Dear Readers,

As we settle down in the digital era, there is a lot to look at and contemplate. Business, as we know it has changed. Millennials are pushing companies to the edge, when it comes to customer experience. Competition is getting stiff, with startups eating away your market share. And the workforce is demanding anytime anywhere work flexibility.

So, what is it that as a bank you could do to ride this wave of transformation?

This edition of our research based newsletter talks about just that. The article on ‘Banking 2020’ gives you a sneak-peek into what the future looks like and what all you need to do to be prepared. There is a link to an interesting video in the article, which you must watch. The article on ‘Commercial Lending Resurgence’ talks about the need to balance risk management with customer experience in today’s times. We also take a look at how Mobile Imaging technology can empower your field force to be more efficient and productive.

Newgen has helped many of its global clients become market leaders through innovative solutions. We have over 200 banking clients from all across the globe. Some of our prominent clients include ICICI Bank, First Caribbean International Bank, Abu Dhabi Commercial Bank, Ecobank, Alex Bank and East West Bank. Our key solution accelerators in banking industry include Account Opening, Commercial and Retail Lending, Loan Origination (Commercial and Consumer Loans), Credit Cards, Trade Finance, Wealth Management, Payments and Tab Banking.

This edition also carries an insightful report from Gartner on ‘Hype Cycle for Digital Banking Transformation’ that throws some interesting facts around technology trends that will drive the industry forward.

I hope you will enjoy reading the newsletter.

Best Regards,

Diwakar Nigam
MD Newgen Software
Here’s how your customers expect to transact with your bank in 2020

- While on vacation – relaxing on a beach
- From the convenience of their home
- Banking on the go

Well, I would prefer all three where time, place and medium don’t matter. Today, Banks are adapting to changing consumer behavior and are focusing on building new channels for interacting and transacting with them. The millennials in particular prefer banking anywhere, anytime and is therefore demanding innovative methods for availing banking services.

Hence, banks are trying to achieve the balance between delivering innovative, high-touch transactions and the traditional modes of services. They continue to innovate to find ways of interacting with the customer that are more direct and relevant.
Combining the physical with digital

It is possible that in future we could see banks serving fewer clients but having deeper relationships with them. They may focus only on those products that they are really good at rather than trying to provide all things to everyone. Digital touch points are proving to be a viable answer to several consumers’ basic banking needs, while in-person interactions at the branch could continue for critical and sensitive issues.

The branch can remain the central hub of activity; however it needs to blend physical presence with digital technology to create a ‘phygital’ environment where consumers can design their own experience through their preferred channels. Phygital transformation has in fact already begun in banks with measures such as moving current functionalities online to making banking convenient.

The visionary banks have gone one step further to reinvent customer experience by providing newer ways to engage and provide value to customers. Banks have also started partnering with technology start-ups to accelerate innovation and create new propositions. One such example is that of “Virtual Banker”, a collaboration tool that allows video conferencing between customers in branches and remotely located bank advisors. The tool is supported by an integrated document sharing functionality as well as an integrated scanner and printer to send, receive and retrieve signed documents. Thus, by integrating digital channels into branches and vice versa, banks provide customers with a true omni-channel experience, where branches and online platforms are used interchangeably!

Banks should not ignore mobile wallets

With Mobile wallets witnessing a higher level of adoption across geographies, it is quickly becoming a robust customer engagement tool and an imperative to increase the customer base. The true value of mobile wallet lies in the time and the money saved, as well as the convenience experienced.

With the introduction of newer modes of payment, prepaid instruments will have a higher usage. There has been significant traction in the usage of such instruments for settling radio cab service bills and other ‘app’-driven transactions such as utility bill payments and online purchase of merchandise. Moreover, with the inclusion of cash-out system along with the payment banks, their usage is only going to expand faster.

Social media and the banking industry

Social media is also dramatically impacting the banking industry and pushing banks to establish their presence on prominent social sites. They are engaging with their customers via social media, analyzing the conversations and creating another exceptional channel of experience. By being proactive and responsive, they are ensuring a better experience for their customers.

A leading survey showed that customers consider ‘in-person’ interaction with the bank as one of the most important attributes of banking. Social media is able to provide that personal connect by facilitating a two-way communication. With an improved targeting, enhanced advertising, full compliance support, more efficient ROI tracking and more – social media now has the potential to play a meaningful role in a bank’s marketing plan.

A robust social media strategy helps banks connect with their customers, gives a human interaction experience, and makes their communication more effective. If executed with diligence, social media posts can add another dimension and the much-needed depth to the bank’s relationship with consumers in a marketplace where there is intense competition and nothing like brand loyalty exists.
Transformative Banking – Go digital with disruptive technologies

Robots and AI invade banking

Banks are even looking at using robots or artificial intelligence to augment human-driven processes. In the latter (AI), the systems automatically detect that the customer had recently checked out a specific bank offering on his mobile device and immediately alerts the thinking customer service concierge – a role that has nothing to do with telling and transactions – allowing a personalized greeting to be dispatched to the customer. Robots could therefore serve as a repository of new insights and perspectives. They could work side-by-side the humans, allowing them to serve customers more effectively.

In April 2015, Bank of Tokyo-Mitsubishi UFJ took the first step toward employing non-human staff with the introduction of a customer service humanoid robot at its flagship Tokyo outlet.

At a height of 58 cm, weighing 5.4 kg, the robot works at the reception area. The robot has been named Nao, and speaks Japanese, English and Chinese. It is speculated that this bank is the first amongst the world’s major financial institutions to employ a customer-facing robot.

Change is a must if the banking and financial services industry aims to keep up with the advent of intelligent devices and communication technologies, thereby paving the way for its own future. Proactive banks that choose to transcend the curve of technology to improve customer experience, engage their audience and boost productivity could well be tomorrow’s market leaders.

Deliver a futuristic banking experience to your customers where Place, Time or Medium no longer matters. Here is an interesting video that depicts how Newgen can help you deliver just that by connecting Systems, Processes, People and Things.

Source: Newgen
Lending continues to be a focus area for banks and has witnessed some major developments globally. For instance, Commercial Lending has been on a roller-coaster ride over the past few years. It remained the most profitable business arm for banks till 2008, when the financial crisis came along as a huge reality check. The global meltdown brought with itself sweeping changes that transformed the operational and strategic framework of this critical financial instrument forever.

The focus on the customer and the top-line growth clearly got sidelined, while a wave of skepticism seeped in, pervading all through. This skepticism was characterized by the prioritization of risk management and compliance measures over customer experience and operational responsiveness. The processes became rigid and strenuous as the internal business policies got aligned with the tight external market conditions. An air of sheer conservatism gripped the commercial lending market, from Corporate and Industrial Lending to Commercial Real Estate, Equipment Financing, and Consumer and Small Business Lending.

Recently, however there are clear signs of revival as the international markets have consolidated and diversified. As a sign of increased confidence, large, small and foreign-related banks have increased commercial and industrial loans substantially in the last one year.

This is one of the best showings in a long time.

However, there is an all new set of challenges that awaits them as they gear up for this battle to remain competitive and compliant.

- **Regulatory oversight has intensified** significantly, and managing new and evolving requirements is a challenge – particularly from the perspective of accurate reporting regulations
- **Risk management is becoming a holistic process** across lending institutions, requiring more standardized processes and better understanding of exceptions
- **Aggressive competition** from other banks and emerging non-banking lenders is a threat
- **New and upcoming sectors** are providing opportunities with immense potential that cannot be neglected

**Business Transformation – The Need of the Hour**

The recent turn of events augur well for banks and financial institutions globally. They also create a compelling need to steer away from the shadows of 2008, and rope in incremental changes that deliver a competitive advantage to banks early on in the rapidly stabilizing economic environment. Slowly
but surely, most forward looking banks have shed the self-imposed ‘cocoon’ that implied limited target markets and lack of process innovations. They are now moving towards modernizing the commercial loan origination function by relying on proven technologies and trusted domain experts to transform their businesses. By doing so, they aim at achieving a balance between the need to reduce operating costs and risk with the need to win more customers and expand profitable relationships.

The Three Choices
Banks may adopt one of the following three technology paths to meet this imperative.

The Traditional Approach – Building an Enterprise Application
Large Banks can leverage hard coded enterprise applications or systems to manage the policies, processes and structures within the commercial lending process. They have to develop an in-house application by setting up a team and corresponding infrastructure. These monolithic applications are hardcoded and do not support process level changes associated with the evolving market dynamics and regulatory compliances. Moreover, these solutions provide automation only in certain aspects of the process and not end-to-end automation. Any change introduced at a later stage can be a costly and time consuming affair, prolonging the time to market and compromising the business and operational agility.

The Point Solution Approach
A point solution would possibly address the current needs of the bank with regards to the automation of the commercial lending process. However, it will not allow the bank to introduce incremental improvements by limiting the flexibility of process changes due to its rigid solution architecture. Also, with disparate systems to work with, employees will not be able to function at the productivity levels that they are capable of.

The Transformative Approach – BPM Based Solutions
The pervading technology which bears the capability of an end-to-end transformation of commercial lending processes is a framework based approach called Business Process Management (BPM). It has the inherent benefits of both “build” & “buying off the shelf” along with the adaptability to business stakeholders to drive the solution based on their business strategy & regulatory compliance level changes.

The BPM platforms consist of configurable components such as the rules engine (BRMS) to store the credit policies, Document Management System (DMS) and workflow which enable businesses to run processes they want rather than what the application demands. Customizable user interface, seamless integration with third party software & mobility framework further enhance the productivity levels.

Whether it is the question of increasing profitability, ensuring business agility, reducing business risks or enhancing customer experience and satisfaction, BPM can deliver by focusing on continuous process improvement and operational flexibility. It helps banks meet both its short and long-term objectives.

Why BPM
BPM facilitates collaboration between business and IT, providing the bank with levers to implement a future ready solution which enables:

- Automating the lending approval process and implementing an optimized workflow that enables improved TAT, predictability, transparency and better decision-making
• Segregating tasks to enable the RM to focus on sales and passing non-value add data entry activities to back office / operations teams
• Building a wrapper layer over all existing loan systems to give stakeholders access to all relevant information centrally
• Digitizing the proposal to online forms. This facilitates capturing information in an actionable format and reproducing it in a Word / PDF document in the bank’s defined format for user reference

A BPM based integrated platform supports the entire credit lifecycle as well as exploit new delivery channels. This improves the efficiency and performance of all lending business units, which ultimately increases customer satisfaction across the entire credit lifecycle.

5 Things to Consider while Implementing a BPM Platform

What banks should be looking for during BPM selection and implementation is recommended to be based on the following criteria:

1. **Power in the Hands of Business** – The ability to change and modify processes according to the market needs and business strategy is a vital cog in the wheel. Banks must look for platform based solutions that offer this agility within their core framework, without the need for massive IT driven customizations

2. **Business Impact Analysis** – Banks must roll out the enterprise wide process transformation in a smooth manner, leveraging the existing infrastructure as much as possible. The training and complexity involved in the rollout must never go overboard or become overwhelming for the business

3. **Quick Time to Market New Products** – Implementing a BPM platform is not just an IT infrastructural change. It must transcend both business and technology to align the organizational processes with the market dynamics. Simply put, it must support quick transitions in product and service offerings

4. **Enterprise Level Collaboration**: BPM framework must have the capabilities which facilitate distinct business units (LOB’s) and systems to talk/interface to multiple underlying applications seamlessly. This interoperability is critical for creating efficiencies across key decision making scenarios. Integration with third party credit agencies & core solutions must be a salient feature of the project

5. **Unified View of Group Level Risk Exposure** – The BPM platform must provide a holistic set of analytical tools at every stage of the process to assess the risk associated. Real-time process monitoring along with model driven risk assessment systems can enable this key business need

To Conclude

The current positive sentiment of the market complimented by rampant industrial growth across most sectors clearly indicate the need to take bold steps. Banks and financial institutions must not shy away from the imminent need to adopt advanced IT systems that support business innovation. With BPM driven agility and process visibility, the fear of the unknown perishes, allowing organizations to undertake this transformation head on.
Mobile Imaging Technology Changes the Face of Banking

Continuing with the transformative wave seen in the banking space, another major development has been witnessed in the way banks approach customers. A recent report predicts that by 2017, 50% of employers will require employees to bring their own device for work purposes. Another report says that by 2018, there will be more than one billion devices used in 'Bring Your Own Device' or BYOD programs worldwide.

Majority of the bank staff today prefers to bring their own device to work – a trend that is becoming popular. This could very well become a ‘Win-Win’ situation for banks, with the recent advancements in mobile imaging technology, allowing them to provide on-time and on-the-go services to their customers. Sophisticated mobile imaging applications have built-in quality enhancement and size truncation features that empowers the field staff to capture customer information anytime anywhere. This opens up the market for banks and gives them a winning edge in a fiercely competitive market.

For banks however, mobile imaging goes much beyond capturing customer information accurately and precisely. Equally important is the secure and real-time transfer of this information back to the core banking systems to ensure faster processing. A combination of the two can reduce the cycle time for all customer facing processes and enhance the overall customer experience. Enterprise Content Management (ECM) platforms can form the bridge between a mobile enabled customer interface and the core enterprise systems by storing all forms of customer information as records that can be accessed as and when needed.

Banks must now leverage these technological innovations to achieve operational excellence in various aspects and win an edge over their competitors. Some of the steps taken by banks include:

- Enhancing Field Force Productivity
- Opening new channels of Banking
- Managing delinquencies on the 'fly'
1. Enhancing Field Force Productivity

Field sales executives are a bank’s first point of contact with the customer and often make or break the deal through their conduct. Still, for many organizations field service operations are the last frontier where enterprise information systems, workforce monitoring solutions and productivity tools stop making an effect. Communication challenges, insufficient information and operational time lags are cited as the top reasons for underperformance by most field agents.

Sophisticated mobile imaging and collaboration apps can result in significant time savings and improved productivity for the bank’s field force. These apps can lead to seamless interactions between the field-sales staff, their offices, and the clients. With improved accuracy in information capture, these brings down the operational expenses and creates process efficiency. Banks can use them across all stages of sales lifecycle from lead management to customer on-boarding, to customer servicing.

Prospecting – Mobility enables dynamic lead management capabilities for the bank’s field force. They can carry out critical tasks involved in prospecting stage while moving around in the field. Some of the key functionalities enabled through mobile technology include viewing assigned leads, searching for leads, scheduling tasks, doing follow-ups, and viewing pending items, alerts and notifications.

Customer Need Analysis – Field agents need access to comprehensive information around individual profiles that can help them categorize prospects appropriately and make successful sales pitch. Depending on demographics, lifestyle, spend patterns and future needs, mobile-enabled applications can suggest the right products for the customer.

Customer On-boarding – Real-time application processing can significantly increase the conversion percentage for field agents by creating minimum time lag in customer decision making process. Through mobile technology, application forms can directly be filled on a mobile/tablet and sent online to the processing center for quality check and further processing with close tracking of application status.

Sales Insights – Often, field agents are required to provide detailed product related information to prospects. Simple mobile devices like smart phones/tablets give them the access to latest product brochures, videos and other marketing material to help close the deal.

Customer Servicing and Retention – After sales services are an important aspect for building sustainable customer relationships and creating several cross/up selling opportunities. The mobile platform renders real-time alerts, pop up reminders, customer query updates, grievance handling, reminders for key events like birthdays and wedding anniversaries etc. for the field executives.

Monitoring and Reporting – Field agents can use their mobile devices to send real-time MIS reports to their supervisors, ensuring complete process visibility and performance tracking from the bank’s head office. Using these reports, the team leads can easily gauge the occupancy rates of various agents and enable dynamic work allocation.

2. Opening New Channels of Banking

Customer acquisition is the most engaging and critical stage of sales lifecycle in the banking industry. Smooth on-boarding can go a long way in creating sustainable loyalties and numerous cross/up selling opportunities for banks. Execution agility and robust process framework at this stage can help banks gain significant brand value and market competitiveness.

Banks have traditionally relied on their branch offices to manage this crucial process that involves intensive documentation around sensitive customer information. They have shied away from using any other channel, as it involves numerous validations and may lead to several compliance issues. This has restricted their target markets and created a huge cost and infrastructural burden on those operating in geographically widespread markets.

