

# Embedding Power BI Reports with ASP.NET MVC



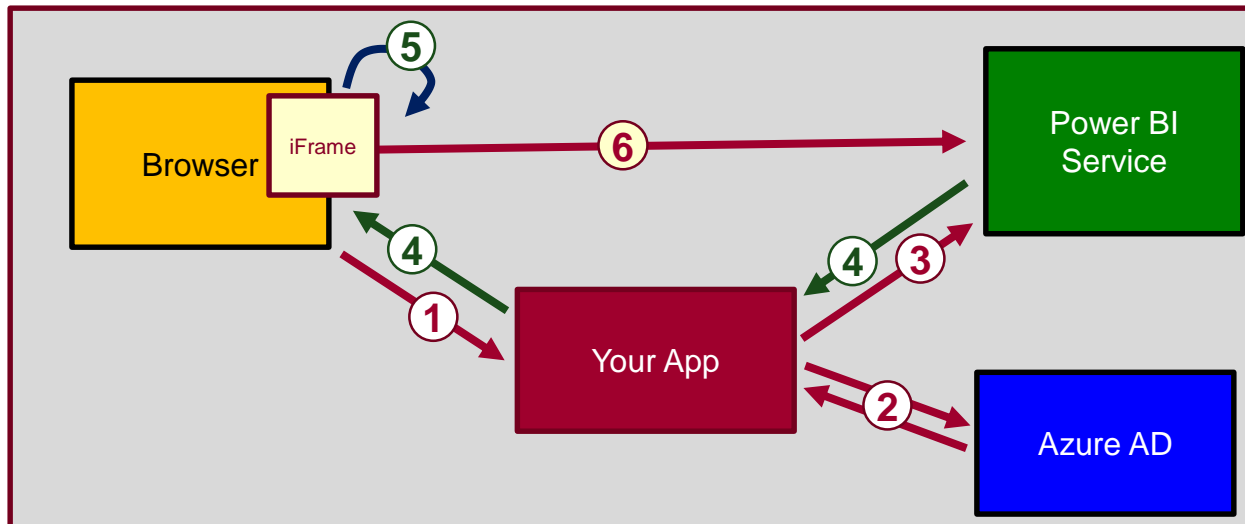
# Agenda

- Creating a ASP.NET MVC Project for Power BI Embedding
- Leveraging the Power BI Embedding Onboarding Experience
- Retrieving Embedding Data using the Power BI Service API
- Generating and Managing Embed Tokens
- Writing Client-side Code to Embed and Interact with an Embedded Report



# Power BI Embedding – The Big Picture

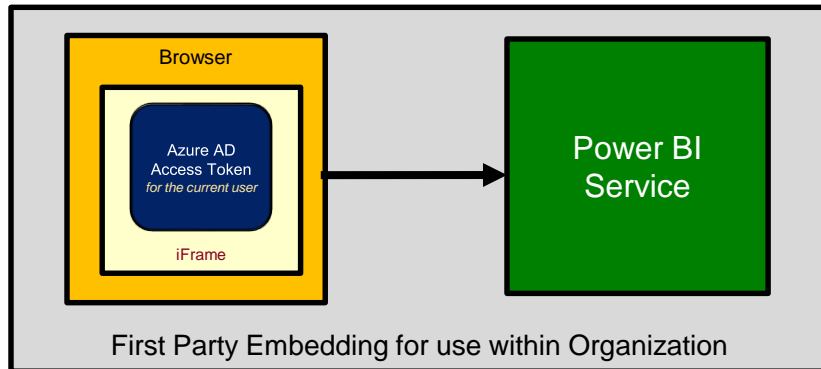
- User launches your app using a browser
- App authenticates with Azure Active Directory and obtains access token
- App uses access token to call to Power BI Service API
- App retrieves data for embedded resource and passes it to browser.
- Client-side code uses Power BI JavaScript API to create embedded resource
- Embedded resource session created between browser and Power BI service



