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**DYNAMICS CON**

**LIVE**

**MAY 2024**

# Innovating with PowerApps in Production and Warehousing Quality Management

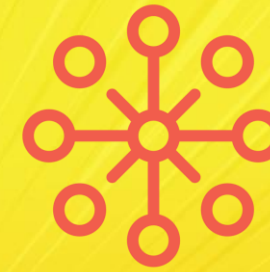


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# Jessica Burkhart



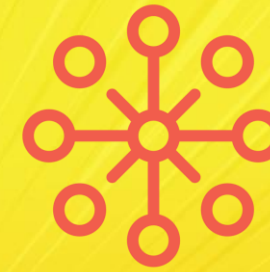
Strabo  
Partners

- D365 F&SCM Technical Architect
- X++ developer
- First time presenter at DynamicsCon





# Chad Schadewald



Strabo  
Partners

- Power Platform Developer
- X++ developer
- First time presenter at DynamicsCon



# Agenda

- Why use a Power App for Quality Management?
- Overview of Quality Control solution
- Leveraging features in Power Platform
- Quality Management App Demo
- Limitations of Power Apps and Power Platform



# Why use a Power App for D365 SCM Quality Control?



# D365 SCM Quality Control Options

- Quality Orders are highly configurable but complex
- Quality Orders require QC personnel to enter data on the full screen
- Warehouse mobile device QC checks only capture pass or fail

The screenshot displays the 'Finance and Operations' interface for Quality Control. At the top, there is a search bar containing 'quality order'. Below this, a navigation bar includes 'Edit', '+ New', 'Delete', and 'Options'. The main content area is titled 'Test groups' and shows a 'Standard view' of a table. The table has columns for 'Test group', 'Description', 'Acceptable quality level', 'Item sampling', and 'Destructive test'. One row is highlighted, showing 'Concentrat' with a description of 'Concentration', an acceptable quality level of '100.00', and item sampling of '1 pcs'. Below the table, there are tabs for 'Overview', 'General', and 'Test'. The 'Test' tab is active, showing a form with sections for 'TEST MEASUREMENT VALUES', 'ATTRIBUTE ASSOCIATION', 'TEST VARIABLES', and 'TEST INSTRUMENT'. The 'TEST MEASUREMENT VALUES' section includes fields for 'Standard' (25), 'Min' (10), 'Max' (30), 'Min tolerance (%)' (60.00), and 'Max tolerance (%)' (20.00). The 'ATTRIBUTE ASSOCIATION' section shows 'Attribute' set to 'Concentration'. The 'TEST VARIABLES' section has 'Variable' and 'Default outcome' fields. The 'TEST INSTRUMENT' section has 'Test instrument' and 'TEST UNIT' (Unit) set to 'pct'.



# Benefits of a QC Canvas App

- Can incorporate with existing systems and functionality
- Eliminate the need for paper in your warehouse
- Easily customized for your desired level of complexity
- Optimized for tablet or phone
- Complete control over app appearance and design
- Real time alerts
- Captured data is available for reports in Power BI

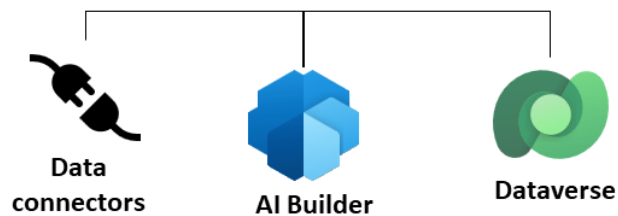




# Power Platform Overview



The low code platform that spans Microsoft 365, Azure, Dynamics 365, and standalone apps.



- Virtual Data Entities
- Business Events
- Custom Services



# Quality Control Solution Overview



# Business Scenario

- Several production lines manufacturing high-end speakers.
- Quality checks are performed every 30 minutes.
- Paper responses are frequently lost or illegible.
- The business would like to leverage a canvas app to more accurately track the quality check responses, automatically validate data captured, capture additional data like pictures, and decrease the response time for quality check failures.





