Getting Started with the Power Platform

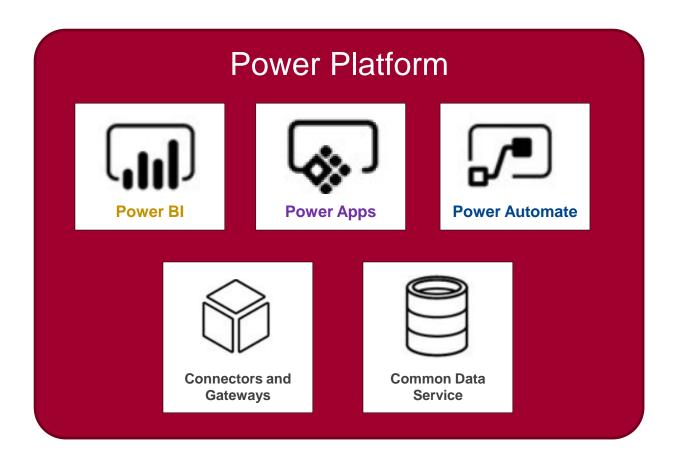


Agenda

- Getting Started with the Power Platform
- Creating Canvas Apps in Power Apps
- Creating Flows in Power Automate
- Introduction to the Common Data Service
- Working with Model-driven Apps



What is the Power Platform?





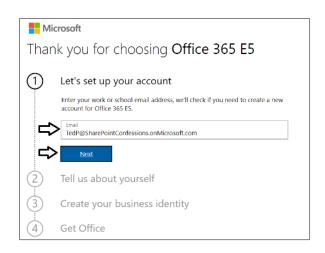
What Can You Build with Power Apps?

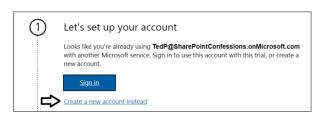
- Canvas Apps
 - Built using Power Apps Studio
- Flows
 - Used to process data and run workflows
- Connections
 - Used to connect Canvas apps and flows to external data
- Common Data Service (CDS) Components
 - Used to create business-centric data solutions
- Model-driven Apps
 - Application platform built on top of CDS
- Power Apps Portals
 - Website development platform built on top of CDS

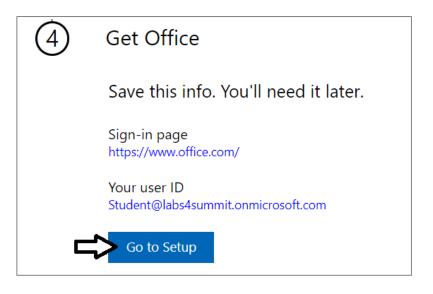


Creating an Office 365 E5 Trial Tenant

- All students will create an Office 365 trial tenant
 - Provides an isolated development environment for lab exercises
 - Trial accounts will last for 30 days



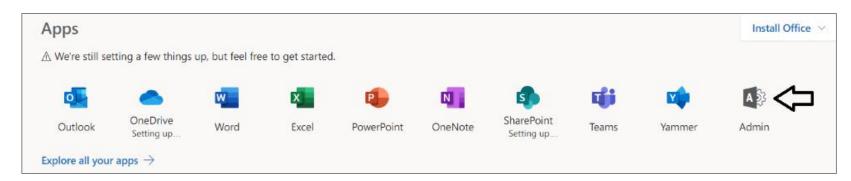




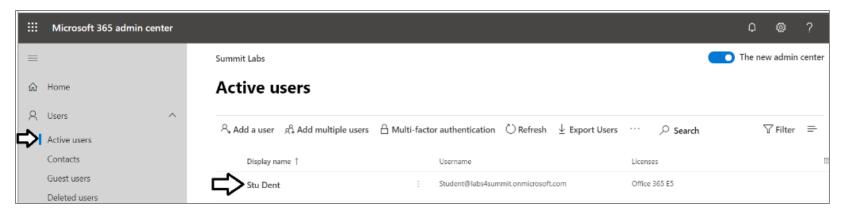


Microsoft 365 Admin Center

Navigate to the Microsoft 365 Admin center



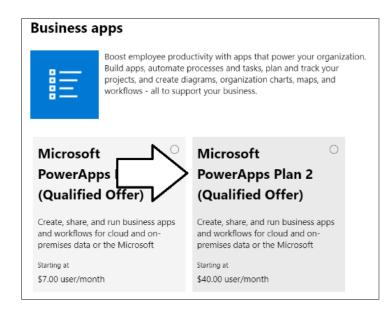
Allows for management of users accounts and licensing





Configuring a Power Apps Plan 2 License

- Certain design tasks require Power Apps Plan 2
 - You can start a 30-day trial for Power Apps Plan 2
 - License must be assigned to individual user accounts

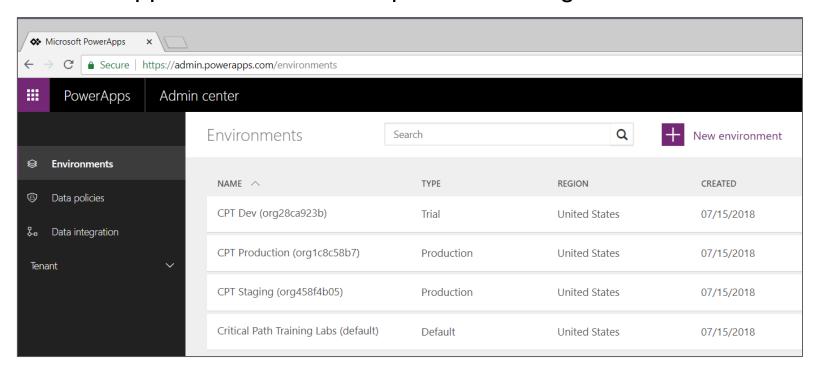






Power Apps Admin Center & Environments

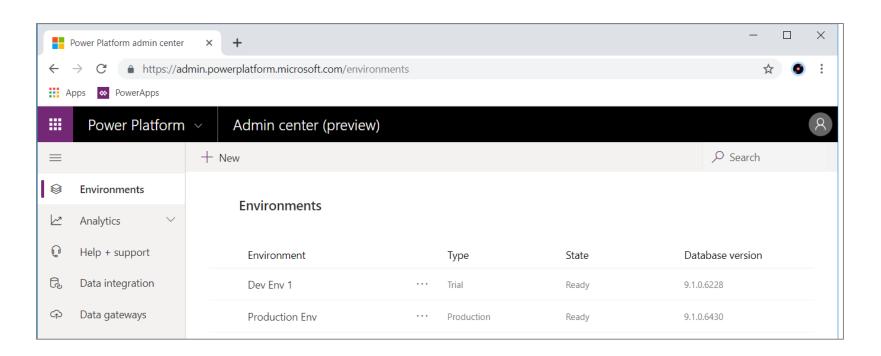
- Power Apps architecture based on environments
 - Environment provides context for creating apps and flows
 - Every tenant is automatically created with default environment
 - Organization can create multiple environments for dev & staging
 - Power Apps Plan 2 license required to manage environments





