



# TIBCO Cloud Workshop

Virtual Workshop via Zoom

19th March 2020

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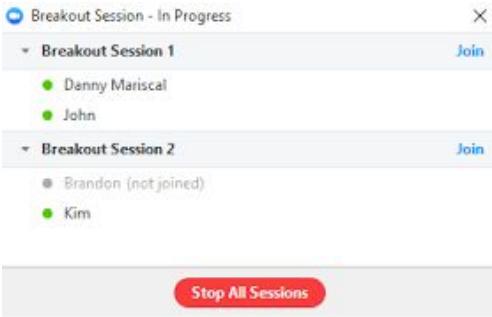
## About TIBCO

TIBCO Software unlocks the potential of real-time data for making faster, smarter decisions. Our Connected Intelligence Platform seamlessly connects any application or data source; intelligently unifies data for greater access, trust, and control; and confidently predicts outcomes in real time and at scale. Learn how solutions to our customers' most critical business challenges are made possible by TIBCO at [www.tibco.com](http://www.tibco.com).

# Agenda & Timings

Time	Length	Subject	Presenter
13:00	15 Minutes	Welcome & Introduction to the team	Guy Murphy
13:15	30 Minutes	Driving agile innovation across the Enterprise with the TIBCO Cloud Platform and our Event Based and API-led connectivity capabilities: Opportunities, challenges of connectivity and integration in today's reality	Guy Murphy
13:45	2 Hours	Hands-on Labs	Dave Winstone/Mark Mussett/Bryn Garton
		Experiencing the full Event Based, API-led connectivity lifecycle	
		Designing an API & Creating a Mock Application	
		Implement and Test your API in the TIBCO Cloud	
15:00	10 Minutes	Break	
		Event Driven Contextual Offers	
		Insights via Real-time Visual Cloud Analytics	
15:45	1 Hour 15 Minutes	<b>Open Discussion</b> adopting TIBCO Cloud, real-life examples including Low Code, FaaS, Streaming, Open Source Innovation, Citizen Integrator/Developer	Todd Bailey/Guy Murphy

# Virtual Delivery / Digital Etiquette



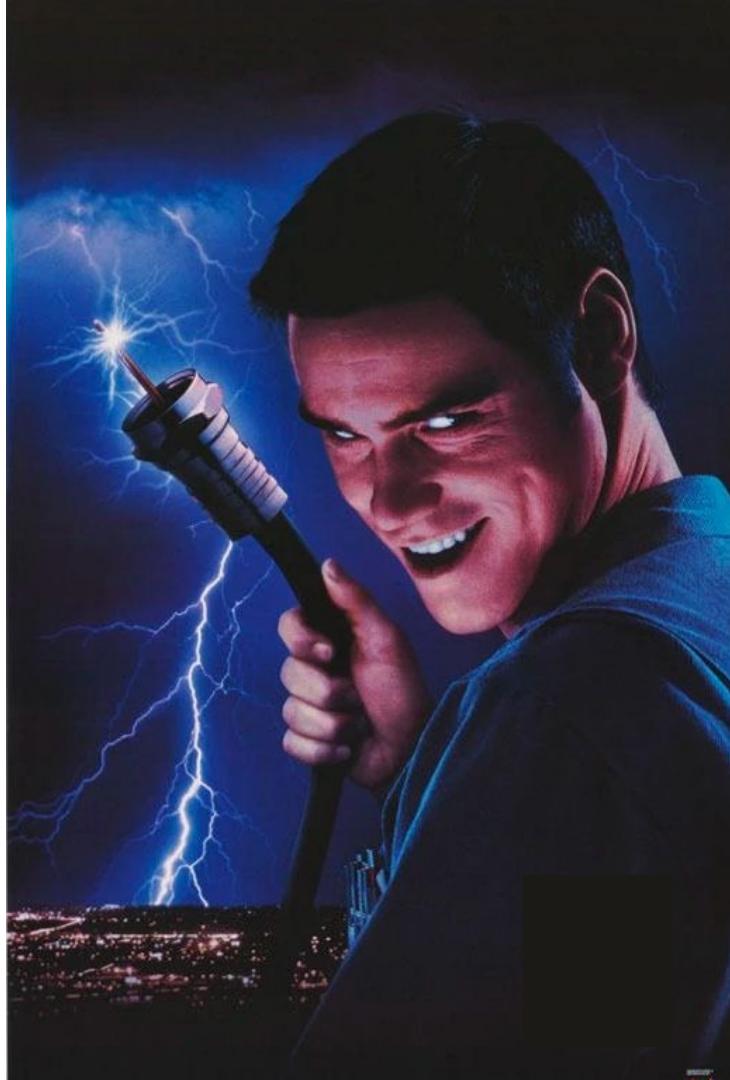
- We'll be using Video - but don't feel pressured to do so yourself!
- We'll be using a single Zoom session for the majority of the time. Breakout rooms will be available for individual help during the Labs
- Do Mute yourself when not speaking as this helps with the audio experience
- Use the "Raise Hand" button if you want to ask a question, but want to wait for a convenient point
- Put a question in the Chat window
  - Send it to everyone if you think the other participants would benefit
- Or just Unmute yourself and ask!



# The important stuff

## Wi-Fi

Username: **Tibco\_Guest**  
Password: **Visitor100**





Martyn Bedford

Senior Solutions Consultant

I have had the benefit of working for TIBCO for the last 12 years, and that has allowed me to work with a wide variety of customers – from the largest Banks, Insurance and Travel Companies in the world, to the smallest innovators and disruptors.

I have a broad experience covering all the major TIBCO capabilities including Integration, Business Process Management, Analytics , Data Science and Data Management



Guy Murphy

Principle Digital Advisor

25 year veteran of the industry, I have worked in every major sector with some focuses on Telco, Banking and Retail/CPG. I've spent the last decade acting as a Strategic Architect supporting both vendor sales teams and clients in various dimensions of digital transformation, from legacy SAP strategies adopting SOA and mobile to some of the most advanced API, hybrid strategies that have deployed agile/multi-modal operating models that have been the bench marks for Gartner and other analysts when defining industry trends. Also acted as an internal change agent on developing product, sales and marketing strategies. Can often be seen traveling the world with a Digital Camera.



Mark Mussett

Senior Solutions Engineer

Veteran IT specialist with a career spanning 21 years in the Integration industry. Joined TIBCO in 2005, with 11 years in Professional Services as Technical Architect and 3 years in Pre-Sales organisations working with our Connected portfolio of products.

Expertise in API (Mashery), Integration (BusinessWorks, Flogo), Messaging (JMS, FTL, and RV), and Golang programming.



Dave Winstone

Senior Solutions Engineer

I have had the benefit of working for TIBCO for the last 14 years, and that has allowed me to work with a wide variety of customers – from the largest Banks and Telco's in the world, to the smallest innovators and disruptors.

I specialise in our “Connect” portfolio, allowing me to work with our customers on ensuring the right solutions and architectures are employed to provide the base for Digital Transformation.



Bryn Garton

Senior Solutions Engineer

Except for a brief spell as an Electrical Engineer my entire career has been spent working for software companies. For the majority of that time I have worked in the field of middleware across its many generations, with roles in Consulting, Software Development, Product Management and most recently Presales.

Since joining TIBCO in 2005 I have worked with TIBCO's customers across many industry verticals including Finance, Energy, Logistics, Utilities and Government.



Todd Bailey

Director of Product Management

If there is a better solution, I love the challenge of finding it. Discovering new and innovative ways to provide the most favorable user experience and helping people be as productive as possible: these are my passions. This arises from 20+ years of experience, firmly rooted in the hospitality industry, where the guest experience is of utmost importance.

Over the past decade I have focused on integration in this connected world, while still remaining true to my roots. Whether it was my past position as Senior Director of Product at Lanyon (acquired by Vista Equity Partners), or my current one as Platform Product Director at Scribe and product owner of Scribe Online, I strive to solve integration challenges and provide an exceptional user experience, having fun doing what I love.



Rishikesh Palve

Senior Product Manager

I am a Senior Product Manager at TIBCO. I have over 9 years of experience working in various roles across different groups such as P&T, Customer Engineering, PreSales and Product Management.

I take keen interest in APIs, Microservices, Event-driven architectures and Cloud-Native ecosystem. At TIBCO, I am responsible for building product roadmap and vision for our Cloud-Native, Event-driven product capabilities that are part of the TIBCO Connected Intelligence platform.

## **Customer Challenge**

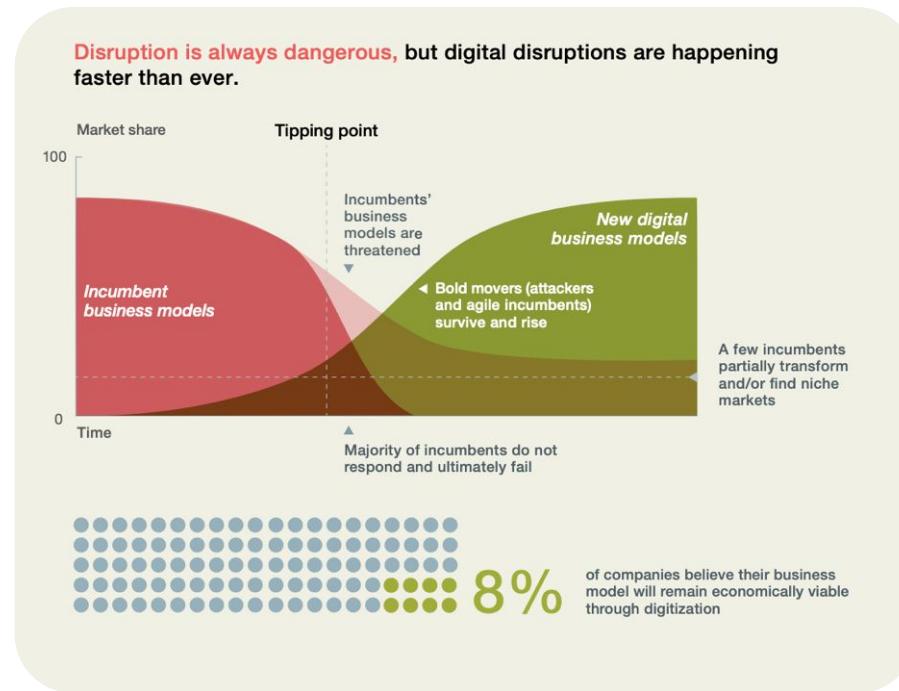
How Do You Create & Accelerate Value in the Digital World

## **TIBCO's Value To Our Customers**

Delivering Connected Intelligence through our Digital Business Platform

Digital disruption is happening *faster than ever*

- Incumbent Models are under attack
- Agile Movers Survive & Rise
- New Models Created
- <8% believe “their biz model will remain eco viable through digitalization”



By 2025, almost a third of total global sales will come from **ecosystems**.



68% Traditional economy

- Platforms facilitate Ecosystem Business Models
- = Business Value
- = Agility
- Businesses must be Open, API(s) will create the new models assisting new models & opportunities

# How Are TIBCO's Customers Innovating for the Connected Intelligence Era?



**\$600,000**

Anticipated OR cost savings PA

*"In real time, we are able to alert our rapid response team to go to the bedside of a patient who is likely to go into cardiac arrest. So far, we've successfully reduced the number of cardiac arrests in the hospital by an estimated 15 to 20%."*

Chief Enterprise Architect, Christine Watts

## Use Case

Integrated systems and centralized data to more effectively measure services and predict risks



**60%**

Saving of time compared with previous technologies used

*"The software's ability to cover the full data science development lifecycle: data retrieval, preparation, transformation, analysis, and final interactive dashboard presentation, meant it could easily meet the aspirations of our proposed agile informatics process,"* Informatics Head of Unit SEPA, Mark Hallard

## Use Case

Evidence-based decisions and efficient and automated analytics



**6 Years**

Time to deliver own visualizations vs. 2 months

*"The driver changes gears about 100 times a lap. Every time there's a gear change, we collect around 1,000 data points. Those gear changes can be categorized into how fast they were, and how much stress they put on the gears. When you visualize that data, you can actually make the gear box last longer, or more importantly, make harsher gear changes. You can then find that if you put the gear box into one particular mode, it's roughly 50 milliseconds faster per lap. Cars that were fourth and fifth in qualifying were one one-thousandth of a second different, so 50 milliseconds matters. So for us to be able to make those harsher gear changes is important. We spent six years creating our own visualizations. TIBCO turned up, and in a matter of two months, did better work."* Head of IT, Matt Harris

## Use Case

Real Time Car Dynamics Changing, Continuous Improvement

Only TIBCO can guarantee its customers digital sovereignty by providing:

## Comprehensive Platform

Capabilities for Digital Execution

Innovate and collaborate without constraints

## Accelerated Innovation

Simplification, Automation & Agility

Deploying anywhere and everywhere at pace

## Freedom

Choice & Scale

Operational Excellence From experimentation to mission critical

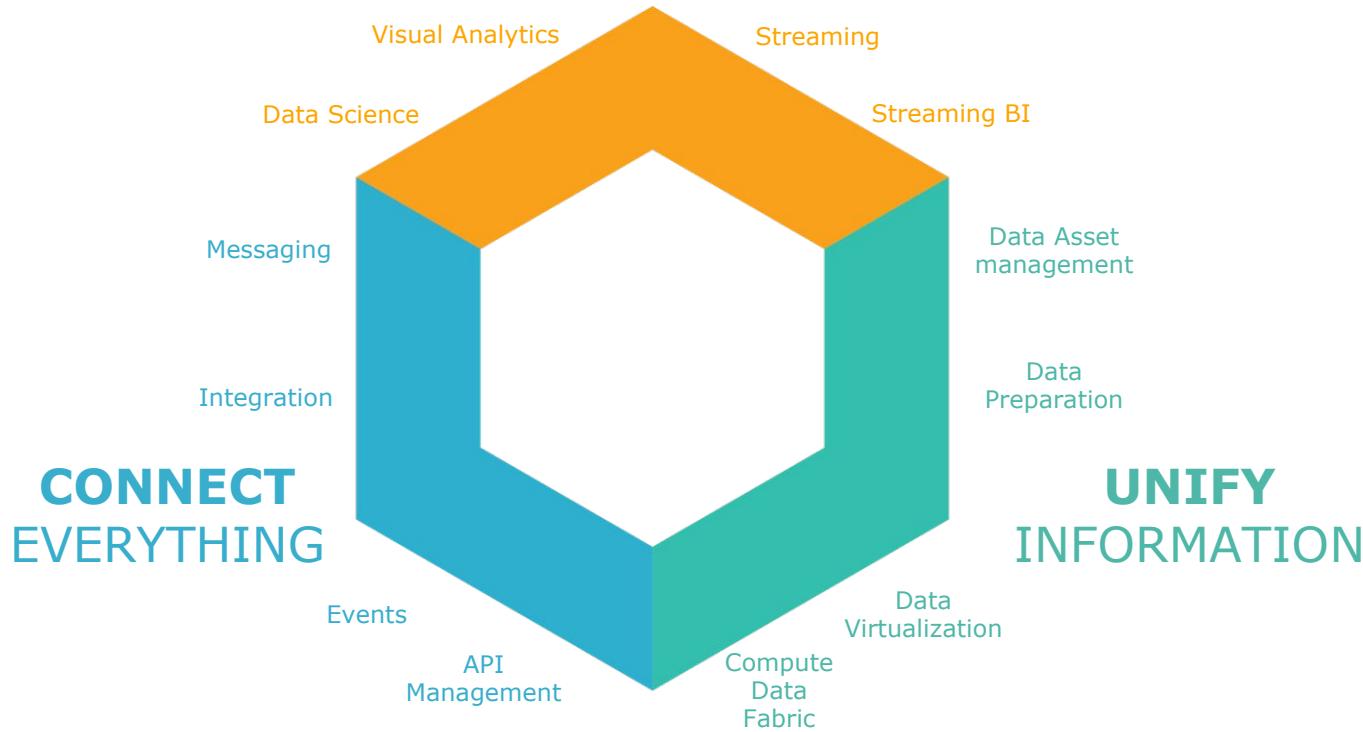


# Digital is Built On This Foundation..

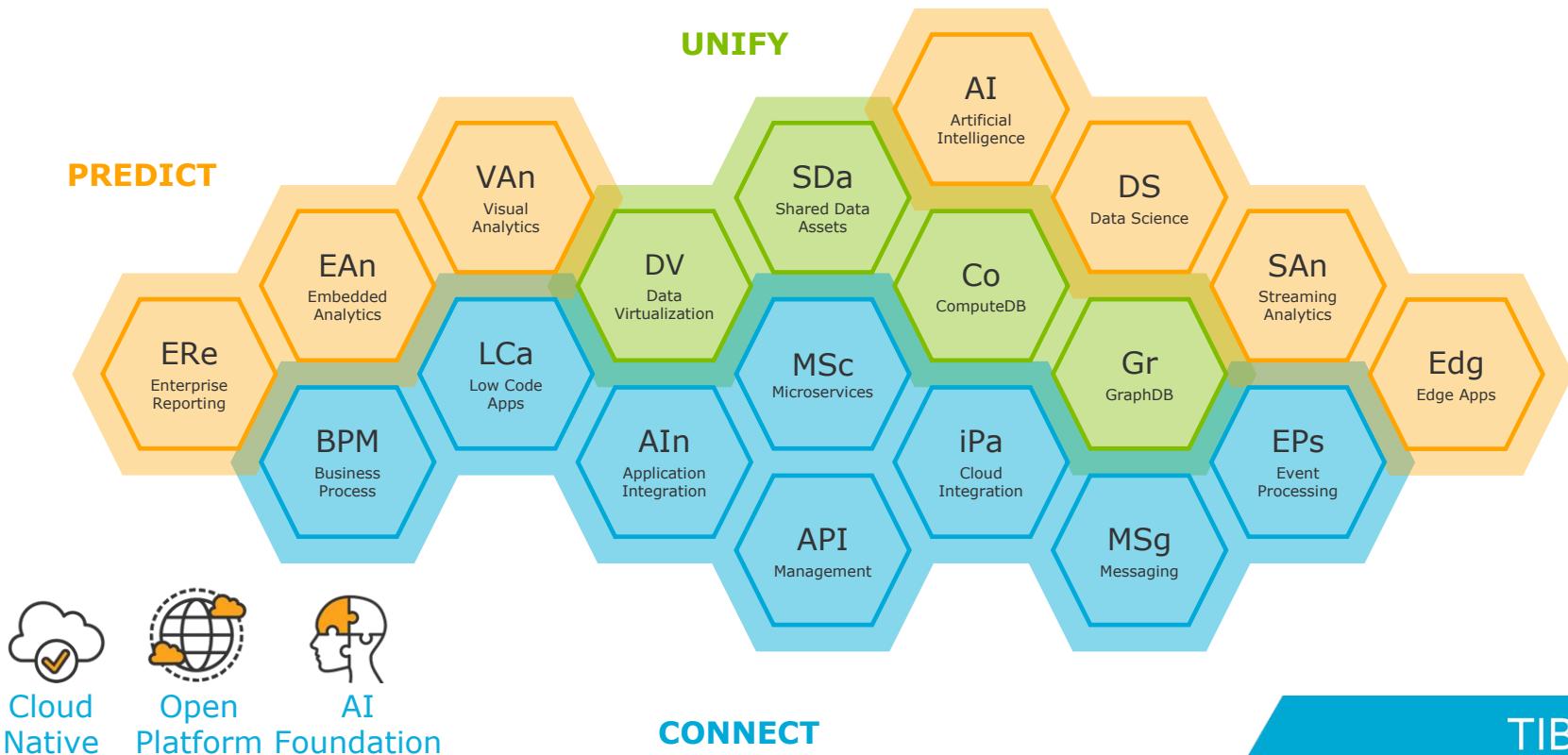


# Best-In-Class, Open and Independent

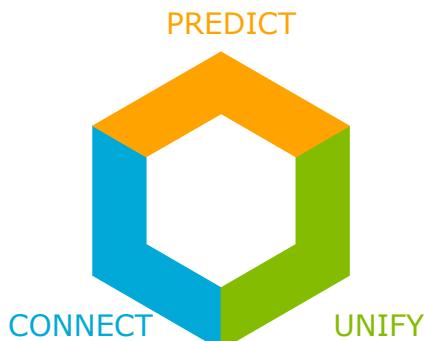
## PREDICT



# How TIBCO delivers the Connected Intelligence Vision



# Built on Strong Core Principles



Cloud  
Native



Open  
Platform



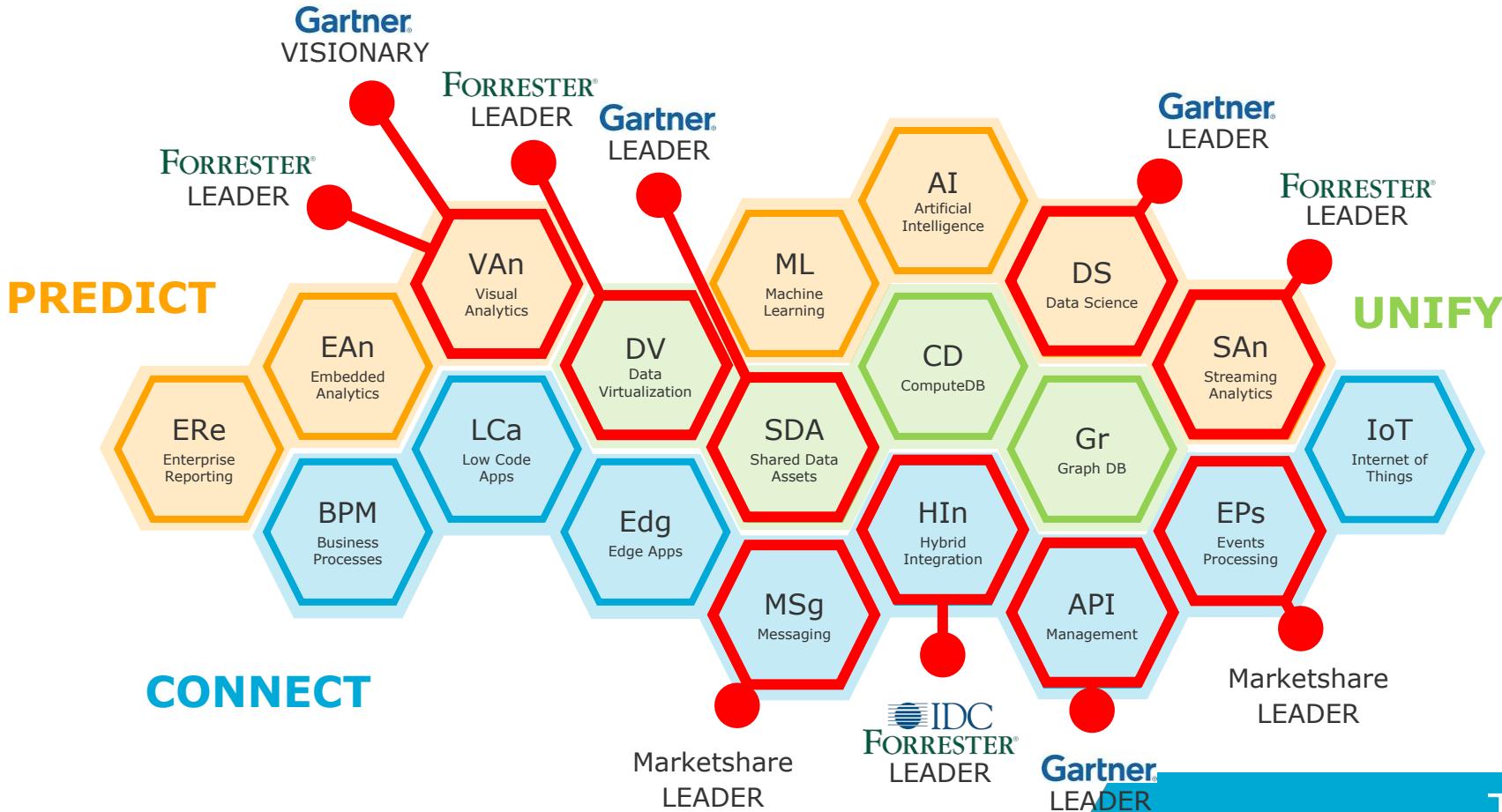
AI  
Foundation

- Re-architected core capabilities as cloud-native 'engines'
- Deliver the same core cloud-native components across workloads
- Significantly reduced or removed any proprietary dependencies
- Devops/Cloudops/Dataops support delivered as open source

