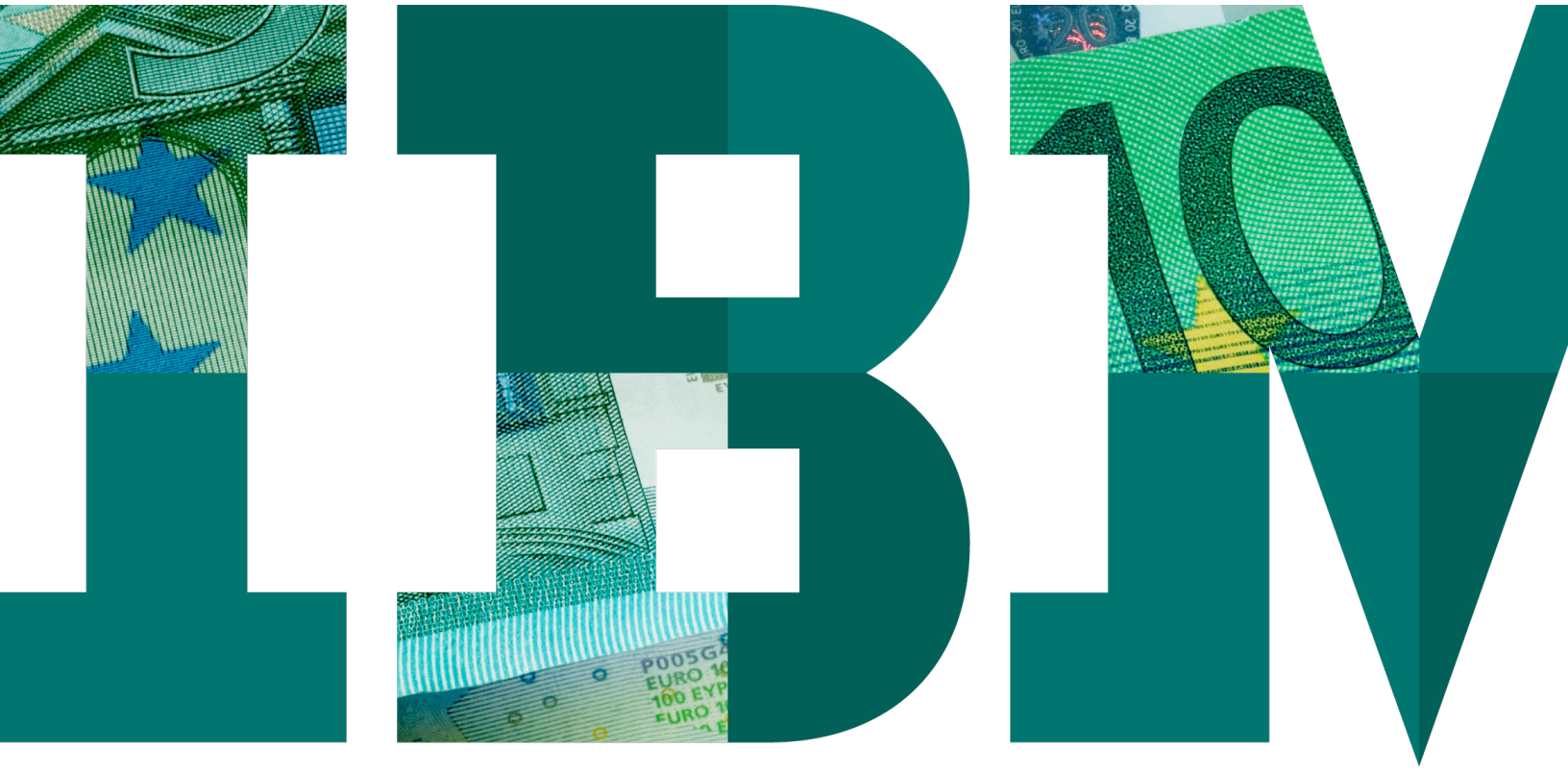
Identifying API use cases: Banking industry



