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BC and beyond

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www.bctechdays.com

Speaker intro

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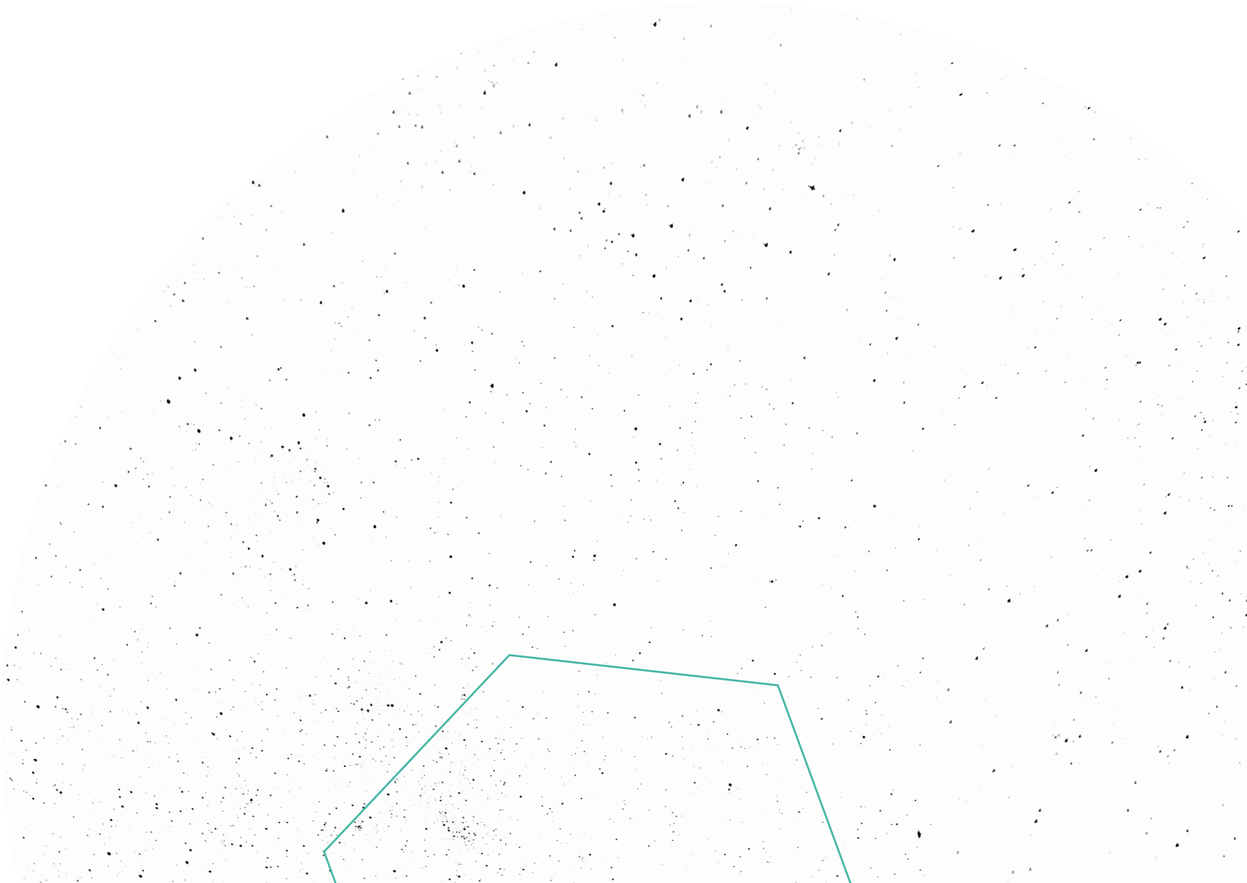
Agenda

- Introduction
- Azure Data Lake
- Azure Functions
- Dataverse
- Q&A



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Azure Data Lake

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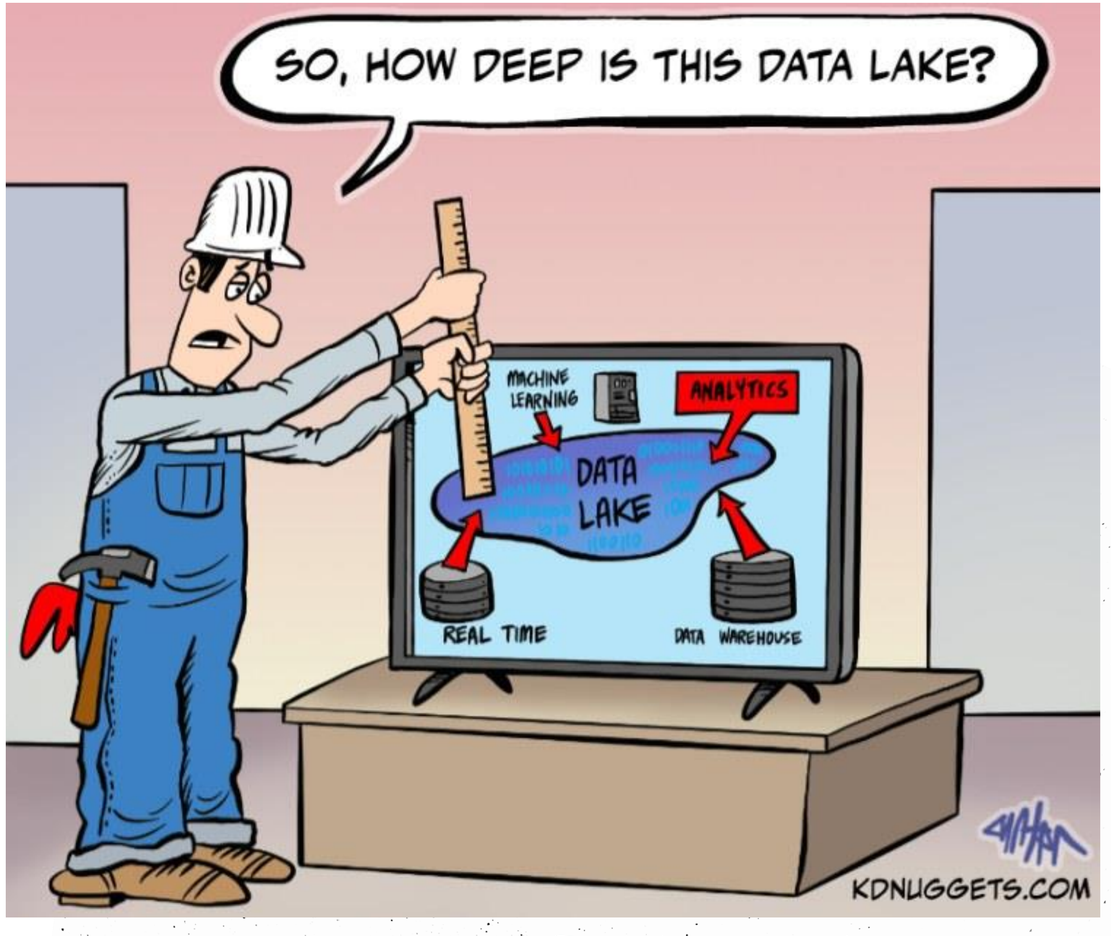
Azure Data Lake – What is it?

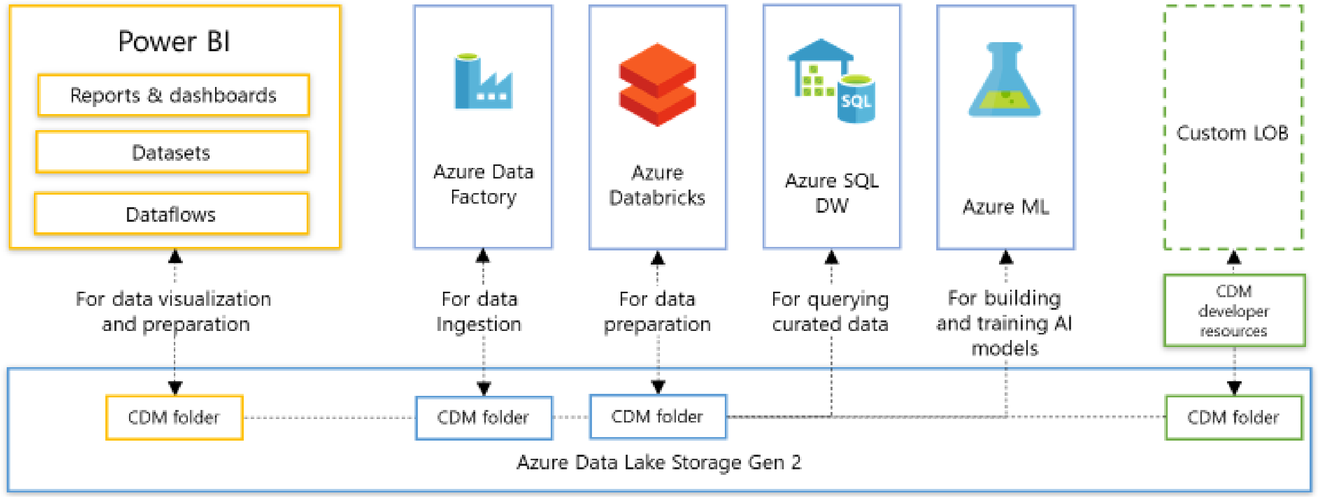
- Imagine a big lake with a lot of data
  - Petabyte-size
  - Trillions of objects



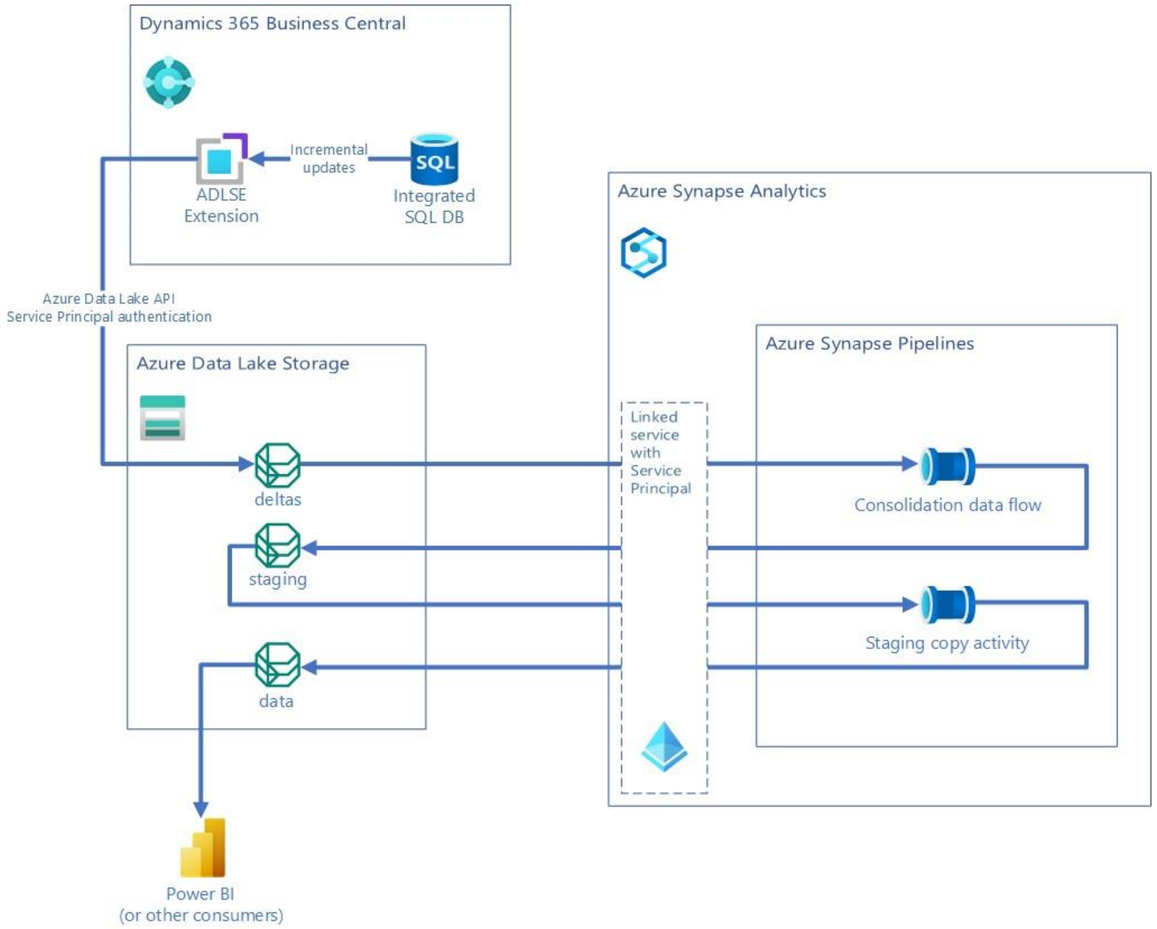
Azure Data Lake – What is it?

