Download Lab Materials

Wifi: SilverGate
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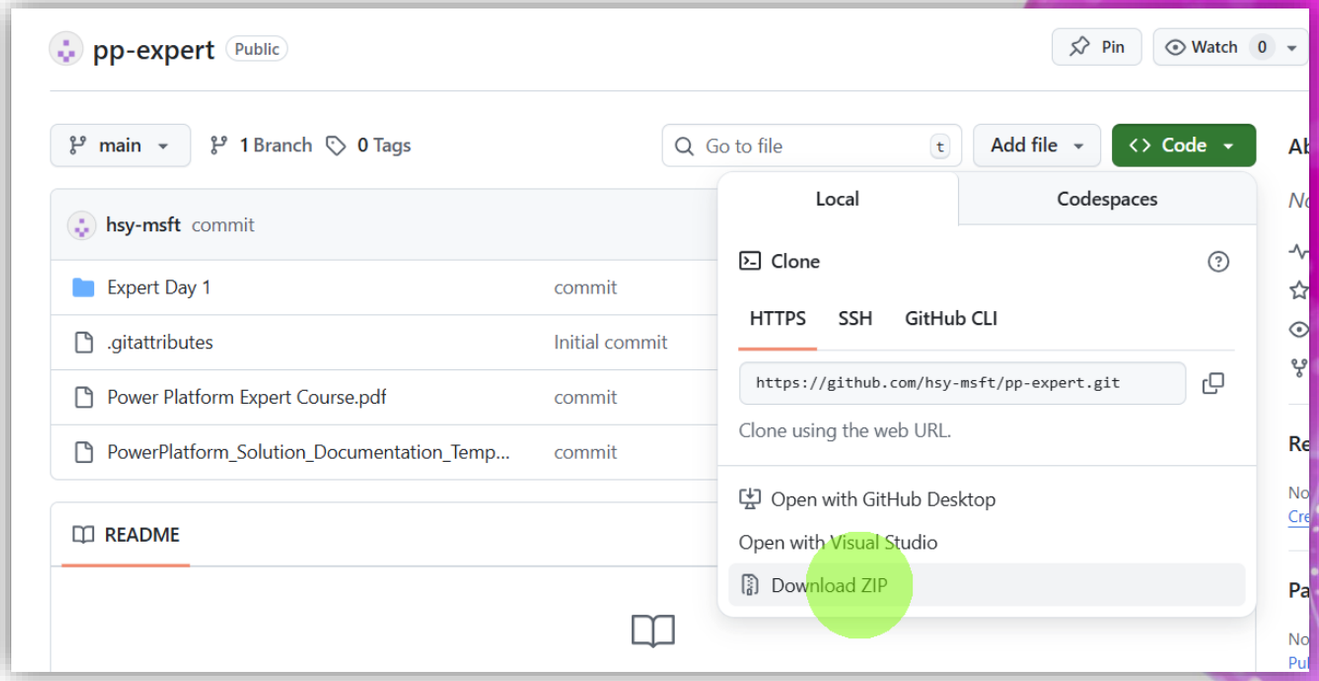
https://tinyurl.com/pp-expert Or

https://github.com/hsy-msft/pp-expert



Microsoft Power Platform

Power Platform Expert Bootcamp – Day 1

Htoo Shwe Yee
Cloud Solution Architect

Conditions and terms of use

Session Schedule (Day 1)

Time	Activity Title
09 00-09 15hrs	Opening Introductions
09 15-10 15hrs	Solution Architecture
10 15-10 30hrs	Break
10 30-12 00hrs	Advanced Canvas Apps
12 00-13 00hrs	Lunch
13 00-15 30hrs	Hands-On Lab (Build the Invoice Intake App)

Session Schedule (Day 2)

Time	Activity Title
09 00-10 15hrs	Advanced Power Automate
10 15-10 30hrs	Break
10 30-12 00hrs	Hands-on Troubleshooting Flow
12 00-13 00hrs	Lunch
13 00-15 30hrs	Hands On Lab Invoice Approval Flow

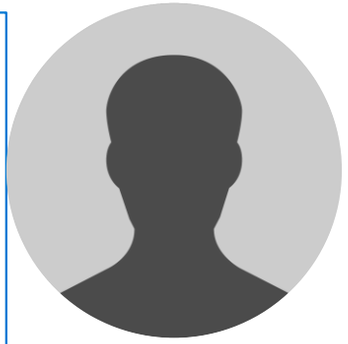
Session Schedule (Day 3)

Time	Activity Title
09 00-10 15hrs	ALM/DevOps
10 15-10 30hrs	Break
10 30-12 00hrs	Power BI Integration & Solution Documentation
12 00-13 00hrs	Lunch
13 00-15 30hrs	Hands On Lab Invoice Approval Power BI dashboard

Self Introduction

Who are you?

- Name, role
- What have you developed so far using PowerApp, Power Automate or PowerBi?
- Expectations for this workshop



Agenda Overview

- Analyzing user requirements
- Component Selection and Project Planning
- Data Modeling and Security in Power Platform
- Designing scalable navigation & app structure
- Error Handling in Canvas App
- Complex Power Fx formulas
- Building and Using Components

Analyzing User Requirements

End-to-End Solution Design and Stakeholder Engagement

Role of Solution Architect

The Solution Architect leads design, aligning Power Platform solutions with business and technical needs.

Project Phase Involvement

Solution Architects engage in discovery, analysis, design, implementation, and quality assurance phases.

Responsibilities and Deliverables

They make key design decisions and produce documentation covering scalability, security, and integration.

Guiding Principles

Focus on business goals, design for maintainability, and prefer configuration over custom code.

Understanding the User Requirements

Capturing Functional Requirements

Functional requirements define what the system must do, gathered through workshops and user interviews.

Identifying Non-Functional Requirements

Non-functional requirements specify system qualities like performance, security, and usability constraints.

Conducting Fit-Gap Analysis

Fit-gap analysis compares requirements with standard features to identify gaps needing custom solutions.

Adopt Before Adapt

Encourage using out-of-the-box functions to cover requirements and reduce customizations.

Justify Customizations

Only customize when significant business needs exist to avoid complexity and longer development time.

Process Catalog Alignment

Align business processes with platform capabilities to identify fits and gaps across workflows.

Feasibility and Prioritization

Assess gap feasibility and prioritize requirements to manage development effort efficiently.

Component Selection and Project Planning

Selecting Power Platform Components: Apps, Automation, BI, AI, and Integration

First-Party vs Custom Apps

- Leverage existing Power Platform tools if closely aligned or build custom Power Apps for unique requirements.

Power Apps Form Factor Choice

- Choose Canvas, Model-driven, or Portal apps based on user type and access needs, including internal or external users.

Automation vs Application

- Decide if background automation suffices or if a full user interface app is necessary for the solution.

BI and AI Integration

- Incorporate Power BI for analytics and choose AI Builder, Copilot Studio or Azure AI for intelligent capabilities based on complexity.

External Integration and Extensibility

- Use Azure Logic Apps, Functions, or custom connectors for integration; develop custom PCF components for advanced UI needs.

Licensing and Future Planning

- Consider licensing costs and scalability to ensure the solution fits budget and future enterprise-wide expansion.

Mapping Requirements to Solution Components and Design Decisions

Defining Solution Components

Identify Power Platform components and external integrations with their specific roles in the solution.

Component Interactions

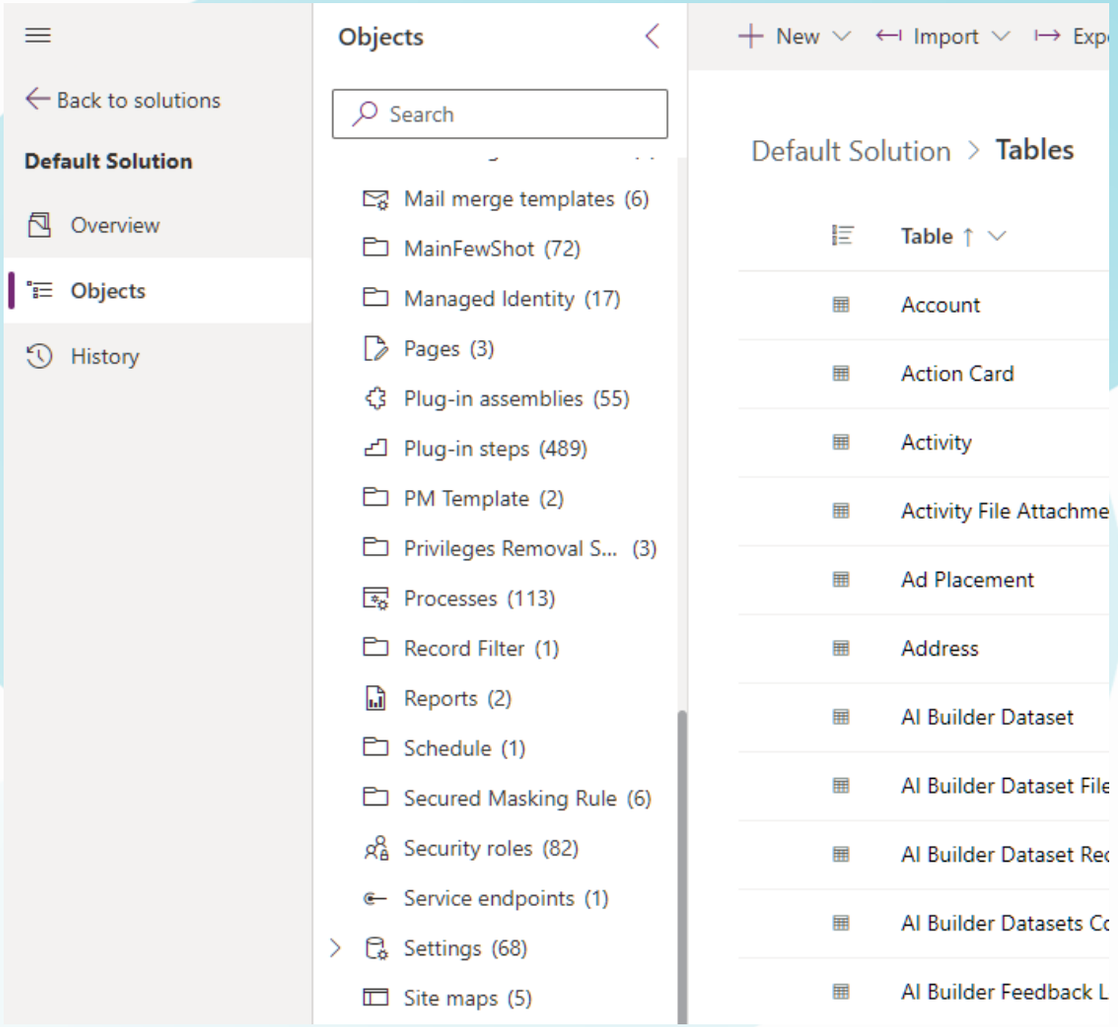
Show how components interact, highlighting data flow and integration points using diagrams or swimlanes.

Mapping Requirements to Design

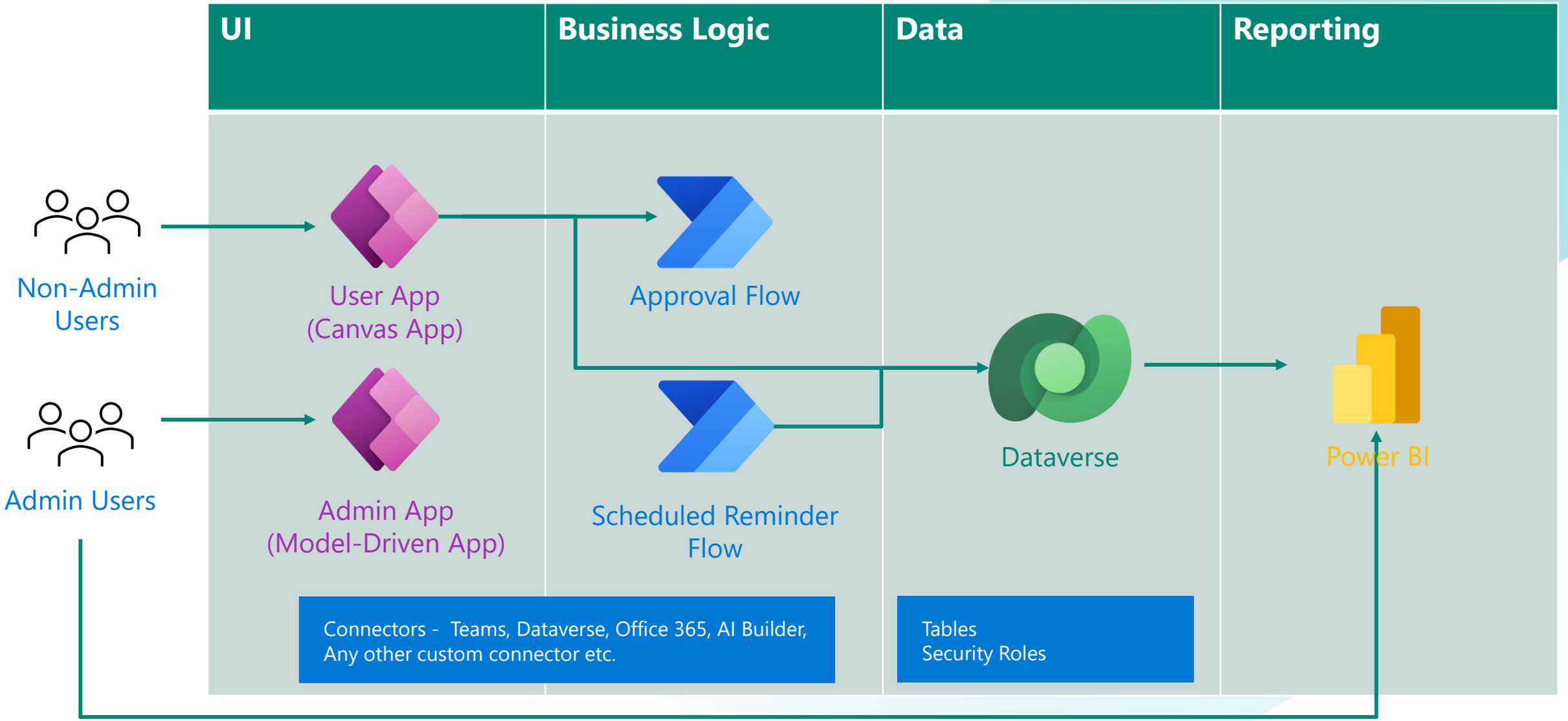
Ensure every requirement is addressed by specific components within a layered conceptual architecture model.

Key Design Decisions

Document critical design choices such as integration methods and environment setups for future clarity.



Sample App Components Architecture



Deciding between Model-driven App and Canvas App

Model-Driven Apps	Canvas Apps
• Data-first approach; UI generated from Dataverse.	• UI-first approach; UI designed freely before connecting data.
• Best for structured, complex Dataverse data.	• Works with many data sources.
• Uses predefined templates with limited customization.	• Full design flexibility on a blank canvas.
• Single-page structure with guided navigation.	• Multi-page, highly flexible layouts.
• Faster to build but may need more user training.	• More effort and time required to design and build.
• Built-in responsiveness and accessibility.	• Must be designed manually for responsiveness and accessibility.

Data Modeling and Security in Power Platform

Designing Data Models in Dataverse: Entities, Relationships, and Field Types

Entity Identification
Identify core business objects as entities with relevant columns based on solution requirements.