# Solution Design

- In D365 SCM, production order start sends a business event which triggers a flow in Power Platform.
- A Power Automate flow creates a table record for the quality check app based on the item's quality group in D365 SCM.
- In the app, the user selects an available production order for quality check.
- The user answers the quality check questions and submits the results.
- Email alerts are sent by a Power Automate flow based on the results.
- A Power Automate flow triggers to create a new iteration for the next quality check for this production order.



# Business Events in D365 SCM

Production order start triggers QC Check creation

- COC method
  - Creates and sends the business event
- Keep it simple!
  - Send only minimal fields to trigger the business event
- D365 SCM continues processing separately from Power Automate.

```
[ExtensionOf(classStr(ProdMultiStartUp))]  
final class STRProdMultiStartUp_Extension  
{  
    protected void startProductionOrder(ProdParmStartUp _prodParmStartUp, ProdPurch _prodPurch)  
    {  
        next startProductionOrder(_prodParmStartUp, _prodPurch);  
  
        ProdTable prodTable = ProdTable::find(_prodParmStartUp.ProdId);  
        InventTable inventTable = InventTable::find(prodTable.ItemId);  
  
        STRProductionOrderStartRequest strProdOrderStartRequest = new STRProductionOrderStartRequest();  
  
        strProdOrderStartRequest.dataAreaID = prodTable.DataAreaId;  
        strProdOrderStartRequest.orderNumber = prodTable.ProdId;  
        strProdOrderStartRequest.barcode = inventTable.strGetItemBarcode();  
  
        STRProductionOrderStartBusinessEvent::newFromRequest(strProdOrderStartRequest).send();  
    }  
}
```



# PA Flow triggered by Business Event

- The heavy lift is done by the flow.
- The Item Quality Group virtual entity is used by the flow to determine the quality group for the production order's finished good.
- Additional quality group configurations are stored in a Power Apps table.
- A quality check transaction record with an initial iteration is created for the production order in the Power Apps quality check table.
- Transactions corresponding to the quality check questions are created as sub-checks.





# PA Flow triggered by Business Event

The screenshot shows a Power Automate flow canvas for a process named 'STRQCChecksCreation'. The flow is triggered by a 'Production Order Start' event. The steps in the flow are:

- Production Order Start
- Parse JSON
- List Production Orders
- Apply to each Production Order



At the bottom of the canvas, there are two buttons: '+ New step' and 'Save'. The top of the interface shows the 'Power Apps' logo, a search bar, and the environment name 'Strabo-sandbox'. The right side of the top bar contains icons for 'Undo', 'Redo', 'Comments', 'Save', 'Flow checker', and 'Test'.



# App Gallery for Active tests

```
refresh(STRQCCheckTransIterations),  
ClearCollect(  
  ActiveQCChecks,  
  AddColumns(  
    STRQCCheckTransIterations,  
    ProductionOrder,  
    QCCheckTrans.ProductionOrderNumber,  
    QCCheckTransId,  
    QCCheckTrans.QCCheckTrans,  
    IterationNumber,  
    Text(Iteration)
```

mat text Remove formatting Find and replace

	Quality Group	Production Order	Item	
	Speaker Check	P000130 <small>InProcess</small>	D0003 - Standard Speaker	<a href="#">Continue</a>
	Speaker Check	P000152 <small>InProcess</small>	D0004 - High End Speakers	<a href="#">Continue</a>



# Capture Quality Check Responses

Power Apps | Search | Environment: Strabo-sandbox

← Back | + New row | + New column | Refresh | Create an app | Edit table properties

