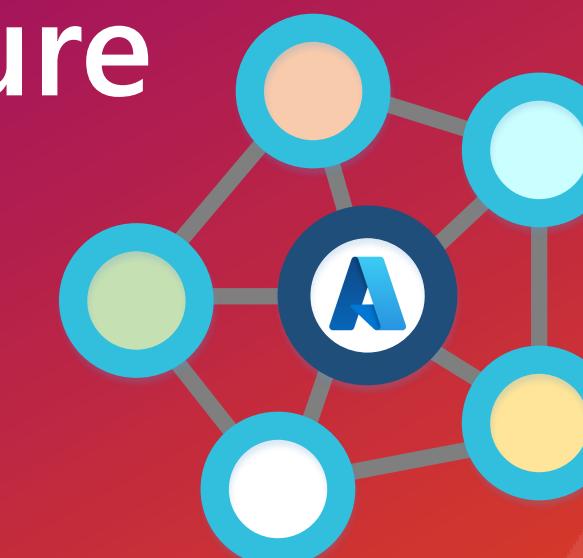




Theory vs Practice

# Implementing a Data Mesh Architecture in Azure

with Paul Andrew





# 15 edycja konferencji SQLDay

8-10 maja 2023, WROCŁAW + ONLINE



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partner złoty

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partner srebrny

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partner brązowy

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# About Me



@MrPaulAndrew



In/MrPaulAndrew



c/MrPaulAndrew



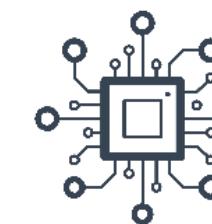
MrPaulAndrew.com



/MrPaulAndrew



**avanade**



Mr Paul Andrew  
Consulting Ltd



Cloud Formations



## CommunityEvents

Demo code, content and slides from various community events.



# About Me





# Data Mesh:

*What  
Why  
How*



*It depends.  
Its hard.*

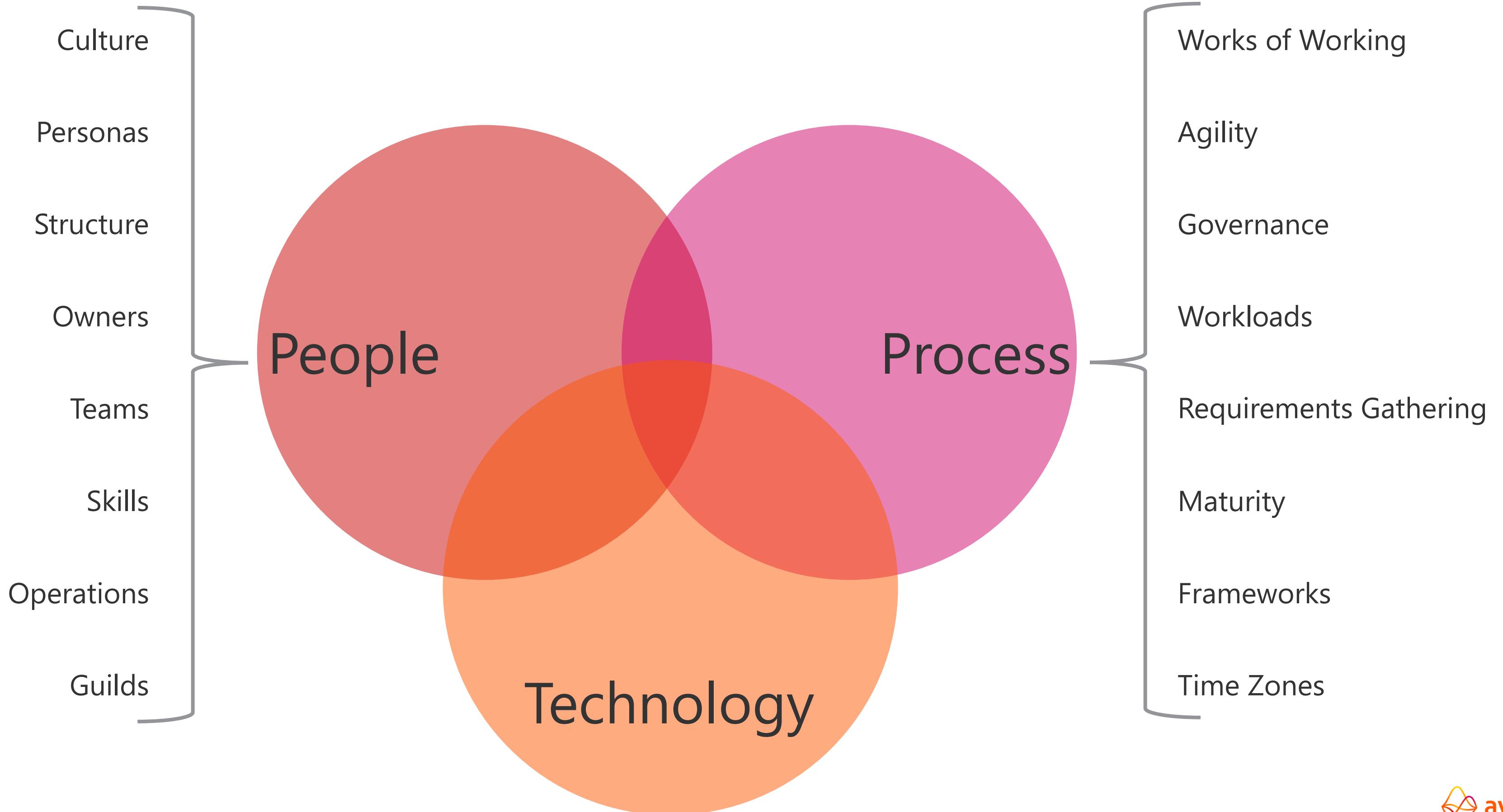


# Data Mesh:

*What is it about?*

*Why should we build it?*

# Data Mesh – What is it about?



# Data Mesh – What is it about?



Technology

# Data Mesh – What is it about?

- *Zhamak Dehghani*

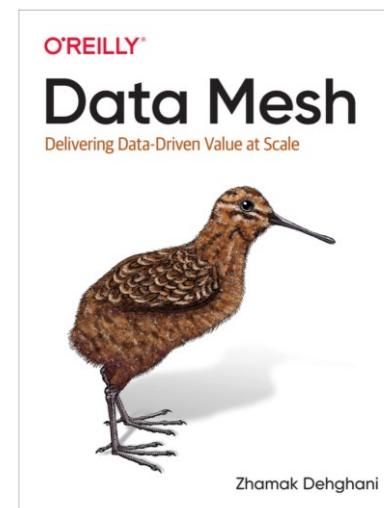
@zhamakd



<https://martinfowler.com/articles/data-mesh-principles.html>

ISBN-10  
1492092398

ISBN-13  
978-1492092391

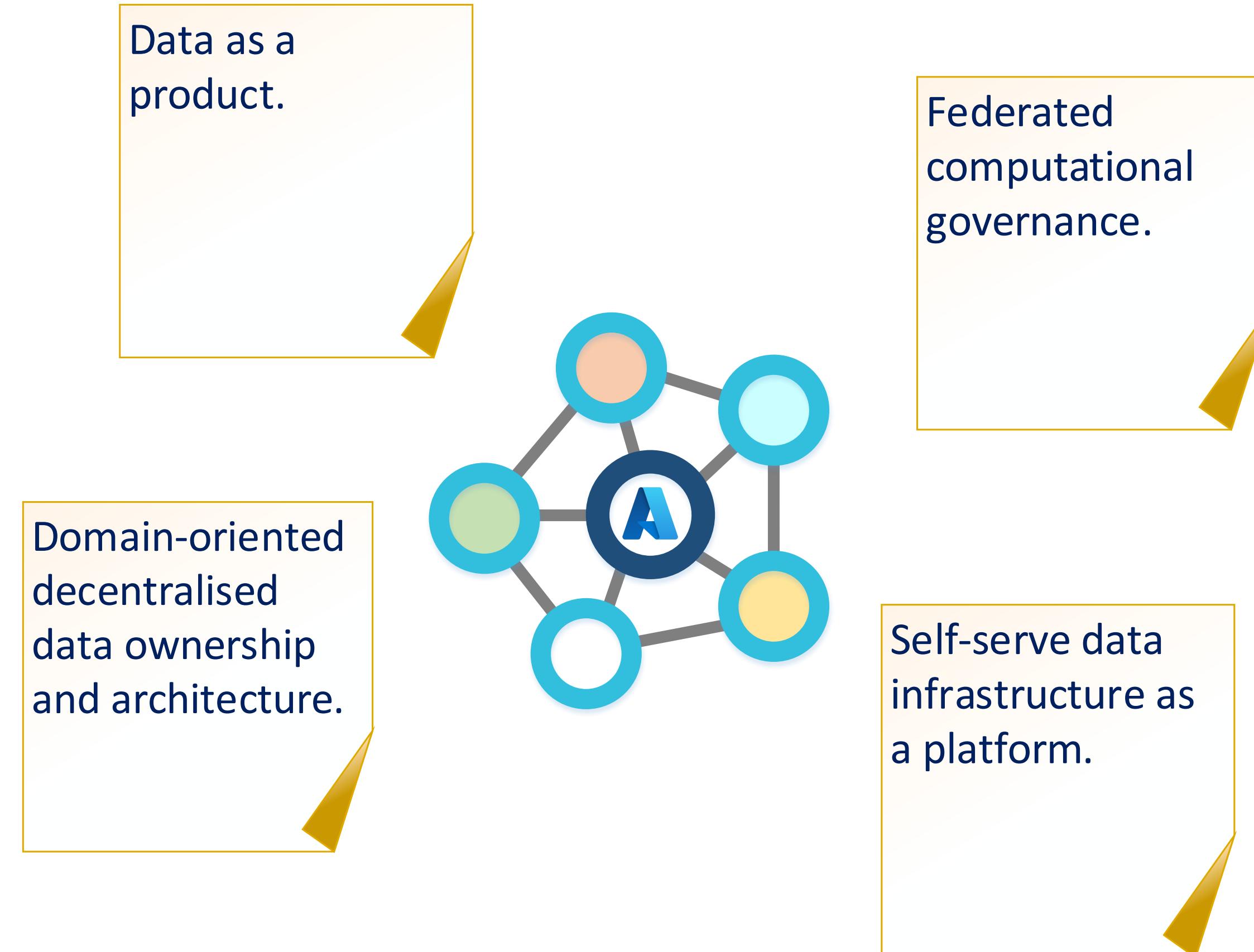


- 1. Domain-oriented decentralised data ownership and architecture.
- 2. Data as a product.
- 3. Self-serve data infrastructure as a platform.
- 4. Federated computational governance.

# Data Mesh Principals

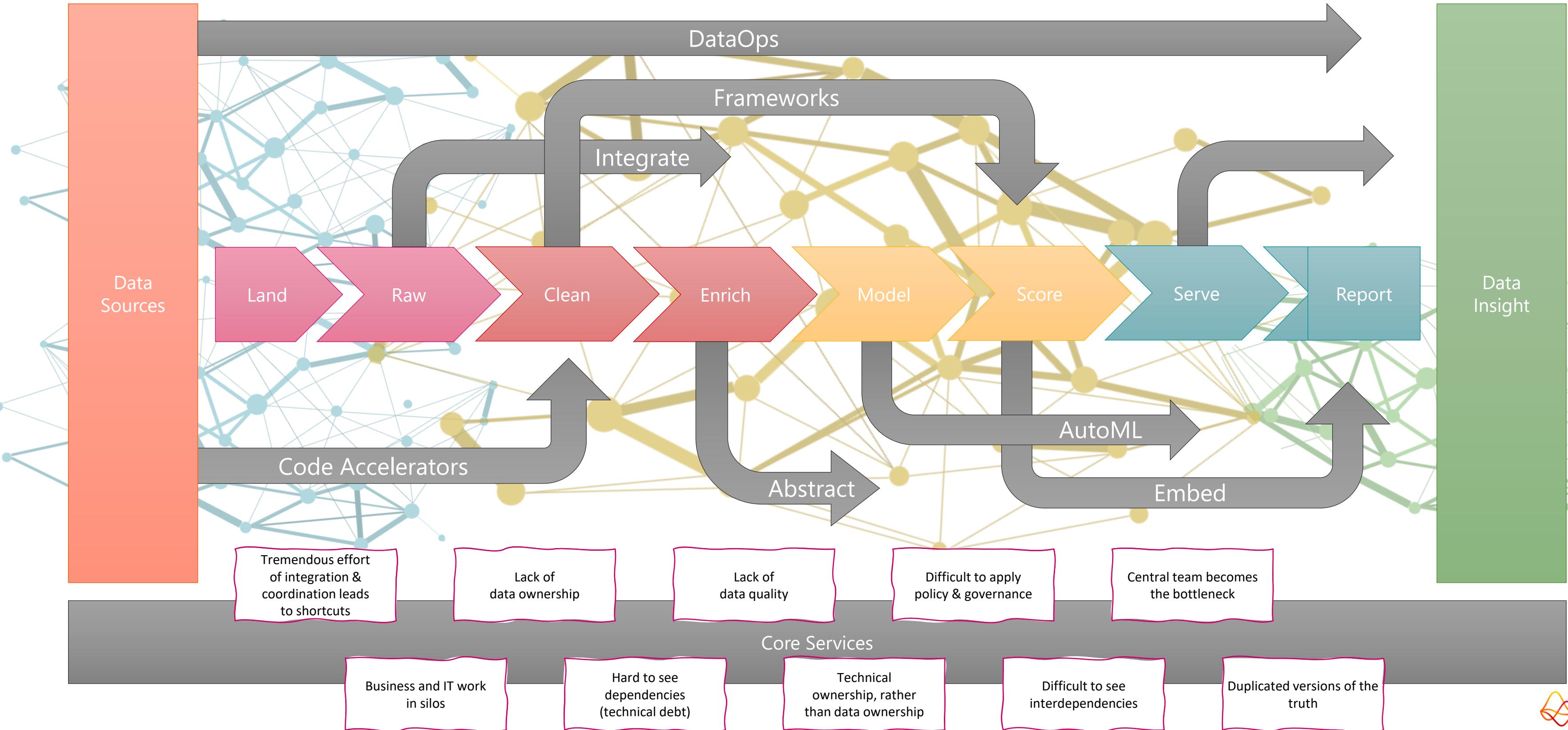
1. Domain-oriented decentralised data ownership and architecture.
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# Data Mesh Principals



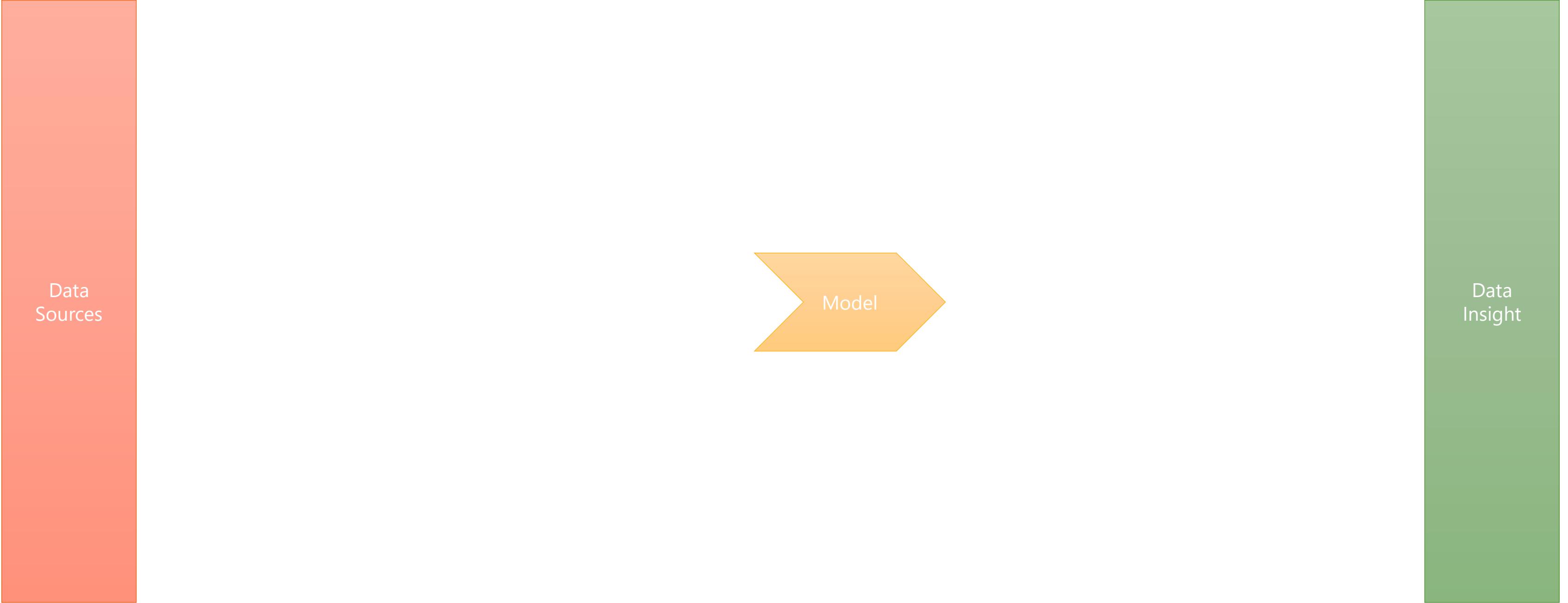
# Data Mesh – Why should we build it?