# First Party Embedding vs Third Party Embedding

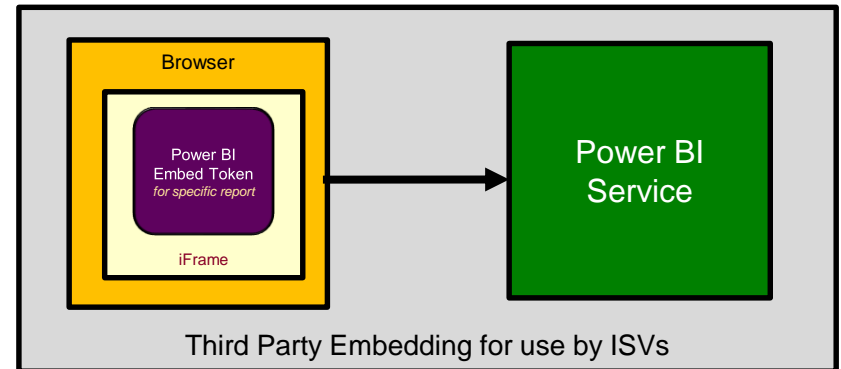
## First Party Embedding

- Known as **User-Owns-Data** Model
- All users require a Power BI license
- Useful in corporate environments
- App authenticates as current user
- Your code runs with user's permissions
- User's access token passed to browser

