

# Importante!

- ❖ Material elaborado pelo time de especialistas em Power Platform da Microsoft Brasil para ser utilizado em **demonstrações online para seus clientes**.
- ❖ O uso deste material é permitido **apenas para clientes** Microsoft que participaram da sua apresentação em ambiente online e para **fins de referência e/ou autoestudo**.
- ❖ Este conteúdo é de **propriedade intelectual da Microsoft**. Todos os direitos reservados.
- ❖ Este material utilizou como referência as funcionalidades da **Power Platform** disponíveis conforme a [documentação oficial](#) e previstas para lançamento em seu [guia de lançamento](#) na data de sua elaboração (ver slide “capa”). Como o conteúdo destas fontes é dinâmico, sempre consulta-los em caso de dúvidas.
- ❖ Em caso de dúvidas ou questões, entrar em contato através do endereço de e-mail [powerplatworkshopsbr@microsoft.com](mailto:powerplatworkshopsbr@microsoft.com)



# Governança e ALM na Power Platform

# Agenda

A inovação e os desafios das lideranças de TI

Pilares de governança da Power Platform

- Segurança
- Gerenciamento
- Monitoramento

Estabelecendo um centro de excelência em low-code

- Principais conceitos
- CoE Starter Kit

ALM na Power Platform

- Principais conceitos
- Recursos para admins, makers and pro-devs

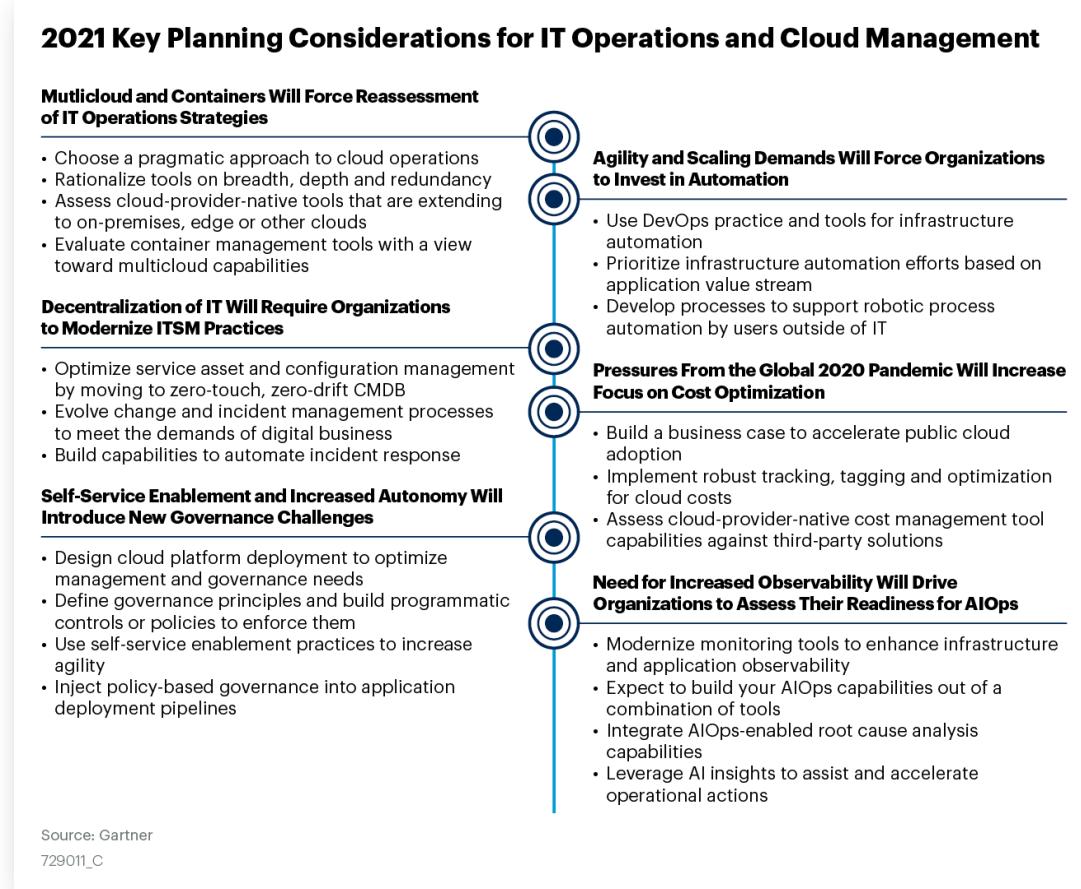
Próximos passos



# Innovation and the IT leadership challenges

# The IT Leader challenge

A growing demand for apps and solutions - growing out of control



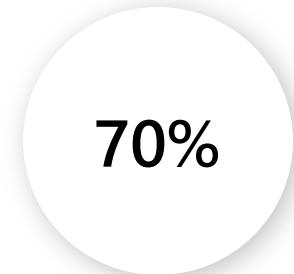
To respond to the growing demand of digital solutions, IT Leaders are increasingly looking for ways to blend code-first with low-code tools like Microsoft Power Platform to accelerate their delivery of business apps.



New apps will be built in the next 5 years – more than all apps built in the last 40 years!<sup>1</sup>



Faster demand for mobile apps than IT departments can deliver.<sup>2</sup>



New applications developed by enterprises will use low-code or no-code technologies.<sup>3</sup>

\*[Gartner, 2021 Planning Guide for IT Operations and Cloud Management, 9 October 2020 - ID G00729011](#)

<sup>1</sup> IDC FutureScape: Worldwide IT Industry 2020 Predictions. Doc # US 45599219, October 2019

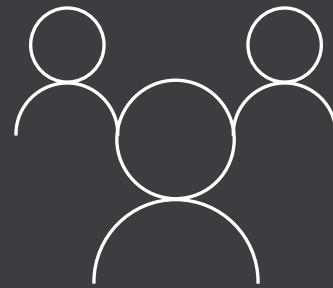
<sup>2</sup> Gartner, How to Deliver Enterprise Mobile Apps Faster – 2017

<sup>3</sup> [Gartner forecast for low code development - 3995846](#)



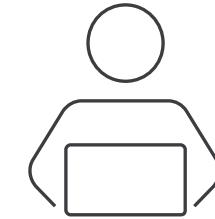
# Digital Transformation is Powered By People

End users will be creating many more apps than experienced developers in the coming years



End Users

4x >



Experienced Developers

# The Growing Number of Developers Creates A New Norm

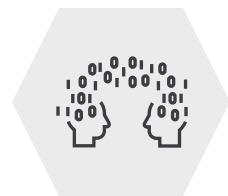
IT must adapt to the growing number of non-technical developers



Shadow IT becomes Citizen IT



Securing your perimeter means securing your people



More Data Sharing Requires Stronger DLP



Better Visibility and custom configurations



# More Developers Require More Governance

Do any of these challenges sound familiar to you?



Business data security concerns regarding connectors



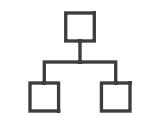
Compliancy issues regarding GDPR



Environment health regarding trial setup



ALM support regarding apps being created/deployed



Maintenance challenges regarding app and flow distribution



Staff turnover challenges regarding app or flow ownership



Security risks regarding "shadow IT"



Information risk management

# Power Platform Empowers IT Admins with Governance Capabilities

*Empowering admins with full visibility and the tools needed to balance business productivity with governance*



Makes governance a mandate

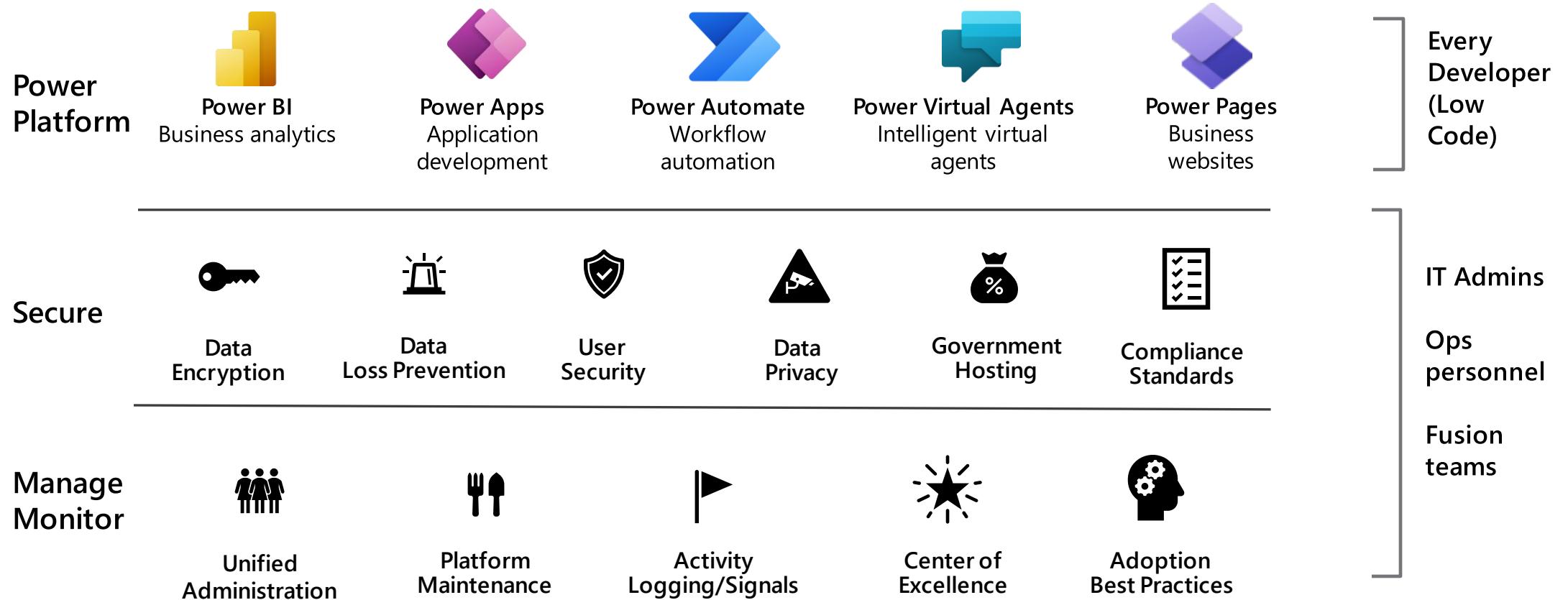


Helps Develop & Implement a Strategy



Allows flexibility when needed

# Low code governance landscape



# Power Platform Governance Pillars

Security, Management and Administration built with IT Leaders in mind



## Secure

Data security, data integrity, compliance standards, environment differentiation, highly secure environments for government



## Manage

Environment management and administration, manage Apps, Flows, Portals; Database management and integration.



## Monitor

Activity logging and oversight of standards, admin analytics, proactive monitoring, scaling growth through CoE, adoption best practices

Power Platform provides a low-code approach to rapidly build apps, flows and bots for any device, while seamlessly allowing for security, management and monitoring with ease.

# Power Platform Governance Pillars

Security, Management and Administration built with IT Leaders in mind



## Secure

- Set up Azure AD conditional access
- Enable cross-tenant isolation
- Configure data loss prevention policies
- Define your environment strategy
- Define your data gateways strategy
- Manage users and their security roles
- Configure email exfiltration



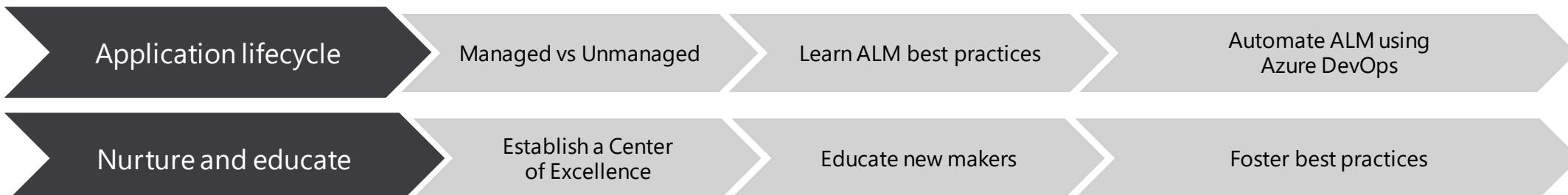
## Manage

- Environment management and administration, manage Apps, Flows, Portals; Database management and integration.



## Monitor

- Automate policies using management connectors
- Leverage admin PowerShell or admin APIs for automation



# Power Platform environments (an introduction)



# Environment

## Definition:

Container to store, manage, and share your organization's business data, apps, flows, chatbots and other Power Platform resources.

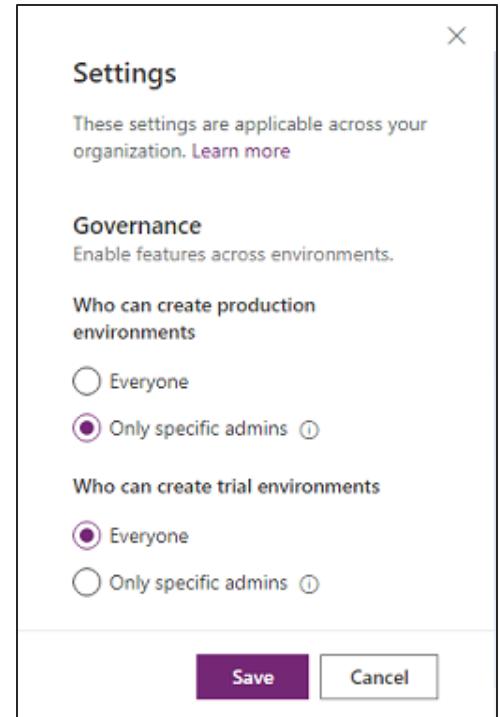
Serves as a container to separate apps that might have different roles, security requirements, or target audiences.

## Key facts:

- Created under an AAD tenant, resources can only be accessed by tenant users.
- Tied to a geographic location
- Different types of environment exists
- Can have either **zero** or **one** Dataverse database
- Every tenant has a Default environment where all licensed Power Apps and Power Automate users can create apps & flows.

## Security tips:

- Non-default environments offer more permission controls.
- Non-default environment creation can be restricted to specific admins.
- Non-default and non-developer environments with Dataverse can be restrict access to a specific AAD security group.



Controlling environment creation in the admin center.

Power Platform		Admin center
		<a href="#">New</a> <a href="#">Refresh</a>
Environments		
Environment	Type	
CRM Dev Env	Production	<a href="#">...</a>
CRM Test Env	Sandbox	<a href="#">...</a>

List of environments in the admin center.

# Environment Types

Type	Creator	Description
Default	Auto-created	A single default environment is automatically created for each tenant and shared by all users (who are Environment Makers).
Production	Licensed user, subject to tenant level setting	This is intended to be used for permanent work in an organization. Production environments are what you should use for any environments on which you depend.
Sandbox	Licensed user, subject to tenant level setting	Sandbox environments are used for development and testing, separate from production.
Trial	Licensed user, subject to tenant level setting	Trial environments are intended to support short-term testing needs and are automatically cleaned up after a short period of time.
Developer	Licensed user	Developer environments are created by users who have the free <a href="#">Power Platform Developer Plan</a> license. They're special environments intended only for use by the owner.
Dataverse for Teams	Auto-created	Dataverse for Teams environments are automatically created for a Team in Teams when you create an app in Teams using the Power Apps app for the first time or install a Power Apps app from the app catalog.
Support	Microsoft support engineer	It is an environment created in your tenant by Microsoft under your direct instructions, for purposes of preventing, detecting, or repairing problems affecting the operation of your online service.

# Create an environment

You can create environments in the Power Platform admin center or using PowerShell

Environment can be created either with or without Dataverse database

To create an environment, all the following must be **true**:

- The user has a license that allows environment creation
- Environment creation is allowed in tenant level (if user is not Global, Power Platform or Dynamics Admin)
- For production and sandbox environments, the tenant must have at least 1GB of database storage capacity available
- For trial (subscription-based) environments, each offer-based trial (also known as "admin trial") subscription entitles the tenant to three subscription-based trial environments. Only tenant-level admins are able to provision trial (subscription-based) environments.
- For trial (standard) environments, the user needs a license providing per-user entitlement for trial environments (refer to the table above). This applies to tenant-level admins, as well.

License	Trial	Production
Microsoft 365 Plans	No	No
Dynamics 365 Teams Plans	No	No
Power Platform Developer Plan	No	No
Dynamics 365 trial	Yes (one)	No
Dynamics 365 Plans	Yes (one)	Yes
Power Apps plan	Yes (one)	Yes
Power Apps trial	Yes (one)	Yes
Power Virtual Agents trial plan	Yes	No
Power Virtual Agents plan	No	Yes

**NOTE!** Global and Power Platform Administrators can create environments without any license

# Managed environments

Managed Environments is a suite of capabilities that allows admins to manage Power Platform at scale with more control, less effort, and more insights. Admins can use Managed Environments with any type of environment except the developer environments.

These are the primary elements of Managed Environments:

- Limit sharing
- Weekly usage insights
- Data policies
- Set up Power Platform pipelines



**Review the digest on Managed Environments for the week of September 12, 2022**

[See all analytics >](#)

● You have one or more Managed Environments that requires attention. Please review the Licensing section of this digest to learn more and resolve the issue. X

Here's what happened in the **16** Managed Environments in the last month:

**18**

Active apps

**202**

Active flows

**3,091**

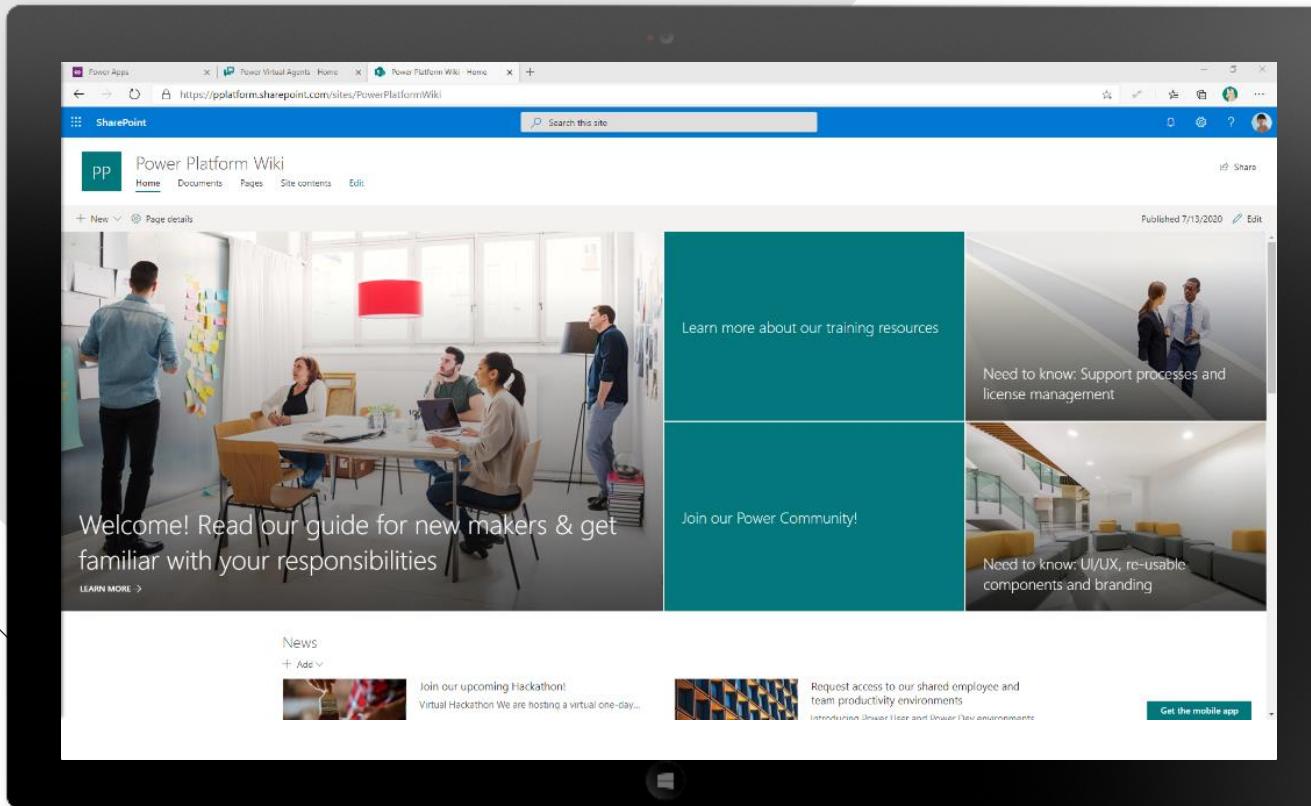
Active app users

**Consider cleaning these up**

These apps haven't run in a while. For organizational hygiene and security, consider contacting their owners to update or remove them.

App	Environment	Last run
<a href="#">Customer Service</a>	<a href="#">Default Productivity</a>	3 weeks ago
<a href="#">Home Energy Audit</a>	<a href="#">Development</a>	2 months ago

# Clearly communicate your strategy to your makers



Purpose of **Default, shared** team and employee productivity environments



Purpose of **Trial** and **Developer** environments



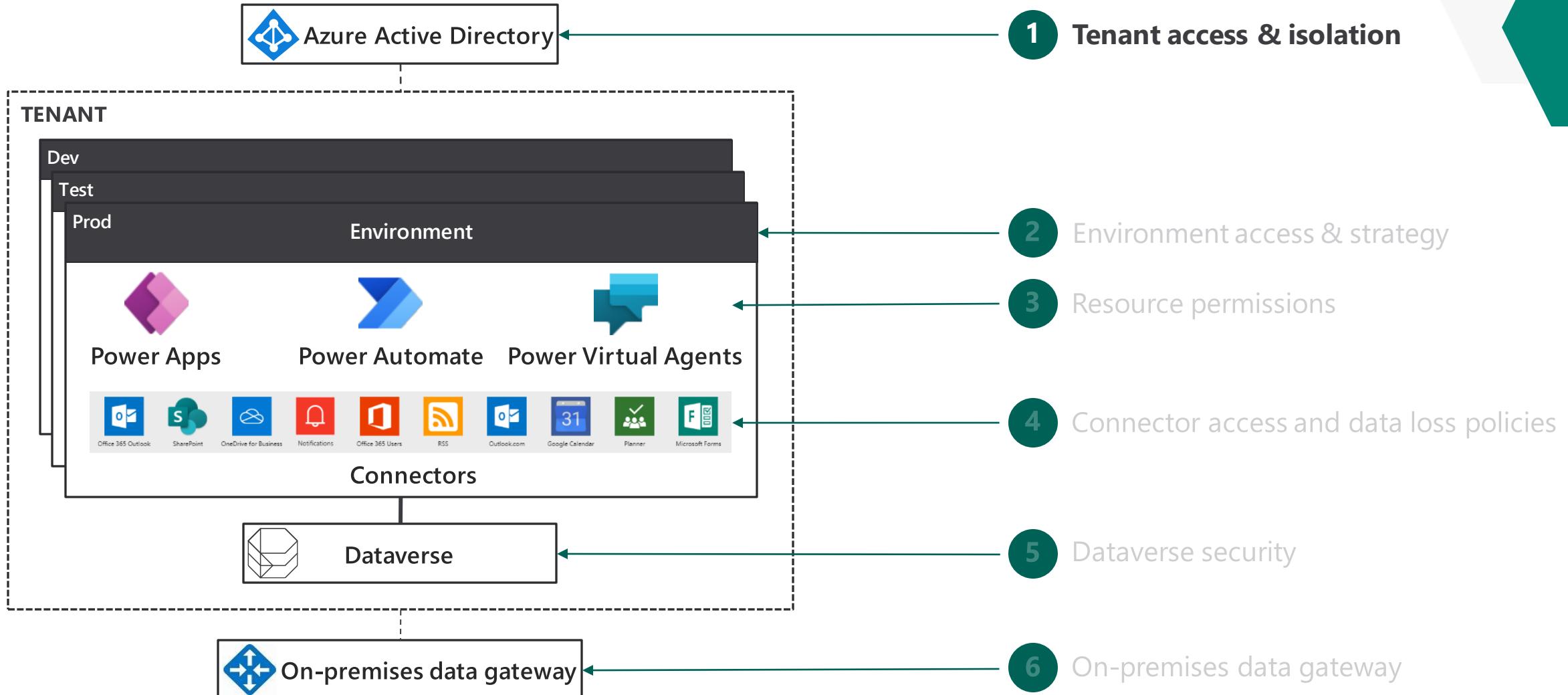
Process of requesting **custom** environments



**Responsibilities** of a maker: keep the tenant tidy, share wisely and protect organization data

# Governance pillar

## Secure

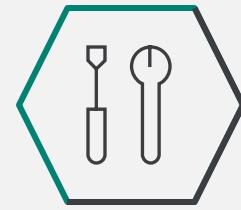


# Tenant level service admin roles



## Global Admin

Full administration to all services in tenant



## Power Platform Admin

### Dynamics 365 Admin

Power Platform Admin role



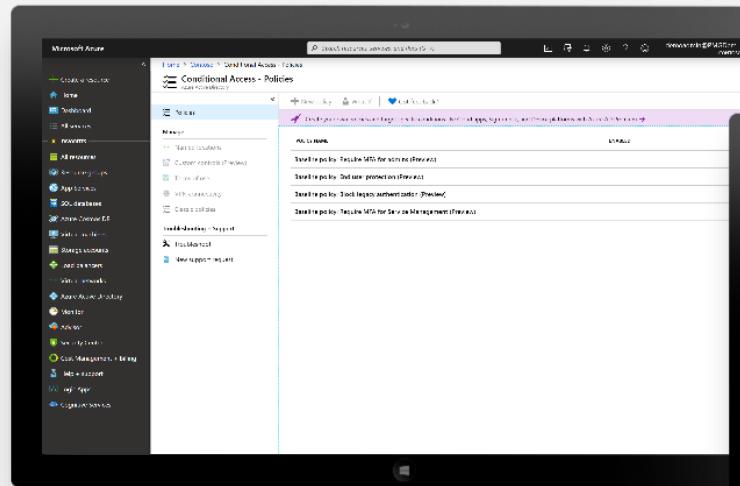
## Delegated Admin

Full administration to all services in tenant

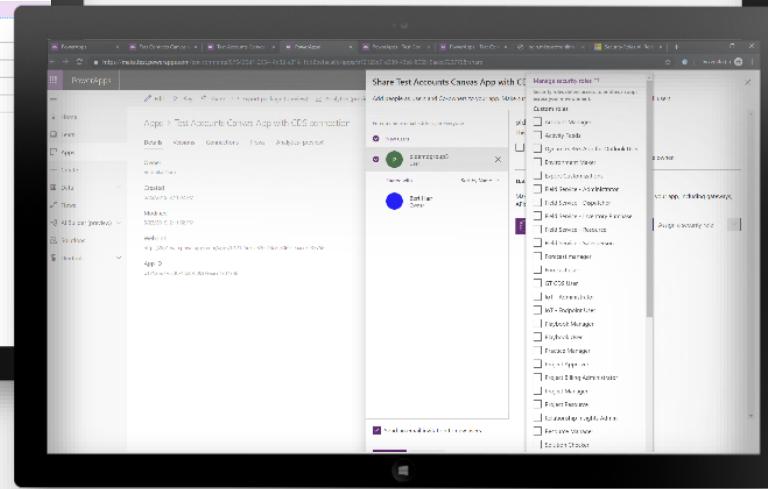
Used for partners to provide support to customers

Full support for Power Platform

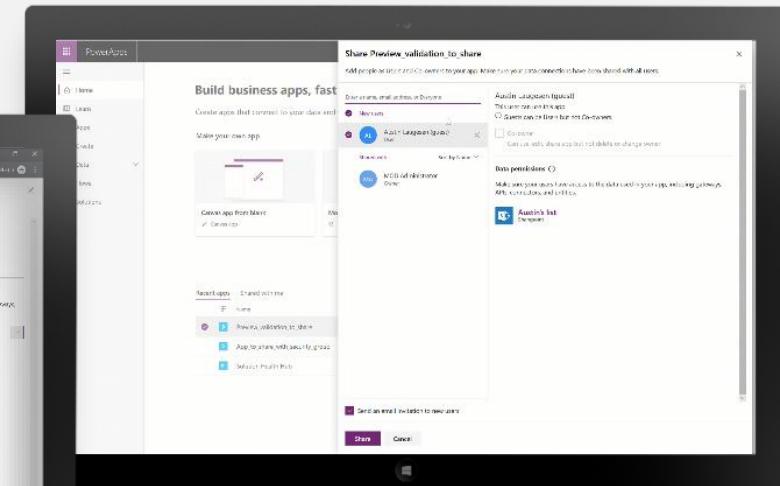
# Identity management with Azure Active Directory



Using Azure Active Directory session and conditional access policies to manage timeout and access requirements. (more details in upcoming slides)



Use Azure Active Directory groups to manage/share apps and data access.



Share apps with external users with Azure Active Directory B2B collaboration.

1

# Tenant Isolation from Power Platform Admin Center (Preview)

The screenshot shows the Power Platform Admin Center interface with the following details:

- Left sidebar:** Includes links for Environments, Analytics, Resources, Help + support, Policies (selected), Data policies, Tenant isolation (preview) (selected), and Admin centers.
- Header:** Power Platform admin center | Tenant isolation
- Main Content:**
  - New tenant rule:** A button to create a new rule.
  - Tenant Isolation:** A section describing inbound and outbound isolation.
  - Switch:** A toggle switch labeled "On".
  - Table:** A grid showing tenant isolation rules. The columns are "Allowed direction" and "Tenant ID".

Allowed direction	Tenant ID
Inbound	00000000-0000-0000-0000-000000000000
Outbound	00000000-0000-0000-0000-000000000000
Inbound	*

- Current in preview and available in Power Platform Admin Center, **Policies > Tenant isolation**.
- New Tenant Rule can be created for Inbound and/or Outbound Restriction once Tenant Isolation is turned on
- Tenant domain or ID to be added to the Allowed list, you can use \* for all tenants.
- Users who create or edit a resource affected by the tenant isolation policy will see a related error message.
- Existing Apps or flows that are in violation of the tenant isolation policy won't run successfully

1

# Email exfiltration blocking for O365 Outlook Connector



SMTP header “x-ms-mail-application” to identify – **Microsoft Power Automate** or **Microsoft Power Apps** – as the client



SMTP header “x-ms-mail-operation-type” to identify – **Forward**, **Reply** or **Send** – as message operation.



Exchange **mail flow rules** can be set up to filter appropriate message.

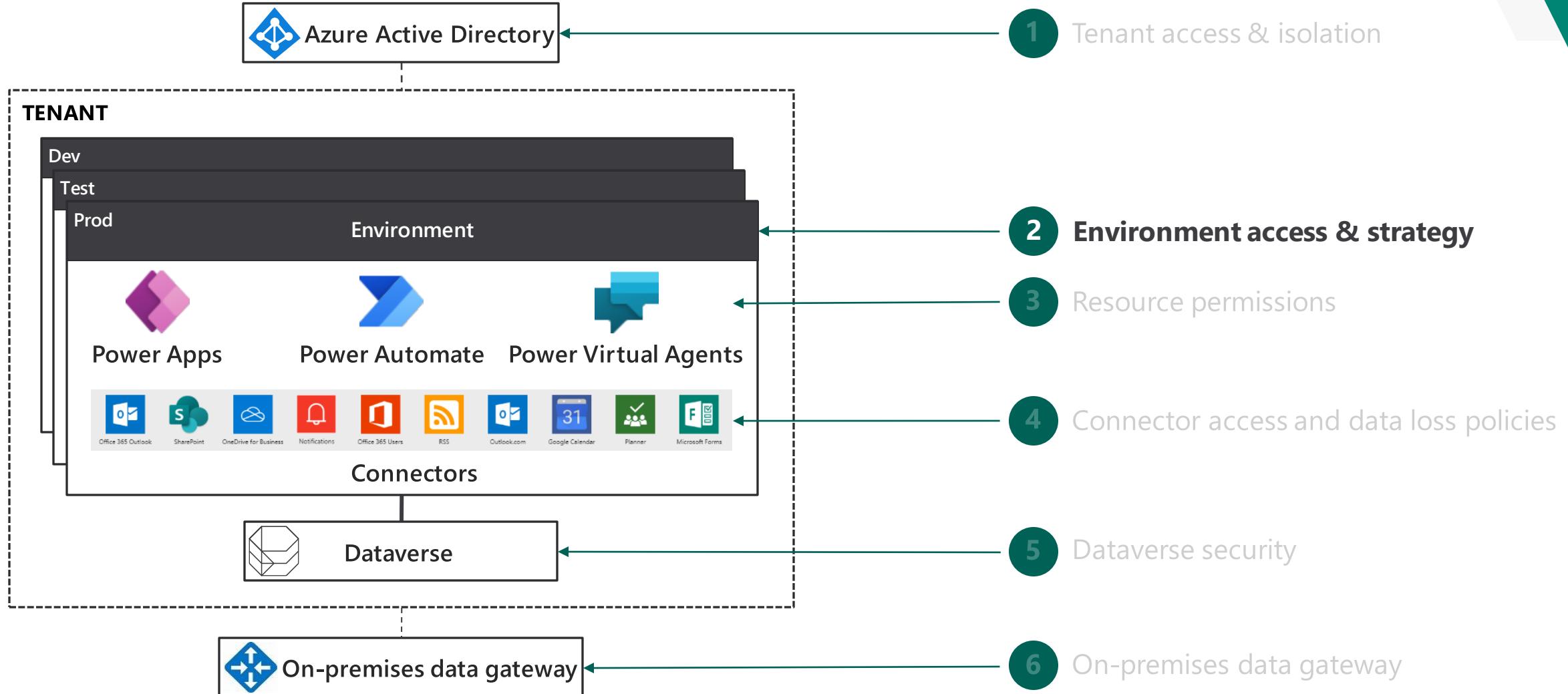


Individual apps or flows can be exempted by using **User-Agent ID** in the SMTP header

The screenshot shows the Exchange Admin Center interface. On the left, a sidebar lists various administrative categories: dashboard, recipients, permissions, compliance management, organization, protection, **mail flow** (which is selected), mobile, public folders, unified messaging, and hybrid. The main pane is titled "Exchange Rule 1" and is configured as follows:

- Name:** Exchange Rule 1
- Apply this rule if...**:
  - The recipient is located... **Outside the organization**
  - A message header includes... **'x-ms-mail-operation-type' header includes 'Forward'**
  - A message header matches... **'x-ms-mail-application' header matches 'Microsoft Power Automate'**
- Do the following...**:
  - Reject the message with the explanation... **'Security policies don't allow forwarding emails to external address using Power Automate. Contact Exchange admin for exception.'**

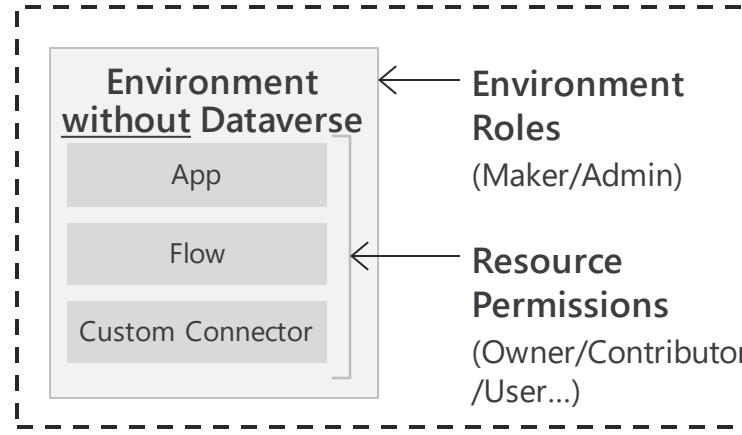
At the bottom right of the rule editor are "Save" and "Cancel" buttons.