Using a **traditional centralised approach**, enhanced with cloud scale technologies to create a modern data analytics platform.



# Data Mesh – *Why should we build it?*

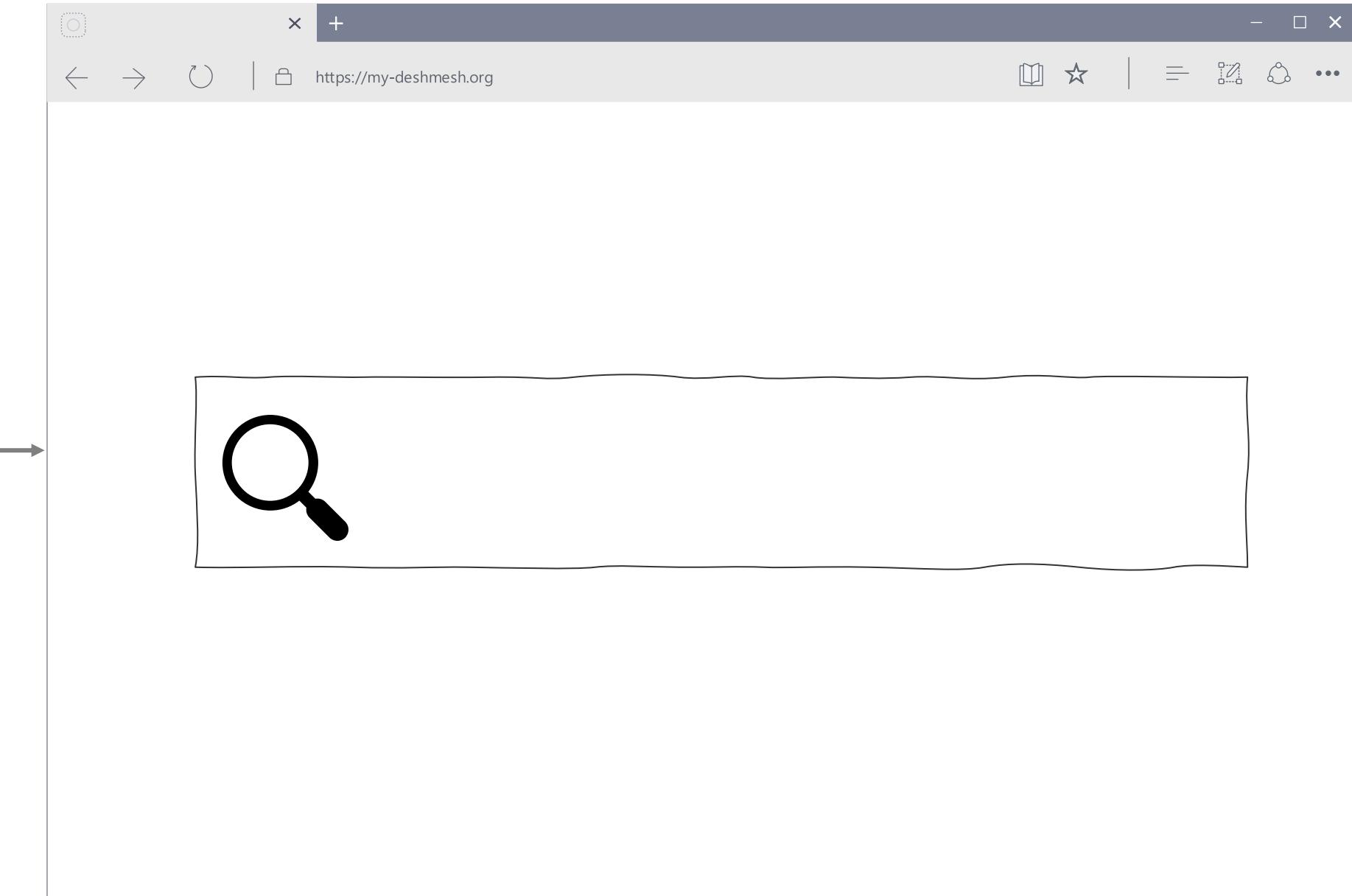
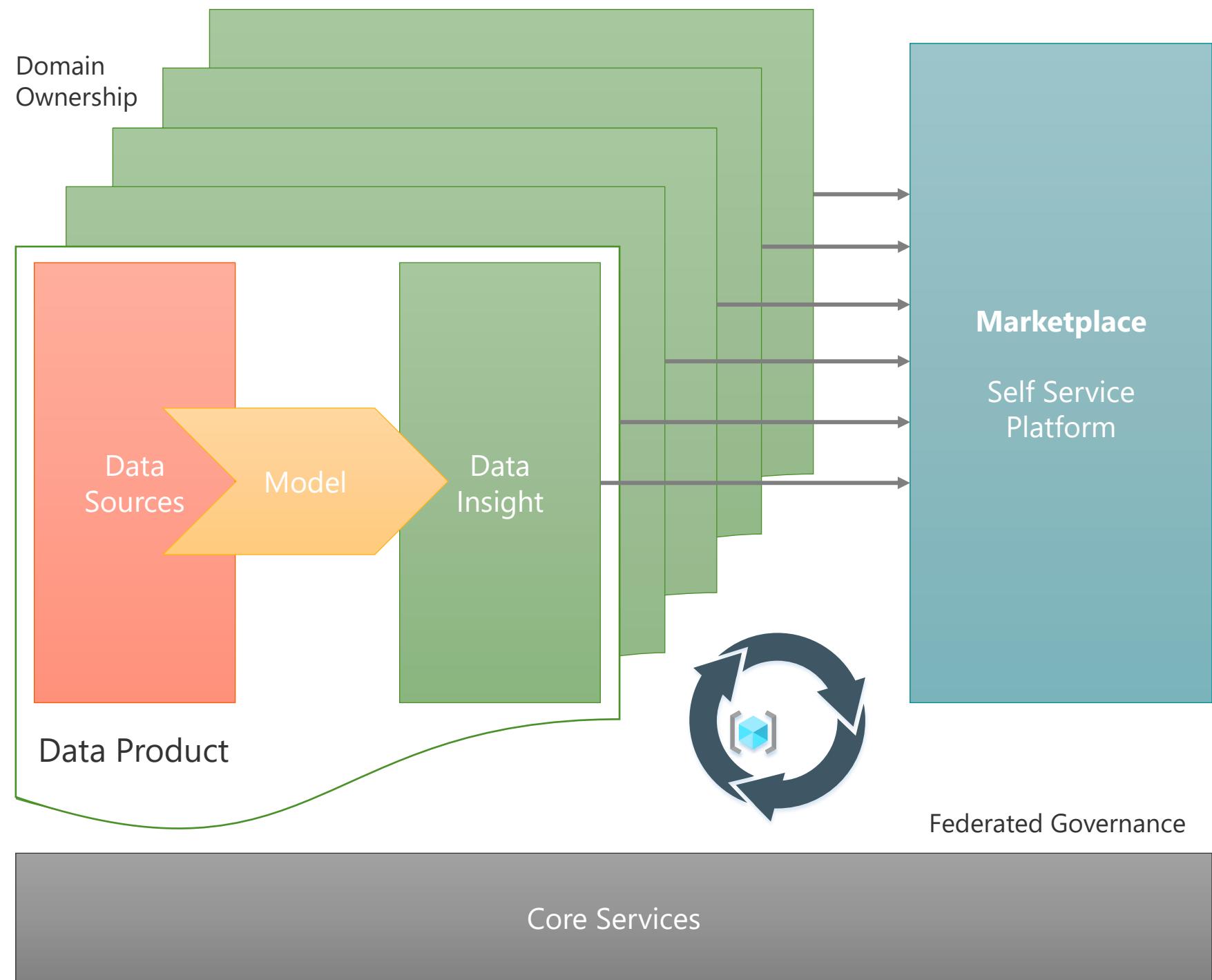
Using a **traditional centralised** approach, enhanced with cloud scale technologies to create a modern data analytics platform.





# Data Mesh – *Why should we build it?*

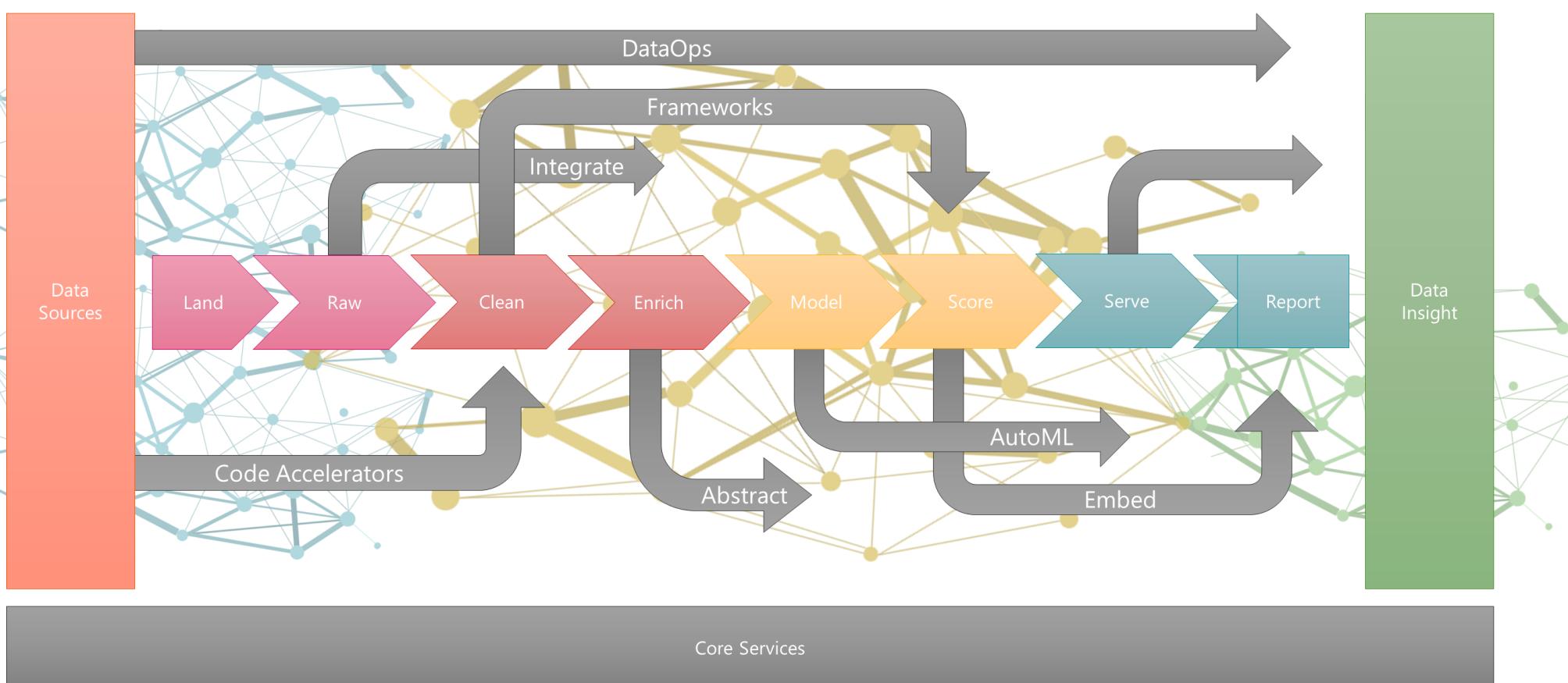
Using a **de-centralised** approach to cloud scale analytics, empowering users to rapidly gain insights to make strategic business decisions.





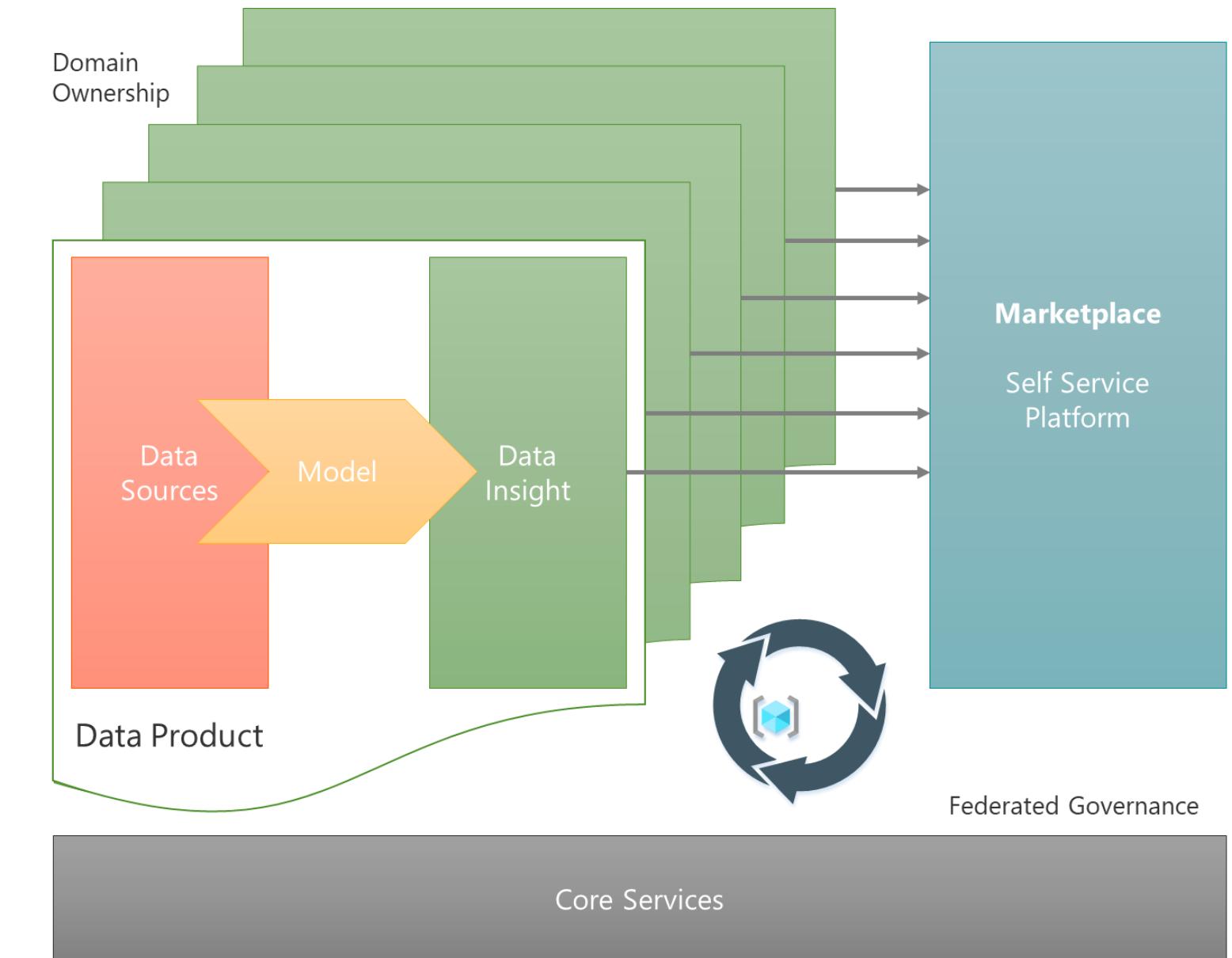
# Time to Insight

Using a **traditional centralised approach**, enhanced with cloud scale technologies to create a modern data analytics platform.

