Developing Custom Data Connectors

Agenda

- The Role of Custom Data Connectors
- Getting Up and Running with M Programming
- Developing with the Power Query SDK
- Configuring Authentication
- Branding a Custom Data Connector
- Distributing Custom Data Connectors

While in Preview

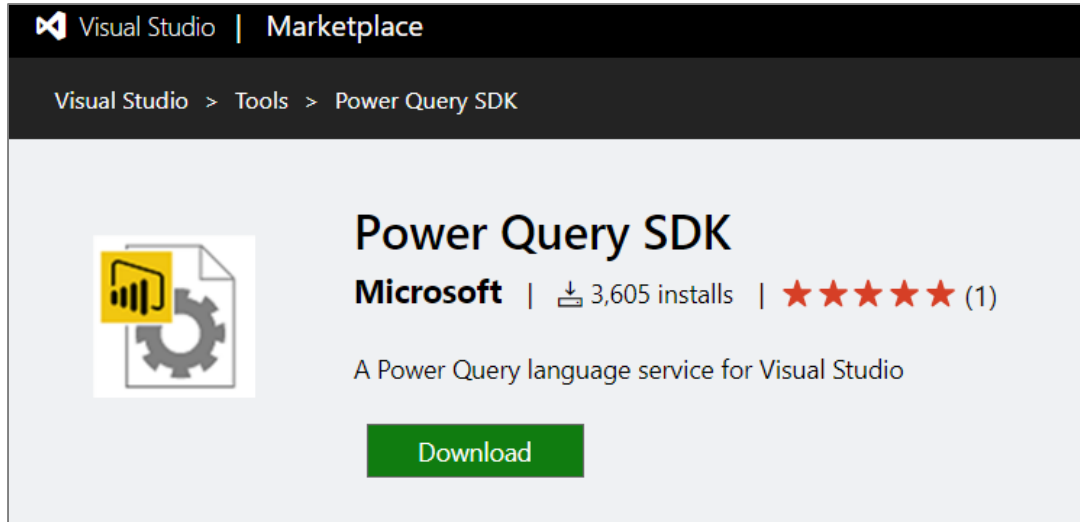- Data Connectors only available in Power BI Desktop

What Can You Do With a Custom Connector?