IBM

Executive summary

Many banks and financial institutions are planning their journey and participation in the API economy. One of the most common questions from companies starting the journey is about the potential use cases within their industry. This paper focuses on several objectives:

- Identifying the common business drivers for API initiatives
- Describing an API identification methodology
- Supplying banking-specific examples using the methodology
- Discussing the current state of regulatory requirements and industry standards
- Providing recommendations for starting an API initiative

Determining an API economy strategy and planning a roadmap offer significant benefits, including:

- Consolidating and standardizing common APIs—or simply business services—within an organization
- Lowering cost of operations by having a central repository and index of enterprise business services such as retrieve credit score
- Accelerating digital projects and improving time to market with safe, quick access to business services by both internal and external parties
- Identifying a partnership ecosystem—especially outside your own industry—for formulating new value-add products and services to be more competitive
- Defining new business models for monetization purposes such as the mobile marketplace; that is, curating your company's business capabilities aggregated with your partners' business capabilities to provide a diverse range of related or complementary services

This paper is intended for business and IT leadership in the banking industry interested in jump-starting API initiatives by learning about industry use cases.

What is a business API?

Application programming interface (API) is a very old term that has been used to describe technical interfaces for software programs where one software program calls another through its API. Often, these APIs were extremely complicated and not really meant for wide consumption. A few other software programs inside the enterprise might use the API to invoke the program; a partner outside the company might use it as well, but with great difficulty.

This long-standing definition is not what's getting businesses excited about an API economy. The excitement is instead around what is referred to as a *business API* or *web API* (although sometimes the additional qualifier is left off). These business or web APIs are easy-to-understand interfaces for a recognizable business asset—for example, a customer record, an account, a product catalog, a price, an order and so on.

A business API is a public persona for an enterprise that exposes defined assets, data or services for consumption by a selected audience of developers, either inside or outside your organization. Business APIs are simple for application developers to use, access, understand and invoke. And because a business API extends an enterprise and opens new markets, application developers can easily leverage, publicize and aggregate a company's assets for broad-based consumption.

Common business drivers for API initiatives

Companies that are executing successful API initiatives focus on one or more of four key drivers: speed, reach, Internet of Things (IoT) and domains.

- **Speed (also known as two-speed IT, bimodal IT or multispeed IT):**  This driver focuses on allowing the business and IT organizations to run at different speeds. Traditional IT management of core systems of record can be changed at a certain rate. Trying to force rapid changes into core systems in the enterprise can result in outages or security exposures. Yet the business needs to react very quickly to new opportunities and competitive threats. It needs a higher rate of change than can be delivered by the controlled changes required to the systems of record. Using APIs, you can prepackage core system assets for consumption by the business to create new and innovative systems of engagement. This driver often tends to be the first one that drives API use in the enterprise.
- **Reach:** To reach new markets and obtain new customers, you  can make APIs available to other enterprises, such as partners who through their interaction with clients can generate additional revenue and new customers for your enterprise. For example, a retail bank may partner with a local realtor network to provide value-add home loan calculation services in its mobile "search for a home near you" app. The bank gains access to consumers looking for a home who are not yet the bank's customers.
- **Internet of Things or devices:** In many industries,  devices are used in conjunction with APIs to provide new and innovative solutions. This tends to happen in one of three ways:

  1. A device sends data via API call, such as a smart watch that is used to pay for fast food, and then updates your bank's systems and your account automatically.
  2. A device is sent a command via API call, such as a digital robot concierge that is directed to issue a virtual branch queue ticket to a banking consumer's mobile device for anyone who opted in for location-based services inside branches.
  3. A device sends data through a non-API call using other technology such as MQTT—a high-volume messaging protocol and transport for telemetry devices—because not all data calls require an action. However, APIs can access the data inside the enterprise and look for or react to particular situations or events. For example, commercial banks can partner with local governments to finance subsidized, eco-friendly farming equipment and help their farming community clientele with irrigation. Data from the sensored equipment, when combined with weather data, can identify patterns where more water is necessary in a certain field patch, thereby helping to improve yield probability and yearly crop revenue. APIs can react to abnormal data too, such as patterns indicating when equipment needs to be serviced.