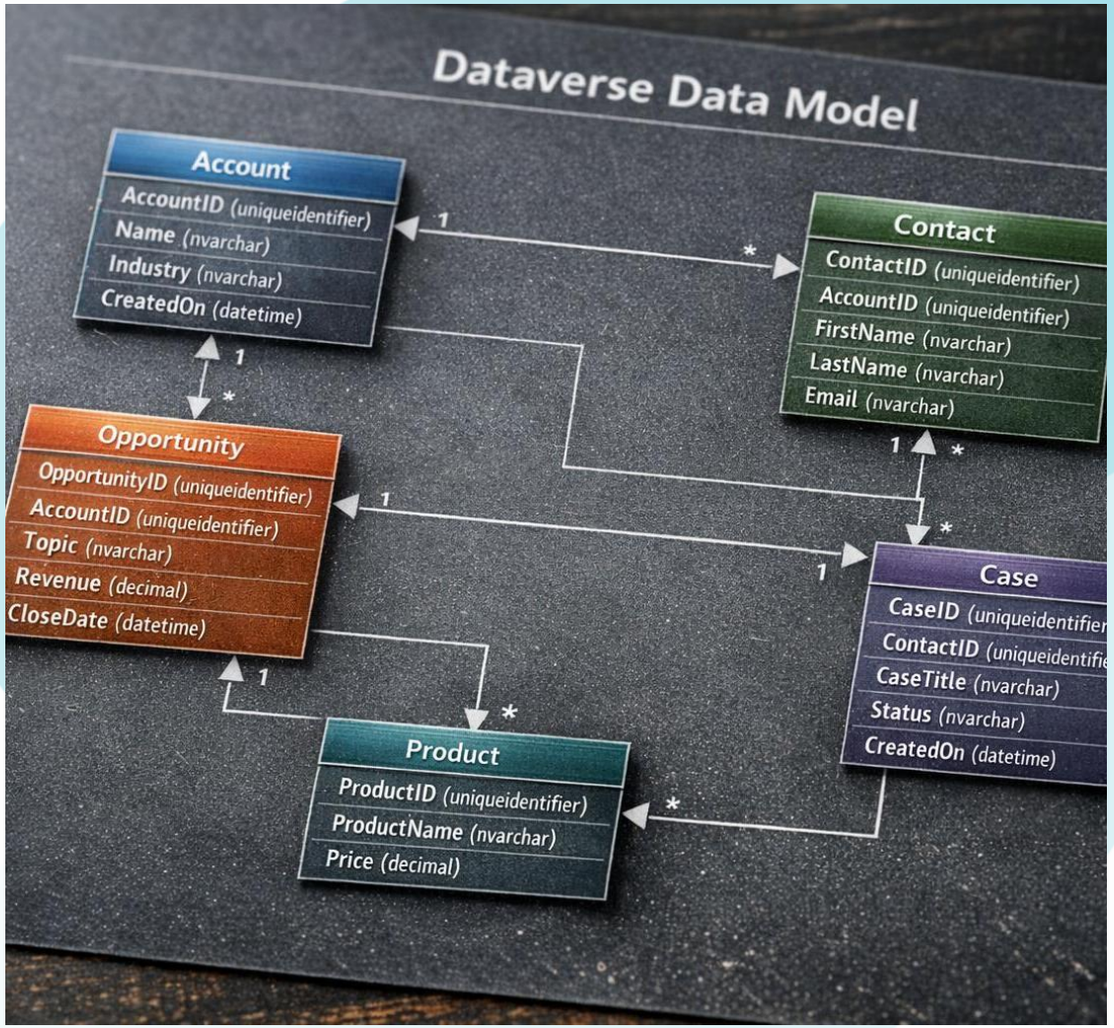
Normalization and Relationships
Normalize data to reduce redundancy using 1:N, N:1, and N:N relationships between tables.

Field Types and Choices
Select appropriate Dataverse field types like Text, Lookup, Choice, and Date based on data needs.

Naming and Documentation
Clear, consistent naming and thorough documentation improve understanding and maintenance.

Iterate with Sample Data
Populating sample records reveals gaps and validates the data model design effectively.

Business Rules and Performance
Use business rules, calculated and rollup fields to enforce logic; optimize for performance and delegation.



Implementing Security: Environment, Roles, Teams, and Field-Level Security

Environment-Level Security

Power Platform environments use roles like Admin, Maker, and User to control app creation and access permissions.

Dataverse Roles and Business Units

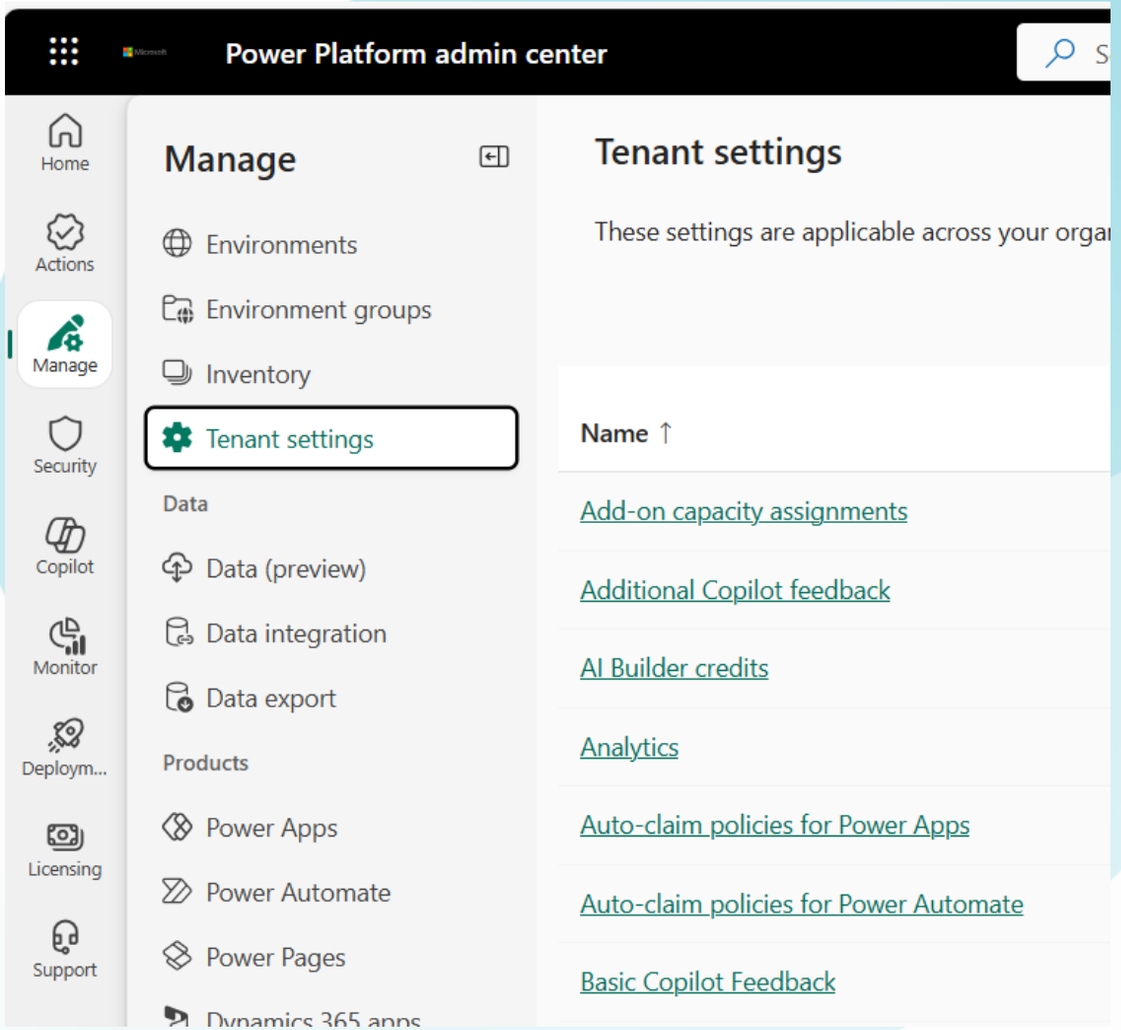
Dataverse roles define permissions with scopes, while business units segregate data for organizational hierarchy and security.

Teams and Record Ownership

Teams, mapped to Azure AD groups, own records to facilitate collaboration and access management in Dataverse.

Field-Level Security and Governance

Sensitive fields are protected by field security profiles, with governance covering compliance, DLP, and audit logging.



Security Best Practices

Least Privilege Principle

Grant users only the minimum access necessary to perform their tasks to enhance security and reduce risks.

Business Unit Segmentation

Plan business unit hierarchy early to segregate data and control access across departments and environments.

Default Security Roles

Use default security roles as templates and customize them to fit job functions and data access needs.

Data Loss Prevention Policies

Implement DLP policies to restrict data flow between business and non-business connectors, preventing leaks.

Designing scalable navigation & app structure

Screen Planning and Navigation Patterns

Logical Screen Planning

Design screens around logical steps with focused content for easier use and maintenance.

Smooth Navigation Patterns

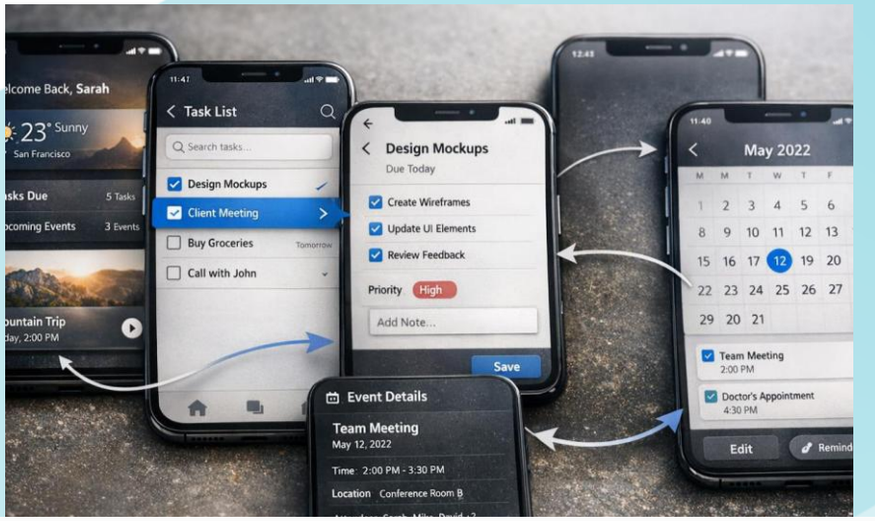
Use consistent navigation bars, back buttons, and step indicators for user-friendly flow.

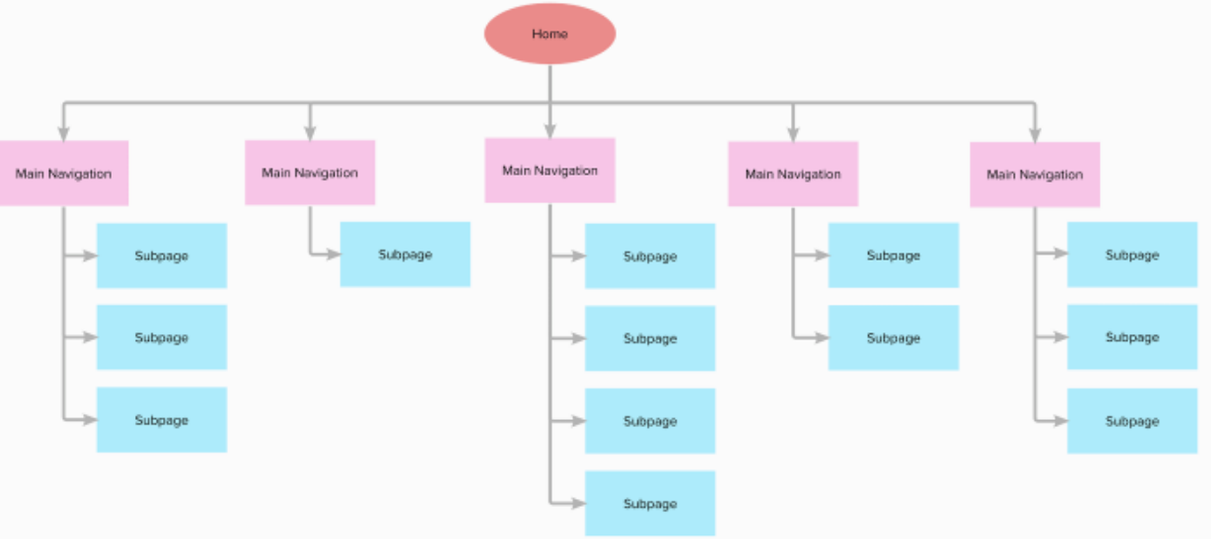
Consistent Design & Components

Maintain consistent controls and use components for uniform navigation across screens.

Performance and Deep Linking

Load data intelligently and enable deep linking for direct access to screens with parameters, for e.g. sending a link to view the request directly in app





User Experience, Feedback, and Common Mistakes

User Journey Feedback

Clear guidance on start, progress indicators during processes, and success messages improve user experience.

Error Handling and Empty States

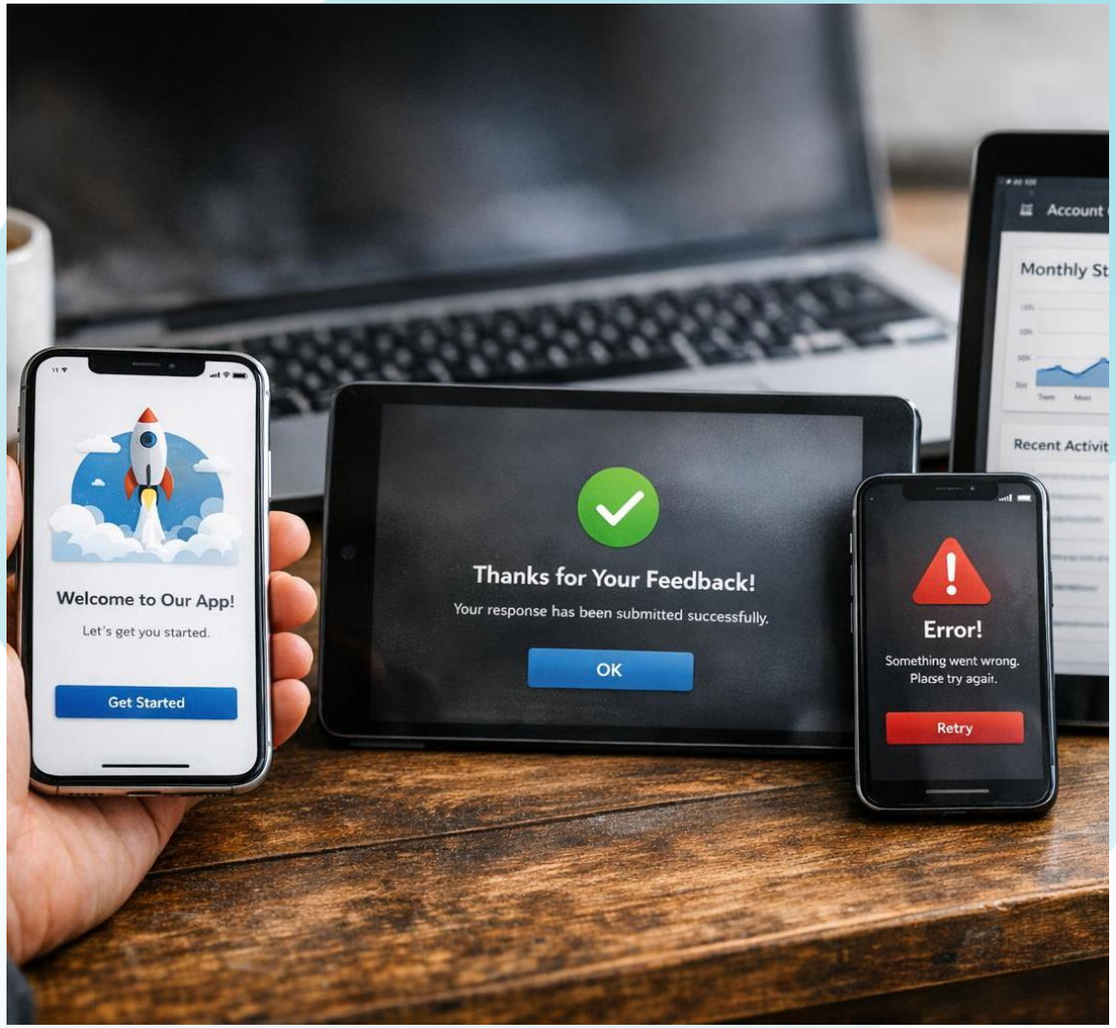
Graceful error messages and empty state notifications prevent user confusion during data issues.

Responsive Design for Devices

Design adapts for phones with vertical stacking and larger buttons; tablets use multi-column layouts.

Common UX Mistakes

Avoid information overload, unclear buttons, missing confirmations, and poor layout balance for better usability.



Error Handling in Canvas App

Error Handling Techniques in Power Apps

Use **IfError()** Function to wrap risky operations and provide alternate actions or friendly error messages.

IfError(Expression, ValueIfError [, FallbackValue])

Example Below:

IfError(10 / 0, "Error: Cannot divide by zero")

Error Handling Techniques in Power Apps

Use **IsError() or IsBlankOrError()** Function to detect errors from data sources or values for conditional handling.

IsError(Expression)

Examples Below:

During Data Retrieval

```
With(
  { ExistingRecord: LookUp('App Devices Assets', ID = 123) },
  If(
      IsError(ExistingRecord),
      Notify("Error: Unable to fetch the record", NotificationType.Error),
      If(
          IsBlank(ExistingRecord),
          Notify("No record found", NotificationType.Information),
          Notify("Record fetched successfully", NotificationType.Success)
      )
  )
)
```

During Running a Flow

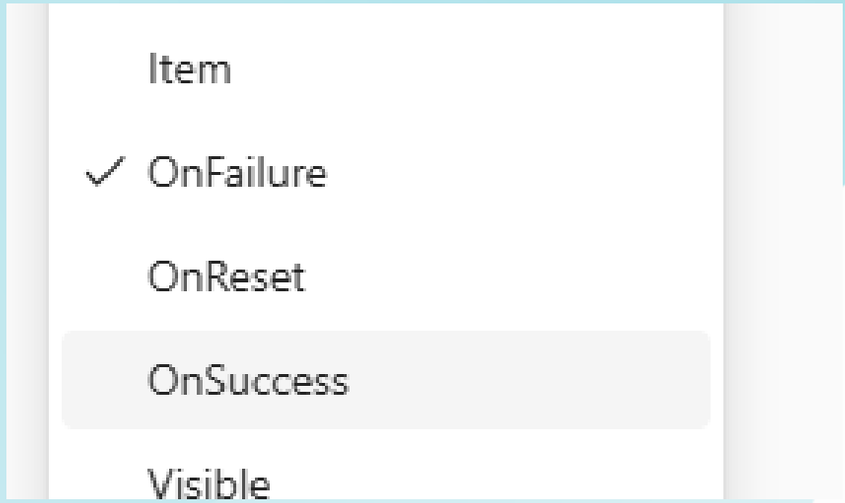
```
If(
  IsError( GetAllCustomerInvoices.Run("C0001023") ),

  // On failure
  Notify( "Error: could not retrieve customer invoices",
NotificationType.Error ),

  // On success
  Navigate('Success Screen’)
)
```

Error Handling Techniques in Power Apps

Use **OnFailure** and **OnSuccess** properties in forms to provide user feedback after submission attempts.