- Build on Azure Blob Storage
- Designed for enterprise big data analytics
- Low-cost storage capacity and transactions
- Hierarchical namespace

Azure data lake gen 2 (hot):
Storage: € 0,01982 per GB per Month
10.000 Write: € 0,05855
10.000 Reads: € 0,00469



Azure Data Lake – BC integration



- BC export delta's to Data Lake
- Azure Synapse consolidate the data
- Read in Power BI

Azure Data Lake – BC integration

- .CSV
  - Row-orientated

Row storage	
Row 1	1
	US
	Free
Row 2	2
	UK
	Paid
Row 3	3
	ES
	Paid

- .Parquet
  - Columns-orientated

Column storage	
user_id	1
	2
	3
country	US
	UK
	ES
subscription_type	Free
	Paid
	Paid

Azure Data Lake – BC integration

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- Which to choose?
  - 11 files in total 28 million rows in PowerBI*

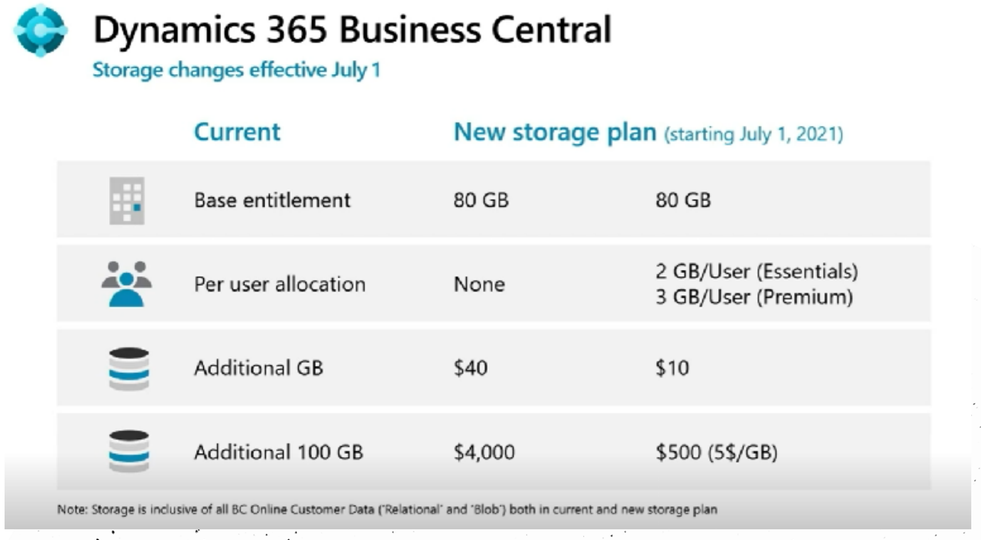
	.CSV	.Parquet
File Size	3,6 GB	655 MB
ReadData Duration (seconds)	307 seconds	555 seconds
Rows per second	92k	51k
Data Model Processing (seconds)	23,4	22,7
Partition processing seconds	309	557

- Conclusion:

It depends ☺

Azure Data Lake – How does it help?

- Business Central Database is costly
- Smaller database is better performance
- APIs are OK but have some limitations
  - Doesn't work with very big data sets
  - How manage deleted data



Dynamics 365 Business Central

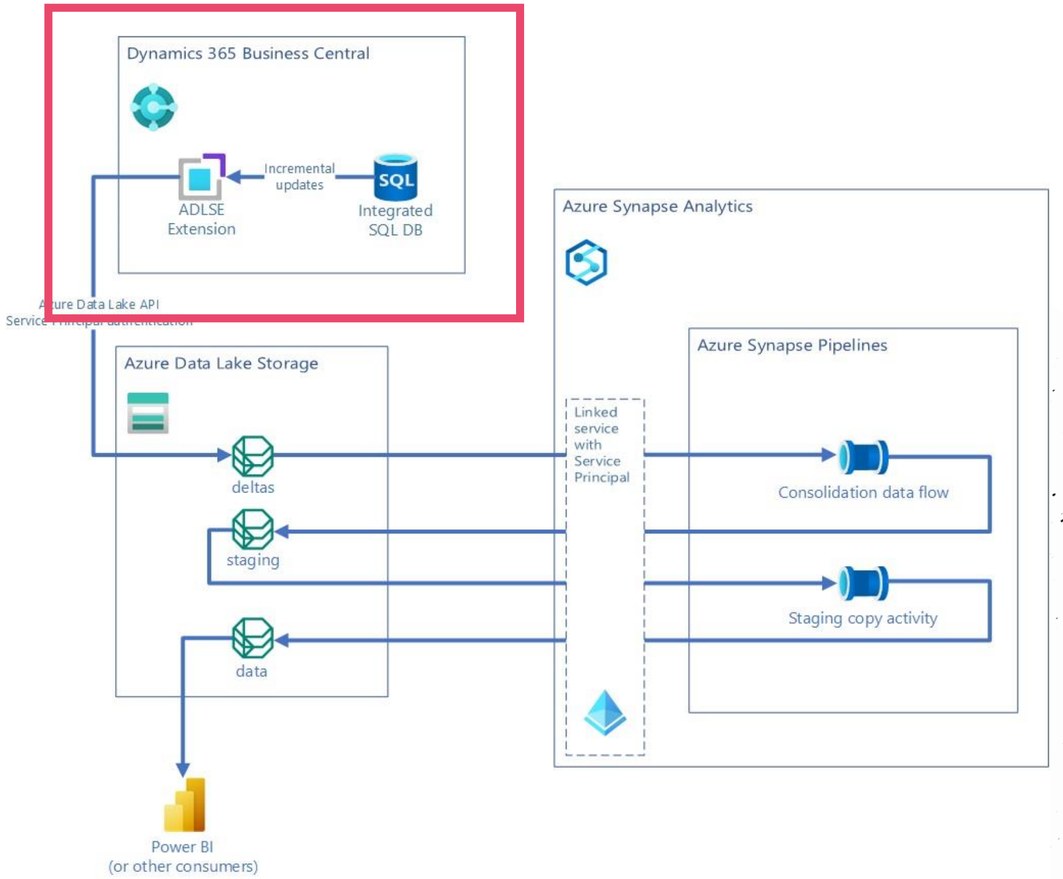
Storage changes effective July 1

	Current	New storage plan (starting July 1, 2021)
Base entitlement	80 GB	80 GB
Per user allocation	None	2 GB/User (Essentials) 3 GB/User (Premium)
Additional GB	$40	$10
Additional 100 GB	$4,000	$500 (5$/GB)

Note: Storage is inclusive of all BC Online Customer Data ('Relational' and 'Blob') both in current and new storage plan

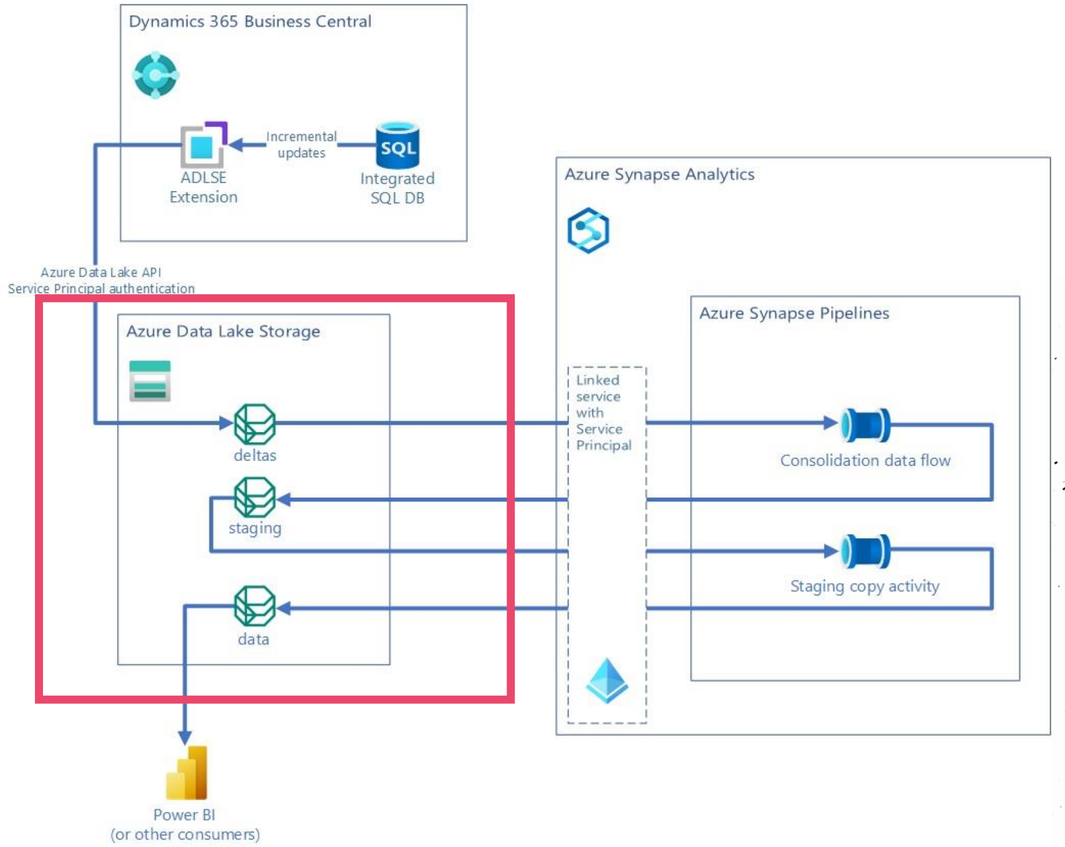
Azure Data Lake – Example usage

- Usage in BC
  - How to setup
  - Export to blob storage
  - How deleted records are handled



