysis.
  - Institutions seemingly in the middle or bottom of the pack may be excellent candidates based on a bank's needs.
  - Reweighting certain characteristics (cloud-native, on-premise only, etc.) could move laggards into a higher position.

- The mix of vendors and platforms includes Celent subscribers and nonsubscribers. We make no distinction in how each are presented, nor does it affect our ratings.

- Due to the strict inclusion criteria for this report (particularly client references and full RFI response) the ABC analysis chart does not provide a complete view of the vendor landscape. Excluded platforms may be appropriate for consideration by certain banks, and while Celent was not able to obtain in-depth information for the purposes of this report, clients can still utilize our advisory service for opinions on these vendors/platforms.

About the Profiles

Each profile gives an overview of a vendor and its core banking solution. Celent developed the list of vendors based on our knowledge of the market and from our interactions with banks and other vendors looking at core conversions and other markets. Analysts built each profile in two stages:

Phase 1: This was the information-gathering stage. We asked vendors to fill out a detailed survey document. Then we went through a live demo and asked questions about the submitted material. Finally, we contacted reference clients to cross-check vendor claims as well as obtain a "boots on the ground" view of the product.

Phase 2: We shared with vendors their draft profiles and asked them to check facts and approve the content. Celent only makes changes to factual errors during transcription. Subjective disputes are not considered.

How Banks Should Use This Report

This report is the result of an exhaustive review of widely available CBS platforms in the market today. The methodology of this report involved making assessments and assigning ratings to many evaluation points across the spectrum of Celent's ABC methodology.

Contrary to the marketing claims of many CBS platform providers that their system is the "best" in the industry, Celent finds every platform in this report excellent in certain areas. On the one hand, this result is not a surprise, as intensified competition between CBS platform providers—predicated on their interest in cross-selling a new client bank a wide range of ancillary products and solutions—has led to a maturing of CBS platforms.

On the other hand, it would be easy—but wrong—to conclude that since nearly all of the CBS platforms performed well in the review that any of them will perform well at an institution. This would be an incorrect reading of the report and could lead a bank CIO down the road toward selecting and implementing a new CBS platform that ultimately does not justify the high cost and management investment required.

The correct question for a bank to ask is, "What is the best CBS platform for my institution today and for the future?" This broader question (how the strengths and weaknesses of a particular CBS platform measure up to a bank's preferences and priorities) speaks to the overarching role of solution fit in guiding a bank toward one CBS platform or another.

Our intention for this report is to enlighten bankers to rise above the occasional hype and frequent superior claims of one solution or another and reframe the conversation in terms of how a bank's strategic needs and operational imperatives match up with the demonstrable qualities of each CBS platform under consideration.

VENDOR PROFILES

This section provides greater detail on the vendors and their platform offerings. While this offers a deeper overview of each platform as well as Celent's opinion, readers should consult Celent's digital platform RFX for even greater granularity.

FIS: IBS

FIS is a public company headquartered in Jacksonville, Florida. It is a leader in technology, solutions, and services, with presence globally across more than 50 countries in North America, Latin America, Europe, and Asia Pacific regions. The company provides a broad array of capabilities across the banking, merchant, and capital markets sectors through an array of mission-critical platforms and processing solutions to meet industry-specific needs of different segments and client types.

Within the banking sector, FIS offers multiple core banking systems, providing a range of platforms for different types and sizes of institution. IBS (Integrated Banking Solution) is a banking platform designed to support institutions looking for a scalable platform operated on a managed basis within the US market. It is particularly suited to institutions in the community and regional banking market with a scalable platform supporting clients up to $200 billion in assets. Within FIS, there is a large consulting, onboarding, and professional services team with great experience and deep expertise focused on driving client growth, efficiency, and market responsiveness.

Table 1: FIS Snapshot

Company Info	
Year Founded	1968
Number of Employees	69,000
Revenues (USD)	14.5 billion
Financial Structure	Public company NYSE: FIS
Product Info	
Product Name	IBS
VendorMatch Link	[FIS IBS]
Year Originally Released / Deployed	1980 / 1980
Current Release /Date of Release	IBS.2023.1.0219 / February 2023

Target Market	IBS is a hosted core processing system easily scalable to meet the needs of banks from $500M up to $200B in assets.
Installed Base	164
Notable Clients	Northern Trust, City National Bank, Synovus Bank, Wintrust Financial, East West Bank
Vendor Events	The vendor offers an annual user conference or customer event.

Source: Vendor RFI

> " IBS delivers a rich set of business capabilities for community, mid-tier, and large regional banks to support, retain, and grow their retail and commercial customer base.
>
> — FIS IBS

Platform Summary

IBS is arguably the CBS platform that created the modern bank IT outsourcing business. The origins of IBS date back to the early 1960s when Milwaukee-based Marshall & Ilsley Corporation set out to leverage its investment in a mainframe-based account processing system to serve the processing needs of its correspondent banks. While IBS has been continually extended and architecturally refined over the years—to the point where it now features more than *40 million* lines of code—it still retains its original character as a COBOL-based system built for a highly scalable outsourcing environment.

Aside from the continual addition of new features and functionality to meet the needs of a wide range of banks, the "secret" to the platform's historic success is its highly parameterized structure, enabling banks to turn features "on" and "off" while allowing for fine-grained system control of the banking accounts services. This, in turn, allows FIS to run a single instance of IBS to serve the processing needs of its several hundred banks.

Key Features   IBS operates on a single processing platform to manage and maintain deposit, loan, and customer account portfolios. It is parameter-driven with a comprehensive capability for defining product attributes and processing options. The core platform is surrounded by an integrated sales, origination, and servicing suite supported by a rich array of marketing, business analytics, and relationship management capabilities. Furthermore, IBS is deeply integrated with a broad array of FIS solutions spanning capabilities such as digital banking, payments, fraud, image, document management, and many more.

Table 2: Core Component Snapshot

● = Base Core Module (Available out of the box)   ● = Additional Module – different code base, preintegrated   ● = Additional Partner Module

● = Additional Core Module   ● = Additional Preintegrated Partner Module   ● = Not available / Not applicable / Additional Module - Non-Partner

● = Composable module from ecosystem partner   ● = Additional Module - different code base

Module Name = In Production	*Module Name* = Supported but not in

Deposits		
● **Retail Deposits**	● **Commercial Deposits**	
Retail Lending		
● **Credit Card Originations**	● **Consumer Loan Origination**	● **Mortgage Loan Origination**
● **Credit Card Servicing**	● **Consumer Loan Servicing**	● **Mortgage Loan Servicing**
● **HELOC Origination**	● **HELOC Servicing**	
Commercial Lending		
● **Small Business Loan Origination**	● **Commercial Loan Origination**	● **Complex Loan Origination**
● **Small Business Loan Servicing**	● **Commercial Loan Servicing**	● **Complex Loan Servicing**
Other		
● **Treasury Management**	● **Merchant Services**	● **General Ledger**

Source: Vendor RFI

The IBS product management team works closely with IBS business executives to prioritize new features based on compliance requirements, sustainability requirements, client commitments, and strategic initiatives. The work is prioritized as part of a three-month program increment.

Current development plans include a program to refresh the IBS user interface (UI) to utilize the most current FIS UI presentation framework. This will provide a responsive UI (supporting both traditional desktops/laptops as well as tablet form factors) while also allowing the applications to operate across various web browsers.

In terms of R&D expense over the past two years, FIS typically reinvests around 7–8% of global revenue in R&D of total revenue attributed to this solution. The vendor offers an annual user conference or customer event. IBS also supports a client community through regional user groups and national client advisory boards.

Table 3: Key Features

1		**Architecture Overview**	The IBS platform is a mainframe-based core account processing platform with integration to many other technologies. Java-based APIs, BaaS, and banker/client interfaces. Oracle and Java systems for complete customer views and ETL for data warehousing capabilities.

2		**Support for Cloud**	IBS is a hosted platform in the FIS Private Cloud, so it does not provide cloud support in the traditional sense. However, it can achieve some benefits of a cloud environment, such as scalability and cost optimization.
3		**APIs and Integration**	FIS's strategy is to API-enable all its products and capabilities, exposed via its FIS Code Connect API Gateway platform and accessible via the Internet or private network. Where applicable, data can also be delivered via real time events, with both Webhooks and Kafka supported. Batch integration is offered for other suitable use cases.
4		**System Flexibility**	IBS is highly configurable by the client, which makes changing the system a simpler task. For example, new products can be established by the bank without FIS intervention, using configuration tools. If new functionality is needed that is currently not available, the IBS change migration system and support structure surrounding it ensure code changes are made without disruption to clients and their unique configurations.
5		**Real Time Capability**	IBS is a batch system which leverages intraday memo posting. While not event-driven, it can create events in real time within seconds of the underlying deposit, loan, customer, or card activity occurring.
6		**Data Models**	The data model is custom to IBS's core account processing platform. The client cannot change the core data model. The client would request an enhancement and IBS developers would make the changes. FIS does offer their clients the ability to capture extended data in the Customer Management solution as well in the Branch/Sales and Service solutions through an advanced authoring and configuration tool. This is offered as a self-service capability.