# Environment security and access control

Access to resources are controlled using

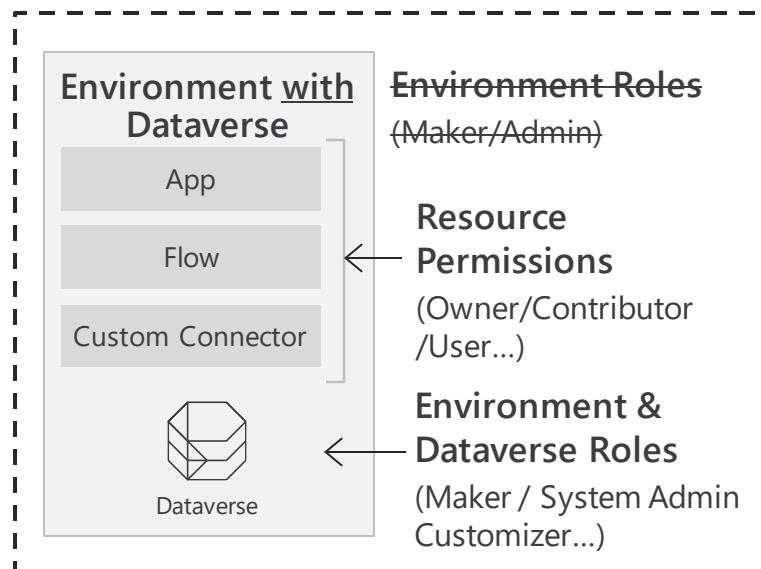
- Environment roles (Maker/Admin)
- Resource permissions for apps/flows/custom connectors/etc.



Environment Admin can perform all administrative actions like

- View/manage resources
- Add/remove a user or group from roles
- Create DLP policies
- Provision Dataverse database to envs

**Environment Maker** can create resources within an environment and distribute apps and flows they build using share functionality



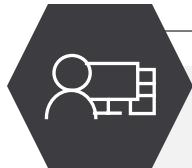
Once a Dataverse database has been created, the Dataverse security roles take over for controlling security

Access to resources are controlled using

- Dataverse security roles
- Resource permissions for apps/flows/custom connectors/etc.

Learn more about Dataverse security roles from [here](#)

## Key out-of-box security roles you need to know



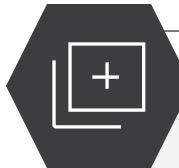
### Environment Admin/System Administrator

- Complete ability to customize and administer the environment
- Full read-write access to data in the database
- The role cannot be modified
- Care should be taken in assigning this to the right people



### System Customizer

- Full permission to customize the environment
- Data access is focused only on data owned by the user
- Role can be modified but it is not recommended to modify



### Environment Maker

- Create new resources in the environment including apps, connections, gateways and flows
- There is no default privileges to data included
- Role can be modified but it is not recommended to modify



### Basic User

- Basic user role, with ability to run apps and perform common tasks but no ability to customize the system
- The data access is focused on Read access to most Common Data Model core entities with full access to records owned by the user (i.e. 'self' privileges)
- Good role to copy to make a custom security role for users

## Customizing Security Roles

If your app uses a custom table, its privileges must be explicitly granted in a security role before your app can be used. You can either add these privileges in an existing security role or create a custom security role.

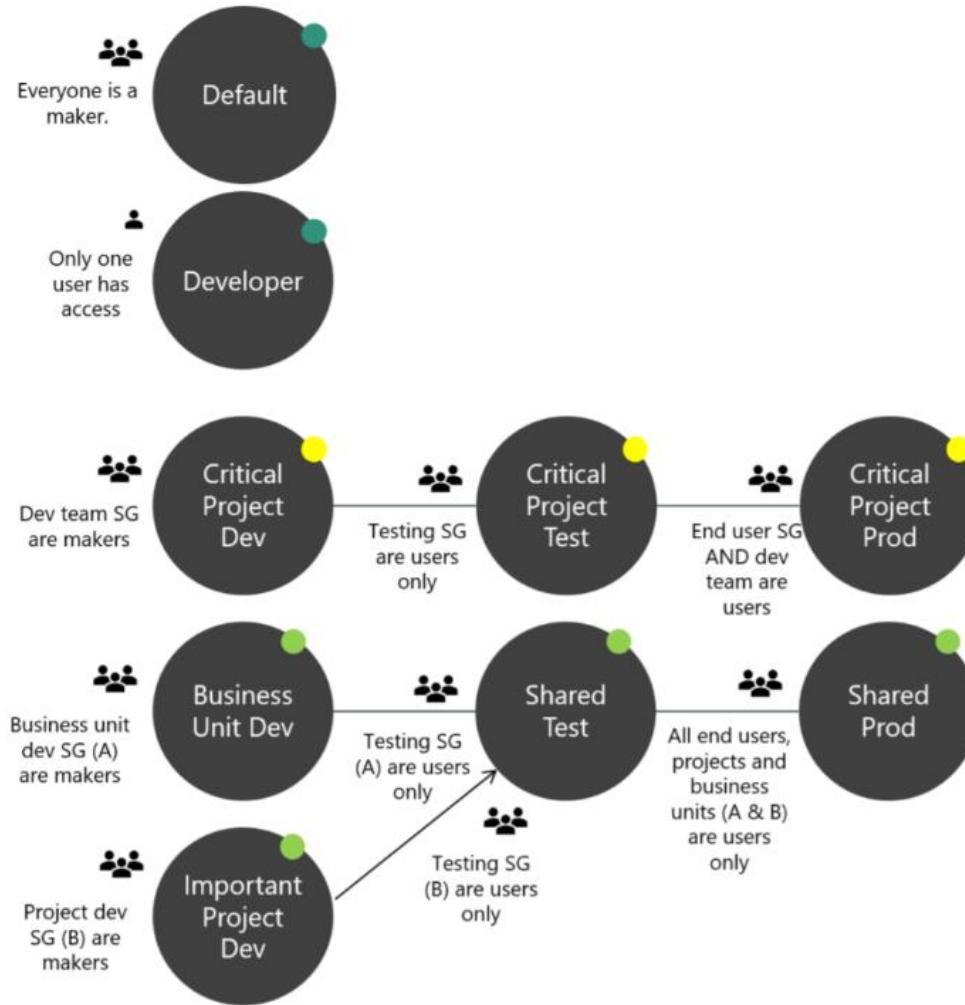
The screenshot shows the Microsoft Dynamics 365 Security Roles interface. On the left, a list of security roles is displayed under a 'Business Unit' of 'org9f0849d3'. The 'Environment Maker' role is selected. On the right, the details for the 'Environment Maker' role are shown, including its permissions for various entities like App Config Master, Attribute Map, and Custom Control. A legend at the bottom indicates that green dots represent 'User' permissions, yellow dots represent 'Business Unit' permissions, and blue dots represent 'Organization' permissions.

Entity	Create	Read	Write	Delete	Append	Append To	Assign	Share
App Config Master	○	●	○	○	○	○	○	○
Attribute Map	○	●	○	○	○	○	○	○
Callback Registration	○	○	○	○	○	○	○	○
Canvas App	○	○	○	○	○	○	○	○
Custom Control	○	○	○	○	○	○	○	○
Custom Control Default Config	○	○	○	○	○	○	○	○
Custom Control Resource	○	○	○	○	○	○	○	○
Customizations	●	●	○	○	○	○	○	○
Entity	○	●	○	○	○	○	○	○
Entity Key	○	●	○	○	○	○	○	○
Entity Map	○	●	○	○	○	○	○	○
Expander Event	○	●	○	○	○	○	○	○
Field	○	●	○	○	○	○	○	○
Hierarchy Rule	○	●	○	○	○	○	○	○
Import Job	○	●	○	○	○	○	○	○

Key:

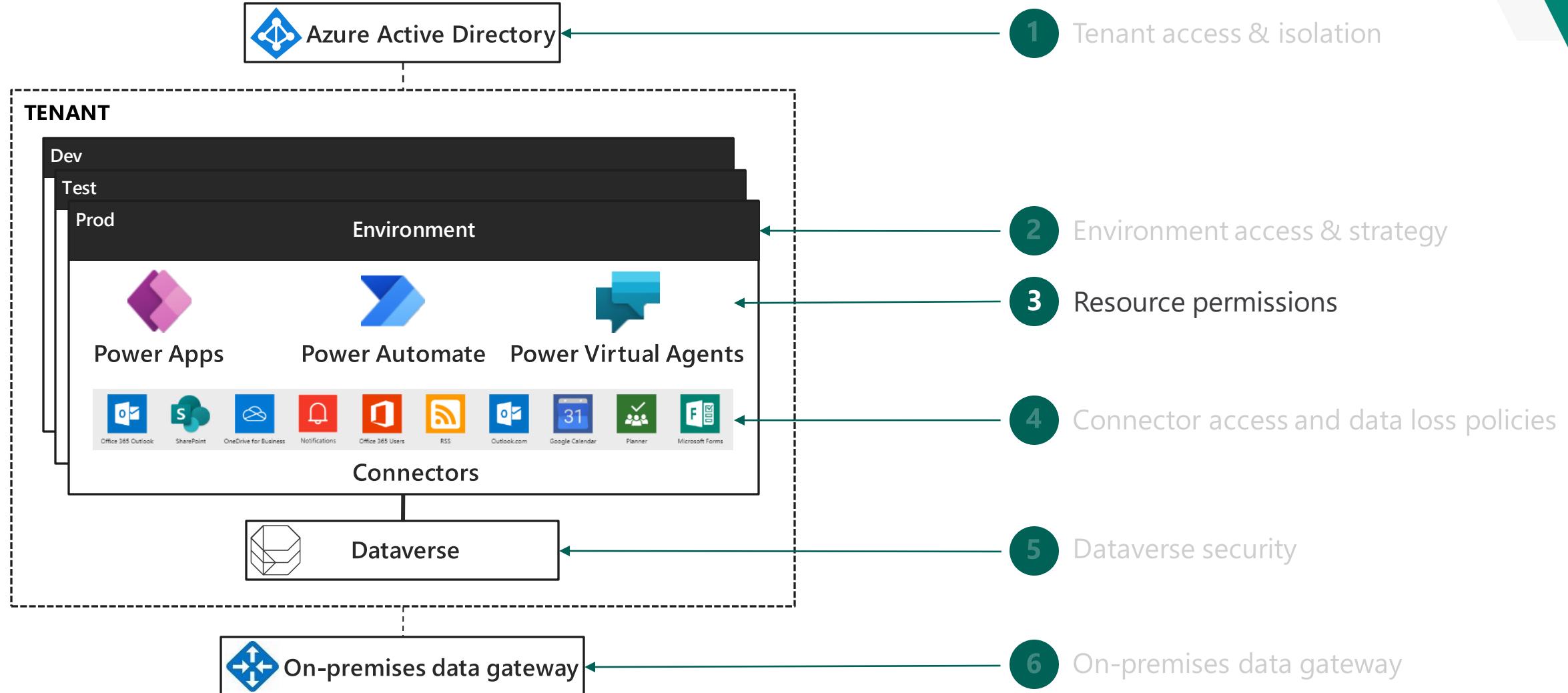
- None Selected
- User
- Business Unit
- Parent: Child Business Units
- Organization

# Strategy for establishing secure environments



## Security checklist (learn more [here](#)):

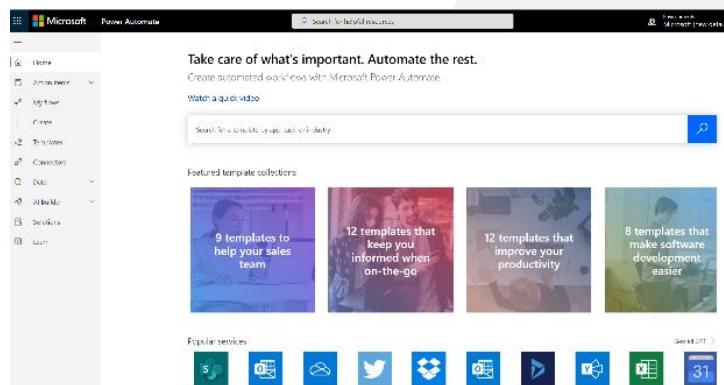
- ✓ Assign your admins the Power Platform service admin role.
- ✓ Restrict the creation of net-new trial and production environments to admins.
- ✓ Treat the default environment as a 'Personal productivity' environment.
- ✓ Establish a process for requesting access to or creation of environments.
  - Dev/Test/Production environments for specific business groups/ applications.
  - Individual-use environments for POCs and trainings.
- ✓ Establish Tenant and Environment level Data Loss Prevention (DLP) policies.



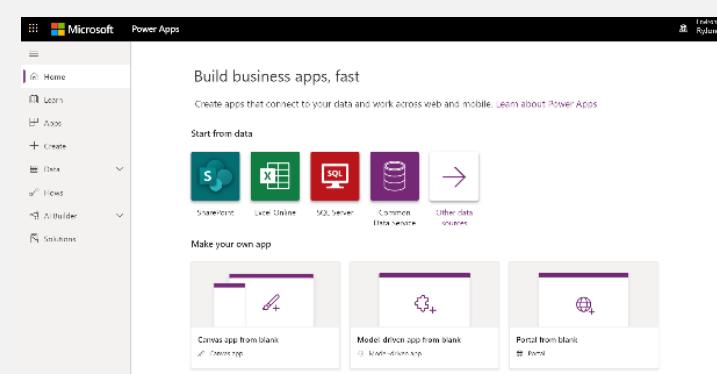
# Resource level access

Resources can be shared in the following modes by the makers -

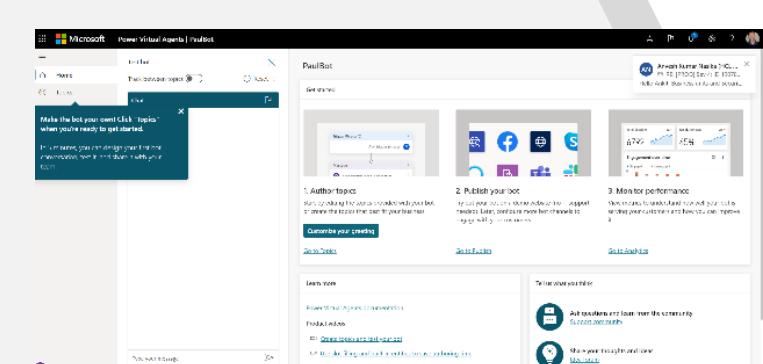
- Access to co-own components – edit, share, use
- Flow co-ownership sharing also shares connections in the flow implicitly with owners
- Access to run components – use only



Power Automate



Power Apps



Power Virtual Agent

3

# Sharing Component and Granting Data Access

The screenshot shows the Microsoft Power Apps interface with a sharing modal open. The main left pane displays navigation options like Home, Learn, Apps, Create, Data, Flows, AI Builder, and Solutions. The central area features sections for "Make your own app" (Canvas app from blank, Model-driven app from blank) and "Learning for every level" (Get started with Power Apps, Author a basic form). The "Your apps" section lists several apps: Environment Request App, Set App Permissions, Developer Compliance Center, Power Platform Admin View, Create Flow From Archive, and Champify (which is currently selected).

**Share Champify**

Add people as Users and Co-owners to your app. Make sure your data connections have been shared with all users.

Enter a name, email address, or Everyone

New users

Isaiah Langer User

Co-owner

Can use, edit, share app but not delete or change owner.

**Data permissions**

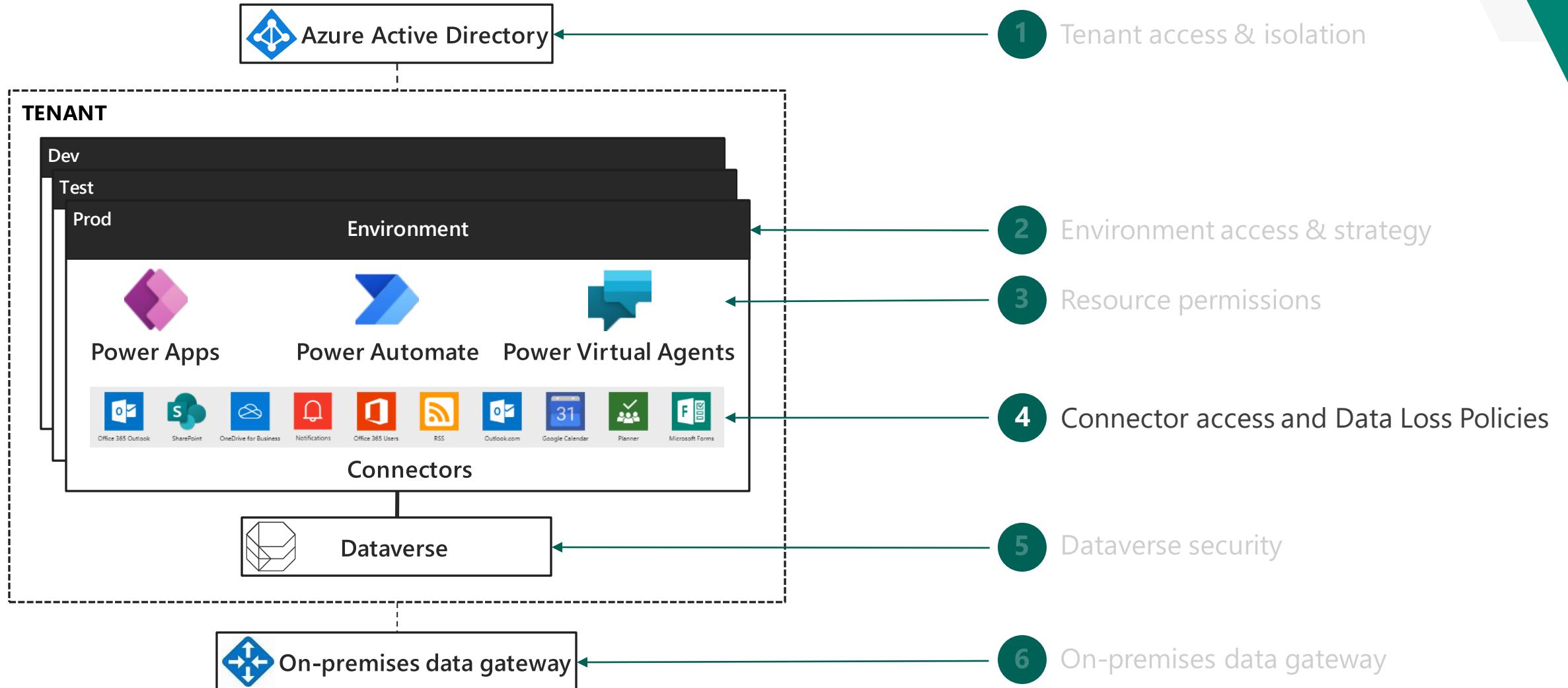
Make sure your users have access to the data used in your app, including gateways, APIs, connectors, and entities.

Champify Students, Champif Common Data Service Show entities

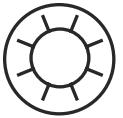
Office 365 Users

Send an email invitation to new users

Share Cancel



# Connection Creation and Authentication



Apps and flows establish connection to the data source using prebuilt or custom connector in context of the user



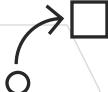
User needs to authenticate based on the mechanisms supported by the connector to establish a connection



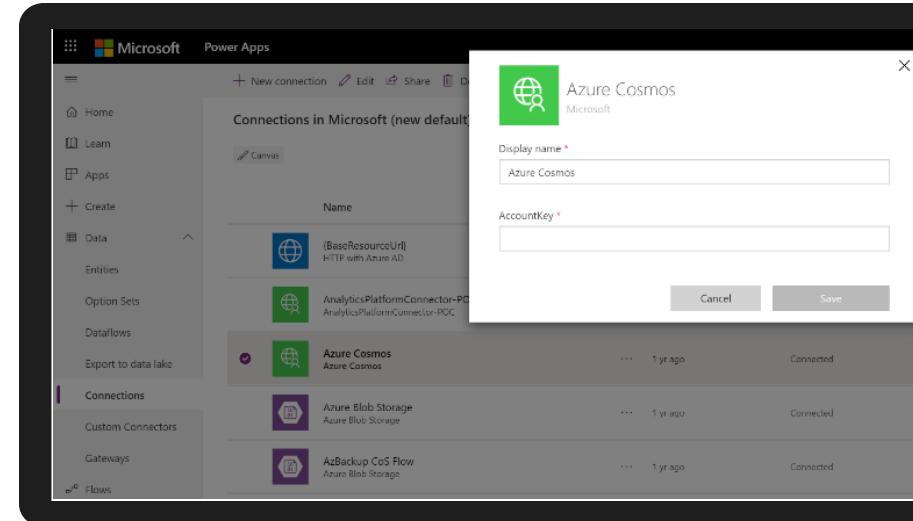
Typical connection types supported by connectors include – AAD, OAuth, APIKey, Windows Auth, Basic, No Auth etc. Some connectors may support multiple auth types



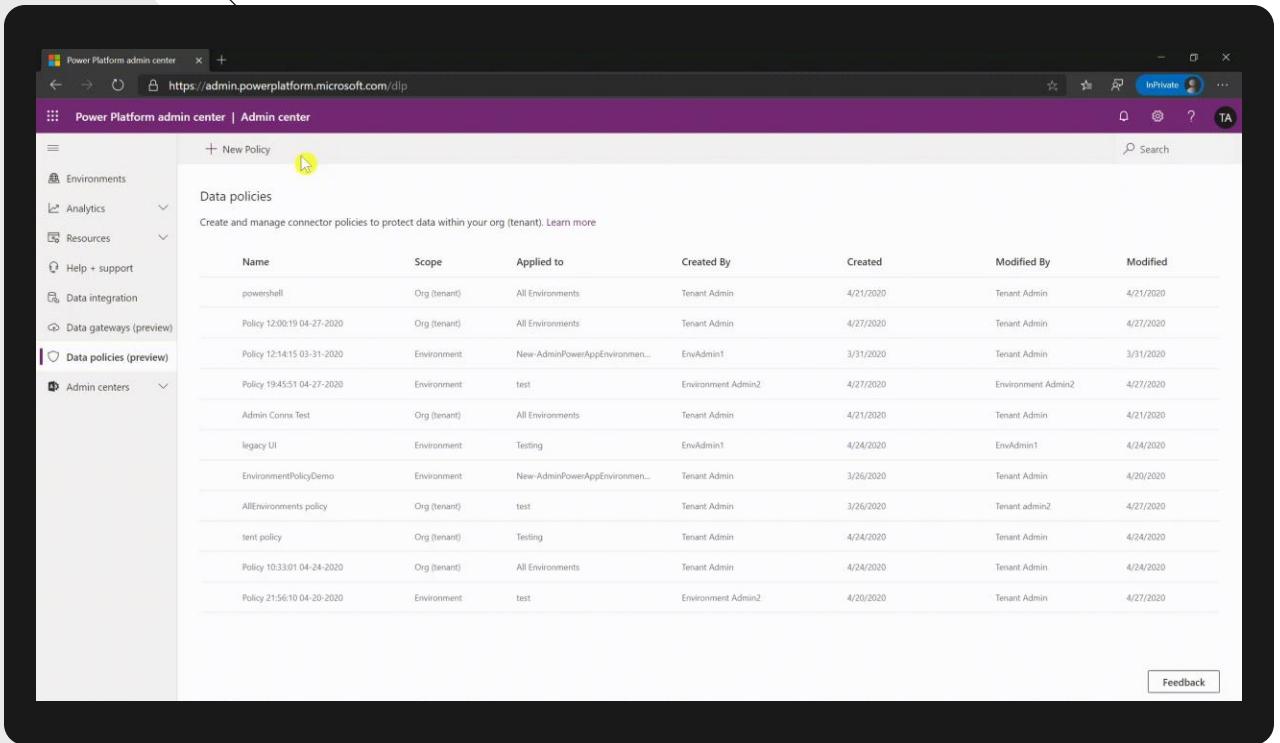
Existing AuthZ/AuthN rights of the user accrue upon establishing the connection



Canvas app connections can be edited, deleted and shared (if implicit sharing is allowed) by the connection creators



**Power Platform DLP policies allow you to control data flows across data connectors when used within Power Apps and Power Automate.**



# Connector Classification

Connectors can be classified across following groups using DLP policies



## Business

- A given Power App or Power Automate resource can use one or more connectors from **Business** group
- If a Power App or Power Automate resource uses a **Business** connector, it cannot use any **Non-business** connector



## Non-business

- A given Power App or Power Automate resource can use one or more connectors from **Non-business** group
- If a Power App or Power Automate resource uses a **Non-business** connector, it cannot use any **Business** connector



## Blocked

- Any Power App or Power Automate resource cannot use any connector from **Blocked** group
- All Microsoft owned premium connectors and third-party connectors (standard and premium) can be blocked
- All Microsoft owned standard connectors and Microsoft Dataverse cannot be blocked

## Tenant and Environment Policies

Power Platform DLP allows admins to create two types of policies



### Tenant level DLP policies

- Supported only for - Power Platform Administrator, D365 Administrator or Global administrator - roles
- Can be applied to one, more than one or all environments at a time
- Can be edited and viewed by any tenant admin
- Connector settings are visible to all relevant environment admins but are not editable by them
- Can be used to manage custom connector patterns



### Environment level DLP policies

- Supported for Environment Admin role associated with the environment
- Can be applied to only one environment at a time
- Specifying the environment is mandatory to create the policy
- Can be edited and viewed by any environment admin (of the environment) and tenant admins
- Can be used to manage custom connector patterns

# DLP Policy Scope

## Tenant policies have three scope settings

### All environments

By default tenant level policies will be applied to all environments created in the tenant

### All except selected environments

Tenant admins can choose to exclude specific environments to apply the policy

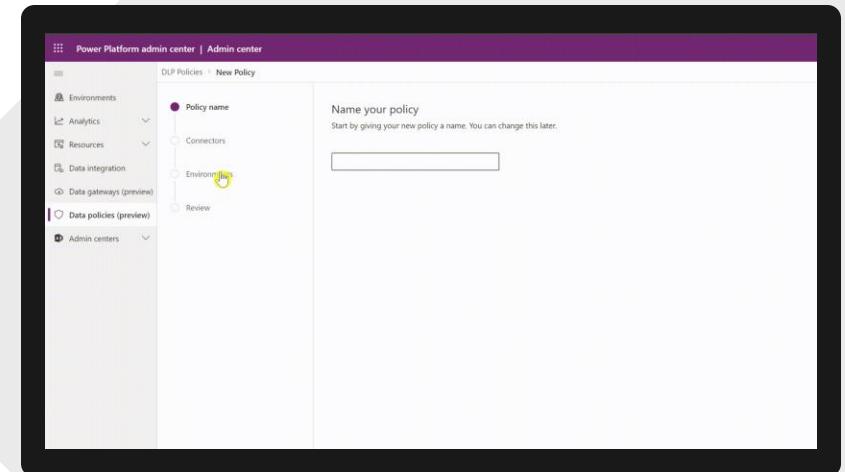
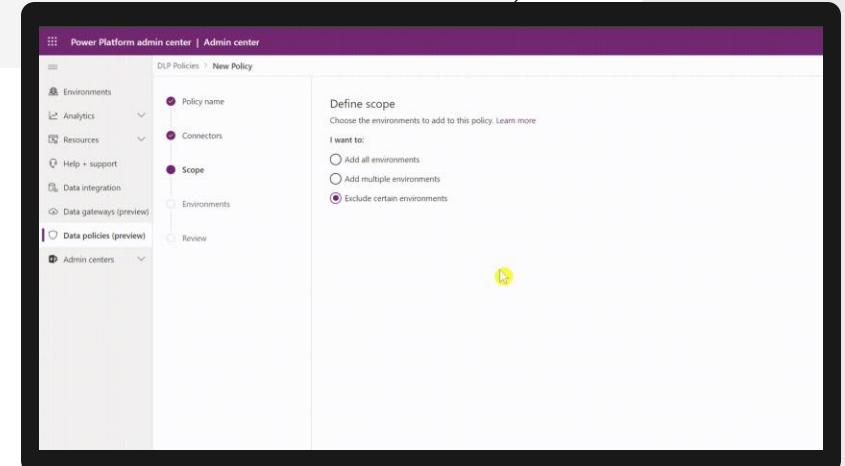
### Only selected environments

Tenant admins can choose to include only specific environments to apply the policy

## Environment policies have one setting

### One environment only

Environment admins can choose to apply the policy on one environment at a time



# DLP Policy Enforcement



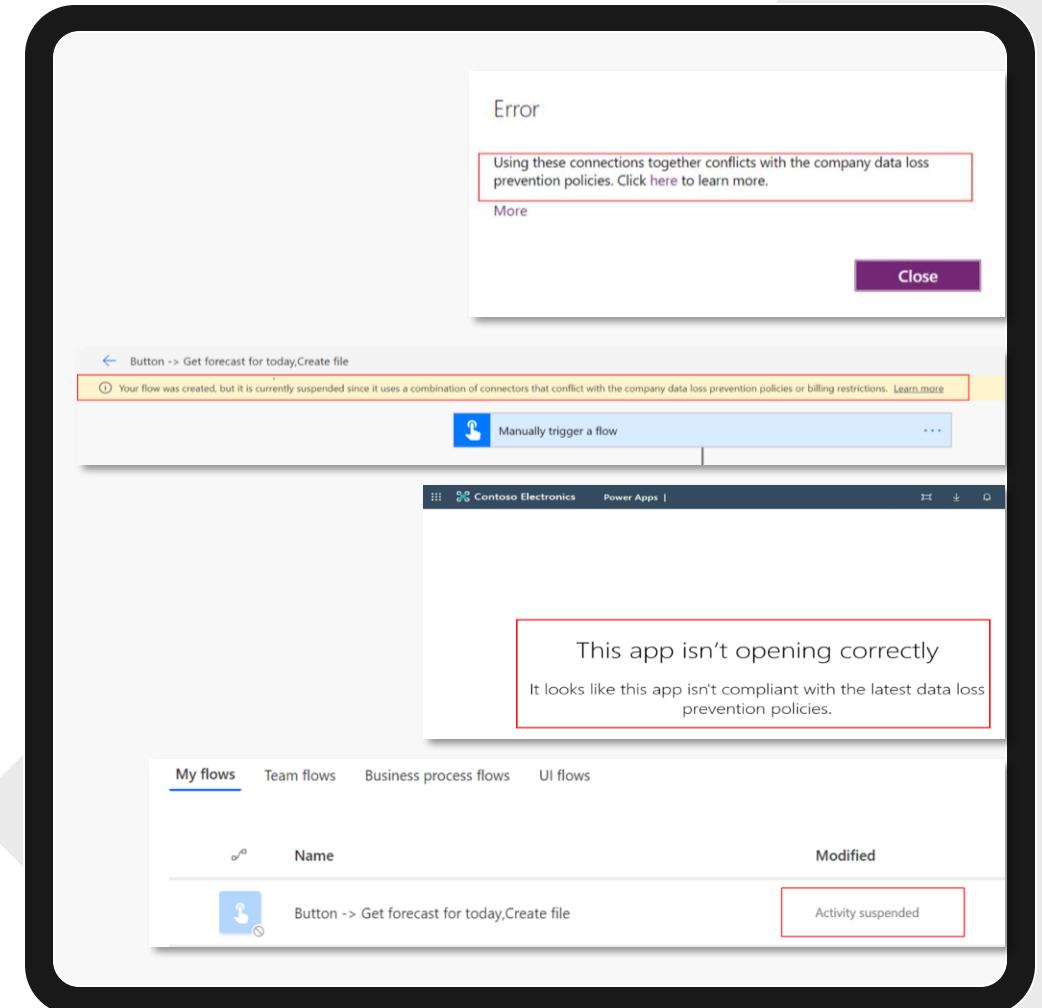
## Design-time

- Power Apps makers see an error upon using connectors that don't belong together or are blocked using DLP policies. Apps violating DLP policies cannot be saved at design time unless DLP violation is resolved.
- Power Automate makers see a warning while saving a flow using connectors that don't belong together or are blocked using DLP policies. Flow will be saved but marked as 'Suspended' and will not execute unless DLP violation is resolved.



## Run-time

- If DLP policy changes impact an existing Power App negatively and it becomes non-compliant then users are no longer able to launch it and get an error.
- If DLP policy changes impact an existing Power Automate negatively and it becomes non-compliant then it is automatically marked as suspended. Users are no longer able to execute it. Power Automate suspension may take ~5 mins to come into effect after policy changes.

