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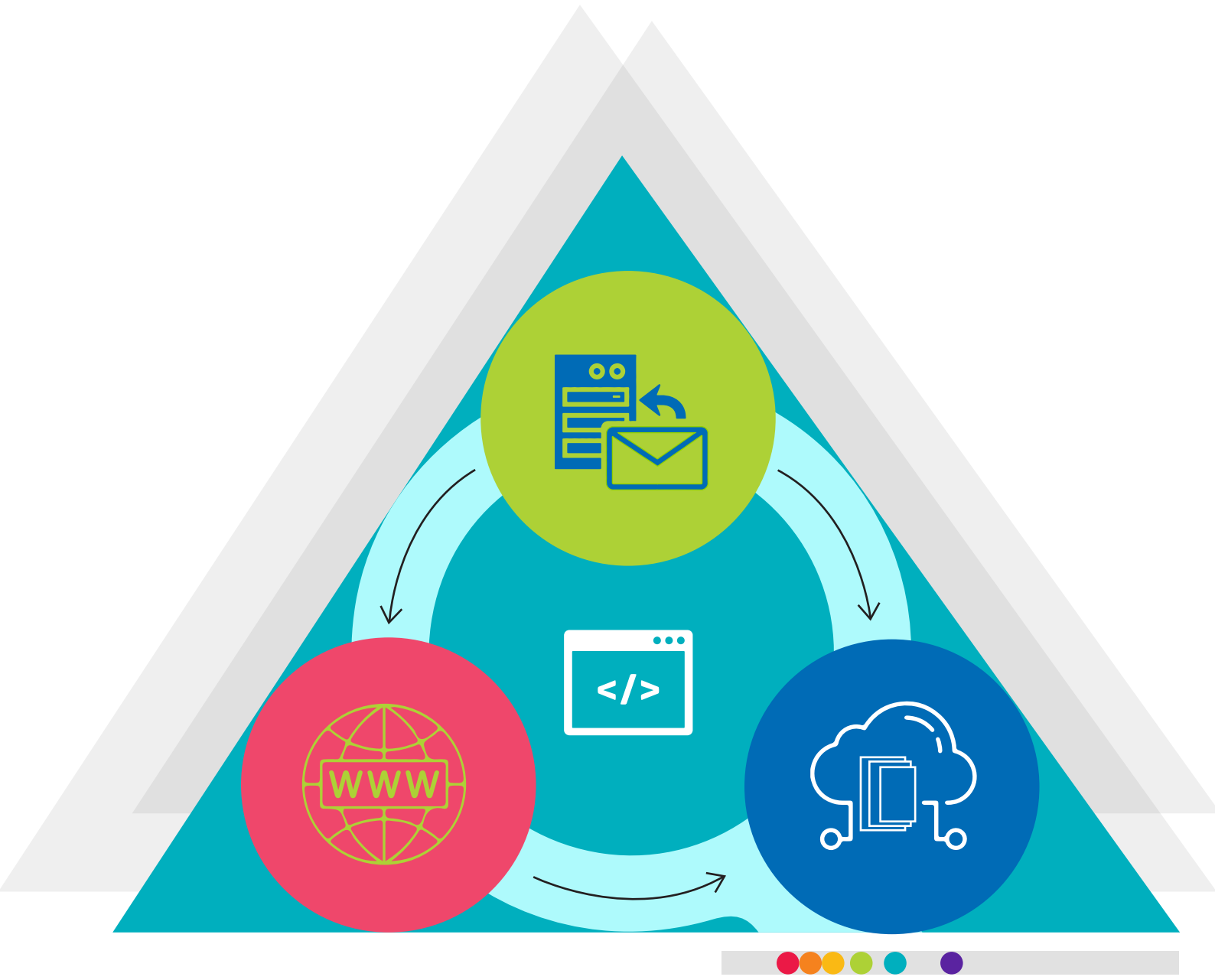
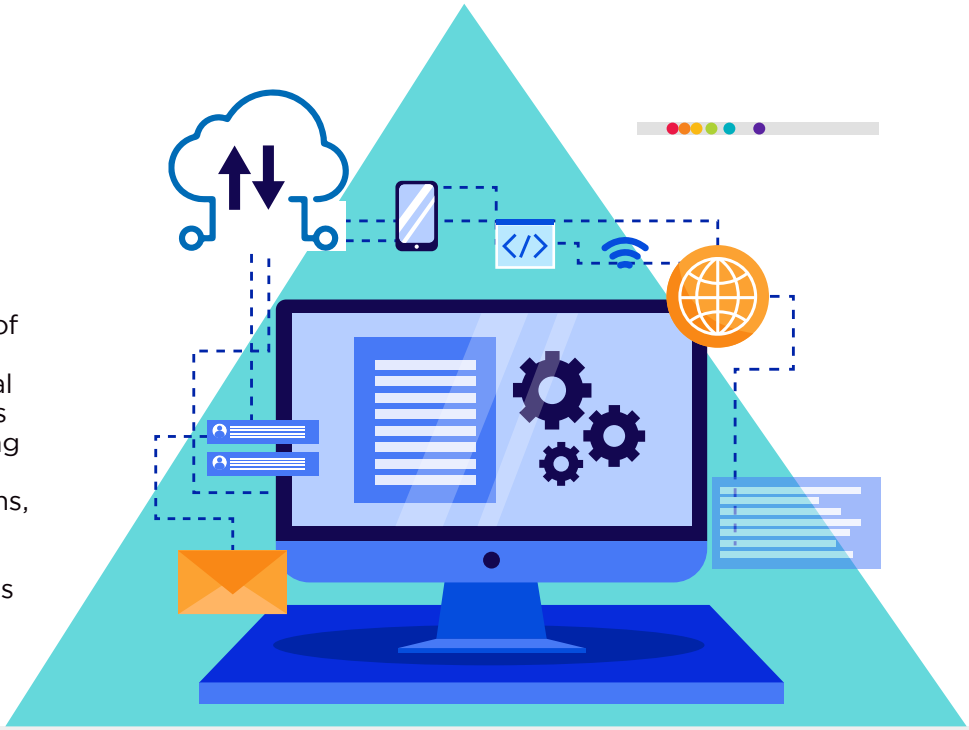
The Power Platform- Connecting the Dots



