

Designing and Developing PowerApps Portals



Agenda

- PowerApps Portal Architecture
 - Developing CDS Solutions
 - Power Apps portal Studio
 - Portal Management App
 - Portal Configuration
 - Developing Web Templates



Student Background Questionnaire

- What is your name?
- What type of portal are you planning?
 - Dynamics 365 Portal
 - Power Apps Portal without Dynamics 365
- With which of the following do you have experience?
 - Dynamics 365
 - Canvas Apps
 - Power Automate (aka Flow)
 - Common Data Service
 - Model-driven Apps
 - Other website building frameworks (e.g. WordPress, ASP.NET)



What is the Power Platform?

Power Platform



Power BI



Power Apps



Power Automate



Connectors and
Gateways



Common Data
Service



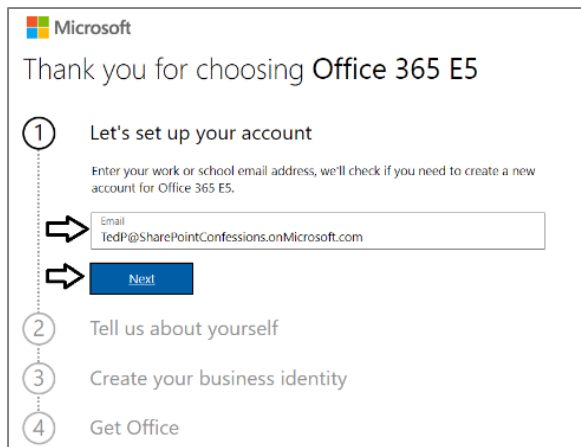
What Can You Build with Power Apps?

- 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

Thank you for choosing Office 365 E5

① Let's set up your account

Enter your work or school email address, we'll check if you need to create a new account for Office 365 E5.

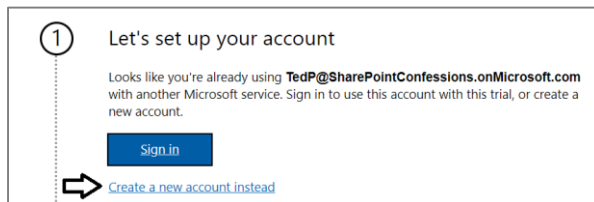
Email
TedP@SharePointConfessions.onMicrosoft.com

Next

② Tell us about yourself

③ Create your business identity

④ Get Office

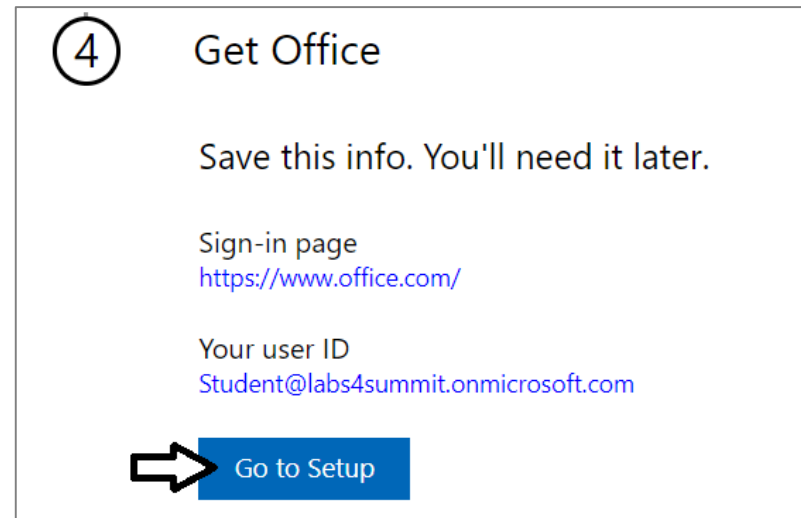


① Let's set up your account

Looks like you're already using TedP@SharePointConfessions.onMicrosoft.com with another Microsoft service. Sign in to use this account with this trial, or create a new account.

Sign in

Create a new account instead



④ Get Office

Save this info. You'll need it later.

Sign-in page
<https://www.office.com/>

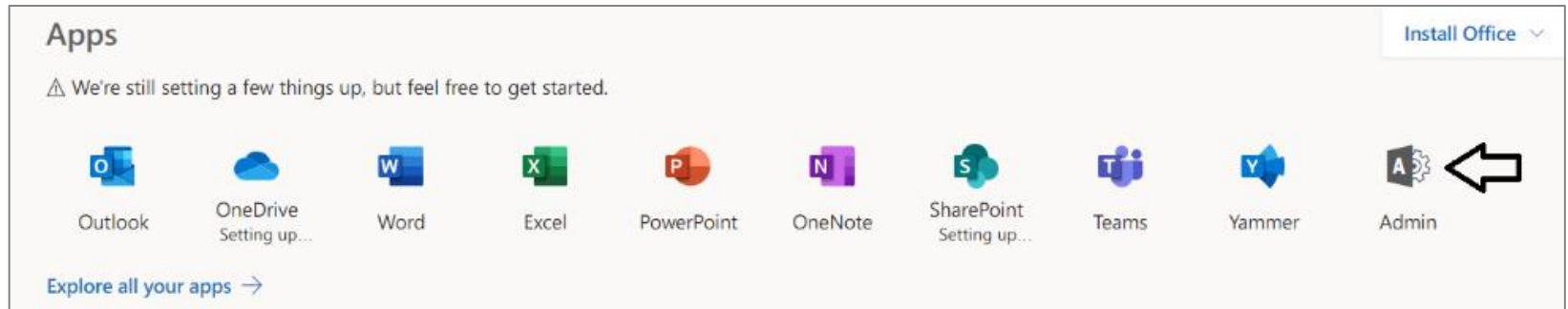
Your user ID
[Student@labs4summit.onmicrosoft.com](#)

Go to Setup

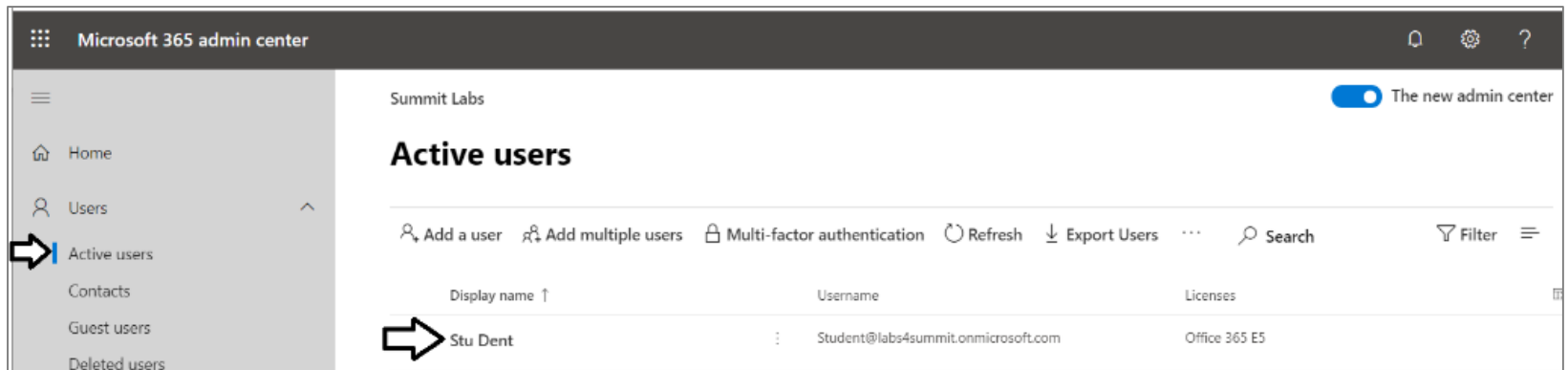


Microsoft 365 Admin Center

- Navigate to the Microsoft 365 Admin center



- Allows for management of users accounts and licensing



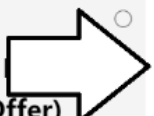
Configuring a Power Apps Plan 2 License

- 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

Business apps

Boost employee productivity with apps that power your organization. Build apps, automate processes and tasks, plan and track your projects, and create diagrams, organization charts, maps, and workflows - all to support your business.

Microsoft PowerApps (Qualified Offer)
Create, share, and run business apps and workflows for cloud and on-premises data or the Microsoft
Starting at
\$7.00 user/month




Microsoft PowerApps Plan 2 (Qualified Offer)
Create, share, and run business apps and workflows for cloud and on-premises data or the Microsoft
Starting at
\$40.00 user/month

Stu Dent
Sign in allowed
[Change photo](#)

Account Devices **Licenses and Apps** ← OneDrive

Select location *
United States ▼

Licenses (2)

<input type="checkbox"/>		<input checked="" type="checkbox"/>	Microsoft PowerApps Plan 2 24 of 25 licenses available
<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	Office 365 E5 23 of 25 licenses available



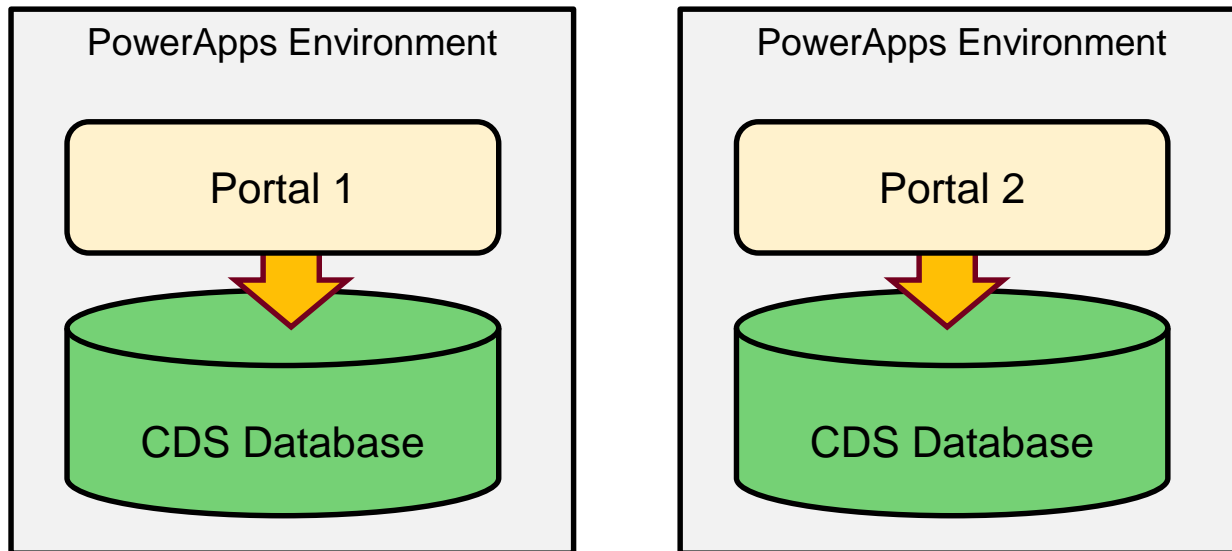
PowerApps Portals

- PowerApps portals provide web development platform
 - Create websites for anonymous users and/or authenticated user
 - Allows for authentication through LinkedIn, Facebook, Twitter, etc.
- Portal content managed by business users
 - Power Apps portal Studio used to add pages and author content
 - Portal Management app created along with portal
- Portal can be customized by web developers
 - Portal can be extended with custom web templates
 - Web templates can be written to access CDS entities



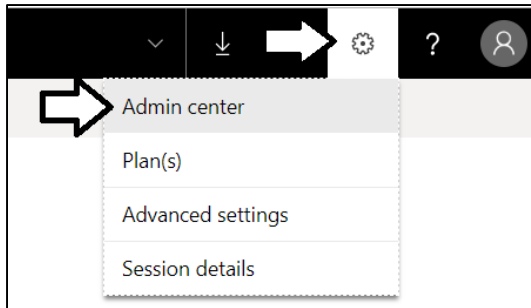
PowerApps Portal Architecture

- PowerApps portals built on Common Data Service
 - You must create a environment with CDS database to create portal
 - CDS used to track data for pages, templates and site content
 - Creating portals triggers installation of several ADX solutions



This Isn't Your Fathers PowerApps Admin Center

- Navigate to the new PowerApps admin center



- Admin center allows you to create and manage environments

Power Platform

Admin center (preview)

Environments

Analytics

Help + support

Data integration

Data gateways

Data policies

+ New

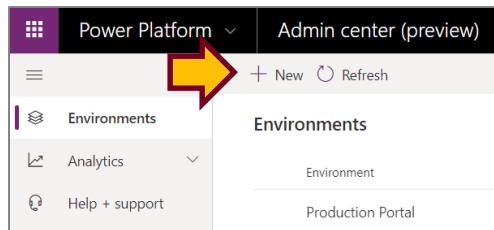
Refresh

Environments

Environment		Type	State	Region
Production Portal	...	Production	Ready	United States
Starter Portal	...	Trial	Ready	United States
Teds Portal	...	Production	Ready	United States
SharePoint Confessions Default	...	Default	Ready	United States

Creating a New Environment

- Use New command in the new admin center



New environment

Name *

Starter Portal

Type ⓘ *

Trial

Region *

Local environments can provide quicker data access.

United States - Default

Purpose

Describe the environment purpose

Create a database for this environment? ⓘ

☒ Yes

Next **Cancel**

Add database

Language *

Default language for user interfaces in this environment

English

Currency *

Reports will use this currency

USD (US\$)

Enable Dynamics 365 apps

In addition to PowerApps. [Learn more](#)

☐ No

Deploy sample apps and data

☐ No

Security group

Restrict environment access to people in this security group. Otherwise, everyone can access. [Learn more](#)

Save **Cancel**



Configuring Environment Features

The screenshot displays the Power Platform Admin center interface. The top navigation bar includes the Power Platform logo, a dropdown menu, and the text "Admin center (preview)". The left sidebar contains a menu with "Environments" (selected) and "Admin centers". The main content area shows the breadcrumb "Environments > Starter Portal > Settings" and a list of configuration categories: Product, Business, Users + permissions, Email, Services, and Data management. The "Product" category is expanded, showing sub-items like Behavior, Features, Languages, and Privacy + Security. The "Email" category is also expanded, showing sub-items like Email settings, Email tracking, Mailboxes, and Server profiles. The "Data management" category is expanded, showing sub-items like Announcements, Auto numbering, Automatic record creation policies, Bulk deletion, Data import wizard, Data maps, Duplicate detection, Mobile configuration, and Templates.