- Create more friendly view of a REST API
- Provide branding on top pf existing connector
- Implement OAuth authentication for SaaS source
- Expose filtered view over a data source
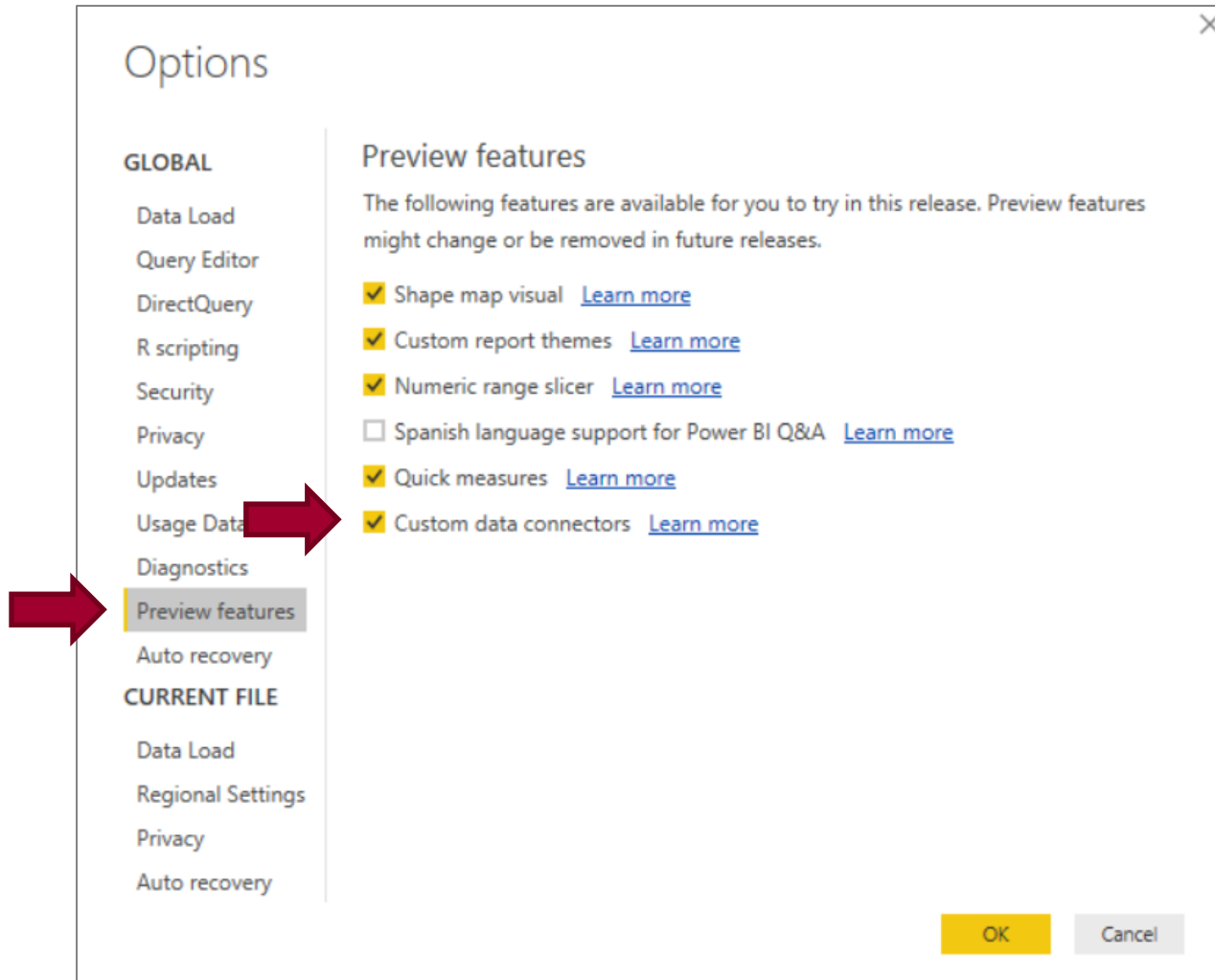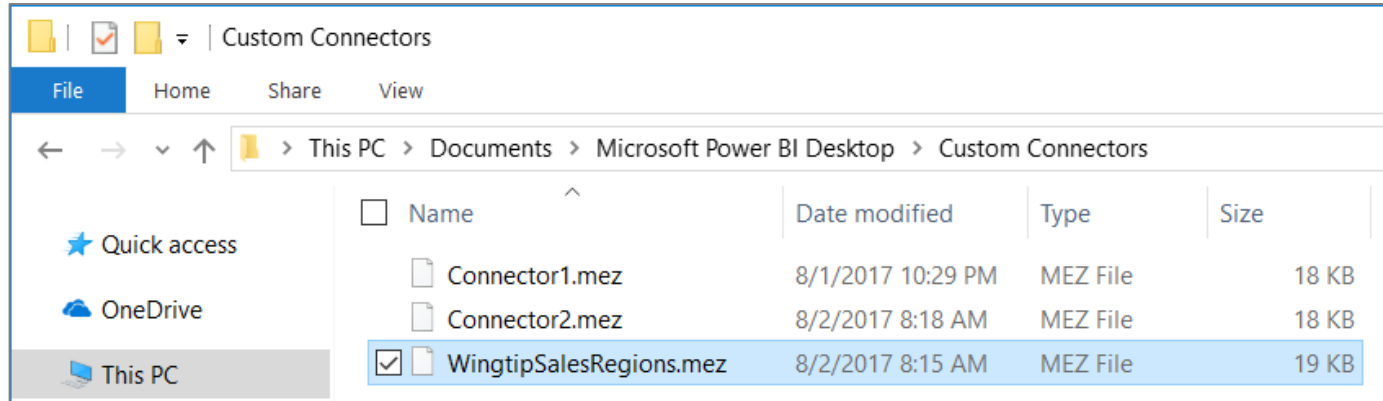- Enable Direct Query for source with ODBC driver