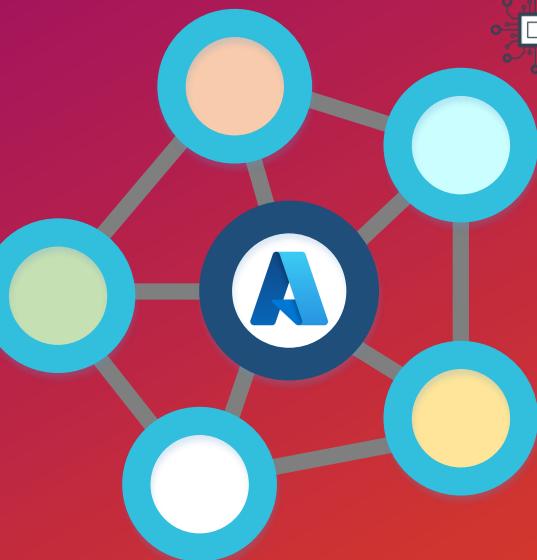


... Weeks/Months

Using a **de-centralised approach** to cloud scale analytics, empowering users to rapidly gain insights to make strategic business decisions.

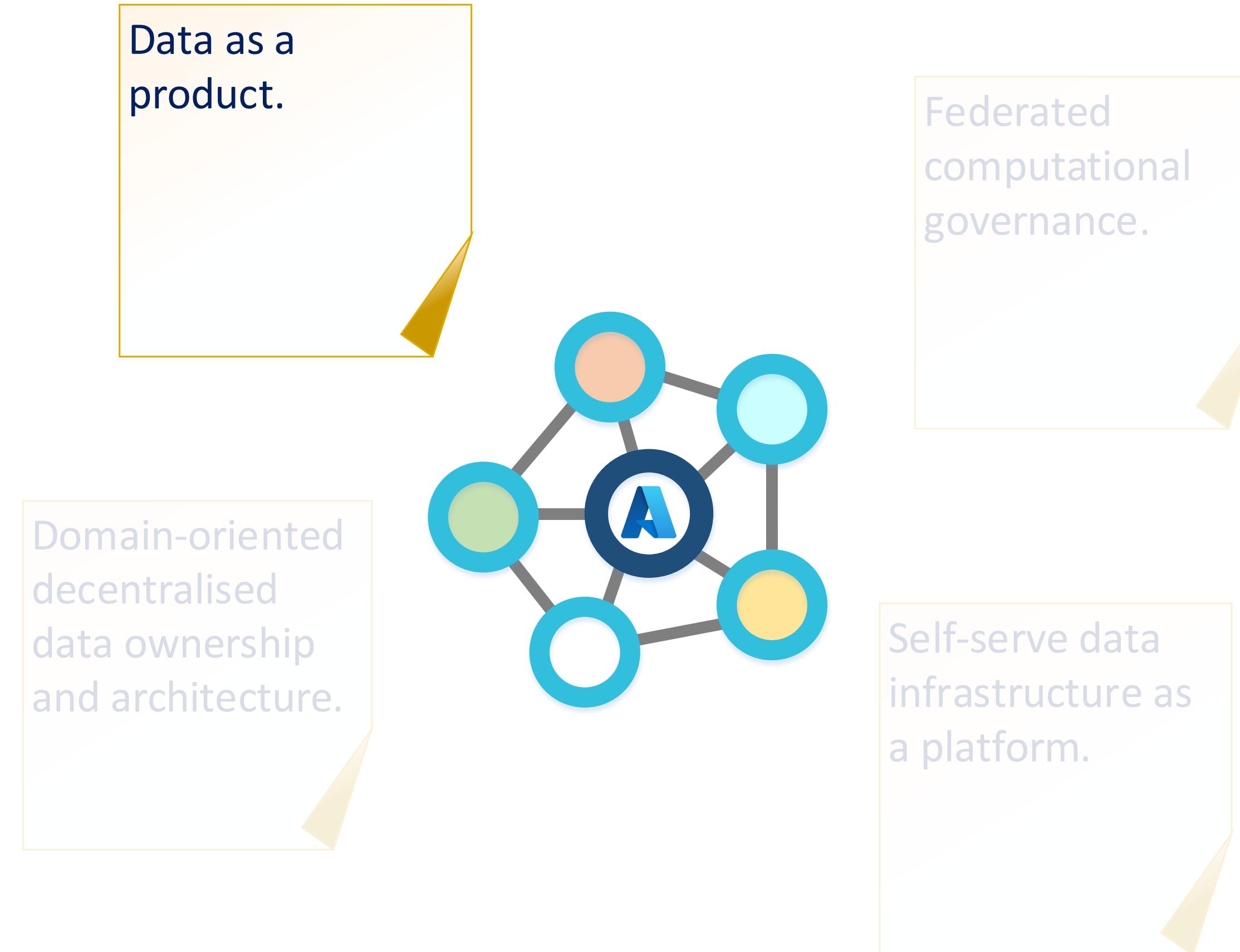


... Hours/Days

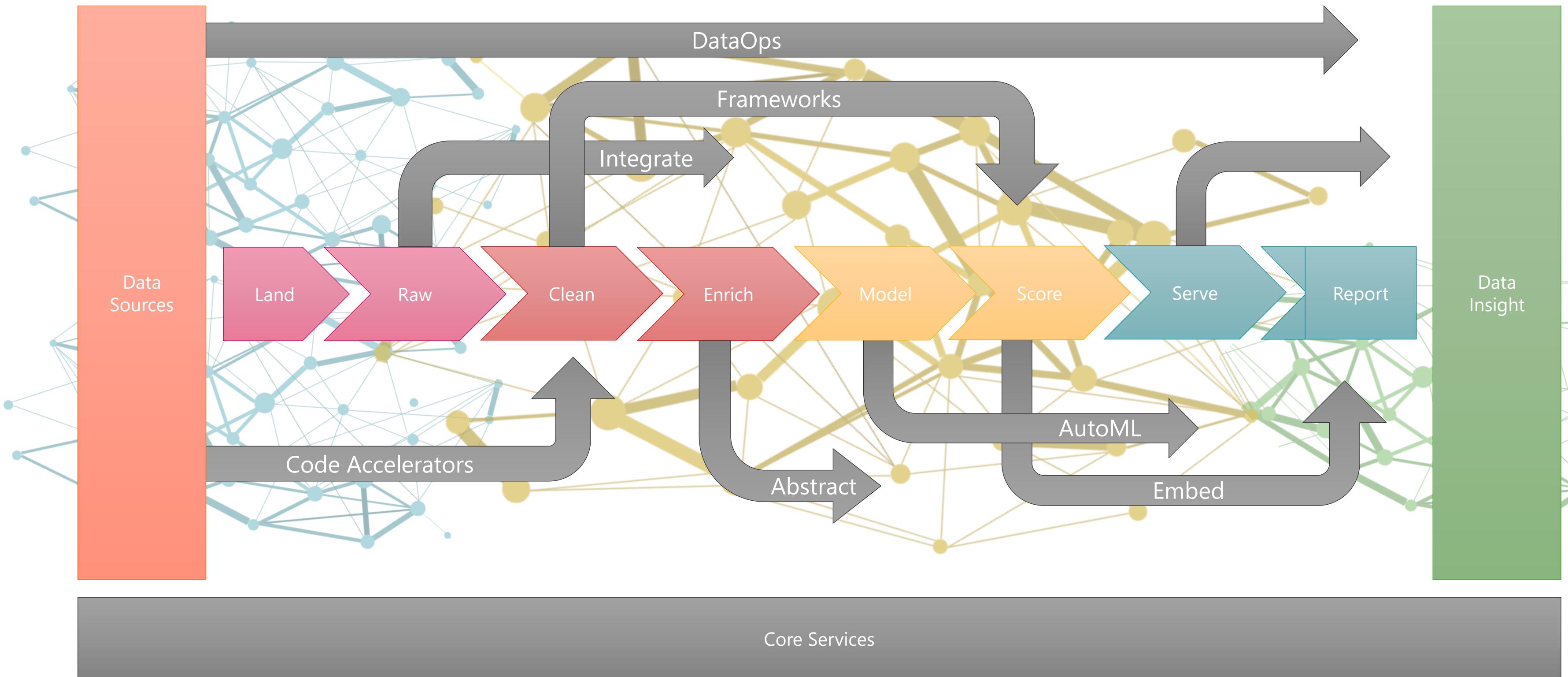


# Data Mesh: *How...* *Products*

# Data Mesh Principals - Theory vs Practice



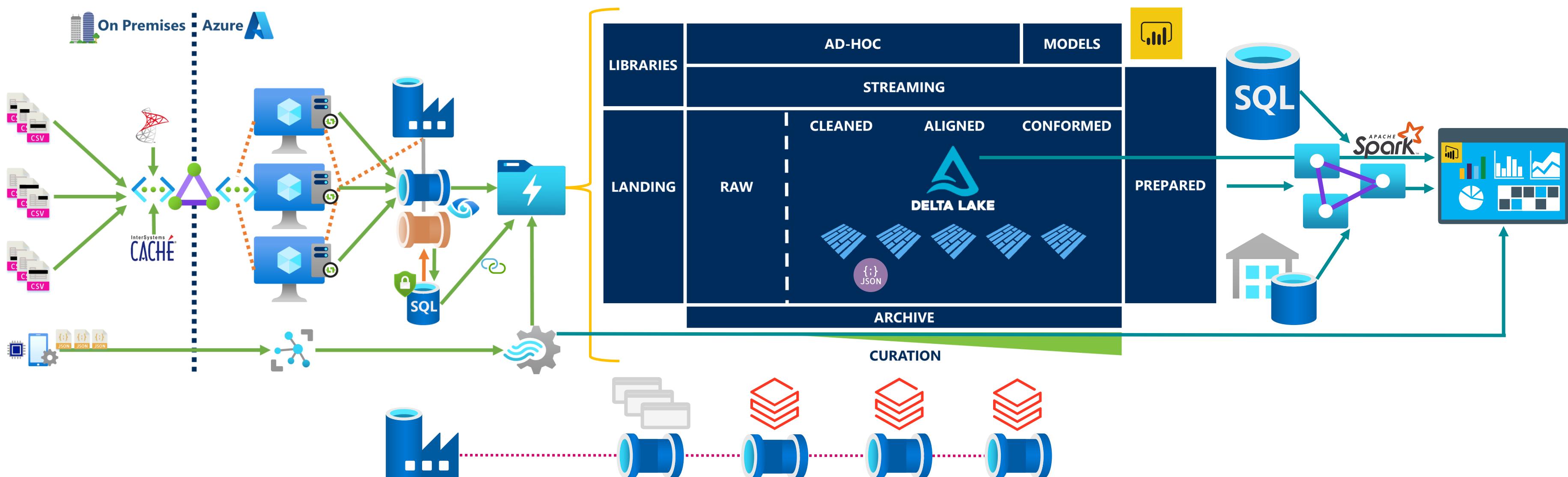
# Extract | Transform | Load



# Extract

# Transform

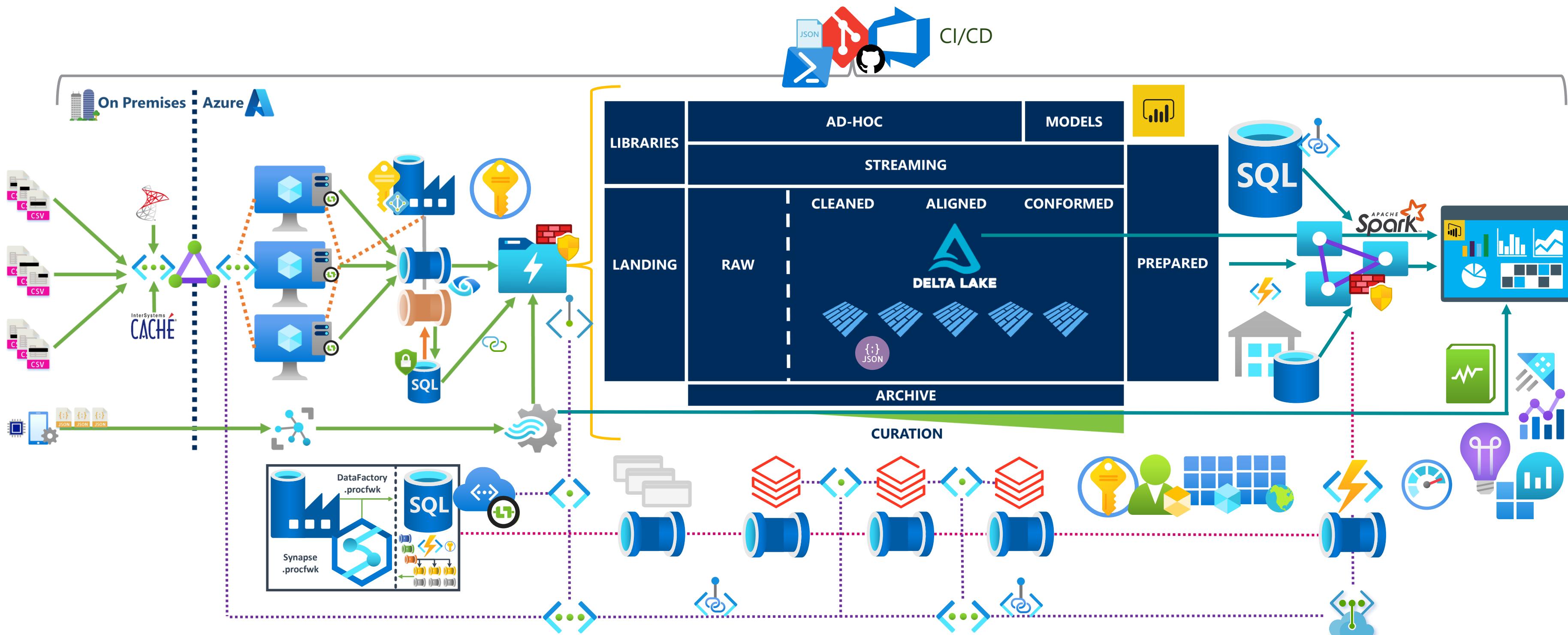
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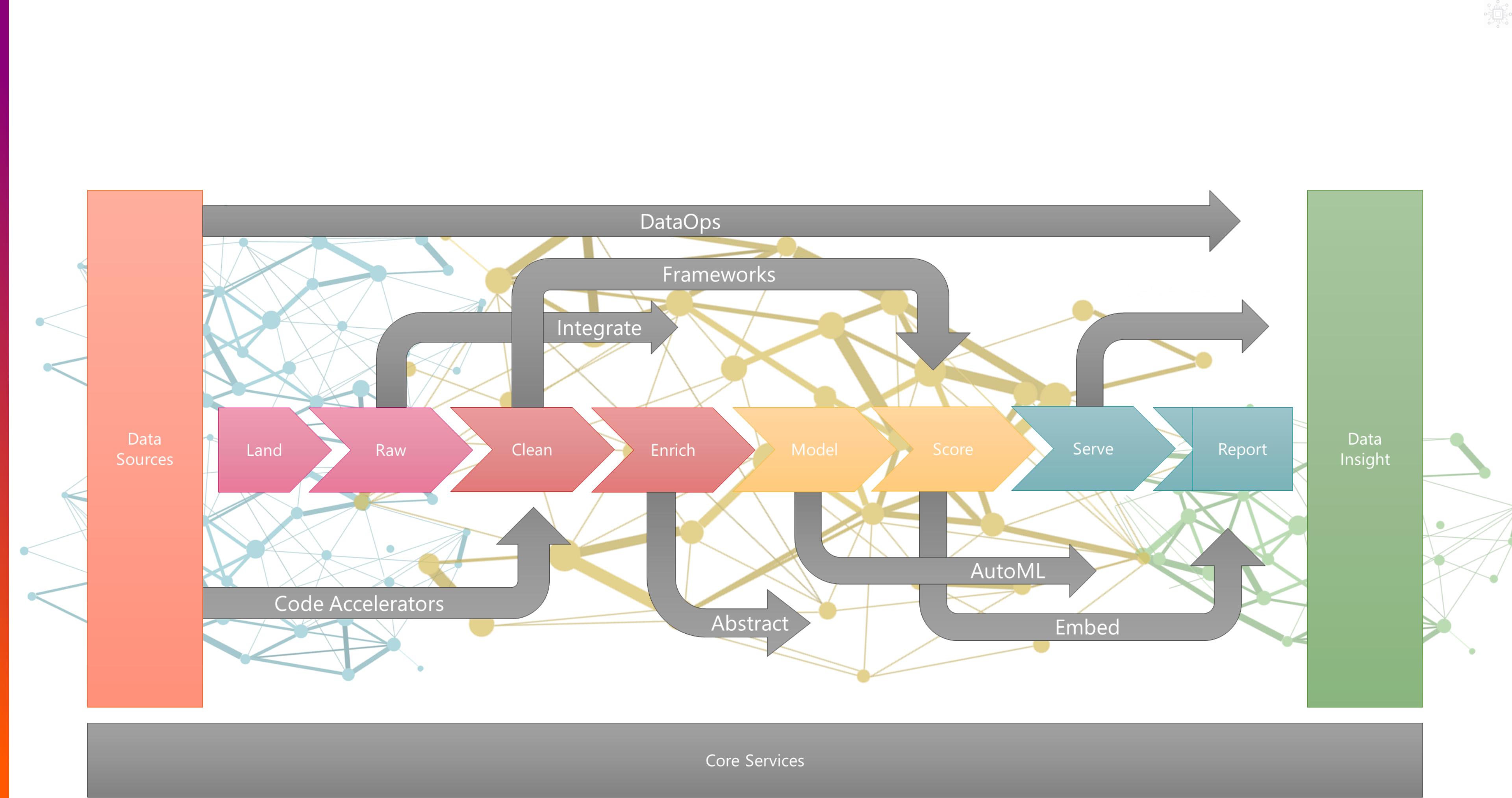