Advanced mobile imaging technology offers banks a reliable and flexible solution that empowers their field agents to initiate customer on-boarding ‘on the fly’. With smart mobile apps, agents are well equipped to conduct customer need analysis, educate potential customers, and influence their decision making, while delivering an unmatched customer experience. It has allowed first time right capture of important customer documents and seamless information transfer to the core banking system for real-time processing.

Thus, mobility brings the bank to customer’s doorsteps, in his office and all the other places that he can be. Physical presence through branch offices no longer defines the market territory for banks. Field agents equipped with smart phones/tablets or any other mobile devices can go to remote locations
and drive business, allowing banks to expand into new service areas and extend existing service areas across the socio-economic spectrum.

3. Managing delinquencies ‘on the fly’
Banks have long carried the risk of delayed/deferred payments on their multiple credit based products. Lack of pertinent communication between the banks, Collection Agencies / Agents create several loopholes in the process. Any transaction that happens in the field is available to entities upstream after a significant time lag, creating several compliance and business related issues for the bank. With Central regulatory bodies introducing stringent guidelines to govern the collection process for financial institutions, field executives need to be constantly monitored to ensure complete transparency and process visibility.

Mobility offers a smart and innovative approach to tackle various challenges associated with collections/recoveries by extending the process to a tablet/smart phone. It enables collection agents to fetch the delinquency lists along with complete customer details including account number, due amount, due date etc on their mobile device from the central bank server to approach the customer in an informed manner. They can then update the system on a real-time basis with the payment updates that trigger an immediate action from the central office.

In a multi-product and multi-debt relationship, mobility can play a key role for banks in managing ‘float money’ efficiently and avoiding funds stagnation. A robust mobile enabled collections process brings down the time lag between payment collection and its entry into the system considerably, enabling banks to better plan their finances. It ensures compliance with legislative mandates/state laws through seamless customer communication and expedited account reconciliations. Mobility not only cuts down on the operating costs and associated process risk, but also enhances agent efficiency, minimizing roll rates and charge-offs. Real-time MIS reports generated on mobile platform allows comprehensive audit trails, eliminating the chances of fraud of any manner.

**Mobile Imaging Technology enhances Customer Experience**

Mobile Imaging Technology has added another dimension to banking operations. Disruptive innovations like mobile imaging when applied to traditional banking processes like customer on-boarding brings about radical changes. It empowers the field force, opens up new channels of banking and lends agility to the process to manage delinquencies. It all adds up to enhanced customer experience and increases customer expectations with regards to banking services. Right from capturing information first-time-right to instant processing of information-mobile imaging technology, backed by ECM acting as the connecting link to Core Banking System, has completely revolutionized the way banks take their services to the customers.

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Magic Quadrant for Customer Communications Management Software, 21 December 2015 G00272479
Magic Quadrant for Intelligent Business Process Management Suites, 18 August 2016 G00276892
Magic Quadrant for BPM-Platform-Based Case Management Frameworks, 24 October 2016 G00276724
Magic Quadrant for Enterprise Content Management, 31 October 2016 G00293563
Newgen is the only company globally to be included in the four latest Magic Quadrants for Magic ECM, BPM-Platform-Based CMFs, iBPMs, and CCM.

Newgen Product Portfolio

**Intelligent Business Process Management Platform**
Newgen Intelligent Business Process Suite (iBPS) provides a process platform for business stakeholders to drive enterprise-wide Digital Transformation. It manages the full range of business processes by leveraging advanced tools for content integration, process orchestration, dynamic case management, predictive and on-demand analytics, enterprise mobility and social collaboration. iBPS facilitates collaboration in the design and execution of intelligent business processes.

**Case Management Framework**
The Newgen Intelligent Business Process Platform based Case Management Framework empowers knowledge workers with information processes, smart analytics, business rules, native mobility platform and tools for multi-channel collaboration, including an interactive interface for social collaboration. Built leveraging the Newgen Intelligent Business Process Management Suite, the CM framework runs end-to-end case life cycle management, redefining how businesses work across the globe.

**Enterprise Content Management Suite**
Newgen OmniDocs Enterprise Content Management (ECM) Suite is the market leading solution that enables "digital transformation" for an enterprise. It allows the end-to-end management of enterprise content like paper documents, forms and electronic files, right from capture to processing, to distribution and disposition.

**Newgen Enterprise Mobility Platform**
The Newgen Enterprise Mobility Platform (NEMF) is a smart choice for enterprises to release mobility imperatives and enable digital transformation. It is a framework to develop, deploy and manage highly configurable hybrid mobile apps, which supports multiple platforms. NEMF provides plug and play components, enterprise level security, advanced data and document capture and adaptors for integration with backend systems to enable rapid low code app development.

**Customer Communications Management**
Newgen’s Omni Output Management System (O2MS) delivers smarter and targeted communications for better customer experiences. It enables secure outbound communication on improved templates with rich designs and graphical representation of analytics across multiple distribution channels. In addition easy archival & retrieval of correspondences for presentment, and efficient customer request resolution are achieved using this enterprise application.

**Image-Based Check Clearing & Payment**
Newgen’s ChequeFlow is an image based Cheque Processing solution for inward and outward clearing. Advanced and highly configurable sub-systems for Automatic Signature Verification, FOREX Cheque Processing, PDC Management, ECS.

**Enterprise Level Scanning Solution**
OmniScan is a production scanning engine for document image capture. It enables scanning of different types of documents in different properties without human intervention using powerful scripts. The inbuilt export and integration feature allows using it as a scanning workstation with any Document Management and Workflow system.
Hype Cycle for Digital Banking Transformation, 2015

To be truly digital, banks must pair an emphasis on customer-facing capabilities with investment in the technical, architectural, analytic and organizational foundations that enable participation in the financial services ecosystem.

Analysis
What You Need to Know
Banks are in the process of becoming digital, seeking to use digital technologies to create new and improved customer experiences and to create new value and business models. Many today, however, are still in early stages of digital marketing. Others, farther down the digital banking path, struggle with sustaining support for proliferating mobile devices and apps, and an inability to integrate with external customer and partner ecosystems due to their legacy environments.

To transform their firms into digital banks, bank CIOs must go beyond early tactical and siloed investments in customer-facing mobile functionalities and technologies to create comprehensive and sustainable digital capabilities. This requires substantial investment in business-IT alignment, new and more effective forms of governance and process management, advanced analytics and rationalized agile architectures, and systems to tap into digital ecosystems of interconnected banks, partners and customers.

The Hype Cycle
Bank CIOs’ struggle to create true, sustainable digital banks, and the technologies and approaches that will help them, are reflected in this new Hype Cycle. Many have begun the digital journey (see Figure 1), investing in maturing technologies such as smartphone banking and tablet apps. More advanced banks have exposed APIs externally to encourage the creation of new apps and the incorporation of bank functionality and data into customer workflows and third-party applications.

This creates increasing complexity on the front, customer-facing side of the business. In most banks, this customer-facing complexity has not been balanced with reduced complexity and increased agility of underlying management structures, analysis and decision making, and application architectures, making their digital banking strategies unsustainable. This underlies why, for example, we have positioned the hype around open banking as about to begin the plunge into disillusionment, a plunge that has already begun in leading banks.

Because sustainable digital banking requires transformation across the total bank, including the front, middle and back offices, we have combined three past Hype Cycles (“Hype Cycle for Bank Operations Innovation, 2014,” “Hype Cycle for Digital Banking, 2014” and “Hype Cycle for Payments Innovation, 2014”) in creating this new Hype Cycle. Five categories of digital technology and supporting domains are reflected, each essential to banks’ mid- to long-term digital success:

• **Customer-facing**: going beyond discrete mobile technologies such as smartphone banking and tablet apps to include rationalized platforms such as open, unified banking solutions and digital wallet consumer hub

• **Agile application architectures** that promote efficiency, reduced complexity and agility, such as open bank

Figure 1. Banks Are Becoming Digital

Source: Gartner (July 2015)
systems, and supporting characteristics such as those supplied by BIAN standards and sourcing alternatives such as private, public and hybrid cloud

- Automation of operational processes and decision making such as intelligent bank operations and advanced analytics
- Ecosystem development, which is supported capabilities such as open banking, smart contracts and blockchain/distributed ledgers
- Agile management and organization designs and assists such as programmable business models for banking

The Priority Matrix

This Hype Cycle is focused on technologies and capabilities that are in the high and transformative categories. CIOs cannot drive innovation with investments that provide only lower levels of business value. They must focus on investments that are disruptive and transformative.

The Priority Matrix shows that many channel- and transaction-related technologies such as smartphone banking and tablet apps are rapidly maturing. While there will always be new digital capabilities that present tactical opportunities — such as geolocation products and services and in-branch video — the strategic opportunities enabling banks to create new revenue streams, which are essential for sustained value (such as open, unified digital banking solutions, open bank systems and programmable business models for banking), have longer time frames.

Many of the transformative technologies and capabilities are interrelated. For example, open, unified digital banking solutions and digital wallet consumer hubs draw upon open bank system designs, which in turn: (1) are enabled by BIAN standards; and (2) enable blockchain, smart contracts and programmable business models.

Figure 2. Hype Cycle for Digital Banking Transformation, 2015

Source: Gartner (July 2015)
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*As of July 2015*

Source: Gartner (July 2015)
Unless these more strategic capabilities advance in maturity and adoption by banks collectively and individually, the value received from more tactical investments will decline, and these tactical investments will flip from being competitive differentiators to wasted investments at best, and competitive inhibitors at worst.

Off the Hype Cycle
This is a new Hype Cycle, combining what had been three separate Hype Cycles (“Hype Cycle for Bank Operations Innovation, 2014,” “Hype Cycle for Digital Banking, 2014” and “Hype Cycle for Payments Innovation, 2014”).

On the Rise
Programmable Business Model for Banking

Analysis By: Kristin R. Moyer

Definition: A programmable business model for banking enables internal and external ecosystems to create, manage and adapt their own business models. Programmable business models are dynamic and disposable. They enable banks to not only survive, but thrive amid volatility by competing with hundreds of business models rather than just one.

Position and Adoption Speed Justification: Most banks have one (or a small number of) fixed, centrally planned and controlled business model to ideate, create, engage, offer, monetize and adapt the way value is created and retained. At times the bank is leveraging users outside the enterprise to create value (for example, using hackathons to support ideation), but it still controls the overall business model. This is an “inside-out” approach to value creation that may not change how the company makes money.

Programmable business models for banking expose assets such as intellectual property, business functionality and business processes so that users inside or outside of the bank can create, manage, adapt and retire their own business models. Banks, people and “things” can provide and/or use programmable business models. Programmable business models are dynamic and disposable because they are easily created, changed and retired through self-service platforms.

This means banks no longer need to rely on one business model to create sufficient shareholder value. Rather, sustainability comes from an “outside-in” approach with multiple business models that are created, managed and maintained by internal and external ecosystems. This enables banks to multiply value creation through two-sided markets (with one side being customers and the other side being ecosystems that create business models and value) and network effects (where value increases as the number of customers and ecosystems increase).

Some of the technologies used to enable programmable business models (like Web APIs, open data and marketplaces) are widely available today. The programmable business model platform can, therefore, be built and used today by referencing existing/legacy financial instruments and the Internet of Things. In the longer term, the programmable business model will be an enabler of the programmable economy, which will emerge from metacoin platforms and a generalized notion of value exchange that goes beyond monetary exchange.

We do not expect the programmable business model for banking to become mainstream for five to 10 years due to barriers like closed industry structures and operating models, and concerns about intellectual property, regulatory compliance, security and operational and reputational risk – especially in such a highly regulated industry.

Gary Olliffe and Eric Knipp are co-authors of this analysis.

User Advice:

• Identify the existing business models used by your bank.

• Make a catalog of the emerging business models that are being used in the banking industry at each stage of the Gartner Business Model Framework.

• Evaluate gaps between your existing business models and the emerging business models in the banking industry.

• Pick one of the gaps at a specific stage, such as create, and do an internal pilot that gives more control to employees to adapt and change existing business models.

• Pick another gap and do an external pilot with a trusted group of existing partners to customize one stage of your existing business model.

• Identify new internal and external ecosystems of partners that can leverage your programmable business model for banking.

• Define and differentiate the individual business model components that can be leveraged by others as raw materials instead of understanding the end-to-end business process and how it can be differentiated.

• Become a designer of building blocks or platforms, rather than business models.
Business Impact:

- Revenue growth – By enabling the creation of entirely new solutions and monetization strategies from a potentially infinite number of ecosystems.
- Cost reduction – By reducing the time and cost of bringing new business capabilities to market.
- Customer experience – By putting more control in the hands of users (sometimes the actual customer) that may be closer to the actual customer than the provider of the programmable business model.
- Agility – By enabling rapid time to market and the ability to adapt to volatile business conditions.

Benefit Rating: Transformational

Market Penetration: Less than 1% of target audience

Maturity: Embryonic

Smart Contracts

Analysis By: Fabio Chesini

Definition: A smart contract is a computer protocol that facilitates, verifies or enforces the negotiation or performance of a contract, or eliminates the need for a contractual clause. Smart contracts usually also have a user interface and often emulate the logic of contractual clauses. A distributed smart contract is a method of using a distributed ledger or blockchain to reach agreements among two or more parties acting as agents to execute the smart contract.

Position and Adoption Speed Justification: The smart contract concept is not new – for instance an escrow contract, which is a legal document that outlines the terms and conditions between parties involved. The escrow agreement defines the arrangement by which one party deposits an asset with a third party (let’s say a bank, called an escrow agent), who will in turn make delivery to another party if and when the specified conditions of the contract have been met. If the escrow agent is able to automate the conditions to trigger the delivery to another party based on the agreement between the parties, this escrow contract turns into an escrow “smart contract” as it has the ability to be executed by a trusted third party using a deterministic approach. However, the rise of metacoin platforms and their distributed ledger component, as well as distributed cloud computing environments, are raising expectations of smart contracts as verification and enforcement mechanisms. Following the escrow example, instead of having a single third party (escrow agent) empowered to execute the smart contract, within a distributed ledger, the parties involved might select a group of third parties instead of a single one; these selected parties can then act as agents to execute the smart contract, turning a single trusted third party (escrow agent) agreement into a trustless smart contract group of (escrow agents)’ agreement. This group of agents can be agreed between the parties to prevent the risk to collude, or they can even select a single or a group of anonymous escrow agents among the participants in a distributed ledger for a full trustless mechanism.

Smart contract scripting languages are currently under development. The need for a “turing complete” scripting language to automate complex agreements, and for a trustless runtime environment providing a deterministic programming language, is the key challenge for this new technology. This technology is evolving very rapidly, driven primarily by the metacoin platforms appearing on the market (for example, clearmatic, Ethereum, Hyperledger or Ripple). Metacoin platforms are also in early alpha and beta stage, making this a strong barrier for full trustless smart contract execution. Also the existing legal and compliance frameworks might require an in-depth review and update to support this “smart” way of doing business; therefore, we believe this technology will take 5 to 10 years to reach the Plateau of Productivity.

User Advice: Work to develop a clear understanding of the different smart contract initiatives such as Codius, Ethereum, PeerNova, etc.

Identify the most relevant use cases for your organization.

Recognize the potential of smart contracts to transform business and operational processes, identifying integration points with existing processes to determine their impact and how they could change the bank’s value proposition.

Business Impact: From a strategic business perspective, smart contracts represent a shift from a product-centric approach to one that is contract-centric throughout the entire life cycle of the customer relationship. From an operational transformation perspective, they can streamline contract clauses related to internal or external customer agreements.

Benefit Rating: Transformational

Market Penetration: Less than 1% of target audience

Maturity: Embryonic
Business Ecosystem Modeling

Analysis By: Mary Knox, Marcus Blosch

Definition: Business ecosystem modeling (BEM) is focused on extending the scope of enterprise architecture (EA) to the network of customers, devices, partners, counterparties and other organizations that make up the organization’s ecosystem. In the context of banks, it is the extension of techniques and approaches – such as business capability or functional modeling – to the bank’s ecosystem.

Position and Adoption Speed Justification: BEM is an important input into digital banking initiatives. It helps banks identify their current and potential roles as financial services suppliers and users (such as using foreign exchange services from a partner) and users of other nonfinancial services (such as HR services). This enables them to develop differentiating strategies based on their core capabilities and the capabilities and needs of other ecosystem members, while sourcing commoditized and noncore functions.