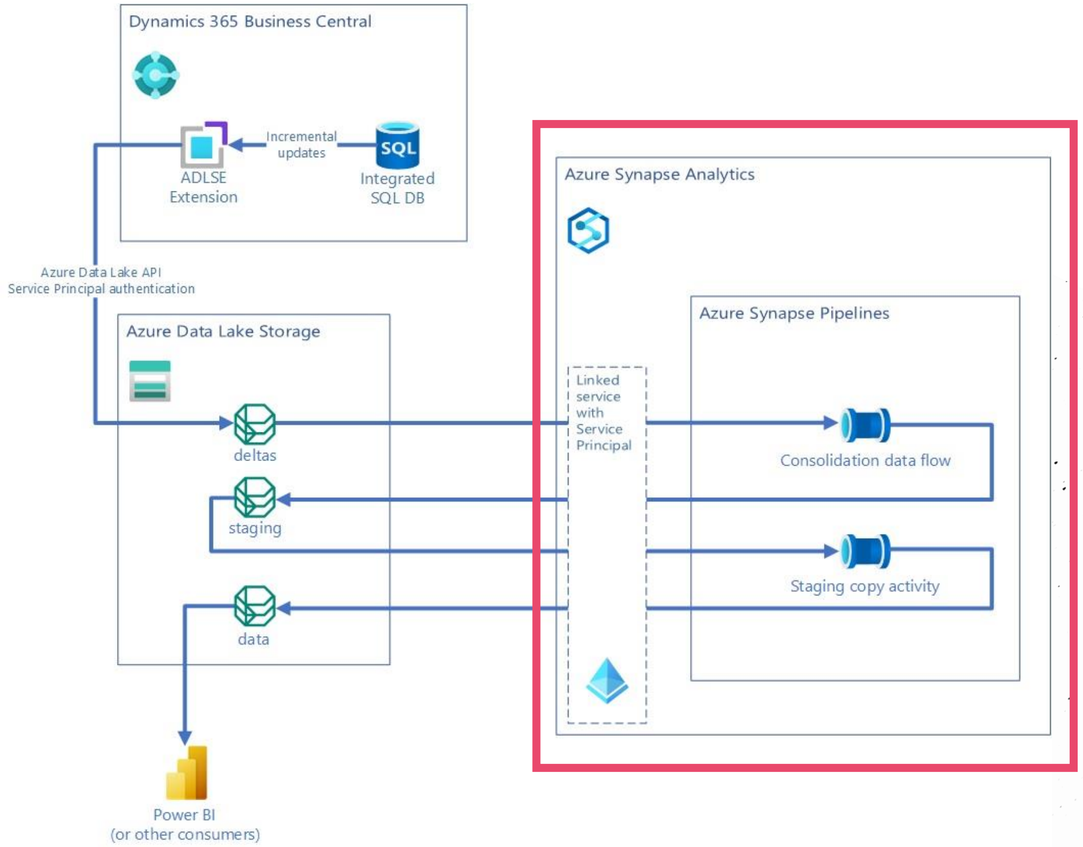
Azure Data Lake – Example usage

- Usage of Azure Data Lake (delta files)
  - Deltas.manifest.cdm.json
  - Delta folder



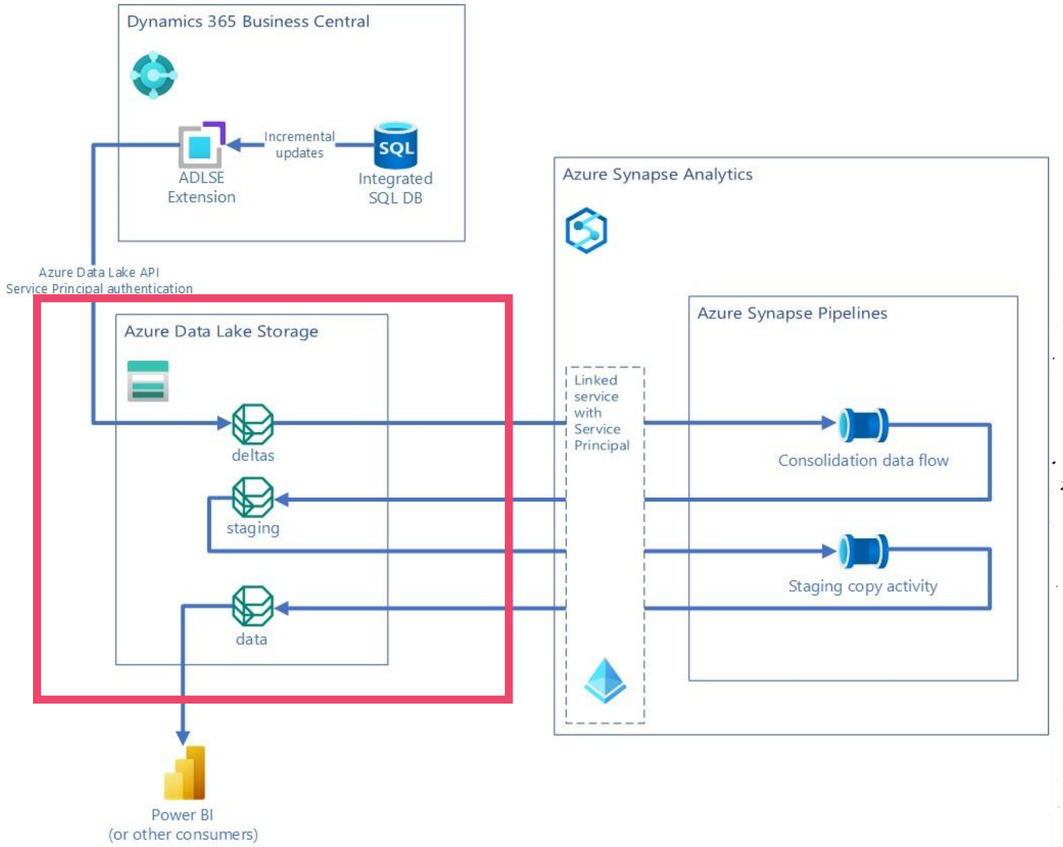
Azure Data Lake – Example usage

- Usage of Azure Synapse
  - Pipelines
  - Data flow
    - Filter old records



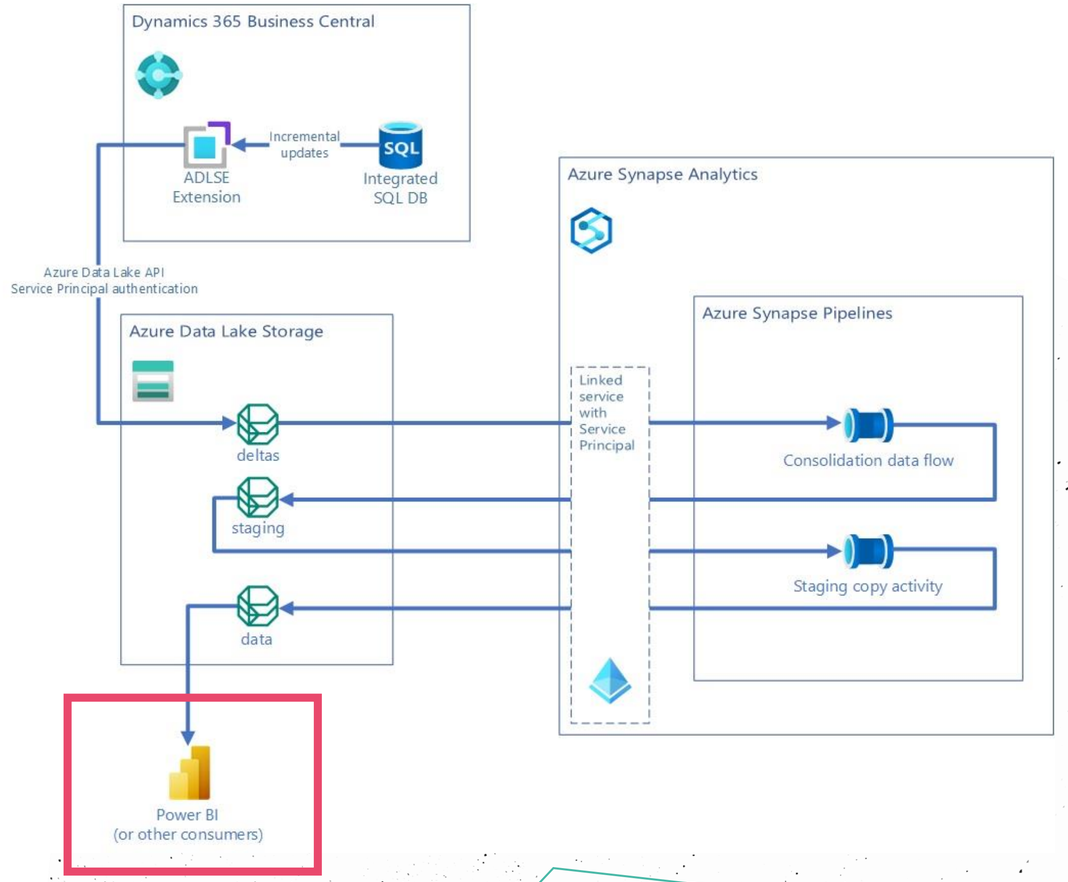
Azure Data Lake – Example usage

- Usage of Azure Data Lake (data files)
  - data.manifest.cdm.json



Azure Data Lake – Example usage

- Usage in Power BI



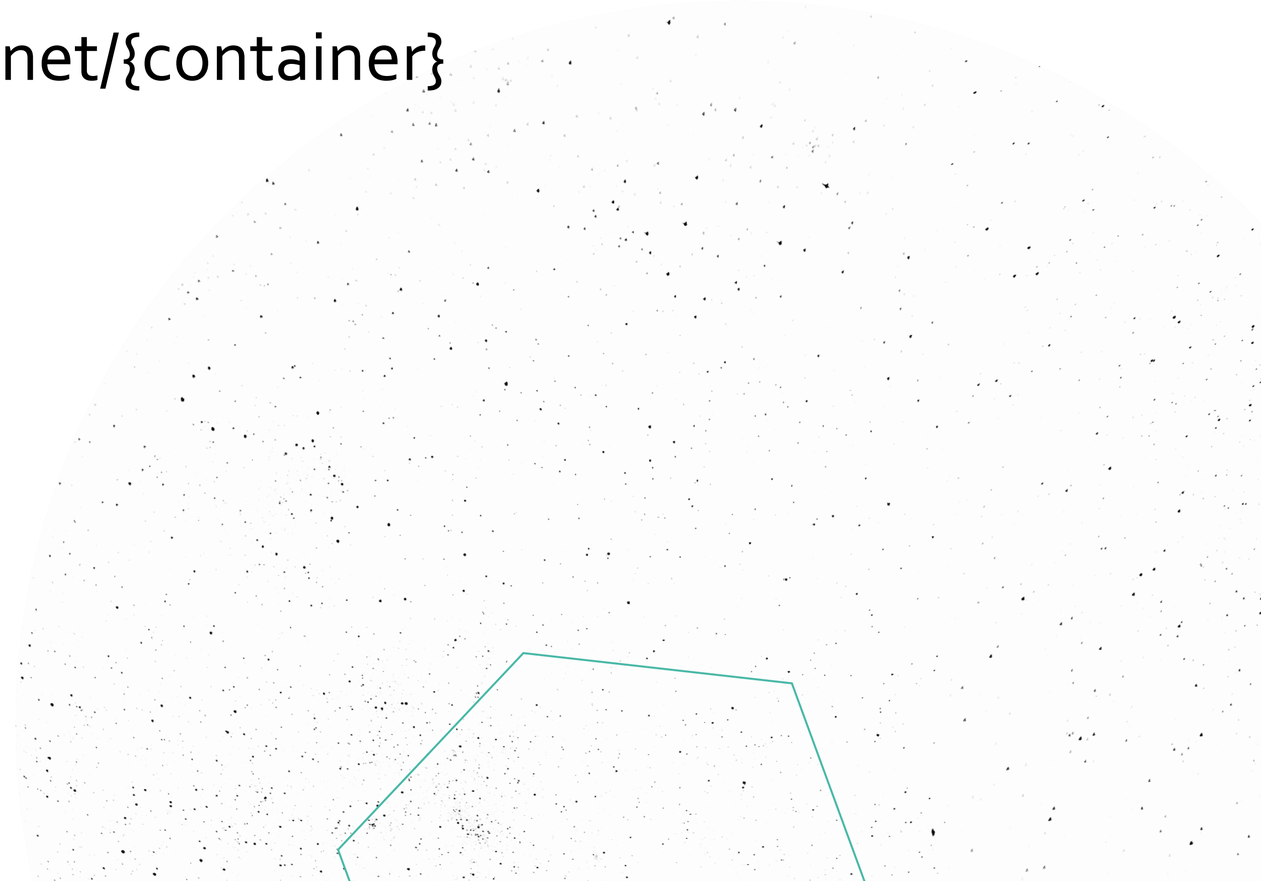
Azure Data Lake – Connection

- Change the URL:

https://{BlobStorage}.blob.core.windows.net/{container}

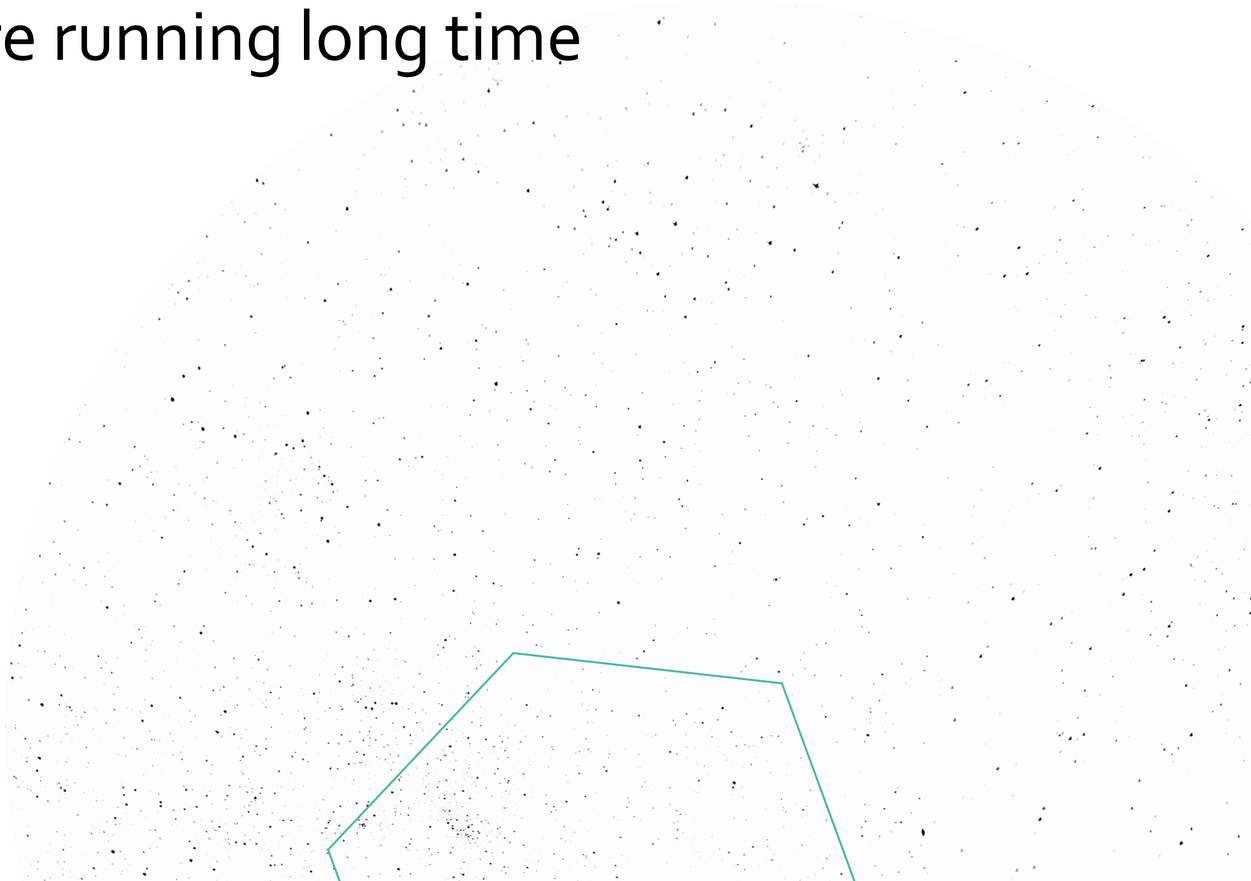
Into

https://{BlobStorage}.dfs.core.windows.net/{container}



Azure Data Lake – Concerns

- Support
  - Github repro bc2adls (microsoft/bc2adls: Exporting data from Dynamics 365 Business Central to Azure data lake storage (github.com))
- With very large datasets -> Pipelines are running long time



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Azure Functions

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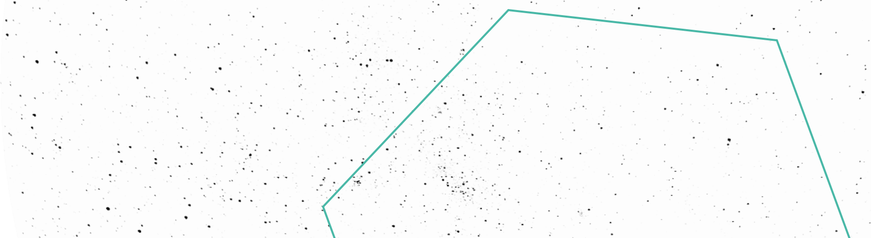
Azure Functions – What is it?

- A fully serverless way to run your (non-BC) code: You write the code and easily deploy, the service does the rest
  - Provide the runtime infrastructure
  - Scale automatically (“consumption”, “premium” and “dedicated” plan)
  - Listen for incoming calls, triggers (other Azure Services, but also 3rd-party) or timer events
  - Integrate with other Azure Services like monitoring through Azure Application Insights or output bindings like Azure SQL, Table/Blob storage or SendGrid
  - Automated CI/CD including staging



Azure Functions – BC integration

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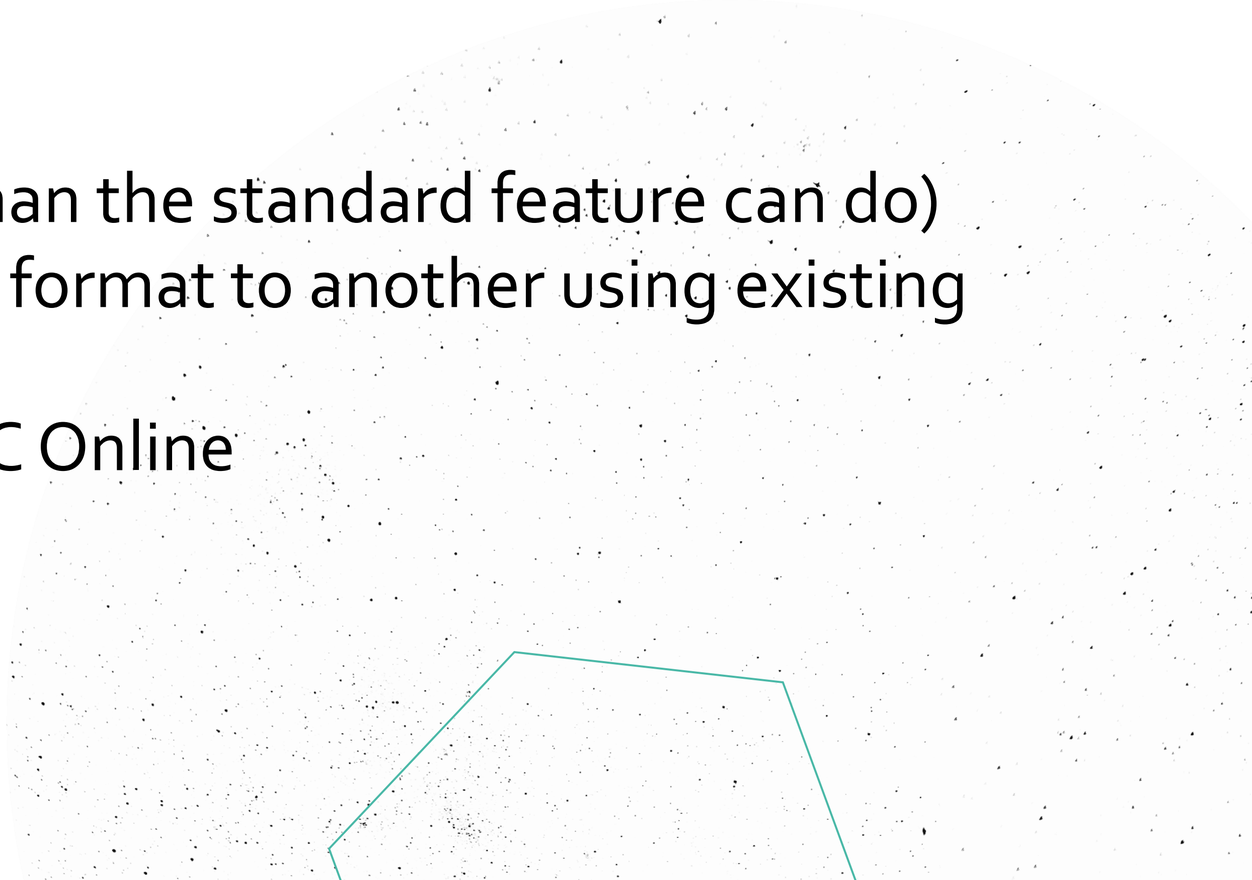
- New, very simplified integration with BC 21!

```
IAzurefunctionAuthentication :=
AzureFunctionAuthentication.CreateCodeAuth('<Function URL>', '<Function
Code>’);
QueryDictionary.Add('name', 'value’);
AzureFunctionResponse :=
AzureFunction.SendGetRequest(IAzurefunctionAuthentication, QueryDictionary);
if AzureFunctionResponse.IsSuccessful() then begin
    AzureFunctionResponse.GetResultAsText(ResponseTxt);
    Message(ResponseTxt);
end
else
    Message(AzureFunctionResponse.GetError());
```

Azure Functions – How does it help?

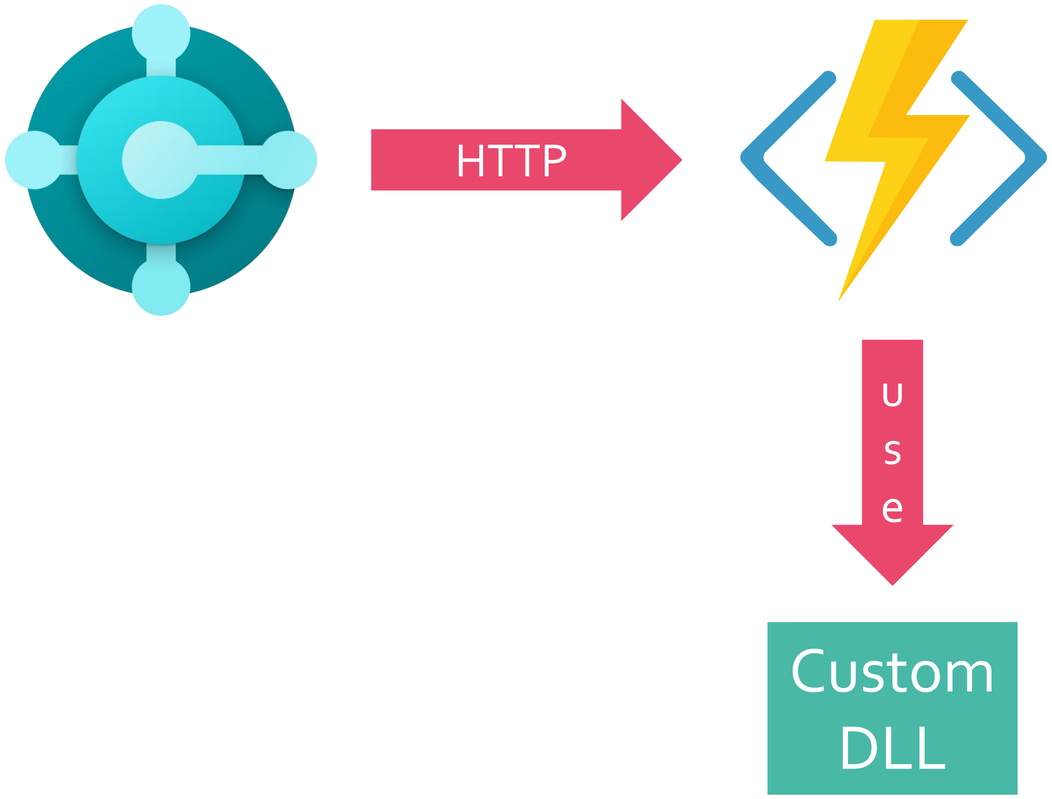
- I have the code (in C#, PowerShell, JavaScript, F#, Java, Python) or know how to build it, but how and where to run it in a secure and scalable way?

