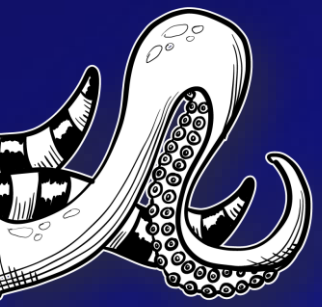
DYNAMICS MINDS

Microsoft Dynamics 365 and Power Platform Conference

Pre-Day: MAY 26, 2024

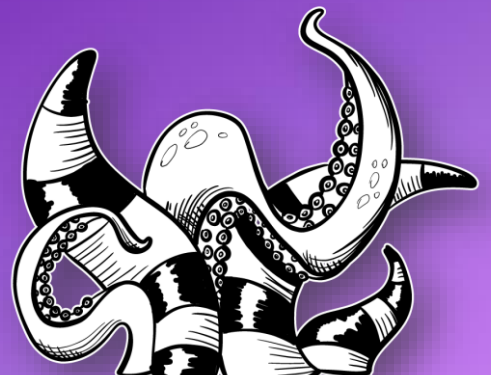
MAY 27 - 29, 2024

Portorož, Slovenia, Europe



Getting Data out of Dynamics 365 Finance and Operations and creating analytical model

Mladen Gvozdenovic
Solution architect & CEO
BI4DYNAMICS



AGENDA

Explore approaches to extract, transform, and leverage data from Dynamics F&O, going beyond the conventional methods.

Dive into advanced integration strategies, such Dataverse, Azure Synapse and Fabric integration with Power BI or SQL database to elevate your analytics game.

Dig into Synapse Link for Dataverse and Fabric, tracing its historic evolution and understanding how it enhances data accessibility and analytics capabilities.

Engage in a detailed comparison, covering settings, security, capabilities, and costs, providing valuable insights for decision-making.

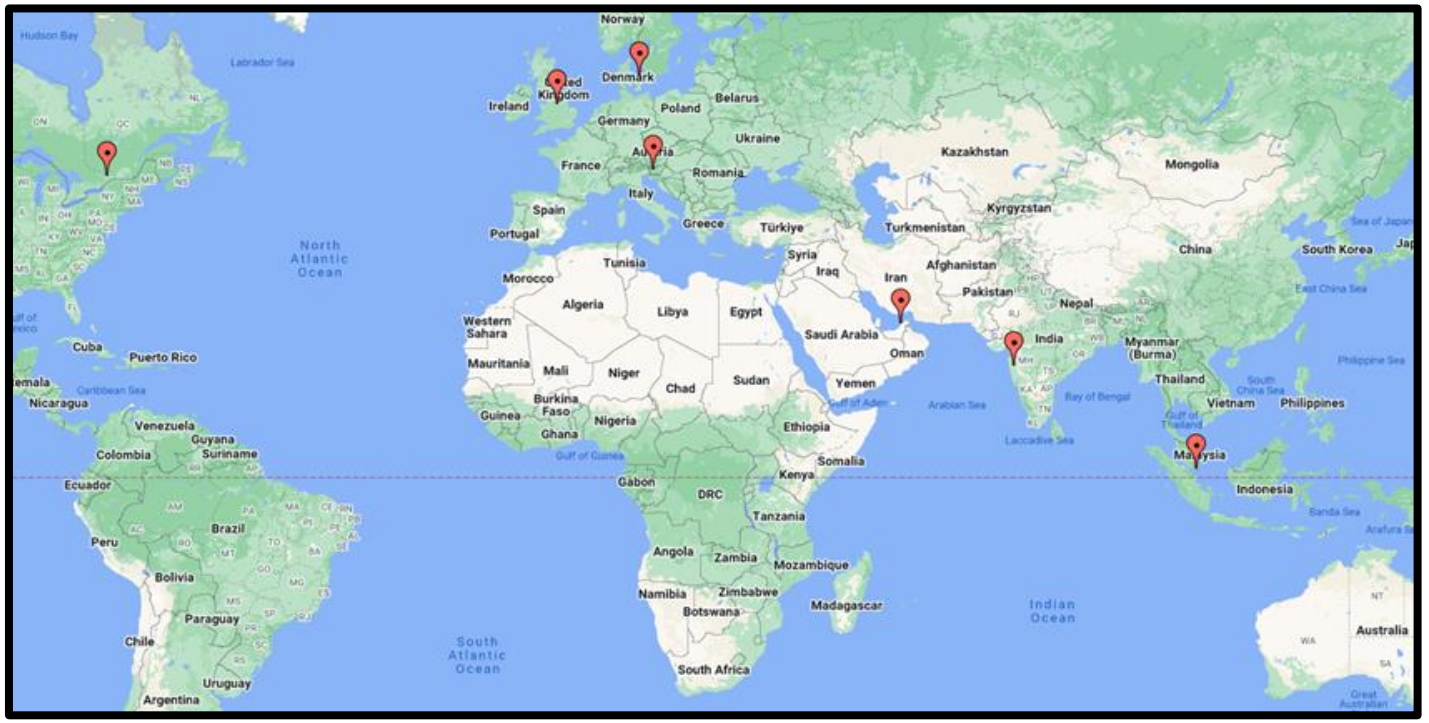
Explore 50+ real-world use cases, assessing cost-effectiveness and analytics outcomes.

Discover best practices for seamless data integration with F&O and gain insights into future trends and innovations. Join us on this journey, where expertise meets innovation, transforming your business intelligence landscape.

About BI4Dynamics

- 15 years - Microsoft Dynamics partner (SI, HR, SR)
  - Started Implementing NAV (DOS version)
  - Team of 100 local resources
  - Delivered 120 ERP/CRM/BI projects

- 12 years - Microsoft ISV
  - International teams
  - Implemented 1000 BI projects (1 or 2 every week)

