

Innovate Faster with APIs and SOA

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Quick Poll

- How many people have smartphones?
- How many have downloaded an app?
- And paid for an app?
- Made an in-app purchase?
- Seen any advertising in an app?



Advertising



Analytics



Contacts



File Transfer & Syncing



Gaming



Health



Location-based Services



Mapping



Messaging



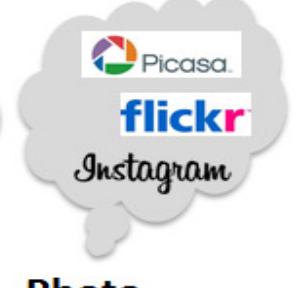
Music



News



Payments



Photo



Search



Shopping



Social

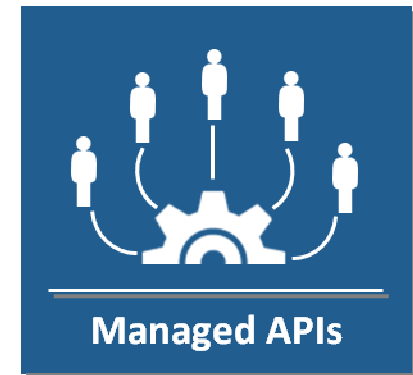
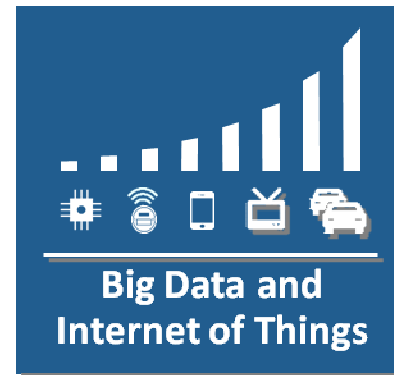
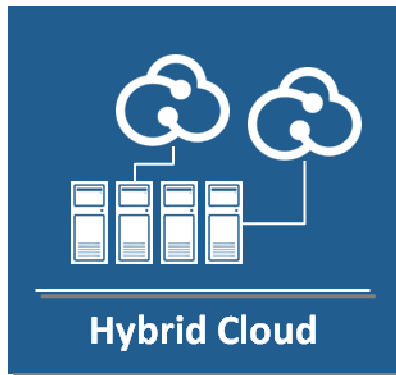


Telephony



Video

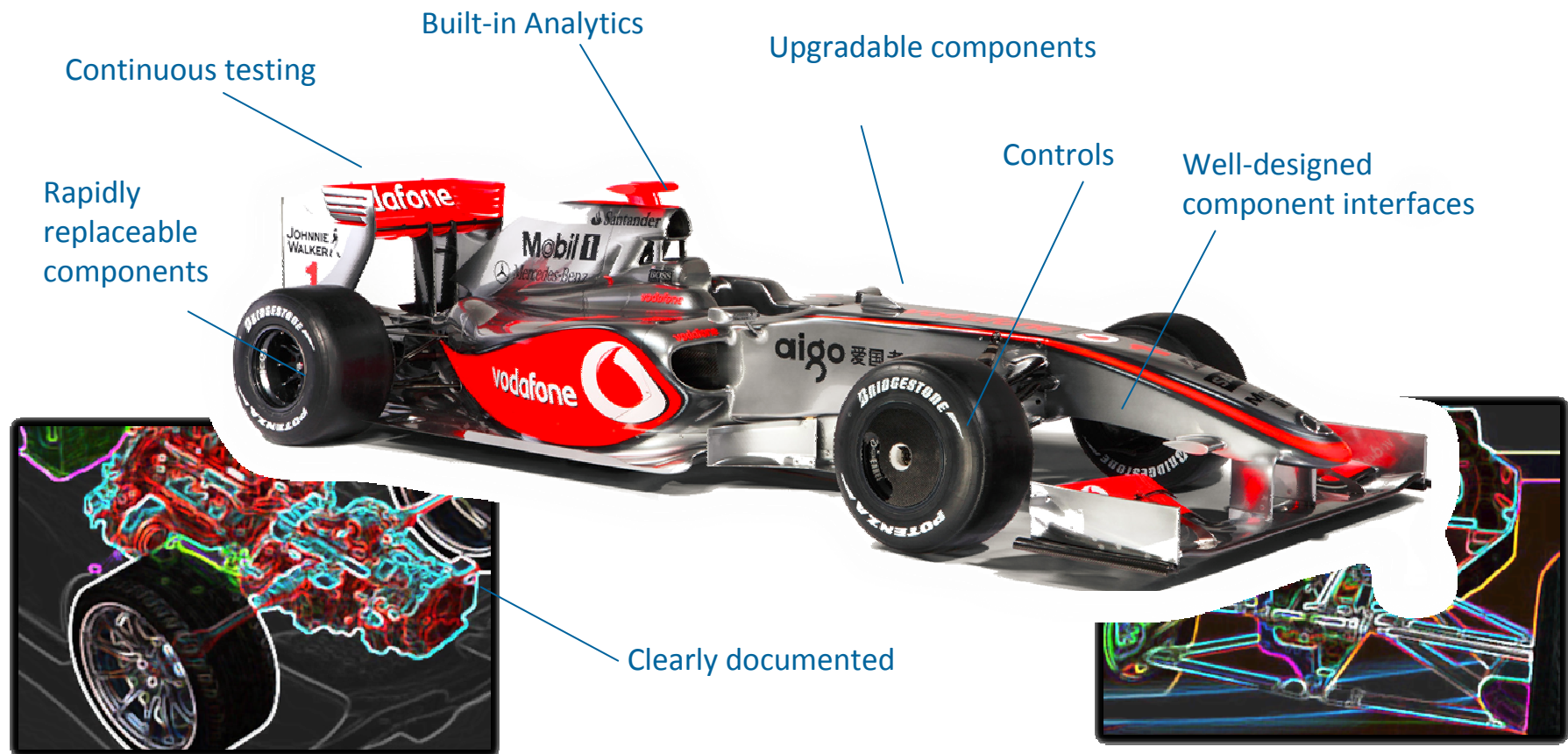
These mega trends mean organizations must restlessly re-invent



- Outpace existing – and emerging – competitors
- Deliver ever more engaging customer experience
- Continuously learn how to improve and anticipate shifts
- Re-invent and enhance experience

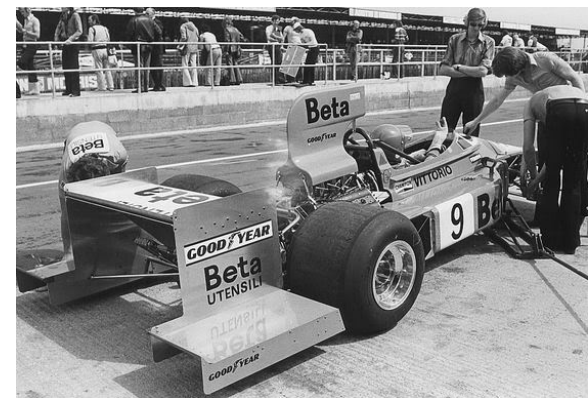
Rapid innovation is enabled by “good design”

- Each F1 car is considered a prototype – is never finished
- Design objective is to enable rapid and continuous evolution



Staying competitive requires restless re-invention

But - Not everything makes the cut!