- Provide customers the same tools used internally to extend capabilities
- Open source delivery of new key capabilities like Project Flogo
- Continued adoption of enterprise and emerging open source (e.g. Kafka)
- Increasingly active engineering participation in larger scale OSS projects

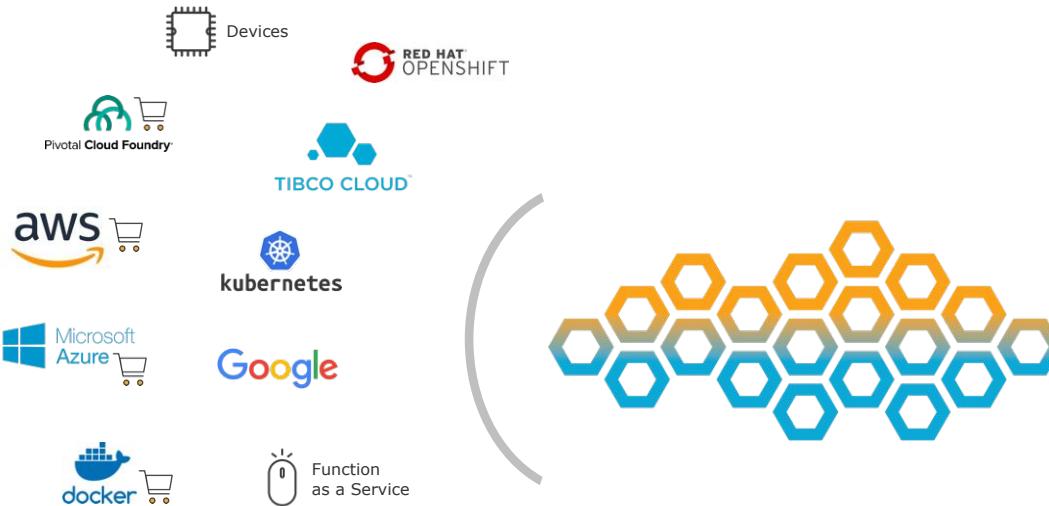
- Application of AI principles and technology across capabilities to enhance workflow and user productivity
- Integration to leading AI frameworks both for real-time projects (Flogo with TensorFlow) as well as Data Science modeling and design
- Increasing use of AI as a platform for developing new capabilities such as adaptive business logic and execution

# Market Leadership Across The Platform



# Available anywhere, everywhere

## TIBCO Connected Intelligence



 marketplaces proposing  
TIBCO Cloud services

### Open Source

Give developers easy access to core capabilities of the Connected Intelligence Cloud

### SaaS

Quickly get up and running with a fully TIBCO hosted and managed service

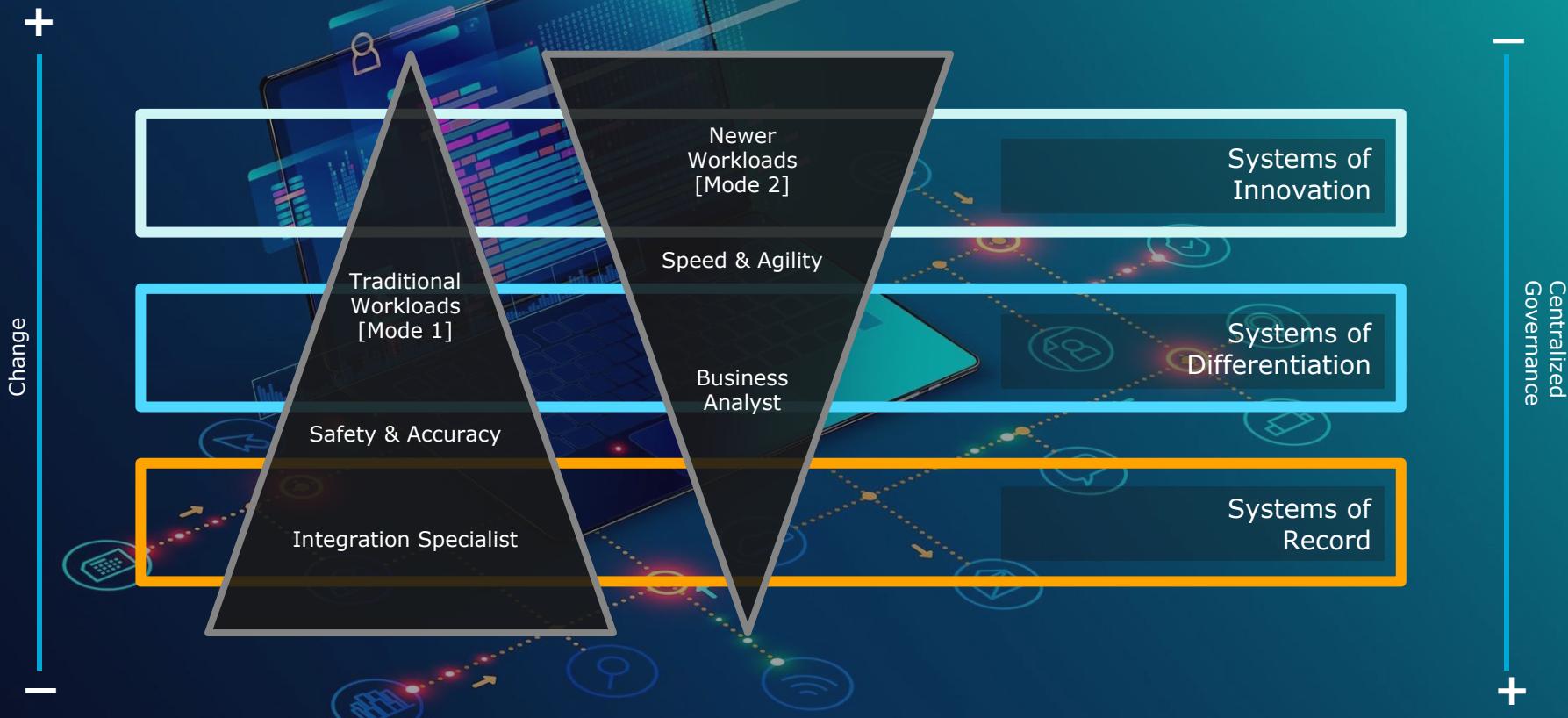
### Hybrid

With all options for self-host, multi-cloud, or edge deployments

### Dynamic Cloud

Optimize cost by dynamically scaling on cloud infrastructure such as Amazon Web Services

# The BiModal approach to API development



# The BiModal approach to API development APIs for Differentiation and Innovation



# API-Led Strategy Is the Connective Tissue of Digital Business

## App Dev & Integration

**Internal Agility**  
Standardize services



**Cloud-native**  
Microservices & microgateways



**Integration**  
SaaS and Hybrid Services



## Digital Business Platform

**Channel Expansion**  
New Distribution



**B2B & B2C Innovation**  
Partner Collaboration



**New Business Models**  
Becoming an ecosystem platform



**API Platform**

Enterprise Data, Services,  
and Applications

# TIBCO Connected Intelligence Cloud

## Capabilities

### PREDICT



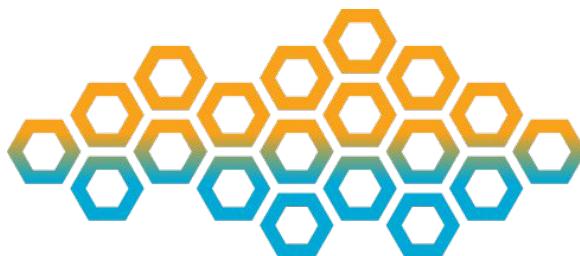
Data Management



Advanced Data Visualization



Streaming Analytics



### Shared services



Billing



SSO



Account Management



Customer Servicing



Service Registry



Integration and  
API  
Management



Messaging and  
Events  
Processing



Digital  
Process  
Automation

**INTERCONNECT  
EVERYTHING**



TIBCO CLOUD<sup>TM</sup> Platform

TIBCO<sup>®</sup>

# TIBCO Cloud in a Nutshell



ACME Parent Production ...

Oregon



Todd B

Home

Team Members

Subscriptions

Settings

Downloads

## Welcome to your TIBCO Cloud™



Discover a new way  
to get started with  
the power of TIBCO  
Cloud



TIBCO®

# Capabilities available on TIBCO Cloud

- TIBCO Cloud Nimbus
- TIBCO Cloud Live Apps
- TIBCO Cloud Integration
- TIBCO Cloud Mashery
- TIBCO Cloud AuditSafe
- TIBCO Cloud Events
- TIBCO Cloud Messaging
- TIBCO Cloud Spotfire



# TIBCO Cloud Services

## *At-a-Glance*



**High Availability**



**Disaster Recovery**



**Security, Privacy, & Compliance**



**PKI Management**



**Role-based Access**



**Auditability**



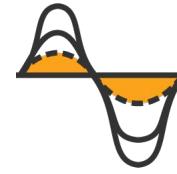
**Service Level Agreement**



**Reporting**



**Operational Dashboard**

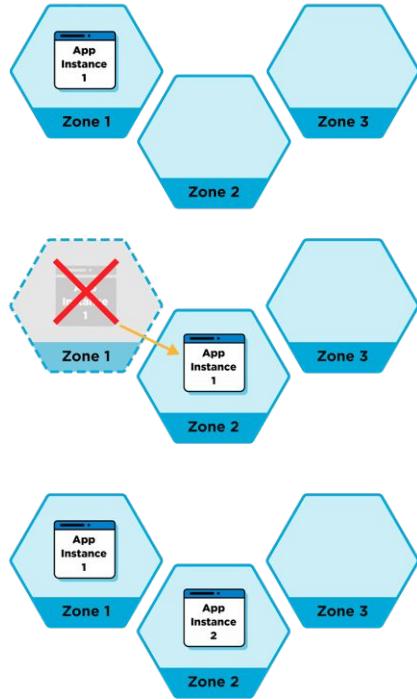


**Transaction Tracking**



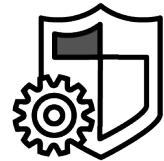
**Support**

# High Availability

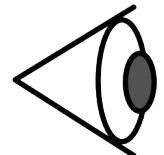


- Each application is executed in an availability zone automatically selected based on available resources.
- Automatic switch-over of apps to new zone if they go down or stop reporting status.
- Scale apps across multiple zones for high availability - load is distributed evenly by the system.

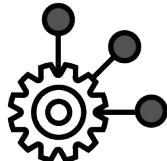
# Security, Privacy and Compliance



Customer traffic, secrets and encryption



Authentication and Authorization

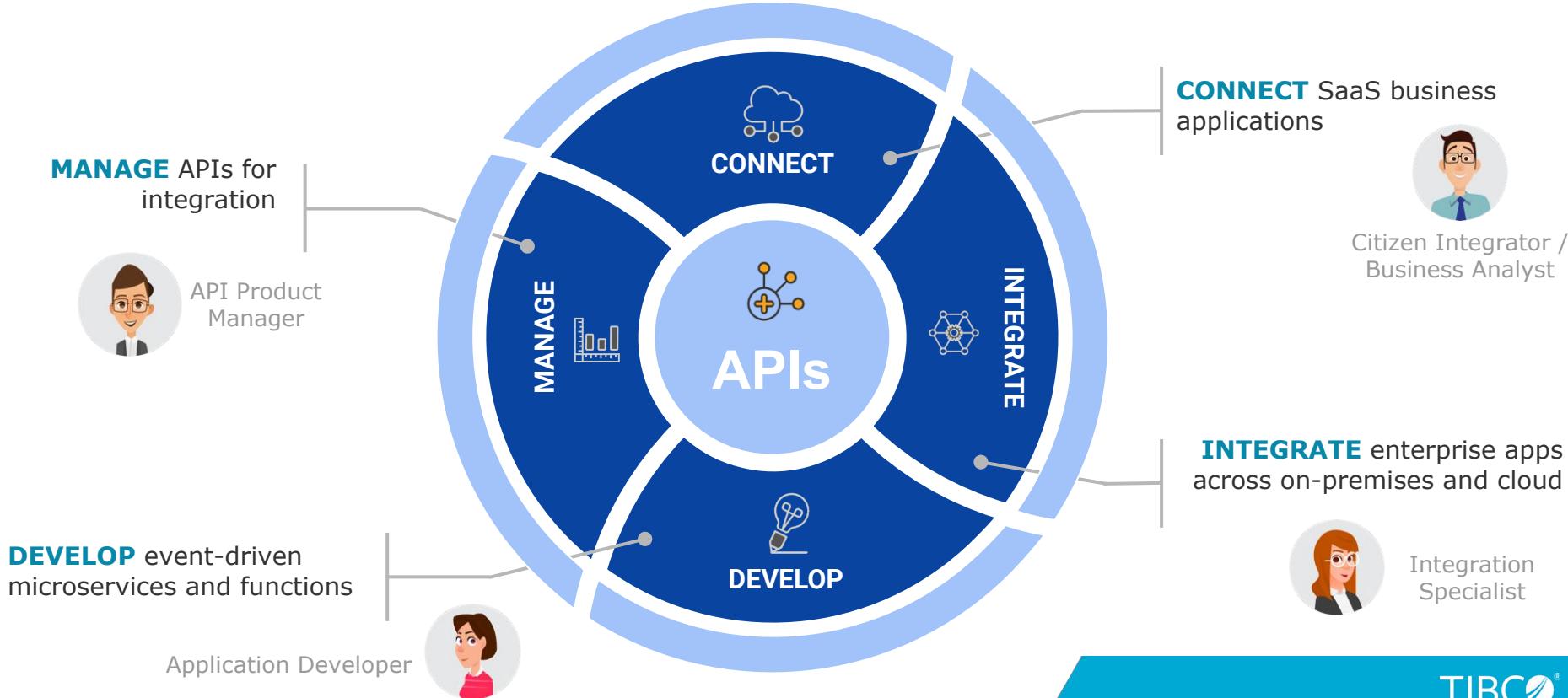


Secure API's for Mobile and Command line interface

- Multi-tenant platform with logical separation of customers.
- Built with privacy and security in mind.
- Encrypted network traffic and data storage.
- Hybrid Connectivity

# Accelerate API-Led Integrations Across Your Business

*Enable Collaborative Integration for Everyone through Tailored User Experiences*





# The Labs

# TIBCO Cloud Integration Blueprint

Standard, secure interface for service consumption



B2B Interface



Internal API Catalogue



TIBCO Mashery

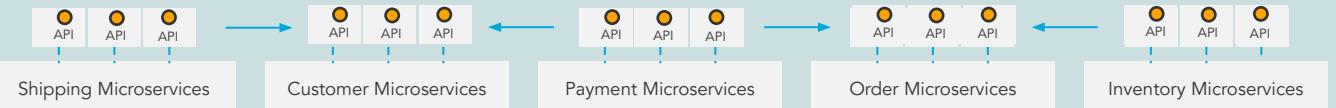
APIs are secured and governed

API Platform



TIBCO Flogo

Interface doesn't change as services are updated



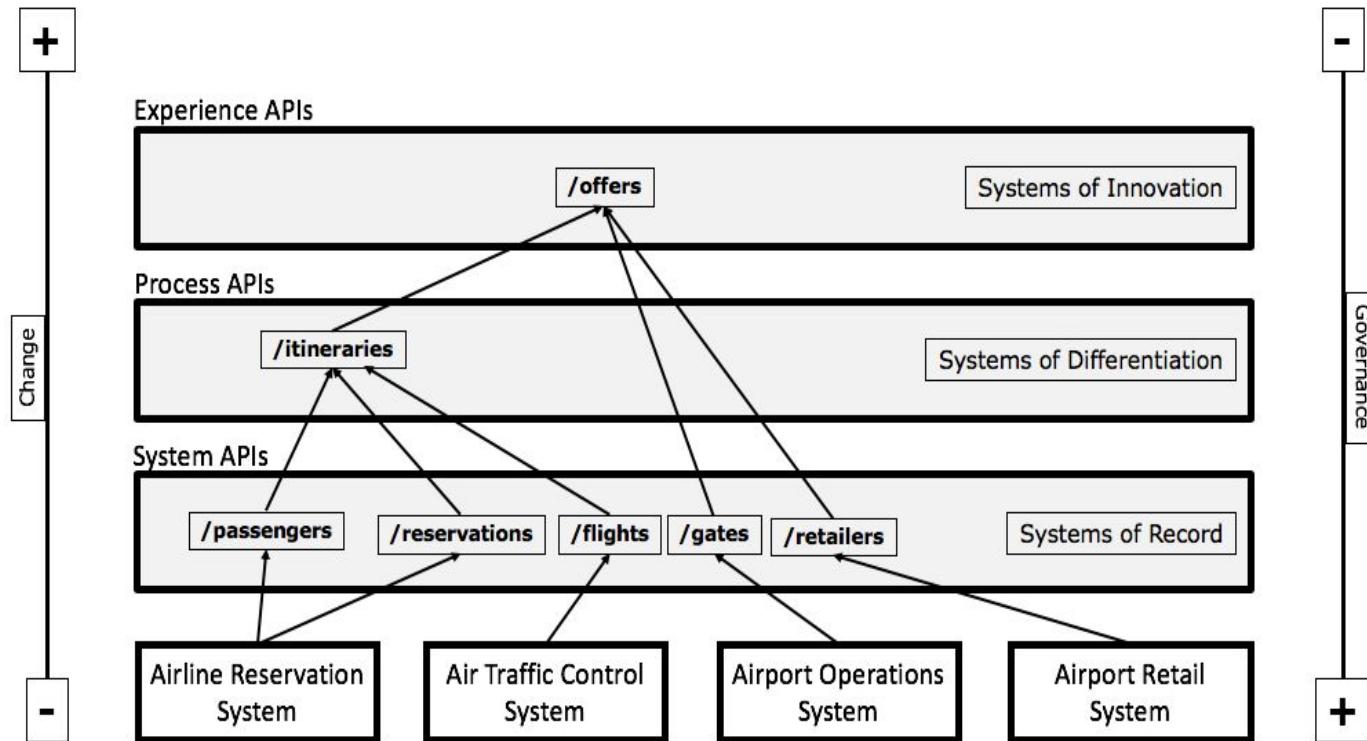
TIBCO BusinessWorks

Complexity of Legacy is abstracted



TIBCO

# API Network Pattern



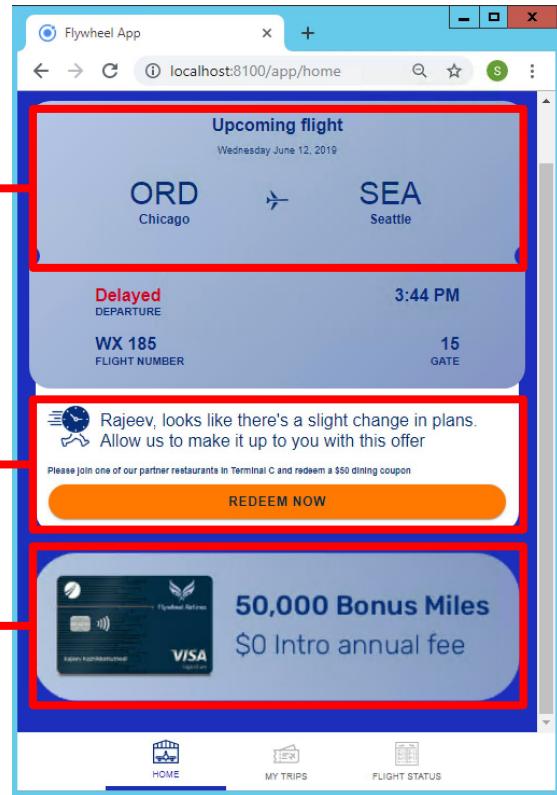
# Connected Customer Experience APIs Are Everywhere

- Customer iPhone App
  - Drive additional revenues for Airport by connecting Airport and Retailers with Airlines
  - Increase Customer Satisfaction by Providing Relevant Real-time information
  - Real-time Offers and Status to Drive Customers from Gates to Retailers
  - Seamless experience for your customers

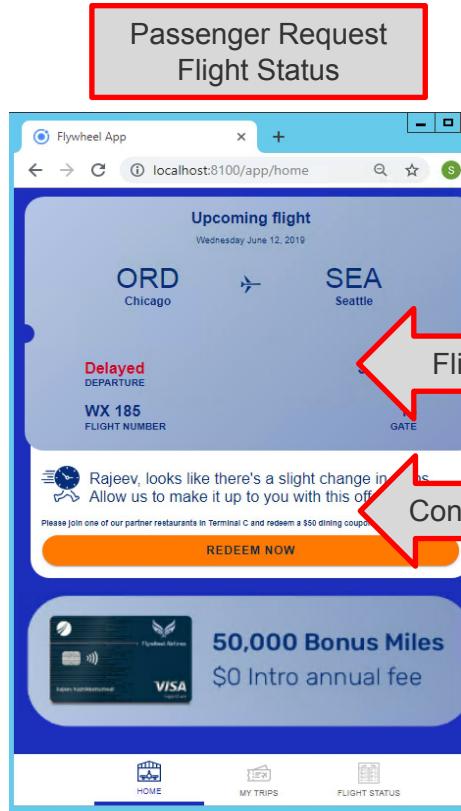
Flight Details

Dynamic Experience

Contextual Offers



# Event Driven API-Led Integration Drives Customer Engagement



Passenger Request  
Flight Status



**Itineraries**  
Responds with Flight Status, Reservations and Passenger details.



**Flights**  
Responds with flight status.



**Reservations**  
Responds with reservation details.



**Passengers**  
Responds with passenger details.



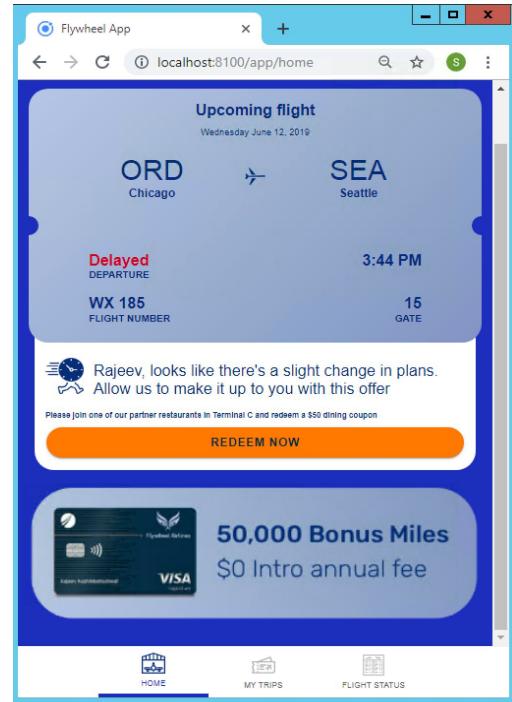
**Retailers**  
Responds with average wait time.