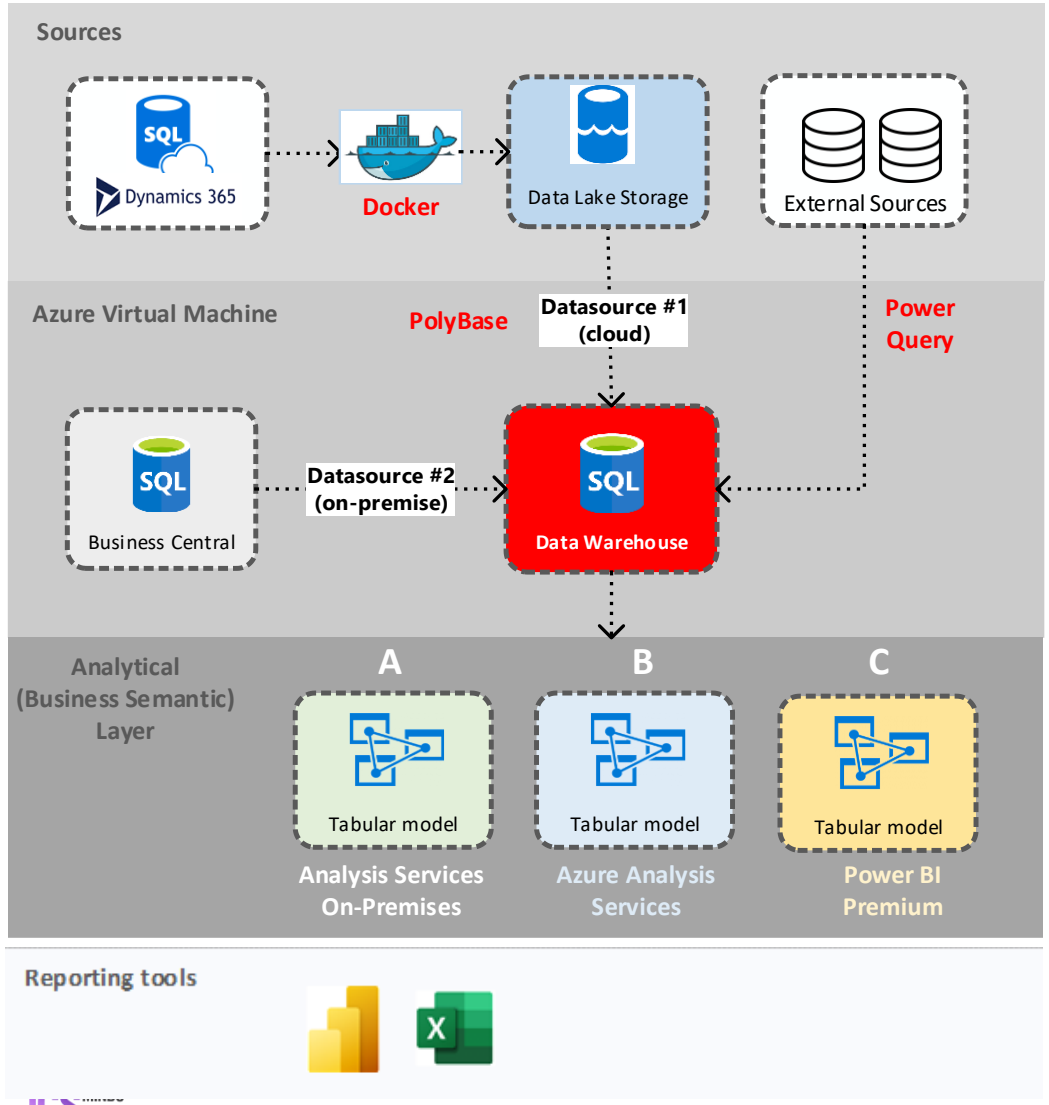


BI4Dynamics v1.0

Standardized BI implementations for Dynamics in a matter of days

Any Size
Any Industry

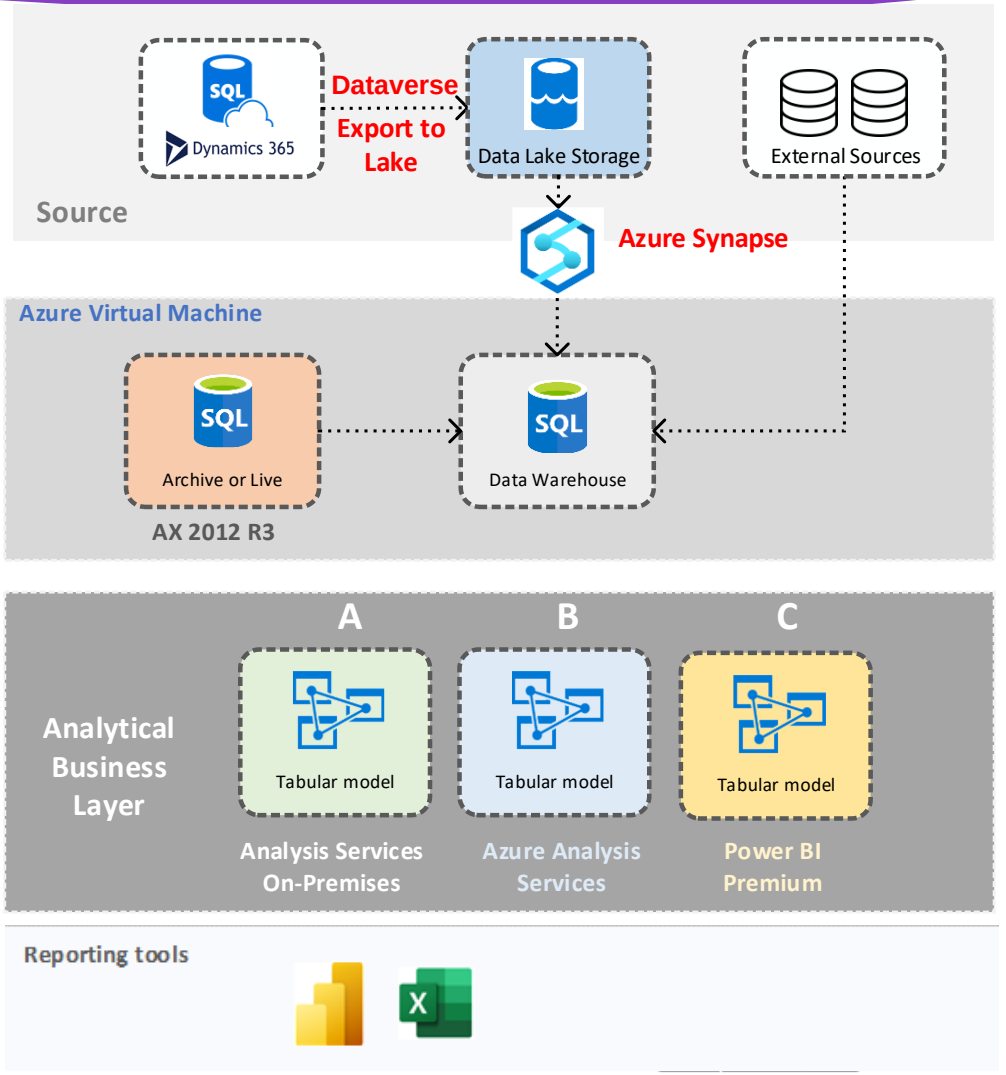
BC <-- current architecture --> DFO



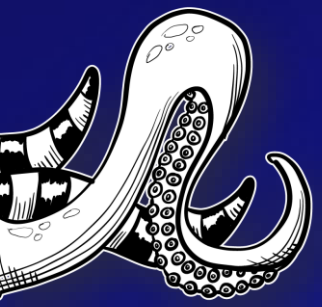
Preparation

Transformation

Consumption



Trusted around the globe



DEMO

Power BI reports

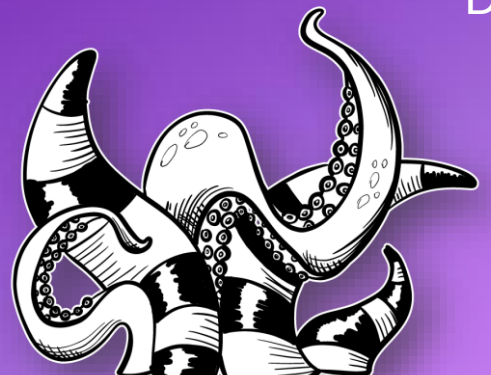
BI4DYNAMICS

Project documentation

12 Cubes	52 Measure groups	153 Dimensions	3133 Measures

Instance name	**BI4Dynamics D365**
BI4Dynamics version	10.0.0
Physical cubes (12)	Common Measures, FA Analysis, GL Analysis, Inventory Analysis, Payables Analysis, Product Information Analysis, Production Analysis, Project Analysis, Purchase Analysis, Receivables Analysis, Retail Analysis, Sales Analysis,
Data warehouse	
Server	MLADENNUC\FO
Database	BI4Dynamics D365
SQL edition	standard
SQL version	15
Analysis database	
Server	MLADENNUC\FO
Database	BI4Dynamics D365
SQL edition	standard
SQL version	X