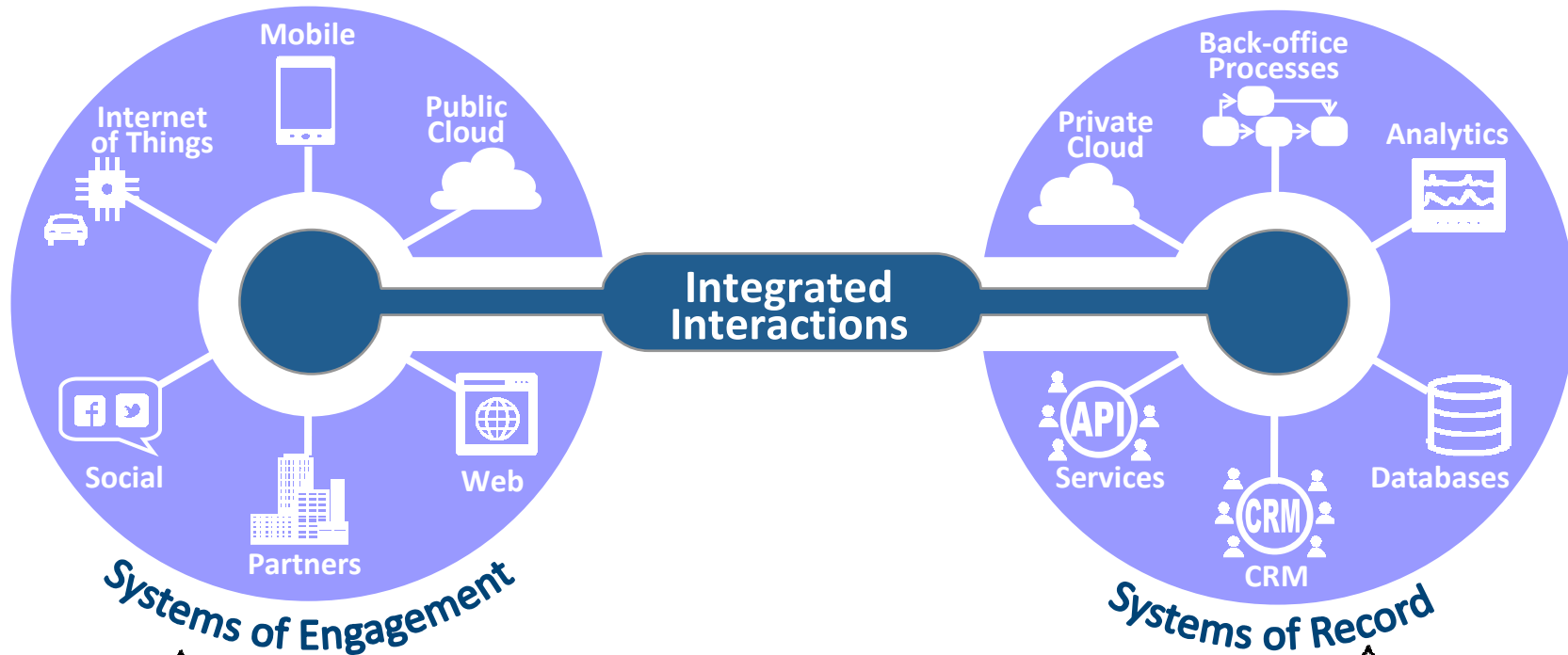


The Goal: Becoming a Composable Business

- Dynamic, flexible, responsive, agile
- Built on blocks of capability that can be rapidly changed
- Driven by analytics of real-time data



Integrating Systems of Engagement & Record



1 Freedom to innovate rapidly

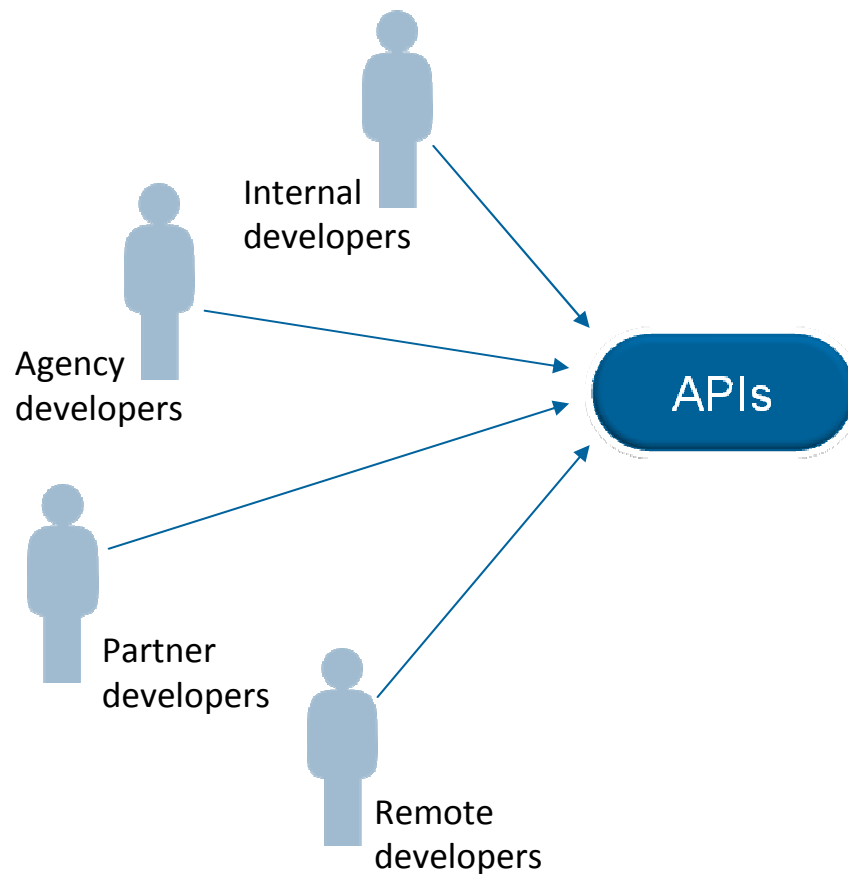
- APIs that enable developers to easily create new Systems of Interaction
- Easy for developers to rapidly consume existing capabilities of Systems of Record via APIs

2 Preserve integrity & stability

- Scales Systems of Record as these are driven by new workloads from Systems of Engagement
- Maintains stability and integrity of processes, data and applications in Systems of Record

What are APIs?