- **Domains:** Typically, domains refer to interactions across multiple lines of business. They can largely work independently, but benefit from sharing data. APIs allow the data to be shared in a controlled, secured manner. Domains can also be seen as physical locations. Companies that have multiple locations, which may include cloud and on-premises data centers, sometimes use APIs as a method to secure and control the flow of data between locations. Considerations for regulatory and compliance constraints based on geographical and country specifications become evident.

Businesses often start with a focus on the requirement for speed. After initial success in this area, they address the other drivers. It is not uncommon for businesses to benefit from APIs across all four drivers.

API identification methodology

Who should identify the business APIs? Figure 1 identifies several roles in a high-level organizational structure. Note that several people may be in each role, and a single person may be assigned to multiple roles.

A key role in the structure is the API product manager. The person or people in this role own the success of the APIs and the API initiative. Tasks associated with the API product manager role include:

- Working with the domain owners to identify desired business APIs to bring to market
- Working with the API developer to drive the creation of the API
- Reporting to executives on metrics
- Defining the product characteristics of the API (monetization, rate limits, audience and so on)
- Communication

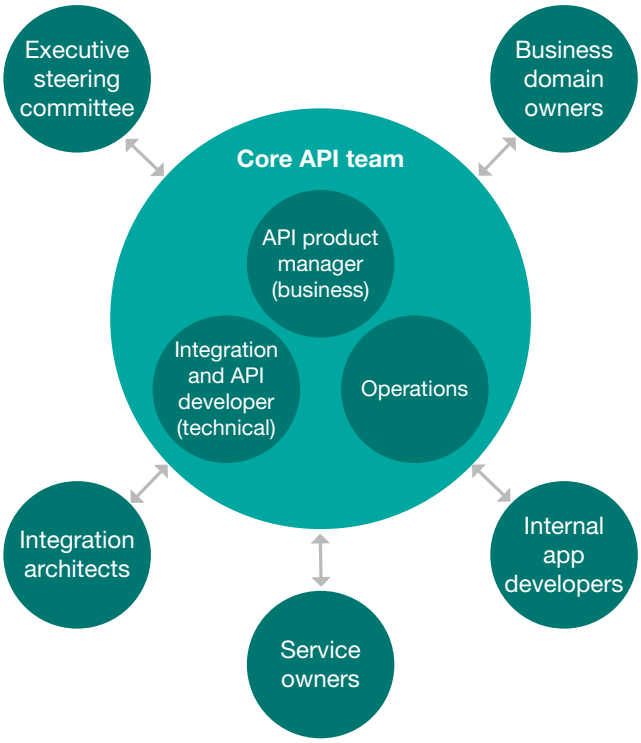


Figure 1. High-level organizational structure for an API development team.

Identifying good APIs is one of the most critical factors in achieving API initiative (and associated business) success. APIs must be focused on the needs of the consumer and should be simple. Three questions lead to a good API:

- Who is the audience?
- What do they want?
- Under what terms and conditions are you willing to make the asset available?

Notice that none of these questions ask or refer to the systems of record that will ultimately deliver the response to the API request. Many companies incorrectly define their APIs by looking at what the systems of record do and adding an API in front of them. This approach may simplify the process for the API provider, but it does not meet the needs of the consumer.

When identifying a candidate API, the API product manager needs to understand the API user being targeted (question one). The second question is probably the most important of the three. Understanding what the audience is trying to accomplish can result in the best API. If the definition is focused on consumer need, then the interface is more likely to be useful to that audience and also more likely to stand up to change (versioning). The third question is related to the policies you want to have around the API. What security measures are required to allow the API to be used correctly? Are there rate limits that must be enforced?