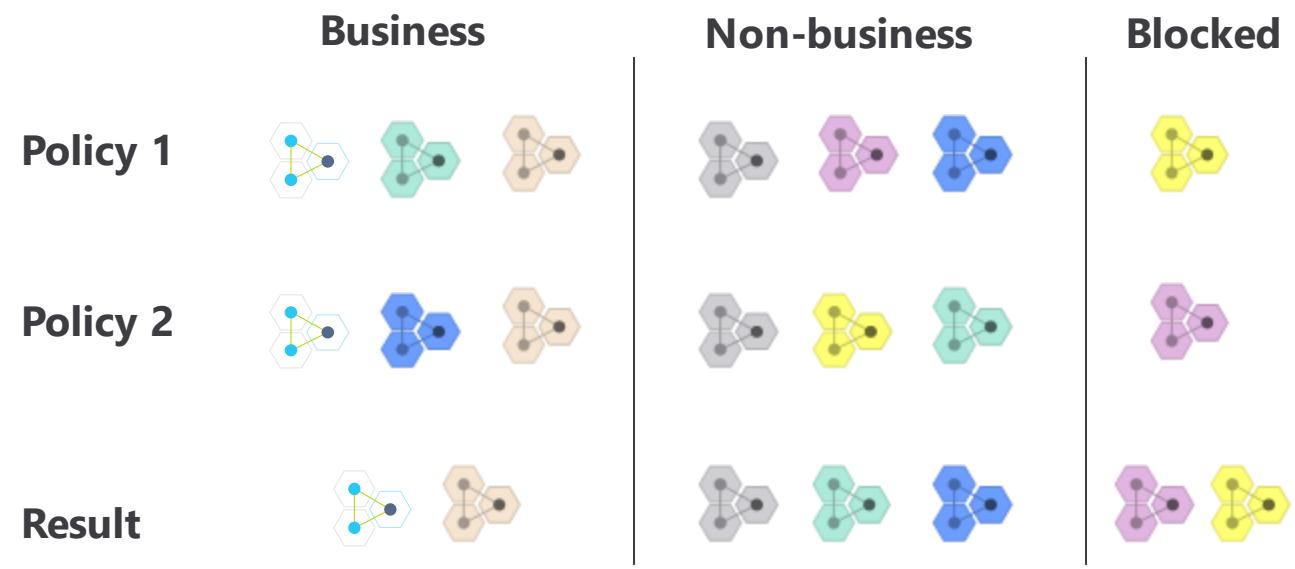


4

## Multiple Policy Impact on Environments

If multiple tenant or environment level policies are applied simultaneously on an environment, then the most restrictive rules accrue

Multiple DLP policies applied to the same environment grouping connectors across Business/Non-business/Blocked



All blocked connectors map to blocked

For predictable outcomes use minimal number of DLP policies per environment

# 4 DLP Management Interfaces

Power Platform for Admins

dlp

Triggers Actions

- Get Environment DLP Policy (preview)
- Update Tenant DLP Policy (preview)
- Delete Environment DLP Policy (preview)
- Create Environment DLP Policy (preview)

Power Platform admin center | Admin center

+ New Policy

Data policies

Create and manage connector policies to protect data within your org (tenant). Learn more

Name	Scope	Applied to	Created By	Created On
powershell	Org (tenant)	All Environments	Tenant Admin	4/2/2020 10:31:15 AM
Policy 12:14:15 03-31-2020	Environment	New-AdminPowerAppEnvironment	EnvAdmin1	3/1/2020 12:14:15 PM
Admin Connie Test	Org (tenant)	All Environments	Tenant Admin	4/2/2020 10:31:15 AM
legacy UI	Environment	Testing	EnvAdmin1	4/2/2020 10:31:15 AM
EnvironmentPolicyDemo	Environment	New-AdminPowerAppEnvironment	Tenant Admin	3/1/2020 12:14:15 PM
AllEnvironments policy	Org (tenant)	All Environments	Tenant Admin	3/1/2020 12:14:15 PM
test policy	Org (tenant)	Testing	Tenant Admin	4/2/2020 10:31:15 AM
Policy 10:33:01 04-24-2020	Org (tenant)	All Environments	Tenant Admin	4/2/2020 10:31:15 AM
Policy 21:56:10 04-20-2020	Environment	Unknown	Environment Admin2	4/2/2020 10:31:15 AM

Windows PowerShell

Windows PowerShell

Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell <https://aka.ms/pscore6>

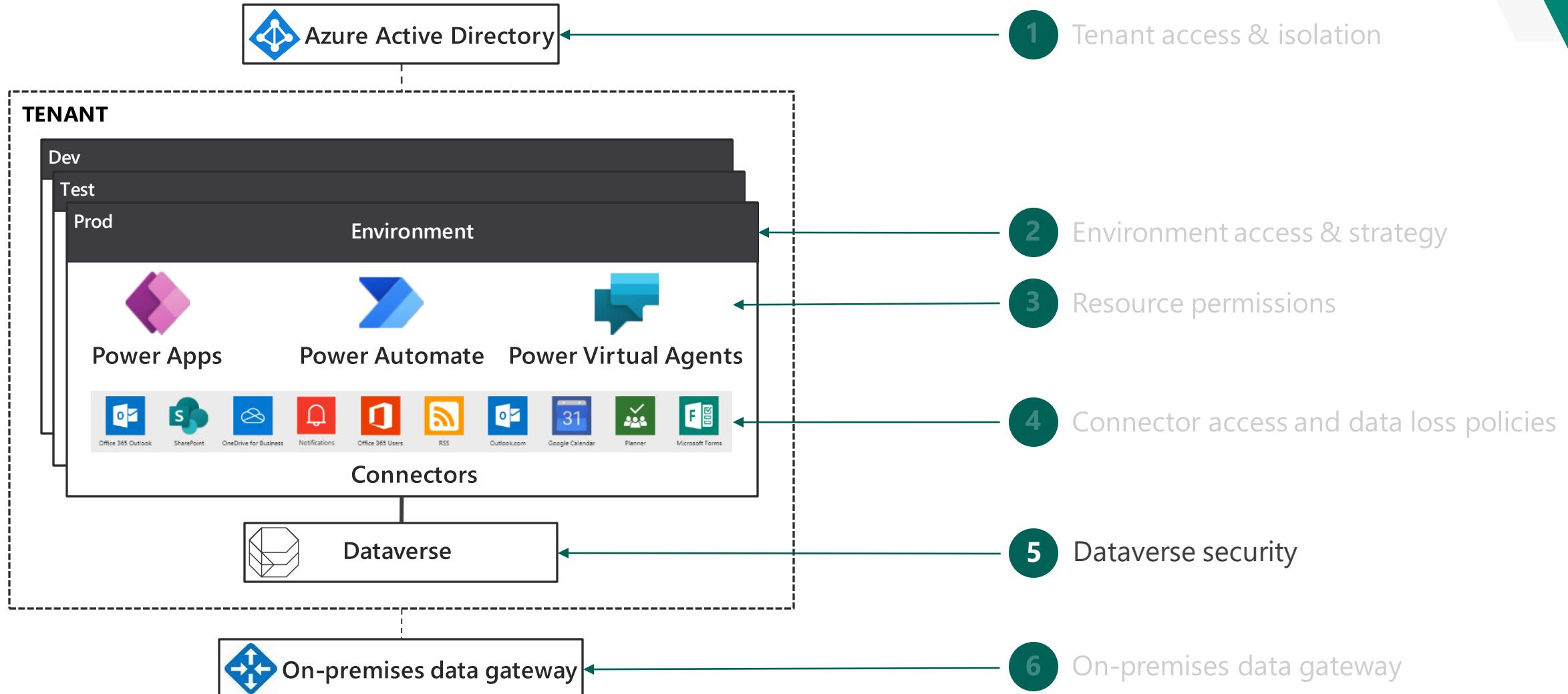
```
PS C:\Users\ansharma> Set-DlpPolicy
```

cmdlet Set-DlpPolicy at command pipeline position 1  
Supply values for the following parameters:  
PolicyName:

Power Platform for Admins  
Connector

Power Platform  
Admin Center

Power Apps  
Powershell



# Security Roles and Privileges

## Roles

Define how different users access different types of records

Contain a set of privileges

Users can be assigned to multiple security roles

Security role privileges are cumulative

## Privileges

### Record-level privileges.

For each entity, permissions can be defined for Read, Create, Delete, Write, Assign, Share, Append and Append To.

### Action/Task-based privileges.

Permissions can also be defined for non-entity related actions, e.g. publish articles.

### Different level of accesses:

Global

Deep

Local

Basic

# Record-level security

## Table

Privilege	Description
<b>Create</b>	Required to make a new record. Which records can be created depends on the access level of the permission defined in your security role.
<b>Read</b>	Required to open a record to view the contents. Which records can be read depends on the access level of the permission defined in your security role.
<b>Write</b>	Required to make changes to a record. Which records can be changed depends on the access level defined in your security role.
<b>Delete</b>	Required to permanently remove a record. Which records can be deleted depends on the access level of the permission defined in your security role.
<b>Append</b>	Required to associate a record with the current record. For example, if a user has Append rights on an opportunity, the user can add a note to an opportunity. Which records can be appended depends on the access level of the permission defined in your security role.
<b>Append To</b>	Required to associate the current record with another record e.g., a note can be attached to an opportunity if the user has Append To rights on the note. Which records can be appended to depends on the access level of the permission defined in your security role.
<b>Assign</b>	Required to give ownership of a record to another user. Which records can be assigned depends on the access level of the permission defined in your security role.
<b>Share</b>	Required to give access to a record to another user while keeping your own access. Which records can be shared depends on the access level of the permission defined in your security role.

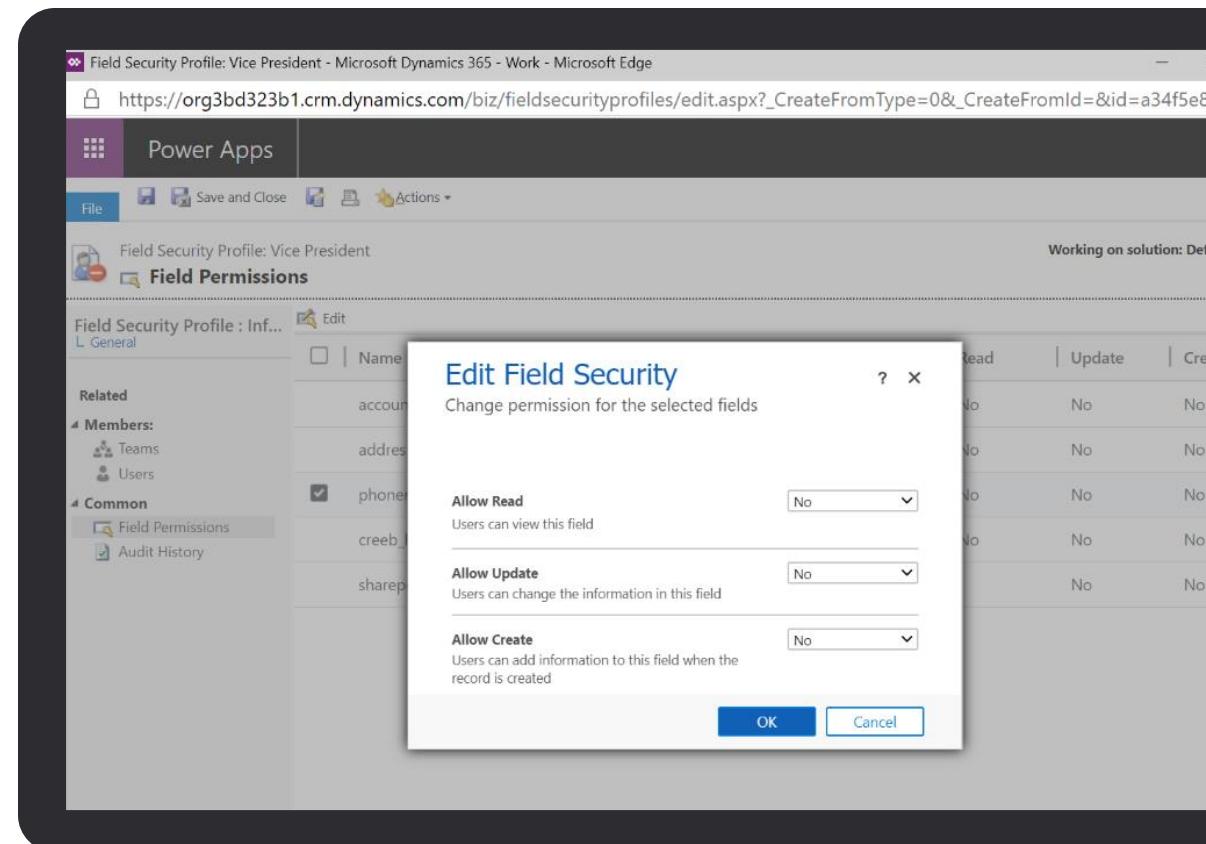
## Access Level

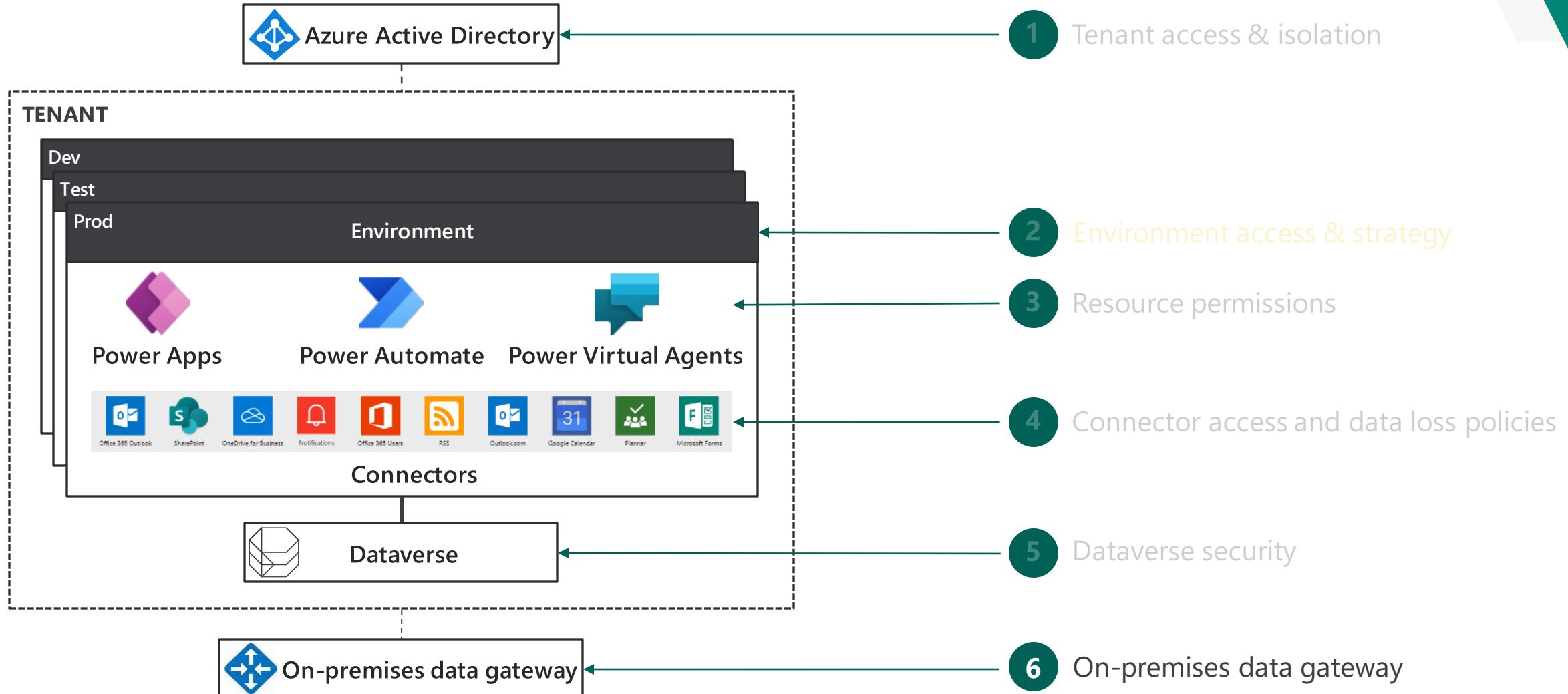
Access	Description
●	<b>Global.</b> This access level gives a user access to all records in the organization, regardless of the business unit hierarchical level that the environment or the user belongs to. Users who have Global access automatically have Deep, Local, and Basic access.
●	The application refers to this access level as <b>Organization</b> .
●	<b>Deep.</b> This access level gives a user access to records in the user's business unit and all business units subordinate to the user's business unit. Users who have Deep access automatically have Local and Basic access, also.
●	The application refers to this access level as <b>Parent: Child Business Units</b> .
●	<b>Local.</b> This access level gives a user access to records in the user's business unit.
●	Users who have Local access automatically have Basic access, also.
●	The application refers to this access level as <b>Business Unit</b> .
●	<b>Basic.</b> This access level gives a user access to records that the user owns, objects that are shared with the user, and objects that are shared with a team that the user is a member of.
●	This is the typical level of access for sales and service representatives.
○	The application refers to this access level as <b>User</b> .
○	<b>None.</b> No access is allowed.

## 5

# Field level security

- Control access to sensitive data
- Can be used in:
  - Client applications – Web, mobile, Microsoft Dynamics for Outlook
  - Web service calls – plugins, workflow, custom code
  - Reporting (via Filtered views)
- Enforce by security profile for:
  - Users and Teams
- Permission Scope:
  - Read
  - Create
  - Update
- Exceptions (do not support FLS)
  - Identifiers – ownerId, contactId, accountId, etc
  - Security principal fields – createdBy, modifiedBy, Owning Team/User
  - Timestamp
  - Codes – state, status





# On-premise Gateway - Key Facts



Allows Power Apps and Power Automate to reach on-premises resources for hybrid integration scenarios.



Leverages Azure Service Bus relay technology to securely allow access to on-premises resources.



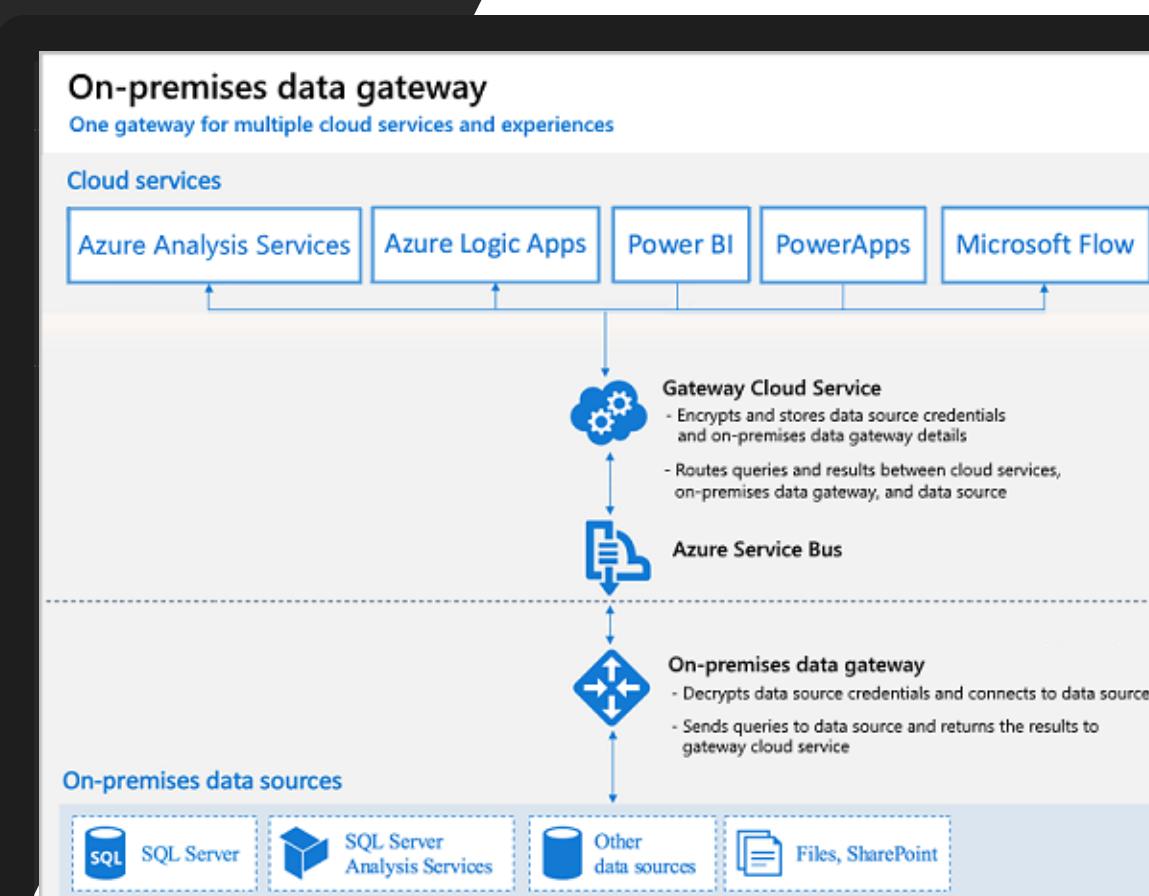
The gateway service must run on a local server in your on-premises location



Setting up a data source on the gateway requires credentials that are encrypted securely. All access to data uses these creds



The gateway service creates an outbound connection to Azure Service Bus on ports: TCP 443(default), 5671, 5672, 9350 through 9354.



# Capabilities

The screenshot shows the Power Platform Admin Center (preview) interface. The left sidebar has sections for Environments, Analytics, Help + support, Data integration, and Data gateways (which is highlighted with a red box). The main area is titled "Data Gateways" and contains a table with two rows. The first row has a "Gateway Cluster Name" of "ADM001", "Contact info" of "nancy@contoso.com", "Users" of "gateway group, gw security...", and "Gateways" of "1". The second row has a "Gateway Cluster Name" of "AP.gateway001", "Contact info" of "ben@contoso.com", "Users" of "gateway group, Nancy", and "Gateways" of "1". A "Tenant administration" toggle switch is turned "On".

Manage gateways entirely in the Power Platform admin center. Learn more [here](#).

The screenshot shows the Power Platform Admin Center (preview) interface. The left sidebar has sections for Environments, Analytics, Help + support, Data Gateways (highlighted with a red box), Data policies, and Admin centers. The main area shows a "Manage Gateway Installers" dialog. It has a note about who can install gateways and a toggle switch labeled "On". Below it is a table titled "Users who can install gateways" with a search bar and an "Add" button.

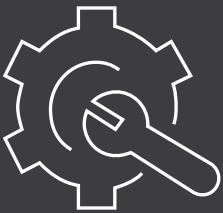
Manage who can install the on-premises data gateway in your enterprise. Learn more [here](#).

The screenshot shows the Power Platform Admin Center (preview) interface. The left sidebar has sections for Environments, Analytics, Help + support, Data integration, and Data gateways. The main area shows a "Manage users" dialog for a gateway cluster named "Contoso gateway cluster". It lists three users: "AE" (Anna Eason, Can use), "FG" (fresh office group, Admin), and "NB" (Nancy Bernard, Can use). A "Shared with" button is highlighted with a red box. To the right is a sidebar with "Manage users" and "Data source type" sections. The "Data source type" section lists various database options like DB2, File System, Apache Impala, etc., with checkboxes checked for most of them.

Manage users in 3 different categories (admins, can use, and can use + share). Learn more [here](#).

# Governance pillar Monitor

# Monitor and Manage the Power Platform



- 1 Set up and view activity logs in Office 365 Audit Logs
- 2 Gain Insights into capacity and storage consumption in adoption in Power Platform Admin Center
- 3 View out-of-the-box tenant and environment level Analytics for usage and adoption in Power Platform Admin Center and Power Apps / Automate portals
- 4 Monitor platform services and planned & unplanned platform changes/incidents

# Activity logs in Office 365 Audit Logs

1

# Access Audit Logs

PowerApps, Power Automate,  
Dataverse audit records are available  
at  
<https://compliance.microsoft.com/auditlogsearch>



## ACTIVITY LOGGING

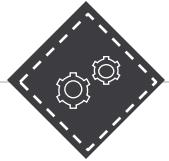
Available with Office E3 or greater license and integrated with Office Security and Compliance center.



Must be enabled at the organization/tenant level.

Office provides API's to query this data, which is currently used by many SIEM vendors to use the Activity Logging data for reporting.

# Monitor Activity Parameters for Power Apps & Automate



## Power Automate

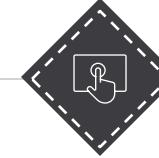
- Created flow
- Edited flow
- Deleted flow
- Edited permissions
- Deleted permissions
- Started a paid trial
- Renewed a paid trial



## Power Apps

- Created app
- Edited/save app (draft)
- Published app
- Deleted app
- Restored an app from app version
- Launched app
- Marking app as featured
- Marking app as hero
- Edited app permissions
- Deleted app permissions

# Monitor Critical Activity Parameters of the Dataverse



## Admin Activity Logged

- Publishing customizations
- Configuring instances by adding solutions to instance
- Team and user management - who was added, deleted, access rights of user/team
- Deletes of attributes
- Backup and Restore actions
- Managing instances - New instance added and delete instance

## User Activity Logged

- Creates, Reads, Updates, Deletes on records and Dataverse metadata
- Dataverse record views
- Export to excel
- SDK calls
- Backend Microsoft support engineer CRUD activities
- Reports viewed

# Monitoring Storage Capacity and Add-on's

2

# Gain Deeper Insight on Storage Capacity



## Capacity management & enforcement

- Understand storage and consumption
- Access for environment admins, power platform service admins, D365 and global admins and individual users who have purchased a license

<https://aka.ms/ppac>

The screenshot shows a navigation menu with the following items:

- Environments
- Analytics
- Dataverse
- Power Automate
- Power Apps
- Data export (preview)
- Resources
  - Capacity
- Dynamics 365 apps

# Capacity Page Details

Features available per tab

**Summary:** overview of store capacity usage

**Dataverse:** an environment breakdown of capacity usage

**Microsoft Teams:** database capacity of Microsoft Teams environments

**Add-ons:** assignment of capacity add-ons per environments (IA Builder credits, app passes, Power Pages logins)

**Trial:** list of trial environments, which does not consume capacity until converted to production

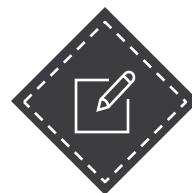
The screenshot shows the 'Capacity' page in the Power Platform admin center. The left sidebar has icons for Home, Capacity, Dataverse, Microsoft Teams, Add-ons, and Trial. The main content area has tabs for Summary, Dataverse, Microsoft Teams, Add-ons, and Trial, with 'Summary' selected. A message says 'See where your org (tenant) is using storage, add-ons, and Microsoft Power Platform requests that could impact your capacity.' Below are three sections: 'Storage capacity usage' (Database, File, Log all at 0 MB used), 'Storage capacity, by source' (Org (tenant) default, User licenses, Additional capacity, Total all at 0 MB), and 'Top storage usage, by environment' (CoE, CorpApps Dev, CoE Dev environments). At the bottom are 'Add-ons' and 'Manage' links.

# Capacity enforcements

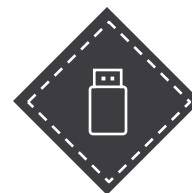
Following storage capacity enforcements apply today



Tenant overall capacity need to be within the entitled limits. The PPAC experience will call out if that is not the case



Creating a new environment, copy and restore are the three operations that are enforced today in an event of capacity overuse



Min 1GB of available DB capacity is required for creating a new environment

For more information click [here](#) !

# Capacity enforcements

## Overflow coverage by capacity type



Data

Available capacity can be used to cover **log** and **file** overflow usage.



File

Available capacity can be used to cover **log** overflow usage.



Log

Available capacity **can not** be used to cover overflow usage.

**View Out of the box Analytics for usage  
and adoption**

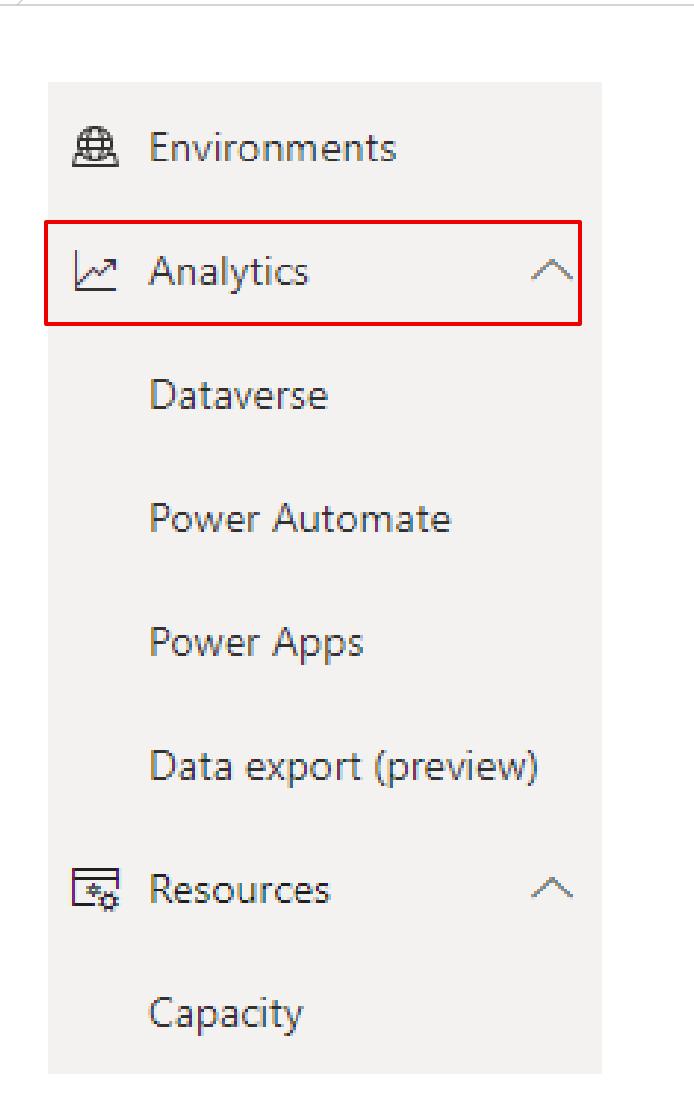
3

# Gain Deeper Insight on Adoption, & Usage

<https://aka.ms/ppac>

## Admin analytics

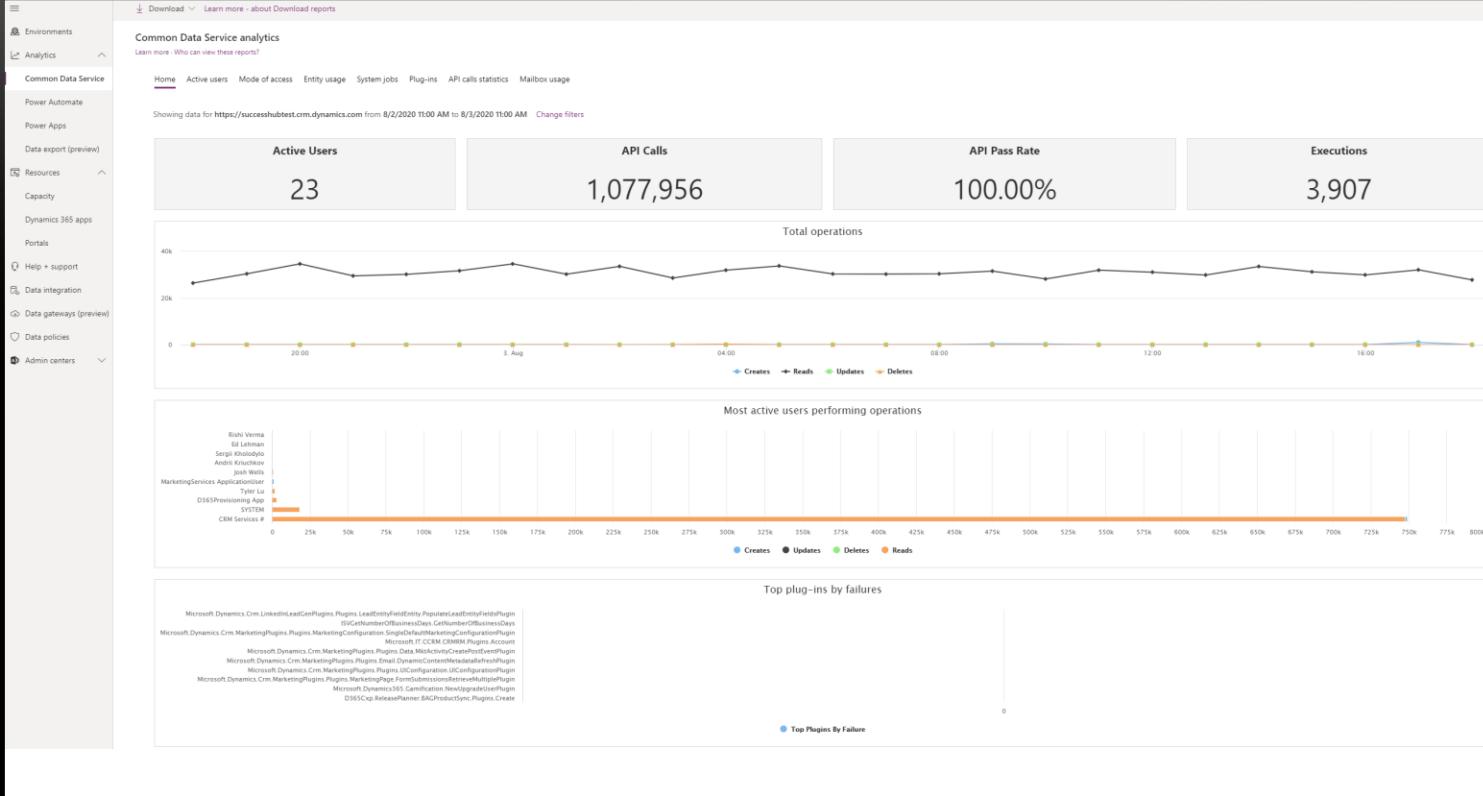
- Tenant level analytics (preview)
- Environment level analytics
- Available from Power Platform admin center
- Access for environment admins, power platform service admins, D365 and global admins
- Data is stored for 28 days
- Data is refreshed daily



The screenshot shows a sidebar menu with the following items:

- Environments
- Analytics** (highlighted with a red border)
- Dataverse
- Power Automate
- Power Apps
- Data export (preview)
- Resources
- Capacity

# Monitoring Microsoft Dataverse

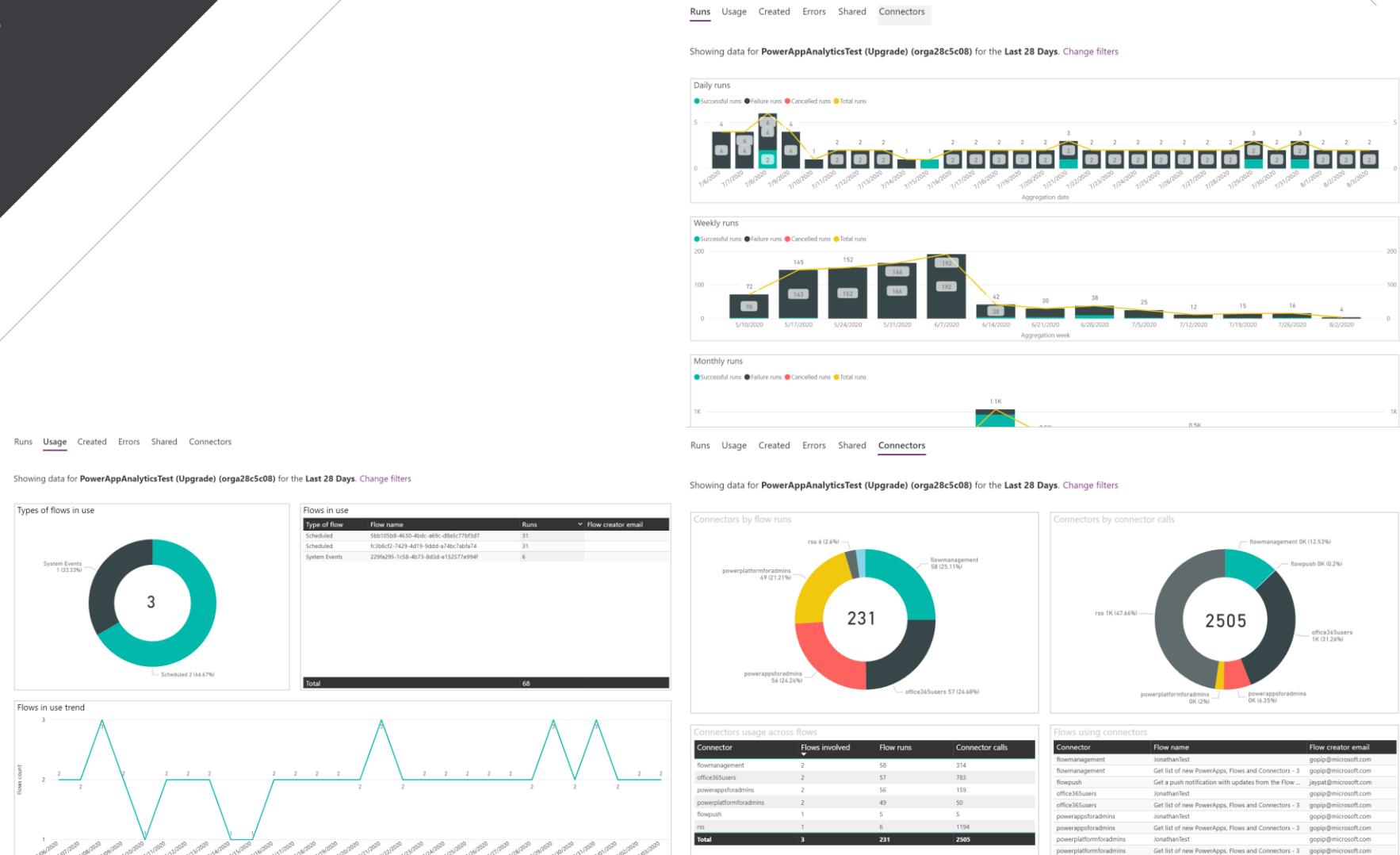


Click on Change Filters to select from a list of environments you have access to, as well as adjust the date range. The data will only be presented in the prior 28-day period.

# Power Automate

## Environment level views

Analytics is available for a 7, 14, 28-day time periods and allows users to switch between environments.



# Maker analytics for Power Automate – Individual flow level views

Flow Makers and Administrators can view details for each flow within their scope, for last 7, 14, 28 days with data refreshed every 4-6 hours

## Flow Usage

- ◆ API usage
- ◆ Runs by day
- ◆ Total number of runs for the flow
- ◆ Gain insights into when the flow is run with the flow run trends

## Flow Health

- ◆ The number of errors per day
- ◆ Flow errors by type
- ◆ Understand the details of a specific error – Error source, action or trigger name, error status code, error count, last error occurrence, last error message and detail

<https://flow.microsoft.com>

The screenshot shows the Microsoft Power Automate interface. On the left, there's a sidebar with links like Home, Action items, My flows (which is selected and highlighted in red), Create, Templates, Connectors, Data, AI Builder, Solutions, and Learn. The main area is titled 'My flows' and lists several flows with columns for Name, Modified, and Type. One flow is highlighted with a red border. A context menu is open over this flow, showing options like Edit, Share, Save As, Send a copy, Export, Run Now, Analytics (which is also highlighted in red), Turn off, Repair tips off, Delete, and Details.

This screenshot shows the 'Usage' tab for a specific flow named 'Get today's weather forecast for my current location'. The sidebar is identical to the previous screenshot. The main area has tabs for 'Api usage', 'Usage' (which is selected and highlighted in blue), and 'Errors'. Below these tabs, there's a summary section with a dark icon and some text, followed by a detailed table of API usage data.