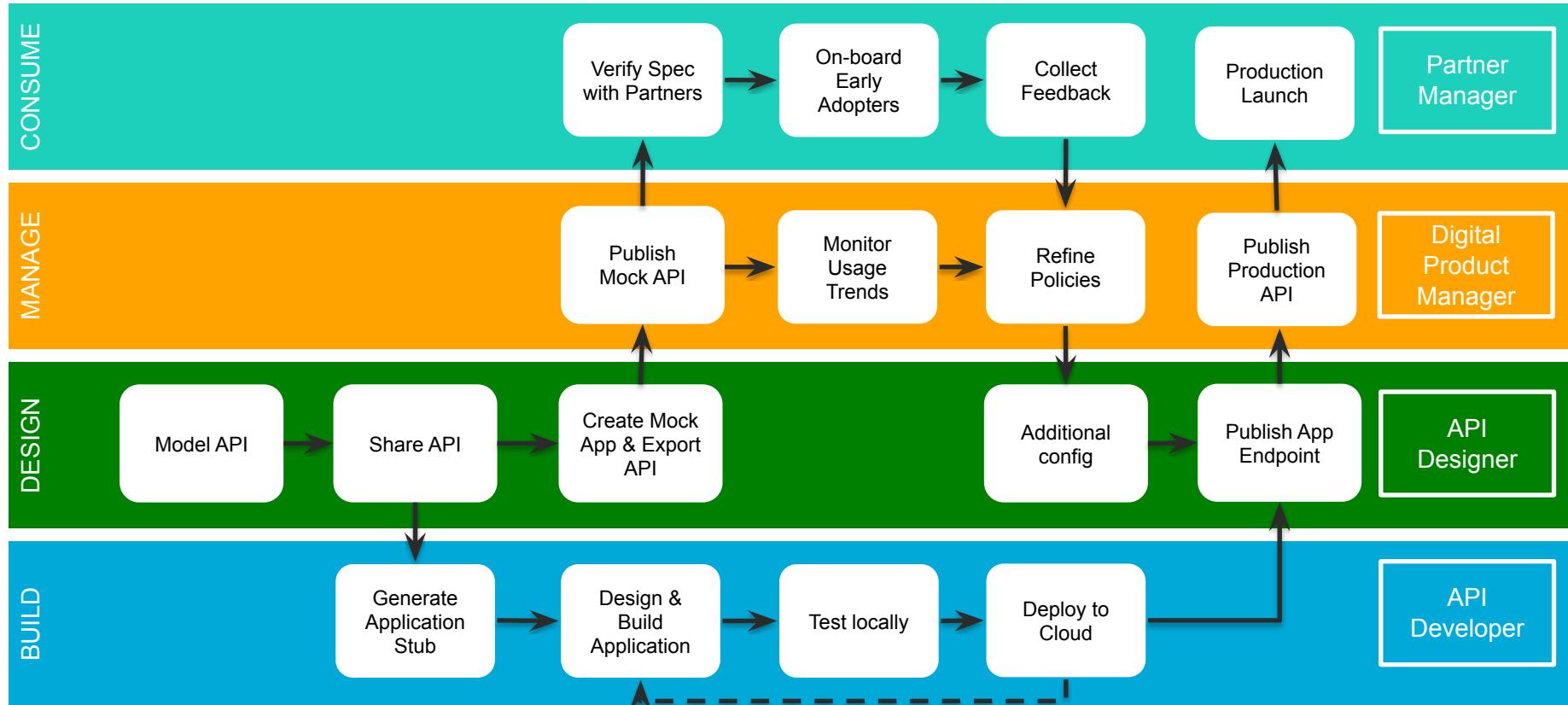
**Decisions**  
Responds with contextual offer based on loyalty, retailers near gate, wait times.

# Use Case: Connected Customer Experience

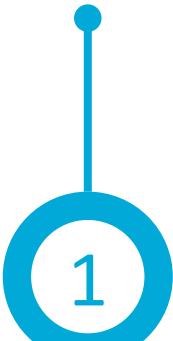
- We will be exploring and building the APIs for Connected Customer Experience Airport iPhone App
- We will concentrate on speed and agility
- We will focus on Process and Event APIs
- The persona will be an IT savvy business analyst
- We will construct new process and experience APIs with readily available APIs



# Empowering an agile, productive API lifecycle



## Connected Customer Experience App



### The TIBCO Cloud

Sign in and get familiar with the TIBCO Cloud Platform



### Import and Explore APIs

Import existing Spec. Explore API and Extend for our App.



### Mock APIs

Fake it before you make it! Get Digital Teams working against your Mock APIs whilst you do the real work.



### Implement & Test APIs

Build out your API by implementing a Flo(go) application that orchestrates and re-uses existing APIs



### Contextual Offers

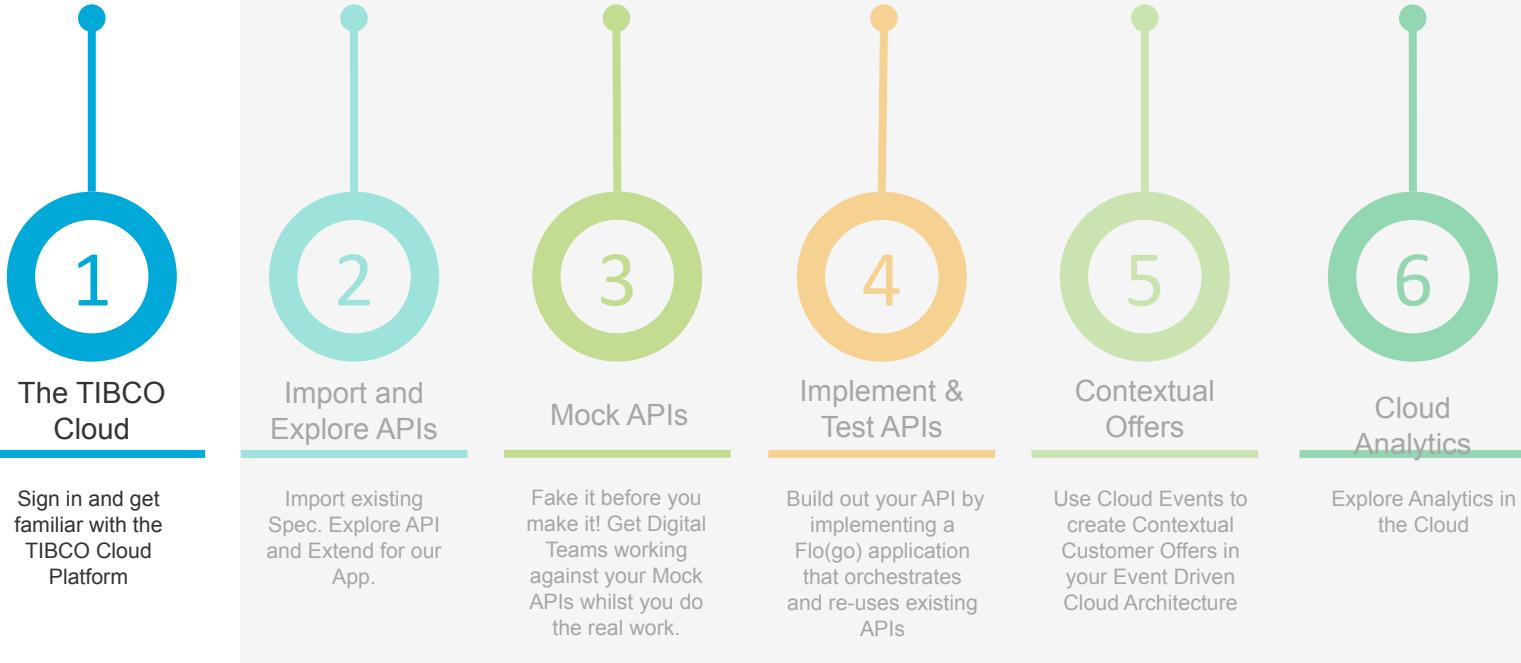
Use Cloud Events to create Contextual Customer Offers in your Event Driven Cloud Architecture



### Cloud Analytics

Explore Analytics in the Cloud

# Connected Customer Experience App



# Key Resources



Download and extract the Hands On Lab : <https://github.com/TIBCOUK/Keys2Cloud>

Make sure you open the scratchpad.md file for easy cut/paste in the Labs:  
<https://github.com/TIBCOUK/Keys2Cloud/blob/master/scratchpad.md>



TIBCO Community :

- <https://community.tibco.com/products/tibco-cloud-integration>
- <https://community.tibco.com/products/tibco-activematrix-busin>

github.com/TIBCOUK/Keys2CloudDecember2019

TIBCOUK / Keys2CloudDecember2019

117 commits 1 branch 0 packages 0 releases 1 contributor

wkarasz updates

images project scripts utils .DS\_Store

Clone with HTTPS Use SSH

https://github.com/TIBCOUK/Keys2CloudDec...

Open in Desktop Download ZIP



Docs TIBCO : <https://docs.tibco.com/>



TIBCO Flogo : <http://www.flogo.io/>

# Sign Up



The TIBCO  
Cloud

- Go to [cloud.tibco.com](https://cloud.tibco.com)
  - <https://cloud.tibco.com>
  - Register
    - Login: your email address
    - Password: your password
  - Region: **EU (Ireland)**
- Check your email for activation email
  - And Junk folder!

The screenshot shows the TIBCO Cloud Services homepage. The top navigation bar includes links for Overview, Cloud Services, Cloud Solutions, Status, SIGN IN, and TRY NOW. The main content area is titled 'TIBCO Cloud™ Services' and features a section for 'TIBCO Cloud™ Integration'. Below this, there is a description of the product's purpose and a 'FREE TRIAL' button. A red arrow points to the 'FREE TRIAL' button.

# Add Subscriptions to the Trial



**TIBCO CLOUD™**

Home Team Members **Subscriptions** Settings Downloads

Subscriptions in Oregon

**Integration** TRIAL

Named users **Unlimited** Expires in **1** MONTH

AVAILABLE

[Details](#) [Upgrade](#) [Launch](#)

**Mashery®** TRIAL

Named users **Unlimited** Expires in **1** MONTH

AVAILABLE

[Details](#) [Upgrade](#) [Launch](#)

**Add subscription**

# Add Spotfire and Events



[View plans](#) 

TIBCO Cloud™ Spotfire® is a smart visual analytics solution with built-in data wrangling, geo-analytics and predictive analytics.

[Free trial](#)

[Add or upgrade](#)



Events

[View plans](#) 

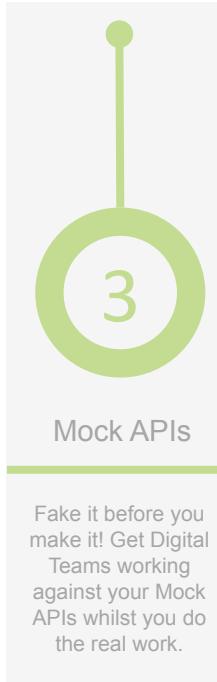
TIBCO Cloud™ Events is a cloud-native solution for improving business outcomes by detecting key events and moving automated decision-making closer to the source

[Free trial](#)

[Add or upgrade](#)



# Connected Customer Experience App



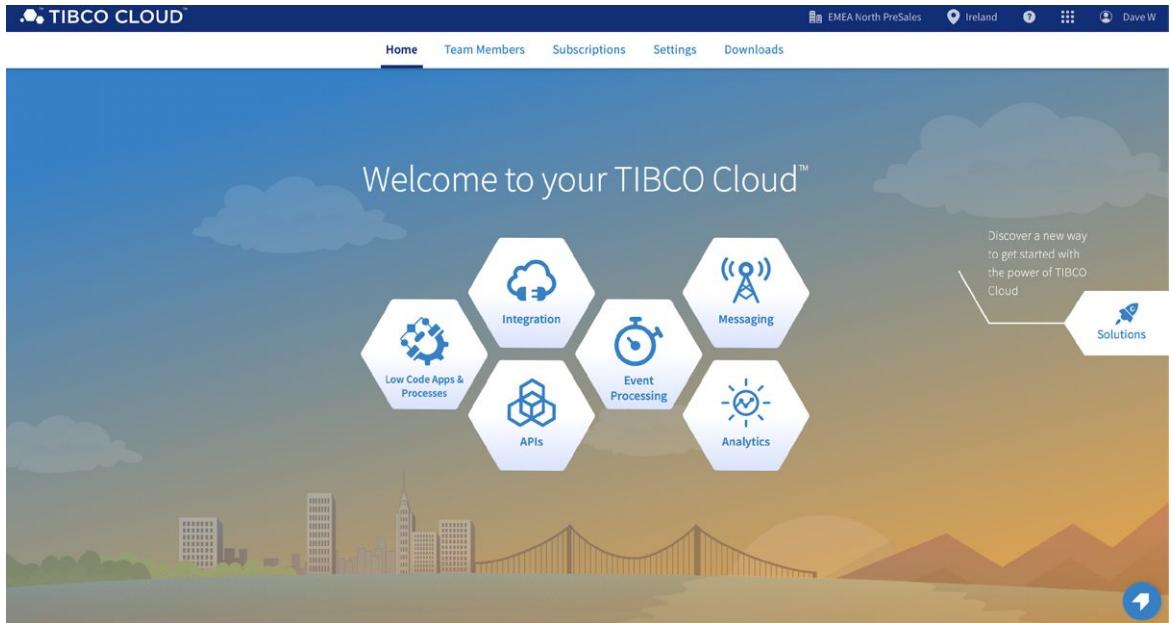
# Log into TIBCO Cloud



Import and  
Explore APIs

## Main Home Page

- Shows which Capabilities are available to your subscription
- Can change Regions
- See and Manage Team Members
- Subscribe to new Capabilities
- Access Help



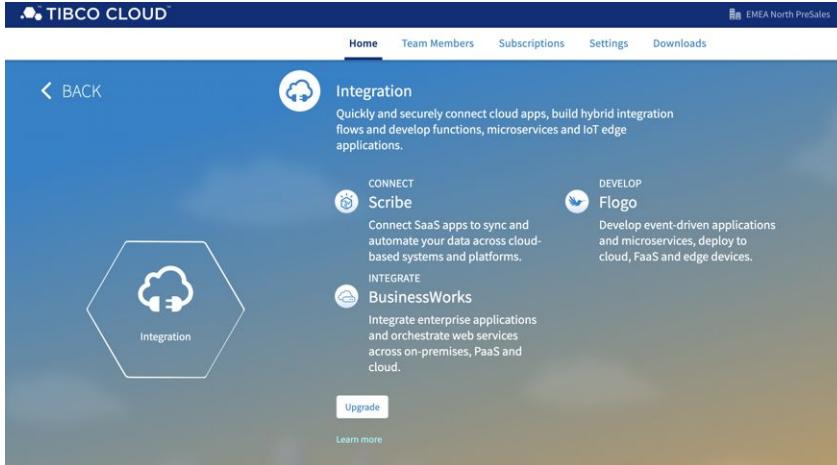
# Importing API Specs.



Import and Explore APIs

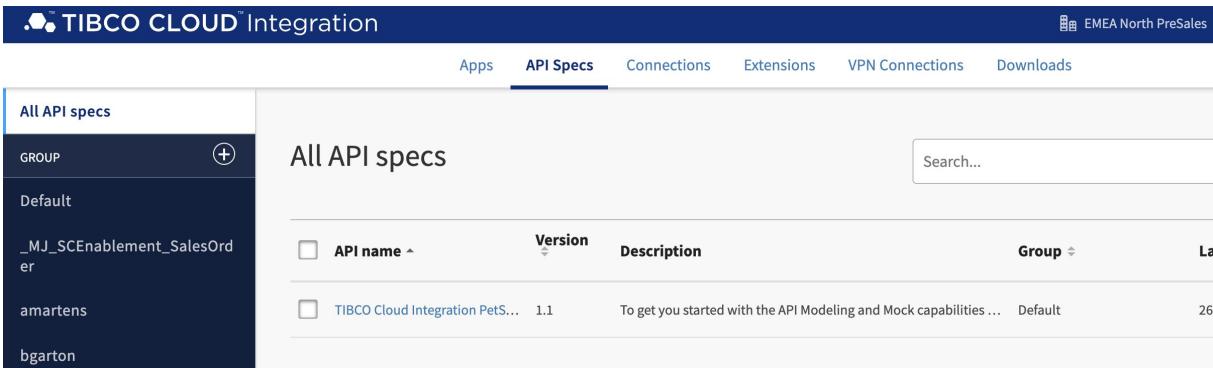
## Navigate to API Spec

- Click on “Integration”
- Click on “Flogo” or “BusinessWorks”
- Click on “API Specs”



## API Specs allows us to

- Create new APIs
- Import existing APIs
- Create Mock Applications
- Generate Application Skeletons (NodeJS and Flogo)



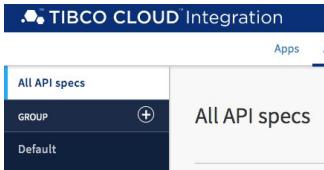
# Importing API Specs.

2

Import and  
Explore APIs

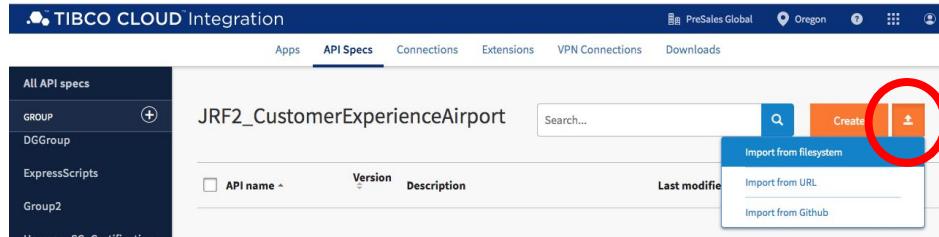
Create a new Group (Click the + sign)

- Call it CustomerExperienceAirport
- Select the new Group
- You'll see an empty list



Import API Spec

- Import from Filesystem and navigate to where you extracted the connected customer experience artifacts
- Choose project/apispecs/APISpecs/v2/passengers.json

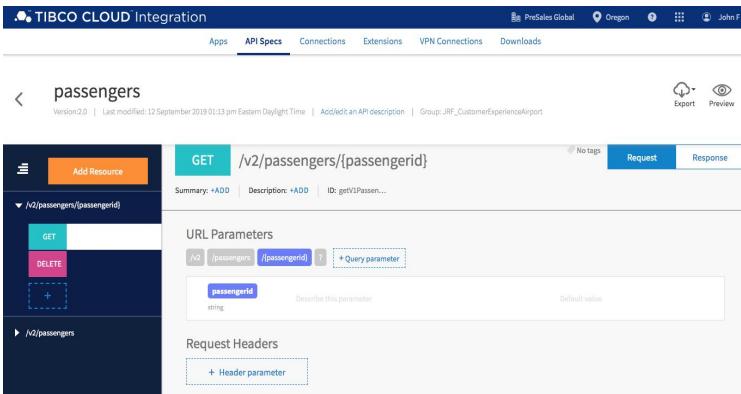


TIBCO

# Exploring the API.

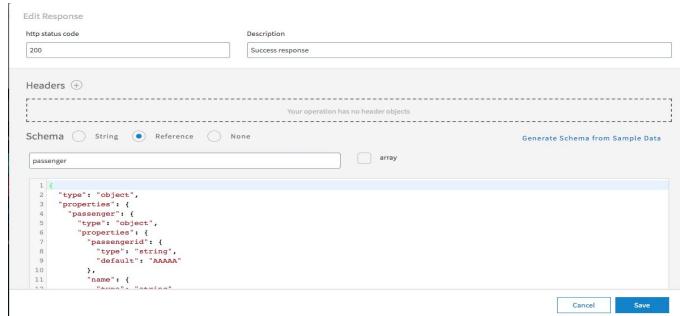
2

## Explore the new API



The screenshot shows the TIBCO CLOUD Integration interface with the 'API Specs' tab selected. A resource named 'passengers' is displayed, version 2.0. The 'GET /v2/passengers/{passengerid}' method is selected. The 'Request' and 'Response' tabs are visible. The 'Request' tab shows 'URL Parameters' with a 'passengerid' parameter and 'Request Headers'. The 'Response' tab is currently empty. The left sidebar shows other resources like 'Add Resource', 'GET /v2/passengers/{passengerid}', 'DELETE /v2/passengers/{passengerid}', and 'GET /v2/passengers'.

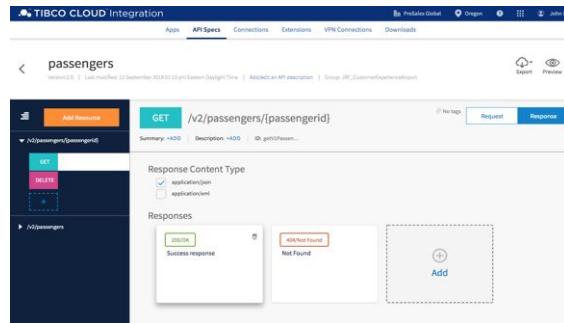
## Example Success Response



The screenshot shows the 'Edit Response' dialog. The 'http status code' is set to 200, and the 'Description' is 'Success response'. The 'Headers' section is empty. The 'Schema' section shows a 'String' type with 'None' selected. The 'passenger' schema is defined as an array of objects. The schema definition is as follows:

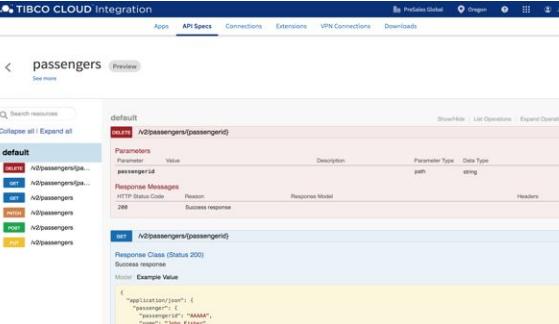
```
1  "type": "object",
2  "properties": {
3    "passenger": {
4      "type": "object",
5      "properties": {
6        "passengerid": {
7          "type": "string",
8          "default": "AAAAAA"
9        }
10      }
11    }
12  }
13  "name": {
```

## Responses



The screenshot shows the 'Responses' section for the 'passengers' API. It displays two responses: a 'Success response' (status 200) and a 'Not Found' response (status 404). The 'Success response' is a simple JSON object with a 'passenger' key. The 'Not Found' response is a standard 'Not Found' message. The 'Request' and 'Response' tabs are visible at the top.