"The business of APIs: Best practices" white paper provides additional information on organizational structure and several other important topics. Download it here.

Once you have answered these three questions, the API product manager and API developer must work together and potentially iterate to define the API. The API developer needs to map the proposed consumer interface for the API to the back-end system of record interfaces—and possibly to many other systems—to provide only the desired result back to the consumer. New business logic may need to be added at a microservice layer in front of the existing systems of record. If the existing systems do not completely address the requirement, the API developer may have to write additional code to add business logic to the existing environment.

Next, consider six categories in which APIs are often used, along with these top questions that can help identify potentially useful APIs in each area.

- **Internal developers (mobile)**
  - What data and transactions would your own mobile apps need?
  - Does generic data exist that is the same for all app users, such as business locations, rates and so on?
  - Is there data specific to existing customers that should be accessible through your app, such as account balance or open account status?
  - What features of the mobile device—for example, the GPS or the camera—might be useful in conjunction with your APIs?
- **Partners**
  - What data and transactions do you share among your current partners?
  - Is partner onboarding a long, difficult process?
  - Would self-registration of partners be of value—increasing the number of partners and broadening geographic coverage, for example?

- **Public**
  - What apps might others write that could use your data and transactions?
  - What information are you currently making available on your website?
  - If there was a comparison app for you versus your competitors, would you want to be listed as an option? What data would the app need?
  - What other industries or processes might also use your products? One example might be a car purchase that needs a bank loan.
  - Think mashups: What other APIs might make sense with yours? Mapping? Social?
- **Social**
  - How do your systems interact with social media? Can you spot trends in social media and raise alerts or take action?
  - Can you gain insight on your brand and your competition through social media?
  - Can you do real-time analytics combining current customer status, behavior and history with social interactions?
- **Devices**
  - Does your company handle devices such as cars, appliances, sensors or meters?
  - What scenarios can apply to the device? For example, needing repair/supplies, needing to send status information, controlling device behavior or enabling interaction between the device and enterprise systems.
  - How are you positioned to integrate the next UI technology, such as wearables like smart clothing or augmented reality glasses?
- **Data and analytics**
  - What data do you collect about your clients? Would this data be of value to a larger audience inside the enterprise?
  - Can your data identify market segments that would be of interest to a non-related industry? For example, can it identify a high volume of expensive credit card purchases in a particular region of the city? Or can it identify a high percentage of wealth management investments being moved to low-risk funds for retirement planning in certain times of the year?

Identifying API use cases in the banking industry

Now we will take a look at some examples that apply the API identification methodology to the banking industry.

Internal developer (mobile app development)

General information

General information is information that is not tailored to the specific customer using the app. This could include information about the bank's offerings, such as:

- Account types and details
- ATM locations, branch locations and hours
- Business banking credit score checks, such as Beacon score lookups in Canada
- Business banking offerings, such as business overdraft, commercial banking Guaranteed Investment Certificates (GICs) and commercial mortgage
- Calculators and financial tools
- Forex
- Interest, loan, CD and mortgage rates

- Other services such as credit card offers, credit card selector, wealth management risk type and retirement fund types and classes—for example, ROTH or traditional IRAs in the US
- Routing numbers
- SWIFT and BIC codes

Custom information and transactions

This example offers information and transactions that are tailored to the customer using the app. Obviously, these APIs require additional security to help ensure appropriate access. APIs that fit this category may include:

- Account alerts
- Account balances
- Appointment scheduling
- Bill pay
- Credit card payments
- Credit score lookup
- Electronic statements
- Partner location services
- Profile management
- Push notifications and alerting services
- Recent transactions
- Remote check deposit (personal or business)
- Transfer funds
- Wealth portfolio re-balancer
- Wealth risk assessor

