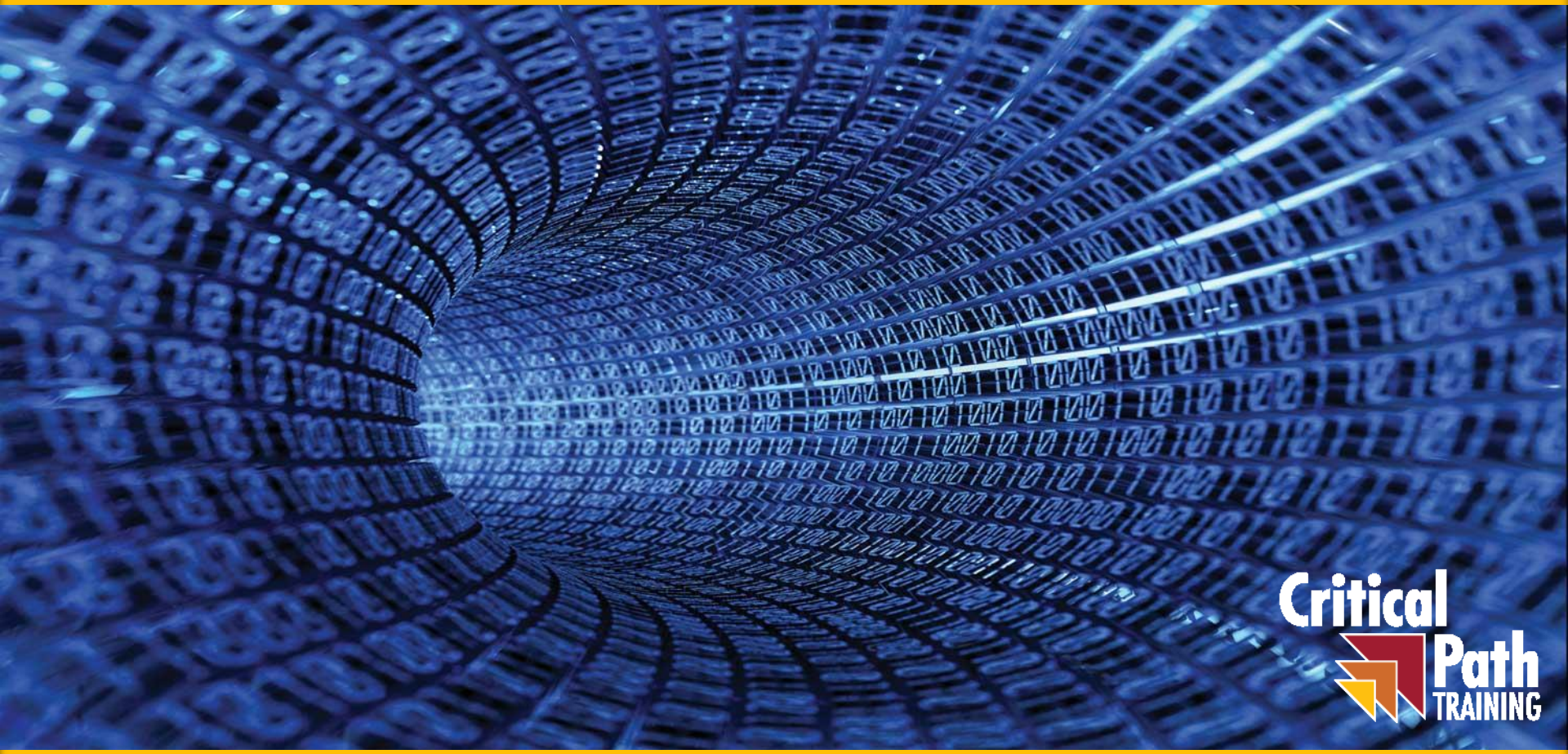
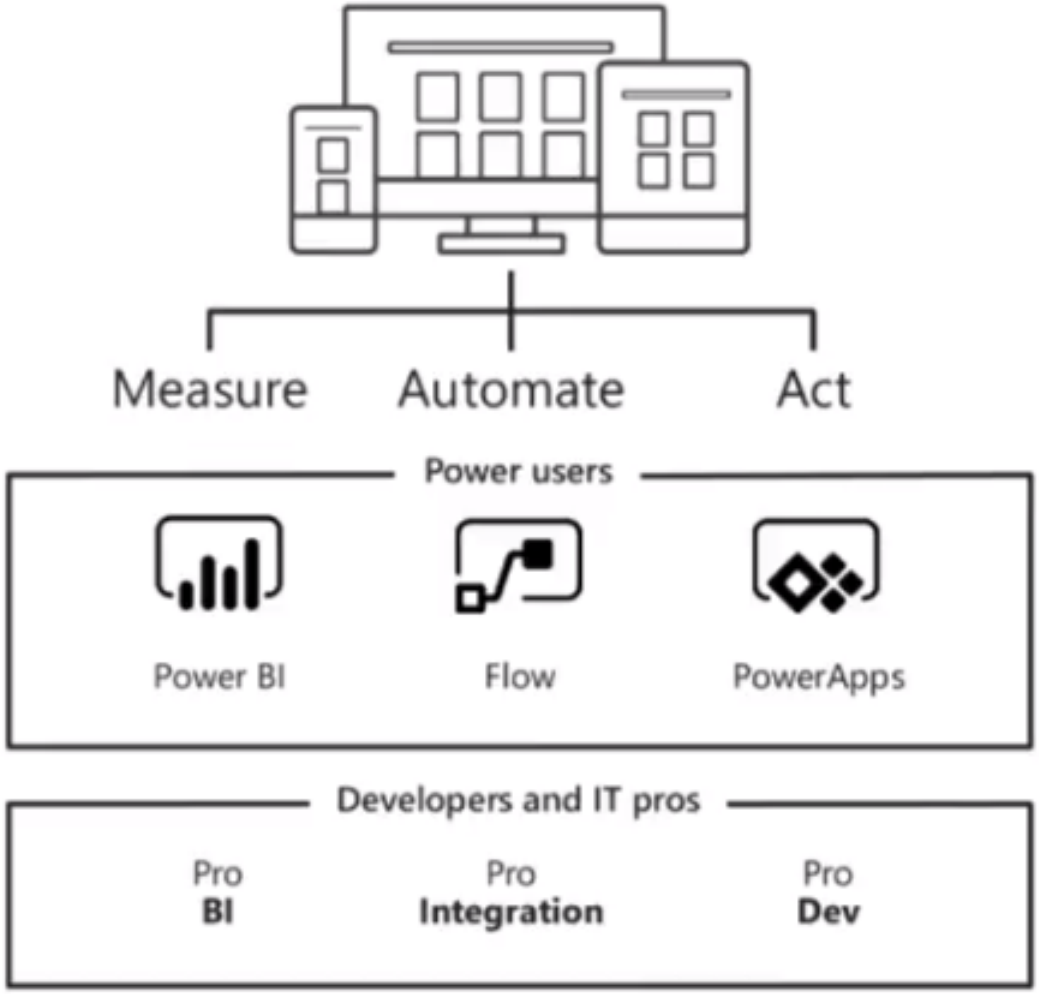
Building Custom Solutions using PowerApps



Agenda

- Working with Variables and Collections
- Managing Application State using Records and Tables
- Using Table Functions for Filtering, Sorting and Grouping
- Writing Imperative Logic in PowerApps Event Handlers
- Using Delegates to Filter, Sort and Aggregate Data
- Creating a Custom Connector

Business Application Platform



Creating PowerApps from a Template

- Create app based on a template for a specific scenario
  - Pre-built layouts and colour schemes for different app screens
  - Templates have predefined screens, features, and sample data
- Customize app made from template
  - Change layout, screens, features, and delete sample data

Learning from Template Apps

- Learn how controls are being configured for common actions such as:
  - Submit data from a form by clicking on a button
  - Transition from one app screen to the other
  - Show a list of items from my data, etc.
  - Data flows in and out of your app
  - Wire up your data source to your app
  - Camera or GPS are being integrated into your app

