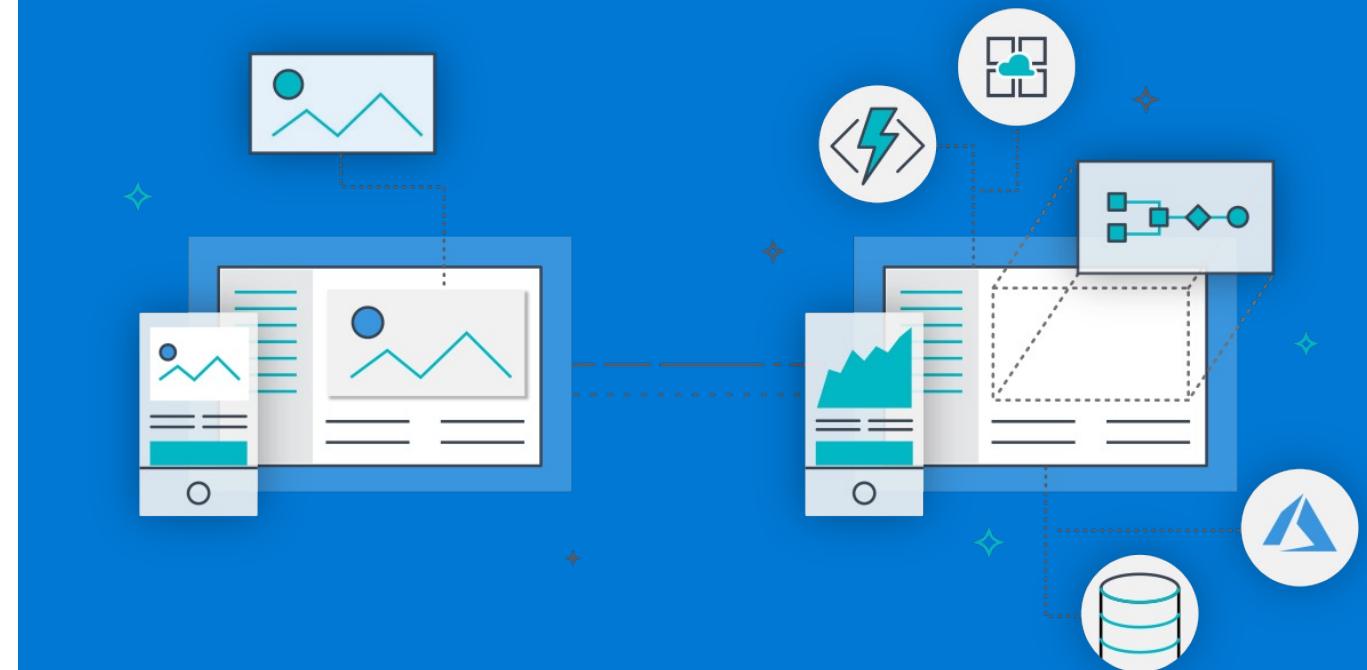


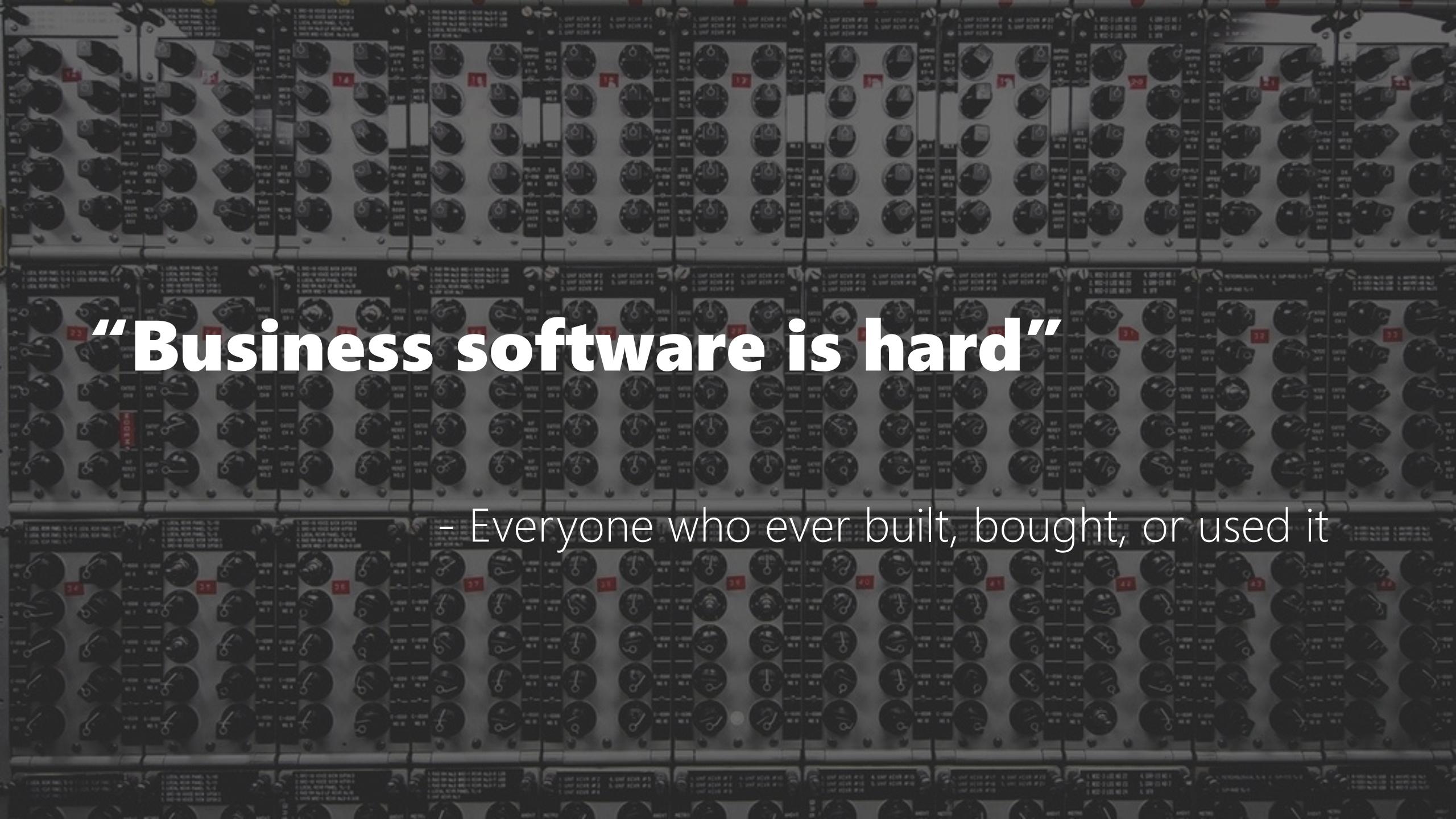
App in a Day

April Dunnam
Principal Cloud Advocate, Microsoft
Youtube.com/@aprildunnam
linkedin/in/aprildunnam

Labs:

<https://aka.ms/advocacy/app-in-a-day>





“Business software is hard”

- Everyone who ever built, bought, or used it



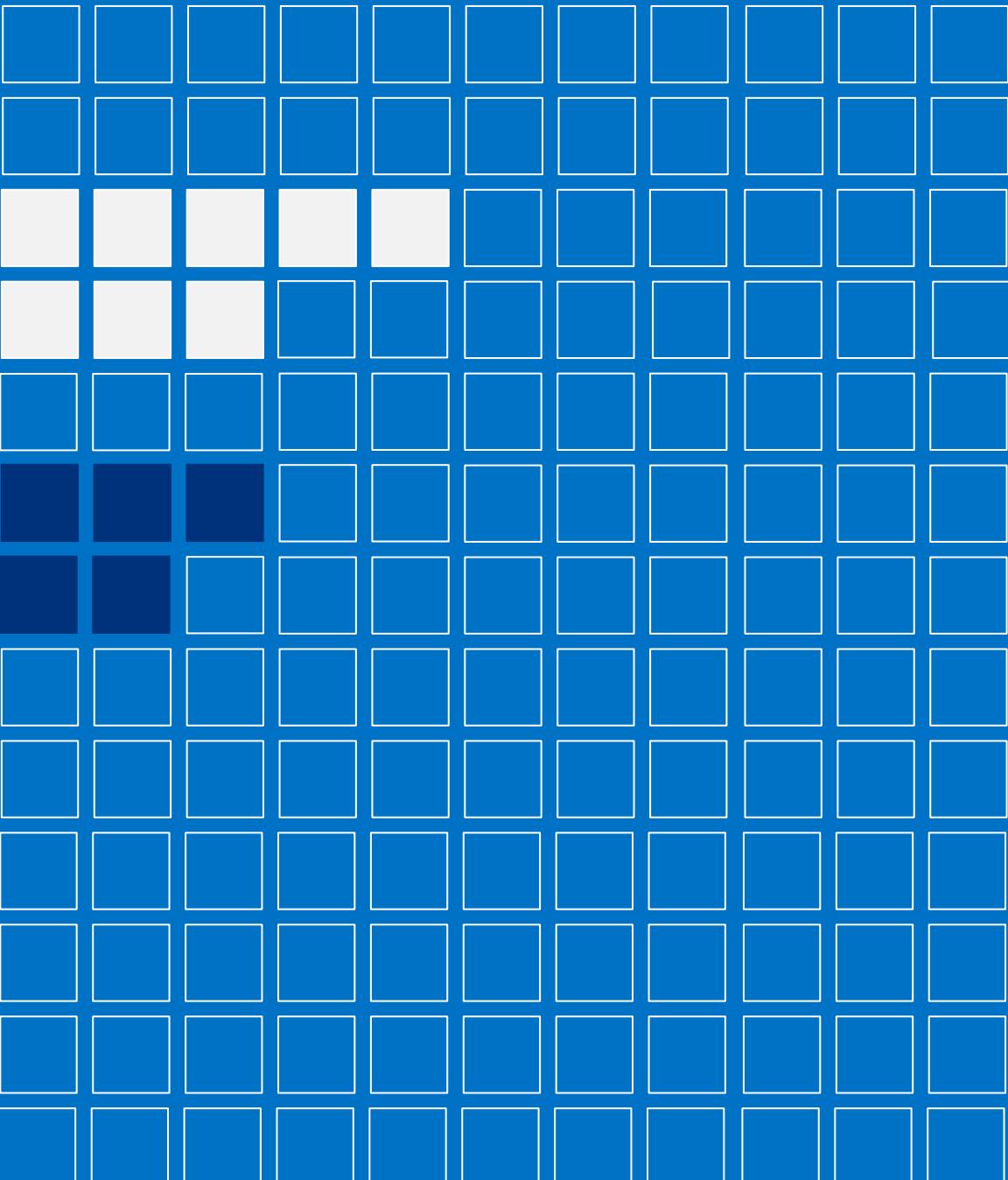
We all
need

apps that work like we do

Only so many problems can be solved with
off-the-shelf SaaS

**Custom software
development**
is time consuming and costly

Everything else is a
missed opportunity
to optimize.



Microsoft Power Platform

Logre más con menos utilizando el conjunto más completo del mundo de herramientas de desarrollo low-code integradas



Power Apps

Para desarrollo de aplicaciones



Power Automate

Para automatización de procesos y flujos de trabajo



Power Virtual Agents

Para chatbots y agentes conversacionales



Power Pages

Para creación de sitios web empresariales seguros y centrados en datos



Power BI

Para la exploración de datos, analíticas e informes



+900 Conectores de datos



AI Builder



Microsoft
Dataverse



Power Fx



Entornos
Administrados

Power Apps picks up where other solutions fall short

Some processes are best solved by off-the-shelf SaaS solutions.

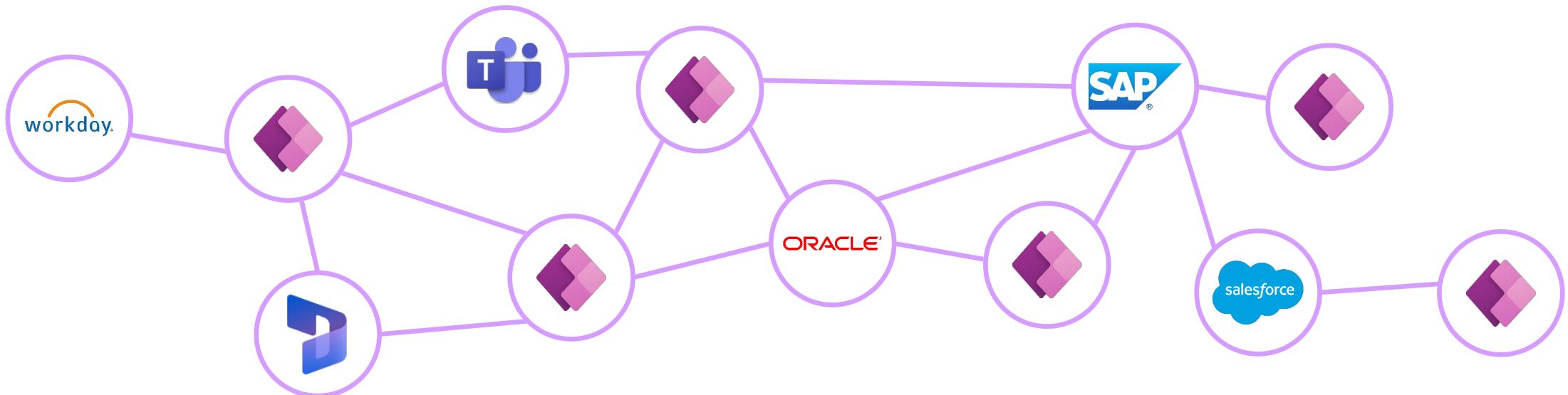
But there isn't always "an app for that."

Some solutions leave missed opportunities for optimization and innovation.

Custom development is needed to fill these gaps with modern solutions.

Developers must find ways to connect these siloed solutions to unlock business data.

The Power Apps low-code development platform solves this for you.