Mobile advantages

Customers using the app on a mobile device can benefit from using phone or tablet functions in conjunction with APIs provided by the bank. Here are a few samples:

- **Camera:** Use to deposit a check by snapping a photo and submitting via a bank's app—something often done today
- **GPS services:** Use with APIs to find the nearest bank branch or ATM
- **Near-field communication (NFC):** Use with other security mechanisms at an ATM to identify the customer and process pending transactions such as a cash withdrawal
- **Digital wallet:** Opens up many business opportunities to provide payment services

Partnering

APIs can help make it easy for partners to do business with you as a bank. Providing APIs to partners (such as creditors, brokerage firms, clearing houses, custodian banks, Visa and MasterCard, and large corporate clients for commercial banks) allows partners to sign up for services and access information about their accounts. Partners can also provide services to their customers using the bank's capabilities.

Sample API scenarios could include branded credit cards or gift cards, rewards programs and business services such as accounts receivable and accounts payable. Using APIs to obtain reports, cash-flow analysis and real-time information can be beneficial. Many banks also partner with insurance providers and financial advisors that can take advantage of the bank's APIs.

Public APIs

Banks can deploy many of the same APIs used internally and with partners as public APIs to drive additional business and help obtain new customers. For example, potential customers may be shopping for the best loan rates or CD rates. By making an API available for a comparison app, your bank has the opportunity to compete for this new business.

Case in point: APIs' role in retail banking, commercial banking and wealth management

Here are three examples of business use cases featuring API ecosystem partnerships in different aspects of the banking industry.

- **Retail banking: Online travel commerce scenario**
  With access to the bank's payment services, consumers buying a vacation package have flexible payment options, such as paying directly through their checking account versus a validated PayPal account. Or the bank can incentivize the consumer to use the bank's credit card for double loyalty points.
- **Commercial and business banking: Construction project scenario**
  Service providers working on construction and building projects can realize several advantages from bank APIs. Lawyers can draft contracts for new business upgrades and franchising. Renovators and contractors could use a quick quote estimator based on types of building upgrades a business needs when planning for more space. The local government offices could realize efficiencies related to generating building permits and licenses.
- **Wealth management: Estate planning and will management scenario**
  Organizations that handle estate planning and will management can use a bank's wealth management APIs to create a digital vault of the inventory of assets required for estate planning or to help draw up a secure digital living will.

One of the most exciting aspects of the API economy is extending your reach to other industries that can send business to you. Banks can benefit by offering loans to customers of other industries such as automotive for car loans, education for student loans and real estate apps for mortgages. Retirement planning, vacation planning, college planning and other high-cost life events can drive opportunities for bank services. By providing APIs to these other industry apps, the bank has the opportunity to obtain new customers who were not directly thinking about the banking aspects related to these areas.

Many companies have public APIs available. Here are a few examples from ProgrammableWeb:[1]

- Plaid is designed to allow developers to integrate transaction and account data from most major financial institutions into third-party applications. The data includes merchant names, street addresses, geo-coordinates, categories and other information.
- Price My Loan serves the mortgage lending industry by providing loan pricing and underwriting services online as a service. The PriceMyLoan API allows users to integrate the mortgage processing service into third-party applications.
- Tipalti API is a mass payment service. It allows businesses to pay out vendors, employees and others globally through multiple methods from Automated Clearing House (ACH) to PayPal to wire transfer. The Tipalti API enables developers to access and integrate the functionality of Tipalti with other applications.
- BankImport API provides users with a single place to track their financials over several accounts from different banks. The BankImport API allows developers to automate the processing of incoming and outgoing money, providing direct access to transactions, bank accounts and settings.

- IBAN Calculator API can convert a national account number into an IBAN, validate an IBAN and find bank information for an IBAN. These functions are useful when performing cross-border online transactions in Europe, validating account numbers, and more. In the event of a fraudulent money transfer the police can also use an IBAN to find out about the bank involved and its location.

