



# POWER BI WORLD TOUR

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# Welcome!

## Power BI User Group (PUG)

San Francisco



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## Power BI for Developers

Reza Rad

Consultant, Author, Trainer

Warning:

This session includes some **Codes** and **Scripts**



# This is the session for you IF

- Confused with REST API, JavaScript API, Embedded...



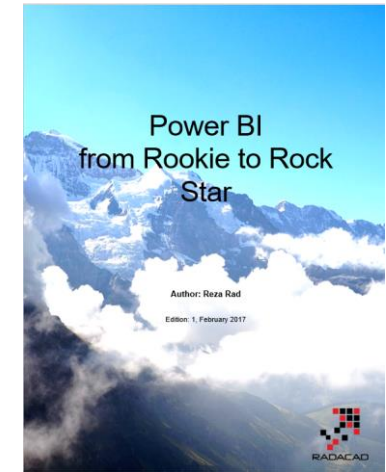
# After this Session: You?

- Mind Blown




# Reza Rad


Consultant, Trainer  
RADACAD



DW/BI Consultant, Mentor, Trainer, Speaker  
Microsoft Data Platform MVP  
Author of SQL Server and BI books  
Author of **Power BI from Rookie to Rock Star book**  
Power BI Trainer for thousands of Developers  
Microsoft Certified Trainer  
Microsoft Certified Professional  
Co-Leader of NZ BI User Group

 /rezarad

 @rad\_reza

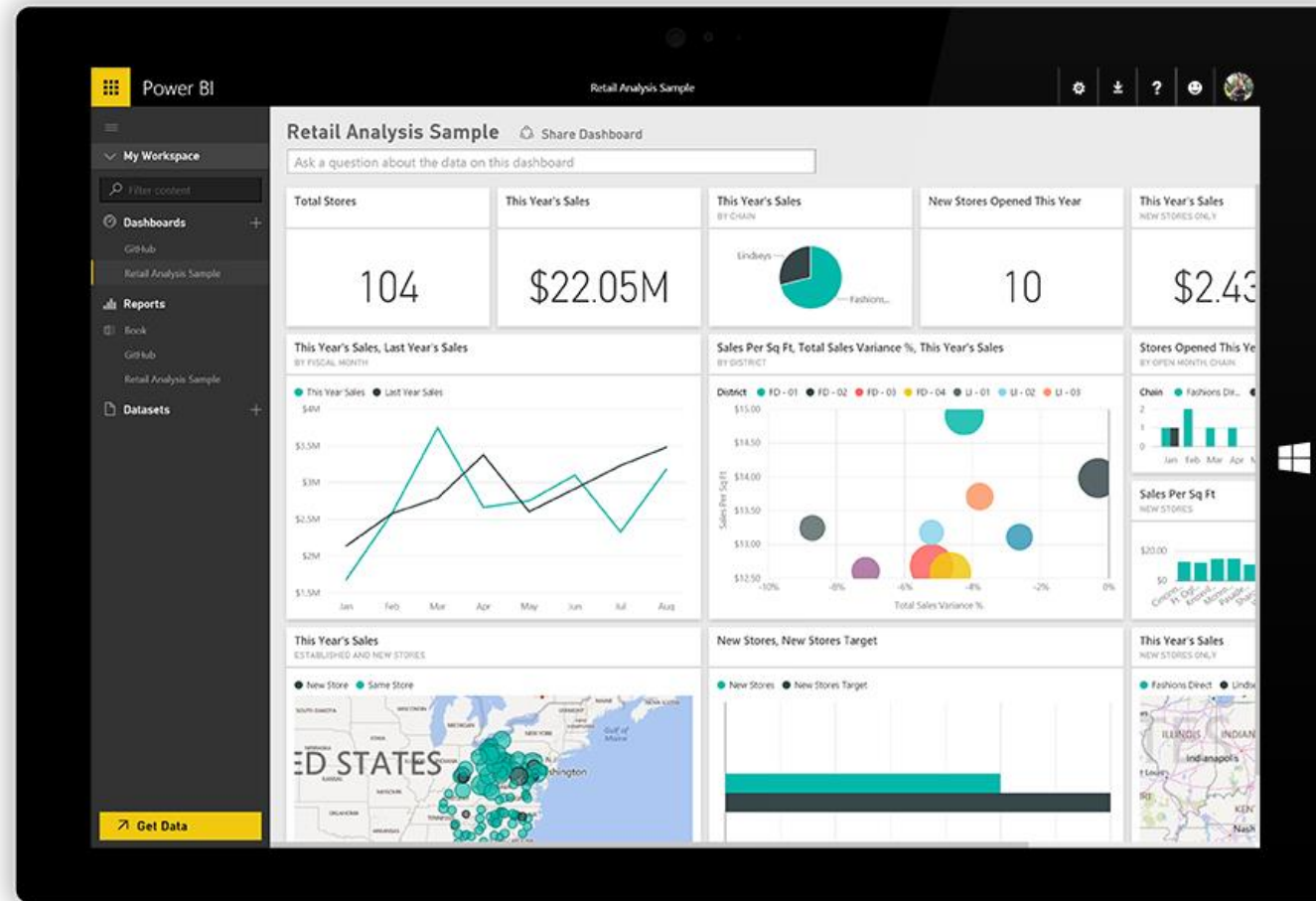
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# Agenda