Application Programming Interfaces give developers easy access to services



Well designed APIs

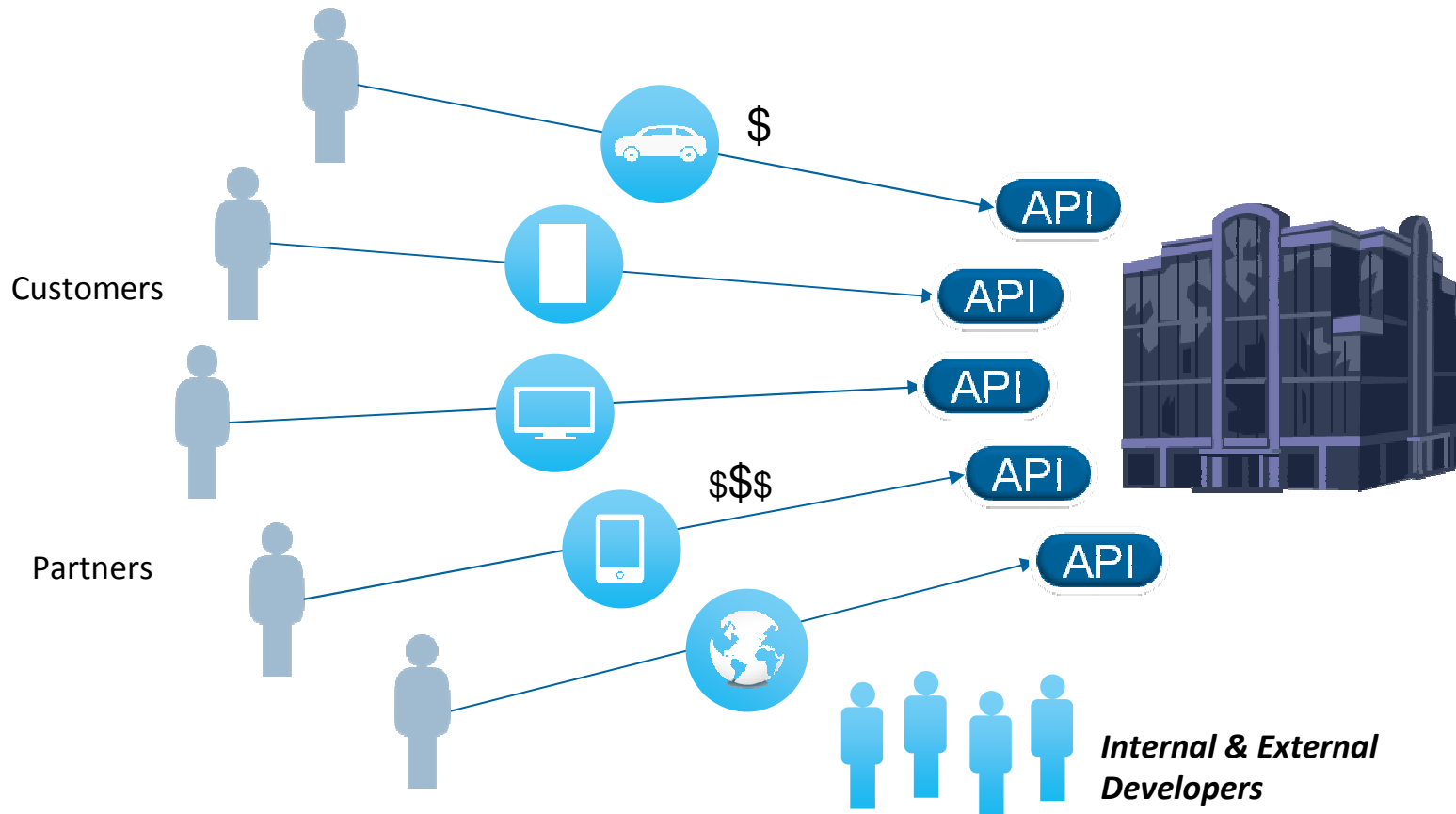
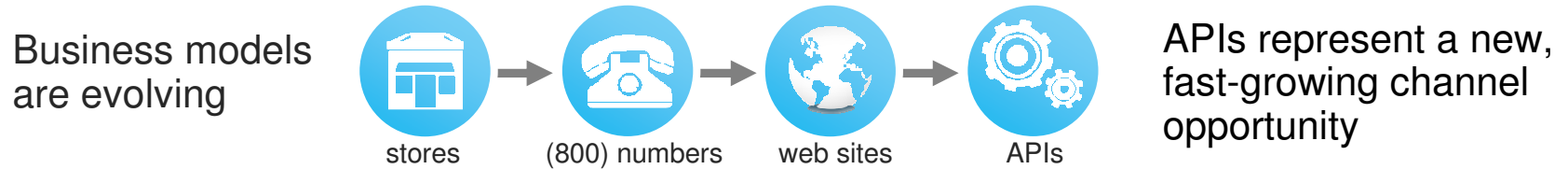
- Do something useful
- Hide the complexity
- Have a simple interface
- Are easy to share and reuse
- Are well documented
- Can be used both inside and outside the company
- Can be combined with other APIs

APIs

Primary ways Clients are benefiting from APIs today

Initiative		Driver	Focus	Role of APIs	Example
1	Driving channel through partners and customers	Business wants to pivot its role in value chain –so-called “ <i>API economy</i> ”	External	Exposing, managing and monetizing services	Expedia does more business through its APIs than its Web site
2	Improving collaboration with external Mobile dev teams	Enterprise IT needs to give access to core services to external agency	External	Sharing backend services in a controlled way without exposing complexity	Many companies use external agencies to develop their Mobile apps
3	Accelerating pace of delivering new services	Business pressure on IT to respond faster to demands	Internal + External	Enabling IT to focus on delivering applications rather than writing code	Many SOA pioneers are extending their solution with APIs