Power Platform Admin Center

- Power Platform Admin center is admin UI of the future
 - Power Platform Admin center preview is missing many features
 - Power Platform Admin center should be main admin UI by 2020
 - Go to https://admin.powerplatform.microsoft.com/environments







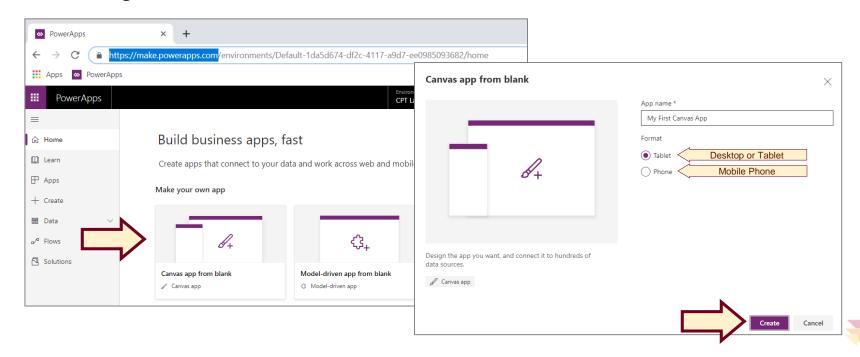
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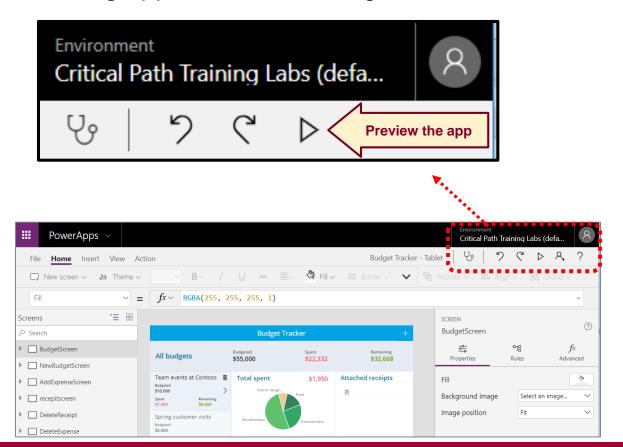
Creating a New Canvas App

- Create Canvas apps from the Power Apps Home page
 - Navigate to https://make.PowerApps.com
 - Chose Canvas app from blank or Start from data
 - Choose between Phone form factor and Desktop/Tablet form factor
 - Clicking Create button redirects browser to https://create.PowerApps.com



Running an App from Power Apps Studio

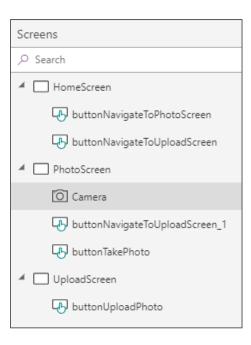
- You can run the app using the Power Apps Studio toolbar
 - Run the app by clicking the Preview the App button
 - Stop a running app to return to design mode





Building Apps using Screens and Controls

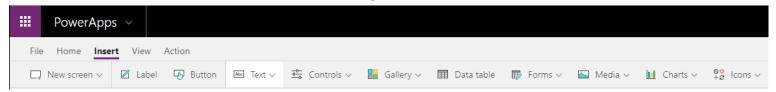
- Screens provide the top-level objects in Power Apps UI
 - Your app must have one screen but can have multiple screens
 - You design screens by adding and configuring controls
 - Left tree view shows hierarchical view of screens and controls
 - You can rename screens and controls using left tree view menu



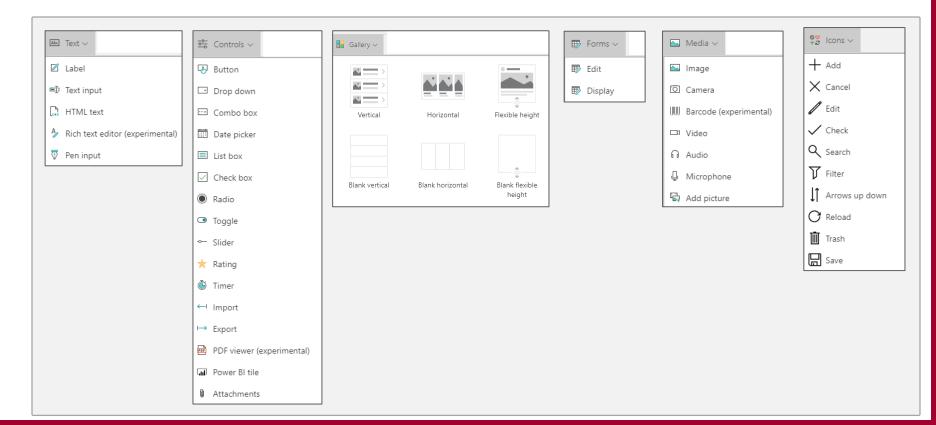


Adding Controls to a Screen

You add controls to a screen using the Insert ribbon tab

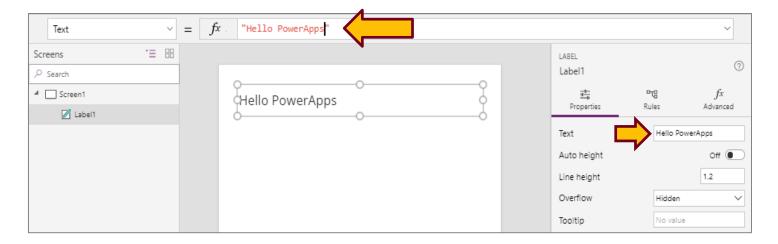


Power Apps provides extensive set of controls for web and mobile apps



Configuring Control Properties

- Control properties can be set two different ways
 - Property values can be set using Properties pane
 - Property values can be set using Formula bar



- Building apps with Power Apps requires shift in thinking
 - You don't write code to set property values like in VBA
 - Control properties configured using formulas
 - You develop using declarative style instead of procedural style



Power Apps Formula Language

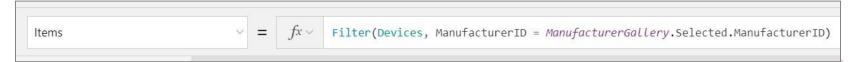
- Power Apps provides its own Formula Language
 - Designed to be as similar as possible to Excel Formula language
 - Power Apps Formula Language includes built-in set of functions
- You write formulas for specific properties
 - Set the Text property for a label