## Preview API



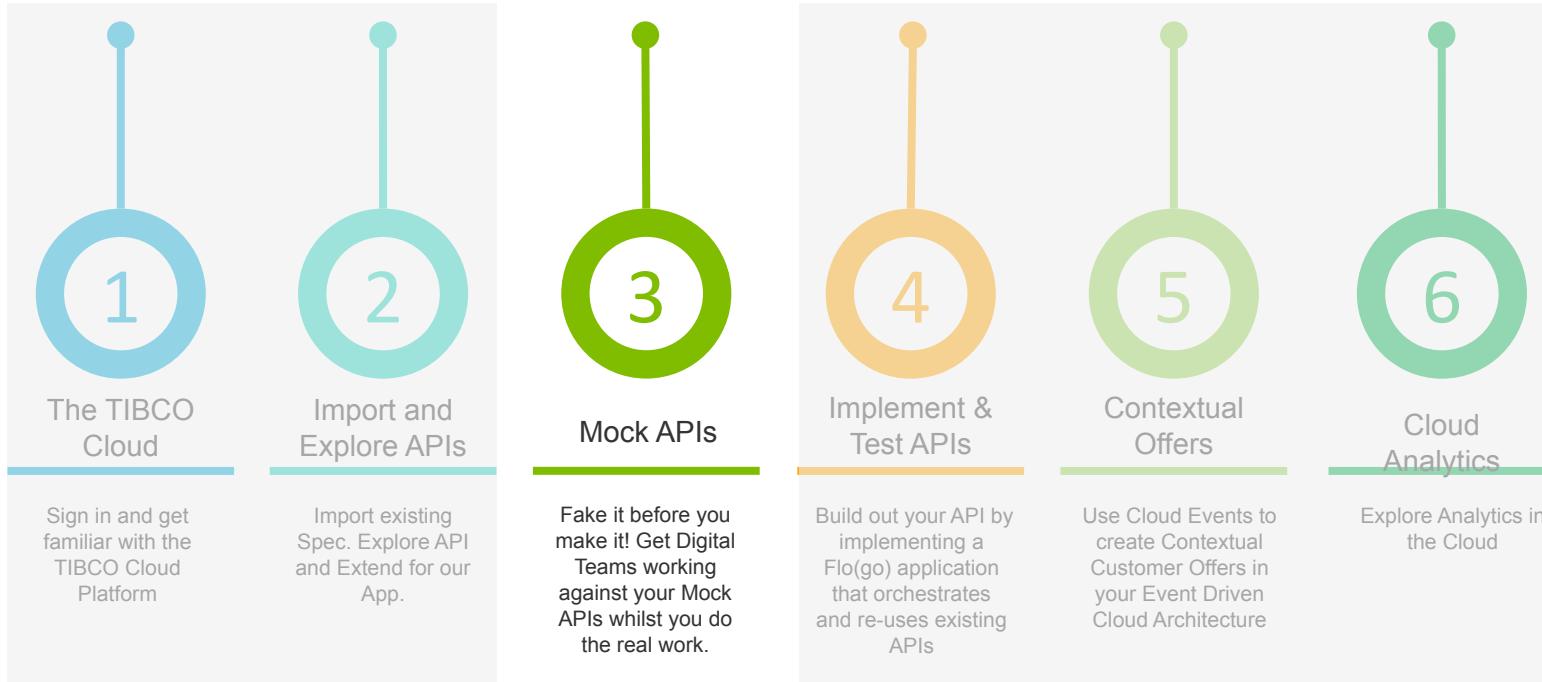
The screenshot shows the 'Preview' section for the 'passengers' API. It displays the API schema for the 'GET /v2/passengers/{passengerid}' method. The schema includes parameters for 'passengerid' (path, string) and 'Response Messages' (200: Success response). Below the schema, a preview of the response is shown as a JSON object:

```
1  {
2    "passenger": {
3      "passengerid": "AAAAAA",
4      "name": "John Fisher"
5    }
6  }
```

Import and  
Explore APIs

TIBCO

# Connected Customer Experience App



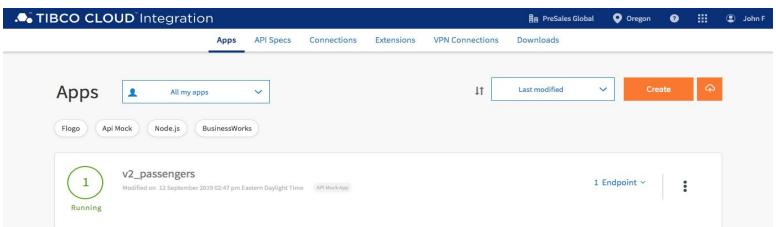
# Mock APIs

3

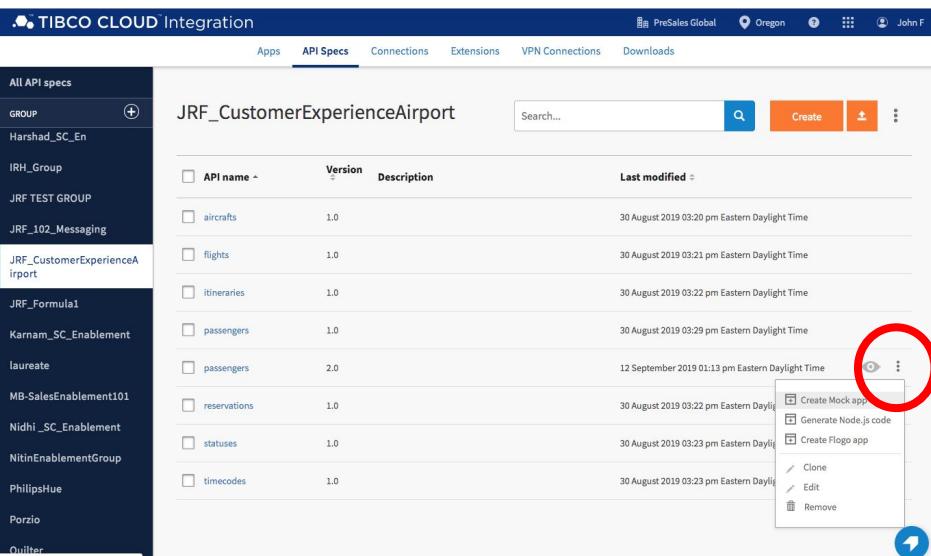
Mock APIs

## Create a Mock API

- Allows you to test quickly
- Provide Developers with an Endpoint
- They can start developing their application straight away
- Click on the 3 dots next to the API and click "Create Mock App"
- Give your app a Name
- Wait until the App shows "Running"



The screenshot shows the TIBCO CLOUD Integration interface. The top navigation bar includes 'PreSales Global', 'Oregon', and a user profile for 'John F'. The main menu has tabs for 'Apps', 'API Specs', 'Connections', 'Extensions', 'VPN Connections', and 'Downloads'. The 'Apps' tab is selected. Below the menu, there are buttons for 'Create', 'Clone', 'Edit', and 'Remove'. A search bar and a 'Last modified' dropdown are also present. The main content area displays a list of apps. One app, 'v2\_passenger', is highlighted with a green circle and labeled 'Running'. Other apps listed include 'Flogo', 'Api Mock', 'Node.js', and 'BusinessWorks'.



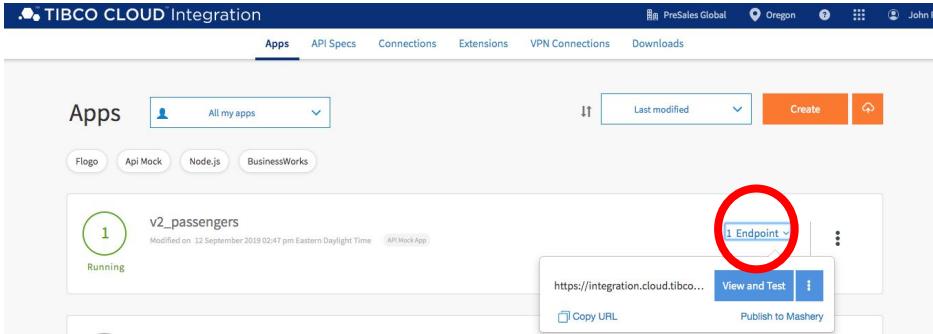
The screenshot shows the 'API Specs' tab of the TIBCO CLOUD Integration interface. The page title is 'JRF\_CustomerExperienceAirport'. The left sidebar lists various API groups and individual APIs. The 'passengers' API is selected and highlighted with a blue border. A context menu is open over this API, with the 'Create Mock app' option circled in red. The menu also includes 'Generate Node.js code', 'Create Flogo app', 'Clone', 'Edit', and 'Remove' options. The main content area shows a table with columns for 'API name', 'Version', 'Description', and 'Last modified'. The 'passengers' API is listed with a version of 2.0, last modified on 12 September 2019 at 01:13 pm.

TIBCO

# Mock APIs

## Test your Mock API

- Click on the Endpoint
- Click on View and Test
- Select Try it out!
- Under GET /v2/passengers.

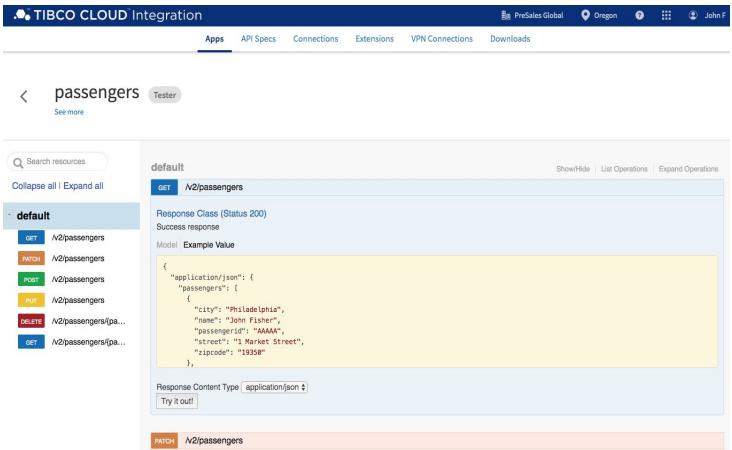


The screenshot shows the TIBCO CLOUD Integration interface. In the top navigation bar, the 'Apps' tab is selected. Below it, the 'v2\_passenger' API is listed under the 'Running' category. To the right of the API card, there is a 'Endpoint' dropdown menu. A red circle highlights this menu. Below the API card, there are buttons for 'View and Test' and 'Copy URL'.



## Mock APIs

Result returned (from Success response)



The screenshot shows the 'passengers' API details page. The 'GET /v2/passengers' operation is selected. The 'Response Class (Status 200)' section shows a 'Success response' with an 'Example Value' JSON object:

```
{"application/json": { "passenger": [ { "city": "Philadelphia", "name": "John Fisher", "passengerId": "AAAAA", "street": "1 Market Street", "zipCode": "19358" }, ] }}
```

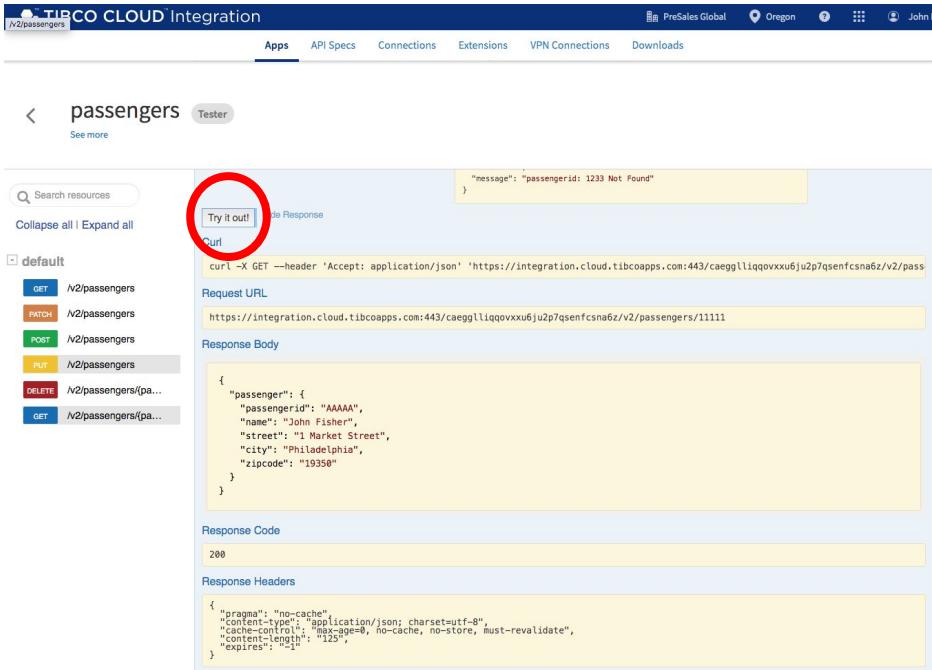
Below the JSON, there is a 'Response Content Type: application/json' field with a 'Try it out!' button.

# Mock APIs

3

## More Testing

- Try testing `/v2/passengers/{passengerid}`.
- Select or scroll down to `/v2/passengers/{passengerid}`. Enter 11111 in passengerid parameter and select Try it out!



The screenshot shows the TIBCO CLOUD Integration API Tester interface. The URL in the address bar is `/v2/passengers`. The main page displays a list of API endpoints for the `passengers` resource, including `GET /v2/passengers`, `PATCH /v2/passengers`, `POST /v2/passengers`, `PUT /v2/passengers`, `DELETE /v2/passengers/{pa...`, and `GET /v2/passengers/{pa...`. A red circle highlights the `Try it out!` button for the `GET /v2/passengers` endpoint. The `Request URL` field shows `https://integration.cloud.tibcoapps.com:443/caegqliqqovxxu6ju2p7qsenfcna6z/v2/passengers/11111`. The `Response Body` field displays the JSON response: 

```
{"message": "passengerid: 1233 Not Found"}
```

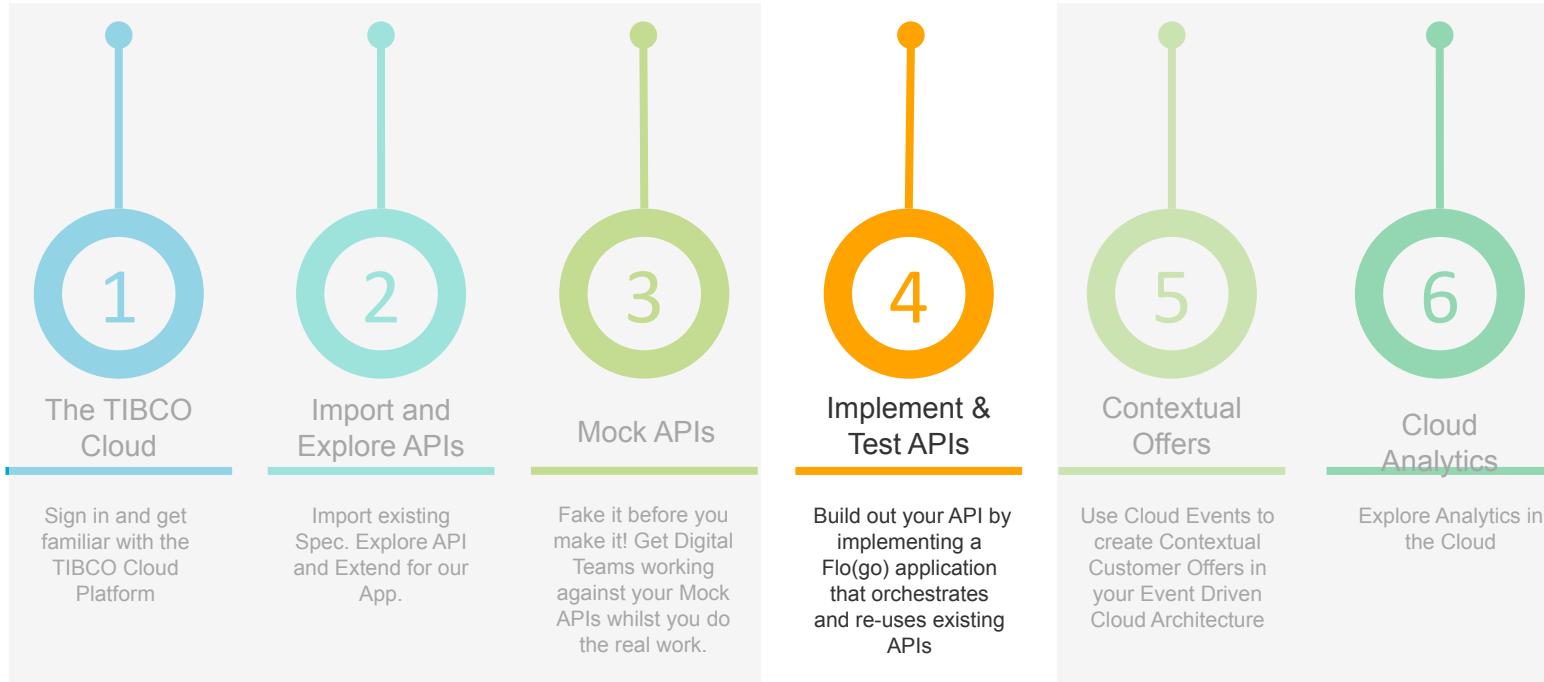
. The `Response Code` is `200`, and the `Response Headers` are: 

```
{"pragma": "no-cache", "content-type": "application/json; charset=utf-8", "cache-control": "max-age=0, no-cache, no-store, must-revalidate", "content-length": "125", "expires": "0"}
```

.

Mock APIs

# Connected Customer Experience App



# Implement API

Extend API implementation by re-using existing API to include Aircraft Details

- We'll use an existing Flogo Application
- Add new steps to call Flights API
- Click on Apps
- Click Create
- Give it a Name + Click Create
- Click on “Flynn” to create a TIBCO Flogo App

The image shows two screenshots of the TIBCO Cloud Integration platform. The top screenshot is a 'Create an app' dialog box. It has a text input field containing 'v1\_itineraries\_todo', a 'Endpoint visibility' section with a 'Public' radio button selected, and two buttons at the bottom: 'Cancel' and 'Create'. The bottom screenshot shows the 'Apps' tab of the TIBCO CLOUD Integration interface. It displays a list of available app types: 'Create a TIBCO Flogo® App' (highlighted with a red circle), 'Create a Mock App', 'Push a Node.js App', and 'Push a TIBCO BusinessWorks™ App'. Each item has a brief description and a corresponding icon. The top right corner of the interface shows user information: 'EMEA North PreSales', 'Ireland', 'Dave W', and a 'Logout' button.

4

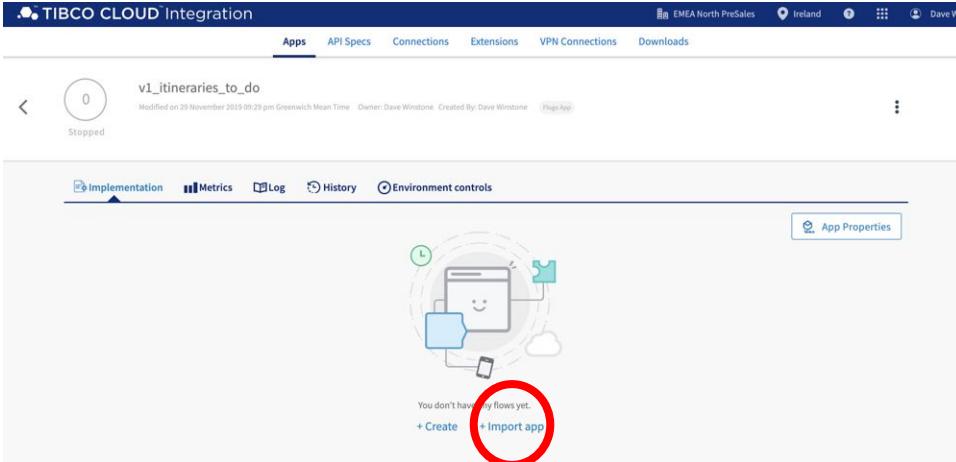
Implement & Test APIs

TIBCO

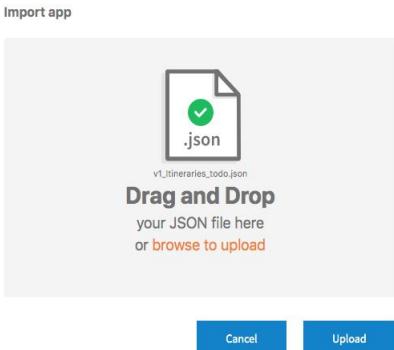
# Implement API

Import pre-built Application...

- Click on Import App



- Navigate to where you extracted the connected customer experience artifacts and drag project/apispecs/TCI/itineraries\_lab/v1\_itineraries\_todo.json into upload files and select Upload.



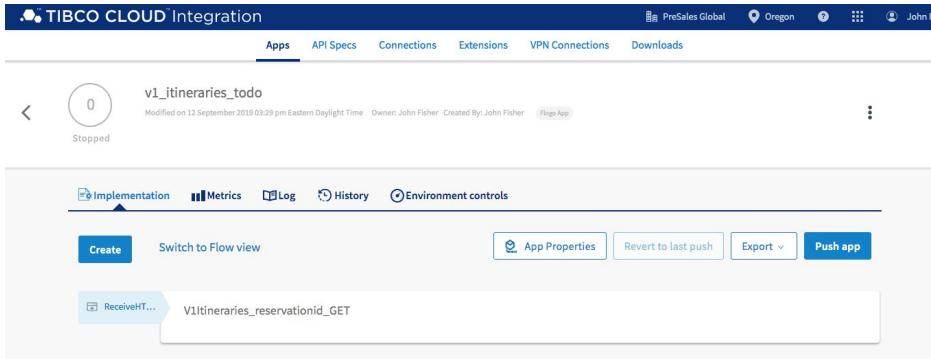
Implement & Test APIs

4

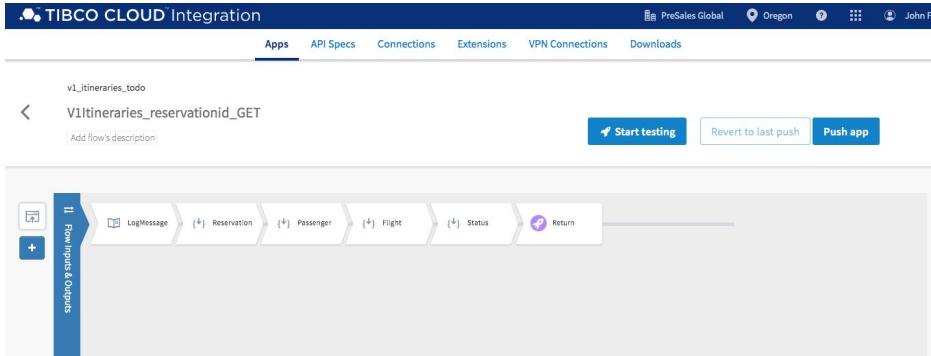
# Implement API

Flogo Application implements the API we used earlier

- Click on `V1Itineraries_reservationid_GET` to view the implementation



The screenshot shows the TIBCO CLOUD Integration interface. The top navigation bar includes 'TIBCO CLOUD Integration', 'Apps' (selected), 'API Specs', 'Connections', 'Extensions', 'VPN Connections', and 'Downloads'. The user is 'John F' from 'Oregon'. The main view shows the 'v1\_itineraries\_todo' app, which was modified on 12 September 2019 at 03:29 pm Eastern Daylight Time by John Fisher. The app status is 'Stopped'. The 'Implementation' tab is selected, showing a single step: 'ReceiveHTTP' followed by 'V1Itineraries\_reservationid\_GET'. Other tabs include 'Metrics', 'Log', 'History', and 'Environment controls'. Action buttons at the top right include 'App Properties', 'Revert to last push', 'Export', and 'Push app'.



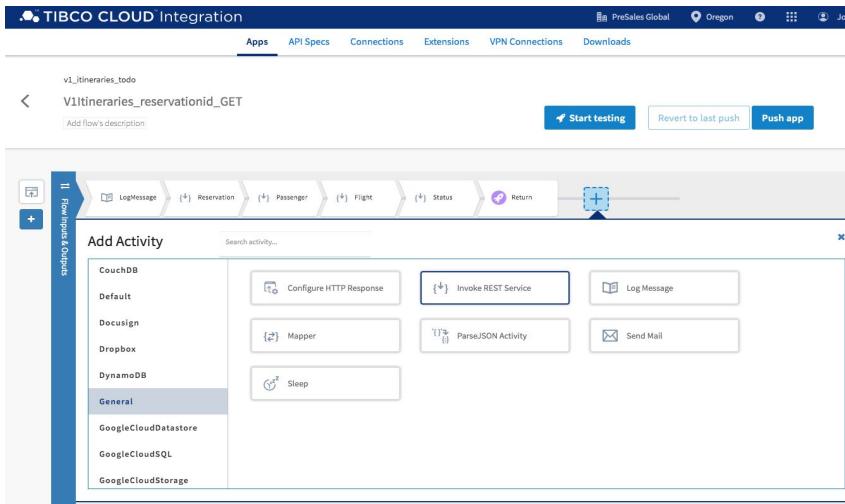
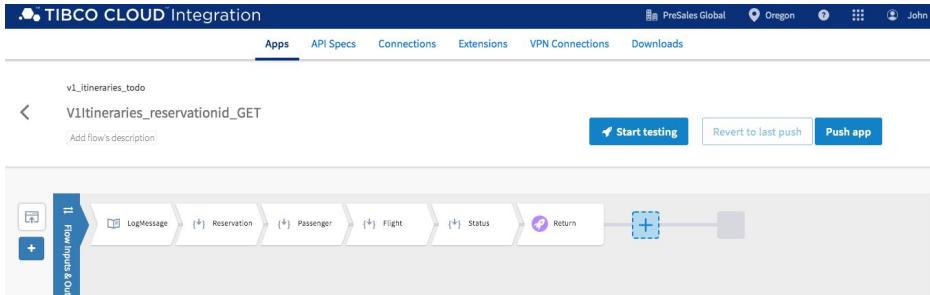
The screenshot shows the 'Flow view' for the 'V1Itineraries\_reservationid\_GET' step. The top navigation bar is identical to the previous screenshot. The main view shows the flow description 'Add flow's description' and three buttons: 'Start testing', 'Revert to last push', and 'Push app'. The flow itself is a sequence of six steps: 'LogMessage', 'Reservation', 'Passenger', 'Flight', 'Status', and 'Return'. A sidebar on the left shows 'Flow Inputs & Outputs' with a 'Flow' icon and a '+' button.