Source: Vendor

ABC SUMMARY   **Advanced Technology**   **Breadth of Functionality**   **Customer Base**

CELENT OPINION   IBS continues its strong position as a hosted universal core banking platform with a long history serving the broad functional needs of community banks to large regionals up to $200 billion in assets. While the platform itself dates back many years, FIS has continued to modernize it to provide to banks a rich, scalable, and flexible platform. IBS sets itself apart with the ability to scale up and down to the functional needs of a variety of different institution types, as well as the efficiencies achieved through its hosted delivery model in the FIS Private Cloud. It also provides a significant amount of parameterization out of the box to allow institutions, even in a hosted environment, to tailor the platform to their needs.

IBS is surrounded by some of FIS's enterprise technology assets and integrated through FIS Code Connect APIs, significantly extending and enhancing the value of the platform. Banks looking for public cloud capabilities on more modern programming languages might explore other options, but those looking for a secure, reliable, and parameterized system with significant functional coverage will find IBS more than ready.

Customer Base

FIS has 164 total customers globally.

Figure 1: FIS Client Base by Geography, Institution Type, and Deployment Mode
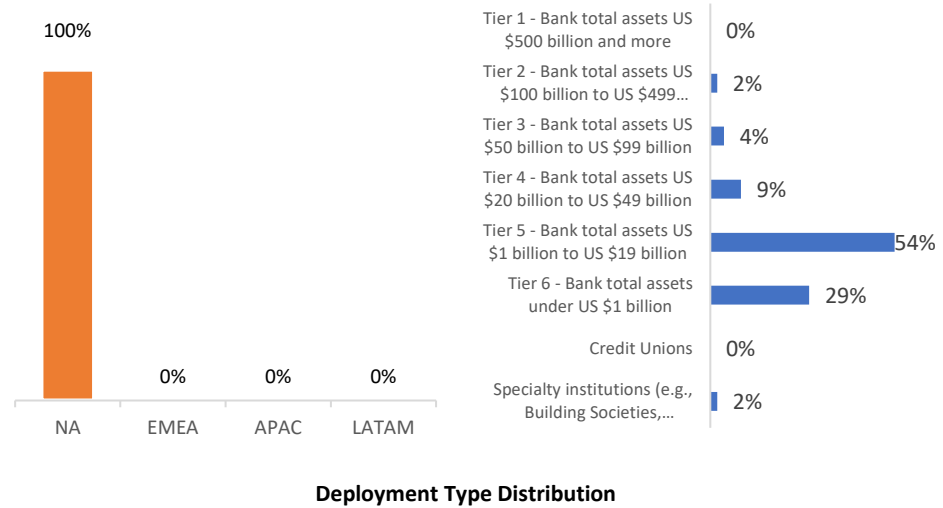
Deployment Type Distribution
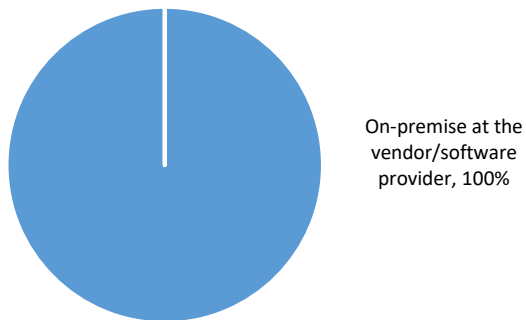
Platform Details

The IBS platform is a mainframe-based core account processing platform with integration to many other technologies. Java-based APIs, BaaS, and banker/client interfaces. Oracle and Java systems for complete customer views and ETL for data warehousing capabilities.

Technology details for IBS are provided in Table 4.

Table 4: Technology Options

Code Base	Core technology: .Net: 1%; C: 1%; Java: 30%; JavaScript: 5%; Other (COBOL is the main language used for the core account processing platform.): 63%

Databases	DB2, Oracle, Sybase
Integration Methods	Web services; XML, not through web services; HTML; HTTP; RESTful HTTP-style services; JSON format; MQSeries, JMS, or similar queue technology; Custom APIs; Flat files
	Public API integrations: Not applicable
	FIS provides extensive consulting and professional service offerings to support clients with open API or event-based integrations.
Deployment Models	Private cloud
	IBS is a fully outsourced solution that is run within the FIS Private Cloud. Therefore, IBS clients do not need their own technical architecture or staff to support. It is multi-tenant and highly scalable.
	FIS also offers clients a managed IT service where they can extend what they run and support in their FIS Private Cloud to include other non-FIS solutions that the client may run on premise/in house today. This helps clients to further alleviate their IT support costs.
Public Cloud Options	None

Source: Vendor RFI

The platform operates on batch basis, although it supports memo post. While not event-driven, IBS can create events in near real time spanning deposits, loans, customer, and card activities.

Table 5: Cloud Support

Microservices Architecture	No
Stateless (apps can scale independently)	No
Container Orchestration (Kubernetes)	No
Service Mesh Support (e.g., Istio)	No

Source: Vendor RFI

Additional Functionality

Table 6 shows IBS's functionality and production status of key features for core banking systems.

Table 6: Ancillary Modules Support

● = Available out of the box ○ = Additional Module – different code base, preintegrated ○ = Additional Partner Module

● = Additional Core Module ● = Additional Preintegrated Partner Module ● = Not available / Not applicable / Additional Module - Non Partner

● = Composable module from ecosystem partner ○ = Additional Module - different code base

Module Name = In Production	*Module Name* = Supported but not in production

Channels		
○ Branch/Teller	○ Digital Banking	○ Digital Onboarding
○ Call Center	○ ATM	
Commercial and Retail Function		
● Currency Management	○ Imaging/ECM Warehouse	○ Data Layer (data lake, data streams, etc)
○ CRM		○ Data Warehouse
Cards & Payments		
○ Bill Pay	○ Payments Engine	○ ACH Origination
○ Card issuing	○ P2P	○ International ACH (IAT)
X SEPA	● Stop Payments	
Risk and Compliance		
○ Asset Liability Management (ALM)	○ Anti Money Laundering (AML)	○ Compliance: Know Your Customer (KYC), OFAC
○ Fraud Detection	○ Risk Analysis and Reporting	

Source: Vendor RFI

Data and Integration

FIS's data model is proprietary.

Table 7: API Integration Details

Function	Approach
Approach to Integration	FIS's strategy is to API-enable all its products and capabilities, exposed via its FIS Code Connect API Gateway platform and accessible via the Internet or private network. The IBS core is fully API-enabled today. Where applicable, data can also be delivered via real time Events/Webhooks and Kafka is supported. Batch integration is offered for other suitable use cases.
% of Platform Exposed as APIs	100
API Management	Yes

Source: Vendor RFI

Configuration

IBS and their entire client base are always using the most current version. New product capabilities are introduced regularly—usually every three months and sometimes even monthly. There is one code base that is running for all clients in a multi-tenant environment within the FIS Private Cloud. The change tools and backout procedures ensure code is current and functioning properly.

IBS is highly configurable by the client, which makes changing the system a simpler task. For example, new products can be established by the bank without FIS intervention, using configuration tools. If new functionality is needed that is currently not available, the IBS change migration system and support structure surrounding it ensure code changes are made without disruption to clients and their unique configurations.

Bank Control and Enterprise Org and Product are their product administration mechanisms. Clients use these tools to set up new products and change existing products that align with their specific institution's needs. Those changes are mostly self-service and require little or no involvement from FIS. Most third party integration requires the institution to work with IBS and the third party vendor to implement the necessary integration; however, this has decreased dramatically with the launch of FIS Code Connect and their marketplace of Open APIs in late 2018 and Events in 2020. Clients are now enabled with a developer tool kit that radically simplifies their ability to integrate third party solutions with the IBS core platform.

Table 8: Continuous Integration (CI) and Upgrading

CI/CD	
Support for CI	Yes
Support for Continuous Delivery or Productization	Yes
CI Tools	FIS has many tools and environments to do continuous development and integration. Developers and teams across the company can develop and test together or apart in many different systems.

Source: Vendor RFI

Pricing

Table 9: Pricing Models

Pricing Models Available	Not provided

Factors Used to Determine Pricing	*Usage-based factors:* Not provided
	Tier-based factors: Not provided

Source: Vendor

FIS: MODERN BANKING PLATFORM

FIS is a public company headquartered in Jacksonville, Florida. It is a leader in technology, solutions, and services, with presence globally across more than 50 countries in North America, Latin America, Europe, and Asia Pacific regions. The company provides a broad array of capabilities across the banking, merchant, and capital markets sectors through an array of mission-critical platforms and processing solutions to meet industry-specific needs of different segments and client types.

Within the banking sector, FIS offers multiple core banking systems, providing a range of platforms for different types and sizes of institution. Modern Banking Platform (MBP) is a new platform (effectively launched at the start of this decade) based on latest technology architecture standards that FIS has built (rather than acquired) and leveraging its extensive core banking system experience (particularly functionality developed for both Profile and Systematics). Within FIS, 426 employees are available to provide professional services / client support for their Modern Banking Platform solution, with 253 physically located in North America.

As a relatively new platform, MBP does not yet have the business functionality breadth across the full banking spectrum compared to other FIS platforms, (functionality is currently concentrated within retail banking). This is likely to expand to commercial banking as MBP gains traction in the market, particularly given FIS's ability to leverage its wider banking expertise.

Table 10: FIS Snapshot

Company Info	
Year Founded	1968
Number of Employees	62,847
Revenues (USD)	$12.6 billion
Financial Structure	Public company NYSE: FIS
Product Info	
Product Name	Modern Banking Platform
VendorMatch Link	[FIS MBP]
Year Originally Released/Deployed	2018 / 2019

Current release and date of release	Release V 3.7.1 / 2021
Target Market	The target market for MBP are all clients that are engaging in core modernization initiatives, clients that are looking to launch additional bank types, or clients whose current core cannot accommodate additional product types. Direct banks, neobanks, and de novo banks
Installed Base	8
Notable Clients	Fifth Third Bank
Vendor Events	The vendor offers an annual user conference or customer event.