OnSelect property of the form's submit button

SubmitForm(frm_Invoice);



OnSuccess property of the form

Navigate('Success Screen’);

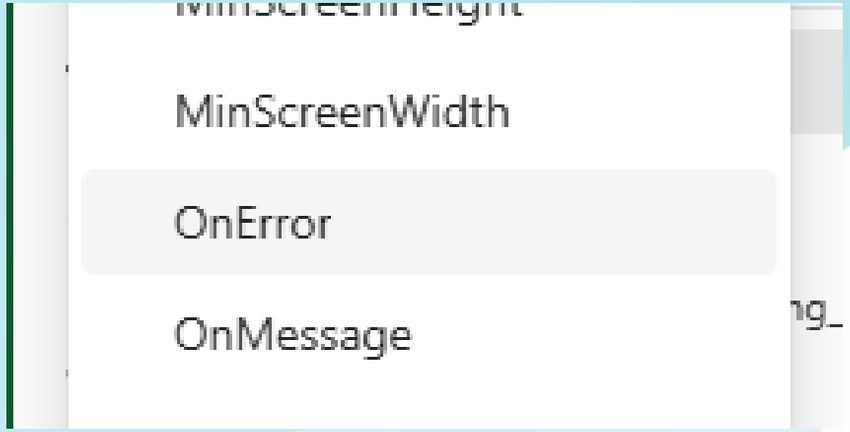
OnFailure property of the form

Notify("Error: the invoice could not be created", NotificationType.Error);

Error Handling Techniques in Power Apps

Use **App.OnError** for global error handling and Notify function to inform users with friendly messages.

```
Notify(
  Concatenate(
    "Error: ", FirstError.Message,
    "Kind: ", FirstError.Kind,
    ", Observed: ", FirstError.Observed,
    ", Source: ", FirstError.Source
  ),
  NotificationType.Information
);
```



Complex Power Fx formulas

Using With() to Simplify Complex Logic

When to use With()

- When a formula is too long or unreadable
- When you repeat the same expression multiple times
- When a calculation should happen only once
- When you want “inline variables” rather than global ones

Before

```
If(
    TextInput_Quantity.Text * TextInput_Price.Text > 500,
    TextInput_Quantity.Text * TextInput_Price.Text * 0.9,
    TextInput_Quantity.Text * TextInput_Price.Text
)
```

After

```
With(
    {
        total: Value(TextInput_Quantity.Text) *
Value(TextInput_Price.Text)
    },
    If(
        total > 500,
        total * 0.9,
        total
    )
)
```

Using Named Formulas (App.Formulas)

Why use Named Formulas?

- Always stay up-to-date (no manual Reset or Update)
- Reduce duplicate logic across screens
- Great for reusable expressions like:
  - URLs
  - Permission checks
  - User context
  - Role logic
  - Current environment variables
  - Business rules

Examples

Named Formula *CurrentUser = User()*	Named Formula *StandardTaxRate = 0.08* *PreferredCustomerDiscount = 0.15*	Named Formula *IsAdminUser = "Admin" in VarUserRoles*
Use it anywhere in the app *CurrentUser.FullName*	Use it anywhere in the app *TotalAmount * (1 + StandardTaxRate)*	Use it anywhere in the app IsAdminUser

Modular patterns (1)

Modular patterns break big formulas into **small, reusable components**.

Pattern 1: Input → Process → Output structure

```
With(
    {
        qty: Value(txtQty.Text),
        price: Value(txtPrice.Text),
        tax: 0.08
    },
    With(
        {
            subtotal: qty * price
        },
        subtotal + (subtotal * tax)
    )
)
```

Pattern 2: Reusable component formulas

Inside a component:

```
With(
    {
        cleanedText: Trim(Self.InputText),
        isValid: Len(Trim(Self.InputText)) > 0
    },
    {
        CleanValue: cleanedText,
        Valid: isValid
    }
)
```

Parent screen:

```
MyTextValidator.Valid
```

Modular patterns (2)

Modular patterns break big formulas into **small, reusable components**.

Pattern 3: Centralized business rules

In Named Formula:

```
HighValueThreshold = 10000
```

Parent screen:

```
If(
    ThisItem.Amount > HighValueThreshold,
    "Director Approval Required",
    "Manager Approval Required"
)
```

Pattern 4: State + Behavior separation

State Layer (Named Formulas):

```
CurrentInvoiceAmount = Sum(galInvoiceLines.AllItems,
LineTotal)
IsLargeInvoice = CurrentInvoiceAmount >
HighValueThreshold
```

UI Layer (Button.Visible):

```
IsLargeInvoice
```

Simplifying and Structuring Formulas

Choosing Appropriate Functions

Use built-in functions like Switch, ForAll, and Collect to simplify logic and improve formula efficiency.

Maintaining Clean Formulas

Use comments and break complex logic into smaller parts to make formulas easier to maintain and debug.

Testing and Debugging

Test formulas in isolation using temporary labels and debugging tools like Monitor for reliable app performance.

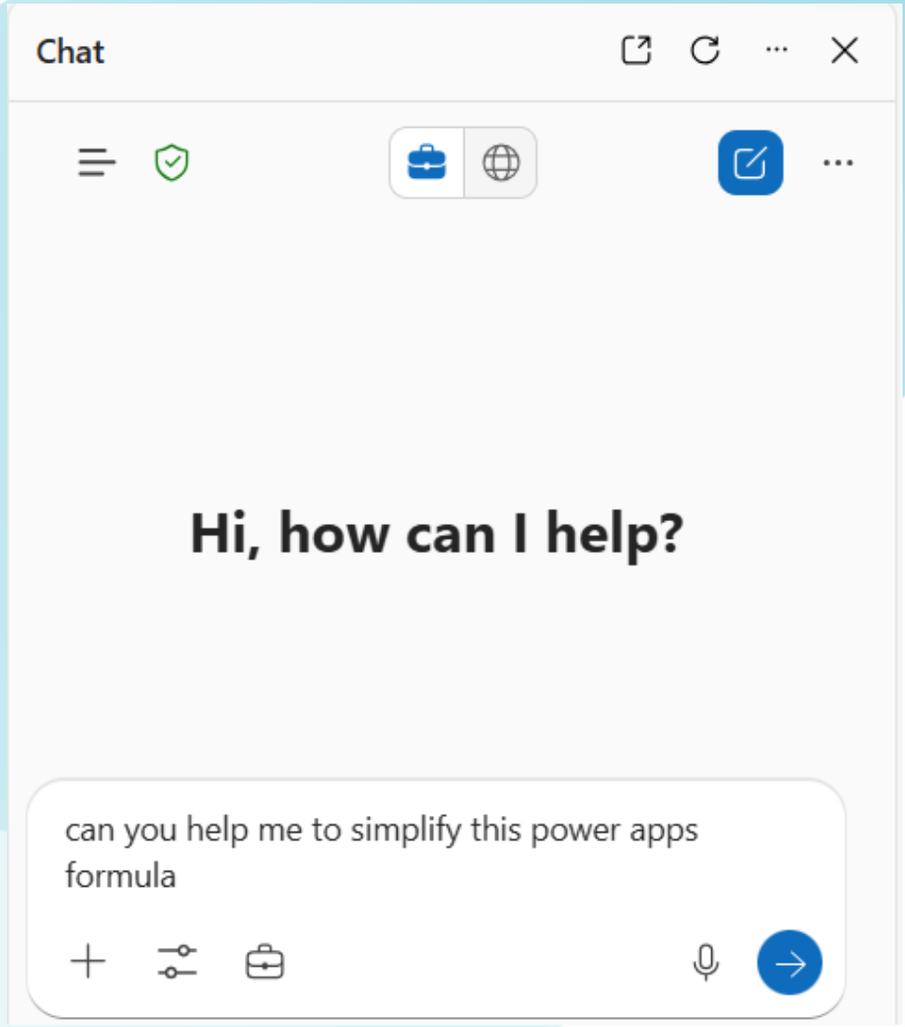
Delegation in Power Apps

Power Apps delegates operations to data sources to improve performance, but some complex formulas are not delegable.

Aggregate functions like Sum, CountIf, and Average simplify data computations and are often delegable to data sources.

Avoiding Common Pitfalls

Avoid nested Ifs, repeated sub-expressions, and unclear operator precedence to reduce errors in app logic.



Building and Using Components

Reusable UI Components

Reusable UI Components

Build custom controls once and reuse them across multiple screens or apps to ensure consistency and ease maintenance.

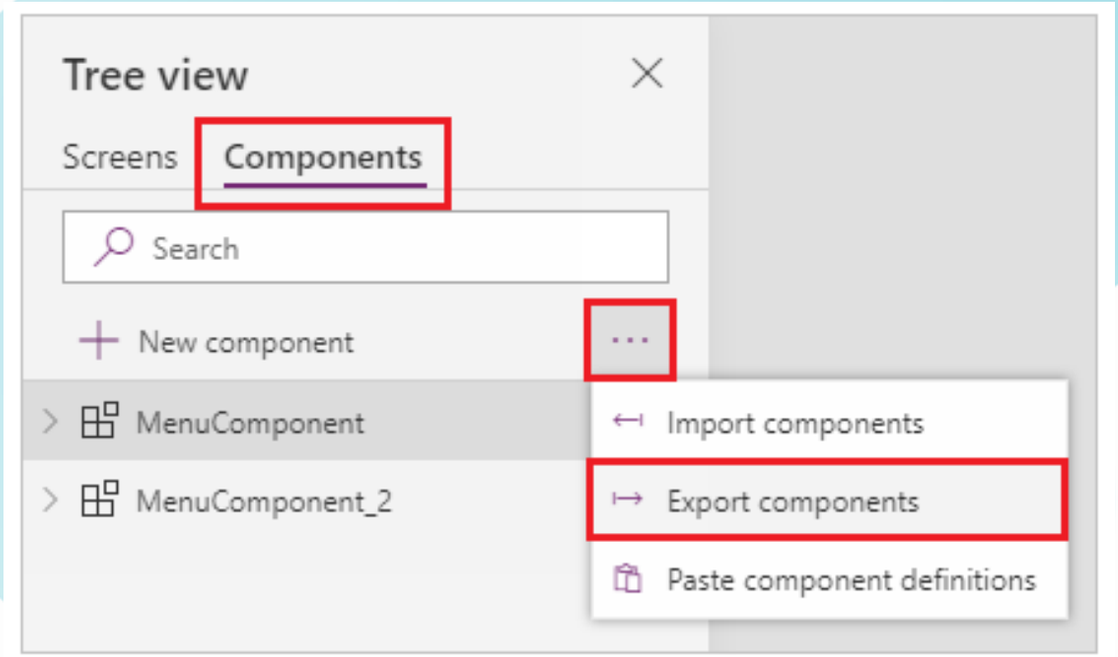
Custom Input and Output Properties

Components support input properties for data and output properties for events, enabling dynamic interaction and navigation.

Common Use Cases

Typical components include

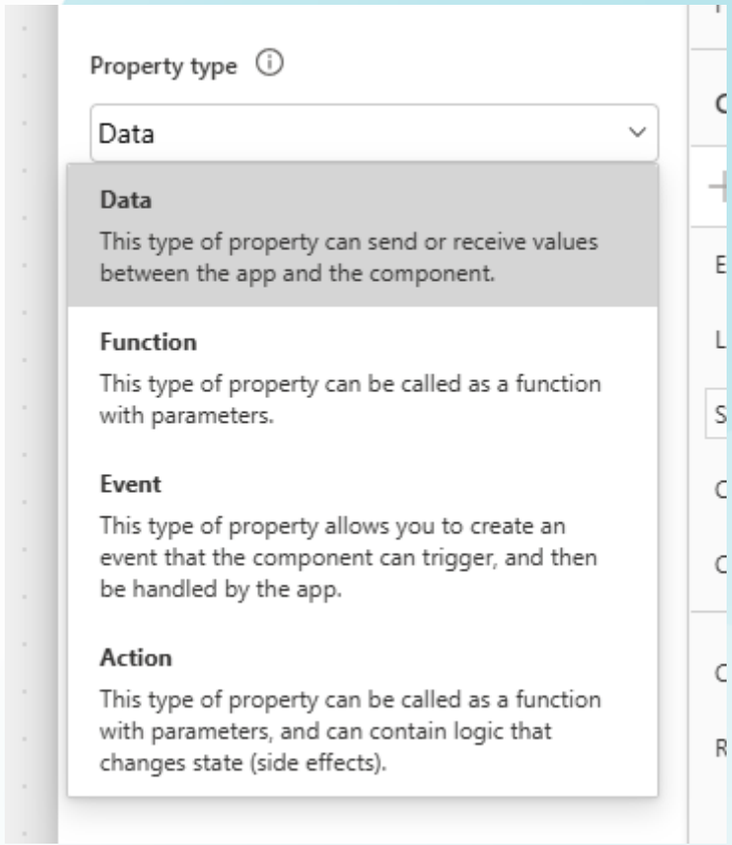
- app headers,
- navigation menus,
- form sections,
- custom controls, and
- pop-up dialog boxes.

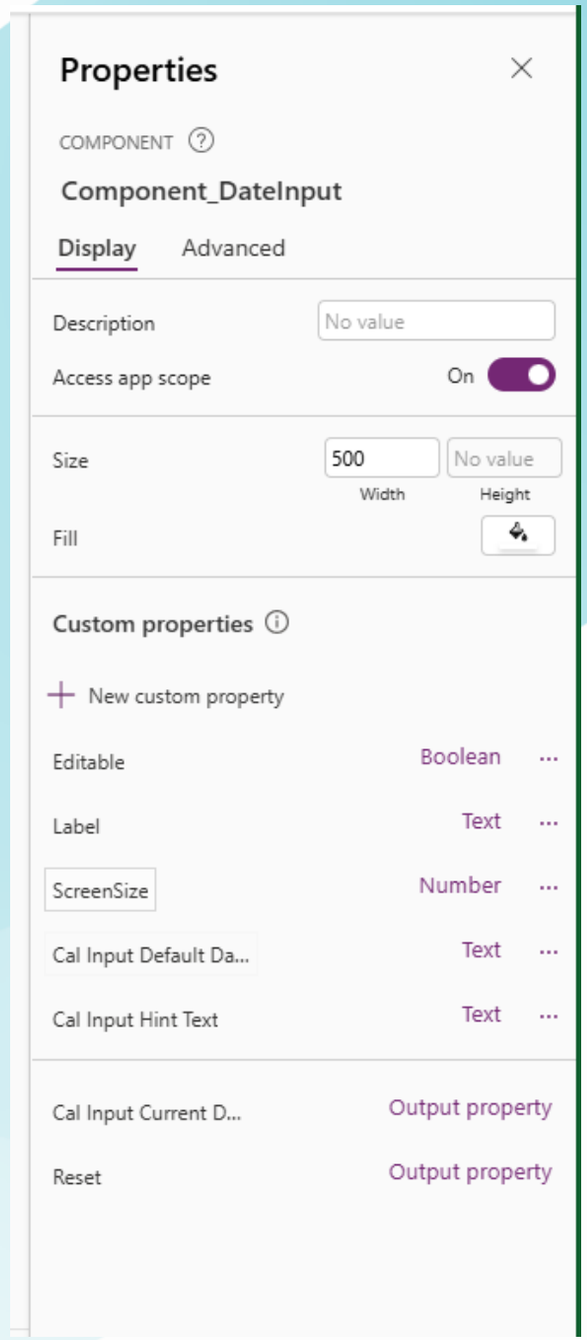


Component Custom Properties

- **Input** Properties: Pass data into a component
- **Output** Properties: Return data or computed values

- Enable real component reusability and flexibility
- Used for dynamic behavior and data passing
- Different Property types for different purposes





Component Libraries, Performance, and Collaboration

Component Libraries Benefits

Component libraries enable reuse across multiple apps and centralized updates for consistent organization-wide components.