Flogo Implementation



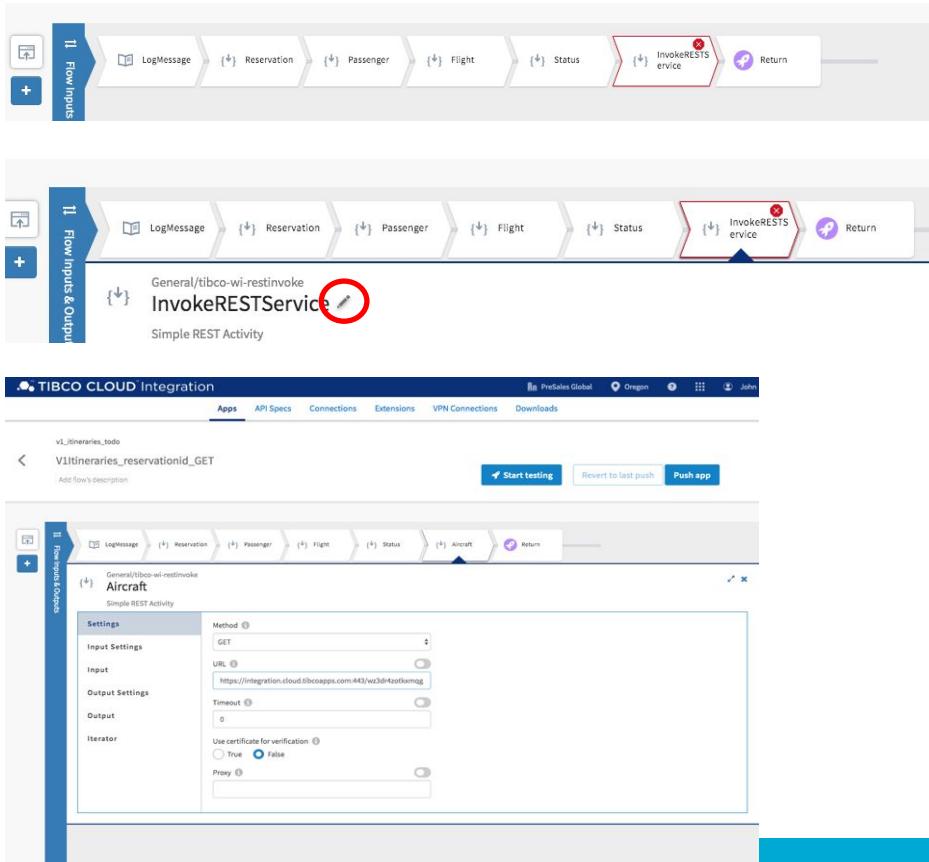
Implement & Test APIs

- Hover over the box to the right of “Return” to reveal a + sign and click on it to add a new Activity



- From Add Activity, scroll down, select General, select Invoke REST Service.

- Drag the InvokeRESTService to the right of Status.
- Rename the activity. Select InvokeRESTService, hover your mouse over the name InvokeRESTService and select the edit icon. Call it “Aircraft”
- Add REST URL - Select “Settings” and past the following URL in the URL field.
- <https://integration.cloud.tibcoapps.com:443/wz3dr4zotkxmqg5au6yhc526iw2otlc2/v1/aircrafts/{aircraftid}>



# Implement API

- Now let's map activity input. Select "Input", expand pathParams and select aircraftid.
- Expand Upstream Output->Reservation->response Body->reservation and select aircraftid.
- This maps the output of previous steps in the Flogo application
- Functions etc. can be used to manipulate the data

The screenshot shows the TIBCO Cloud Integration interface with the following details:

- Header:** TIBCO CLOUD Integration, Apps, API Specs, Connections, Extensions, VPN Connections, Downloads, PreSales Global, Oregon, John F.
- Path:** v1\_itineraries\_todo > V1itineraries\_reservationid\_GET
- Buttons:** Start testing, Revert to last push, Push app
- Flow Diagram:** A sequence of steps: LogMessage, Reservation, Passenger, Flight, Status, Aircraft, and Return.
- Activity Configuration:**
  - Activity Input:** pathParams (a. aircraftid) is selected, with the expression `! Sactivity[Reservation].responseBody.reservation.aircraftid`.
  - Upstream Output:** Headers are listed, including flightid, passengerid, aircraftid, timecoded, price, class, rownumber, seatnumber, and a. headers.
  - Functions:** A list of available functions: array, boolean, coerce, datetime, float, json, number, string, utility, and utils.
- Left Sidebar:** Flow Inputs & Outputs, with 'Input' selected.

# Implement API

- We now need to configure the Output Schema of the API Call
- Configure the Output settings. Select Output Settings and past the following schema into Response Schema.

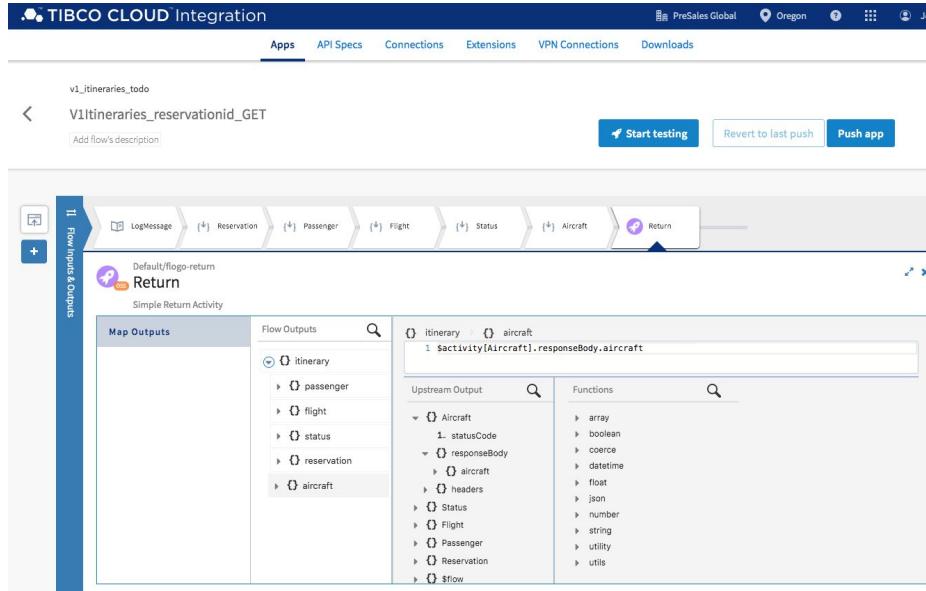
```
{"aircraft":  
  {"aircraftid":"111",  
   "type":"767",  
   "seatcapacity":"280"}  
}
```

The screenshot shows the TIBCO Cloud Integration interface. The top navigation bar includes 'TIBCO CLOUD Integration', 'Apps', 'API Specs', 'Connections', 'Extensions', 'VPN Connections', and 'Downloads'. The user is logged in as 'John F' in the 'Oregon' location. The main view displays a flow titled 'v1\_itineraries\_todo' with a sub-step 'V1/itineraries\_reservationid\_GET'. The flow consists of several activities: 'LogMessage', 'Reservation', 'Passenger', 'Flight', 'Status', 'Aircraft', and 'Return'. The 'Aircraft' activity is currently selected, showing its configuration details. The 'Output Settings' tab is active, and the 'Response Schema' field contains the following JSON schema:

```
1: {"aircraft":  
  2:   {"aircraftid":"111",  
  3:     "type":"767",  
  4:     "seatcapacity":"280"}  
  5: }  
  6: }
```

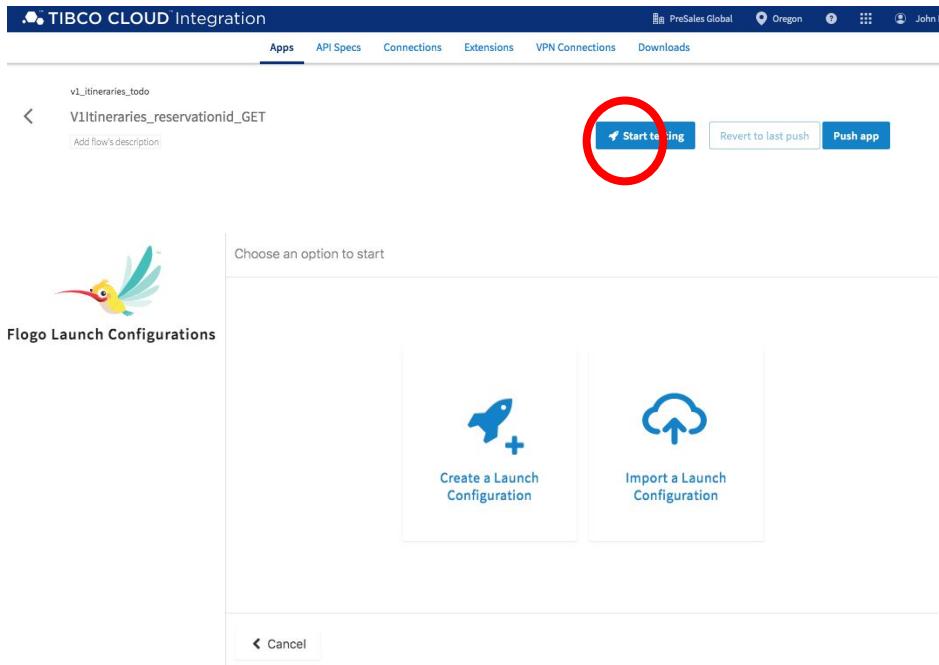
# Implement API

- Next – we need to map the response of the Aircraft API to the final return value of the Itinerary API
- Select Return activity, expand Flow Outputs itinerary and select aircraft. In upstream Output Aircraft, expand Aircraft->responseBody, select aircraft.



# Test API

- Click on Start Testing



The screenshot shows the TIBCO CLOUD Integration interface. At the top, there is a navigation bar with links for Apps, API Specs, Connections, Extensions, VPN Connections, and Downloads. The Apps link is currently selected. On the left, there is a sidebar with a logo of a bird in flight and the text "Flogo Launch Configurations". The main content area shows a list of flows: "v1\_itineraries\_todo" and "V1itineraries\_reservationid\_GET". Below the list, there is a button labeled "Start testing" with a red circle drawn around it. To the right of the "Start testing" button are "Revert to last push" and "Push app" buttons. At the bottom of the main content area, there is a "Choose an option to start" section with two buttons: "Create a Launch Configuration" (with a rocket icon) and "Import a Launch Configuration" (with a cloud icon and an upward arrow). At the very bottom of the interface, there is a "Cancel" button.

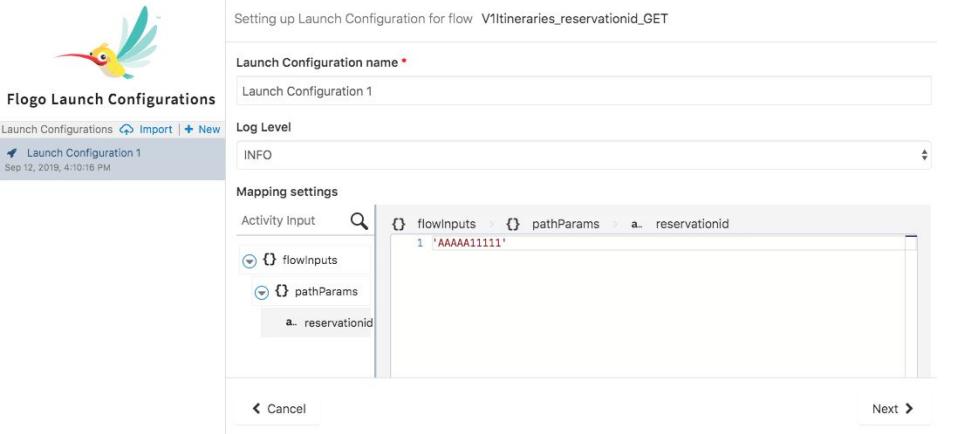
4

Implement &  
Test APIs

- Create a “Launch Configuration” to set up some test input data

# Test API

- Expand Activity Input flowInputs->pathParams->reservationid. And enter 'AAAAAA11111' into flowInputs. Use quotes. Select Next. Select Run.



Setting up Launch Configuration for flow `V1itineraries_reservationid_GET`

Launch Configuration name \*

Launch Configuration 1

Log Level

INFO

Mapping settings

Activity Input

flowInputs

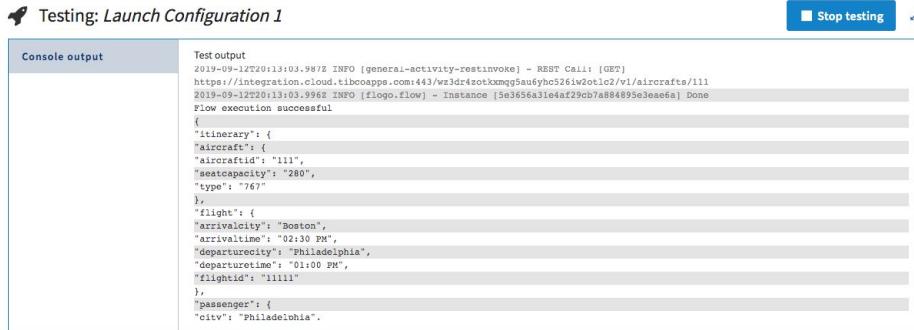
pathParams

a. reservationid

1 'AAAAAA11111'

Cancel

Next >



Testing: Launch Configuration 1

Stop testing

Console output

```

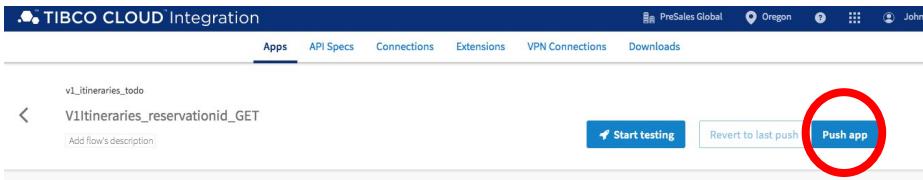
Test output
2019-09-12T20:13:03.987Z INFO [general-activity-restinvoker] - REST Call: [GET]
https://integration.cloud.tibcoapps.com:443/wz3dr4zotkxmnp5au6yhc5261w2otc2/v1/aircrafts/111
2019-09-12T20:13:03.996Z INFO [flogo.flow] - Instance [5e3656a31e4af29cb7a884895e3eae6a] Done
Flow execution successful
{
  "itinerary": {
    "aircraft": {
      "aircraftid": "111",
      "seatecapacity": "280",
      "type": "767"
    },
    "flight": {
      "arrivalcity": "Boston",
      "arrivaltime": "02:30 PM",
      "departurecity": "Philadelphia",
      "departuretime": "01:00 PM",
      "flightid": "11111"
    },
    "passenger": {
      "city": "Philadelphia"
    }
  }
}

```

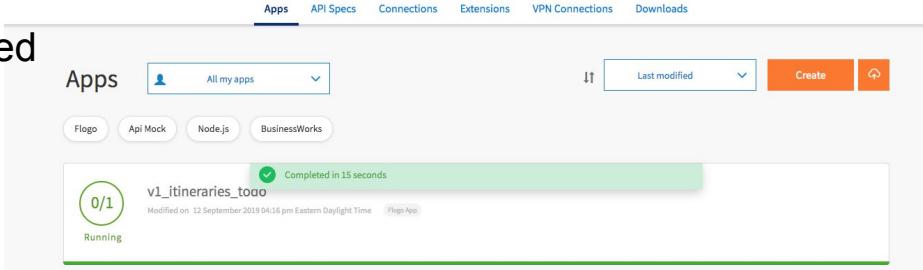
- Detailed Logging shows testing results

# Deploy API

- Select “Push App”



- Wait until Deployment completed
- Scale button can be used to scale applications up/down



Implement &  
Test APIs

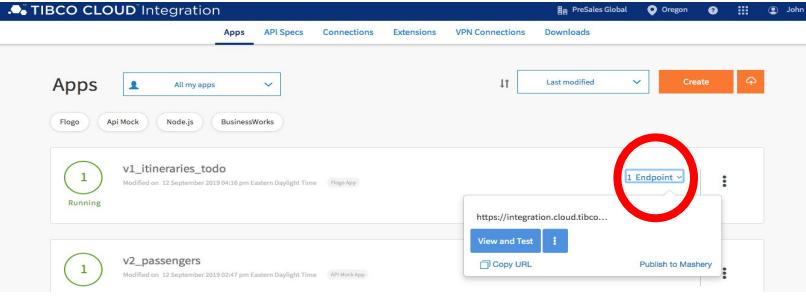
4

# Test Deployed API

4

Implement &  
Test APIs

- Test your live endpoint by selecting Endpoint, select View and Test.
- Enter AAAA11111 for reservationid input parameter and select Try it out!



Try it out

curl -X GET --header 'Accept: application/json' "https://integration.cloud.tibcoapps.com:443/hasaxx/baxx/c3uvbeyv432ped6/v1/itineraries/AAAA11111"

Request URL  
<https://integration.cloud.tibcoapps.com:443/hasaxx/baxx/c3uvbeyv432ped6/v1/itineraries/AAAA11111>

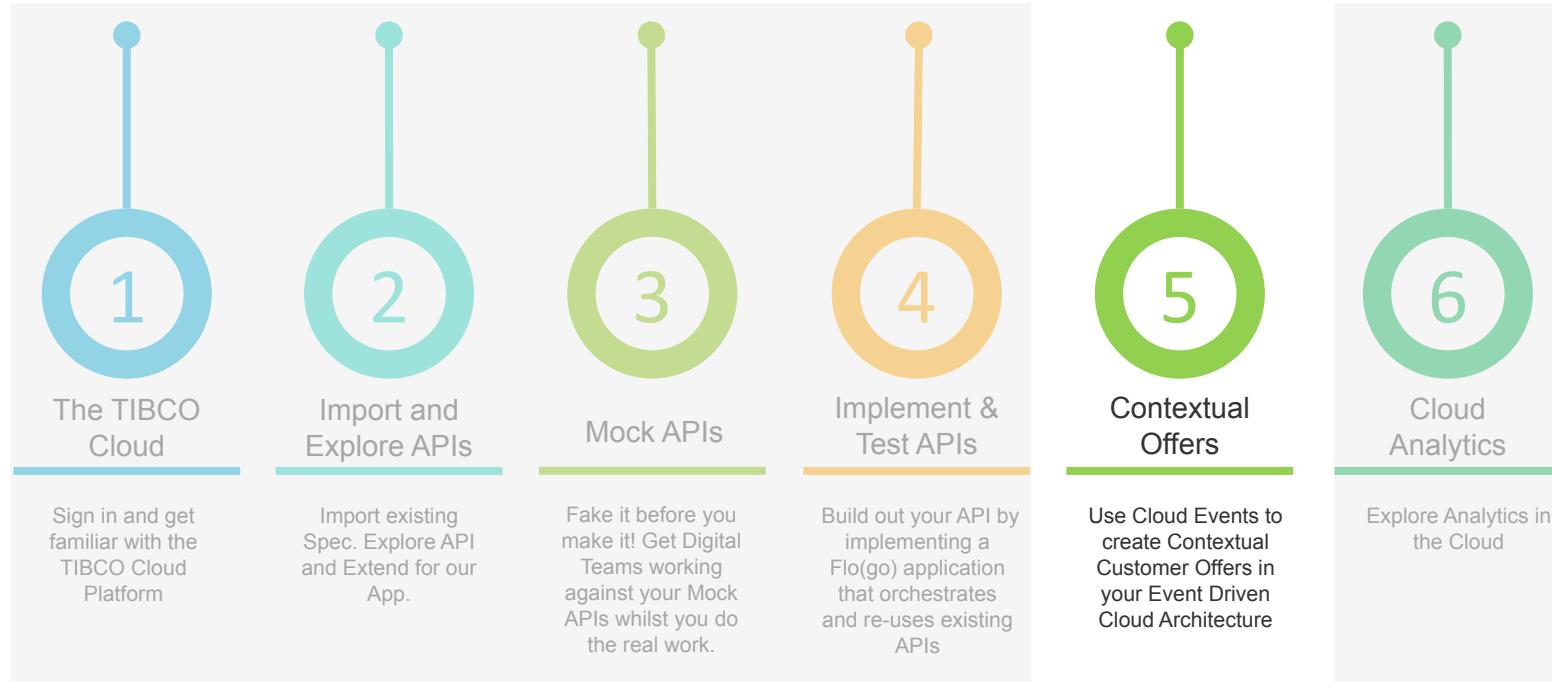
Response Body

```
  "aircraft": {
    "aircraftId": "011",
    "aircraftType": "737",
    "type": "737"
  },
  "flight": {
    "flightId": "011",
    "arrivalTime": "00:10 AM",
    "departureTime": "01:10 AM",
    "departure": "01:10 AM",
    "flight": "1111"
  }
}
```

Response Code  
200

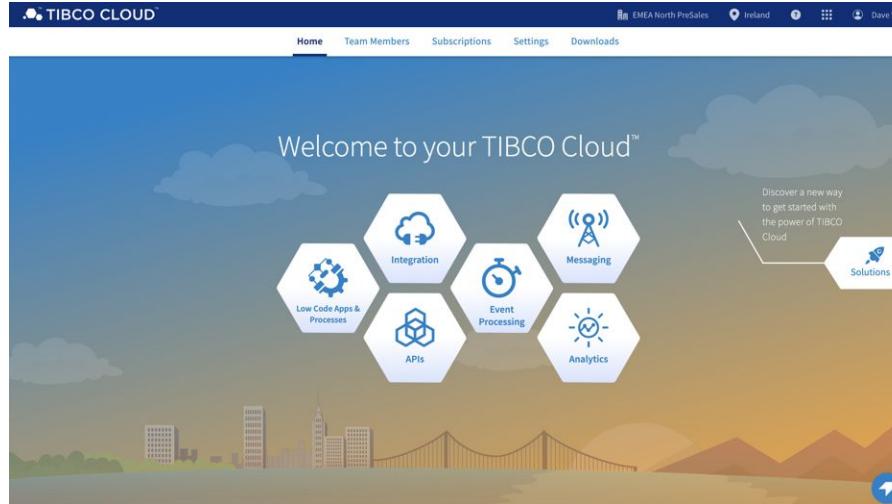
Response Headers

# Connected Customer Experience App



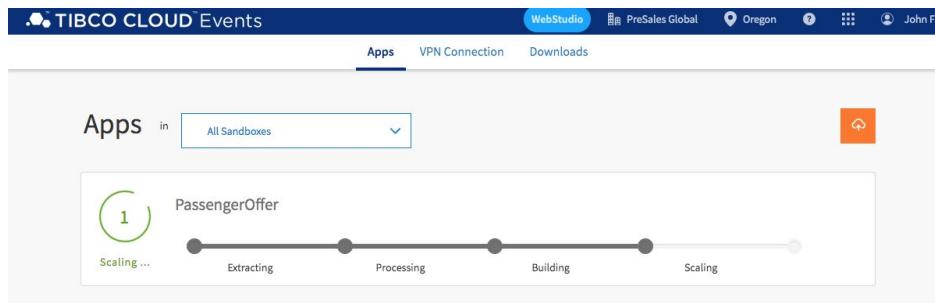
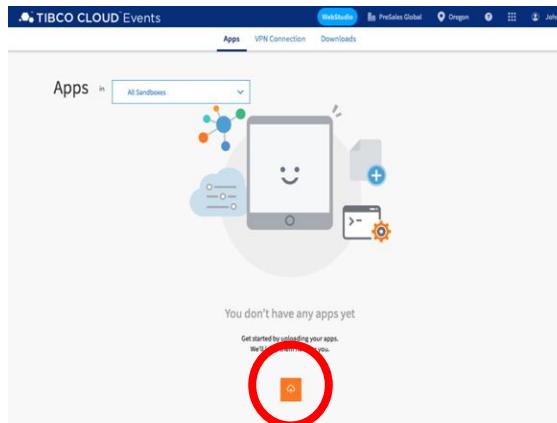
# Event Driven APIs to provide Contextual Offers

- We'll start with a prebuilt solution. This solution will create an API that makes an offer decision based on passenger loyalty and flight status.
- From the TIBCO Cloud Home Screen – select Event Processing, followed by “Events”



# Event Driven APIs to provide Contextual Offers

- The “You don’t have any apps yet” page should be opened.
- Select Upload, cloud with up-arrow.
- Navigate to where you extracted the connected customer experience artifacts and drag project/CloudEvents/PassengerOffer.ear into Drag and Drop and select Push.
- The PassengerOffer project files will be pushed to the cloud and started.