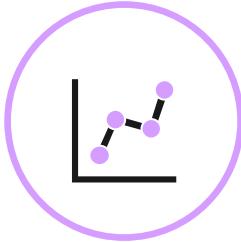
The benefits of a low-code development platform

Low-code development platforms make businesses more productive and agile



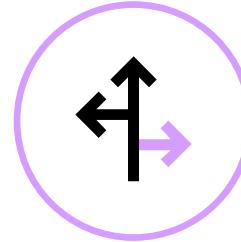
Efficiency

Teams can simultaneously develop apps for multiple platforms and rapidly provide working examples.



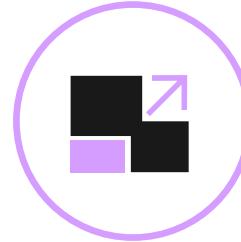
Flexibility

Create flexible apps that accomplish specific tasks. That flexibility is critical for scaling and extending apps to quickly finish projects.



Responsiveness

Easily pivot to accommodate roller-coaster market shifts with new digital initiatives.



Iterability

Provide customers with a consistent, frictionless experience using prebuilt templates and chatbots.

Low-code platforms are also a great option for professional developers. Many low-code platforms are extensible and offer building blocks that are intended for developers to use, which makes these platforms a smart choice for any user.



Accelerate with advanced innovation

Innovate at the speed of your creativity

With a comprehensive set of multi-experience app capabilities



Power Apps

Physical and digital world



IoT Edge



IoT Hub



Mixed reality



Geospatial



Mapping



HoloLens

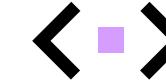
Artificial Intelligence solutions



AI builder



Azure Cognitive Services



Robotic Process Automation



Power Virtual Agents



Power BI

Innovative Integrations



GitHub



Teams



Portals



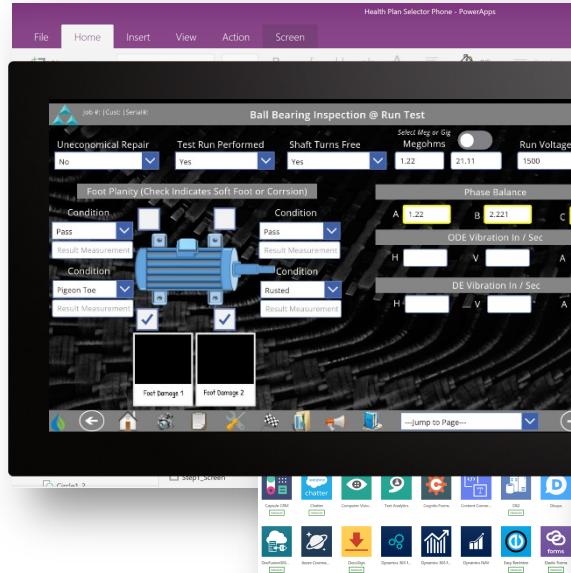
550+ connectors



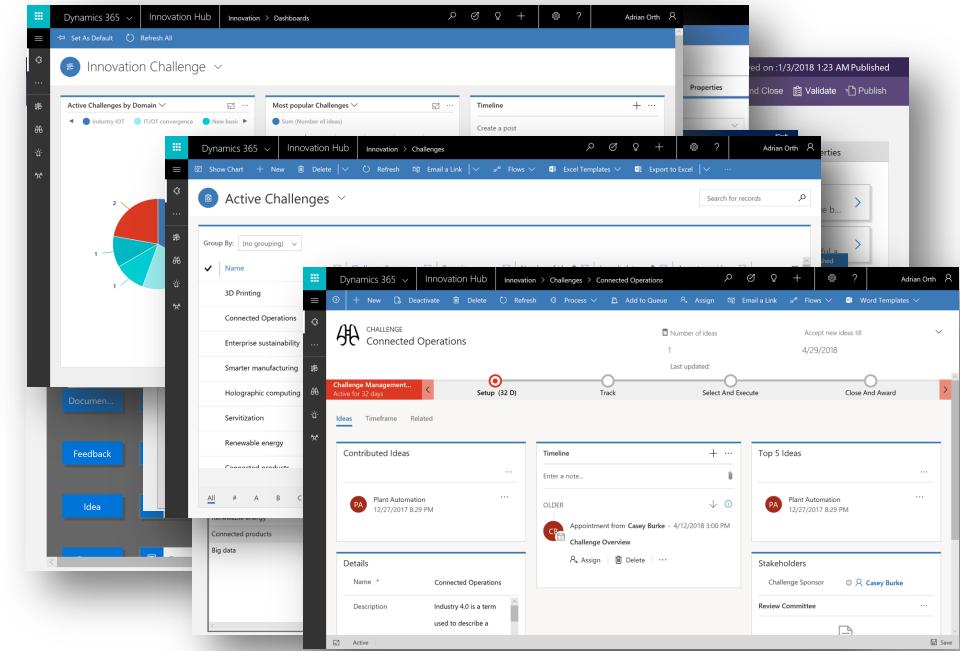
API Management

What is Power Apps?

It makes Apps from data



Canvas apps start with user experience, with pixel-perfect control to build highly customized task- and role-based apps that mash up data from 190+ sources



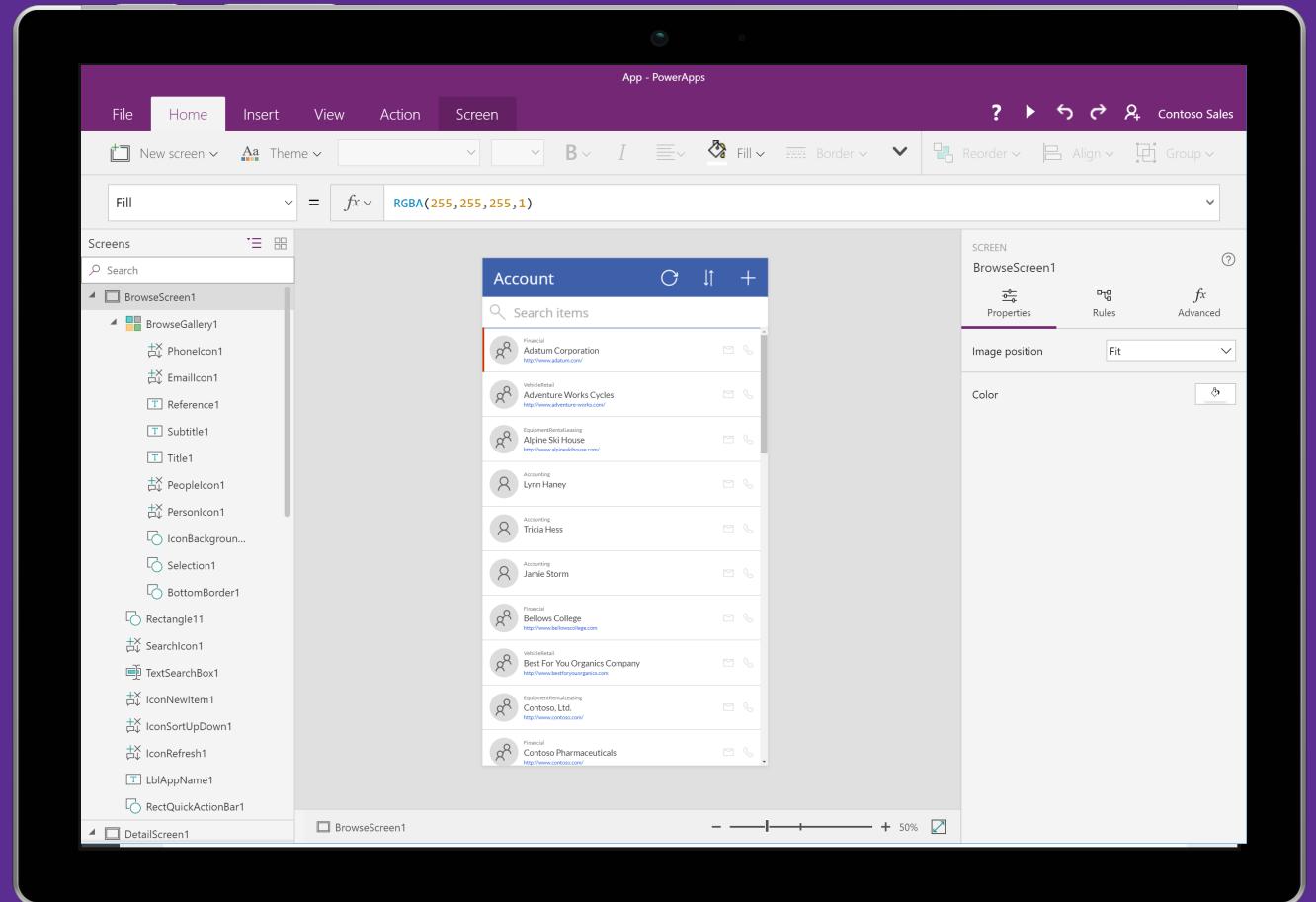
Model-driven apps leverage your data model, relationships, and business processes to automatically generate immersive, responsive applications

Easy Authoring

Truly WYSIWYG – full control over user experience, use it as you build it

Create app logic with familiar Excel-like expressions

Mash up data from multiple sources right at the app level

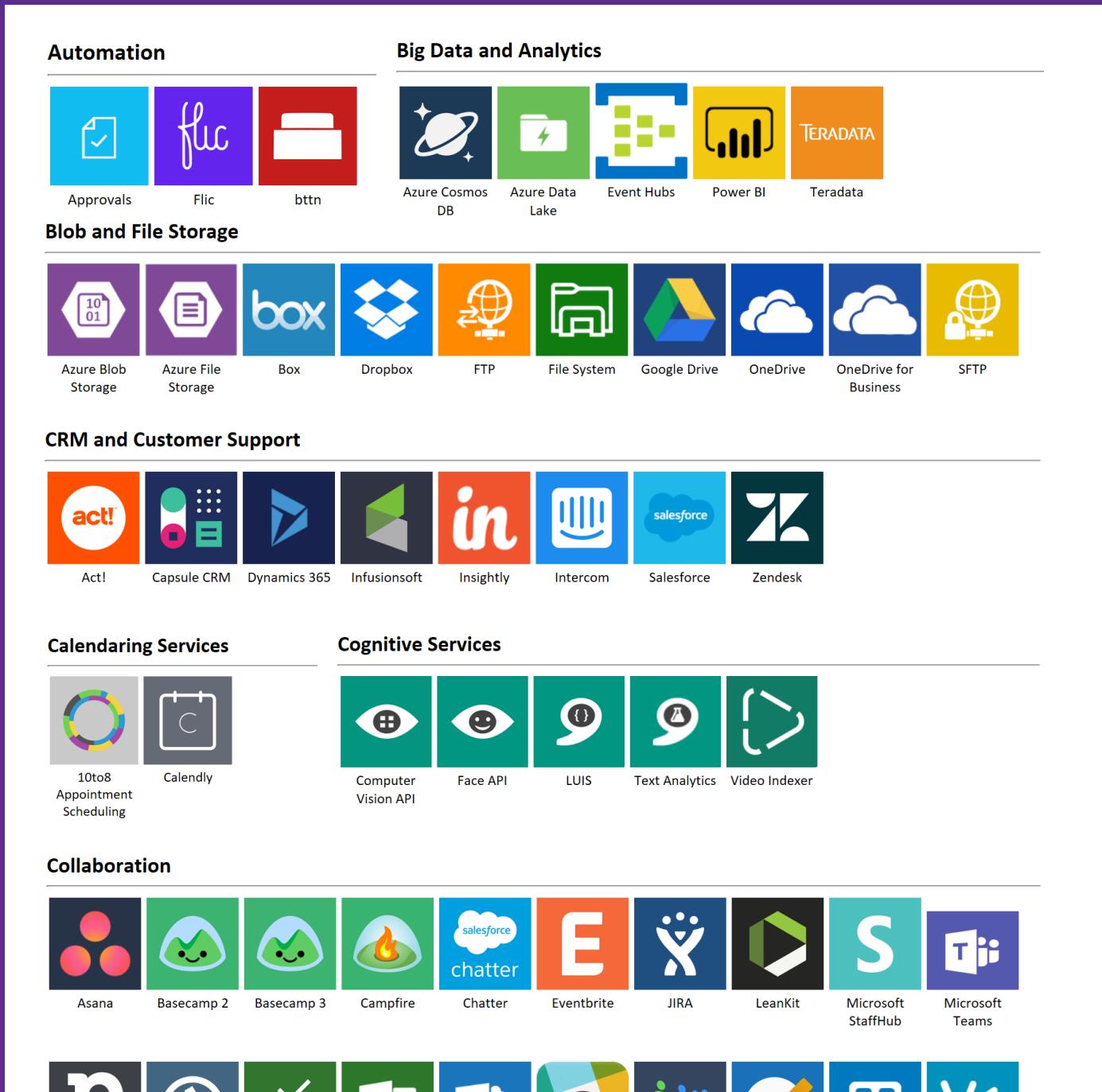


Connected data

Common data service provides a rich platform + standard model that gets creators instantly productive