BEM is a logical extension of a bank’s business-outcome-driven EA activities as banks seek to:

- Adopt digital strategies that extend beyond the bank’s firewall
- Respond to globalization and fragmentation of markets
- Rapidly introduce new products and services
- Continue to contain costs while driving operational efficiencies
- Meet customer demand for more personalized bank services
- Improve how they contextualize their products and services by capturing customers’ needs and intents to align payment products and services within their own environments and workflows

However, BEM is currently at an early stage in banking, which lags some other industries. This, coupled with the continued pressures of regulatory compliance, leads us to position it at post-trigger 20% with an estimated seven or eight years to plateau.

User Advice:

- Extend EA practices beyond the walls of your enterprise to include all current and potential members of your business ecosystem.
- As part of your BEM initiative include: (1) stakeholder analysis and mapping to define the ecosystem and the actors in it; (2) business capability modeling to identify the capabilities of each actor and the relationships and interdependencies between the capabilities across the ecosystem; (3) decision analysis to identify the decisions that need to be made and the implications for the supporting information architecture; and (4) performance analysis to identify the metrics and measures needed to operate and change the ecosystem.
- Include a short version of enterprise context for each of your key ecosystem partners to ensure that you fully understand their strategies and goals, and how their interests are, or could be, intertwined with your own strategies and goals.
- Identify areas of opportunity where a closer collaborative relationship with customers, partners and other third parties could add value, or where you can offer new products, services or capabilities (such as through the offering of open development banking platforms, public APIs or apps) for integration into ecosystem participants’ business processes.
- Use EA to facilitate collaboration with ecosystem partners. Develop elements that provide an end-to-end perspective of the relationships, rather than being limited to your organization. This will include business process models, information architecture and collaborative governance models.

Business Impact: BEM can provide high value in:

- Attaining new performance levels. In a marketplace where control is increasingly in the hands of customers, banks must influence, and accept influence from, the broader financial services ecosystem to gain operational improvements.
- Developing new ways of working. Each bank has its own core competencies and resource constraints. By working with ecosystem partners, these core competencies can be combined and address resource limitations in new ways.
- Developing innovative ideas. New ideas can come from combining insights across the ecosystem and by opening up bank systems for direct access by ecosystem participants to build customer-desired solutions using the bank’s assets.
- Providing access to new markets and customers. Often, access to emerging markets involves working closely with
local partners. BEM can help identify and manage relevant ecosystem members and resources in diverse geographies.

We expect BEM to enable future financial services business models and innovations.

**Benefit Rating:** High

**Market Penetration:** 1% to 5% of target audience

**Maturity:** Emerging

**Digital Wallet Consumer Hub**

**Analysis By:** Christophe Uzureau; Alistair Newton

**Definition:** A digital wallet consumer hub allows its users to control and manage all their other digital wallet capabilities, including from multiple digital wallet providers. It offers analytics and enhanced account management capabilities for payment and loyalty programs, including a dashboard to facilitate this process.

**Position and Adoption Speed Justification:** The digital wallet consumer hub profile is at an embryonic stage. At this stage, some banks such as Commonwealth Bank of Australia (CBA) have started providing more flexibility to their customers to define certain payment parameters.

However, to reach maturity, it would have to allow users to:

- View transactions across multiple digital wallet solutions, including from third parties.
- Provide an aggregated stream of payment transactions across all payment cards and accounts, as well as loyalty programs.
- Aggregate, transfer and exchange loyalty points and schemes, including the ability to convert points to local fiat currencies, and pay with points.
- Provide pretransaction advice and information on “best” payment card or accounts to be used.
- Capture post-transaction details, such as copies of digital receipts, and tag receipts and transactions.
- Map out locations where payment card details are used or stored, and highlight risk profiles associated with such storage.

- Repopulate new payment card details to all digital wallet sites on card replacement or renewal.

To achieve such a functional level, banks will need to open up their banking operations – see the Open-Source Banking Systems profile in “Hype Cycle for Open Banking APIs, Apps and App Stores, 2015” – as well as to invest into new digital interfaces to enable consumers to define their preferences. The business case for a digital wallet consumer hub is more difficult to create than compared to traditional payment products such as credit cards – most of the revenue will be indirect, not fee-based revenue. As a result, we currently position this profile at post trigger 20% and expect that banks will need at least 5 years to deliver on ROI.

**User Advice:** Prioritize providing a digital wallet consumer hub over a me-too digital wallet. As a starting point for your digital wallet consumer hub, enable customers:

- To access, track and manage multiple loyalty programs while planning to enable payments via loyalty points.
- To set their security parameters – for example, define a limit in purchasing value, authorize only certain types of merchants or usage at specific locations for a given card account.

Consider which areas of functionality you will replicate – or even totally migrate – from your existing digital banking applications to your digital wallet offerings. Account management functionality is critical for adoption and reusing digital banking capabilities will reduce cost as well as improve experience consistency.

**Business Impact:** Digital wallet consumer hubs have the potential to ensure your bank status as a provider of security and digital ID services, as well as the primary advisor to help consumers maximize their purchasing power. As consumers’ reliance on these solutions increase, so will the amount of information collected on consumers’ consumption patterns. This will significantly improve the contextualization of banks’ products and services, and make sure the bank prioritize their product development according to the overall customer experience, not just how their specific LOBs are organized. This contextualization process will strongly contribute to the digital banking transformation, while investments into digital wallet consumer hubs will also enhance digital banking interfaces.

**Benefit Rating:** Transformational

**Market Penetration:** Less than 1% of target audience
Maturity: Embryonic

IoT for Banking

Analysis By: David Furlonger, Kristin R. Moyer, Stessa B Cohen

Definition: The Internet of Things (IoT) for banking is the network of physical objects that contains embedded technology to communicate and sense or interact with the objects’ internal state or the external environment. It comprises an ecosystem that includes things, communication, applications and data analysis that banks can use for organizational efficiency and customer delivery.

Position and Adoption Speed Justification: The IoT (technologies, standards, processes and so on) is very immature, and many financial institutions have just started experimenting with it. Only a small minority have deployed solutions in a production environment. Those organizations that have deployed IoT initiatives tend to have done so in areas that have traditionally been known as operational technology (OT), such as ATM monitoring and security, rather than IT. In the near-term future, smartwatches could be incorporated into banking relationships – for example, a smartwatch could detect that customers have changed time zones and proactively alert their digital wallets and the card issuers for fraud and payment purposes. In the longer-term future, we expect to see “things” become banking customers. For example, a connected vending machine accepts payments for purchases already, and could have the ability to make its own payments for restocking or repair in the future. This would require banks to determine appropriate payment, line of credit and cash management services for the vending machine, market these services to the vending machine, validate the identity of the vending machine, execute a smart contract and then onboard and manage the vending machine as a small business customer.

We believe it will take five to 10 years for the IoT to reach the Plateau of Productivity in the banking industry, given its immaturity today. Barriers to adoption include privacy, security, lack of a compelling business case and lack of skills. However, the falling costs of networking and processing mean that there are few economic inhibitors to adding sensing and communications to products or operational facilities costing as little as a few tens of dollars.

User Advice:

• Establish an individual to head up IoT initiatives and act as a technical and business focus for the domain. There are natural synergies with digital business, so IoT may fall within the purview of your chief digital officer (CDO).

• Educate the organization on the business value of the IoT. For example, IoT can increase revenue, decrease costs, improve return on assets, reduce risk, improve service, etc.

• Conduct a market assessment/impact analysis and ideation activities if you expect the IoT to impact you in the short term, and to identify which new skills will be required and to find staff and sourcing partners.

Business Impact: The IoT can lead to higher lending returns (from more effectively monitoring property usage and so on), new revenue streams (such as untapped collateral management fees) and more effective risk management. In the longer-term future, we expect to see things become banking customers and represent an entirely new market opportunity.

Benefit Rating: High

Market Penetration: Less than 1% of target audience

Maturity: Embryonic

Digital Payment Advisor

Analysis By: Alistair Newton; Christophe Uzureau

Definition: A digital payment advisor is a smartphone application that dynamically advises consumers on the most appropriate payment solution, source of funds or funding strategy to use for any particular transaction. The advisor has access to users’ payment and loyalty details and their wider pools of alternative funds and data. It knows the physical location of users (including their actual location within a physical retail store). The objective of the advisor is to help the customer make “better,” more-informed payment decisions.

Position and Adoption Speed Justification: This technology remains at an early stage of development. It will increasingly link to many of the functions that are offered by the next generation of personal financial management (PFM) solutions as well as those offered through digital wallet applications. As a stand-alone application that integrates all this additional functionality, its early stage of development is reflected in the fact that there are as of yet only theoretical models that provide this full suite of solutions.

User Advice: While banks may not initially feel that they should be offering their customers this sort of functionality, they must recognize that this sort of machine-led intelligence will increasingly influence customer behavior. If they as banks do not offer these sorts of solutions to their customers,
then other financial services or third-party providers may be tempted to do so. Banks should plan for the existence of such functionality and integrate it into their own plans to offer PFM and digital wallet solutions.

**Business Impact:** Banks will need to plan for the advent of digital payment advisors because of its business impact on two levels. First, as an indicator of machine-influenced customer behavior, banks will need to understand how their customers will behave when they have access to perfect information. Equally, banks need to understand how the use of machine-driven advisors of this sort will impact existing product and service offerings and the extent to which they will need to amend pricing and functional capabilities to take account.

**Benefit Rating:** High

**Market Penetration:** Less than 1% of target audience

**Maturity:** Embryonic

### Open Bank Systems

**Analysis By:** Mary Knox, Don Free

**Definition:** An open bank system’s assets and functions are accessible and usable in the context of the end user across intra- and interenterprise boundaries. They are also capable of incorporating functionality and data from many sources spanning internal and external ecosystems. Open bank systems are characterized by adherence to service-oriented architecture principles, the exposure of APIs, the ability to consume APIs, incorporation of workflow and business rules capabilities, and supporting technologies and organizational structures and practices.

**Position and Adoption Speed Justification:** The position of open bank systems is based on the achievement of accessibility and usability in the context of the end user. While some aspects of bank systems, such as componentization, or incorporation of business rules or workflow, may be farther along, the achievement of open bank systems is emerging, with a minimum of eight years expected before they reach the plateau. This is because most banks and vendors are saddled with legacy systems, including core systems with long replacement cycles, the need for new organizational models and practices, and immaturity of best practices and industry standard approaches to the creation and operation of open bank systems. Work across banks in industry associations such as Banking Industry Architecture Network (BIAN) help to accelerate open bank system achievement, and startup banks and vendors unsaddled with legacy may achieve open bank systems in a shorter time frame.

**User Advice:** CIOs

- Assess the level of openness of bank systems required to support your bank’s digital banking and other business strategies.
- Identify the audiences (such as internal bank IT staff, internal bank business staff, third-party developers or customers) for open bank systems, and the associated requirements.
- Use the openness assessment and audience identification to pinpoint weaknesses in your current systems for the support of digital banking, prioritize investments, and evaluate upcoming projects and vendor solutions.
- Don’t confuse componentization with openness. Debunk vendor hype by realizing that just because a system is componentized doesn’t mean it is open. Accessibility must be granted to the components and the functionality, and data they contain in a manner that is suited to the skill level (business as well as technical) and intent of the end user.

**Business Impact:** Open bank systems are essential for supporting digital banking strategies that rely, in part, on the ability to expose bank functionality and information to end users – including customers and counterparties – through APIs and apps. They also require the ability to present customers and other third parties with personalized services. Bank system openness also is important for meeting a bank’s internal operational goals. The degree of bank system openness will significantly impact the ability to introduce differentiating customization, while ensuring the ability to accept future upgrades and reducing replacement risk if switching solutions. Similarly, open bank systems support “assembly” approaches to application design that blend functionality from multiple vendor solutions, including public, community and managed cloud services, and in-house development including private cloud.

**Benefit Rating:** Transformational

**Market Penetration:** Less than 1% of target audience

**Maturity:** Emerging

### Geolocation Products and Services

**Analysis By:** Alistair Newton

**Definition:** Geolocation-based products and services leverage the physical location of customers to deliver them enhanced or differentiated product or service propositions.
**Position and Adoption Speed Justification:** Through the last year, there has been limited movement on this profile. The potential for products and bank services to be tailored to customers based specifically on location is theoretically very powerful, but remains a challenge for many banks. As with last year, if this profile were based solely on the use of geolocation for fraud management, then it would be further along the Hype Cycle. However, this profile includes the integration of geolocation into mainstream products, and hence suffers from the challenges in that area. It also specifically excludes stand-alone location services, such as ATM and branch-finder applications, which can be found in many mobile banking applications.

**User Advice:** Recognize the benefits and risks of integrating geolocation into products and services, and the impact that geolocation will have in addressing the needs and requirements of your digital customers. Ensure that all offerings are specifically permission-based, and consider the use of “toggles” to allow customers to very easily and intuitively turn geolocation on and off. Start with solutions that integrate to loyalty applications, and only then start to consider how applications align to location-specific product offers or location-variable pricing. Recognize the role of geolocation in customer conversations — customers who share their locations with you are offering you a useful insight into their needs and wants, so treat the information with care and tact, and only reuse it where you can add value to the customer.

**Business Impact:** Integrating geolocation into products and services will allow banks to:

- Adapt pricing and product offerings to take account of customer need or competitor activity.
- Deliver a more empathetic experience to existing and potential customers.
- Allow the integration of wider “big data” points into the overall service offering.
- Allow the development of partnership strategies (for example, offering enhanced loyalty points to encourage a customer to make a purchase when in a particular retail outlet).

**Benefit Rating:** Moderate

**Market Penetration:** Less than 1% of target audience

**Maturity:** Embryonic

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**Public Cloud for Core Banking**

**Analysis By:** Don Free

**Definition:** Public cloud for core banking is a derivative of cloud computing used by banks to source their mission-critical systems of record. These public cloud formations consist of single-instance, shared core banking software associated with multitenancy or bank-specific database deployments. This technology replaces the Core Banking BPO technology profile, whose adoption varies dramatically by region.

**Position and Adoption Speed Justification:** Although core banking is a mature technology, the public cloud deployment of core banking is immature. Use cases are typically limited to small-tier financial institutions (microfinance), banks with low account transaction volumes or as subsets of larger bank product portfolios. Broad adoption across all banking tiers will remain elusive until assurances of security and data privacy concerns are resolved. Expansive efforts for even broader regional adoption will be hindered by country-specific legislative treatments for data privacy that have to be reconciled. Although the vast majority of central banks have not specifically prohibited public cloud deployments of production systems, this model has not been embraced either. However, a plurality of global central bank contacts interviewed by Gartner privately concede that public cloud usage for mission-critical systems is inevitable. Gartner predicts that obstacles to adoption will be diminishing as empiric public cloud experiences increase over a three- to five-year period.

**User Advice:** Banking CIOs:

- Initiate the public cloud conversation with regulators. Most central banks will not establish a position absent of bank demand for this deployment model.
- Submit proposals for incremental public cloud deployments of targeted market segments with lower-risk profiles. Microfinance and unbanked/underbanked markets are ideal candidates for initial deployments of public cloud processing.
- Experiment with public cloud infrastructure to become more familiar with this deployment model. Public cloud development and test environments are increasingly used to leverage elasticity.
• Explore the competitive landscape for public cloud providers. Start the discovery effort with core banking vendors that are promoting public cloud capabilities.

**Business Impact:** Public cloud is the future service model for accessing bank technology to support business aspirations of innovation and a means to rationalize IT operational requirements. Gartner predicts that resources for business support will increasingly be derived from external sources to accommodate the fast pace of change within the banking industry. The impact of this business change will force banks to source commodity functions to realize increased agility objectives and economies of scale on a more granular basis.

Bank IT organizations will have to prepare for public cloud sourcing through restructuring to accommodate a distributed sourcing model that repositions IT as a broker of technology.

**Benefit Rating:** High

**Market Penetration:** Less than 1% of target audience

**Maturity:** Emerging

**Sample Vendors:** Mambu; Ohpen; Temenos Group

**Digital Personal Financial Advisor**

**Analysis By:** Stessa B Cohen

**Definition:** A digital personal financial advisor (DPFA) is a set of technologies that use a customer’s own data, data analytics and other business intelligence to learn about customer financial behavior generally and a specific customer’s personal financial habits. This enables a bank to proactively help the customer achieve short- and long-term personal financial goals.