Set the Color property of the label text



Write an formula to filter the items shown in a gallery



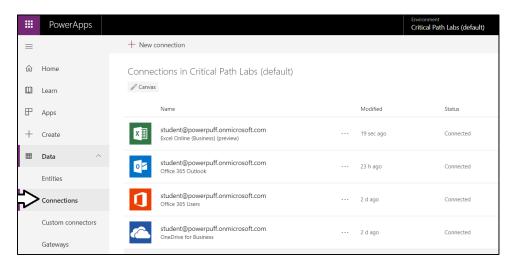
Events and State Changes

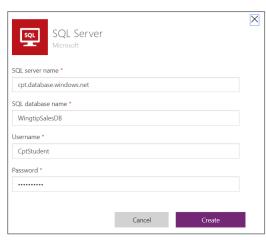
- Formulas for event properties can contain imperative logic
 - OnSelect, OnVisible, OnStart, etc.
- Imperative logic is used to take action
 - Set value of global variable or context variable
 - Add item to a collection.
 - Navigate between screens
 - Submit data to server
- You can chain actions together with chaining operator (;)



Understanding Connectors & Connections

- What is a Connector?
 - API wrapper that Power Apps uses to interact with datasource
- What is a Connection?
 - Configuration created to connect to a specific datasource
 - Each connection is created using a specific connector
 - Connection also caches login credentials and granted permissions
 - Connections can be shared across users

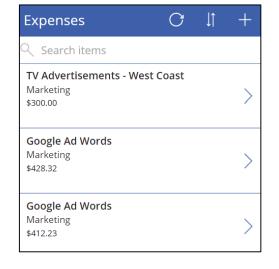




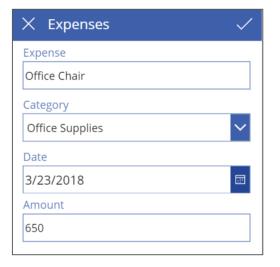


Data Binding with Galleries and Forms

- Table binding
 - Gallery control
 - DataTable control



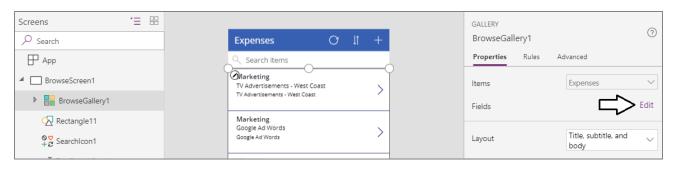
- Single-record binding
 - Display form control
 - Edit form control





Working with the Data Pane

- You use the Data pane to configure data binding
 - Select a data-bound control and then display Data pane
 - Data pane allows you to change layout for data binding
 - Once you select layout, you can then map fields below



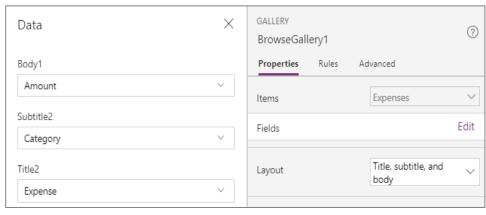




Table Functions

- Each table represented as a value
 - Table can be passed as argument
 - Table can be returned by function
- Functions that return tables
 - Filtering: Filter, Search
 - Sorting: Sort, SortByColumns
 - Shaping: AddColumns, DropColumns, RenameColumns
 - Grouping: GroupBy, Ungroup



Understanding Delegation

- Delegation is act of pushing work to data source
 - Work usually involves filtering and sorting
 - Work can also involve aggregation
 - Delegation minimizes amount of data retrieved by app
- Not all connectors support delegation
 - Non-delegate-able connectors only return 500 items
 - Searching through data becomes unpredictable





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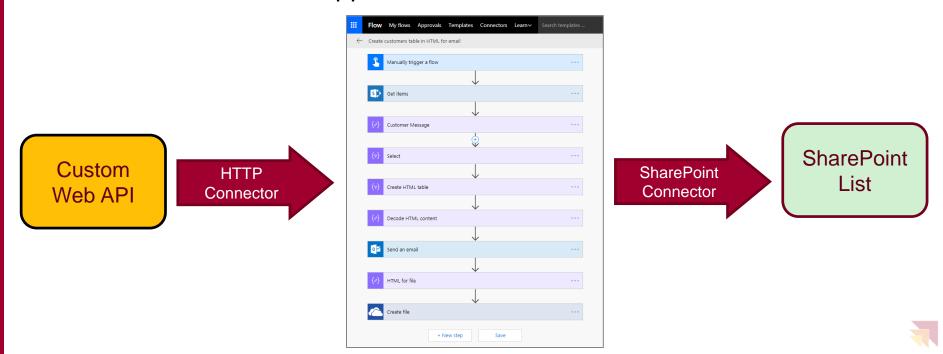
What is Power Automate?

- Service for automating business and workflow processes
 - You use Power Automate by creating and running "flows"
 - Power Automate provides browser-based flow editing experience
 - Power Automate originally went by the name of "Microsoft Flow"
- What can you automate by creating a flow?
 - Sending notifications
 - Importing and exporting data
 - Generating Microsoft Word documents
 - Automating approvals



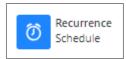
Building Blocks of Power Automate

- Flows are created using the following building blocks
 - Triggers events that start a flow
 - Actions tasks and operation executed by flow
 - Services sources and destinations for data
 - Connectors wrappers to communicate with service APIs



Flow Trigger Types

- Scheduled Flow Triggers
 - Runs periodically based on an interval



- Automated Flow Triggers
 - Runs when something happens







- On-demand Flow Triggers
 - Runs when a user clicks a button

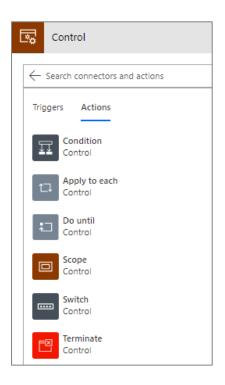


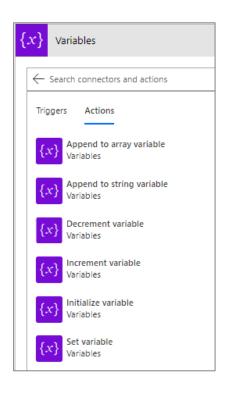


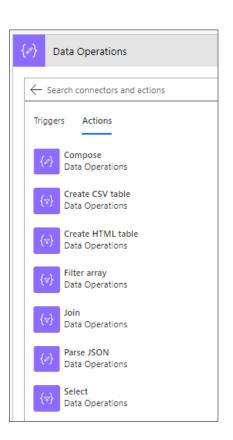


Core Action Categories

- Control: actions to provide control-of-flow
- Variables: actions to manage state within flow lifetime
- Data operations: action to process data & prepare content