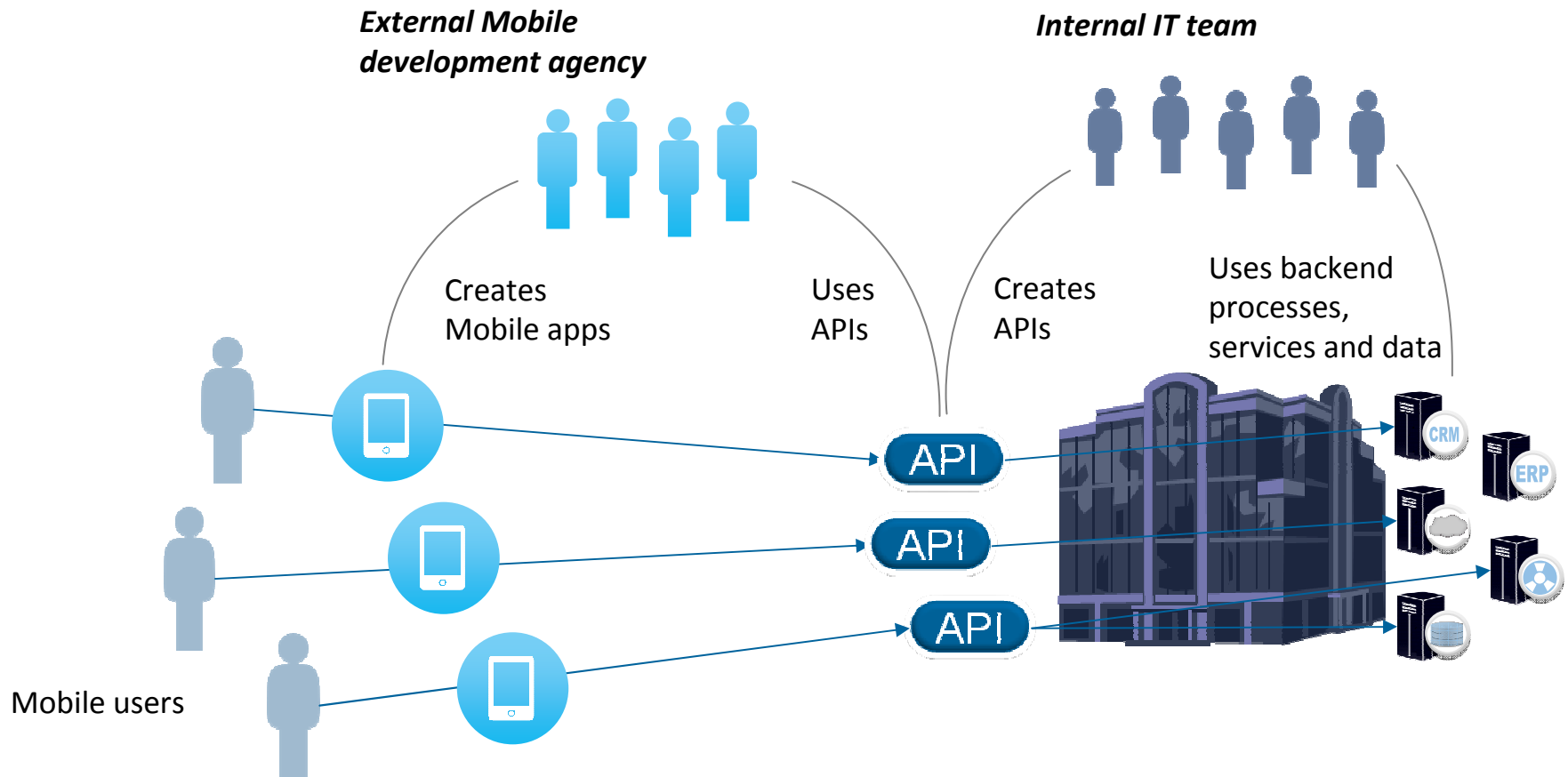
1 Using APIs to drive channel through partners and customers



2 Using APIs to ease collaboration with external Mobile dev teams

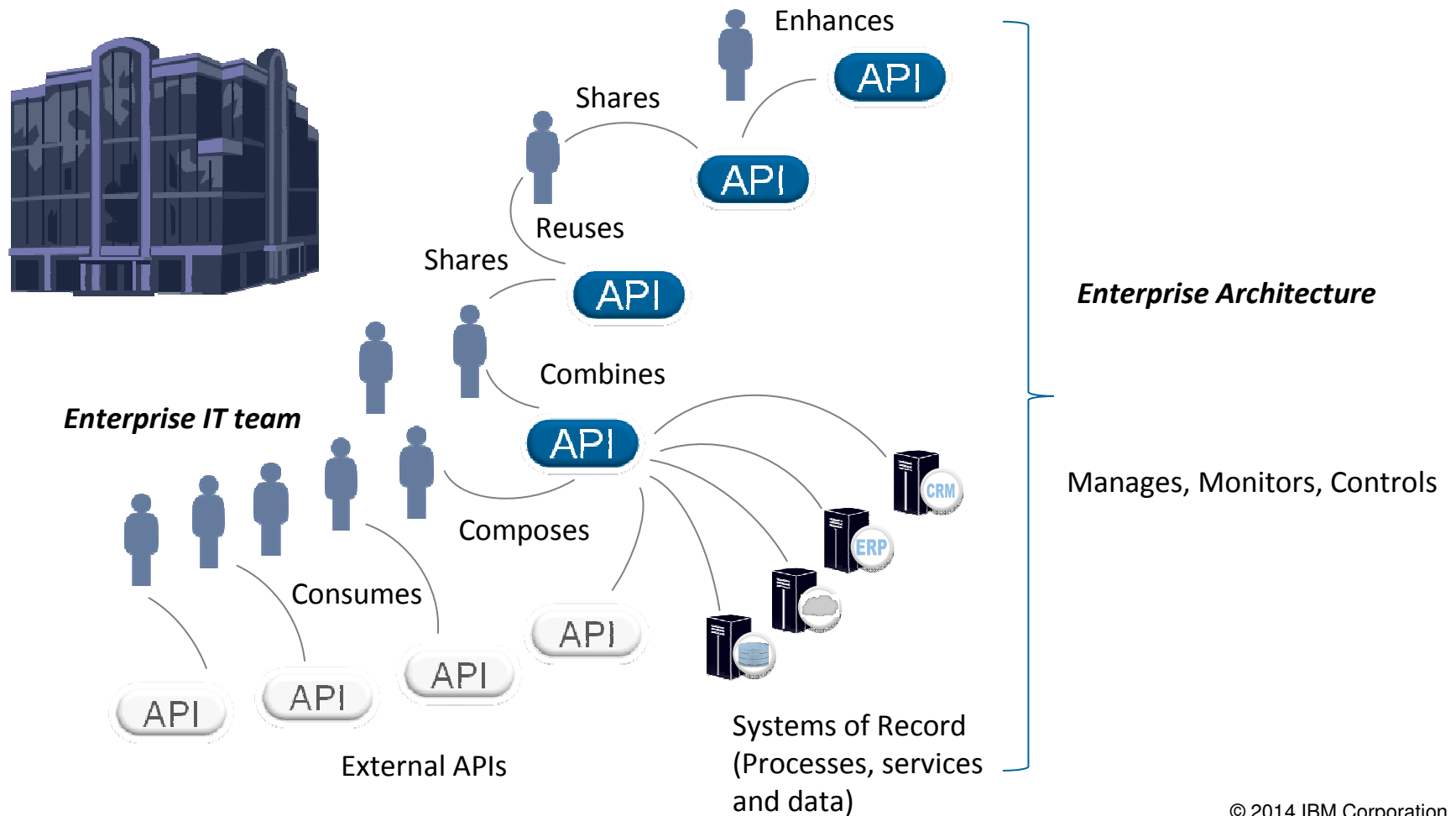
External teams can build engaging and integrated Mobile apps faster