**Position and Adoption Speed Justification:** The estimated time to the Plateau of Productivity is based on the complexity of integration and linkages a bank must make for DPFAs to be effective in supporting customers and generating revenue. This requires linking available data analytics and information about the customer – including customer profiles and historical payment data, customer financial aspirations and goals – to current financial cash flow, budget and actions for future-based planning and automatically generating suggested changes in spending and cash flow to make it possible to attain goals. This enables a bank’s systems to analyze past transactions and budgets, and allows customers to create and monitor personal goals and receive personalized advice. Adoption will also be affected by the availability of vendor solutions that can leverage data analytics as well as cash-flow data. Personal financial management (PFM) vendors are still in the process of developing DPFA capabilities.

**User Advice:**

• Develop a clear roadmap for the development of DPFA in your organization during the next three years.

• Aim for a solution that uses data analytics to proactively answer customers’ questions and solve their problems, rather than simply repackaging existing bank statements and static information.

• Create specific use cases for deploying DPFA capabilities to each type of device customers prefer.

• Establish PFM capabilities as part of a complete digital banking experience that enables the customer to manage personal, family and small business cash flow, connect all accounts and products held at the bank and elsewhere, and create, monitor and act on financial goals.

• Create a data architecture that provides a foundation for this transition from basic PFM to a true DPFA. This architecture must be able to take context (for example, location and predicted need) into account, using BPM technologies and data analytics.

**Business Impact:** DPFAs’ capabilities are not channel- or device-specific. They will work best when implemented within other services. Their transformational value can be realized by pushing appropriate and relevant capabilities to any device, including smartphones, tablets, wearable devices and digital wallets.

**Benefit Rating:** Transformational

**Market Penetration:** 1% to 5% of target audience

**Maturity:** Emerging

**Sample Vendors:** eWise; Geezeo; Misys Banking and Securities; The Moneyer; Yodlee

**Blockchain/Distributed Ledgers**

**Analysis By:** Fabio Chesini; David Furlonger

**Definition:** A blockchain or distributed ledger is a “transaction database” shared by all participants in a network. The distributed ledger contains every transaction ever executed between all participants. With this information, anyone can trace back a value belonging to any participant at any point in history.
Position and Adoption Speed Justification: The majority of blockchain initiatives are still in the early alpha or beta stage. The market recognizes the true value of the blockchain as a stand-alone component of a metacoin platform, decoupled from the other two main components: the token or virtual currency; and the scripting language (for smart contracts). Due to the intrinsic nature of distributed systems, and the different approaches to reaching consensus in a distributed ledger, the main concerns center around scalability, security and regulatory framework. Another factor is that most blockchain initiatives are open-source, and their innovation, evolution and support are heavily influenced by the creators of these metacoin platforms.

User Advice: Include blockchain technology as one scenario in your strategic planning for 2016, assessing potential risks and operational costs, as well as your execution capabilities. Identify the integration points with existing infrastructures to assess the future investments needed. For instance, Earthport did a partnership with Ripple Labs to streamline their clearing and settlement processes for low-value, cross-border payment services.

Business Impact: The blockchain technology is gaining traction, because it has the promise to transform the transaction flows of any industry. For example, “payment services in the transaction banking business” is one of the most popular use cases being adopted in the banking industry.

Benefit Rating: Transformational

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Sample Vendors: Hyperledger; Ripple Labs; Tembusu Systems

Mobile Imaging for Bank Staff

Analysis By: Stessa B. Cohen

Definition: Mobile imaging for bank staff describes the technology deployed on smartphones and tablets in branches and with bankers in the field that enables banks to capture documents, and identity documents and photographs to improve operational efficiencies and reduce the cost of products and services.

Position and Adoption Speed Justification: The mobile-based technology and workflow capabilities for banking have begun to emerge from the mobile capture technology designed for customer-facing apps. Gartner expects banks to adopt this technology to push existing processes that are traditionally completed in the back office out to the branch staff and bankers who work outside the office. The challenge will be using this technology to transform branches and customer-facing interactions. Because bankers are faced with high cost of branch operations and back-office processing, Gartner expects banks to adopt this technology to increase operational efficiency and decrease processing costs.

User Advice:

- Identify processes that require customers to submit paper applications that are processed in the back office.
- Evaluate vendor providers that support workflows and use cases for a variety of situations and the bank staff that can bring these documents, images, photos and workflows into existing bank processes and workflows.
- Monitor technology maturity for the ability to scan and validate government-issued identification.
- Focus application development on improving the customer experience, rather than on the transaction.

Business Impact: This technology can be deployed across all areas of bank staff who talk to and meet with customers in person. This includes consumers, small and midsize business (SMB) customers, private and high-net-worth customers. It also includes all lines of business, especially document-intensive processes in credit card, loans and mortgages. Bankers will be tempted to move existing processes to mobile and tablets. While these initiatives will improve costs and efficiencies, the return will not be transformative. Those initiatives that focus on ways to transform existing processes to processes that enable customers to achieve goals (such as purchasing a new house, manage finances, pay bills, pay off debt) will be most productive. This will probably involve the digitalization of several workflows and business processes, and focus on the customer experience rather than on a single transaction. This technology can also be used to support digital transformation of banker-customer interactions.

Benefit Rating: High

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Sample Vendors: Kofax Image Products; Mitek; Newgen Software; Top Image Systems
Open-Source Banking Systems

Analysis By: Kristin R. Moyer

Definition: Open-source banking systems are banking-specific applications (like card management software or core banking), components (like relationship pricing) and infrastructure (like user interface widgets) that are made available through an open-source license process. Open-source software is available under license and distribution conditions specified by the Open Source Initiative. An open-source license typically permits free use, access to the source code, modification and redistribution, subject to the conditions of the entity distributing it.

Position and Adoption Speed Justification: Open-source banking systems make code available to everyone, and let CIOs take advantage of open innovation, which capitalizes on knowledge and expertise that lie beyond an enterprise’s boundaries. Open-source banking systems may be especially appealing in areas of commoditized functionality, components and infrastructure – as is the case with packaged applications relative to homegrown applications. Some examples of open-source banking solutions include Cyclos (online and mobile banking), MyBanco (microfinance), Micro-finance Open Architecture Project (which also includes software, not just standards) and Mifos (core banking and APIs).

We have not seen an increase in the use of open-source banking systems during the past 12 months, and, therefore, have not changed its position on the Hype Cycle. Lack of structured product governance (on the part of the open-source platform), support, standards (impacting interoperability), cost of skills training/maintaining and security vulnerabilities are barriers to adoption. On the supply side, software vendors benefit from the prevalence of the traditional licensing model, which provides them with an annuity stream for customization and support. These factors are likely to delay growth in open-source banking and result in not reaching the Plateau of Productivity for more than 10 years.

User Advice:

- Do not adopt open-source software to execute an open-banking strategy if the primary objective is to tap into third-party developers for the development and deployment of apps to customers. Public Web APIs and software development kits (SDKs) are easier for third-party developers to use, because they will usually include documentation, sample code and other support not available via open-source software.
- Evaluate opportunities to leverage open-source components like microloans or smart cards that may enable faster time to market and lower costs than are involved in evaluating, selecting and implementing a packaged application that includes more functionality than needed.

Business Impact: Open-source banking systems enable banks to have direct customization control over applications, components and infrastructure, as well as leveraging the power of open innovation. In theory, open-source banking systems could reduce the total cost of ownership of applications, components and infrastructure because it is free. The continuing focus on cost reduction on the part of CEOs will create an opportunity for increasing the interest in open-source banking systems.

However, corporations often desire maintenance and support services for open-source software (as is the case for Linux and providers like Red Hat and others), which then reduces the cost benefit of open source and can create the same type of vendor dependence involved with proprietary applications. It also means that there is no vendor that is actually supporting the customizations that have been made, which can increase maintenance costs.

Benefit Rating: Low

Market Penetration: Less than 1% of target audience

Maturity: Embryonic

Sample Vendors: Cyclos; jPOS; Micro-finance Open Architecture Project; Mifos; MyBanco; Open Smart Card Development Platform

Wearable Banking Apps

Analysis By: Stessa B Cohen; Christophe Uzureau; Alistair Newton

Definition: Wearable banking apps enable customers to perform tasks such as receiving alerts, taking actions based on alerts, tracking spending activity, locating ATMs and other bank facilities, performing a transaction, or making a payment – from an electronic device worn on or attached to the body (for example, a smartwatch). Wearables include sensors and embedded intelligence (for example, microcontrollers) and can provide data wirelessly to other devices and back-office systems.
Position and Adoption Speed Justification: Wearables are still emerging, and banks face a fragmented market with many device types: smartwatches, traditional watches with smart features, fitness bands, clothing and jewelry. Few bank solution vendors have developed apps across all devices, instead focusing on a single device, such as the Apple Watch. The adoption rate for wearable banking apps remains uncertain because it will depend on factors such as integration with Apple Pay and Passbook and the availability of WatchKit for developers (in the case of the Apple Watch).

Wearable devices usually connect to smartphones that handle most origination and authentication processes and access to related secure credentials. Users must be able to set parameters. For example, for payment services, they need an ability to define origination criteria (such as value, type of merchant or location) for multiple or single transactions and to manage a dedicated account (virtual or prepaid) that funds wearable-originated payments.

Wearable banking apps must also support new virtual personal assistant capabilities as well as Internet of Things-based functionality. This includes capabilities such as the ability to validate an offer or initiate a negotiation on behalf of the customer. Current wearable banking apps do not reach that level of maturity.

We believe that wearable banking app technology will mature much more rapidly than traditional banking solutions. If customers don't adopt the devices, then banks will seek out other devices and solutions.

User Advice: When designing digital banking and digital wallet interfaces, make sure you achieve a fine level of parameterization with regard to the authorization process to support wearable-originated alerts and payments.

Plan for apps to fail. When developing and deploying wearable banking apps, expect that some apps will fail to gain traction with customers. Gaining experience and expertise in digital banking entails failure. Do not let this experience end the bank's experimentation with and use of wearable banking apps. Instead, ask for customer feedback, and identify the point(s) of failure – customer experience, ease of use, design and/or adoption of the particular wearable device.

Delivering any ROI on investment in wearable apps will be extremely difficult. Banks cannot count on charging for use of services via wearables.

Business Impact: Wearable banking apps are an extension of digital banking and digital wallets. They mostly act as a connecting device to contribute to the contextualization of banking and payment systems via location, specific use and so forth. Many early adopters will seek out banking apps to reduce the number of times that they use their smartphones to perform the same activities. Wearable devices may also offer opportunities for banks to devise new means of biometric customer authentication. However, this application is still in an embryonic stage of development.

Benefit Rating: Moderate

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Sample Vendors: FIS; Malauzai Software; Misys Banking and Securities

Advanced Analytics

Analysis By: Mary Knox

Definition: Advanced analytics are sophisticated quantitative methods (e.g., data mining, prediction, simulation and optimization) to produce insights that traditional approaches to business intelligence (BI) – such as query and reporting – are unlikely to discover. It includes predictive and prescriptive analytics.

Position and Adoption Speed Justification: The quantity and breadth of data available to banks make this industry fertile ground for the adoption and use of advanced analytics. The challenge digital banking and open banking strategies create for traditional face-to-face means of assessing opportunities and risks, a desire for real-time proactive responsiveness to improve outcomes, a desire on the part of banks to create more efficient processes that allow them to expand their addressable markets and improve productivity, and a desire for deeper insights to improve competitiveness are just some of the factors that have placed analytics high on banks’ priority lists.

However, legacy siloed architectures and banks’ current primary focus on transactional data – instead of the full range of structured and unstructured data that is available – mean it will take continued effort to make full and productive use of advanced analytics. Therefore, we position advanced analytics as climbing the peak, with more than five years before the Plateau of Productivity.

Despite this positioning, it should be noted that in some specific areas, such as credit risk and fraud detection, banks are very mature with predictive analytics.
User Advice:

- Look beyond transactional data to include location, social media, news and other structured and unstructured data that can advance your digital banking strategies.

- Provide tools and data access to a broader set of bank staff, and to customers and partners, who will undertake the bulk of the analysis.

- Focus on the strategic business challenges and key issues that advanced analytics will be used to answer before evaluating technology, processes and organization.

- Use tools such as business capability models, customer journey maps, ecosystem models, and process flows such as procure-to-pay and order-to-cash in working with business counterparts to brainstorm and prioritize the kinds of decisions to be made in support of business strategies (the strategies of the bank, or the strategies of bank customers and/or partners), the kinds of data that are or could be made available, and the appropriate analytics to support those decisions.

Business Impact: Advanced analytics serve as the eyes and ears of the digital bank, enabling customer and partner intimacy in a time of self-service, demographic diversity and real-time activity. They can improve outcomes related to customer churn, cross-selling and propensity to purchase (including next-best-offer), database marketing, and customer lifetime value prediction and optimization. They can also improve decision making and outcomes related to risk (including fraud), and resource utilization, improving productivity and performance.

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Sample Vendors: Angoss; APT; FICO; IBM; RapidMiner; SAP; SAS

At the Peak

Biometric Mobile Banking Authentication

Analysis By: Alistair Newton

Definition: Biometric mobile banking authentication describes the use of biometric identity technology on smartphones and tablets to allow bank customers to log on to mobile banking or payment applications. It includes the fingerprint solutions from the likes of Apple and Samsung, but also includes some recognition solutions for accessing mobile banking and payment applications. It specifically excludes use of biometrics to access ATMs and branch services.

Position and Adoption Speed Justification: This is positioned approaching the peak primarily because of activity within the U.S. market associated with Apple Pay. However, the biometric “touch” capability is also starting to see adoption for mobile banking login in countries where Apple Pay is not yet accessible. Gartner considers that the utility gained by customers from using such technology once it is considered secure and robust, aligned with the unsustainable nature of many existing identification and verification (ID&V) solutions deployed by banks, will overcome obvious customer reticence over using biometric technology. The actual type of biometric technology deployed will likely vary to include fingerprint, voice, facial recognition or similar methods, depending on the type of mobile device used and the desired customer experience.

User Advice: These emerging forms of ID&V capabilities will now start to differentiate your business and define whether solutions you deploy are successfully adopted by your customers. Migrate customer ID&V capabilities from back office to front office to help differentiate your offerings. Track the capabilities that are currently deployed in the market to assess their suitability for your own ID&V needs. Build scenarios to outline the impact of strong and sustainable biometric authentication being deployed onto your customers’ mobile devices. Understand how you can balance customer access to higher-risk transactional capabilities with appropriate security solutions. Also, recognize the potential for the deployment and maturing of such technology, as it may fundamentally change the underlying business processes or business rationale for many of your bank’s mobile applications, and it is imperative that the potential impacts of such changes are highlighted early in the development cycle.

Business Impact: Once a consumer can be strongly authenticated onto a mobile device or application, the owner of that authentication mechanism becomes the gatekeeper for many of the applications on that customer’s mobile device. Accepting that current solutions from the likes of Apple and Samsung do not yet deliver a completely identified and authenticated customer, banks need to closely track this sector, as the potential that they may become beholden to such third-party entities to authenticate mobile banking customer logins would have a significant impact on existing mobile banking business models. Banks must understand their own corporate trust equation: By devolving customer verification to a third party, such as Apple or Samsung, is the
bank imperceptibly undermining the level of customer trust in their institution?

_Benefit Rating:_ High

_Market Penetration:_ 5% to 20% of target audience

_Maturity:_ Adolescent

**Mobile Imaging for Bank Customers**

_Analysis By:_ Stessa B Cohen

**Definition:** Mobile imaging and capture for customers describe the technology that is used in banking apps for customer smartphones and tablets that enables them to capture documents, identity documents, photographs and any other paper-based item required to complete a bank process or transaction.

**Position and Adoption Speed Justification:** The mobile-based technology and workflow capabilities for customers have begun to emerge from the widespread adoption of mobile remote deposit capture in the U.S. as well as the need to improve operational efficiencies for processes such as new account opening, consumer loans and mortgages. Banks that have adopted mobile imaging for customers often focus on single apps, especially for consumers, rather than an enterprise platform to develop apps for a variety of customers. Gartner expects banks to adopt this technology to push existing processes that are completed in the back office out to customers. Because bankers are faced with the high cost of branch operations and back-office processing, Gartner expects this technology to mature rapidly as banks seek to increase operational efficiency and decrease processing costs.

**User Advice:**

- Identify processes that require customers to submit paper applications and documents at the branch or by mail and processed in the back office.