Documentation



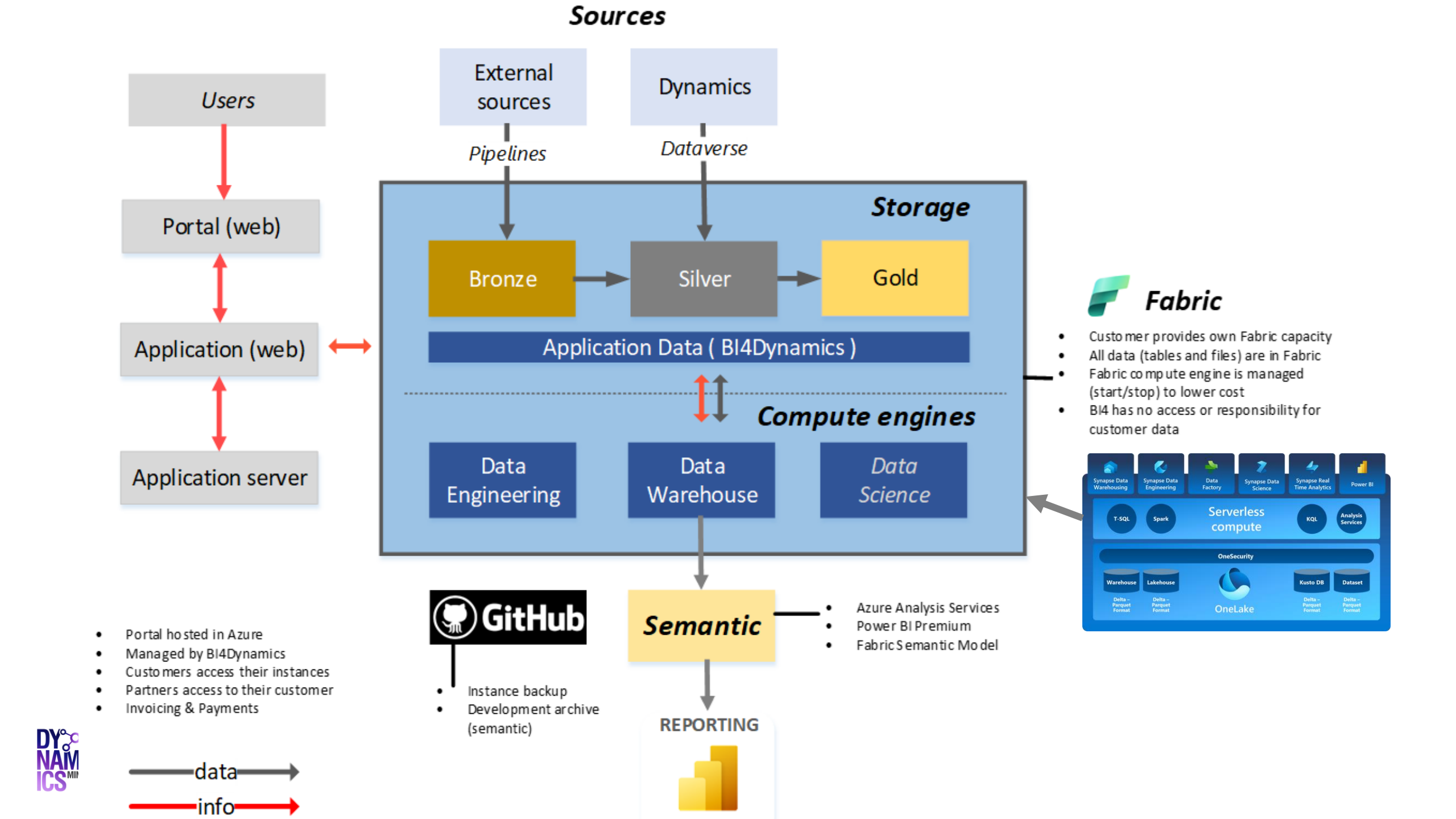
DYNAMICS MINDS

BI4Dynamics v2.0 - paradigm shift

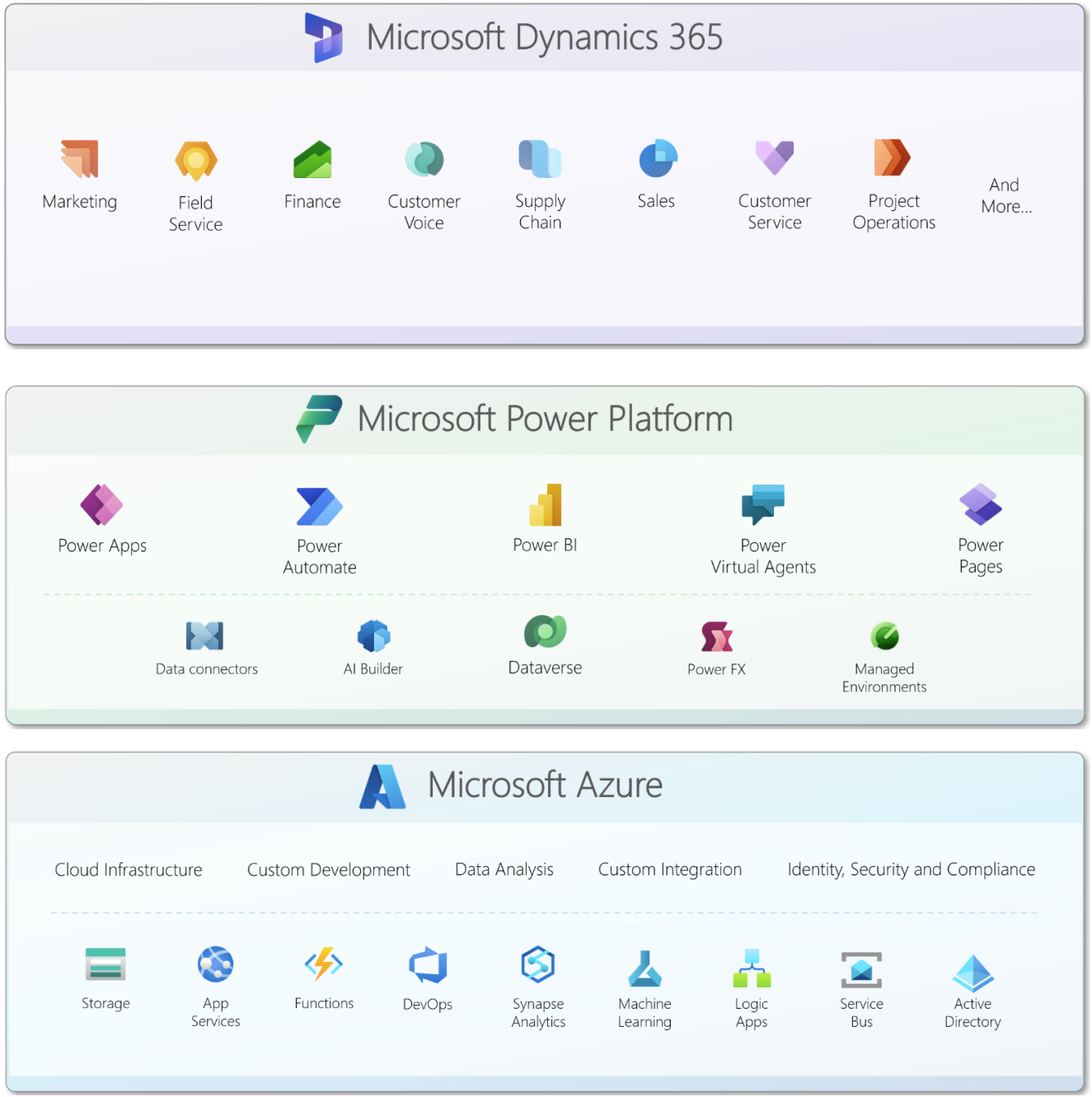
- BI4Dynamics 2.0 is fully Saas solution
  - **Same content and same customizations** features as BI4Dynamics 1.0
  - **Integration into Microsoft Fabric (storage engine, compute engine)**
  - Self-service installation in **30 minutes**

  and this will allow us to go further – beyond Data Warehouse

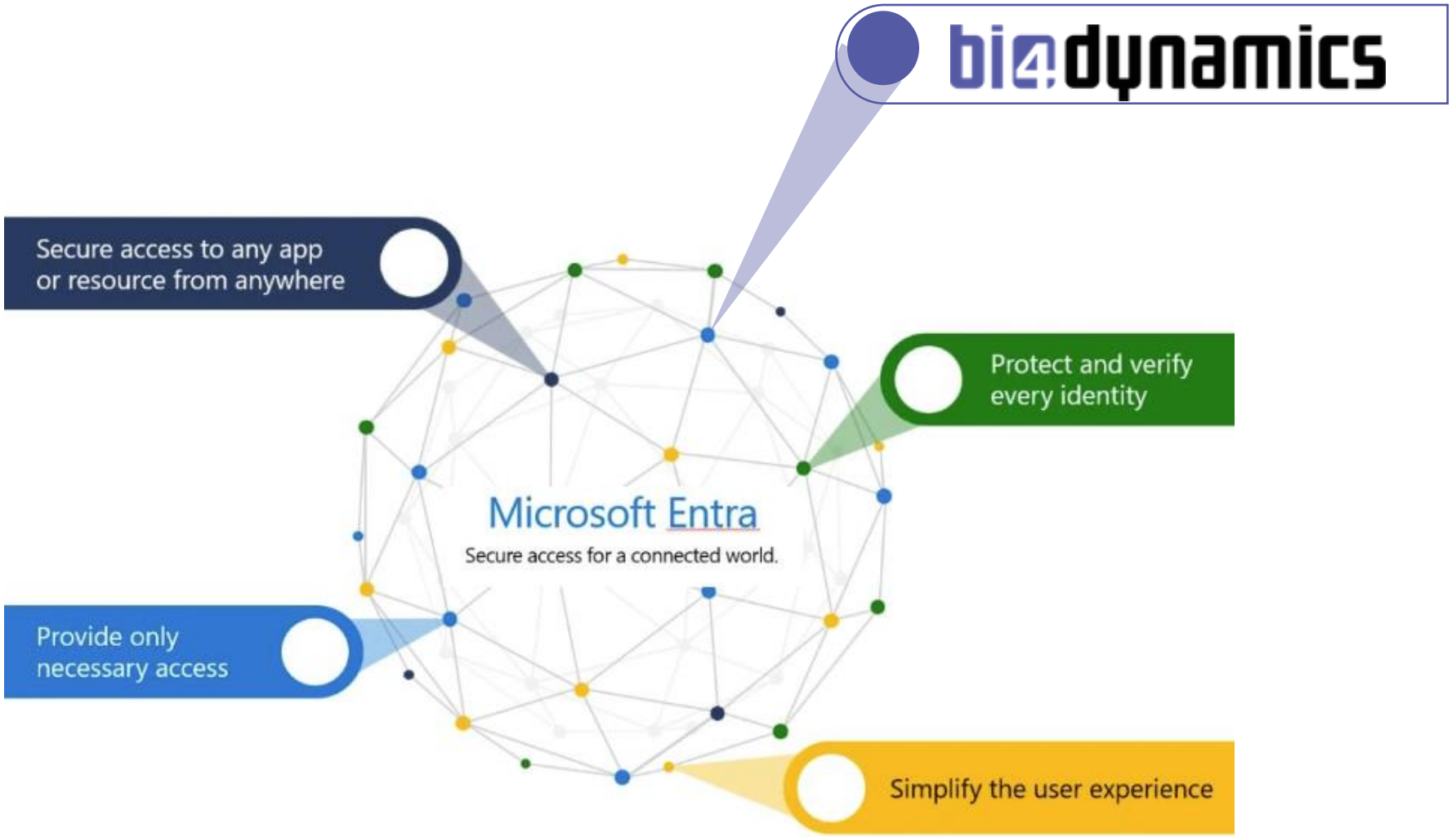
- Beyond Data Warehouse
  - Examples of BI4Dynamics data with **new Power BI visuals / reports**
  - Examples of BI4Dynamics data with **new patterns = DAX expressions**
  - Introduction of **Data science - forecasting models based on BI4Dynamics**


Sources
External sources
Dynamics
Users
Pipelines
Dataverse
Portal (web)
Storage
Bronze
Silver
Gold
Application (web)
Application Data (BI4Dynamics)
Compute engines
Data Engineering
Data Warehouse
Data Science
Application server
Fabric
Customer provides own Fabric capacity
All data (tables and files) are in Fabric
Fabric compute engine is managed (start/stop) to lower cost
BI4 has no access or responsibility for customer data
Synapse Data Warehousing
Synapse Data Engineering
Data Factory
Synapse Data Science
Synapse Real Time Analytics
Power BI
T-SQL
Spark
Serverless compute
KQL
Analysis Services
OneSecurity
Warehouse
Lakehouse
Kusto DB
Dataset
Delta – Parquet Format
OneLake
GitHub
Semantic
Azure Analysis Services
Power BI Premium
Fabric Semantic Model
Instance backup
Development archive (semantic)
REPORTING
Portal hosted in Azure
Managed by BI4Dynamics
Customers access their instances
Partners access to their customer
Invoicing & Payments
data
info

BI4Dynamics SaaS is seamlessly integrated into Microsoft Cloud



Identity: Microsoft Entra

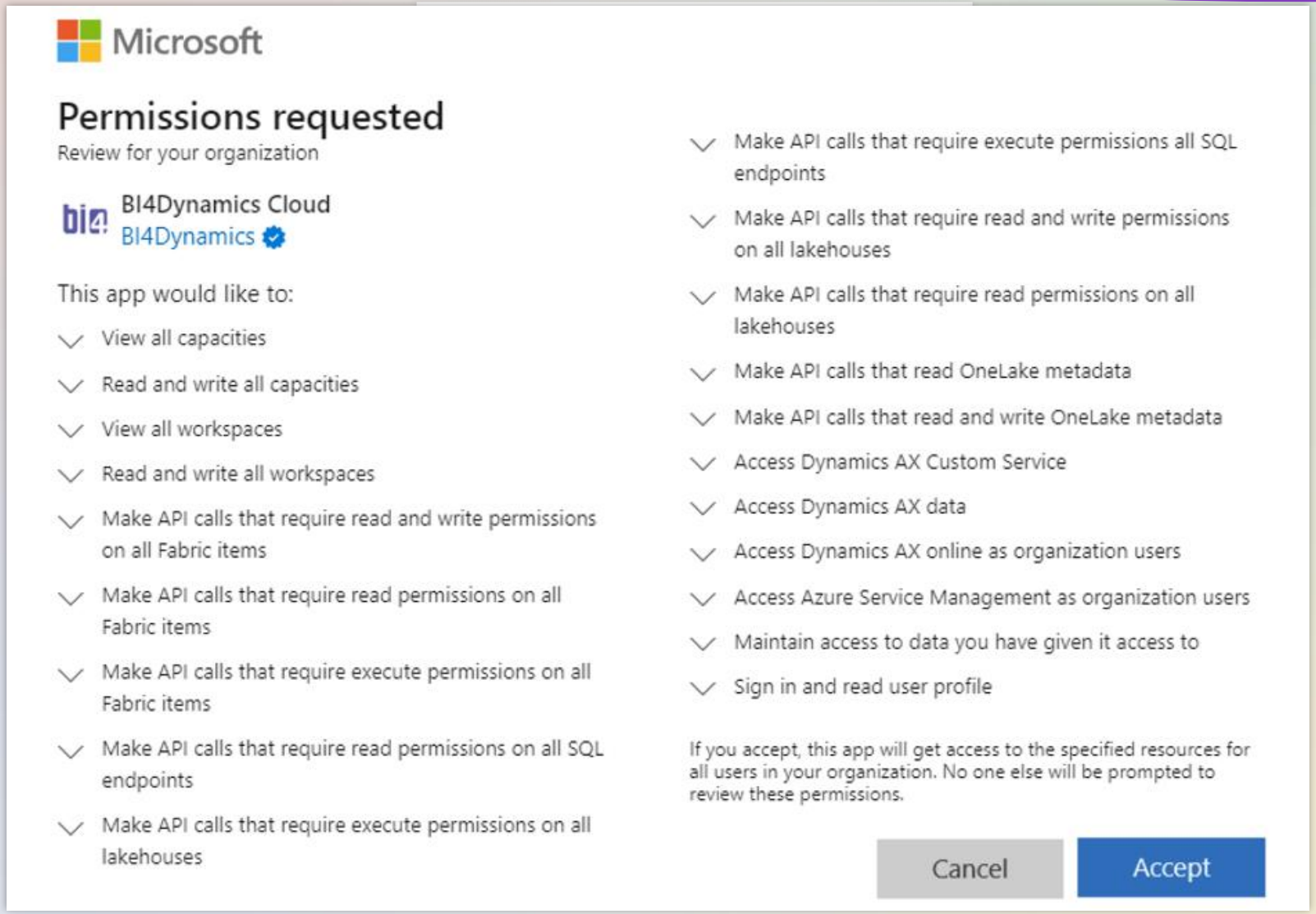


Deployable infrastructure

Resource Group

	App Service	API to communicate with Portal
	Key Vault	Vault to save secrets and keys
	Storage Account	Azure Synapse Link and sensitive data storage
	Fabric Capacity	Data compute engines
	Synapse Workspace	Azure Synapse Link data processor
	Apache Spark Pool	Big data compute capabilities
	Managed Identity	Security identity to clue everything together