- Introduction to Developer Opportunities
- Embedding Power BI Content
- Push Data
- REST API

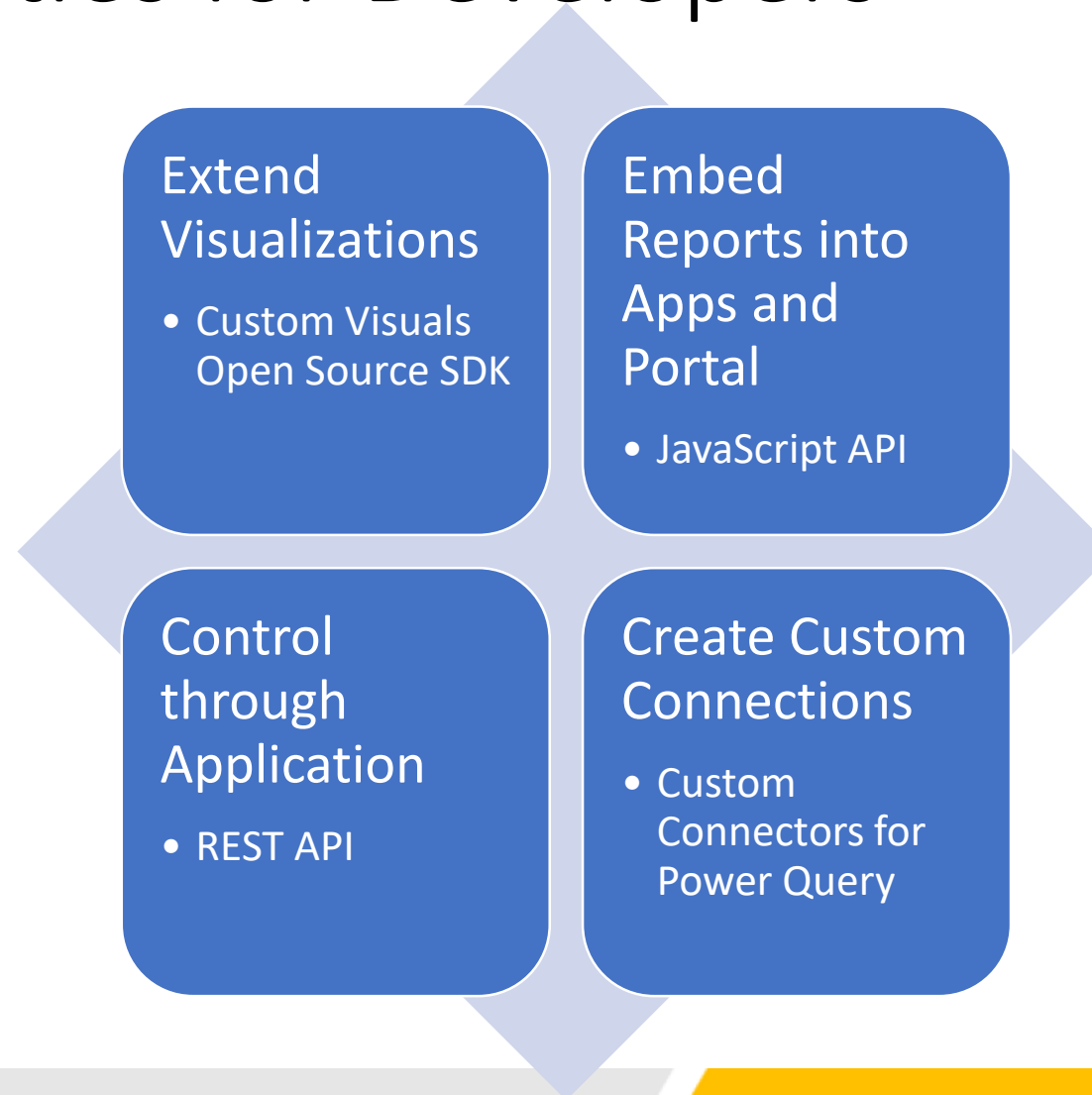
- Heaps of **DEMO**s

# Introduction to Power BI





# Opportunities for Developers



# What you can do with Power BI REST API?

Integrate Power BI Content (Dashboard, Tile, Report) into an Application

Push Data from an Application into Power BI Dataset