Source: Vendor RFI

> " Future-Proof Design, Cost-Effective Changes, Functionally-Rich Components, Agility and Flexibility, Powerful Core Processing Engine, Real-Time Data Processing, Extensive Marketplace of Solutions, Lower Risk Upgrades, Rapid Implementation.
>
> —FIS MBP

Platform Summary

Modern Banking Platform represents an architectural shift by FIS from the traditional, monolithic core banking application through a decomposition of core-specific capabilities into core components with discrete functionality and ultimate flexibility. MBP is a completely new market proposition by FIS, built from the ground up to compete with some of the most modern platforms on the market today. It officially launched during the second quarter of 2019.

The FIS Next-Generation Core has six foundational components, which are complemented by a wide variety of optional extended components. These empower a new kind of banking experience.

1. **Account Engine** – CAPE, the Common Account Processing Engine. The heart of the platform offers robust, reliable, and efficient real time transaction processing and accounting functions with no practical limits to volumes. The CAPE engine underpins processing cores for:
 Retail Deposits: providing processing of retail liability products including savings, deposits, time deposits, checking accounts, and regulated savings products such as IRAs and ESAs
- Commercial Deposits: supporting commercial deposits, time deposits, checking,

savings, and MMDA with facilities for onboarding, sweeping, and cash management
- Retail Lending: providing processing of retail asset products including term loans and lines of credit together.

2. **Enterprise Customer** – With the customer component, users can manage aspects of the customer view in one place. In the digital age, customer centricity is crucial, and a superior customer experience must be driven by data and insight.

3. **Product Factory & Management** – The rules-based, parameter-driven product management component allows users to easily construct and manage products, improving time-to-market for new offerings.

4. **Real-Time Data Hub** - This component manages all data coming in and going out of the platform securely and in real time, offering greater customer personalization and improved fraud prevention and detection.

5. **Compliance** – This component is used for compliance with various regulators in global jurisdictions.

6. **Enterprise Collateral Management** – A real time collateral management solution covering collateral booking, processing, valuation, revaluation, and LTV positioning

With these six components, Modern Banking Platform can support retail and commercial banking products, from basic checking accounts and savings accounts to some of the more complex financial products.

In addition, Modern Banking Platform can be integrated to FIS or non-FIS extended components that support capabilities at the enterprise level. Banks can pick and choose the ones that reflect their business strategy.

All components—both foundational and extended—are independent. Central access to all solutions is provided through FIS Code Connect, an API platform. This ensures that all APIs for these microservices are versioned, governed, exposed, and integrated easily and securely. FIS Code Connect also allows banks and fintech partners to publish and manage their own APIs, so that they can deliver solutions to FIS clients.

Table 11: Core Component Snapshot

🟢 = Base Core Module (Available out of the box)	🔵 = Additional Module – different code base, preintegrated	⚫ = Additional Partner Module
🔵 = Additional Core Module	🟡 = Additional Preintegrated Partner Module	🔴 = Not available / Not applicable / Additional Module - Non-Partner
🔵 = Composable module from ecosystem partner	🟡 = Additional Module - different code base	

Module Name = In Production ❙ *Module Name* = Supported but not in production

Deposits	
🟢 **Retail Deposits**	🟢 **Commercial Deposits**

Retail Lending					
X	Credit Card Originations	🟡	**Consumer Loan Origination**	X	Mortgage Loan Origination
X	Credit Card Servicing	🟢	**Consumer Loan Servicing**	X	Mortgage Loan Servicing
🟡	**HELOC Origination**	🟢	**HELOC Servicing**		
Commercial Lending					
X	Small Business Loan Origination	X	Commercial Loan Origination	X	Complex Loan Origination
X	Small Business Loan Servicing	X	Commercial Loan Servicing	X	Complex Loan Servicing
Other					
🔵	*Treasury Management*	🔵	**Merchant Services**	🟡	**General Ledger**

Source: Vendor RFI

The Modern Banking Platform is actively managed as a portfolio product against a multi-year road map of feature and capability extensions. This road map and prioritization of development are regularly reviewed against both changing market direction and client requirements. R&D expense over the past two years has been around 7–8% of global revenue. The vendor offers an annual user conference or customer event.

Table 12: Key Features

1		**Architecture Overview**	FIS MBP is a cloud-native next generation core banking platform, built from the ground up on a microservices based, API-first, event-driven, open-integration and componentized architecture. Each component has an n-tier architecture, with the UI or presentation being based on access through thin-client browser or through APIs (REST and SOAP). The application layer is built predominantly on JAVA and utilizes a relational database to store and process data.
2		**Support for Cloud**	The platform is cloud-native with microservices, supporting container deployments, which improves availability and provides instant scalability. FIS has also built these "multi" capabilities into a single deployment to allow customers to grow on a singular, common platform and run in public clouds like Azure or FIS data centers, their own data center, and as a hybrid.
3		**APIs and Integration**	FIS MBP promotes online synchronous (using API) or asynchronous integrations using Event Broker. The central point for the API integration is FIS Code Connect. More than 1,000 APIs (FIS and partners) are available over FIS Code Connect. FIS Event Broker is a platform that supports asynchronous notification to subscribers interested in reacting to events.
4		**System Flexibility**	The platform provides a set of flexible, scalable, and configuration-driven core banking features built with API-driven open access. Product changes are typically done through business configuration rather than coding. The configurable product factory enables financial institutions to create and launch new products within days rather than months without need for development.

5	▷▷	**Real Time Capability**	MBP is designed to be a real time transaction processing system. However, certain bank induced transactions can be scheduled to run at a specific time, such as certain fees and charges, interest calculation, etc. The analytics platform can integrate into data sources in batch (multiple batches a day) or real time.
6		**Data Models**	The data model is based on FIS's Financial Services Data Model. The physical data model is extended only by FIS. The logical data model is extended by the client using an administrative panel where it is possible to define new fields of such objects such as Customer, Arrangements, Transactions, etc. MBP is designed in such way to abstract logical data models from its physical representation. Adding a new product that is different from existing product by set of properties that describe it does not result in alteration of table definition that holds the definition of products. Using the design principal, FIS can hold responsibility to physical data model definition and let the client be responsible to some extent for the logical data model.

Source: Vendor

ABC SUMMARY   ● **Advanced Technology**   ◔ **Breadth of Functionality**   ● **Customer Base**

CELENT OPINION

MBP has undergone significant maturity since our last analysis of the platform in 2019. It's a truly next-gen platform competing with some of the most modern cores globally. FIS has attracted top-tier financial institutions in banking with a platform that combines modern technology built from the ground up with FIS's proven track record of implementation and ancillary capabilities. While functionality is still being built into the platform, significant progress has been made, such as its support for lending. Code Connect also provides functional support for other FIS assets.

Tier 1–3 banks, especially those already using an FIS core, are natural fits for Modern Banking Platform. While it may not have all the bells and whistles just yet, it's getting there and becomes an even more formidable platform by the day. It's hard to find an institution that wouldn't be well-served shortlisting MBP. It should of particular interest to top- and medium-tier sized institutions that are keen to obtain a strong underlying technology platform, with the latest principles in technology architecture, but also have access to a company with broad and extensive banking depth and experience.

Customer Base

FIS has eight total customers globally, although with a number of implementations in progress.

Figure 2: FIS Client Base by Geography, Institution Type, and Deployment Mode

Deployment Type Distribution

Private cloud, 93%
On-premise at the customer, 7%
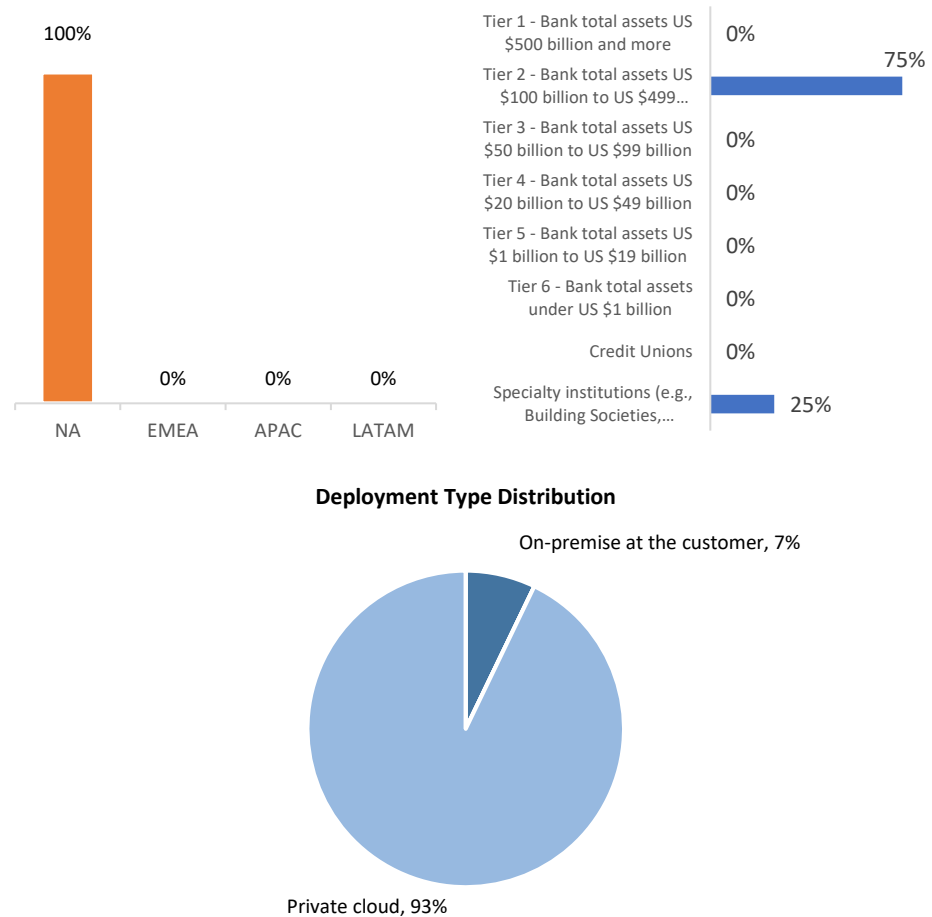
Platform Details