Authorization



Result:
30 minutes
installation

Getting data out of DFO

This is the first step in BI project and unfortunately,, also currently the only step provided by Microsoft.

History of D365 F&O as datasource

	BYOD	Entities in Datalake	Tables in DataLake
What is exported	Table	Entity	Table
Destination	Azure SQL Customer subscription	Azure Data Lake (Gen2)	Azure Data Lake (Gen2)
Benefit	Flexible Open to any tool	Ready make templates Free	Flexible
Handicap	Slow, reliability issues, Not for big tables	Difficult to modify DFO data only	No BI model ready Cost

There is not much about BI modeling.

DYNAMICS MINDS

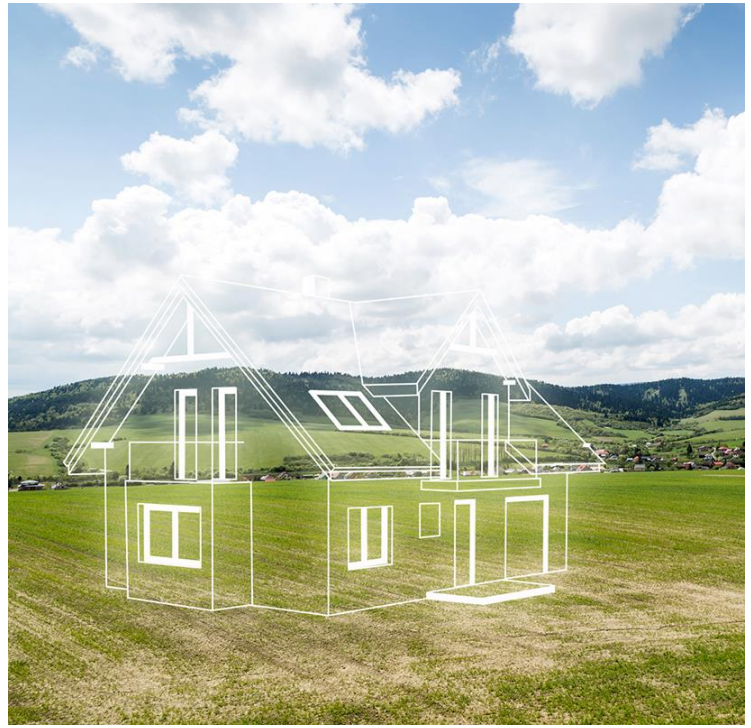
Current situation

- Microsoft provides
  - Few options to **get data out of D365**
  - Outstanding support for Customers and Partners

- Customer also need
  - Analytical model
  - Power BI reports (visualisation part)

As a result, customers and partners spent a lot of time working on BI project creating analytical model and validating data transformation.