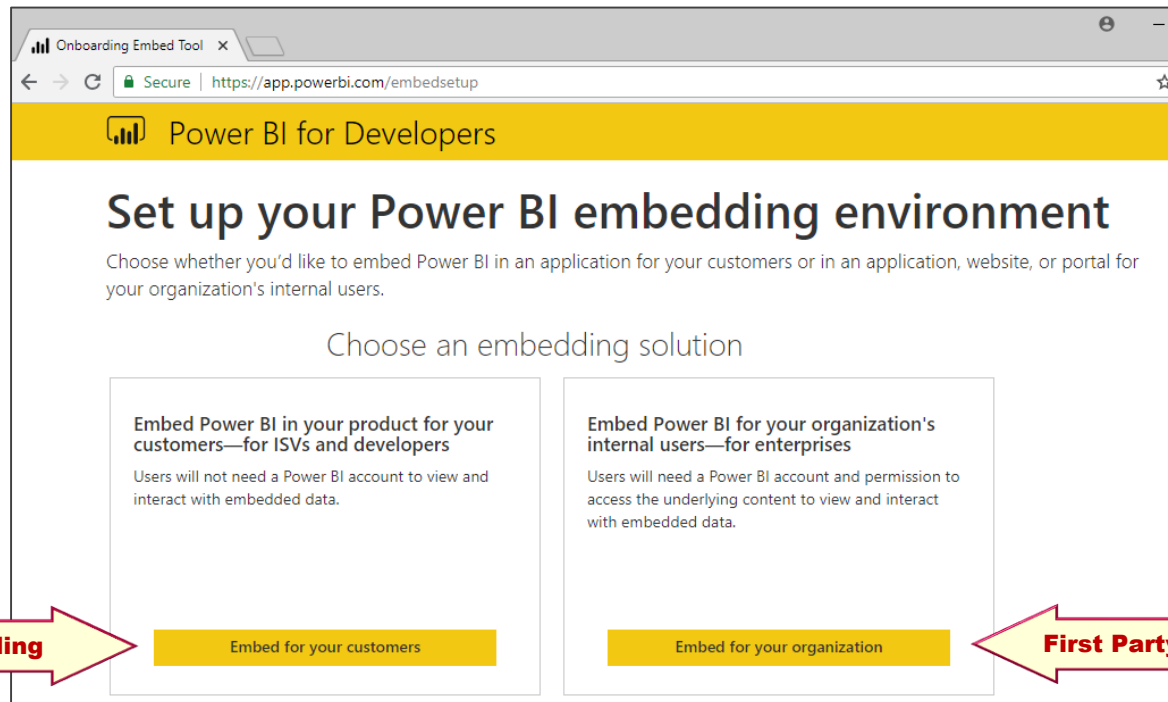


## Third Party Embedding

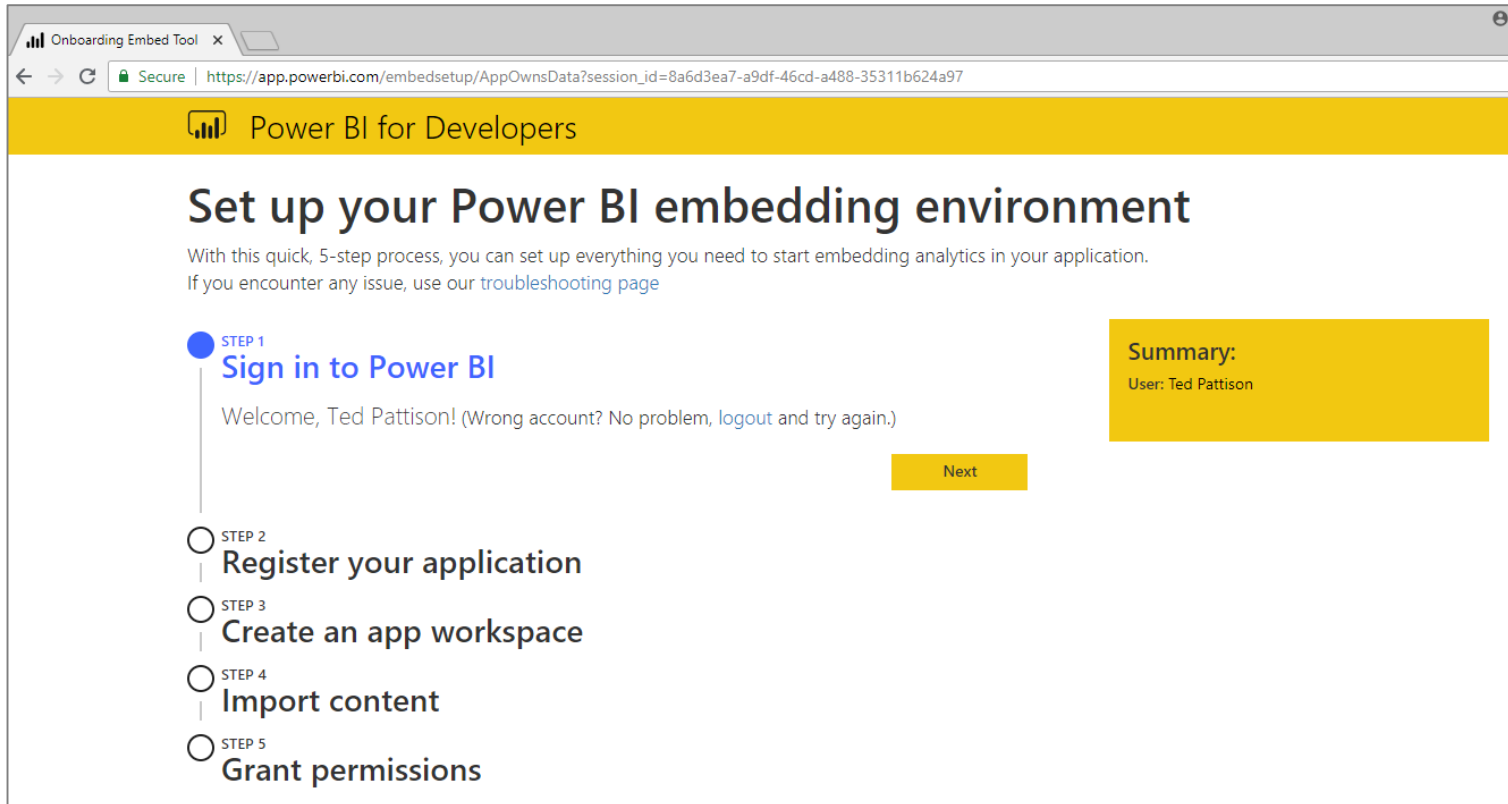
- Known as **App-Owns-Data** Model
- No users require Power BI license
- Useful for commercial applications
- App authenticates with master user account
- Your code runs with admin permissions
- Embed token passed to browser



**<https://app.powerbi.com/embedsetup>**



# App-Owns-Data Experience – Step 1



The screenshot shows a web browser window with the title "Onboarding Embed Tool". The address bar shows a secure connection to [https://app.powerbi.com/embedsetup/AppOwnsData?session\\_id=8a6d3ea7-a9df-46cd-a488-35311b624a97](https://app.powerbi.com/embedsetup/AppOwnsData?session_id=8a6d3ea7-a9df-46cd-a488-35311b624a97). The page header is "Power BI for Developers". The main heading is "Set up your Power BI embedding environment", followed by a subtext: "With this quick, 5-step process, you can set up everything you need to start embedding analytics in your application. If you encounter any issue, use our [troubleshooting page](#)".

The onboarding process is shown as a vertical list of five steps:

- STEP 1** (Active): **Sign in to Power BI**  
Welcome, Ted Pattison! (Wrong account? No problem, [logout](#) and try again.)  
[Next](#)
- STEP 2: Register your application
- STEP 3: Create an app workspace
- STEP 4: Import content
- STEP 5: Grant permissions

A yellow summary box on the right contains the text: "Summary: User: Ted Pattison".