The technical architecture of FIS MBP is a cloud-native, next generation core banking platform, built from the ground up on a microservices based, API-first, event-driven, open-integration and componentized architecture that defies the traditional monolith. Each component has an n-tier architecture, with the UI or presentation being based on access through thin-client browser or through APIs (REST and SOAP). The application layer is built predominantly on JAVA and utilizes a relational database to store and process data.

The MBP solution is delivered using loosely coupled microservices using an API-first, event-driven approach. FIS MBP exposes business functionality via REST services (fully documented) using industry standard JSON payloads. MBP

provides a browser-based Admin Tool for the bank's administrative and operational users.

Data is structured based on the Financial Services Data Model and conforms to the requirements of the financial services industry. The database is relational and utilizes certain object-oriented design concepts such as inheritance and classification. The transactional database design employs an "Insert Only" design pattern which contributes to high performance and scalability of the solution and leads to minimum contention for batch and real time transactions and provides full auditability. Data at rest and in motion is encrypted.

FIS provides a big data component called Reporting & Analysis Solution (FIS RAS) that comprises an operational data store fed with real time data. The solution offers real time reporting capabilities and data extraction as batch.

Security Architecture – MBP allows for multiple options for identity and access management (IAM), which can utilize FIS-native authentication through its inbuild identity provider (FIS IAM) or through a federated model by utilizing the bank's own identity management solution (IdP) for defining authentication and authorization rules.

FIS provides an API management layer (FIS Code Connect) providing security authentication and access control, leveraging industry standard OAuth 2.0 and JWT for identification.

Deployment Architecture – MBP is cloud-native and deployable on a public or private cloud. MBP is deployed via Docker containers and utilizes Kubernetes Service for process orchestration. For event streaming, the solution uses Apache Kafka or a cloud event hub such as the Azure Events Hub.

Technology details for Modern Banking Platform are provided in Table 4.

Table 13: Technology Options

Code Base	Core technology: Java: 100%
Databases	NoSQL, Oracle, PostgreSQL
Integration Methods	Web services; RESTful HTTP-style services; JSON format; MQSeries, JMS, or similar queue technology; Custom APIs; Flat files
	Public API integrations: More than 1,000 APIs are available on Code Connect. These are both FIS APIs and FIS Partners APIs. Current and full list of APIs is available at https://codeconnect.fisglobal.com/app/home
	The vendor does provide training for API integrations.

Deployment Models	On-premise at the customer, On-premise at the vendor/software provider, Private cloud, Public cloud (NA)
	On-premise at the customer, Public cloud, (EMEA)
	On-premise at the customer, Public cloud, (APAC)
	On-premise at the customer, Public cloud, (LATAM)
	FIS MBP is cloud-native by design and currently certified to run on Microsoft Azure (with Google and IBM cloud to come soon). MBP is a fully managed SaaS offering by FIS. When designing the deployment strategy for MBP in cloud, FIS started with a clean sheet and challenged itself to exploit the investment of Cloud Service Provider (CSP) technology provisions (server, security, currency) to provide leading edge capability for lower overall costs with greater speed to market and increased reliability (availability and instant scalability).
	MBP is provided as a fully managed SaaS offering (managed end-to-end by FIS) in Azure Cloud where customers simply consume services via APIs. The MBP SaaS offering is hosted within two Azure regions, each comprising three availability zones, therefore six data centers in total, each of which have their own networking. Microsoft operates one of the most advanced backbones in the world with sufficient resilience and capacity. Service operates active-active-active within a region, allowing the loss of up to two availability zones/data centers without taking out service. Should an entire region be impacted, FIS can switch across to a separate region. Should it be a global problem, FIS relies on Microsoft to resolve.
Public Cloud Options	Microsoft Azure

Source: Vendor RFI

MBP supports 24/7 processing capability, which includes flexible transaction processing across real time, batch, and hybrid transaction processing. There is no reduced functionality while the batch is running and no shadow databases or memo postings. As a consequence, the system supports concurrent transaction and batch processing with no close-down for end of day. MBP is also event driven, which implies that any transaction in the system, be it financial or non-financial, is recorded as an event. These events can be streamed to other components of the solution or also sent to external systems for triggering actions in real time.

Table 14: Cloud Support

Microservices Architecture	Yes
Stateless (apps can scale independently)	Yes
Container Orchestration (Kubernetes)	Yes
Service Mesh Support (e.g., Istio)	No

Source: Vendor RFI

MBP leverages standard cloud deployment and operation tooling including Kubernetes, Clustering, Multi-Region resilience, Cloud database services, Infrastructure as tooling Hashi, Terraform, Sentinel, BitBucket, Azure AKS Kubernetes, Azure Monitor, Azure Application Insights, Flexible Server PostgresSQL, Azure Storage, Azure Event Hub, Azure Networking, Automated deployment through Helm & Harness.io.

Additional Functionality

Table 6 shows FIS's functionality and production status of key features for core banking systems.

Table 15: Ancillary Modules Support

● = Available out of the box   ● = Additional Module – different code base, preintegrated   ● = Additional Partner Module

● = Additional Core Module   ● = Additional Preintegrated Partner Module   ● = Not available / Not applicable / Additional Module - Non Partner

● = Composable module from ecosystem partner   ● = Additional Module - different code base

Module Name = In Production | *Module Name* = Supported but not in production

	Channels				
●	*Branch/Teller*	●	**Digital Banking**	●	**Digital Onboarding**
X	Call Center	●	**ATM**		

	Commercial and Retail Function				
●	**Currency Management**	●	**Imaging/ECM Warehouse**	●	**Data Layer (data lake, data streams, etc)**
X	CRM			●	**Data Warehouse**

	Cards & Payments				
●	**Bill Pay**	●	**Payments Engine**	●	**ACH Origination**
●	**Card Issuing**	●	*P2P*	●	*International ACH (IAT)*
●	*SEPA*	●	**Stop Payments**		

	Risk and Compliance				
X	Asset Liability Management (ALM)	●	**Anti Money Laundering (AML)**	●	**Compliance: Know Your Customer (KYC), OFAC**

● **Fraud Detection**   ● **Risk Analysis and Reporting**

Data and Integration

FIS's data model is proprietary.

Table 16: API Integration Details

Function	Approach
Approach to Integration	FIS MBP promotes online synchronous integration using API or asynchronous integrations using Event Broker. The central point for the API integration is FIS Code Connect. More then 1,000 APIs (FIS and partners) are available over FIS Code Connect. FIS Event Broker is a platform that supports asynchronous notification to subscribers interested in reacting to events.
% of Platform Exposed as APIs	100
API Management	Yes

Configuration

As database change moves across environments, the Flyway schema can be used to track its current version state and then be upgraded to the new target version. At the same time, GIT source code management tool is being used to keep track and manage development code changes. In addition, FIS provides tools to manage the transfer of configuration between environments to ensure consistency.

The platform provides a set of flexible, scalable, and configuration-driven core banking features built with API-driven open access. Product changes are typically done through business configuration rather than coding. The configurable product factory enables financial institutions to create and launch new products within days rather than months, without need for development.

MBP enables an organization to configure various types of retail and commercial deposits as well as different types of lending products (retail, mortgage, commercial, SME). These configurations are based on a product template, product definition, and finally the type of transaction processing allowed for each type of account. Financial institutions can create various types of accounts and define the type of transaction processing allowed for each type. While every line of business has its own unique account types, transaction types, or processes, they share the same concept of product and pricing definition, account definition, charge processing, transaction processing, and accounting patterns. The currently available version is release 3.7.1. FIS has a well-defined product

road map that will see new functionalities and features delivered over the upcoming releases.

MBP is offered in a SaaS model, hosted on a public cloud, private FIS cloud, or in a hybrid model. Typically, FIS provides access to the UI or through APIs to the functions and services of the platform. Development and change management are provided as part of the service offering. FIS uses a mix of industry-standard development tools as well as parameter driven configuration to affect changes within the system.