Power Platform ▾ Admin center (preview)

Environments > Starter Portal > Settings

Product

- Behavior
- Features
- Languages ↗
- Privacy + Security

Business

- Business closures ↗
- Calendar ↗
- Currencies ↗
- Regional formatting ↗

Users + permissions

- Business units ↗
- Hierarchy security ↗
- Positions ↗
- Security roles ↗
- Teams ↗
- Users ↗

Email

- Email settings
- Email tracking
- Mailboxes ↗
- Server profiles ↗

Services

- Microsoft Social Engagement ↗

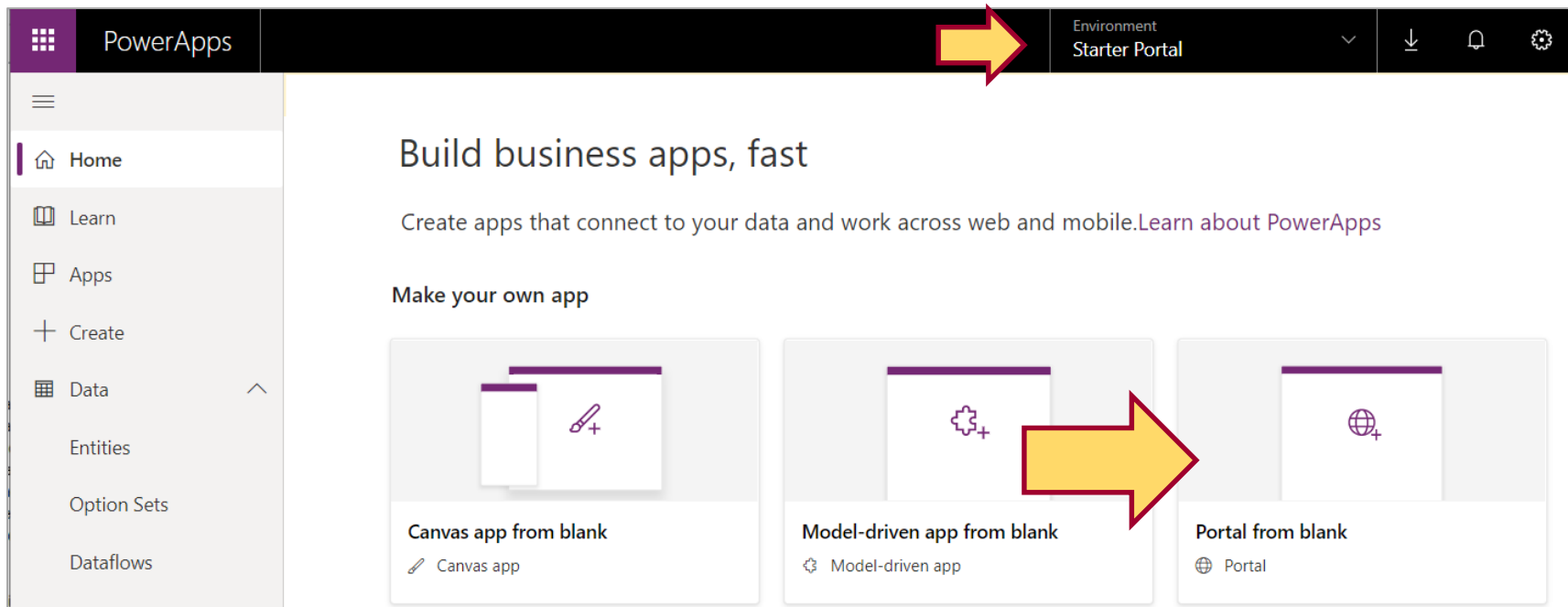
Data management

- Announcements ↗
- Auto numbering ↗
- Automatic record creation policies ↗
- Bulk deletion ↗
- Data import wizard ↗
- Data maps ↗
- Duplicate detection ↗
- Mobile configuration ↗
- Templates ↗



Creating a New PowerApps Portal


- New portal created using PowerApps Maker Portal
 - Select your target environment
 - Create portal using **Portal from blank** template




Providing Portal Provisioning Data

- Portal requires Name and unique address

Portal from blank



Create a website to share data with external and internal users. This template comes with sample pages to get you quickly started. [Learn more](#)

 Portal

① We'd need to install certain prerequisites for try portals, use an environment with them installed or create a new one using the Create new environment button

Name *
Teds Starter Portal

Address * ①
TedsStarterPortal

✓ TedsStarterPortal.powerappsportals.com

Language
English

By clicking on Create, you agree to the Terms of service and the Privacy Statement.

Create Cancel

Name *

Teds Starter Portal

Address * ①

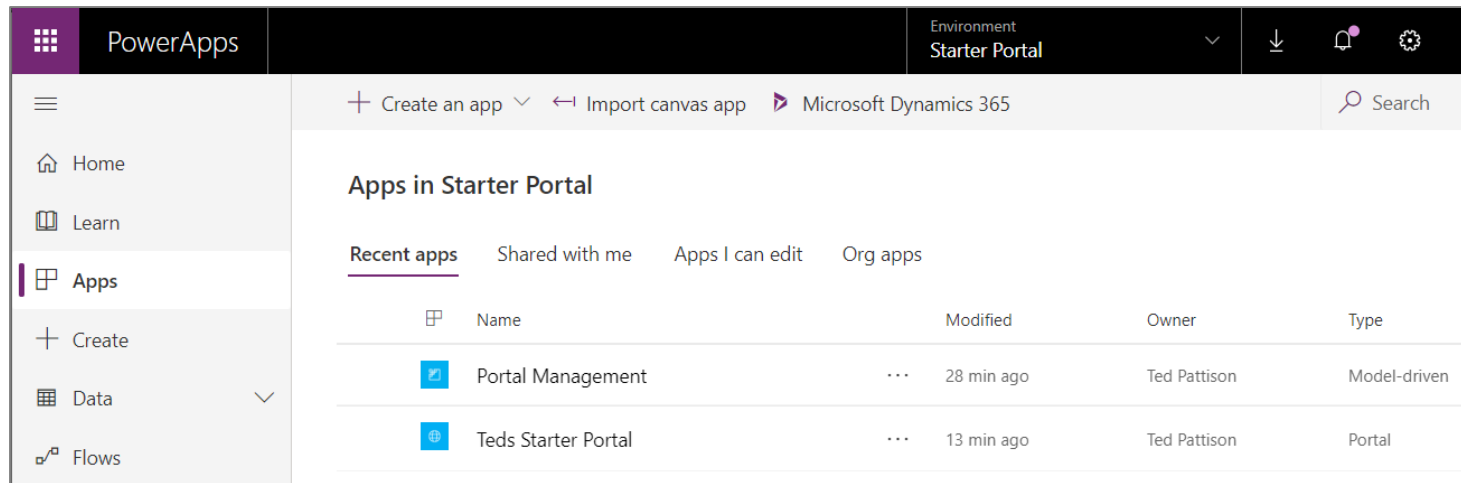
TedsStarterPortal .powerappsportals.com

✓ TedsStarterPortal.powerappsportals.com



Environment					
Starter Portal	▼	↓	🔔	⚙️	?
<div>Portal provisioning in progress</div> <p>Your portal Teds Starter Portal is currently being provisioned and this can take time. You'll be notified via Notifications pane once it is provisioned.</p>					

Portal Apps

- Provisioning a portal creates two applications
 - PowerApps portal
 - Model-driven app named **Portal Management**



The screenshot shows the PowerApps environment for 'Starter Portal'. The left sidebar contains navigation links: Home, Learn, Apps (selected), Create, Data, and Flows. The main content area is titled 'Apps in Starter Portal' and features tabs for 'Recent apps', 'Shared with me', 'Apps I can edit', and 'Org apps'. Below the tabs is a table listing recent applications.

	Name	Modified	Owner	Type
	Portal Management	28 min ago	Ted Pattison	Model-driven
	Teds Starter Portal	13 min ago	Ted Pattison	Portal

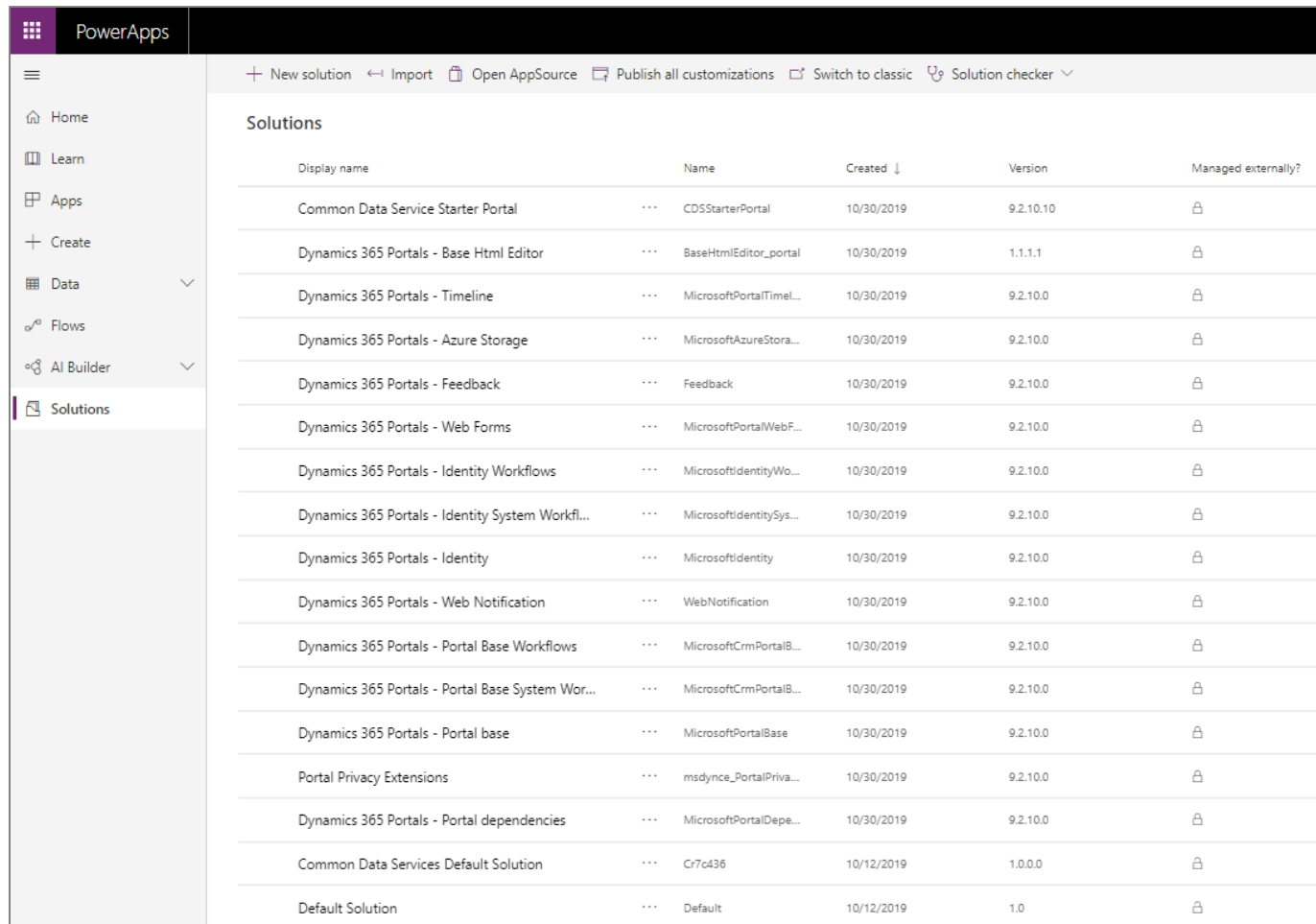


Launching the Portal

The image illustrates the process of launching the PowerApps portal. On the left, the PowerApps application interface is shown, with the 'Apps' menu open and a yellow arrow pointing to 'Portal Manager'. On the right, a web browser window displays the 'Home - Starter Portal' page for 'Contoso Ltd'. The page features a blue header with the company logo and navigation links. The main content area has a large blue banner with the text 'Build your website!' and a subtext 'This is a sample landing page for your website to get started with.' Below this is a 'Getting started' section with three placeholder cards, each containing an icon and the text 'Sample title' and 'This is a dummy text. You can start editing directly'.

Solutions Installed to Support Portals

- Creation of portal triggers installation of ADX solutions



The screenshot shows the PowerApps interface with the 'Solutions' tab selected in the left-hand navigation pane. The main area displays a table of installed solutions. At the top of the table area, there are buttons for '+ New solution', 'Import', 'Open AppSource', 'Publish all customizations', 'Switch to classic', and 'Solution checker'. The table has columns for 'Display name', 'Name', 'Created', 'Version', and 'Managed externally?'. The solutions listed include various Dynamics 365 Portal components and extensions.