Introduction

This is a two-part whitepaper on “Connecting the Dots” with the Microsoft Power Platform. In this first part, we attempt to elicit the benefits of the Power Platform and how it can be leveraged to solve major organizational challenges. In the next part, we discuss HCL’s capabilities in detail in connecting the dots with ease. Assuming each system as a dot in the gamut of systems, we have given a perspective of the typical challenges of connecting these dots and how the Power Platform helps in connecting the dots smoothly with minimal coding.



The current world of systems

Technology has changed at a breakneck speed in recent years but not all customers have kept pace with key modernization trends. For such customers, the gap is widening every day. On one hand, we have customers who still run many day-to-day business operations on workbooks and worksheets, MS Access, emails, and manual operations and on the other, some customers are struggling with an uncontrolled and disparate set of technologies and tools.

Most customers have a combination of the following systems to run their business:

Legacy systems	Domain/function-specific product	Custom applications with huge volumes of code	Integration services with uncountable APIs
Desktop Applications with no compatibility with the web/cloud world	Workforce bound to connect with internal systems from the outside world	Database servers with their own stored procs/queries	Content management/ digital asset management systems
Project management application	Business process management systems	BOTs	Desperate reporting tools

Gaps between the dots

Considering all the above systems of operations as “dots” there are multiple issues being faced either because of too many dots or in connecting the dots. These gaps have a direct bearing on business impacting productivity, operational efficiency, and roll-out strategy.

Productivity Issues:

- **Employee Productivity Issues–** When the workforce needs to access multiple systems (be it databases, websites, or devices) to address a specific need, their productivity is hampered.
- **High Lead Times–** When each department/division of an organization has its own systems of record and user interfaces to verify/update details, and when each unit has their own kind of approval mechanism, it increases the lead time to close a process.

Delayed GTM/Rollout Due to Integration Nightmare:

- An unorganized choice of technologies within the same organization and a lack of centralized architecture control boards lead to integration issues
- Integration issues directly impact GTM timelines and rollout strategy
- **Integration challenges** can lead to operational and productivity issues
- Inevitably re-engineering the whole architecture at any point delays GTM timelines

Operational Efficiency Issues:

- Decrease in process efficiency– With multiple systems in place and no proper handshake between them, there are high chances of a process gaps, with multiple iterations and manual interventions to close a process life cycle.
- Lack of 360-degree end-to-end insights– In today’s world, it takes additional effort and time to integrate multiple systems to get a 360-degree view of any process.
- Lack of real-time status
- Inability to predict/forecast
- No process automation– Due to the lack of process automation, suboptimal processes exist, resulting in redundant manual tasks
- Issues with filling a form as the system expects
- Issues with digitizing paper forms/hardcopies
- Lack of intuitive and interactive dashboards
- Dependency on the IT team for any small enhancement
- Long turnaround times to visualize any given functional requirement

Gaps within the dots

Each product stack/application by itself would have certain limitations to cater to many of these IT-centric need as shown below. Gaps within the dots directly impact the technical capability of any given solution and decreases end-user confidence.

Can the power platform help in connecting the dots?