Table 17: Continuous Integration (CI) and Upgrading

CI/CD	
Support for CI	Yes
Support for Continuous Delivery or Productization	Yes
CI Tools	Development Operations (DevOps) Approach enables Continuous Integration and Continuous Deployment (CI/CD) with the following toolsets being used:
	- Atlassian: Development Community
	- eclipse: Local Development
	- Java Unit Testing: Unit Testing
	- Git: Source Code Management
	- Jenkins: Build, Deploy, and Test Automation
	- Maven: Build
	- Sonarqube: Continuous Code Quality
	- Fortify: Code Security
	- BlackDuck: Open Source Scans
	- Selenium Testing: UI Test Automation
	- Soap UI: API Test Automation
	- Integration Testing
	- Apache Code Signing Service: Code Signing
	- Artifactory: Code Release

Source: Vendor RFI

Pricing

Table 18: Pricing Models

Pricing Models Available	None
Factors Used to Determine Pricing	*Usage-based factors:* None
	Tier-based factors: None

Source: Vendor RFI

Pricing

FIS: PROFILE

FIS is a public company headquartered in Jacksonville, Florida. It is a leader in technology, solutions, and services, with presence globally across more than 50 countries in North America, Latin America, Europe, and Asia Pacific regions. The company provides a broad array of capabilities across the banking, merchant, and capital markets sectors through an array of mission-critical platforms and processing solutions to meet industry-specific needs of different segments and client types.

Within the banking sector, FIS offers 11 core banking systems, providing a range of platforms for different types and sizes of institution. Profile is one of its leading platforms able to serve the global banking market, with presence in both the US and international markets, and a range of banks tiers, including Tier 2 as well as mid-tier segments. Overall, FIS has close to 1,400 core system employees available to provide professional services and client support for the Profile core banking solution. In North America, there are 221 core system resource employees supported by a number of additional FIS-leveraged resources.

Table 1: FIS Snapshot

Company Info	
Year Founded	1968
Number of Employees	62,847
Revenues (USD)	$12.6 billion
Financial Structure	Public company NYSE: FIS
Product Info	
Product Name	Profile
VendorMatch Link	[FIS Profile]
Year Originally Released/Deployed	1988 / 1988
Current Release and Date of Release	Version 7.6.6 / 2022
Target Market	Profile is a global core banking solution targeted at large financial institutions as well as digital banks.
Installed Base	159

|	
Notable Clients	Ally Bank, RBC, American Express, ING N.V., Sainsbury PLC, Scottish Widows Bank PLC
Vendor Events	The vendor offers an annual user conference or customer event.

Source: Vendor RFI

> " FIS Profile is and will continue to be one of FIS's primary core banking solutions. Profile is currently in production use at close to 160 financial institutions in more than 30 countries around the world. Its client base includes traditional and non-traditional banks in the retail and commercial banking space, servicing deposits and loans, and powering account volumes of all sizes—from a niche client with less than 1,000 accounts to a mega bank processing over 80 million accounts on a single instance of the Profile platform. Most notably, it is the core solution behind the top digital banks in North America today.
>
> — Matthew Lessig, Vice-President & General Manager, Profile

Platform Summary

Profile is a real time, always-on, multicurrency, deposit and loan core banking system developed as a single integrated solution. It contains an extensive inventory of thousands of configurable features that are designed to meet the product needs of retail and commercial banking organizations. It supports an installed base of 159 financial institutions in more than 30 countries around the world. It has a diverse client base that includes de novo start-ups to mid-sized banks and top-tier global banks. It has a long-term track record of proven scalability and high availability.

Figure 1: FIS Profile IT Architecture
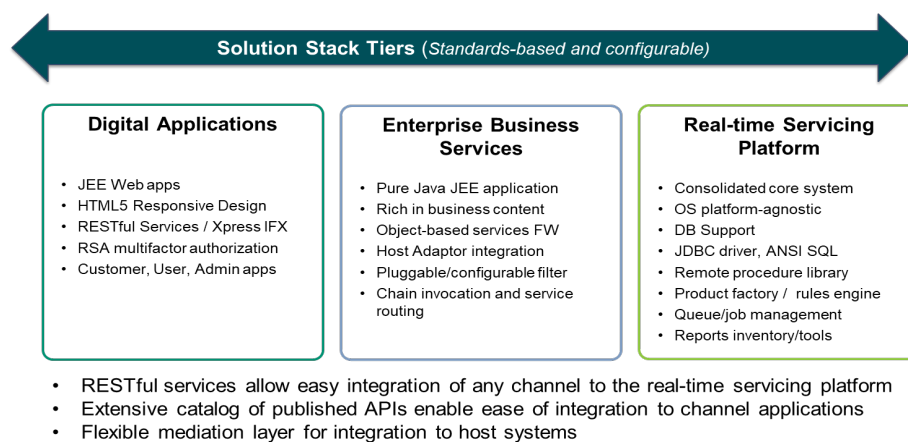
Source: Vendor

Celent reviewed Profile version 7.6.2 (November 2018) in its previous report and version 7.6.5 (2021) for this report. Since that time, FIS has continued to enhance the platform. The most recent releases addressed changes needed for US federal regulatory changes inclusive of annual tax changes, additional security scans which resulted in improved security features, GT.M NoSQL database enhancements, improving efficiencies and performance, as well as functional enhancements covering Sheltered Harbor, overdraft limits, and IBAN account number format changes.

Key Features   Profile's key features include real time processing of financial and non-financial transactions, a highly configurable product factory that covers the spectrum of deposit and loan products globally, database extensibility without coding, and a robust report writer that allows for the creation of new reports and changes to existing reports to be made by business analysts rather than developers.

Table 2: Core Component Snapshot

🟢 = Base Core Module (Available out of the box)　　🔵 = Additional Module – different code base, preintegrated　　⚫ = Additional Partner Module

🔵 = Additional Core Module　　🟡 = Additional Preintegrated Partner Module　　🔴 = Not available / Not applicable / Additional Module - Non-Partner

🔵 = Composable module from ecosystem partner　　🟡 = Additional Module - different code base

Module Name = In Production ┃ *Module Name* = Supported but not in production

Deposits		
🟢 **Retail Deposits**	🟢 **Commercial Deposits**	
Retail Lending		
🟡 **Credit Card Originations**	🔵 **Consumer Loan Origination**	🔵 **Mortgage Loan Origination**
🔵 **Credit Card Servicing**	🟢 **Consumer Loan Servicing**	🟢 **Mortgage Loan Servicing**
🔵 **HELOC Origination**	🟢 **HELOC Servicing**	
Commercial Lending		
🔵 **Small Business Loan Origination**	🔵 **Commercial Loan Origination**	🟡 **Complex Loan Origination**
🟢 **Small Business Loan Servicing**	🟢 **Commercial Loan Servicing**	🟡 **Complex Loan Servicing**
Other		
🔵 **Treasury Management**	🟡 **Merchant Services**	⚫ **General Ledger**

Source: Vendor RFI

Table 3: Key Features

1		**Architecture Overview**	Three-tier architecture used primarily on premise at the financial institution or hosted by the vendor with optional managed services.
2		**Support for Cloud**	Private cloud and public cloud hosting is now available and in production.
3		**APIs and Integration**	Profile is not a microservices application. However, the components that make up the Profile stack of applications can be deployed in private or public cloud.
4		**System Flexibility**	Three-tier (UI is the most flexible tier); Not componentized, but run-time executables are optimized based on bank's configuration, resulting in smaller optimized footprint; Major areas of system are exposed as APIs.
5		**Real Time Capability**	100% real time processing.
6		**Data Models**	Proprietary data model; NoSQL database

Source: Vendor

IT Road Map Overview

New system features are prioritized first by regulatory compliance and application security, then by enhancements that impact the broader client base, and finally by client-funded enhancement requests.

FIS provides quarterly Profile releases which primarily focus on US federal regulatory compliance, security changes needed to secure the software, and bank and client data.

Research and development expense during the past two years has been 6% of total revenue attributed to this solution. The vendor offers an annual user conference or customer event.

ABC SUMMARY   **Advanced Technology**   **Breadth of Functionality**   **Customer Base**

CELENT OPINION
Profile from FIS has a long history as one of the top-performing core banking systems in multiple global regions and across many institution-size segments. FIS has continued to update and maintain Profile to keep its current customer base satisfied and continue to attract new clients. Along with many other FIS core banking systems, clients grow their business with Profile using modern—if not next generation—integration tools.

Since Celent's 2019 report, FIS has continued to enhance the platform. The most recent releases addressed US federal regulatory changes, additional security scans, GT.M NoSQL database enhancements, improving efficiencies, and functional enhancements covering Sheltered Harbor, overdraft limits, and IBAN account number format changes.

FIS has also added 11 new Profile clients across multiple asset-size tiers. This is impressive on an absolute basis because some core vendors have had little or no client growth recently, and some client bases have declined. FIS is one of few core system vendors that have had success selling a system to large and mid-sized banks across three global regions and that continue to have success in new system sales.

Customer Base

FIS has 159 total customers globally, including 83 in Portugal. This is an increase of 11 new clients since publication of Celent's 2019 core systems report. Customers include 109 clients that are Tier 5 institutions with total assets

between US $1 billion to $19 billion, and 31 clients that are Tier 1 – Tier 3 institutions with total assets exceeding $50 billion.