Power Query SDK

- Download
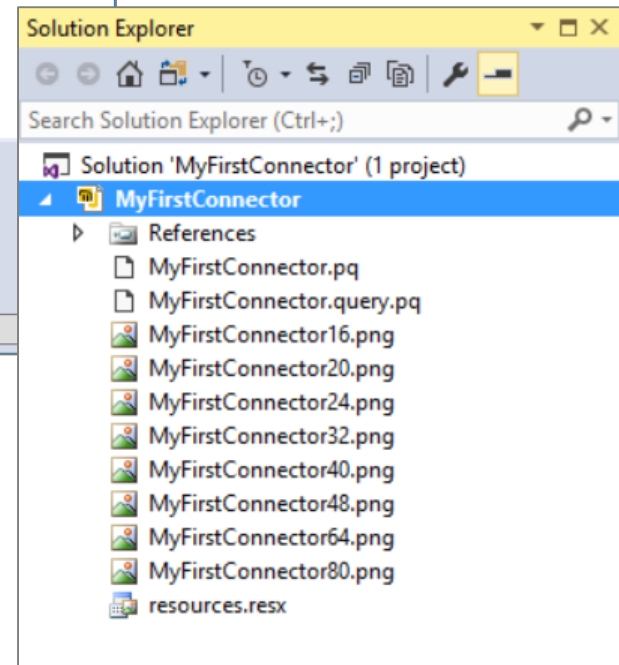 - https://aka.ms/powerquerysdk
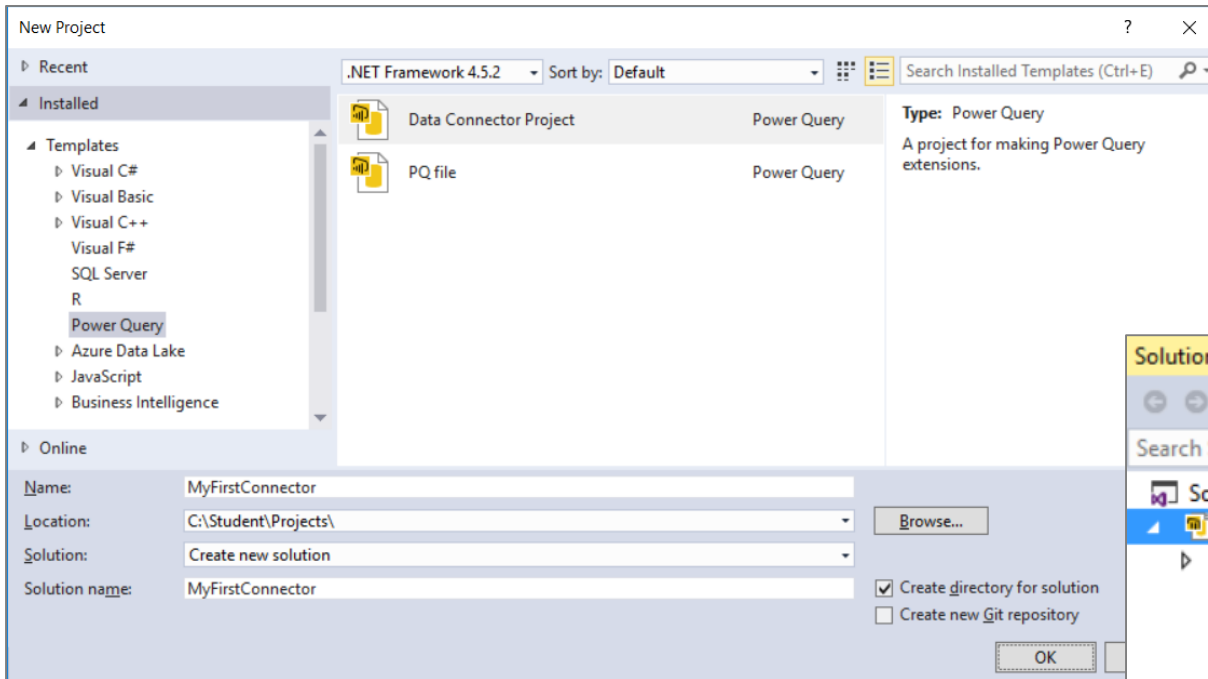
Power BI Desktop Preview features