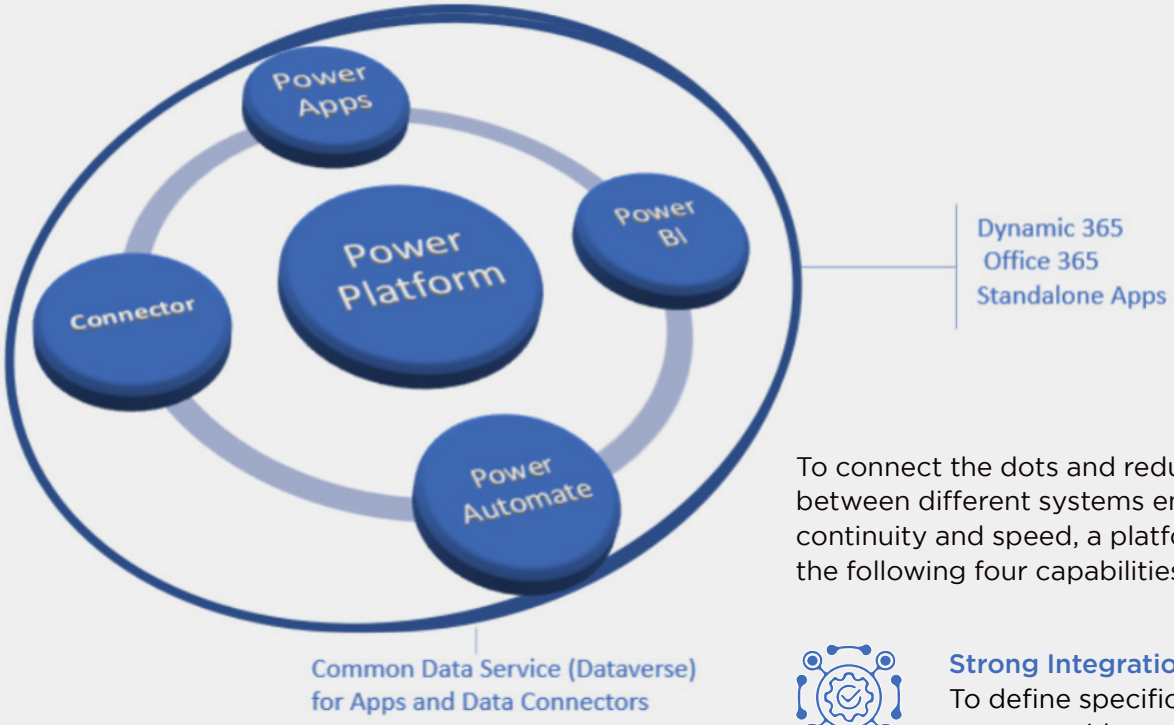
It is practically impossible for an organization to consolidate multiple systems/applications used over the years and rationalize them drastically into an ideal state that a start-up might want to have. It is also not possible to suddenly suspend/stall existing legacy systems.

Enter Microsoft Power Platform. It has the capability to connect these dots by addressing most of the operational, integration issues, and hence, improves productivity. It also transforms business users into Power Users to quickly convert their ideas/needs into tangible solutions through Power Apps and Power Automate Flows. Microsoft Power Platform provides a growing ecosystem of Connectors to connect with well-known products. We can leverage RPA to resolve issues with day-to-day routine tasks. Power BI helps in reducing turnaround times on designing dashboards, interactive reports, and more.

Microsoft Power Platform is a comprehensive offering, with easy-to-use readymade features including integration capabilities, a "growing ecosystem of connectors", Excel-style Fx development language, and AI features designed for citizen developers.

A pictorial depiction of Power Platform components follows:

Figure 1 : Components of Microsoft Power Platform



To connect the dots and reduce the gaps between different systems ensuring business continuity and speed, a platform would require the following four capabilities:

Strong Integration Framework–
To define specific patterns to connect with respective systems

Intuitive UI framework–
To create simple and robust UI surfacing data from desperate systems and update data back to multiple systems through the above integration framework

Process Orchestration–
Connect with different systems and execute a given process across the dependent systems in a seamless way

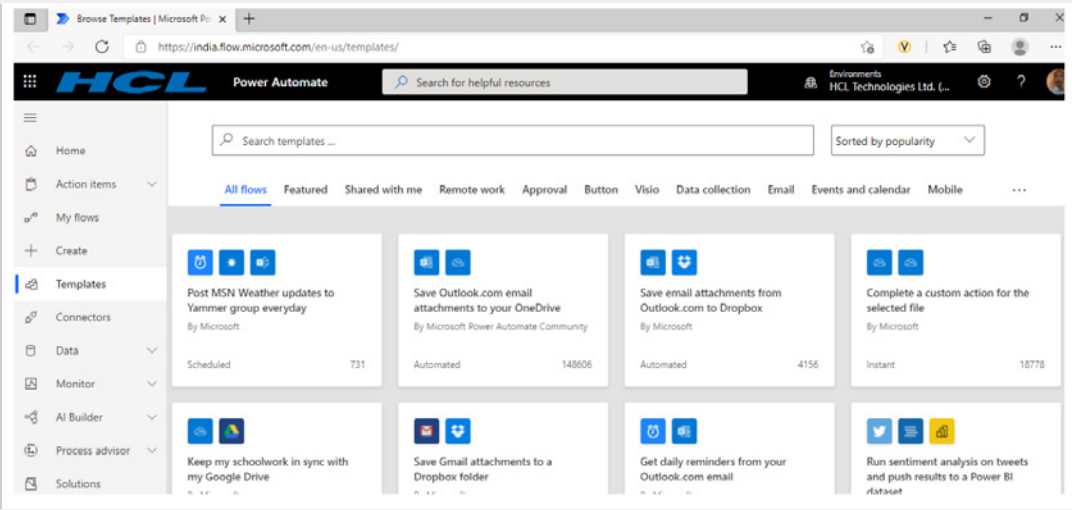
Process Automation–
In case of no possibility to connect with a specific system/ systems, or if a lot of manual tasks are carried out by support persons, then those steps have to be captured once and run many times as needed to reduce manual errors

Strong Integration Framework

Power Platform has a strong Integration Framework to integrate with most of the well-known products/services/on-premises data sources in the market (around 300+ OOTB connectors exist in Power Platform). Its integration framework is abstracted in the form of Connectors. Connector is a common framework designed by Microsoft which is shared across O365 and Azure products.