Phone Layout Templates

Templates

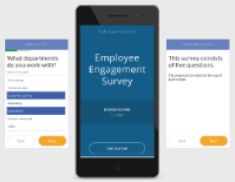
Alumni Association

Asset Checkout

Budget Tracker

Case Management

Cost Estimator



Employee Engagement Survey

Health Plan Selector

Invoice Management

Quick Tips

Service Desk

Site Inspection

Tablet Layout Templates

Templates

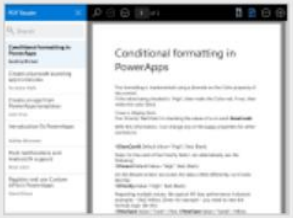
Asset Checkout

Budget Tracker

Case Management

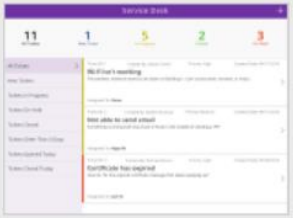
Contest Registration

Cost Estimator



PDF Reader

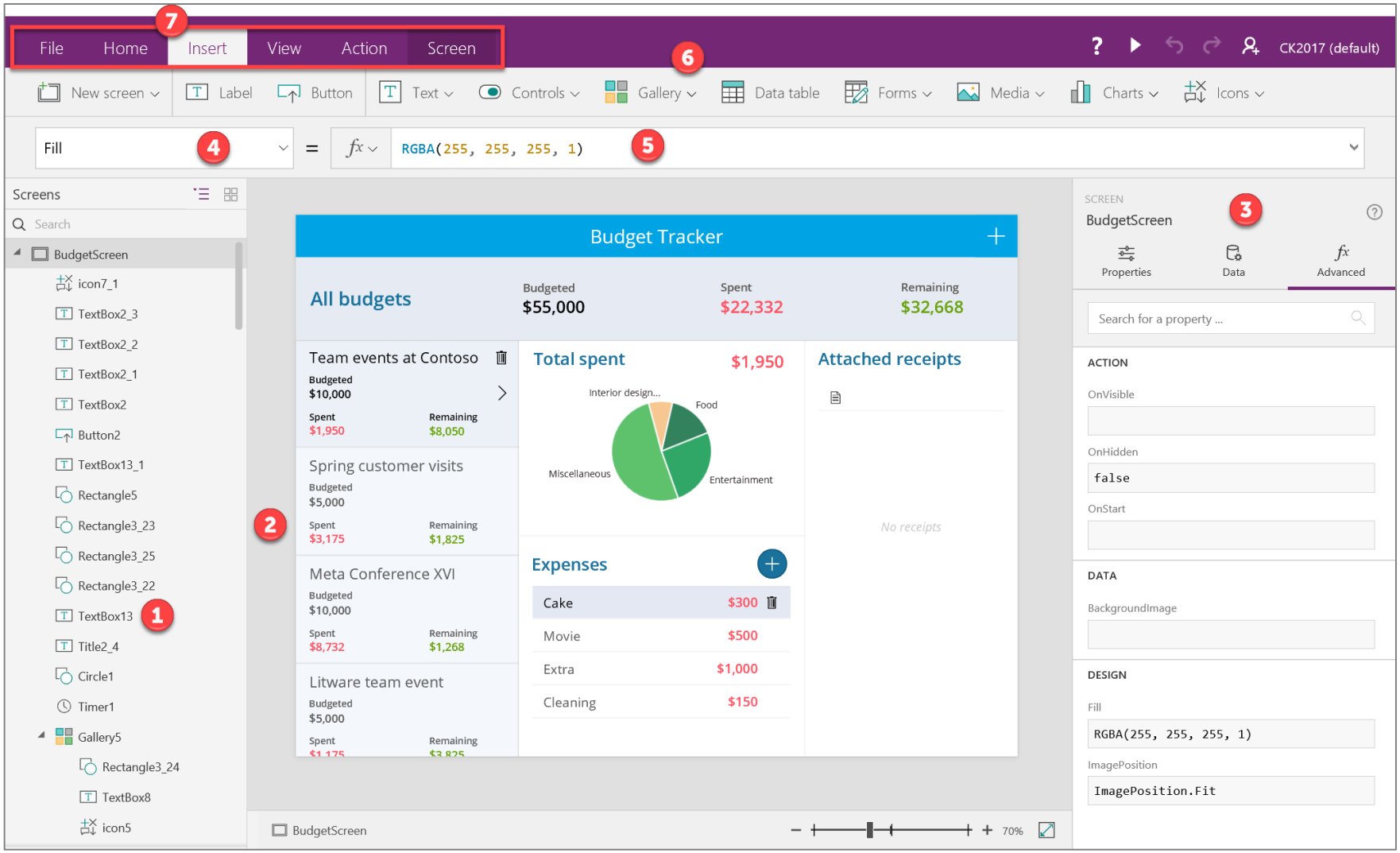
Product Showcase



Service Desk

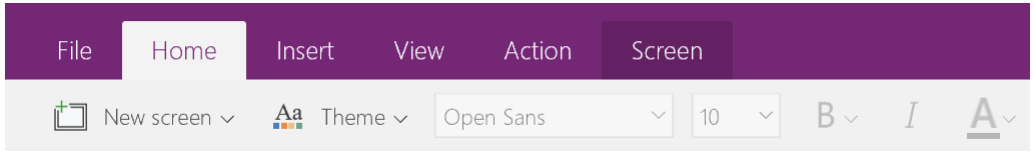
Site Inspection

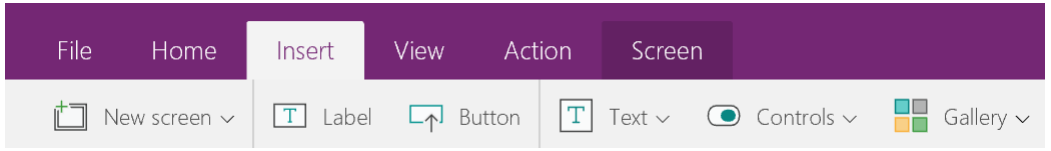
PowerApps Studio Interface

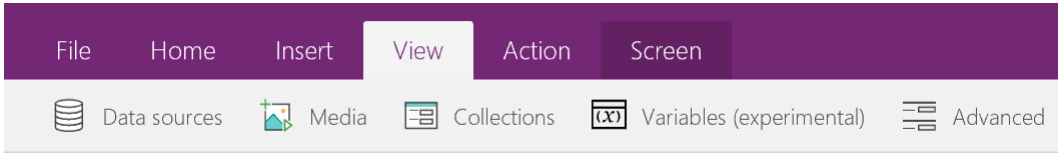


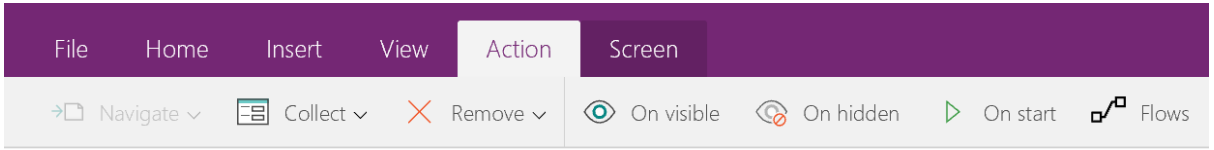
Ribbon

- Set of context-sensitive tabs which will display controls you can use to build your app:
  - Home tab
  - Insert tab
  - View tab
  - Action tab







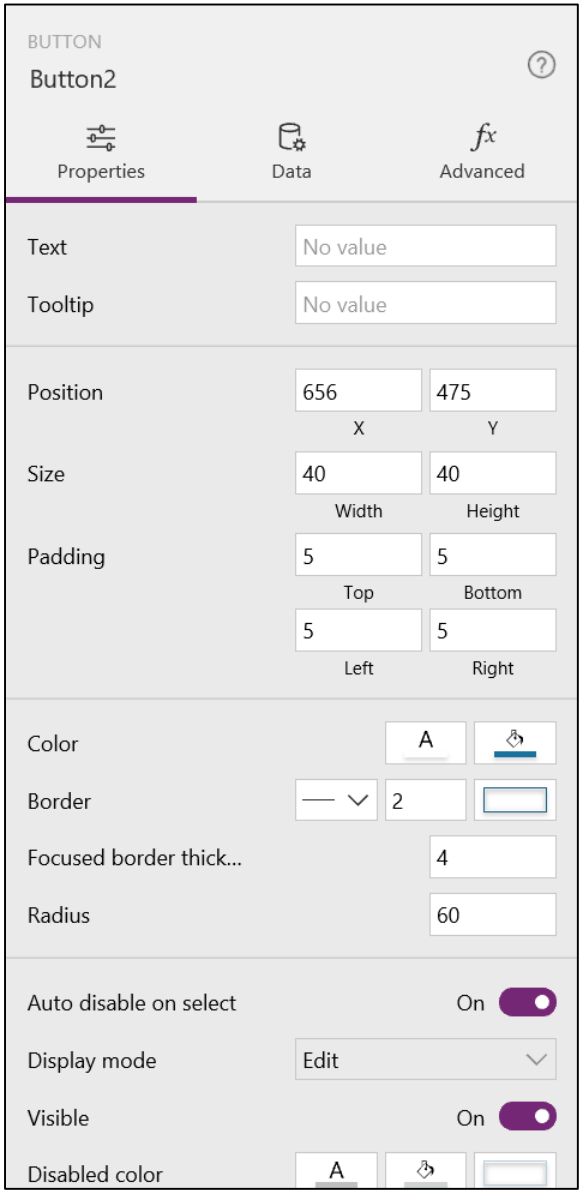


Panels

- **Properties Panel**
  - Will expose most common properties of any control you can configure visually without writing an expression
- **Data Panel**
  - Will surface configuring data sources and binding fields to Gallery and Form controls
- **Advanced Panel**
  - Used for more advanced customizations for controls

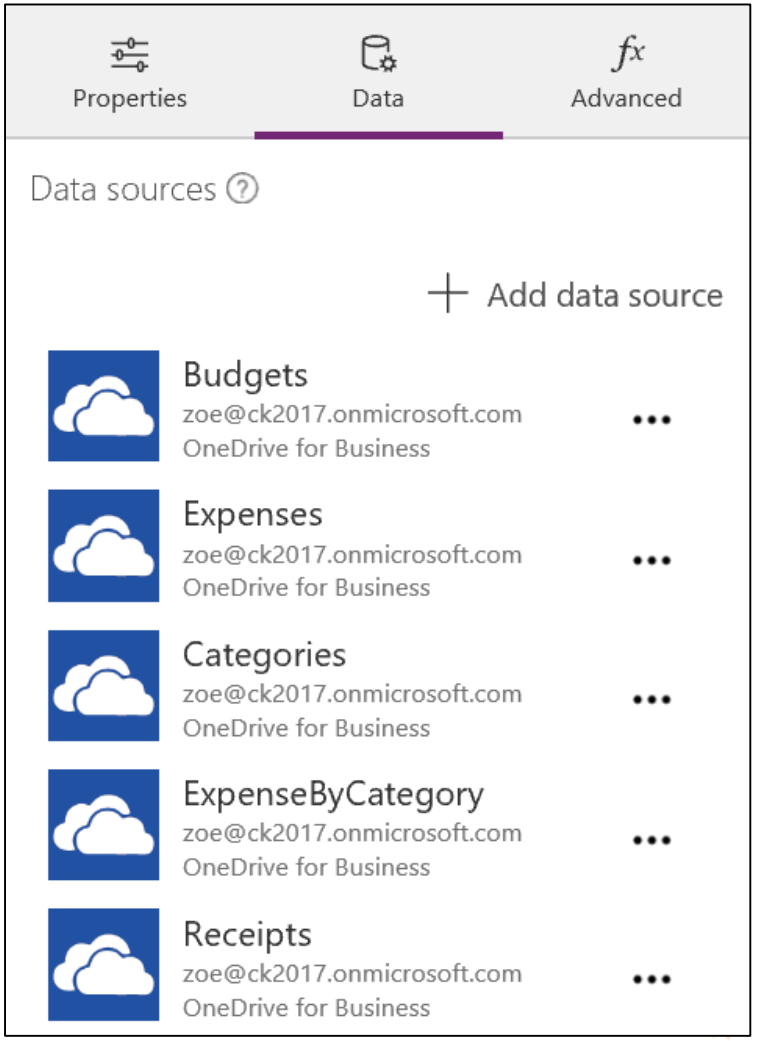
Properties Panel

- Configure controls without using a formula
  - Varies based on control
- Configure properties such as:
  - Text
  - Tooltip text
  - Position
  - Look & Feel
    - Size
    - Padding
    - Colors
    - Borders