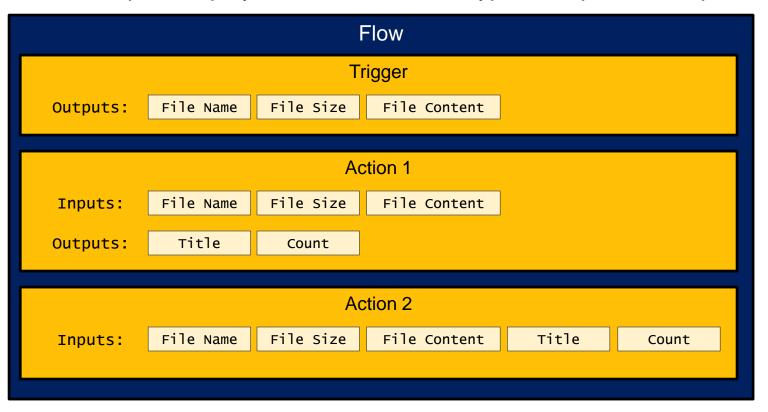






Data Automatically Flows from Step to Step

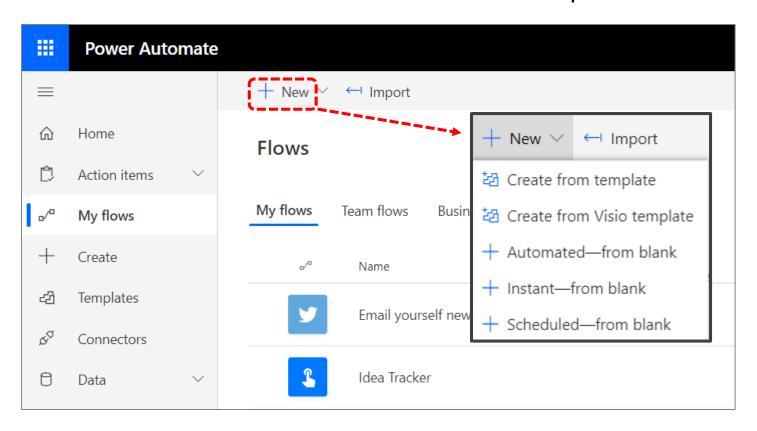
- Data in flows added by step outputs
 - Data added in step output is available in later steps
 - It's easy to configure step input data using output data in previous steps
 - Certain outputs displayed/hidden based on types of input and output





Creating and Managing Flows

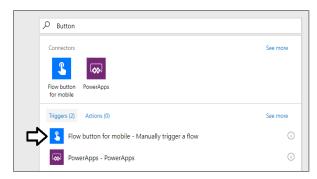
- Power Automate user portal used to manage & edit flows
 - Accessible through https://flow.microsoft.com
 - Flow can be created from blank or from template



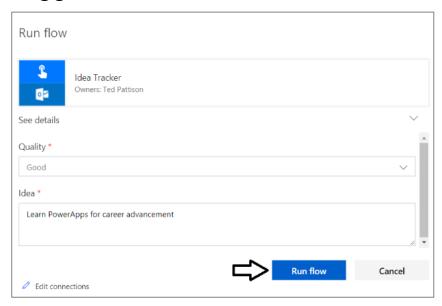


Creating a Flow Trigger by Manual Button

Use Run button for Mobile as flow trigger

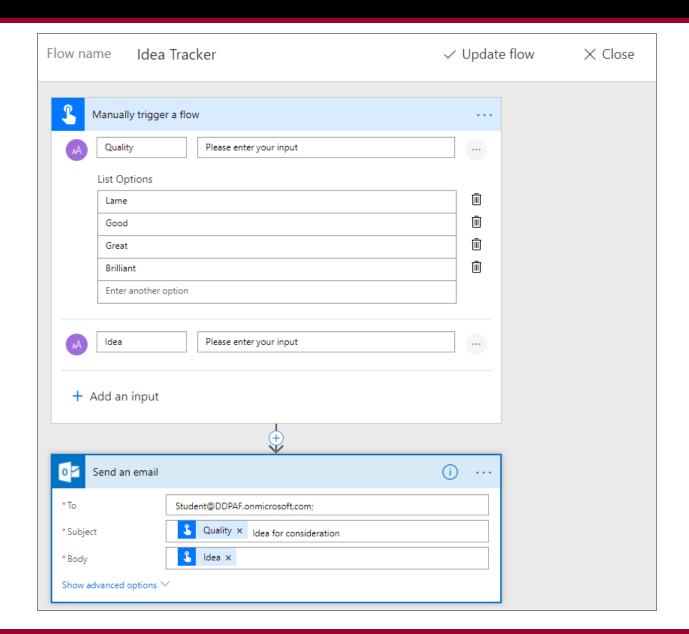


Trigger can be extended with one or more input fields





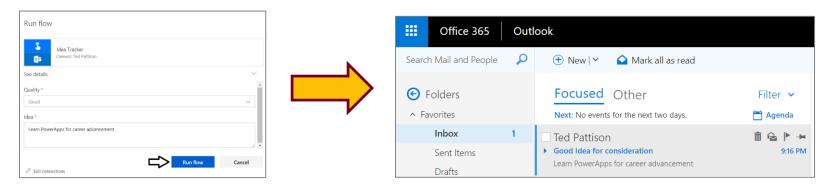
Building Out The Idea Tracker Flow



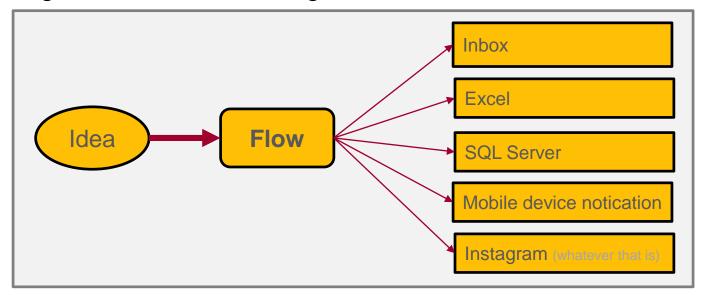


Where Should You Write the Idea?