# Event Driven APIs to provide Contextual Offers

- Wait until the application is running
- Select 2 Endpoints and choose PassengerOffer Swagger link.
- Expand the GET Method and select “Try it out”
- Enter the values as shown and press “Execute”

The screenshot shows the TIBCO Cloud Events interface. At the top, there is a navigation bar with 'TIBCO CLOUD Events', 'Webhooks', 'PreSales Global', 'Oregon', and a user profile for 'John F.'. Below the navigation bar, there is a search bar with 'Apps' and a dropdown menu set to 'All Sandboxes'. A list of applications is displayed, with 'PassengerOffer' being the first item. The 'PassengerOffer' card shows it was created on '21 September 2018 09:03 am Eastern Daylight Time' and has '102 applications' and '11 Processes, 4 API'. It is marked as 'Running' and is associated with 'My Default Sandbox'. A red circle highlights the 'View and Test 2 Endpoints' button. Below this, a modal window for 'PassengerOffer - /swagger' is open, showing the Swagger UI with the URL <https://events.cloud.tibcoapps.com/f3e7b0cc-e165-496b-b259-bb5d646a50c0/>. The Swagger UI shows the 'Schemes' dropdown set to 'HTTP/HTTPS' and the 'Parameters' table for the '/Channels/HTTP' endpoint. The table includes fields for 'passengerid' (value: 11111), 'loyaltystatus' (value: GOLD), 'flightstatus' (value: DELAY3), '\_extid' (value: \_extid\_), '\_ts' (value: \_ts\_), '\_rn' (value: \_rn\_), and 'string' (value: string). At the bottom of the Swagger UI, there are 'Execute' and 'Clear' buttons.

# Event Driven APIs to provide Contextual Offers

- The offer, shown below, is Dinner At Chilis.
- Try different input options

passengerid	loyaltystatus	flightstatus
11111	BRONZE	DELAY1
11111	SILVER	DELAY1
11111	GOLD	DELAY1
11111	BRONZE	DELAY2
11111	SILVER	DELAY2
11111	GOLD	DELAY2
11111	BRONZE	DELAY3
11111	SILVER	DELAY3
11111	GOLD	DELAY3

Execute      Clear

Responses      Response content type: application/xml

Curl

```
curl -X GET "https://events.cloud.tibcoapps.com/f3e76bcc-e165-496b-b259-bb6d46a59c0f/Channels/HTTP/offers?passengerid=11111&loyaltystatus=GOLD&flightstatus=DELAY3" -H "accept: application/xml"
```

Request URL

```
https://events.cloud.tibcoapps.com/f3e76bcc-e165-496b-b259-bb6d46a59c0f/Channels/HTTP/offers?passengerid=11111&loyaltystatus=GOLD&flightstatus=DELAY3
```

Server response

Code	Details
200	Response body

```
<?xml version="1.0" encoding="UTF-8"?>
<event id="18">
<message>!!!! Offer 11111 Dinner At Chilis</message>
</event>
```

Download

Response headers

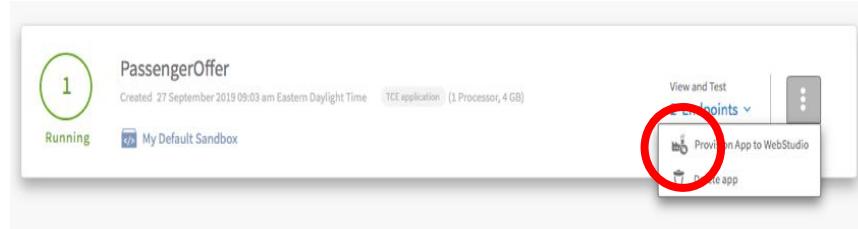
```
cache-control: max-age=0, no-cache, no-store, must-revalidate
content-length: 114
content-type: application/xml; charset=ISO-8859-1
date: Fri, 27 Sep 2019 14:46:19 GMT
expires: -1
pragma: no-cache
status: 200
strict-transport-security: max-age=31536000; includeSubDomains; preload
x-content-type-options: nosniff
x-frame-options: deny
x-xss-protection: 1; mode=block
```

Responses

Code	Description
200	200 success
400	400 Bad Request

# Updating Real-time Decisions

- We are going to use WebStudio to make changes to the Cloud Events decision table.
- To do this, we need to provision the PassengerOffer App to WebStudio.
- Click Back on your Web Browser to return to the home screen of TIBCO Cloud Events



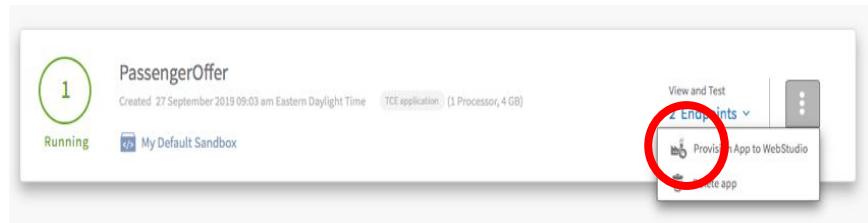
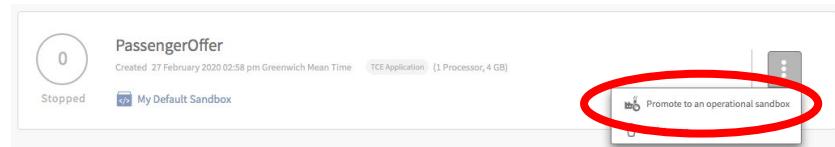
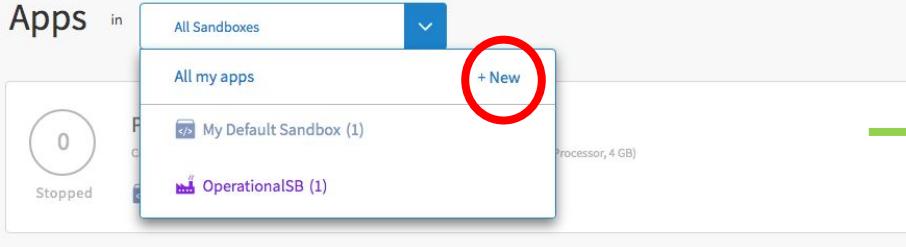
# Updating Real-time Decisions



Contextual Offers

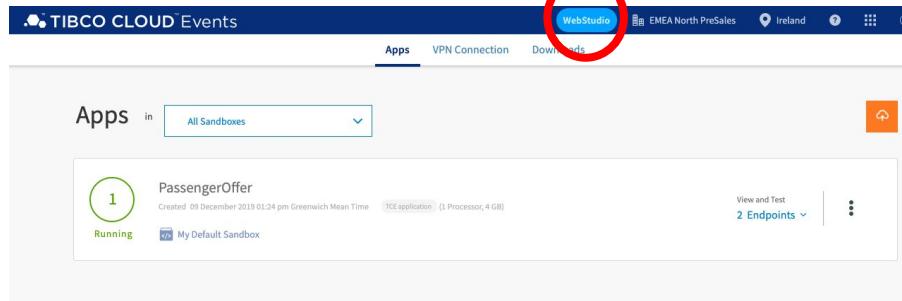
To use WebStudio the app needs to be running in an Operational Sandbox.

- Create an Operational Sandbox from the Sandboxes dropdown (Click on +New)
- From your running PassengerOffer App, select Promote to an operational sandbox. Choose the one you have just created
- If necessary start the App using Scale Instances
- Select Provision App to WebStudio from the dropdown and wait for dialog indicating the provisioning was successful.

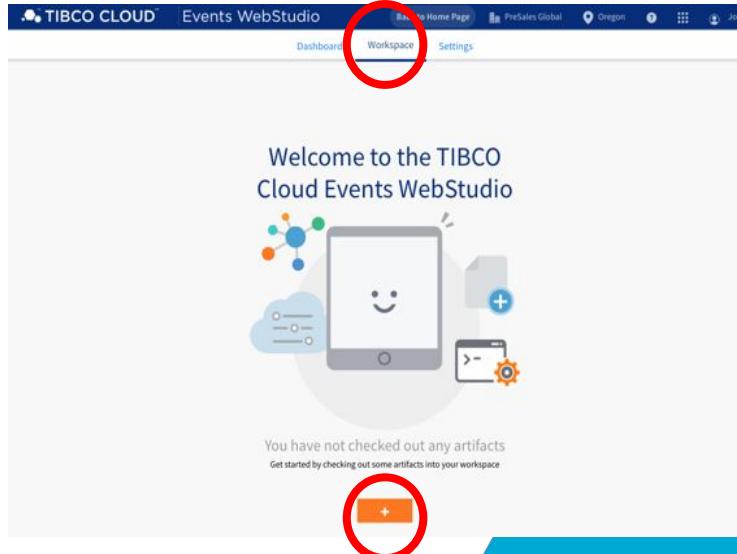


# Updating Real-time Decisions

- Select WebStudio. Navigate to Dashboard.
- The dashboard shows all recent activities.
- Navigate to Workspace.
- We are going to check out project artifacts and make changes. Select +



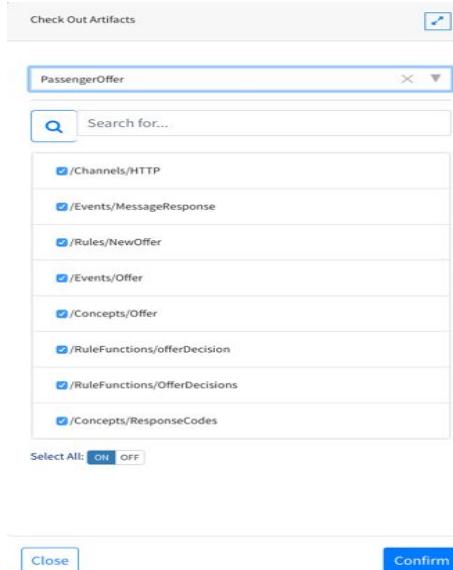
The screenshot shows the TIBCO CLOUD Events dashboard. At the top, there is a navigation bar with the TIBCO CLOUD logo, the word 'Events', and several tabs: 'WebStudio' (which is highlighted with a red circle), 'Apps', 'VPN Connection', and 'Downloads'. Below the navigation bar, there is a search bar with the text 'Apps in All Sandboxes'. The main content area displays a list of applications: 'PassengerOffer' (1 Running, 2 Endpoints), 'My Default Sandbox', and a 'View and Test' button. There is also a small orange up arrow icon in the top right corner of the dashboard area.



The screenshot shows the 'Events WebStudio' workspace. At the top, there is a navigation bar with the TIBCO CLOUD logo, the word 'Events WebStudio', and tabs: 'Dashboard' (which is the active tab, highlighted with a red circle), 'Workspace', and 'Settings'. The main content area features a welcome message: 'Welcome to the TIBCO Cloud Events WebStudio' with an illustration of a smartphone, a cloud, and a gear. Below this, a message says: 'You have not checked out any artifacts' with a sub-instruction: 'Get started by checking out some artifacts into your workspace'. At the bottom, there is a large orange button with a white plus sign, which is also highlighted with a red circle.

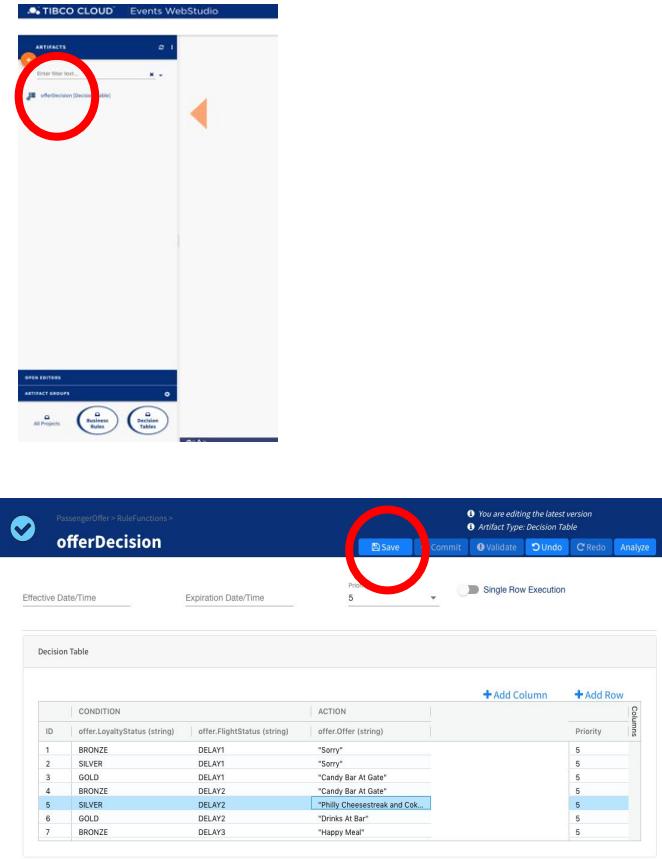
# Updating Real-time Decisions

- Select PassengerOffer and select Confirm.
- This will check out all PassengerOffer artifacts.



# Updating Real-time Decisions

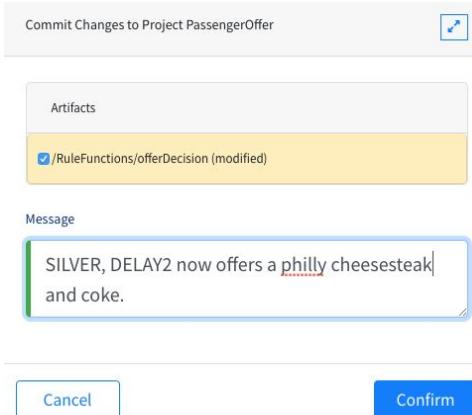
- We are going to make changes to the PassengerOffer decision table.
- Select offerDecision from ARTIFACTS list.
- In the offerDecision table scroll down to row 6 where SILVER, DELAY2 and “Happy Meal” is displayed.
- Change “Happy Meal” to “Philly Cheesesteak and Coke”.
- Select Save.



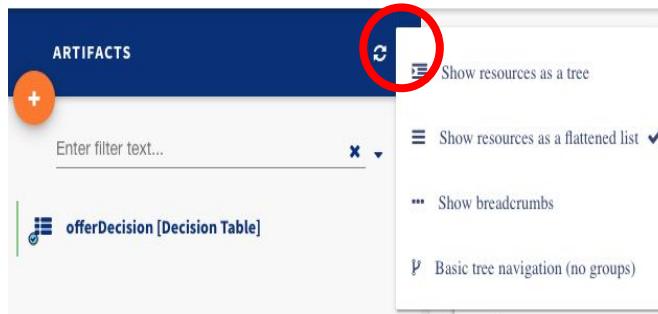
ID	CONDITION	ACTION	Priority
1	offer.LoyaltyStatus(string)	offer.Offer(string)	5
2	SILVER	"Sorry"	5
3	GOLD	"Candy Bar At Gate"	5
4	BRONZE	"Candy Bar At Gate"	5
5	SILVER	"Philly Cheesesteak and Coke"	5
6	GOLD	"Drinks At Bar"	5
7	BRONZE	"Happy Meal"	5

# Updating Real-time Decisions

- Commit your changes. Select Commit, add a message and select Confirm.

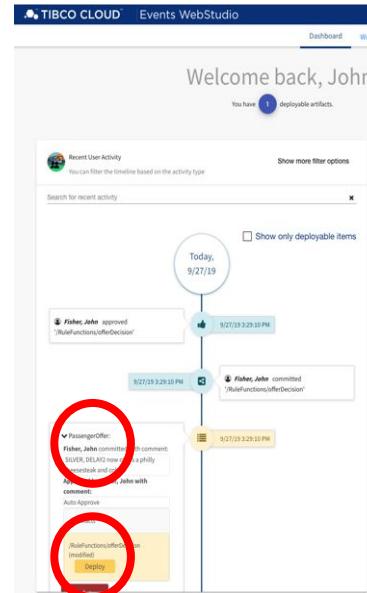
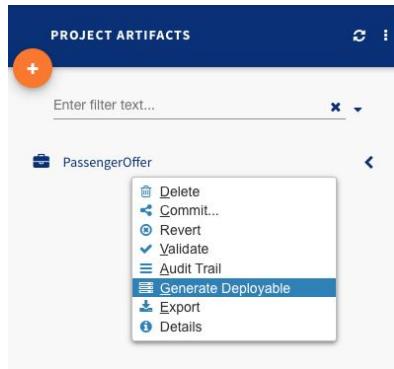


- Select show resources as tree.



# Deploying Real-time Decisions

- Right-click on PassengerOffer and select Generate Deployable.
- Select PassengerOffer and select Confirm.
- Select Dashboard, select >PassengerOffer from recent activity and select Deploy.



# Testing Real time Decisions



Contextual Offers

- Navigate to Cloud Events Apps Home Page and select 2 Endpoints PassengerOffer - /swagger.

The screenshot shows the TIBCO Cloud Events interface. On the left, the 'PassengerOffer' app is listed under 'Running' with a status of '1'. On the right, the 'Endpoints' section is highlighted with a red circle. Below, a Swagger UI window is open for the 'PassengerOffer' app, specifically for the '/Channels/HTTP' endpoint. The 'Parameters' section shows several fields: passengerId (1111), arrival (SILVER), loyaltyStatus (DELAY2), and flightStatus (extid\_1, ms\_, nm\_). The 'Response' section shows a JSON response with a 'message' field containing the value '1111 Philly Cheesesteak and Colon message'.

```
curl -X GET "https://events-cloud.tibcoapps.com/2e7fbcc-e151-49b0-9259-1e6d44a9cc12/Channels/HTTP/offers?passengerId=1111&loyaltyStatus=DELAY2" -H "accept: application/json"
```

Request URL:  
<https://events-cloud.tibcoapps.com/2e7fbcc-e151-49b0-9259-1e6d44a9cc12/Channels/HTTP/offers?passengerId=1111&loyaltyStatus=DELAY2>

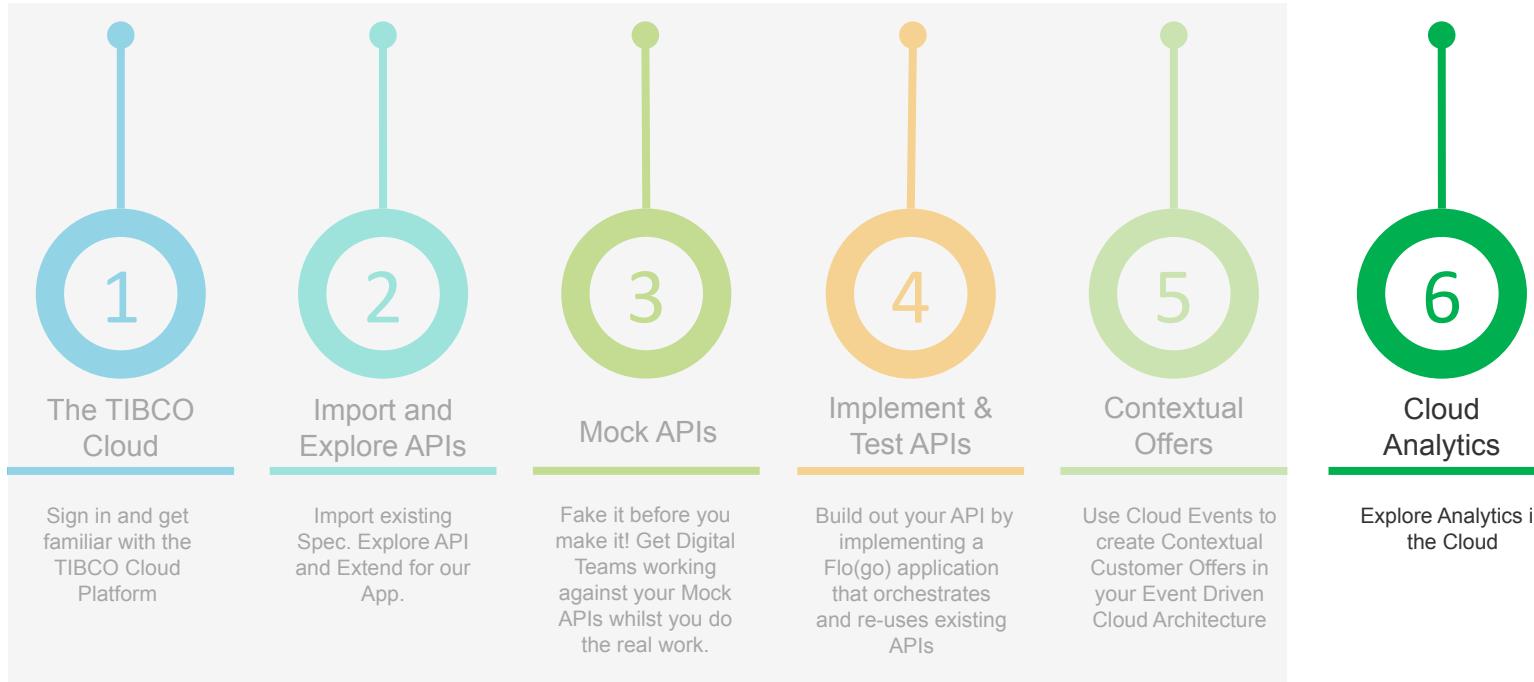
Server response

Code	Details
200	Response body

```
curl -X GET "https://events-cloud.tibcoapps.com/2e7fbcc-e151-49b0-9259-1e6d44a9cc12/Channels/HTTP/offers?passengerId=1111&loyaltyStatus=DELAY2" -H "accept: application/json"
{
  "message": "1111 Philly Cheesesteak and Colon message"
}
```

- Expand GET Method and select Try it out.
- Fill in the values as shown
- New offer should be shown

# Connected Customer Experience App

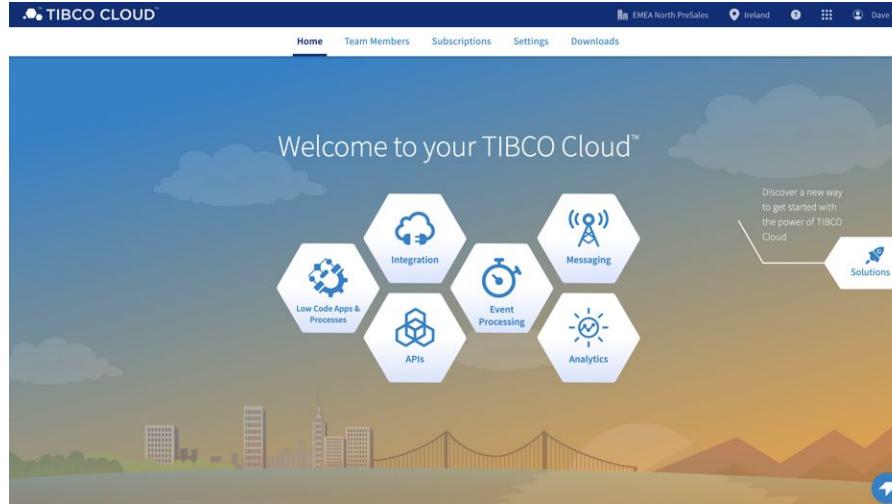


# Cloud Analytics



Cloud  
Analytics

- We'll start with a prebuilt Dashboard with embedded Data.
- From the TIBCO Cloud Home Screen – select Analytics Processing, followed by "Spotfire"

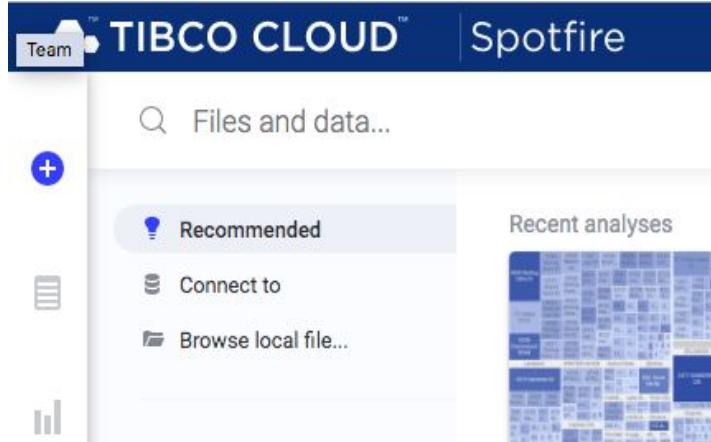


# Cloud Analytics



Cloud  
Analytics

- Select “Browse Local File”
- Navigate to where you extracted the connected customer experience artifacts and select project\Analytics\SFO GIS Analysis.dxp
- Select open.