Add 1000+ connected data sources

Add custom connectors and on-premises sources



Cross-platform

Publish instantly to iOS, Android, Windows, and the web

Sharing apps is like sharing documents

Manage across environments

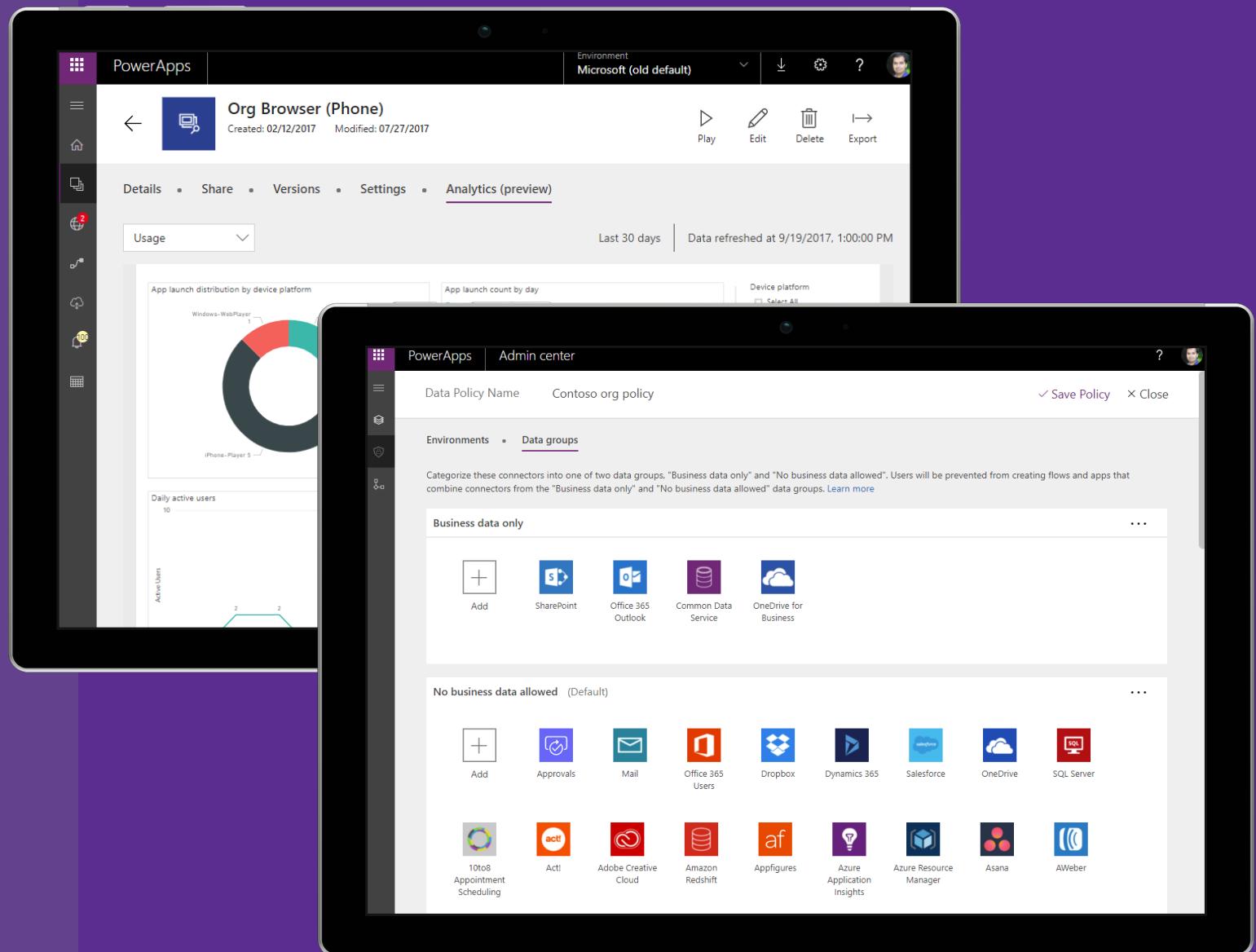


Enterprise Ready

Centrally view app telemetry and manage apps

Set DLP policy on data and connectors

Compliance with 13+ standards inc.
HIPAA, EU Model Clauses & SOC

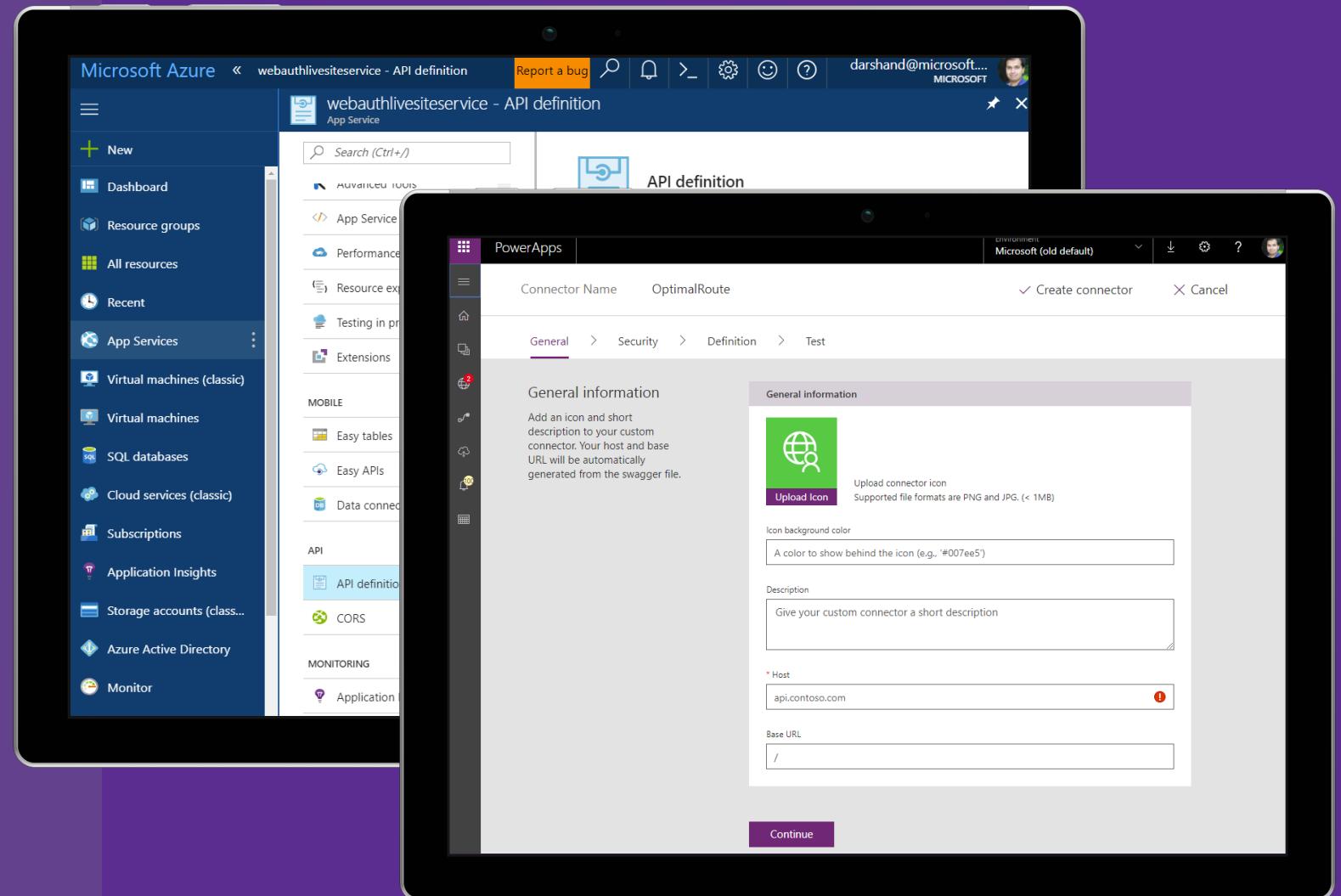


Pro developers welcome...

Build apps that go beyond what you get in the box

Build reusable custom app components & connectors

Leverage the full power of Azure capabilities



Power Apps – Example Apps

Retail Apps ▾

[MCS Center of Excellence \(COE\) for Power Platform Offering](#) - Contact [Bert Wijns](#) (App Store owner) - [App Store Statistics](#)

The grid displays ten retail applications:

- Supply Chain Assistant (Retail)
- Consumer Packaged Goods (Retail)
- Clienteling App (Retail)
- Restaurant Food Prep Planning and Guide (Retail)
- Customer Insights Retail App (Retail)
- Retail Store Hours Virtual Agent (Retail)
- Store Audit Stock Inventory (Retail)
- Retail Sales Buddy (Retail)
- Nightly Closing Notes (Retail)
- Customer Insights and Feedback App (Retail)

Banking Apps ▾

[MCS Center of Excellence \(COE\) for Power Platform Offering](#) - Contact [Bert Wijns](#) (App Store owner) - [App Store Statistics](#)

The grid displays ten banking applications:

- Investment Bank Quote Approval (Banking)
- Demo Flow | Build Agile Business Process Automating Approvals for Loan Applications in minimal time (Banking)
- Customer Insights Banking App (Banking)
- Call Report Application (Banking)
- Banking Mortgage portal (Banking)
- Finance Regulatory App (Banking)
- Retail Banking Customer Journey (Banking)
- Mobile Client 360 (Banking)
- Mobile Financial Adviser 360 (Banking)
- Banking Client Consultation (Banking)

Intelligent Automation and RPA ▾

[MCS Center of Excellence \(COE\) for Power Platform Offering](#) - Contact [Bert Wijns](#) (App Store owner) - [App Store Statistics](#)

The grid displays six applications across different industries:

- Hospital Staffing SAP Automation (Healthcare)
- Demo Flow | Build Agile Business Process Automating Approvals for Loan Applications in minimal time (Banking)
- Introduction to the 7100 dispenser (Manufacturing & Utilities)
- Claims Processing Automation (RPA) (Healthcare)
- Invoice Processing Automation (RPA) (Cross-Industry)

COVID-19 Apps ▾

[MCS Center of Excellence \(COE\) for Power Platform Offering](#) - Contact [Bert Wijns](#) (App Store owner) - [App Store Statistics](#)

The grid displays twenty COVID-19 related applications across various sectors:

- COVID Arrival Testing (Public Sector)
- COVID Contact Tracing (Public Sector)
- COVID Outbreak Management (Public Sector)
- Return To Work - Virtual Agent (Return To Work)
- Return To Work Facility Management (Return To Work)
- COVID-19 Analysis dashboard (Cross-Industry)
- COVID-19 Emergency Response solution (Healthcare)
- Covid-19 Power Platform Template (Healthcare)
- COVID-19 Crisis Mgmt Multilang. (Cross-Industry)
- Patient Dashboard 360 (Healthcare)
- Hospital Shift Mgmt. and Optimization (Healthcare)
- Retail Store Hours Virtual Agent (Retail)

DEMO

Power Apps

Hands On Lab

Create a Machine Ordering Canvas App

<https://aka.ms/advocacy/app-in-a-day>

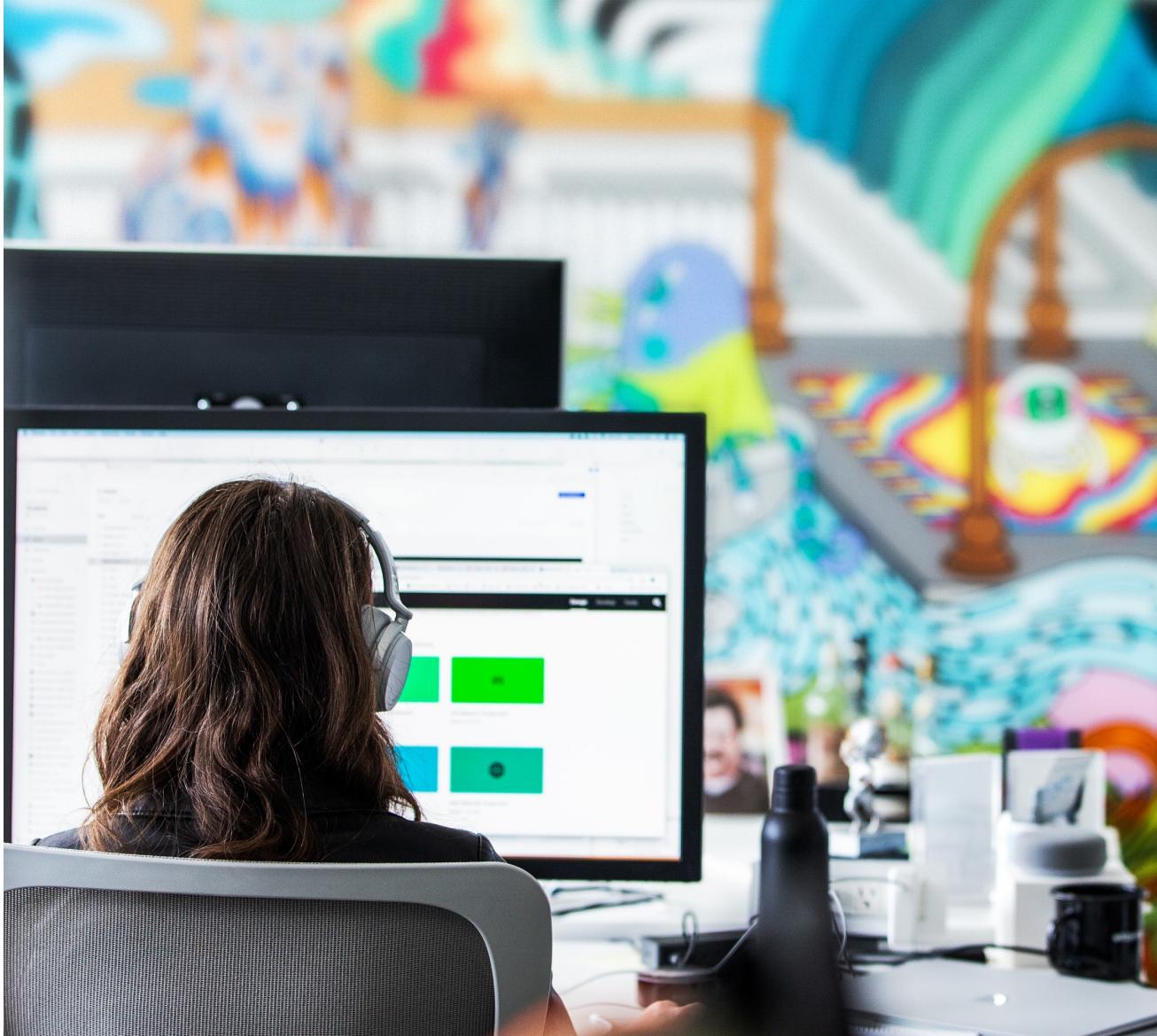
Hands On Lab

Create a Dataverse Table for the
machine ordering app

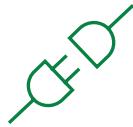
<https://aka.ms/advocacy/app-in-a-day>



Microsoft Dataverse



Two types of data



External (Connectors)

- Access your most used data sources with nearly 800 data connectors
- Connectors enable you to connect apps, data, and devices in the cloud
- Examples of popular connectors include Salesforce, Office 365, Twitter, Dropbox, Google services, and more.
- You can also create custom connectors to meet any of your business needs.