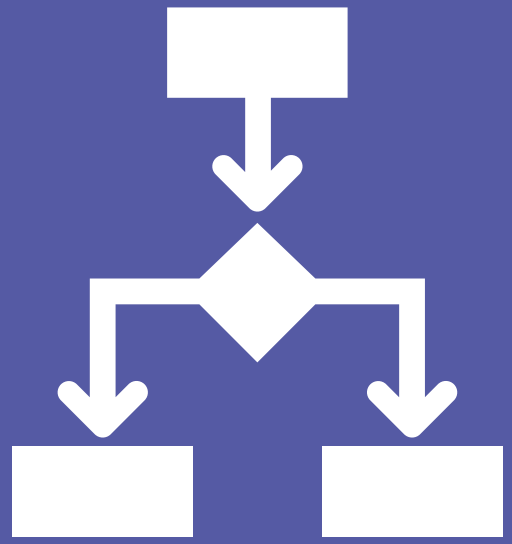
Do it yourself



No one is talking about the house

Tipical data warehouse architecture

bi4dynamics.com



Effort

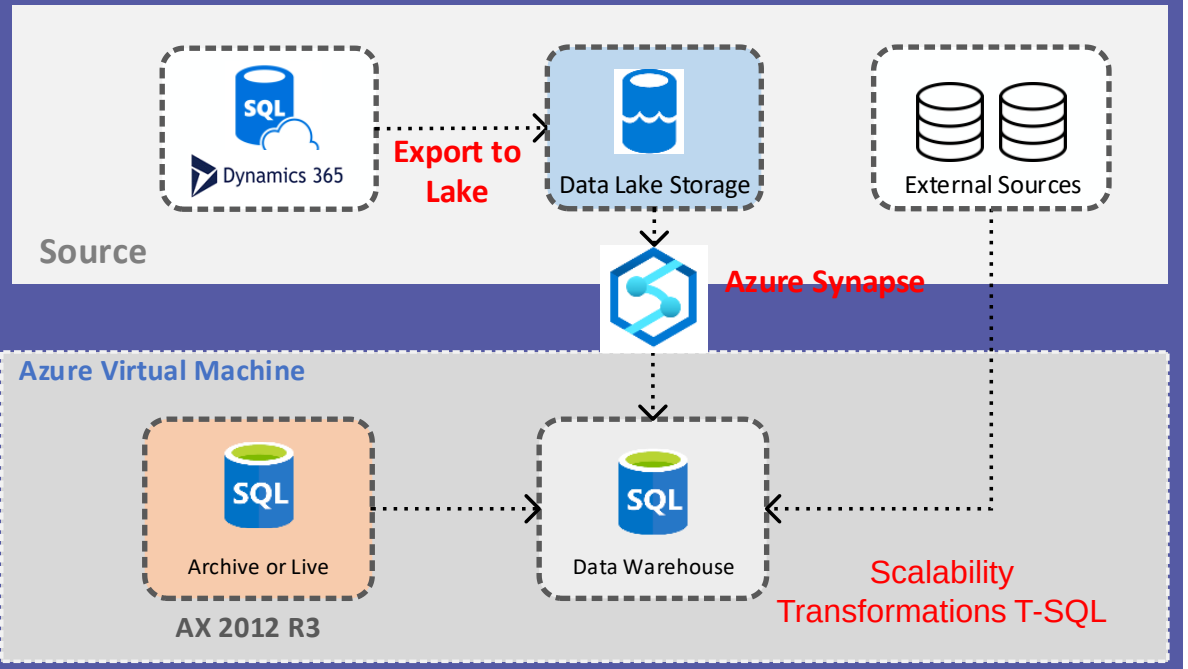
10% **Preparation**

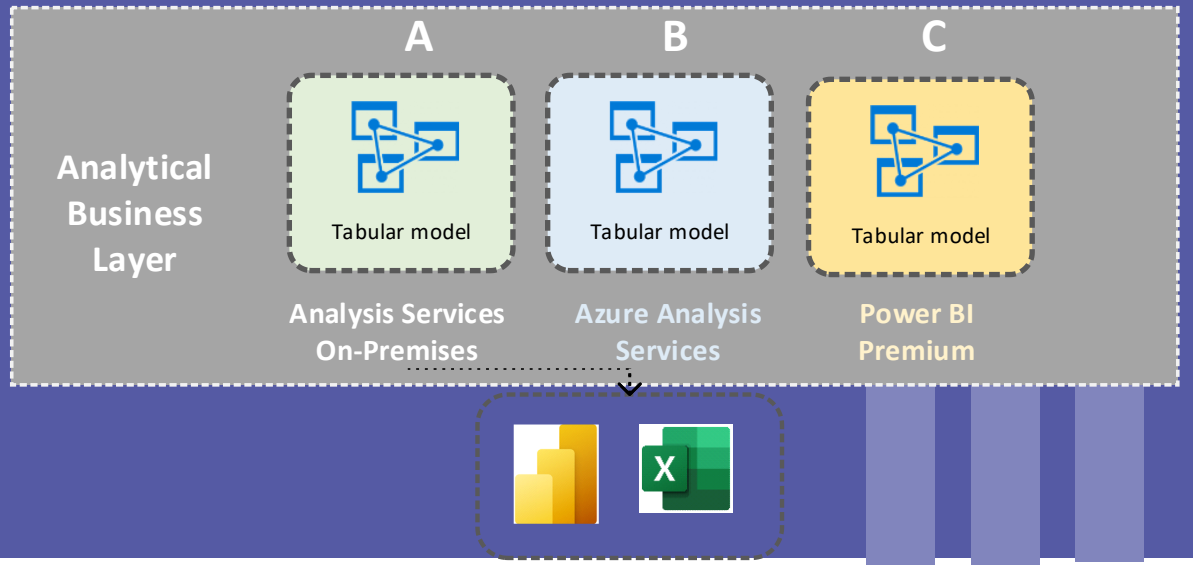
Finding best incremental strategy

60% **Transformation**

20% **Transformation**

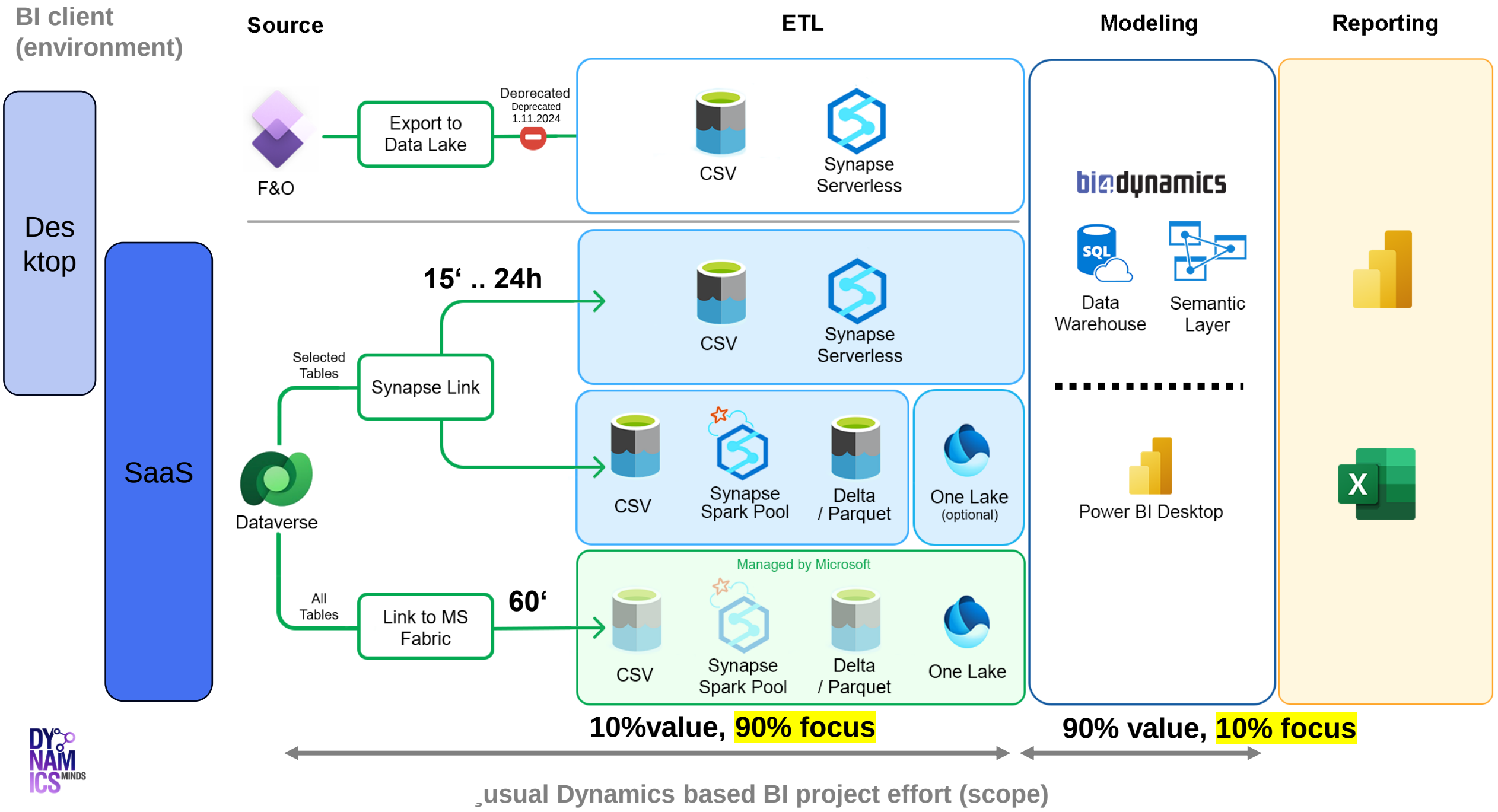
10% **Consumption**





Key issues in every BI project: data quality vs data availability vs data transformation

- Historically, the biggest problem in most BI projects when extracting data is data quality, quality of data source.
- DFO is an ERP, **data quality** is golden grade (can't get better)
- In the last few years, Microsoft focus for DFO based BI project was getting data out of DFO. This is a first phase of BI project and is focused on datasource availability and not on BI transformation. It consumes a lot of customer and partner resources.
- Microsoft is not providing data transformation. Customers and partners must figure this extremely important part by themself.


BI client (environment)
Source
ETL
Modeling
Reporting
Desktop
SaaS
F&O
Export to Data Lake
Deprecated
Deprecated 1.11.2024
CSV
Synapse Serverless
15‘ .. 24h
Selected Tables
Synapse Link
Dataverse
CSV
Synapse Serverless
CSV
Synapse Spark Pool
Delta / Parquet
One Lake (optional)
All Tables
Link to MS Fabric
60‘
Managed by Microsoft
CSV
Synapse Spark Pool
Delta / Parquet
One Lake
bi4dynamics
Data Warehouse
Semantic Layer
Power BI Desktop
10%value, 90% focus
90% value, 10% focus
usual Dynamics based BI project effort (scope)

Comparing 2 models:
Power BI App vs Data warehouse-based Semantic model

Power BI app

26 visuals

Price for 1 Power BI model: 40 € / month
Price for 2 Power BI model: 50 € / month
Price for 3 Power BI model: 60 € / month

Data Warehouse + Analitical db + PBI

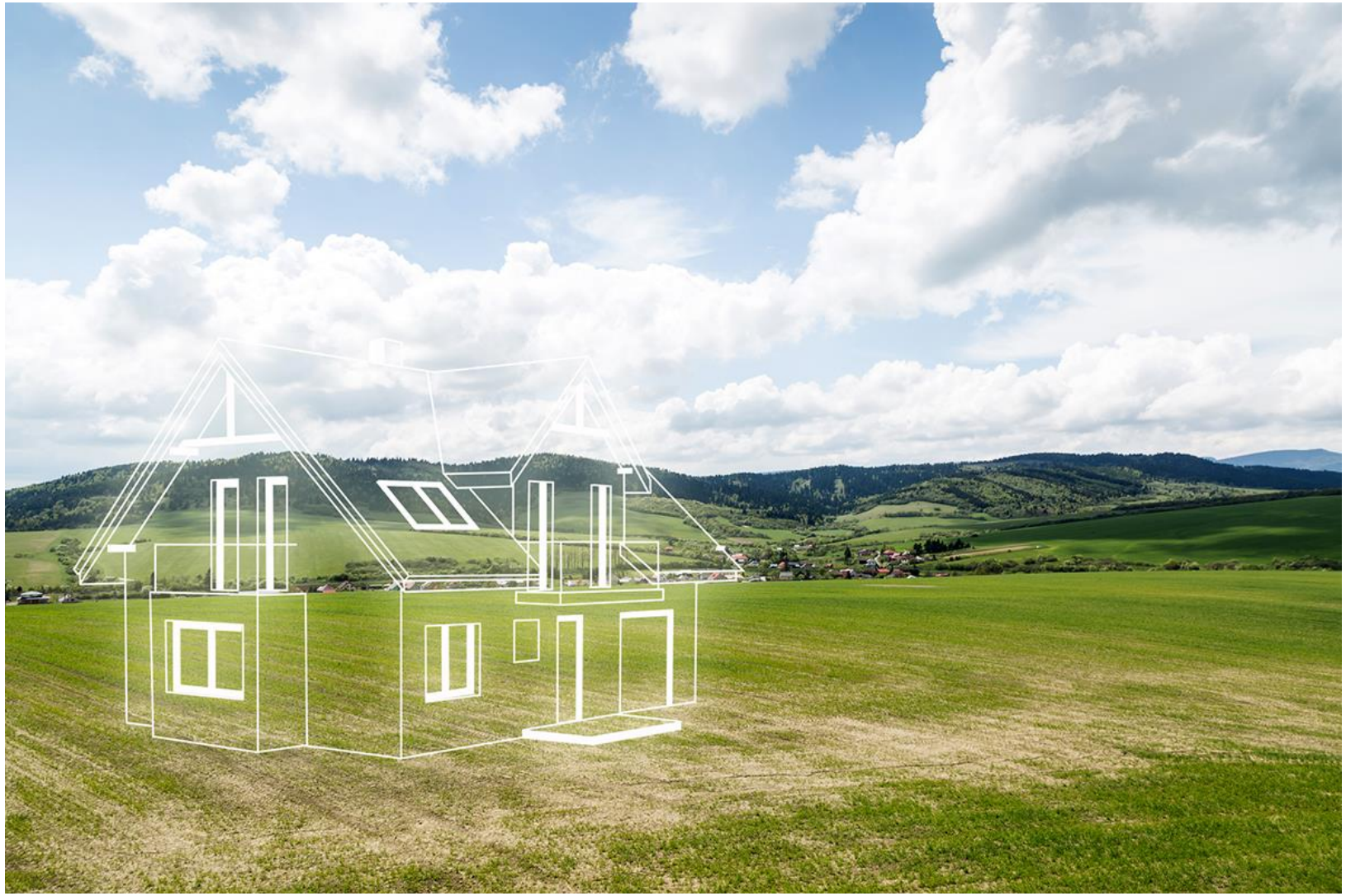
28 visuals

Price for 6 DW based models: 250/800 € / month
Price for 10 DW based models: 500/1250 € / month

What are we missing?