# Extract

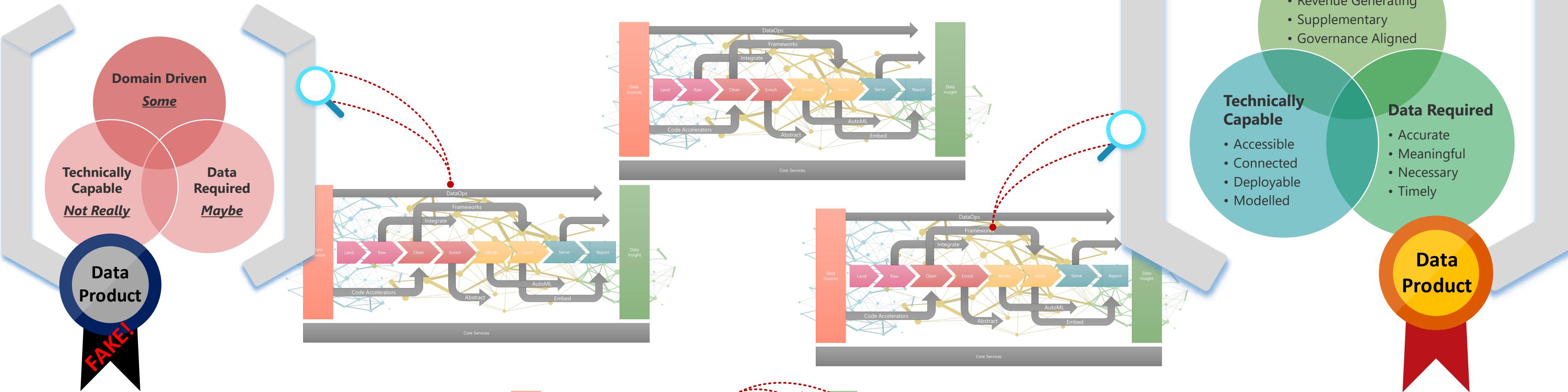
# Transform

# Load

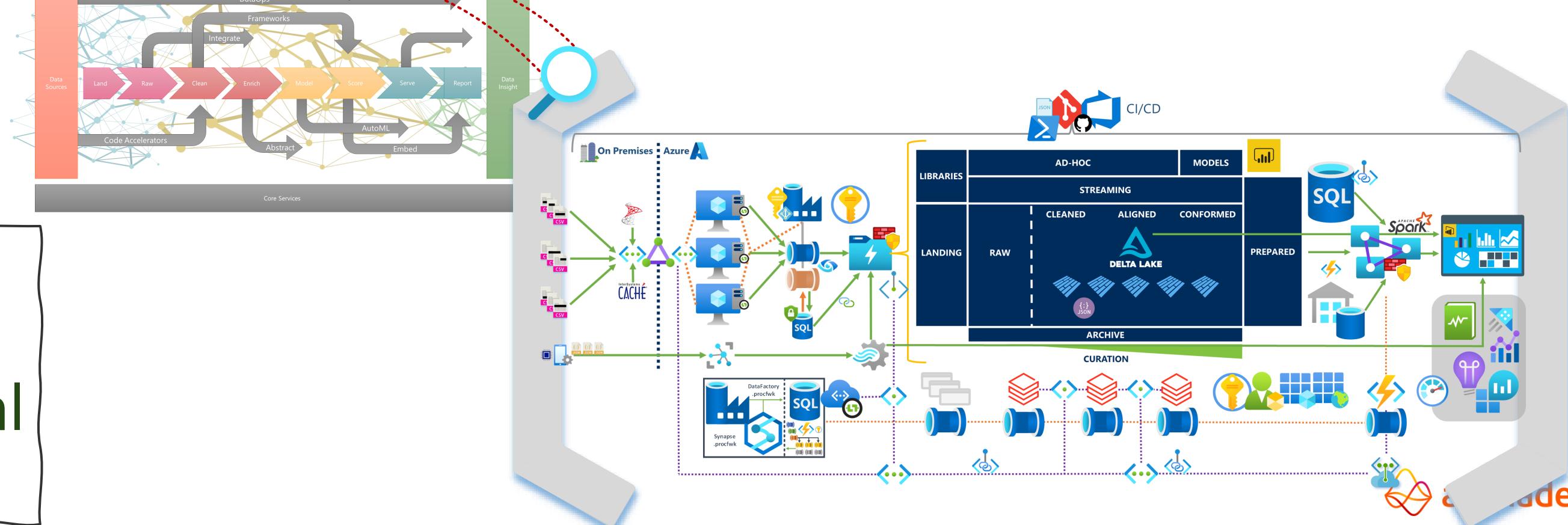




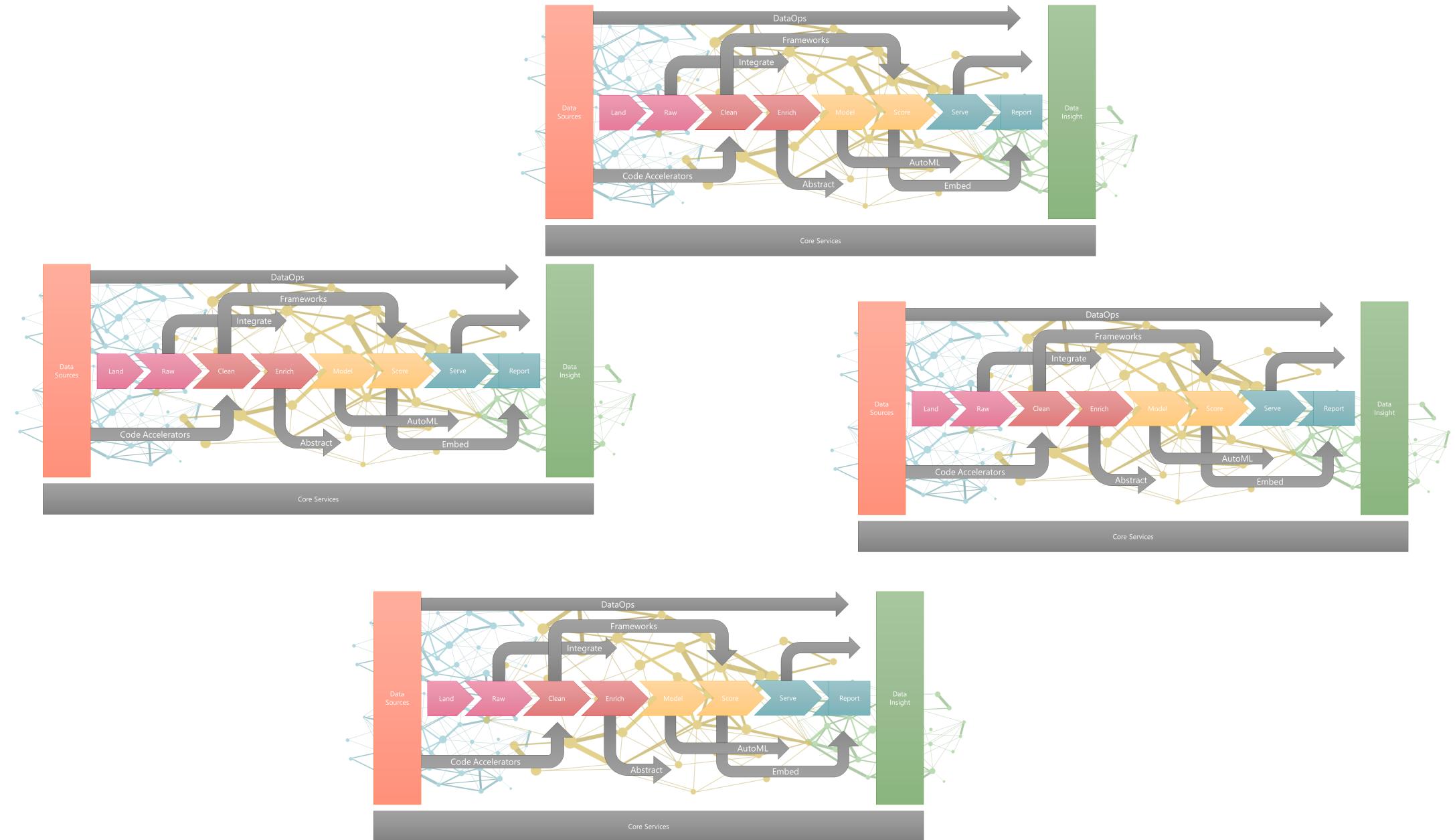
# Data Products



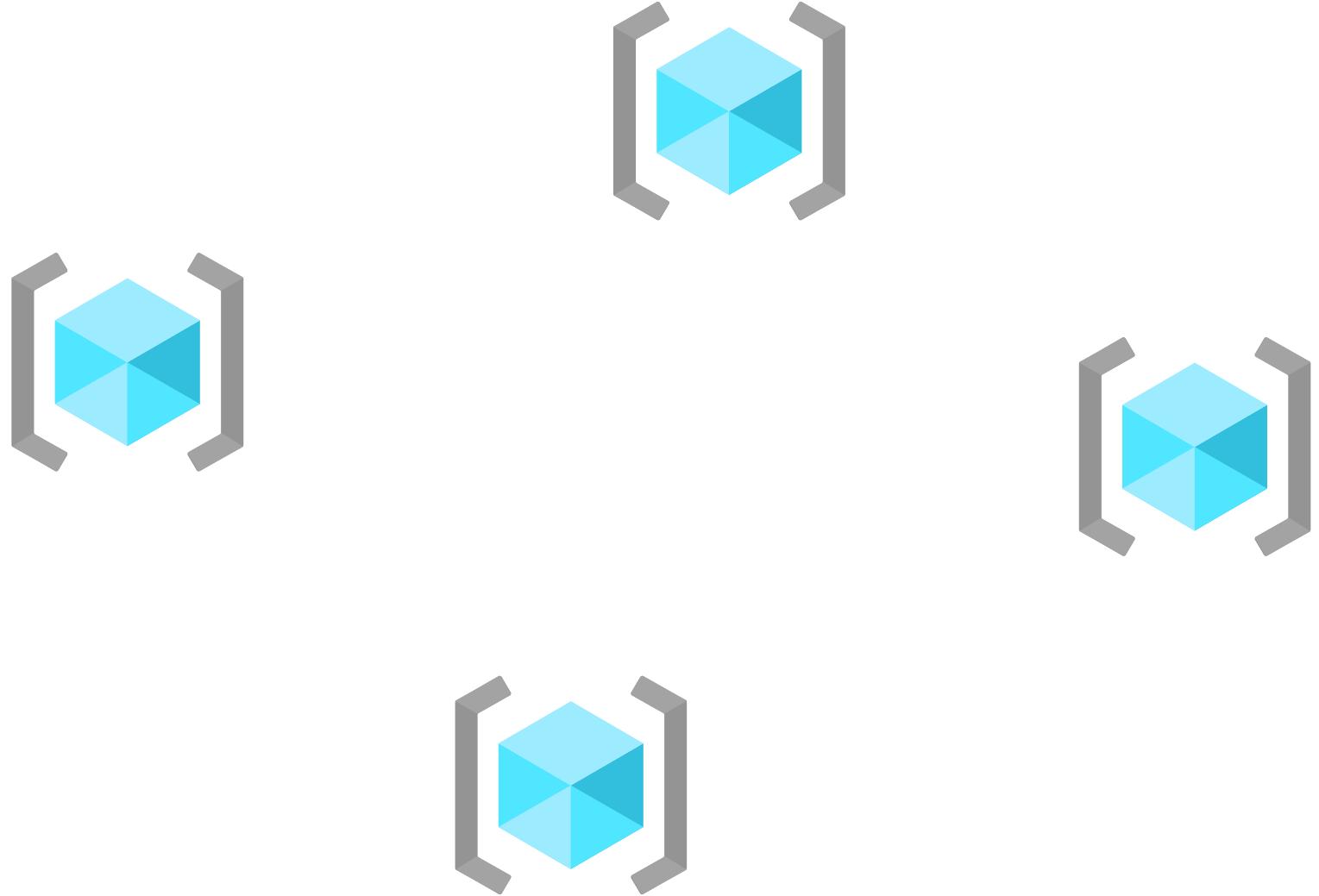
**Q1:** Should a data product handle both transactional/operational and analytical data?