Internal teams retain control and expose only what is required



3 Using APIs to accelerate pace of delivering new services

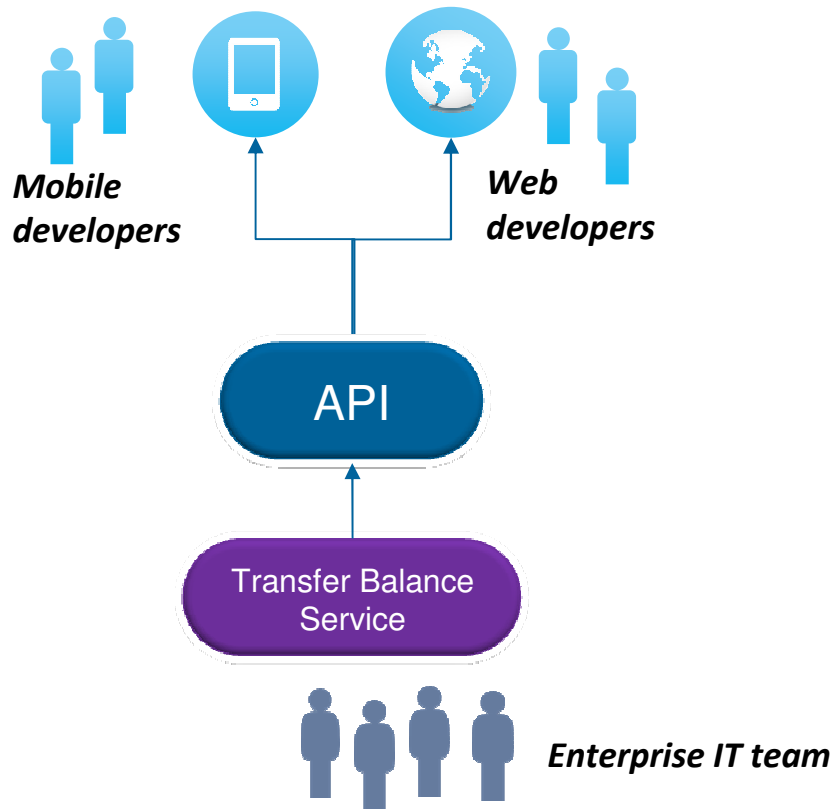
IT team can share, re-use, (re)combine and deliver new capabilities quicker
Composing new capabilities using internally shared APIs and external APIs



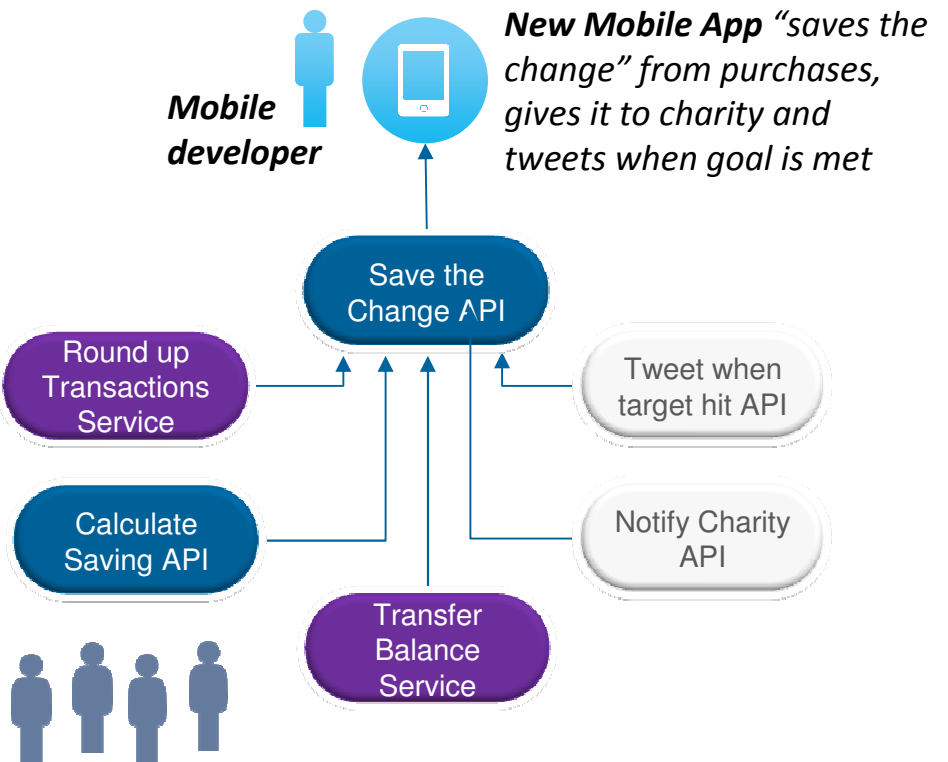
SOA can help you get a head start in delivering valuable APIs

Your existing catalog of SOA services can speed the time to deliver

Existing SOA services can be exposed via APIs to reach more developers



Combining existing services – together with internal and 3rd party APIs – can deliver new or enhanced capabilities



How can APIs accomplish all this?



APIs help developers consume existing services

- *Build upon services others have already created*
- *Hide the complexity behind the service so I can focus on my value-add*
- *Recombine existing capabilities in new ways*

APIs make it easier for developers to share services

- *Easier to enable my code to be re-used by others*
- *Easier to define the interface*
- *Easier to let others extend and adapt my code, then re-share*

Does this sound familiar?

