

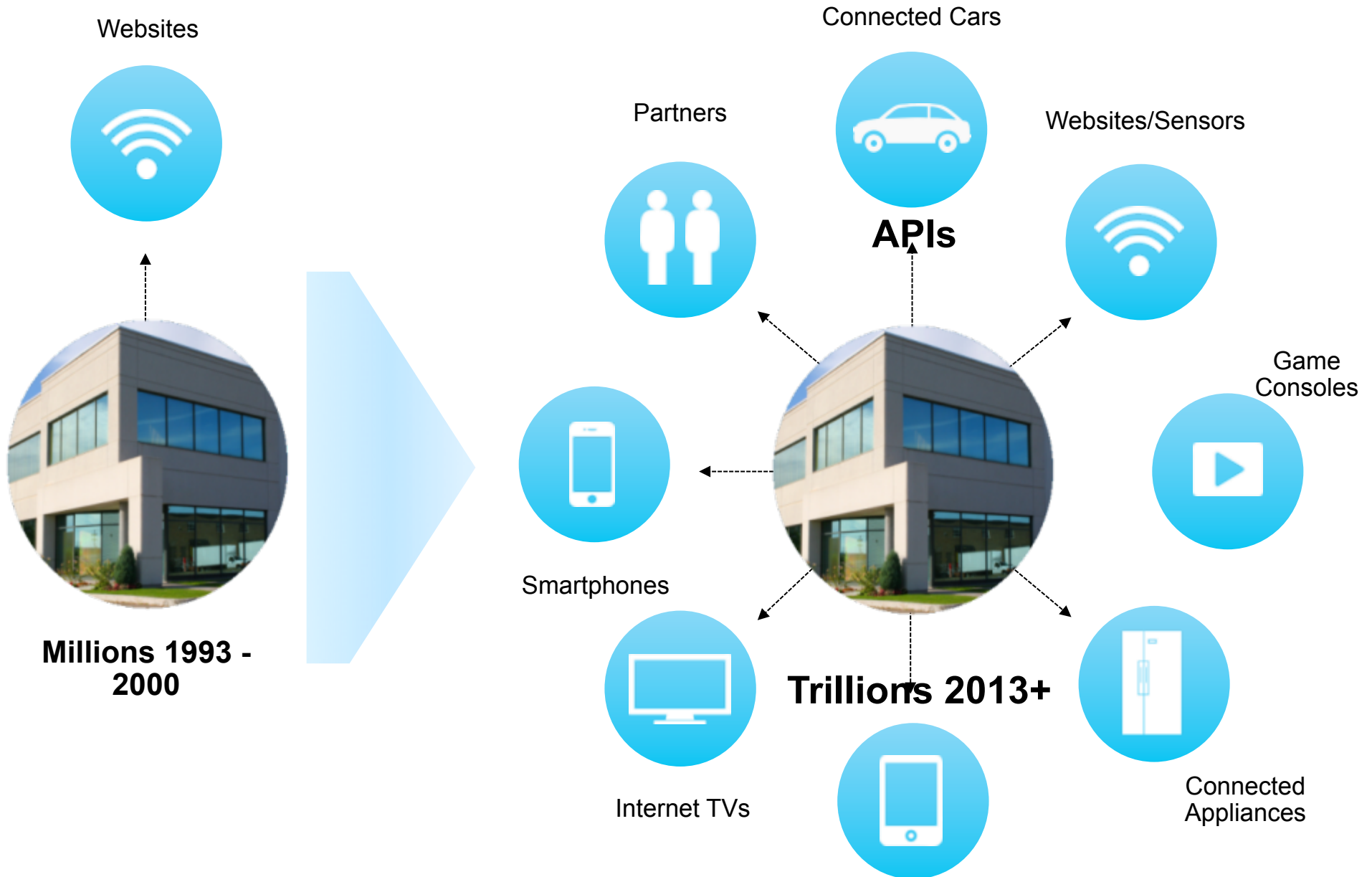
The value of APIs and API Management

Kevin Postreich – IBM WW Technical Sales

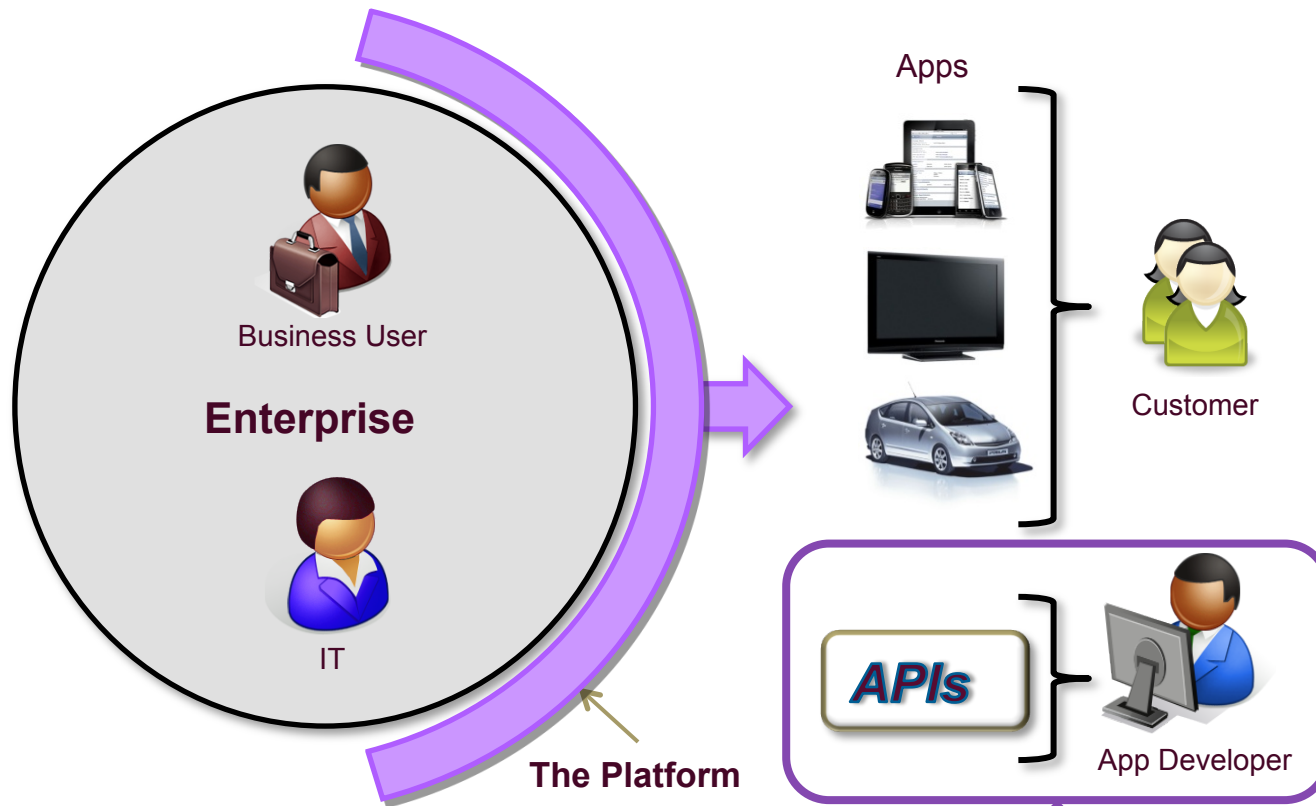


The way we reach customers is evolving

- Companies are making their business information available through business APIs to all types of consumers
 - Tapping into new markets and application development channels to become a more engaging enterprise



Companies Need to Become an Engaging Enterprise



Enterprises want to tap into innovation from a large community of developers, not just developers they employ

- **Business Users** want to engage **Customers** in new markets
- They need to **Externalize the Enterprise**
- They need to get **Apps** in front of these **Customers**
- **Apps** need **APIs** that Externalize the Enterprise
- **App Developers** use **APIs**
- **App Developers** are now **External** to the **Enterprise**
- **IT Guys** need to secure, scale and support the externalized **Enterprise**
- **Business Users** and **IT Guys** need Insights so they can respond to business needs

Business API = Web API = Productized Service

What is a Business API?