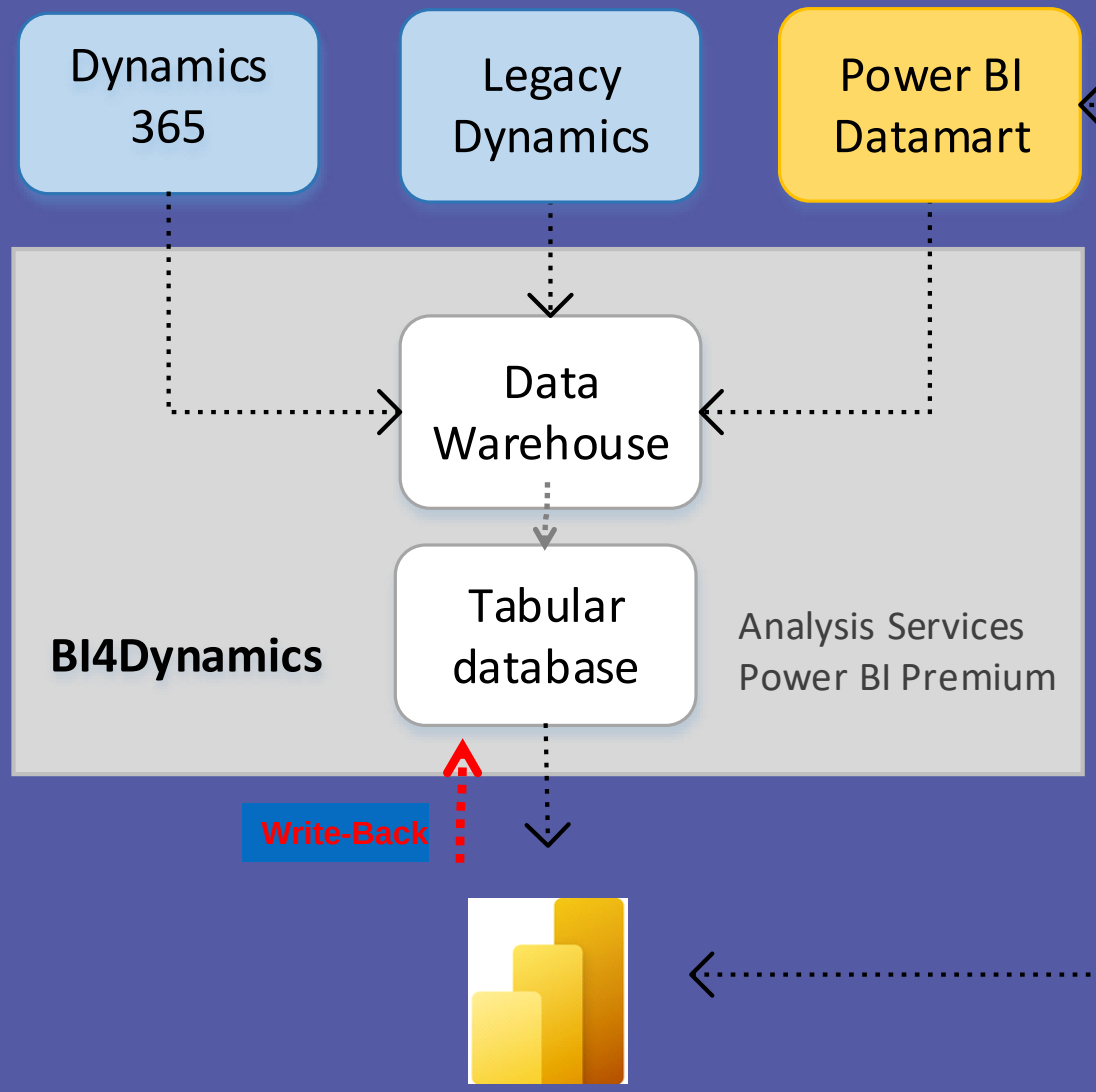
Data transformation, data validation, performance check and more...

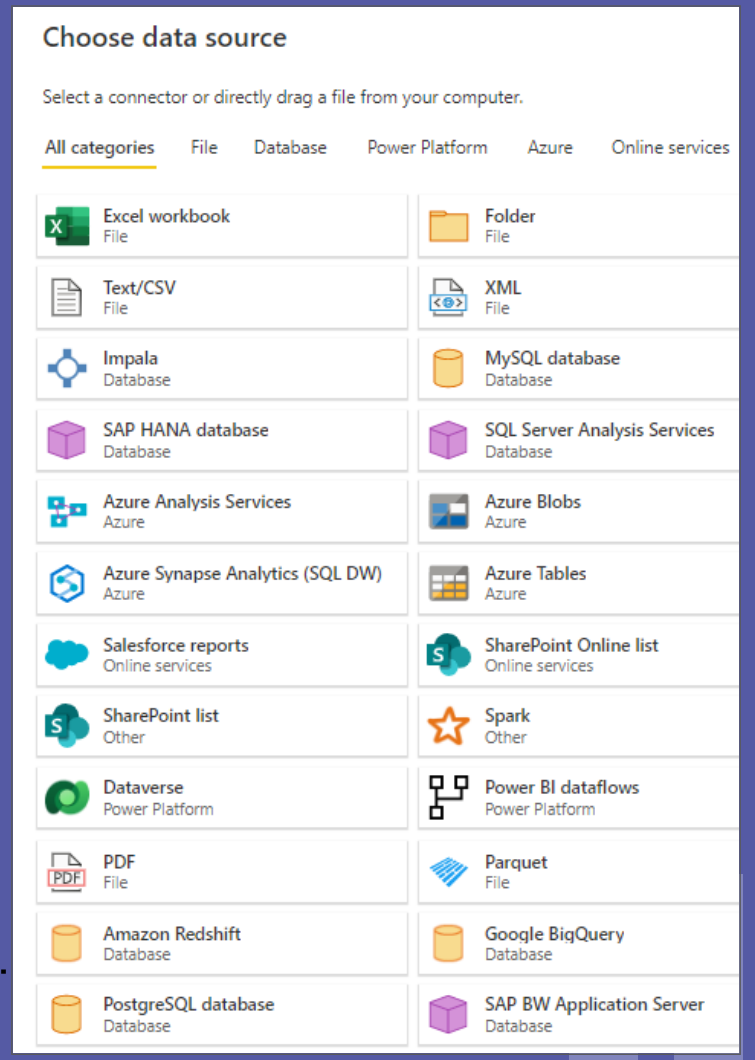
We have a land (data), we must build a house (BI model)



Very little is spoken about the house.

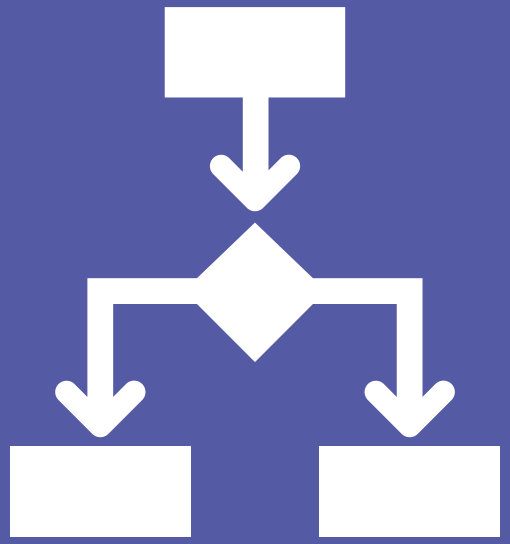
Architecture On-Premise: Data transformation (1 million lines of code)