You can track the idea by sending an email



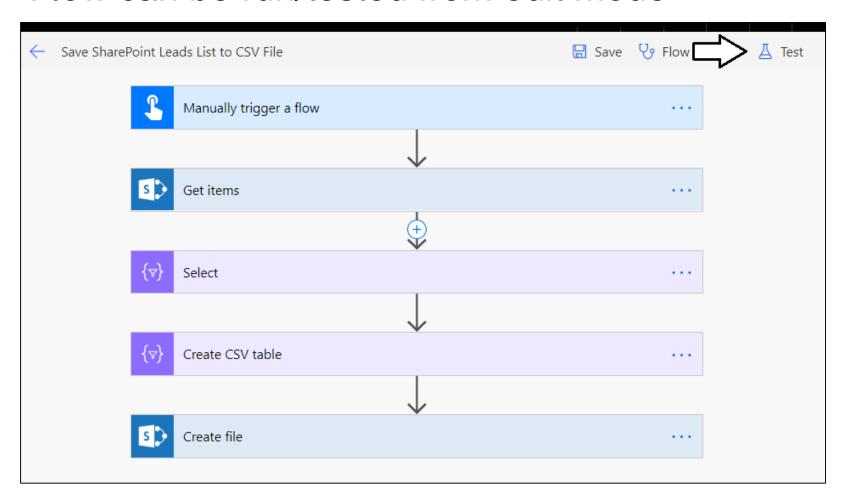
Or get even more extravagant





Testing a Flow

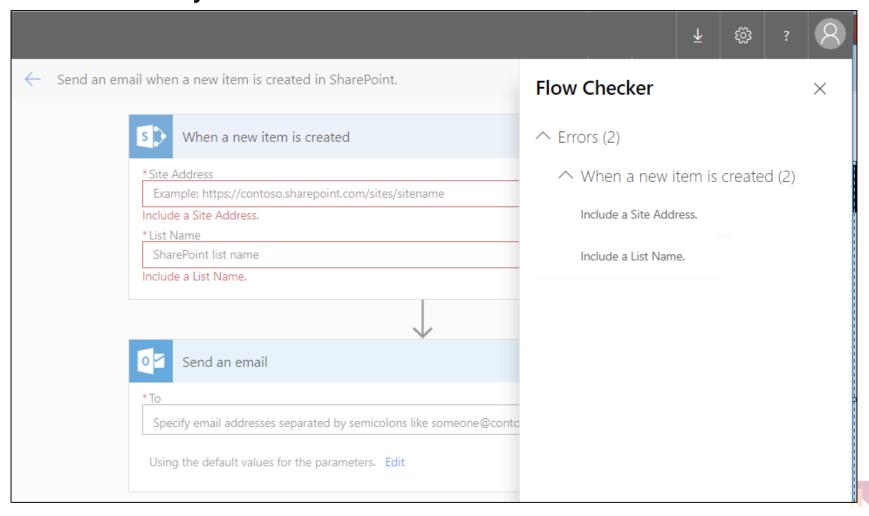
Flow can be run/tested from edit mode





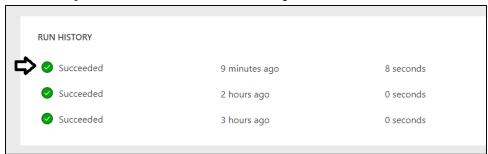
Flow Checker

Automatically checks flows for errors and omissions

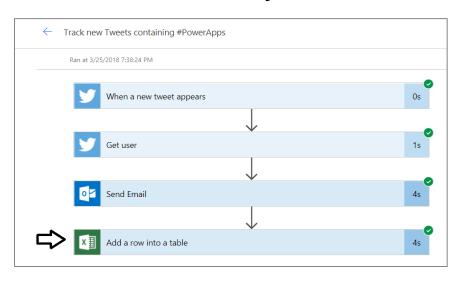


Run History

Flow provides history flows that have run



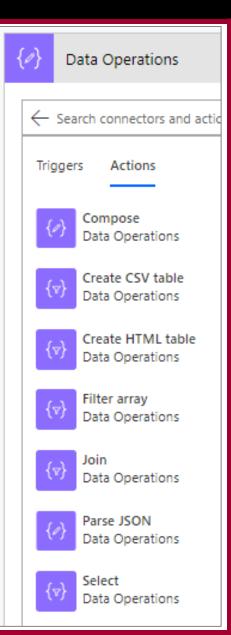
Provides read-only view of data for auditing & monitoring





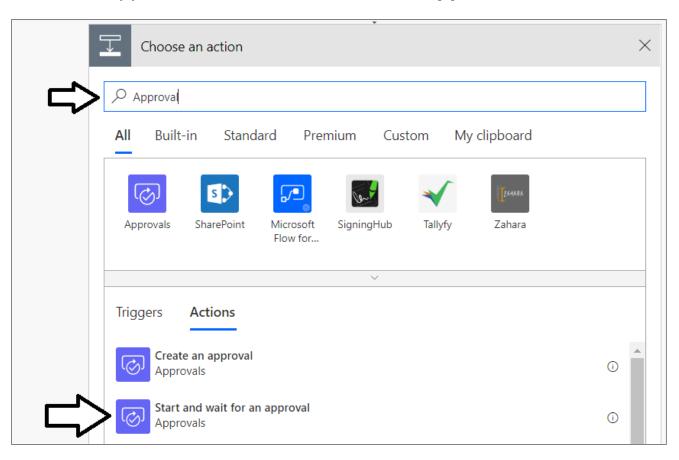
Actions with Data Operations

- Compose
 - Used to parse together text, HTML, JSON, etcs.
- Create CSV Table
 - Used to export data files with CSV format
- Create HTML Table
 - Used to create HTML tables for use in email messages
- Filter Array
 - Filter the contents of an existing array
- Join
 - Parse email address array into single string
- Parse JSON
 - Parse JSON returned from HTTP call into an object
- Select
 - Remap the columns in an array



Add the Start an Approval Action

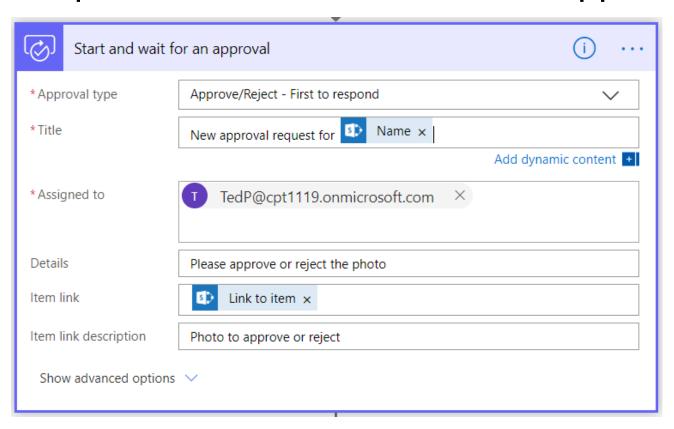
- An Approval process is added as an action
 - Select the Approvals action named Start an approval





Building Out The Start an Approval Action

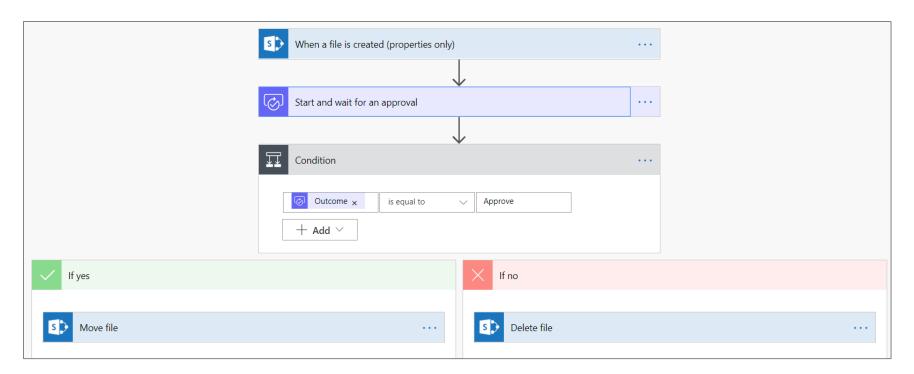
You provide data which is sent to approver