Internal (Dataverse)

- Store all your data as individual pieces in a single source.
- Create one or many database instances in Microsoft Dataverse
- The common data model empowers makers to create their solutions even faster
- Share your solutions across your organization to gain even more collaboration

Microsoft Dataverse

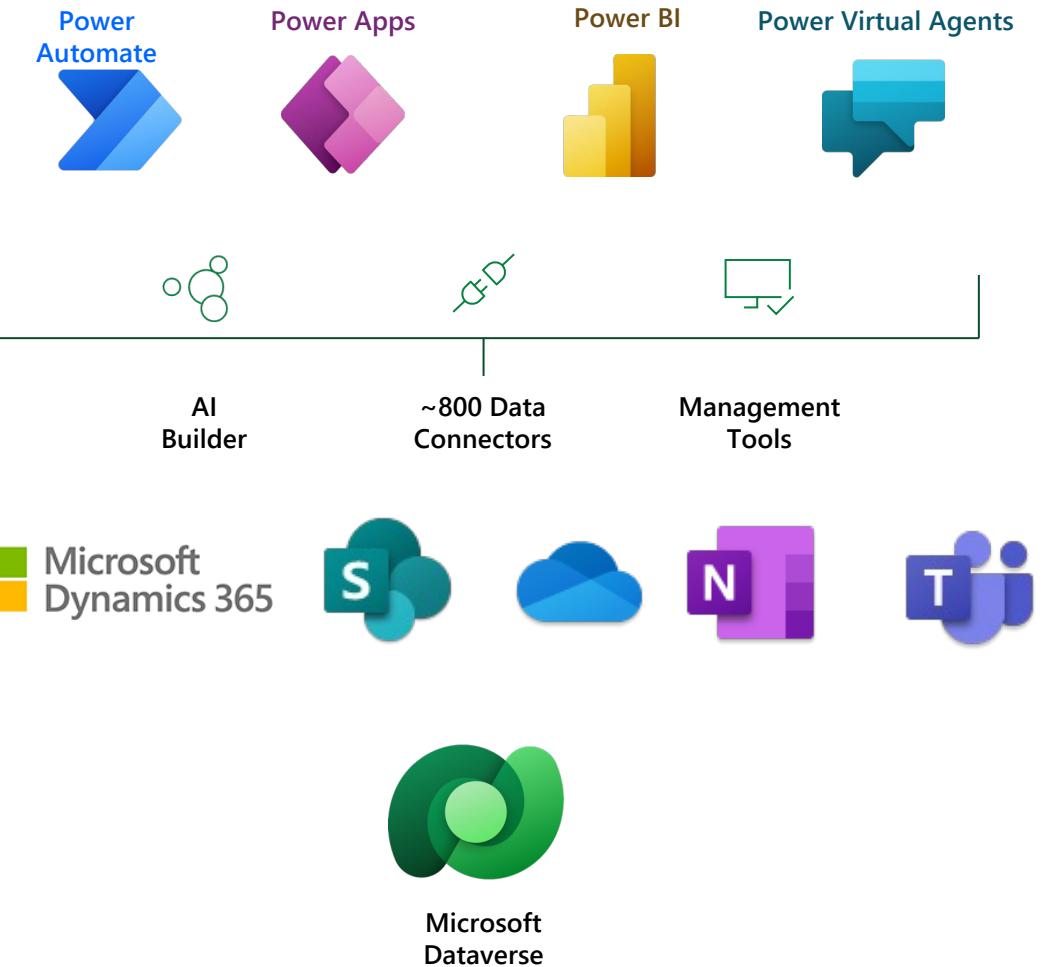
Dataverse is an easy, scalable solution for your data across a range of Microsoft services

Microsoft Dataverse is the data platform for Microsoft Power Platform

Dataverse is the platform on which Dynamics 365 solutions are built

Dataverse provides support for native Teams, SharePoint, OneDrive, and OneNote integration

Microsoft Dataverse for Teams is an essential subset of Dataverse capabilities included at no additional cost



Dataverse is much more than a database



More than a server

Although the Dataverse database is based on Azure SQL, it is so much more than a SQL server



An actionable platform

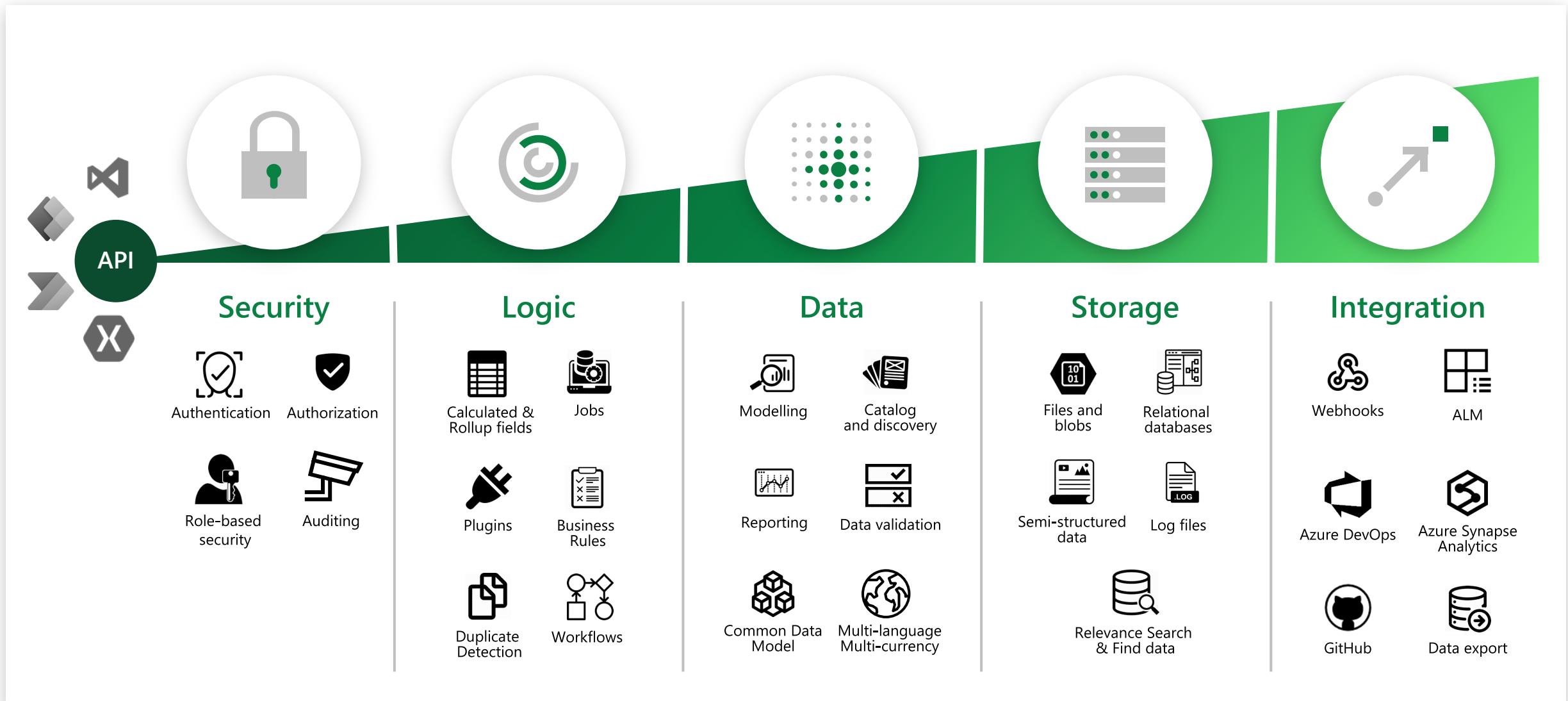
Dataverse comes with a rich system of actionable features that enable it to operate as a platform to do more with your data



Out-of-the-box controls

Dataverse provides capabilities like security and business logic built into the platform greatly simplifying your time to deliver value

Microsoft Dataverse – what's in the box?



Dataverse

Tables that represent commonly used concepts and activities across a variety of business & app domains

Ability to **extend** the standard entities by adding **custom columns** and **relationships**

Add **custom tables** to support your scenario and application

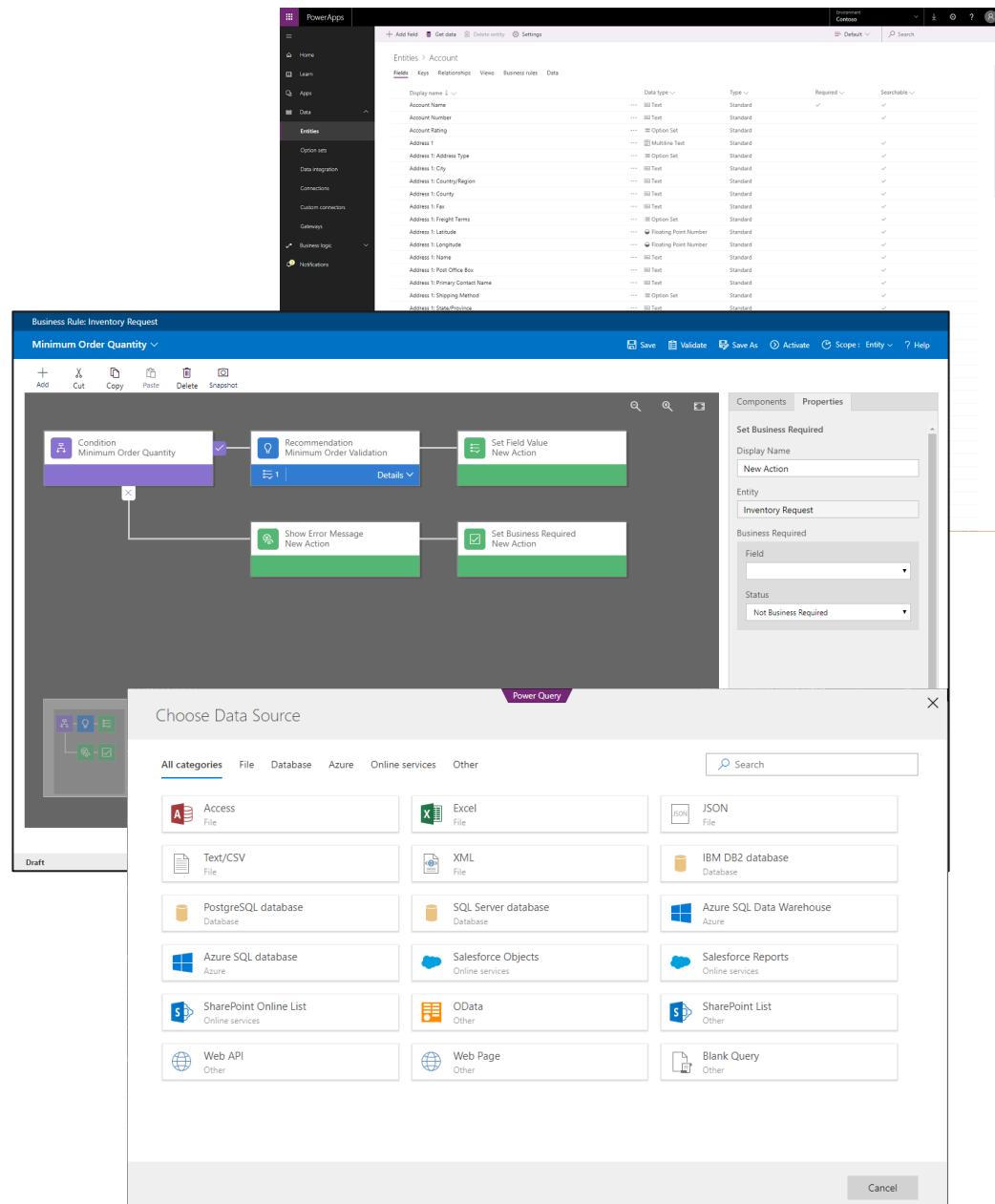
Create **calculated and roll up columns** to provide consistent calculations across apps

Define **business rules and validation** to ensure data quality

Easily **import and synchronize** your data using **Power Query**

Sophisticated **security model** providing row level security and even models hierarchies.

Production ready **pro developer SDK** allowing Dataverse access from any pro-dev application



Microsoft Dataverse

Runs on and extends with Microsoft Azure



Compute

Load Balancer



Web

Jobs

Sandbox

Reporting



Storage

SQL Elastic Pools

Blob Storage

Cosmos DB

Search

Data Lake



Events + Extensibility

Azure Functions



Event Hubs



Kubernetes Services



Teams is now a full low-code platform

Hub for users to **discover and use** apps, bots, data, and automation.

Embedded low-code services to provide **solutions for Teams**.

Building blocks to power **customized solutions**.

Relational database for Teams users.