# Data Products in Azure

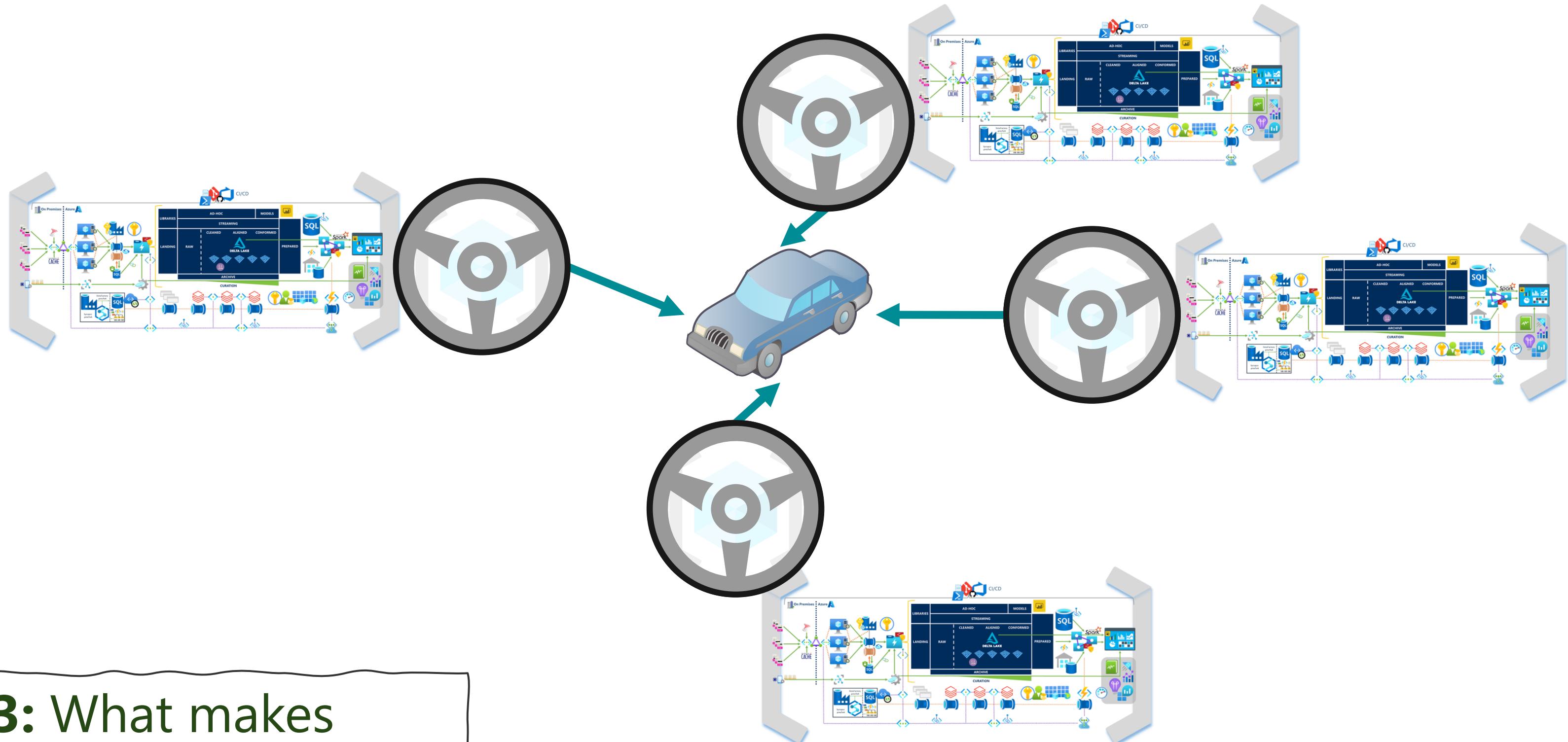


# Data Products in Azure



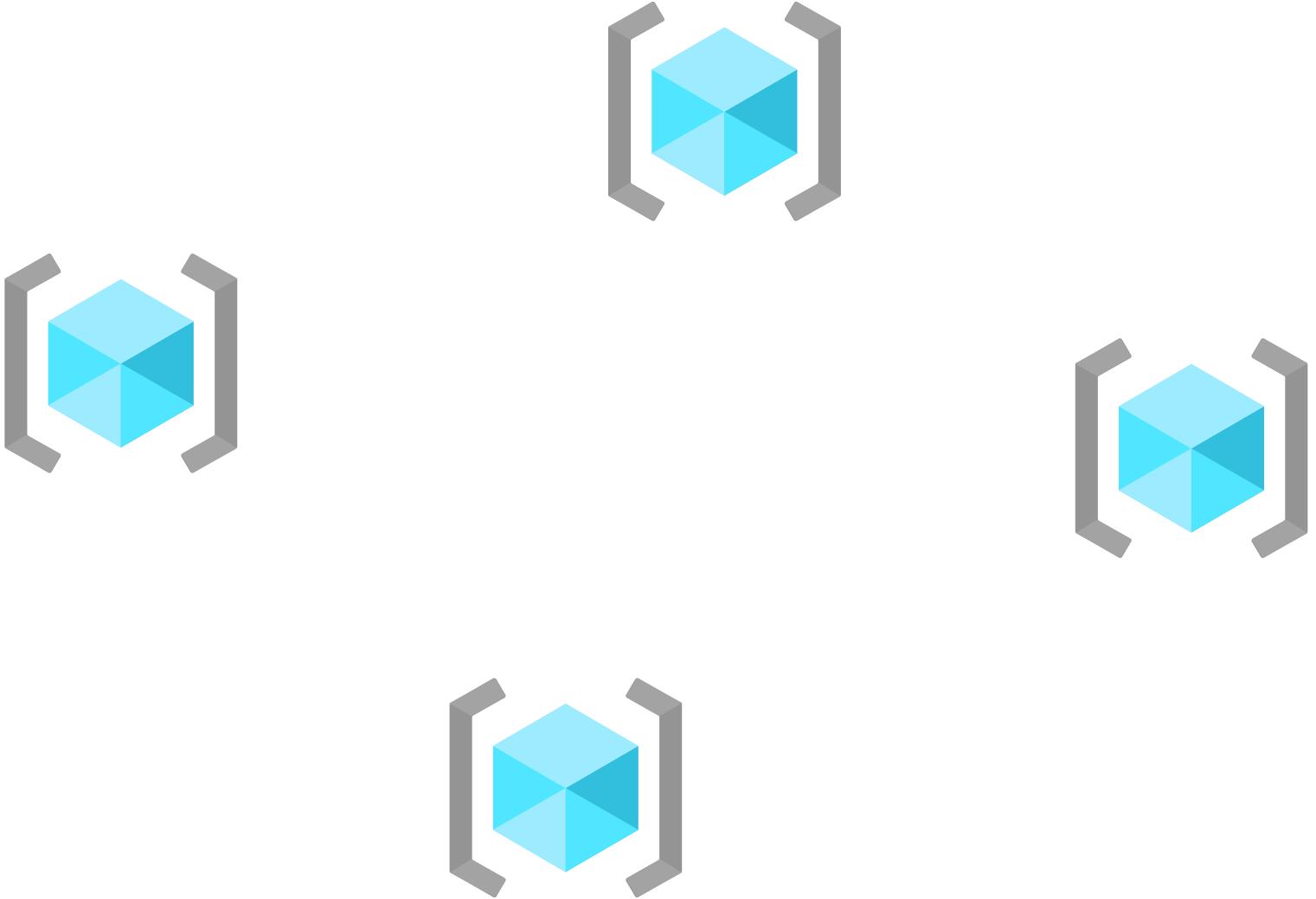
**Q2:** When does a data solution become a Data Mesh?

# Data Products in Azure



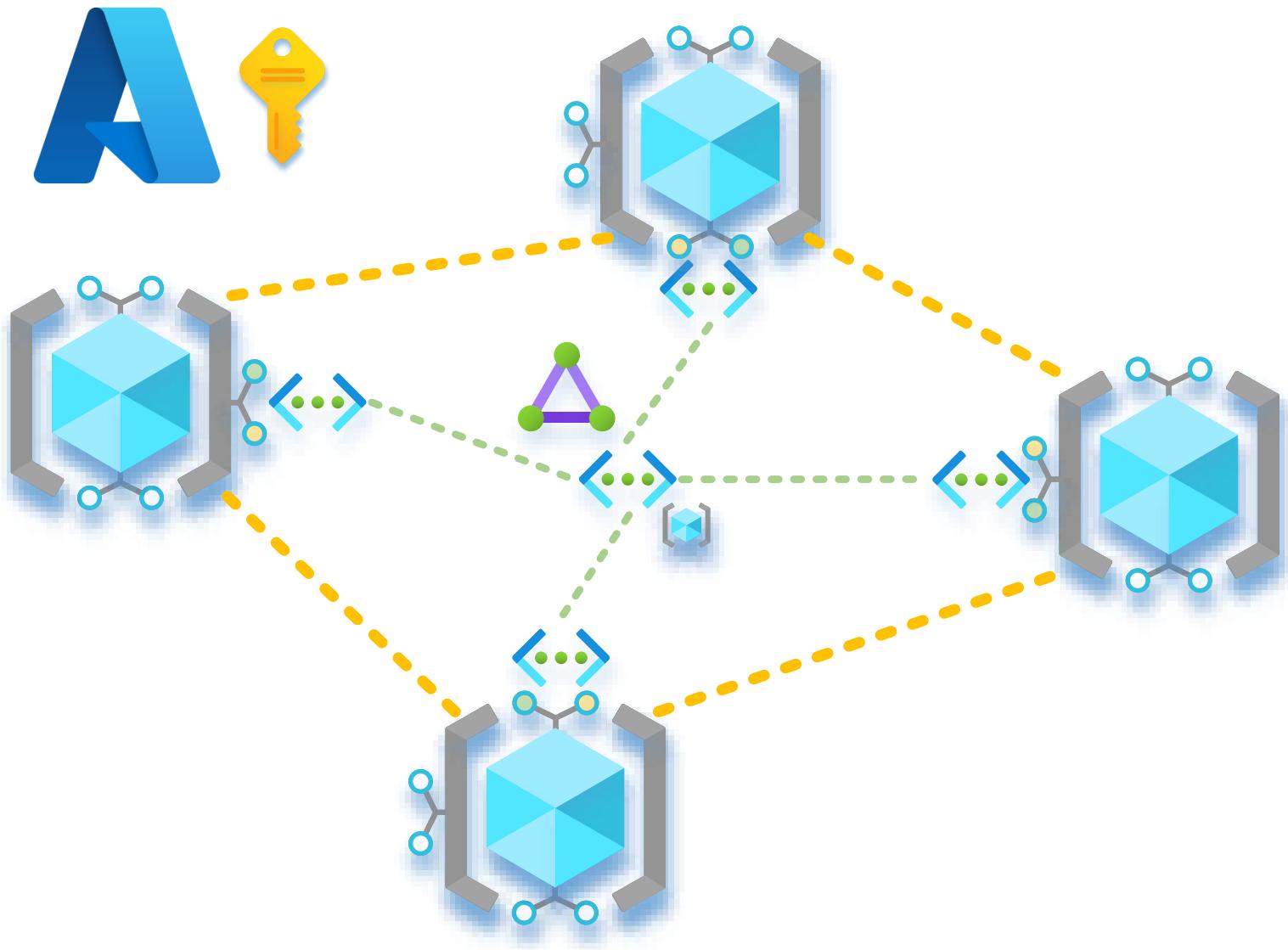
**Q3:** What makes minimum viable Data Mesh contain?