- Evaluate vendor providers that support workflows and a variety of customer use cases across the bank that can bring these documents, images, photos and transactions into the bank’s existing processes and workflows.

- Monitor technology maturity for the ability to scan and validate government-issued identification.

- Focus application development on improving the customer experience rather than on the transaction.

**Business Impact:** This technology can be deployed in apps to customers in all areas of the bank. These include consumers, small or midsize business (SMB) customers, and investment, private and high-net-worth customers. They also include all lines of business, especially document-intensive processes in credit card, loans and mortgages. Bankers will be tempted to move existing processes to mobile and tablets. While these initiatives will improve costs and efficiencies, the return will not be transformative. Transformative initiatives will be those that use existing processes, but in new ways, to digitally enable customers to achieve goals (for example, for a new house, to manage finances, to improve cash management, to pay bills or to pay off debt). This transformation will probably involve the digitalization of several workflows and business processes and should focus on the customer experience rather than on a single transaction.

**Benefit Rating:** High

_Market Penetration:_ 5% to 20% of target audience

_Maturity:_ Adolescent

**Sample Vendors:** Kofax Image Products; Mitek Systems; Newgen Software Technologies; Top Image Systems

**Open Unified Digital Banking Solutions**

_Analysis By:_ Stessa B Cohen

**Definition:** Digital banking solutions support open unified multichannel integration that enables the bank to deliver any customer service or functionality to customers or systems on any device or channel, to third parties, and to external partners. The bank can develop new services and incorporate services via Web APIs. Unified solutions enable the bank to focus on the synergies among all channels rather than the delivery of the product or service itself.

**Position and Adoption Speed Justification:** Gartner still views open unified digital banking solutions as an emerging technology. A key reason is that bankers are still working to identify business use cases for replacing existing online and mobile banking solutions, for deploying solutions that support mobile and online channels and devices, and for the deployment of digital banking services enterprise-wide. Existing providers offer traditional online and mobile banking solutions and integration with core banking systems, but they often do not support open architectures that decouple the presentation of services from the services and transactions themselves and, crucially, enable the bank to bring new and existing processes together to offer innovative digital services. New providers are emerging that afford multichannel
integration in an architecture that enables the bank to develop and deliver services for both bank staff and customers via any device or channel.

User Advice: Create a digital banking delivery strategy that places the customer experience, rather than the transaction, at its center. A transaction-centric approach that simply automates, digitalizes or streamlines existing transactions will not meet banks’ digital needs.

When evaluating providers, prioritize those that support multichannel integration that enables the customer to start and complete tasks across devices and channels – and which are focused on achieving customer goals, such as improving small business owners’ cash flow – and allows the bank to create and use digital services. Avoid channel solutions with rigid, transaction-centric workflows that require customers to start by figuring out which transaction will accomplish their goals.

Separate the customer experience from the transaction. Customers will expect and want their mobile experience to be different from the experience of accessing the bank’s online website. The customer’s experience on a device should take his or her location and other contextual information into account.

Business Impact: This technology can be deployed to replace separate or siloed mobile and online banking solutions enterprisewide and to build a multichannel architecture that supports delivery of digital services to all channels and devices across the enterprise. Banks that realize transformational benefits will be those that choose solutions that enable the development of digital banking products and services. These services will leverage not only bank systems, transactions and processes, but also customer data and the partner ecosystem.

Benefit Rating: Transformational

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Sample Vendors: Asseco SEE; Backbase; Crealogix Group; CR2; D3 Banking; eLeader; Misys Banking and Securities; MX Technologies; Q2 Software; Technisys; Yodlee

Hybrid Cloud

Analysis By: Mary Knox

Definition: Hybrid cloud computing refers to policy-based and coordinated service provisioning, use and management across a mixture of internal and external cloud services.

Position and Adoption Speed Justification: Adoption of hybrid cloud in banks lags other industries due to lower public cloud adoption by banks, and particularly due to the concerns of banks about privacy, security and regulatory compliance. Lack of hybrid cloud offerings tailored to banks is also hindering adoption. However, because hybrid cloud can present banks with a viable cloud alternative sensitive to banks’ concerns, we expect adoption to take place fairly rapidly as bank-targeted hybrid cloud options become available and as best practices are formed. Plans for use of hybrid cloud are rising at the same time bank community cloud use, another cloud alternative designed to protect banks’ unique concerns, is projected to decline. Thus, while positioned as prepeak 10% and at less than 2% overall adoption, we expect hybrid cloud to reach the Plateau of Productivity in banks within five years.

User Advice:

• Seek hybrid solutions that bridge public and private cloud to meet security, privacy, performance and regulatory requirements.

• Create guidelines and policies for the appropriate use of the different hybrid cloud models and coordinate hybrid cloud services with noncloud applications and infrastructure to support a hybrid IT model.

• Adopt API access to data and logic for all applications as an architectural principle.

Business Impact: Hybrid cloud enables selective use of public cloud, allowing banks to receive the desired agility and cost savings of cloud while addressing banks’ concerns regarding security, privacy and regulatory compliance. It leads the way to a unified cloud computing model, in which there is a single cloud that is made up of multiple sets of cloud facilities and resources (internal and external) that can be used as needed based on changing business requirements, offering the best-possible economic model and maximum agility, and setting the stage for new ways for banks to work with customers, partners, and other relevant third parties. Meanwhile, less ambitious hybrid cloud approaches still allow for cost optimization, flexible application deployment options, and a coordinated use of internal and external resources.

Benefit Rating: High

Market Penetration: 1% to 5% of target audience
**Open Banking**

**Analysis By:** Kristin R. Moyer; Mary Knox; Don Free

**Definition:** Open banking uses Web APIs, apps and app stores to enable internal and/or external ecosystems to create new user interfaces (such as mobile apps), channel applications (like online banking), extend accessibility to functions, data and products, and create new digital banking solutions.

**Position and Adoption Speed Justification:** We believe open banking is at the Peak of Inflated Expectations. Most architects and many CIOs are convinced of the business value of open banking and APIs, but are struggling to gain CEO/board and line-of-business attention. Many boards and CEOs in the banking industry are concerned about using APIs (especially externally) due to intellectual property, security, regulatory compliance and reputation risk concerns. Those concerns are valid and reasonable, but can be addressed by proper API usage policies and application infrastructure investments. The quality of underlying data and services stacks are a barrier to creating a Web API layer for many banks, especially those that have not renewed their core banking systems. We expect open banking to begin to fall into the Trough of Disillusionment during the next 12 months for these reasons. However, several government and regulatory bodies such as the U.K., India and potentially the EU (PSD2) are independently creating their own open banking API standards and/or gateways. In our opinion, these factors will result in a rapid, massive adoption of public Web APIs by the industry – with open banking reaching the Plateau of Productivity within five to 10 years. First movers will have an advantage, because creating a sustainable open banking and API program is challenging and requires substantial time and resources to create. Therefore, first movers will be in a position to use APIs to innovate and disrupt, rather than just meet government or regulatory requirements.

**User Advice:**

- Communicate the business value of APIs based on top CEO and business executive priorities: revenue, cost, user experience and talent management.
- Expand addressable market share by providing APIs for data the bank already makes publicly available (for example, foreign exchange rates, interest rates, and branch and ATM locations).

**Business Impact:** Open banking is transformational because it:

- Changes the role of IT from builder to enabler.
- Can expand addressable market share by making product, pricing and other data available for comparison and consumption through social media sites, online stores and other digital media. We have seen net revenue growth increases of up to 30% in a 12-month period.
- Can enable CIOs to reduce costs through faster time to market, lower delivery costs and easier partner integration. We have seen it reduce time and cost to market by 90%.
- Improve internal and external user experience by enabling mobility, creating new ecosystems, crowdsourcing new ideas and attracting modern digital/mobile development talent.

**Benefit Rating:** Transformational

**Market Penetration:** 1% to 5% of target audience

**Maturity:** Emerging

**Sample Vendors:** Lending Club, MasterCard, Social Money, Standard Treasury, Visa
include security and privacy concerns, lack of clarity regarding regulator position, integration issues and limited range of bank-specific public cloud offerings. There is, however, pent-up demand from banks for public cloud options as banks seek public clouds promise of cost reduction, agility, and scaling.

Further, banks have moved to achieve more-open bank systems (see Open Bank Systems profile) – particularly with investments in service-oriented architecture (SOA)-compliant componentized applications – which enable a more selective use of public cloud. These would include hybrid cloud models that bring together public and private cloud alternatives. This will drive additional adoption of public cloud, including by banks that are already investing in private cloud.

As a result, we position public cloud adoption in banks as beginning to slide into the trough, and becoming mainstream in two to five years.

**User Advice:**

- Do not regard public cloud only as a logical extension of private cloud initiatives. Look to the use of public cloud as an alternative for expanding into new markets where you do not have the economies of scale or investments to support private cloud.

- Look beyond cost savings to business goals, such as agility and innovation, in justifying the use of cloud.

- Seek hybrid solutions that bridge public and private cloud to meet security, privacy, performance and regulatory requirements.

- Adopt API access to data and logic for all applications as an architectural principle.

- Require that all use of public cloud within your bank, including use by individual business units, be governed centrally to ensure consistency and integrity of operations.

**Business Impact:** Digital banks are seeking the increased agility and efficiency of public cloud as they struggle to meet the demand for providing an increased array of self-service products, services and configurations in decreasing time spans. Public cloud can provide banks with rapid time to market for new products and services while reducing the sunk cost, and the ability to rapidly scale up and down, supporting changes in demands and meeting temporary demands, such as for stress testing to meet regulatory compliance requirements. Public cloud can also free resources for the development of digital assets.

**Benefit Rating:** High

**Market Penetration:** 5% to 20% of target audience

**Maturity:** Adolescent

**Sample Vendors:** Amazon; IBM; Microsoft; Ohpen; Temenos Group

**Sliding Into the Trough**

**Logical Data Warehouse**

**Analysis By:** Mark A. Beyer; Roxane Edjlali

**Definition:** The logical data warehouse (LDW) is an approach to data warehouse design that uses data virtualization and distributed processing alongside a repository-centric solution. Analytics systems can access different processing models and data stores as a unified data warehouse infrastructure, without the usual compromises of single-platform solutions.

**Position and Adoption Speed Justification:** Organizations are seeking a method of adapting existing data warehouses, data marts and operational data stores to the new infrastructure styles that combine analytic data stores with various distributed process engines, as well as hybrid on-premises with cloud styles. The LDW represents a way to extend existing data warehouses beyond the relational database and the constraints of row/column-based SQL-based processing. Organizations are using external files/tables from the current DBMS that houses their data warehouse, introducing data virtualization, SQL compatibility with search, Hadoop, mixed-content analysis, NoSQL, and audio, visual and image analysis.

At the start of 2015, 15% to 18% of leading organizations (3% to 4% of the overall market) had implemented most of the LDW’s capabilities. This trend is growing as more organizations encounter the rising costs of maintaining multiple warehouses, and even those associated with separate Hadoop clusters as users attempt to combine the datasets.

Gartner sees clear indications that practices and technologies are progressing. The technology landscape is still evolving rapidly, with new open-source projects extending the Hadoop stack, such as Apache Spark. Cloud and on-premises hybrids are challenging data access and data movement service-level agreements. As a result, practices that pursue a “best fit” engineering approach will mature faster than a vendor-provided solution. The LDW offers a data access layer that is semantically consistent across various data sources and use cases.
User Advice: Chief data officers and business intelligence (BI) and data warehouse architects should evaluate pilot projects and test cases for combining “big data” solutions with traditional data stores that support analytics. They should then determine the most appropriate method for providing combined data, based on existing skills, platform preferences, use case demand and budgetary constraints.

CIOs should pursue accurate cost evaluations for deploying, maintaining and accessing information and data in Hadoop clusters, and determine if processes can be migrated to repetitive transform and load jobs in the primary warehouse. At the same time, they should identify data use cases where no compromise model is possible for portraying data, and determine the best approach for displaying alternatively transformed data (while this could involve a traditional hub-and-spoke architecture, it could also draw on a BI platform’s semantic capabilities or data virtualization tools).

Using data stability and pervasive analytic models as a guide, develop a series of standards that determine when analytic data will be stored in repositories, made available via a semantic and/or virtual tier, or kept in a processing language environment to leverage distributed processing on clusters.

Business Impact: The LDW is effectively an evolution and augmentation of existing data warehouse architecture practices, not a replacement. It reflects the fact that not all analytical, query and reporting needs can be supported by a traditional centralized repository-style data warehouse. It implies that a much broader and more inclusive data management solution for analytics is about to emerge. The LDW provides a more reliable ability to respond to new analytical or reporting demands with short time-to-delivery requirements and with a large number of datasets made available via query tools and applications. In this way, it accelerates data warehouse modifications and provides a rapid deployment capability for new sources with gradually maturing use cases (referred to as “late binding”). Late-binding support also makes the LDW an option for leveraging data lake discoveries. The LDW can even use a data lake as a source or one of the underlying data stores.

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Sample Vendors: Cisco, Cloudera, IBM, Microsoft, Oracle, Pivotal, SAP, Teradata

Remote Commerce Emulation Payment Systems

Analysis By: Christophe Uzureau, Alistair Newton

Definition: Remote commerce emulation payment systems enable proximity payments (at the POS) by accessing payment credentials located on a server in a fashion same as when performing an e-commerce transaction. As a result, the actual payment credentials do not pass between the handset and POS terminal.

Position and Adoption Speed Justification:

It’s important to stress that the transactions can be initiated by a retailer-generated bar code displayed on the POS (e.g., DigiCash or FLASHiZ solutions in Europe), designed to be scanned by the consumer’s mobile device. It can also rely on a Bluetooth low energy (BLE) device coupled with a POS (e.g., Apple’s iBeacon).

The ongoing deployment of real-time low-value payment systems will have a positive impact on the ability of payment providers to develop remote commerce emulation payment systems and introduce added-value services (e.g., better reconciliation services) to merchants. In some geographies, notably Asia/Pacific, the development of social messaging app wallets is another driver for such systems. They are exploring how to enable their digital wallet users to initiate transactions at the POS, notably via QR codes. In the U.S., some retailers led by Walmart, as part of Merchant Customer Exchange (MCX), are planning the launch of CurrentC as an alternative to the card industry’s push for NFC-enabled mobile payment systems. The solution is expected to rely on a QR code-initiated remote commerce emulation payment system.

However, the current focus on harmonizing the tokenization process via EMVCo and the resulting momentum for mobile-originated proximity payment systems is reducing their appeal for payment initiation.

Gartner expects that some of the supporting technologies for remote commerce emulation payment systems will be combined with tokenization processes, especially with regard to the use of BLE devices; for example, to support the reconciliation of vouchers with the payment process.

A combination of these factors accounts for the move from the peak to post-peak 30%.

User Advice:

- Use remote commerce emulation payment systems to target small or midsize businesses (SMBs) and position...
your overall banking products and services (lending, cash management). Strategic alliances and partnerships will also be needed if you currently do not provide acquiring services.

• Plan to launch or develop partnerships to launch supply chain services to augment your remote commerce emulation services.

• Reuse existing credit transfer infrastructures to support remote commerce emulation. This is especially valid in markets where real-time low-value payment systems have been or are being implemented.

• Enable your customers to define usage parameters for the use of remote commerce emulation through your digital banking interfaces. This will reassure customers while strengthening the role of your digital banking platforms.

**Business Impact:** The business impact does not depend solely on transactional services – especially bearing in mind the potential impact on reduced interchange revenue by using credit transfer systems compared with card networks. It's primarily an ability to work with new customer segments – “prosumers” and SMBs. What matters to them is how well the solutions fit into their supply chains as well as their contribution in terms of added value services (inventory management, reconciliation services, loyalty applications and so on).

As a result, the delivery of remote commerce emulation payment systems is a component of banks’ digital banking transformation to reach new customer segments. In turn, those systems will benefit from an improvement in digital banking interfaces and the use of new sources of data to assess credit worthiness and improve delivery of short-term credit to SMBs.

Under the condition of delivery of such services, Gartner regards the business impact as high.

**Benefit Rating:** High

**Market Penetration:** 1% to 5% of target audience

**Maturity:** Emerging

**Sample Vendors:** Apple; Barclays (Pingit); DigiCash; FLASHiZ; MCX; PayPal

**In-Branch and ATM Video**

**Analysis By:** Alistair Newton

**Definition:** In-branch and ATM video covers the technologies that deliver interactive video capabilities to customers within the physical confines of a branch. The video interaction can be delivered through a specifically equipped ATM or may require separate stand-alone terminals.