Display name	Name	Created ↓	Version	Managed externally?
Common Data Service Starter Portal	CD5StarterPortal	10/30/2019	9.2.10.10	🔒
Dynamics 365 Portals - Base Html Editor	BaseHtmlEditor_portal	10/30/2019	1.1.1.1	🔒
Dynamics 365 Portals - Timeline	MicrosoftPortalTimel...	10/30/2019	9.2.10.0	🔒
Dynamics 365 Portals - Azure Storage	MicrosoftAzureStora...	10/30/2019	9.2.10.0	🔒
Dynamics 365 Portals - Feedback	Feedback	10/30/2019	9.2.10.0	🔒
Dynamics 365 Portals - Web Forms	MicrosoftPortalWebF...	10/30/2019	9.2.10.0	🔒
Dynamics 365 Portals - Identity Workflows	MicrosoftIdentityWo...	10/30/2019	9.2.10.0	🔒
Dynamics 365 Portals - Identity System Workfl...	MicrosoftIdentitySys...	10/30/2019	9.2.10.0	🔒
Dynamics 365 Portals - Identity	MicrosoftIdentity	10/30/2019	9.2.10.0	🔒
Dynamics 365 Portals - Web Notification	WebNotification	10/30/2019	9.2.10.0	🔒
Dynamics 365 Portals - Portal Base Workflows	MicrosoftCrmPortalB...	10/30/2019	9.2.10.0	🔒
Dynamics 365 Portals - Portal Base System Wor...	MicrosoftCrmPortalB...	10/30/2019	9.2.10.0	🔒
Dynamics 365 Portals - Portal base	MicrosoftPortalBase	10/30/2019	9.2.10.0	🔒
Portal Privacy Extensions	msdynce_PortalPriva...	10/30/2019	9.2.10.0	🔒
Dynamics 365 Portals - Portal dependencies	MicrosoftPortalDepe...	10/30/2019	9.2.10.0	🔒
Common Data Services Default Solution	Cr7c436	10/12/2019	1.0.0.0	🔒
Default Solution	Default	10/12/2019	1.0	🔒



PowerApps Portal Entities

Ad	adx_ad
Ad Placement	adx_adplacement
Alert Subscription	adx_alertsubscription
Change Password for Portals Contact	adx_bpf_c2857b638fa7473d
Content Snippet	adx_contentsnippet
Entity Form	adx_entityform
Entity Form Metadata	adx_entityformmetadata
Entity List	adx_entitylist
Entity Permission	adx_entitypermission
External Identity	adx_externalidentity
Invitation	adx_invitation
Invite Redemtion Page Alert	adx_inviteredemtion adx_pagealert
Page Notification	adx_pagenotification
Page Tag	adx_pagetag
Page Template	adx_pagetemplate
Poll	adx_poll
Poll Option	adx_polloption
Poll Placement	adx_pollplacement
Poll Submission	adx_pollsubmission
Portal Comment	adx_portalcomment
Portal Language	adx_portallanguage
Publishing State	adx_publishingstate
Publishing State Transition Rule	adx_publishingstatetransitionrule
Redirect	adx_redirect
Setting	adx_setting
Shortcut	adx_shortcut

Site Marker	adx_sitemarker
Site Setting	adx_sitesetting
Tag	adx_tag
URL History	adx_urlhistory
Web File	adx_webfile
Web File Log	adx_webfilelog
Web Form	adx_webform
Web Form Metadata	adx_webformmetadata
Web Form Session	adx_webformsession
Web Form Step	adx_webformstep
Web Link	adx_weblink
Web Link Set	adx_weblinkset
Web Notification Entity	adx_webnotificationentity
Web Notification URL	adx_webnotificationurl
Web Page	adx_webpage
Web Page Access Control Rule	adx_webpageaccesscontrolrule
Web Page History	adx_webpagehistory
Web Page Log	adx_webpagelog
Web Role	adx_webrole
Website	adx_website
Website Access	adx_websiteaccess
Website Binding	adx_websitebinding
Website Language	adx_websitelanguage
Web Template	adx_webtemplate



Portal Templates

- **Customer self-service portal**
 - Provides customers with access info, support resources and order status
- **Partner portal**
 - Provides portal for with resellers, distributors, suppliers and/or partners
- **Employee self-service portal**
 - streamline common tasks and allows for sharing resource
- **Community portal**
 - Facilitates interactions between customers and experts
- **Portal from blank**
 - Minimum portal with a small set of sample pages



Portal Templates

Portal	Audience	Workload
Community Portal	Partner, Customer	Choose this option to provision a portal focused on an online community. This portal will contain features such as forums, ideas, blogs and case management.
Customer Self Service	Partner, Customer	This option provides the ability for portal users to search knowledge articles, submit cases and participate in discussion forums to resolve issues.
Employee Self-Service	Employee	This portal allows employees to be able to access a centralized knowledge articles and also submit cases.
Partner Portal	Partner	Choose this option to build a portal where external partners can manage and collaborate on Accounts and Opportunities. Addons are available for Dynamics 365 for Field Service or Dynamics 365 for Project Service.
Custom Portal	Partner, Customer	The custom portal is meant for unique line of business scenarios where the other starter portals are not a good fit. The custom portal can be configured to address a variety of requirements. Specific features from the other starter portals can be incorporated into the starter portal.



Portal Base Template

- Content management
 - content publishing, design, theming
 - search, multi-lingual support, templating.
- Extensibility
 - Web Pages, Templates, Entity Forms, Entity Lists, and more.
- Security based on identity management
 - integration with authentication providers
 - web roles, content permissions, entity permissions.
- Common features
 - Ads, Polls, Ratings, and Comments



Portal Template Features

Feature	Customer self-service portal	Partner portal	Employee self-service portal	Community portal	Portal from blank
World Ready	•	•	•	•	•
Multi-Language Support	•	•	•	•	•
Portal Administration	•	•	•	•	•
Customization and Extensibility	•	•	•	•	•
Theming	•	•	•	•	•
Content Management	•		•	•	
Knowledge Management	•	•	•	•	
Support/Case Management	•		•	•	
Forums	•		•	•	
Faceted Search	•		•		
Profile Management	•		•		
Subscribe to Forum Thread	•		•		
Comments	•		•	•	
Azure AD Authentication			•		
Ideas				•	
Blogs				•	
Project Service Automation Integration		•			
Field Service Integration		•			
Partner Onboarding		•			
Portal Base	•	•	•	•	•
Portal Workflows	•	•	•	•	•
Web Notifications	•	•	•	•	•
Microsoft Identity	•	•	•	•	•
Identity Workflows	•	•	•	•	•
Web Forms	•	•	•	•	•
Feedback	•	•	•	•	•



Lab Time

- Exercise 1: Download the Student Lab Materials
- Exercise 2: Sign Up for an Office 365 E5 Trial
- Exercise 3: Create a PowerApps Environment with CDS Database
- Exercise 4: Provision a New PowerApps Portal



Agenda

- ✓ PowerApps Portal Architecture
- Developing CDS Solutions
 - Power Apps portal Studio
 - Portal Management App
 - Portal Configuration
 - Developing Web Templates



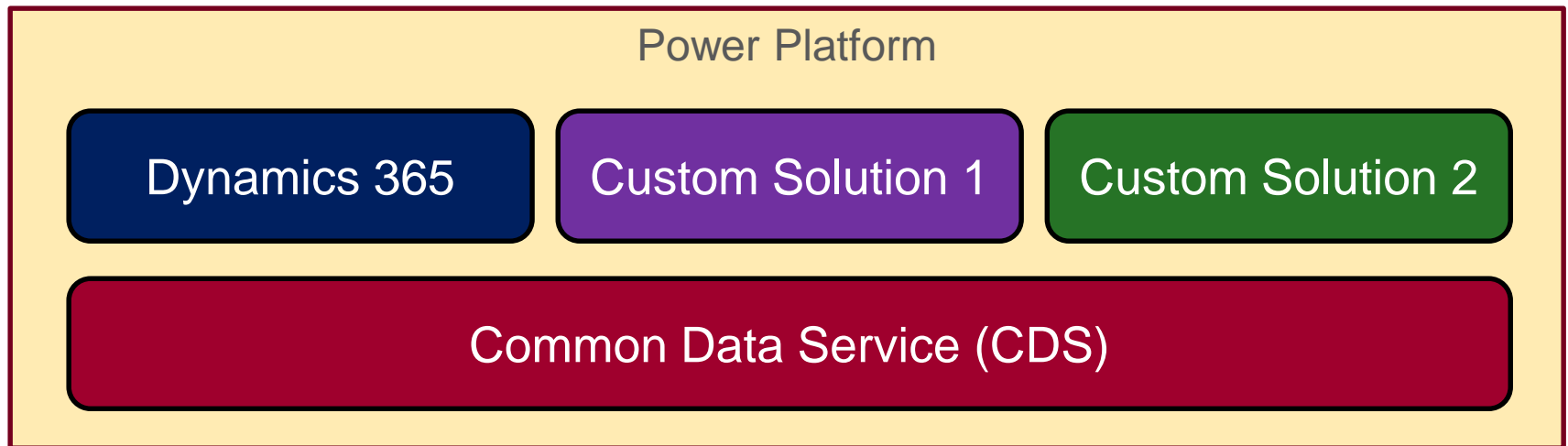
What is Common Data Service?

- 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



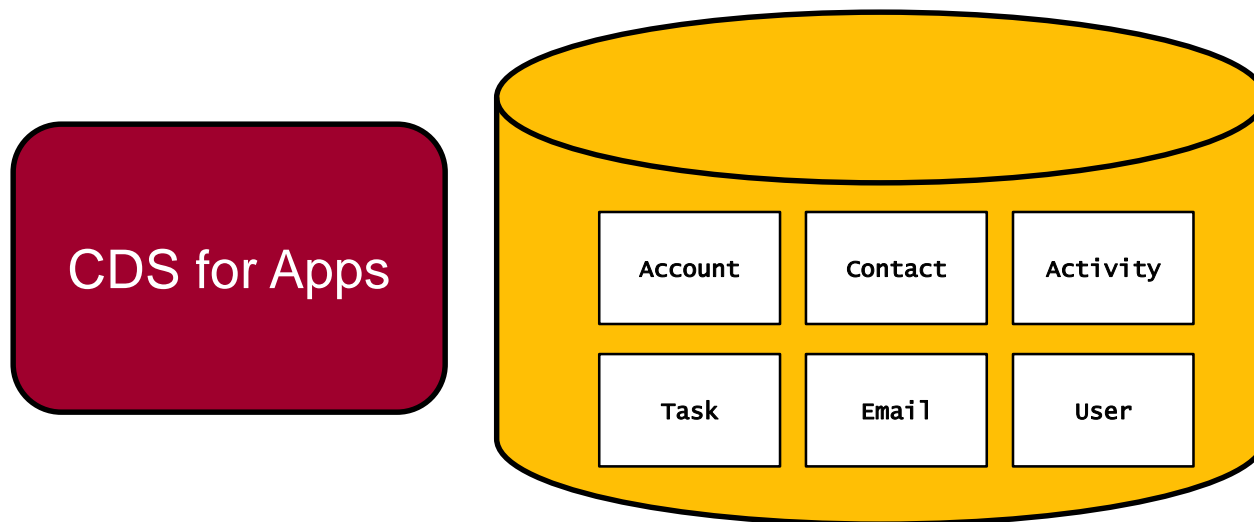
Birth of the Power Platform

- Microsoft migrating infrastructure out of Dynamics 365
 - CDS has infrastructure for building entity-based business solutions
 - Dynamics 365 add additional value-added entities with UI and logic
 - Custom solutions can be built using entities with UI and logic
 - CDS provides foundation of Power Platform



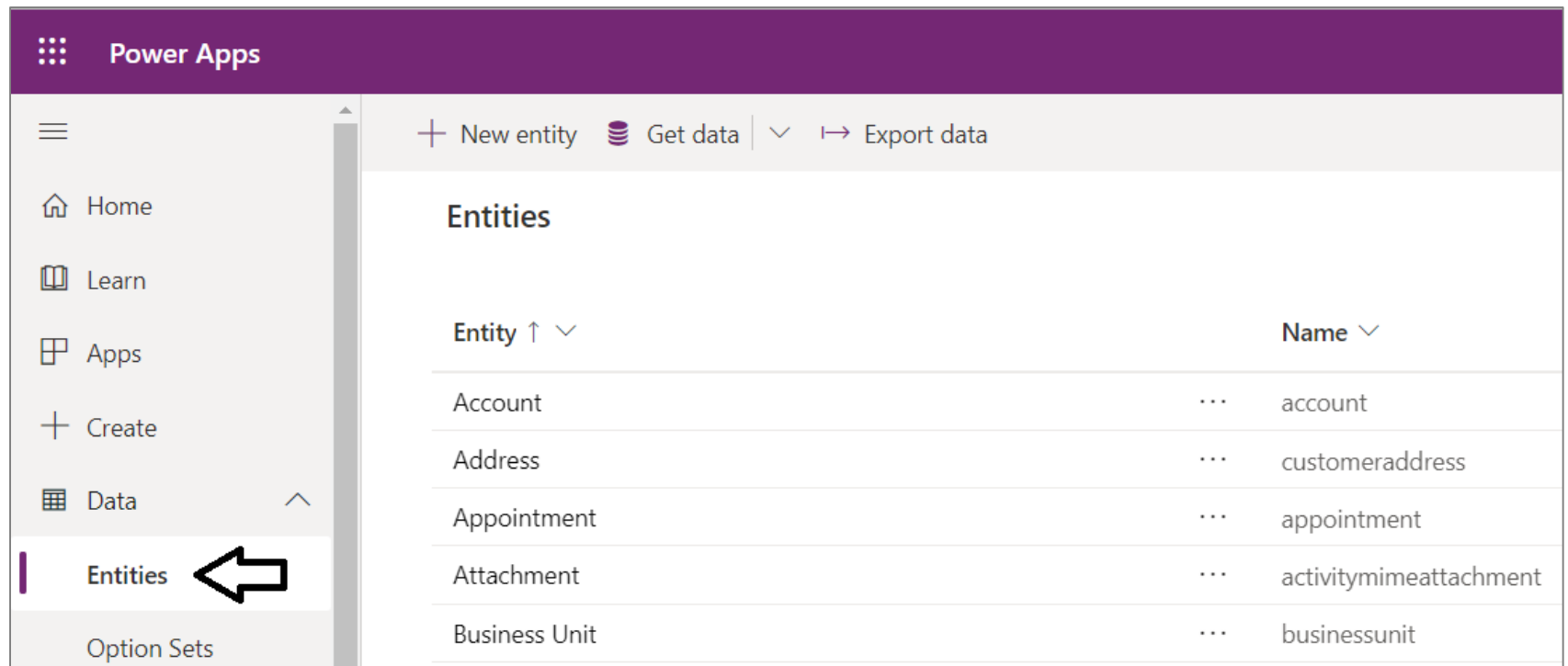
Common Database Model Schema

- 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



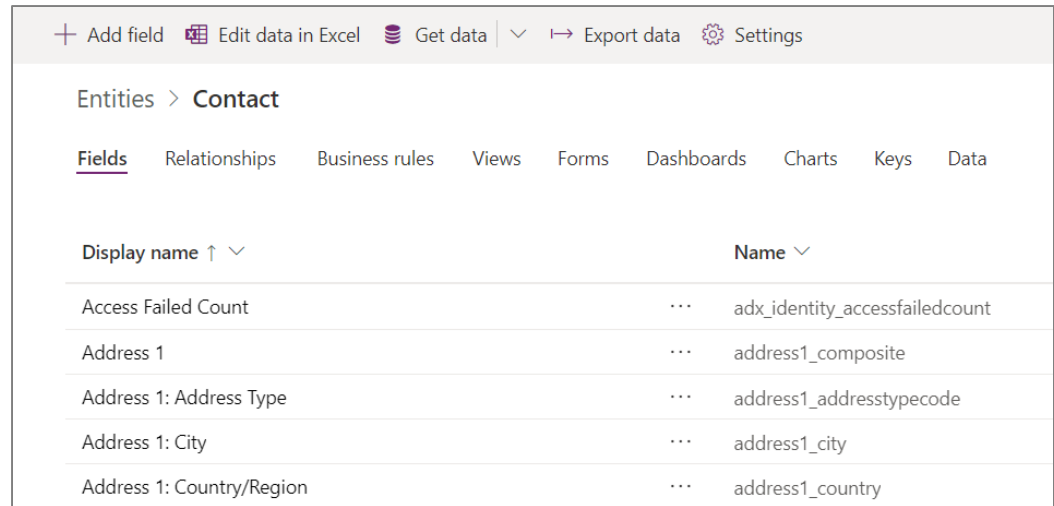
The screenshot shows the Power Apps interface. The left sidebar contains navigation options: Home, Learn, Apps, Create, Data, **Entities** (highlighted with a large black arrow), and Option Sets. The main area displays the 'Entities' section with a table of standard entities.