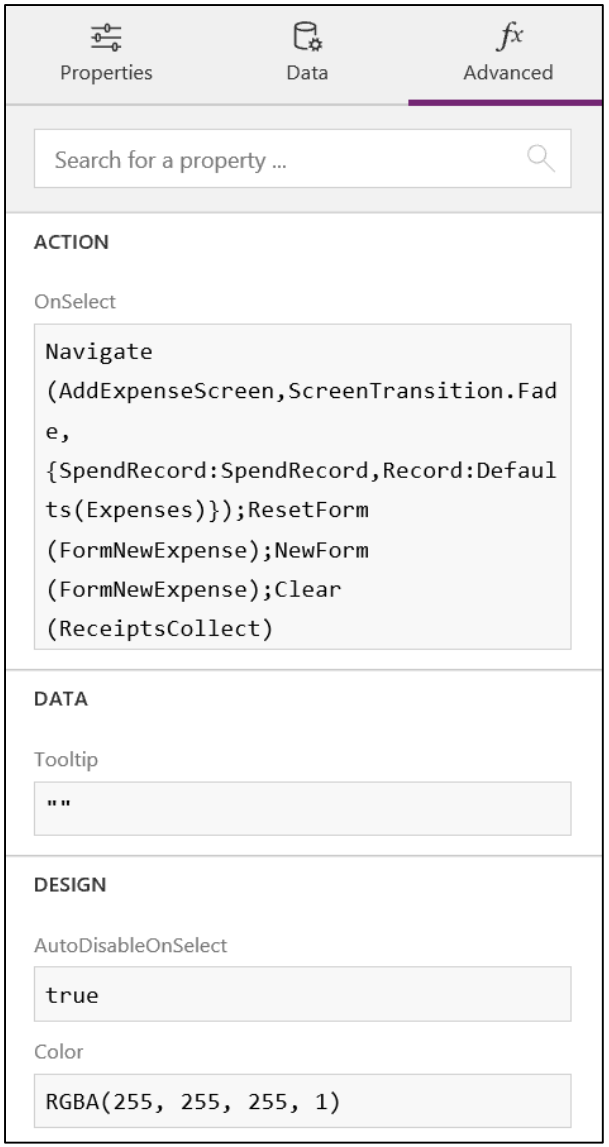
Data Panel

- Will list existing data sources
- Also provides ability to add new data sources



Advanced Panel

- Configure more advanced customizations for controls



Create App from Data Source

- In PowerApps, you can automatically generate an app based on a data source which includes:
  - SharePoint List
    - Create directly from SharePoint list
    - Or create a connection to the SharePoint list
  - Excel data
  - CDS Entity

Excel Data

- You can use an Excel file that has table data.
- Excel files must be uploaded to a cloud service before you can create the PowerApp:
  - Box
  - Dropbox
  - FTP
  - Google Drive
  - OneDrive
  - OneDrive for Business

Agenda

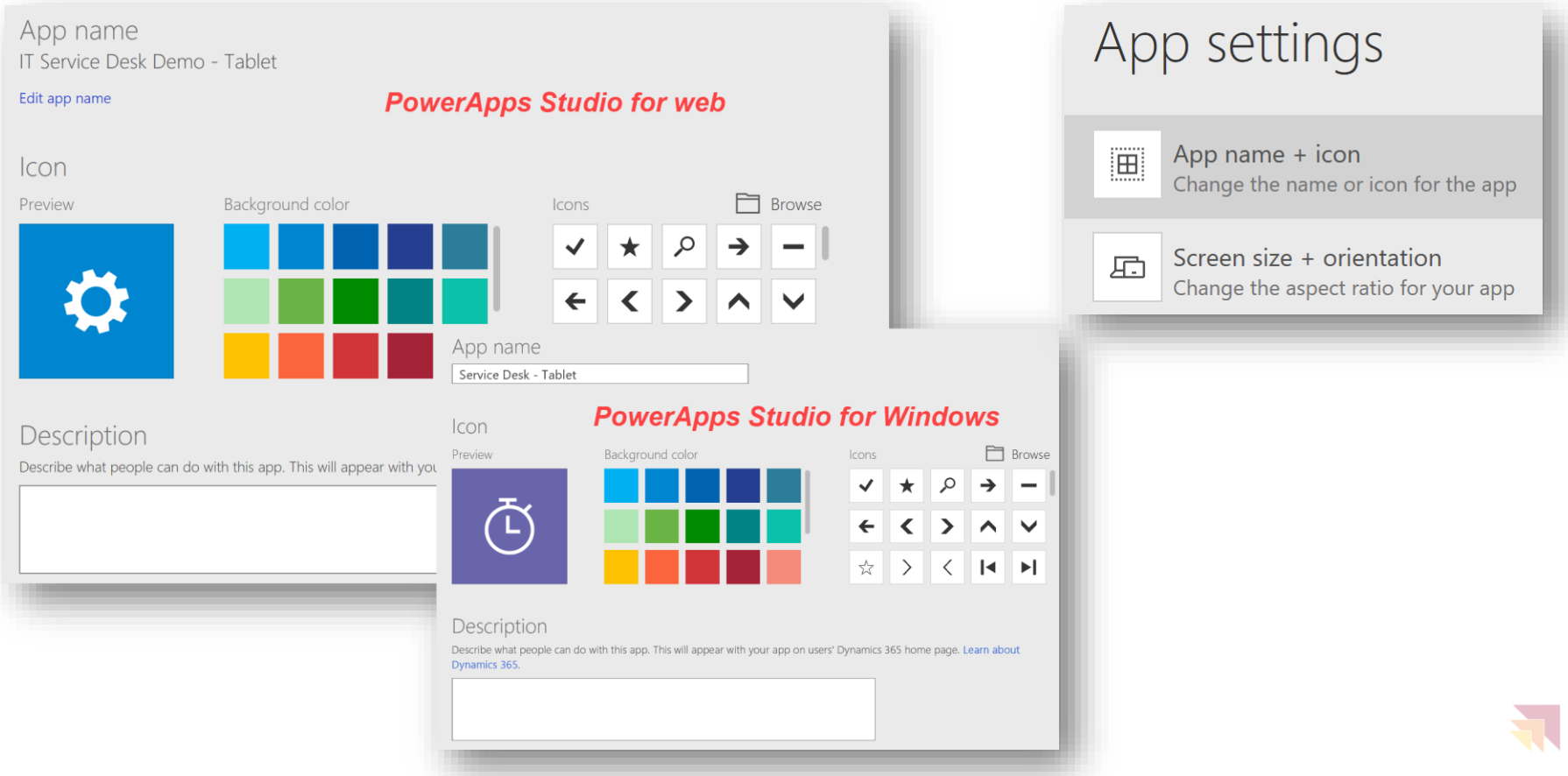
- ✓ Getting Started with PowerApps Studio
- ➢ Creating an App From Scratch
- Connecting to Data
- Integrating PowerApps with SharePoint Online

Creating Custom PowerApps

- You can create your own app from scratch using the Blank app template:
  - Using any one of a variety of data sources and then adding more sources later.
  - This approach is much more time-intensive than generating an app automatically.
  - Experienced app makers can build the best app for their needs.
  - Specify the appearance and behavior of each UI element so that you can optimize the result for your exact goals and workflow.