Build Once, Update Everywhere

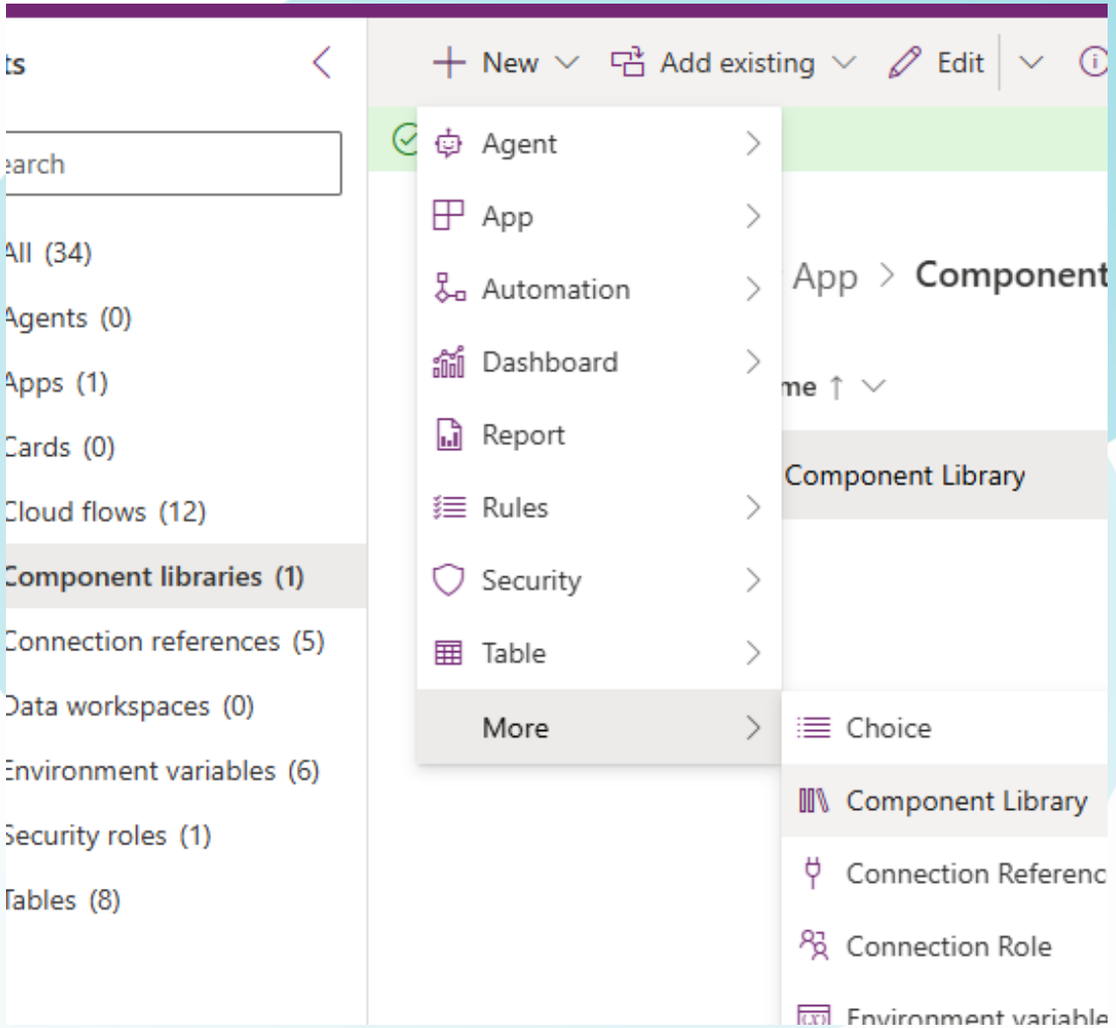
Editing a component updates all instances instantly, saving time and ensuring uniformity across app screens.

Performance Enhancements

Components encapsulate complex logic and reduce control trees, improving app performance and maintainability.

Collaboration and Best Practices

Components facilitate teamwork by modularizing work and require clear naming and regular updates for effective use. Define governance to avoid breaking changes



Microsoft Power Platform

Power Platform Expert Bootcamp – Day 2

Session Schedule (Day 2)

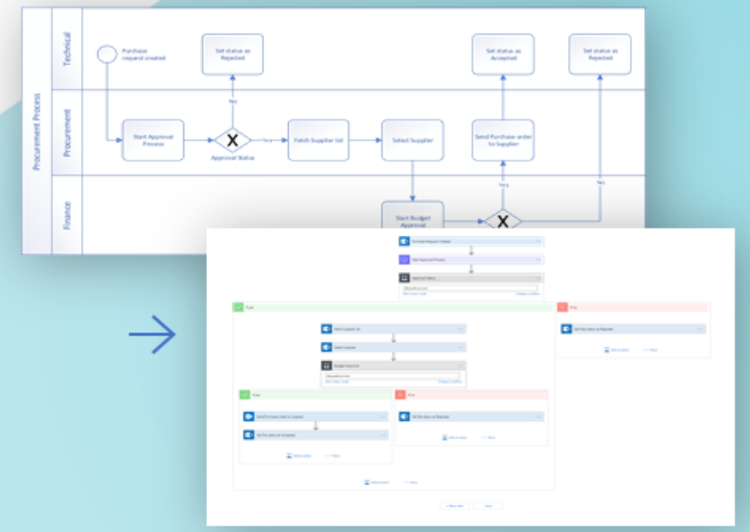
Time	Activity Title
09 00-10 15hrs	Power Automate Architecture & Resilient Automation
10 15-10 30hrs	Break
10 30-12 00hrs	Hands-on Troubleshooting Flow
12 00-13 00hrs	Lunch
13 00-15 30hrs	Hands On Lab Invoice Approval Flow

Agenda Overview

- Scenario Evaluation and Automation Patterns
- Modular Automation with Child Flows
- Error handling in Power Automate
- Advanced Power Automate Action Settings
- Interactive Experiences with Adaptive Cards

Scenario Evaluation and Automation Patterns

Common Automation Scenarios



- Automated approvals across data stores and services
- Recurring processing – e.g., expire all records over 7 days
- Process guidance – interactive step by step completion of common business processes
- Automated triggering from data or service events e.g., record or file created
- Mobile user clicks a button to kick off automation including context
- Power App app user clicks a button to launch a flow in the background

Automation Suitability Checklist

Question	Why it matters
Is the process repeatable & rules-based?	Automation requires clear, deterministic steps
Does it involve high volume or frequency?	High ROI for automation
Are the systems involved API-friendly?	Determines cloud flow vs. RPA
Are there approvals, conditions, or branching?	Helps select the flow structure
Are humans still required for decisions?	Determines hybrid automation
Are compliance & audit logs required?	Influences flow type + environment

Decision Matrix for Selecting an Automation Pattern

Scenario	Recommended Pattern	Why
Trigger-based (record created/updated)	Automated Flow	Best event-driven model
Human decision required	Approval Flow (Human in the loop)	Provides audit + Teams integration
Complex business stages	Business Process Flow	Structured step-by-step flow
On-demand user action	Instant/Button Flow	Manual execution by users
Time-based recurring process	Scheduled Flow	Runs automatically on schedule
Legacy desktop app	Desktop Flow (RPA)	Simulates user actions
Large-scale data processing	Automated or Scheduled + Parallelism	Best performance

Additional Evaluation Criteria

✓ Complexity

- Use automated flows for simple rules; RPA only when absolutely necessary.

✓ Resilience

- For long-running workflows:
- Use Scopes + RunAfter error handling
- Use separate child flows
- Add retry policies

✓ Data Sensitivity

- Processes involving finance/HR → prefer Dataverse connectors + solution-aware flows.

✓ Performance

- If processing > 5,000 items:
- Use pagination
- Use parallel branches
- Prefer SQL/Dataverse over SharePoint

Modular Automation with Child Flows

Concept and Benefits of Child Flows

Definition of Child Flows

Child flows are subroutines invoked by parent flows to break down complex processes into smaller reusable units.

Benefits of Child Flows

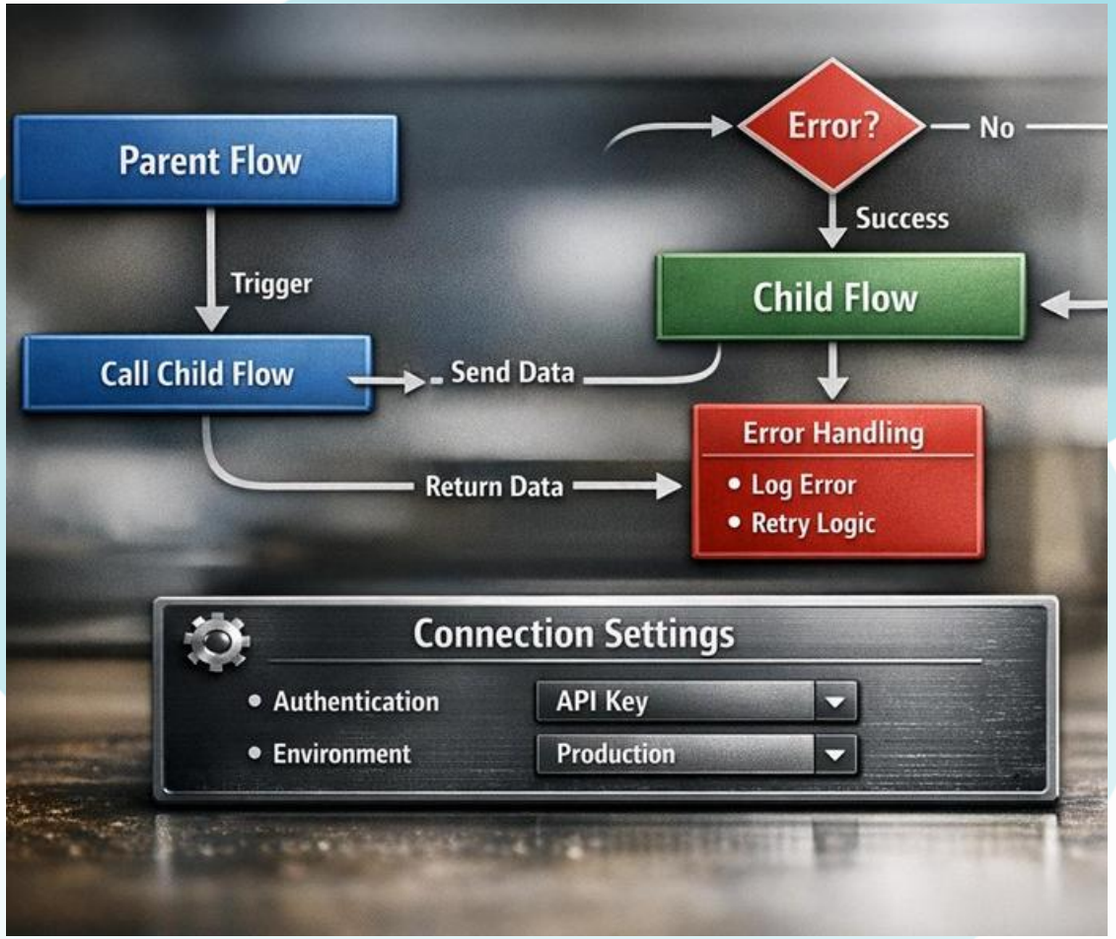
They reduce complexity, avoid duplication, and simplify maintenance by centralizing common process steps.

Reusability Across Processes

Child flows can be used by multiple parent flows, creating a reusable library of process logic.

Best Practices for Child Flows

Name child flows clearly, document inputs/outputs, and add conditions to prevent unintended standalone runs.



Setup, Usage, and Error Handling

Setup Requirements

Child flows must be inside solutions and triggered manually with defined inputs and outputs for communication.

Connection Considerations

Child flows run with owner's connections; **configure run-only users** to avoid permission errors in parent flow.

Execution Limits

Parent flow waits up to **30 days** for child completion; child flows are limited to cloud flows only with no nesting.

Error Handling Strategies

Handle child flow failures **using run-after conditions** or by designing child to return success/failure status outputs.

Environment Variables

Environment Variables

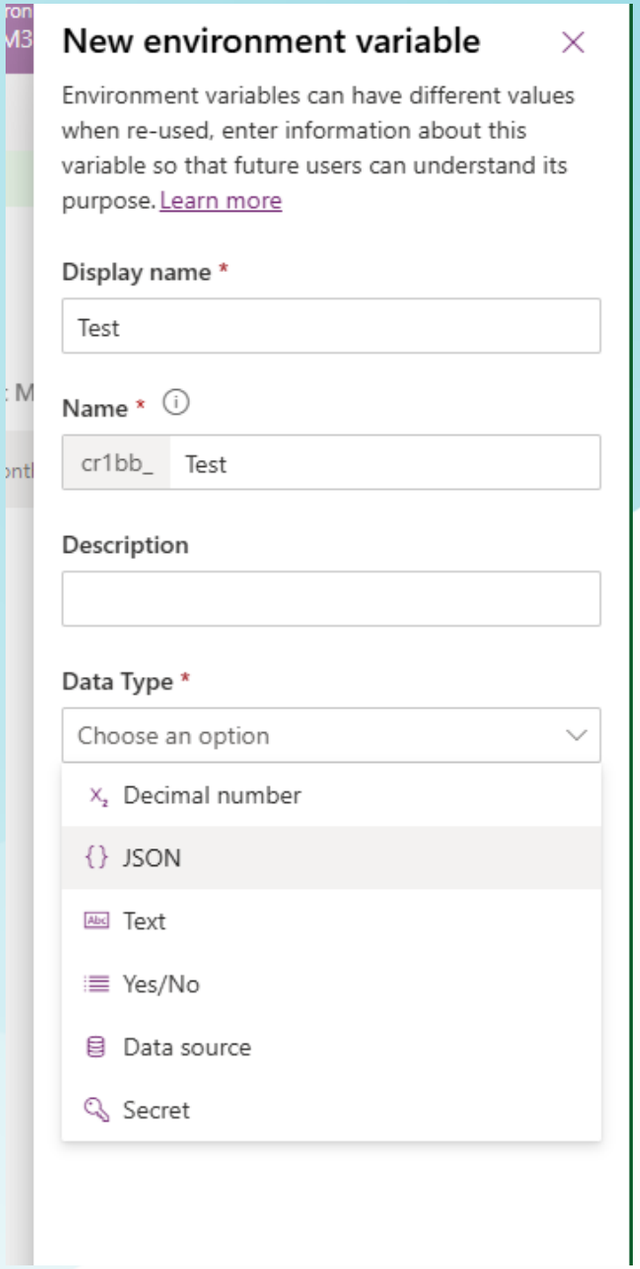
Environment variables enable one-click deployment using correct configuration values for each environment, avoiding missing config errors.

Best Practices Tips

Create variables for values changing by environment, set default and current values, and update during solution import.

Common Mistakes to Avoid

Avoid hardcoding settings and remember to update env variables after import; use Dataverse-backed environments only.



Error handling in Power Automate

Error Handling Strategies in Power Automate

Configure Run After

Set actions to run after failure or skip to create alternative logic paths in flows.

Scopes for Try/Catch

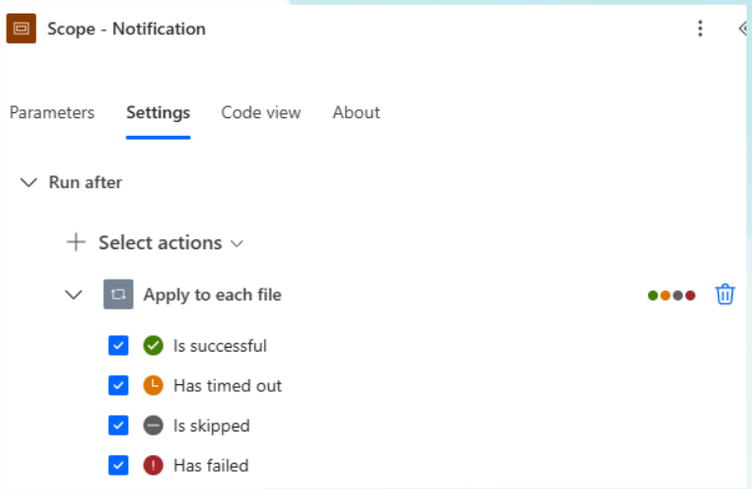
Use try and catch scopes to handle errors by grouping actions and executing catch logic on failures.

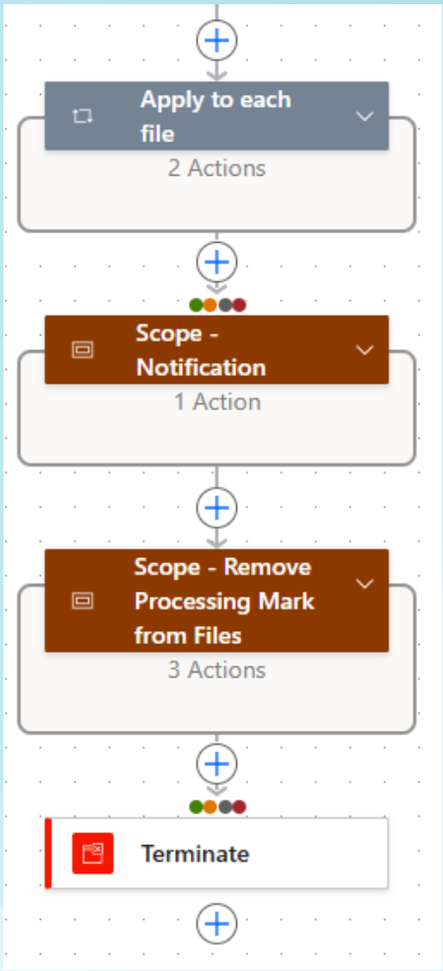
Terminate Action Usage

Terminate flows on errors with a failure status and custom message to highlight issues clearly.

Retry Policy and Monitoring

Adjust retry settings for transient errors and configure failure notifications for effective monitoring.