# Maker analytics for Power Apps – Individual app level views

App Makers and Administrators can view details for each app within their scope, for last 7, 14, 28 days with data refreshed every 4-6 hours

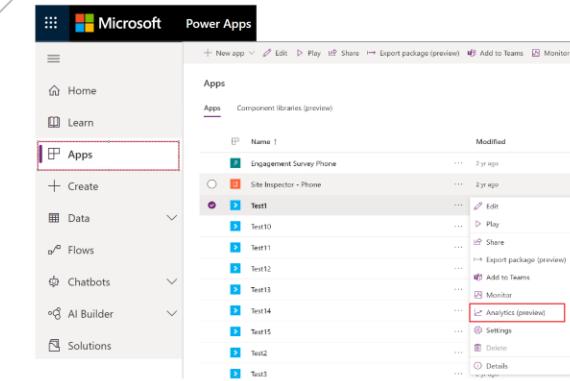
## App Adoption and Usage

- ◆ Active Users – How many users are using the app and daily active usage
- ◆ Location – Where is the app usage and filter by country
- ◆ App Usage – App launches with filters for device platform, player version, country

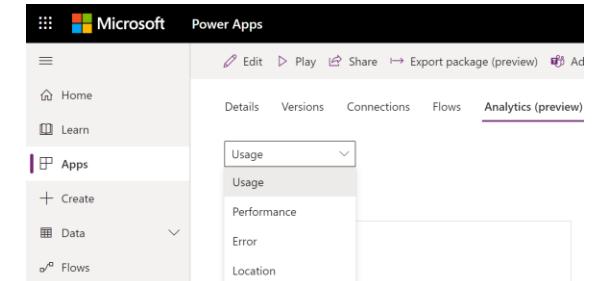
## App Health

- ◆ Toast errors are errors which end users see
  - Errors per app in the environment,
  - Error trends across apps,
  - Overview across all apps for error breakdown by https status
- ◆ Performance – Best and least performing service(std and custom) in the environment

<https://make.powerapps.com>



The screenshot shows the Microsoft Power Apps portal. In the top navigation bar, there are links for 'New app', 'Edit', 'Play', 'Share', 'Export package (preview)', 'Add to Teams', and 'Monitor'. Below the navigation bar, there's a sidebar with options: Home, Learn, Apps (which is selected and highlighted in purple), Create, Data, Flows, Chatbots, AI Builder, and Solutions. The main content area displays a list of apps under the heading 'Apps'. One app, 'Test', is selected and highlighted in purple. To the right of the app list, there are several actions: 'Edit', 'Play', 'Share', 'Export package (preview)', 'Add to Teams', 'Monitor', 'Analytics (preview)', 'Settings', 'Delete', and 'Details'. The 'Analytics (preview)' link is also highlighted in red.



The screenshot shows the Microsoft Power Apps portal with the 'Analytics (preview)' tab selected in the ribbon. The ribbon also includes 'Edit', 'Play', 'Share', 'Export package (preview)', and 'Ad'. Below the ribbon, there are tabs for 'Details', 'Versions', 'Connections', 'Flows', and 'Analytics (preview)'. On the left, there's a sidebar with 'Apps', 'Create', 'Data', and 'Flows'. The main content area has sections for 'Usage', 'Performance', 'Error', and 'Location'. The 'Usage' section is currently selected and highlighted in purple.

# Data Export (preview)

## Tenant level analytics

Export tenant level analytics to  
Azure Data Lake

Bring your own lake (BYOL)

The screenshot illustrates the integration of tenant-level analytics and bring-your-own-lake (BYOL) capabilities.

**Power Platform Admin Center - Data export (preview):**

- Header: New data export, Data export (preview), Manage data exports to Azure Data Lake. Data is exported automatically every 24 hours.
- Tab: Data Lake (selected) vs App Insights
- Table:

Data package	Environment	Storage account name	Status
Power Apps	All	poweranalytics	Connected

**Storage Explorer (preview) - poweranalytics Storage Account:**

- Left sidebar: Home > poweranalytics, poweranalytics | Storage Explorer (preview), Storage account.
- Search bar: Search (Ctrl+ /) and Search.
- File structure:

  - CONTAINERS: powerplatform (selected)
  - FILE SHARES
  - QUEUES
  - TABLES

- Actions: Upload, Download, New Folder, Select All, Rename.
- File list:

NAME	LAST MODIFIED
Applications	9/10/2021, 1:15:38 PM
ConnectionReference	9/11/2021, 1:32:55 PM
Connections	9/10/2021, 1:15:38 PM
environments	9/7/2021, 1:32:37 PM
usage	9/9/2021, 1:19:03 PM

# Platform incidents

4

# Monitoring platform status

Power Apps and Automate services platform status can be seen in both portals and Office 365 Service Health

[https://admin.microsoft.com/Adminportal/Home  
?source=applauncher#/servicehealth](https://admin.microsoft.com/Adminportal/Home?source=applauncher#/servicehealth)

## Service health

All services   Incidents   Advisories   History   Reported issues

View the health status of all services that are available with your current subscriptions.

### Preferences

Service

Health

Microsoft Power Automate

Healthy

Power Apps

Healthy

## Power Apps Support

<https://powerapps.microsoft.com/en-us/support>

No known issues: Power Apps is running smoothly

## Search

Search support



## Power Automate support

<https://flow.microsoft.com/en-us/support>

### Warning:

Starting October 12th, security certificates of old Power Automate Desktop versions (older than July 21 release - version 2.11.51.21196) will expire. Users using these old versions will need to install the latest version of Power Automate Desktop to continue using desktop flows.

Last updated: 10/07/2021 4:54:15 PM UTC

# Monitoring platform updates and changes

Power Apps and Automate services platform updates and changes can be monitored in Office 365 Message Center

## Message center

Last sync to Planner: October 19, 2020, 3:24 PM [Sync now](#)

Each message gives you a high-level overview of a planned change and how it may affect your users, and links out to more detailed information to help you prepare. [Learn more about managing changes](#)

[Inbox](#) [Archive](#)

Preferences Planner syncing

3 items Search



Filters: Service: Microsoft Power Automate, Microsoft Po... , +2 Tag Message state

Message title	☆	Service	Last updated	Act by	Tag
(Updated) Power Apps can now display images from Mic...	:	Power Apps in Microsoft 365  Sha...	Oct 5, 2021		<a href="#">NEW FEATURE</a> <a href="#">USER IMPACT</a>
Upcoming changes to Power Apps per app plan licenses	:	Power Apps	Sep 24, 2021		<a href="#">ADMIN IMPACT</a>
(Updated) PowerApps/PowerAutomate Retirement of Di...	:	Microsoft Power Automate in Microsoft...	Aug 26, 2021	Sep 25, 2021	<a href="#">MAJOR UPDATE</a> <a href="#">ADMIN IMPACT</a> +2

# Establishing a low-code Center of Excellence (CoE)

## Core concepts

## What is a Center of Excellence?

Center of Excellence (CoE) is a team, shared facility or entity that provides leadership, best practices, research, support and/or training for a focus area

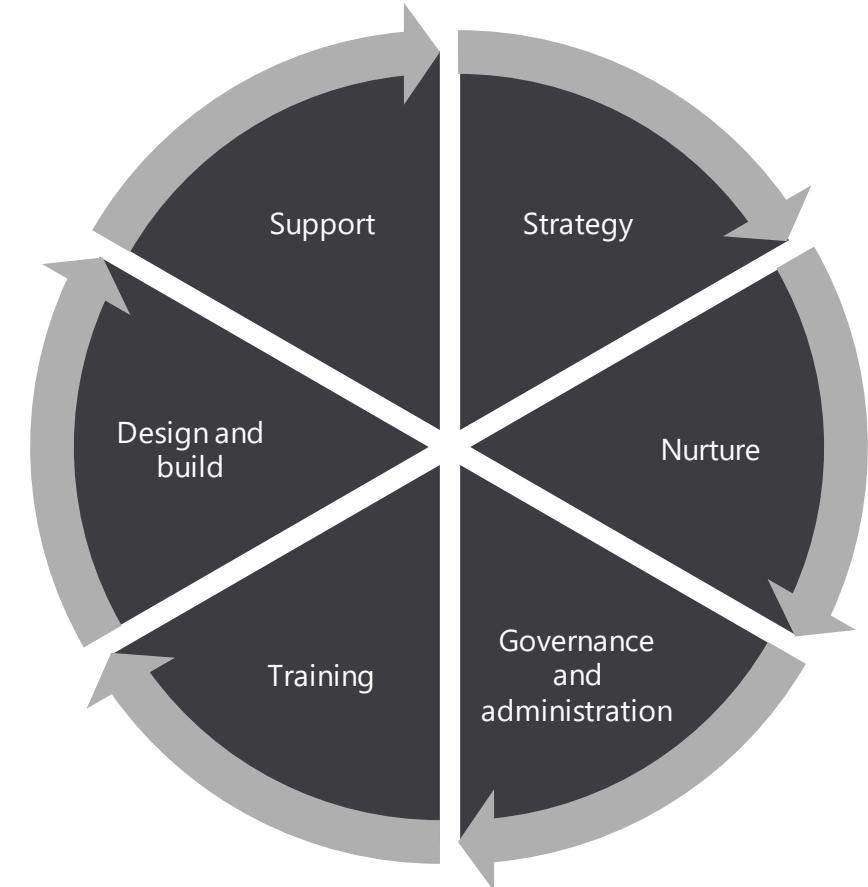
It is a coordinating function that often sits between IT and organizational groups / business groups.

Helps form a strategy for adopting & supporting Apps.

Establishes the guard-rails, best practices & standard to be followed.

Designed to drive innovation and improvement with longevity.

Ensures consistency & defines standards to be followed.



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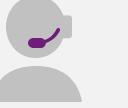
## **Establishing a Centre of Excellence**

---

A key principle is to clarify why you're setting up a CoE, what it aims to accomplish and the key business outcomes you hope to achieve.

Designed to drive innovation and improvement, as a central function it can break down geographic and organisational silos – a powerful way for organisations to align around business goals rather than individual department metrics.

# Roles and responsibilities

				
Low Code Strategy	Power Platform Admin team	Power Platform Nurture team	Power Platform Re-Usable Assets & Automation ...	User support team
Align Power Platform strategy with Digital Transformation strategy	Environment Strategy DLP Policies	App-in-a-day / Hackathons Solution envisioning Community of Practice	Automation / Azure DevOps Application & Architecture review Library of common utilities, patterns and templates	Help Desk guidance / FAQ Ticketing process Support Process & Resources
Drive innovation	Data integration / migration guidelines	Evangelize Platform	App Catalog	
Key Decision makers	Guardrails			
Business Value	License management			
Adoption and Change management				
Empower new ways of working				

# Operating models

Centralised	Hybrid / Matrix	Decentralised / Federated
<p>Controls the entire initiative.</p> <p>All stakeholders connect and devise common strategy, process, standards and implementation methodology.</p> <p>All solutions monitored centrally.</p> <p>Re-usability high as common components is built, revised &amp; published regularly.</p> <p>Efficiency High due to central management of deployment, reusable components.</p> <p>Best suited for organizations running out of 1 or few locations.</p>	<p>Hub &amp; Spoke model. Central COE with sub-CoE in different Geos or teams.</p> <p>Sub-COE follows high Level strategy as laid by Central COE, but drives &amp; monitors solutions locally.</p> <p>Re-usability medium to high, as they have visibility to resources from central team.</p> <p>Efficiency may not be as high as centralized model. But this model has better control for local requests.</p> <p>Best suited for Geographically distributed organizations.</p>	<p>COE teams distributed across organization.</p> <p>Individual teams build their own strategy and solutions as per their needs.</p> <p>Re-usability low as each team builds their own solutions.</p> <p>Efficiency low as various teams work in silos.</p> <p>Best suited for organizations where various teams plan to start small or have very different priorities</p>

# Involvement with business

## Gatekeeper

Not involved in app development

Ensures processes are followed and guides accordingly

Led by a lean team primarily ensuring process and procedure is followed

## Coach

Provides expert advice to teams, guiding them in building own solutions

Understands the challenges and recommends the best possible solution

Leverages champions network

## End-to-end delivery

Delivers end-to-end solution

Understands requirements, designs & builds the right solution

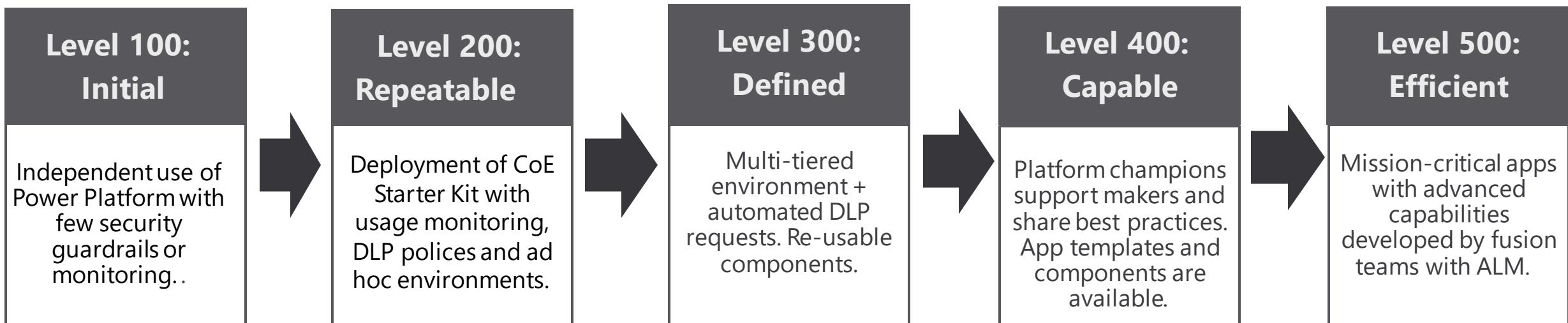
Fully fledged development team: solution architects and developers

# Align your CoE to the Power Platform adoption maturity model

**WHAT:** The model identifies consistent themes, patterns, practices, and behaviors that underpin the progress of successful organizations as they implement Power Platform.

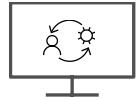
**WHY:** An effective CoE doesn't happen overnight. The model offers a practical roadmap for incremental growth and proven results.

**HOW:** [Explore maturity model goals and opportunities](#)



# Establishing a low-code Center of Excellence (CoE) **CoE Starter Kit**

# What is CoE Starter Kit



Existing offering:  
Admin Centre capabilities  
Extensibility via Connectors



Templates:  
A templated implementation of  
best practices

The **CoE Starter Kit** is a collection of components and tools designed to help you get started with developing a strategy for adopting and supporting the Power Platform.

<https://aka.ms/coestarterkit>

The dashboard displays tenant overview statistics and detailed reports for environments, apps, flows, custom connectors, makers, and connections. It includes charts for top environments by app count, top app makers, top app maker cities, user launches, and app launches.

**Tenant Overview:**

Category	Value
Total Environments	46
Environment Created This Month	10
Total Environment Makers	19
Total Custom Connectors	10
Total App Makers	9
Total # of Apps	355
Total Flow Makers	197
Total # of Flows	56
Created This Month	9

**Developer Compliance Center:**

Canvas Apps: ORBIT - Details, DLP Editor, Thrive Feed, Form Component Test.

Power BI: Thrive People Browser, ConferenceSQL UnOptimized Champions, Test, UPennApp.

PowerApps: Update your app details to stay in compliance.

**Power Platform:**

Welcome to PowerApps and Microsoft Flow!

**Template Catalog:**

- Starter Template
- Naming Conventions

Published by Lee Gu

Category: IT + Administration

Microsoft Flow is an online workflow service that is licensed through our Office 365 entitlement. It is capable of automating events across common apps and services. The Flow service contains over 250 connectors, including corporate and consumer-based services.

PowerApps is a suite of apps, services, connectors and data platform that provides a rapid application development environment to build custom apps. Quickly build custom business apps that connect to business data, from the same set of connectors is used by Flow.

Learn Watch Engage

# CoE Starter building blocks

The dashboard provides a high-level overview of Power Platform adoption across environments. It includes sections for Tenant Overview, Power Apps, and Power Automate. A map highlights the locations of top app makers.



## Admin

Gain Insights into your Power Platform adoption

This center allows administrators to manage and audit various Power Platform components. It includes sections for Canvas Apps, Model Driven Apps, SharePoint Form Apps, Flows, Chatbots, and Custom Connectors.



## Governance

Establish Audit, Compliance and Archive processes

This page facilitates training and learning opportunities. It lists upcoming events like 'App in a Day' and 'Flow in a Day', along with various learning resources such as Power Apps and Power Automate learning paths.



## Nurture

Accelerate your adoption with a thriving community

# Admin Components - Core

## CoE Starter Kit Building Blocks

These components provide the core to get started with setting up a CoE – including **Sync Flows** to gather information about all your resources into Dataverse tables and build Apps and reports on top of that to help you get more visibility of what apps, flows and makers are in your environment.

Core Components contains mainly assets relevant to admins but also provides foundation for some of the other CoE components like Governance and Nurture

The image displays three screenshots illustrating the Admin Components - Core. The top-left screenshot shows the 'Power Apps | Power Platform Admin View' dashboard with two main sections: 'Active Makers' and 'Active Environments'. The 'Active Makers' section includes a bar chart showing the sum of apps for various makers, with the top entry being 'Pete Pooleman' at 100. The 'Active Environments' section includes a bar chart comparing the sum of apps and flows across different environments, with 'Personal Environment' having the highest values (approx. 63 apps and 49 flows). The bottom screenshot shows the 'Power Apps | Environment Request' page, which lists 'My Pending Environment Creation Requests (3)'. The table details three requests:

ID	Name	Expiration	Status	Requested
ECR-01002	My Custom Environment	60 days (requested)	Pending	10/21/2021
ECR-01001	MyEnv	60 days (requested)	Pending	10/08/2021
ECR-01000	CustomApp Development	30 days (requested)	Pending	10/05/2021

On the right side of the dashboard, there is a list titled 'Cloud flows' with several entries, each preceded by a small icon:

- Display name ↑ Admin | Capacity Alerts
- Admin | Compliance detail request v3
- Admin | Sync Template v3
- Admin | Sync Template v3 (Apps)
- Admin | Sync Template v3 (Connectors)
- Admin | Sync Template v3 (Custom Connectors)
- Admin | Sync Template v3 (Desktop Flow - Runs)
- Admin | Sync Template v3 (Desktop flows)
- Admin | Sync Template v3 (Flow Action Details)
- Admin | Sync Template v3 (Flows)

# Governance Components – Audit & Compliance

## CoE Starter Kit Building Blocks

After you've become familiar with your environment and resources, you might start thinking about audit and compliance processes for your apps. You might want to gather additional information about your apps from your makers, or audit specific connectors or app usage. The apps and flows that are part of this solution help you get started.

The screenshot shows the 'Developer Compliance Center' interface in the Power Apps portal. The top navigation bar includes 'Power Apps | Developer Compliance Center', a search bar, and various navigation icons. Below the header, there are tabs for 'Canvas Apps', 'Model Driven Apps', 'SharePoint Form Apps', 'Flows', 'Chatbots', and 'Custom Connectors'. The main area displays a grid of cards representing different applications and flows:

Category	Name	Status	Description
Flows	SQLPhoneApp	● (Red)	Personal Productivity No Description
Flows	ALM Accelerator for Makers	● (Orange)	Production No Description
Flows	Shared Mailbox	● (Red)	Personal Productivity
Flows	SQLApp	● (Red)	Personal Productivity No Description
Flows	Shared	● (Red)	Personal Productivity No Description
Flows	Admin - Environment Request	● (Orange)	Power Platform CoE Admin app for Power Platform CoE resource request ma...
Flows	My office days	● (Red)	Personal Productivity No Description
Flows	Admin - Access this Flow	● (Orange)	Power Platform CoE No Description
Ideas		● (Orange)	Personal Productivity No Description

A large callout box on the right side provides instructions for updating app details:

**Update your app details to stay in compliance.**

You own an app that's currently shared broadly and missing compliance details, which means it needs to be audited by an administrator per our support policy. Please complete the business justification details in the Developer Compliance Center app to document the intended use.

**App Details**

Display Name: Heritage Diary working  
Environment: Contoso (Development) (contosodev)

**Instructions**

1. Login to the [Developer Compliance Center](#) and locate your app.
2. Enter your business justification and other details in the "Support Details" form.
3. If your app indicates a high business impact, you must provide additional documentation for a mitigation plan and required support details.

Questions? Get help from our community [Yammer Group](#).

# Nurture Components - Learning

## CoE Starter Kit Building Blocks

An essential part of establishing a CoE is nurturing your makers and an internal community. You will want to share best practices and templates and onboard new makers – the assets part of this solution can help develop a strategy for this motion.

The Nurture Components solution contains assets relevant to everyone in the organization, admins, makers as well as end users of apps and flows.

The screenshot shows the Microsoft Template Catalog interface. At the top, there's a navigation bar with the Microsoft logo and a 'Submit an Idea in the catalog' button. Below it, the 'Template Catalog' section has tabs for 'Featured' (which is selected), 'All', and 'New'. Two template cards are displayed:

- Starter Template**: Published by Lee Gu, Category: IT + Administration. Description: Morbi tempus iaculis urna id volutpat lacus laoreet. Lobortis feugiat vivamus at augue eget arcu dictum varius. Tristique sollicitudin nibh sit amet commodo. Porta non pulvinar neque laoreet suspendisse. A 'Download' button is present.
- Naming Conventions**: Published by Lee Gu, Category: Collaboration. Description: No description. It has a yellow star icon.

Below the catalog, there's a 'Power Apps | Power Platform Training Registration' section with a 'Register for Power Platform events' button. It lists 'My Upcoming Events' and 'Learning Resources'.

Event	Date	Details
App in a Day	01 Nov 2021 09:00	Power Apps training for makers
Flow in a Day	02 Nov 2021 09:00 to 02 Nov 2021 17:00	Power Automate training for makers

# Standalone Add-ons

This screenshot shows the Microsoft Power Apps Innovation Backlog add-on. It displays a list of submitted ideas under categories such as 'Automate Environment', 'Customer Feedback', 'Find the Expert', and 'Make the Awesomizer actually'. Each idea includes details like developer ownership, complexity, and estimated return on investment.

This screenshot shows the ALM Accelerator for Makers add-on. It features a dashboard for managing projects. It includes sections for creating new projects, viewing existing projects like 'My Inspection App' and 'Project X', and monitoring deployment environments (DEV, TEST, PROD) and deployment logs.

This screenshot shows the Project A Theme add-on. It provides a theme editor where users can define styles for various UI elements like buttons, text inputs, and dropdowns. It also includes a 'THEME PREVIEW' section where users can see how their themes will look applied to specific components.



## Innovation Backlog

Submit ideas for apps and flows that need building



## ALM

Implement Application Lifecycle Management patterns and practices for source control



## Theming

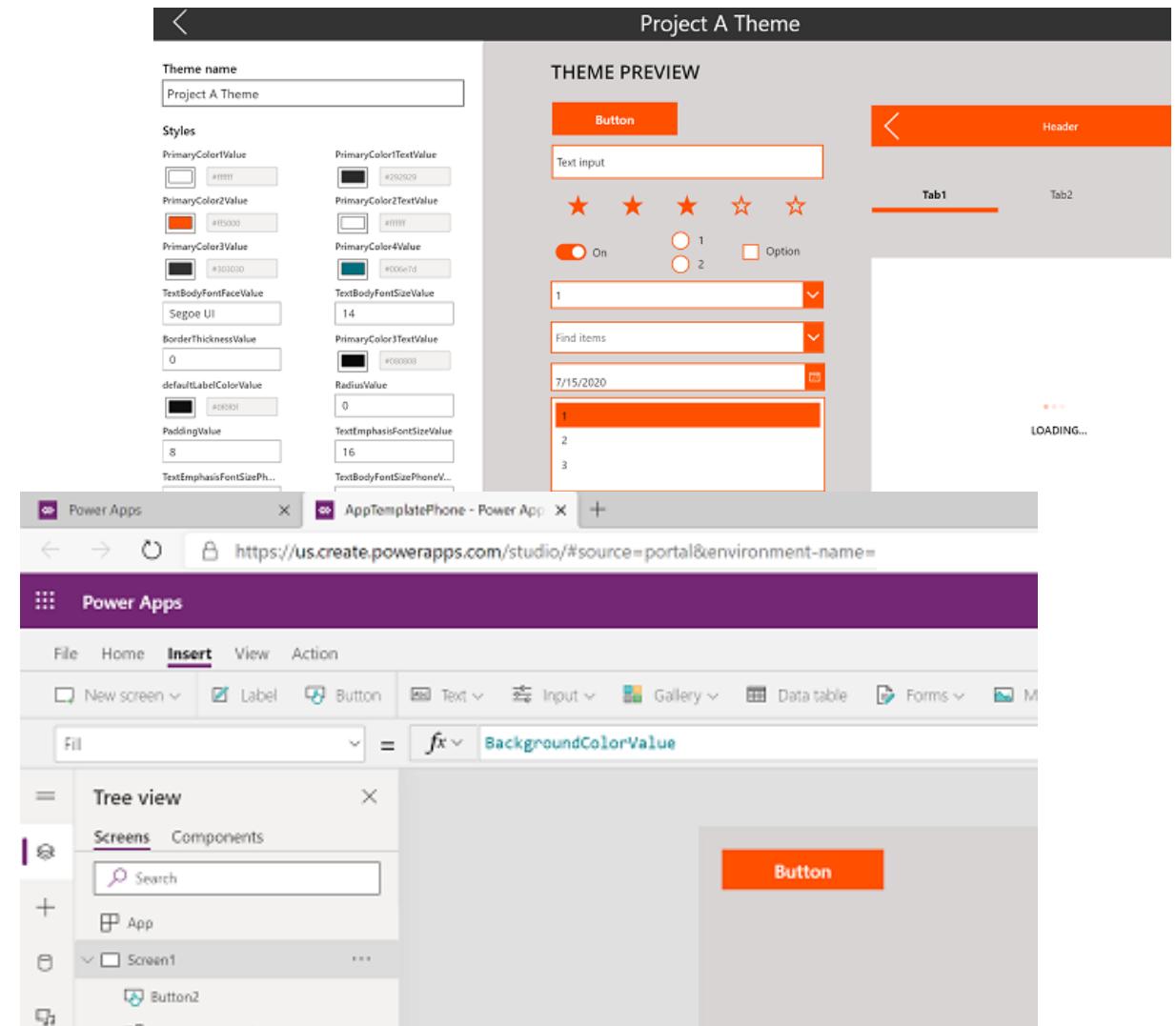
Create, manage and share enterprise branded themes

# Theming Components - Branding

## CoE Starter Kit Standalone Add-ons

You use theming components to create, manage, and share themes for canvas apps. A theme contains a collection of styles that define multiple design properties for controls and components such as colors, fonts, and borders. These styles are then applied automatically to controls and components when makers use the themed template app to create a new app.

The theming components solution doesn't have a dependency on other components of the CoE Starter Kit, so it can be used independently.



# Innovation Backlog - Ideas

## CoE Starter Kit Standalone Add-ons

Use the Innovation Backlog app to ask users to submit ideas for apps and flows that need building and describe pain points with the current process. As users describe the process, they will provide information about personas involved, tools used, and measures for improvement. This information is then used to calculate an ROI and complexity score.

The theming components solution doesn't have a dependency on other components of the CoE Starter Kit, so it can be used independently.

The screenshot shows a Microsoft Power Apps interface titled "Innovation Backlog". The main title is "Submitted Ideas". On the left, there's a sidebar with a search bar and a "+ Add idea" button. Below that are four sections: "Automate Environment", "Customer Feedback", "Find the Expert", and "Make the Awesomizer actually". Each section contains developer information (Owner: Available, cost, time, complexity), pain points, estimated ROI, complexity, keywords, and tools. To the right of the table, there are status, developer owner, and like buttons. A tooltip on the right side of the screen says "An app that will collect information about the".

Idea	Pain Points	Estimated return on investment	Number of Likes: 1	Status
Automate Environment Developer Owner: Available \$20,000.00 /month 0.2 hours/month Not Configured	Time Consuming Manual Work, Processing Delays	\$20,000.00 /month 0.2 hours/month	Add like	New
Customer Feedback Developer Owner: Available \$12,777.00 /month 103.3 hours/month Complexity				Edit status
Find the Expert Developer Owner: Available \$4,953.00 /month 38.1 hours/month Complexity	Complexity Not Configured			Developer Owner Available
Make the Awesomizer actually Developer Owner: Available \$836.54 /month 8.7 hours/month	Keywords Power Platform Environment			Edit dev owner

# ALM Accelerator for Makers

## CoE Starter Kit Standalone Add-ons

Use the ALM Accelerator for Makers app to follow ALM patterns and practices for source control, and move your solutions from development to test to production environments by using [GitHub](#).

Makers can use the ALM Accelerator for Makers app to view all their projects, and deploy their work-in-progress or completed solution to a test or production environment. After a new project has been created and approved, makers can go to [make.powerapps.com](#) to build and create assets—such as apps, flows, and tables—in a solution that has been created for them.

The screenshot displays the ALM Accelerator for Makers application interface. It lists three projects: 'My Inspection App' (Pending), 'Project X' (Pending), and 'TestPro888' (Approved). The 'TestPro888' project has a 'Deploy' button and a deployment history showing three stages: DEV, TEST, and PROD. The first two stages have a purple dot, while the third has a grey dot. To the right of the application is a screenshot of a GitHub repository page for 'HalaRM009'. A red box highlights the 'Actions' tab. Below it, a specific build log for 'deploy\_to\_test' is shown, detailing the steps taken: Set up job, Clone this repo, Parse the request from event client\_payload, Power Platform Microsoft actions, Export the solution from Dev (source) environment, Unpack the exported solution, Commit the unpacked solution to the topic branch, Pack the solution for testing in build environment, Import the solution to Build Environment, Run /Microsoft/powerplatformactions/import-solution, Import-solution:, Export the solution as managed from build environment, Import the managed solution to the Test (target) Environment, Upload the managed solution to artifact, Save job status to a file (status.json), Upload job status file as artifact, Post Power Platform Microsoft actions, Post Clone this repo, and Complete job. The build status is listed as 'failed on Oct 9 at 5%'. At the bottom of the application interface, there is a Power Automate approval card for a 'Project Github ALM Creation Request' from Michael, dated Tuesday, December 1, 2020, at 12:24 PM. The card includes 'Approve' and 'Reject' buttons and a note about receiving push notifications and grants approvals from anywhere.

# Standalone Add-ons



The page shows a bar chart of DLP policies and a section for creating new policies:

Policy Type	Count
Standard DLP Policies	4
Personal Productivity Policy	1
Power User Policy	1
Custom Policy	2

Instructions for creating a new DLP policy:

If you would like a custom policy or would like a connector to be materialized for an existing policy, please [COMPANY SPECIFIC INSTRUCTIONS ON REQUESTING A NEW DLP POLICY](#). If you do not have a process today, evaluate using the [DLP Request Management process](#) of the CoE starter kit.



## Administration Planning

Better plan your team structure, review where you spend time, and look for automation or innovation opportunities.



## Communication Site

Site to share success stories, upcoming events, rules of engagement and guidelines with your maker community

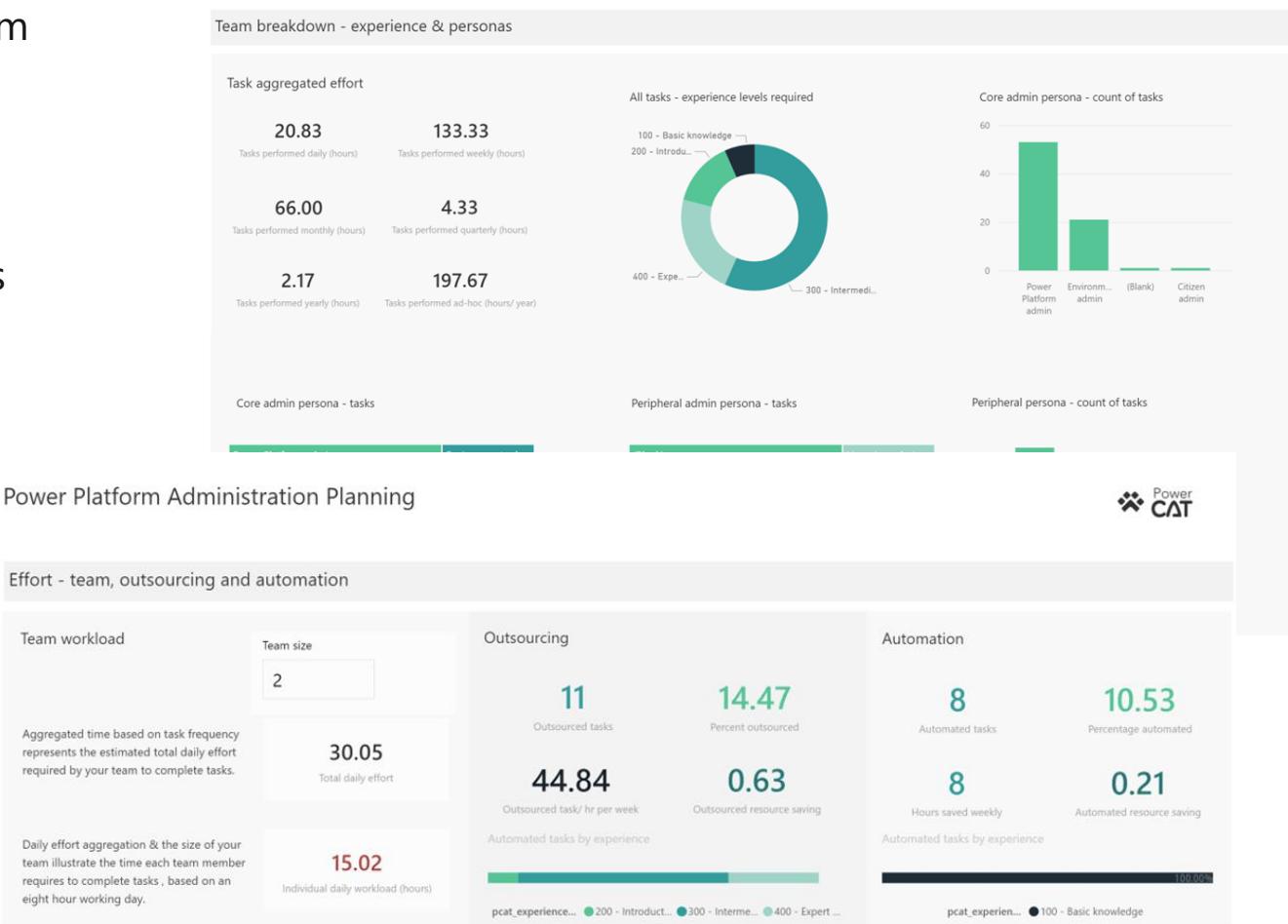
# Administration Planning

## CoE Starter Kit Standalone Add-ons

Behind the scenes, your IT and Center of Excellence team spends time configuring, managing and nurturing the adoption of Microsoft Power Platform. Understanding how that time is spent can help you plan who you need on your team and find the highest-impact opportunities to streamline the administrative effort.