# App-Owns-Data Experience – Step 2

STEP 2

## Register your application

Register your application with Azure AD to allow your application access to the Power BI REST APIs and to set resource permissions for your app. You can change this later in the Microsoft Azure portal. [Learn more](#)

Application Name

Enter a display name to identify your application in Azure

API access

Select the APIs and the level of access your app needs. You can change these settings later in the Azure portal.

[Learn more](#)

☐ Select All

Read APIs ⓘ

- ☒ Read All Datasets
- ☒ Read All Dashboards
- ☒ Read All Reports
- ☒ Read All Groups
- ☒ Read All Workspaces
- ☒ Read All Capacities

Write APIs ⓘ

- ☐ Read and Write All Datasets
- ☐ Read and Write All Dashboards
- ☐ Read and Write All Reports
- ☐ Read and Write All Workspaces
- ☐ Read and Write All Capacities

Create APIs ⓘ

- ☐ Create Content

By clicking Register, you agree to the [terms of use](#)

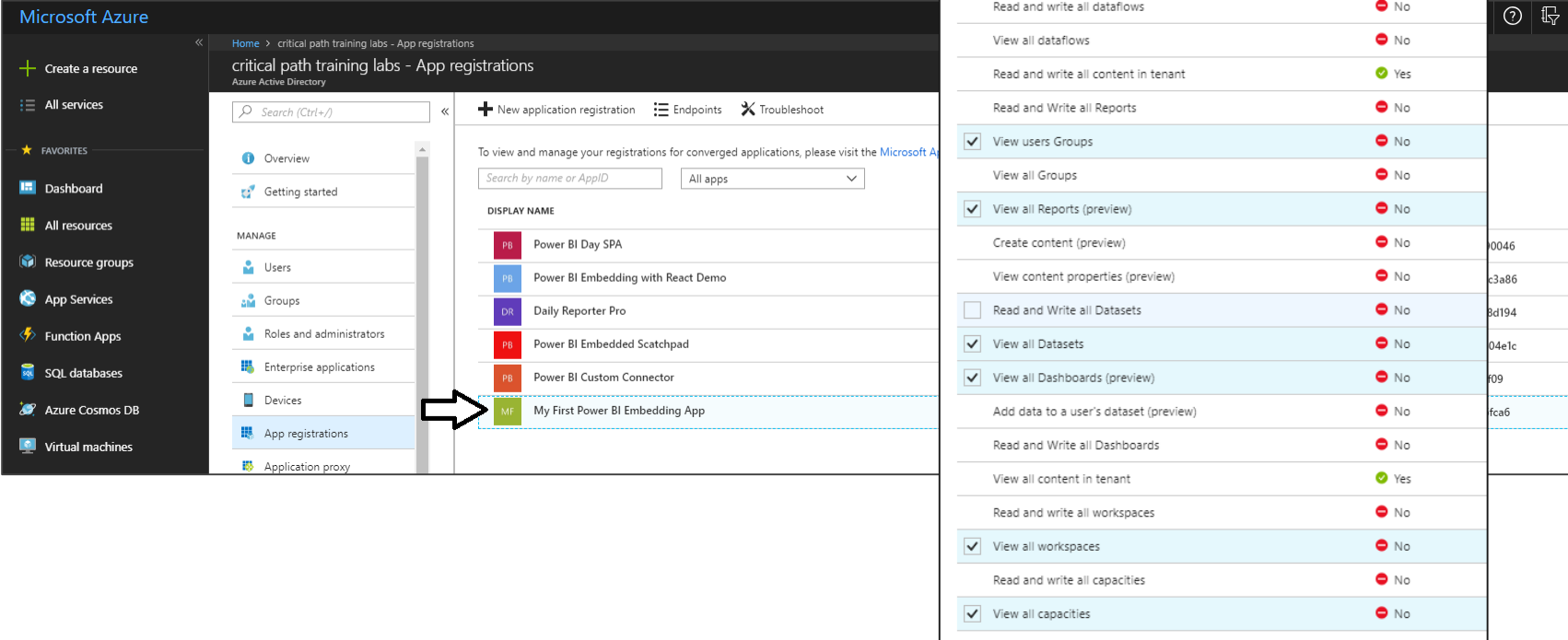
Register





# What Just Happened?

- The Onboarding Tool created a new Azure AD App
  - Configured as a Native app as opposed to a Web app / API



The screenshot displays the Microsoft Azure portal interface. On the left, the navigation pane shows 'App registrations' selected under 'MANAGE'. The main pane shows a list of applications. An arrow points to the application 'My First Power BI Embedding App' (ME). To the right, a detailed view of the 'DELEGATED PERMISSIONS' for this app is shown, indicating it requires admin consent.