**Position and Adoption Speed Justification:** Through the last year, the technology has had limited growth in adoption, despite intense client interest. Greatest levels of traction remain in the United States market, and adoption is still subject to significant cultural parameters. In many markets, in-branch video will be viewed as a degradation of service, unless it can be shown that video technology can enhance the service to a customer. For example, if using video technology can ensure that the customer speaks to the bank’s best expert on a particular subject, rather than having to settle for second-best if that advice were to be delivered face-to-face in a branch. In such an instance, the customer will be more willing and likely to embrace the use of that technology. Cultural acceptance will slow the global adoption of this technology. However, in specific countries, like the United States, broad adoption will be achieved more quickly.

**User Advice:** Focus on adding value to the customer experience rather than purely saving staff costs for the bank – unless your deployments focus on the former, you risk alienating customers. If the customer suspects that staff cuts are the prime motivation for deploying such technology, they will be less inclined to adopt it. Focus on the ability of the customer to access best advice through these channels, on the ability of video to enhance self-service at ATMs and on the additional capability that video may bring to a branch if your bank is opening a new customer-facing outlet.

Ensure that branch-based staff are fully integrated into the solution and available on-site to help customers troubleshoot any issues with the technology. Recognize that in some geographies, cultural barriers may restrict adoption, and do not overlook networking costs and challenges – extensive use of video capability can be bandwidth-intensive, with associated cost implications in those regions where bandwidth is restricted and expensive.

**Business Impact:** In-branch video may deliver a number of benefits, such as:

• Allowing existing branch outlets to become financially sustainable

• Allowing the opening of new branch outlets with lower cost implications
• Allowing the centralization of domain experts into a center of excellence

• Delivering better regulatory compliance

**Benefit Rating:** Moderate

**Market Penetration:** 1% to 5% of target audience

**Maturity:** Early mainstream

### Cloud-Driven Business and IT Services

**Analysis By:** Peter Redshaw

**Definition:** There are two components of cloud-driven business and IT services:

1. Cloud implementation services – These include consulting, business analysis, IT architecture analysis, system integration, deployment and testing services that implement some form of cloud computing.

2. Cloud-enabled services – These include services that are packaged as outsourcing offerings (sometimes called business process as a service [BPaas]) where the business or IT service provider leverages one or more cloud computing technologies.

**Position and Adoption Speed Justification:** The verticalization of cloud that is specific to just the banking and investment services (BIS) industry is at an early stage and significantly behind the generic, cross-industry offerings elsewhere. Although banks are building and buying more cloud-based services, there are still relatively few that are dedicated to just this industry.

The first component, cloud implementation services, has few inherent barriers to adoption, as BIS firms seek external help with implementations once approved. The second component, cloud-enabled services that are unique to BIS, is emerging in this industry, and many of the business and IT service providers have not yet fully developed, verticalized, marketed and priced their offerings. An example of such a service is reconciliations in the cloud. Pervasive usage will depend on overcoming perceived obstacles, such as security and resilience, and the emergence of alternative entities, such as cloud service brokerages and community clouds that focus on the BIS industry and with gated admission.

**User Advice:** BIS firms need to make choices based on alignment to key performance indicators (KPIs) and the use of business-driven sourcing and management strategies.

Additional due diligence should be done during the evaluation and selection process, as well as the contracting process, due to the relatively new area of cloud computing and the incredibly dynamic and fast-growing technological changes being introduced, as well as challenges in building and negotiating a cloud services contract with appropriate performance metrics. Potential end users must identify who pays for what, how the cost of one-time activities will inflate the total cost and how key business stakeholders are involved in the governance.

With regard to cloud-enabled services that leverage disruptive cloud technologies and new vendor offerings, users should be aware that a significant number of offerings that IT service providers are introducing are in development or being piloted. As a result, each class of offering – whether an infrastructure utility solution leveraging cloud infrastructure or a SaaS-based solution leveraging an application infrastructure or other types of business services – needs to be thoroughly evaluated for all the key risk areas.

Integration and interoperability will be among the most important risk areas to analyze and manage on an ongoing basis. Operating-level agreements (OLAs) that align with the specific service-level agreements (SLAs) are critical but hard to achieve, as the solutions are highly standardized. In a best-case scenario, OLAs should be agreed on at the contract-negotiation level, before an award is made. For existing relationships, the organization must retrofit OLAs.

**Business Impact:** For advisory and consultative services, users will be able to gain insights and analysis on how to harness cloud computing technologies to further their strategic use of IT. In the long term, the user can more clearly identify and execute IT architectures that provide competitive parity versus competitive advantage.

Users will need access to these more industrialized cloud computing solutions to benefit from shorter adoption timelines and a faster ROI in IT services.

The long-term impact of cloud-driven business and IT services and solutions will be material and significant with regard to their size, breadth and savings levels within the overall IT service industry. This impact will provide more choices for enterprise buyers. It will reshape the service provider landscape, because major barriers to capital-intensive areas, such as infrastructure and applications, will be removed.

**Benefit Rating:** High
**Market Penetration:** 5% to 20% of target audience

**Maturity:** Adolescent

**Sample Vendors:** Atos; BT; Capgemini; HCL Technologies; HP; IBM; Microsoft; Oracle; SunGard; Tata Consultancy Services

**Social Messaging App Wallet**

**Analysis By:** Christophe Zuerue

**Definition:** A social messaging app wallet relies on an instant messaging platform to originate payment transactions. The messaging platform is, therefore, the interface to register accounts and initiate and monitor payment activity.

**Position and Adoption Speed Justification:**

Social messaging app wallets – previously called social messaging app-based payment systems – have improved in functionality during 2014 and 2015. The development of social messaging app wallets was more pronounced in APAC notably thanks to WeChat Wallet in China and Line Pay in Japan. However, these providers are now expanding into new markets and the launch of SnapCash and Facebook Messenger P2P payment feature will increase competition and generate further innovations in terms of functionality and use cases.

Social messaging apps are also turning into new digital ecosystems supporting new types of communication and consumption patterns as well as financing scenarios. For example, in China, by leveraging an open API strategy and approach, WeChat has extended its social messaging app to enterprises, government departments and banks (including all Tier 1 and most Tier 2 banks in China).

As they are getting more mature and growing their user base, those wallets are attracting new partners. Banks in Taiwan and Japan are starting to collaborate with social messaging apps to improve the contextualization of their own products and services. Chinese banks have been actively involved with WeChat. All Tier 1 banks and most Tier 2 banks have set up their in-app stores in WeChat to deliver functionalities such as reviewing, checking account balances, making credit card repayment, and redeeming loyalty points.

However, some challenges remain – notably outside APAC – in terms of financial regulations as well as sustainable business models (e.g., how to reduce the cost of funding transactions). As a result, the social messaging app wallets are making strong progress but have not yet reached the Slope of Enlightenment and is now at pretrough 45%.

**User Advice:** Heads of payments, digital leaders and CIOs of banks:

- Use Web APIs as a delivery channel for social messaging apps in order to expand the addressable market share for your P2P payment solutions.
- Use social messaging app wallets to reach both new retail customers and SMBs by using such solutions as new channels for information collection as well as loan origination. This would also demand strong cross-line-of-business collaboration inside your organization.

**Business Impact:** As in 2014, the business impact is high. Social messaging app wallets are well-aligned to the context of consumers’ digital consumption needs. Social messaging app are becoming more important intermediaries for marketing and distributing products and services, and the supporting digital wallets are supporting an increasing number of use cases, across digital and physical goods. Their impact is not limited to retail payment origination. Social messaging apps are impacting digital banking operations in China and are starting to impact the financial supply chain thanks to their reach of small or midsize businesses (SMBs) as well as their collections of alternative credit data to support short-term financing. Social messaging app wallets are also impacting the physical supply chain. For example, one possible new service could be to assist commercial clients to clear some inventories via flash sales.

**Benefit Rating:** High

**Market Penetration:** 5% to 20% of target audience

**Maturity:** Adolescent

**Sample Vendors:** Facebook; Kakaotalk; Line; Snapchat; Tencent

**Tablet Apps**

**Analysis By:** Kristin R. Moyer; Stessa B Cohen

**Definition:** Tablet apps are mobile apps designed specifically for tablets. While smartphone apps should have narrow, focused functionality because of their small screen size, tablet apps can include more functionality and information detail because of their larger screen size.

**Position and Adoption Speed Justification:** Most banks have apps with some degree of successful adoption. A recent Gartner survey revealed that 33% of customers use smartphones and 15% use tablets to access services.
Given the higher usage of smartphones than tablets, as well as a desire to minimize complexity, most banking apps are designed for use on smartphones and tablets. This is a suboptimal approach because, in most cases, there is too much functionality for a small smartphone screen or not enough for a larger tablet screen. Many customers use tablets differently than they use smartphones. Using a smartphone-optimized app on a tablet is like reading an oversize book. We expect to see banking apps become more specifically designed for tablets during the next two to three years. For example, banking apps that have replicated online banking functionality to a mobile device will most often be best-suited for tablets, while more narrowly focused apps (like account balance or real-time exchange rates) will be best-suited for smartphones.

Some banks have already started transitioning. Citi has a retail banking app for smartphones (Citi Mobile App) as well as tablets (CitiBank for iPad). The tablet app provides detailed information that is more appropriate for a larger screen size – for example, the ability to view and manage accounts, track, analyze and plan finances; and read about personal finance and money management. Deutsche Bank has a tablet app – GlobalPrime for iPad – targeted at senior executives in hedge funds or institutional clients that provides daily margin and reporting information. We also expect to see many employee apps built specifically for tablets.

We expect tablet apps to reach the Plateau of Productivity within two years as banks seek to deliver more specifically to a user’s need, location and technology.

**User Advice:**

- Create personas for tablet users and use them to identify and design tablet apps.
- Deploy tablet apps for relationship managers, private bankers, loan officers, and customer service and other sales employees who have face-to-face interactions with customers. Tablet apps will provide a more compelling and efficient experience, and reduce sales cycles.
- Deploy tablet apps for branch employees to increase operational efficiencies of customer-facing processes such as new account opening, loan and mortgage origination, and other document-intensive processes. Doing so will bring these documents into the processing workflow more quickly and likely improve the customer experience at the branch.

**Business Impact:** Tablet apps have a high business impact in customer-facing interactions because they introduce an opportunity for efficiency, information and presentation. For example, loan officers often go into the field with a rolling suitcase that includes paper brochures, a laptop, a scanner, cables and other equipment to sell and originate a loan. A tablet app can eliminate all this equipment when coupled with other technologies, such as image capture and electronic signatures. It can also shorten sales cycles and reduce errors due to manual data entry.

**Benefit Rating:** High

**Market Penetration:** 20% to 50% of target audience

**Maturity:** Early mainstream

**Sample Vendors:** Asseco SEE; Bottomline Technologies (Andera); Crealogix Group; D3 Banking; Epam Systems; Fiserv; FIS; Kofax; Kony; Malauzai Software; Mitek; Nucleus Software Exports; SAP; Tagit; Techmisys; Top Image Systems; Vipera

**Digital Wallets**

**Definition:** A digital wallet solution is an electronic vault, where a person’s credentials related to payment cards, account details and/or IDs, identification cards, loyalty programs and other sensitive data are stored securely and accessed from an interface on an electronic device. The credentials can be stored in the device and/or on a remote server.

**Position and Adoption Speed Justification:**

2014 has experienced a strong interest in digital wallets in the wake of the launch of Apple Pay. This has generated investments into and contributed to the standardization of processes, such as tokenization. This will facilitate the delivery of digital wallets by new entrants.

It has also generated more interest in how to influence the digital ecosystem by providing platforms to design new digital wallet solutions. The implications are not just about proximity payments and cash and card replacement, but, most importantly, about supporting new digital commerce models. For example:

- Google announced its Android Pay payment platform in 1Q15, offering a suite of APIs for developers to create their own digital payment systems/solutions.
- Social messaging app providers are also launching digital wallet solutions (e.g., WeChat, Line Pay, Snapcash, Facebook Messenger). In China, WeChat has extended its
social messaging app – by providing APIs – to enterprises, government departments and banks (including all Tier 1 and most Tier 2 banks in China).

The adoption of wearable devices (see wearable banking app profile) will also drive digital wallet adoption and usage:

- Directly as a smart watch could store or give access to secure credentials to originate a transaction – a wearable digital wallet.
- And indirectly as the wearable devices could connect to a smartphone based digital wallet solution which would handle most origination and authentication processes.

Competition is, therefore, accelerating at both the digital-wallet-issuance- and digital-wallet-platform levels. This will lead to a wave of new solutions and failures, paving the way for more advanced functionality and supporting better use cases, notably those enabling new types of digital commerce. For example, launching a new digital wallet brand is facing strong consumer rigidity because of entrenched payment habits and negative security perceptions. Therefore, we position digital wallets in the pre-trough 25% position.

**User Advice:** Think in terms of digital wallet functionalities first – You don't have to issue a digital wallet to benefit from the opportunity. Some functionality could be delivered via existing digital banking channels.

Create a digital wallet functionality prioritization matrix that maps to specific consumer groups' usage requirements.

Think in terms of combinations of functionalities and how each combination will pave the way for introducing the next generation of services.

Align the bank's digital wallet strategy with its digital banking strategy.

Use digital banking interfaces to provide customers with an ability to define security preferences and alerts.

**Business Impact:** Digital wallets are transformational to banks. They enable the contextualization of their products and services by capturing customer needs and intent in order to align delivery to their experience. This also enables the delivery of new services, such as enhanced budgeting and account management services, digital (payment) advisory services, and negotiation capabilities on behalf of customers. By using digital wallet functionality, banks will be in a much better position to engage in specific conversation with customers. The process of contextualization enabled by digital wallets will, therefore, accelerate digital banking transformation. However, this doesn't mean banks have to launch their own digital wallets to participate in that market. They can deliver digital wallet functionalities via their digital banking platforms as well as adopt partnerships and focus their effort on delivering a digital wallet consumer hub.

**Benefit Rating:** Transformational

**Market Penetration:** 1% to 5% of target audience

**Maturity:** Adolescent

**Sample Vendors:** Alipay; Amazon; American Express; Apple; DigiCash; FLASHiZ; MasterCard; PayPal; Visa

**Big Data Management**

**Analysis By:** Mary Knox

**Definition:** Big data is high-volume, high-velocity and/or high-variety information assets that demand cost-effective, innovative forms of information processing that enable enhanced insight, decision making and process automation. Big data management, in the context of digital banking, is the design, capture and maintenance of big data assets that enable the extraction of value in a cost-efficient and risk-sensitive manner to support the digital bank. For the purposes of this profile, we are also including the data governance aspects of big data.

**Position and Adoption Speed Justification:** Results from the Gartner's 2014 Research Circle Big Data Survey show that 38% of banks have invested in big data. However, many of these are in a piloting phase, making actual current adoption somewhat lower, probably closer to 30% of banks.

Driving big data adoption are risk and regulatory compliance priorities, and the need to offer differentiating context aware products and services, developing a broader understanding of customer behavior, and delivering personalized services and next-best-offers based on individual characteristics. However, many banks still struggle to identify and implement appropriate use cases, organizational models, data types and sources, and technologies.

As a result, we position big data management as sliding into the trough, with approximately three years before reaching the Plateau of Productivity.
User Advice:

- Identify existing use cases for big data techniques and technologies in your business to justify and ground your big data strategy across four major categories:
  - Risk
  - Sales, marketing and customer service
  - Operational effectiveness
  - Strategic planning and decision making
- Extend your existing data governance and management practices and architectures to your big data initiatives, including ones embracing nontraditional data sources, such as social media and news.
- Identify your current data governance principles, management approaches and architectural guidelines that stifle big data innovation, and develop and enforce principles and guidelines that are suitable for overseeing the management of big data.
- Examine alternatives for elastic, scalable resources to bring to your big data initiatives, including consideration of hybrid approaches that bring together third-party cloud and internally deployed solutions, and alternatives such as logical data warehouses and data lakes.
- Understand your data management software and service vendors’ roadmaps for supporting big data across the full range of big data access, management, storage, analysis, reporting and archiving. Make this a point of product evaluation.

Business Impact: Big data management techniques and technologies are essential for banks to meet regulatory and competitive requirements. Banks that go beyond the basic business requirements will be able to create differentiating products and services, and significantly improve their risk standing.