Check out IBM Bluemix for your API needs

If you are exploring the API economy and interested in public APIs, IBM offers the IBM® Bluemix® platform as a service (PaaS). IBM handles the security, management, operations, scalability and performance for financial institutes that place their APIs on its branded mobile marketplace hosted on the IBM Bluemix cloud platform.

Social

You might already act as a consumer of social APIs from companies such as Twitter or Facebook, mashing up this information with your own APIs. Acting on specific mentions of your company and trends in social media can provide business advantages that enable you to take advantage of opportunities or head off problems. Among other things, you can combine Twitter feeds that reference your bank with your own analytics to help determine if you must take action to rectify customer satisfaction issues or promote positive comments.

In addition, references to consumer or business needs might allow you to act to offer banking solutions. For example, searches or comments about buying a car might prompt you to advertise car loans to the consumer.

Device integration and wearable devices

The device most closely associated with banking is the ATM. ATMs can be fitted with sensors for NFC intended for authentication as mentioned earlier, but perhaps banks can take this a step further. The bank could offer an API to local businesses to provide offers to customers near the bank's ATM locations. When an ATM recognizes a customer is nearby, businesses in the area might pay to invoke an API to push information to the customer with an offer to attract them to enter their business. In addition, a portion of the customer purchase could be credited to the bank, creating a new revenue model.

Financial institutions such as Fidelity and Westpac are already investing and innovating with wearable devices and augmented reality APIs to improve the digital experience in financial markets and banking. These IoT APIs are the competitive ground in which a highly populated digital consumer market, such as the Asia Pacific region (APAC), chooses to bank with the financial institution based on the best onboarding and extreme digital experience. Banks are competing to gain the attention and lifetime wallet share of certain segments of the population: Gen Y (millennials between 20 and 32 years old) and Gen Z (hyperconnected consumers who are under 19 years old). Wearables and IoT-sensored engagement, together with mobile, may be just the inroad to these consumers' hearts.

Data and analytics

Banks gather data on their clients' behavior and often perform analysis to help identify marketing opportunities. Typically, the data and analytics are targeted to a specific internal audience. Through APIs, organizations can make the data and analytics more easily available to additional internal audiences and provide additional value from data that has already been collected.

In Canada, digital-native bank Tangerine worked with IBM to instrument its mobile banking app and provide an opt-in, simple "shake to feedback" feature. It offers customers an immediately accessible way to provide personalized feedback directly to the bank. This capability gives personal attention to the banking consumers who may not believe they are heard when they post in a generic app store comments area. More importantly, Tangerine gains insight on any patterns for app defects and design improvement ideas straight from their customers. Learn more about how Tangerine enhances customers' mobile experiences.

Commercial banking customers could reap huge business value if their bank's business mobile app provided opt-in push notifications to any ecosystem partners based on API-enabled location services. For example, a franchisee business could get alerts about new legal services, government licensing offices, commercial renovators, building inspectors and so on near its location that may offer assistance necessary for the franchisee to start or grow its business.

In addition, APIs can give third parties access to data assets in aggregate—for example, data to identify which age demographics are buying what type of high-risk or low-risk funds from a wealth management perspective. Third-party fund managers can use the data to provide more valuable and targeted product offerings to that age demographic and allow the bank to become more compelling to work with, based on personalized recommendations. Access to personal information may be regulated in your geography or industry; be sure to consider this before providing access.

Industry standards and regulatory requirements

The European commission has issued a set of requirements for the banking and financial industry called Payment Services Directive 2 (PSD2) that requires the use of APIs. Two useful resources are available to find out more about PSD2:

- 5 Things You Need to Know About PSD2
- Explaining PSD2 without TLAs is tough!