Entity ↑ ▾	Name ▾
Account	account
Address	customeraddress
Appointment	appointment
Attachment	activitymimeattachment
Business Unit	businessunit



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



+ Add field Edit data in Excel Get data Export data Settings		
Entities > Contact		
<u>Fields</u>	Relationships	Business rules Views Forms Dashboards Charts Keys Data
Display name ↑ ↓		Name ↓
Access Failed Count	...	adx_identity_accessfailedcount
Address 1	...	address1_composite
Address 1: Address Type	...	address1_addrstypetcode
Address 1: City	...	address1_city
Address 1: Country/Region	...	address1_country



Moving to Model-driven Apps

- What are the key benefits of model-driven apps?
 - Rich no-code design environment focusing on components
 - Create apps with consistent UI navigation, elements & metaphors
 - Design apps using the building blocks of Dynamics 365
 - Create responsive apps that work on desktop and mobile devices
 - Build apps into solutions that can be distributed and versioned
- What are the steps to building a model-driven app?
 - Model business data using entities in Common Data Model (CDM)
 - Define business processes on top of app-specific entity model
 - Compose the app UI on top of entities and business processes



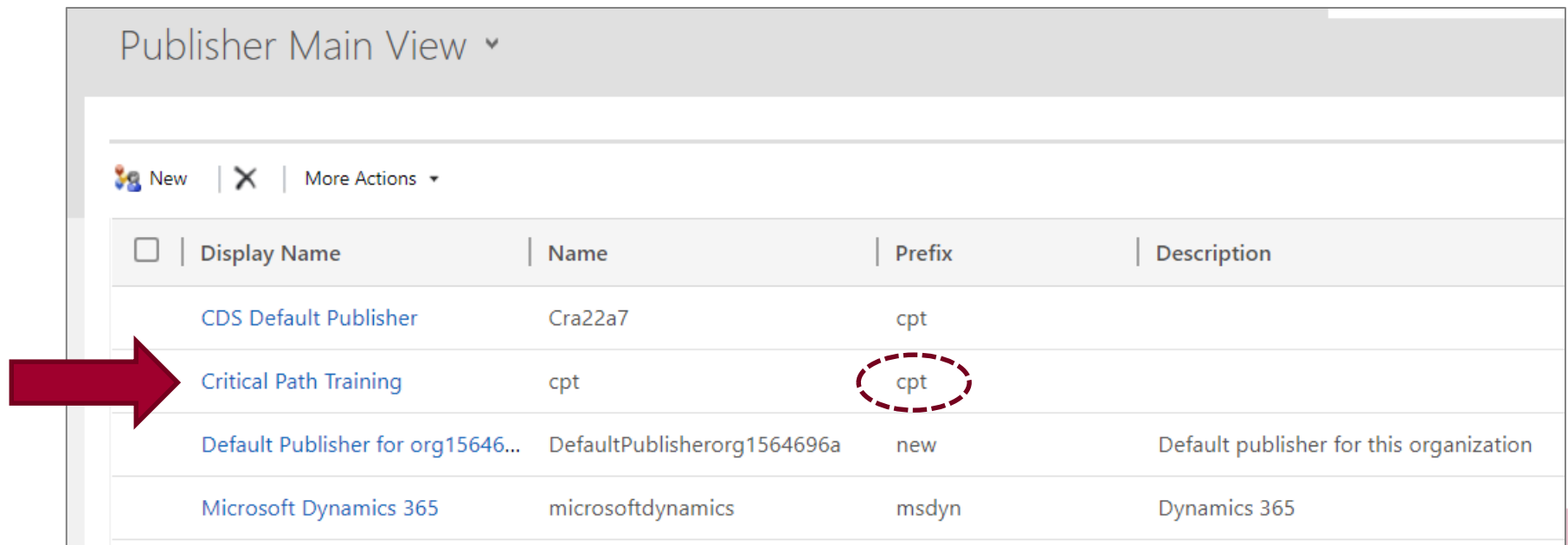
Introduction to Solutions

- 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



Publisher Main View ▾

 New |  | More Actions ▾

<input type="checkbox"/>	Display Name	Name	Prefix	Description
	CDS Default Publisher	Cra22a7	cpt	
	Critical Path Training	cpt	cpt	
	Default Publisher for org15646...	DefaultPublisherorg1564696a	new	Default publisher for this organization
	Microsoft Dynamics 365	microsoftdynamics	msdyn	Dynamics 365

Creating a New CDSA Solution

New solution

×

Display name *

Critical Path CDSA Demo

Name *

CriticalPathCDSADemo

Publisher *

Critical Path Training

Version *

1.0.0.0

PowerApps

Home

Learn

Apps

Create

Data

+ New solution

← Import

Open AppSource

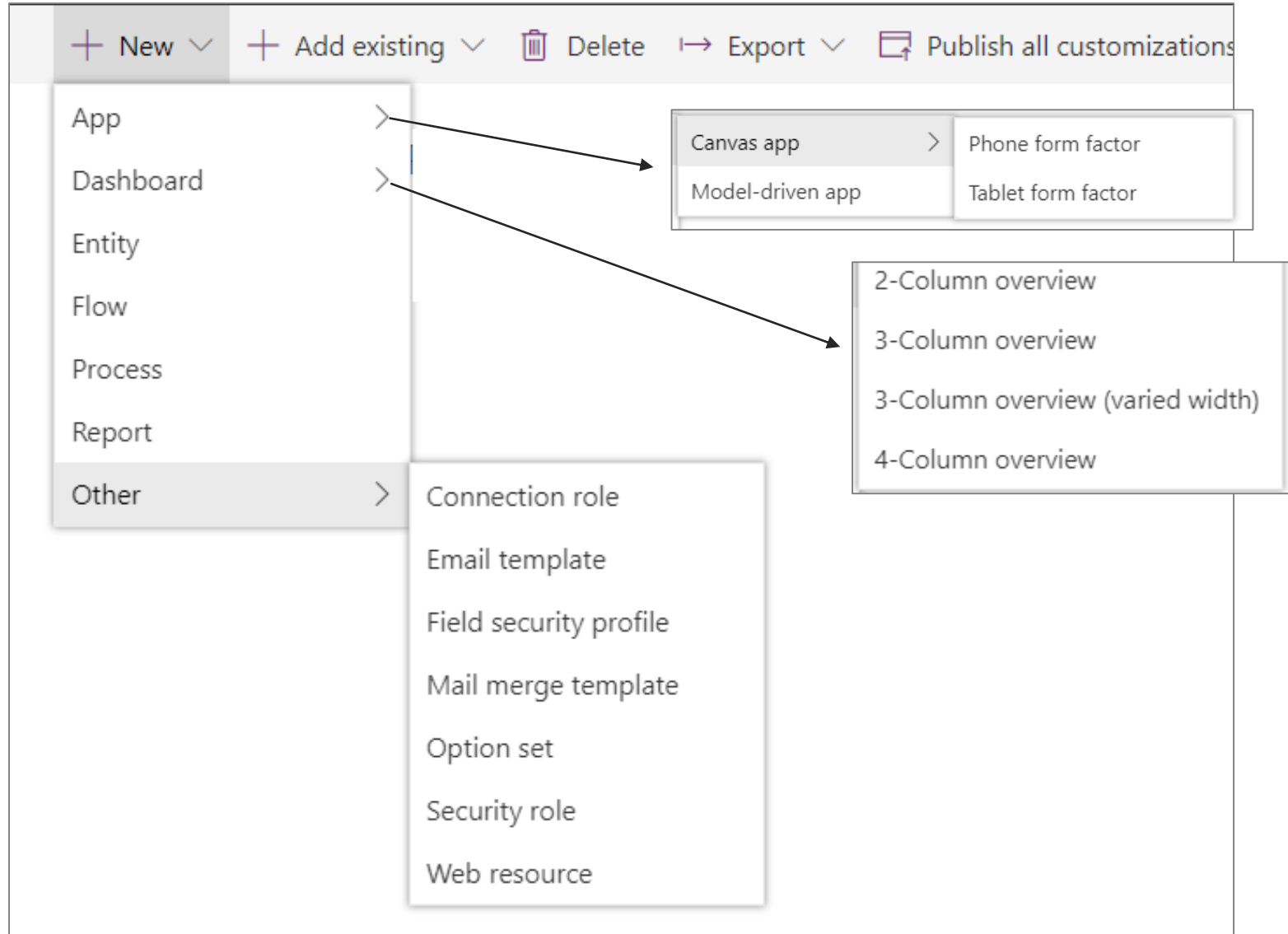
Publish all customizations

Switch to classic

Solutions

Display name		Created ↓	Version
Critical Path CDSA Demo	...	1/31/2019	1.0.0.0
Common Data Services Default Solution	...	1/26/2019	1.0.0.0
Default Solution	...	1/26/2019	1.0

Adding Solution Components



Lab Time

- Exercise 5: Import the Product Management Solution



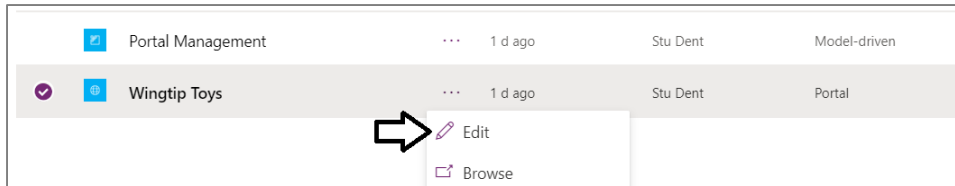
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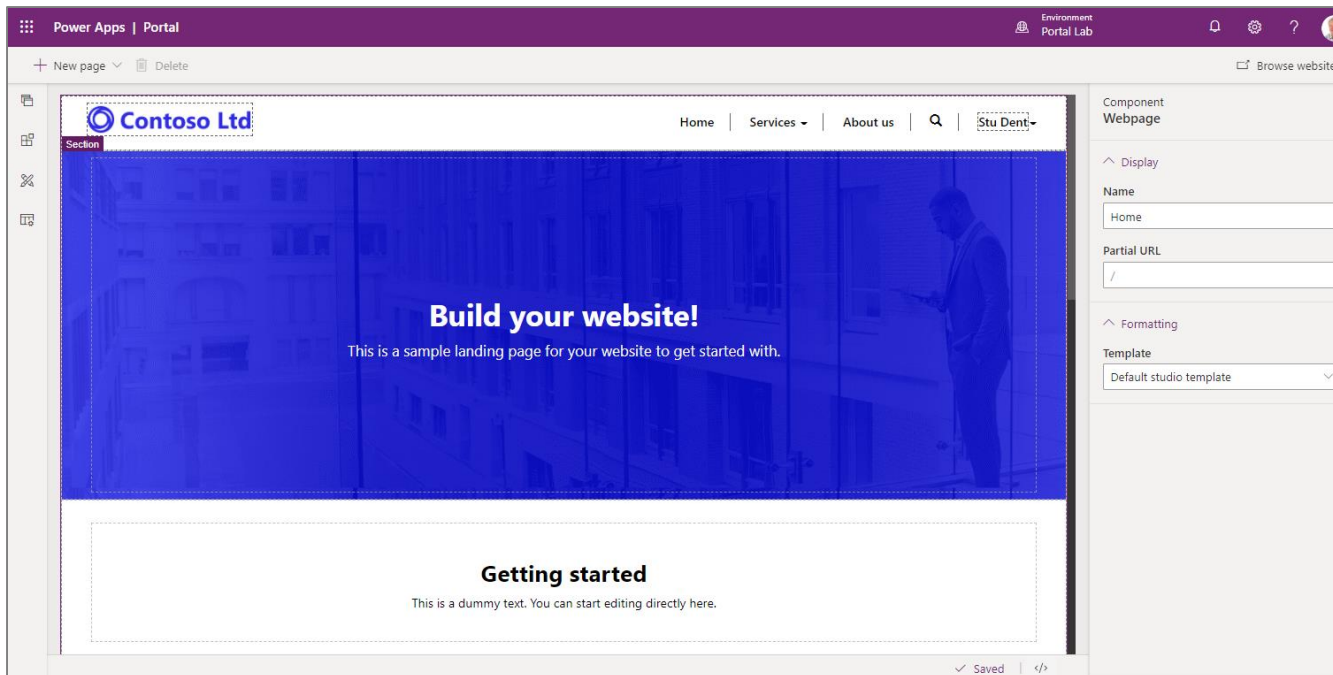


Power Apps portal Studio

- Choosing Edit on portal launches Power Apps portal Studio



- Power Apps portal Studio supports Chrome (latest version) and IE10.