Microsoft Teams platform



Power Apps



Power Virtual Agents



Power BI



Power Automate

Microsoft Dataverse for Teams tables

Built on Microsoft Dataverse

Scalable data modeling and storage options



SharePoint Online Lists

- Built and maintained by **citizen developers**
- Connect natively with a **standard connector**
- Good for **low volume and simple non-relational data model** shared across O365 and Power Platform
- **Simple Permission Groups** managed by IT Professionals and super users



Dataverse for Teams

- Built and maintained by **citizen developers**
- Connect natively with **Microsoft Teams**
- Good for **low volume of relational data structures** to use exclusively within Microsoft Teams
- **One-click upgrade to Dataverse**
- **OMG** (Owner, Member, Guest) permissions



Microsoft Dataverse

- Built and maintained by **super users**
- Connect natively with a **premium connector¹**
- Good for **large volume of transactional data** (Data, Files, Log)
- Out-of-the-box **multi-language and multi-currency support**
- **Advanced Role Based Access Control (RBAC)**
- Auto **Load-Balancing, Backup, Restore and audit log**
- Customizable **duplicate detection** and **business rules**



On Premises Data

- Built and maintained by **IT professionals**
- Connect with an **On-Premises data gateway¹**
- Good for connecting to **legacy master data and systems**
- **Share same Gateway** across Power Apps, Power Automate and Power BI
- Can be configured for **load balancing**



SQL On Azure

- Built and maintained by **IT professionals**
- Connect with a **premium connector¹**
- Good for **very large volumes of master data** shared with heterogeneous systems
- Role Based Access Control (**RBAC**) **customizable by IT Professionals**
- Data Quality Tools and Business rules **customizable by IT Professionals**

¹Feature requires standalone Power Apps or Power Automate user license

DEMO

Dataverse

Hands On Lab

Create a Dataverse Table for the
machine ordering app

<https://aka.ms/advocacy/app-in-a-day>

Tips and Tricks

Delegation - Understanding where query options are applied

- Where the query options are applied can impact performance and actual results.
- Many apps supports delegation of certain query options allowing them to be processed on the server instead of the client.
- Server processing is the goal because it is more efficient and produces accurate results.
- When server processing is not available for an option, the first 500 records that apply from the server are returned and then the client processing of the option occurs on that set of data (configurable from 1-2000 records).

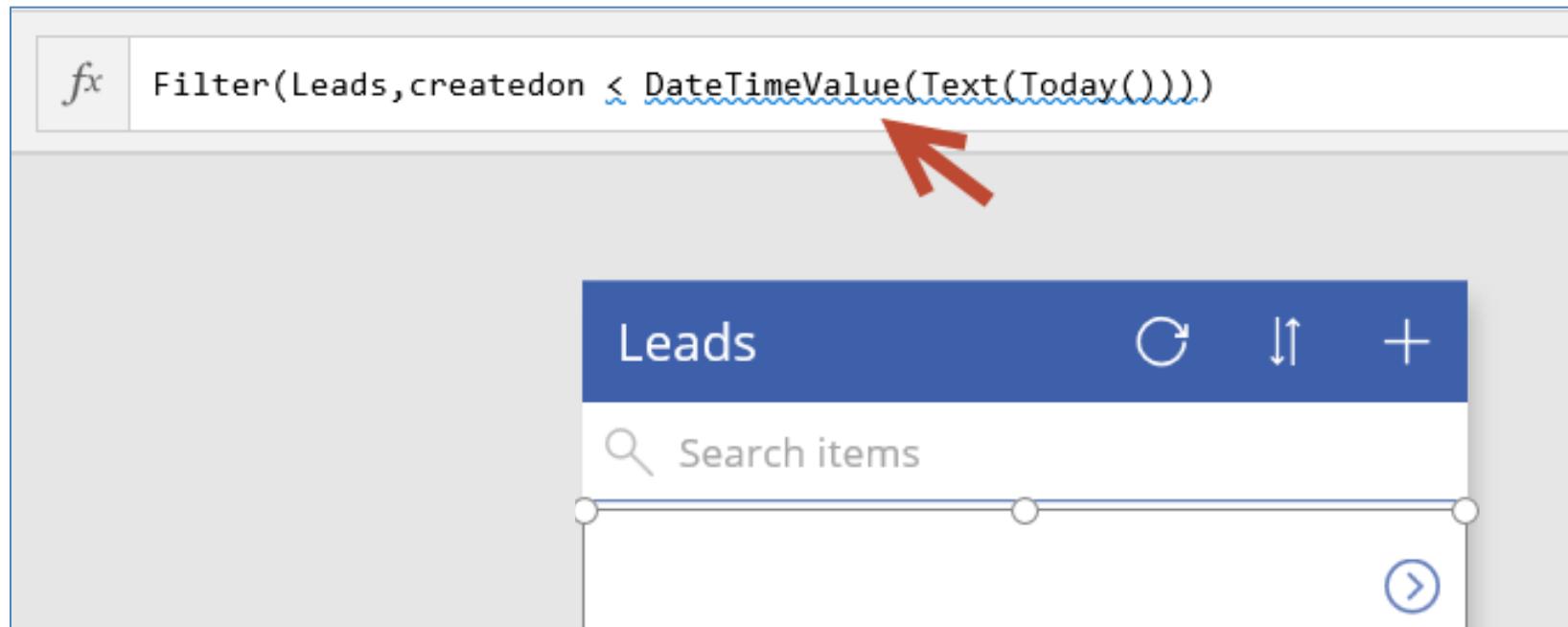
Query options that ARE delegated to server

- Not, IsBlank, <, <=, =, <>, >, >=, +, -, StartsWith
- And (&&), Or (||), Not (!), In (recently included context variables)
- Sort and SortByColumns are also performed on the server
- Keep in mind, if the right side of the comparison includes a formula you might have to resolve the formula separately
 - E.g. createdon < Today()

Query options that are NOT delegated to server

- [**If**](#), [**ExactIn**](#)
- [*****](#), [**/**](#), [**Mod**](#)
- [**Concatenate**](#) (including [**&**](#))
- String manipulation functions: [**Lower**](#), [**Upper**](#), [**Left**](#), [**Mid**](#), [**Len**](#), ...
- Signals: [**Location**](#), [**Acceleration**](#), [**Compass**](#), ...
- Volatiles: [**Now**](#), [**Today**](#), [**Rand**](#), ...
- Table shaping: [**AddColumns**](#), [**DropColumns**](#), [**ShowColumns**](#), ...
- Aggregates: [**Sum**](#), [**Average**](#), [**Min**](#), ...
- [**First**](#), [**FirstN**](#), [**Last**](#), [**LastN**](#)
- [**CountRows**](#), [**CountA**](#), [**Count**](#)
- [**Collect**](#), [**ClearCollect**](#)
- [**CountIf**](#), [**RemoveIf**](#), [**UpdateIf**](#)
- [**GroupBy**](#), [**Ungroup**](#)

How to tell if your query options aren't delegated to server



Filtering Data

- Filter function applies the formula to each record
- Can include =,<>,<,>,>=,<=,&&,|| and In operators

```
fx Filter(Contacts, statuscode=1)
```

```
fx Filter(Contacts, _parentcustomerid_value in "000e5e00-7695-e611-80ff-b4b52f67b66a")
```

```
fx Filter(Contacts, statuscode=1, _parentcustomerid_value in "000e5e00-7695-e611-80ff-b4b52f67b66a")
```

```
fx Filter(Contacts, statuscode=1 || _parentcustomerid_value in "000e5e00-7695-e611-80ff-b4b52f67b66a")
```

Search

- Search for a single text value in one or more columns



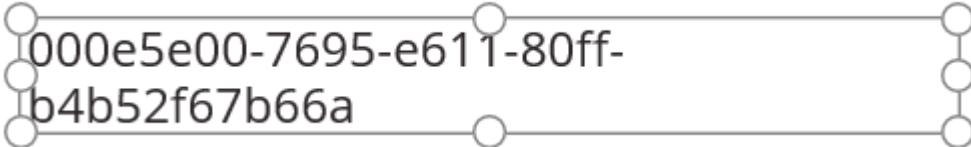
Items = *fx* `Search(Contact, TextSearchBox1.Text, "firstname", "lastname", "telephone1")`

Lookup

- Find a single record and reduce it to all columns or a single value

Text = f_x _parentcustomerid_value

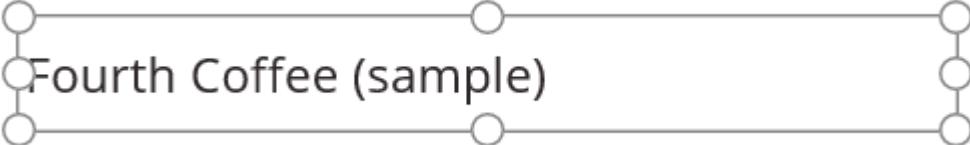
Shows :



000e5e00-7695-e611-80ff-
b4b52f67b66a

Text = f_x LookUp(Accounts, accountid = _parentcustomerid_value, name)

Shows :



Fourth Coffee (sample)

Sorting Data

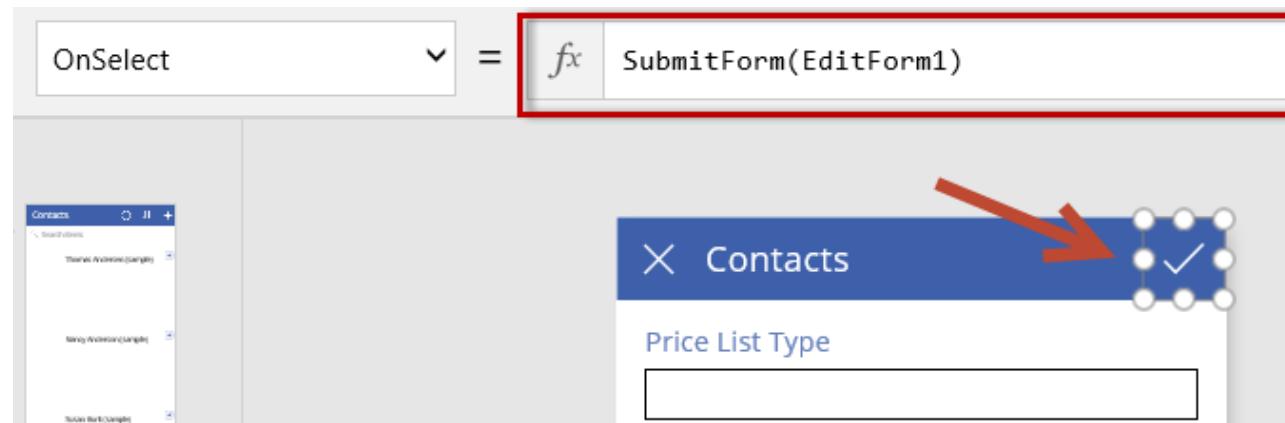
- Sort can sort by a simple formula e.g. numberofchildren + numberofexpectingchildren

```
Items = fx Sort(Contact, numberofchildren)
```

```
Items = fx SortByColumns(Contact, "statuscode", [2,1])
```

Functions for working with forms

- SubmitForm – causes save to happen on new/changed data
- NewForm – Sets a form up for creating a new record
- EditForm – Sets the form into edit mode
- ResetForm – reset the form the initial state e.g. cancel edits



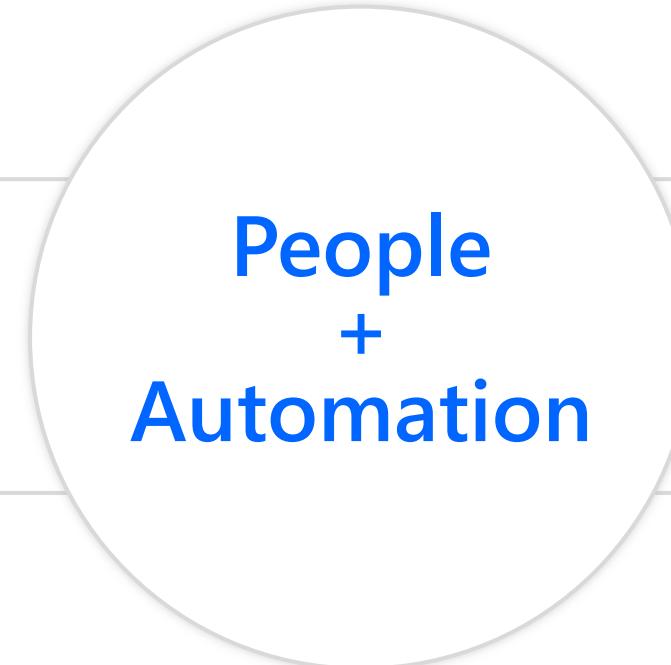
Working with Dates

- Now() returns current date/time
- Today() returns current date with time set to midnight
- Use DateAdd() to add or subtract days, months, years
- Dynamics 365 stores dates in UTC, however they are adjusted depending on field metadata behavior setting
- User local behavior date/time fields are handled
- Time zone independent behavior date/time fields must be converted prior to save to UTC