Figure 2: FIS Client Base by Geography, Institution Type, and Deployment Mode
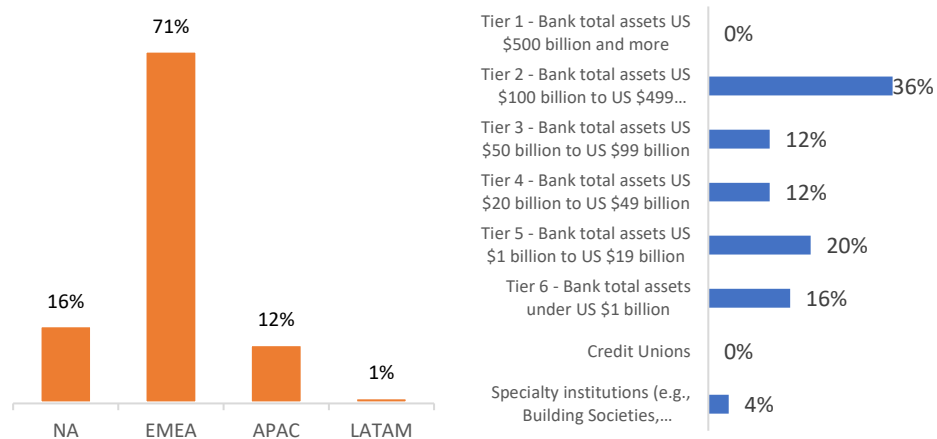
Deployment Type Distribution
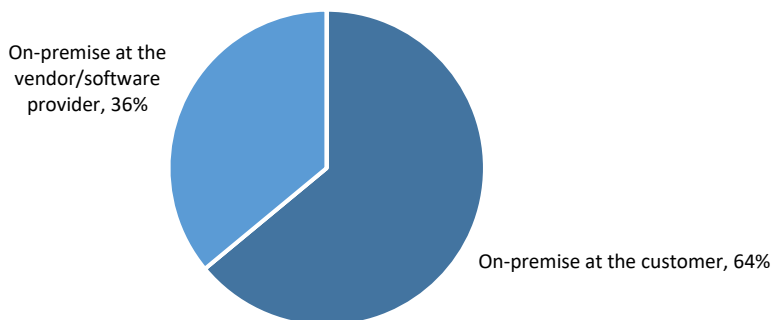
Source: Vendor RFI

Profile is primarily an on-premises solution. However, over one-third of clients have taken advantage of the hosted option available not only in North America but also in EMEA and APAC, and all clients can utilize a hybrid cloud deployment model by integrating Profile with other client systems operating on a public cloud.

Client demand and system conversion economics have not been sufficient to date for FIS to provide cloud-based deployment beyond the FIS private cloud, onto which all of the North American hosted clients have been migrated. In addition, FIS sells Modern Banking Platform (MBP) for clients that want a next generation core system.

Platform Details

Profile has a three-tier architecture with a web browser, application server, and Profile host system database. The customer-facing user interface (UI) design is based on scalable open-source technologies such as the combined

Tiles/Struts/Spring Java framework and HTML5 web-responsive design. The database has also been open-sourced for over a decade.

- This framework and design approach divides the UI into pieces of reusable template that are being rendered among different web pages, and it accommodates multiple devices.
- The Struts framework provides an extensible open standards development environment for FIS Profile Web applications based on published standards and proven design patterns.
- The core of the Struts framework is a flexible control layer based on standard technologies such as Java Servlets, JavaBeans, Resource Bundles, and Extensible Markup Language (XML).
- Spring Workflow provides a foundation for implementing workflow processes within web applications. Interoperability with other banking legacy systems is also assured by the cross-platform and robust integration capabilities of the Java EE platform.
- The Profile host provides the database engine, transaction engine, and batch support.

Technology details for Profile are provided in Table 4.

Table 4: Technology Options

Code Base	Core technology: .Net: 1%; Java: 50%; Other (The Profile host component is coded in PSL with some extensions in C.) MUMPS: 49%
Databases	NoSQL
Integration Methods	Web services; XML, not through web services; RESTful HTTP-style services; JSON format
	Public API integrations: 0
	The vendor does not provide training for API integrations.

Deployment Models	*NA/EMEA/APAC:* On-premise at the customer, On-premise at the vendor/software provider
	LATAM: On-premise at the customer
	Profile is not a microservices application. However, the components that make up the Profile stack of applications can be deployed in private or public cloud.
	• The UI is HTTPS-based and will run in any of the supported browsers.
	• The middleware can be deployed in any container with Tomcat or Websphere. It scales horizontally.
	• Profile host environments can be deployed in any Linux/Unix container if it has sufficient data storage. Horizontal scalability is provided through GT.Ms (Greystone Technology M Logical Multi Site (LMS) capabilities). GT.M is a high-throughput, key-value database engine optimized for transaction processing.
	FIS provides a managed-service offering for Profile banking clients. The services can include infrastructure and application hosting inclusive of software and hardware updates and disaster recovery. FIS also offers a virtual back office service where FIS provides all back office support for the bank. This can include reconciliation, exception processing, and administration of the application.
Public Cloud Options	Amazon AWS (in production, multiple client sites) and Azure

Source: Vendor RFI

Profile provides 100% real time processing. In addition to the many benefits of real time processing, it also reduces day-two exception processing as errors and transaction integrity are validated at the time of update. This enables changes and corrections at the point of interaction and also provides a better customer experience.

The Profile core banking solution including the user interfaces uses and runs within cloud components, including Docker images, Kubernetes, and OpenShift. Cloud capabilities are shown in Table 5.

Table 5: Cloud Support

Microservices Architecture	No
Stateless (apps can scale independently)	Yes
Container Orchestration (Kubernetes)	No; in development
Service Mesh Support (e.g., Istio)	No

Source: Vendor RFI

Additional Functionality

Table 6 shows the functionality and production status of key features for Profile.

Table 6: Ancillary Modules Support

● = Available out of the box   ● = Additional Module – different code base, preintegrated   ● = Additional Partner Module

● = Additional Core Module   ● = Additional Preintegrated Partner Module   ● = Not available / Not applicable / Additional Module - Non Partner

● = Composable module from ecosystem partner   ● = Additional Module - different code base

Module Name = In Production | *Module Name* = Supported but not in production

Channels		
● **Branch/Teller**	● **Digital Banking**	● **Digital Onboarding**
● **Call Center**	● **ATM**	

Commercial and Retail Function		
X Currency Management	● **Imaging/ECM Warehouse**	● **Data Layer (data lake, data streams, etc)**
● **CRM**		● **Data Warehouse**

Cards & Payments		
● **Bill Pay**	● **Payments Engine**	● **ACH Origination**
● **Card Issuing**	● **P2P**	● **International ACH (IAT)**
● **SEPA**	● **Stop Payments**	

Risk and Compliance		
● **Asset Liability Management (ALM)**	● **Anti Money Laundering (AML)**	● **Compliance: Know Your Customer (KYC), OFAC**
● **Fraud Detection**	● **Risk Analysis and Reporting**	

Source: Vendor RFI

Data and Integration

FIS's data model is proprietary. Table 7 describes details of Profile's API integration capabilities.

Table 7: API Integration Details

Function	Approach
Approach to Integration	Spring Integration enables lightweight messaging within Spring-based applications and supports integration with external systems via declarative adapters. Spring Integration's primary goal is to provide a simple model for building enterprise integration solutions while maintaining the separation of concerns that is essential for producing maintainable, testable code. In addition to wiring together fine-grained components, Spring Integration provides a wide selection of channel adapters and gateways to communicate with external systems. Channel adapters are used for one-way integration (send or receive); gateways are used for request/reply scenarios (inbound or outbound).
% of Platform Exposed as APIs	75%
API Management	Profile APIs are made available as part of the Profile deployment and/or exposed via FIS Code Connect (FIS API Gateway on WSO2).

Source: Vendor RFI

Configuration

The base system contains sample deposit and loan products. New products can be derived from existing products or created from scratch. The product schema contains a large number of attributes, all of which are configurable to create or modify a product.

The recommended approach to make product changes and deploy them into a production environment is to first add, modify, and configure a product in a development environment. Developers then use the installation components to deploy the changes to test and production environments. The installation process can be integrated into CD/CI pipelines.

For "self-service" changes that do not need vendor assistance, the client can change and extend the configuration. For example, they can create/change products and make general system changes. Depending on the license agreement, the client can also change or extend the application itself.

Table 8: Continuous Integration (CI) and Upgrading

	CI/CD
Support for CI	Yes
Support for Continuous Delivery or Productization	Yes
CI Tools	Visual Studio Code, Eclipse, Git, Jenkins, Artifactory

Source: Vendor RFI

Pricing

Table 9: Pricing Models

Pricing Models Available	Term license, Enterprise license
Factors Used to Determine Pricing	*Usage-based factors:* Number of total or named users, Policy or account volume, Annual premium volumes/revenues
	Tier-based factors: None

Source: Vendor RFI

FIS: SYSTEMATICS

FIS is a public company headquartered in Jacksonville, Florida. It is a leader in technology, solutions, and services, with presence globally across more than 50 countries in North America, Latin America, Europe, and Asia Pacific regions. The company provides a broad array of capabilities across the banking, merchant, and capital markets sectors through an array of mission-critical platforms and processing solutions to meet industry-specific needs of different segments and client types.

Within the banking sector, FIS offer multiple core banking systems, providing a range of platforms for different types and sizes of institution. The Systematics platform has a strong client base on the retail banking side, notably in the top-tier banking segments, with the platform addressing both the US and international market. It does have a particularly strong client base in the US. Within the company there around 150 employees available that provide professional services / client support for their Systematics solution, with 71 physically located in North America.

R&D expense over the past two years has been 7–8% of total revenue attributed to this solution. The vendor offers an annual user conference or customer event.