Benefit Rating: High

Market Penetration: 20% to 50% of target audience

Maturity: Adolescent

Sample Vendors: Apache, EMC, IBM, MapR, Oracle, SAP, Teradata

BIAN Standards

Analysis By: Mary Knox; Don Free

Definition: The standards developed by the Banking Industry Architecture Network (BIAN) – an industry group comprising banks, software vendors, service providers and other interested parties – define the service components of a bank service-oriented architecture (SOA).

Position and Adoption Speed Justification: BIAN is developing consensus-driven bank service definitions to increase the agility and reduce the cost of SOA. During the past year, BIAN has made significant progress in building out its services landscape, and providing supporting capabilities directly and through partners. BIAN is also increasing membership and geographic scope with efforts including a promising North American initiative that takes BIAN beyond its European roots and more recent Asia/Pacific wins.

Challenges remain, including whether and how certification – needed to increase the usability of the standards – can be accomplished, and the extent to which BIAN will become prescriptive, rather than descriptive. Other challenges are lack of industry process standardization, the need to drive consensus across groups, existing investment in legacy systems, and vendors’ intellectual property concerns.

Gartner positions BIAN standards as emerging – six to seven years from mainstream adoption when it will produce transformational benefits (see Benefits section). But BIAN services offer significant benefits to early adopters in the interim, by guiding bank and vendor development, and acting as a reference model for the evaluation of internal projects and vendor solutions.

User Advice: CIOs and enterprise architects:

- Align any in-house SOA-based development with the BIAN service landscape, using BIAN as a reference model to aid in integration across separate pockets of development and vendor-supplied solutions. Evaluate all new projects against the BIAN model to identify gaps, synergies and priorities.
- When evaluating vendor-supplied bank applications and services, include BIAN standards use and participation as one of your criteria, giving it a medium weighting (after basic solution functionality and vendor viability).
- Weigh the benefits and costs of active membership based on your investment in SOA development, and whether
the use of the BIAN service landscape to guide internal initiatives and the selection of vendor solutions is a priority for your bank. BIAN participation can provide important learning opportunities and the ability to influence services design in areas of importance to your bank.

- Press your preferred SOA tool providers and system integrators for BIAN support. This should include mapping your present applications landscape to the BIAN landscape for guiding future development, and identifying gaps and opportunities.

- If using or planning to use BIAN standards, lobby for BIAN or BIAN-approved organizations to provide BIAN certification for vendor solutions and developers.

**Business Impact:** Service-level standards are critical for digital business transformation, because they enable collaboration and interoperability across the banking ecosystem, as well as across internal functional areas within the bank. Reuse and selective use of third-party services, including cloud, enabled by industry service-level standards, will increase bank agility, eventually moving BIAN standards from a competitive differentiator to a competitive requirement.

BIAN standards will be transformational, changing the banking and vendor landscapes. They will allow for rapid composition of new products and services, the offering of collaborative and customer-driven banking services, and new partner-based business models that foster innovation. They will also facilitate the market entry of new best-of-breed service providers and software vendors targeting the banking industry.

**Benefit Rating:** Transformational

**Market Penetration:** Less than 1% of target audience

**Maturity:** Emerging

**Intelligent Bank Operations**

**Analysis By:** Mary Knox

**Definition:** Intelligent bank operations (IBOs) are a style of work in which operational intelligence technologies are integrated into the transactional systems and physical operations that run a bank. Operational intelligence technologies include monitoring and alerting tools that enhance situation awareness; decision management tools (such as rule engines and real-time analytics) that enable better decisions; and workflow and process orchestration engines that coordinate more flexible and efficient processes.

**Position and Adoption Speed Justification:** Digital banking is driving the adoption of IBOs as banks become more responsive to the needs of diverse stakeholders. By embedding capabilities into operational systems to enable real-time intelligence, IBOs are critical for activities such as:

- Process optimization and prioritization
- Location-based services
- Improved device management
- Customer servicing and cross-sell based on real-time customer activities and context
- Risk identification and mitigation
- Fraud detection, including the real-time pattern detection
- Market and broker surveillance
- Information-based, value-added services by embedding operational analytics into customer process flows

IBOs are enabled by the decreasing cost of technology and vast increases in real-time data availability. Vendors’ IBO capabilities are improving, and IBOs are increasingly being included in application suites and middleware solutions. IBOs are challenged, however, by legacy systems and application silos.

As a result, IBO is nearing the trough as banks evolve best practices in its use, and is expected to be adopted by a majority of banks in less than five years.

**User Advice:**

- Work with subject matter experts and managers to understand the kinds of decisions that operations should support:
  - If an operation requires enhanced situation awareness, then some form of event management technology should be applied.
  - If the operation requires faster and better decisions, decision management or related prescriptive analytics technology should be used.
  - If the operation requires more-sophisticated and flexible processes, then it should be implemented using business process management (BPM) flow management technology.
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- Identify where real-time bank operations intelligence can be used to detect leading indicators to anticipate situations before they materialize so that behavior can be proactive. For example, a customer’s click-through on a bank website can provide indication of potential product offers, or a change in the financial behavior of a significant member of an industry segment that can preclude credit and market risks.

- Assess where real-time operations intelligence can improve outcomes by reducing the lag between events and responses. For example, rapid identification of the impact of website outages can trigger proactive reach-outs to critical customers and prioritization of remediation efforts. Similarly, immediate detection of an inappropriate trader email can prompt blockage of that email, reducing compliance risk.

- Evaluate the strengths and limitations of three sources of bank operations intelligence technology:
  - Integrated software infrastructure suites, such as intelligent BPM suites and financial messaging platforms.
  - An assemblage of point products from one or more vendors.
  - Packaged applications (such as core banking), packaged process templates or cloud-based SaaS offerings with integrated operational intelligence features.

**Business Impact:** IBO responds to the need of digital banks for increased visibility in how the company is running and what is happening in its external environment. The vast amount of underutilized, real-time business data represents an opportunity for significant improvement in:

- Situation awareness supporting, for example, real-time complex offer generation and fraud detection.
- Provision of prescriptive and predictive advice such as whether to authorize a credit transaction based on multiple-sourced data and complex rules.
- Flow management to coordinate the activities of people, process flows, application software or physical devices utilizing complex and/or rapidly changing rules.

IBOs also increase the level of collaboration among business people by improving communication and information sharing.

As a result, we rate the business value of IBO as high for digital banks.

**Benefit Rating:** High

**Market Penetration:** 5% to 20% of target audience

**Maturity:** Adolescent

**Sample Vendors:** IBM; Ignite Sales; Informatica; Oracle; Pega; Rage Frameworks; Splunk; Systar; TIBCO Software

**Private Cloud Computing**

**Analysis By:** Peter Redshaw; Mary Knox

**Definition:** Private cloud is a form of cloud computing that is used by only one organization or that ensures an organization is completely isolated from others. It contrasts with public cloud (where access to the service is open to any customer) and with hybrid cloud variations such as community cloud (as provided for or by a trusted group or organization, such as SWIFT). Like all forms of cloud computing, it provides scalable and elastic IT-enabled capabilities that are delivered as a service to customers using Internet technologies.

**Position and Adoption Speed Justification:** Financial services institutions (FSIs) building a private cloud service are trying to acquire similar benefits to public cloud but within their control and, often, on-premises. Private cloud helps avoid many of the obstacles that FSIs encounter with public clouds, such as security, regulatory compliance (e.g., where the data is held) and the lack of verticalized solutions.

Private cloud computing is particularly suited to FSIs, which tend to have more complex and bigger portfolios of legacy IT systems than firms in most other industries. This means that FSIs, though generally cautious, are a little ahead of other industries when it comes to adopting private cloud.

Therefore, we’ve assessed the market penetration as 20% (smaller banks) to 50% (larger banks).

**User Advice:** CIOs and FSIs seeking to implement a private cloud should:

- Create a business case for developing full private cloud services versus using public cloud services or modernizing established architectures.
- Lay the foundation for success with your private cloud implementation.
• Consider the long-term roadmap for your private cloud services. Build with the potential to take advantage of hybrid sourcing (using both your private and public cloud services) at some point in the future.

• Recognize that there are significant challenges in moving from private infrastructure as a service (IaaS) to private platform as a service (PaaS). These challenges are organizational, as traditional development organizations with different teams focusing on different strata are not suited to the creation of vertical stacks.

• Start slowly with: development/test lab provisioning; short term, low SLA computing requests; and simple, non-mission-critical Web services (for example, self-service requests and dynamic provisioning for Web environments).

• Pilot a private cloud implementation to gain support for shared services and to build transparency in IT services costing and chargebacks.

• Implement change and configuration management processes and tools as part of implementing private cloud services to ensure that you can standardize on the software stacks to be delivered through self-service provisioning and adequately maintain them.

**Business Impact:** Private cloud computing can reduce the cost of operations and (most importantly) enable faster service delivery. It is attractive primarily to FSIs because it enables agility – self-service ordering of frequently requested services on demand – as well as dynamic provisioning.

Private cloud computing also changes the relationship between the business and IT, transforming how IT is consumed. The shift to services, pay per use and chargeback can enable the business to focus on rapidly changing service requirements and consuming IT based on variable costs. Meanwhile, IT can focus on efficient implementation and sourcing.

Private cloud will mostly affect Tier 1 and Tier 2 FSIs that have:

• Already finished virtualization.

• The scale to save costs.

• IT departments empowered with the relevant capability and knowledge.

• Business concerns about data security.

• Many legacy systems.

**Benefit Rating:** High

**Market Penetration:** 20% to 50% of target audience

**Maturity:** Early mainstream

**Sample Vendors:** Apprenda; Atos; Citrix; HP; IBM; Microsoft; Pivotal; Progress Software; Red Hat; VMware

**Mobile-Originated Proximity Payment Systems**

**Analysis By:** Christophe Uzureau; Alistair Newton

**Definition:** With mobile-originated proximity payment systems, the origination of the transaction depends on the mobile device wherein the secure credentials are transmitted from the mobile device.

**Position and Adoption Speed Justification:** The definition includes the use of Near Field Communication (NFC) and the use of quick response code (QR code) when the systems use the bar codes on the phone screen to enable the device to communicate with a bar code reader at the point of sale (POS) to initiate the payment (such as with Starbucks’ mobile application), but not mobile payment systems where the bar code is displayed at the POS and read by the POS (e.g., DigiCash).

The launch of Apple Pay in the U.S. in 2H14 has given mobile-originated proximity payment systems some momentum. The increased competition between Apple, Google (with acquisition of Softcard and the launch of Android Pay) as well as Samsung (acquisition of LoopPay and launch of Samsung Pay) is generating investments into better consumer interfaces and new authentication systems (biometrics – notably Touch ID which is being reused outside Apple Pay by other payment providers and including by banks for their mobile banking platforms).

Nevertheless, the main benefits are related to payment processes, notably to investments into tokenization. The standardization of the tokenization process initiated by EMVCo (and driven by the Apple Pay announcement) has created a more open approach to tokenization. Tokenization could also enable the creation and use of QR codes that contain the token information necessary for the transaction, strengthening the security of using QR codes for payment origination.

Both directly (Apple Pay marketing clout and adoption, Touch ID experience) and indirectly (investments in tokenization process, renewed competition from Samsung and Google), Apple Pay has contributed to move this profile forward, reaching post-trough 5%.
User Advice:

• Recognize the impact that adopting Touch ID will have on your broader customer authentication strategies.

• Use digital banking interfaces to provide customers with an ability to define security preferences and alerts.

• Develop payment schemes with other nonbank providers to limit overreliance on Apple Pay and to demonstrate to customers that you remain the main control point for all their payment needs.

• Deploy tokenization beyond Apple Pay and credit cards to support new use cases, e.g., by using contextual tokens to deliver digital pocket money to younger customers.

Business Impact: The current harmonization process of tokenization (as well as Host Card Emulation [HCE]) and the related payment industry drive for standardization have the potential to increase the benefit rating to high. However, Apple Pay faces much more difficult conditions outside the U.S. market where interchange level is lower, thereby impacting the initial drivers for card issuers to share some of their payment margins with Apple.

In terms of digital banking transformation, some banks, such as ING Belgium, are using Touch ID for mobile banking authentication purposes. However, they need to make sure that the bank is still regarded as a preferred customer digital ID provider. There is also a risk as Apple uses Touch ID to position its Passbook interface as a way to manage multiple card accounts.

Digital banking transformation would benefit from using tokenization beyond NFC-enabled mobile payment systems. E.g., virtual accounts to target underbanked customers. This would provide an opportunity to position the digital banking interface as the way for customers to define security preferences (e.g., limiting the value spent at a given merchant) as well as to better control their personal finances (e.g., attributing different tokens to different budgets/savings objectives).

Benefit Rating: Moderate

Market Penetration: 1% to 5% of target audience

Maturity: Adolescent

Sample Vendors: Apple; FeliCa Networks (Sony and NTT Docomo); Google; Samsung; Starbucks

Near-Real-Time Low-Value Payment Systems

Analysis By: Christophe Uzureau; Alistair Newton

Definition: Near-real-time low-value payment systems refer to payment systems that enable transfers of funds (at their slowest a few hours) from one customer banking account to another customer banking account. This profile does not include interbank settlements using real-time gross settlement systems.

Position and Adoption Speed Justification: The deployment of near-real-time low-value payment systems continues its progress, however, at a slower pace than 2014 (Singapore and Denmark systems went live). This accounts for the slight increase in maturity of this profile:

• In the U.K., the Faster Payments Service initiative has generated a new wave of new payment systems options for consumers which are now interoperable: Launched by Barclays, Pingit has integrated with Paym which enables mobile originated P2P payments, and Zapp which enables mobile originated payments at the POS. Both Paym and Zapp are operated by interbank processor Vocalink.

• Singapore’s Fast And Secure Transfers (FAST) service, which went live in March 2014, currently processes more than 1m transactions a month and also provides opportunities such as enhanced invoice reconciliation services as it is built on the ISO 20022 standard.

• There is now a strong interest by regulators across multiple geographies in deploying real-time payment systems. However, deploying real-time payment systems is not straightforward:

• In the U.S., defining and orchestrating a transformation roadmap for the new payment system with so many financial institutions at different level of IT maturity will clearly slow down progress.

• New use cases demand to think beyond speed of transactions and think across line of businesses (LOBs) — e.g., how to use a near-real-time payment system to promote cash management services.

• Banks are also worried that Fintech will disproportionately benefit from the new payment systems while banks bear the cost of setting up the new infrastructure.

• Real-time payment systems made progress in 2014 and banks will have to respond to regulators’ drive for such systems as well as customers’ growing expectations of
faster payments. However launching them in new markets, especially in the U.S., will be a more challenging affair.

**User Advice:** To demonstrate value to their retail customers, banks should market person-to-person (P2P) payment solutions and use the new systems to develop digital wallet functionalities.

On the commercial side, real-time payment systems need to be fully integrated with cash management services, and this will demand some important changes for bank commercial payment systems, and how they integrate with other banking systems and common services.

**Business Impact:** Near-real-time low-value payment systems create an opportunity for banks to offer new services to their clients, such as developing P2P payment solutions and are improving the alignment between digital wallets and digital banking solutions and strengthening the role of digital banking channels for money management.

Large retailers are keen to reduce the cost of card acceptance and will drive the marketing of mobile payment system based on near-real-time payment systems. For e.g., two large U.K. retail chains – Sainsbury's and Asda – have signed for Vocalink Zapp solution.

Near-real-time low-value payment systems are even more important to "prosumers" (that is, businesses of up to one employee, and generating up to $80,000 in business turnover a year) and small or midsize businesses (SMBs). For those who are not prepared to obtain or rent a point of sale (POS) system, combining a mobile POS integrated to near-real-time low-value payment systems would reduce cost of acceptance versus cards. This would also promote the bank’s account services (notably reconciliation and cash management services), thus positively impacting the delivery of digital banking services to SMB banking customers.

**Benefit Rating:** High

**Market Penetration:** 5% to 20% of target audience

**Maturity:** Early mainstream

**Sample Vendors:** ACI; CGI (Logica); Fiserv; FIS; Fundtech; Vocalink

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**Climbing the Slope**

**Mobile-Originated P2P Payment Solutions (for Mature Payment Markets)**

**Analysis By:** Christophe Uzureau, Alistair Newton

**Definition:** Mobile-originated peer-to-peer (P2P) payment solutions rely on mobile devices to initiate transfers from the payer account to the payee account. The authorization process could be performed via a proprietary network (e.g., from a card association), an interbank network (e.g., Faster Payments in the U.K.) or from a wireless network operated by a mobile operator.