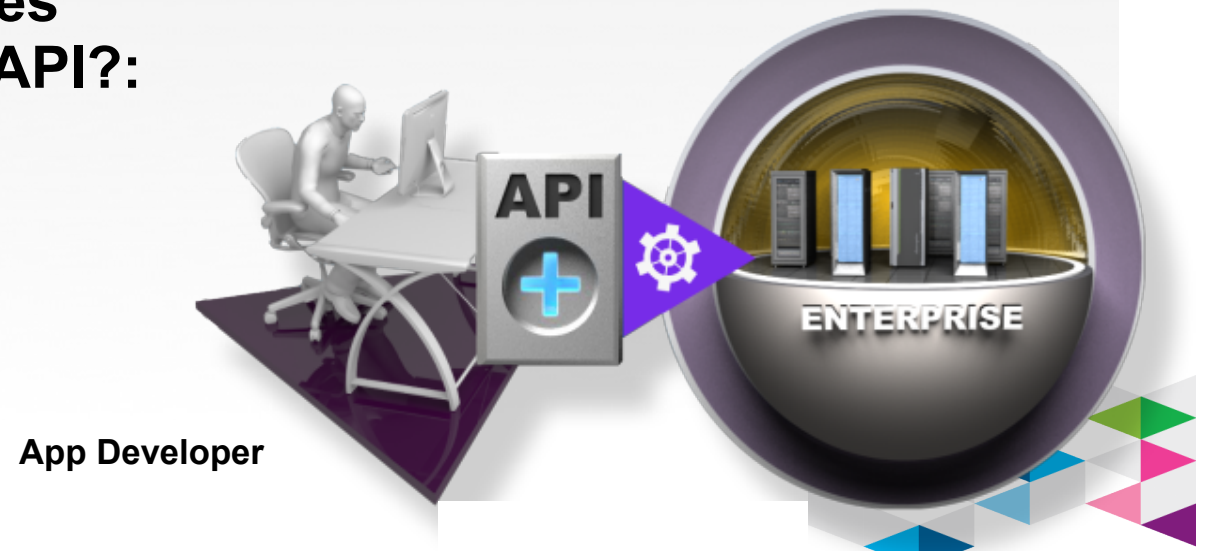
- A Business API is a **public persona** for an enterprise; exposing defined assets, data or services for public consumption
- A Business API is **simple** for app developers to use, access and understand
- A Business API can be easily invoked

What Value Does a Business API Provide?

- Extends an enterprise and opens new markets by allowing external app developers to easily leverage, publicize and/or aggregate a company's assets for broad-based consumption

What “assets, data or services” are exposed via a Business API?:

- Product catalogs
- Store listings
- Order status
- Inventory
- Social interaction



APIs - the building blocks for apps

Application Programming Interface

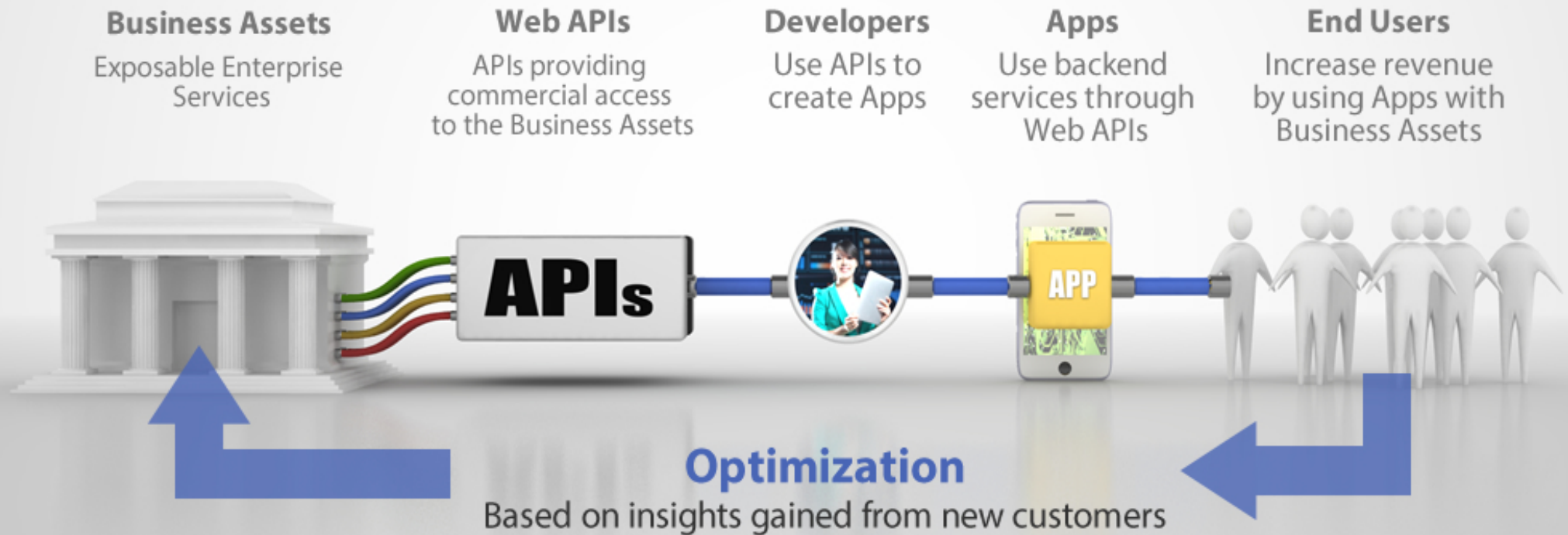
The **“API economy”** has changed how developers think about building apps, and how organizations deploy software in the cloud

Bank Externalized Services



API Economy

Lifecycle



The API Economy

Where companies [providers] expose their (internal) digital business assets or services in the form of (Web) APIs to third parties [consumers] with the goal of unlocking additional business value through the creation of new assets