A Service

A **repeatable business task** –
e.g., check customer credit; open new account

Service Orientation

A way of thinking about your **business through linked services** and the outcomes that they bring



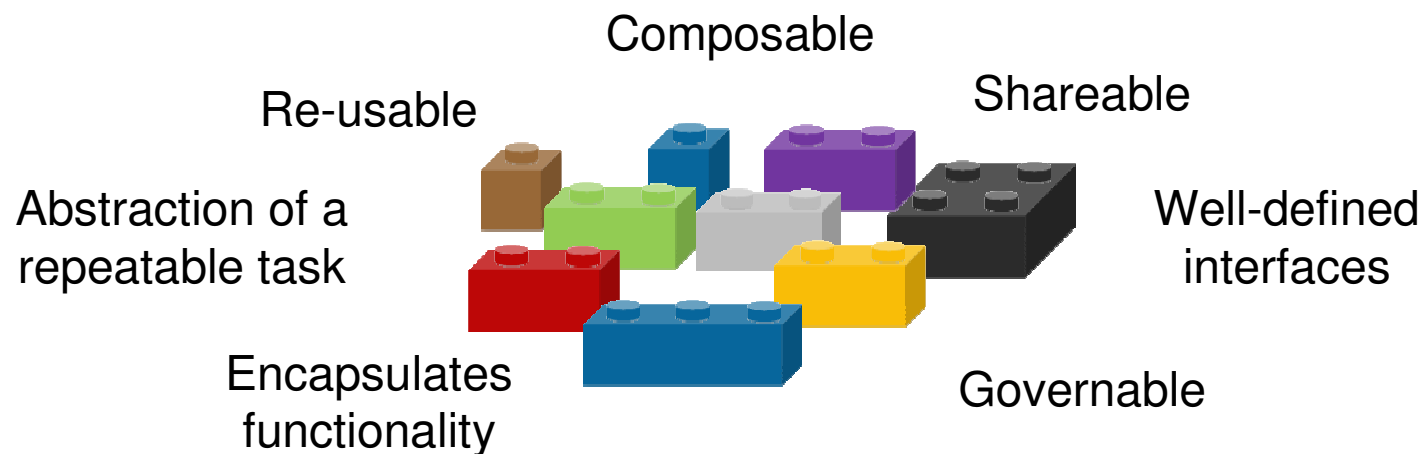
Service Oriented Architecture (SOA)

An business-centric **architectural approach** based on service oriented principles

Some superficial differences...

	APIs	SOA
<i>Terminology</i>	APIs	Services
<i>Associated Technologies</i>	JSON, REST, HTTP	Web services, SOAP, XML
<i>Applications</i>	Mobile apps	Web, Enterprise apps

...yet many similar characteristics



...So are APIs are sort of SOA 2.0?

No. Not really. We don't really go in for 2.0ing things anymore...

We prefer to think of it as a SOA renaissance – that the discipline of “good design” has advanced and spread its influence even further

Here are some keys ways “good design” has advanced since the emergence of SOA



APIs

- **Increased focus on the consumer of the service**
 - Thinking of an API as a “product” that should be crafted and designed with them foremost in mind
 - Recognising that great services must offer consumers great service
 - Focus on expediency – less to read, learn, set-up
- **Simplifying access to the services**
 - Enabling Self-service within and outside the organization
 - Making it easier to combine 3rd party services with in-house ones
- **Emergence of easier, lightweight technology**
 - JSON, OAuth

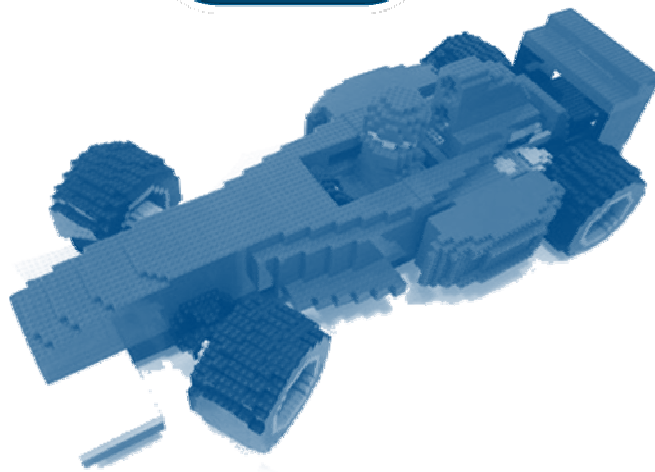
In that case, are APIs just a new name for SOA?

There are many similarities – but one very important difference:

The objective most have been focusing on achieving with them

“How can I increase the
pace of innovation?”

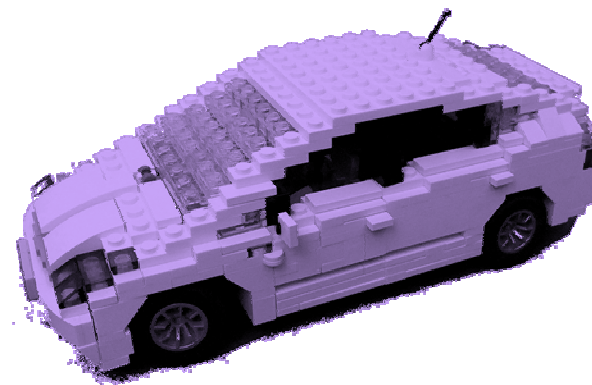
APIs



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

“How can I increase the
efficiency of IT team?”

SOA



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

APIs and SOA are best together

Most successful companies are combining their API and SOA initiatives

Analysts expect a confluence of API and SOA and view as one single market

“How can I increase the **pace of innovation** – including using services we already have?”