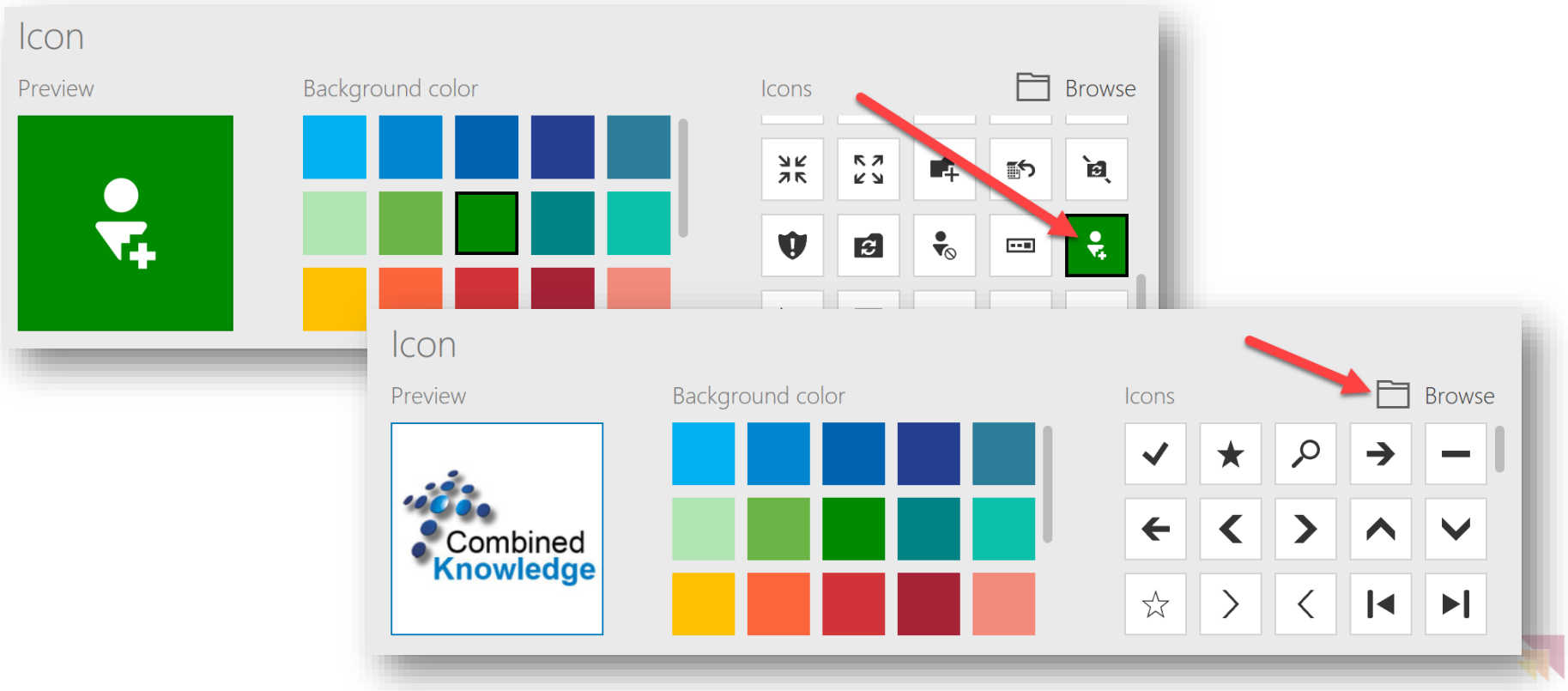
App Name & Icon

- Name, icon, and description settings your app
- **File** tab > **App Settings** (PowerApps Studio)



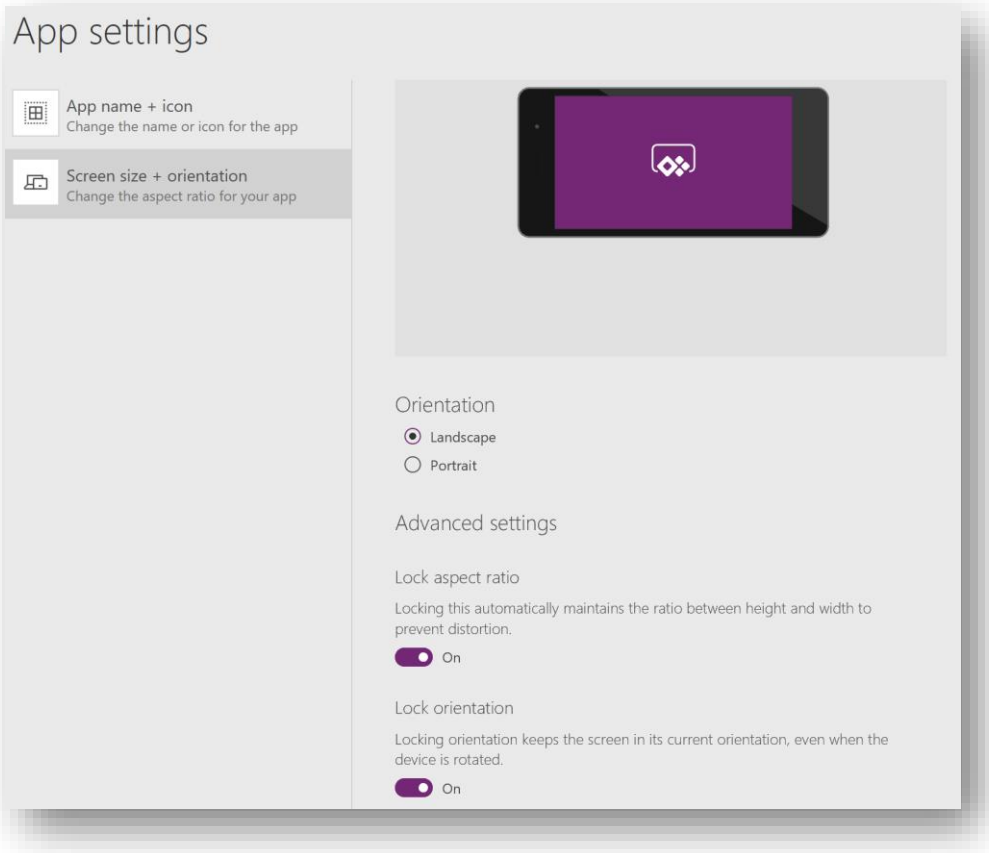
App Background & Icon

- Use pre-defined icons & change background color or use your own image
  - For best results, use square icon (i.e. 300x300)