DELEGATED PERMISSIONS		REQUIRES ADMIN
<input type="checkbox"/>	Read and write all dataflows	No
<input type="checkbox"/>	View all dataflows	No
<input type="checkbox"/>	Read and write all content in tenant	Yes
<input type="checkbox"/>	Read and Write all Reports	No
<input checked="" type="checkbox"/>	View users Groups	No
<input type="checkbox"/>	View all Groups	No
<input checked="" type="checkbox"/>	View all Reports (preview)	No
<input type="checkbox"/>	Create content (preview)	No
<input type="checkbox"/>	View content properties (preview)	No
<input type="checkbox"/>	Read and Write all Datasets	No
<input checked="" type="checkbox"/>	View all Datasets	No
<input checked="" type="checkbox"/>	View all Dashboards (preview)	No
<input type="checkbox"/>	Add data to a user's dataset (preview)	No
<input type="checkbox"/>	Read and Write all Dashboards	No
<input type="checkbox"/>	View all content in tenant	Yes
<input type="checkbox"/>	Read and write all workspaces	No
<input checked="" type="checkbox"/>	View all workspaces	No
<input type="checkbox"/>	Read and write all capacities	No
<input checked="" type="checkbox"/>	View all capacities	No





# App-Owns-Data Experience – Step 3

STEP 1  
Sign in to Power BI

STEP 2  
Register your application

STEP 3  
Create an app workspace

STEP 4  
Import content

STEP 5  
Grant permissions

In order to start adding content to Power BI, you need to create an app workspace. You can manage your app workspace in the Power BI web service. [Learn more](#)

Name your app workspace

Create app workspaceSkip

Summary:

User: Ted Pattison

Application: My First Power BI Embedding App

Application ID:  
122e858a-1b70-40f8-aa5e-de0ff4f6fca6



# App-Owns-Data Experience – Step 4

✓ STEP 1  
Sign in to Power BI

✓ STEP 2  
Register your application

✓ STEP 3  
Create an app workspace

**STEP 4  
Import content**

○ STEP 5  
Grant permissions

To embed Power BI content in your app, you can use a sample report to get started, or upload your own .pbix file.

☒ Sample Power BI report

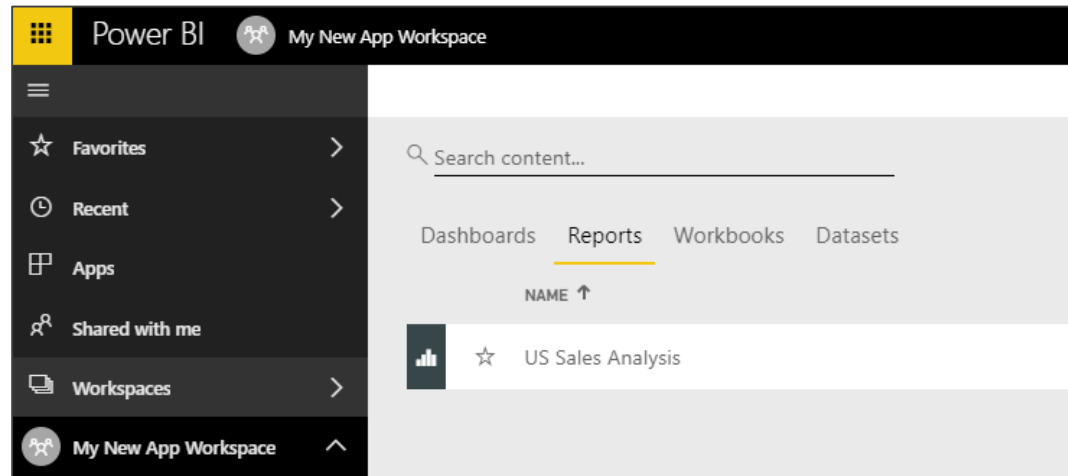
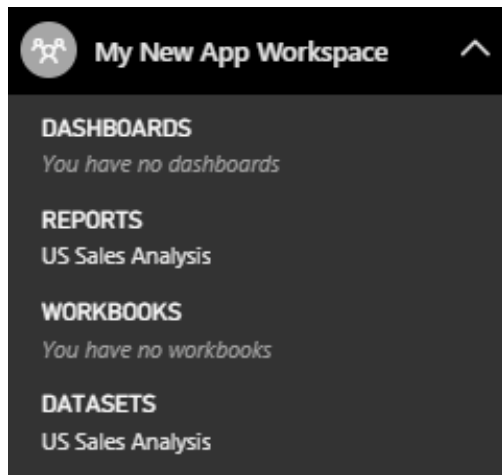
☐ Upload .pbix file