STRQSubChecksTrans

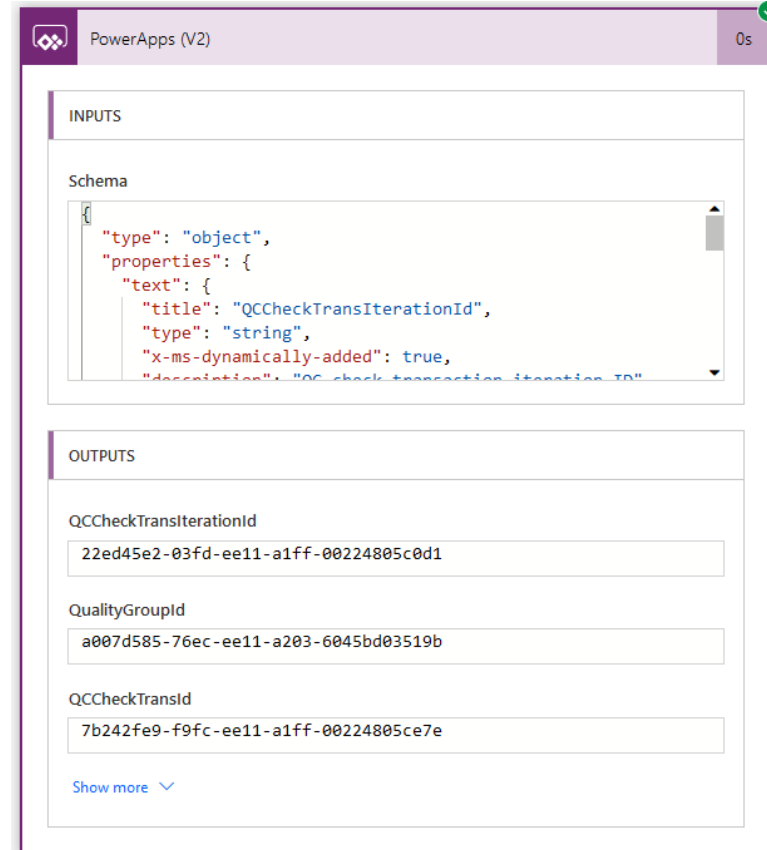
Description	QCCheckTransliteration*	Immediate...*	FailureNotif...*	ExpectedCode	Question	Question...*	TestResult*
Speaker Code SubCheck 01	QC-I-000109	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	4710482648107	Scan the speaker barcode.	1	Fail
Speaker Code SubCheck 01	QC-I-000111	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	4710482648107	Scan the speaker barcode.	1	Fail
Speaker Code SubCheck 01	QC-I-000114	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	4710482648107	Scan the speaker barcode.	1	Fail
Speaker Code SubCheck 01	QC-I-000103	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	1328593047561	Scan the speaker barcode.	1	Fail
Speaker Code SubCheck 01	QC-I-000105	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	4710482648107	Scan the speaker barcode.	1	Fail
Speaker Code SubCheck 01	QC-I-000104	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	1846205728368	Scan the speaker barcode.	1	N/A
Speaker Code SubCheck 01	QC-I-000107	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	4710482648107	Scan the speaker barcode.	1	Fail
Speaker Code SubCheck 01	QC-I-000108	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	4710482648107	Scan the speaker barcode.	1	Fail
Speaker Code SubCheck 01	QC-I-000110	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	4710482648107	Scan the speaker barcode.	1	Fail





# Capture Quality Check Responses

- A quality check failure triggers the flow to send an immediate alert.
- An additional email is sent at the end of the flow to provide a summary of the most recent QC Check results.
- QC Check data is stored in the Dataverse tables and is available for use in Power BI reports.



The screenshot displays the PowerApps (V2) interface for a flow. The top bar shows the PowerApps logo, the text "PowerApps (V2)", and a "0s" indicator. The main content is divided into two sections: "INPUTS" and "OUTPUTS".

**INPUTS**

Schema

```
{  
  "type": "object",  
  "properties": {  
    "text": {  
      "title": "QCCheckTransIterationId",  
      "type": "string",  
      "x-ms-dynamically-added": true,  
      "description": "QC check transaction iteration ID"  
    }  
  }  
}
```

**OUTPUTS**

QCCheckTransIterationId  
22ed45e2-03fd-ee11-a1ff-00224805c0d1

QualityGroupId  
a007d585-76ec-ee11-a203-6045bd03519b

QCCheckTransId  
7b242fe9-f9fc-ee11-a1ff-00224805ce7e

Show more ▾

# Next Iteration

- A flow triggers once the quality check is completed.
- The user can immediately start another quality check for the same production order.
- Another flow watches the Production Orders virtual entity. When the production order status changes to Ended, the flow removes and uncompleted quality check records.