Regulatory requirements with associated deadlines may be a driver for some banks to participate more rapidly than they anticipated in the API economy, but many will have already identified significant business advantages to APIs outside of those required by regulations.

Even if your region of the world has not issued regulatory requirements for APIs, industry standards for APIs are most likely coming in the future. Just as industries have found standards such as Banking Industry Architecture Network (BIAN) and Swift to be useful in the past, APIs are expected to help make access to the standard interfaces easier to consume—without the need for regulatory requirements. IBM is already working with BIAN to create API interfaces for the BIAN standards (see the IBM developerWorks® blog post, "Open APIs for the Banking Industry"). While today's business APIs are still in the early stages and standards have not yet been defined, over time you can expect to see common standardized APIs in the industry. Banks can compete on value-add services integrated with their partner ecosystem, heightened digital engagement and personalized offerings to their clients—not on having a different API interface.

Closing thoughts and recommendations

The banking industry is one of the most active industries in the API economy. Pressures from new entrants into the market are driving incredible activity around APIs in banking. Such entrants include Apple Pay and Alipay, regulatory requirements such as PSD2 in Europe, and government entities such as Infocomm Development Authority (IDA) of Singapore and Monetary Authority of Singapore (MAS). These government entities in particular are encouraging open banking with APIs in addition to the typical reasons for API initiatives: speed, reach, devices and domains.

If your financial enterprise has not started strategizing and planning for business APIs, the time is now. Do not wait until you know all the answers and have everything in place to get started—the market is moving too fast. Plan stages for the rollout, and then build on what you learn.

If you have already begun your API initiative, look to build on your successes and quickly identify false starts. Also look at additional business drivers and use cases to obtain additional value for the business.

As we move into the API economy, there are huge opportunities for new and innovative solutions. IBM brings significant knowledge of the banking industry and the API economy and would like to be your partner on your API journey. Let us share our expertise and experiences to help maximize the value for your enterprise.

To understand more about the IBM perspective on the API economy, visit the IBM API Economy and Digital Transformation websites. IBM API Connect™ is a complete foundation to create, run, manage and secure APIs. You can find more information about IBM API Connect at the API Connect website, and you can download a trial version of API Connect here.

About the authors

Alan Glickenhouse, API Business Strategist

Alan Glickenhouse is a business strategist on the IBM API Connect offering management team. He joined IBM in 1981 and has held numerous positions in sales, technical sales, marketing, development and technical support. On the API Connect team, Alan assists clients in all industries with their business strategy for APIs, understanding their business direction and existing environment (both business and technical), and helps businesses successfully adopt an API strategy that fits their environment. Alan has an AB from Vassar College in Computer Mathematics and has several SOA certifications. Contact him at glick@us.ibm.com or follow @ARGlick.

Esther Kim, Global Mobile API Economy Solutions Executive, Financial Services

Esther Kim is currently the financial services sector leader from the IBM Worldwide Mobile API Economy Solutions team. Esther joined IBM 21 years ago. In the early years of her IBM career she worked in the IBM PC technical support center, then moved to the financial banking solutions business unit as a systems engineer. She then moved to the IBM Software Channels division. Esther has spent the last 16 years in the financial industry with both business and IT executive sponsors as her customers in a consultative approach that aligns their requirements and roadmap with IBM software solutions. These solutions enable competitive advantage, risk mitigation, lower cost of operations and new revenue models. Esther holds a Bachelor's Degree in Mathematics from the University of Waterloo in Canada. Connect with Esther on LinkedIn.

IBM Cloud
Route 100
Somers, NY 10589

Produced in the United States of America
August 2016

[1] Examples of public APIs came from a keyword search for "banking" on www.programmableweb.com. This information is not intended as a recommendation of these specific APIs, nor a statement about their capability or quality. ProgrammableWeb acts as a repository where any company can promote its public APIs. Consumers must evaluate the functionality and quality of any API and decide if it meets their needs before deploying.

APW12357-USEN-00