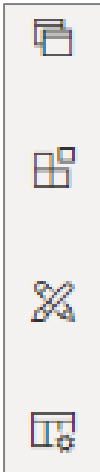
Power Apps portal Studio Tools

Command Bar

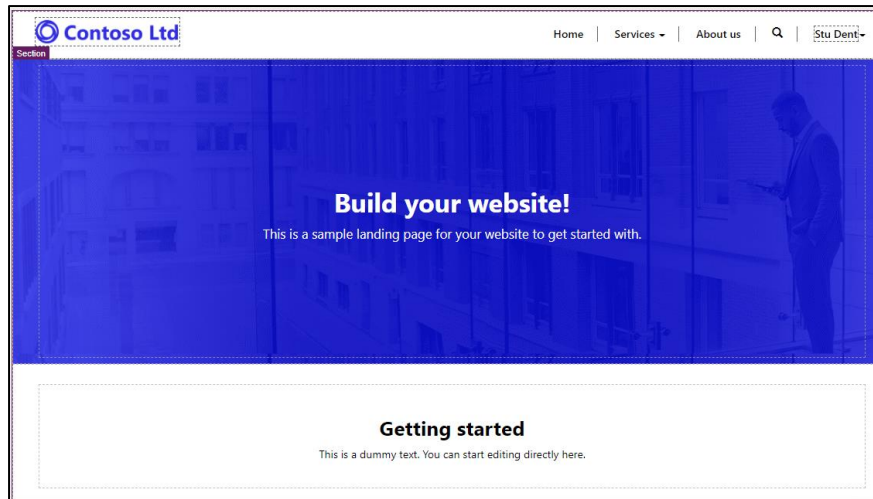
+ New page ▾ Delete

🔗 Browse website

Toolbelt



Canvas



Component Properties pane

Component
Webpage

^ Display

Name

Home

Partial URL

/

^ Formatting

Template

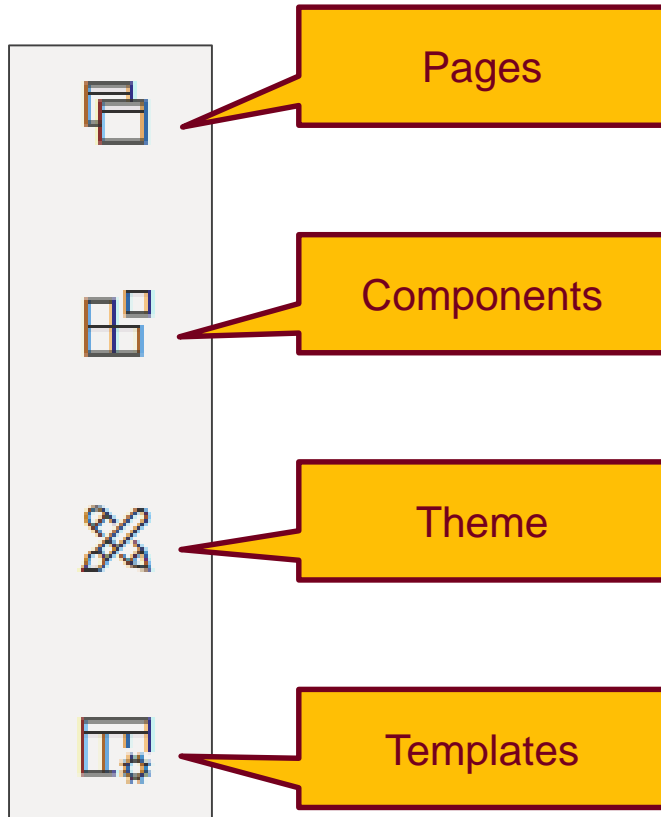
Default studio template ▾

Footer

✓ Saved | </>

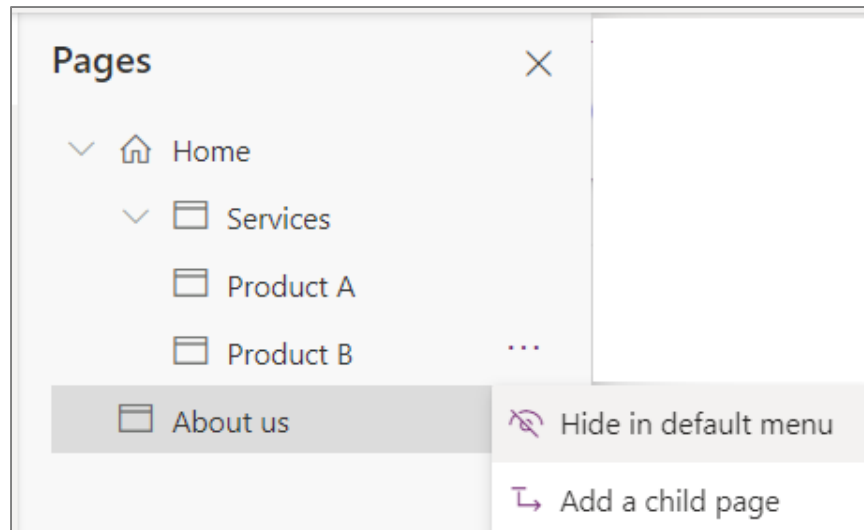


Toolbelt



Navigation using the Pages Menu

- Pages menu provide important functionality
 - Navigate between pages
 - Create new page
 - Move pages up or down
 - Promote or demote pages in page hierarchy



Page Placeholders

- Pages contain editable placeholder sections
 - Every page has Page Copy place holder
 - Some template expose Page Title placeholder

Home > Services > **Product C**

Page Title

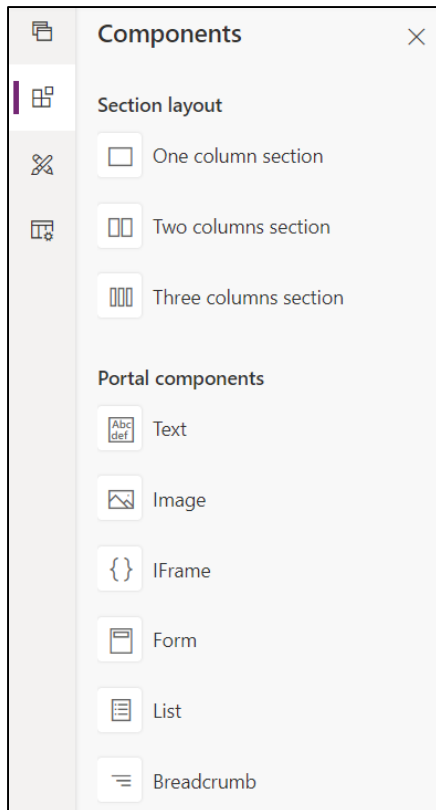
Product C

Page Copy



Composing Pages using Components


- Components used to author page content
 - You drag components onto page design surface
 - You configure component properties in properties pane



Section Component Properties

Home > Services > **Product C**

Product C






Component
Section

^ Display

Minimum height


100px

Alignment

☒  ☐  ☐ 

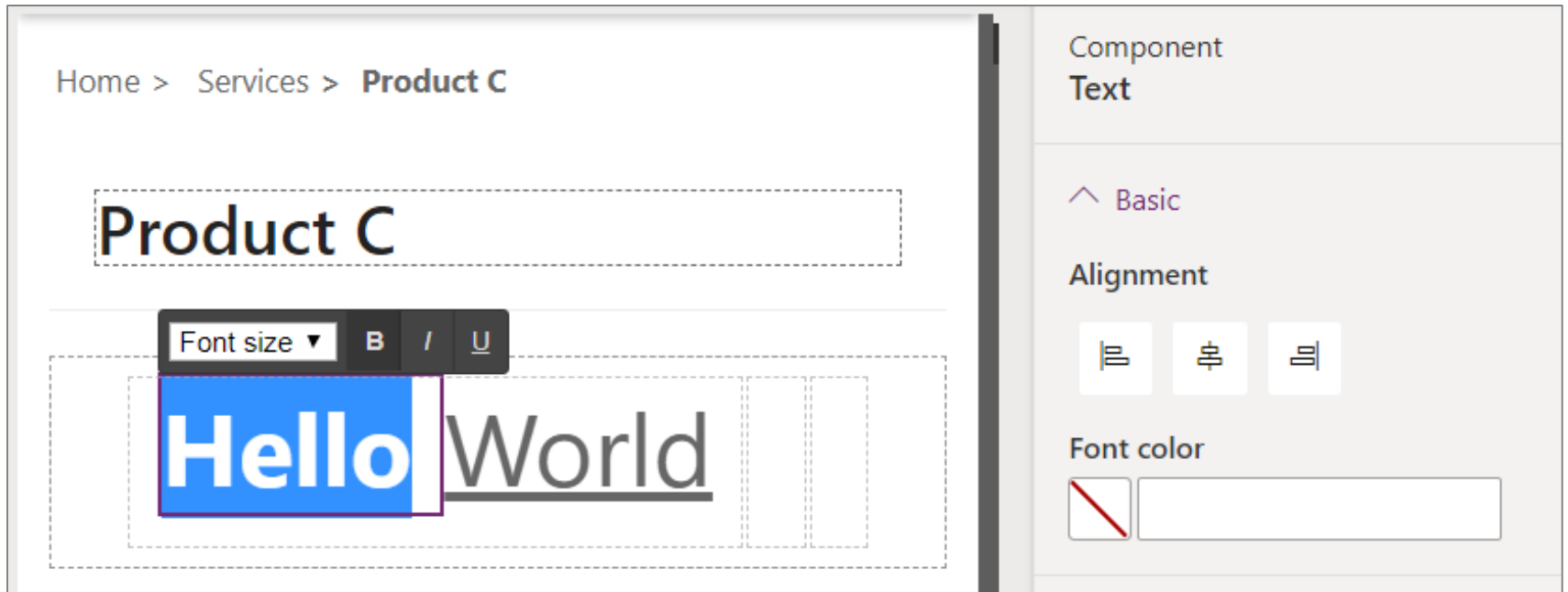
Background

☒ Fill ☐ Image



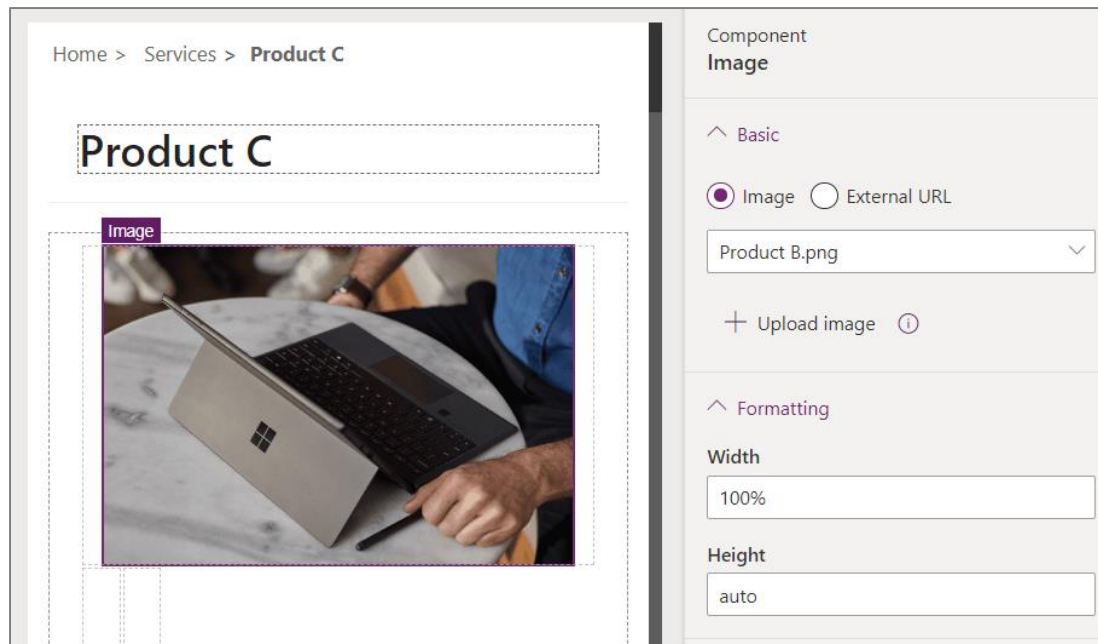


Text Component Properties



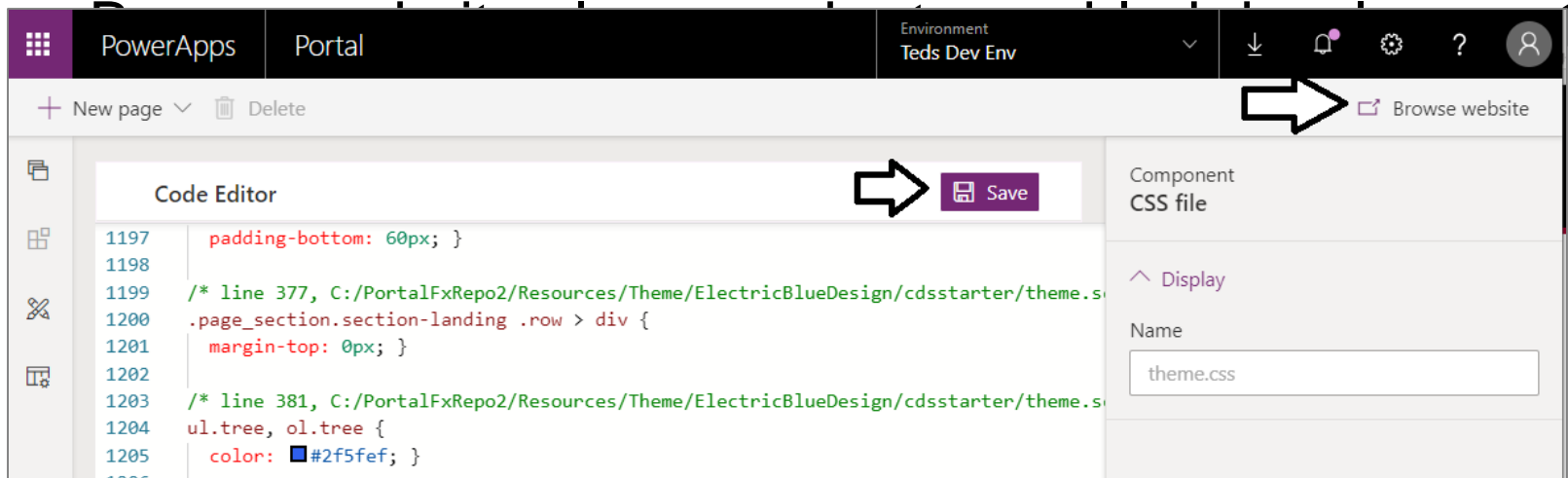
Uploading Images

- Easy to upload images
 - Support image types: PNG, SVG, JPG and JPEG
 - Maximum image file size is 5MB
 - Image file names must be unique



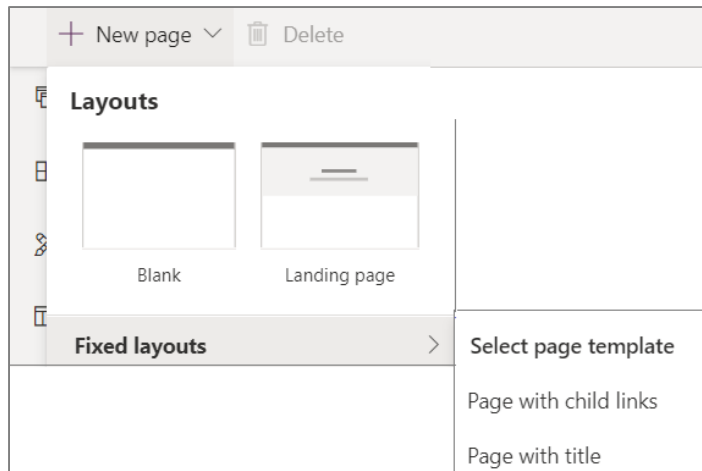
Seeing Your Changes in the Portal

- Power Apps portal Studio provides **Browse website** button
 - Used to test how the portal will appear to others