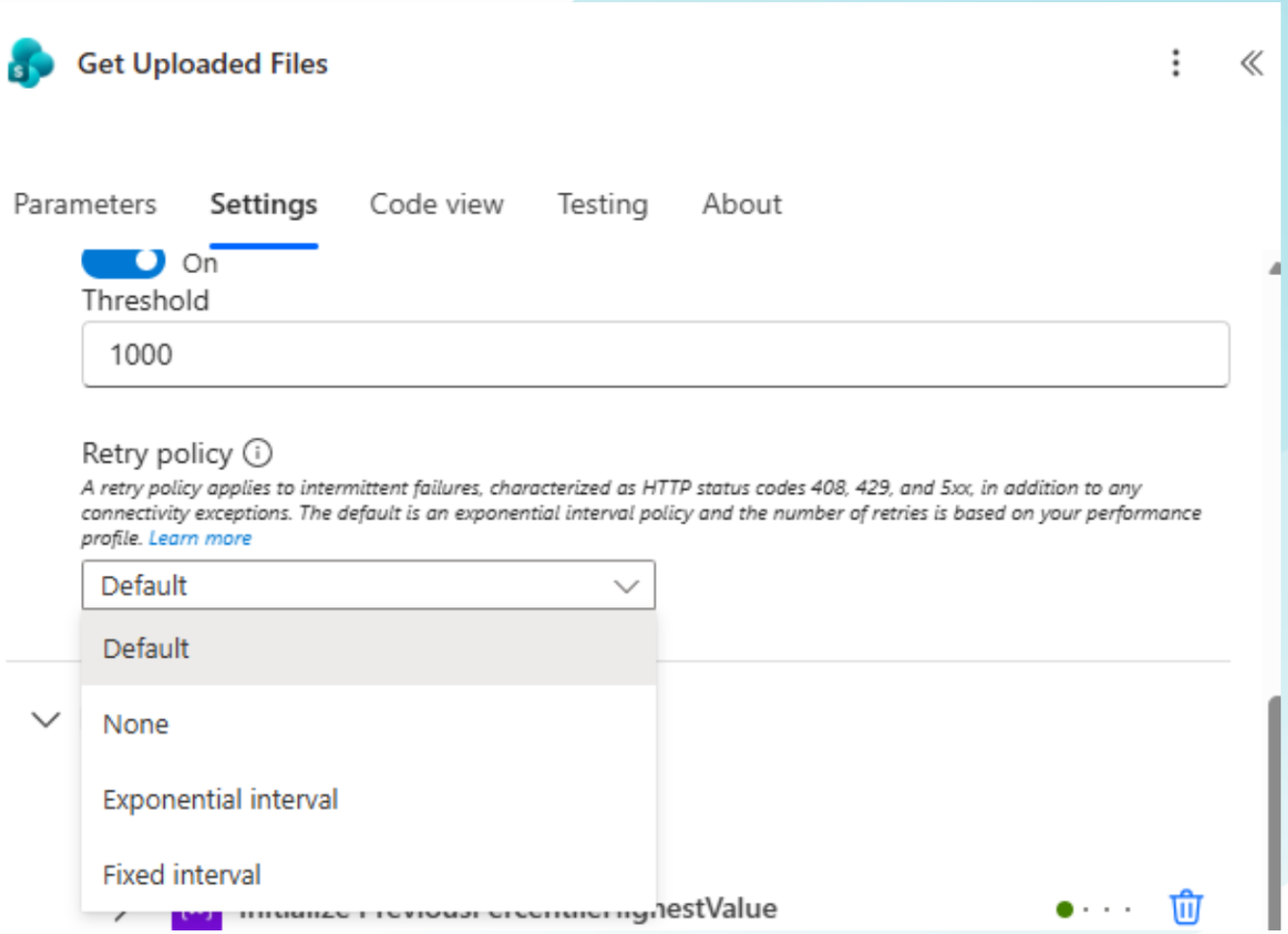


Advanced Power Automate Action Settings

Error Handling with Retries

Retry Policy

Automatic retries on failures help handle transient errors; configurable policies include none, fixed, or exponential delays based on action safety.



Pagination and Timeouts

Pagination and Timeouts

Pagination fetches large datasets in chunks to improve flow performance.

Timeouts

Timeout prevent long-running actions from hanging indefinitely.
Duration in ISO-8601 format, for e.g.

- PT1H – 1 hour
- PT30S – 30 Seconds
- P1D – 1 day

30-Day Flow Duration Limit

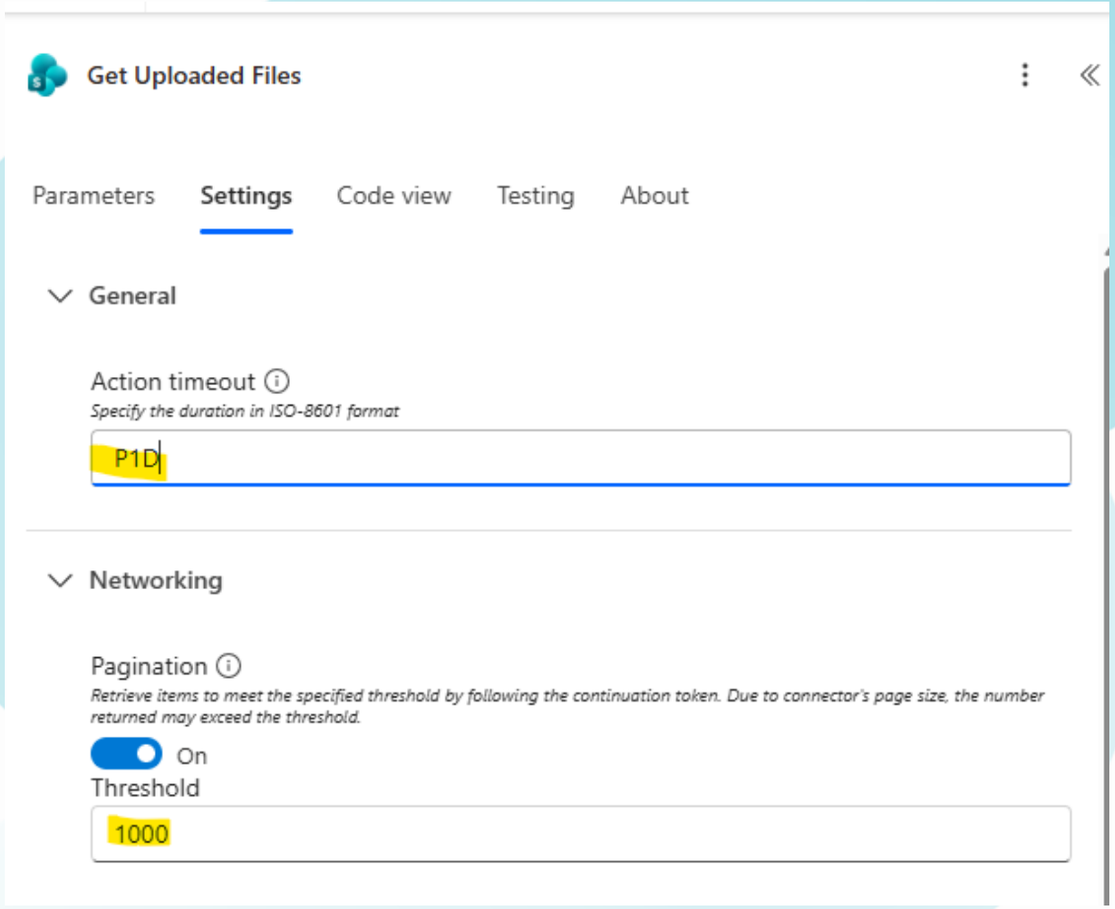
Cloud flows can run up to 30 days including all waiting times before they automatically time out.

Auto-Expiration

Any pending steps like approvals expire after 30 days if no response is received, stopping the flow.

Implications for Workflow Design

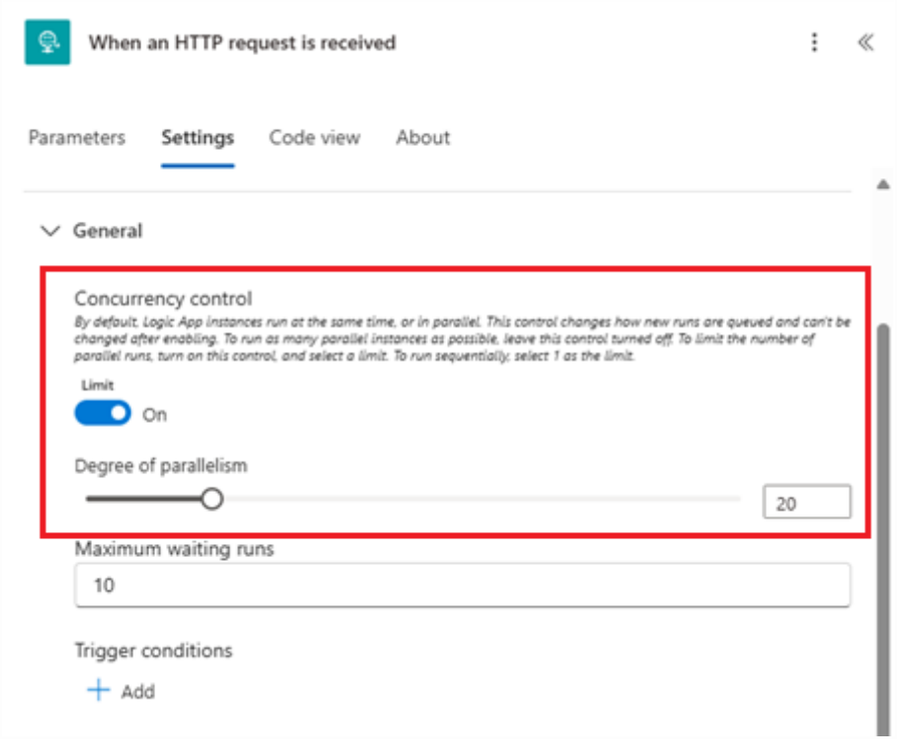
Workflows cannot indefinitely wait for user actions; design must consider the 30-day timeout limit.



Optimizing Performance with Concurrency Control

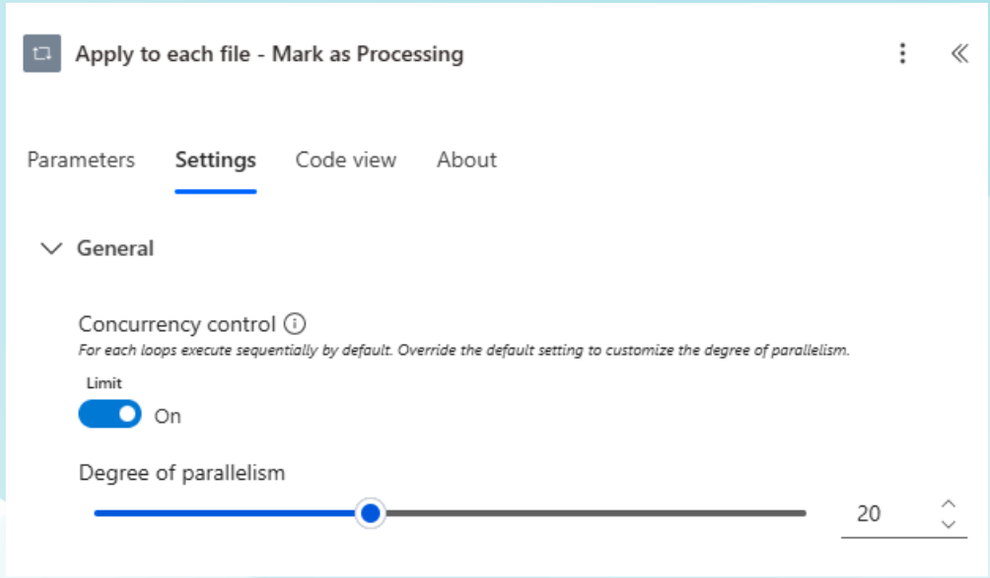
Trigger Concurrency

Triggers can be set to allow multiple concurrent runs or restrict to sequential execution to manage workflow overlap and resource use.



Iteration Concurrency

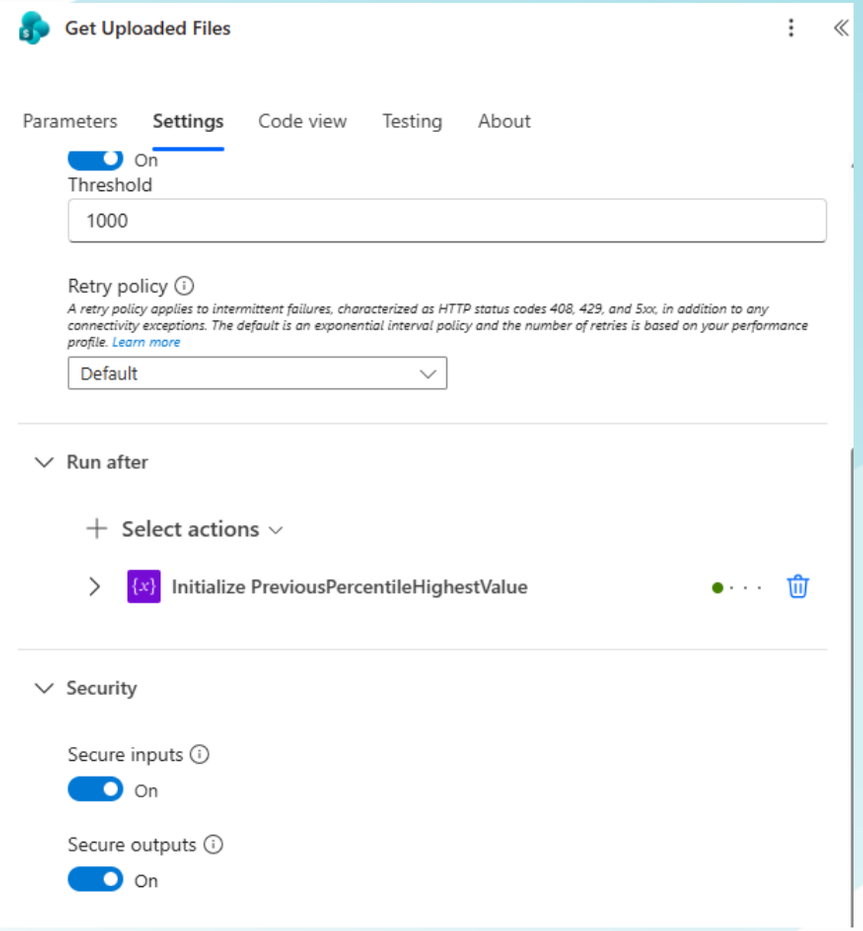
Enabling concurrency allows multiple loop iterations to run simultaneously, improving speed for independent tasks. Use moderate parallelism to avoid conflicts or throttling.



Security, Branching, and Best Practices

Secure Inputs and Outputs

Mask sensitive data in flow logs by enabling secure inputs and outputs to protect API keys and secrets from exposure.



Interactive Experiences with Adaptive Cards

Adaptive Cards in Teams and Outlook

Adaptive Cards Overview

Adaptive Cards are JSON-defined UI snippets that render interactive cards in apps like Teams and Outlook.

Use Cases

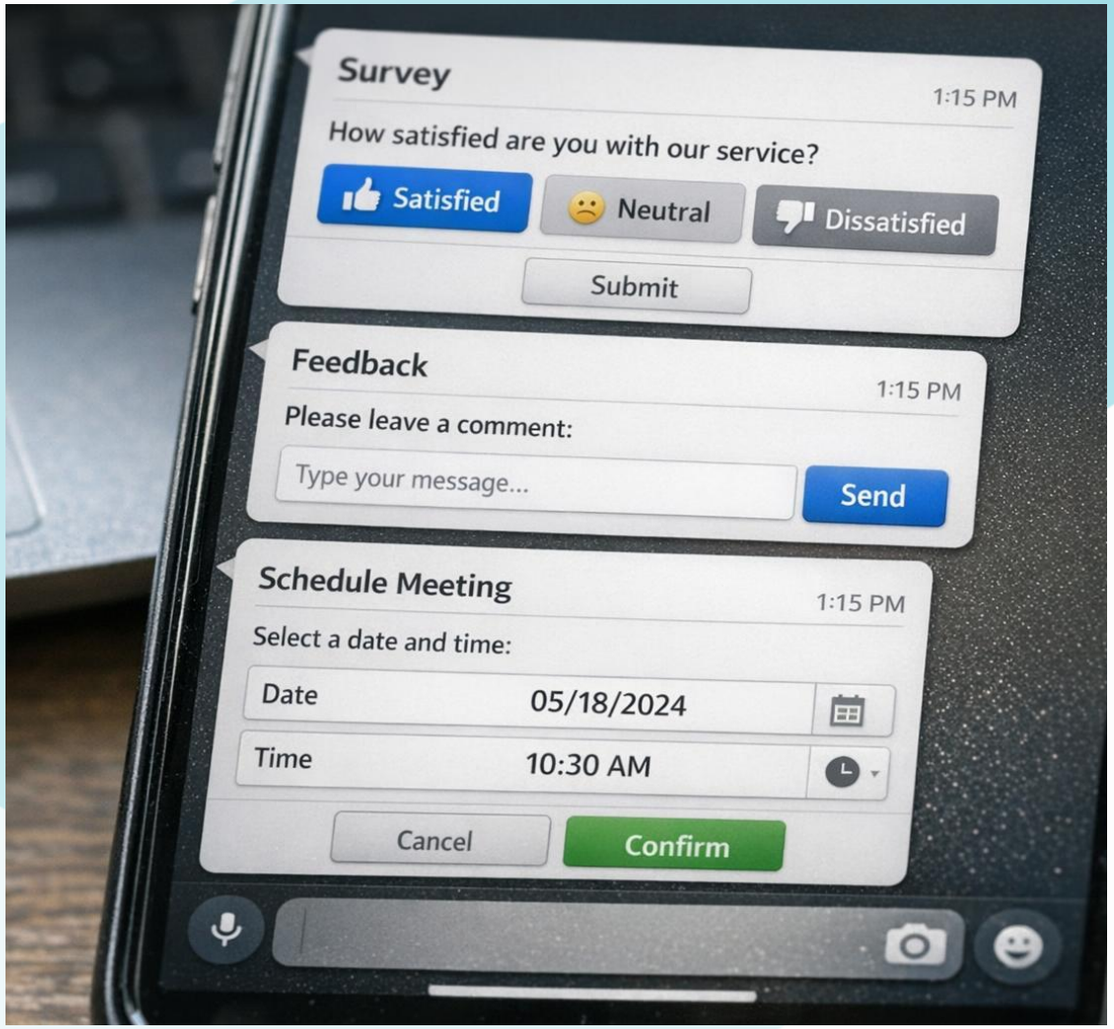
Use cases include approvals, surveys, data collection, decision forms, and quizzes within Teams chat.