API Economy

Mobile App Assembly

Consumer view

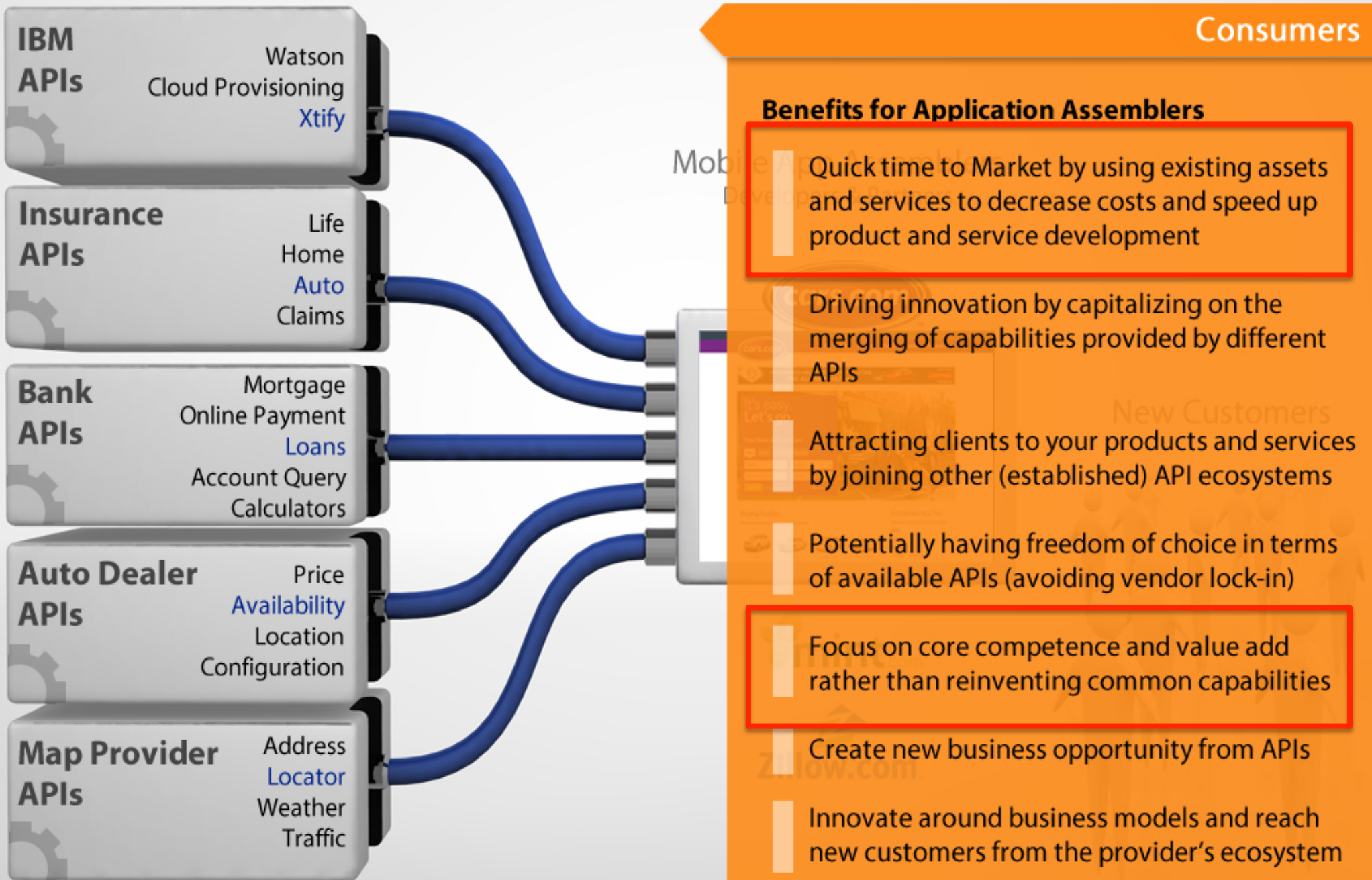


Providers

Consumers

API Economy

Mobile App Assembly



Providers

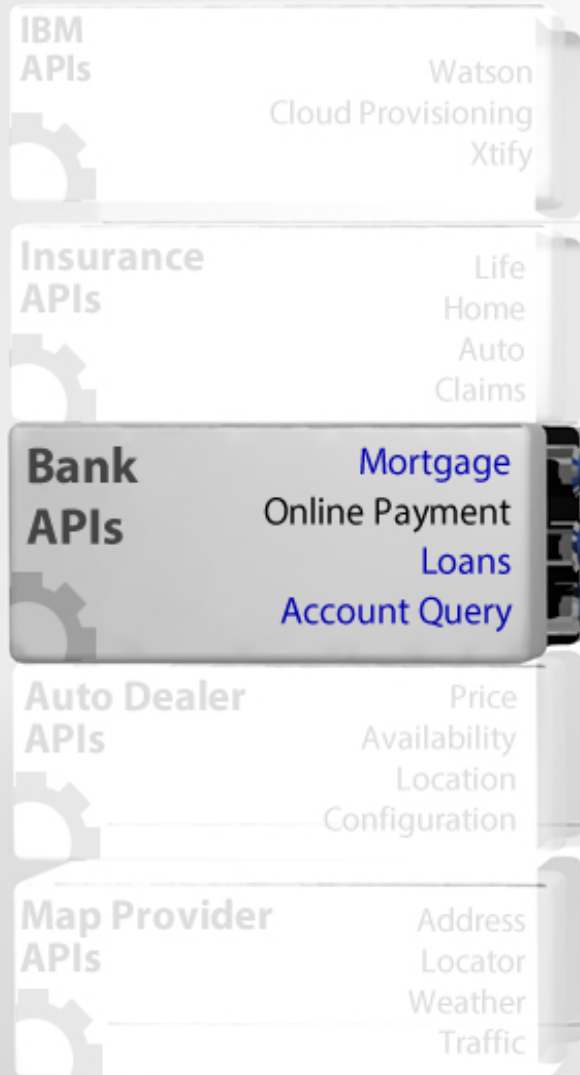
API Economy

Provider Perspective

Mobile App Assemblers

Developers & Partners

Provider view



New Customers



Providers

Consumers

API Economy

Provider Perspective

Mobile App Assemblers
Developers & Partners

Providers

Benefits

- Expanding into new customer bases and niches that you normally wouldn't be able to reach on your own
- Focusing on your core value
- Expanding your brand and brand loyalty
- Easier possibilities in establishing new partnerships and capitalizing on them
- Benefitting from open innovations of crowdsourcing and expert sourcing, which are implicitly unlocked through the opening of APIs
- Realize profit from new business models
- Decreased development costs and time through software (e.g., mobile apps) produced by third parties
- Keeping up with application demands (e.g. new apps, new features)
- Wider and quicker coverage of different platforms and devices



New Customers



Consumers

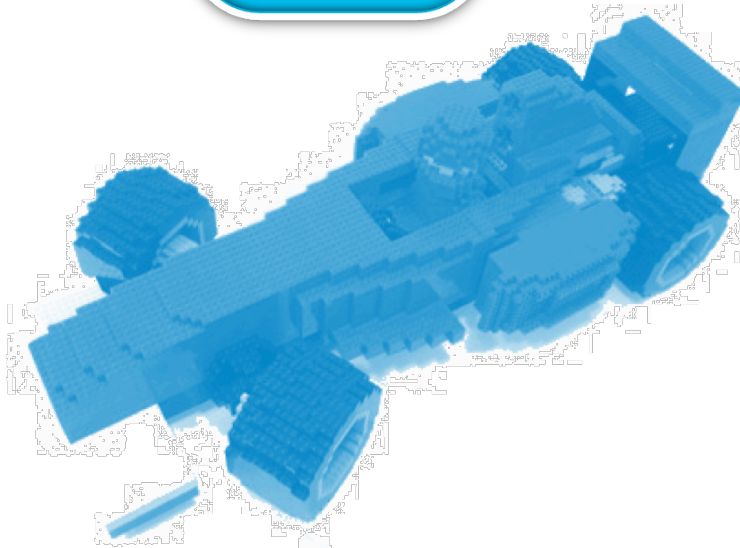
Are APIs just a new name for SOA?