# Leveraging Features in Power Platform





# Connection References

- Office 365 Users
  - Access user profiles in your organization using your Office 365 account
- Office 365 Outlook
  - Show, send, delete, and reply to email messages
- Microsoft Dataverse
  - Integrate data into Power Automate from D365 SCM
- Azure Blob Storage
  - Upload and retrieve files from a blob storage account

	Name
	jessicab@strabo.partners Office 365 Users
	jessicab@strabo.partners Office 365 Outlook
	jessicab@strabo.partners Microsoft Dataverse
	Azure Blob Storage Azure Blob Storage



# Email Alerts

Send failure alert email

\*To: SupervisorEmail x

\*Subject: QC Test Failure!

\*Body:

Font 12 B I U [Rich Text Editor Icons]

Hello QC manager,

Quality check {x} FailedCheckInfo x for production order  
ProductionOrderNumber x . item ItemNumber x  
ItemDescription x has failed.

Expected value: {x} ExpectedValue x  
Entered value: {x} EnteredValue x

Quality check iteration # Iteration x summary for order:  
{x} CheckSummary x

Show advanced options v

QC Test Failure!

Chad Schadewald <chads@strabo.partners> Today at 4:46 PM  
To: Chad Schadewald

Hello QC manager,

**Quality check "Scan the speaker barcode." for production order P000152, item D0004 - High End Speaker has failed.**

Expected value: 1328593047561  
Entered value: 123BAD

**Quality check iteration #1 summary for order:**

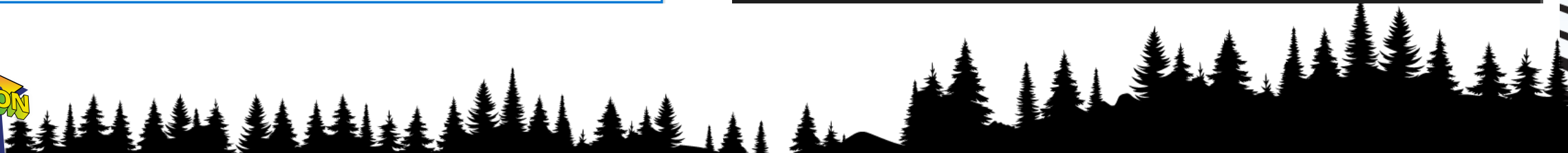
Quality Check: "Scan the speaker barcode."  
- Fail

Quality Check: "Is the speaker free of any obvious defects?"  
- Pass

Quality Check: "Are the output cables fully attached?"  
- Pass

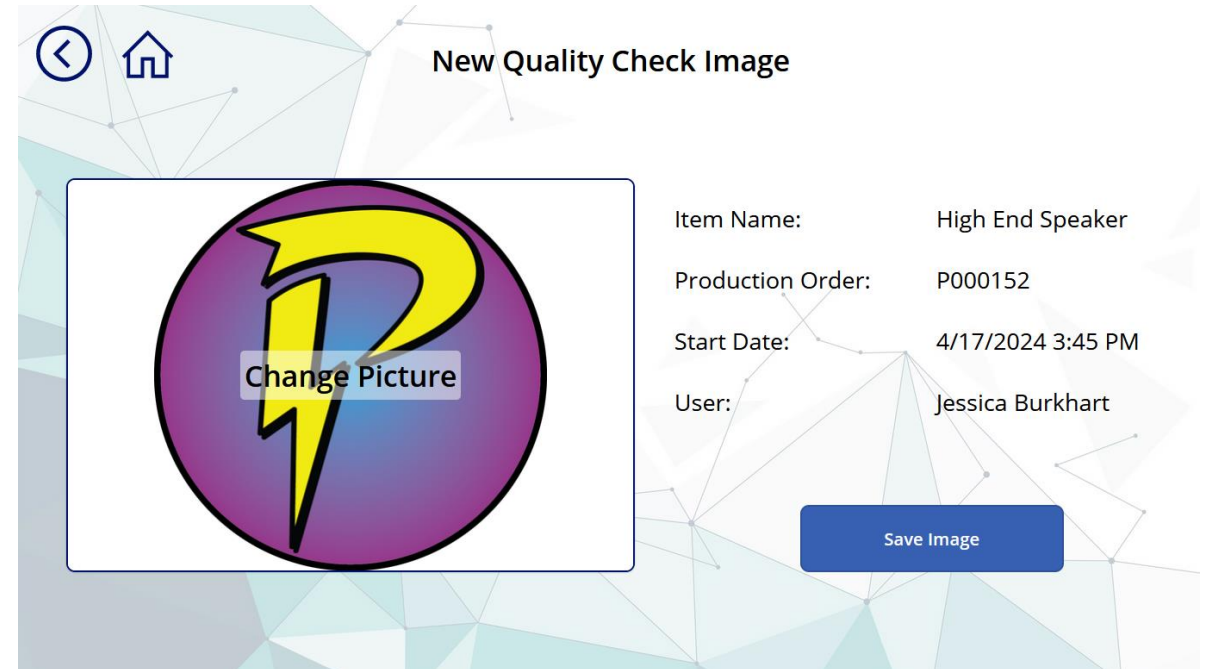
Quality Check: "Is the front grill cloth fully attached?"  
- Pass