Responding to the Approval Response

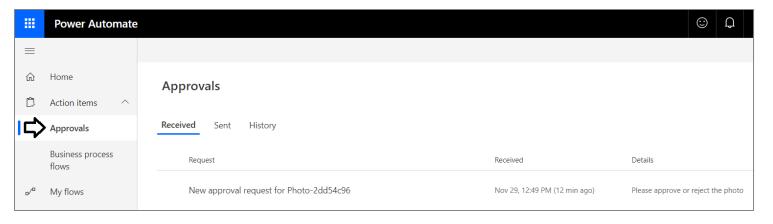
- Start an Approval action followed by a condition
 - Allows flow to determine if approval was accepted or rejected
 - Condition provides If yes and If no branches for both outcomes





Approvals Center

- Microsoft Flow provides Approvals Center
 - Provides alternative to email for approve/reject processing
 - Accessible through browser
 - Provides monitoring of completed approvals and pending approvals





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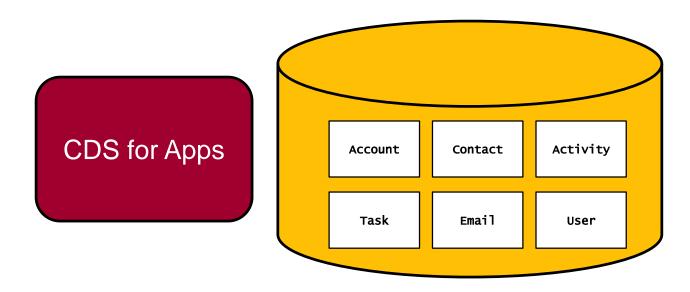
What is Common Data Service?

- Platform for building business applications
 - Business application include CRMs, ERPs, etc.
 - Provides common database infrastructure
 - Created to conform to the Common Data Model (CDM)
- What does Common Data Service provide?
 - Standard database schema of common entities
 - Extensible design for extending and creating entities
 - Ability to build entity-specific UI components
 - Ability to build entity-specific business logic
 - Ability to build apps by assembling components



Common Database Model Schema

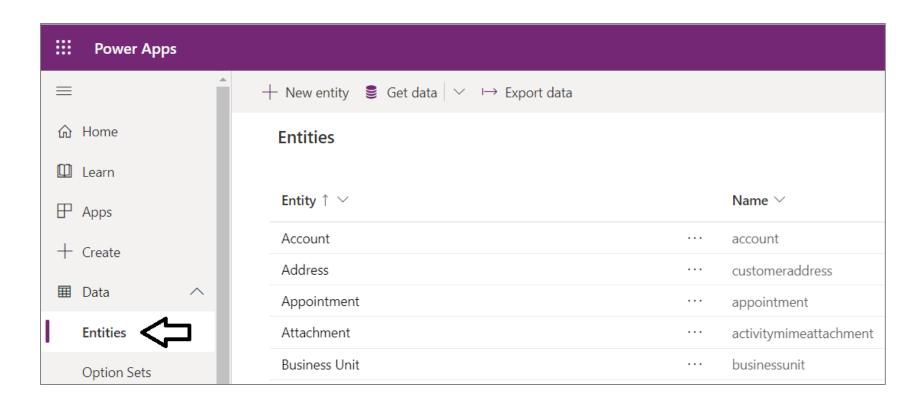
- CDM defines set of entities available to all applications
 - Account: represents an business entity that can be invoiced
 - Contact: represents a human being
 - Activity: represents an event that can be schedule
 - Task: represents work item that can be assigned to user or team
 - Email: represents email message sent or received
 - User: represents system user who can be owner of records





Inspecting the Standard Entities

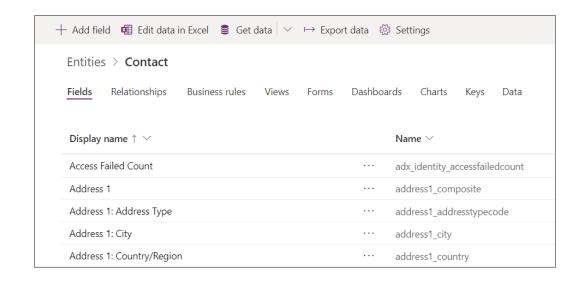
CDS created with set of standard entites





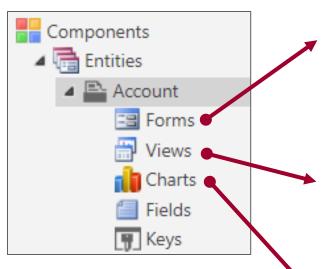
What Exactly is an Entity?

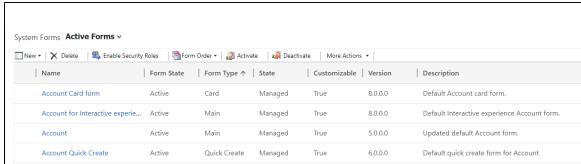
- Data components
 - Entity and Fields
 - Relationships
- UI components
 - Forms
 - Views
- Logic Components
 - Business rules
 - Business process flows
 - Workflows, Actions & Flows
- Visualization Components
 - Charts
 - Dashboards





Inside an Entity





ew: All Active Views				
New X More Actions •				
Name ↑	Туре	State	Customizable	Description
Account Advanced Find View	Advanced Find View	Managed	True	
Account Associated View	Associated View	Managed	True	Displays information about related accounts in the detail form of \dots
Account BulkOperation View	Associated View	Managed	True	Display Accounts for BulkOperation View
Account List Member View	Associated View	Managed	True	Displays information about related accounts in the Members subg

🚵 Nev	/			
	Name ↑	State	Customizable	Description
	Accounts by Industry	Managed	True	Shows the total number of accounts by industry.
	Accounts by Owner	Managed	True	Shows the total number of accounts by owner.
	Accounts by Owner - Tag Chart	Managed	True	Shows the total number of accounts by owner in a tag chart.
	New Accounts By Month	Managed	True	Shows the number of new accounts in a month.

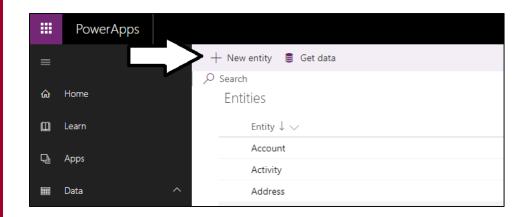


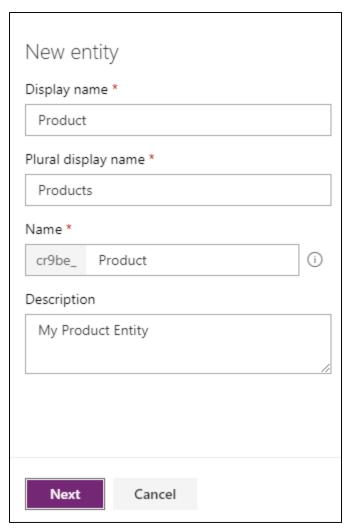
CDS Extensibility

- You can modify most standard entities
 - Modification involves adding fields
 - Existing fields cannot be modified or removed
 - System entities cannot be modified
- You can create custom entities
 - Herein lies the ability to design complex business apps