Hands On Lab

Create a Model Driven App for Machine Ordering

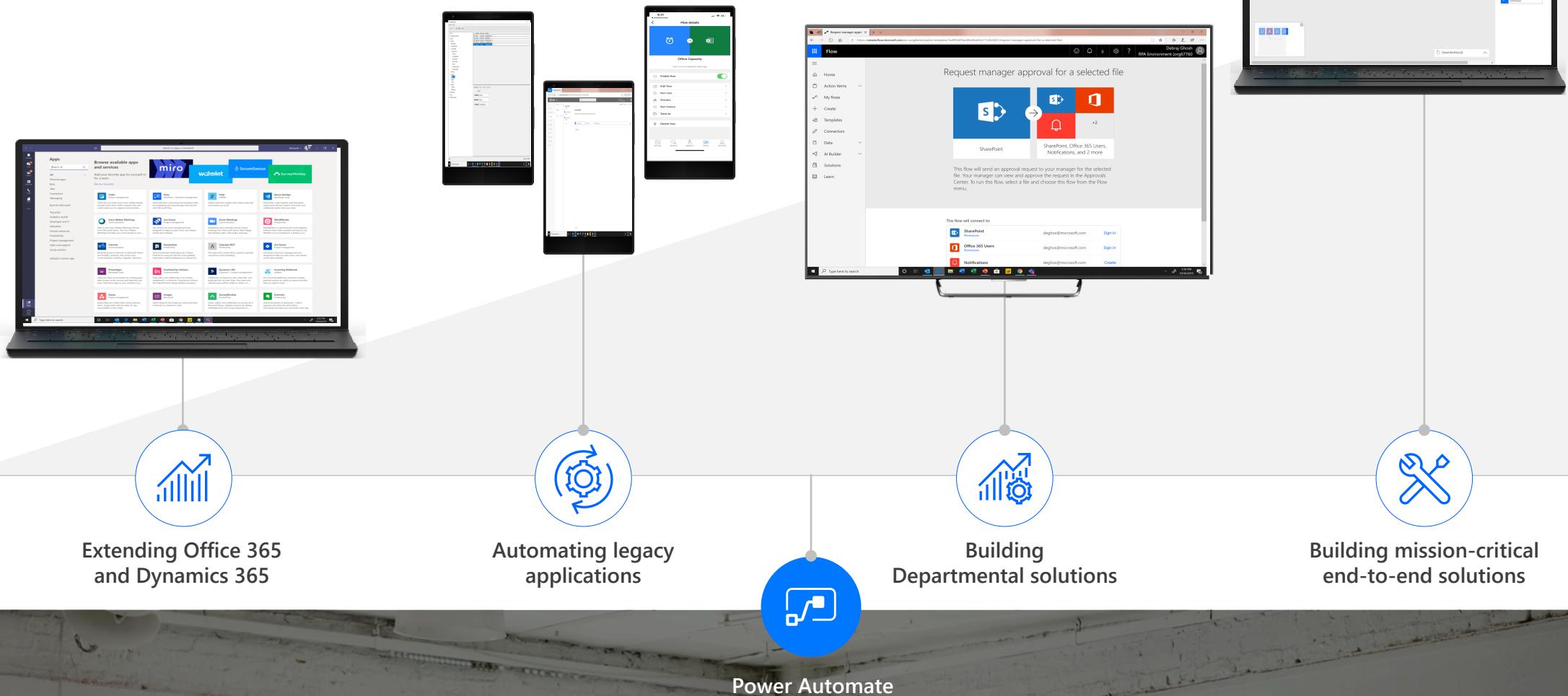
<https://aka.ms/advocacy/app-in-a-day>



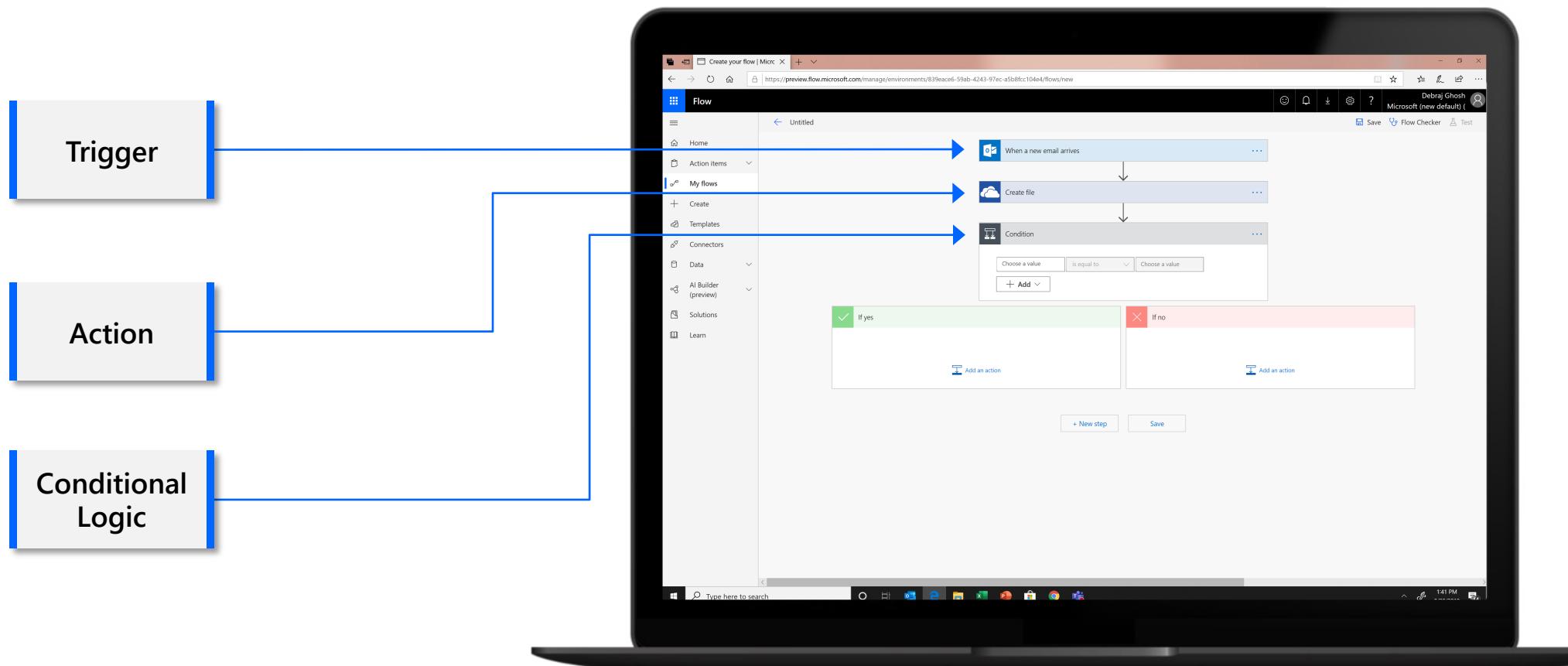
Empower your people to focus on what matters most

Take care of what's important. Automate the rest.

Enabling Digital Transformation Across the Organization



The Basic Power Automate UI



Trigger

Three Types of Triggers



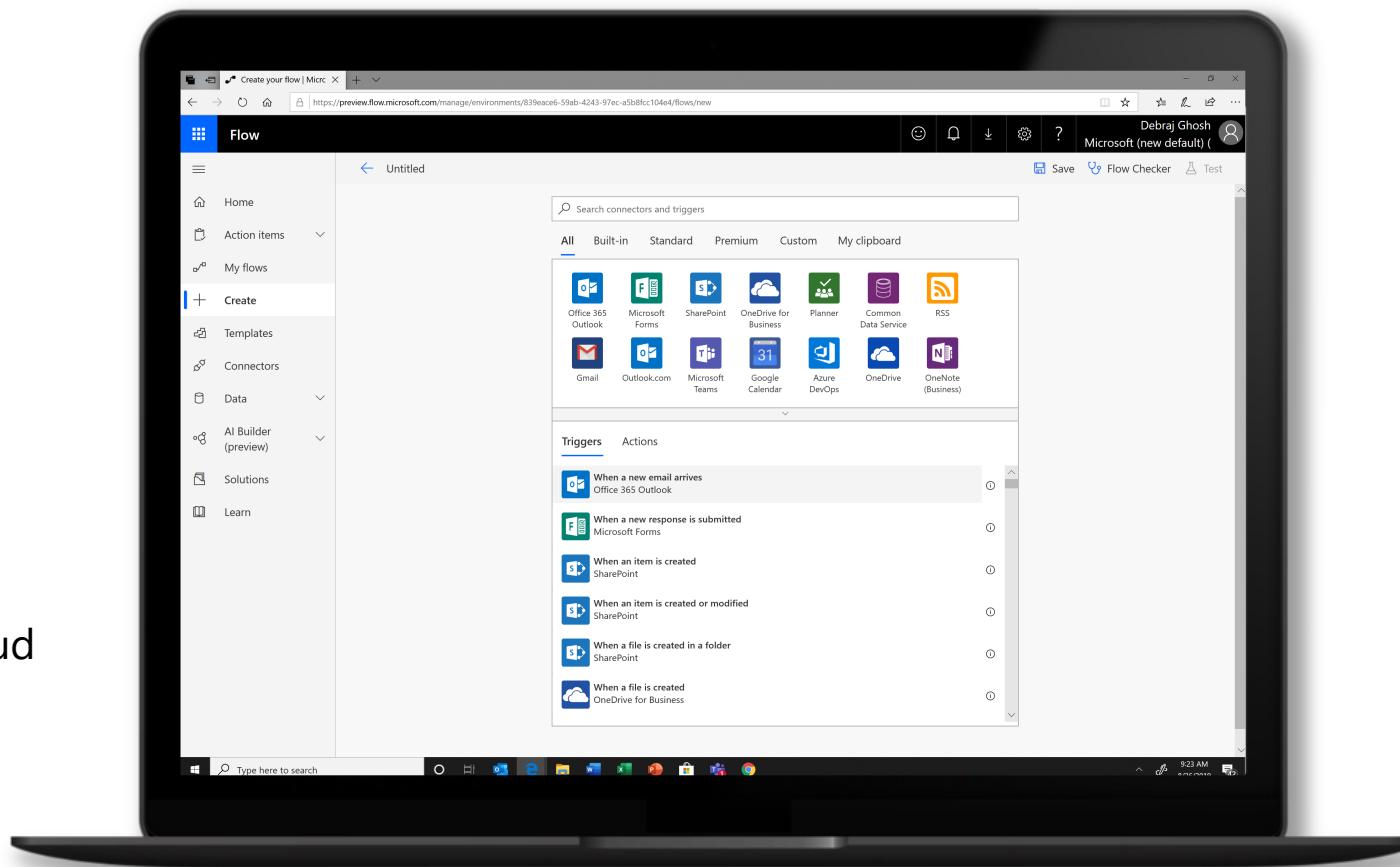
Manual Action



Run on a Schedule



Run based on an event that happens in a cloud or on-prem service

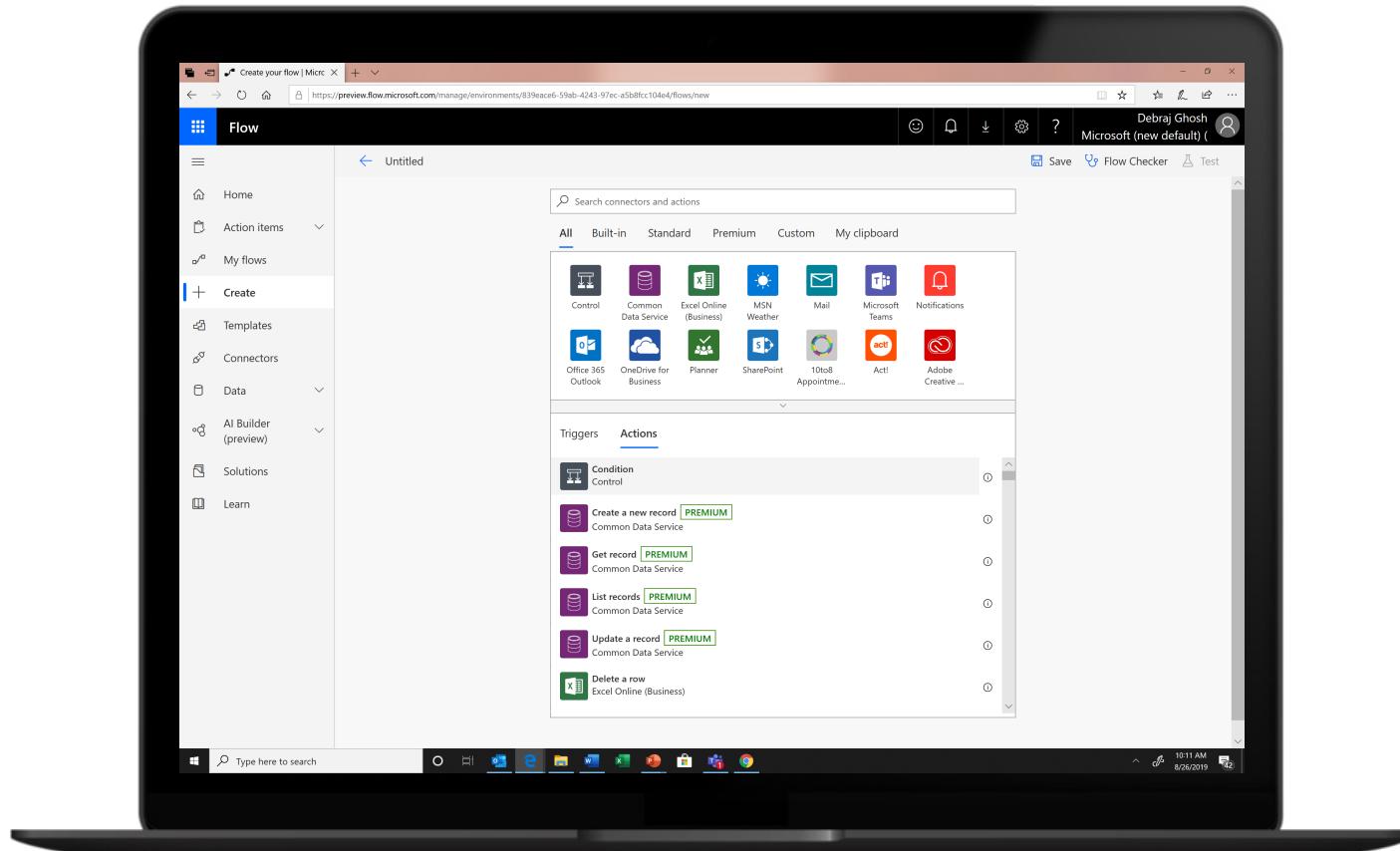


Microsoft
Power Automate

Action



A Flow 'Action' is any number of steps that run after the trigger.