API's complement SOA: Share and rapidly deliver valuable enterprise capabilities to new markets

There are many similarities – but one very important difference:

“How can I increase the
pace of innovation?”

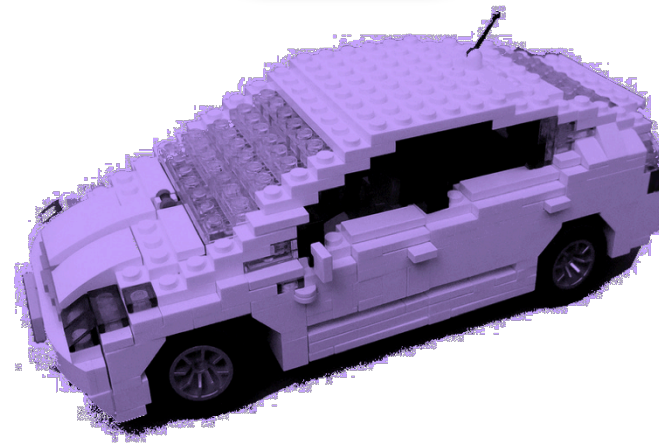
APIs



Reuse → Speed to deliver
Sharing → Expediency
Encapsulate → Less to learn

“How can I increase the **agility**
and effectiveness of delivery?”

SOA



Reuse → Effort to deliver
Sharing → Effectiveness
Encapsulate → Less to change



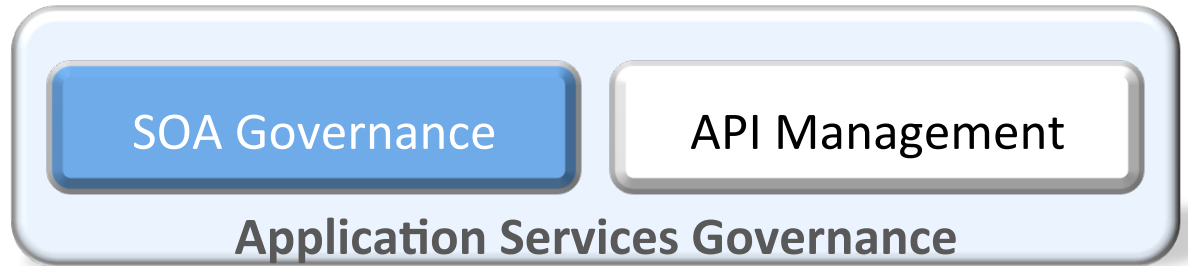
Two similar worlds converging

Gartner.

“The **overlap** between SOA governance technology and API management is **significant.**”

“It is about tracking and monitoring the artifacts in an SOA or an API project, enforcing and ensuring compliance with the policies associated with the artifacts and measuring the outcomes related to their use.”

- August 2013, Gartner's Application Services Governance report



Service Management	API Management
Mainly about Services	Mainly about APIs
Govern services through the lifecycle	Expose APIs to the Web, manage them to prevent chaos in usage
Began with Web Services	Began with REST
100's of services	Smaller number of APIs
Typically internal , behind firewall	External and Internal
Driven by Enterprise Architects	Driven by Business , Marketing, Mobile teams, Innovation teams
Governs with a Stick	Governs with a Carrot
Established market presence	Newer in market
Contracts enforced with ESBs and Gateways	Security and Entitlements controlled by Gateway



What is IBM API Management?



A single, comprehensive solution to design, secure, control, publish, monitor & manage APIs

IBM API Management

Fully on-premise, multi-tenant solution,
for API providers



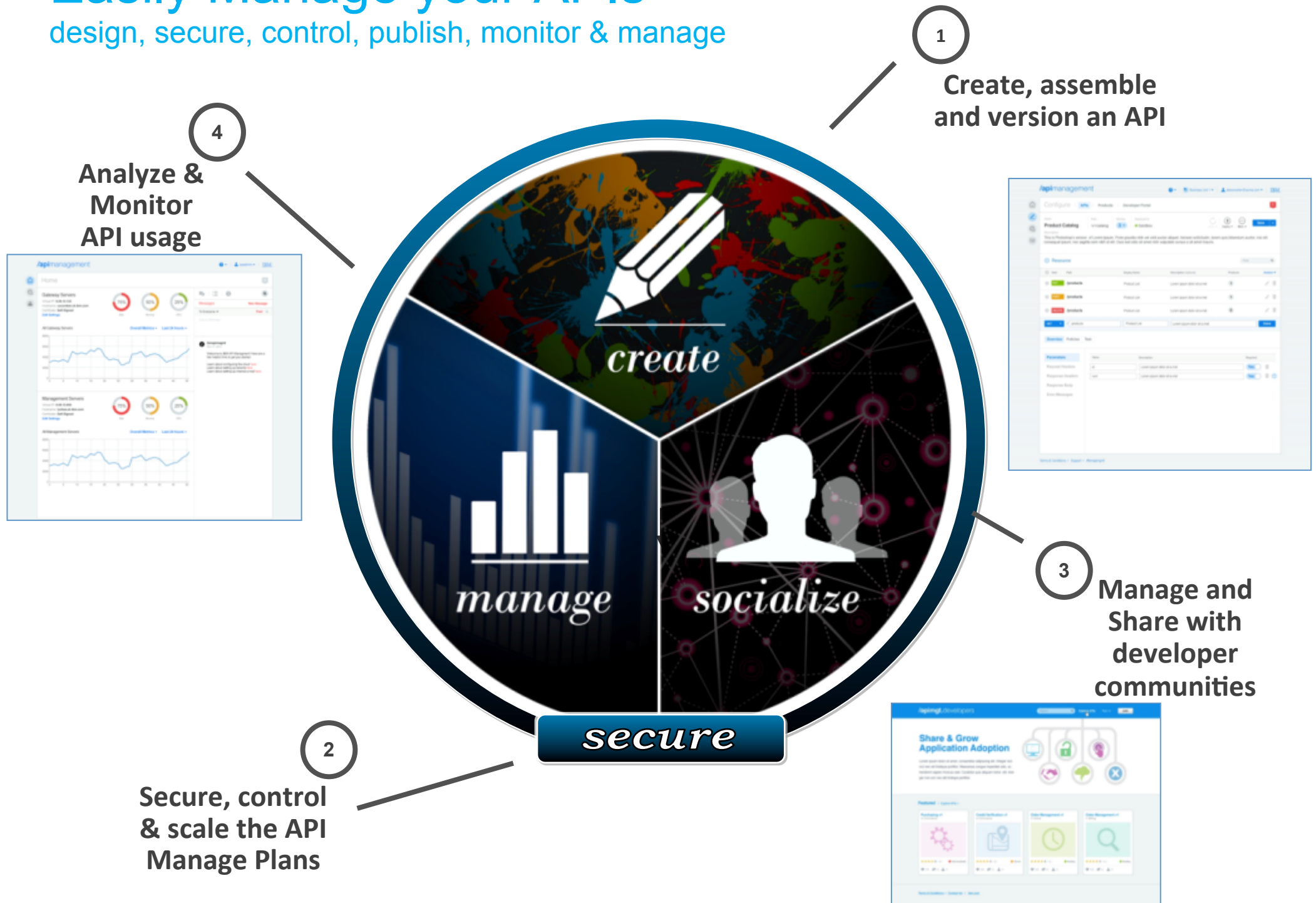
IBM DataPower

API Gateway for security, control, integration &
optimized access to a full range of Mobile, Web, API,
SOA, B2B & Cloud workloads