# Data Products in Azure

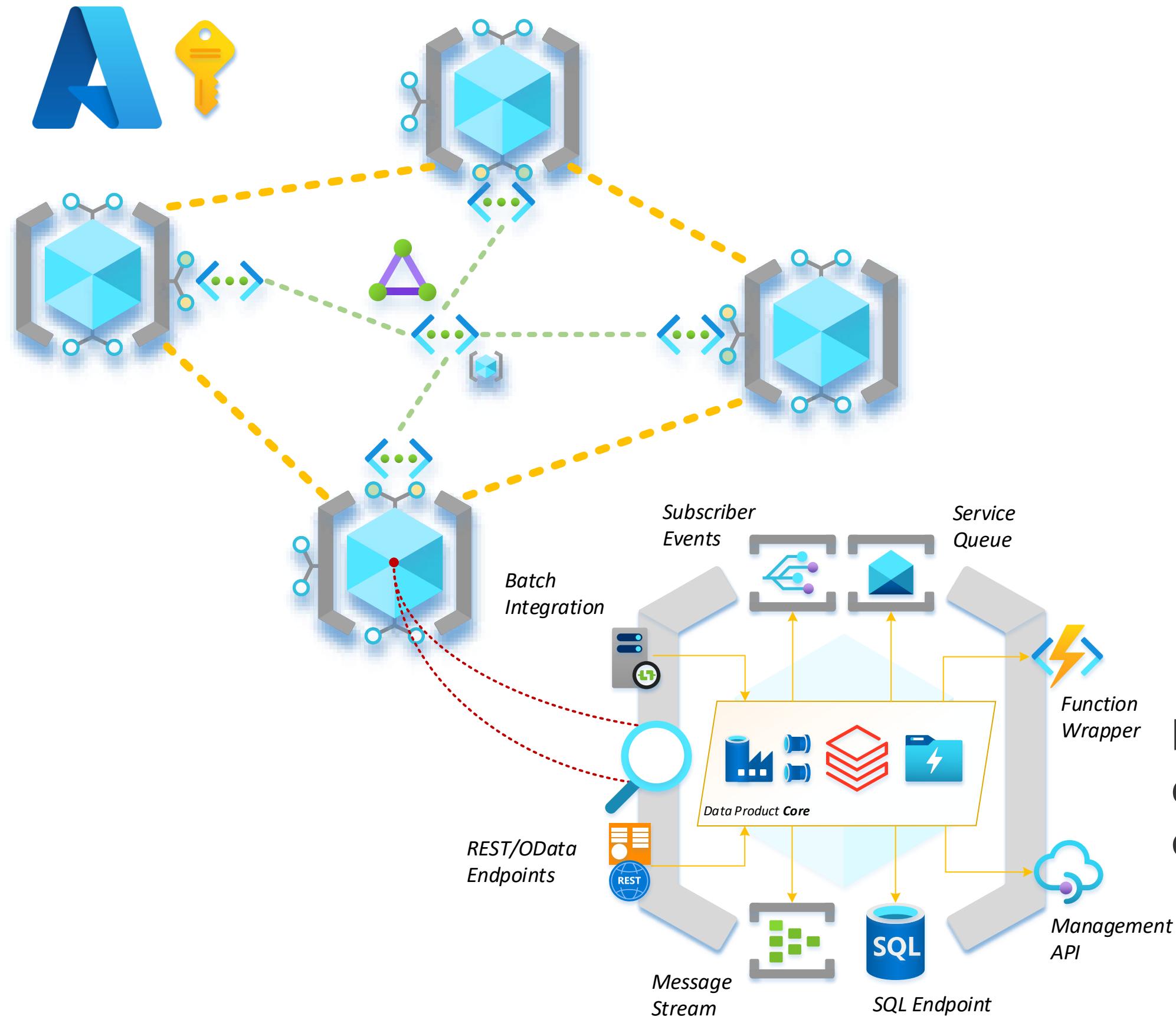




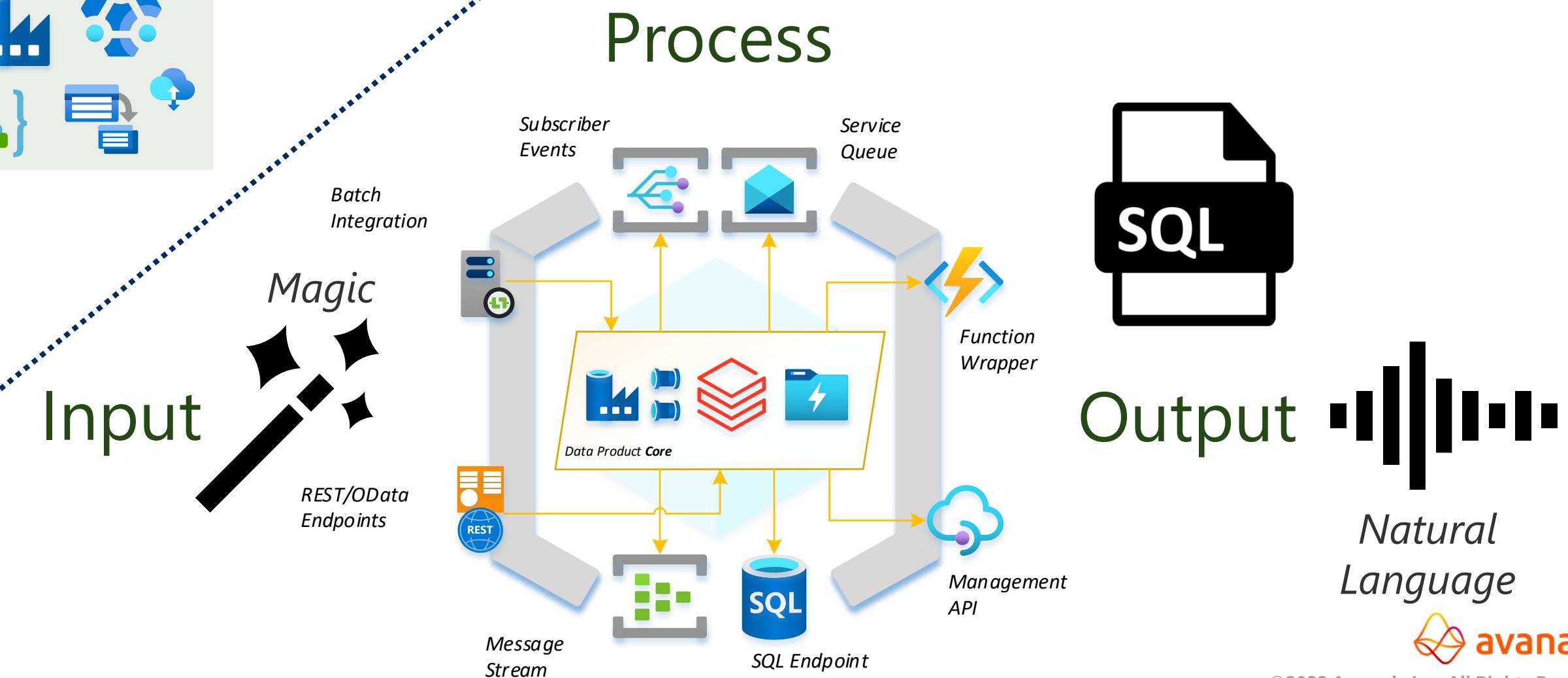
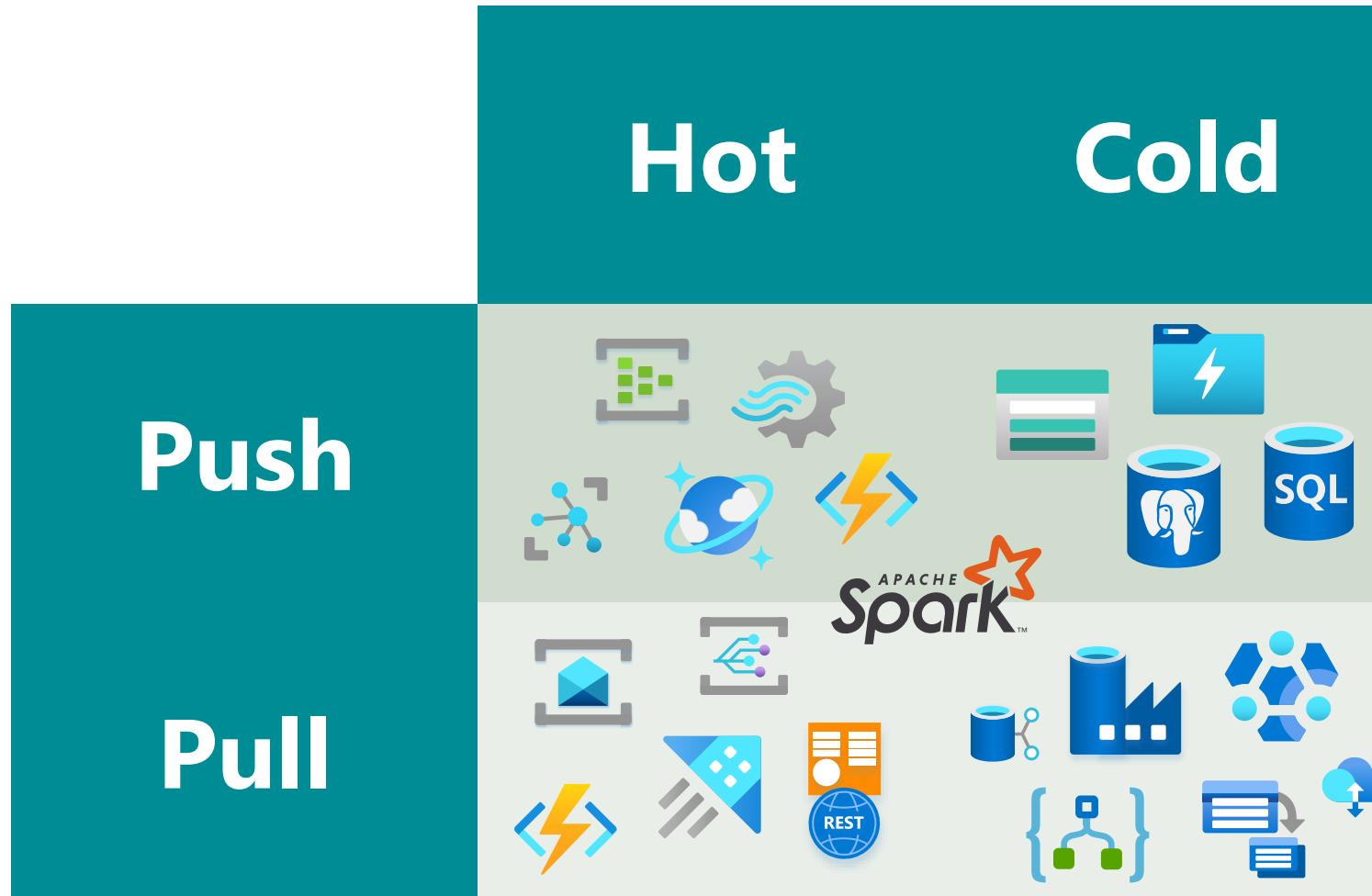
# Data Products - Azure Interfaces



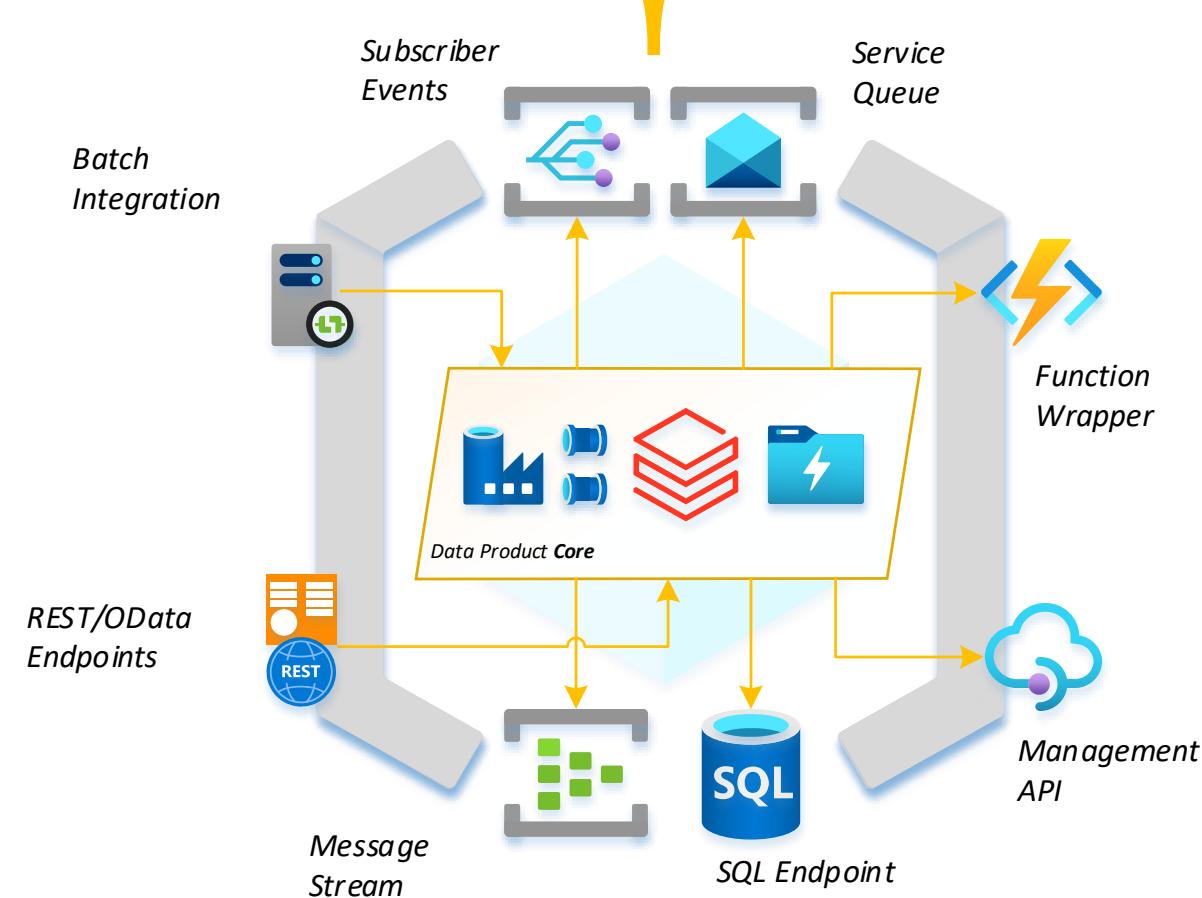
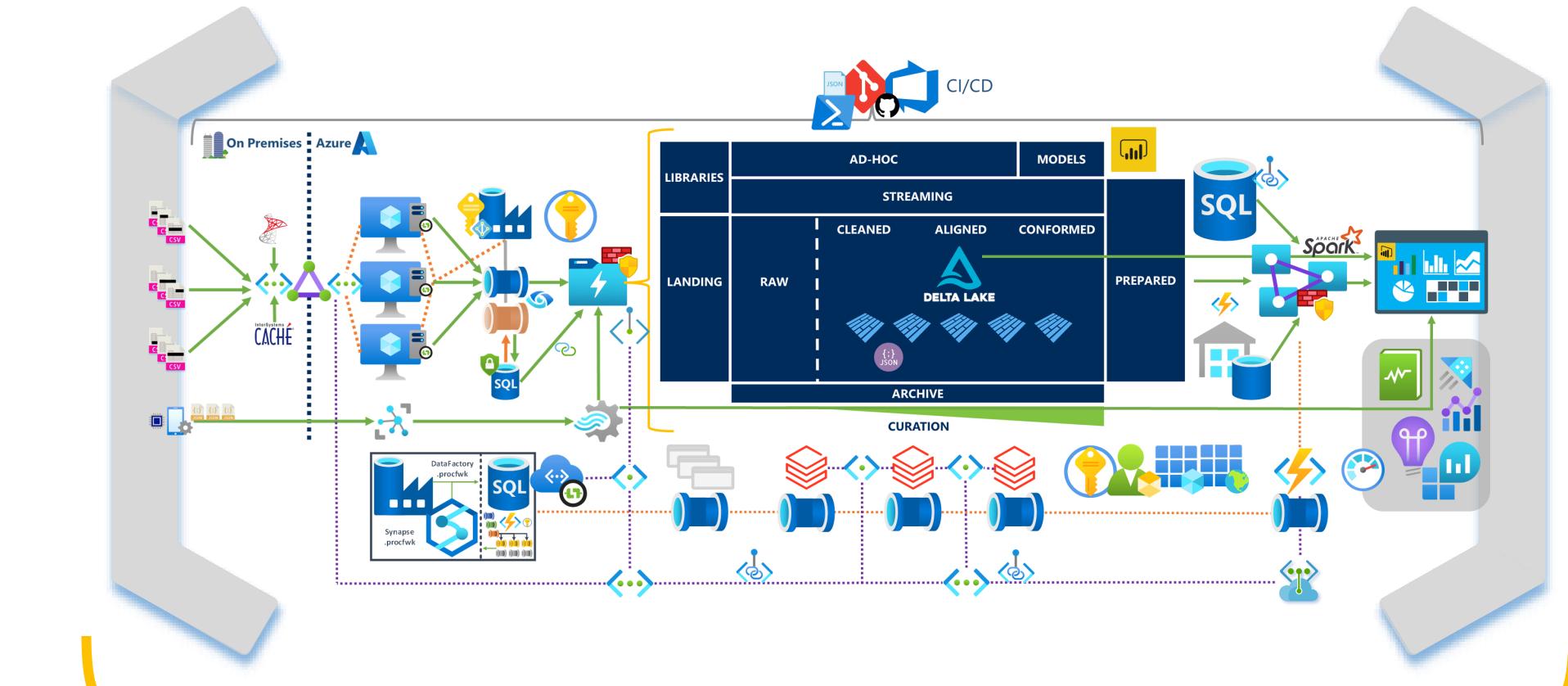
# Data Products - Azure Primary Interfaces