- Examples
  - Merge a PDF
  - Create a barcode (if you need more than the standard feature can do)
  - Convert a data or image file from one format to another using existing code libraries
  - Let your own C# libraries survive in BC Online



Azure Functions – Example usage

- Let your C# library survive!



Interlude: Serverless dev

Fotos from pexels.com, Aleksandr Balandin and Alexander Dummer

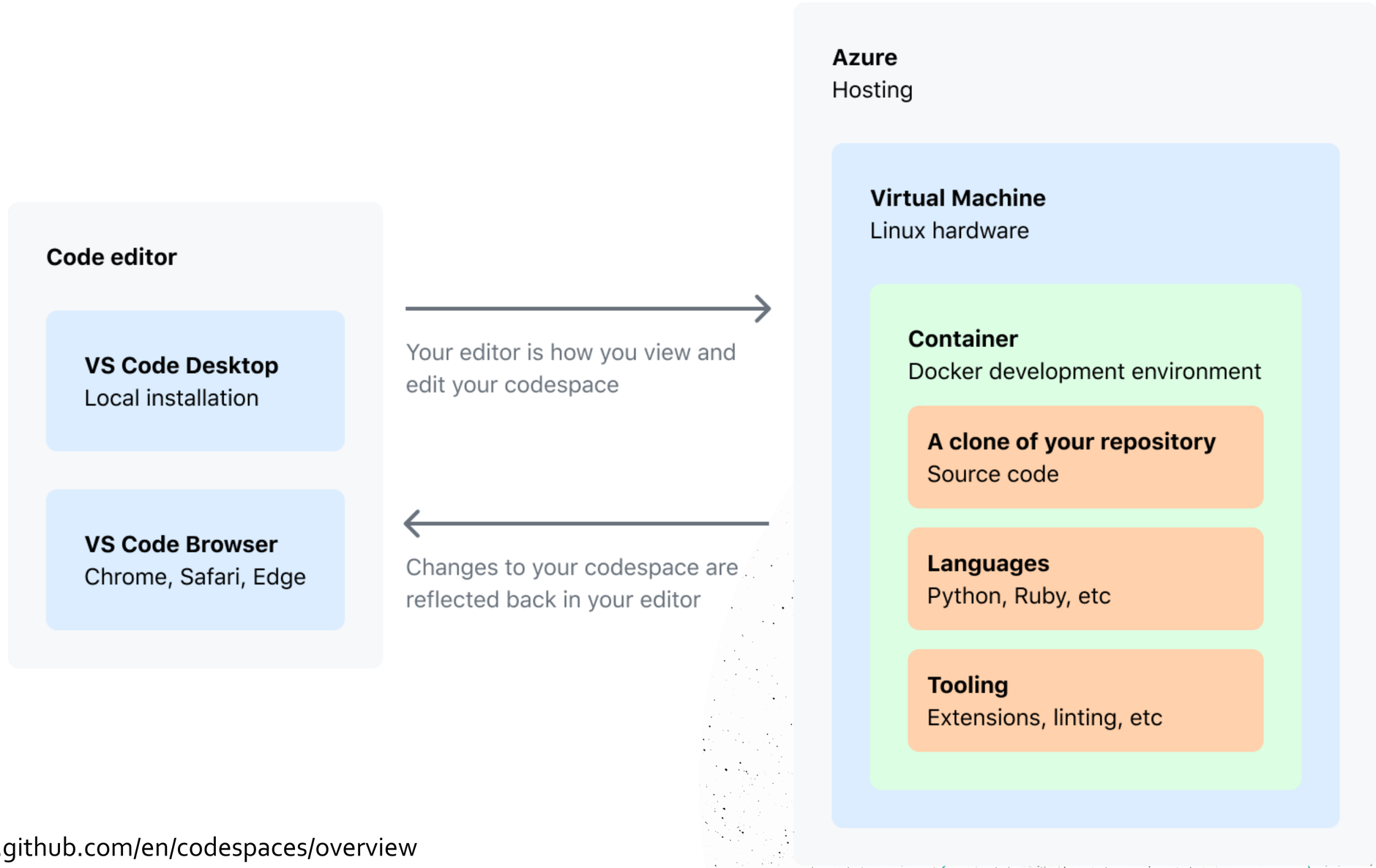
Interlude: Serverless dev with Codespaces

- Why?
  - No reliance on local, potentially different environments
  - All dependencies, tools incl. versions etc. defined in config file in repo
  - Extremely fast setup, onboarding and switching between projects

- How?
  - One of the options: GitHub Codespaces
  - Containerized, configurable dev environment
  - Usable via VS Code in a browser or local VS Code
  - Full functionality incl. extensions

- Majority of GitHub is developed in Codespaces…

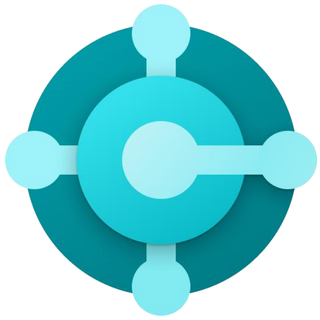
Interlude: Serverless dev with Codespaces



Source: https://docs.github.com/en/codespaces/overview

Azure Functions – Example usage

- Let your C# library survive!



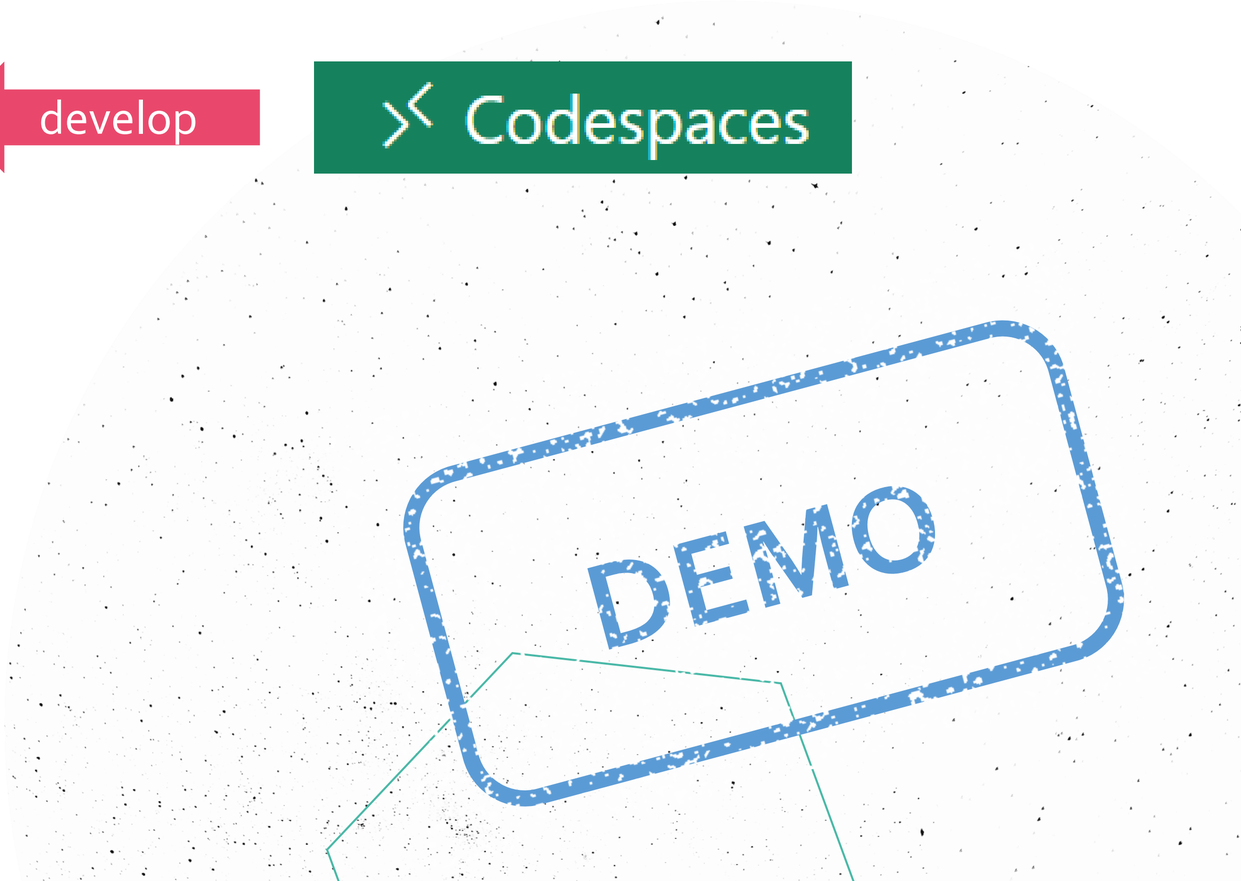
HTTP

develop

Codespaces

use

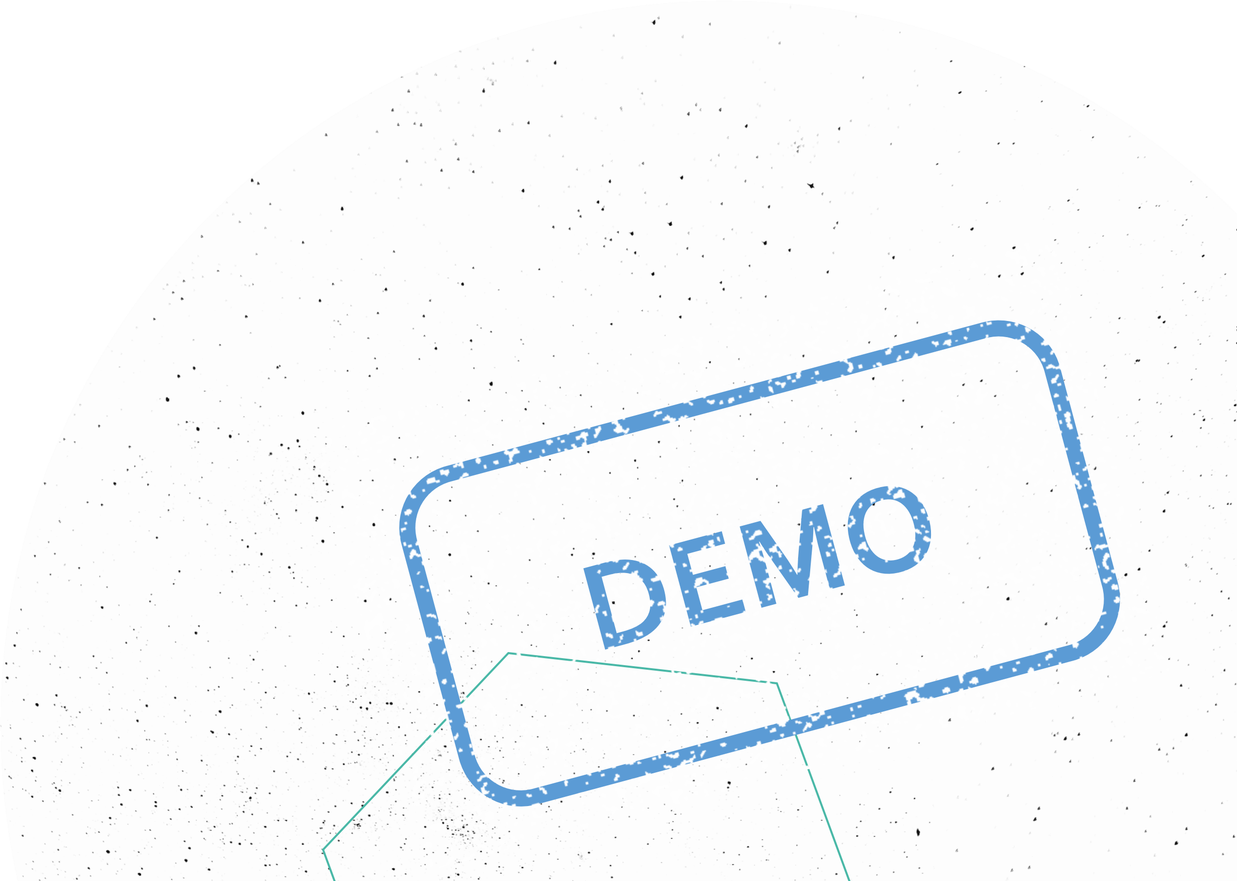
Custom DLL



Azure Functions – auto-test it!