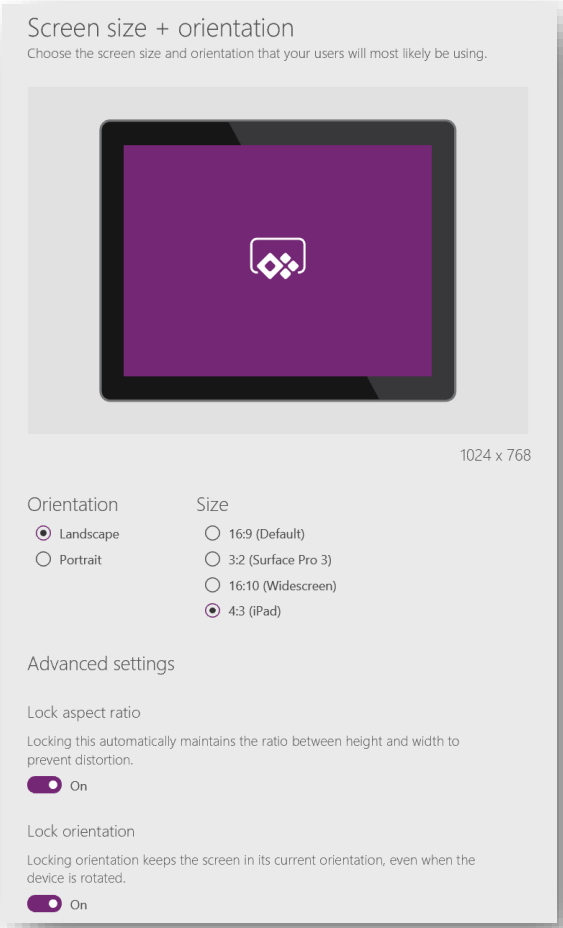


Screen Size & Orientation

Phone layout

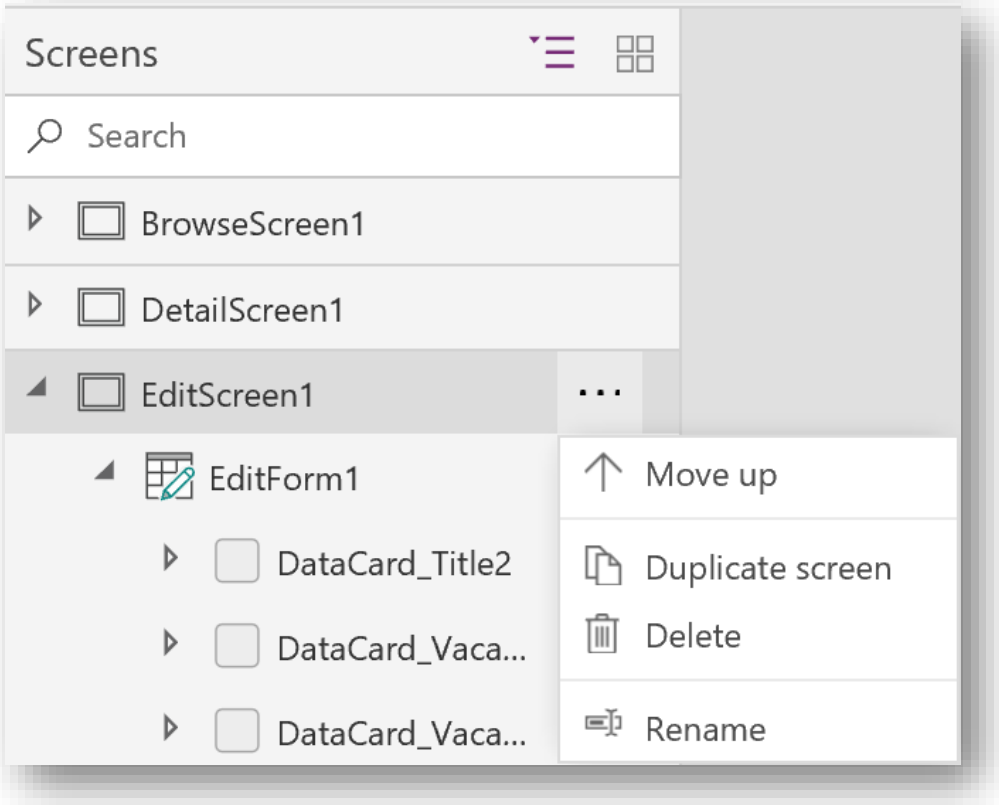


Tablet layout

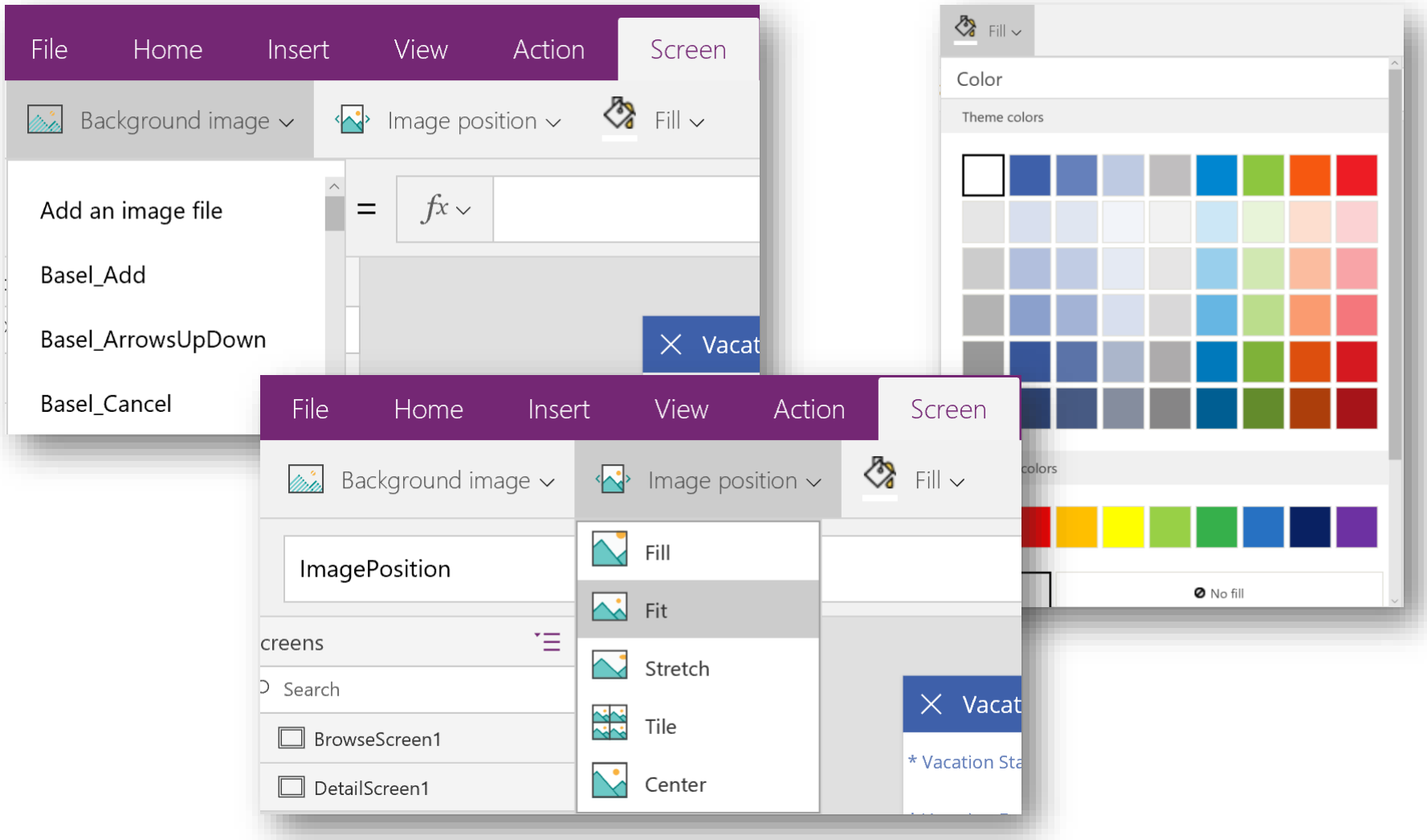


Customizing Screens

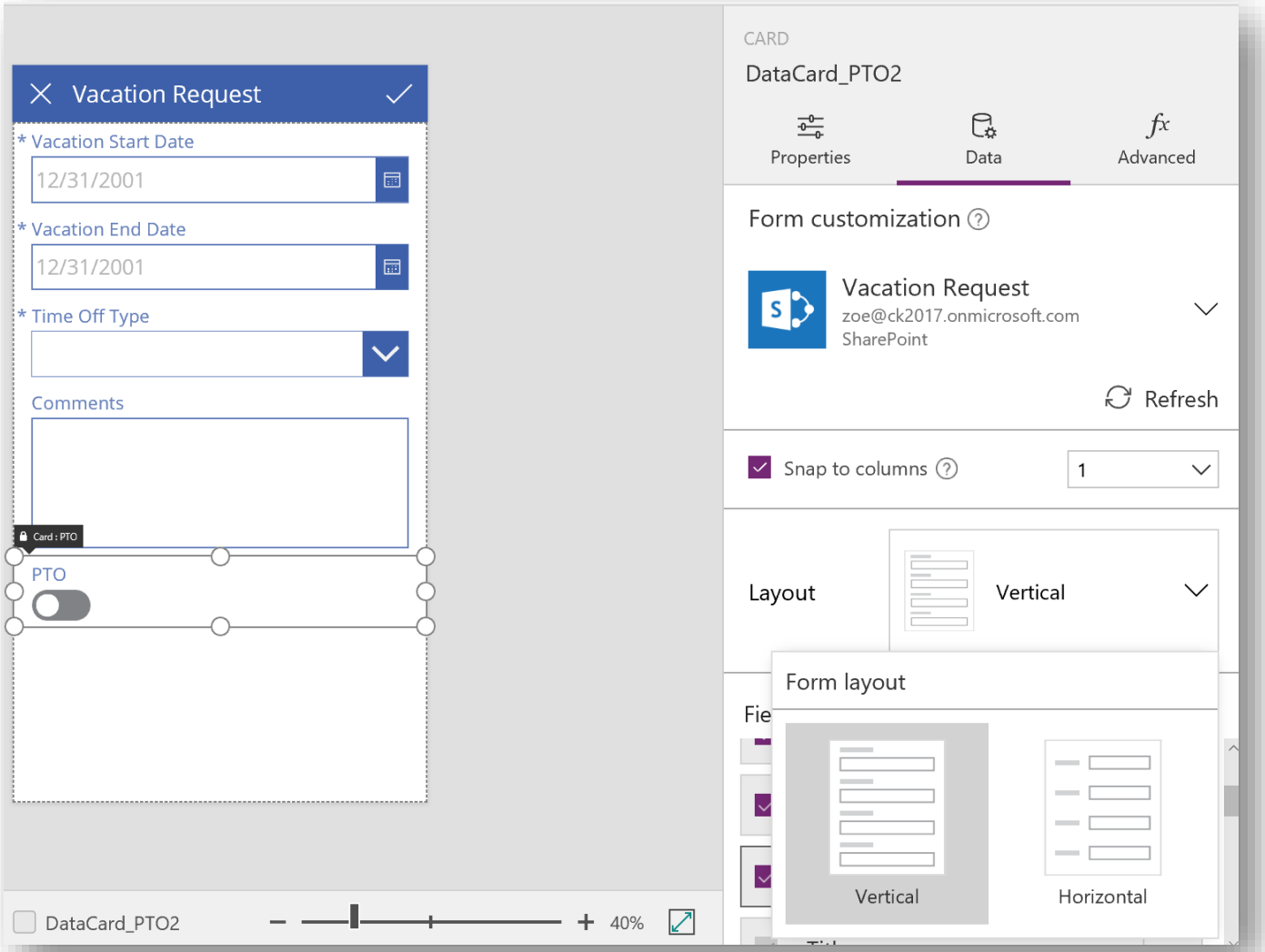
- Move (reorder)
- Duplicate
- Add screens
- Delete screens
- Rename screens



Screen Layout Settings



Form Layouts



Controls

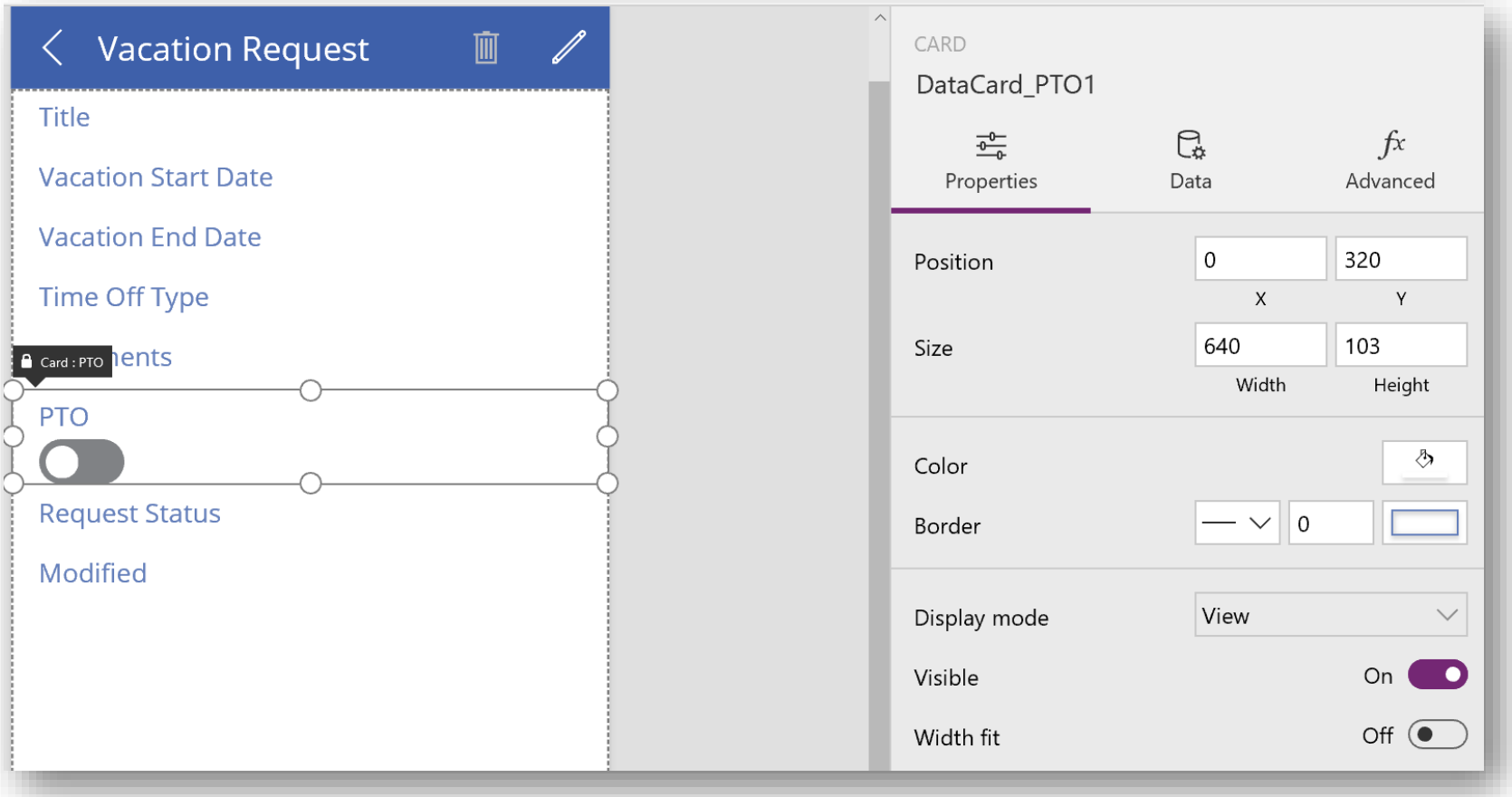
- You can add a variety of UI elements to your app which are called controls.
  - Controls have properties that can be configured to change the appearance and behavior of each control