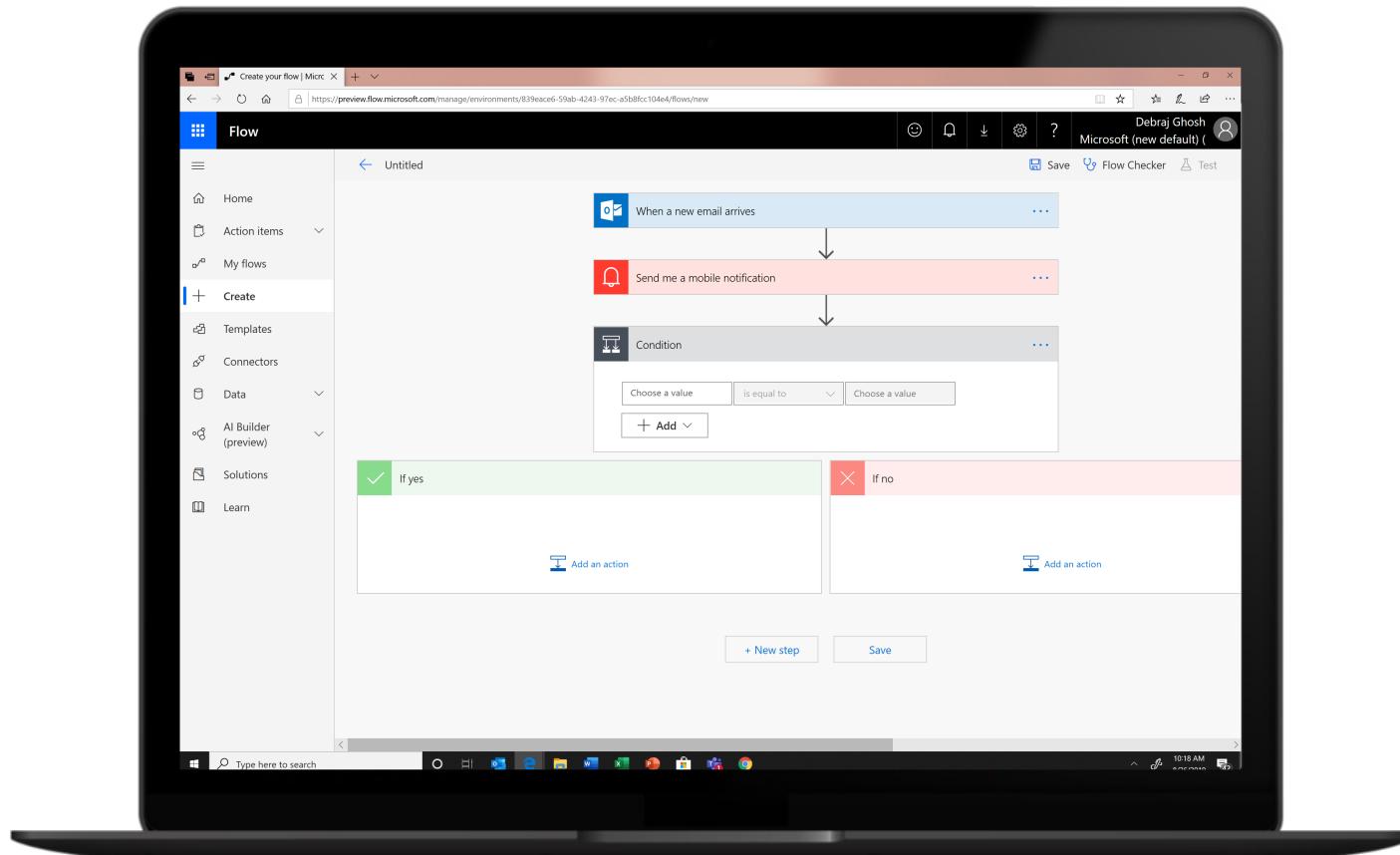


Microsoft
Power Automate

Conditional Logic



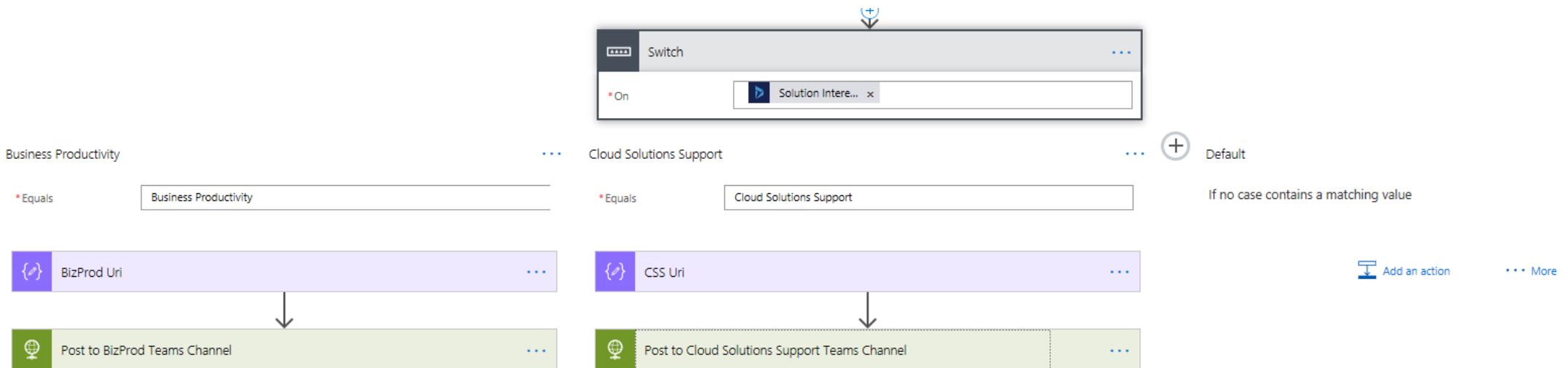
Conditional logic enables automated decisions based on a given scenario.



Microsoft
Power Automate

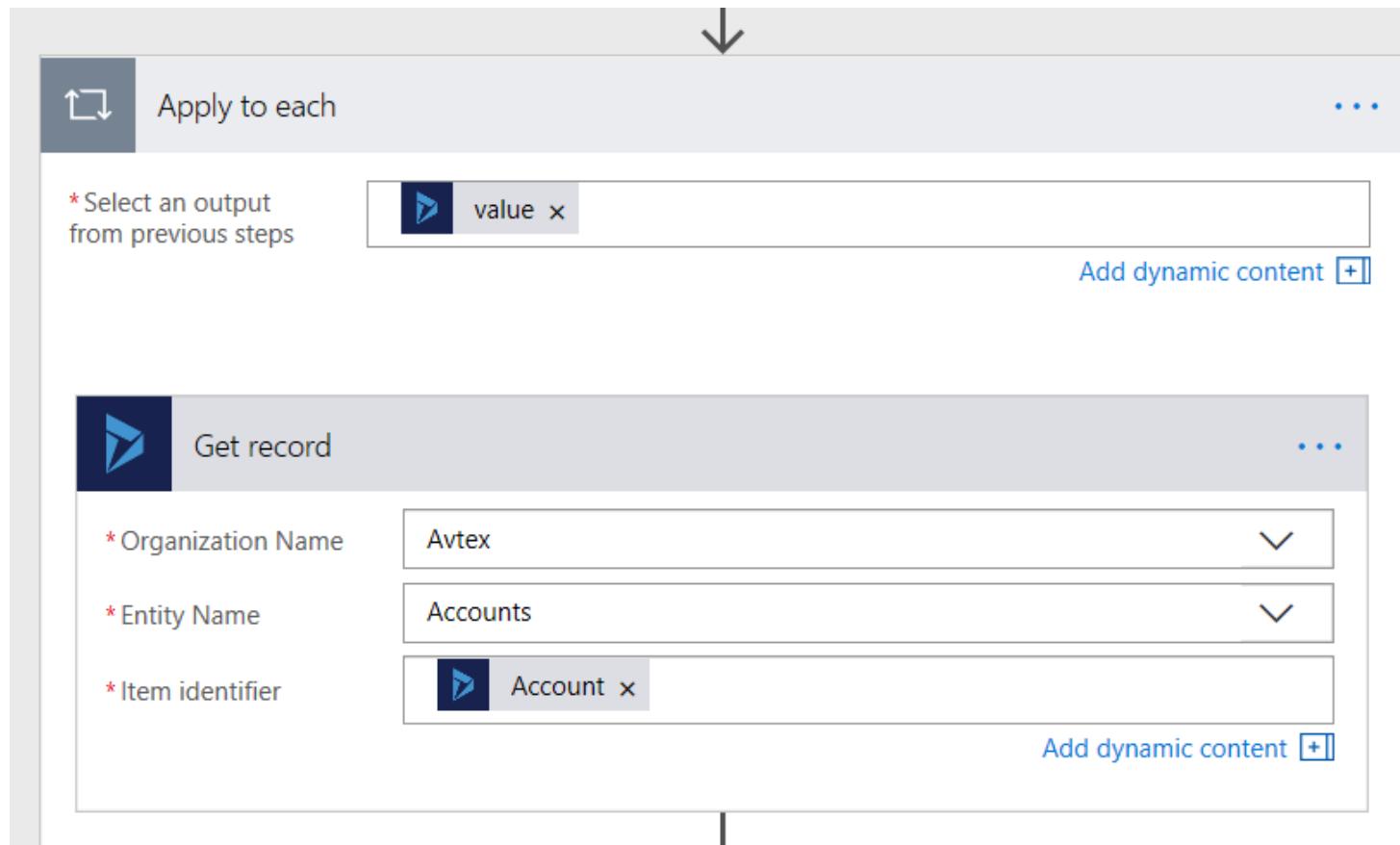
Flow Core Concepts

Switch – different actions based on a single value



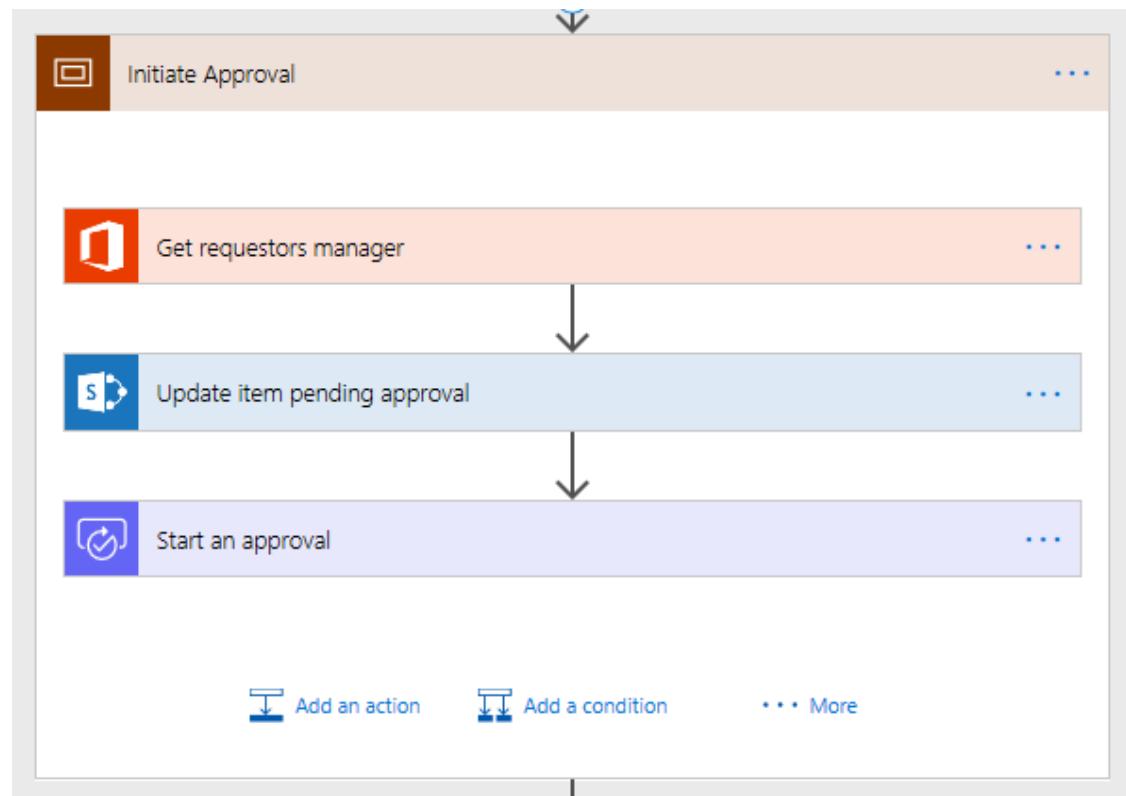
Flow Core Concepts

Apply to Each – loops
through a collection of items

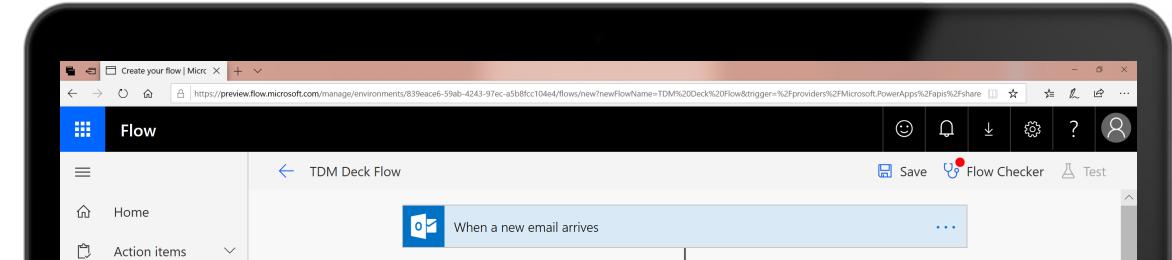
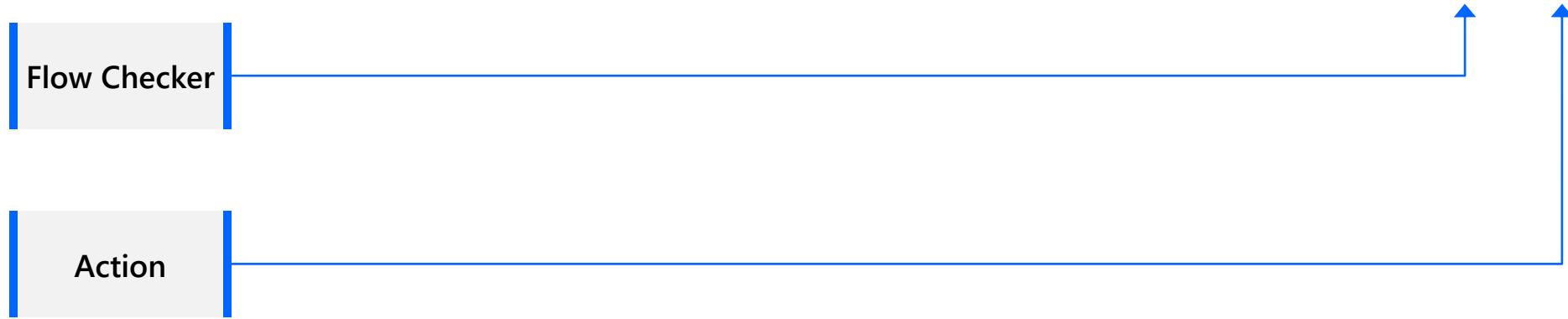