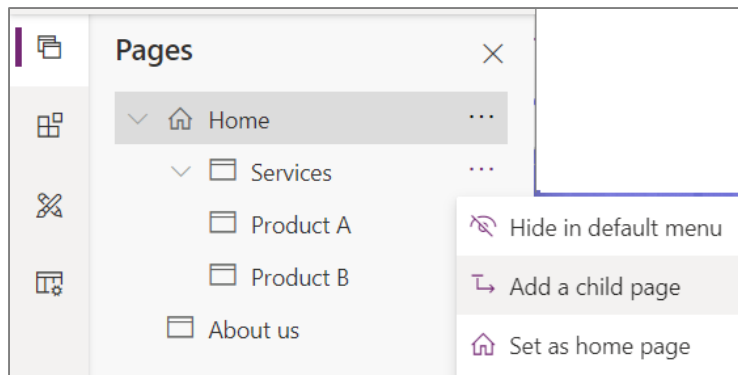


Creating New Pages

- Create new page from command bar

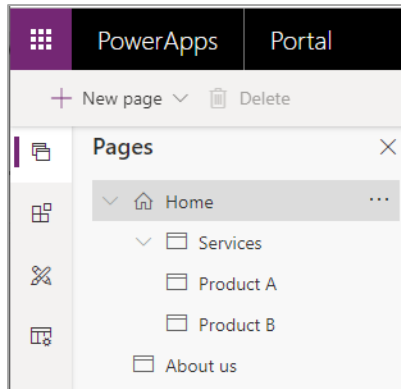


- Create new page from toolbelt



Page Hierarchy

- Web Page can have one or more child pages
 - Provides foundation for building page hierarchy

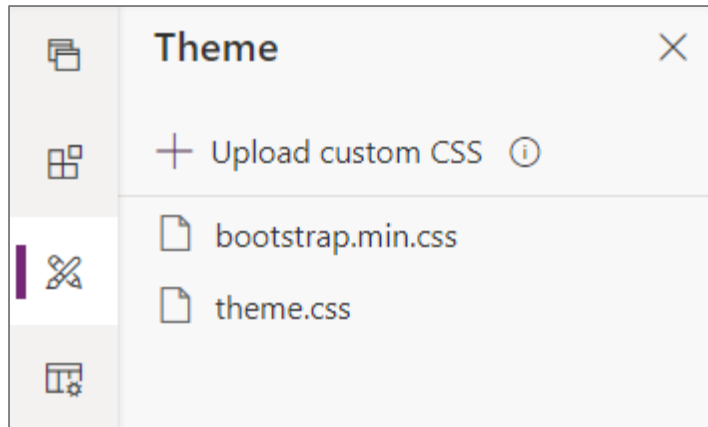


- Page hierarchy used to build navigation menu



Themes

- PowerApps portals styled using Bootstrap 3
 - Not practical to use a more recent version of bootstrap (e.g. v4)
 - theme.css file is provided for your custom styles

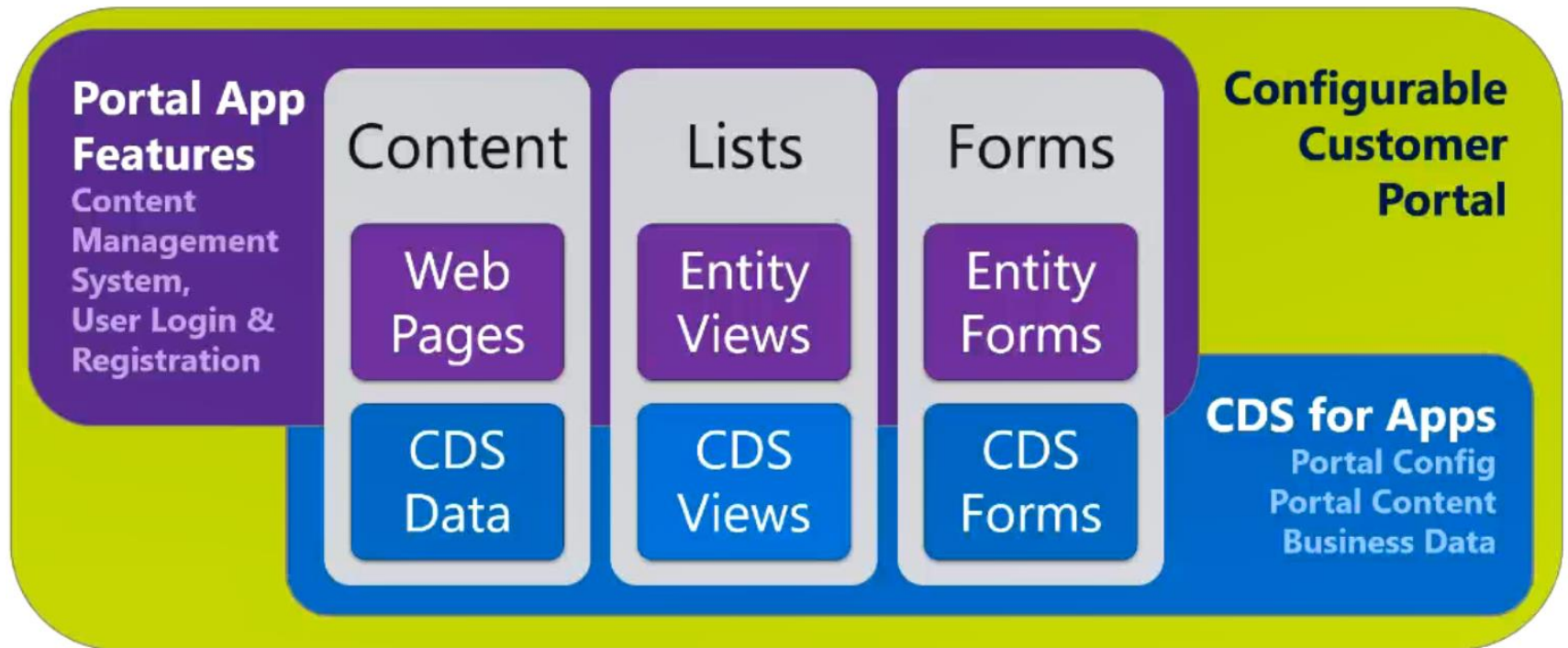


Entity Lists and Entity Forms

- Web page can be linked to entity list or entity form
 - Leverage forms and views of CDS entity
- Entity Lists
 - Defined on top of existing CDS entity views
 - Entity list can provide actions for CRUD operations
 - Can be displayed as tradition grid, calendar or map
 - Can provide Excel download option
- Entity Form
 - Can be created as read-only, edit or insert
 - Allows users to add and edit CDS records
 - Can capture data from authenticated users ad anonymous users



Entity Lists and Entity Views

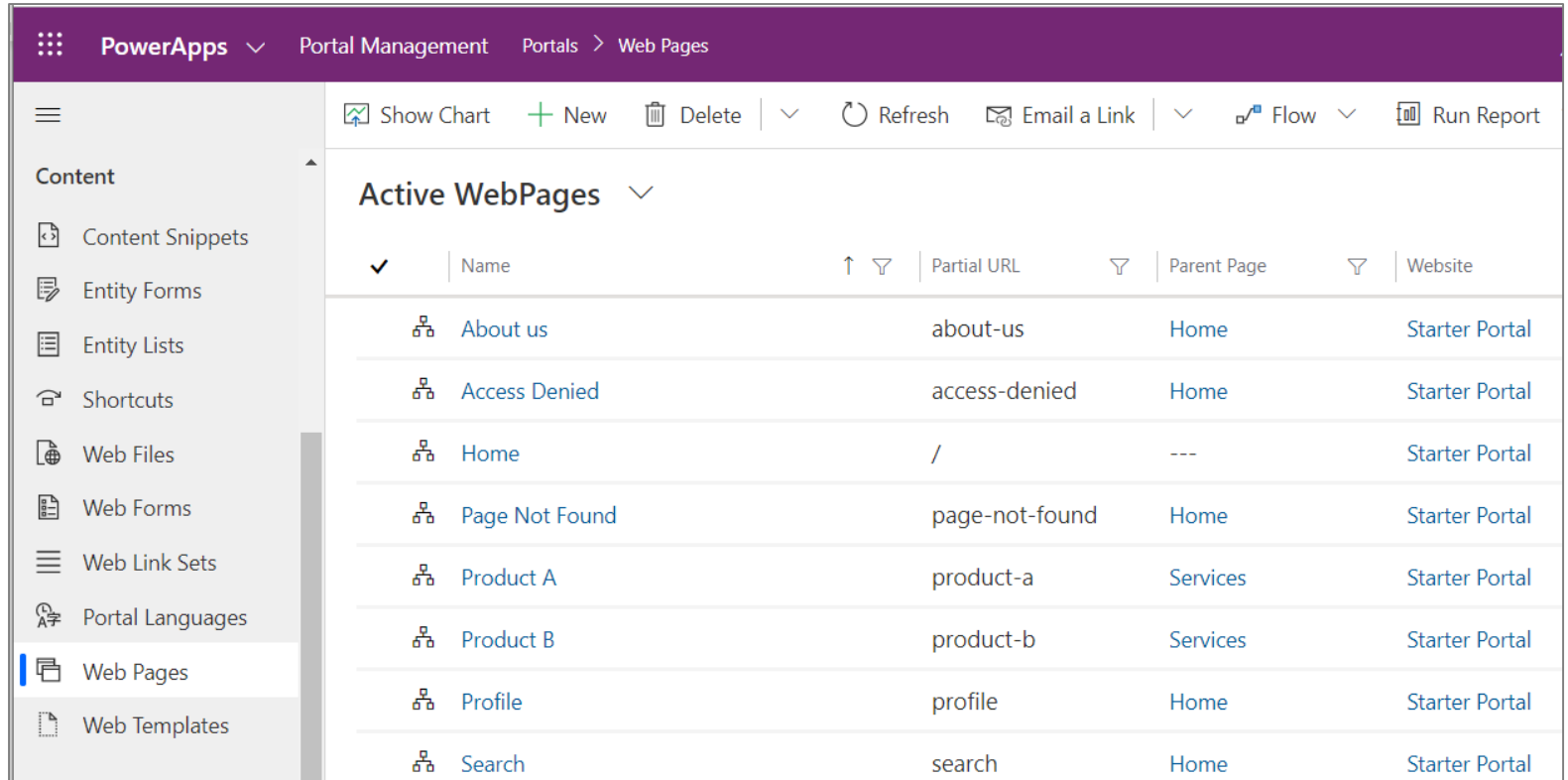
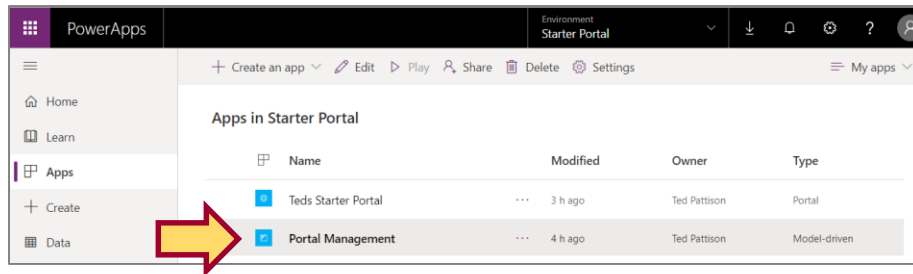


Agenda

- ✓ PowerApps Portal Architecture
- ✓ Developing CDS Solutions
- ✓ Power Apps portal Studio
- Portal Management App
 - Portal Configuration
 - Developing Web Templates

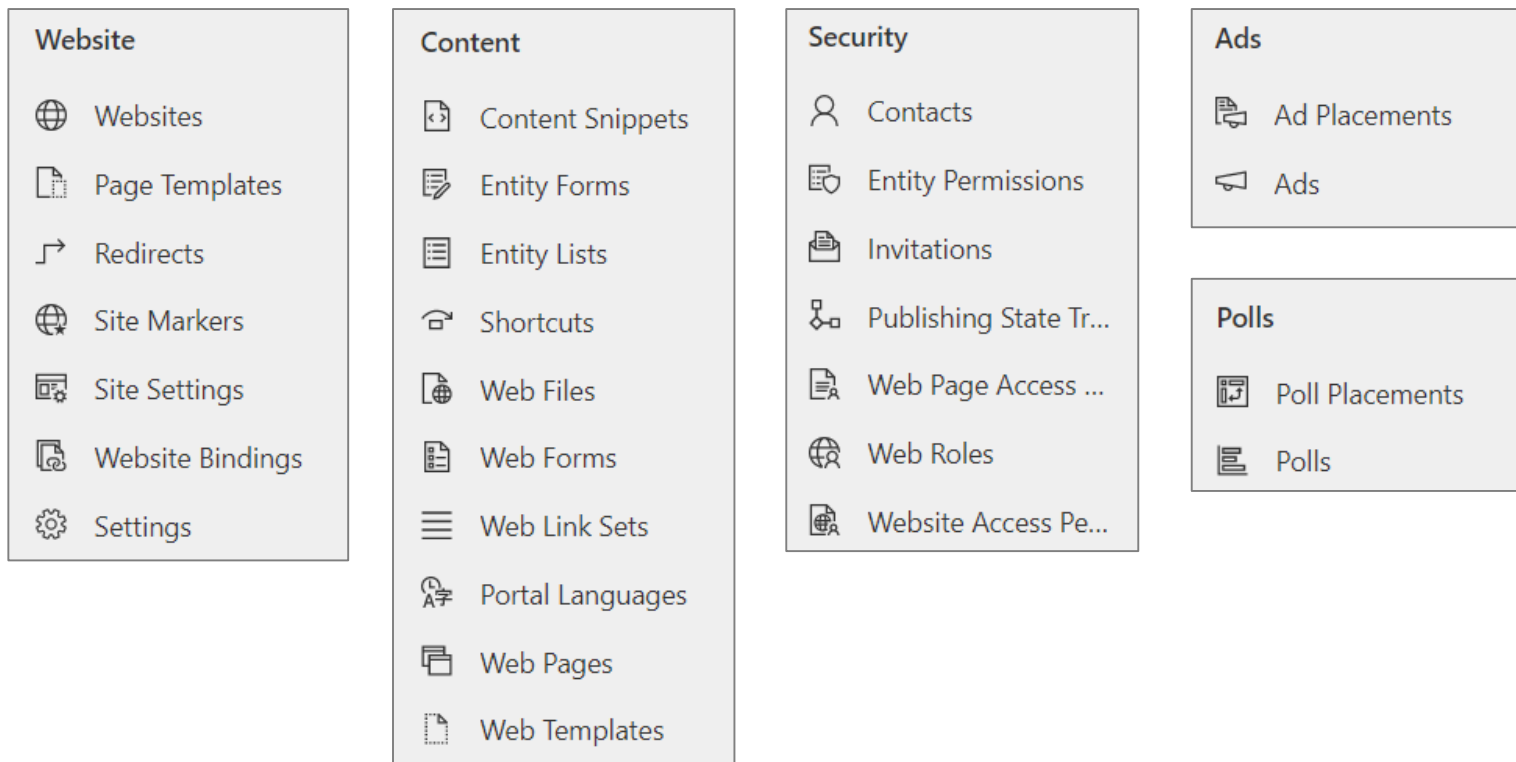


Portal Management App



Portal Management App Entities

- Portal Management app provides access to portal entities
 - Website entities
 - Content entities
 - Security entities
 - Ad and Poll entities



Content Snippets

- What are Content Snippets?
 - Reusable fragments of editable content
 - Can be added to web templates or page content



Page Templates

- Each page based on underlying page template
 - You can switch between page templates for a page in Power Apps portal Studio
- There are two types of page templates
 - Rewrite
 - Web Template



Web Templates

- Web templates defines HTML layout
 - Web templates can provide HTML for entire page
 - Web template can provide HTML for page of page
- Web templates can contain liquid templating code



Web Files

- Web Files provide inline or downloadable content
 - Not based on templates
 - Used to deliver content such as documents
 - Used to store custom CCS and JavaScript files



Portal Security Model

- Users are tracked using CDS Contact entity
 - Portal adds CDS forms to Contact entity
 - Forms are for manage passwords, view portal-specific contact information, and provide registration and profile management forms for the portal.