# Cloud Analytics

- Dashboard shows the results of a customer satisfaction survey.
- Select a category such as Restaurant.
- You will see the geo map of the airport highlight only Restaurants.
- Click on the background to select all categories.
- Now under Top Promoters select art work. The map will reflect the selection.
- Click on the tabs to see Terminal View and Survey Data.
- To save this analysis click on Viewing and select Editing.

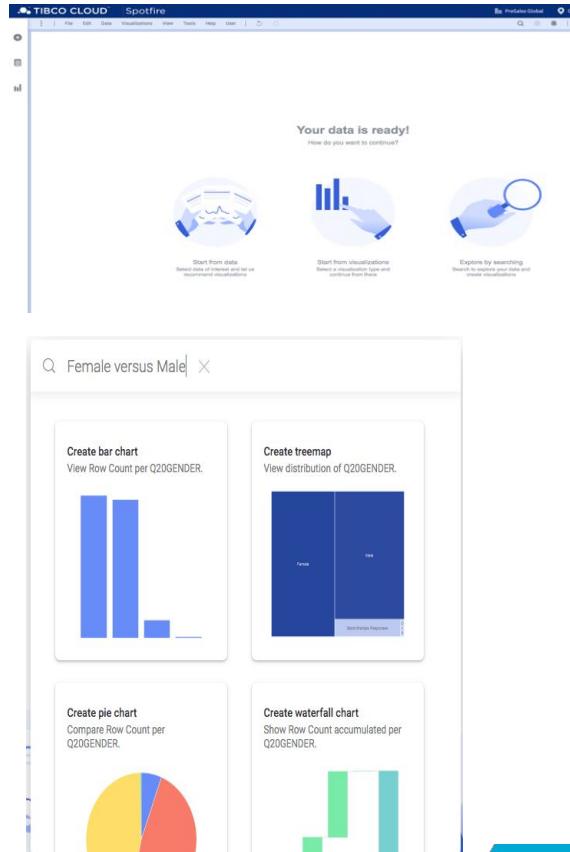


# Create New Visualisations

6

Cloud  
Analytics

- In this exercise you will be using natural language processing to create a pie chart to show survey Responses.
- Click on + to add a new tab.
- Select Explore By Searching
- In What are you interested in? type Female versus Male and select create pie chart.

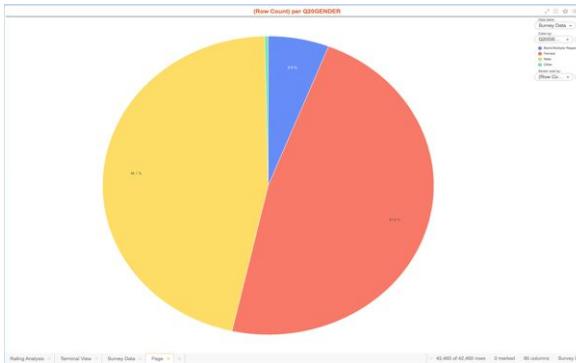


# Create New Visualisations

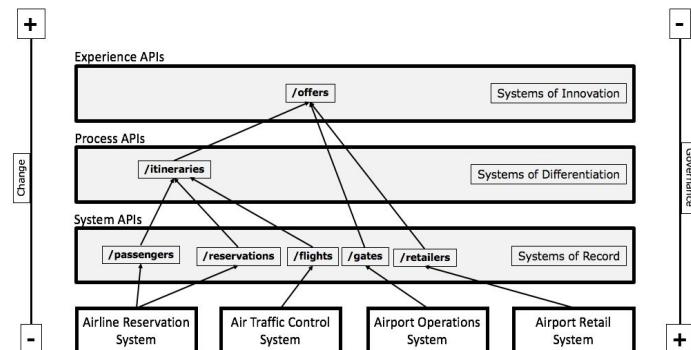
6

Cloud  
Analytics

- Try creating different analysis
- Right-Click and Create Details Visualisation



# Bringing it all back together

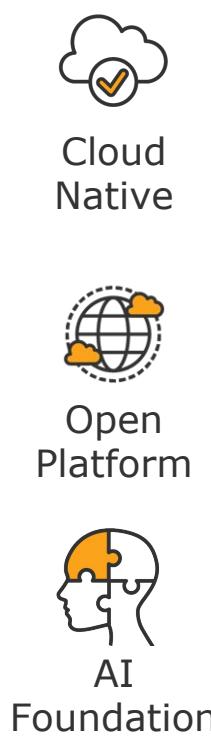


# Embracing Open Source, Event-Driven, Serverless, ML & More

Todd Bailey

Director Product  
Management

# Built on Strong Core Principles



- Re-architected core capabilities as cloud-native 'engines'
  - Deliver the same core cloud-native components across workloads
  - Significantly reduced or removed any proprietary dependencies
  - Devops/Cloudops/Dataops support delivered as open source
- 
- Provide customers the same tools used internally to extend capabilities
  - Open source delivery of new key capabilities like Project Flogo
  - Continued adoption of enterprise and emerging open source (e.g. Kafka, Pulsar)
  - Increasingly active engineering participation in larger scale OSS projects
- 
- Application of AI principles and technology across capabilities to enhance workflow and user productivity
  - Integration to leading AI frameworks both for real-time projects (Flogo with TensorFlow) as well as Data Science modeling and design
  - Increasing use of AI as a platform for developing new capabilities such as adaptive business logic and execution

# Inclusive approach to an open platform

*Best-of-Breed Innovation and Faster Time-to-Market*



Use preferred open source projects with enterprise support from TIBCO

Embrace open standards in your product development

Build on a foundation of leading open source software



# Inclusive approach to an open platform

*Best-of-Breed Innovation and Faster Time-to-Market*



## Messaging

- Commercial Support
- Bridge into TIBCO Messaging
- Management, Monitoring
- App-Dev support through Flogo

## AsyncAPI

- Handle, process APIs
- Expand to support consumption and app-dev patterns



## Project Flogo

- 100+ Active Contributors
- 800+ Contributions
- 1.2k+ GitHub Stars
- 56k+ Docker Pulls

## Expanding Capabilities

- Events, Streams, Rules
- API Microgateway
- CatalystML Specification

Customer Adoption  
**AIR FRANCE KLM**

**JABIL** **CAESARS ENTERTAINMENT**

**THINGSTREAM**

**TIBCO**



56,000+

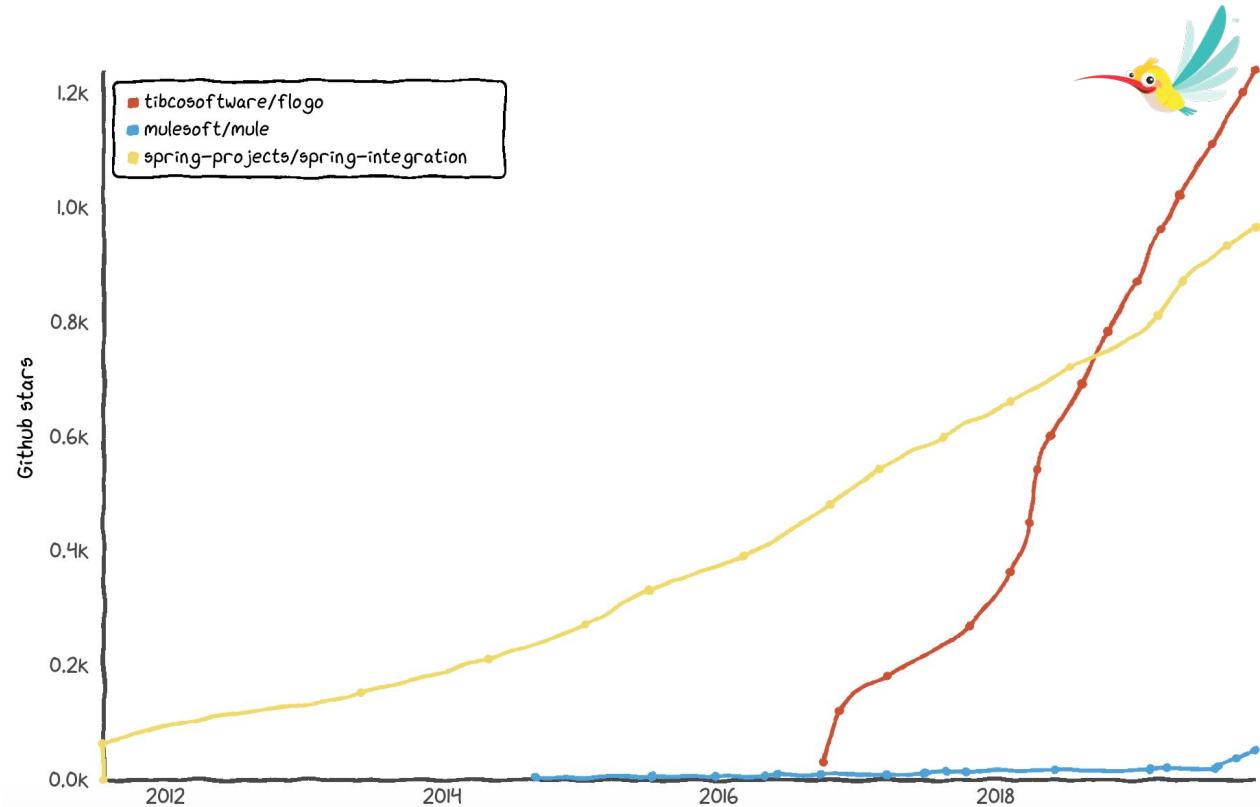


1,200+

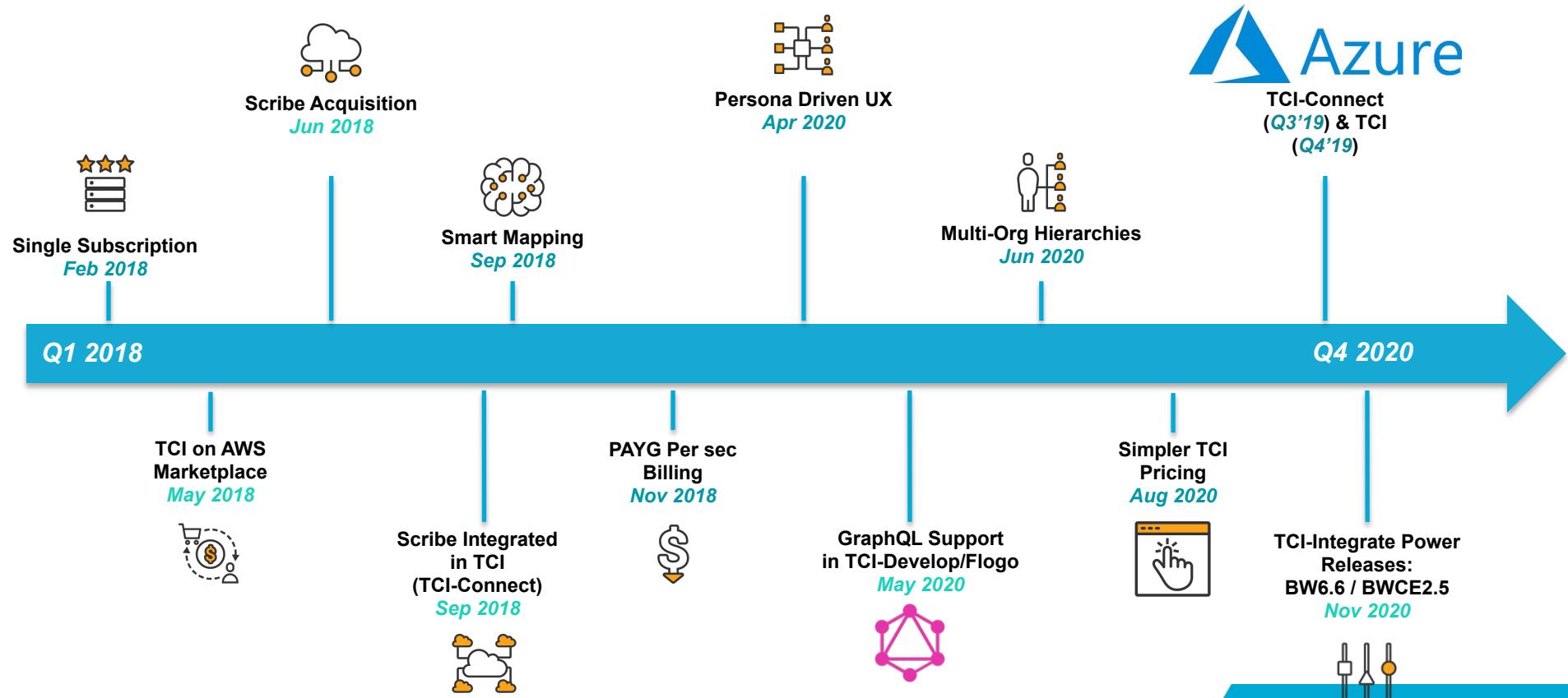


800+

Contribs



## Key Product Milestones



# Announcing TIBCO Cloud™ Integration on Azure

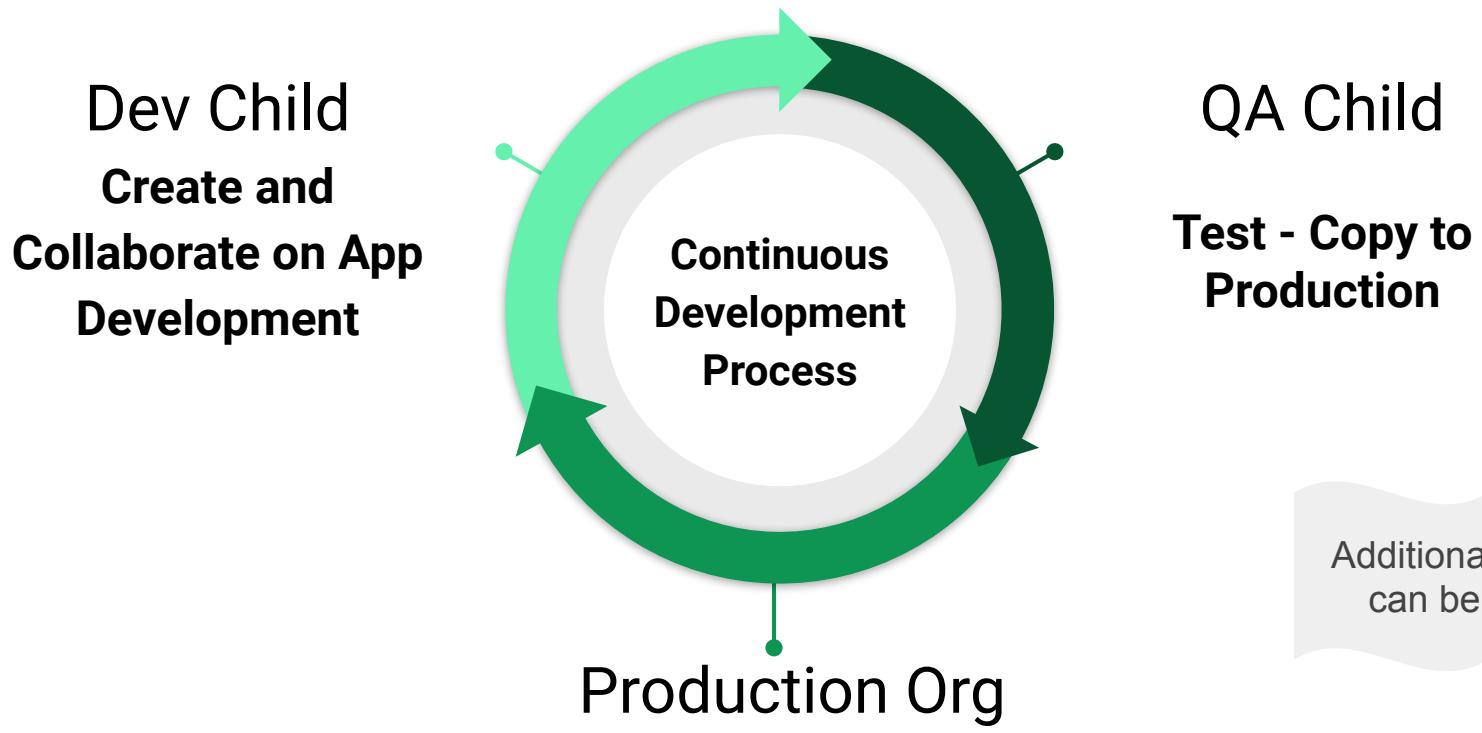
*TIBCO Cloud Integration capabilities now additionally available on Microsoft Azure*

Integrate your solutions all  
within a managed environment  
in *Microsoft Azure*

Also available on *Azure*  
*Marketplace*

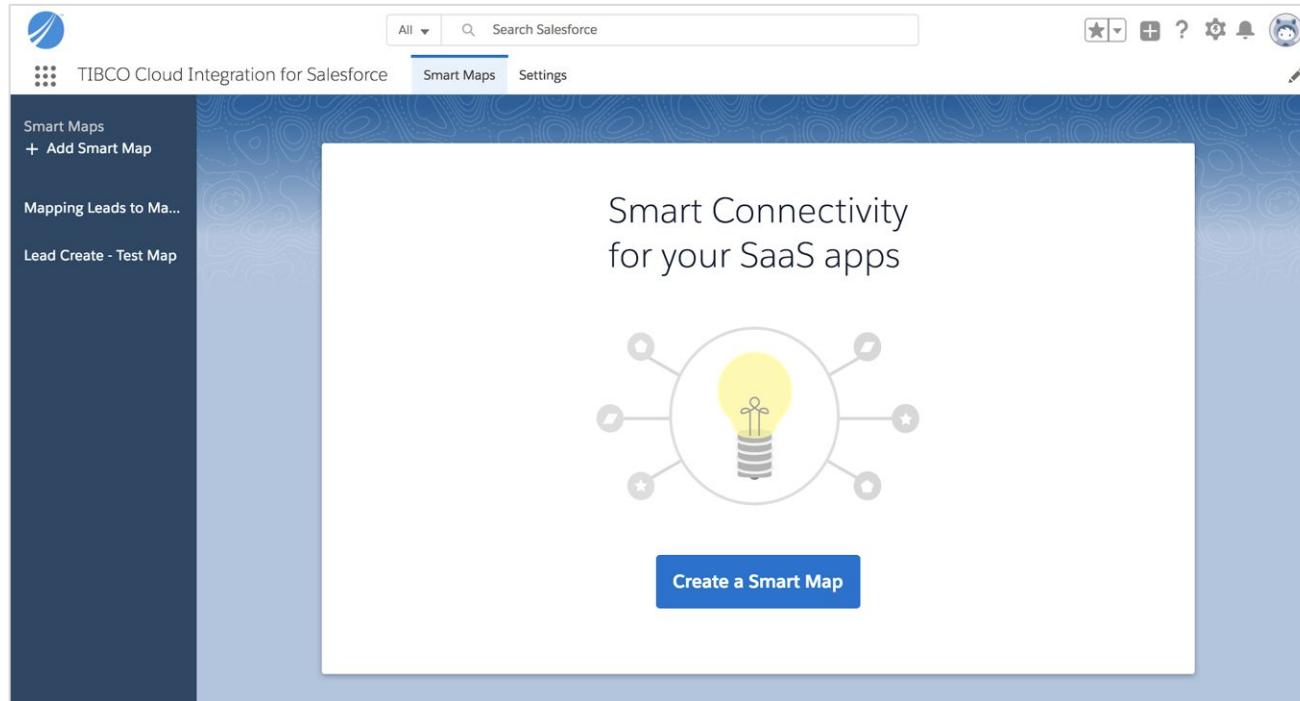


# Support for multi-org hierarchies



**Copy from QA Used to Replace the Operational Version**

# Smart Maps – Embedded Integration



***Natively embedded capabilities  
in popular SaaS Apps***

***Smart Mapping - powered by  
Machine Learning***

***Backed by a FaaS runtime for  
speed, scale and cost-efficiency***

***Install as an App in your  
Salesforce Instance, targeted for  
availability in other areas***

# TIBCO Cloud Integration for Serverless & FaaS



**AWS Lambda**



The **only** integration engine to  
run natively on AWS Lambda –  
and soon enough on Microsoft  
Azure Functions

## New Features & Functionality



## First-class support for GraphQL

Native GraphQL trigger; OOTB tooling to implement server that auto-generates: trigger config, flows as resolvers, and data mappings based on GraphQL schema

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# Embracing Modern API & App Dev

## TIBCO Cloud Integration - *Flogo Apps*

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### gRPC®

First-class support & tooling for implementing gRPC services; OOTB gRPC Client activity



### Open API™ Specification

Swagger 2.0 support & tooling for API-first development



## AWS Lambda

Deploy apps to AWS Lambda & bind to any event source; Integrated CloudWatch for logging; Native S3 & API Gateway Triggers



## Kafka, MQTT & Avro

Built-in Kafka, MQTT & TIBCO Cloud Messaging connectivity for event pub/sub;  
Avro Schema Registry for Kafka  
Pub/Sub, Built-in Avro serialization/deserialization

# Cloud-Native, Event-Driven & Serverless TIBCO Cloud Integration - *Flogo Apps*



## Monitoring

OpenTracing support & OOTB Jaeger tracer; Prometheus support for Metrics; Open API & custom extensions support



## Run Anywhere

Official support for CNCF certified Kubernetes, OpenShift, AWS Lambda, ECS, EKS, Fargate, Google Cloud Run, GKE, Azure Container Instances, AKS, PCF(PAS)



## Application Config Management

Externalize Flogo app config using Consul, AWS Parameter Store, Kubernetes Config Maps & Secrets

# TIBCO Cloud Integration - *BusinessWorks Apps*

## Migrate, build once and deploy anywhere

### BusinessWorks

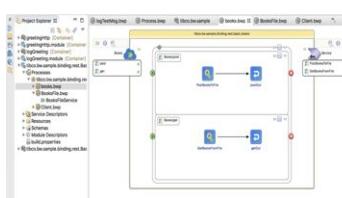
5.x

### Application

Migration  
Process



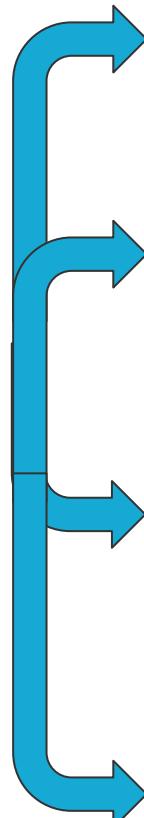
Migration Wizard



BW Studio Design Time



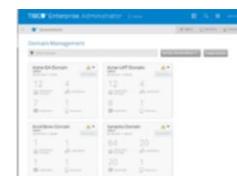
**Maven™**



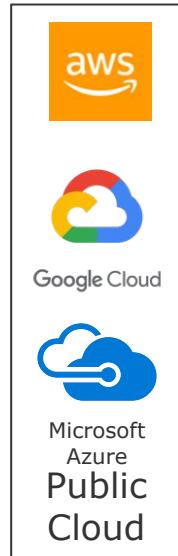
CLOUD FOUNDRY

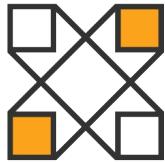


Pivotal  
Cloud Foundry®



AppSpace  
(On Premise)





**Dependency Viewer,  
Unused Resource  
Management**



**Unit Testing  
& Mocking**



**JSON  
Transformation**



**HTTP 2.0**

Key new features

## TIBCO Cloud Integration - *BusinessWorks Apps*



**Hot Updates to  
Business  
Parameters**



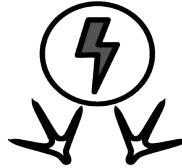
**Distributed  
Tracing &  
Advanced  
Process**