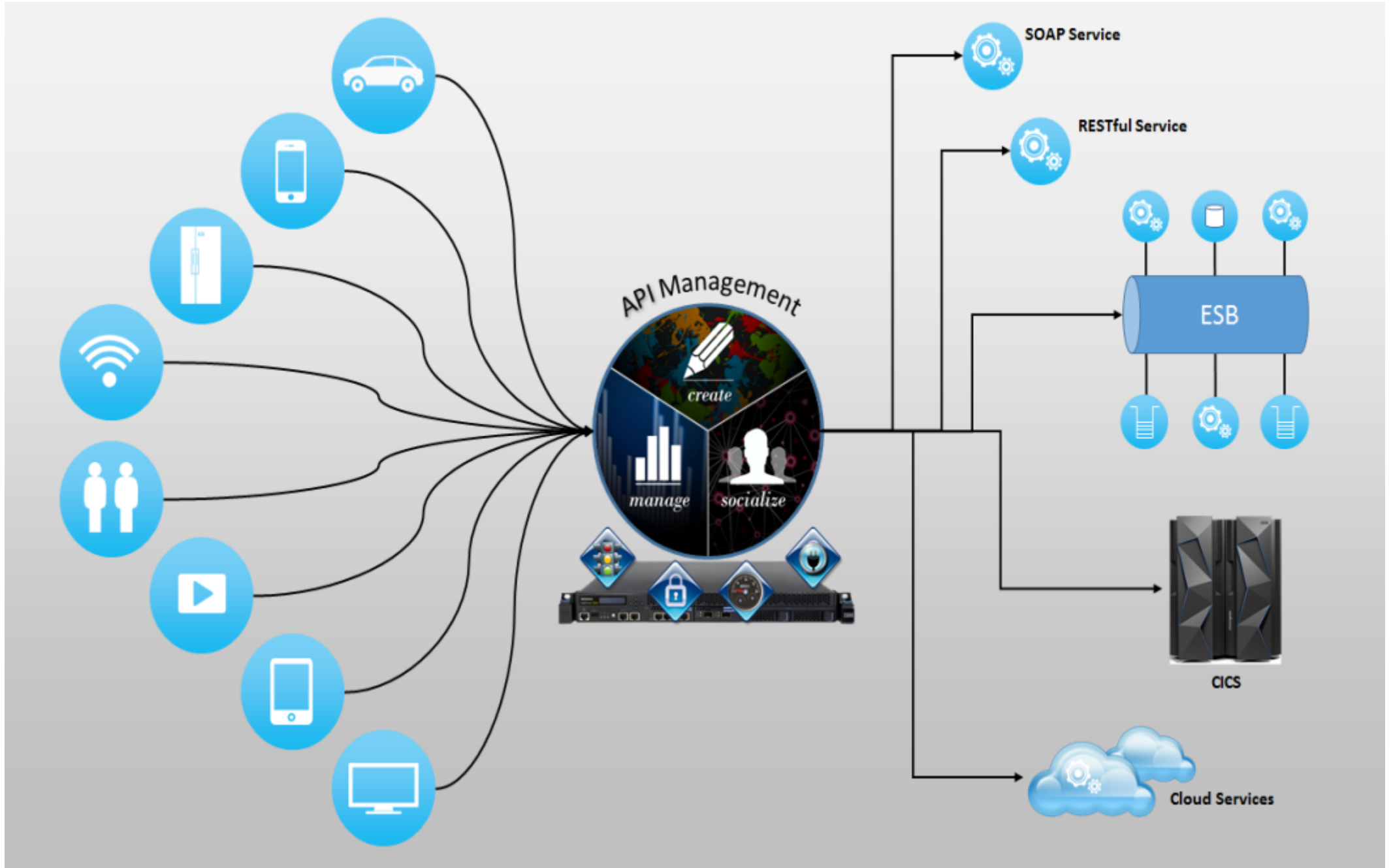
Over a decade of innovation, 10,000+ units sold,
2000+ customer installations worldwide

Easily Manage your APIs

design, secure, control, publish, monitor & manage



Where does API Management fit?



API Success Requires Addressing Needs of Multiple Stakeholders

Multiple roles: Single user interface

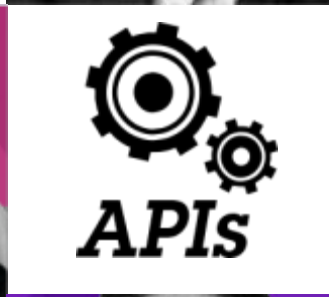


API Product Manager (Provider)

- How can I rapidly release & update my APIs?
- How do I publicize my API?
- How do I measure success?

App Developer

- Where do I access APIs?
- How do I understand the APIs?
- How do I measure success?



API Developer

- How do I assemble APIs?
- How do I manage security?
- Will the infrastructure scale?
- How do I measure performance?

Operations Lead

- How do I manage all the API Environments that are being requested?
- How can I scale each environment?
- How can I easily find and fix issues?



API Developer: Easily create, find REST and SOAP APIs



The screenshot shows the API Management console interface. At the top, there's a navigation bar with the logo and user information. Below it, a sidebar on the left contains navigation icons and a list of API environments: Draft APIs (3), Sandbox (2), Test (2), and Production (1). The main area displays a table of APIs with columns for Name, URL Path, Last Modified, and Actions. Three APIs are listed: 'Product Catalog' (5 versions, /v1/catalog), 'Credit Check' (8 versions, /ccheck), and 'Orders' (1 version, /orders). Each API entry has a 'REST' or 'SOAP' label and a 'Custom Label' button. A modal window titled 'Add a new API' is open, showing fields for API name, path, and description, along with buttons for 'Load a WSDL' and 'Find in registry'.

- Define the **REST** or **SOAP API** you wish to expose
- **Import** from a WSRR registry
- **Search** for, add custom **tags** to, and mark **favorite** APIs for easier discovery



API Developer: Assemble New APIs Through Configuration



The screenshot displays a configuration interface for an API. It is divided into several sections:

- Available values:** A table with columns 'Field' and 'Sample'. It lists 'xy.currencyFrom' (USD) and 'xy.currencyTo' (GBP).
- Transformation:** A central workspace where a 'Multiply' operation is being configured. It shows a flow from 'Available values' to the 'Multiply' box and then to 'Input variables'. A dropdown menu is open, showing various transformation categories: String, Mathematical, Boolean, Date, and Utility. The 'Multiply' operation is highlighted in yellow.
- Input variables:** A table with columns 'Field' and 'Sample'. It lists 'body', 'JSON', '4.5t.Accountid', '4.5t.Balance', and 'xy.Currency' (USD).
- Navigation/Action Menu:** A vertical menu on the left side with options: Parameters, Request Headers, Response Headers, Response Body, HTTP (GET, PUT, POST, DELETE), Web Service (Invoke Operation), and Policies (Activity Log, Throttle).