Distribution of Data Connectors

- Added to well-known folder in Documents folder

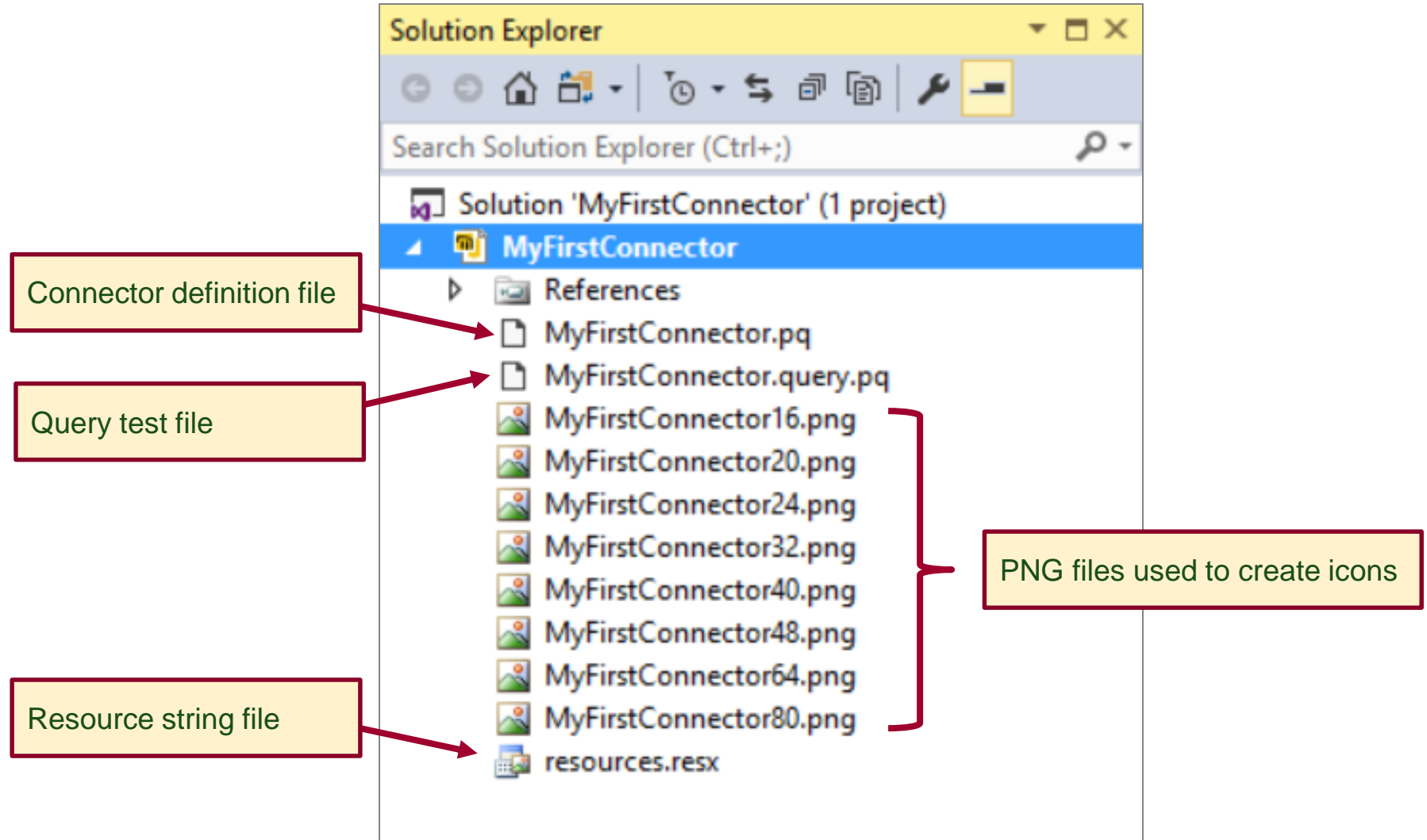 - **[My Documents]\Microsoft Power BI Desktop\Custom Connectors**