Quality Check: "Is the speaker centered in the cabinet?"  
- Pass



# Image Capabilities

- Barcode scanning
  - Uses the device camera to scan barcodes.
- Image capture
  - Use the device camera to take pictures and upload the images through the app.
- Fetch images from D365 SCM
  - Pull product images from D365 SCM using the Product document attachments virtual entity.





# Blob Storage

- Azure storage account with blob container
- Considerably more affordable
- The connector uses the storage account name and access key.
- A Power Apps action saves the image to the blob with a unique Blob Storage ID.
- Images from the blob can be displayed in you canvas app using a gallery.

The screenshot shows the configuration for the 'Add image to STRQCCheckImages' action. The fields are as follows:

- \* Table name: STRQCCheckImages
- \* BlobStorageId: BlobStorageID
- \* Iteration: int(...)
- \* ProductionOrder: ProductionOrder
- \* QCCheckImage: null
- \* QCCheckTrans: QCCheckTrans
- \* QCCheckTransIteration (STRQCCheckTransIteration): str\_strqcchecktransiterations(QCCheckTransl...)

There is a 'Show advanced options' link at the bottom.

The screenshot shows a gallery titled 'STRQCCheckImages' with the following data rows:

BlobStorageId	STRQCCheckImageId	ProductionOrder	Iteration
JTJmcWNhcHAIMmZhMT...	7c00e702-fafc-ee11-a1ff-002248...	P000105	1

# App Design Features

- Hints/tool-tips are easily configured
- Button and text size are fully configurable
- Accessibility for visual and motor impairments