- Assemble a new API by combining multiple REST or SOAP services into a **composite API**
- **Provide examples** of the request and response messages, headers and parameters
- **Drag and connect** linking the request and response messages
- **Transform** the message elements with a click



API Developer: Secure the API



The screenshot shows the API Management console for an API named 'ATM'. The console includes a sidebar with navigation icons, a top header with the API name and user information, and a main content area with a table of API versions and configuration options. A dropdown menu for 'Identify Application Using' is open, showing 'Client ID' as the selected option. Below it, a dialog box for 'Authenticate Application Users Using' is open, showing 'Basic' as the selected authentication method. A second dialog box for 'Authenticate Application Users Using' is open, showing 'OAuth' as the selected authentication method, with 'Public' as the Client Type and 'Authorization Code' as the Grant Type.

- Identify application with **Client ID & Secret (password)**
- Authenticate using **LDAP** or **Authentication URL**
- Authorize using **OAuth 2.0** support with implicit grant type, authorization code, resource owner

The application **secret** functions effectively as a password known only to the application



API Developer: Version the API for iterative development



The screenshot shows the API Management console for an API named 'ATM'. The 'Version' dropdown is set to '4'. A dropdown menu is open, showing a list of versions to switch to:

Version	Last Modified
Version 1	8 days ago
Version 2	a minute ago
Version 3	a minute ago
Version 4	a few seconds ago

Below the list is a '+ New Version' button. The 'Deployed To' field shows 'No environments'.

- **Version** the API configuration in just one click
- **Revert** prior version

The screenshot shows the API Management console for the same 'ATM' API. The 'Version' dropdown is now set to '1'. The 'Deployed To' field shows 'prod' and 'test' environments.


- Versioning APIs is different than versioning services
 - Think versioning of non backward compatible changes
 - Services would be versioned for any/all interface changes




API Provider: Customize API Portal(s)



Customize Portal (Sandbox) <https://9.30.192.137/fourth/sb>

Company Logo (215 x 30)
Default | [Change](#) 


Browser Tab Icon (16 x 16)
Default | [Change](#) 


Marketing Image (420 x 260)
Default | [Change](#) 


API Gateway URL 

Marketing Text 

Button and Link Color
Page Background Color
Font Family

[+ Environment](#)

Name ▲	URL	Cluster Name
Sandbox	https://9.30.192.14/fourth/sb	Gateway 1
Developer Portal: https://9.30.192.137/fourth/sb		Customize Portal

Tailor the look and feel of each Developer Portal

- Company Logo
- Browser icon
- Marketing Image
- Background Color
- Font
- Terms of Service URL
- Support Link
- Twitter ID

API Provider: “Productize” APIs using Plans



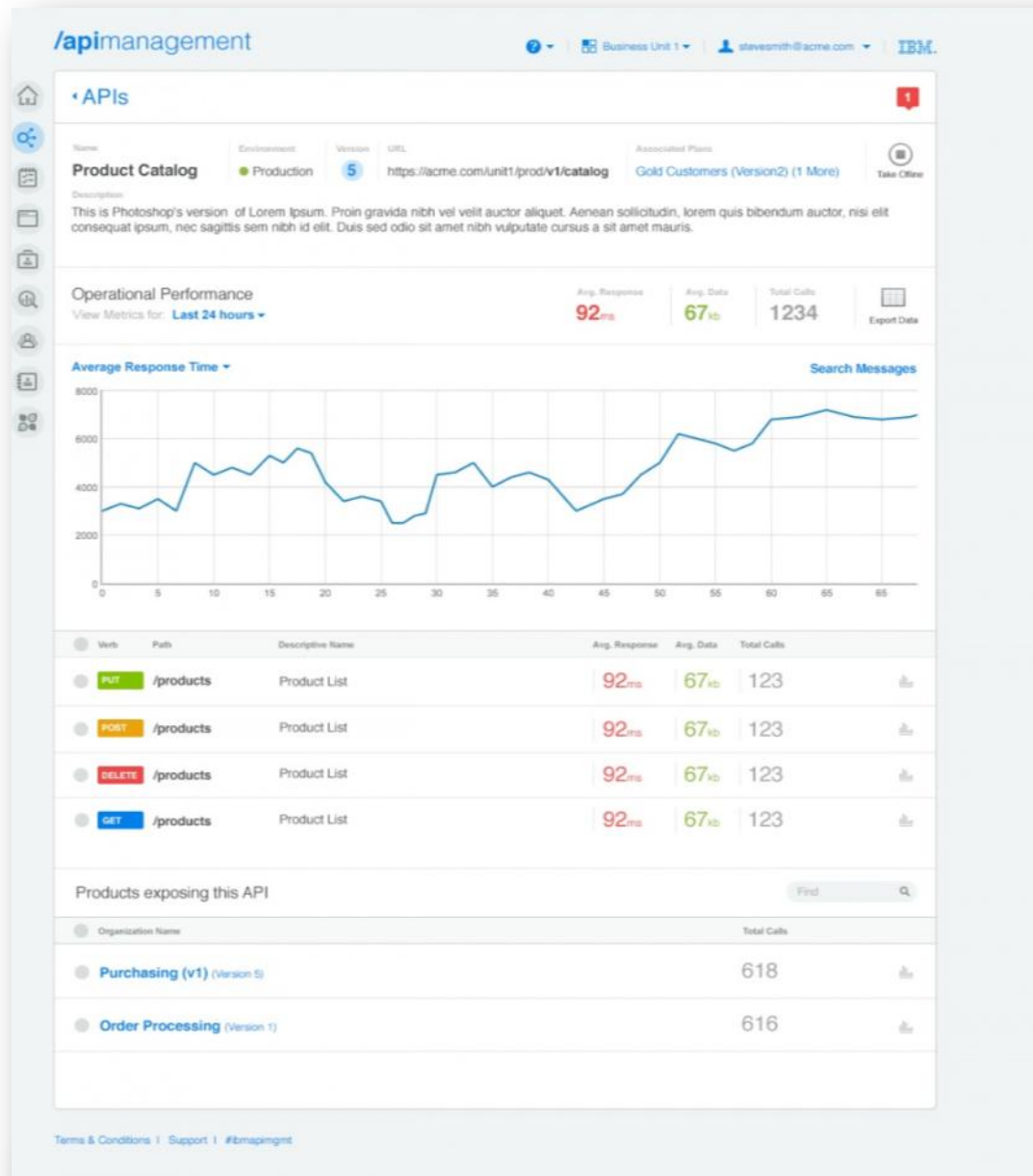
The screenshot displays the API Management console interface. At the top, the URL is `/apimanagement` and the user is logged in as `kelmmatt@us.ibm.com`. The main section is titled "Plans" and shows a plan named "Public" with version "1". A dropdown menu for "Switch to" is open, showing "Version 1" (modified 6 hours ago) and a "New Version" button. Below the plan details, there is a "Resource" section with a table of resources. A modal window titled "Add resources" is open, showing a table of resources with columns for Method, Path, and Display Name. The resources listed are:

Method	Path	Display Name
<input type="checkbox"/>	PUT	product
<input type="checkbox"/>	DELETE	product
<input type="checkbox"/>	POST	product
<input type="checkbox"/>	GET	product

Below the resource table, there is a "Rate Limit" section with input fields for "Number of Requests" (1000), "Time Interval" (1 Hours), and a checkbox for "Hard Limit" (Create log entry when limit is hit). An "Apply" button is at the bottom right of the modal.