Creating a Custom Entity







Adding Custom Fields

Entities > Product			
Fields Relationships Business rules View	rs Keys Data		
Display name ↓ ∨	Data type 🗸	Type 🗸	Required
List Price	··· Currency	Custom	
List Price (Base)	· · · © Currency	Custom	
Product Available	··· 🔚 Two Options	Custom	
Product Category	··· 🗏 Option Set	Custom	
Product Code	··· Abd Text	Custom	~
Product Description	··· Æ Text Area	Custom	
Product Image	··· 🖂 Image	Custom	
Product Name	··· Abc Text	Custom	~



Core System Fields Added to All Entities

ties > Product s Relationships Business rules V	iews Keys Data	
Display name ↓ ∨	Data type 🗸	Type ∨
Created By	· · · · · · · · · · · · · · · · · · ·	System
Created By (Delegate)	· · · · · · · · · · · · · · · · · · ·	System
Created On	· · · · · · · · · · · · · · · · · · ·	System
Currency	· · · · · · · · · · · · · · · · · · ·	Standard
Exchange Rate	· · · × Decimal Number	Standard
Import Sequence Number	· · · · · · · · · · · · · · · · · · ·	System
List Price	· · · · · · · · · · · · · · · · · · ·	Custom
List Price (Base)	· · · · · · · · · · · · · · · · · · ·	Custom
Modified By	· · · · · · · · · · · · · · · · · · ·	System
Modified By (Delegate)	· · · · · · · · · · · · · · · · · · ·	System
Modified On	··· 局 Date and Time	System
Owner	··· A Owner	System
Owning Business Unit	· · · • III Lookup	System
Owning Team	· · · · · · · · · · · · · · · · · · ·	System
Owning User	· · · • Lookup	System
Product	· · · □ Unique Identifier	System
Product Available	··· Two Options	Custom
Product Category	· · · Option Set	Custom
Product Code	· · · El Text	Custom
Product Description	· · · E Text Area	Custom
Product Image	· · · 🖂 Image	Custom
Product Name	· · · Est Text	Custom
Record Created On	· · · Date Only	System
Status	··· Option Set	System
Status Reason	··· 🗏 Option Set	System
Time Zone Rule Version Number	· · · · · · · · · · Whole Number	System
UTC Conversion Time Zone Code	· · · · · · · · · · Whole Number	System
Version Number	· · · · · · · · · · · · · · · · · · ·	System

Product	· · · □ Unique Identifier	System
Created By	· · · □ Lookup	System
Created By (Delegate)	··· 🖾 Lookup	System
Created On	··· · · · · · · · · · · · · · · · · ·	System
Modified By	· · · • Lookup	System
Modified By (Delegate)	··· ⊞ Lookup	System
Modified On	··· 局 Date and Time	System
Owner	··· A Owner	System
Owning Business Unit	· · · • I Lookup	System
Owning Team	· · · • • Lookup	System
Owning User	· · · ⊞ Lookup	System
Record Created On	· · · 🗇 Date Only	System
Status	··· 🗏 Option Set	System
Status Reason	$\cdots \equiv OptionSet$	System
Time Zone Rule Version Number	· · · · · · · · · · Whole Number	System
UTC Conversion Time Zone Code	· · · · · · · · · · · · · · · · · · ·	System
Version Number	· · · · · · · · · · · · · · · · · · ·	System

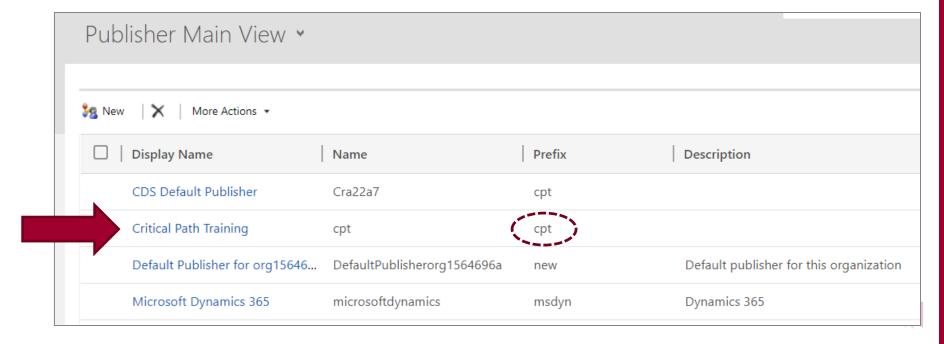
Introduction to Solutions

- Solutions used to move configuration between environments
 - Solutions used to move metadata (e.g. custom entity, model-driven apps)
 - Solutions not used to move business data itself
- Solutions can be managed or unmanaged
 - Unmanaged solutions is "open" solution which allows changes
 - Managed solutions are locked down and do not allow changes.
 - During development, you work with an unmanaged solution
 - When you export solutions, export is created as managed or unmanaged
- When you import a managed solution, it is in lockdown mode
 - You cannot modify or remove application components or customization
 - Managed solution is serviceable and upgradable
 - Uninstalling managed solution removes everything

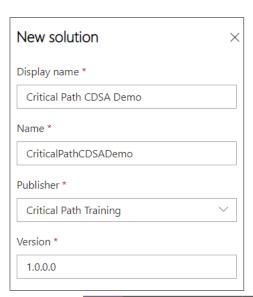


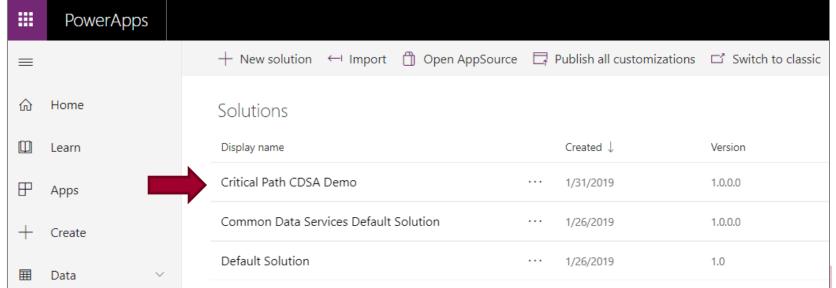
Publishers and Solutions

- CDSA solutions used to distribute applications
 - Provides means to conduct ALM
- CDSA Publishers
 - Profile used to provide identity for CDSA solutions
 - You should create new publisher when distributing solutions