Microsoft Power Platform administration planning is designed to help you:

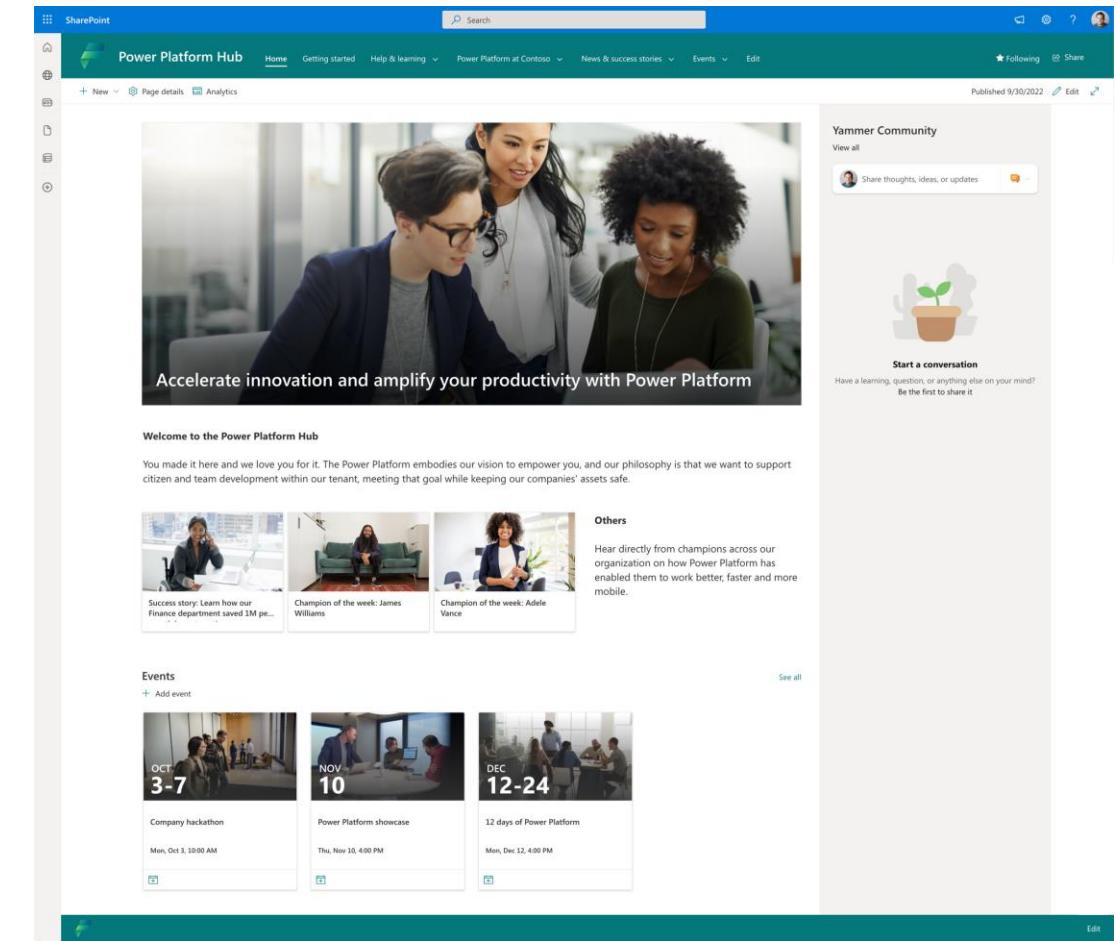
- Better plan your team structure.
- Review where you spend time, and look for automation or innovation opportunities



# Communication Site Template

## CoE Starter Kit Standalone Add-ons

At the heart of growth is a community, a place for people to collaborate, share ideas, and discover new ways to apply technology to achieve more. A community is a safe place to ask questions to share tacit knowledge and expand skill sets. Organizations that have succeeded at creating a growing community of makers provide tools such as Yammer or Microsoft Teams groups, regular events and speaking opportunities, and foster an environment of ongoing learning.

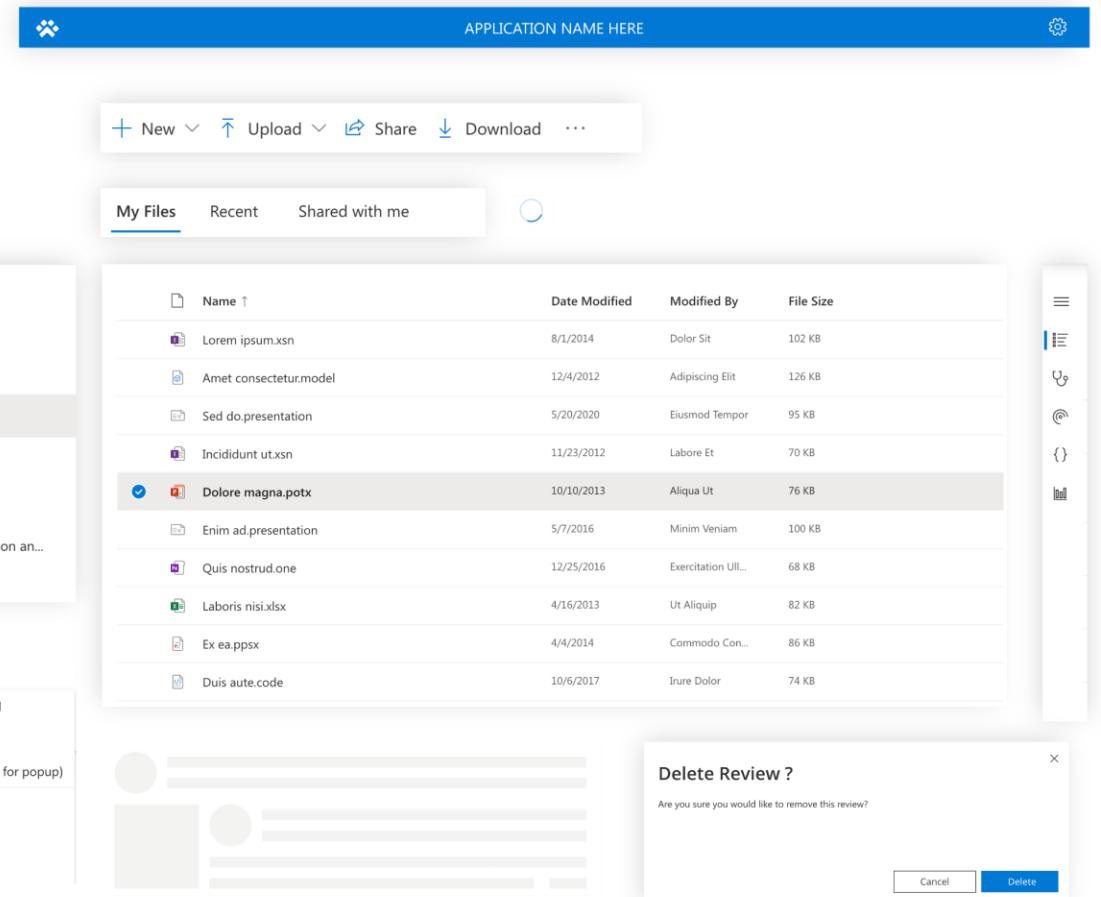


# Content Creator Kit

## CoE Starter Kit Standalone Add-ons

The Creator Kit helps create Power Apps experiences on the web and mobile platforms with convenient components that are ubiquitous in modern software. The kit contains a component library, several commonly used [Power Apps component framework controls](#), a set of templates, and other utilities that increase developer productivity.

All controls and components included in the kit use the [Fluent UI](#) framework to help you easily create consistent, beautiful, and effective user experiences for custom business applications.



# CoE Starter Kit - Documentation

Center of Excellence Starter Kit documentation can be found from

<https://docs.microsoft.com/en-us/power-platform/guidance/coe/starter-kit>

- Requirements and limitations
- Comparison of different CoE versions (Production / Dataverse for Teams)
- Setup and how to use instructions
- Guidelines how update and extend the toolkit
- Detailed documentation of each component like individual Flows, Apps etc. of the CoE

The screenshot shows a Microsoft Docs page titled "Microsoft Power Platform Center of Excellence (CoE) Starter Kit". The page includes a sidebar with navigation links for "Overview", "Establishing a Center of Excellence", "Set up the CoE Starter Kit", and "What's in the CoE Starter Kit". The main content area features a heading, a publish date (07/08/2021), and a reading time (2 minutes). It also includes a summary of the CoE's purpose and a description of the starter kit's components. Below the main content are four icons representing "Overview", "Admin", "Govern", and "Nurture", each with a brief description and a list of sub-components.

**Microsoft Power Platform Center of Excellence (CoE) Starter Kit**

07/08/2021 • 2 minutes to read • +1

A Center of Excellence (CoE) in an organization drives innovation and improvement and brings together like-minded people with similar business goals to share knowledge and success, while at the same time providing standards, consistency, and governance to the organization.

The Microsoft Power Platform CoE Starter Kit is a collection of components and tools that are designed to help you get started with developing a strategy for adopting and supporting Microsoft Power Platform, with a focus on Power Apps, Power Automate, and Power Virtual Agents.

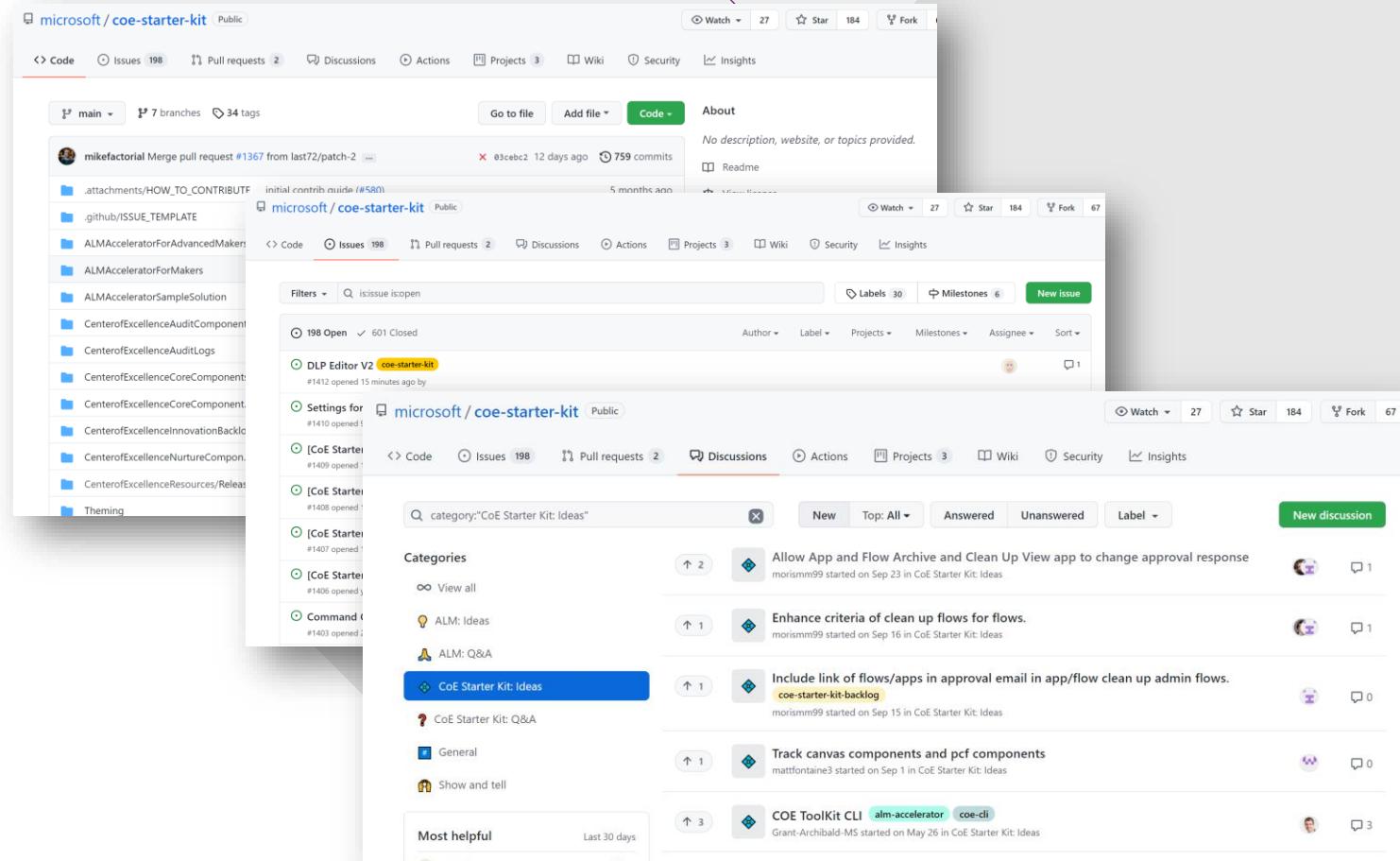
Overview	Admin	Govern	Nurture
Define goals and expected outcomes of your CoE <ul style="list-style-type: none"><li>• Overview</li><li>• Motivation</li><li>• Download</li></ul>	Gain insights into your Microsoft Power Platform adoption <ul style="list-style-type: none"><li>• Set up</li><li>• Use</li><li>• Deep dive</li></ul>	Establish audit and compliance processes <ul style="list-style-type: none"><li>• Set up</li><li>• Use</li><li>• Deep dive</li></ul>	Accelerate your adoption by thriving with a community of makers <ul style="list-style-type: none"><li>• Set up</li><li>• Use</li></ul>

# CoE Starter Kit – GitHub Repo

Center of Excellence Starter Kit GitHub Repository can be found from

<https://github.com/microsoft/coe-starter-kit>

- Download latest and previous version of CoE
- Report possible issues and get support (not officially supported by MS)
- Request new features
- Have a discussions and share ideas
- Contribute



# CoE Starter Kit – Extend

- When you're ready to extend the CoE Starter Kit with your own ideas, you'll do so by making modifications to the solution components in your own **unmanaged** solution
- Choose components from the CoE Starter Kit to add to your new solution
- Extend the CoE Starter Kit by making modifications to the solution components in the context of your new unmanaged solution
- Deploy your solution to test and production. We recommend making modifications and installing updates pushed by our team to the solution in a development environment dedicated to this kit and hosting a production environment that has the real data. If data is being accessed and contributed by other users, it's a good idea to have separate development, test, and production environments.

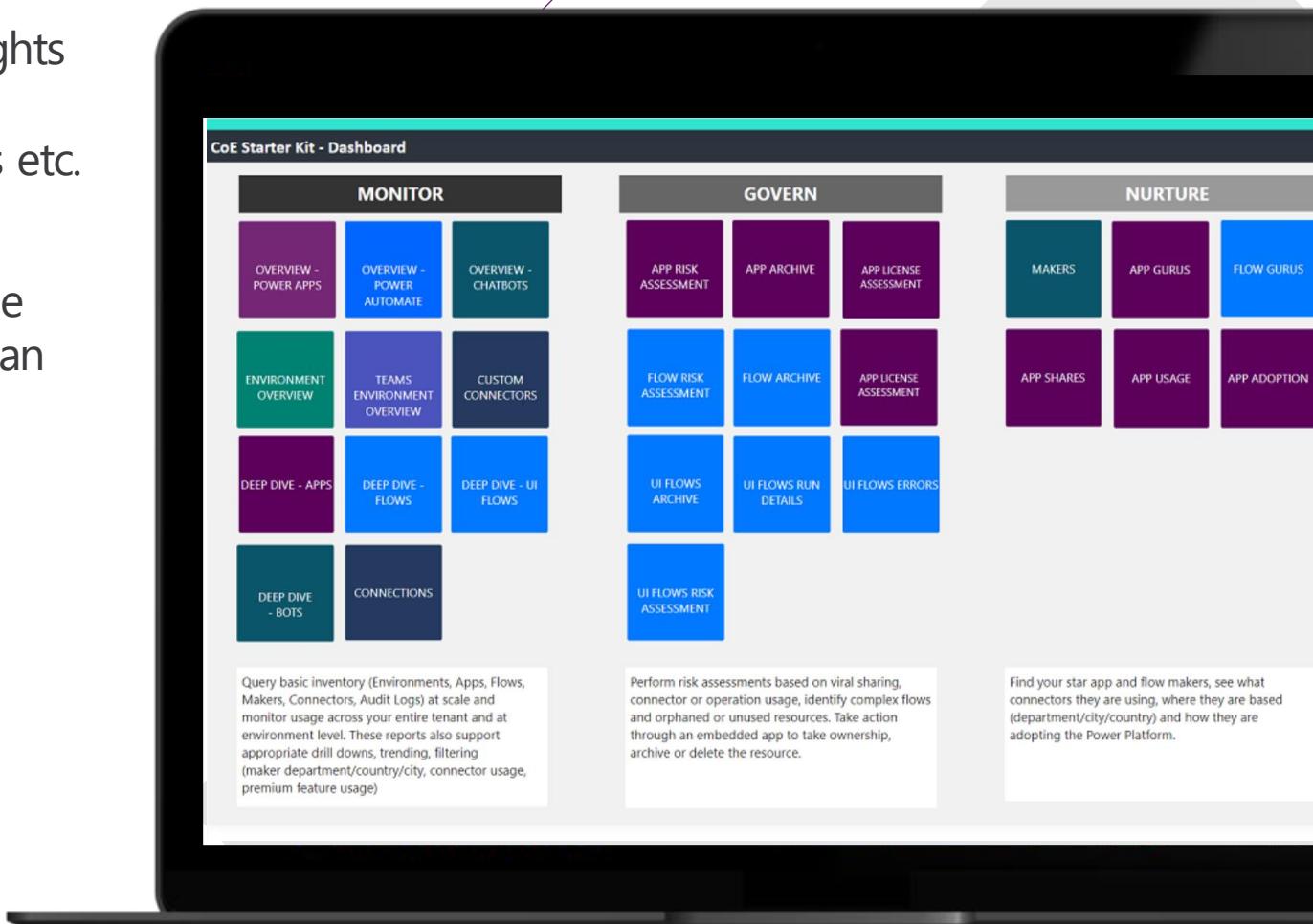
# Power BI Dashboard

Provides a holistic view with visualizations and insights into resources in your tenant: Environments, Apps, Flows, Connectors, Connections, Audit Log, Makers etc.

Telemetry from the audit log is stored from the moment you set up the CoE Starter Kit, so over time you can look back and identify trends for longer than 28 days

The dashboard provides analytics and data for the following areas

- **Monitor** - Oversight of tenant resources
- **Govern** - Drive actions through insights
- **Nurture** - Learn about your community



# Reports Available

## Overview – Apps, Flows, Chatbots

A tenant-wide overview of resources

## Environments

Shows you how many environments, environment makers, and Microsoft Dataverse instances you have

## Microsoft Teams Environments

Shows you the number of Microsoft Teams environments, environment makers, and resources in those environments you have

## Apps

An overview of apps in your environment

## Cloud Flows

An overview of flows in your environment

© Microsoft Corporation

## App / Flow Connections

Shows which resources and makers are using which connectors and—at a high level—which resources and makers are using premium features.

## App and Flow Risk Assessment

Identify overshared and overused resources, or resources that use specific connectors.

## App License Assessment

View apps that use premium or standard features and drill down into connectors, departments or makers that are using premium connectors.

## App, Flow and Desktop Flow Archive

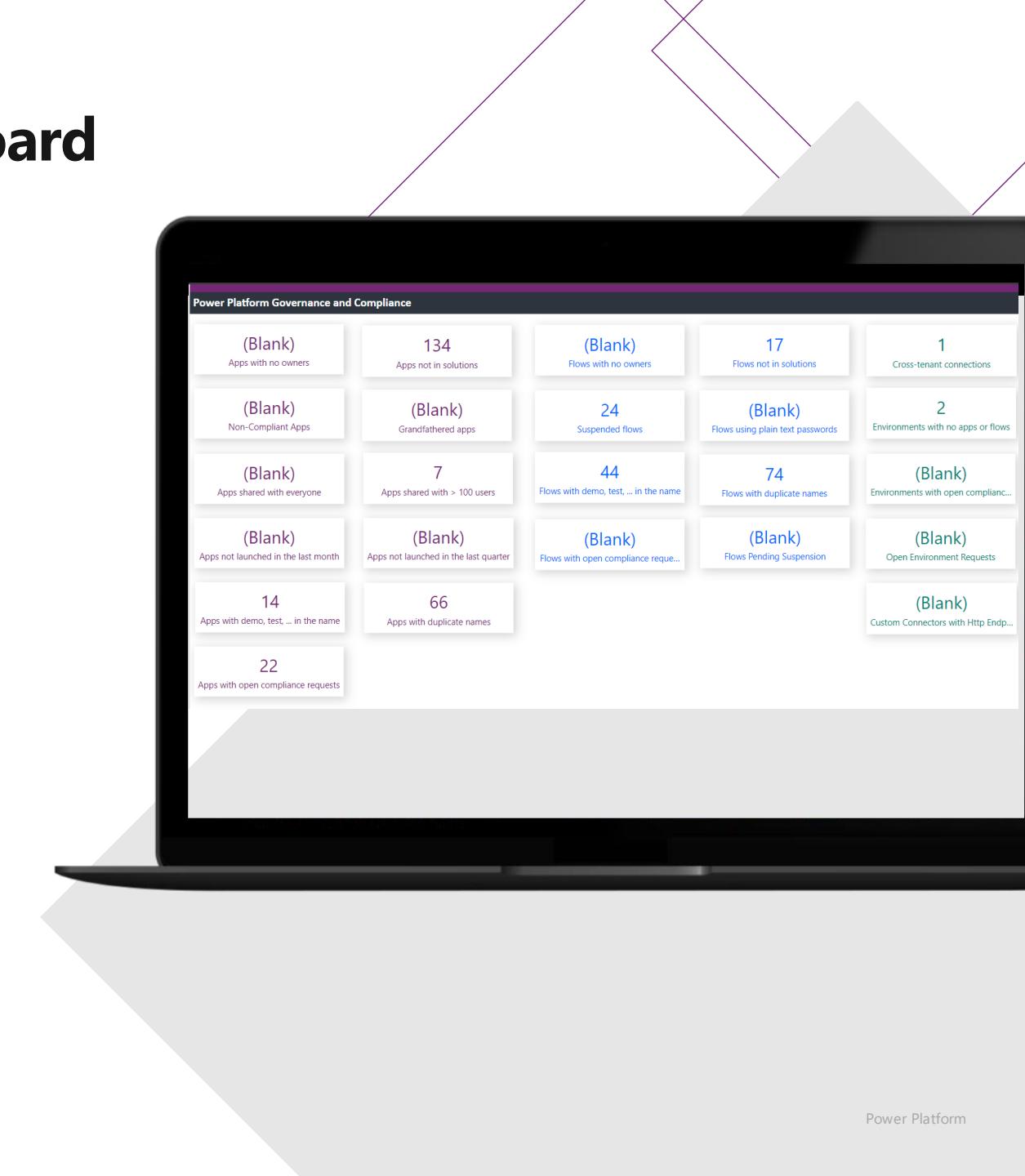
Identify unused apps, flows and desktop flows by monitoring their archive score: in short, the higher the score, the more likely it is that you can safely archive the resource.

Power Platform

# Compliance and Governance Dashboard

The **Compliance and Governance insights** page provides you with a tenant-wide overview of:

- Apps and flows without an owner
- Apps and flows not in solutions
- Apps and flows with duplicate names
- Apps and flows with test, demo, template in the name
- Apps and flows with open [compliance details requests](#)
- Apps currently not compliant with DLP policies or billing policies
- Grandfathered apps
- Apps shared with everyone and apps shared with more than 100 users
- Apps not launched in the last month and in the last quarter
- Suspended flows
- Flows using plain text passwords
- Cross-tenant connections
- Environments with no apps or flows



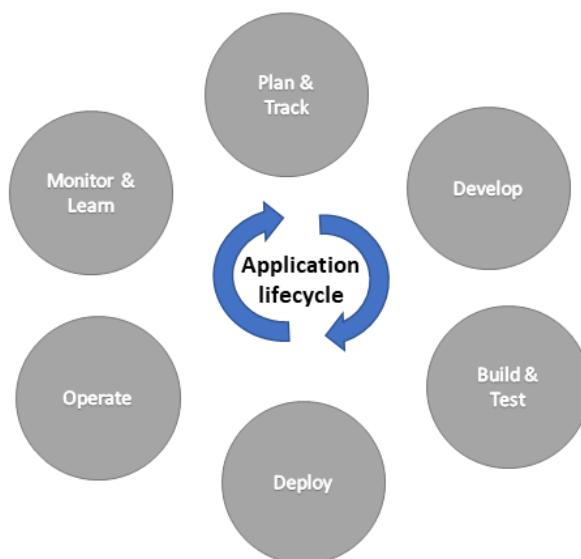
# ALM with Power Platform

## Core concepts

## ALM (application lifecycle management)

### What it is?

Is the **lifecycle management of applications**, which includes **governance, development, and maintenance**. Moreover, it includes these disciplines: requirements management, software architecture, development, testing, maintenance, change management, support, continuous integration, project management, deployment, release management and governance.



### Tools

Provide a **standardized system** for **communication** and **collaboration** between software development teams and related departments, such as **test** and **operations**. These tools can **also automate** the process of software development and delivery.

#### Examples:

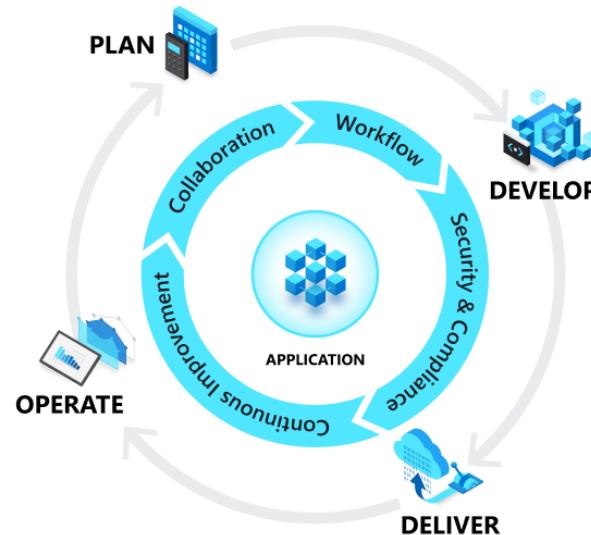


## DevOps

### What it is?

Combines **development** (Dev) and **operations** (Ops) to **unite people, process, and technology** in application **planning, development, delivery, and operations**. DevOps enables coordination and collaboration between formerly siloed roles like development, IT operations, quality engineering, and security.

You **implement** DevOps by following DevOps practices **throughout the application lifecycle**



### Tools

Provide a **standardized system** for **communication** and **collaboration** between software development teams and related departments, such as **test** and **operations**. These tools can **also automate** the process of software development and delivery.

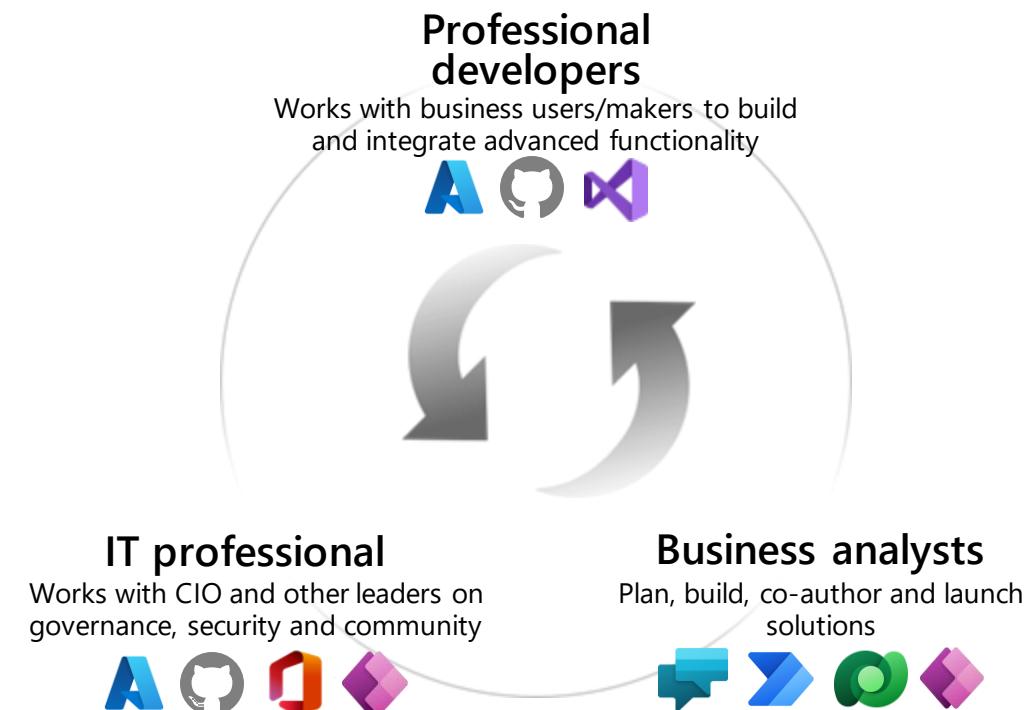
### Examples:



## Fusion Team

### What is it?

Digital “fusion teams” are distributed and multidisciplinary digital business teams that blend technology and other types of domain expertise



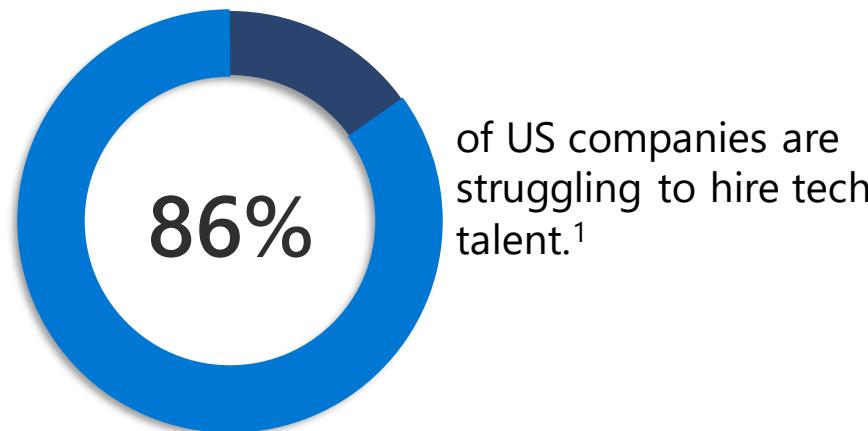
## Fusion Team

### Why?

As demand for apps grows, the number of developers is not keeping up. Power Platform low-code solutions with fusion development, foster creativity and technical innovations all across the enterprise.

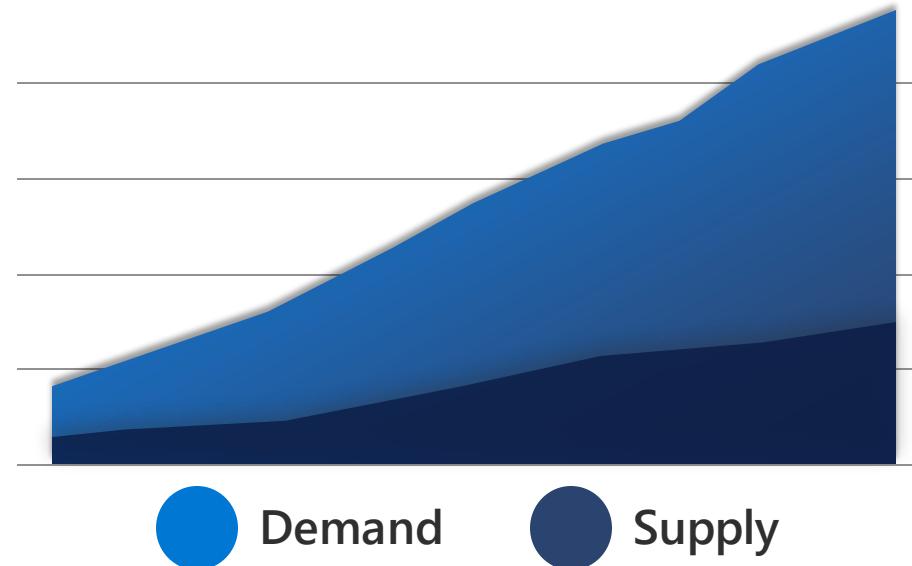
#### Fewer developers are available

**4M** The shortfall in developers needed just in 2022 is 4 million.<sup>1</sup>



#### More and more apps are needed

**500M** companies will create 500 million more apps in the next 5 years than have been created in the last 40.



# Critical players in creating fusion development

## How a fusion team collaborates on building an app

Let's take a look at who across an enterprise might be involved in successful fusion development, and what expertise they would bring.



### CIO

Sets fusion vision and aligns to business goals



### Governance and Security Lead

Works with IT pro to set data protection policies for fusion apps



### IT pro

Sets up managed environments, ALM, training



### Code-first Developer

Builds custom connectors and components and co-authors development of advanced functionality



### Business User/ Low Code Developer

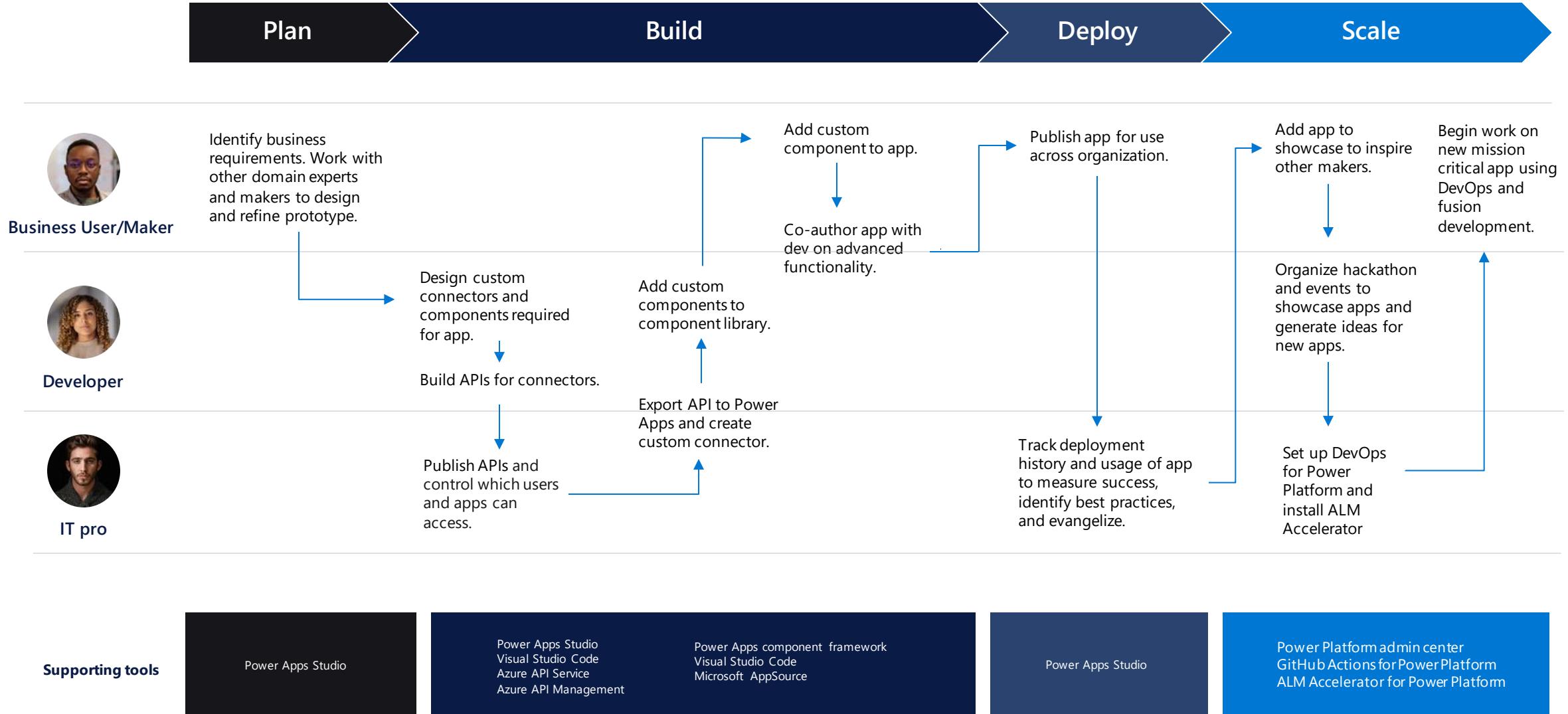
Identifies business requirements for app and collaborates with other domain experts and developers to build and publish app

# The fusion team maturity model

## The 5 phases of full realization of benefits for fusion development

Initiation	Preparation	Collaboration	Acceleration	Innovation
<p><b>Plan and launch a fusion program</b></p> <ul style="list-style-type: none"><li>&gt; Fusion opportunity identification</li><li>&gt; CIO-led charter and approach to structuring</li><li>&gt; Application assessment</li><li>&gt; Champions of process identified</li><li>&gt; Cross IT executive buy-in</li></ul>	<p><b>Set up governance and security strategy</b></p> <ul style="list-style-type: none"><li>&gt; Creation of controlled environments and proper governance</li><li>&gt; Formal COE established</li><li>&gt; Establishment of roles and responsibilities</li><li>&gt; Skilling distribution across fusion team</li></ul>	<p><b>Collaborate on app development</b></p> <ul style="list-style-type: none"><li>&gt; Initial application built</li><li>&gt; Fusion team focus on areas of expertise</li><li>&gt; Achieve rapid deployment and real-time iterations</li></ul>	<p><b>Maintain quality with DevOps and best practices</b></p> <ul style="list-style-type: none"><li>&gt; Best practices are curated and scaled</li><li>&gt; Showcase fusion-built apps</li><li>&gt; Field ideas for new apps</li><li>&gt; Apply standard DevOps processes to fusion apps</li></ul>	<p><b>Enjoy the benefits of fusion development</b></p> <ul style="list-style-type: none"><li>&gt; Fusion applications flourish around the entire enterprise, empowering teams to ideate and execute</li><li>&gt; Pro devs and IT pros have confidently secured environments for creation of mission-critical apps</li><li>&gt; Competitive advantage realized</li></ul>
<p><b>Key driver:</b> CIOs</p>	<p><b>Key driver:</b> IT pros (Sec, DevOps, etc.)</p>	<p><b>Key driver:</b> Pro devs, Business Users/Makers</p>	<p><b>Key driver:</b> CIOs, IT pros</p>	<p><b>Key driver:</b> Pro devs, IT pros</p>

# Fusion teams in practice



# ALM basics with Power Platform



Environments

Solutions

Source Control

Licensing

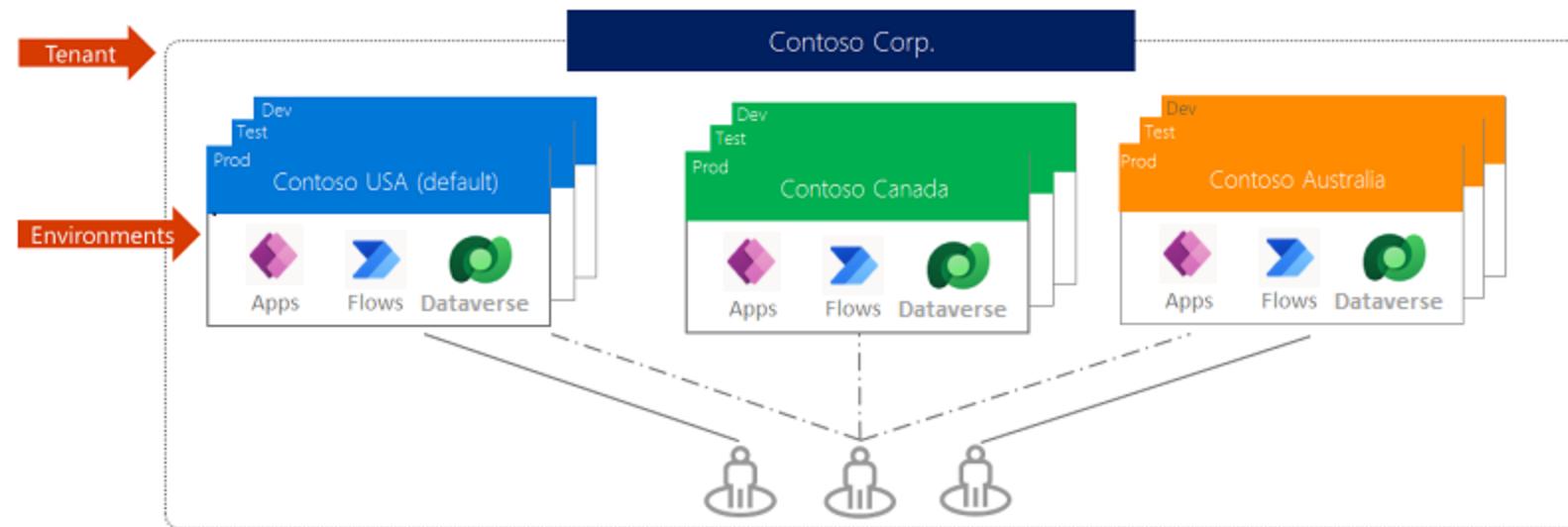
## Environments

A space to **store**, **manage**, and **share** your organization's business data, apps, chatbots, and flows.