- Include multiple **APIs** and **Resources** per Plan
- **Version** your Plans
- Apply **Entitlement** by Plan or Resource
 - How much can you use
- **Fine grained control** over plan deployment
 - Deploy to multiple environments and developer communities
- Enforce **Hard** or **Soft** limits

API Provider: Gain Business Insights



Business **Analytics** for both API provider and application developer:

- **Top traffic** producing API ,
- **Top application** producing traffic
- **Structured Filtered Search** across analytics for example
 - country:USA, color:red
- **Saved Searches** and Filters for easy and consistent retrieval
- Enables **chargeback/billing** for API consumption by developers through export of activity as .csv file

API User: Developer portal for API consumers



Share & Grow Application Adoption

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer non orci nec elit tristique porttitor. Maecenas congue imperdiet odio, ac hendrerit sapien rhoncus sed. Curabitur quis aliquam tortor. elit. Integer non orci nec elit tristique porttitor.

New | Explore APIs >

- Product Catalog (Mar 05, 2014)
- Credit Check (Mar 05, 2014)
- Orders (Mar 05, 2014)
- Something (Mar 05, 2014)

Product Catalog (March 05, 2014)

Status: ● Healthy

Description: This is Photoshop's version of Lorem Ipsum. Proin gravida nibh vel velit auctor aliquam et aenean ante molestie. Blandit libero mattis enim nunc tristique posuere.

Additional Documentation:

- User Guide.pdf (Last updated: 02-08-13 | 222.1kb)
- User Reference.pdf (Last updated: 02-08-13 | 222.1kb)

Identify your Application using
Client ID - You must always provide your applications Client ID in order to access this API

Authenticate using
OAuth - Check below to see which resources are OAuth protected

- **Self service** developer portal to explore APIs
- Browse API **documentation**
- **Role-based access** for viewing APIs via communities
 - App developers can be in multiple communities with varying levels of access
- **Browse** available plans with limits and choose from available plans
- **Customize** the developer portal to reflect branding and company image

API User: Register application



/appdevelopers | Explore APIs | andreadams@acme.com

Applications

[+ Register New Application](#)

Acme Flights

i.fly
Come fly with Me
Baggage Tracking

Acme Flights

Client ID: 611752075528171 [Hide](#)
Client Secret: [Reset](#)

Description
This is Photoshop's version of Lorem Ipsum. Proin gravida nibh vel velit auctor aliquet. Proin gravida nibh vel velit auctor aliquet.

Product Catalog: **Basic**

Name	Path	Average Calls / 15 Minutes (last 24 hours)	Full Activity Charts
GET	/products	24 / 100	

Activity **Last 24 Hours**

- **Register** new application
- **Security:** Some APIs may require a client secret and client ID to access the API

Add Application

Name

Description (Optional)

[Add](#)

Client Secret

Please make note of your Client Secret. You may need it to access APIs that require Client Secret. The Client Secret cannot be retrieved, if you should forget it, you will need to reset it.

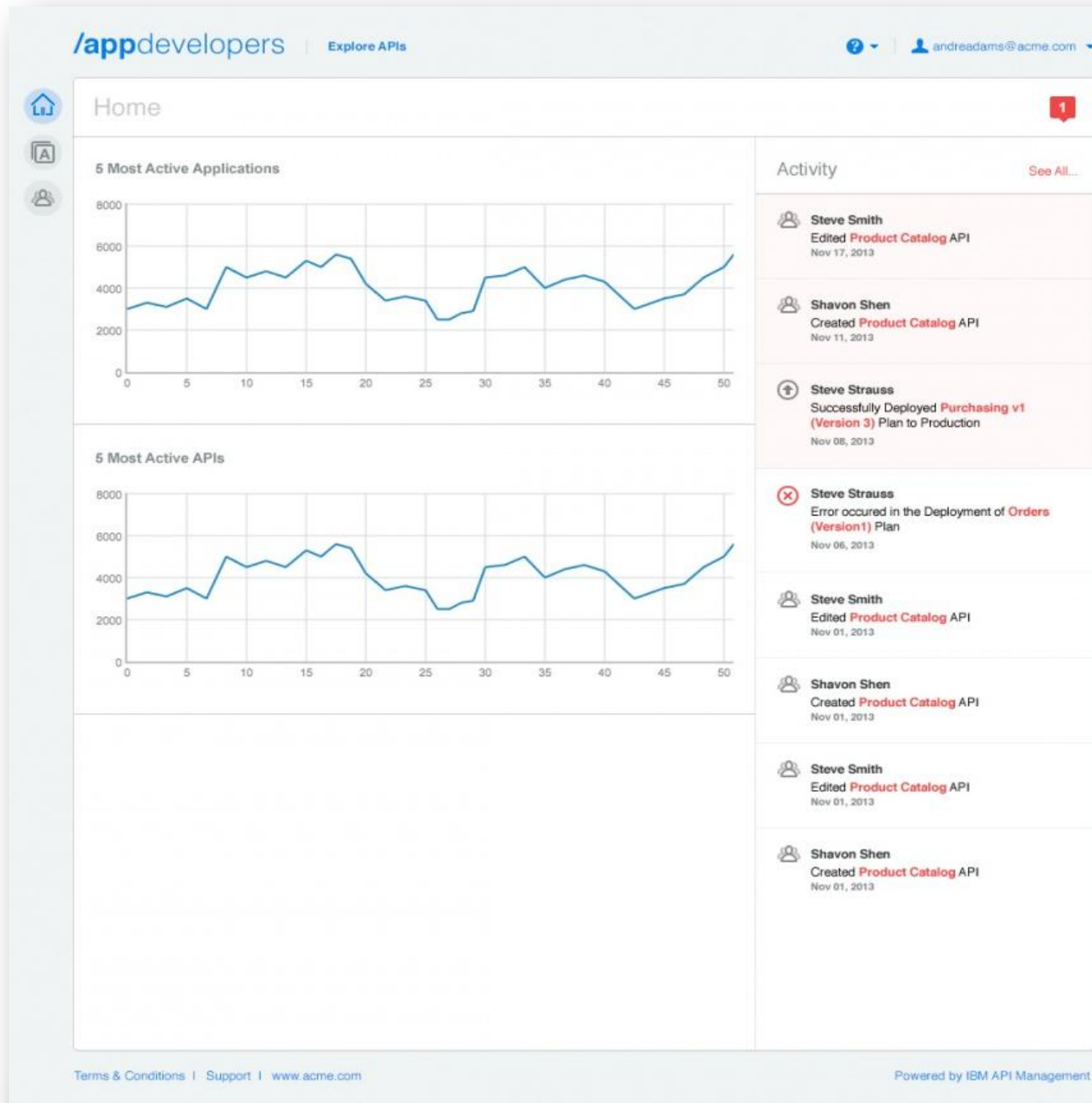
Client Secret
slakdjfk2jehaoicnklawekjr2o

[Done](#)