**Summary:**  
User: Ted Pattison  
Application: My First Power BI Embedding App  
Application ID:  
122e858a-1b70-40f8-aa5e-de0ff4f6fca6  
Workspace: My New App Workspace  
Workspace ID:  
ed3bd652-89c9-4262-8ac0-4757b38ebf69



# What Just Happened?

- The Onboarding Tool created a new Power BI App Workspace
  - It also uploaded a PBIX file so there is already one dataset and one report
  - New app workspace is not automatically associated with a dedicated capacity



# App-Owns-Data Experience – Step 5

- ✓ STEP 1  
| Sign in to Power BI
- ✓ STEP 2  
| Register your application
- ✓ STEP 3  
| Create an app workspace
- ✓ STEP 4  
| Import content
- STEP 5  
| **Grant permissions**

Grant permissions for your application to access the selected APIs with the signed in account.  
[Learn how to grant permissions directly in Azure Portal.](#)

Grant permissions

## Summary:

User: Ted Pattison

Application: My First Power BI Embedding App

Application ID:

122e858a-1b70-40f8-aa5e-de0ff4f6fca6

Workspace: My New App Workspace

Workspace ID:

ed3bd652-89c9-4262-8ac0-4757b38ebf69


Report ID:

a5c37d6c-f26d-4565-a5e7-19fe1a3fcb79



# Granting Permissions to the App


- Users must consent to the permissions requested by an app

 STEP 5

## Grant permissions

Grant permissions for your application to access the selected APIs with the signed in account.  
[Learn how to grant permissions directly in Azure Portal.](#)

Grant permissions

 Microsoft

tedp@bizappsummit.onmicrosoft.com

## Permissions requested

My First Power BI Embedding App

This app would like to:

- ✓ View users Groups
- ✓ View all Reports (preview)
- ✓ View all Datasets
- ✓ View all Dashboards (preview)
- ✓ View all workspaces
- ✓ View all capacities
- ✓ Sign you in and read your profile

Accepting these permissions means that you allow this app to use your data as specified in their terms of service and privacy statement. **The publisher has not provided links to their terms for you to review.** You can change these permissions at <https://myapps.microsoft.com>. [Show details](#)

Cancel Accept



# All Great Experiences Must Come to an End



Power BI for Developers

## Set up your Power BI embedding environment

Success! Your Power BI embedding environment is ready to use.

Download the sample app to explore your embedded content with all the relevant information from the environment you've set up, pre-configured and ready to test.

If you encounter any issue, use our [troubleshooting page](#)

Download Sample App



### Power BI Developer Center

Find all the resources you need in one place, including documentation, APIs, tutorials, and more!



### Summary:

User: Ted Pattison

Application: My First Power BI Embedding App

Application ID:

122e858a-1b70-40f8-aa5e-de0ff4f6fca6

Workspace: My New App Workspace

Workspace ID:

ed3bd652-89c9-4262-8ac0-4757b38ebf69

Report ID:

a5c37d6c-f26d-4565-a5e7-19fe1a3fcb79

Download Sample App



# User-Owns-Data Onboarding Experience

- Users-Owns-Data Experience is similar to App-Owns-Data experience
  - Users-Owns-Data Experience allows you to create app a **Native** or **Web app / API**
  - App create as Web app / API must be created with valid Reply URL
  - Process configures Azure app with a secret key known as Application secret
  - Application secret allows app to authenticate with AAD using authorization code grant flow

**Summary:**

User: Ted Pattison

Application: My User-Owns-Data App

Application ID:

70c57777-bb2f-4079-bc4d-aca03c51dc78

Application secret:

ASXQUJIO2AaLuwoIEbEbSXCQx/+4Km45MJ...

Workspace: My First Party App

Workspace ID:

cbe63eb7-bb17-4dae-8815-9159c9ae9859

Report ID:

19d3e036-1fd2-49f4-b218-a5330bf2f4c4

Download Sample App