Connectors act as a wrapper around APIs of specific services of various products available in market. Microsoft has published around 300+ connectors and it also supports deployment of custom connectors.

Figure 2: Templates under Power Automate

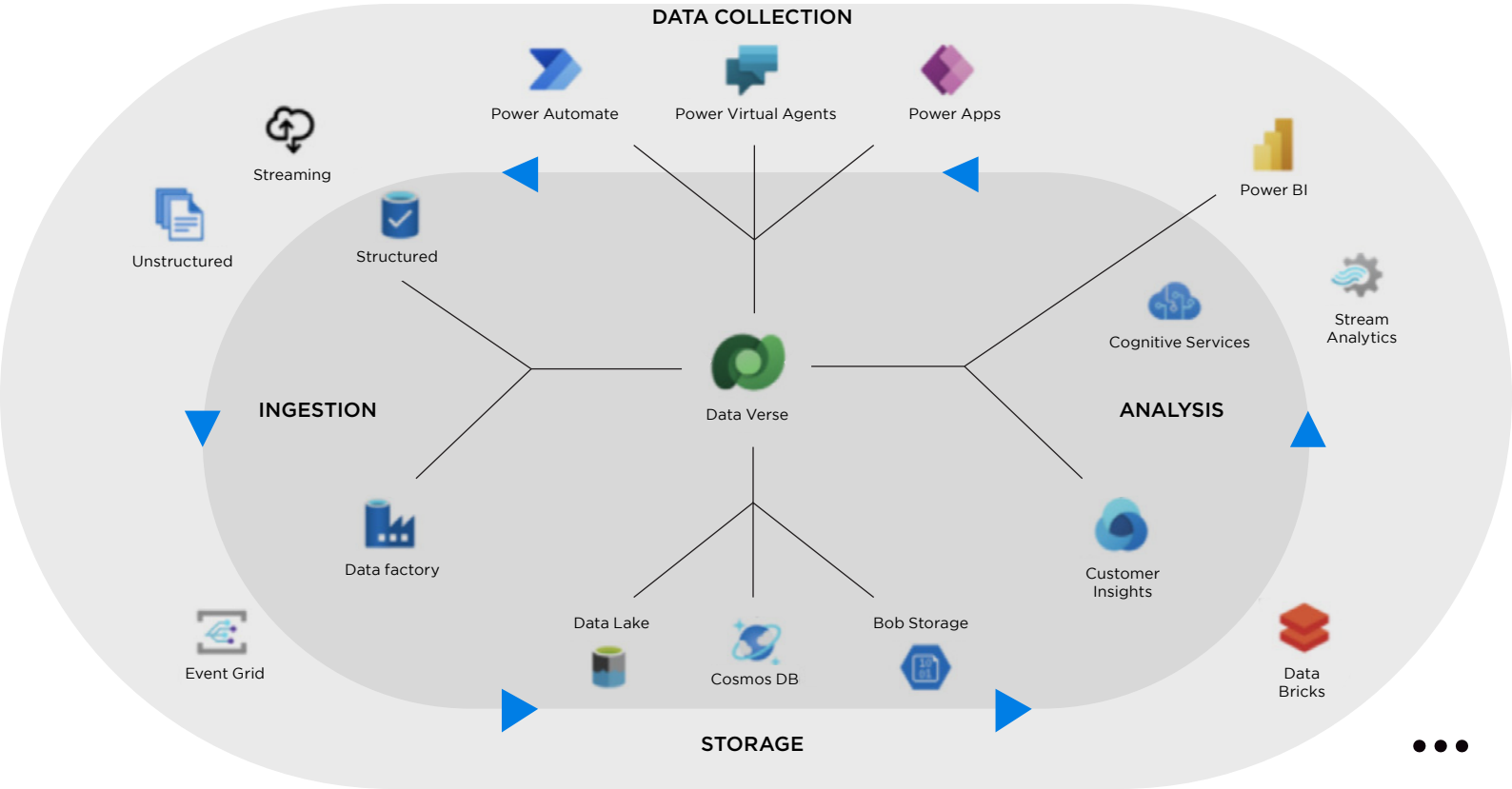


Connectors make life of developers/integration architects easier as all required inputs for an integration are just configured through a few clicks. This can take from a few hours to a day compared to establishing an integration from scratch, which would have taken a few weeks to a month.