Control Gateways, Data Sources, Refresh, Data Sets...

# Embedding Power BI into App

**Step 3: Embed a dashboard**

Enter an embed url for a dashboard from Step 2 (starts with https://):

<https://app.powerbi.com/dashboardEmbed?dashboardId=fcff76f9-15ff-4a8e-8242-275ac9c25b90>

**Embed Dashboard**

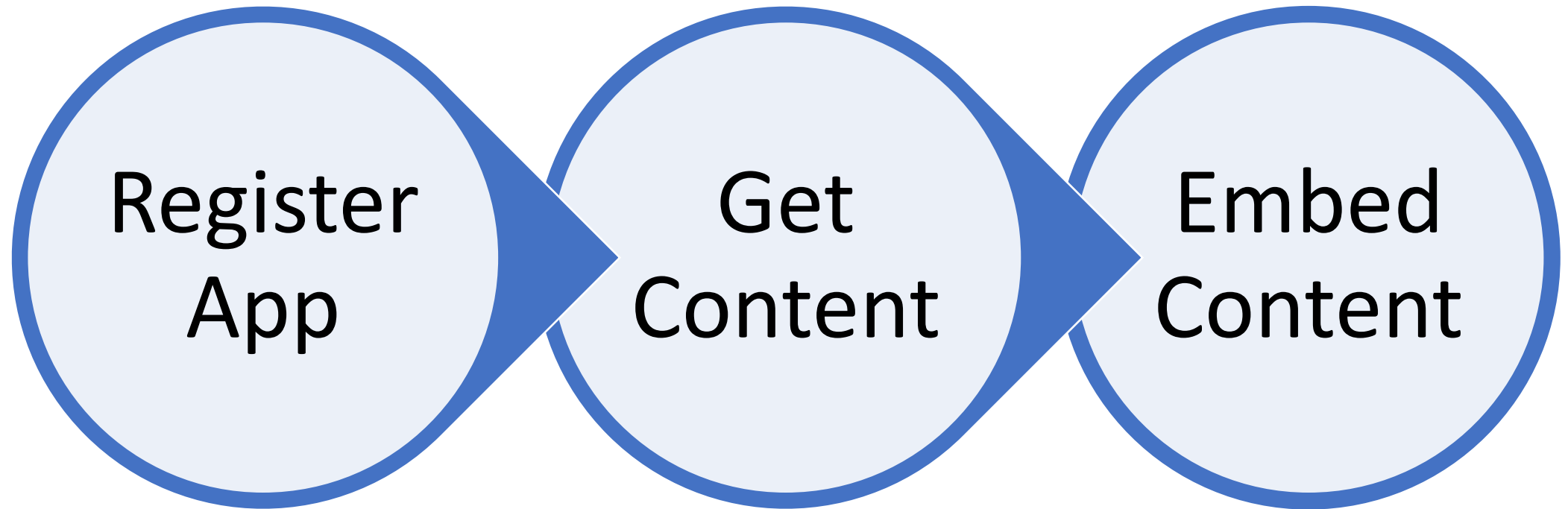
The dashboard displays four charts:

- New Hires, New Hires Same Period Last Year, Actives YoY % Change BY MONTH:** A combination bar and line chart showing monthly new hires (teal bars), new hires from the same period last year (dark grey bars), and the year-over-year percentage change in actives (red line).
- New Hires, Actives BY REGION, ETHNICITY:** A stacked bar chart showing new hires by region (North, Midwest, Northwest, East East, Central, South, West West) and ethnicity (Group A-G). A purple line chart shows the percentage of actives.
- Bad Hires % of Actives BY AGE GROUP:** A waterfall chart showing the percentage of bad hires relative to actives across different age groups, categorized as Increase (green), Decrease (red), and Total (teal).
- Bad Hires (<60 Days of Employment) BY REGION, ETHNICITY:** A stacked bar chart showing the percentage of bad hires by region and ethnicity.

# Embedding Power BI into Web Application

- Without a Token
  - Embed Power BI content
  - Based on user's login
  - They need Power BI accounts
- With a Token
  - You can manage users
  - Users login to your application
  - Users do not need to have Power BI Accounts
  - All reports run under this token

# How to Embed Content?



# Embedded Demo

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# Register App

- Register App with Azure AD
- Only registered App can access the content from Power BI
- <http://dev.powerbi.com/apps>



Power BI for Developers

## Register an Application for Power BI

Register a new application that can be used to call Power BI APIs

### Step 1 Login to your Power BI account

Create a new application with just a few simple steps. Once created, you can make any subsequent changes to your app details via the [Azure Management Portal](#).

Sign in with your existing account

Don't have an account? Get one for free.