- Functional test
  - Same story as for everyone else: Unit tests, integrations tests

- Performance test
  - Azure Load Testing



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Dataverse

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Dataverse – What is it?

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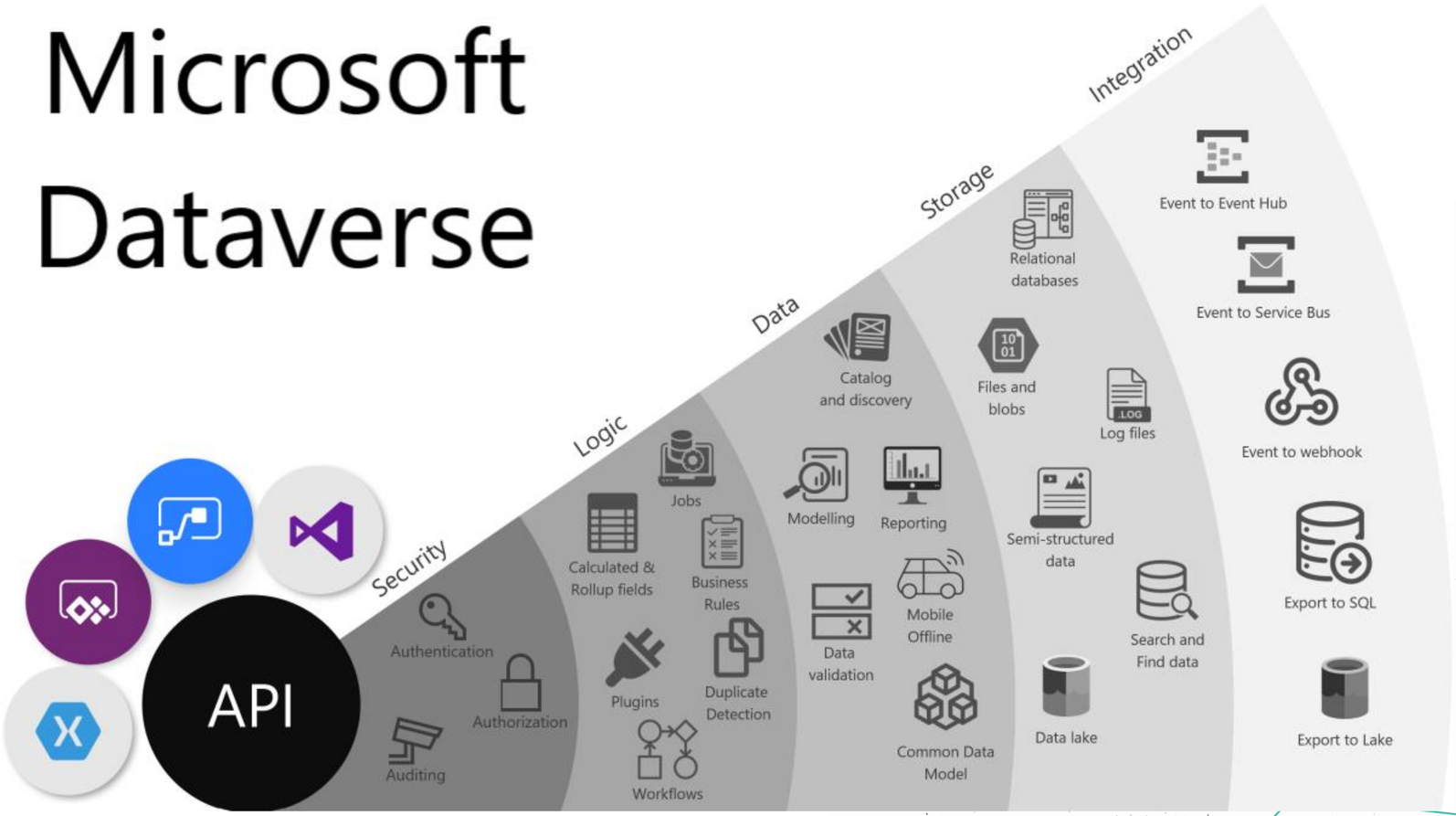
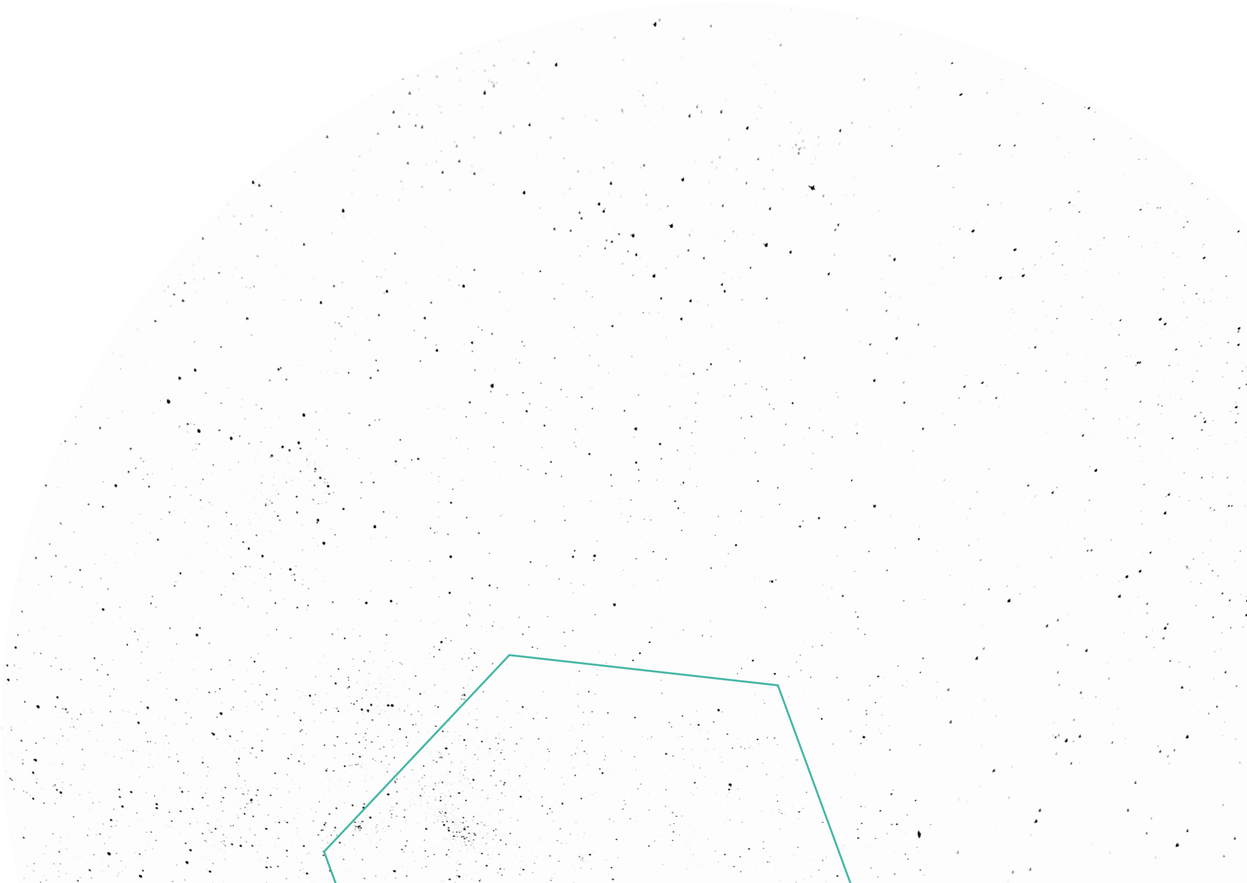
- A database in de cloud
- Easy to manage and to understand (low code)
- Mostly used for integration with systems (Power Platform or others)
- Common Data Model

Dataverse – What is it?