# Data Products - Azure Primary Interfaces

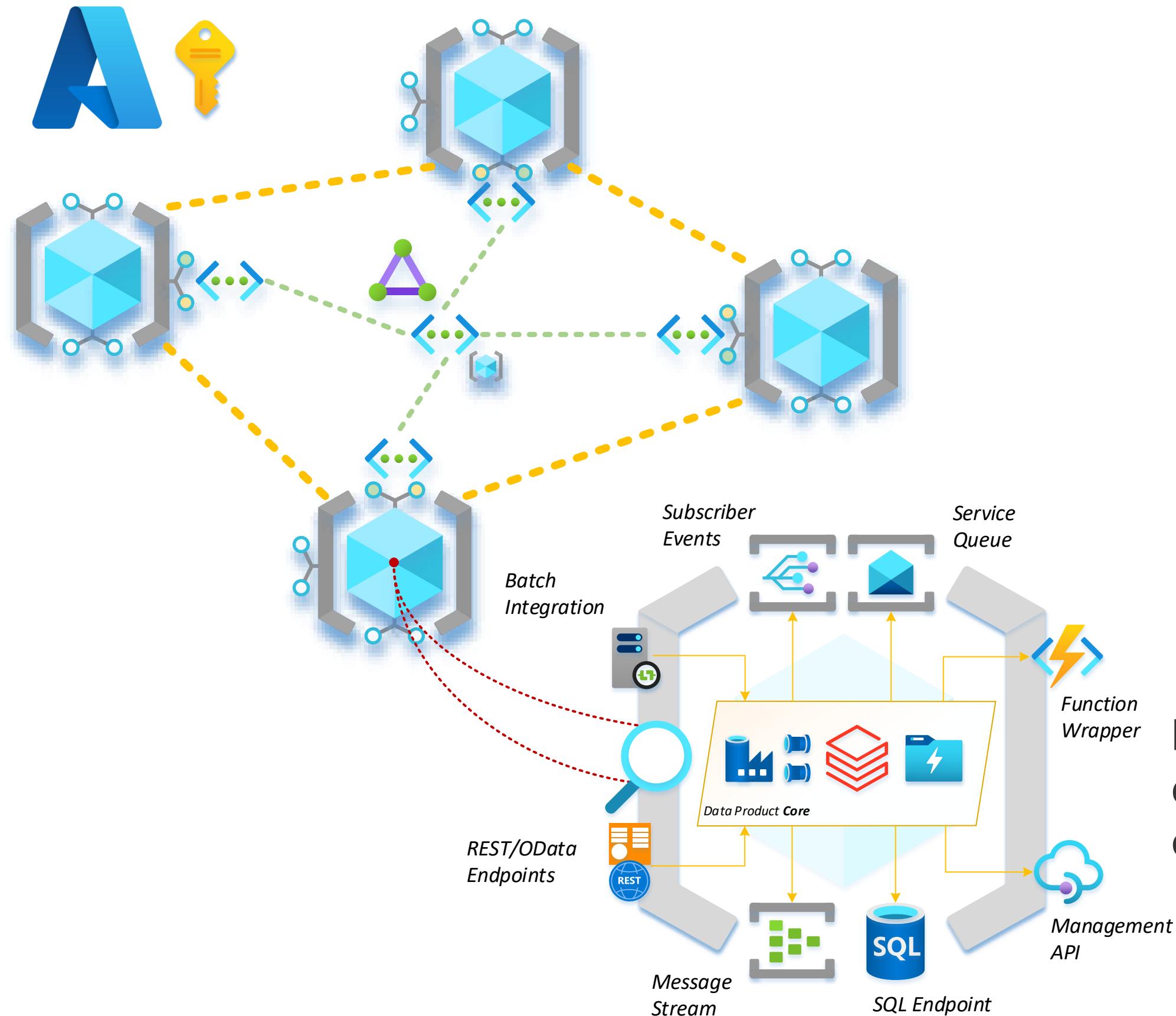


# Data Products - Azure Primary Interfaces



**Primary Interfaces –**  
data integration and  
exchange.

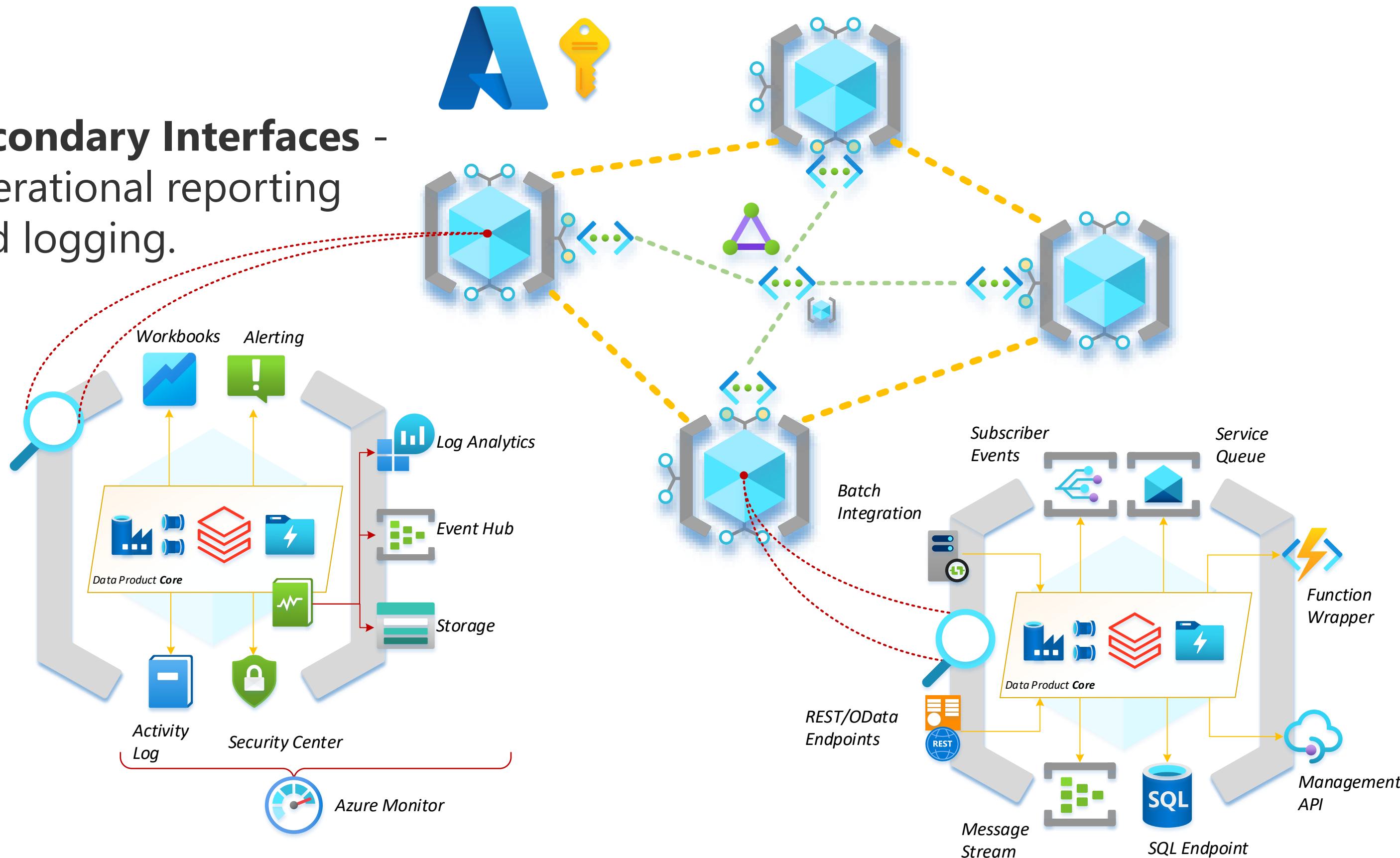
# Data Products - Azure Primary Interfaces





# Data Products - Azure Secondary Interfaces

**Secondary Interfaces** -  
operational reporting  
and logging.

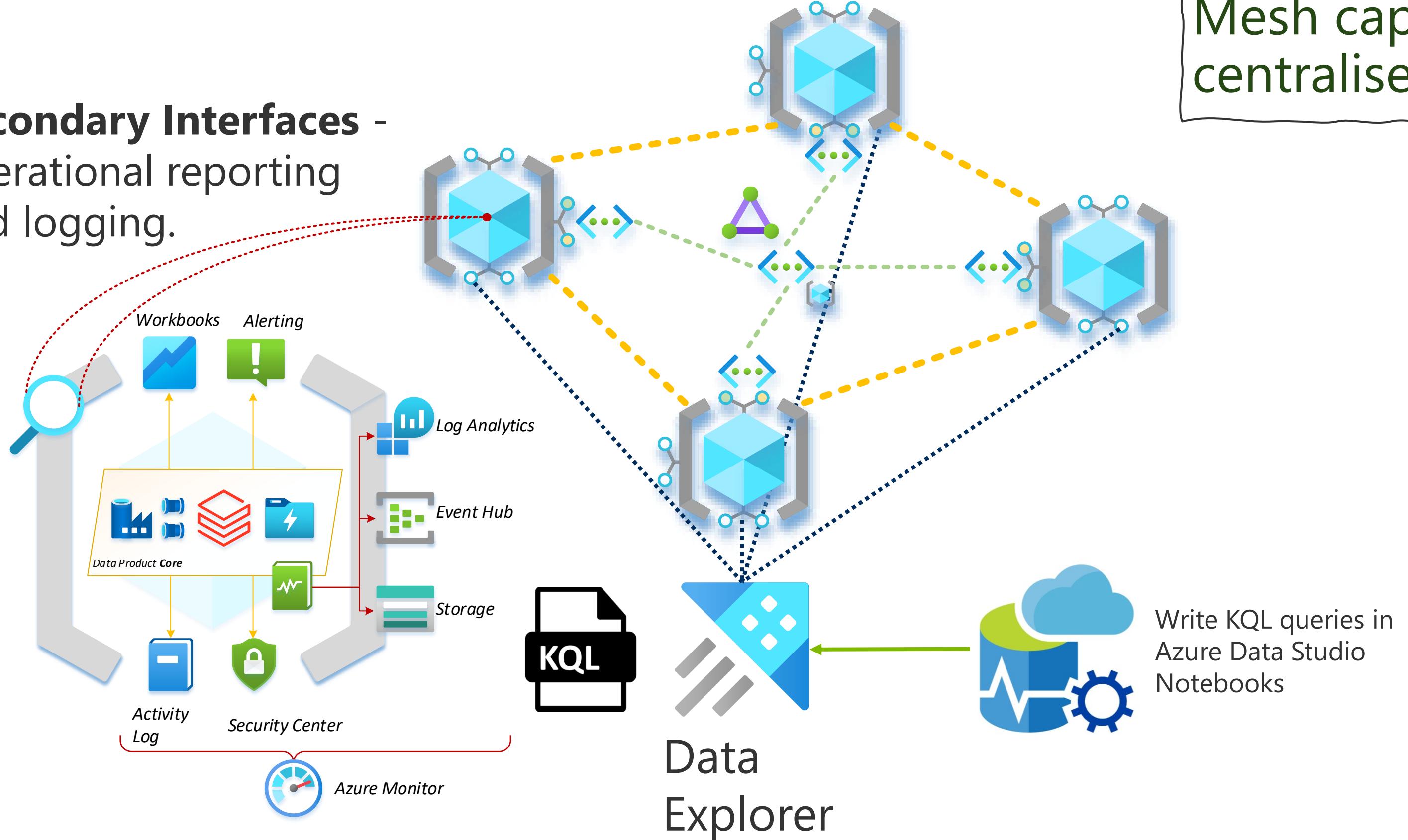


**Primary Interfaces** –  
data integration and  
exchange.



# Data Products - Azure Secondary Interfaces

**Secondary Interfaces** - operational reporting and logging.

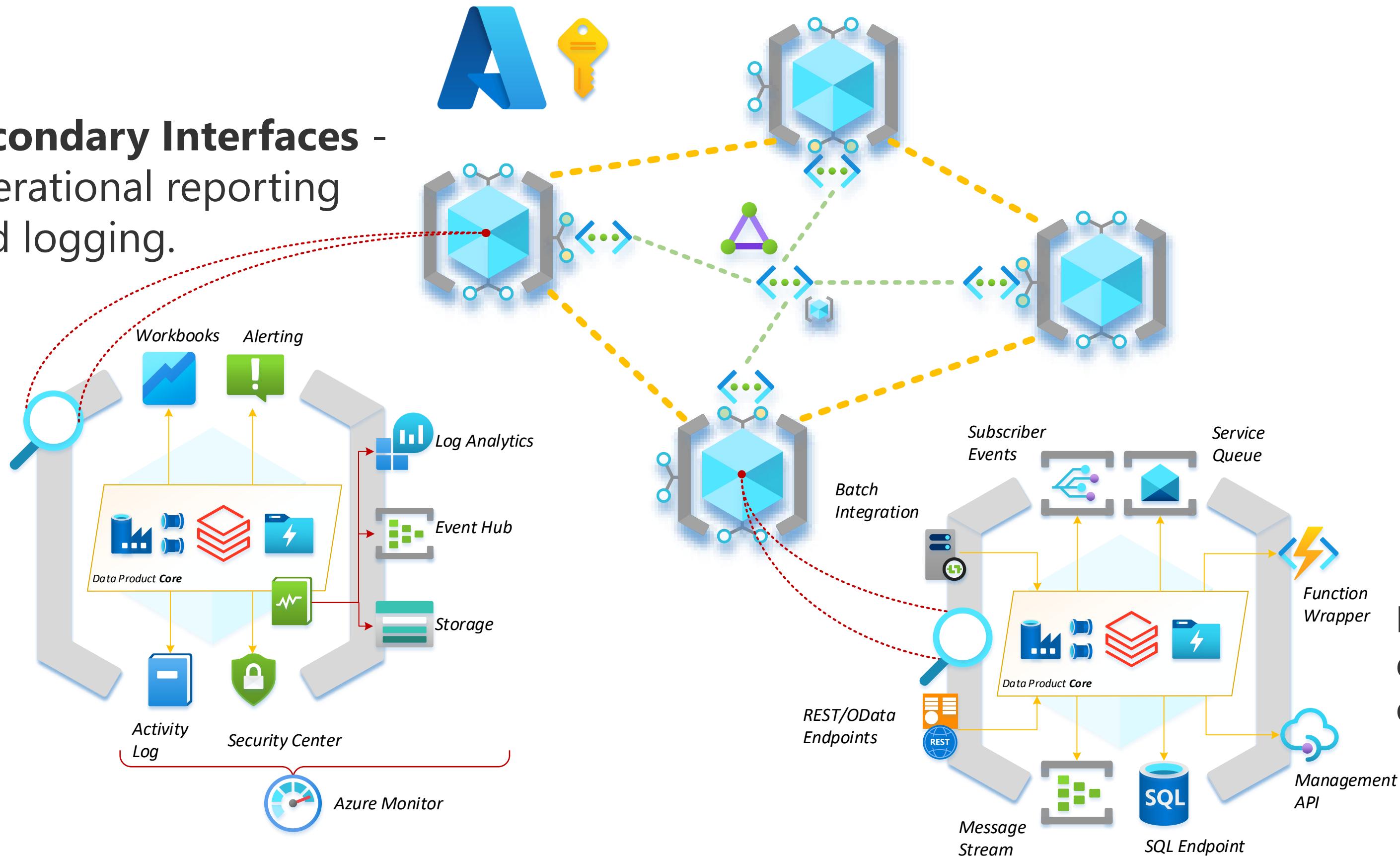


**Q4: Should all Data Mesh capabilities be decentralised?**



# Data Products - Azure Secondary Interfaces

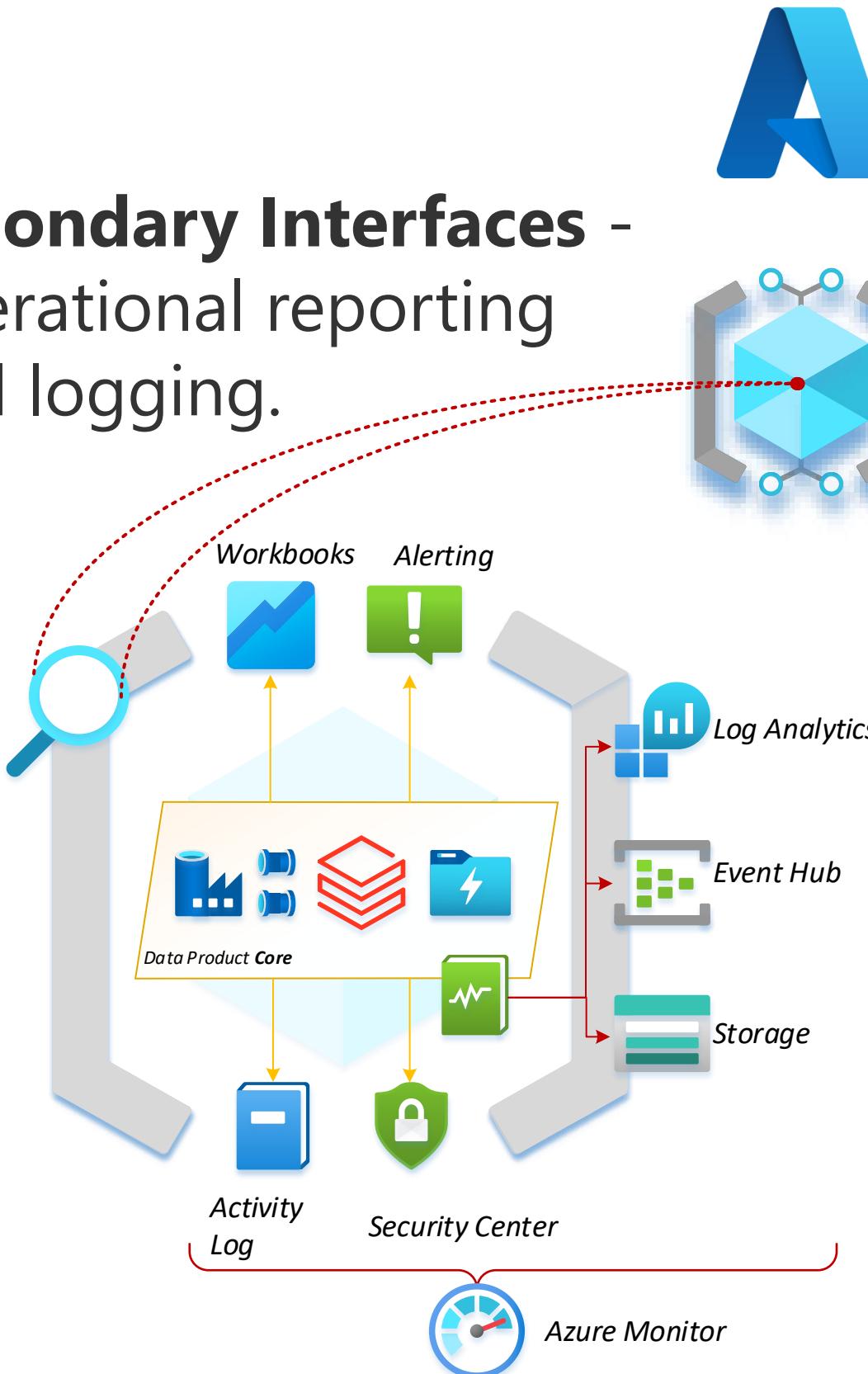
**Secondary Interfaces** -  
operational reporting  
and logging.