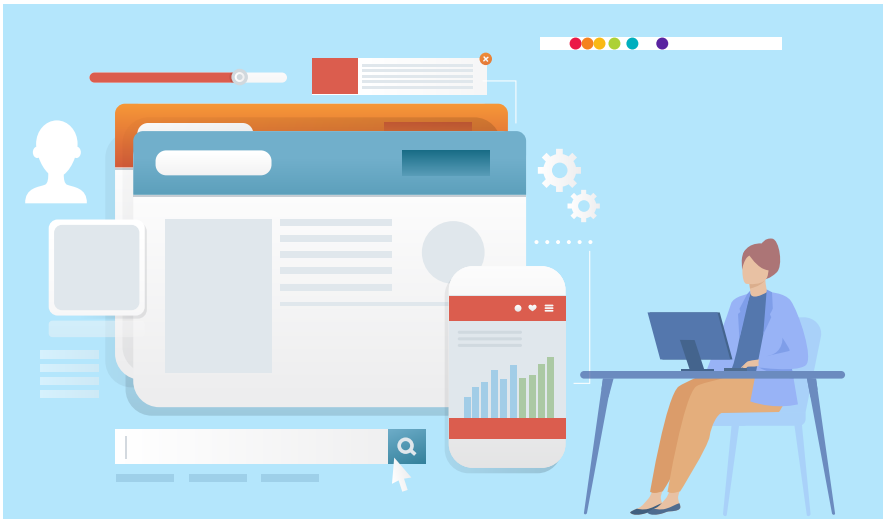
These integration patterns used by Connectors are beyond the scope of this white paper.

Power Platform also follows a strong integration pattern called “Shared Database”. It is a shared database is Dataverse (CDS). CDS is the common store for all the Power Platform products like Power Apps, Power Automate, and PVA. Dataverse can also be leveraged as a common store to pull data from various other sources, to ingest data from event grids/data factories, as well as to analyze and visualize data insights through Power BI.

Figure 3: The Dataverse Shared Database



Intuitive UI Framework



Microsoft provides three options to design quick and intuitive user interfaces, with which many of the usability, extensibility, and accessibility issues at the user interface level can be addressed.

1. Canvas App–
This can be used to design a form from scratch, and it has features to connect with over 200 types of data sources. It can be used to create a highly tailored interface for web, mobile, and tablet applications.

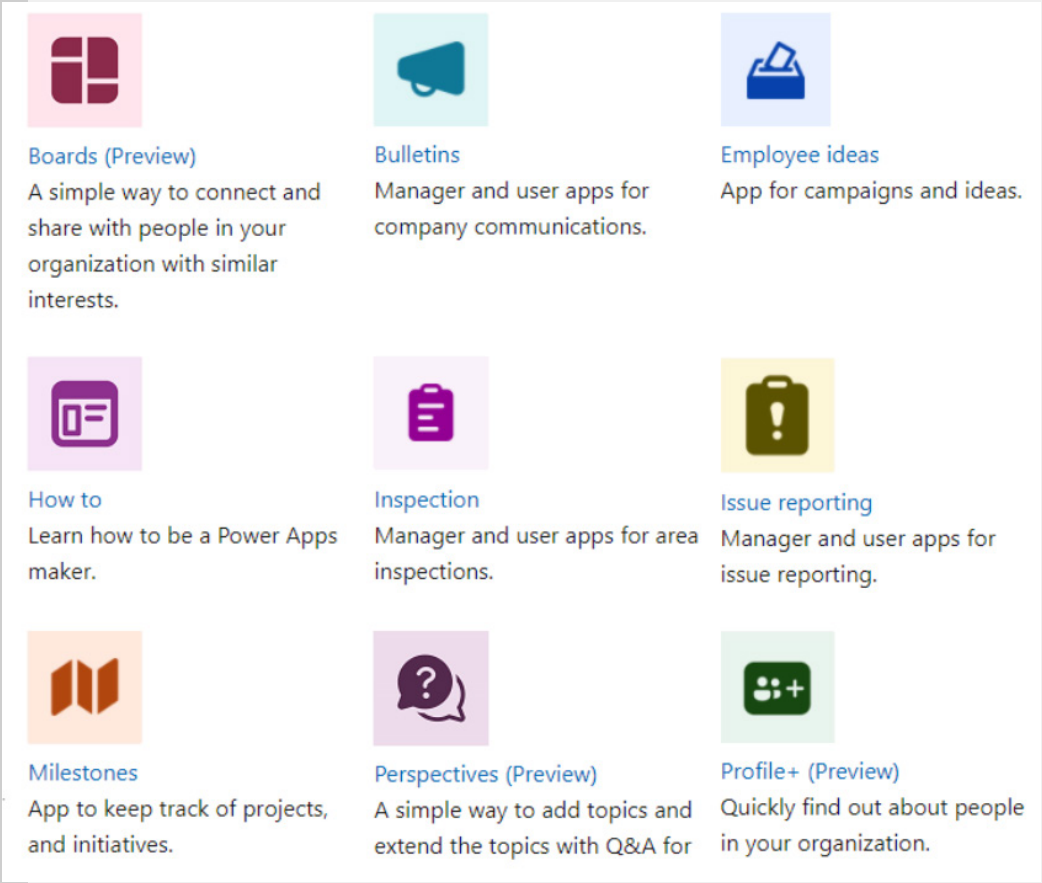
3. Portal App-
It can be used to create external-facing websites and allows us to choose between build the form anonymously or for authenticated users.