Visual Studio Project Template

- Installed > Templates > Power Query

Project Contents

Connector definition file

Query test file

PNG files used to create icons

Resource string file

Section Declaration

- Extensions defined within M section document


```
MyFirstConnector.pq    X

section MyFirstConnector;

  [DataSource.Kind="MyFirstConnector", Publish="MyFirstConnector.Publish"]
⊞ shared MyFirstConnector.Contents = ...;

  // Data Source Kind description
⊞ MyFirstConnector = ...;

  // Data Source UI publishing description
⊞ MyFirstConnector.Publish = ...;

⊞ MyFirstConnector.Icons = ...;
```

Section declaration

Shared Members

- Functions and variables local unless marked as shared
- Shared functions become exports from an extension

Data Source Function

- **XX**

```
[DataSource.Kind="MyFirstConnector", Publish="MyFirstConnector.Publish"]
shared MyFirstConnector.Contents = (optional message as text) =>
    let
        _message = if (message <> null) then message else "(no message)",
        a = "Hello from MyFirstConnector: " & _message
    in
        a;
```

M Functions Currently Supported

- Web.Contents

- OData.Feed

- Odbc.DataSource

- AdoDotNet.DataSource

- OleDb.DataSource

Data Source Metadata Record

- Record included with these properties
  - Authentication
  - Label
  - SupportsEncryption

```
[DataSource.Kind="MyFirstConnector", Publish="MyFirstConnector.Publish"]
shared MyFirstConnector.Contents = (optional message as text) =>
    let
        _message = if (message <> null) then message else "(no message)",
        a = "Hello from MyFirstConnector: " & _message
    in
        a;
```

```
MyFirstConnector = [
    Authentication = [
        // Key = [],
        // UsernamePassword = [],
        // Windows = [],
        Implicit = []
    ],
    Label = Extension.LoadString("DataSourceLabel")
];
```

Data Publishing Metadata Record

- Record used to interact with consumer

```
[DataSource.Kind="MyFirstConnector", Publish="MyFirstConnector.Publish"]
shared MyFirstConnector.Contents = (optional message as text) =>
    let
        _message = if (message <> null) then message else "(no message)",
        a = "Hello from MyFirstConnector: " & _message
    in
        a;
```

```
MyFirstConnector.Publish = [
    Beta = true,
    Category = "Other",
    ButtonText = { Extension.LoadString("ButtonTitle"), Extension.LoadString("ButtonHelp") },
    LearnMoreUrl = "https://powerbi.microsoft.com/",
    SourceImage = MyFirstConnector.Icons,
    SourceTypeImage = MyFirstConnector.Icons
];
```

Future Plans for Data Connectors

- File extension change (.mez to .pqx)
- Improved tracing/diagnostics for Direct Query
- Versioning of extensions and dependencies
- Improved support for Library extensions
- Integration with Microsoft Flow and PowerApps
- Support for Scheduled Refresh via a Gateway
- Integration with the Office Store
- Development experience improvements