It also serves as a **container** to separate apps that might have **different roles**, **security** requirements, or **target** audiences.

How you choose to use environments depends on **your organization** and the apps you're trying to build.

You can also **move resources** between environments through **solutions**.



## Environment strategy

To follow **ALM principles**, are required dedicated environments for at least **development, testing** and **production**

Some organizations might also need **more environments**, for example for UAT and SIT testing

Consider separate development environments to **help isolate changes** from one work effort being checked in before it's complete

Power Platform updates are **applied by regions**, so additional consideration must be taken in **global organizations**

The level of **complexity**, how **critical** the app is, and **users impacted** by the application are all important measures of how to **provision environments** to support all the scenarios.

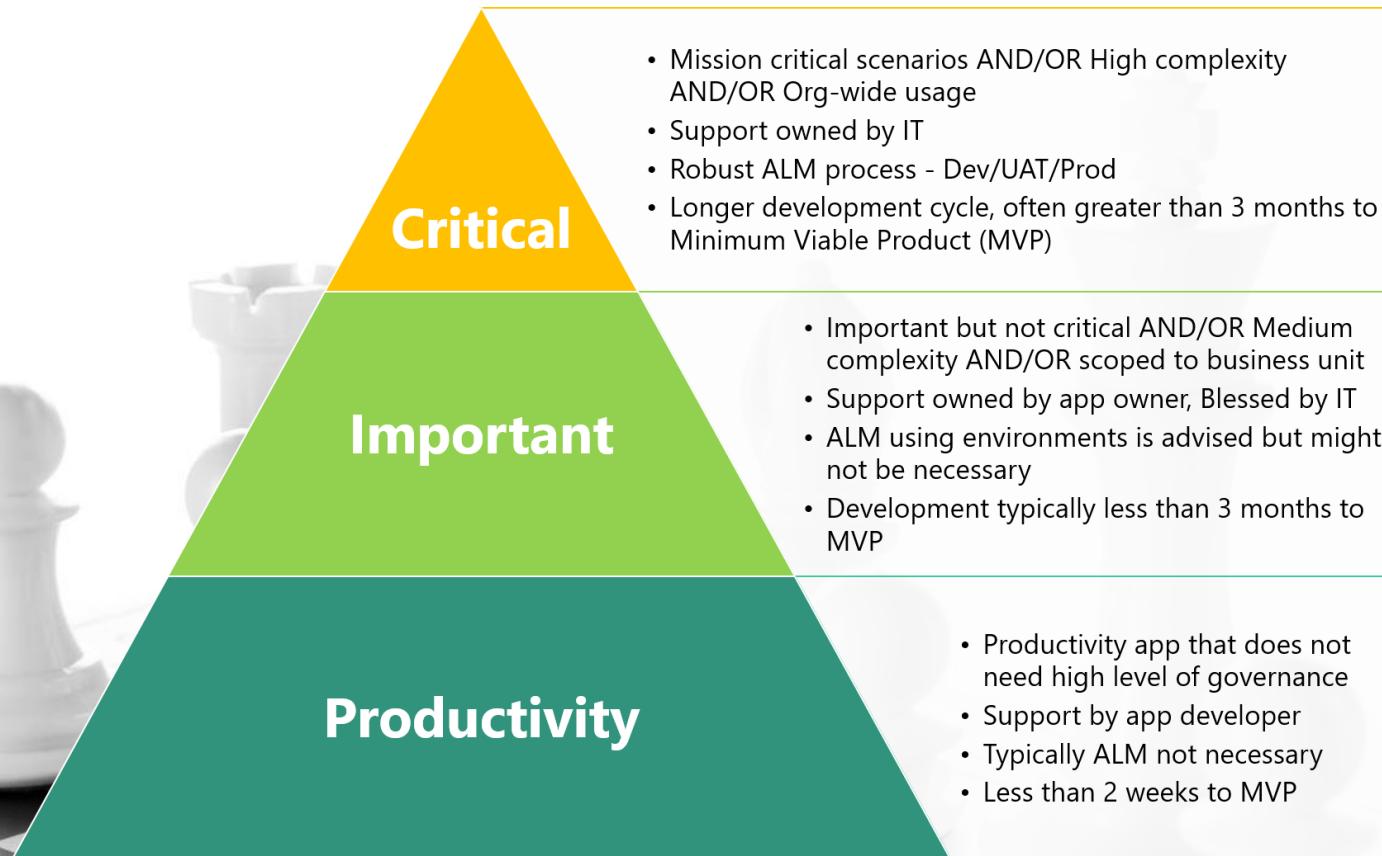
The environment strategy will **shape** and **direct** the **DLP strategy**

Each environment consumes **1 GB of data capacity**, so manage custom environments wisely.



## Environment strategy

### tiers of application support (example)

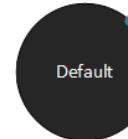


## Environment strategy

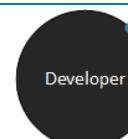
### Scenario

Everyone is a maker. Communicate with everyone that **Default** isn't for development of critical apps

### Environment



Only one user has access. **Developer** environments are completely locked for any other user except the user who subscribed to the community plan. Applications can be moved out of the environment if needed.



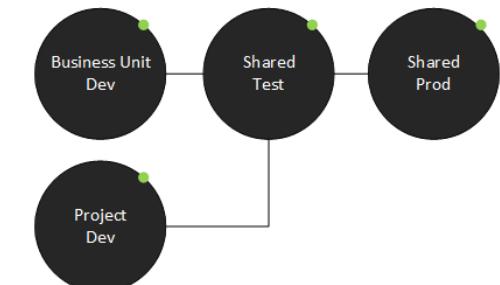
Approved users have access. **Shared** environments for user and team productivity scenarios, with an approved maker list.



**Dedicated** environments for critical projects and workloads. Developers have environment maker access in the development environment, but only user access in the test and production environments. End users only have end user access to the production solution so no one can modify the production applications.



**Shared** test and production environments for important but medium complex apps. Individual projects and business units have their own development environment to protect data, but solutions are deployed to shared test and production environments. Developers are end users in the test environment, and end users only have basic user access to solutions and data in the production environment.



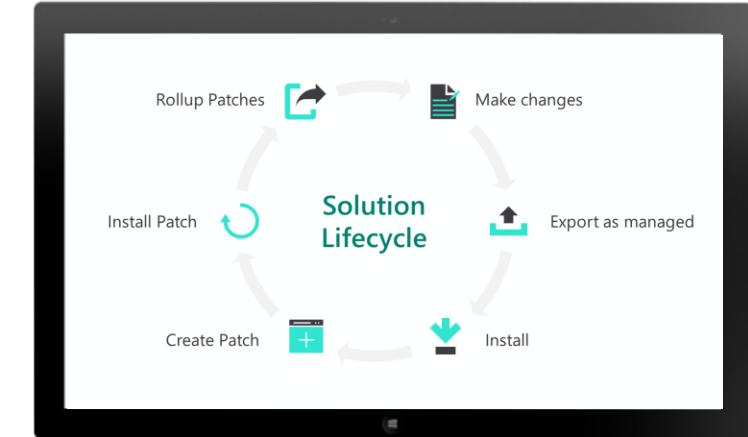
# ALM basics with Power Platform



Environments Solutions Source Control Licensing

## Solutions

Solutions enables application lifecycle management in Power Platform



### Author solutions

Solutions are containers to track the changes and customizations you make

### Deploy solutions

Solutions are how you transport and install changes to target environments

### Manage solution lifecycle

Solutions enable lifecycle management for your customizations and can be fully integrated into your DevOps processes

## Solutions types



### Unmanaged

- Used in **development environments** while you make changes to your application.
- Can be **exported** either as **unmanaged** or **managed**.
- Exported unmanaged** versions of solutions should be **checked** into **source control system**.
- Unmanaged solution, not environments, must be considered the **source of true** for Microsoft Power Platform assets
- When **deleted**, its components remains and belongs to **Default Solution**.

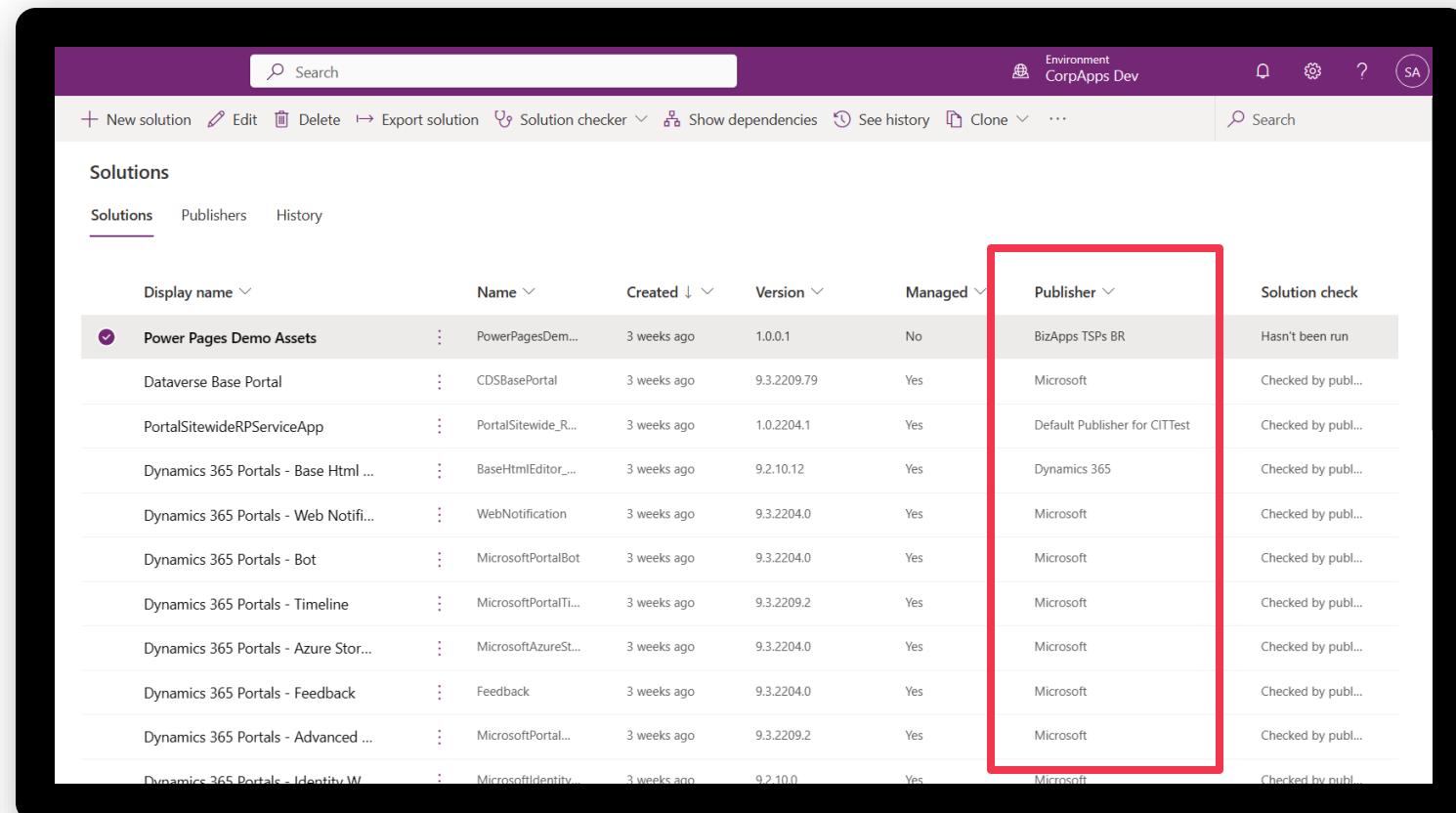


### Managed

- Used in all any environment **that isn't a development** environment for that solution.
- Must be considered a **build artifact**.
- You can't edit components** directly within a managed solution. But you can define some **properties** that can be changed at destination environment
- Altering a managed component** at destination environment will create a **dependent unmanaged solution**.
- When a managed solution is **deleted** (uninstalled), **all the customizations** and **extensions** included with it are **removed**.

## Solution publisher

- Solutions **require a publisher**
- Publisher can be associated with multiple solutions
- **Two default publishers** are included
  - CDS Default Publisher
  - Default Publisher for “your org name”
- **Create your own publisher** - do not use one of the default publishers
- Use the **same publisher in all your solutions**
- The publisher dictates the **customizations prefix and choice values**
- **Important** - When importing new assets through a managed solution, the **publisher “owns” those assets**



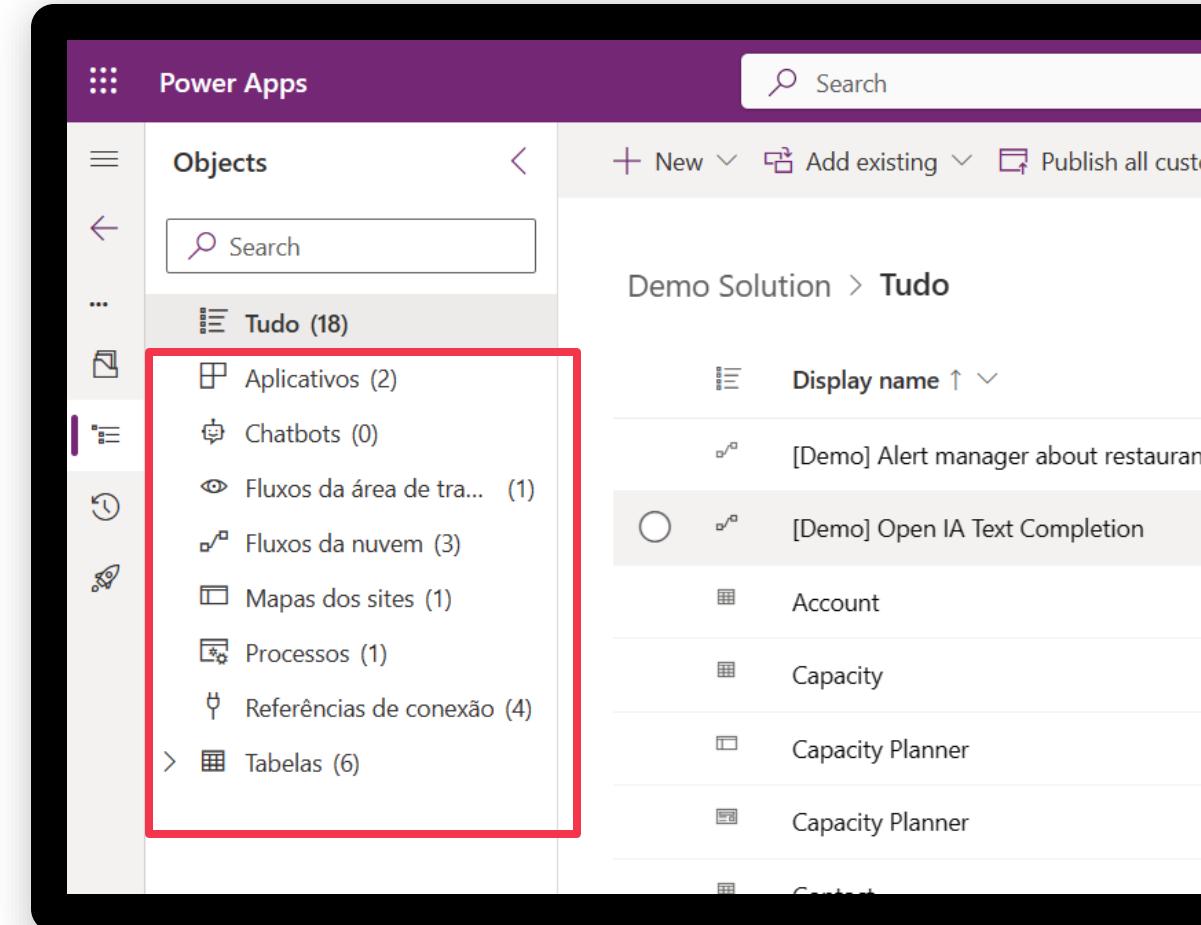
The screenshot shows the 'Solutions' page in the Microsoft Power Platform. The top navigation bar includes 'Environments', 'Solutions' (which is highlighted in red), 'Source Control', and 'Licensing'. The main area displays a table of solutions:

Display name	Name	Created	Version	Managed	Publisher	Solution check
Power Pages Demo Assets	PowerPagesDem...	3 weeks ago	1.0.0.1	No	BizApps TSPs BR	Hasn't been run
Dataverse Base Portal	CDSBasePortal	3 weeks ago	9.3.2209.79	Yes	Microsoft	Checked by publ...
PortalSitewideRPSERVICEApp	PortalSitewide_R...	3 weeks ago	1.0.2204.1	Yes	Default Publisher for CITTest	Checked by publ...
Dynamics 365 Portals - Base Html ...	BaseHtmlEditor_...	3 weeks ago	9.2.10.12	Yes	Dynamics 365	Checked by publ...
Dynamics 365 Portals - Web Notifi...	WebNotification	3 weeks ago	9.3.2204.0	Yes	Microsoft	Checked by publ...
Dynamics 365 Portals - Bot	MicrosoftPortalBot	3 weeks ago	9.3.2204.0	Yes	Microsoft	Checked by publ...
Dynamics 365 Portals - Timeline	MicrosoftPortalTi...	3 weeks ago	9.3.2209.2	Yes	Microsoft	Checked by publ...
Dynamics 365 Portals - Azure Stor...	MicrosoftAzureSt...	3 weeks ago	9.3.2204.0	Yes	Microsoft	Checked by publ...
Dynamics 365 Portals - Feedback	Feedback	3 weeks ago	9.3.2204.0	Yes	Microsoft	Checked by publ...
Dynamics 365 Portals - Advanced ...	MicrosoftPortal...	3 weeks ago	9.3.2209.2	Yes	Microsoft	Checked by publ...
Dynamics 365 Portals - Identity W...	MicrosoftIdentity...	3 weeks ago	9.2.10.0	Yes	Microsoft	Checked by publ...

## Solution components

A component represents something that you **can potentially customize**.

Anything that can be included in a solution is a component. To view the components included in a solution, open the solution you want. The components are listed in the **Components** list.



The screenshot shows the Microsoft Power Apps portal interface. The top navigation bar includes 'Environments', 'Solutions' (which is highlighted in red), 'Source Control', and 'Licensing'. Below the navigation is a search bar and a toolbar with 'New', 'Add existing', and 'Publish all customizations' buttons. The main area is titled 'Power Apps' and shows a 'Objects' list under 'Demo Solution > Todo'. A red box highlights the 'Tudo (18)' section, which contains the following items:

- Aplicativos (2)
- Chatbots (0)
- Fluxos da área de trabalho (1)
- Fluxos da nuvem (3)
- Mapas dos sites (1)
- Processos (1)
- Referências de conexão (4)
- Tabelas (6)

On the right side, there is a detailed view of the 'Display name' column for the components:

Display name
[Demo] Alert manager about restaurants
[Demo] Open IA Text Completion
Account
Capacity
Capacity Planner
Capacity Planner
Contact

## Default solutions

There are **two default** solutions:

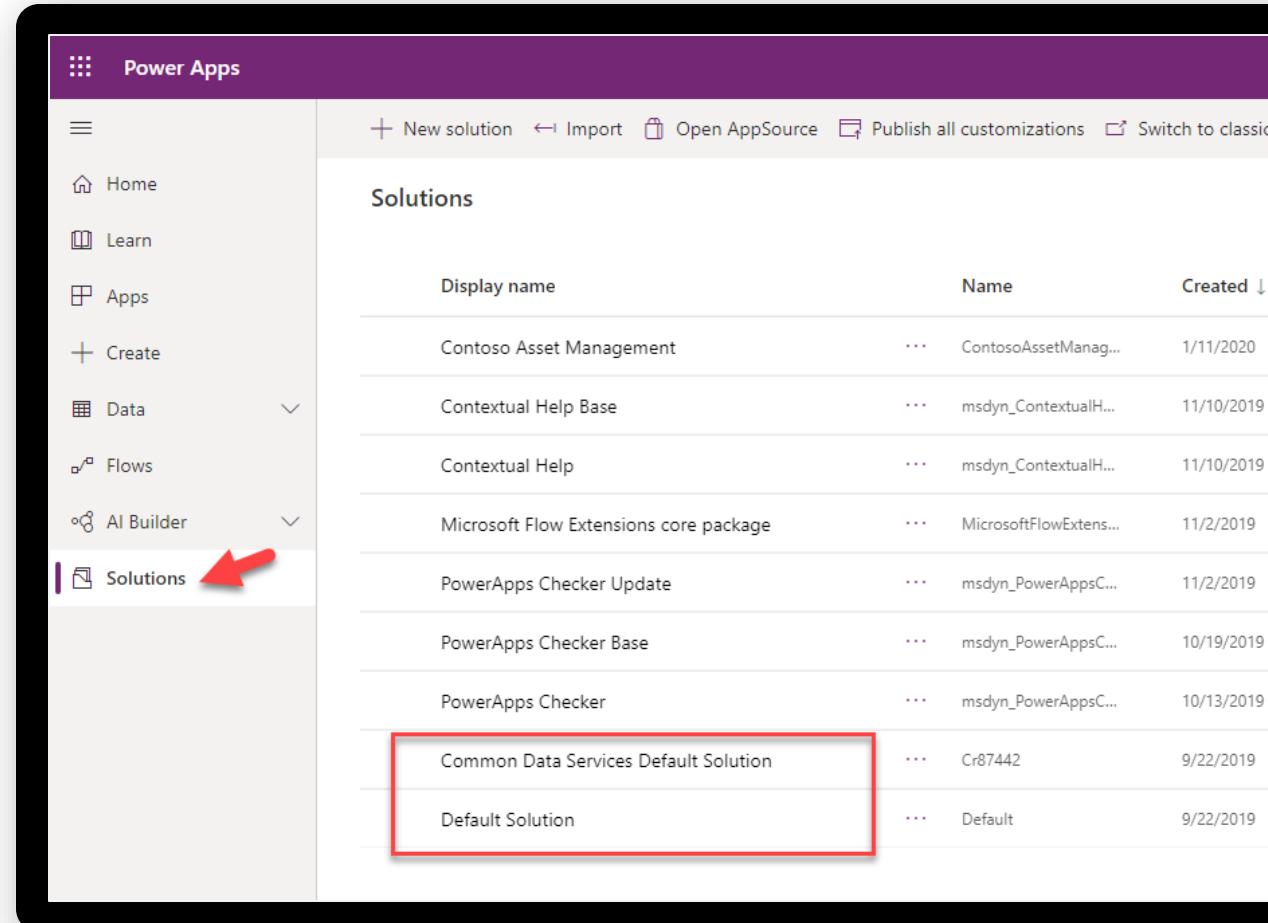
**Common Data Service Default Solution:** use when you want to evaluate or learn the Power Platform

**Default Solution:** contains all components in the system



**Don't use default solutions to manage customizations!**

- ✓ You will also use the default publisher assigned to the solution
- ✓ You cannot change prefix and choice values
- ✓ The default solution can't be exported



The screenshot shows the 'Solutions' section of the Microsoft Power Apps interface. The left sidebar includes options like Home, Learn, Apps, Create, Data, Flows, AI Builder, and Solutions. A red arrow points to the 'Solutions' option in the sidebar. The main area lists solutions with columns for Display name, Name, and Created. Two specific solutions are highlighted with red boxes: 'Common Data Services Default Solution' and 'Default Solution'.

Display name	Name	Created
Contoso Asset Management	ContosoAssetManag...	1/11/2020
Contextual Help Base	msdyn_ContextualH...	11/10/2019
Contextual Help	msdyn_ContextualH...	11/10/2019
Microsoft Flow Extensions core package	MicrosoftFlowExtens...	11/2/2019
PowerApps Checker Update	msdyn_PowerAppsC...	11/2/2019
PowerApps Checker Base	msdyn_PowerAppsC...	10/19/2019
PowerApps Checker	msdyn_PowerAppsC...	10/13/2019
Common Data Services Default Solution	Cr87442	9/22/2019
Default Solution	Default	9/22/2019

## Solution lifecycle

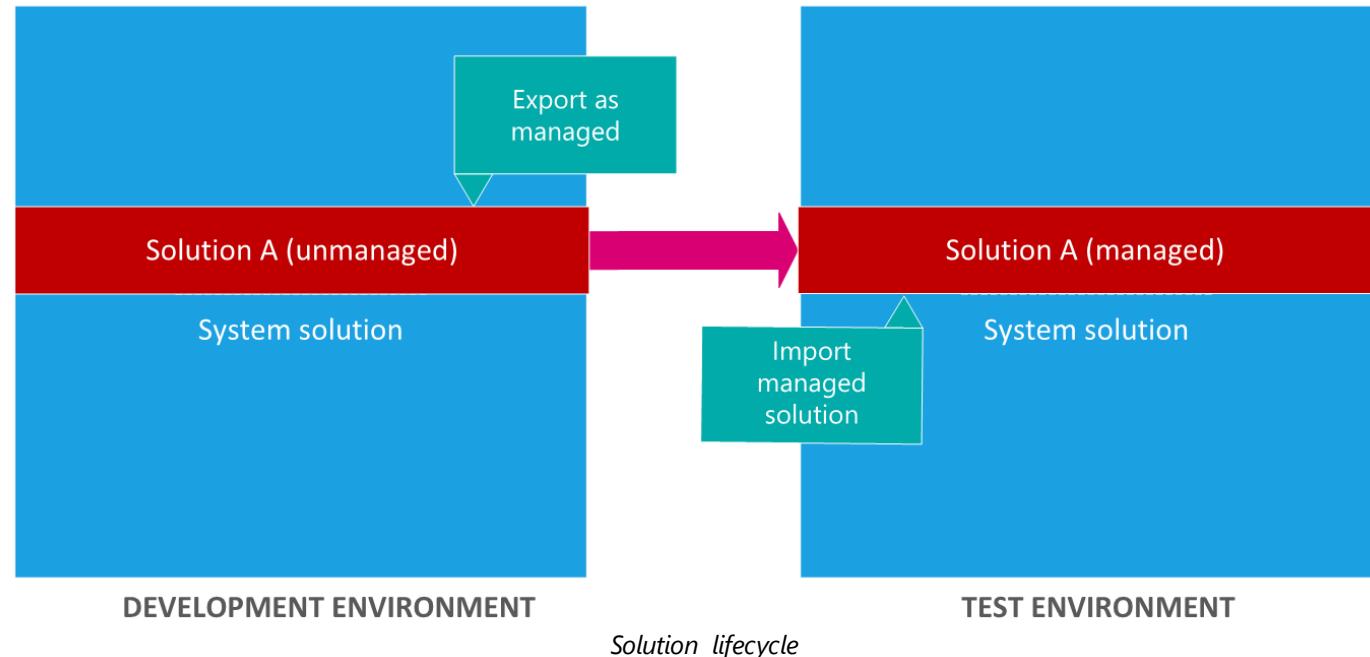
**Create** Author and export unmanaged solutions.

**Update:** Create updates to a managed solution that are deployed to the parent managed solution. You **can't delete components** with an update.

**Patch\***: A patch contains **only the changes for a parent managed solution**. Use patches when making **small updates** (similar to a hotfix).

**Upgrade:** removes unused components, implements upgrade logic and merges all patches to the solution into a new version of the solution. Solution upgrades will **delete components** that existed but are **no longer included in the upgraded version**.

\* Patching isn't recommended because it limits team development and increases complexity when storing your solution in a source control. Use **Update** instead.



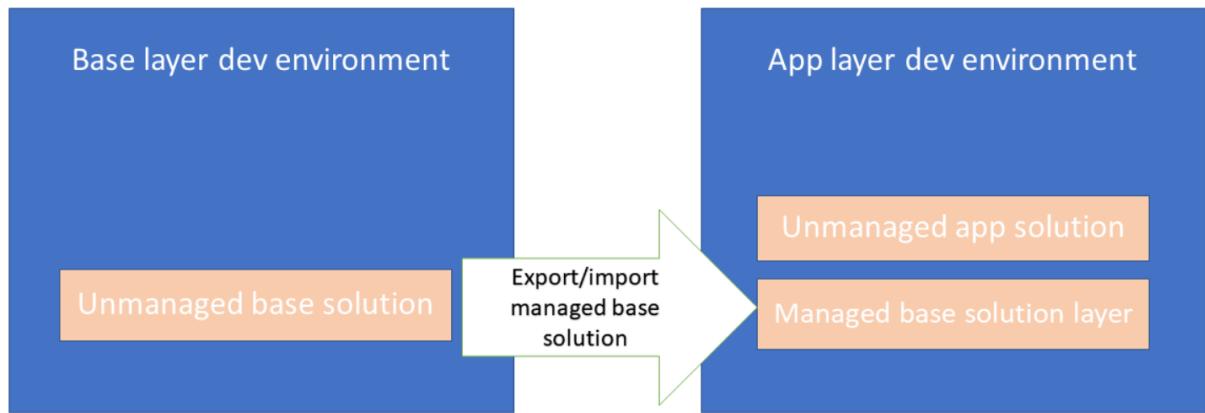
## Organize solutions

### Take some time do plan!

- Think about how many solutions you **want to release** and whether the solutions will **share components**.
- How it will be the **size** of your solution?
- How your solution will be **delivered** and **updated**?
- What will be the **purpose** of your solution? (a template/base solution, departmental, mission critic)

### Tips

- For most of the cases, **one solution** will be the **best option**.
- However, use **multiple solution** could be **beneficial**. For example, when you have a large application and need to **segment development and deployment**.
- Segment your solutions by component type when there are **no cross-dependency risks**.
- Solution dependency can be **hard** to solve.
- Avoid develop multiple apps with **different purposes** on the same environment because this can lead to **solution dependency** between them.



*A recommended solution segmentation approach*

## Solution layers

When you have **multiple solutions installed**, there will be in layers.