2. Model-Driven App-
This can be used to generate forms from existing data, more inclined with the underlying data model. It automatically generates forms and views from the existing data source using Common Data Service to model forms. The app will then be responsive across devices.

Power Apps provides the flexibility to host it within Power Platform environment or on SharePoint Online or surface it within MS Teams. This helps users to access the app from anywhere, anytime and from any device.

Microsoft has created reusable Power apps for specific business scenarios which are available in the Microsoft Teams Store. It helps us to accelerate app design by reusing some of these apps wherever applicable:

Figure 4: Power Apps in the Microsoft Teams Store



We can also leverage the Power Apps Component Framework (PCF) to design custom code components for canvas and model-driven apps– to enhance user experience with handling data on a form/view/dashboard (e.g. to represent a numeric value with a dial or slider code component, to give a different visual experience like a Calendar or Map of data bound to a dataset).

Table 1: Common Business Scenarios for Power Apps

COMMON BUSINESS SCENARIOS	
Business scenario	**Power Apps Type**
Form for internal user access with standard/custom design	Canvas Apps
Entity model-based responsive forms with standard design	Model-Driven Apps
Forms for external user access	Portal Apps
Invoke a simple form from Teams	Power Apps for Teams and Dataverse for Teams

Process Orchestration

We can leverage the Power Platform to orchestrate business processes through Automate Flow and Connectors. It allows business users to create and automate workflows across multiple applications and services without the need for developer intervention. It has a long way to go in terms of handling errors and process failures– in order to become a robust orchestration engine. A new feature in the Common Data Service (Current Environment) connector for Power Automate Flows is the ability to use transactions when performing some platform operations. This would be useful when we need to ensure the create/update/deletes are atomic (if one transaction fails, they all fail, and if one succeeds, they all succeed). This is also useful as we transition our Workflows in Dynamics 365 Power Apps to Microsoft Power Automate Flows. This feature is available under the Common Data Service (Current Environment) connector, which is different from the Common Data Service Connector.

Power Automate Business Process flows can help in orchestrating a business process across different systems. Rule-based orchestration is possible through branching logic in each stage of the business process flow.

Table 1: Common Business Scenarios for Power Apps

COMMON BUSINESS SCENARIOS	
Business scenario	**Power Automate Type**
Simple Approval flows	Cloud Flow
Trigger an email on document upload / status change in SharePoint	Cloud Flow
Approval from	MS Teams Cloud flow with MS teams template
Trigger an approval request in MS teams for an item change in SharePoint	Power Automate flow in SharePoint
Pass contextual data from Power BI to SharePoint	Power Automate Visual in Power BI
Seek approval of manager before sharing Onedrive file	Power Automate flow with ODB template
Filter and copy data from SharePoint to database server	Power Automate flow with connection to SharePoint and database server

Business scenario	Power Automate Type
Run a scheduled job / process on recurring basis	Power Automate Scheduled flows
Push Notification whenever an email is received from boss	Power Automate Button flows
Send reminders to specific team members when new item is added or approved (order received / support request etc.)	Power Automate Button flows
Repeat a set of manual tasks	Power Automate Desktop RPA (refer next section)
Handle customer service requests same consistent way (well defined process) irrespective of which support engineer handles it	Power Automate Business Process Flow
Assign tasks to multiple team members by click of a button in mobile device	Power Automate Button flow

Process Automation

Automation of repeated manual tasks is the need of the hour for many organizations. They want their workforce to focus on workloads associated with higher value steams, by automating mundane tasks. Power Automate Desktop RPA can be leveraged to implement process automation in most of the common manual tasks carried out by the support staff (like web scraping, collating data from different sources, dumping data to data warehouses, extracting information from different Excel sheets, generating periodic reports, etc.). Below are the RPA models provided by Power Automate Desktop:

Table 3: RPA Model Types

RPA Model type	Category	Build type
Category classification	Text	Prebuilt and Custom
Entity extraction	Text	Prebuilt and Custom
Key phrase extraction	Text	Prebuilt
Language detection	Text	Prebuilt
Sentiment analysis	Text	Prebuilt
Text translation	Text	Prebuilt
Prediction	Prediction	Custom
Form processing	Vision	Custom
Object detection	Vision	Custom
Business card reader	Vision	Prebuilt
Text recognition	Vision	Prebuilt
Receipt processing	Vision	Prebuilt

While the possibilities of application of these models are endless, below are some common business scenarios, and the AI model types that are suited to addressing them:

Table 4: Common Business Scenarios for RPA Model Types

COMMON BUSINESS SCENARIOS	
Business scenario	**RPA Model Type**
Automate customer application processing	Form processing
Automate expense reports	Receipt processing
Categorize user feedback based on their focus	Category classification
Extract insights from product reviews	Entity extraction
Identify language of text	Language detection
Identify and classify customer feedback	Sentiment analysis
Translate support requests into your language	Text translation
Identify fraudulent transactions	Prediction
Get alerted to social media posts referencing your brand	Key phrase extraction
Automate contact list	Business card reader
Automate inventory taking	Object detection
Take a photo of text and save it to a database	Text recognition