Power Automate Integration

Power Automate posts adaptive cards to Teams users or channels, optionally waiting for user responses.

Outlook Actionable Messages

Adaptive Cards can be sent as actionable emails in Outlook, though response handling requires additional setup.



Design and Limitations of Adaptive Cards

Wait for Response Pattern

This pattern pauses the flow until the user submits the interactive card, resuming with their inputs.

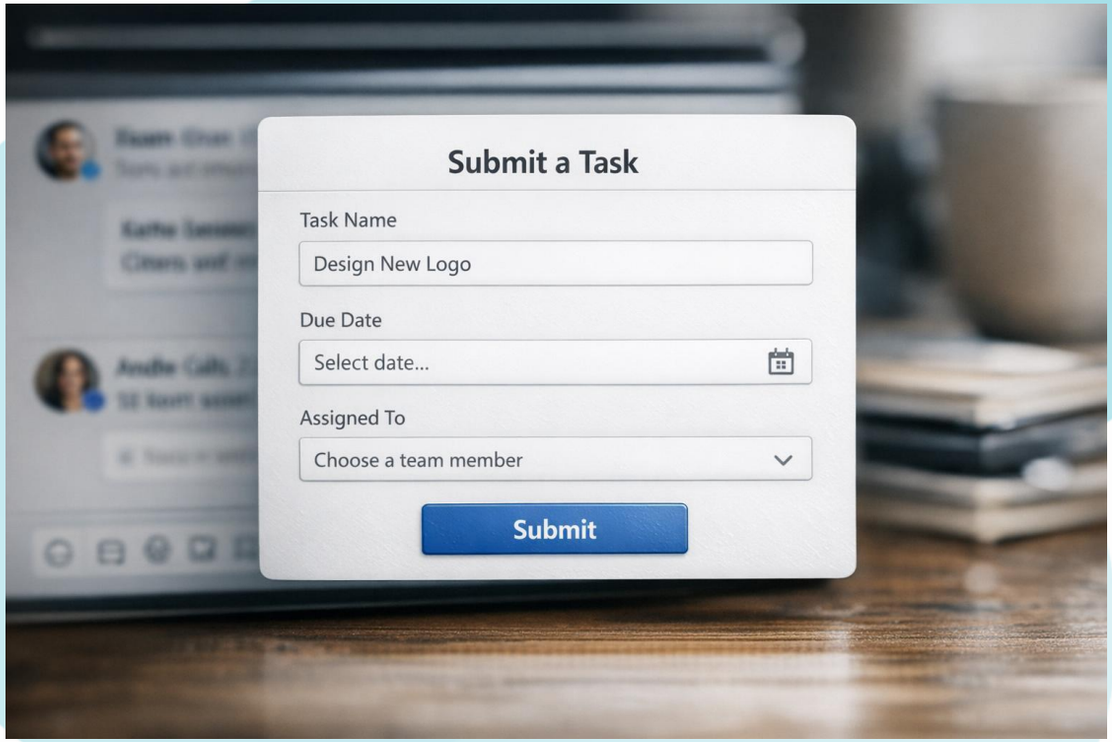
Designing Adaptive Cards

Cards are designed visually with Adaptive Card Designer or Teams Card editor using JSON for customization.

https://adaptivecards.microsoft.com/designer

Limitations and Security

Cards accept responses only from targeted users or channels, with some UI elements unsupported in Teams.



Microsoft Power Platform

Power Platform Expert Bootcamp – Day 3

Session Schedule (Day 3)

Time	Activity Title
09 00-10 15hrs	ALM/DevOps
10 15-10 30hrs	Break
10 30-12 00hrs	Power BI Integration & Solution Documentation
12 00-13 00hrs	Lunch
13 00-15 30hrs	Hands On Lab Invoice Approval Power BI dashboard

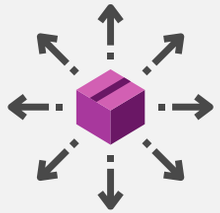
Agenda Overview

- Solutions
- Application Lifecycle Management (ALM) in Power Platform
- DevOps and Deployment Practices
- Power Platform Solution Documentation
- Integrating Power Apps and Power BI Reports

Solutions

What is a solution?

Solutions are ***authored***, ***packaged***, and ***maintained*** by a **publisher** allowing customizations to components that extend your Power Platform organization



Solutions allow ***distribution*** of business functionality across Power Platform environments

Deployment Using Solutions

- In Power Platform, solutions are leveraged to transport apps and components from one environment to another or to apply a set of customizations to existing apps.
- A solution can contain one or more apps and flows as well as other components such as site maps, tables, processes, web resources, option sets, and more.
- Some components are nested within other components, for example, a table contains forms, views, charts, fields, entity relationships, messages, and business rules.
- Solutions are stored within Dataverse and so need environments with Dataverse installed to be used.

Solution Components

Schema	User Interface	Environment Variables	Process & Code	Connection References	Security	Settings

Power Apps

Low-code application development

Power Virtual Agents

Powerful chatbots

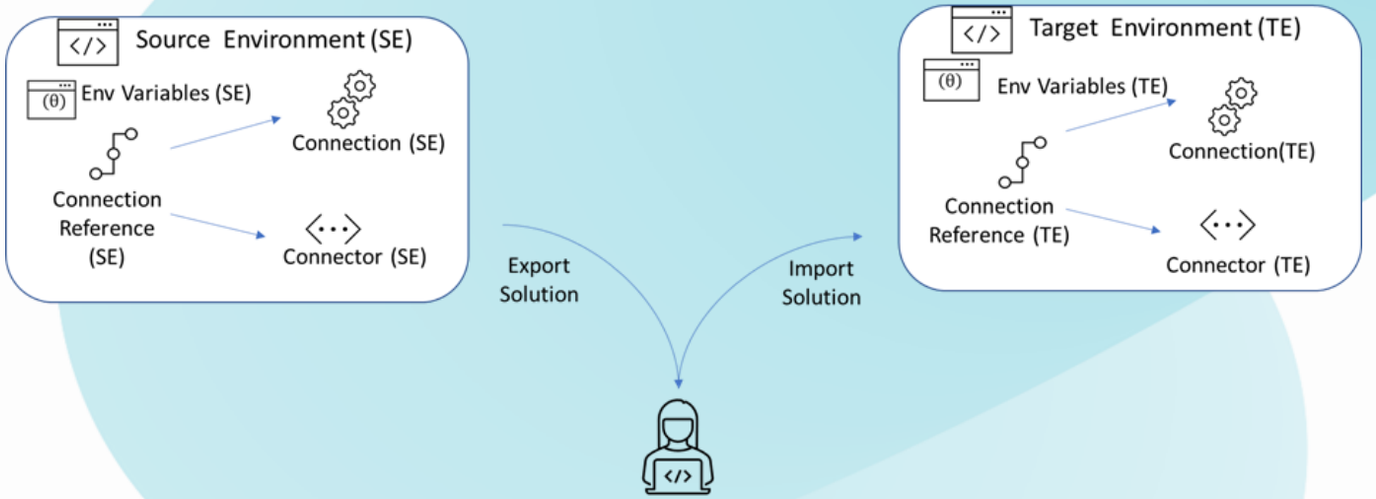
Power Automate

Intelligent process automation

Environment Variables and Connection References

- Environment variables allow you to transport application configuration data with solutions and optionally manipulate the values in your Application Lifecycle Management (ALM) pipeline.

- Connection references ensure that connections can participate in ALM by removing hard-coded identifiers within components and allowing new connections to be associated as you migrate solutions across environments.



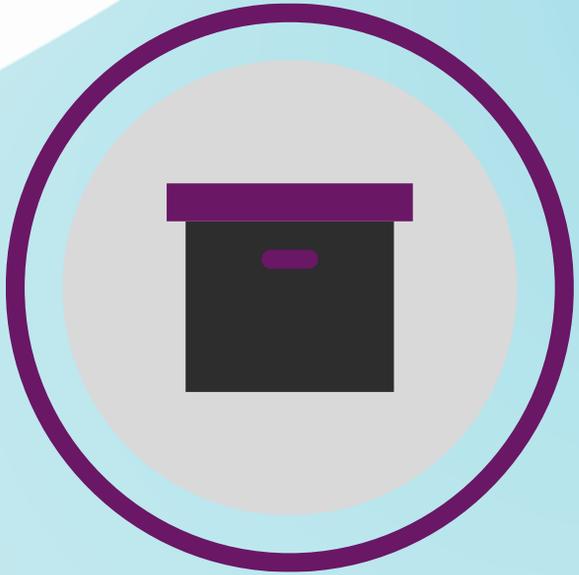
Unmanged vs Managed solutions

Unmanaged Solution

Collection of references to components

No restrictions on what can be added, removed, or modified

Recommended only during development of the solution



Managed Solution

Sealed “binary”

Components can’t be added or removed

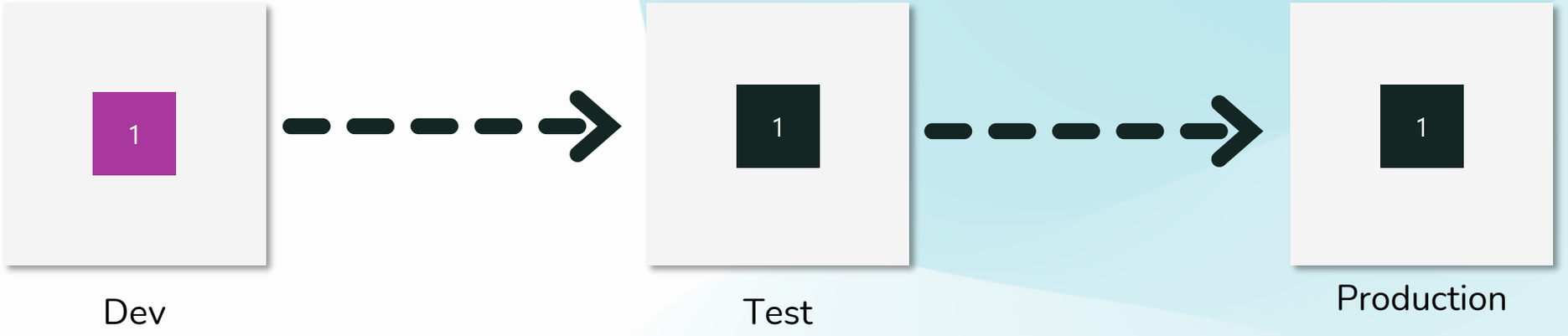
Cannot be exported

Recommended when a solution is not actively being customized*

Application Lifecycle Management (ALM) in Power Platform

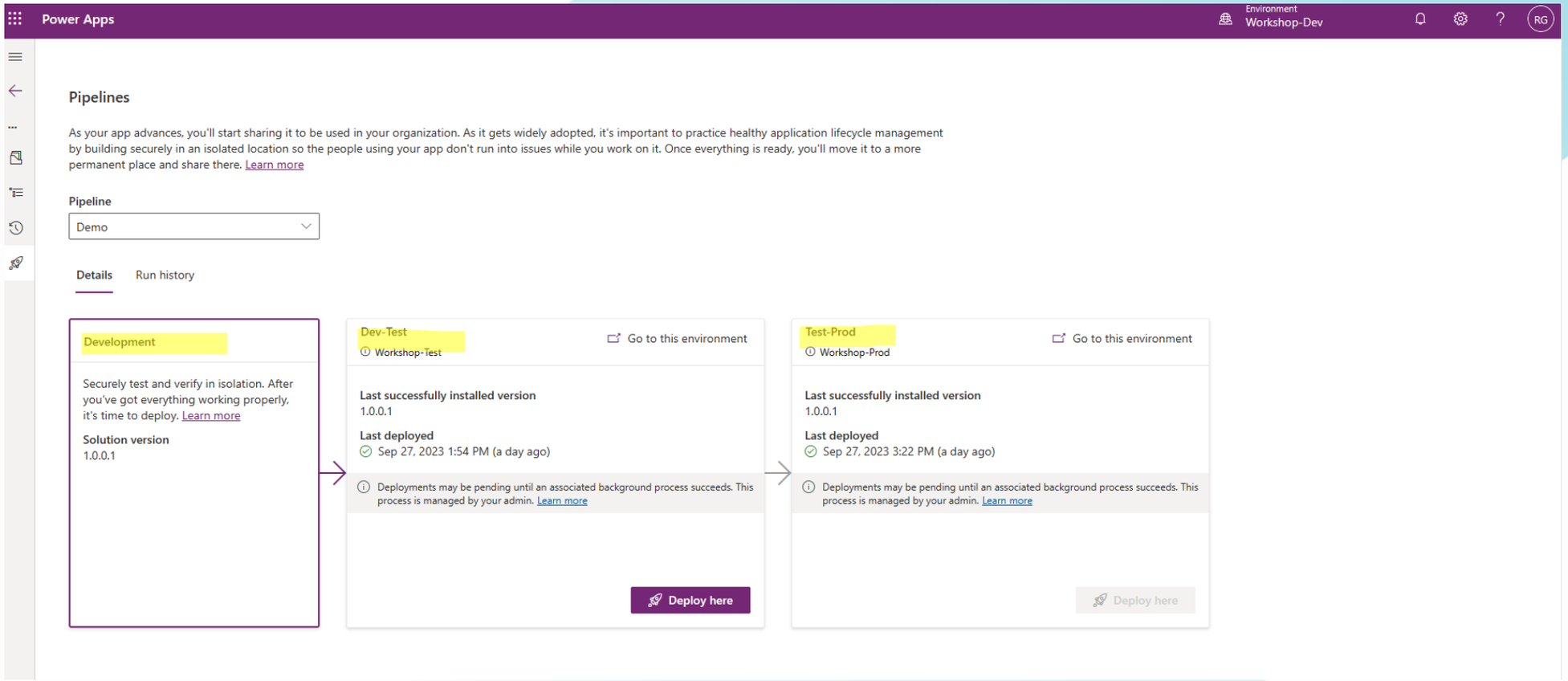
Application Lifecycle Management

- Application Lifecycle Management of a software includes plan and track, develop, build and test, deploy, operate, monitor, and learn from discovery.
- For a healthy ALM, there should be separate Dev, Test and Prod environments.
- Source control should be your source of truth for storing and collaborating on your components.
- Automated deployment mechanisms are preferred over manual.