APIs + SOA



Reuse → Speed to deliver with reduced effort

Sharing → Expediency with efficiency

Encapsulate → Less to learn and less to change as it grows

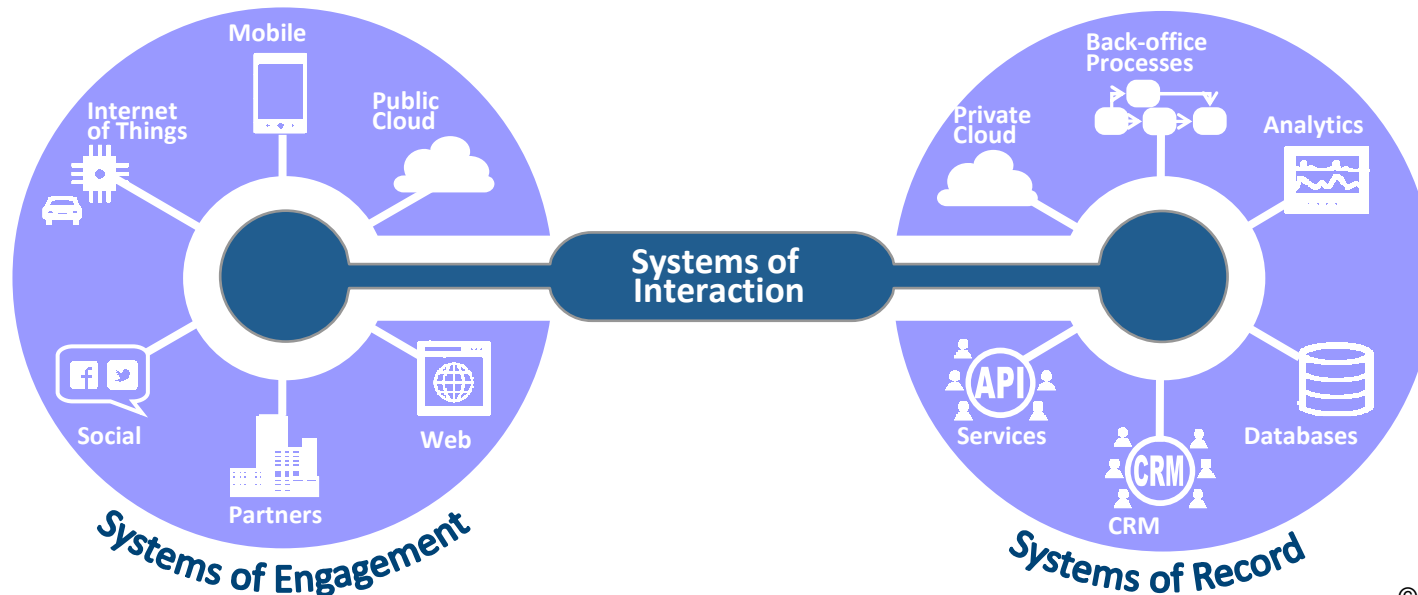
This is because each style of “good design” sprung from the major pressures of the systems they were most focused on...

APIs

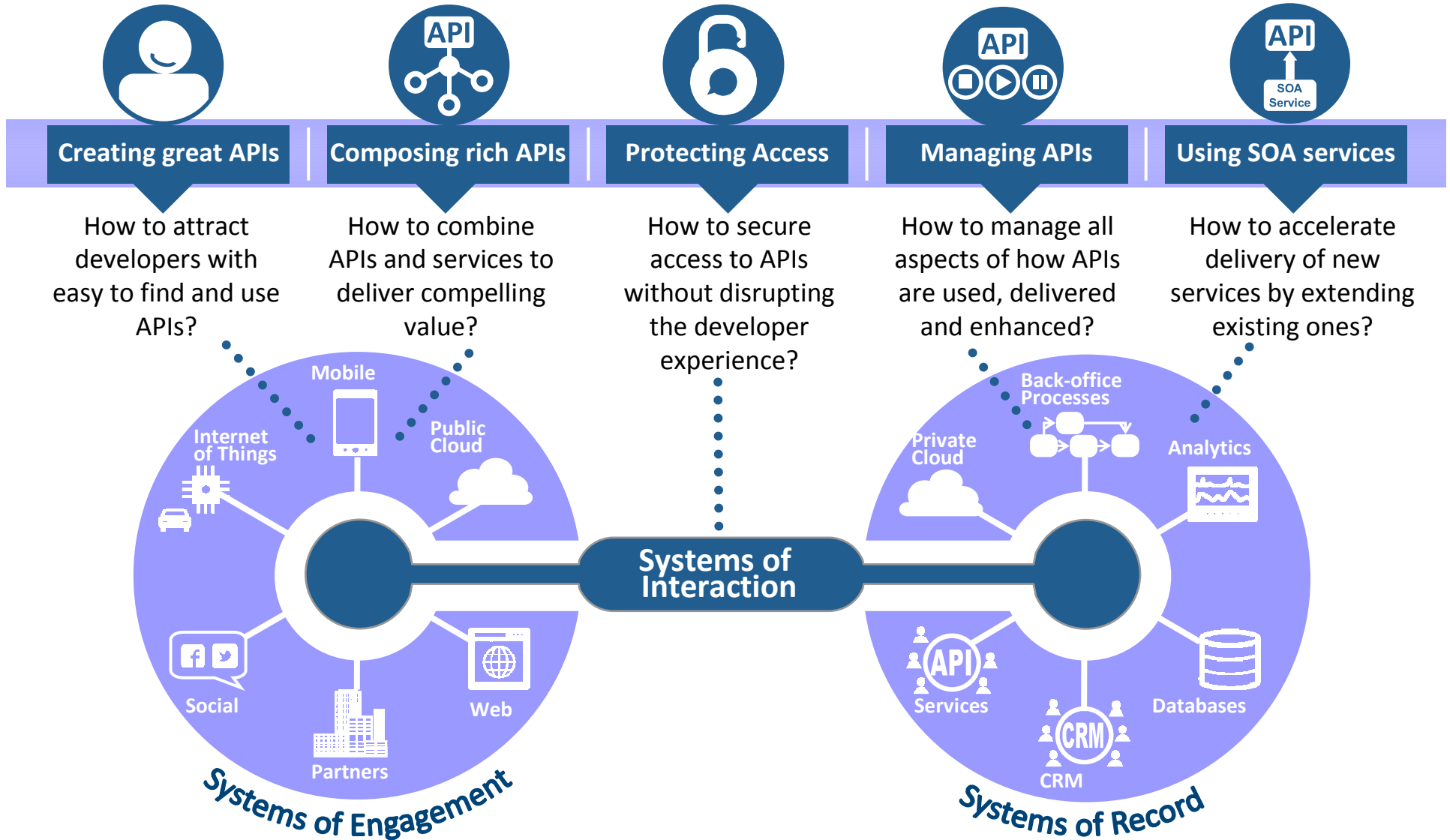
- Deliver new apps faster – increase pace
- Increase rate of change
- Open up access more to drive innovation
- Keep re-inventing the experience
- Improve user experience
- Shorten application births

SOA

- Do more with less – increase efficiency
- Reduce need for change
- Increase control – governance
- Stop re-inventing the wheel
- Improve quality and stability
- Lengthen application lifecycles



Capabilities required to innovate rapidly





Creating great APIs that attract developers



Design the API you want to provide

Configure the API by proxying existing REST interfaces...

Clearly document API with examples

Promote through customised portal

Define APIs and Resources

Create new API

API name

API description

<https://khleairways.web.castiron.com/>

All APIs

Baggage

+ Add authentication URL

Checks baggage status

admin@khleairways | Jul 26, 2012 12:09:53 PM | <https://khleairways.web.castiron.com/acme/>

Resource Definition More Documentation

Add a Resource

GET Resource URI (e.g. customer/{customerID})

Resource description

<https://khleairways.web.castiron.com/acme/>

GET status?trackID

This gets a status for a bag

<https://khleairways.web.castiron.com/acme/status?trackID>

Response Headers

Header name	Description
Header name	Description

Response Body

```
{
  "bagstatus": {
    "bags": [
      {
        "id": "133944",
        "status": "On Belt",
        "checkInLocation": "LHR",
        "checkInTime": "Wed Jun 27 21:50:2",
        "currentLocation": "JFK",
        "destination": "LVS"
      },
      {
        "id": "133823",
        "status": "On Plane",
        "checkInLocation": "YYZ",
        "checkInTime": "Wed Jun 27 21:50:2",
        "currentLocation": "TRANSIT",
        "destination": "LVS"
      }
    ]
  }
}
```

Customize Developer Pages

You can sign into your customized portal with your Web API credentials.