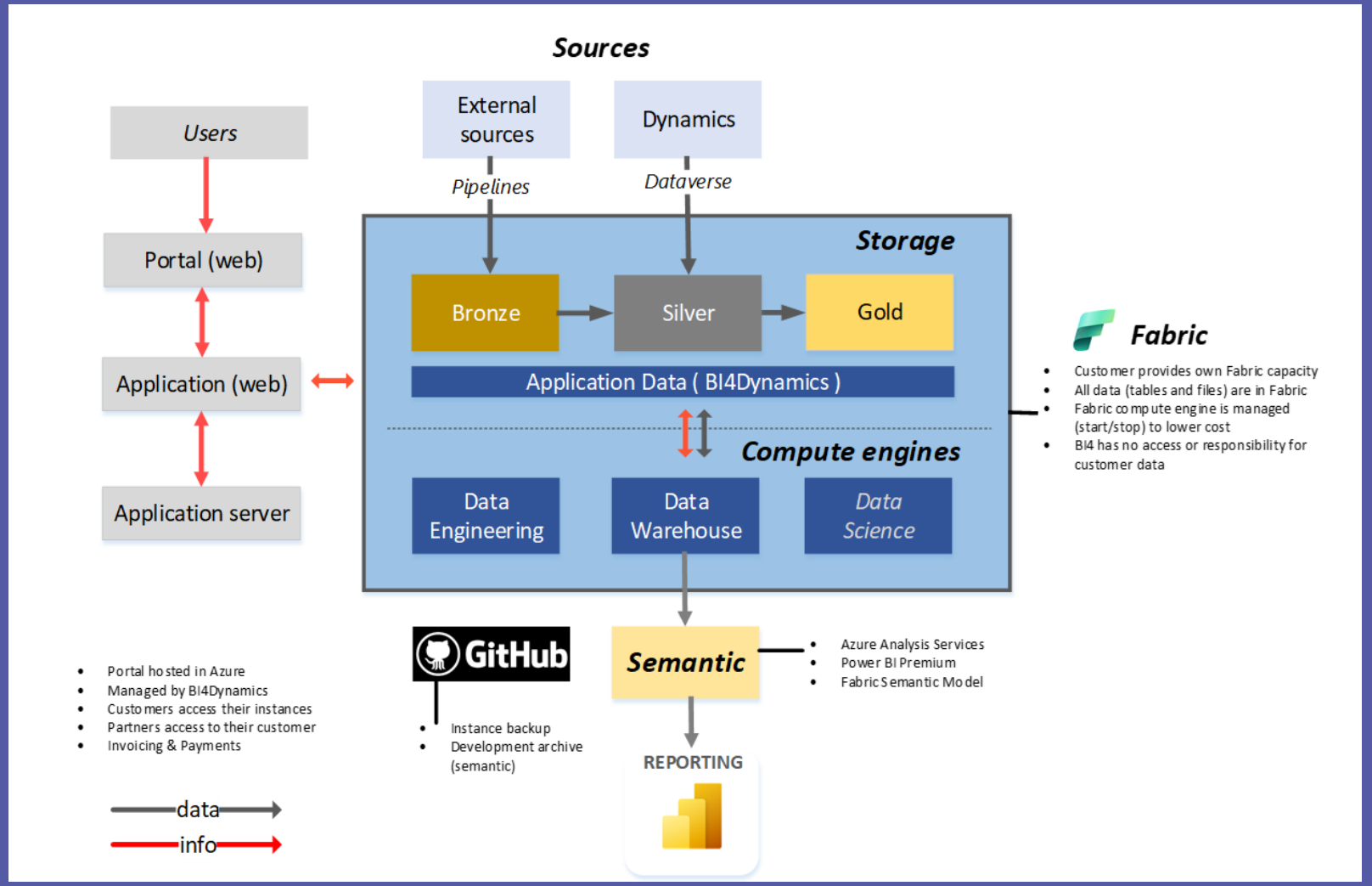




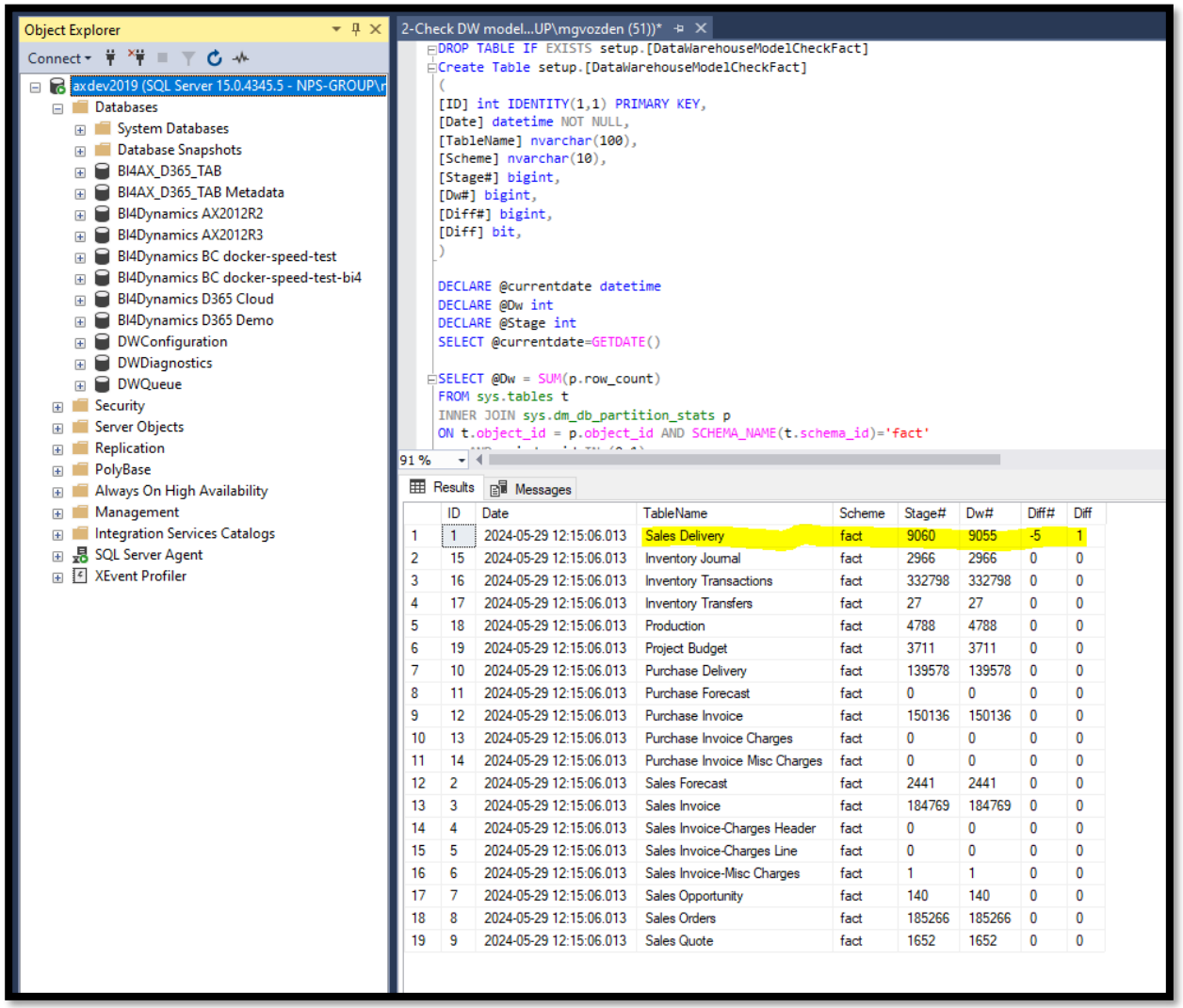
Architecture

Architecture (SaaS) – Data Transformation





Data validation



	ID	Date	TableName	Scheme	Stage#	Dw#	Diff#	Diff
1	1	2024-05-29 12:15:06.013	Sales Delivery	fact	9060	9055	-5	1
2	15	2024-05-29 12:15:06.013	Inventory Journal	fact	2966	2966	0	0
3	16	2024-05-29 12:15:06.013	Inventory Transactions	fact	332798	332798	0	0
4	17	2024-05-29 12:15:06.013	Inventory Transfers	fact	27	27	0	0
5	18	2024-05-29 12:15:06.013	Production	fact	4788	4788	0	0
6	19	2024-05-29 12:15:06.013	Project Budget	fact	3711	3711	0	0
7	10	2024-05-29 12:15:06.013	Purchase Delivery	fact	139578	139578	0	0
8	11	2024-05-29 12:15:06.013	Purchase Forecast	fact	0	0	0	0
9	12	2024-05-29 12:15:06.013	Purchase Invoice	fact	150136	150136	0	0
10	13	2024-05-29 12:15:06.013	Purchase Invoice Charges	fact	0	0	0	0
11	14	2024-05-29 12:15:06.013	Purchase Invoice Misc Charges	fact	0	0	0	0
12	2	2024-05-29 12:15:06.013	Sales Forecast	fact	2441	2441	0	0
13	3	2024-05-29 12:15:06.013	Sales Invoice	fact	184769	184769	0	0
14	4	2024-05-29 12:15:06.013	Sales Invoice-Charges Header	fact	0	0	0	0
15	5	2024-05-29 12:15:06.013	Sales Invoice-Charges Line	fact	0	0	0	0
16	6	2024-05-29 12:15:06.013	Sales Invoice-Misc Charges	fact	1	1	0	0
17	7	2024-05-29 12:15:06.013	Sales Opportunity	fact	140	140	0	0
18	8	2024-05-29 12:15:06.013	Sales Orders	fact	185266	185266	0	0
19	9	2024-05-29 12:15:06.013	Sales Quote	fact	1652	1652	0	0

Daily processing alerts for checking performace

ID	Finished	OK	Stage (GB)	Dim (GB)	Help (GB)	Fact (GB)	Total (GB)	Stage (Min)	DimFact (Min)	Analytics (Min)	Total (Min)	Stage (GB/min)	DW (GB/min)	Total (GB/min)	Completed Local Time
15135	31/01/24 22:14		117	29	5	56	207	6	25	42	73	19.53	8.28	2.84	16:14
15130	31/01/24 20:50		117	29	5	56	207	6	24	18	48	19.52	8.62	4.31	14:50
15126	31/01/24 19:56		117	29	5	56	207	6	27	22	55	19.52	7.66	3.76	13:56
15118	31/01/24 18:03		117	29	5	56	207	6	36	20	62	19.51	5.74	3.34	12:03
15112	31/01/24 16:02		117	29	5	56	207	6	27	22	55	19.51	7.66	3.76	10:02
15108	31/01/24 14:52		117	29	5	56	207	5	27	19	51	23.40	7.66	4.05	08:52
15104	31/01/24 13:53		117	29	5	56	206	6	24	22	52	19.48	8.60	3.97	07:53
15093	31/01/24 12:01		117	29	5	56	206	10	29	20	59	11.69	7.12	3.50	06:01
15049	30/01/24 22:51		117	29	5	56	206	5	26	18	49	23.34	7.93	4.21	16:50
15044	30/01/24 21:49		117	29	5	56	206	5	24	18	47	23.34	8.59	4.39	15:48
15041	30/01/24 20:56		117	29	5	56	206	5	25	19	49	23.34	8.24	4.21	14:56
15037	30/01/24 19:51		117	29	5	56	206	5	26	19	50	23.34	7.93	4.12	13:51
15030	30/01/24 18:07		117	29	5	55	206	5	34	20	59	23.33	6.06	3.49	12:07
15025	30/01/24 16:53		117	29	5	55	206	7	25	20	52	16.66	8.24	3.96	10:53
15020	30/01/24 15:56		117	29	5	55	206	5	23	19	47	23.32	8.95	4.38	09:55
15013	30/01/24 14:03		117	29	5	55	206	6	25	31	62	19.42	8.23	3.32	08:03
15003	30/01/24 12:02		117	29	5	55	206	10	30	20	60	11.65	6.86	3.43	06:02
14874	28/01/24 22:47		116	29	5	55	206	5	24	17	46	23.29	8.56	4.47	16:47
14869	28/01/24 21:54		116	29	5	55	205	6	26	21	53	19.40	7.90	3.88	15:54
14866	28/01/24 20:49		116	29	5	55	205	5	25	18	48	23.28	8.22	4.28	14:49
14863	28/01/24 19:51		116	29	5	55	205	6	26	18	50	19.40	7.90	4.11	13:51
14858	28/01/24 18:52		116	29	5	55	205	6	24	21	51	19.39	8.56	4.03	12:52
14855	28/01/24 17:52		116	29	5	55	205	6	23	22	51	19.39	8.93	4.03	11:52
14852	28/01/24 16:47		116	29	5	55	205	5	24	17	46	23.27	8.55	4.46	10:47
14848	28/01/24 15:48		116	29	5	55	205	5	24	18	47	23.27	8.55	4.37	09:48
14845	28/01/24 14:48		116	29	5	55	205	6	23	18	47	19.39	8.93	4.37	08:48
14842	28/01/24 13:47		116	29	5	55	205	5	24	17	46	23.27	8.55	4.46	07:47
14834	28/01/24 12:00		116	29	5	55	205	10	29	19	58	11.63	7.08	3.54	06:00
14795	27/01/24 22:49		116	29	5	55	205	6	24	18	48	19.39	8.55	4.28	16:49
14790	27/01/24 21:49		116	29	5	55	205	5	25	18	48	23.26	8.21	4.28	15:49
14786	27/01/24 20:49		116	29	5	55	205	5	25	17	47	23.26	8.21	4.37	14:48
14779	27/01/24 19:00		116	29	5	55	205	5	28	26	59	23.26	7.33	3.48	13:00
14776	27/01/24 17:57		116	29	5	55	205	6	26	24	56	19.39	7.89	3.66	11:57
14773	27/01/24 16:51		116	29	5	55	205	5	26	19	50	23.26	7.89	4.10	10:51
14770	27/01/24 15:55		116	29	5	55	205	5	25	24	54	23.26	8.21	3.80	09:55
14766	27/01/24 14:49		116	29	5	55	205	6	25	17	48	19.38	8.21	4.28	08:49