Power Apps

Environment
D365 Dev Env

Home

Learn

Apps

Create

Data

Entities

Option Sets

Dataflows

Export to data lake

Connections

Add form

Edit data in Excel

Get data

Export data

Export to data lake

Settings

Entities > Contact

Contact

...

Main

Standard

Contact Quick Create

...

QuickCreate

Standard

Contact Quick Form

...

QuickViewForm

Standard

Contact Reference Panel

...

QuickViewForm

Standard

Information

...

Main

Standard

Invite Web Form

...

Main

Custom

Live Persona Card Form

...

QuickViewForm

Standard

Portal Contact

...

Main

Custom

Portal Contact for Interactive experience

...

Main

Custom

Profile Web Form

...

Main

Custom

Profile Web Form - Japanese

...

Main

Custom

- ✓ adx_confirmremovepassword
- ✓ adx_createdbyipaddress
- ✓ adx_createdbyusername
- ✓ adx_identity_accessfailedcount
- ✓ adx_identity_emailaddress1confirmed
- ✓ adx_identity_lastsuccessfullogin
- ✓ adx_identity_locallogindisabled
- ✓ adx_identity_lockoutenabled
- ✓ adx_identity_lockoutenddate
- ✓ adx_identity_logonenabled
- ✓ adx_identity_mobilephoneconfirmed
- ✓ adx_identity_newpassword
- ✓ adx_identity_passwordhash
- ✓ adx_identity_securitystamp
- ✓ adx_identity_twofactorenabled
- ✗ adx_identity_username



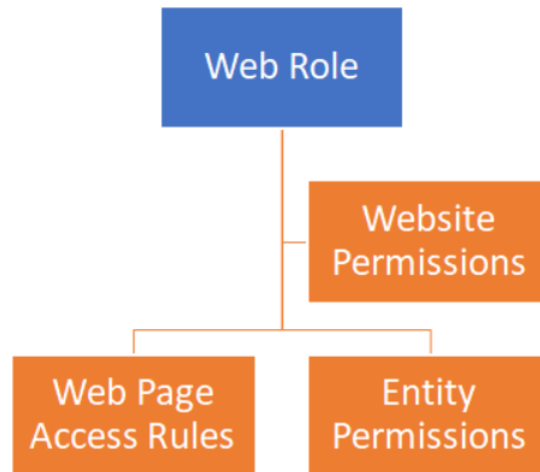
Portal Authentication

- Local Authentication
 - Usernames and user credential stored in CDS contact record
 - Passwords are stored as hashed values
- External Authentication
 - User accounts and credentials managed by 3rd party provider
 - OAuth2 (Microsoft, Twitter, Facebook, Google, LinkedIn, Yahoo)
 - Open ID (Azure Active Directory, Azure AD B2C)
- Security Administration
 - Portal admin decided which type(s) of authentication to support



Authorization

- **Web Roles** defines set of permissions for an audience
- **Website Permissions** define what (if any) front-side editing permissions a Web Role should have.
- **Web Page Access Rules** define what pages are visible to Web Role and what actions can be taken.
- **Entity Permissions** define what access a Web Role has to individual entities.







Email Confirmation


Stu Dent

Confirm your account CRM:0000001

Sat 12/14/2019 6:43 ... 42 KB

Your account requires confirmation. Please click the following link to complete the registration.

 Reply  Reply All  Forward  IM

 SD

Stu Dent <student@msd2020.onmicrosoft.com>

☐ Ted Pattison (personal)

Confirm your account CRM:0000001

Your account requires confirmation. Please click the following link to complete the registration.

[Complete Registration](#)

Or you can copy the following URL and paste it into your web browser.

<https://wingtipstoysportal.powerappsportals.com/en-US/Account/Manage/ConfirmEmail?userId=59552622-b91e-ea11-a810-000d3a1913ba&code=HvF95GVJgS4bxjFSBibeydfvAd3oU5KISA1Sy5IUg0c6H%2FqiYKDXNH%2ByJvGTln20hMNWqbWpyO2ZUdpyUOPTXZnHbP59zcdLMQOcMS9uo1piPROwfRAvrzYc4%2BaNe7VJ6WQekcUvTUzgZ78j%2Fcl6e1eHZrddZ%2FqB5NZR9v8XVHJU2%2FLBggzJV0pVDNRuZu>

If you believe you received this email in error, please contact Customer Service for assistance.



Integrating External Authentication Providers

- PowerApps portals allows for external authentication providers
 - Users can authenticate using LinkedIn, Facebook and Twitter
- Brian Knight (MVP) has some very useful videos
 - PowerApps Portals External Authentication with LinkedIn
<https://www.youtube.com/watch?v=8Zx2RBhwV4I>
 - PowerApps Portals External Authentication with Facebook
<https://www.youtube.com/watch?v=egfnaXIqpwU>

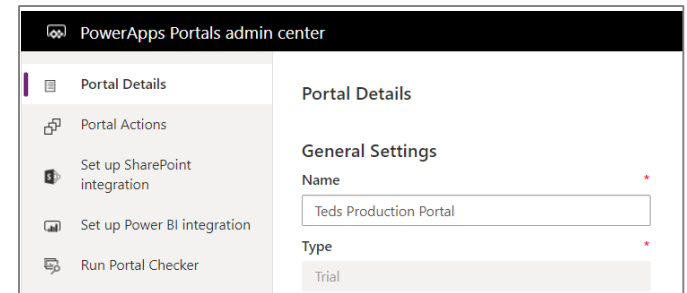
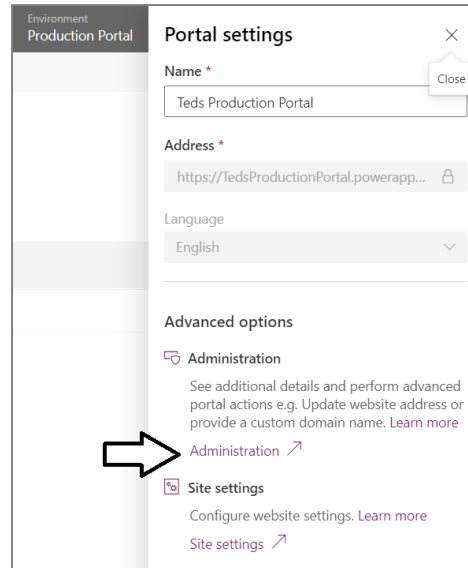
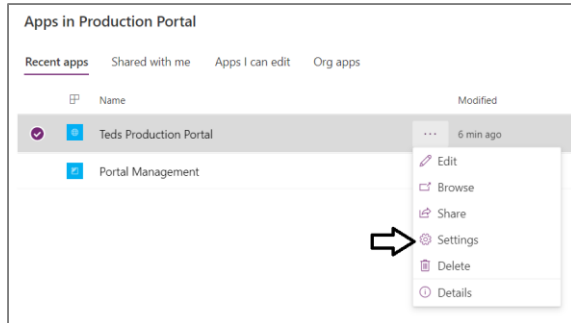


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Navigating to the Portal admin center



Converting from Trial to Production

- Portal is created in trial mode
 - Portal must be converted to production mode within 30 days
 - Host environment must be in production mode to convert portal
 - Important configuration options not available in trial portal

The screenshot displays the 'PowerApps Portals admin center' interface. On the left, a sidebar lists various actions, including 'Convert', which is highlighted by a white arrow. The main panel shows 'Portal Details' for a portal named 'Teds Production Portal'. The 'Type' is currently set to 'Trial'. A yellow warning banner states: 'Your trial portal will expire in 30 day(s). Convert your portal to production to avoid its suspension. Learn more'. Below the details, the 'Application ID' is 'a278550c-49c6-4035-b8da-e4304bc91c37', the 'Owner' is 'Ted Pattison', and the 'Base Portal URL' is 'https://TedsProductionPortal.powerappsportals.com'. A modal dialog titled 'Convert trial to production' is open in the foreground, asking for confirmation to convert the trial portal to production. The dialog includes 'Confirm' and 'Cancel' buttons.

PowerApps Portals admin center

Portal Details

General Settings

Name
Teds Production Portal

Type
Trial

ⓘ Your trial portal will expire in 30 day(s). Convert your portal to production to avoid its suspension. [Learn more](#)

Convert

Application ID
a278550c-49c6-4035-b8da-e4304bc91c37

Owner
Ted Pattison

Portal URL
Base Portal URL
<https://TedsProductionPortal.powerappsportals.com>

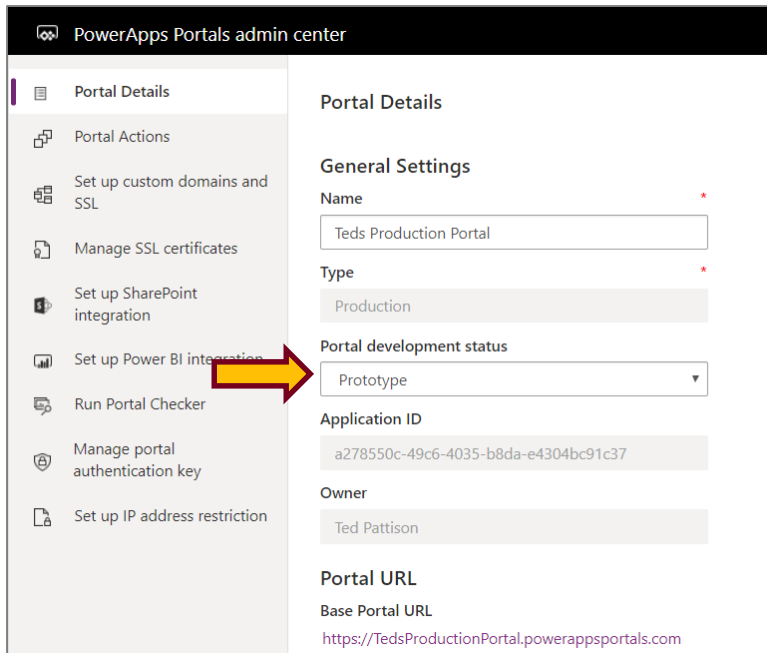
Convert trial to production

This action will convert your trial portal to production. Are you sure you want to continue?

Confirm Cancel

Portal Development Status

- Production portal has develop status property



PowerApps Portals admin center

Portal Details

General Settings

Name: Teds Production Portal

Type: Production

Portal development status

Prototype

Application ID

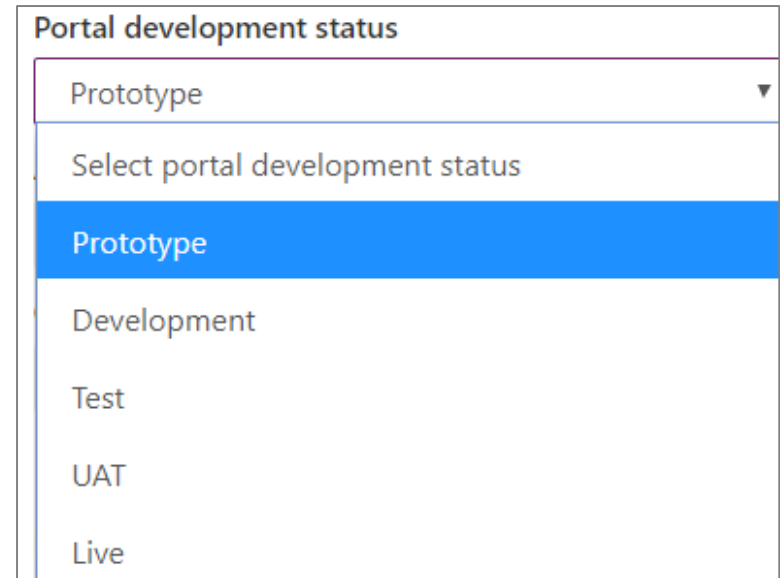
a278550c-49c6-4035-b8da-e4304bc91c37

Owner

Ted Pattison

Portal URL

Base Portal URL
<https://TedsProductionPortal.powerappsportals.com>



Portal development status

Prototype

Select portal development status

Prototype

Development

Test

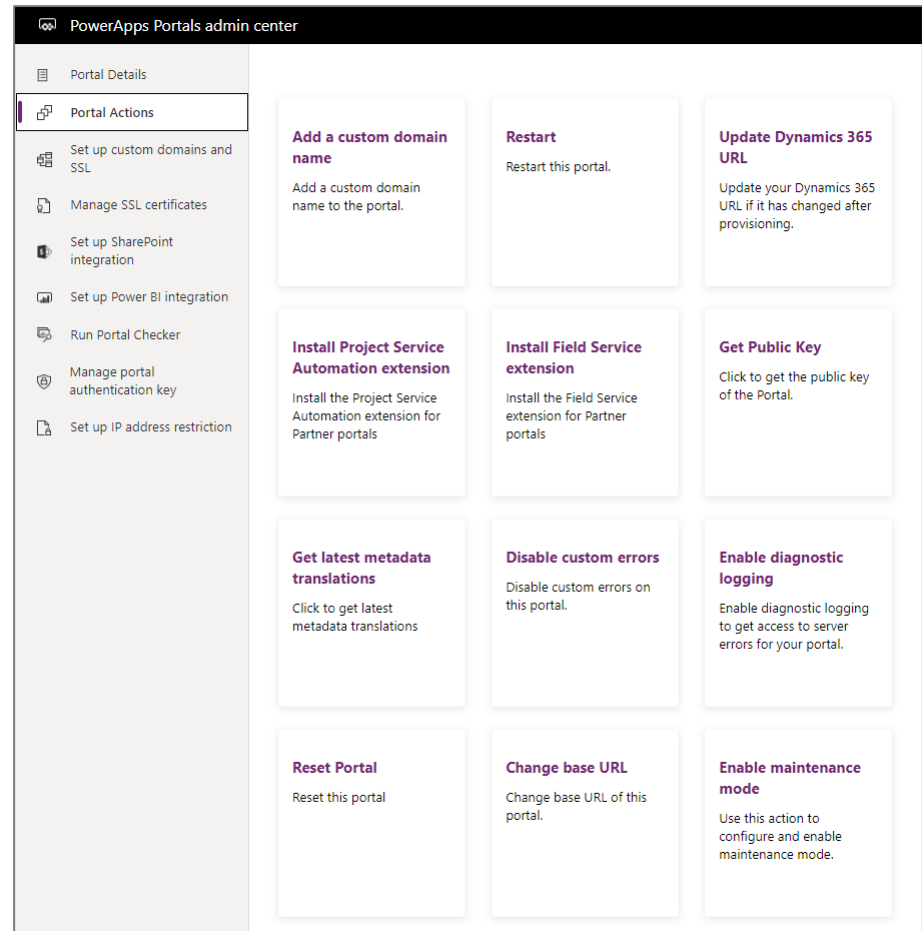
UAT

Live



Portal Actions

- Import portal actions
 - Add custom domain
 - Configure SSL
 - Enable SharePoint Integration
 - Enabled Power BI Integration
 - Restart Portal
 - Reset Portal