Table 19: FIS Snapshot

Company Info	
Year Founded	1968
Number of Employees	62,847
Revenues (USD)	$12.6 billion
Financial Structure	Public company NYSE: FIS
Product Info	
Product Name	Systematics
VendorMatch Link	[FIS Systematics]
Year Originally Released / Deployed	1977 / 1977
Current Release and Date of Release	220.212 / 2021
Target Market	US and global large financial institutions

Installed Base	58
Notable Clients	TD Bank, Citizens Bank, BMO-Harris Bank, Barclays, Riyadh International Bank, Virgin Money, Bank of Ayudhaya (BAY), ANZ, Bank of the Philippine Islands (BPI), Banco de Bogota, Banco de Credito del Peru, Infonavit
Vendor Events	The vendor offers an annual user conference or customer event.

Source: Vendor RFI

> Systematics has been a leader in the industry for decades with its robust and feature-rich capabilities. With developing industry trends and changing customer demands, Systematics continues to enable clients with tools and options to meet ever-changing demands and continue to evolve with the digital age. We are doing this with continued componentization and API enablement to support new business models.
>
> — FIS Systematics

Platform Summary

In 1968, a University of Arkansas graduate named Walter Smiley determined that many banks would be priced out of the market to acquire and program the mainframe computers required to automate their banking activities. Based on this hypothesis, Smiley started a data processing company that he named Systematics and, with a $400,000 investment from the Little Rock-based Stephens family, built out a new COBOL-based bank processing system. Over the years, Systematics grew from a deposit system into a full-fledged retail banking platform, with wide-ranging functionality across deposits and lending.

The Stephens family held their investment in Systematics until 1990, when it sold the business to a local telecommunications company called Alltel, which formed a new subsidiary named Alltel Information Services (AIS). Alltel sold AIS in 2003 to the title insurance titan Fidelity National Financial, the cornerstone of what we know today as FIS.

Systematics is FIS's flagship large retail bank CBS platform, with 58 clients globally, including half of the top 20 banks in the United States. The platform is deployed primarily as a licensed on-premise solution, although it is also available through a hosted option.

It's designed to be a suite of integrated, end-to-end core banking solutions which are scalable and versatile. The integrated suite is built to be flexible to use in organizations of any size, business structure, or geographic scale. It supports multi-institution, multi-currency, and multilingual environments

Key Features   Reliability Security, Scalability Throughput Configurability, Transactional Integrity, Multiple Legal Entities, and a Modernization Roadmap

Table 20: Core Component Snapshot

🟢 = Base Core Module (Available out of the box)   🔵 = Additional Module – different code base, preintegrated   ⚫ = Additional Partner Module

🔵 = Additional Core Module   🟡 = Additional Preintegrated Partner Module   🔴 = Not available / Not applicable / Additional Module - Non-Partner

🔵 = Composable module from ecosystem partner   🟡 = Additional Module - different code base

| **Module Name** = In Production │ *Module Name* = Supported but not in production |

Deposits		
🟢 **Retail Deposits**	🟢 **Commercial Deposits**	
Retail Lending		
🔵 **Credit Card Originations**	🟡 **Consumer Loan Origination**	🟡 **Mortgage Loan Origination**
🟡 **Credit Card Servicing**	🟢 **Consumer Loan Servicing**	🟢 **Mortgage Loan Servicing**
🟡 **HELOC Origination**	🟢 **HELOC Servicing**	
Commercial Lending		
🟡 **Small Business Loan Origination**	🟡 **Commercial Loan Origination**	🔵 **Complex Loan Origination**
🟢 **Small Business Loan Servicing**	🟢 **Commercial Loan Servicing**	🔵 **Complex Loan Servicing**
Other		
🟡 *Treasury Management*	🟡 *Merchant Services*	🟢 **General Ledger**

Source: Vendor RFI

The product backlog is prioritized by client and market needs based on a quarterly review. Future development plans include regulatory compliance, data accessibility, and transition capability to the Modern Banking Platform.

Table 21: Key Features

1	▦	**Architecture Overview**	Systematics is a COBOL-based system designed to run in a mainframe environment / IBM Z-series hardware. While it is written in Assembler as well as COBOL, many of the functional components have been moved away from it—enabling greater adaptability and integration (75% of functionality is now exposed through APIs) while leveraging stability of a proven engine. Programming frameworks utilized for distributed ancillary offerings that integrate with the core include Java JEE, Spring, JAXB, and Hibernate. Systematics is also a traditional batch-based system but can memo post to achieve a similar result as real time processing.
2	☁	**Support for Cloud**	Systematics does not currently support cloud deployments.

3		**APIs and Integration**	Systematics uses APIs for synchronous integration. Asynchronous integration occurs via queue-based, publish and subscribe of alerts, and secure FTP for bulk data transfer.
4		**System Flexibility**	Systematics is designed to allow for customization as the source code is delivered with the software license.
5		**Real Time Capability**	Some components are 100% real time, however the core accounting components are intraday memo post, and activity is reprocessed in batch overnight. All scheduled processes such as accruals, pricing, reporting, and GL interfacing occur in batch.
6		**Data Models**	The data model for Systematics is proprietary built from the ground up for the product. Some out-of-the-box extendibility is included. Complete extendibility available through configuration via developer UI and modification of source code.

Source: Vendor

ABC SUMMARY   ◯ **Advanced Technology**   ● **Breadth of Functionality**   ● **Customer Base**

CELENT OPINION FIS Systematics is one of the most "tried and true" platforms on the market today, renowned for being the workhorse of large Tier 1 institutions across the globe. It has made a name for its stability, scalability, and speed, leveraging the IBM mainframe. FIS continues to invest in its enterprise and integration support, which will benefit Systematics as institutions begin to reevaluate what capabilities should and should not be in the core itself. FIS has also shifted configurability to a more user-friendly developer UI allowing more rapid innovation.

Large banks are the obvious target market and will appreciate the ability to run on-premises and customize the platform to the needs of the bank. FIS keeps doing enough to export functionality out and modernize that clients remain relatively satisfied relative to transformation cost and risk. However, Celent expects ongoing question marks about its long-term viability or reliance on COBOL/on-prem mainframe hardware to be a sticking point for some institutions. It's also likely that FIS will start to position MBP within Systematics core market as a medium-term transformation route for banks looking to shift to more modern architecture.
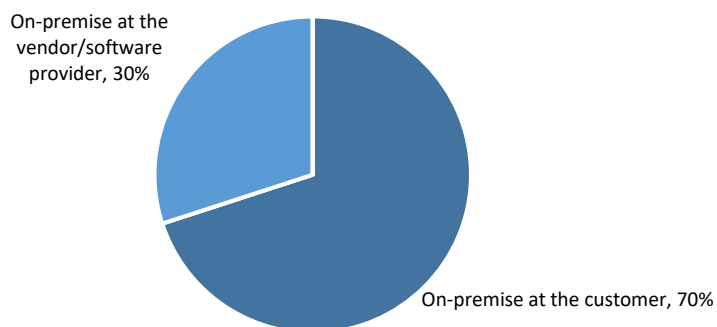
Customer Base

FIS has 58 total customers globally. Two-thirds of customers are in North America, although FIS successfully sells and services Systematics in all global regions.

Figure 3: FIS Client Base by Geography, Institution Type, and Deployment Mode
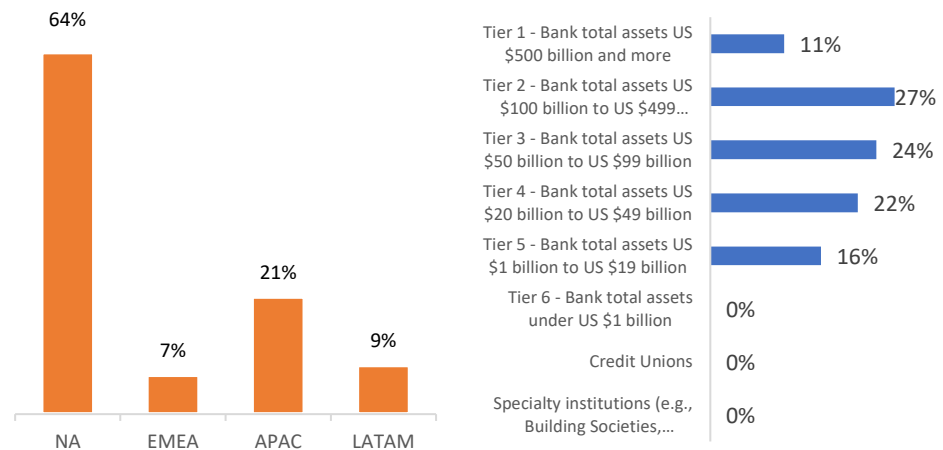
Source: Vendor RFI

Platform Details

The application architecture provides a set of standards, methods, facilities, and tools for developing and maintaining a system. It is composed of the following:

Policy Administration, Retrieval, and Management System (PARMS)

PARMS, a control file facility, provides a tool for efficient management of bank policies, products, and prices. Easy-to-use, real time screens eliminate redundancy of control information, thus reducing hardware cost and decreasing policy administration effort. For example, in a multistate environment, some systems require a complete set of control information for each state. With PARMS, only the unique state policies are duplicated. Some examples are usury limits and delinquency management.

SDMS and Data Dictionary

SDMS, a data management system, and the Data Dictionary allow financial institutions to share, reference, and store data fields, thus providing increased programmer productivity and minimizing data redundancy. In addition, these tools provide the capability to migrate to a database technology.