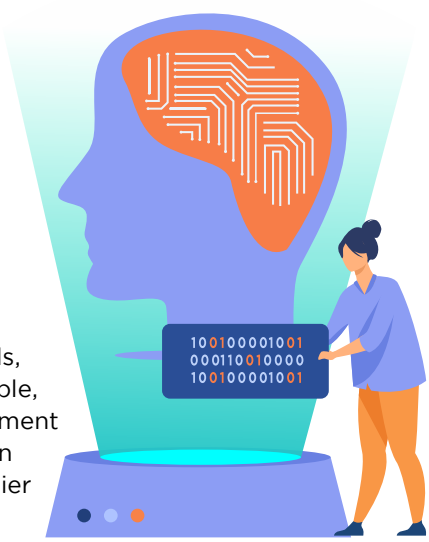
These models put a broad range of AI capabilities in the hands of businesses without the need for coding or data expertise which, in a way, empowers business users as Power Users.

We just need to follow five steps to make use of AI Builder capabilities of Power Platform:

1. Choose an AI model type:
Use the model type that suits a specific business need. Choose from a growing set of AI solutions (some of them have been listed above)

2. Connect data:
Select business specific data from the available options.

3. Tailor the AI model:
Depending on the type of model, we can tweak custom models to optimize the AI behavior.



4. Train the AI model:
Training is an automatic process, where AI Builder "teaches" the AI model how to resolve specific business problems (for example, how to recognize products on an image). When trained, the AI model can generate insights such as the result of a prediction, or the list and number of objects detected in an image.

5. Use insights from the AI model:
Use the results from the AI model across Microsoft Power Platform to create AI solutions that meet specific business needs, without a need for coding skills. For example, we can create a flow that automates document processing in Power Automate or an app in Power Apps that predicts whether a supplier will be out of compliance

How can the Power Platform close the gap?

Gap between the dots	How Power Platform closes the gap (Business issues)
Workforce Productivity Issue	Business can continue as usual by connecting various applications, underlying data sources through Connectors– there is no need for the user to connect with multiple systems. Hosting Power Apps on Teams/SharePoint can also enable easier access.
Lead Time	Streamlined approval process through Power Automate Flow and the ability to simplify UI through Power Apps can reduce lead times.
Process Efficiency	Connect with different products/legacy systems through well-established connectors. Improve process and operational efficiency by focusing mainly on business process than on integrating the underlying technology stack.
Real-Time Visibility	Power BI Dashboards, Connectors, and Data Gateways can connect with cloud/on-premises systems and provide a real-time unified status view. AI Builder-based models can extract information from unstructured data.
Predict/Forecast	Power BI Dashboards, Connectors, and Data Gateways can connect with cloud/on-premises systems and provide a real-time unified status view. AI Builder-based models can extract information from unstructured data.
Repeated Manual Tasks	With Power Automate RPA, capture or record the repeated tasks and play them.
Digitizing a Form	Leverage AI Builder models like form processing and text recognition.
Integration Nightmare	With the help of over 325 connectors and counting, we will be able to tackle most of the integration challenges with industry-wide, well-known products/legacy systems.
High Dependency on the IT Team	With the help of user-friendly Power Automate cloud flow user interface, business users themselves can design a tangible process flow with no/less dependency on the IT team. Also, with the help of Power Automate Desktop RPA and web RPA support, users can record their typical routine activities while handling a specific ticket, which can then be used to handle typical L1 tickets in an automated way.
Long Release Time	With the help of low code design of the UI/integration layer and with leveraging predefined Dataverse Entities, turnaround times for deploying an application almost gets reduced by two to three times

Table 5: Closing Gaps Between the Dots with Power Platform

Table 6: Closing Gaps Within the Dots with Power Platform

Gap between the dots	How Power Platform can fulfill or replace the gap (Technical and end-user issues)
Extensibility	With a fully decomposed set of components like Power Apps for UI, Automate flow for workflows and business process flows, Connectors to connect with external systems, and Dataverse acting as a common database for all Power Platform components– Power Platform is a fully extensible platform.
Performance and Scalability	With Power Apps/Flows hosted on cloud (O365), Microsoft provides high scalability through various licensing options– please refer to Requests limits and allocations - Power Platform | Microsoft Docs. Also, scalability at Power Apps level to handle huge volumes of data and improving performance is possible by leveraging different design patterns like delay loads, concurrent calls, and load data from server with local caching.
Usability	With the Intuitive UI design framework of Power Apps, the apps are easy to use. Native support for rendering model-driven apps for iOS/Android phones is also present.
Availability	Leveraging O365 availability of Power Apps to internal users is not a question and for external users, we can leverage the Portal Apps feature.
Security	Power platform leverages the M365/O365 security adherence, GDPR compliance, and IRAP/ISO/IEC certification compliance for enhanced security. Power Apps support authentication through Azure AD, multi-factor authentication, and role-based access to restrict access to specific apps/contents/records. Data at rest and transit are encrypted– TLS encryption for data at transit and SQL Server TDE for real-time encryption of data at rest are used.
Code Maintenance	With low-/no-code development, there is almost no code to maintain. In rare scenarios, we may have to use PCF for building components. Code Maintenance of custom connectors and APIs can be done through the usual SCM/versioning tools.
Resource Learning Curve	With the kind of flexibility given by Power Platform for even business users to learn and design process flows in a quicker way, the resource learning curve is very minimal.