**Position and Adoption Speed Justification:**

It’s important to stress that this profile focuses on mature payment markets, which is not simply about the country dimension, since one given country could have mature and nonmature payment markets (e.g., Thailand and South Africa). Please also note that the payment origination process can make use of the preregistered account details of the payee or a third-party contact database (e.g., Facebook friends’ contacts) or initiate a transfer to a payee’s email address or mobile phone number and request the payee to register to collect the funds.

As suggested by the definition, there are many different types of technologies that can support mobile-originated P2P payment solutions. In 2014 and 2015, there have been positive developments in enabling such solutions that account for the progress of the profile:

- Development of retail real-time payment systems is one such technology foundation, supporting the growing interest and competition in developing mobile-originated P2P solutions. For example, FAST was launched in Singapore in 2014, and Japan’s Zengin System is expected to become 24/7 in 2015. In the U.K., adoption of Faster Payments has led to the launch of Barclays Pingit, Zapp (Vocalink) and the Paym Mobile Payment Service (operated by Vocalink). Regulatory environments favorable to market entry – such as the Payment Services Directive (PSD) 2.0 in Europe – enabling better access to existing payment infrastructure, and therefore, interoperability as well as access to liquidity for new solutions.
- P2P payment solutions driven by social messaging app wallets (WeChat, Line Pay, Snapcash, Facebook Messenger) – the growing number of functionality and use cases for those digital wallets increase the incentives
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and user confidence in using P2P payment solutions. Flexible processes (notably, how to make request from multiple payers) and innovative marketing by mobile P2P solutions such as Venmo (PayPal) – for example, assisting customers to share the bill for pay-per-view events – have driven adoption and interest by younger customer groups.

• Availability of platforms to design new solutions, e.g., Snapchat relies on Square’s technology and money transmitter license to support its Snapcash P2P payment system.

As a result, this profile has made progress to post-trough 25%, and we expect this profile to reach the plateau in just over two years.

User Advice:

• Rely on multiple mobile P2P payment venues – including from third parties – to position your digital banking services as the right platform for money management, notably with younger customers.

• Use Web APIs as a delivery channel for social messaging apps in order to expand the addressable market share for your P2P payment solutions.

• Position the development of mobile P2P solutions as part of your consumer and commercial banking operations. Moreover, develop multiple use cases to accompany the roll out of those solutions.

Business Impact: P2P payments do not constitute a distinct market, and the business case depends on developing multiple use cases. The lessons from Barclays Pingit are important here. Pingit started as a consumer mobile P2P payment solution, but from a business case perspective, it provided Barclays with a new tool to serve “prosumers” (businesses with a maximum of two employees and a limited turnover) and the small to midsize business (SMB) market, and to start positioning other banking products and services to these customer segments.

This is why mobile P2P payment solutions are part of the digital banking transformation – they increase the reach of the bank’s digital banking operations while aligning their operations to third-party solutions that will bring more context to customers’ use of banking products and services.

For banks, the business case and impact of mobile P2P-originated payment systems is, therefore, not limited to P2P. What matters is how such solutions are used, not only to target consumers but also prosumers and SMBs, as well as larger commercial clients looking for another payment facility. The business impact is high only if banks think beyond consumers’ P2P transactions.

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Sample Vendors: Fiserv; FIS; PayPal; Vocalink

Smartphone Banking

Analysis By: Alistair Newton

Definition: Smartphone mobile banking covers light applications downloaded to the consumer’s mobile devices from an app store. Smartphone apps may offer full-service banking or focus on point solutions, such as payment initiation, bill payment, or transaction and balance tracking. This definition of smartphone mobile banking now excludes downloadable apps that are developed to run on tablet PCs, such as the Apple iPad and Android-based tablets. These are covered in a separate technology profile.

Position and Adoption Speed Justification: The adoption of smartphones by consumers across the globe continues to accelerate to the extent that now consumers with basic old-style feature phones are an increasingly small part of the market, at least in terms of most developed financial services markets. The adoption of mobile banking using smartphones has accelerated, and while consumers still have a range of concerns over security and privacy, to a significant extent the utility provided by mobile banking outweighs these risks in the eyes of many consumers. Penetration in Europe remains behind the U.S., but still accelerates, and in Asia/Pacific, adoption is booming.

Gartner anticipates that smartphone banking technology will reach the Plateau of Productivity within two years, although the concerns over the real contribution of mobile banking applications to bottom-line cost savings or profitability still remain. The role of digital wallets and the further fragmentation of the mobile banking market into stand-alone apps and tablet-based solutions will further influence future use and adoption of mobile banking.

User Advice: Banks must still approach this sector with a degree of caution and ensure that they maintain a laserlike focus on customer experience and security. However, in most countries, a failure to deliver a mobile banking application will be seen by most customers as a failure of their bank.
Consumers use smartphone and tablet apps in a very different fashion than the way they used downloadable applications for their feature phones, laptops or desktop-based applications. Many early full-service mobile banking applications, which simply replicated online banking functionality on mobile devices, did not meet the new digital demands of many customers. Increasingly, banks will need to take a position on the role of tablet-based banking and the increasing crossover in functionality, such as basic balance inquiry and payment, that will come from digital and mobile wallets. Managing fraud and securing network transactions will become an increasing headache, as will the demands of accurately identifying and authenticating customers when they are transacting within the digital footprint of a mobile device.

**Business Impact:** Smartphone banking cannot be rolled out in isolation from the other bank channels, processes, services or products. Banks will need to understand the role and position of the smartphone proposition and how customers using that service will interact with the bank, including the increasing use of contextual and location-specific data. The bank may need to adopt existing processes and procedures to accommodate these new customer demands. Banks will also need to start addressing the digital needs of customers as customers’ use of smartphones throughout their daily lives starts to influence their consumption of financial service products.

**Benefit Rating:** High

**Market Penetration:** 20% to 50% of target audience

**Maturity:** Early mainstream

**Sample Vendors:** Asseco Group; Backbase; Comarch; Crealogix Group; D3 Banking; Finantix; Fiserv; FIS; Intelligent Environments; Malauzai Software; Misys; Monitise; Q2; Vipera; Visa (Fundamo); Yodlee

**Analysis By:** Christophe Uzureau; Alistair Newton

**Definition:** Mobile wireless payment systems enable the initiation of transactions via mobile handsets and their authorizations through wireless networks operated by mobile operators (or mobile virtual network operators). Funding can be via mobile phone bills, prepaid accounts, bank accounts, cards or any other type of account holding value.

**Position and Adoption Speed Justification:** During 2014-15, some important announcements have contributed to improve the maturity and relevance of mobile wireless payment systems in nonmature payments markets, notably in India and Africa:

- New “payment bank” licenses have been issued by the Reserve Bank of India to drive payment innovations, and this will benefit the development of mobile wireless payment systems via increased competition and collaboration for payment initiation and collection. For example, Bharti Airtel has partnered with Kotak Mahindra Bank to set up a payments bank, Reliance Industries with State Bank of India and Oxigen Services with RBL Bank.
- In India, the National Payments Corporation of India (NPCI) is pushing for the launch of a Unified Payment Interface (UPI). Using a set of APIs, the objective of the UPI is to infuse flexibility in payment solution design, notably via the use of account proxies such as virtual payment addresses (aligned to authorization rules). This will contribute to make payment value chains more fit to local consumer and business needs and provide more traction to NPCI Immediate Payment Service (IMPS).
- Kenya’s Safaricom (operates M-Pesa) and MTN Group have announced a partnership to progressively integrate their respective mobile wireless payment systems across Africa in 2Q15. This announcement creates a de facto cross-border mobile wireless payment scheme in Africa and will contribute to the respective adoption of both parties’ solutions.

This is why we regard the benefit of this profile as high; however, there are still two to five years to reach the plateau in order to build the right collaborative models and generate sufficient scale to generate further investments into new functionalities as well as deal with challenges in terms of identification and Know Your Customer (KYC).

**User Advice:**

- Where potential bank customers cannot access bank payment infrastructures, use mobile wireless payment systems to give them access. Such payment systems enable banks to capture new sources of information about the unbanked and underbanked and accelerate go-to-market with a stronger business case than developing a dedicated infrastructure.
- Prepare to partner with local merchants and solution providers to acquire customers because consumer perceptions of banks are often negative in emerging markets.
- Prepare to deliver services and solutions (liquidity management, authentication and fraud management) to support third-party mobile wireless payment systems to
acquire valuable alternative credit information to support
the delivery of your banking products and services.

- Whenever available, integrate with the local ID schemes as well as related biometric authentication systems to not only support identification/KYC but also to support payment services such as for government services.

- Banks operating in emerging markets or with a large population of migrant workers in their domestic markets will find it valuable to use mobile wireless payment systems to support remittances.

**Business Impact:** Mobile payment systems are an important entry point to bank the unbanked, to accelerate financial inclusion (notably by reaching the rural population) and foster entrepreneurship, and therefore, to build a digital banking proposition – mostly relying on mobile financial services – in those markets. For example, according to The Economist, M-Shwari, the banking service – savings and loans – associated with M-Pesa – now has “9m customers and attracted deposits of 135 billion Kenyan shillings ($1.6 billion) in its first two years.”

In nonmature banking markets, most of digital banking transformation will be initiated first by adoption of digital payment systems.

**Benefit Rating:** High

**Market Penetration:** 5% to 20% of target audience

**Maturity:** Early mainstream

**Sample Vendors:** Celcom; Fundamo; Globe Telecom; Mahindra Comviva; MTN Group; National Payments Corporation of India (NPCI); Safaricom; Smart Communications

**Appendixes**
This is a new Hype Cycle.

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**Hype Cycle Phases, Benefit Ratings and Maturity Levels**

**Table 1. Hype Cycle Phases**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Innovation Trigger</strong></td>
<td>A breakthrough, public demonstration, product launch or other event generates significant press and industry interest.</td>
</tr>
<tr>
<td><strong>Peak of Inflated Expectations</strong></td>
<td>During this phase of overenthusiasm and unrealistic projections, a flurry of well-publicized activity by technology leaders results in some successes, but more failures, as the technology is pushed to its limits. The only enterprises making money are conference organizers and magazine publishers.</td>
</tr>
<tr>
<td><strong>Trough of Disillusionment</strong></td>
<td>Because the technology does not live up to its overinflated expectations, it rapidly becomes unfashionable. Media interest wanes, except for a few cautionary tales.</td>
</tr>
<tr>
<td><strong>Slope of Enlightenment</strong></td>
<td>Focused experimentation and solid hard work by an increasingly diverse range of organizations lead to a true understanding of the technology's applicability, risks and benefits. Commercial off-the-shelf methodologies and tools ease the development process.</td>
</tr>
<tr>
<td><strong>Plateau of Productivity</strong></td>
<td>The real-world benefits of the technology are demonstrated and accepted. Tools and methodologies are increasingly stable as they enter their second and third generations. Growing numbers of organizations feel comfortable with the reduced level of risk, the rapid growth phase of adoption begins. Approximately 20% of the technology's target audience has adopted or is adopting the technology as it enters this phase.</td>
</tr>
<tr>
<td><strong>Years to Mainstream Adoption</strong></td>
<td>The time required for the technology to reach the Plateau of Productivity.</td>
</tr>
</tbody>
</table>

**Source:** Gartner (July 2015)
Table 2. Benefit Ratings

<table>
<thead>
<tr>
<th>Benefit Rating</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformational</td>
<td>Enables new ways of doing business across industries that will result in major shifts in industry dynamics</td>
</tr>
<tr>
<td>High</td>
<td>Enables new ways of performing horizontal or vertical processes that will result in significantly increased revenue or cost savings for an enterprise</td>
</tr>
<tr>
<td>Moderate</td>
<td>Provides incremental improvements to established processes that will result in increased revenue or cost savings for an enterprise</td>
</tr>
<tr>
<td>Low</td>
<td>Slightly improves processes (for example, improved user experience) that will be difficult to translate into increased revenue or cost savings</td>
</tr>
</tbody>
</table>

Source: Gartner (July 2015)

Table 3. Maturity Levels

<table>
<thead>
<tr>
<th>Maturity Level</th>
<th>Status</th>
<th>Products/Vendors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embryonic</td>
<td>• In labs</td>
<td>• None</td>
</tr>
<tr>
<td>Emerging</td>
<td>• Commercialization by vendors</td>
<td>• First generation</td>
</tr>
<tr>
<td></td>
<td>• Pilots and deployments by industry leaders</td>
<td>• High price</td>
</tr>
<tr>
<td></td>
<td>• Maturing technology capabilities and process understanding</td>
<td>• Much customization</td>
</tr>
<tr>
<td></td>
<td>• Uptake beyond early adopters</td>
<td></td>
</tr>
<tr>
<td>Adolescent</td>
<td>• Proven technology</td>
<td>• Second generation</td>
</tr>
<tr>
<td></td>
<td>• Vendors, technology and adoption rapidly evolving</td>
<td>• Less customization</td>
</tr>
<tr>
<td>Early mainstream</td>
<td>• Not much evolution in vendors or technology</td>
<td>• Third generation</td>
</tr>
<tr>
<td>Mature mainstream</td>
<td>• Robust technology</td>
<td>• More out of box</td>
</tr>
<tr>
<td></td>
<td>• Not much evolution in vendors or technology</td>
<td>• Methodologies</td>
</tr>
<tr>
<td></td>
<td>• Several dominant vendors</td>
<td></td>
</tr>
<tr>
<td>Legacy</td>
<td>• Rarely used</td>
<td>• Maintenance revenue focus</td>
</tr>
<tr>
<td>Obsolete</td>
<td>• Rarely used</td>
<td>• Used/resale market only</td>
</tr>
</tbody>
</table>

Source: Gartner (July 2015)
About Newgen

Newgen Software is a leading global provider of Business Process Management (BPM), Enterprise Content Management (ECM), Case Management (CM) and Customer Communication Management (CCM), with a global footprint of 1300+ installations in over 61 countries with large, mission-critical solutions deployed at the world’s leading Banks, Insurance firms, BPO’s, Healthcare Organizations, Government, Telecom Companies & Shared Service Centers.


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“Mr. John Tracey,
Chief Executive Officer,
Guyana Bank for Trade & Industry Limited

“We engaged Newgen to implement their FATCA Solution to assist us with our FATCA reporting mandate. The GBTI team was and continues to be pleased with the solution offering as it provides a comprehensive and user-friendly method for us to remediate and report on our customers as necessitated by the FATCA Compliance. Noteworthy is that even prior to the implementation GBTI was able to work with Newgen to customize aspects of tools which were unique to our requirements.”

“Julius Kamau,
Director - Technology & Operations,
National Industrial Credit Bank

“Our IT strategies act as the backbone to ensure that we continuously deliver excellent service to our customers. Newgen has proved to be a true partner in realizing our goals by strengthening us through its globally acknowledged product portfolio. Newgen’s world-class BPM & ECM product suite has automated our business processes and helped us to achieve business excellence; resulting in increased productivity and faster services to our customers. We look forward to further strengthening our relationship in future.”

“Dr. Tariq Taha,
Chief Information & Transformation Officer,
Bank Dhofar

“As part of our customer-centric business approach, we continually focus on our Digital strategies and Newgen has been the perfect partner for us in this Digital Transformation. Its robust BPM and ECM platform and agile implementation helped us smoothly transition our loan origination and credit card processes to an automated environment. And thus has helped us in achieving our endeavors of giving best of the class services to our customers.”
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- 40+ Patents

OVERVIEW
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- 1800+ Employees
- 270+ Partners
- 61+ Countries
- 20+ Verticals

OUR CSR INITIATIVES
- Sadbhavna
- SOS Village
- NDDPS at Govt. Girls School

OUR LOCATIONS
- USA
- Canada
- UK
- UAE
- Singapore
- India

OUR INVESTORS
- IDG Ventures
- Ascent Capital
- SAP Ventures

INDUSTRIES CATERED
- Banking
- Financial Services
- Insurance
- Healthcare
- Government
- Shared Services
- Telecom
- Legal
- Education
- Pharmaceuticals
- Manufacturing
- Airlines

Transformative Banking – Go digital with disruptive technologies