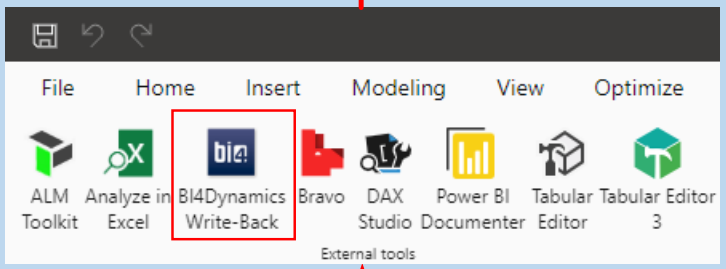
More BI

Data Warehouse & Power BI modeling

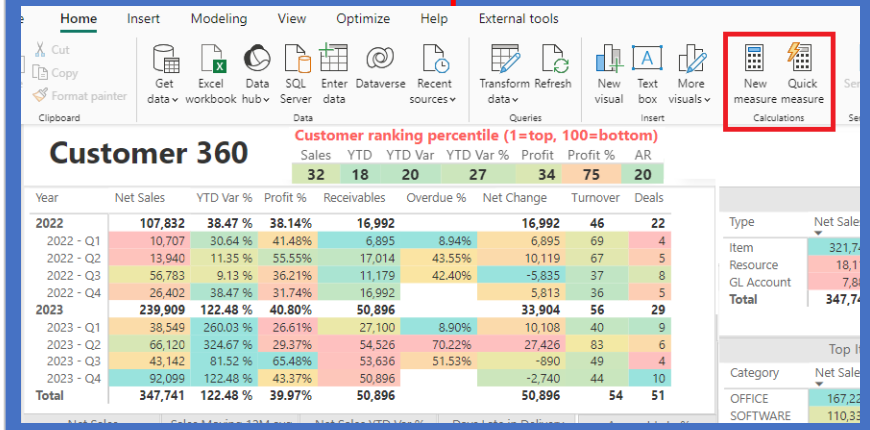
User's Computer
(Power BI modeling)

Writeback Client
Get differences – Local vs Server model

Send request
Update status



External Tools



Direct Query

Live Connection

Cloud

AZURE STORAGE
(detached)

Store requests
BI license + User (email)

Get requests
Update status

SEMANTIC LAYER

Power BI Premium

BI server
(Data warehouse modeling)

Writeback Server
Sends requests to Datawarehouse App

Process requests

App
Updates Semantic model
Updates Data Warehouse

DAX update from Power BI

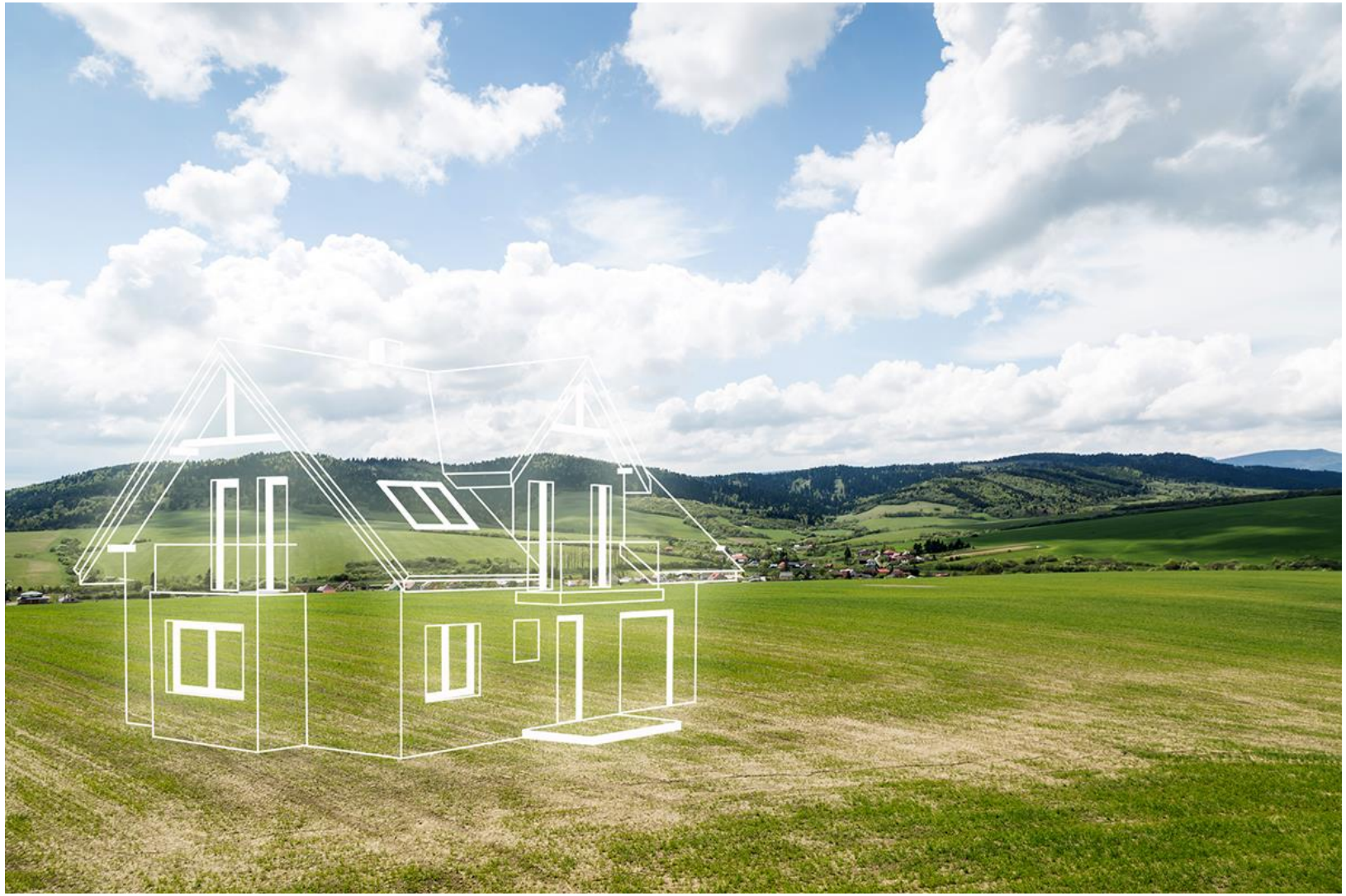
SQL update

DAX update from Data warehouse

DATA WAREHOUSE

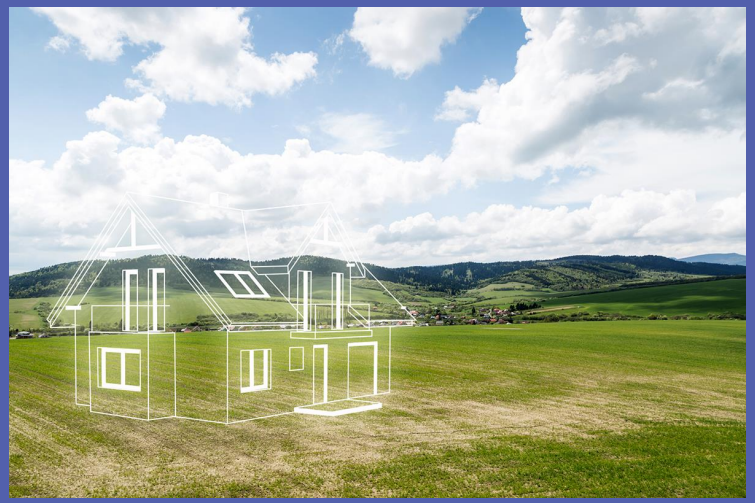
50 facts, 150 dimensions

We have a land (data), we must build a house (BI model)



Very little is spoken about the house.

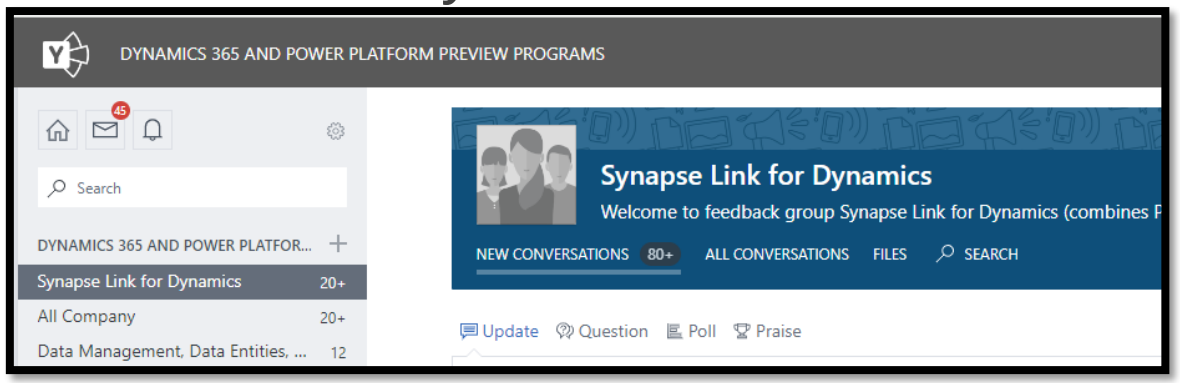
What now?



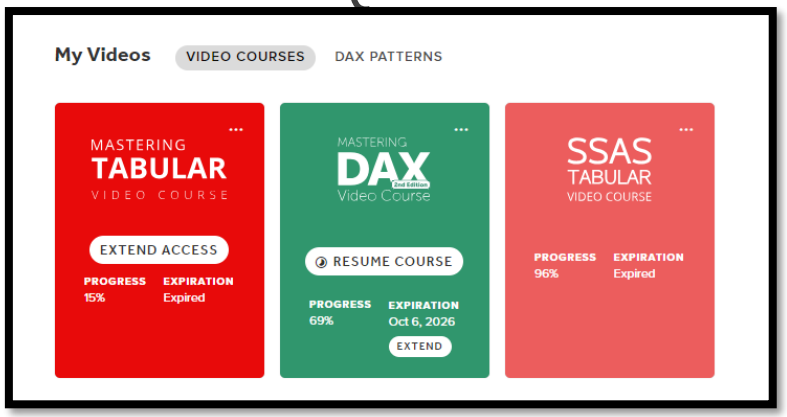
What now?

Learn more

- Join the Yammer group (Viva Engage) for Microsoft Dynamics BI



- Check SQLBI.COM



DYNAMICS MINDS

Thank you!

Mladen Gvozdenovic

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