Flow Core Concepts

Scopes – group actions together



Power Automate Offers Easy Checking and Real-time Testing



Microsoft
Power Automate

Hundreds of Out of the Box, Customizable Templates



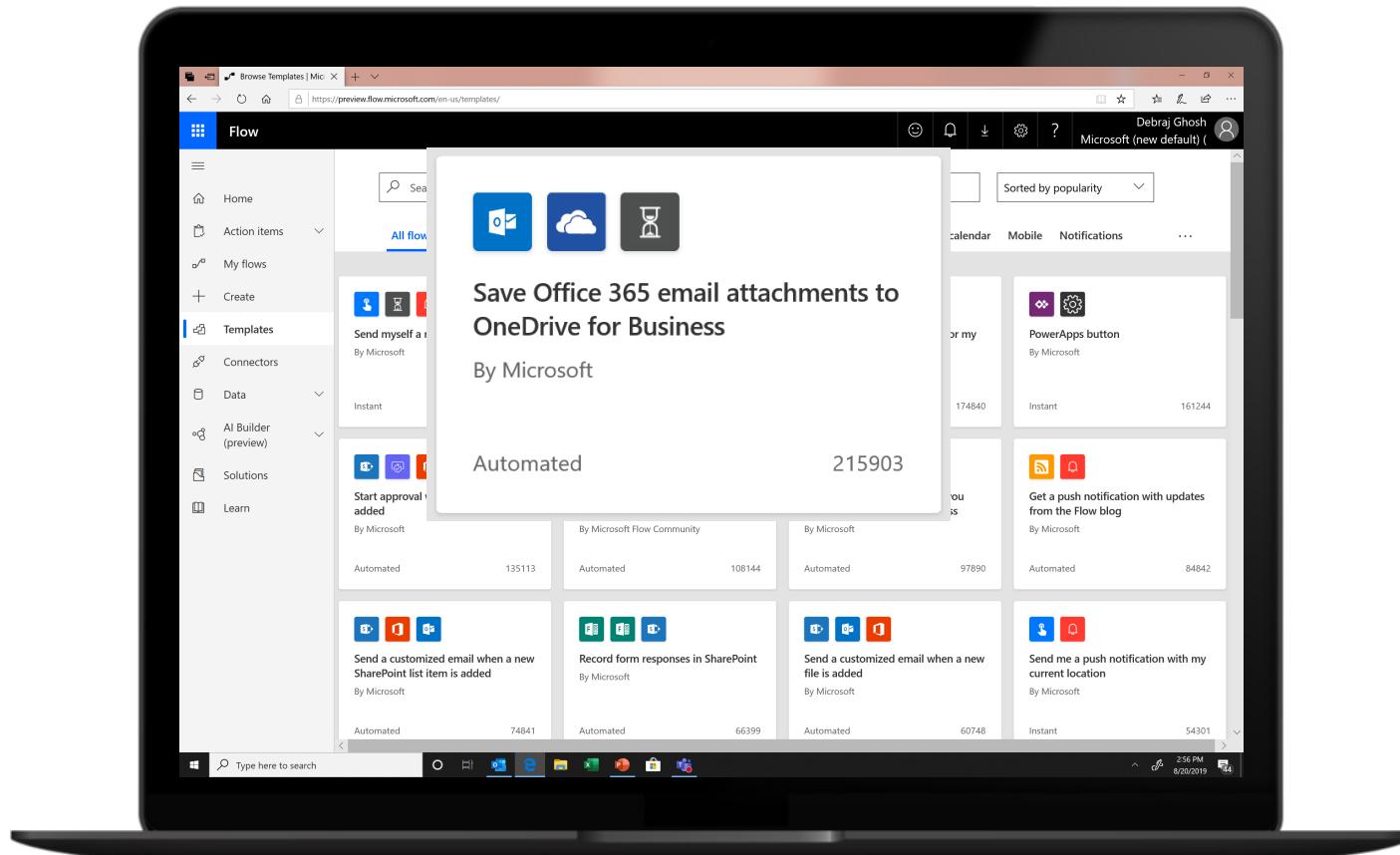
Automate out of the box



Learn from templates



Many to choose from



Microsoft
Power Automate

Automate Approvals



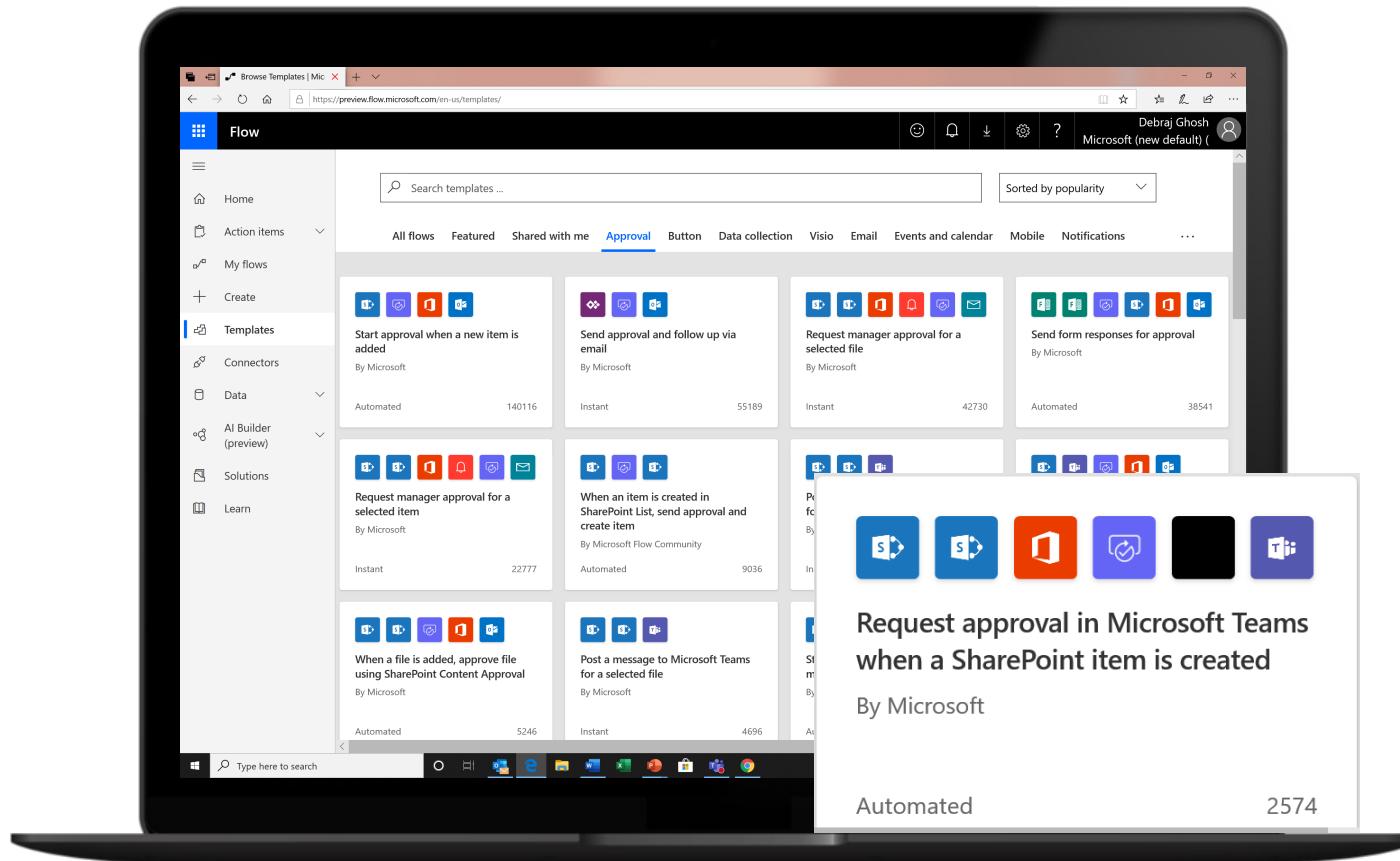
Automate approvals to focus on more valuable tasks



Many approval scenarios offered out of the box



Quickly save departmental time



Microsoft
Power Automate

Enhance Automation with the Power of AI

Leveraging AI Builder



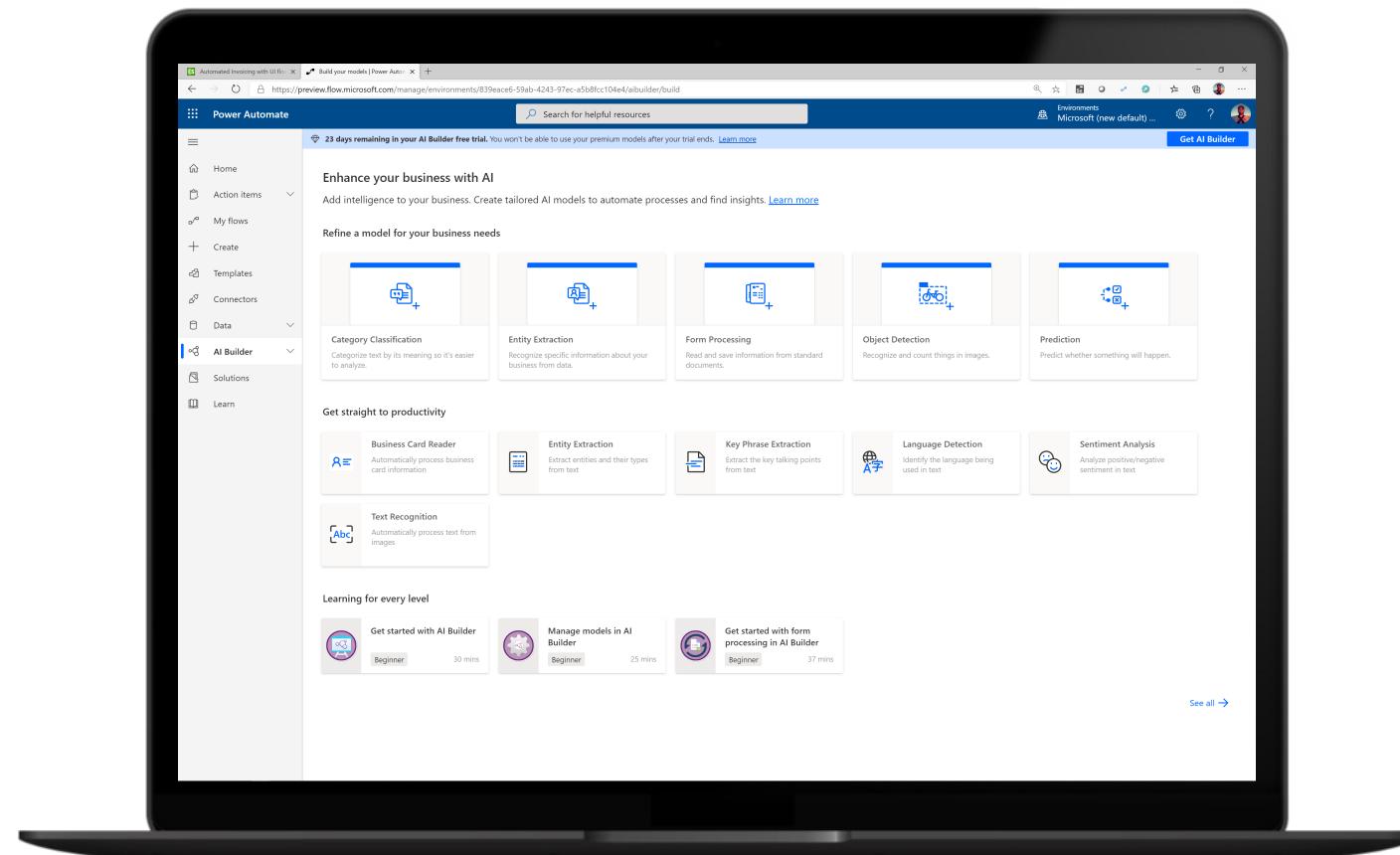
No-code AI



AI for many industry scenarios



AI for multiple industry verticals

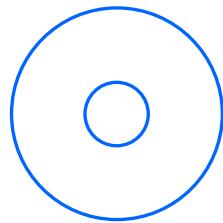


Microsoft
Power Automate

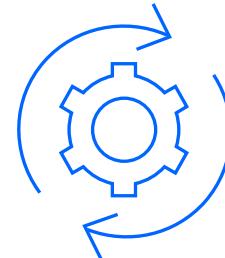
Automating Apps without APIs for our Modern World:

Automate Apps with Robotic Process Automation (RPA) Capabilities

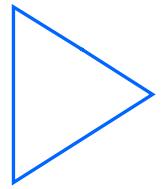
An RPA tool can learn to automate a task by watching the user perform that task in a graphical user interface (GUI), and then perform the automation by repeating those tasks directly in the GUI.



Record the Task



Automate the Task



Playback Task

DEMO

Power Automate

Hands On Lab

Integrate a Power Apps App with Power Automate

<https://aka.ms/advocacy/app-in-a-day>

Keep Learning

- Hack Together: <https://aka.ms/hacktogether/powerplatform-ai>
- Additional Workshops: <https://aka.ms/PowerAdvocatesWorkshops>
- Power Fx documentation: <https://aka.ms/LearnPowerFx>
- PL 900 prep course: <https://aka.ms/PL900ExamTipsCourse>
- April's YouTube: <https://youtube.com/@aprildunnam>
- Low Code Revolution Show: <https://aka.ms/LowCodeRevolutionShow>
- Power Apps sample apps: <https://aka.ms/powerapps-samples>