# Making Changes in App Permission

- Azure Management Portal

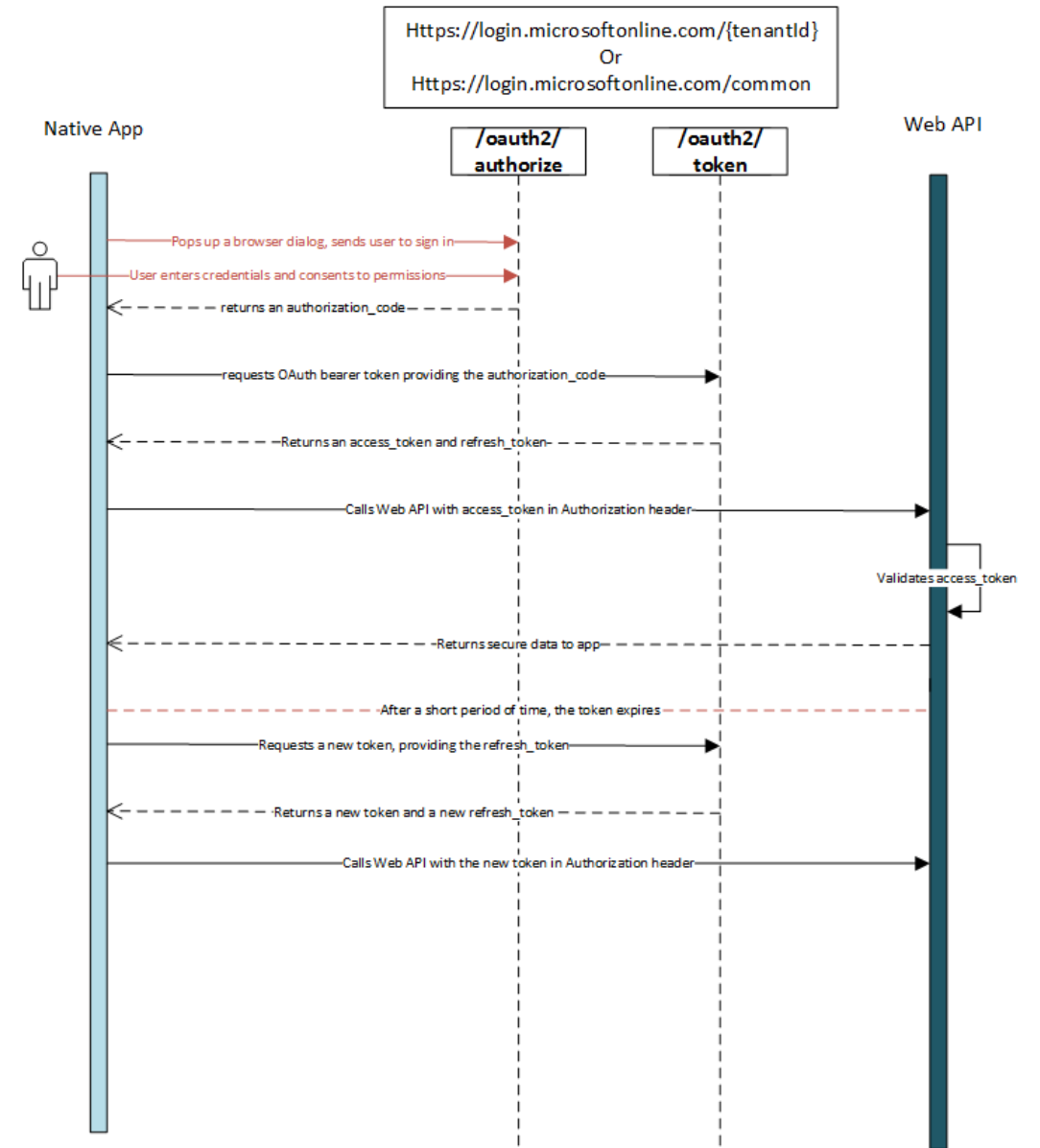
The screenshot shows the Microsoft Azure Management Portal interface for 'radacad - App registrations'. The left sidebar contains navigation options like Overview, Quick start, and various management tools. The main content area displays a table of registered applications with columns for Display Name, Application Type, and Application ID.

DISPLAY NAME	APPLICATION TYPE	APPLICATION ID
NT Native Test App	Native	b785ce2b-86c4-4642-858b-b2d...
MP Microsoft Power BI	Web app / API	2443e2d7-2c6e-4482-ae1a-a5e...
MP Microsoft Power BI	Web app / API	0abd8e2f-eef7-45b1-96f8-7aae...
SS ssim-migration-890dcb5d-d498-4l	Web app / API	13e7c1db-c486-43c7-829b-f1fe...
NT Native Test App	Native	7d534674-3206-4cff-af16-12cf8...
TR Test Reza PBI Embedded 1	Web app / API	6418dad-c0599-4dc4-a8d3-b9c...
NT New Test Power BI Server Side	Web app / API	6cc7b533-6cf8-4124-baef-02aa...
MP Microsoft Power BI	Web app / API	e3ffd6c9-bf22-4ee5-9b02-e8bd...
PS P2P Server	Web app / API	76c9f980-89de-4247-98b7-4a03...