- Properties can be configured:
  - Directly from the toolbar
  - In the **Properties** tab
  - Or in the formula bar

Adding Controls

- **Text:** Label, Text input, HTML Text, Pen input
- **Controls:** Button, Dropdown, Date picker, List box, Checkbox, Radio, Toggle, Slider, Rating, Timer
- **Gallery:** Vertical, Horizontal, Flexible height, Blank vertical, Blank horizontal, Blank flexible height
- **Data table**
- **Forms:** Edit, Display, Entity form
- **Media:** Image, Camera, Barcode, Video, Audio, Microphone, Add picture
- **Charts:** Column chart, Line chart, Pie chart
- **Icons**

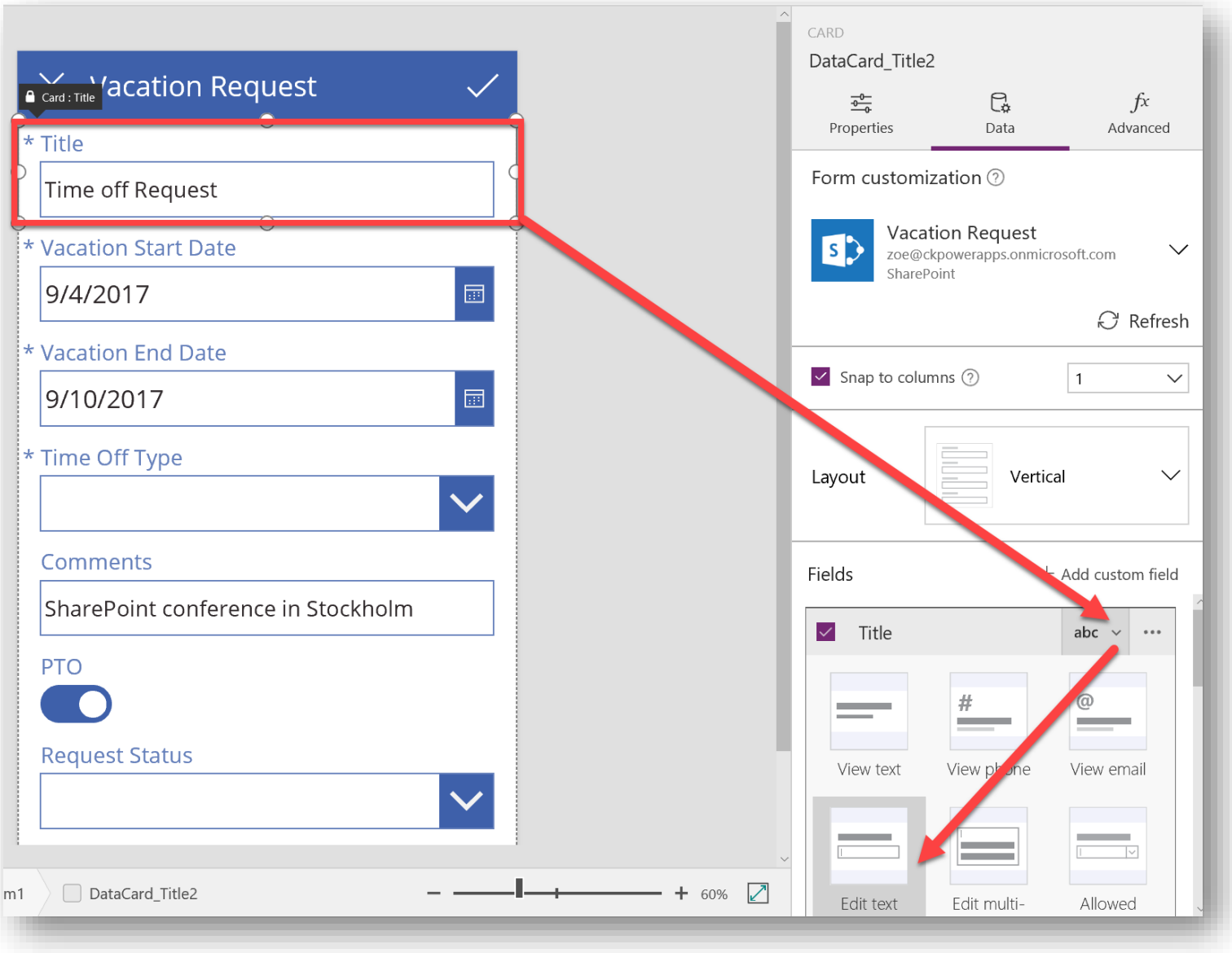
Modifying Control Properties



Card Controls and Data Cards

- **Card controls**
  - Building blocks of the **Edit** and **Display** form controls
  - Form represents entire record
  - **Card** represents a single field of the record
- Interact with **cards** in right-hand pane after you select a form control in design workspace
  - In the pane:
    - Choose which fields to show
    - Change order of fields
    - Change how to show each field

Data Cards

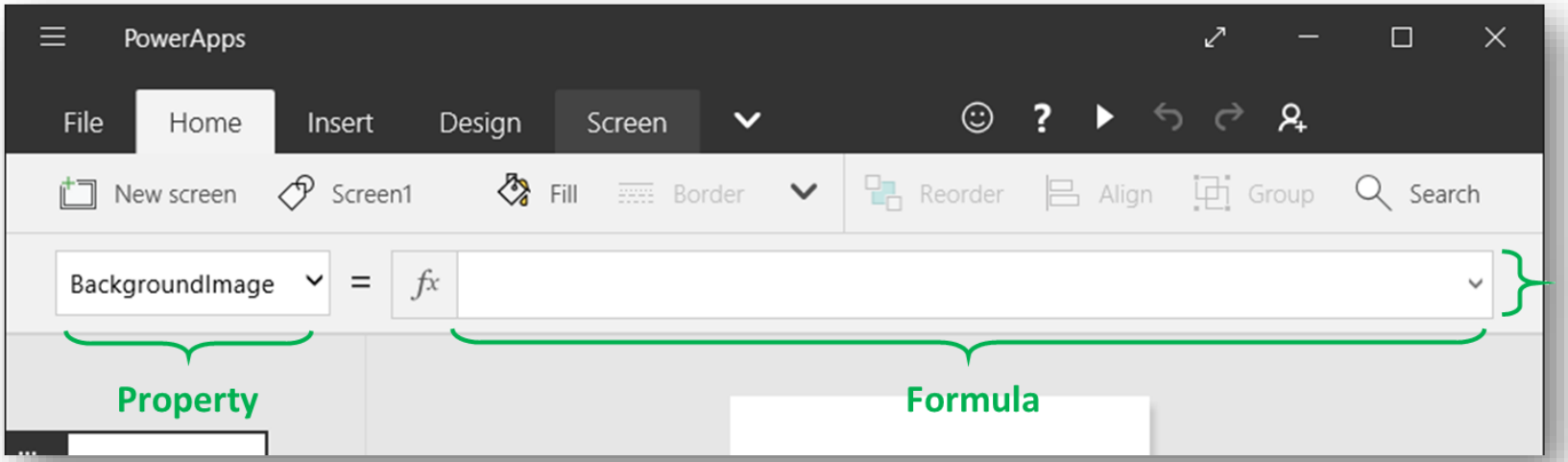

Vacation Request
Card : Title
* Title
Time off Request
* Vacation Start Date
9/4/2017
* Vacation End Date
9/10/2017
* Time Off Type
Comments
SharePoint conference in Stockholm
PTO
Request Status
m1
DataCard_Title2
60%
CARD
DataCard_Title2
Properties
Data
Advanced
Form customization
Vacation Request
zoe@ckpowerapps.onmicrosoft.com
SharePoint
Refresh
Snap to columns
1
Layout
Vertical
Fields
Add custom field
Title
abc
View text
View phone
View email
Edit text
Edit multi-
Allowed

Working with the Formula Bar

- **Excel Formulas**
  - Build formulas that populate cells
  - Create tables and charts
- **PowerApps Formulas**
  - Build formulas similar to Excel as you configure controls instead of cells
  - Build formulas that apply specifically to apps instead of spreadsheets