API User: Monitor API consumption



- Monitor **most active** applications and APIs



IT Admin: Support many organizations with one solution



/apimanagement sysadmin **IBM**

Manage User Accounts

Identity Provider and E-mail Settings 1

Organization Find

Owner	Account Name	Type	Status	Actions
Select	Acme Business Unit 4	API Provider		Activate
Steve Smith	Acme Business Unit 1	API Provider	Active last login: 2 hours ago	✎ ✉ 🗑
Steve Smith	Acme Business Unit 2	API Provider	Invitation Pending... Resend Invitation	✎ ✉ 🗑
Steve Smith	Acme Business Unit 3	API Provider		
Andre Adams	Andre Inc.	Consumer		
Sam Takahashi	Toyota	Consumer		
Kris Knoll	Krispy Inc.	Consumer		
Chris Casper	Cucumber Smath	Consumer Upgrade	Active last login: 2 hours ago	✎ ✉ 🗑
Lillian Lawrence	Lycheelicious	Consumer Upgrade	Active last login: 2 hours ago	✎ ✉ 🗑

Send Message

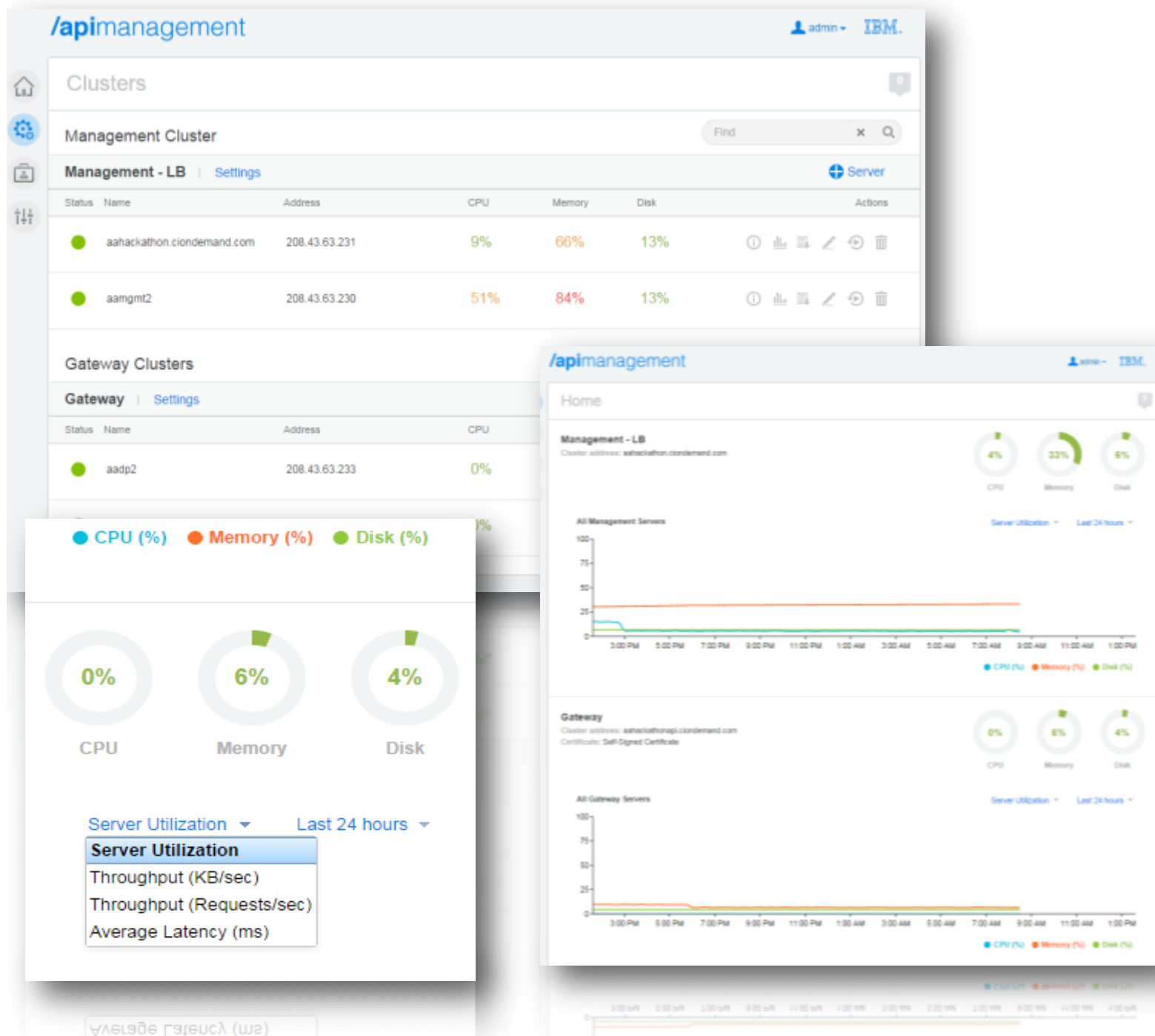
Steve Smith

Message

Send

- **Multi-tenant** support for multi-provider organizations
- Provider and Consumer **organization Visibility**
- **Alerts** & notifications
 - Example: An API rate limited has been reached
- Send **email** directly through tool
 - Example: Application registered for API consumption OR receive email of details on accessing the API manager user interface

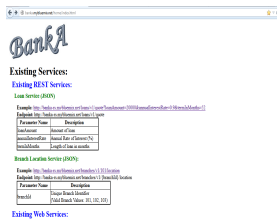
IT Admin: Single Dashboard health monitoring & admin



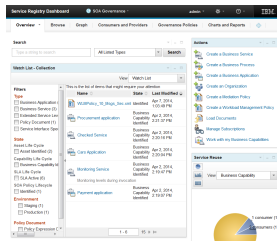
- Consolidated **super admin view**
- View **system health**
- DataPower **load balancing**
- **SSL certificate Management**
- Server **scaling**

Demonstration – Exposing Banking SOAP Services as REST

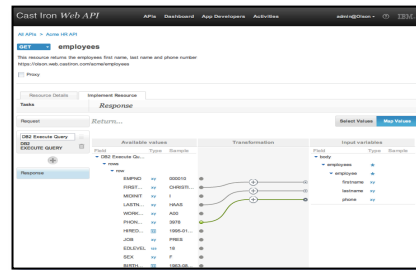
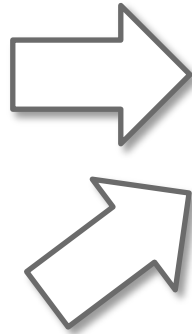
1. Cloud based REST Services on Bluemix that have the Branch Addressing information
2. On-premise SOAP services catalogued in WSRR that contains detailed Branch Services information, such as Loan Services, Drive Up, ATM Availability etc
3. The Business requirements dictate that a mashup of the both the Branch Addressing and Services information in a single REST API that can be consumed by internal & external parties
4. Provide a self-service developer portal where API consumers can register applications, browse API's and retrieve API Documentation, sample Request & Reply data samples and more.



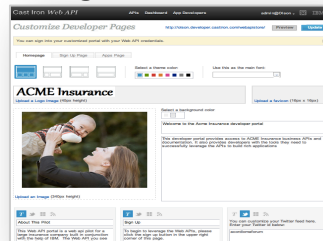
Branch Addressing REST (Bluemix)



Branch Detail SOAP Service catalogued in WSRR



IBM API Management



Developer Portal



Mobile Apps/ IoT