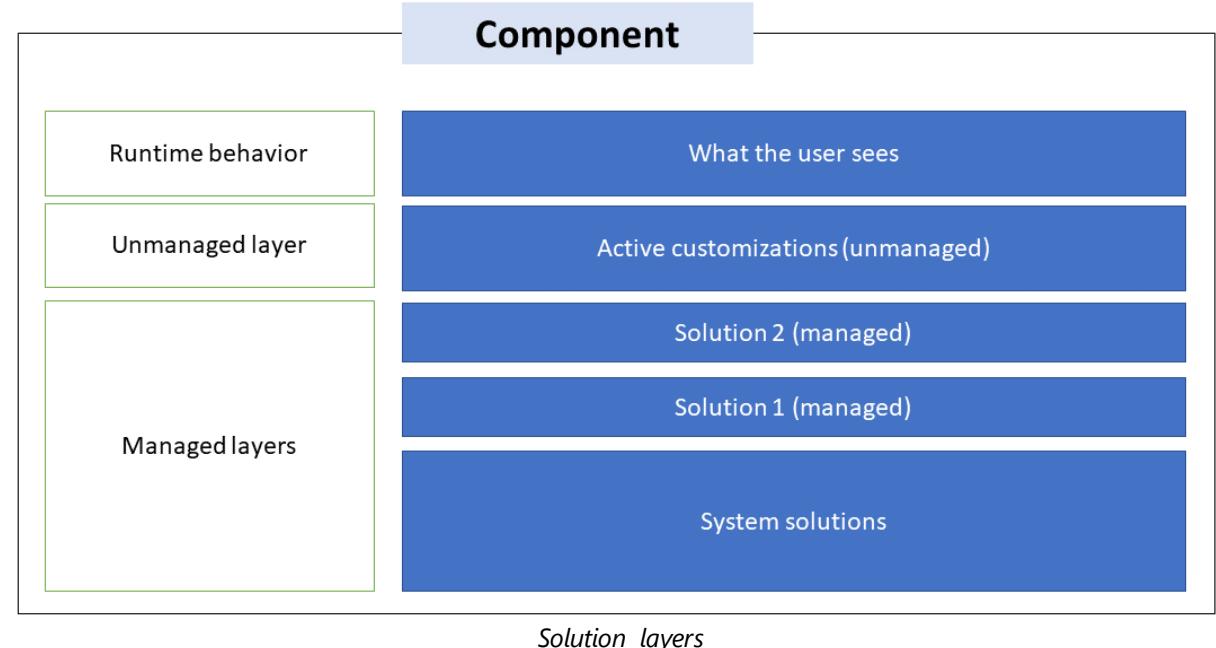
There are **two** distinct layers:

- **Unmanaged**: all imported unmanaged solutions and ad-hoc customizations
- **Managed**: All imported, managed solutions and the system solution

### Key facts about layers

- Solution layering is implemented at a **component level**.
- When multiple managed solutions are installed, the **last one installed** is above the managed solution installed previously.
- If you **uninstall** a managed solution, the managed solution **below** it takes effect.
- If you **uninstall all managed solutions**, the default behavior defined within the **system solution** is applied
- There are two possible runtime behaviors for a component:

Model Driven Apps, forms and site map **will be merged**  
All other components will be on the **top layer**



Avoid putting components on multiple solutions

## Use segmented solutions

- Only include in a solution tables components that you **created** or **modified**.
- A solution with **unintended components** can cause **unexpected behavior** at destination environment, since it will create a **new solution layer** for them if they already exists.
- The following options are available when including a table component in a solution:

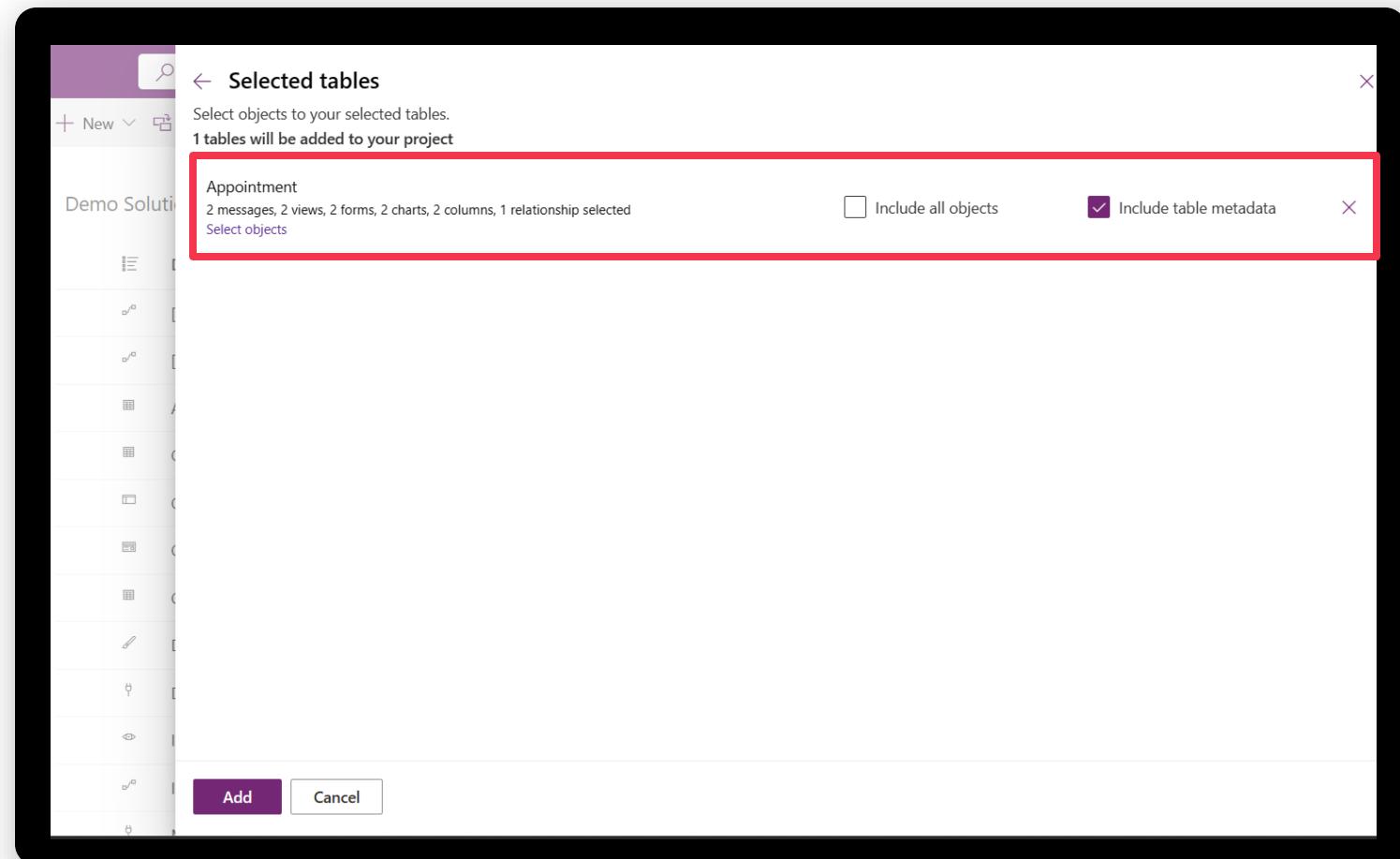
**Include no components or metadata**

**Select components**

**Include entity metadata**

**Include all components**

 If the component exists in target environment and you haven't change it, don't include it in the solution



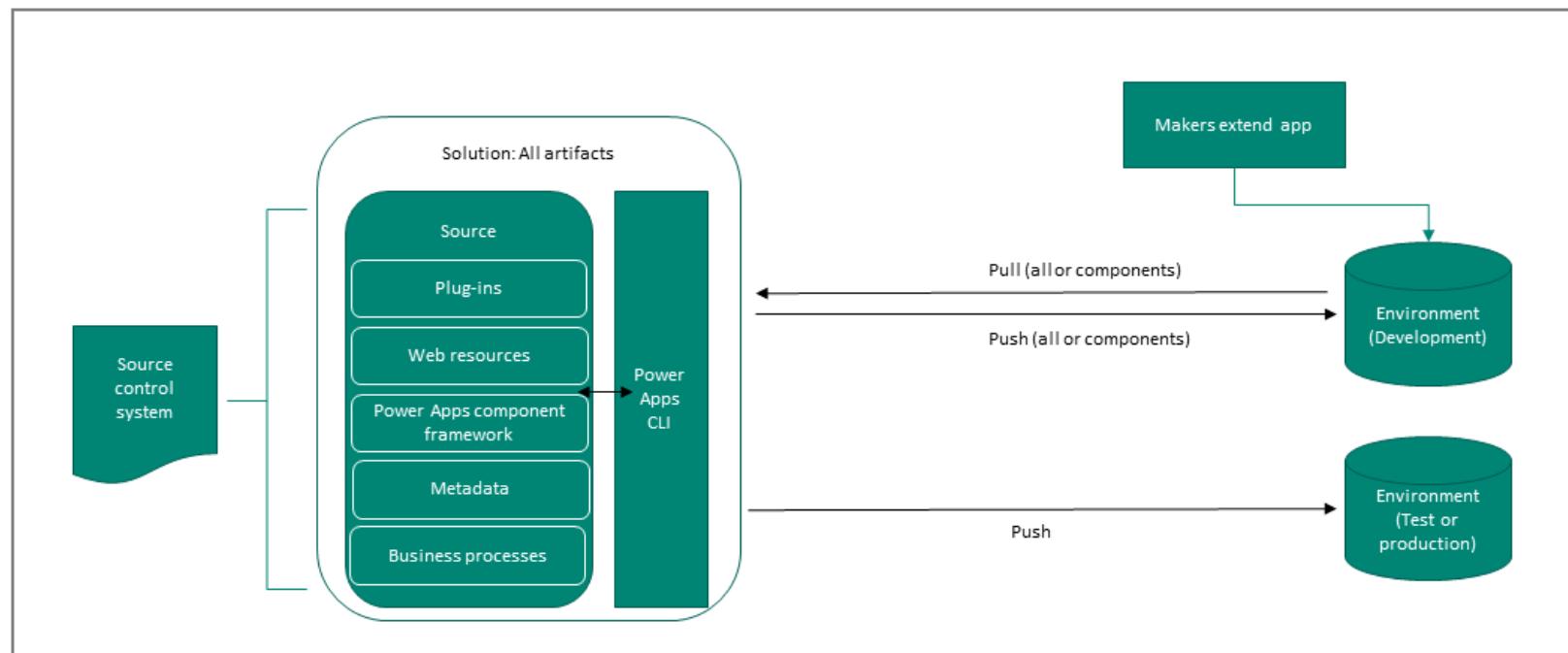
## Source Control

Use when **multiple app makers** and **developers** are working on the **same set of files**.

When used, **must be the single source of truth**, not environments

Gives you the ability to **roll back changes** or restore deleted files

Use a **Git repository** and adopt a **branch strategy** to enable team development and **Azure DevOps** or **GitHub** to start your **DevOps journey**



## Source Control

Team development is **always challenging**, so keep in mind:

- **Automation is a journey.** The focus must be on foster communication and gradually improve efficiency.
- Because source control systems **have limitations** on how merges occur, we recommend that you avoid situations where multiple people make changes on this complex components at the same time: **forms, flows, and canvas apps.**
- A **recommended approach** is:
  - Define who in the development team **will be in charge of each type of customization** (Dataverse, apps, flows and custom development)
  - Use **source control** and **build tools** on **Azure DevOps** and **GitHub** to allow pro-devs to get access to the recent versions of the customizations and to integrate and their code automatically.



## Licensing

The following table shows the **minimum licensing requirement** for each type of development

Development type	Power Apps per User	Power Automate per User	Power Automate Attended	Process Mining Add-on	IA Builder credits	PVA
Model Driven, Canvas Apps and Portals	X					
Cloud flows (in a app context)	X					
Cloud flows (organizational automation)		X				
Desktop flows			X			
Embed IA Builder models in apps and flows					X	
Chatbots						X
Process and task mining (web)		X				
Process and task mining (Minit)				X		

**Important:** The licenses to run / share developments may be different!

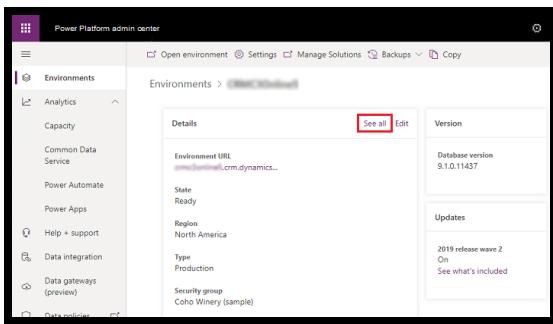
# ALM with Power Platform Tools

# ALM for admins and makers



## Tools used

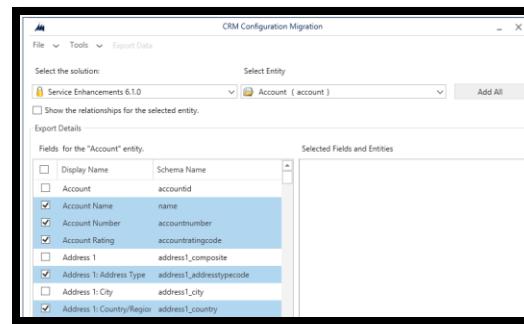
### Power Platform Admin Center



Manage environments, data integration, gateways and data policies

[Learn more](#)

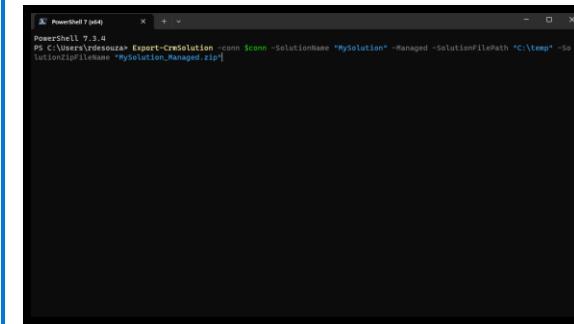
### Configuration Migration Tool



Move configuration and/or reference data across environments

[Learn more](#)

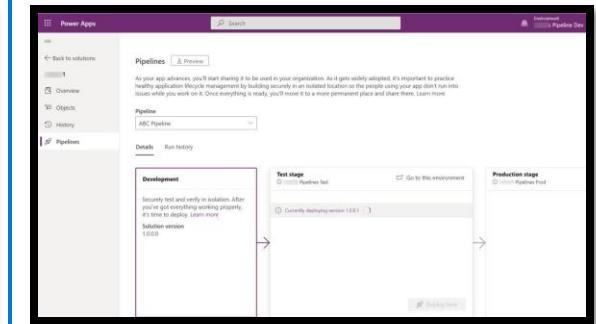
### Power Shell Modules



Automate many of the monitoring, management, and quality assurance tasks that are only possible manually

[Learn more](#)

### Pipelines



Deploy solutions to environments with a single click

[Learn more](#)

# ALM for developers



## Tools used

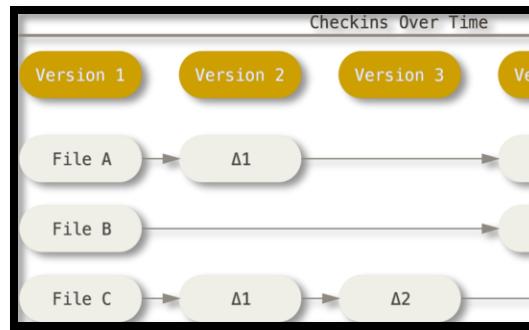
### Azure DevOps / GitHub

```
PowerPlatform-Tools
master
PowerPlatform-Tools / azure-pipelines.yml
1 # Starter pipeline
2 # Start with a minimal pipeline that you can customize to build and deploy your code.
3 # Add steps to build, run tests, deploy, and more:
4 # https://aka.ms/yaml
5
6 # Triggers
7 - master
8
9 pool:
10   vmImage: ubuntu-latest
11
12 steps:
13 - script: echo Hello, world!
14   displayName: Run a one-line script
15
16 - script: |
17   # Add other tasks to build, test, and deploy your project.
18   echo See https://aka.ms/yaml
19   displayName: Run a multi-line script
20
```

Solution metadata, build and deploy tasks automation

[Learn more](#)

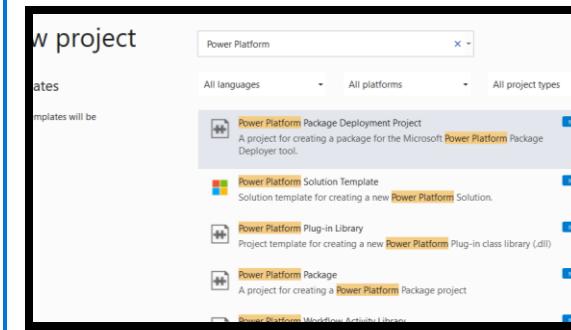
### Version Control System



Allow you to maintain a single "source of truth" and recall specific versions when needed.  
We recommend GIT

[Learn more](#)

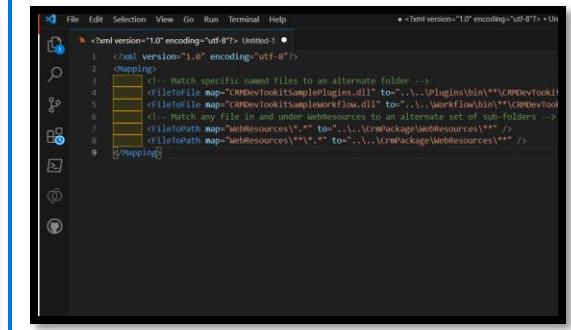
### Package Deployer



Deploy solutions, files, custom code and HTML files to Dataverse instances

[Learn more](#)

### Solution Packager



Unpack a compressed solution files so they can be easily managed by a source control system

[Learn more](#)

# ALM for developers



## Tools used

### Power Platform CLI

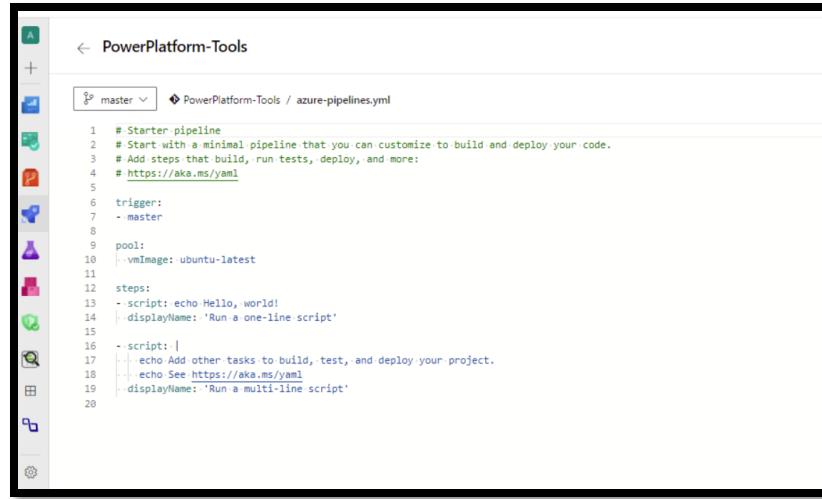
A screenshot of a terminal window showing the Microsoft Power Platform CLI. The window title is 'PowerPlatform CLI'. The terminal shows the command 'pac' being run, followed by a detailed help output for the 'pac' command. The help text includes sections for 'Usage', 'Commands', and 'Aliases'. The 'Commands' section lists various sub-commands like 'admin', 'auth', 'canvas', 'help', 'org', 'portals', 'pof', 'plugin', 'solution', and 'telemetry' with their descriptions. The 'Aliases' section shows mappings for commands such as 'pac auth' to 'pac auth:login' and 'pac org' to 'pac org:create'. The terminal is running on a Mac OS X system, as indicated by the prompt '@karatay ~> /workspaces/VSCodeLab (main)\$'.

Empowers developers and app  
makers to create code  
components

[Learn more](#)

## Pipeline automation with Azure DevOps

### Power Platform Build Tools



```
PowerPlatform-Tools
master > PowerPlatform-Tools / azure-pipelines.yml

1 # Starter pipeline
2 # Start with a minimal pipeline that you can customize to build and deploy your code.
3 # Add steps that build, run tests, deploy, and more:
4 # https://aka.ms/yaml
5
6 trigger:
7   - master
8
9 pool:
10  - vmImage: ubuntu-latest
11
12 steps:
13   - script: echo Hello, world!
14     displayName: 'Run a one-line script'
15
16   - script: |
17     echo Add other tasks to build, test, and deploy your project.
18     echo See https://aka.ms/yaml
19     displayName: 'Run a multi-line script'
20
```

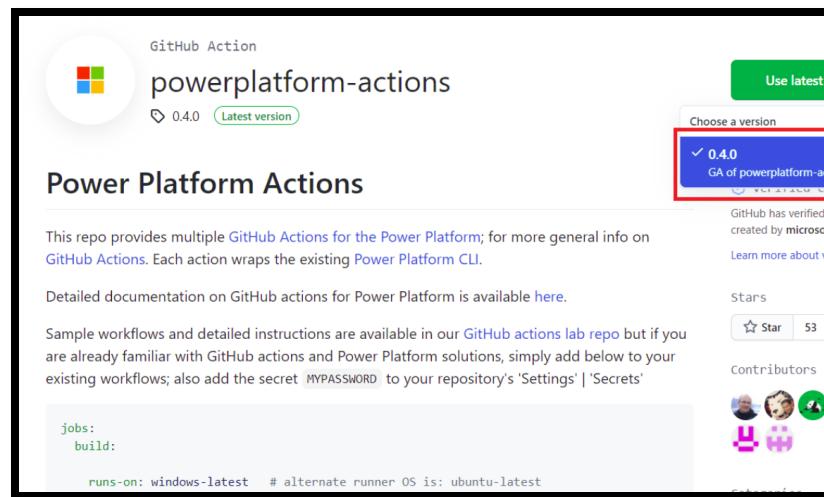
[Learn more](#)

Use to automate common build and deployment tasks related to apps built on Microsoft Power Platform on Azure DevOps. These tasks include:

- Synchronization of solution metadata (also known as solutions)
- Generating build artifacts
- Deploying to downstream environments
- Provisioning or de-provisioning environments
- Perform static analysis checks against solutions by using the Power Apps checker service

## Pipeline automation with GitHub

### GitHub Actions



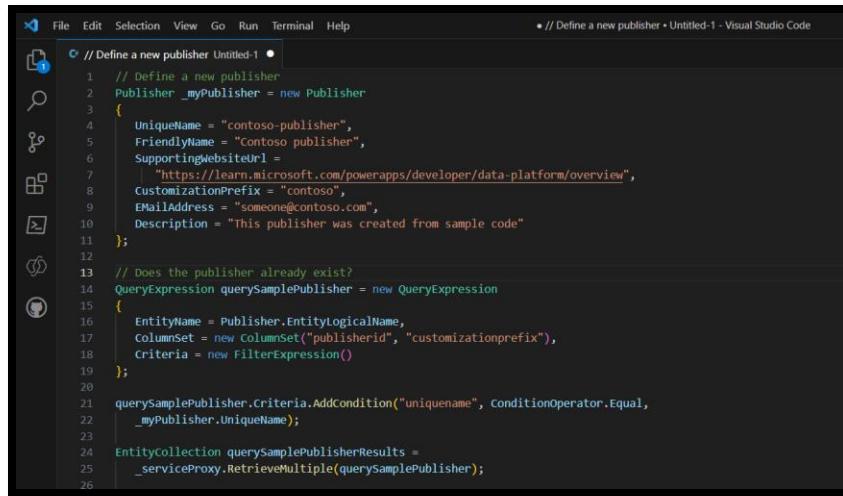
[Learn more](#)

Create workflows in your repository to build, test, package, release, and deploy apps; perform automation; and manage bots and other components built on Microsoft Power Platform.

- Importing and exporting application metadata (also known as solutions)
- Deploying to downstream environments.
- Provisioning or de-provisioning environments
- Performing static analysis checks against solutions by using Power Apps solution checker.

## Manage solutions using code

### Dataverse SDK



```
File Edit Selection View Go Run Terminal Help
// Define a new publisher • Untitled-1 - Visual Studio Code
// Define a new publisher
Publisher _myPublisher = new Publisher
{
    UniqueName = "contoso-publisher",
    FriendlyName = "Contoso publisher",
    SupportingwebsiteUrl =
        "https://learn.microsoft.com/powerapps/developer/data-platform/overview",
    CustomizationPrefix = "contoso",
    EmailAddress = "someone@contoso.com",
    Description = "This publisher was created from sample code"
};

// Does the publisher already exist?
QueryExpression querySamplePublisher = new QueryExpression
{
    EntityName = Publisher.EntityLogicalName,
    ColumnSet = new ColumnSet("publisherid", "customizationprefix"),
    Criteria = new FilterExpression()
};

querySamplePublisher.Criteria.AddCondition("uniquename", ConditionOperator.Equal,
    _myPublisher.UniqueName);

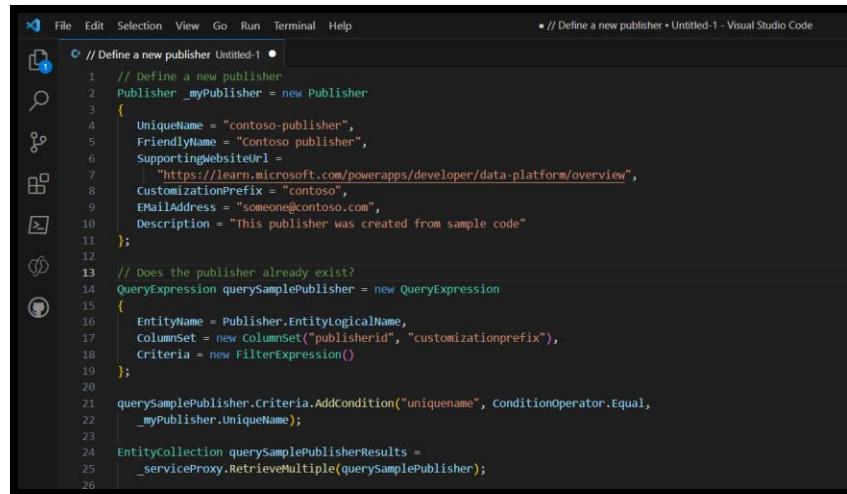
EntityCollection querySamplePublisherResults =
    _serviceProxy.RetrieveMultiple(querySamplePublisher);
```

[Learn more](#)

Use Dataverse SDK for .NET to create **custom automation** on your application lifecycle such:

- Create a publisher
- Create, export, import and delete solutions
- Add or remove solution components
- Detect solution dependencies and create a report

## Edit customizations.xml file



```
// Define a new publisher
1 // Define a new publisher Untitled-1
2 Publisher _myPublisher = new Publisher
3 {
4     UniqueName = "contoso-publisher",
5     FriendlyName = "Contoso publisher",
6     SupportingwebsiteUrl =
7         "https://learn.microsoft.com/powerapps/developer/data-platform/overview",
8     CustomizationPrefix = "contoso",
9     EmailAddress = "someone@contoso.com",
10    Description = "This publisher was created from sample code"
11 };
12
13 // Does the publisher already exist?
14 QueryExpression querySamplePublisher = new QueryExpression
15 {
16     EntityName = Publisher.EntityLogicalName,
17     ColumnSet = new ColumnSet("publisherid", "customizationprefix"),
18     Criteria = new FilterExpression()
19 };
20
21 querySamplePublisher.Criteria.AddCondition("uniquename", ConditionOperator.Equal,
22     _myPublisher.UniqueName);
23
24 EntityCollection querySamplePublisherResults =
25     _serviceProxy.RetrieveMultiple(querySamplePublisher);
26
```

[Learn more](#)

The customizations.xml file contains the definition of every component included in a solution. Alter it is **supported on the following scenarios:**

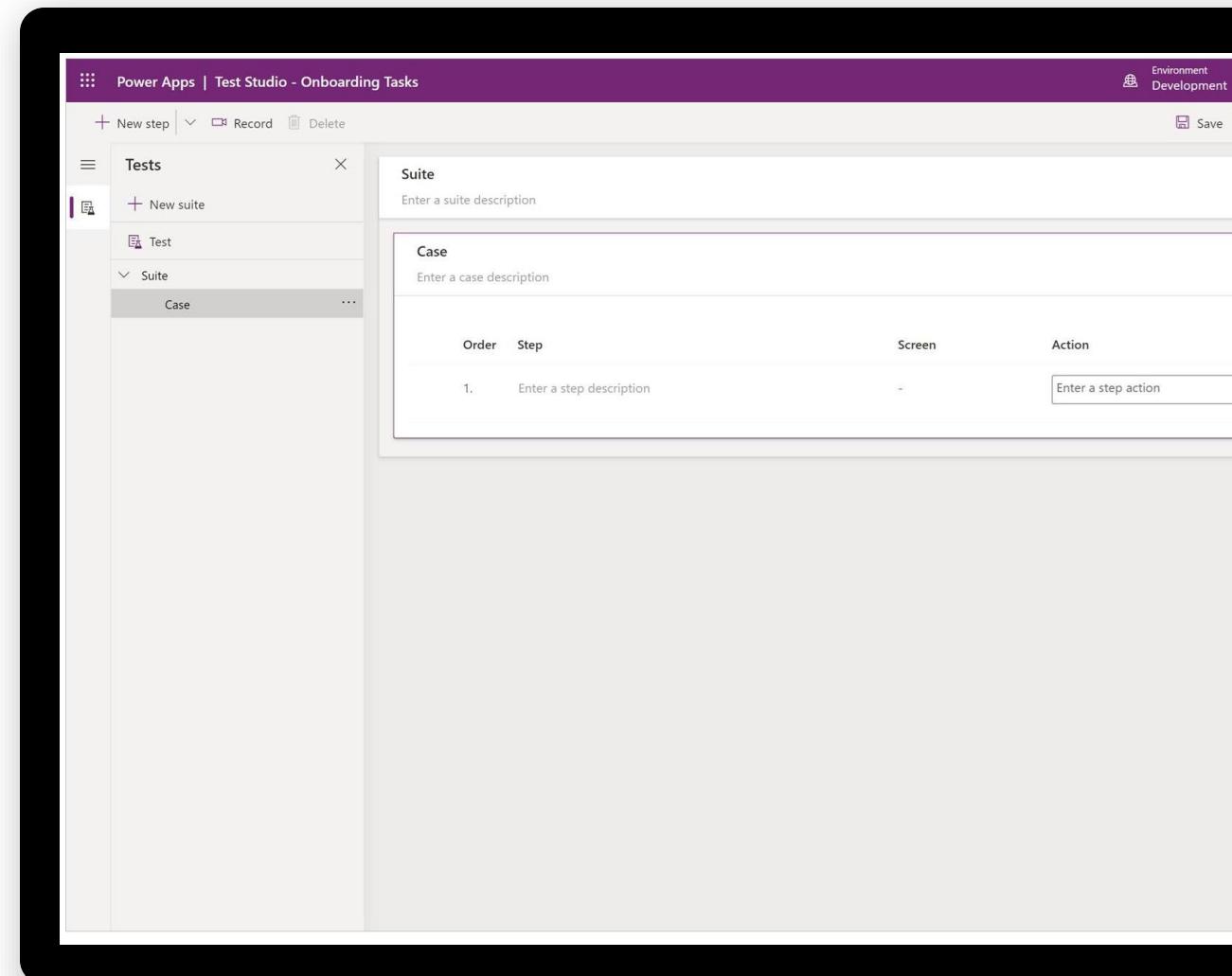
- Edit the following Model Driven Apps components definition
  - Ribbon
  - SiteMap
  - FormXML
  - Saved Queries
  - ISV Config

**Important:** You must decompress the solution zip file, edit customizations.xml and create a new zip file to import the solution of the target environments

# Testing tools

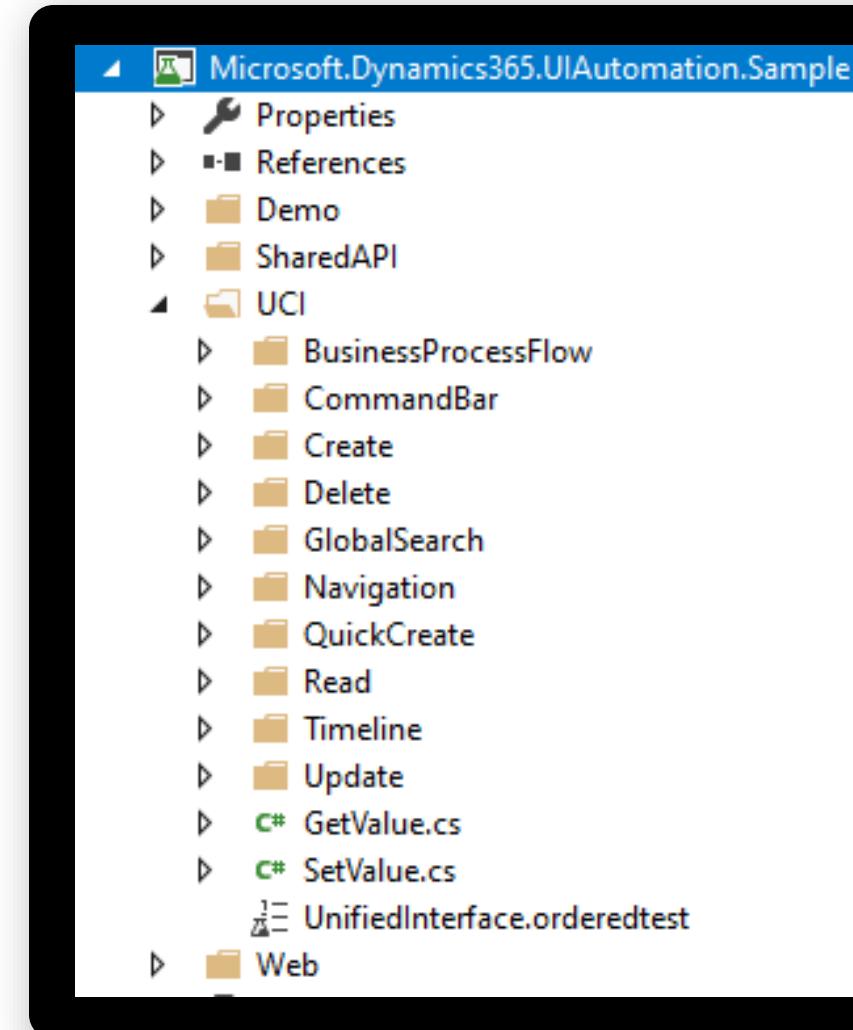
## Test Studio (only for Canvas app)

- **Low-code solution** to write, organize, and automate tests **for canvas apps**
- Write tests using **Power Apps expressions** or use a **recorder** to save app interaction to automatically generate the expressions
- Can be used **on Azure DevOps pipelines** to automate test execution



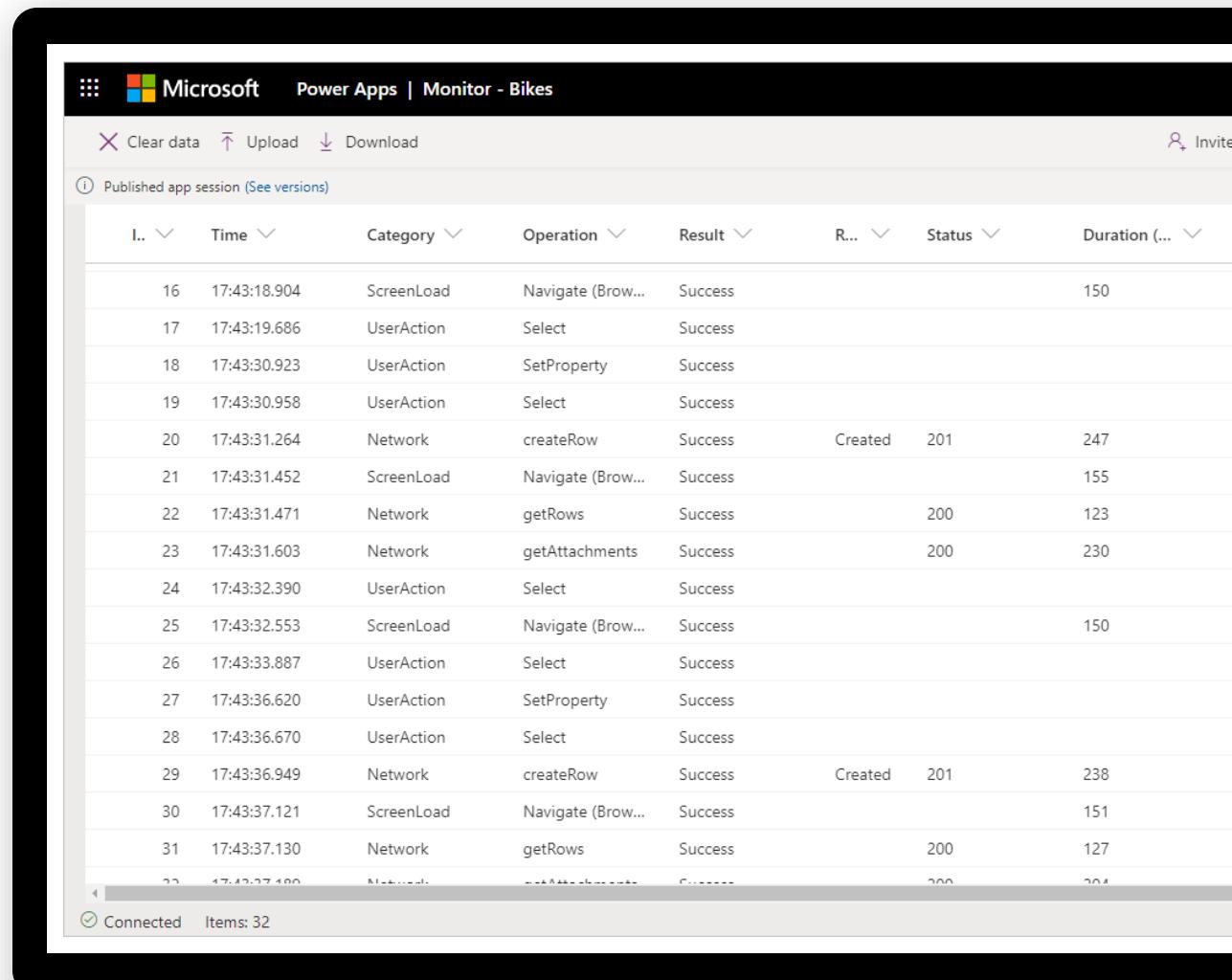
## Easy Repro (model-driven apps)

- An automated UI testing framework
- Built specifically for testing your **Dynamics 365** and **model-driven apps** implementations
- Provides an **easy-to-use set of APIs** that make setting up UI testing quick and easy, abstracting and reducing the need for you to work directly with the Document Object Model (DOM)
- Can be included on **Azure DevOps pipelines**



## Monitor

- View a **stream of events** from a user's session to **diagnose** and **troubleshoot** problems
- Works for **canvas and model-driven apps**
- Help you **diagnose** and **troubleshoot** problems faster
- Provides a **better understanding** of how the events and formulas contained in your app work, so you can **improve performance** and identify any **errors** or **problems**.