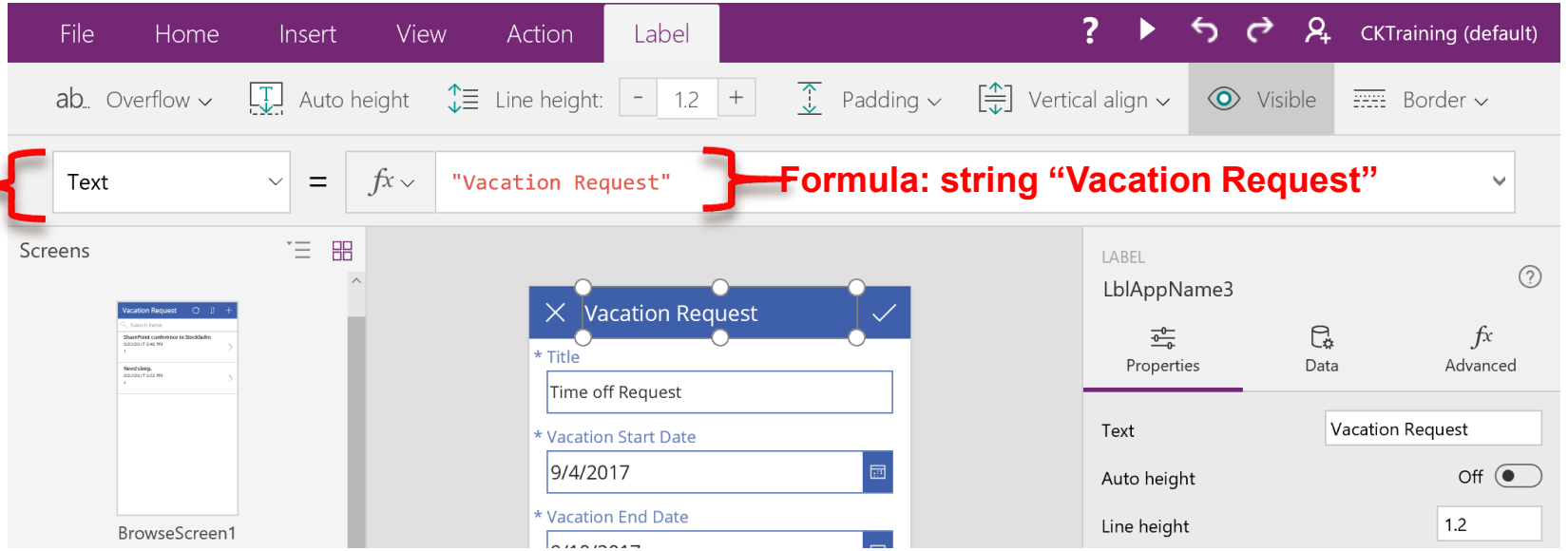
Working with the Formula Bar

- Formula sits on top of the screen and has two parts:
  - **Property list:** Each control and screen has a set of properties. Use this list to select a specific property.
  - **Formula:** The formula to be calculated for this property, made up of values, operators, and functions.



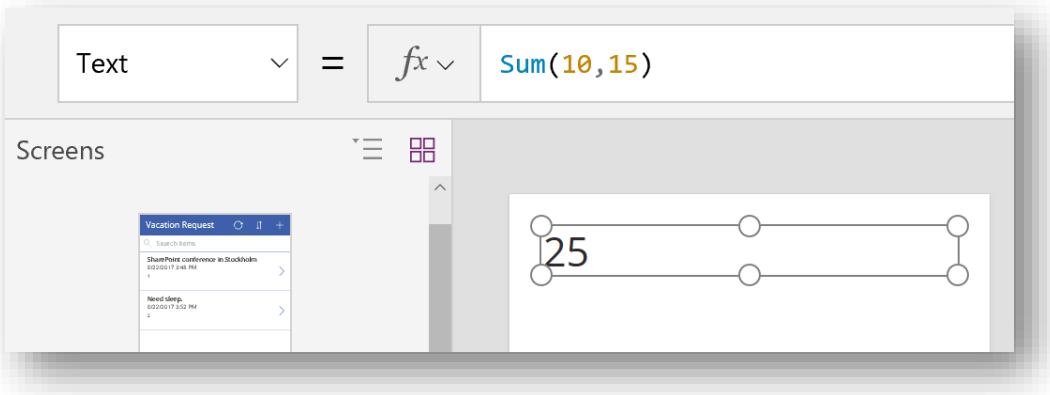
Working with the Formula Bar

- Formula **Text** of a **Label** control
  - All strings must be in double quotes **“string text”**

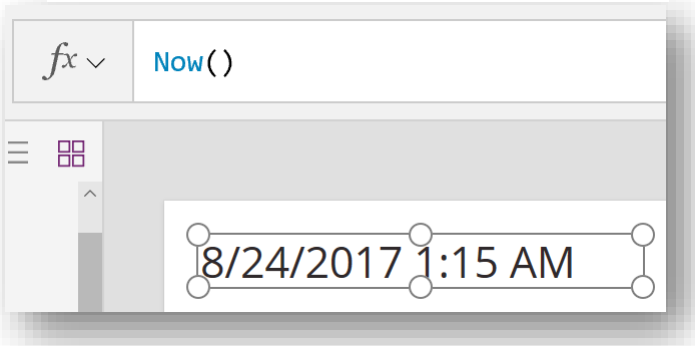


Formula Examples (Label Text)

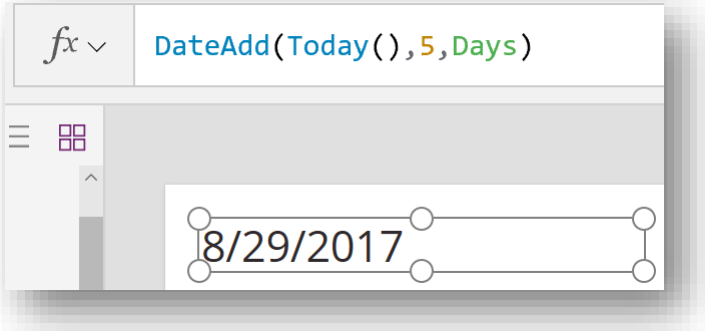
Sum of numbers



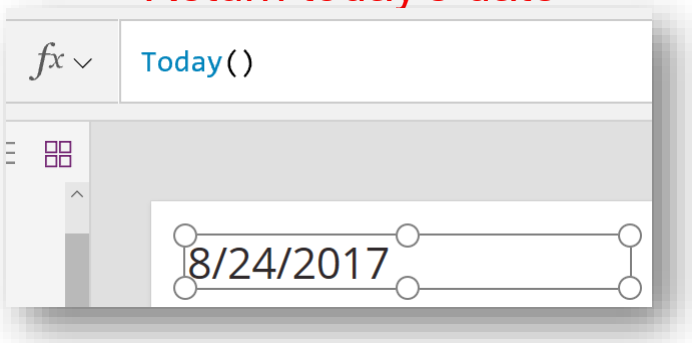
Return now (date and time)