Conclusion

Though Microsoft Power Platform provides ready-to-use apps, flow templates, prebuilt connectors, and AI models, it's still evolving around the areas of versioning, DevOps, and rule-based decisions in orchestration. There is also has a complex licensing around this Microsoft SaaS offering which is difficult for an organization to follow and chose.

We, at HCL, offer an end-to-end governance framework for optimal day-to-day operations (e.g. assistance to customers in deciding the right licensing option) coupled with the best-fit operating model and team structure associated with it, to undertake a fail-safe modernization-cum-transformation journey on the Power Platform. We hope to cover these aspects and more in the next part of this white paper. Happy reading, till then!

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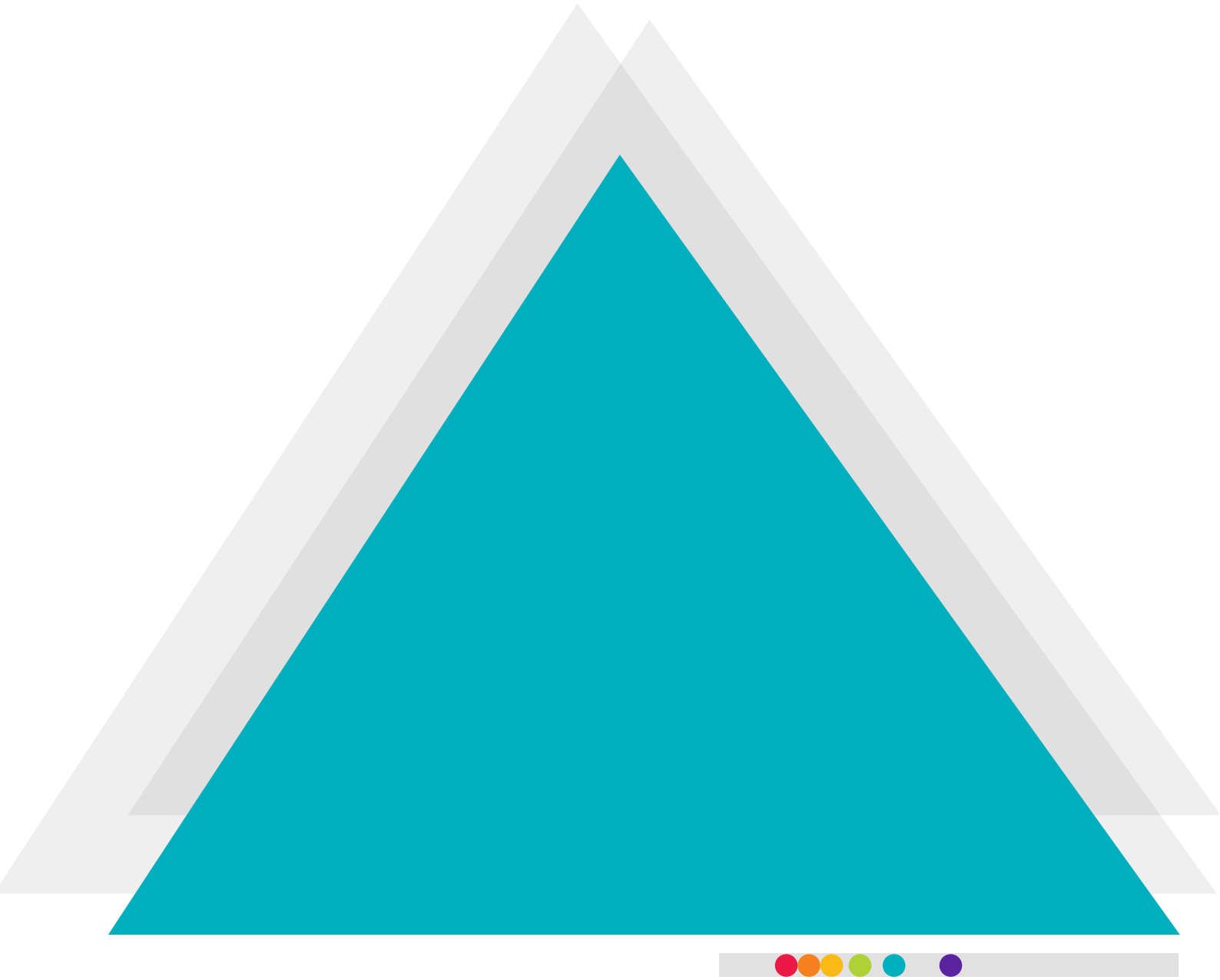
His interest areas are around Azure App services, Azure APIM, Azure DevOps, comparison of DevOps tools, Low code platforms, object recognition, data mining and application security.



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