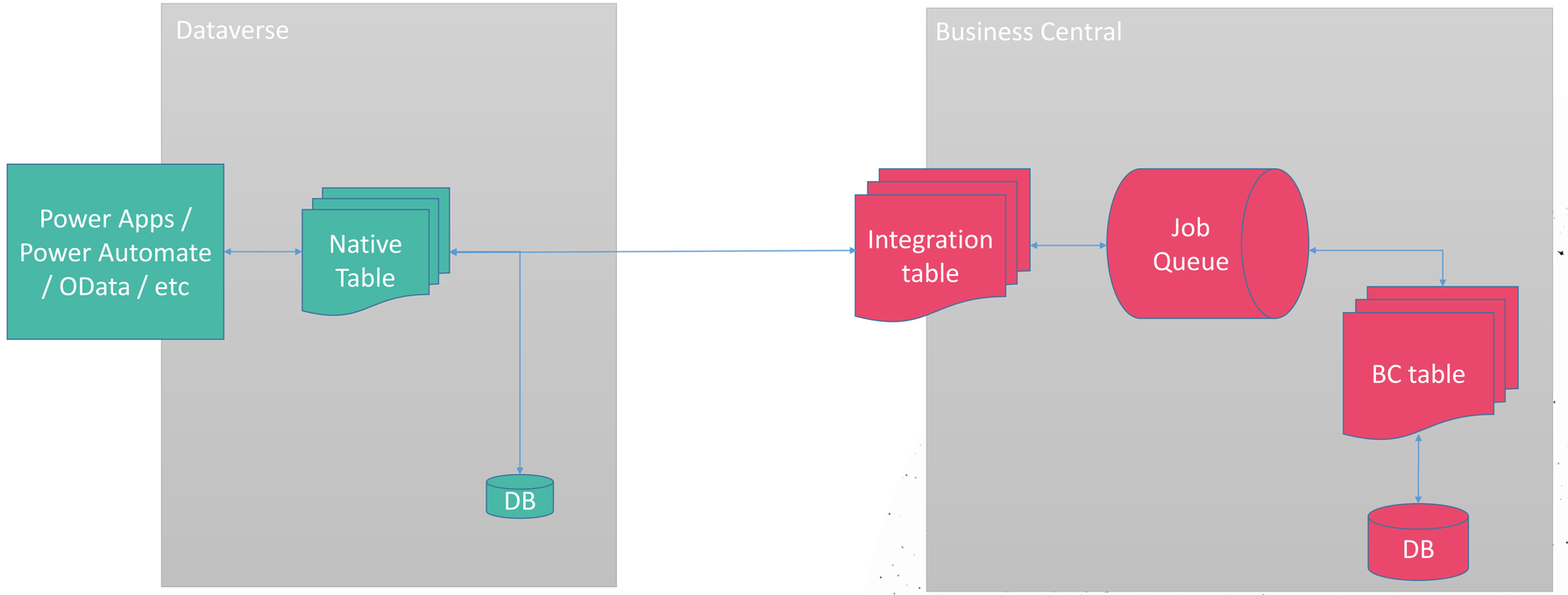


Dataverse – BC integration

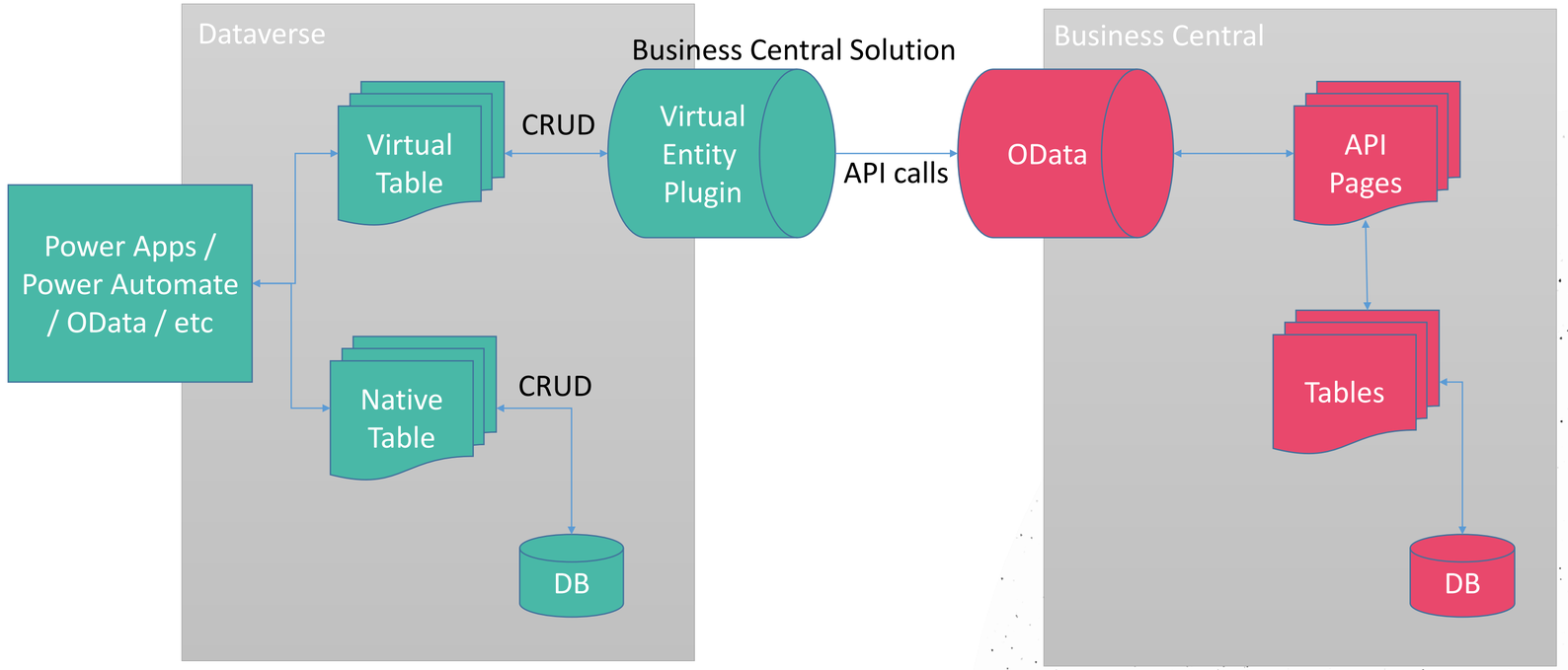
- There are two types of integration:
  - Sync method
  - Virtual entities
    - Only for BC online



Sync – High Level Design

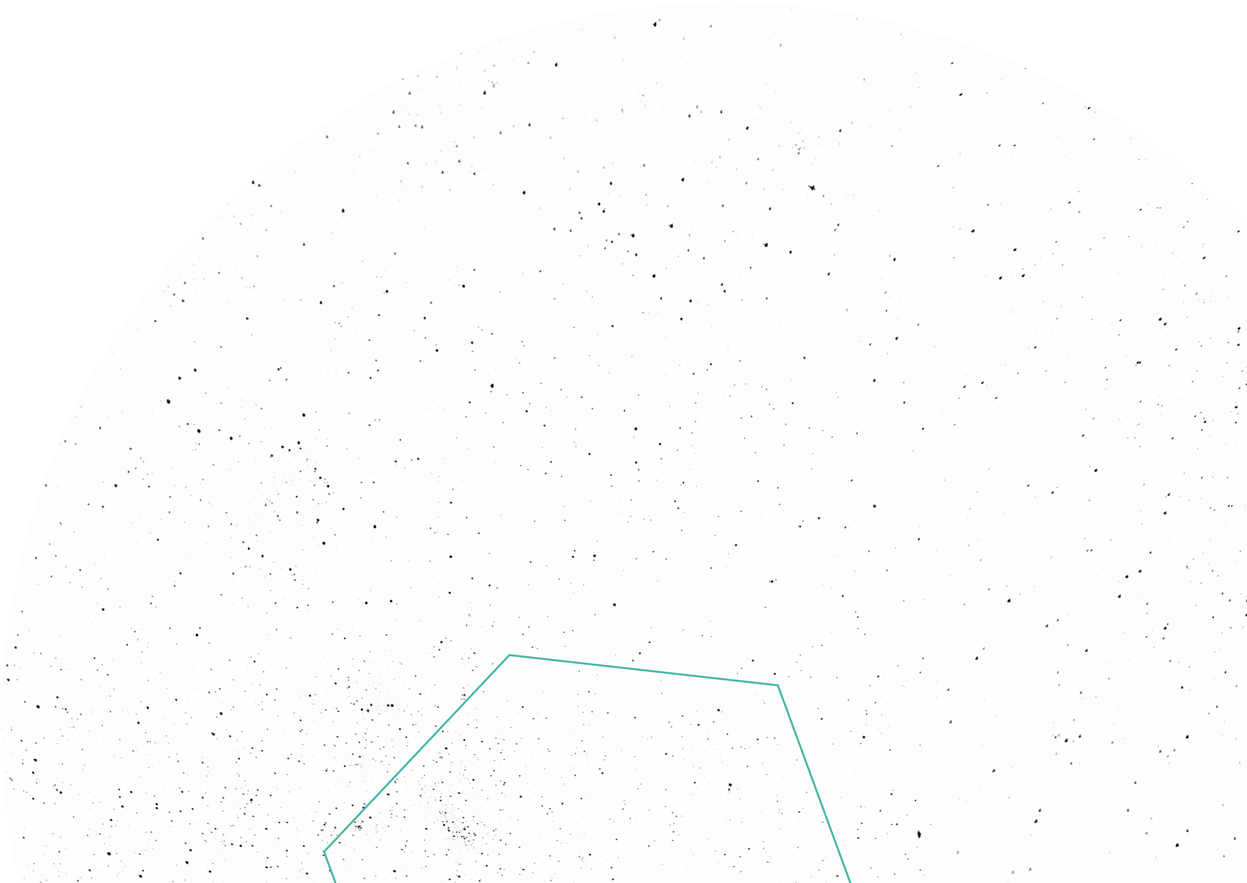


Virtual tables – High Level Design

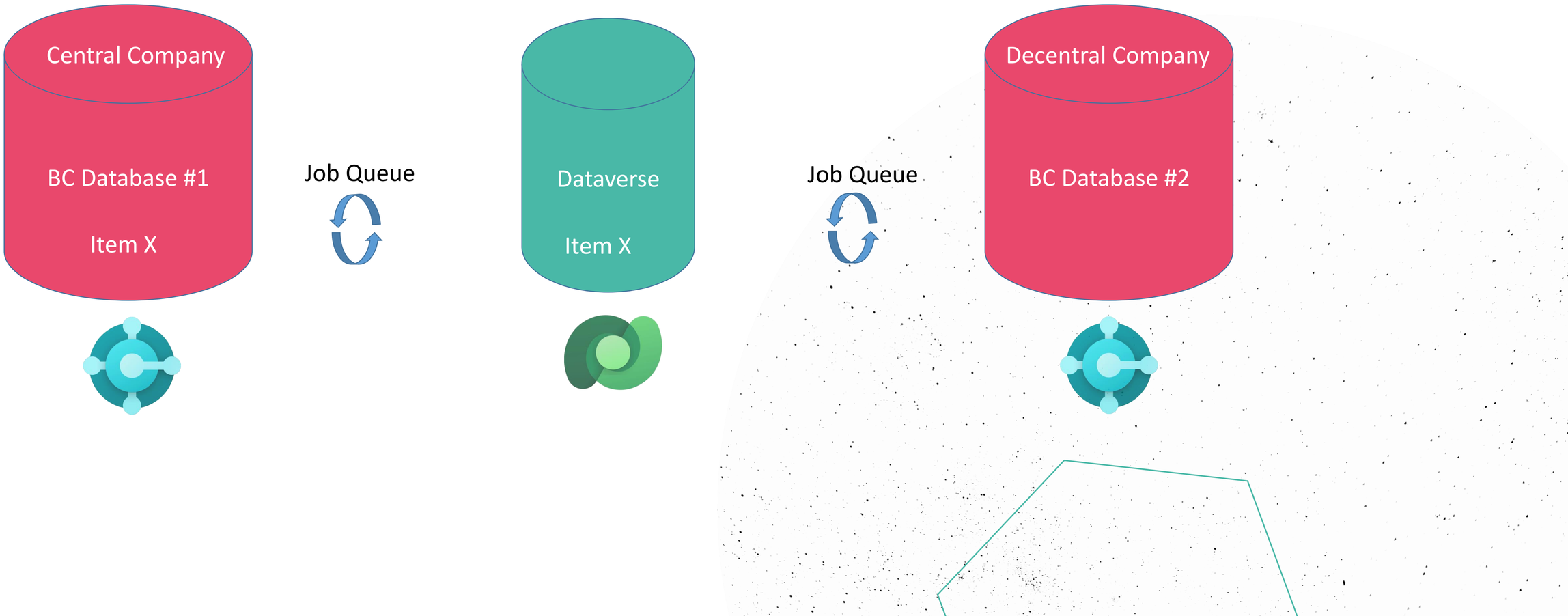


Dataverse – How does it help?

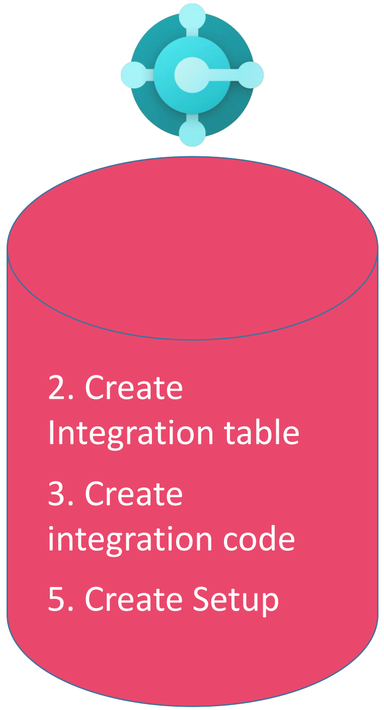
- Standard integration with BC
- Share records easily with other environments (or other systems)
  - For example customers / vendors / items