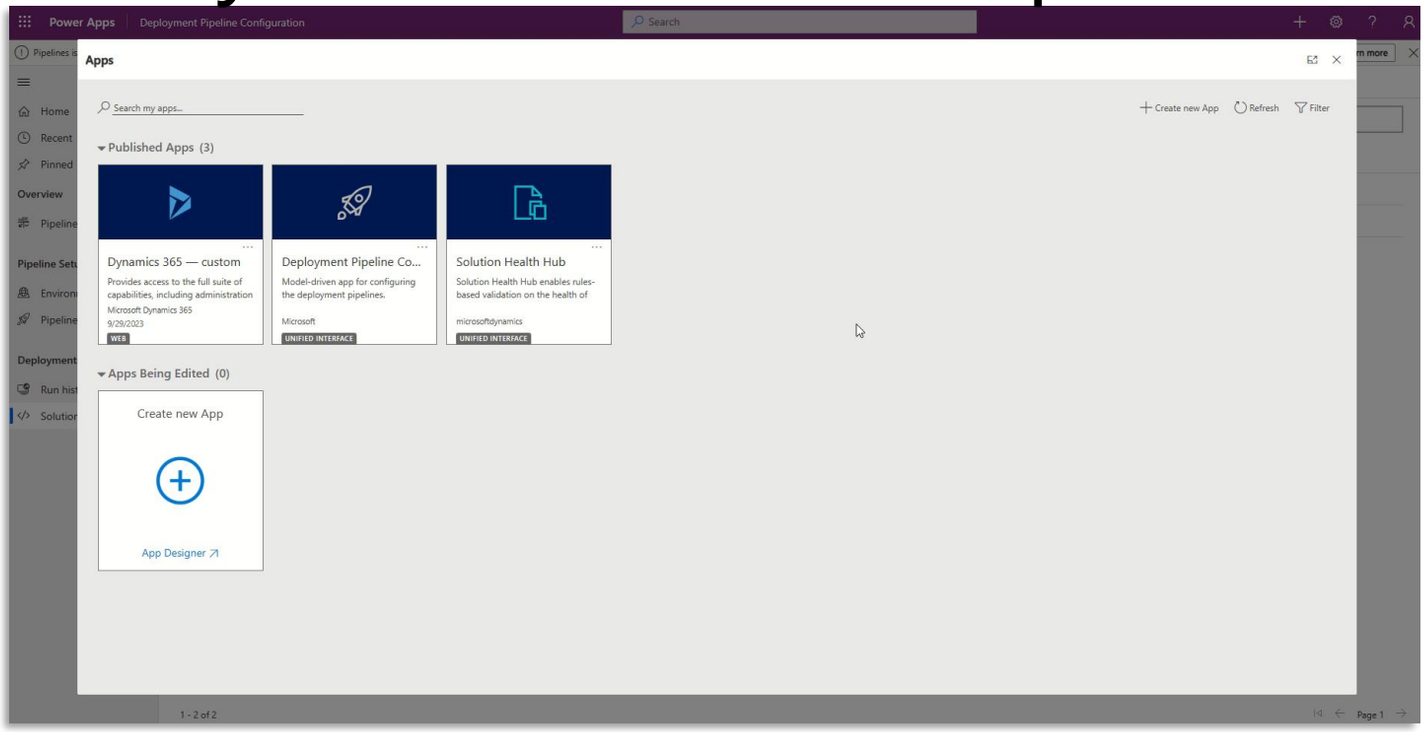


Power Platform Pipelines- In-Product ALM with Managed Environments

Pipelines in Power Platform aim to democratize application lifecycle management (ALM) for Power Platform and Dynamics 365 customers by bringing ALM automation and continuous integration and continuous delivery (CI/CD) capabilities into the service in a manner that's more approachable for all makers, admins, and developers.



Why Power Platform Pipelines



Centrally view all deployment activity across my team, organization, or tenant

"Host" Dataverse DB is the Pipelines control center

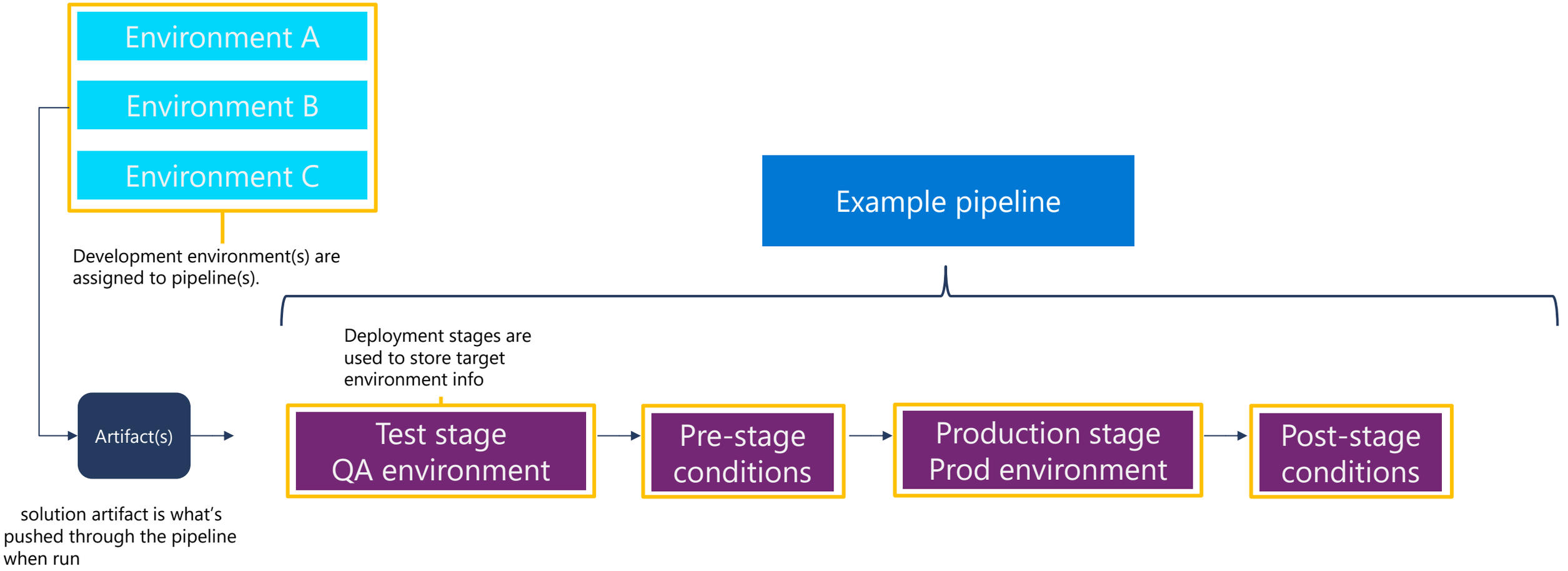
Centrally manage pipelines & security

Every solution, every version, every error log is automatically retained in "host" DB

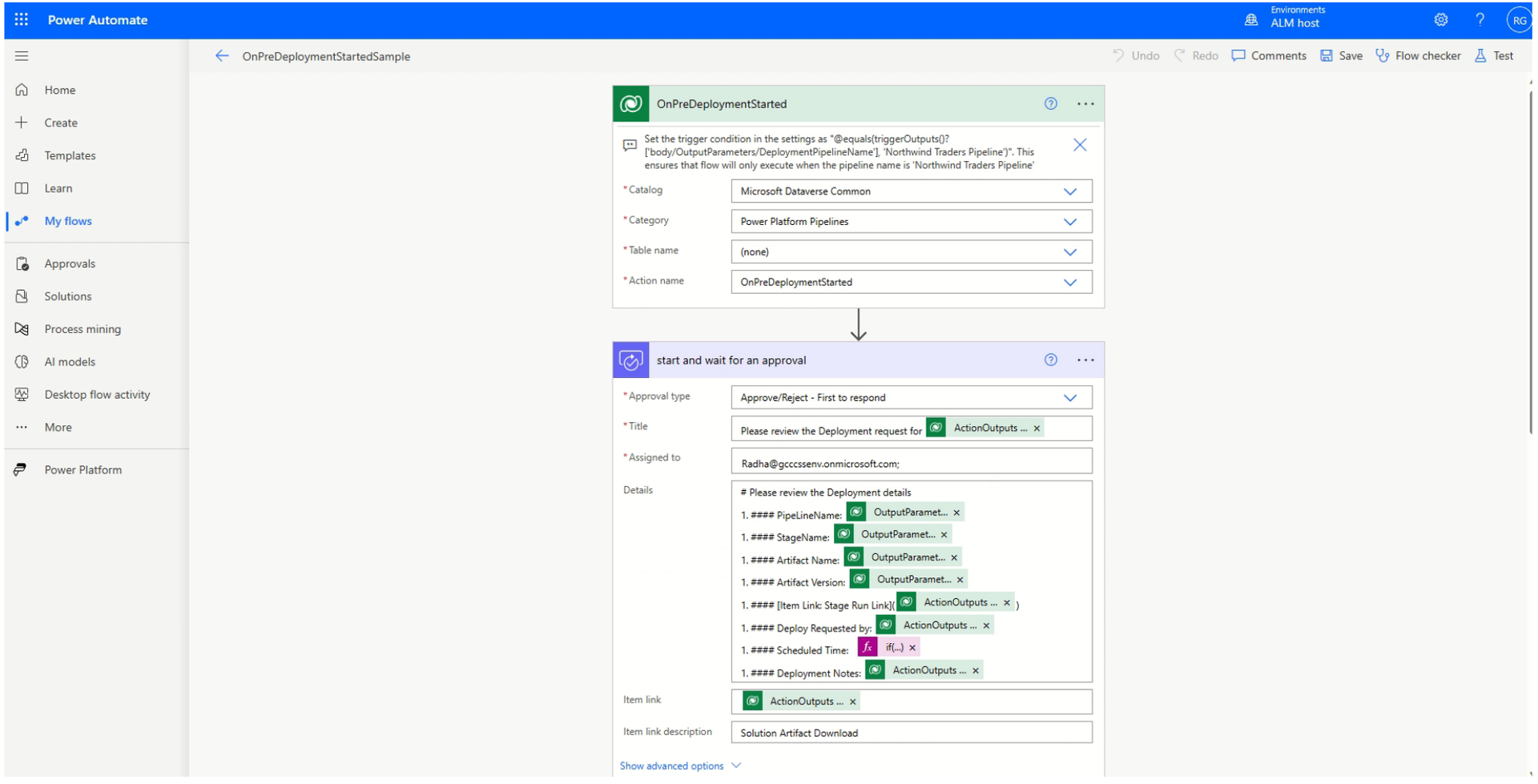
Access to Pipelines and resources are controlled by security roles

- Deployment Pipeline Admin
- Deployment Pipeline User

Pipelines in Power Platform key concepts



Deep dive: Pipeline extensibility



Pre-deployment

- Produces event to trigger cloud flows and/or plugins
- Deployment is pending (blocked) until flow or plugin updates deployment request to approved/rejected
- Executes after system pre-validates deployment & stores artifact in host

Post-deployment

- Produces non-blocking event
- Ex: send notification when deployment completes

- Note: pre-deployment events are always fired but won't block deployment unless set as required.

Configuring Approvals and Governance Before Production Deployment

Governance and Change Management

Organizations require formal approvals before deploying to production to ensure accountability and alignment with change management policies.

Approval Gates in Pipelines

Azure DevOps and Power Platform pipelines can enforce approval gates, requiring designated approvers before production deployment.

Approver Roles and Responsibilities

Approvers like project sponsors or IT managers review changes, test results, and grant deployment permission, ensuring oversight.

Automating Approvals with Power Automate

Power Automate can streamline release approvals by triggering deployment automatically once the approval is granted.

Data Migration and Common ALM Issues

Metadata vs Business Data

Solutions include metadata like tables and apps but exclude business data records, requiring separate migration tools.

Missing Dependencies

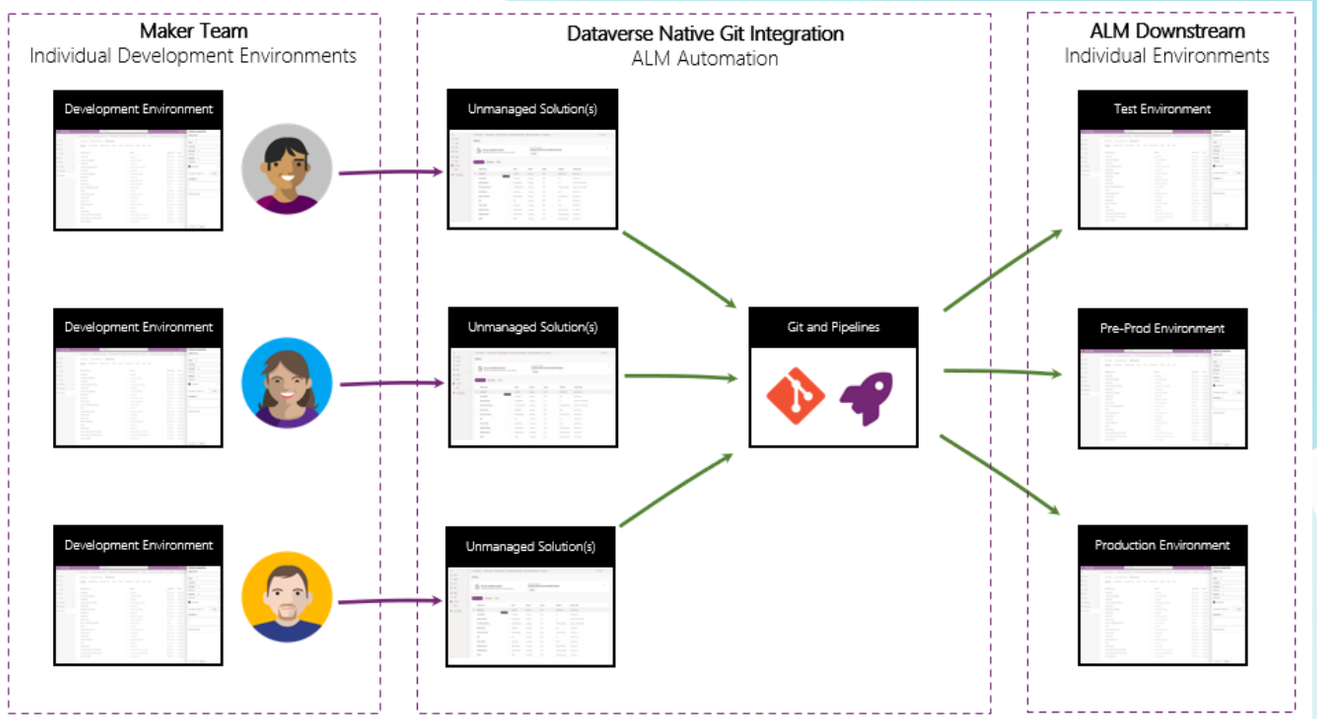
Forgetting components such as connection references can cause import failures or malfunctioning flows.

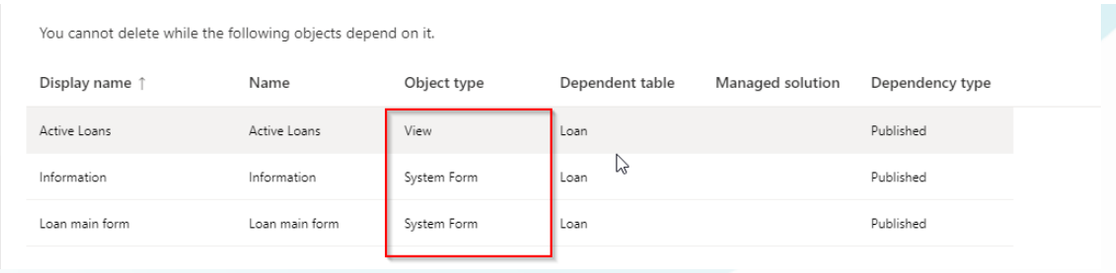
Syncing Multiple Developers

Coordinating changes among multiple developers is challenging; use a single source of truth or source control.

Environment Differences

Target environments need proper configuration like user accounts and roles; solutions don't handle user sharing.





DevOps and Deployment Practices

DevOps Principles in Power Platform: Source Control, CI/CD, and Team Collaboration

Source Control and Versioning

Power Platform solutions can be exported and tracked using source control systems like Git for version management.

Environment and Branch Strategy

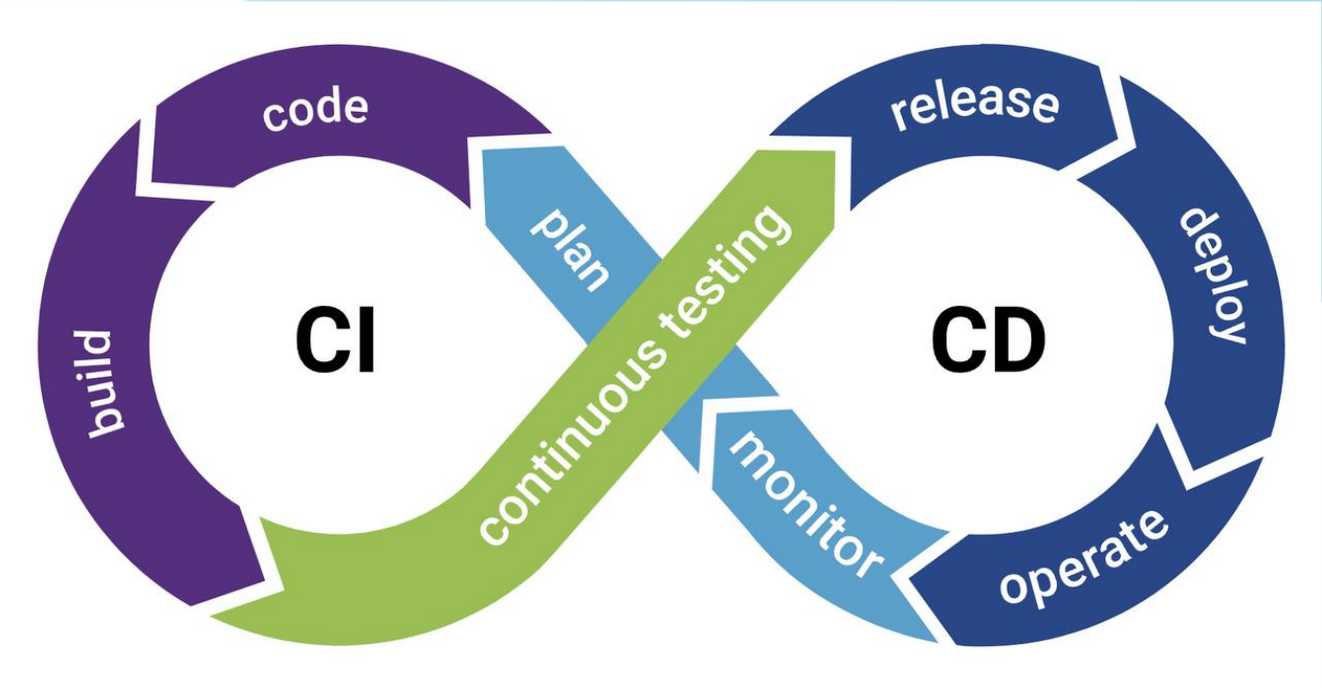
Use Dev, Test, and Prod environments as branches to safely build and deploy solutions without affecting production.