Homepage Sign Up Page Apps Page

Select a theme

ACME Insurance

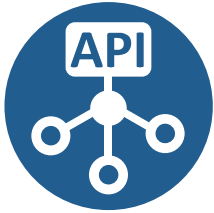
Upload a Logo Image (45px height)

Upload an Image (340px height)

About This Pilot Sign Up

This Web API portal is a web api pilot for a large insurance company built in conjunction with the help of IBM. The Web API you see...

To begin to leverage click the sign up button in the top right corner of this page.



Composing Rich APIs

Creating great APIs

Composing rich APIs

Protecting Access

Managing APIs

Using SOA services

Assemble an API by combining existing services

Tasks

Request

Web Service Webserv...

WEB SERVICE WEBSERVICE INVOKE OPERATION

Response

Response

Return...

Select Values

Map Values

Available values		Transformation	Input variables	
Field	Sample		Field	Sample
xy years			* body	
xy interest			* JSON	
xy loanamt			xy MonthlyPrincipalAndInterest	536.82
* Web Service Webservice Invoke			xy MonthlyTax	83.33
* Response		xy MonthlyInsurance	125	
* body		xy TotalPayment	745.15	
* GetMortgagePaymentResponse				
* GetMortgagePaymentResult				
xy MonthlyPrincipalAndInterest				
xy MonthlyTax				
xy MonthlyInsurance				
xy TotalPayment				



Securing Access to APIs



Configure the entitlement for each consumer

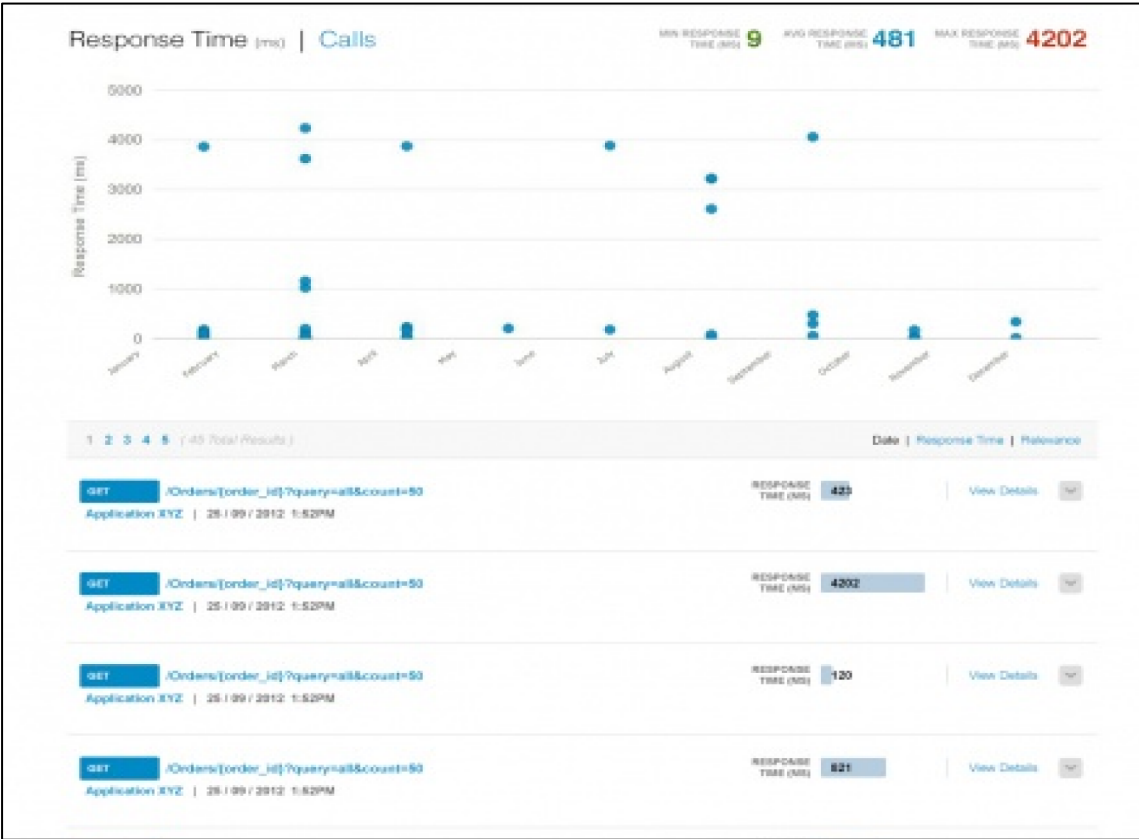
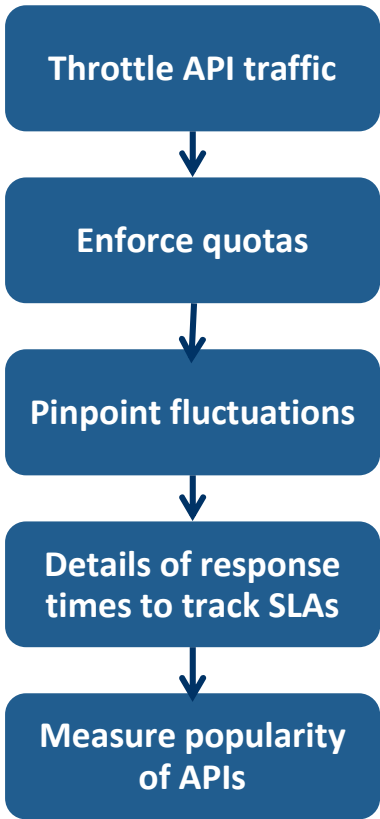
Apply OAuth to secure access

Configure LDAP directory



Manage APIs

- Creating great APIs
- Composing rich APIs
- Protecting Access
- Managing APIs**
- Using SOA services



Why IBM for APIs and SOA?

Leader in SOA focused on helping extend your investments to APIs

Ability to create and deploy new APIs in minutes

Ability to compose rich APIs by re-using and extending SOA services

Experience with 1,000s of SOA and API mgmt deployments

Out-of-the-box API Analytics

Global network for SOA and API experience, product support & skills