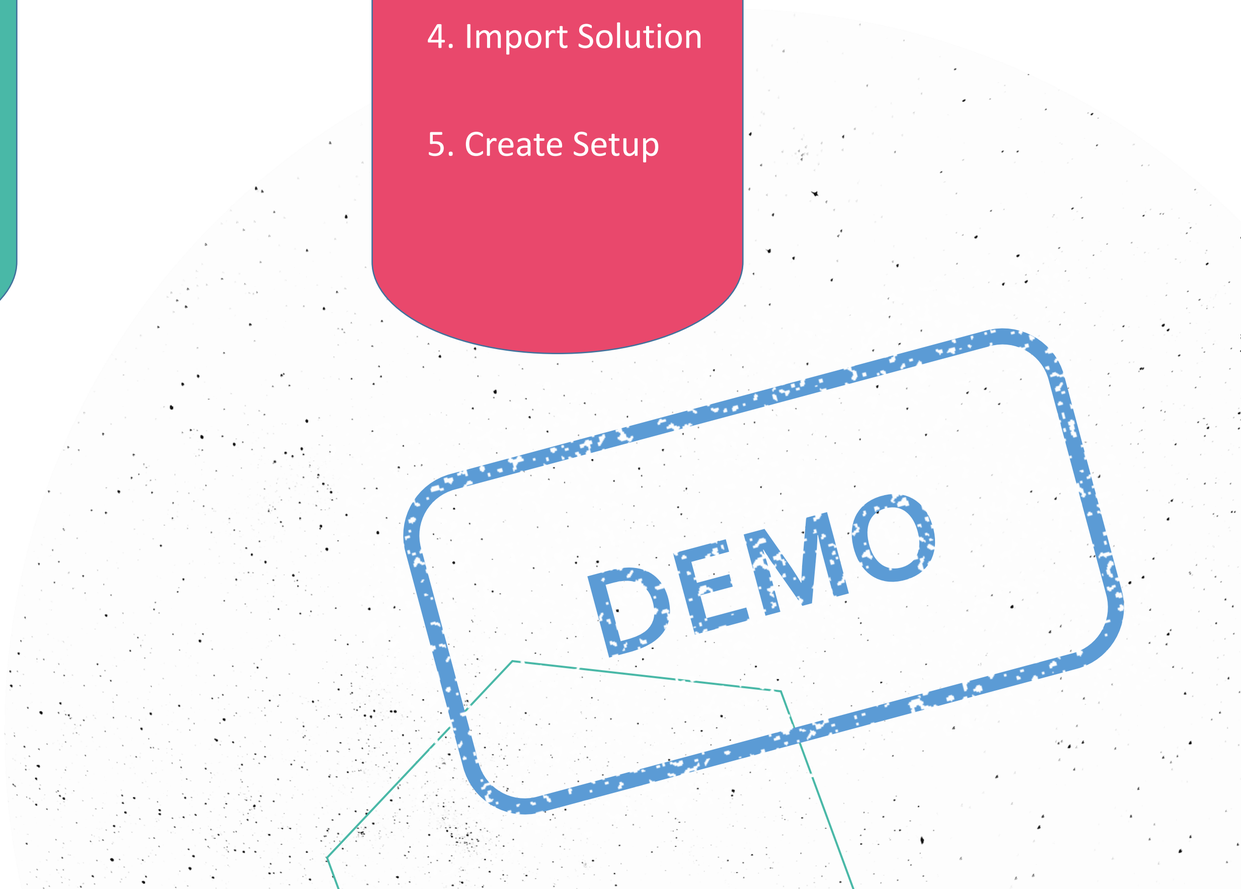


Dataverse – Scenario

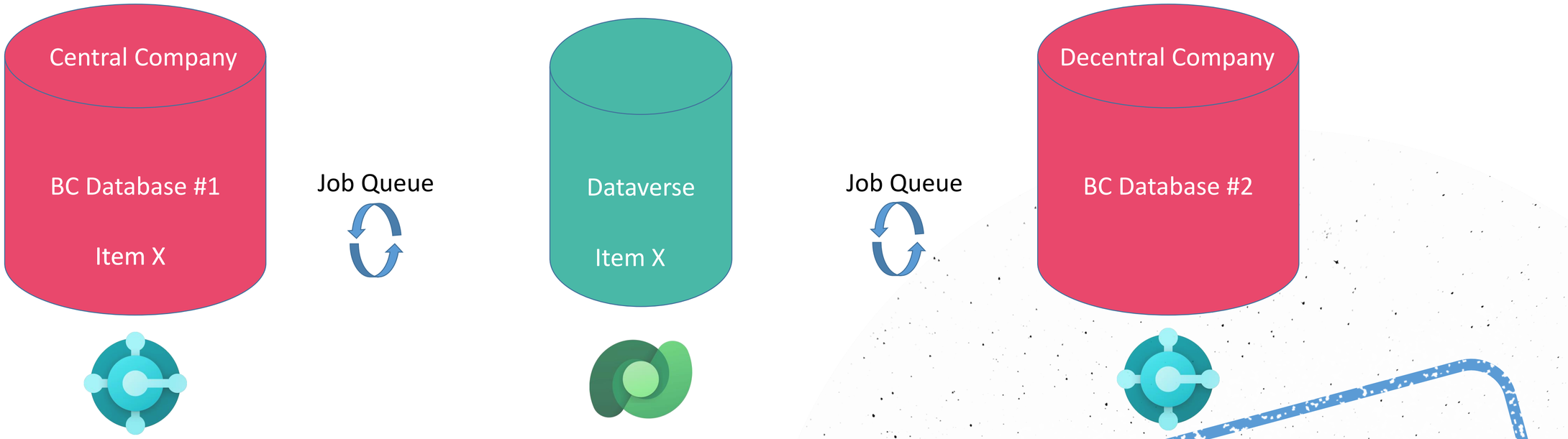


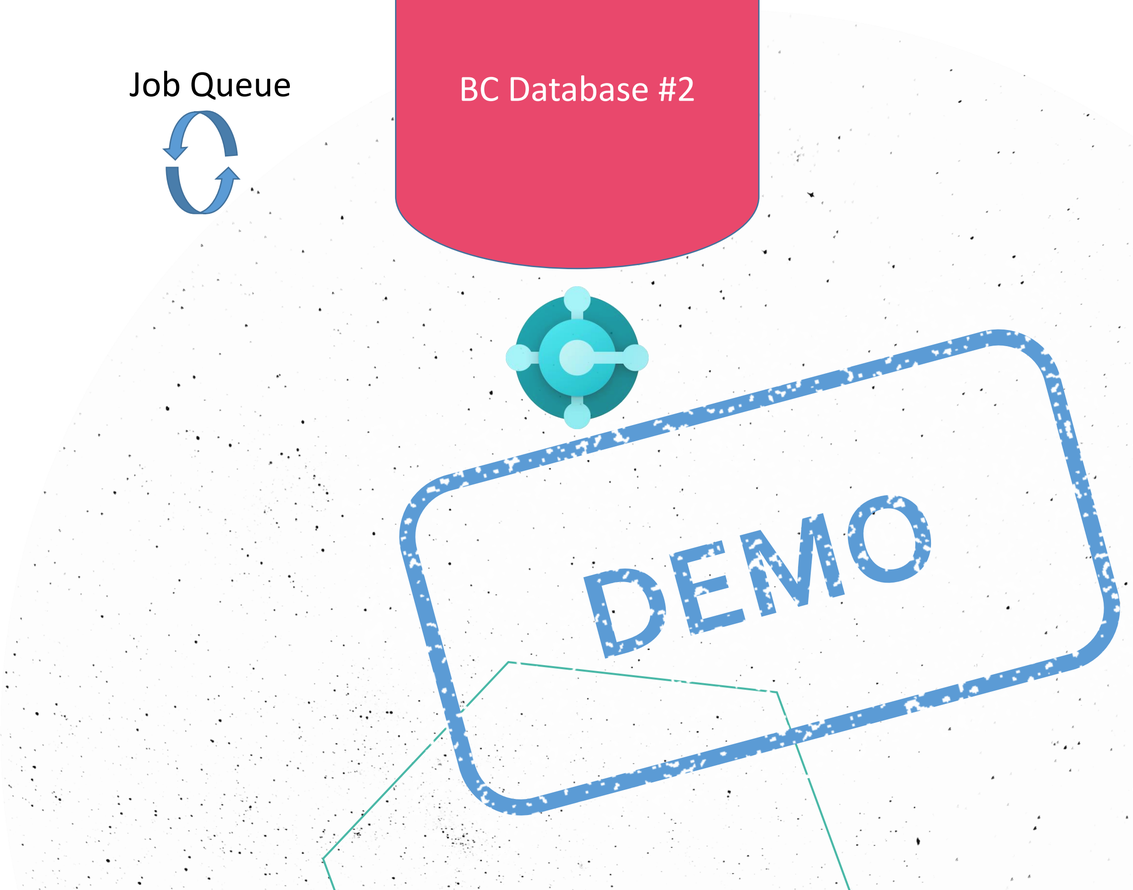
Dataverse – Development needed





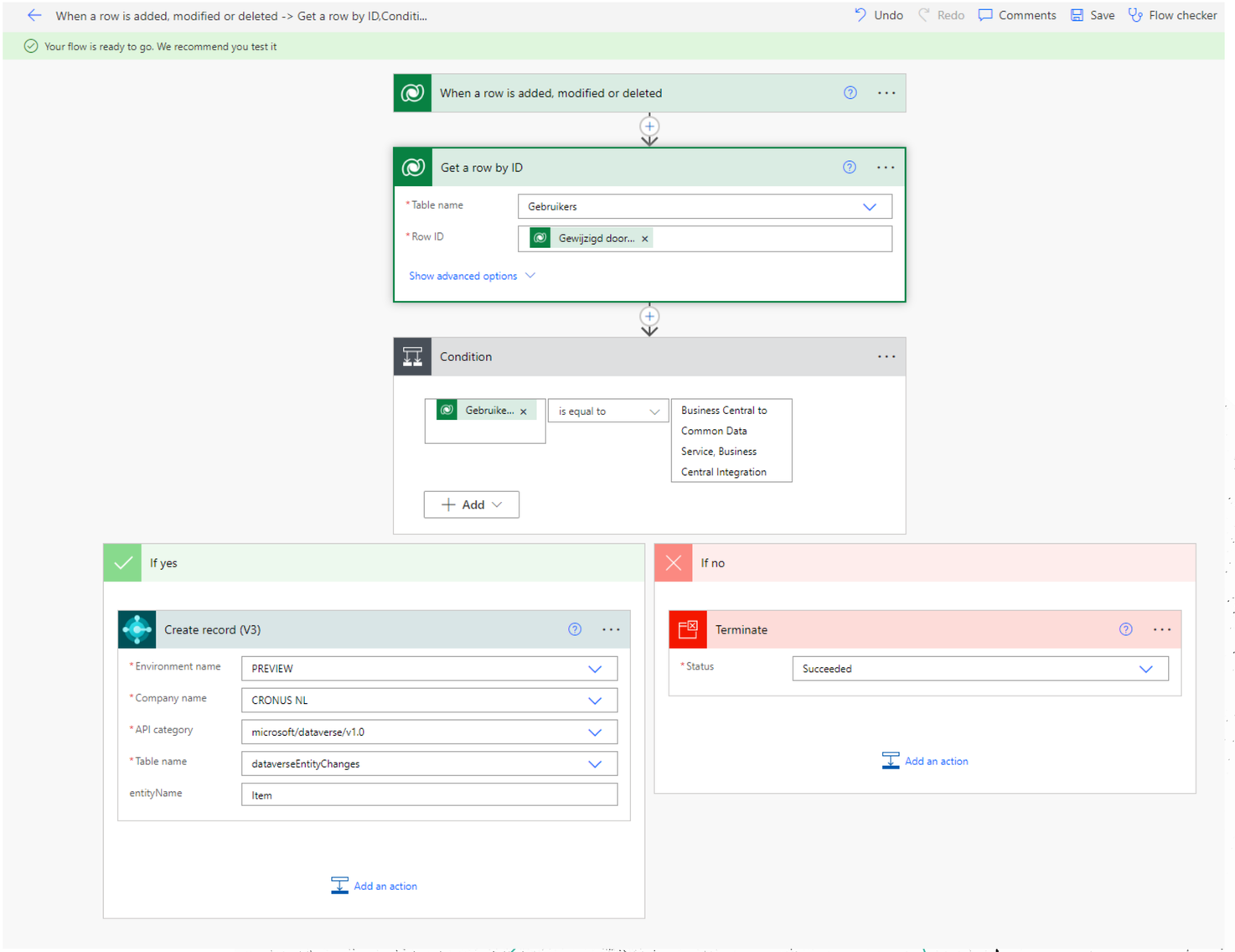
Dataverse – Scenario





Dataverse – Some notes

- Direct triggers on table
- BC21 trigger
- Extend existing entities
- A lot of coding



Any Questions?

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Thank You!