# Access Token

1. Get Authorization Code
2. Get Access Token



## Get Dashboard

```
System.Net.WebRequest request =  
System.Net.WebRequest.Create(String.Format("{0}dashboards", baseUri)) as System.Net.HttpWebRequest;  
    request.Method = "GET";  
    request.ContentLength = 0;  
    request.Headers.Add("Authorization",  
String.Format("Bearer {0}",  
authResult.AccessToken));
```

## Get Tile

```
System.Net.WebRequest request =  
System.Net.WebRequest.Create(  
    String.Format("{0}Dashboards/{1}/Tiles",  
        baseUri,  
        dashboardId)) as  
System.Net.HttpWebRequest;
```

## Get Report

```
System.Net.WebRequest request =  
System.Net.WebRequest.Create(  
    String.Format("{0}/Reports",  
    baseUri)) as System.Net.HttpWebRequest;
```

# Load Content into IFrame

```
var embedContainer = $('#embedContainer')[0];

// Embed the report and display it within the div container.
var report = powerbi.embed(embedContainer, config);

// Report.off removes a given event handler if it exists.
report.off("loaded");

// Report.on will add an event handler which prints to Log window.
report.on("loaded", function() {
    Log.logText("Loaded");
});

report.on("error", function(event) {
    Log.log(event.detail);
    report.off("error");
});

report.off("saved");
report.on("saved", function(event) {
    Log.log(event.detail);
    if(event.detail.saveAs) {
        Log.logText('In order to interact with the new report,
        create a new token and load the new report');
    }
});
```

# REST API Live Sample

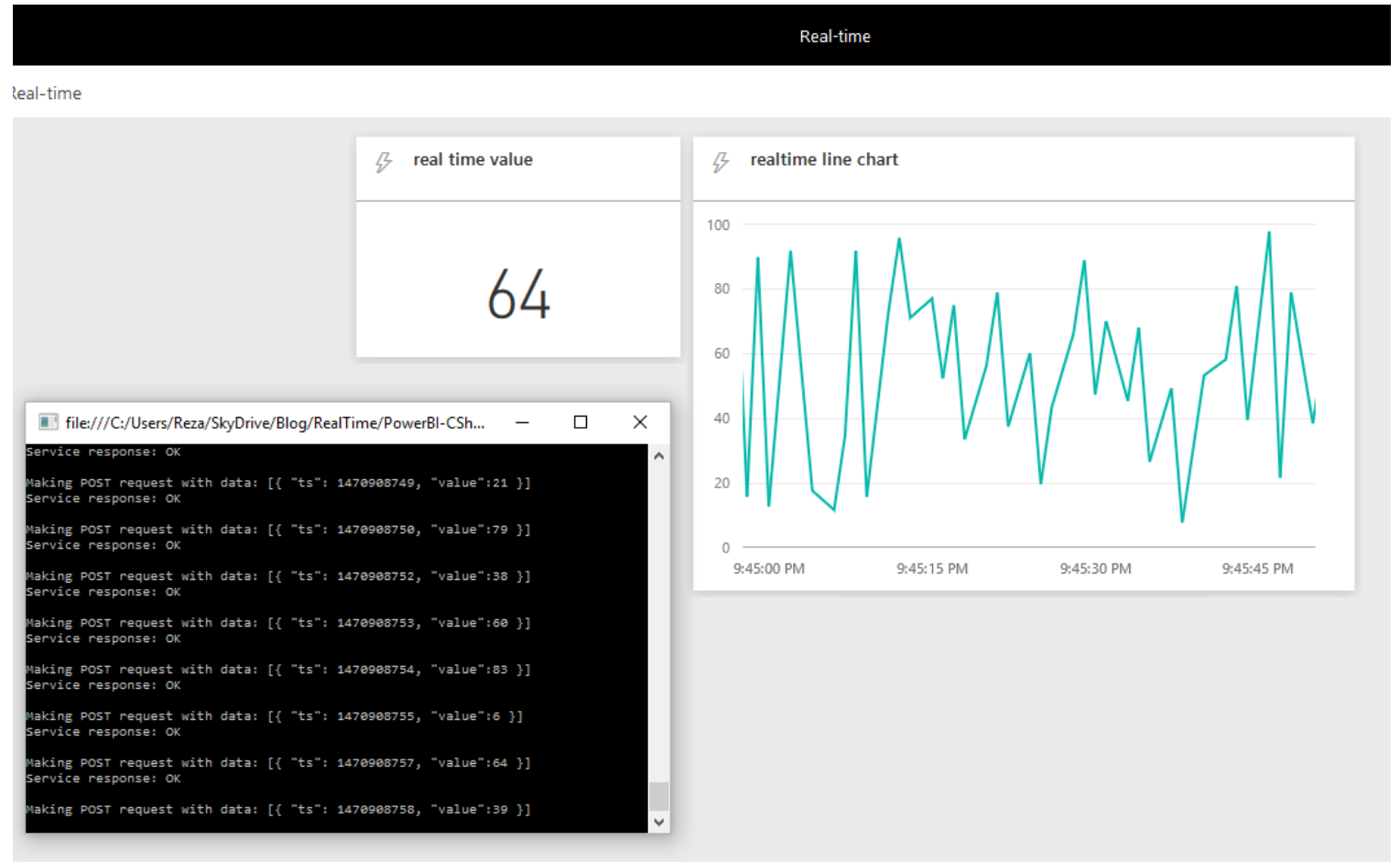
- <https://microsoft.github.io/PowerBI-JavaScript/demo/v2-demo/index.html>