P000152: D0004 - High End Speaker

Scan the speaker by

Is the speaker free

Are the output cabl

Is the front grill cloth fully attached?  Yes  No

Is the speaker centered in the cabinet?  Yes  No

Submit ⓘ

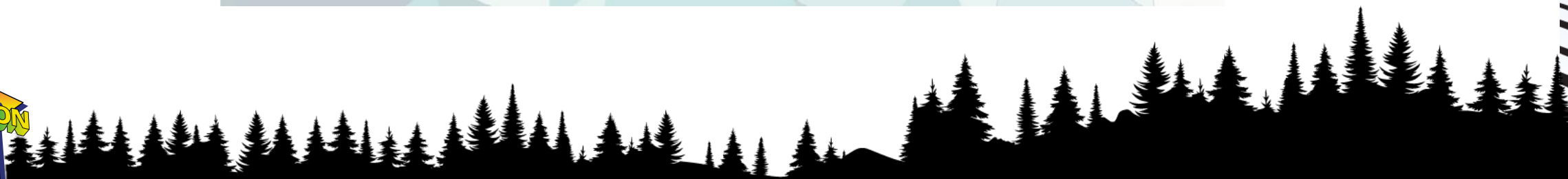
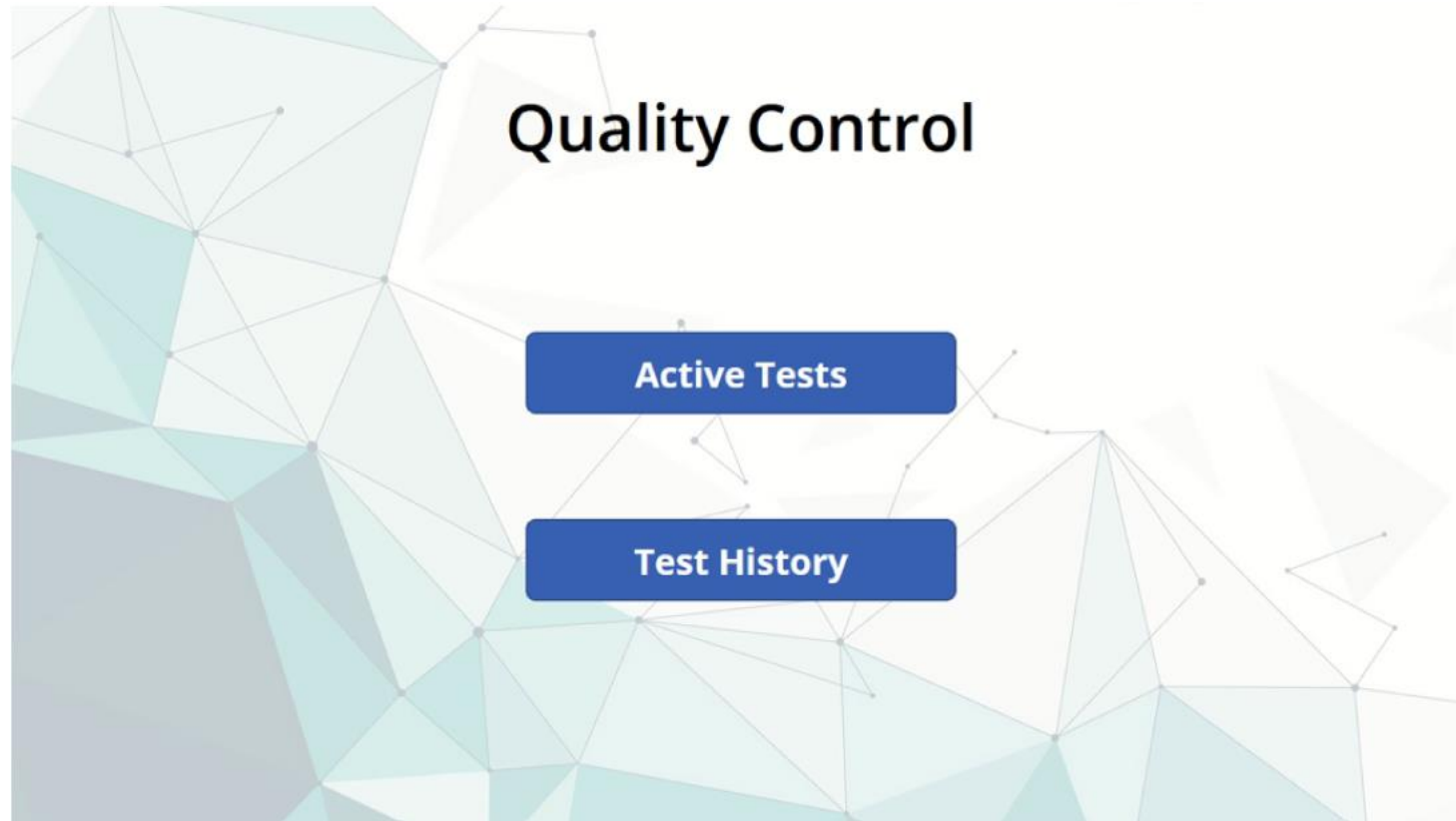
Scan

Please fill out all questions before hitting submit.

# Quality Control Check App Demo



# Quality Check App





# Power App and Power Platform Limitations



# Limitations

- Security can be cumbersome.
- Filtering on grids is limited.
- Multiple levels of many-to-one relationship expansion isn't supported.
- The app cannot read device information.
- No feedback is provided to the user when the app is processing. This must be added by the developer.
- Low-code is not as flexible for complex business scenarios.





Q&A