**JWT Auth**



**bw-tooling  
GitHub**



## Memory Optimization

Reduce JVM heap utilization with Memory Saving Mode for BW Engine

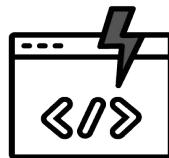


## Fast Startups

Faster startups for multi-module apps, Improved Restarts

# Turbo-charged Runtime Engine

TIBCO Cloud Integration - *BusinessWorks Apps*



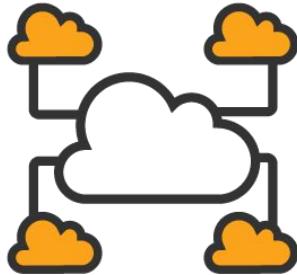
## Faster XML Processing

Enhanced XML Processing Layer



## Minified EAR

Significant reduction in EAR size



## Scribe as part of TIBCO Cloud Integration

- Native user experience and navigation
- Simplified onboarding to broader TIBCO Cloud capabilities
- Functional Parity including hierarchical organizations

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## Key new features TIBCO Cloud Integration *Scribe Apps*

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Dynamic  
Conditional  
Mappings



TIBCO Cloud™  
AuditSafe  
Connector



Quickbooks  
Online Connector



REST Web Services  
Connector Update



CRM / CDS  
Multi-Factor Auth  
Connector Update



## Locally Deployed Dev Portal

Fully cloud-native and on-premises developer portal for APIs



## Cloud-native API gateway

Deploy completely containerized in private cloud



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Key new features in Full Lifecycle API Management

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## Async API support

Handle and process based on the Async OSS standard



## GraphQL and gRPC

Advanced support for emerging protocols



Challenges

# Data and Integration challenges slow digital businesses and increase operational issues

## High Complexity



Information assets are broad, complex, and diverse

## Rapid Pace Change



Business and technology landscapes change rapidly

## IT Dependency



High IT backlog unable to satisfy requirements quickly

# In the current economy cloud and SaaS are key.

## **The opportunity to tap cloud to take digital leadership is now**

*Everything from systems to processes to support models is ripe for digital transformation. It's time to jump on the cloud*

The top Emerging technologies to watch 2017 to 2021 — Forrester

## **The rate of cloud adoption is increasing**

*70% of all software, services, and technology spend by 2020 will be cloud based*

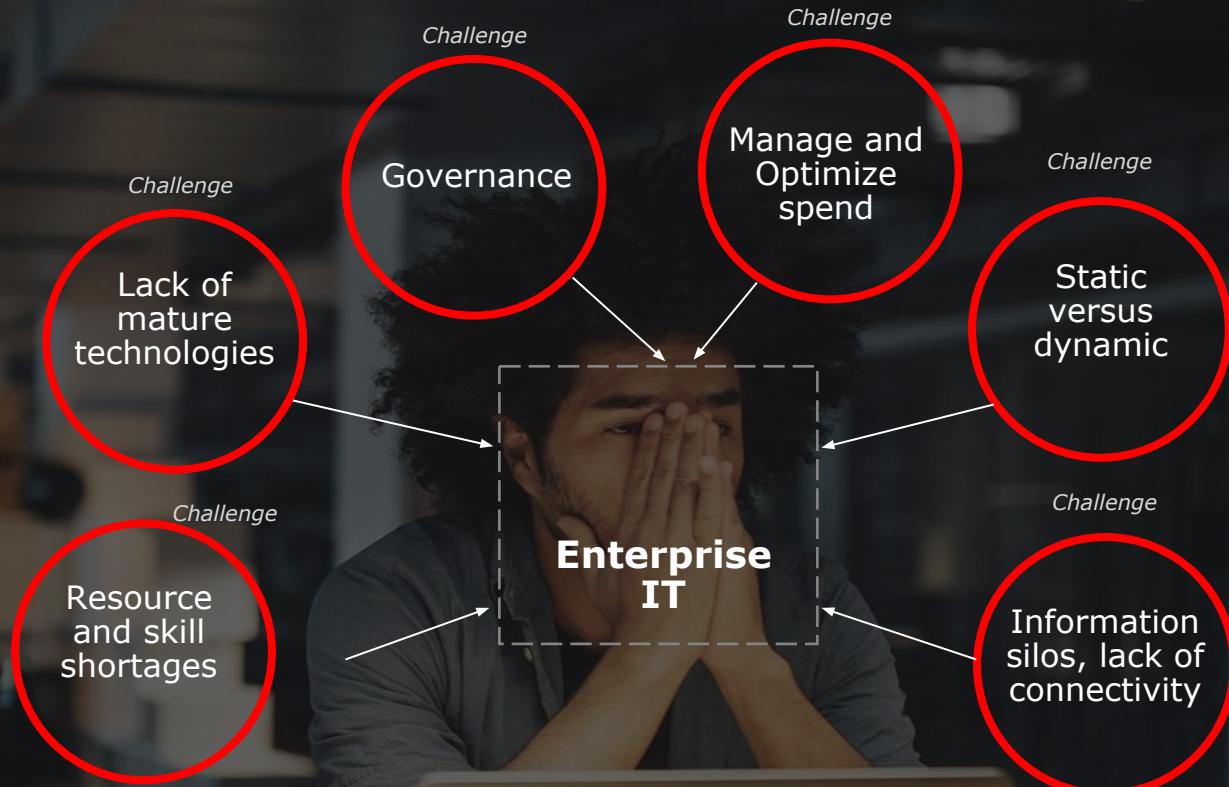
FutureScape — IDC

## **Cloud transition is a requirement for digital transformation**

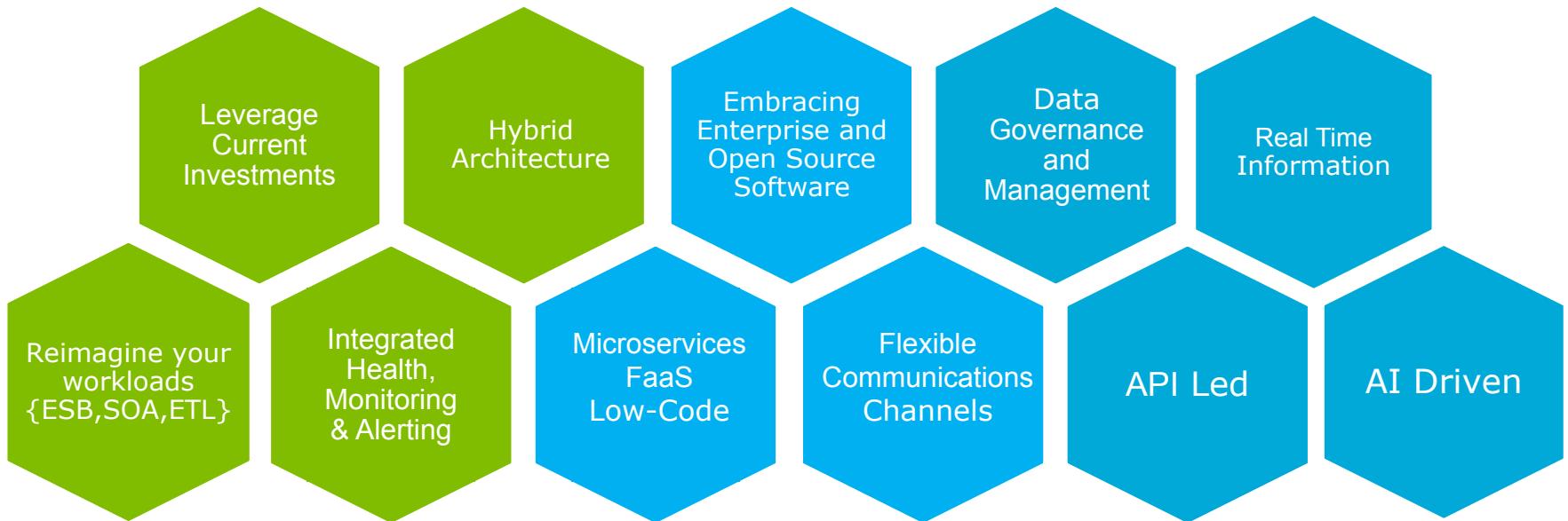
*Cloud is more than just a technology transformation driver — it's a business transformation accelerator*

Cloud Powers The New Connected Economy — Forrester

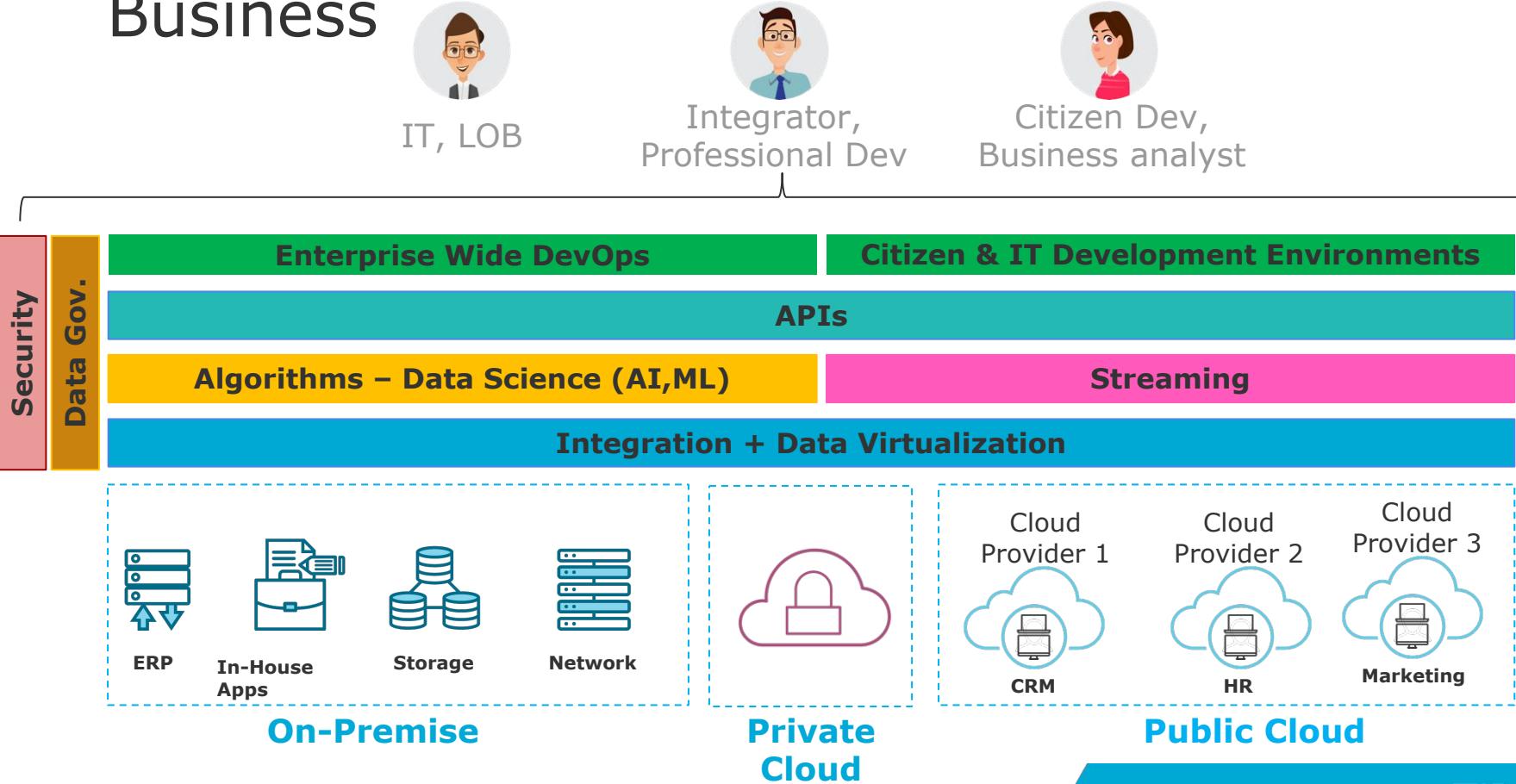
# The challenges are real



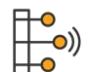
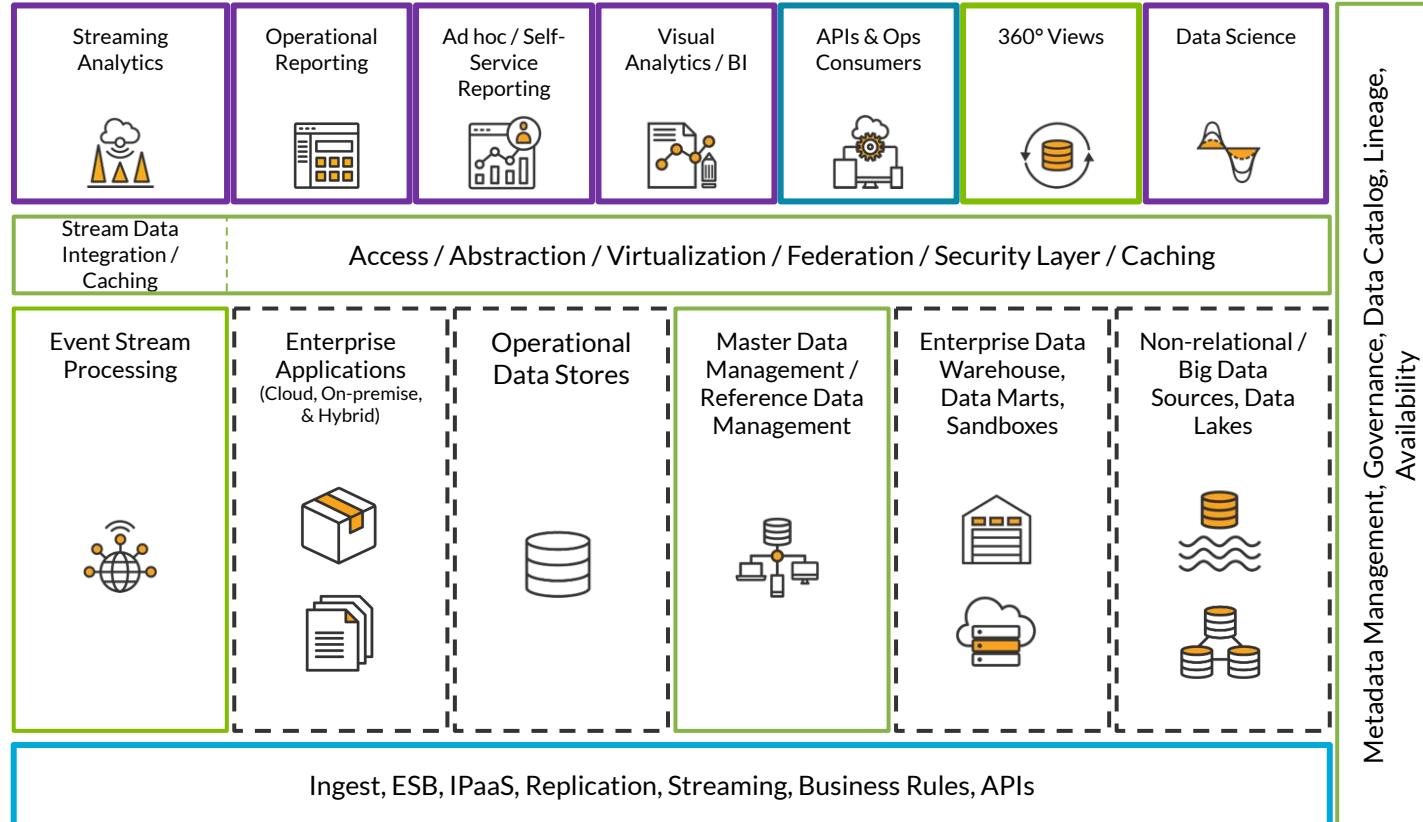
# Architecture Foundations for a Digital Business



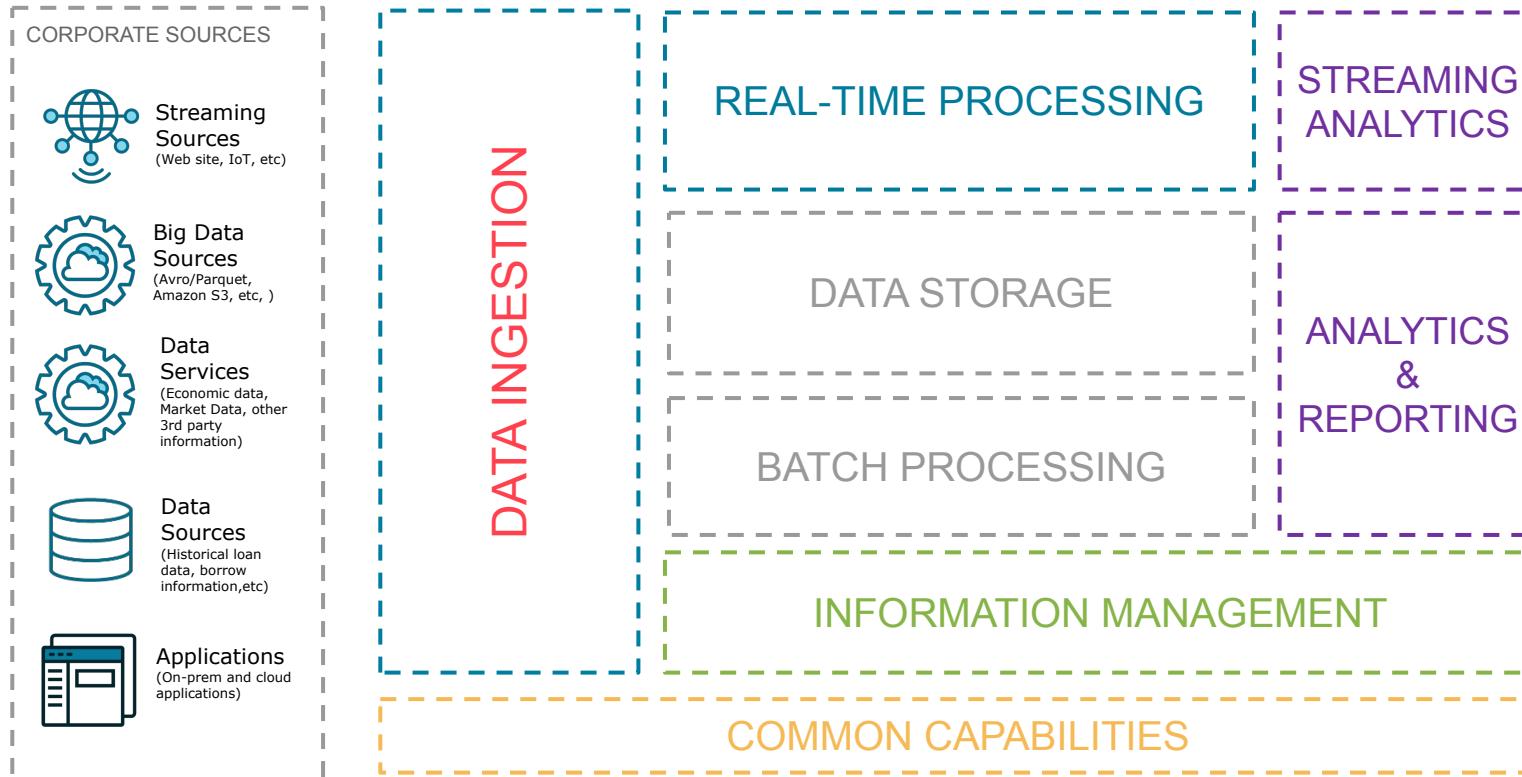
# TIBCO Reference Architecture for Digital Business



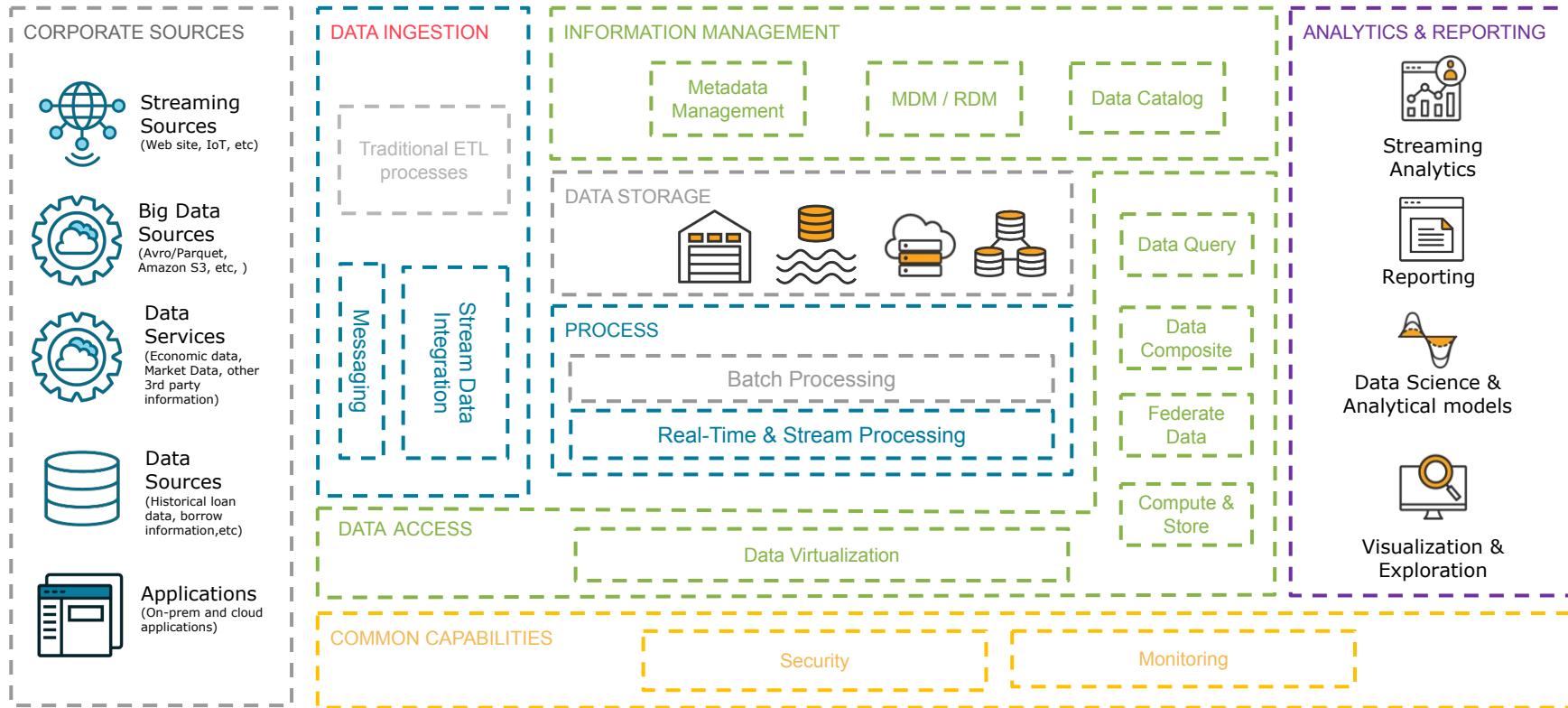
# Modern Data Management Platform Capabilities



# Reference Architecture for Data

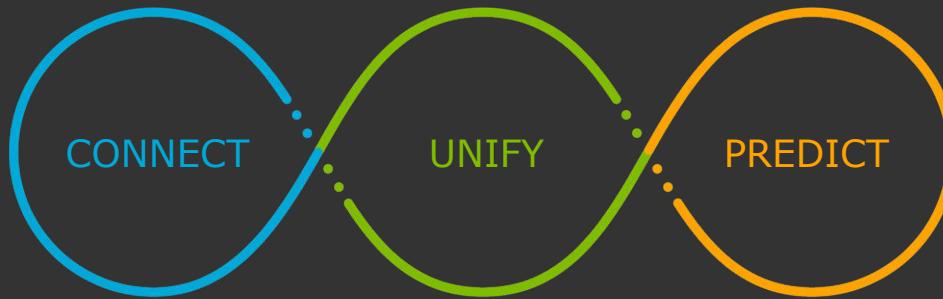


# Reference Architecture for Data



# Your journey of innovation does not stop here...

**TIBCO** provides the most optimal path to digital innovation



A single platform takes you from **connected** to **intelligent**.

# Thank you