# Benefits of Embedded

- Bring Power BI into Any Application
- Manage Users and Roles yourself
- No more per user licensing payment
- Sharing with everyone you like
- Powerful interactive reports in all applications

# Push Data

- Real-time dashboard





# Power BI Real-time Demo

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# REST API and Dataset

- Refresh\*
- Data Source Management
  - Gateway

# REST API and Refresh

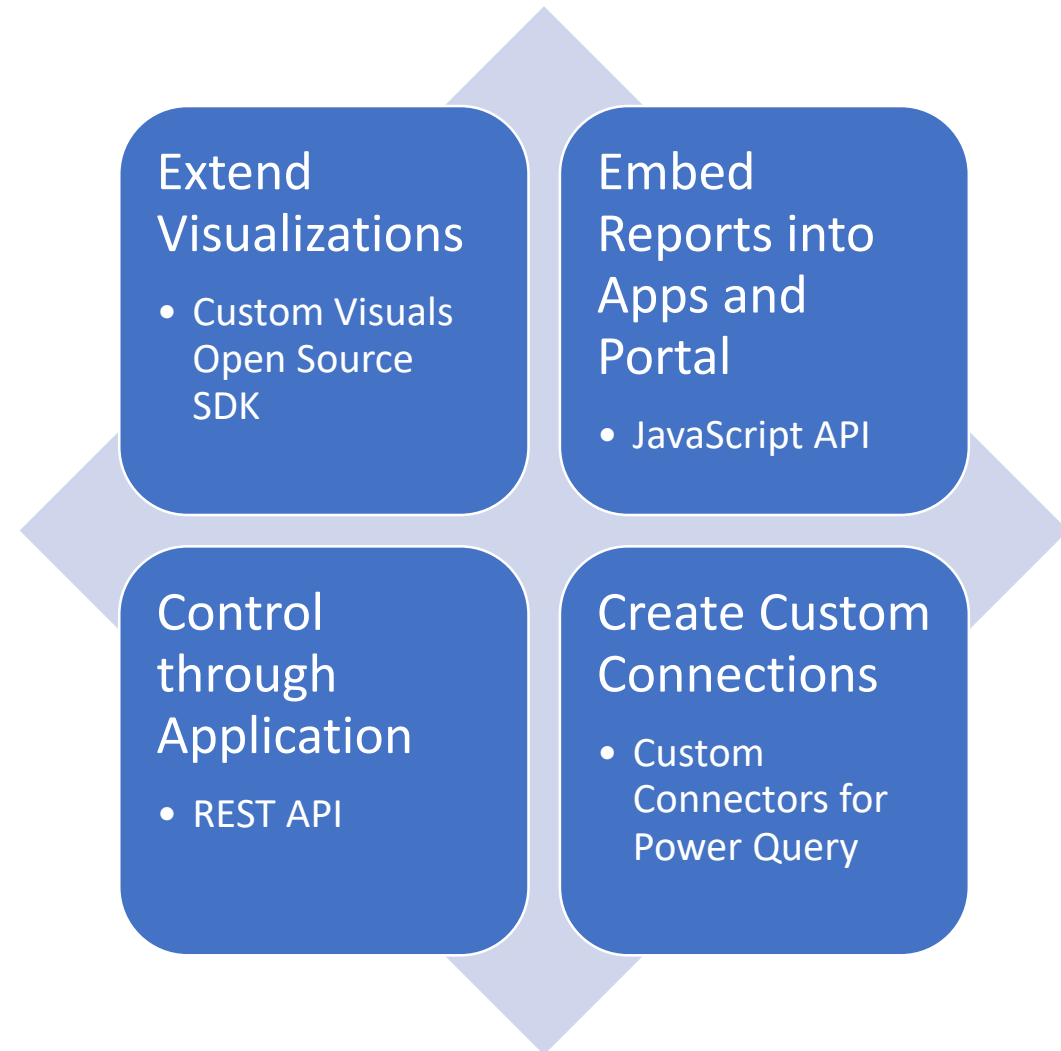
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# Benefits of REST API

- Automation
- Power BI Beyond Limits
- Control from API
- Adding Analytics to your Portal
- Internal application development
- Package application development
- SaaS application development

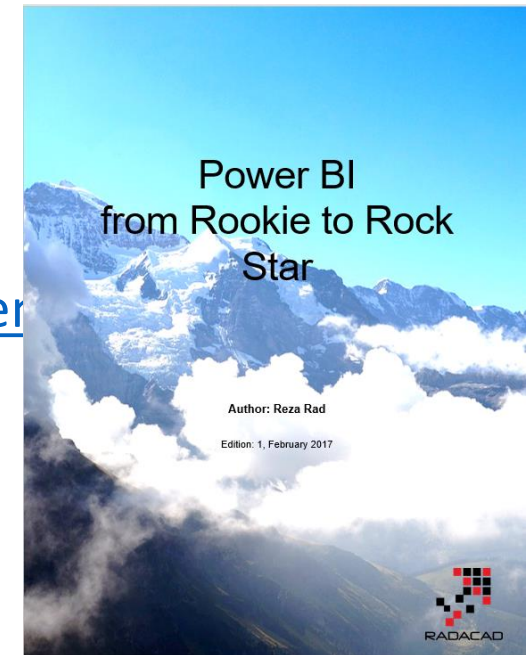
# Summary

- Developer Opportunities



# References to Study More

- Power BI online **Book**
- <http://www.radacad.com/online-book-power-bi-from-rookie-to-rockstar>
- (Download all **Demos and examples** from here)
  
- Embedding Power BI Content
- <https://powerbi.microsoft.com/en-us/documentation/powerbi-developer-embed>
  
- Sample Projects:
- <https://github.com/Microsoft/PowerBI-developer-samples>
  
- Sample Demo Page:
- <https://microsoft.github.io/PowerBI-JavaScript/demo/v2-demo/index.html>





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## Thank you for Attending!

Don't forget to join your local PUG to enjoy year-round networking and learning.

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[www.pbusergroup.com/siliconvalley](http://www.pbusergroup.com/siliconvalley)