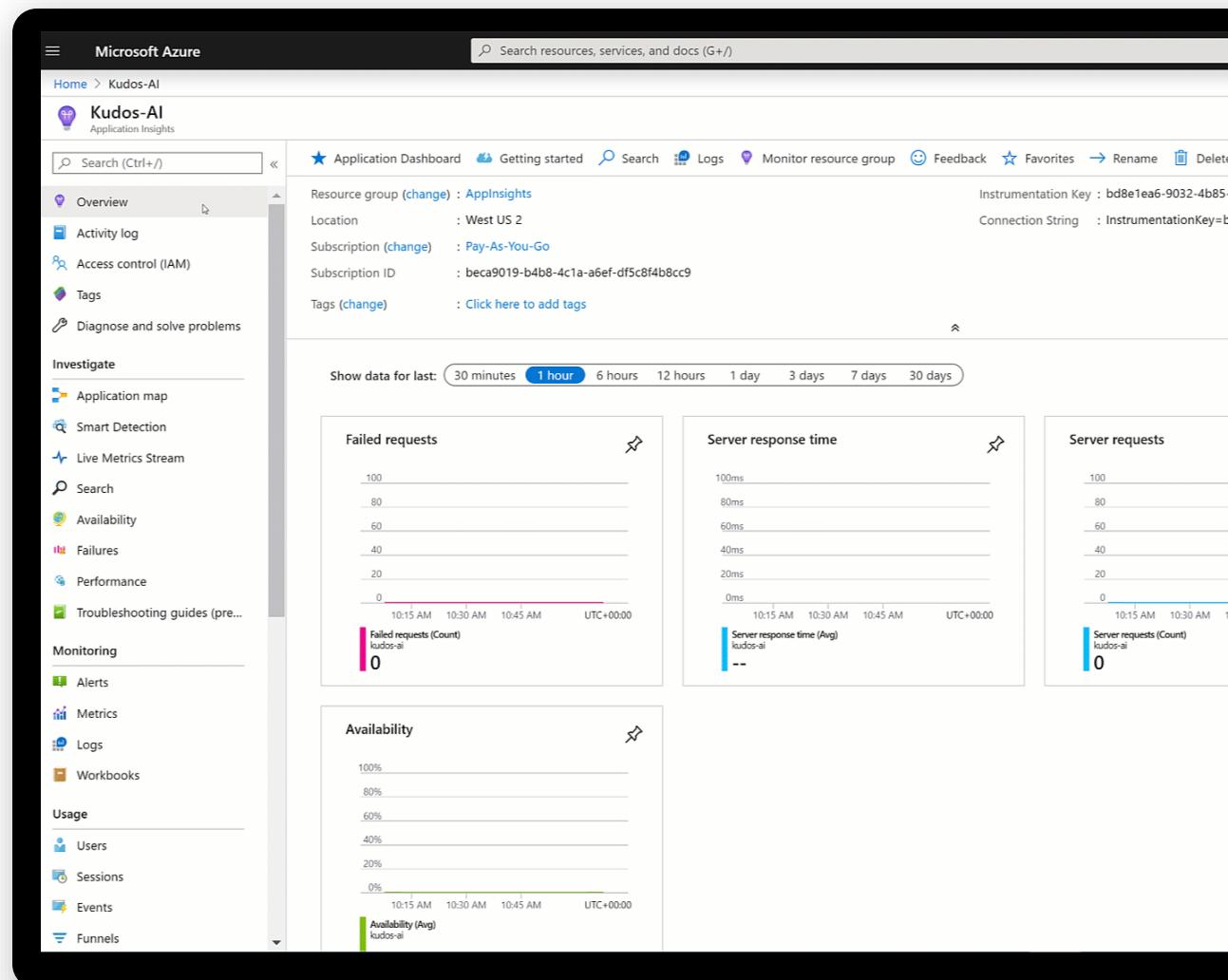
The screenshot shows a table of telemetry data for a published app session. The columns are: I.., Time, Category, Operation, Result, R..., Status, and Duration. The data includes various events like ScreenLoad, UserAction, Network, and SetProperty, all resulting in Success. The duration of each event is listed in the R... column.

I..	Time	Category	Operation	Result	R...	Status	Duration (...)
16	17:43:18.904	ScreenLoad	Navigate (Brow...	Success			150
17	17:43:19.686	UserAction	Select	Success			
18	17:43:30.923	UserAction	SetProperty	Success			
19	17:43:30.958	UserAction	Select	Success			
20	17:43:31.264	Network	createRow	Success	Created	201	247
21	17:43:31.452	ScreenLoad	Navigate (Brow...	Success			155
22	17:43:31.471	Network	getRows	Success		200	123
23	17:43:31.603	Network	getAttachments	Success		200	230
24	17:43:32.390	UserAction	Select	Success			
25	17:43:32.553	ScreenLoad	Navigate (Brow...	Success			150
26	17:43:33.887	UserAction	Select	Success			
27	17:43:36.620	UserAction	SetProperty	Success			
28	17:43:36.670	UserAction	Select	Success			
29	17:43:36.949	Network	createRow	Success	Created	201	238
30	17:43:37.121	ScreenLoad	Navigate (Brow...	Success			151
31	17:43:37.130	Network	getRows	Success		200	127
32	17:43:37.400	Network	getAttachments	Success		200	204

# Telemetry tools

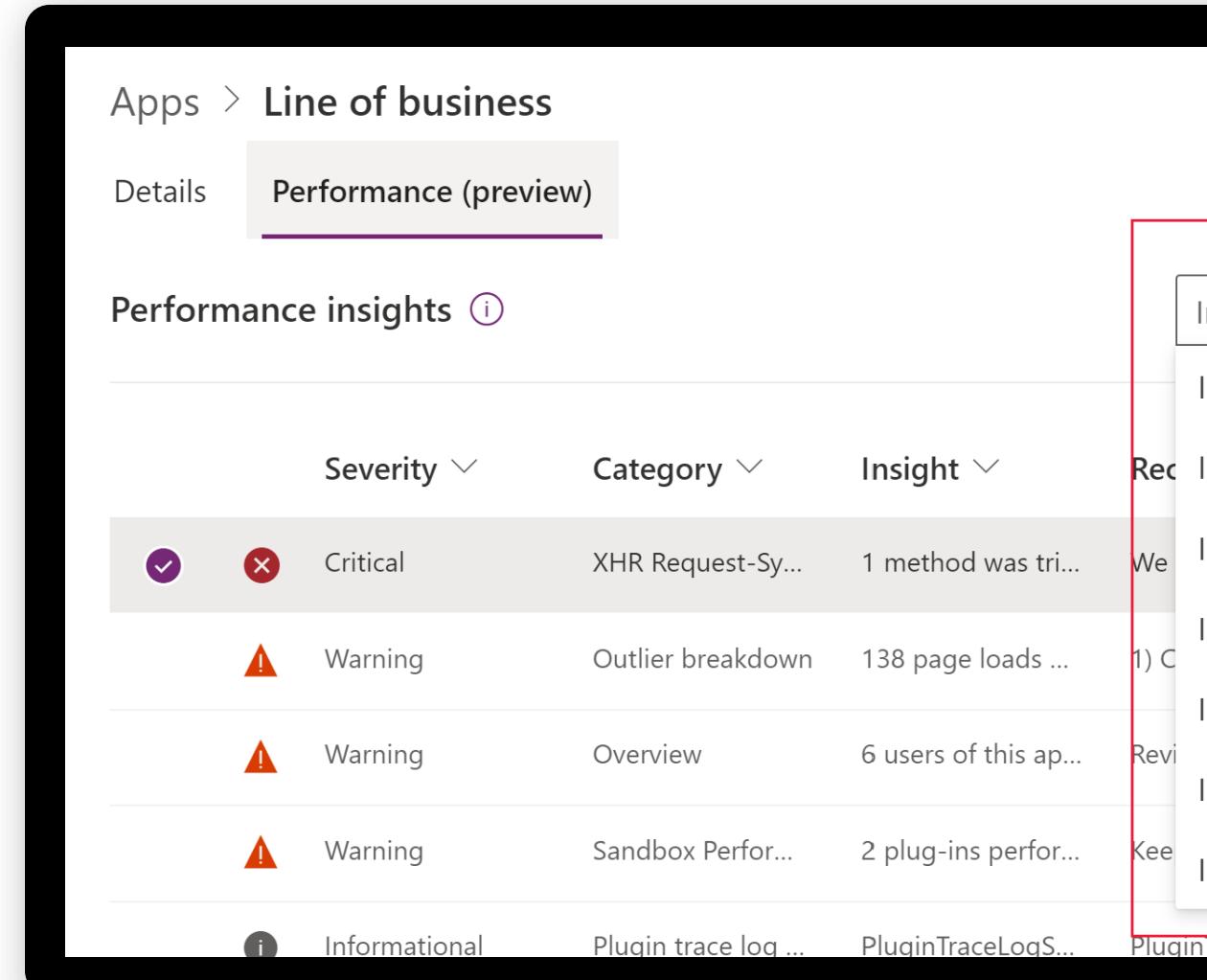
## Application Insights (canvas apps)

- Help you diagnose **issues** and understand what **users actually do** with your canvas apps
- Help you **troubleshoot issues**, drive better business decisions and **improve the quality of your apps.**



## Performance insights for model driven apps (preview)

- Tools that analyzes **runtime user data** and provides a **prioritized list of recommendations** to help **improve the performance** of model-driven apps
- Insights are generated based on collected user data of your model-driven app **every 24 hours**.



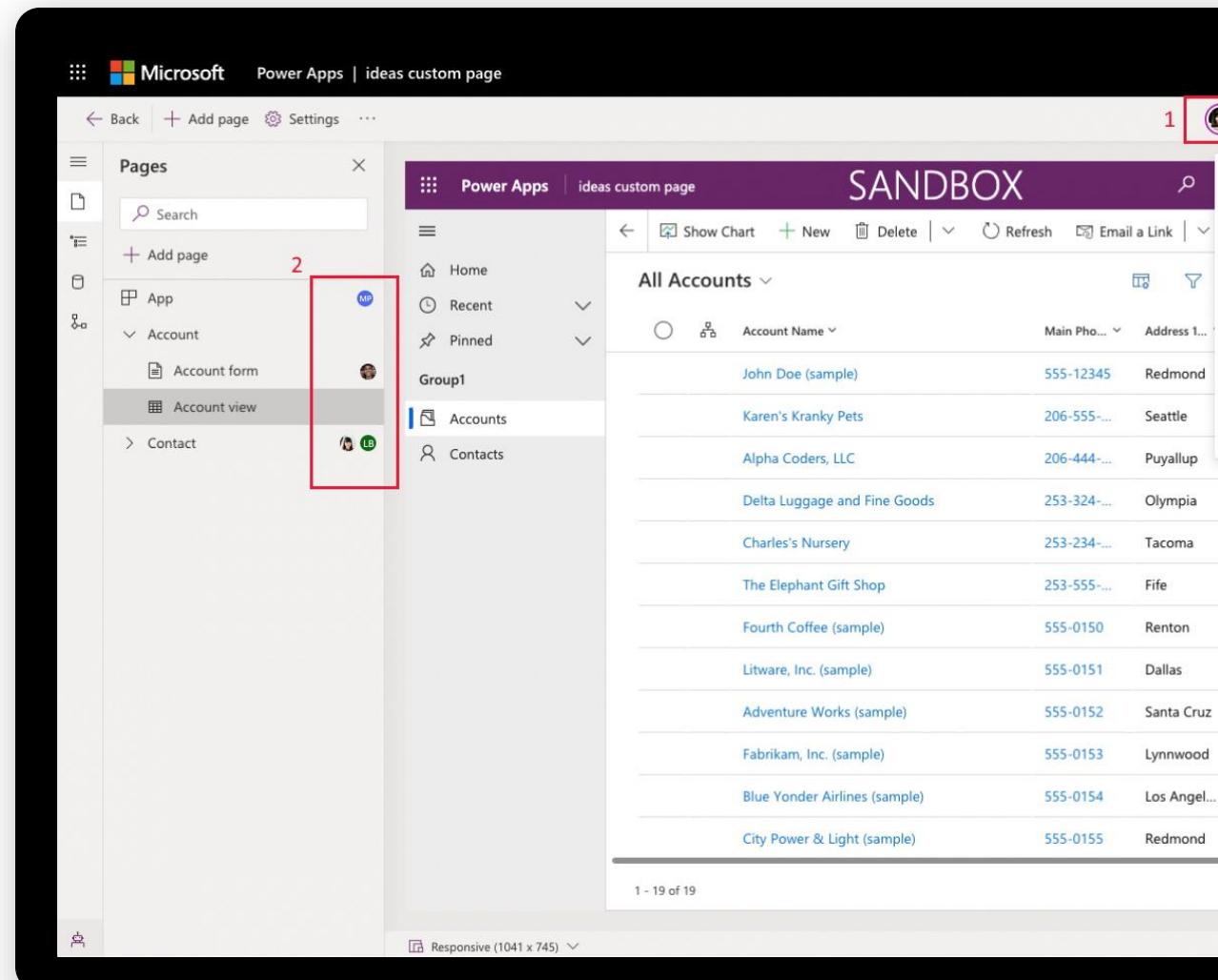
The screenshot shows a web-based interface titled "Line of business" under the "Apps" navigation. The "Performance (preview)" tab is selected. Below it, a section titled "Performance insights" includes a link with a question mark icon. A table lists five performance issues:

Severity	Category	Insight
Critical	XHR Request-Sy...	1 method was tri...
Warning	Outlier breakdown	138 page loads ...
Warning	Overview	6 users of this ap...
Warning	Sandbox Perform...	2 plug-ins perfor...
Informational	Plugin trace log ...	PluginTraceLog...

# Enabling fusion teams

## Collaboration in model-driven apps

- **Collaboration is key** to help fusion teams work together
- In **model-driven apps**, the following collaboration features are available:
  - Commenting
  - Co-presence
  - Co-authoring (preview)



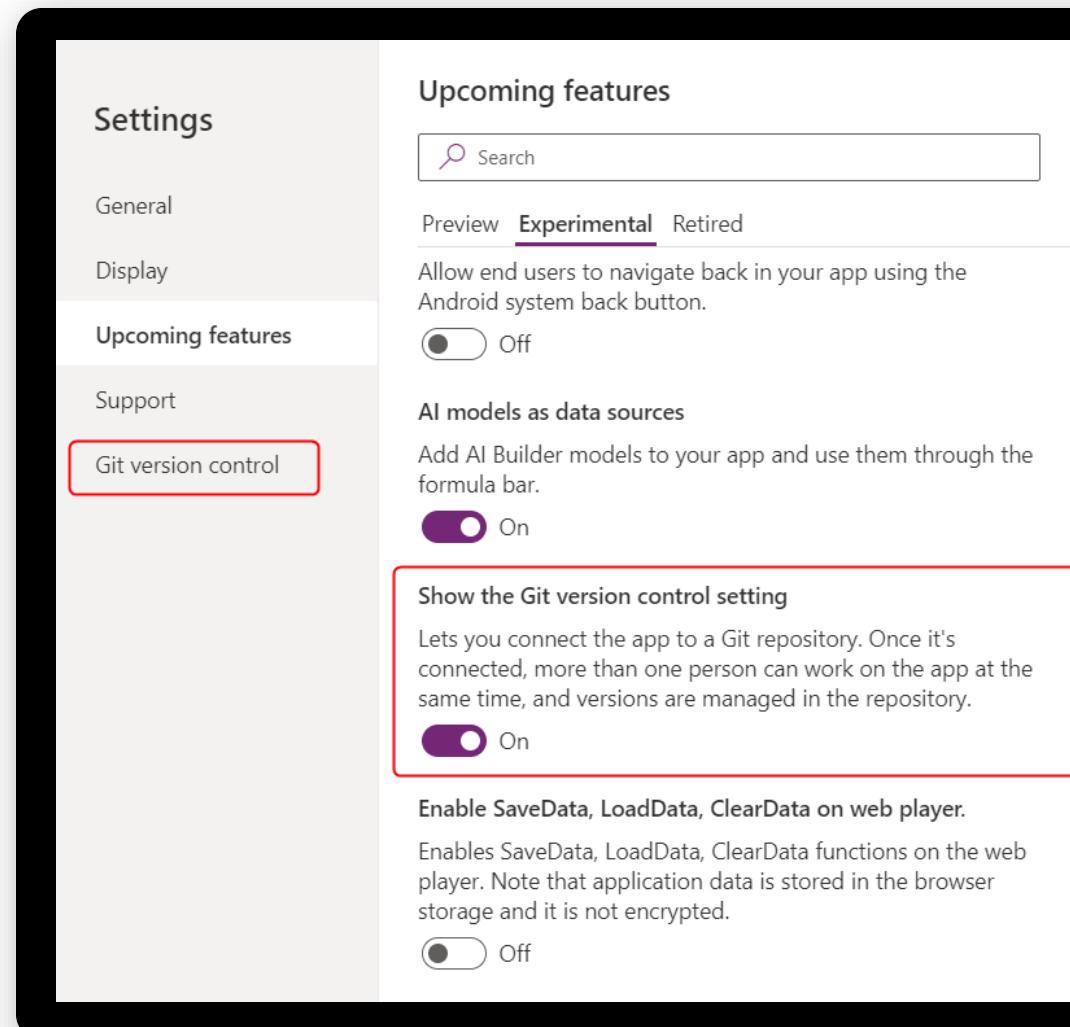
The screenshot shows the Microsoft Power Apps 'Pages' interface. On the left, there's a sidebar titled 'Pages' with a search bar and a red box highlighting the 'Account view' item under the 'Account' section. A red number '2' is placed above the sidebar. On the right, the main area displays a 'Power Apps | ideas custom page' titled 'Sandbox'. It shows a list of 'All Accounts' with sample data rows:

Account Name	Main Pho...	Address 1...
John Doe (sample)	555-12345	Redmond
Karen's Kranky Pets	206-555-...	Seattle
Alpha Coders, LLC	206-444-...	Puyallup
Delta Luggage and Fine Goods	253-324-...	Olympia
Charles's Nursery	253-234-...	Tacoma
The Elephant Gift Shop	253-555-...	Fife
Fourth Coffee (sample)	555-0150	Renton
Litware, Inc. (sample)	555-0151	Dallas
Adventure Works (sample)	555-0152	Santa Cruz
Fabrikam, Inc. (sample)	555-0153	Lynnwood
Blue Yonder Airlines (sample)	555-0154	Los Angel...
City Power & Light (sample)	555-0155	Redmond

At the bottom, it says '1 - 19 of 19'.

## Use Git version control to edit canvas apps (experimental)

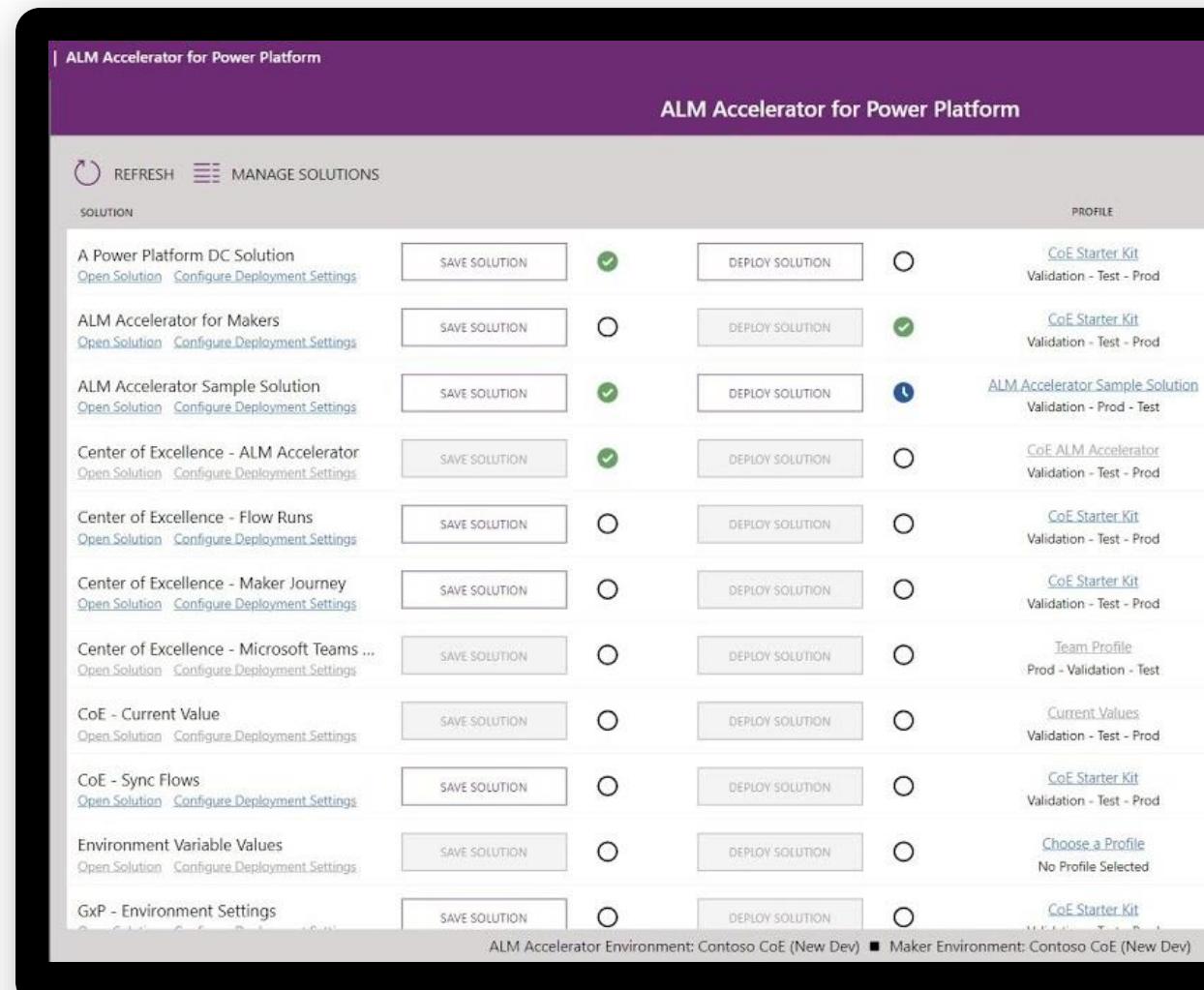
- Enable **more than one person** to edit a canvas app at the **same time**
- Git is used as the backing store for this feature



# Enabling fusion teams

## ALM Accelerator

- Perform **source control**, **enable version history**, and deploy their solutions in Power Platform
- Its target users are makers with no ALM knowledge
- Uses **Azure DevOps Pipelines** through a **canvas app** to provide a **simplified interface** for makers to regularly commit and create pull requests for their development work
- It is a **reference implementation** of ALM patterns and practices using other in-built platform capabilities and **can be customized**



## Which ALM tool I must choose?

This table isn't exhaustive and is meant to help you make an informed decision

Capability	Pipelines	ALM Accelerator	DevOps/GitHub
<b>IT / Developer involvement</b>	Not required	Up-front set up	Required for every project
<b>Source Code integration</b>	No, but planned	Yes	Yes
<b>Maker requires elevated privileges in target environment</b>	Yes, but service principal support planned	No, service principal supported	No, service principal Supported
<b>Quality Control</b>	Minimal	Best practices	Unlimited
<b>Democratized for Citizen Development</b>	Yes	Yes	No
<b>In-Product Experience</b>	Yes	Canvas app provided, but not in maker experience	No
<b>Support</b>	Microsoft supported	Power CAT support via GitHub Issues and Discussions	Microsoft supported and GitHub Issues
<b>Customization</b>	No	Yes	Yes
<b>Code-first development</b>	No	Yes	Yes

# Which ALM approach I should choose?

There are few questions you must answer first

Identify the stage of Power Platform adoption journey

Define ALM requirements for each type of application and lifecycle stage

Identify the ALM and source code policies

Create a roadmap for ALM adoption

Then use this [scenarios](#) as reference

Learn / Power Platform /



## About healthy ALM

Article • 08/07/2022 • 5 contributors



This section provides information about the various scenarios that will help you reach the end goal of implementing and practicing healthy application lifecycle management (ALM) by using Power Apps, Power Automate, and Microsoft Dataverse in your organization.

The scenarios range from people who are new to Microsoft Power Platform to existing users practicing unhealthy ALM, and show how you can move to a recommended, successful ALM implementation.

Scenario 0: ALM for a new project

Scenario 1: Citizen development ALM

Scenario 2: Moving from a single environment

Scenario 3: Moving from unmanaged to managed solutions

Scenario 4: Use DevOps for automation

Scenario 5: Support team development

# Próximos passos

# Continue sua jornada de **conhecimento**

## Eventos técnicos de Power Platform

Eventos no **Microsoft Teams** conduzidos pelos especialistas em Power Platform da Microsoft Brasil. Para participar procure seu **gestor(a) de conta** (AE) ou **especialista** (SSP).



### Governança e ALM

#### Tópicos

- Governança
- Segurança
- Monitoramento
- CoE Starter Kit
- ALM/DevOps

#### Duração

03 horas



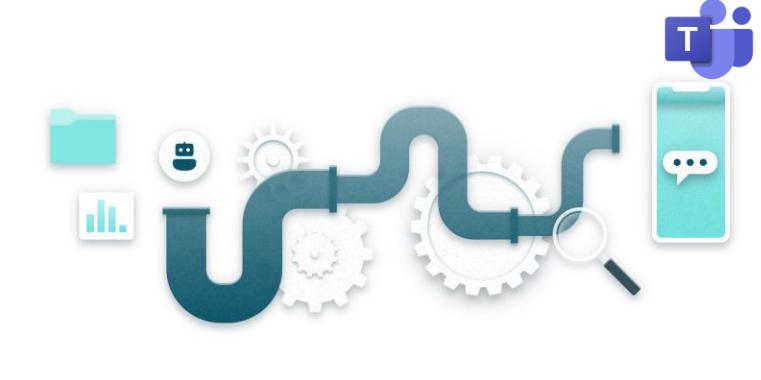
### Desenvolvimento de aplicativos

#### Tópicos

- Power Apps Canvas
- Dataverse e Model Driven Apps
- Power Pages
- Fusion Teams

#### Duração

03 horas



### Hiper automação

#### Tópicos

- DPA e BPA
- Power Virtual Agents
- Process e Task Mining
- RPA

Estendendo o SAP com Power Platform

#### Duração

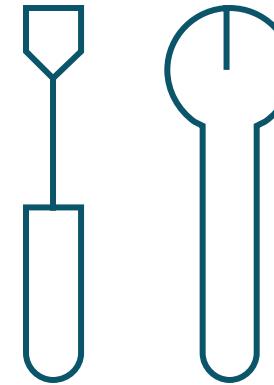
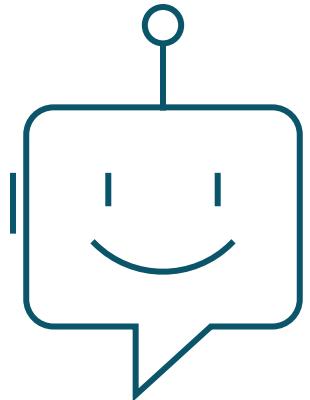
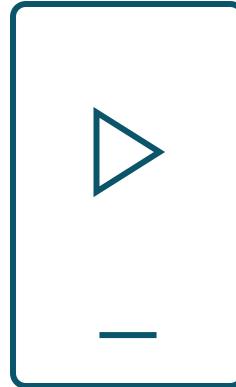
03 horas

# Continue sua jornada de **conhecimento**

**Em breve!**

## Workshops “in a Day”

Workshops “hands-on” conduzidos em nosso **centro de tecnologia (MTC)** em **São Paulo/SP** por parceiros credenciados.  
Para participar procure seu gestor(a) de conta (AE) ou especialista (SSP).



### App in a Day

#### Tópicos

- Power Apps Canvas
- Microsoft Dataverse
- Power Apps Model Driven
- Power Automate

#### Duração

08 horas

### RPA in a Day

#### Tópicos

- Fundamentos de RPA
- Integração com Outlook e Teams
- Integração com web e Excel
- Tópicos avançados

#### Duração

08 horas

### Admin in a Day

#### Tópicos

- Segurança
- Monitoramento
- Automação
- Publicação

#### Duração

08 horas

# Continue sua jornada de **conhecimento**

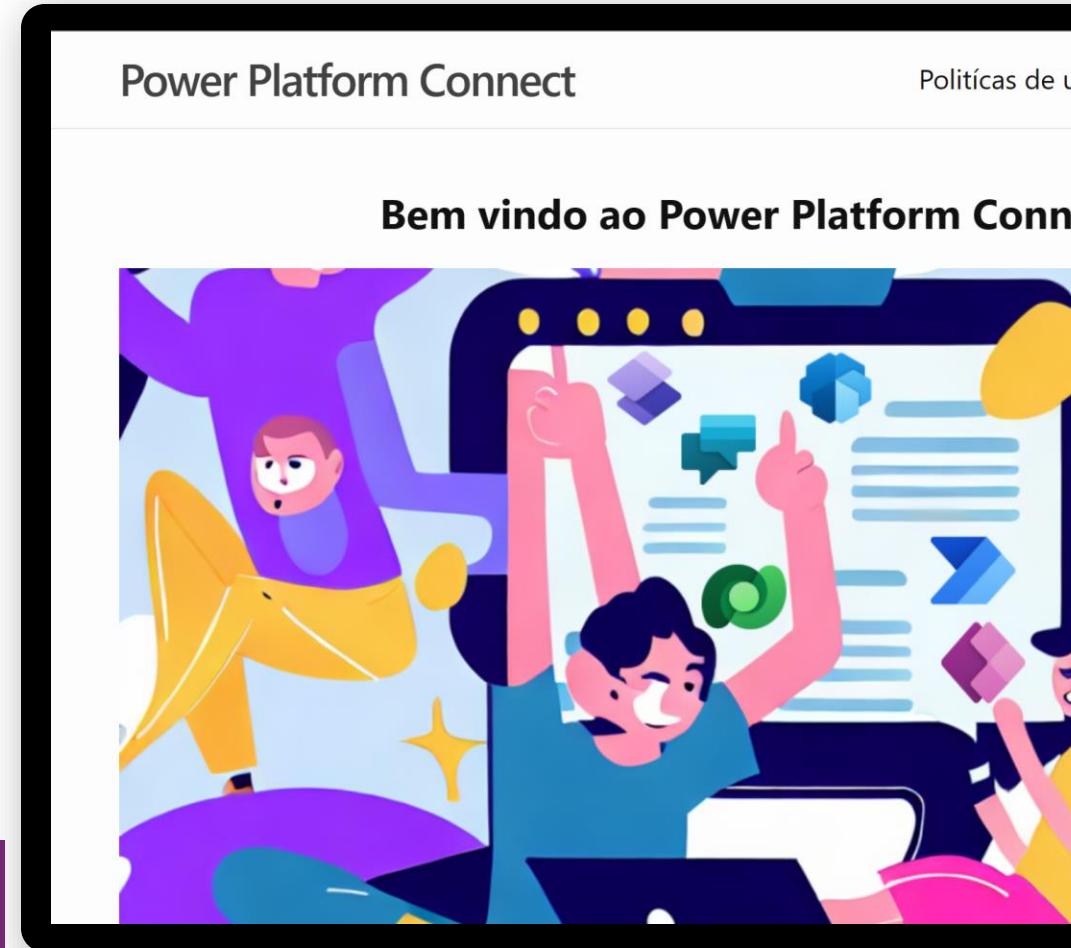
## Power Platform Connect

Site mantido pelos especialistas em Power Platform da Microsoft Brasil.

Nele você encontrará:

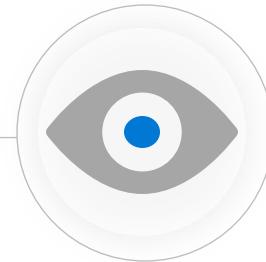
- ❖ **Links** para a **documentação oficial** de todos os produtos da Power Platform
- ❖ **Materiais** utilizados nos eventos conduzidos pelos times de especialistas
- ❖ **Notícias** sobre a Power Platform e **oportunidades de treinamento**
- ❖ **Espaço de discussão** para você esclarecer suas dúvidas diretamente com nosso time.

<https://microsoft.github.io/powerplatformconnect>



# Acelere sua jornada low-code com nosso guia de adoção

## Planeje



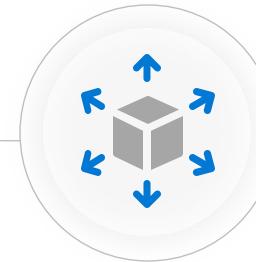
- Kickoff
- Equipe do projeto
- Patrocínio executivo
- Estratégia e visão de adoção
- Critérios de sucesso
- Plano de gerenciamento de mudanças
- Prontidão
- Estratégia de treinamento

## Capacite



- Campeões
- Comunidade
- Recompensas e reconhecimento
- Plano de comunicação
- Consciência
- Suporte contínuo

## Cresça



- Centro de Excelência (CoE)
- Maturidade da adoção
- Plano operacional
- Acompanhamento de sucesso
- Gestão de mudanças
- Calendário de atividades

Saiba mais: [aka.ms/PowerPlatAdoption](http://aka.ms/PowerPlatAdoption)

# Microsoft Unified para aplicações de negócio

Cientes **Unified** migram para nuvem **35% mais rápido<sup>1</sup>** e **reduzem em 67%** os eventos críticos de parada<sup>2</sup>



## Mantenha seu negócio online

24x7, Cobertura de suporte reativo conforme necessário em toda a organização e ambientes, incluindo a gestão do escalonamento



## Acelere seu tempo de adoção

Gerente de conta designado que garante que você tenha os recursos e serviços certos



## Construa o conhecimento da sua equipe

Laboratórios práticos e aprendizado sob demanda para aprimorar sua equipe no Dynamics 365 e no Power Platform



## Remover bloqueios técnicos

Responda e recupere-se de incidentes de forma mais rápida e eficaz



## Melhorar o desempenho da solução

Acesse engenheiros, arquitetos e cientistas de dados da Microsoft para obter críticas



## Aumente sua postura de segurança

Aumente o foco nos controles de mobilidade e segurança do Dynamics 365 e do Power Platform



### Como começar?

Peça ao seu Executivo de Conta da Microsoft ou ao seu Especialista de Soluções de Aplicativos de Negócios para agendar uma reunião com seu Especialista de Suporte para explorar suas opções



Saiba mais| [www.microsoft.com/unifiedsupport](http://www.microsoft.com/unifiedsupport)

<sup>1</sup>Source: The Total Economic Impact™ of Microsoft Unified Support, June 2022: A commissioned study conducted by Forrester Consulting

<sup>2</sup>Source: Using Microsoft Unified Support To Minimize Support TCO, June 2020: A commissioned TEI Spotlight conducted by Forrester Consulting

# Obrigado !

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