Build and Deployment Automation

Automate solution export, import, and quality checks using Azure DevOps or GitHub Actions for reliable deployments.

Team Collaboration and Testing

Coordinate multiple makers through solution ownership, peer review, and quality gates like Solution Checker tests.



DevOps Options in Power Platform

- **Pipelines:** for makers who don't have a requirement for controlling their solution's source code or adding specific business processes to their ALM process.
- **ADO Build Tools:** for IT administrators and developers who have highly-customized ALM requirements and need granular control over their ALM processes.
- **ALM Accelerator:** for makers and more advanced, code-first makers who want to use source control, automation, and a maker-friendly canvas app for their ALM tasks.
- **GitHub Actions:** for developers who want to use GitHub as their source control platform and leverage its features and integrations for ALM

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

Connection References, Versioning, and Governance

Connection References & Environment Variables

Connection references act as placeholders for connections, enabling easy mapping in different environments. Environment variables carry config specific to each environment.

Managed vs Unmanaged Solutions

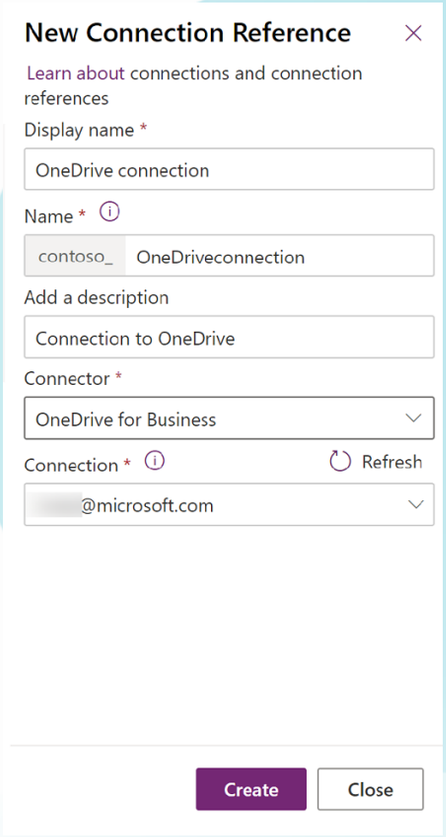
Development uses unmanaged solutions for editing; managed solutions deployed to production ensure stability and prevent direct edits.

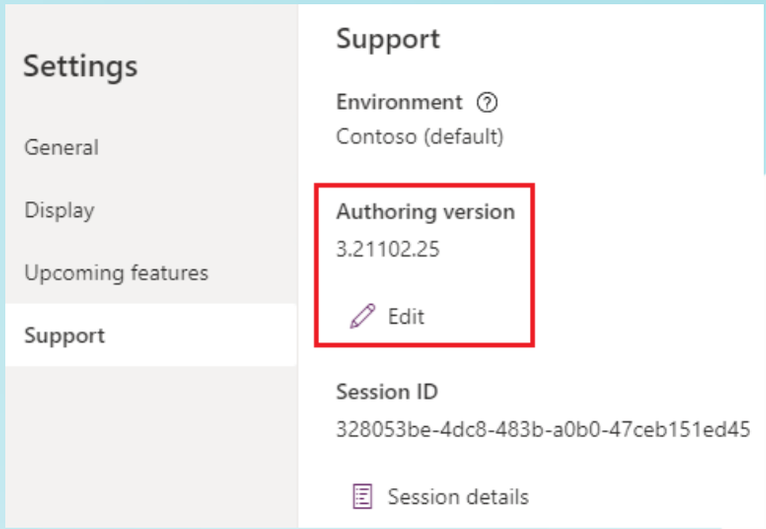
Versioning and Deployment Lifecycle

Increment solution versions for releases; pipelines deploy tested versions to test and production ensuring controlled upgrades and rollbacks.

Governance and ALM Process

Governance enforces authorized deployments and approvals to prevent unapproved production changes, maintaining source of truth integrity.





Power Platform Solution Documentation

Documentation Best Practices

✓ Use consistent naming conventions
Clear, camelCase naming improves clarity and maintainability.

✓ Document "just enough," not everything
Avoid documenting every action; focus on purpose, triggers, and main sequences.

✓ Use inline comments in Power Apps formulas
Comments help future maintainers quickly understand logic.

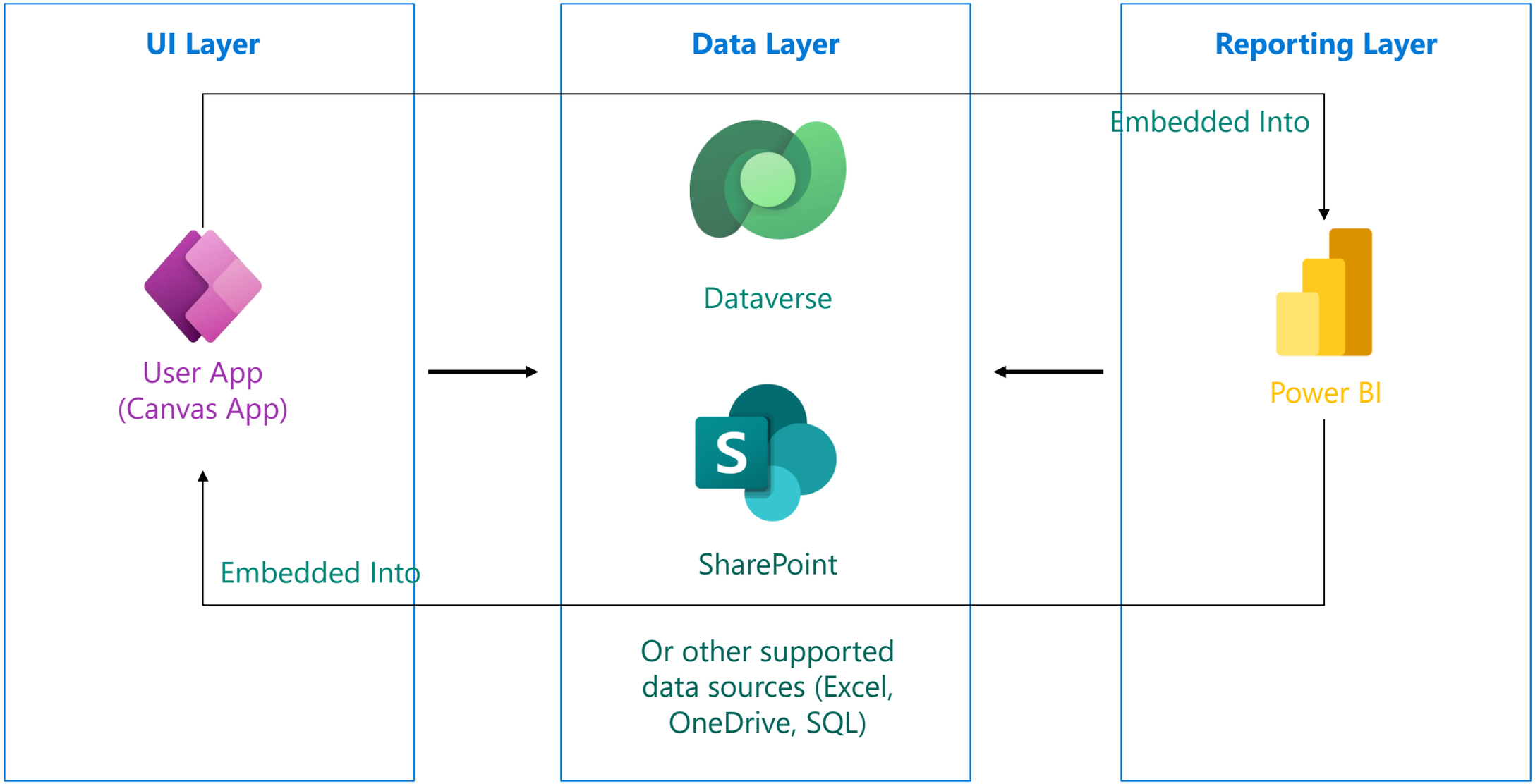
✓ Keep architecture diagrams updated
ERDs, integration diagrams, and data flows must reflect current solution state.

✓ Leverage AI & automation tools
AI Doc and GitHub Copilot help generate solution summaries and markdown docs.
Power-CAT-Tools/AI_DOCUMENTATION.md at main · microsoft/Power-CAT-Tools
https://pnp.github.io/cli-microsoft365/cmd/flow/flow-get

✓ Keep documentation accessible (SharePoint, OneNote)
Power Wiki recommends using centralized knowledge bases.

Integrating Power Apps and Power BI Reports

Power BI and Power Apps Integration Possibilities



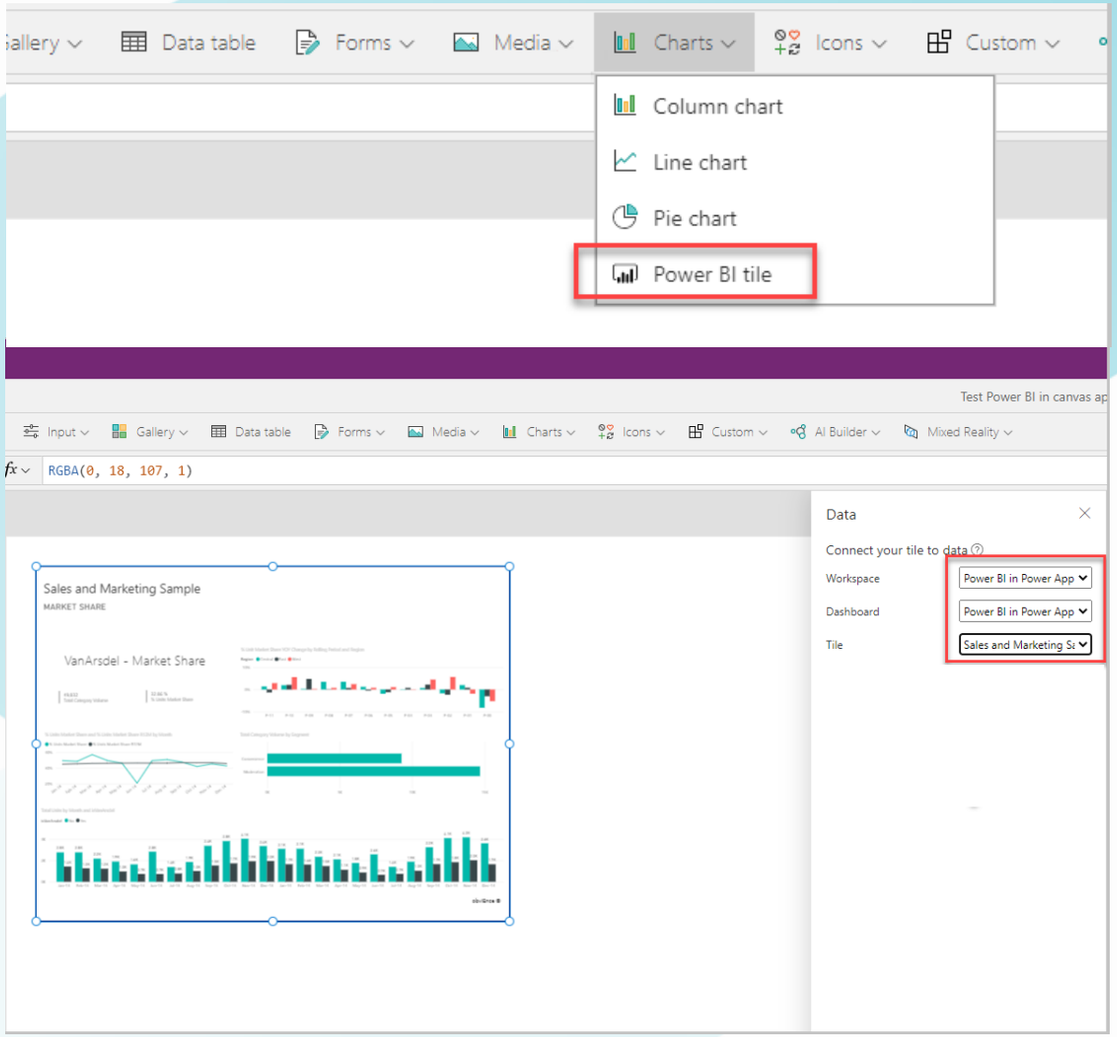
Integrating Power BI Dashboard in Power Apps

Power Bi Dashboard

Power Bi reports will have to be pinned to a dashboard for Power Apps to be able to view the information. Configure reports via Power Bi portal to dynamically display visuals for the report.

Dynamically Update Visuals

Updating the Power Bi Dashboard will automatically update all apps that are using the Tile.



Integrating Power Apps in Power BI

Embedding Power Apps in Power Bi Reporting

Build custom pages to enhance reporting dashboard. Enable interactions to perform additional actions (edit, new, delete) to backend database.

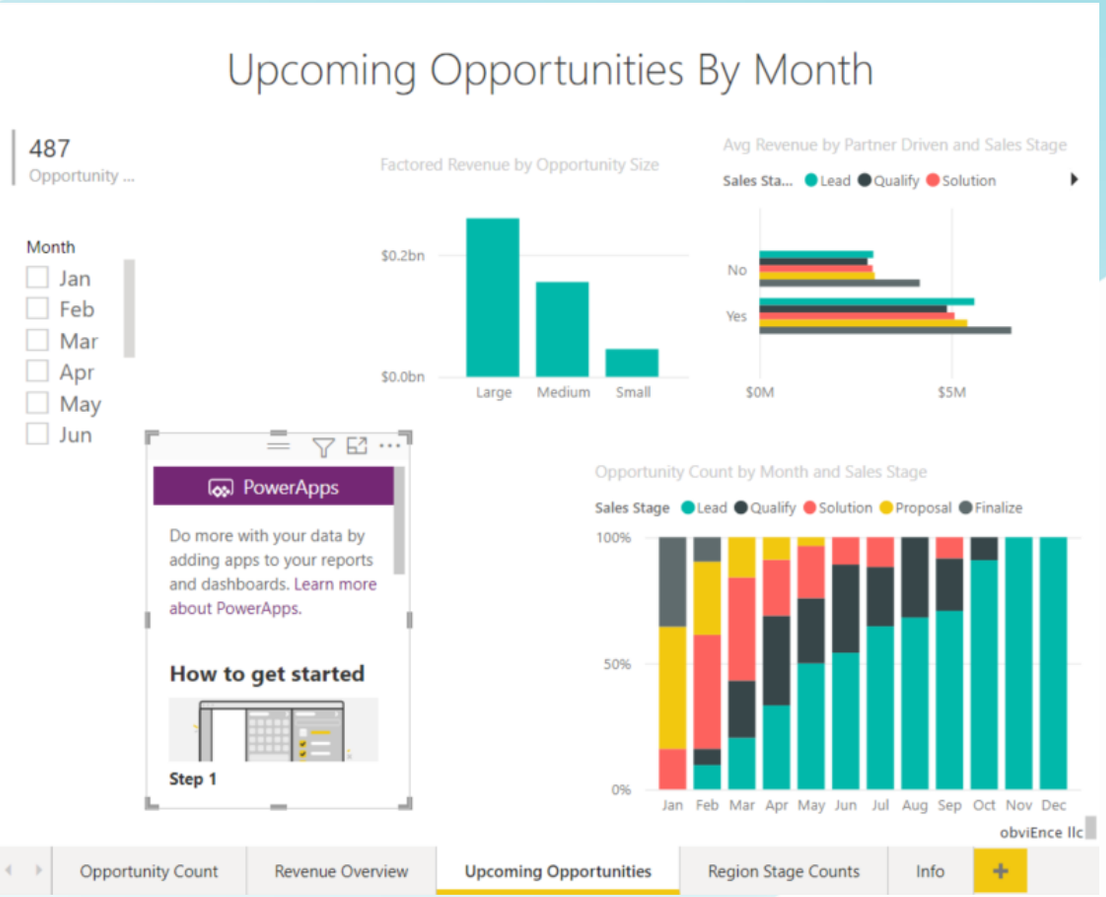
Custom Input and Output Properties

Embedded canvas apps support input properties for data and output properties to display customized information, enabling additional way to interact.

Common Use Cases

Typical embedded canvas apps are used to collect additional information, perform calculations, to collect information used for follow-up to the report.

**Do note that the data on the report will only refresh as part of the scheduled/manual refresh. Not upon update via embedded canvas app*



End