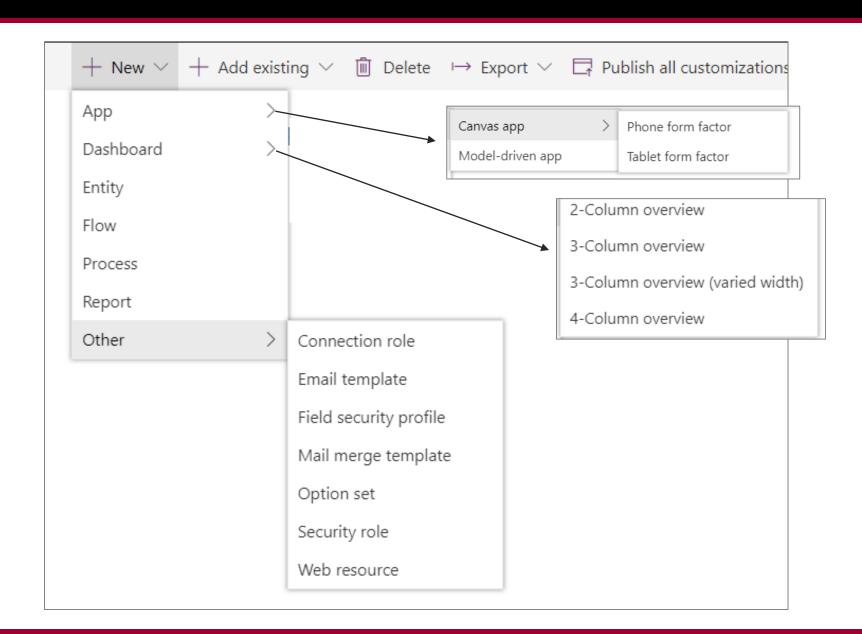


Creating a New CDSA Solution





Adding Solution Components



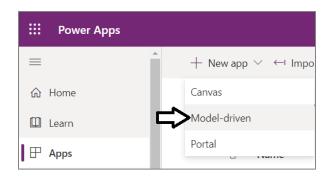


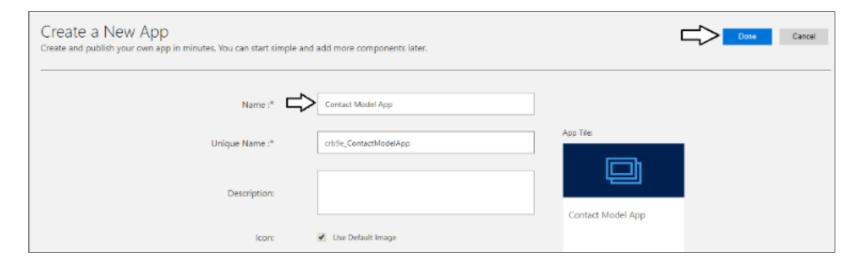
Agenda

- Getting Started with the Power Platform
- Creating Canvas Apps in Power Apps
- Creating Flows in Power Automate
- ✓ Introduction to the Common Data Service
- Working with Model-driven Apps



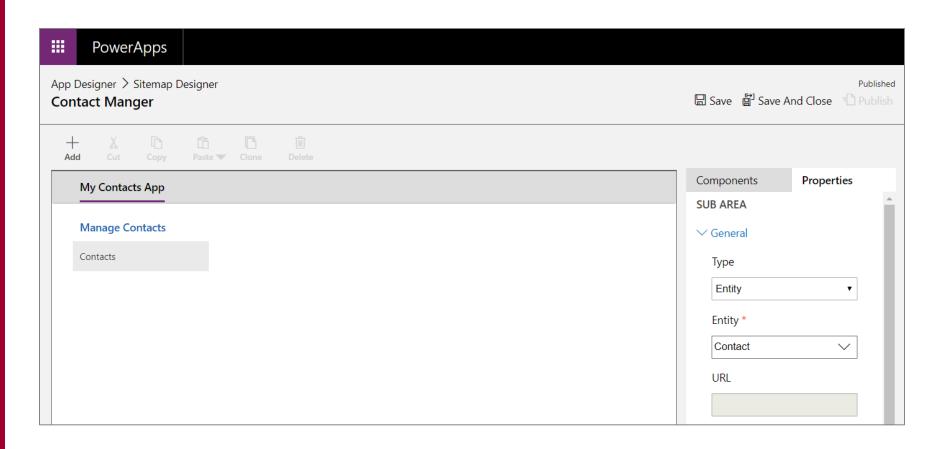
Creating a Model-driven App





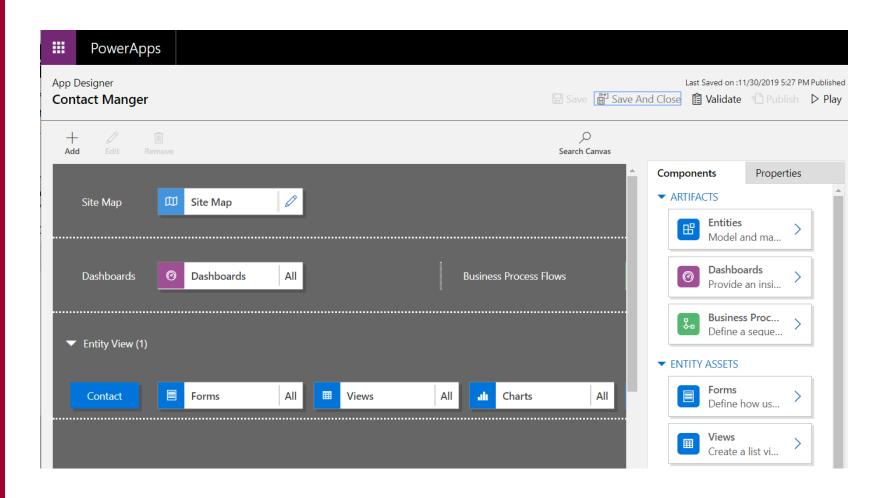


Creating the Sitemap Component



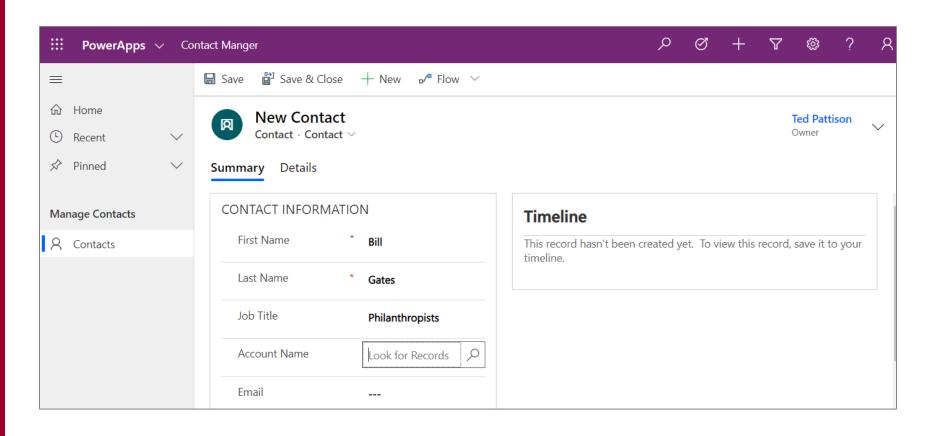


Publishing and Running the App





Testing a Model-driven App





Summary

- Getting Started with the Power Platform
- Creating Canvas Apps in Power Apps
- Creating Flows in Power Automate
- ✓ Introduction to the Common Data Service
- ✓ Working with Model-driven Apps