Add 5 days to today's date

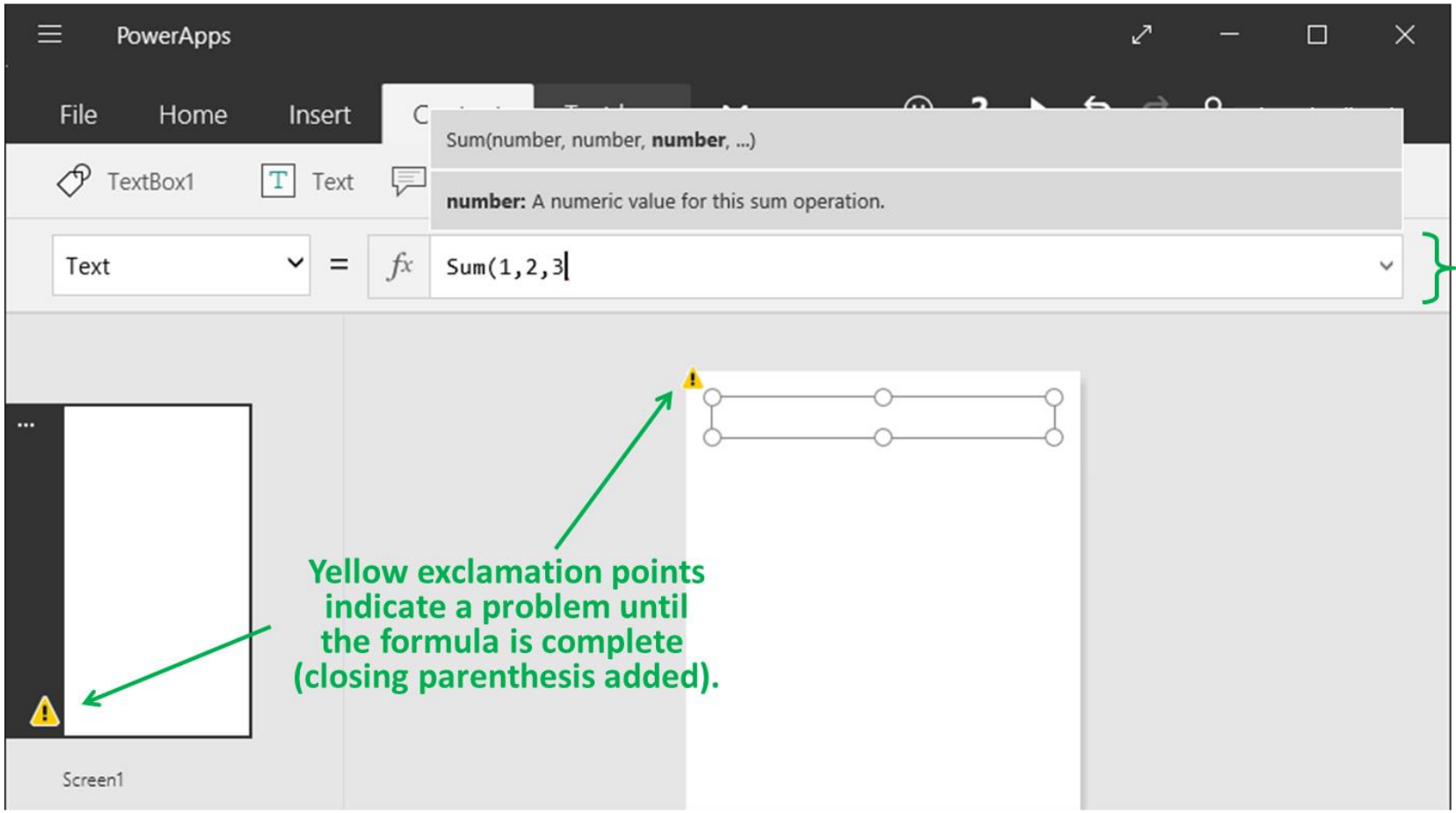


Return today's date

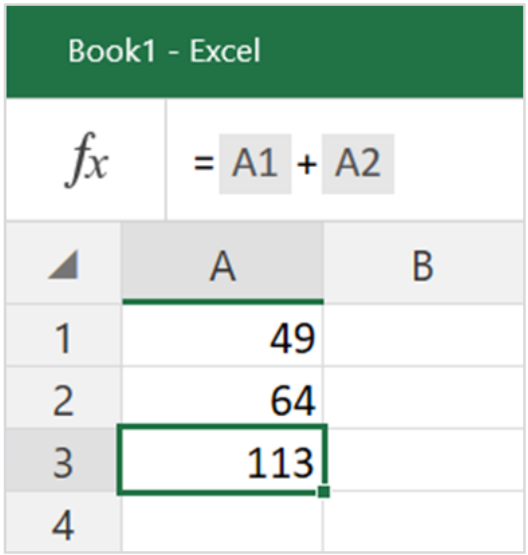


https://powerapps.microsoft.com/en-us/tutorials/formula-reference/

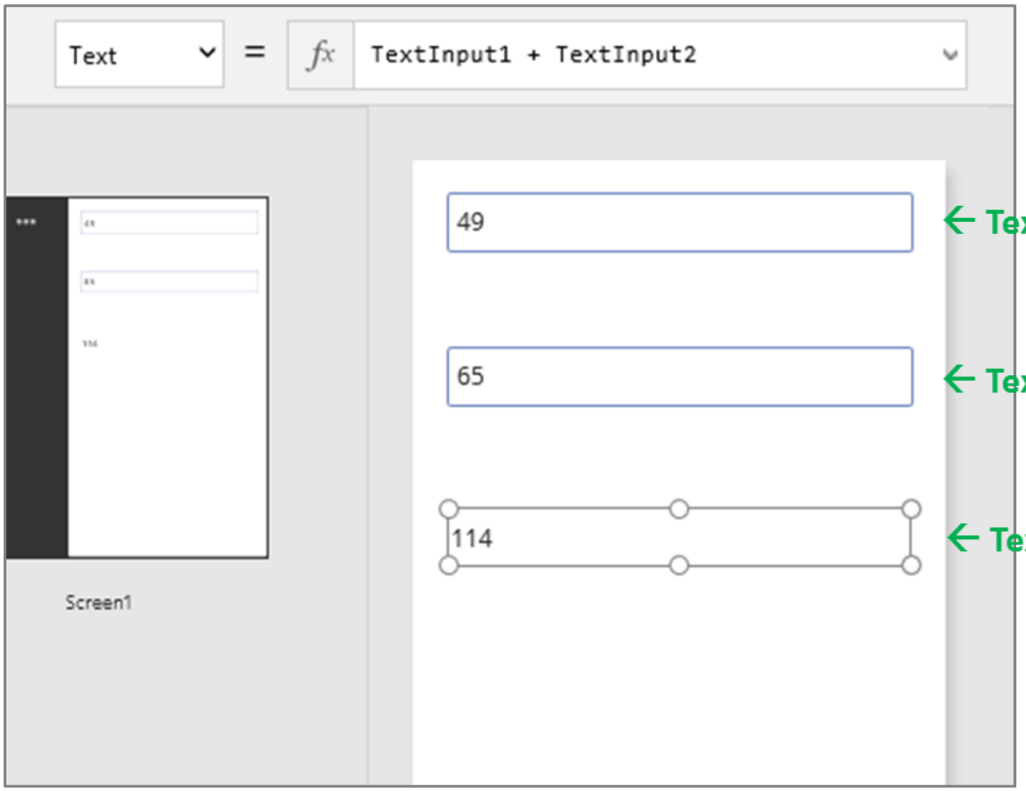
Formula Errors



Change Value Based on Input

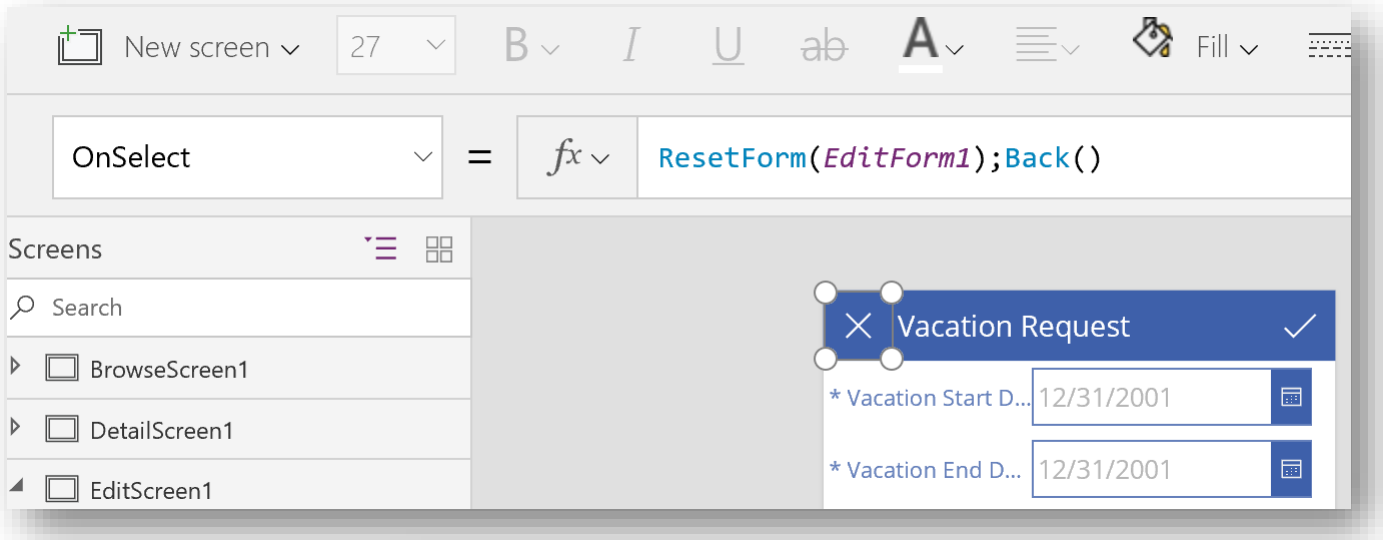


A3's formula depends on the values of cells **A1** and **A2**



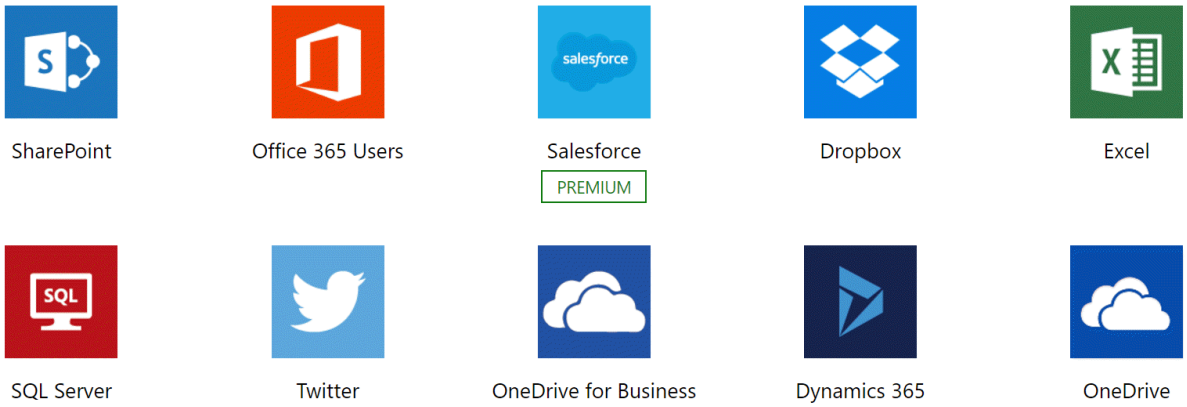
Form Interactivity & Navigation

- Create buttons and set the navigation to go back and forth between screens



Data Sources & Connectors

- **Data Sources**
  - External information stored in cloud services
  - Examples: Excel workbooks, SharePoint lists, SQL tables
- **Connectors**
  - A proxy or wrapper around an API which allows the underlying service to talk to PowerApps and Flow



Components of a Connector

- Components offers a set of operations:
  - **Actions**
    - Changed directed by a user such as an action to lookup, write, or delete data
  - **Triggers**
    - Can notify your app when a specific event occurs

  - Two types of triggers:
    - **Polling triggers** – These triggers call your service at a specified frequency to check for new data.
    - **Push triggers** – Provides ability to send various notifications that directly targets your Apps. Trigger push notification directly from an App or from a Flow.

SharePoint List

- Generate an app automatically based on data in a SharePoint list
  - Users can manage items in app for SharePoint list
  - Libraries are NOT supported
- By default, the app will have 3 screens:
  - **BrowseScreen1** - browse through all records in the list
  - **DetailsScreen1 -** view all fields for a specific record
  - **EditScreen1 -** create or edit a record
- Customize these screens based on your needs
- Not all columns are supported

Supported/Unsupported Columns

Column type	Support	Default cards
Single line of text	Yes	View text
Multiple lines of text	Yes	View text
Choice	Yes (single values only)	View lookup
Number	Yes	View percentage View rating View text
Currency	Yes	View percentage View rating View text
Date and Time	Yes	View text
Lookup	Yes (single values only)	View lookup Edit lookup
Boolean (Yes/No)	Yes	View text View toggle

Supported/Unsupported Columns

Column type	Support	Default cards
Person or Group	Yes (single values only)	View lookup Edit lookup
Hyperlink	Yes	View URL View text
Picture	Yes (read-only)	View image View text
Calculated	Yes (read-only)	
Task Outcome	No	
External data	No	
Managed Metadata	Yes (read-only)	
Rating	No	

Summary

- Getting Started with PowerApps Studio
- Creating an App From Scratch
- Connecting to Data
- Integrating PowerApps with SharePoint Online