Application Programming Interface (API)

API allows a single version of a program to operate in many different environments, such as online or batch and different operating systems. The compiler interface and similar runtime interfaces free programmers from environment-specific programming issues.

Report Program Interface

RPI allows you to add new reports with minimal programming. New report layouts and selection criteria are set up using a high-level programming language. The report can then be added to the standard processing using any desired frequency.

Screen Painter

The Screen Painter provides an easy and flexible way for users to modify or define new screens. Simply paint a screen, and the Screen Painter adds it to the standard set for recall at any time without programming. AM uses this facility for all of its PARMS information.

Technology details for Systematics are provided in Table 4.

Table 22: Technology Options

Code Base	Core technology: .Net: 10%; Java: 5%; Other (COBOL, Assembly): 85%
Databases	DB2
Integration Methods	Web services; RESTful HTTP-style services; JSON format; MQSeries, JMS, or similar queue technology; Custom APIs; Flat files; Native messaging
	Public API integrations: See https://codeconnect.fisglobal.com/app/home
	The vendor does provide training for API integrations.

Deployment Models	On-premise at the customer, On-premise at a partner, On-premise at the vendor/software provider, Private cloud (Global)
	In NA, full services available include hardware, software, SAAS, development, testing, integration, support, and back office.
	In EMEA, full services available include hardware, software, SAAS, development, testing, integration, support and back office.
	In APAC, Services available include hardware, software, development, testing, integration, support, and back office.
Public Cloud Options	None

Source: Vendor RFI

Systematics is batch-based system with memo post. As a COBOL, mainframe-based system, it does not support cloud deployment, although it can be run on a full service / ASP basis through FIS if required.

Table 23: Cloud Support

Microservices Architecture	No
Stateless (apps can scale independently)	No
Container Orchestration (Kubernetes)	No
Service Mesh Support (e.g., Istio)	No

Source: Vendor RFI

Additional Functionality

The figure below shows FIS's functionality and production status of key features for core banking systems.

Table 24: Ancillary Modules Support

🟢 = Available out of the box	🔵 = Additional Module – different code base, preintegrated	⚫ = Additional Partner Module
🔵 = Additional Core Module	🟡 = Additional Preintegrated Partner Module	🔴 = Not available / Not applicable / Additional Module - Non Partner
🔵 = Composable module from ecosystem partner	🟡 = Additional Module - different code base	

Module Name = In Production ┃ *Module Name* = Supported but not in production

Channels

● Branch/Teller	○ Digital Banking	○ Digital Onboarding
○ Call Center	○ ATM	

Commercial and Retail Function		
● Currency Management	● Imaging/ECM Warehouse	● Data Layer (data lake, data streams, etc)
● CRM		● Data Warehouse

Cards & Payments		
○ Bill Pay	○ Payments Engine	○ ACH Origination
○ Card Issuing	○ P2P	○ International ACH (IAT)
○ SEPA	● Stop Payments	

Risk and Compliance		
● Asset Liability Management (ALM)	● Anti Money Laundering (AML)	● Compliance: Know Your Customer (KYC), OFAC
○ Fraud Detection	○ Risk Analysis and Reporting	

Source: Vendor RFI

Data and Integration

FIS's data model is proprietary.

Table 25: API Integration Details

Function	Approach
Approach to Integration	APIs for synchronous integration. Asynchronous integration occurs via queue-based, publish and subscribe of alerts, and secure FTP for bulk data transfer.
% of Platform Exposed as APIs	75
API Management	Yes

Source: Vendor RFI

Configuration

FIS provides an Installation Utility with the product set. Systematics is designed to allow for customization as the source code is delivered with the software license.

Table 26: Continuous Integration (CI) and Upgrading

CI/CD	
Support for CI	No
Support for Continuous Delivery or Productization	No

CI/CD	
Support for CI	No
CI Tools	0

Source: Vendor RFI

The FIS Systematics product suite is designed to allow for speed-to-market with respect to new product introduction. All core applications allow for online configuration of products through common components and architecture.

Pricing

Table 27: Pricing Models

Pricing Models Available	None
Factors Used to Determine Pricing	*Usage-based factors:* None
	Tier-based factors: None

Source: Vendor RFI

PATH FORWARD

Migrating to a core banking system no longer requires full open heart surgery, and banks don't need to take the full banking CBS with the shift to modular approaches. However, banks should select a platform and vendor based on long-term partnership fit.

The architecture development of the modern traditional CBS platforms highlighted in this report to modular, component-based, API-first, and cloud-enabled or cloud-native deployment significantly broaden the migration options available to banks. These offer the ability to start with priority business areas and operate with lower deployment costs, allowing banks to take a phased approach to overall platform implementation and decisions around running old and new CBSs concurrently to allow progressive renovation and migration.

Significantly, the willingness of most vendors to shift toward a more open, ecosystem approach to platforms means that banks are not necessarily tied into a one-platform decision when selecting a CBS provider—and best-of-breed approaches are an option. However, for most banks, selecting a new banking platform provider should be seen as part of an application and vendor consolidation strategy. Banks need to move toward use of a smaller number of strategic business platforms, rather than support the proliferation of applications that exists in most established institutions today. As such, selecting a CBS provider should still be one of most important business and technology decisions a bank makes.

Recommendations

As you consider your path forward, Celent offers the following recommendations:

- While the impact of Moore's law means system speeds for supporting bank workloads is no longer the prevailing constraint it was when older CBS platforms were developed, scalability and operational resilience remain essential hygiene factors. A CBS must be able to support possible exponential demands in transaction processing from digital banking and open banking, and also support data insight demands for the likely shift to data-oriented banking service propositions. Banks need to look for platforms that can scale in real time on demand (i.e., are truly cloud-native) to balance scalability, resilience, and cost. This does not necessarily mean banks need to deploy on public cloud now, but the ability to shift workloads in the future to public cloud will be likely be critical.

- Most "modern traditional" platforms offer the benefit of deep business functionality with modern technology architectures. Richness of functionality—particularly in breadth of ability to service across the bank and

meet local product needs—is valuable in driving shorter deployment times, allowing access to best practice processes and facilitating a platform strategy. However, configurability, flexibility, and the ability to support ongoing product innovation will be more significant in the long term. Platforms that support continuous innovation, allowing both business and IT to drive development by the bank, will have an advantage here.

- Selecting a CBS has been made easier by the shift to cloud, in that it should be relatively straightforward for a vendor to provide a mock, but actual, operational core system for evaluation purposes. Institutions should test configurability, asking vendors to replicate existing capabilities but also ensuring they look to use the platform themselves.

- It should be remembered that a new CBS shouldn't just replicate existing products and services. Core migration should be part of a broader bank digital transformation program, with a focus on product rationalization, process re-engineering and optimization, and a shift toward the digital banking target operating model.

No one knows exactly what the future will bring. Choosing a CBS that gives you the agility to meet future needs will position the bank well in a rapidly changing world.

LEVERAGING CELENT'S EXPERTISE

If you found this report valuable, you might consider engaging with Celent for custom analysis and research. Our collective experience and the knowledge we gained while working on this report can help you streamline the creation, refinement, or execution of your strategies.

Support for Financial Institutions

Typical projects we support include:

Vendor short listing and selection. We perform discovery specific to you and your business to better understand your unique needs. We then create and administer a custom RFI to selected vendors to assist you in making rapid and accurate vendor choices.

Business practice evaluations. We spend time evaluating your business processes and requirements. Based on our knowledge of the market, we identify potential process or technology constraints and provide clear insights that will help you implement industry best practices.

IT and business strategy creation. We collect perspectives from your executive team, your front line business and IT staff, and your customers. We then analyze your current position, institutional capabilities, and technology against your goals. If necessary, we help you reformulate your technology and business plans to address short-term and long-term needs.

Support for Vendors

We provide services that help you refine your product and service offerings. Examples include:

Product and service strategy evaluation. We help you assess your market position in terms of functionality, technology, and services. Our strategy workshops will help you target the right customers and map your offerings to their needs.

Market messaging and collateral review. Based on our extensive experience with your potential clients, we assess your marketing and sales materials— including your website and any collateral.

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For more information please contact info@celent.com or:

Craig Focardi	cfocardi@celent.com
Daniel Mayo	dmayo@celent.com

Americas

USA
99 High Street, 32nd Floor
Boston, MA 02110-2320

+1.617.262.3120

USA
1166 Avenue of the Americas
New York, NY 10036

+1.212.345.3960

USA
Four Embarcadero Center
Suite 1100
San Francisco, CA 94111

+1.415.743.7960

Brazil
Av. Dr. Chucri Zaidan, 920
Market Place Tower l - 4° Andar
Sao Paulo SP 04583-905

+55 11 5501 1100

EMEA

Switzerland
Tessinerplatz 5
Zurich 8027

+41.44.5533.333

France
1 Rue Euler
Paris 75008

+33 1 45 02 30 00

Italy
Galleria San Babila 4B
Milan 20122

+39.02.305.771

United Kingdom
55 Baker Street
London W1U 8EW

+44.20.7333.8333

Asia-Pacific

Japan
Midtown Tower 16F
9-7-1, Akasaka
Minato-ku, Tokyo 107-6216

+81.3.3500.4960

Hong Kong
Unit 04, 9th Floor
Central Plaza
18 Harbour Road
Wanchai

+852 2301 7500

Singapore
138 Market Street
#07-01 CapitaGreen
Singapore 048946

+65 6510 9700