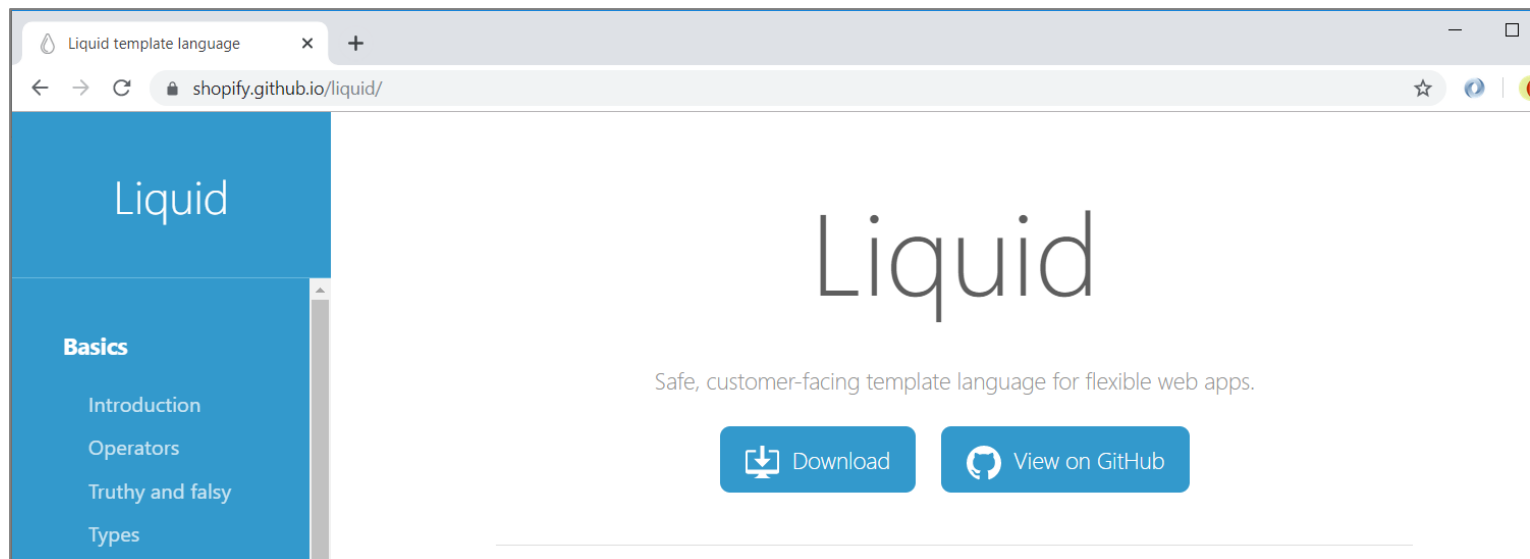
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Liquid Template Language

- Liquid is open-source template language
 - Created by Shopify in 2006
 - Currently used by 100s of websites and ISVs
 - Designed to surface data from databases into web pages
 - Liquid template code runs in the cloud in secure manner
 - Docs and tutorial available at <https://shopify.github.io/liquid/>



Liquid 101 – Objects and Tags

- **Objects** and variables denoted by double curly braces: `{{` and `}}`

Input

```
{{ page.title }}
```

Output

Introduction

- **Tags** with logic use curly braces and percent signs: `{%` and `%}`.

Input

```
{% if user %}  
  Hello {{ user.name }}!  
{% endif %}
```

Output

Hello Adam!



Liquid Objects

- The follow Liquid objects are available in PowerApps portals

now	A date/time object that refers to the current UTC time at the time the template is rendered.
page	current portal request page with title and URL
params	request.params
request	Contains information about the current HTTP request. More information: request
settings	Allows you to load any Site Setting by name. More information: settings
sitemap	Allows access to the portal site map. More information: sitemap
sitemarkers	Allows you to load any Site Markers by name. More information: sitemarkers
snippets	Allows you to load any Content Snippet by name. More information: snippets
user	Refers to the current portal user. If no user is signed in, this variable will be null.
weblinks	Allows you to load any Web Link Set by name or ID. More information: weblinks
website	current portal Website record with website properties

- PowerApps-specific reference for Liquid template language
 - <https://docs.microsoft.com/en-us/powerapps/maker/portals/liquid/liquid-overview>



Liquid 101 - Filters

- Filters transform objects and are separated by a |

Input

```
{{ "/my/fancy/url" | append: ".html" }}
```

Output

```
/my/fancy/url.html
```

Input

```
{{ "adam!" | capitalize | prepend: "Hello " }}
```

Output

```
Hello Adam!
```



Liquid 101 – where filter

- where can be used to filter records

Input

```
All products:
{% for product in products %}
- {{ product.title }}
{% endfor %}

{% assign kitchen_products = products | where: "type", "kitchen" %}

Kitchen products:
{% for product in kitchen_products %}
- {{ product.title }}
{% endfor %}
```

Output

```
All products:
- Vacuum
- Spatula
- Television
- Garlic press

Kitchen products:
- Spatula
- Garlic press
```



Creating a Solution with Custom Entities

Solutions > Critical Path Training Solution			
Display name ▾		Name	Type ▾
Audience	⋮	cpt_audience	Option Set
Class	⋮	cpt_class	Entity
Class Location	⋮	cpt_classlocation	Entity
Course	⋮	cpt_course	Entity
Course Length	⋮	cpt_length	Option Set
Training Class Management 🔗	⋮	cpt_TrainingClassManagement	Client Extension
Training Class Management 🔗	⋮	cpt_TrainingClassManagement	Model-driven App
Import class events from Eventbrite 🔗	⋮	Import class events from Eventbrite	Flow



The Course Entity

Solutions > Critical Path Training Solution > Course

Fields

Relationships

Business rules

Views

Forms

Dashboards

Charts

Keys

Data

Display name ↑ ∨

Name ∨

Data type ∨

Audience

...

cpt_audience

☰ Option ...

Course Code

...

cpt_coursecode

Abc Text

Currency

...

transactioncurrencyid

🔍 Lookup

Description

...

cpt_description

Abc Text Area

Description URL

...

cpt_descriptionurl

Abc URL

Exchange Rate

...

exchangerate

×₂ Decimal...

Length

...

cpt_length

☰ Option ...

List Price

...

cpt_listprice

💰 Currency

List Price (Base)

...

cpt_listprice_base

💰 Currency

Name

Primary Field

...

cpt_name

Abc Text



The Class Entity

Solutions > Critical Path Training Solution > **Class**

Fields

Relationships

Business rules

Views

Forms

Dashboards

Charts

Keys

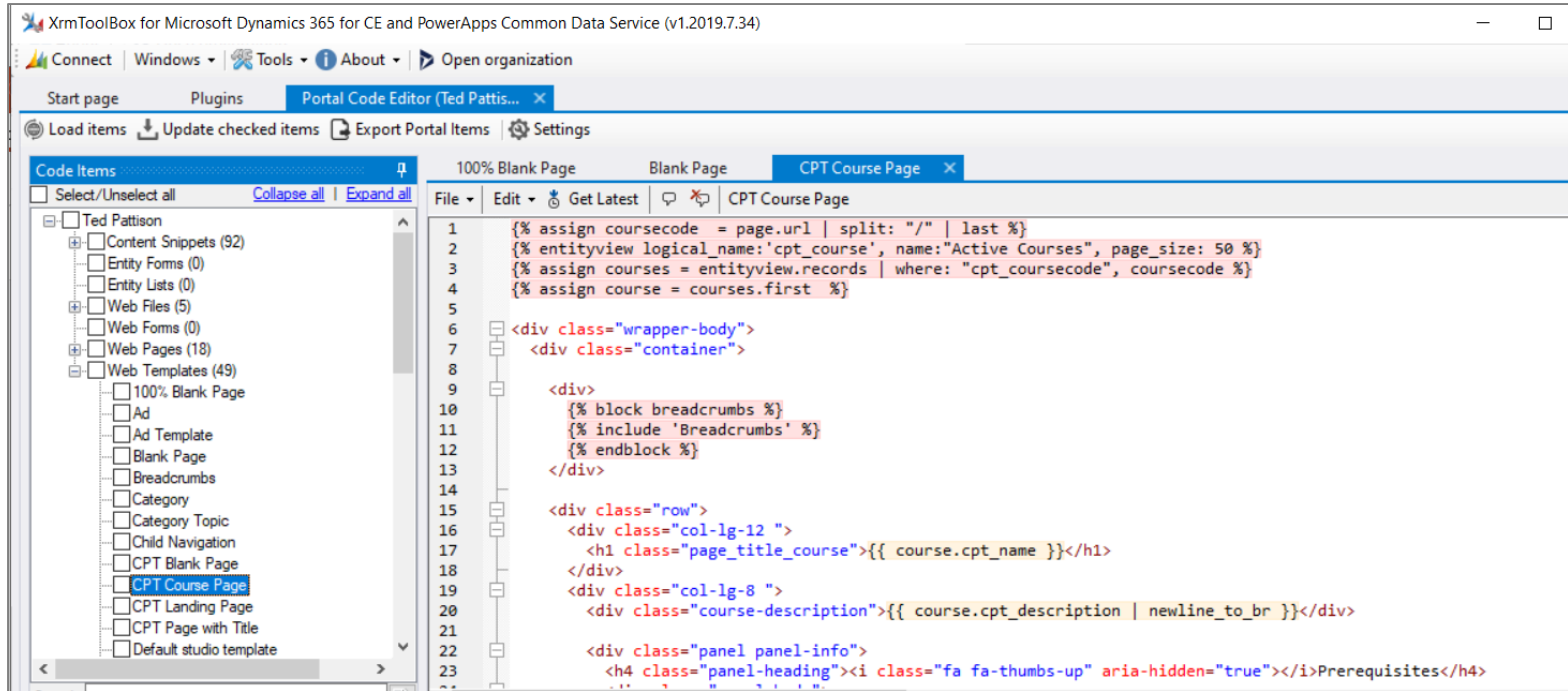
Data

Display name ↑ ∨		Name ∨	Data type ∨
Attend Online	...	cpt_attendonline	Two Options
Course	...	cpt_course	Lookup
Description	...	cpt_description	Text Area
End	...	cpt_end	Date and Time
EventbriteID	...	cpt_eventbriteid	Text
Instructor	...	cpt_instructor	Lookup
Location	...	cpt_location	Lookup
Name Primary Field	...	cpt_name	Text
Registration Url	...	cpt_registrationurl	URL
Start	...	cpt_start	Date and Time



XrmToolbox

- Authoring Tool for PowerApps Portals
 - Provides plug-ins for authoring and managing portals



Using Liquid to Access Entity Data

- Web Template created using Liquid scripting language
 - Can be used to access CDS data

```
<table class="table-schedule table table-bordered table-striped">
  <thead class="thead-dark">
    <tr>
      <th>Start</th>
      <th>Instructor</th>
      <th>Location</th>
      <th>Action</th>
    </tr>
  </thead>
  {% entityview logical_name:'cpt_class', name:"Active Classes", page_size: 50 %}
  {% assign classes = entityview.records | where: "cpt_Class_Course_cpt_Course.cpt_coursecode", course.cpt_coursecode |
    order_by: "cpt_start" %}
  {% for item in classes %}
    <tr>
      <td>{{item.cpt_start | date: "MMM d"}}</td>
      <td>{{item.cpt_instructor.name}}</td>
      <td>{{item.cpt_location.name}}</td>
      <td><a href="{{item.cpt_registrationurl}}" target="_blank">Register</td>
    </tr>
  {% endfor %}
{% endentityview %}
</table>
```




Demo Portal at www.TedPattison.net

Public Class Schedule · CPT Portal

tedpattison.net/schedule/

AppsM365 AdminPower BIPowerAppsa Azure PortalTutorial 1CS in Power BIPortal DevSPODig web interface



PowerApps Portals ▾Training Courses ▾ScheduleAboutSearchSign in

Home > Public Class Schedule

Public Class Schedule

Start	Class	Audience	Instructor	Location	Length	Online	Action
Nov 25	Day of Building Business Solutions with PowerApps (DOPAP)	Citizen developers	Christina Wheeler	Online	1 Day	Yes	Register
Nov 26	Day of Building Business Solutions with Microsoft Flow (DOFLO)	Citizen developers	Christina Wheeler	Online	1 Day	Yes	Register
Dec 3	Building Business Solutions with PowerApps and Flow (BBSPA)	Citizen developers	Ted Pattison	Tampa, FL	3 Days	No	Register
Dec 9	Modern SharePoint and Office 365 Development (MSD365)	Professional developers	Ted Pattison	Tampa, FL	4 Days	Yes	Register
Dec 16	Power BI Certification Bootcamp (PBI365)	Citizen developers	Ted Pattison	Tampa, FL	3 Days	Yes	Register
Jan 13	Power BI Developer Bootcamp (PBD365)	Professional developers	Ted Pattison	Tampa, FL	4 Days	Yes	Register
Jan 20	Building Business Solutions with PowerApps and Flow (BBSPA)	Citizen developers	Ted Pattison	Tampa, FL	3 Days	Yes	Register
Feb 3	Modern SharePoint and Office 365 Development (MSD365)	Professional developers	Ted Pattison	Tampa, FL	4 Days	Yes	Register



Summary

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