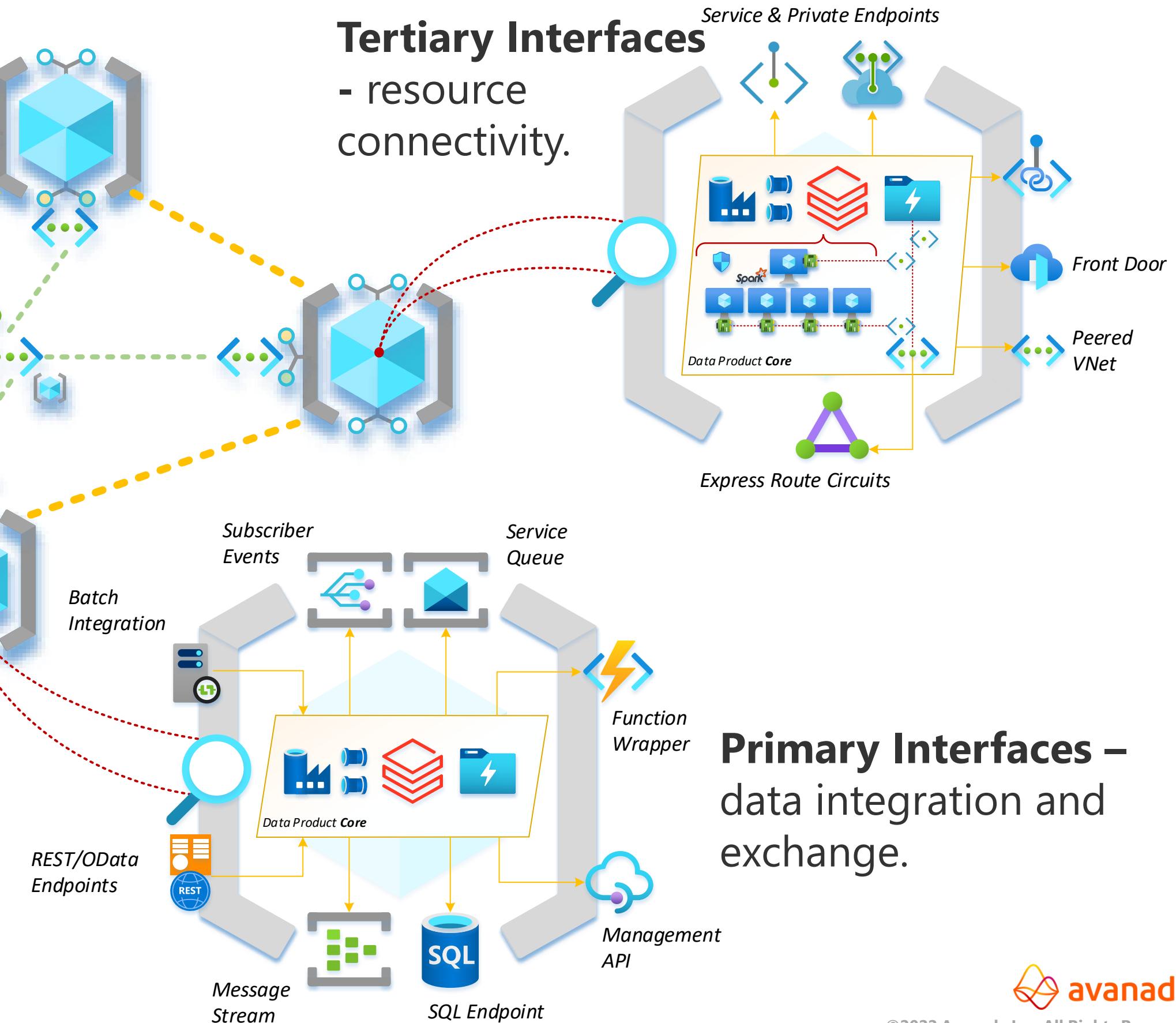
**Primary Interfaces** –  
data integration and  
exchange.

# Data Products - Azure Tertiary Interfaces

**Secondary Interfaces** - operational reporting and logging.

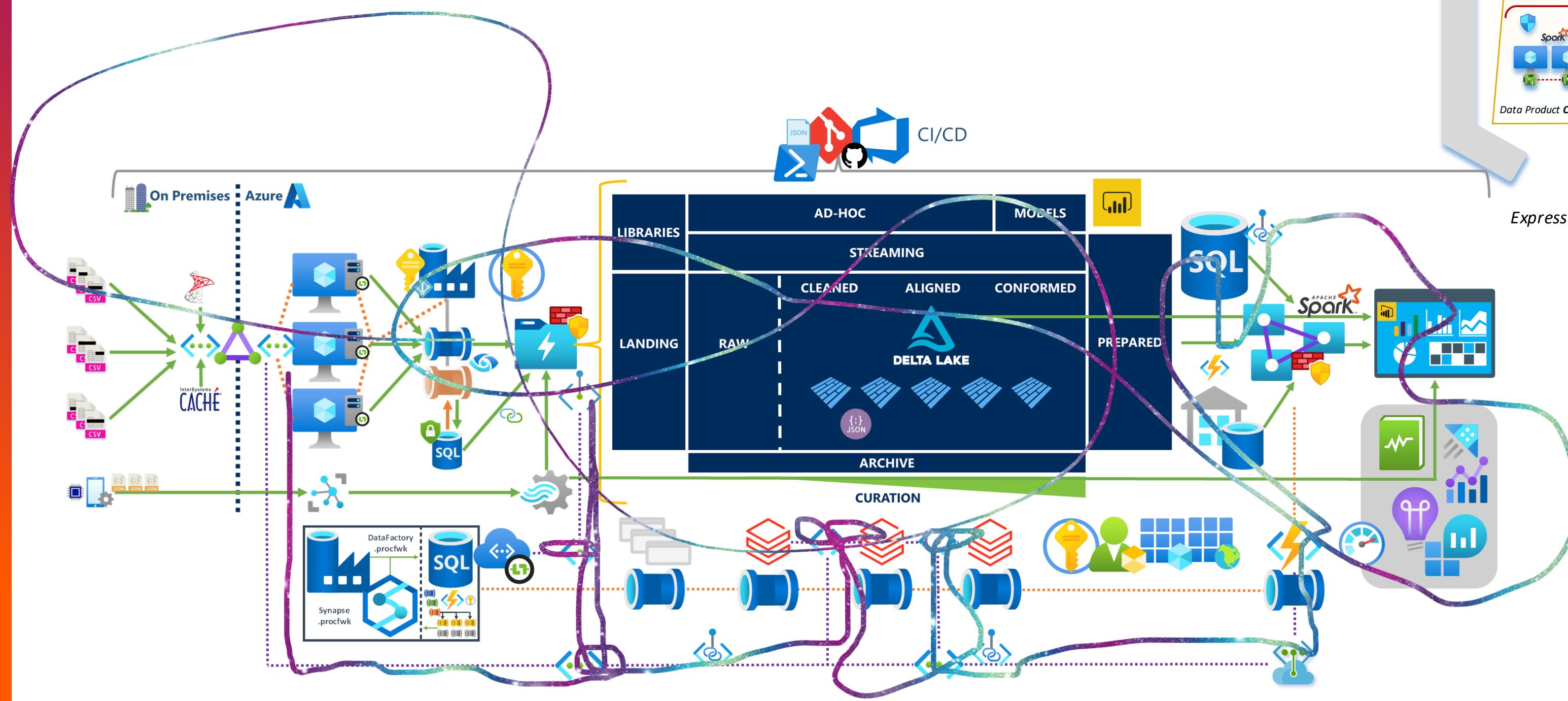


**Tertiary Interfaces** - resource connectivity.

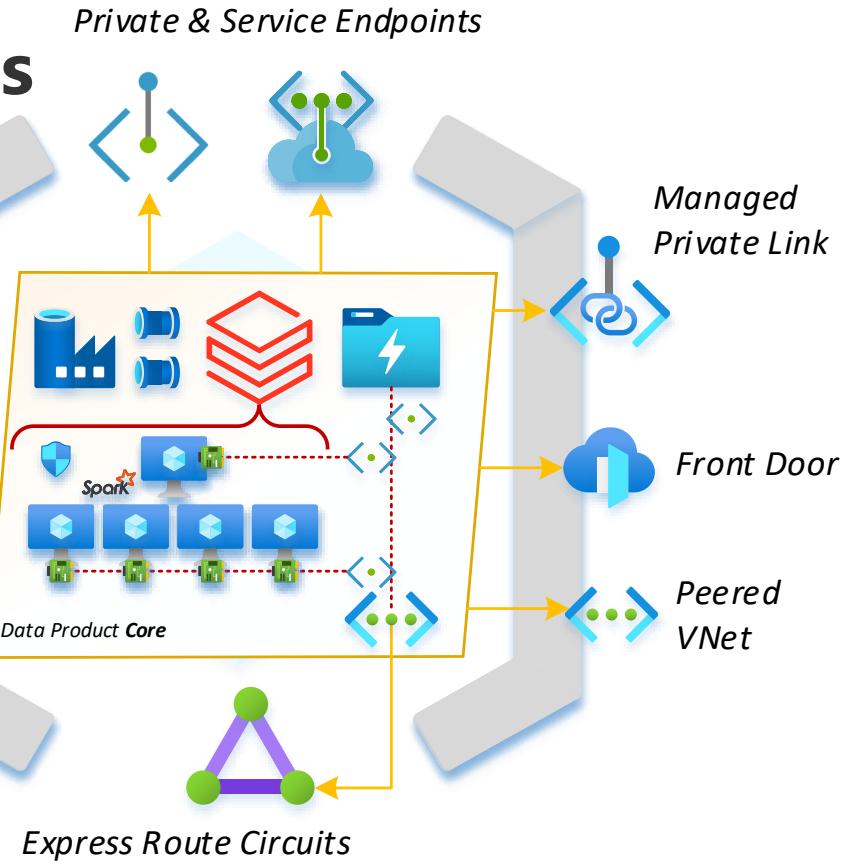


**Primary Interfaces** – data integration and exchange.

# Data Products - Azure Tertiary Interfaces

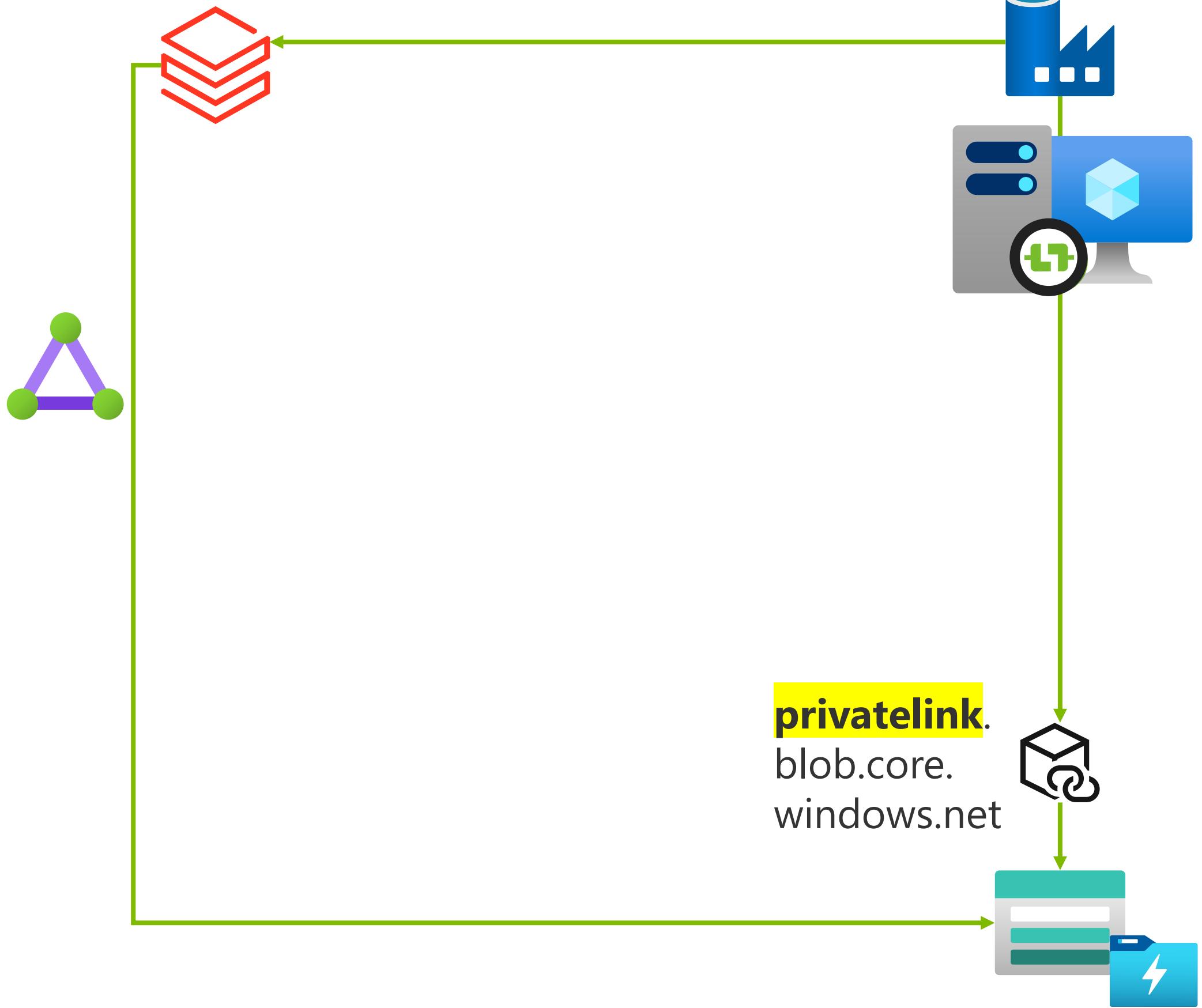


**Tertiary Interfaces**  
- resource connectivity.

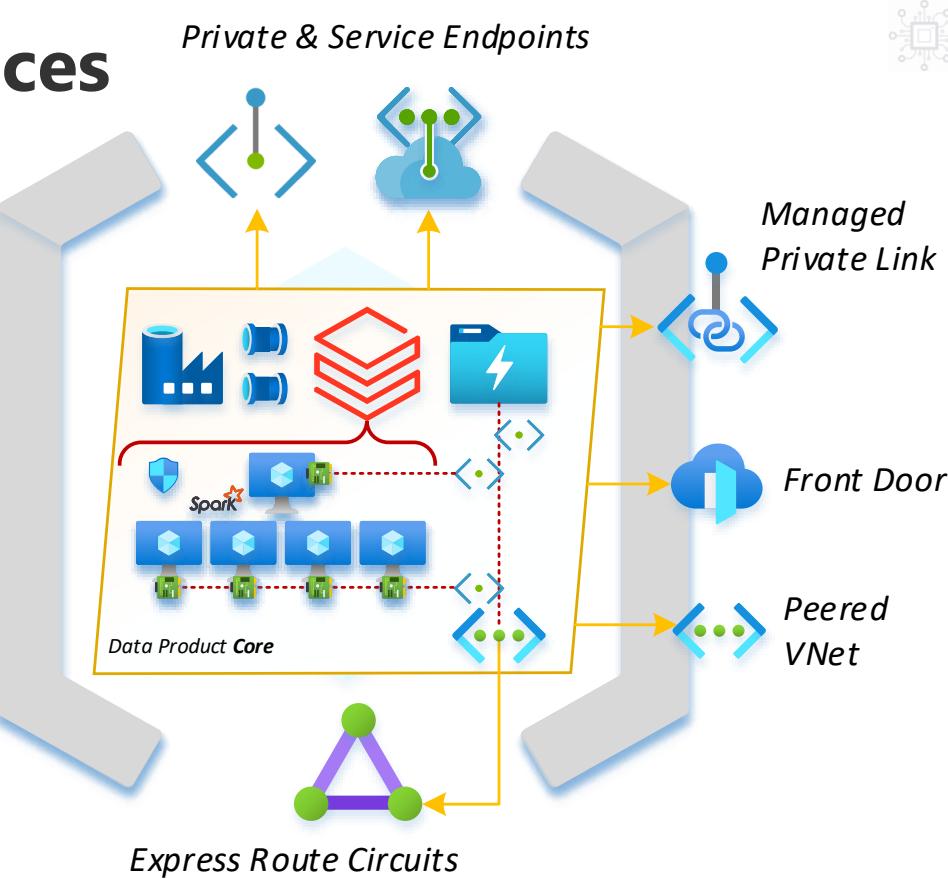


# Data Products - Azure Interfaces

VNets



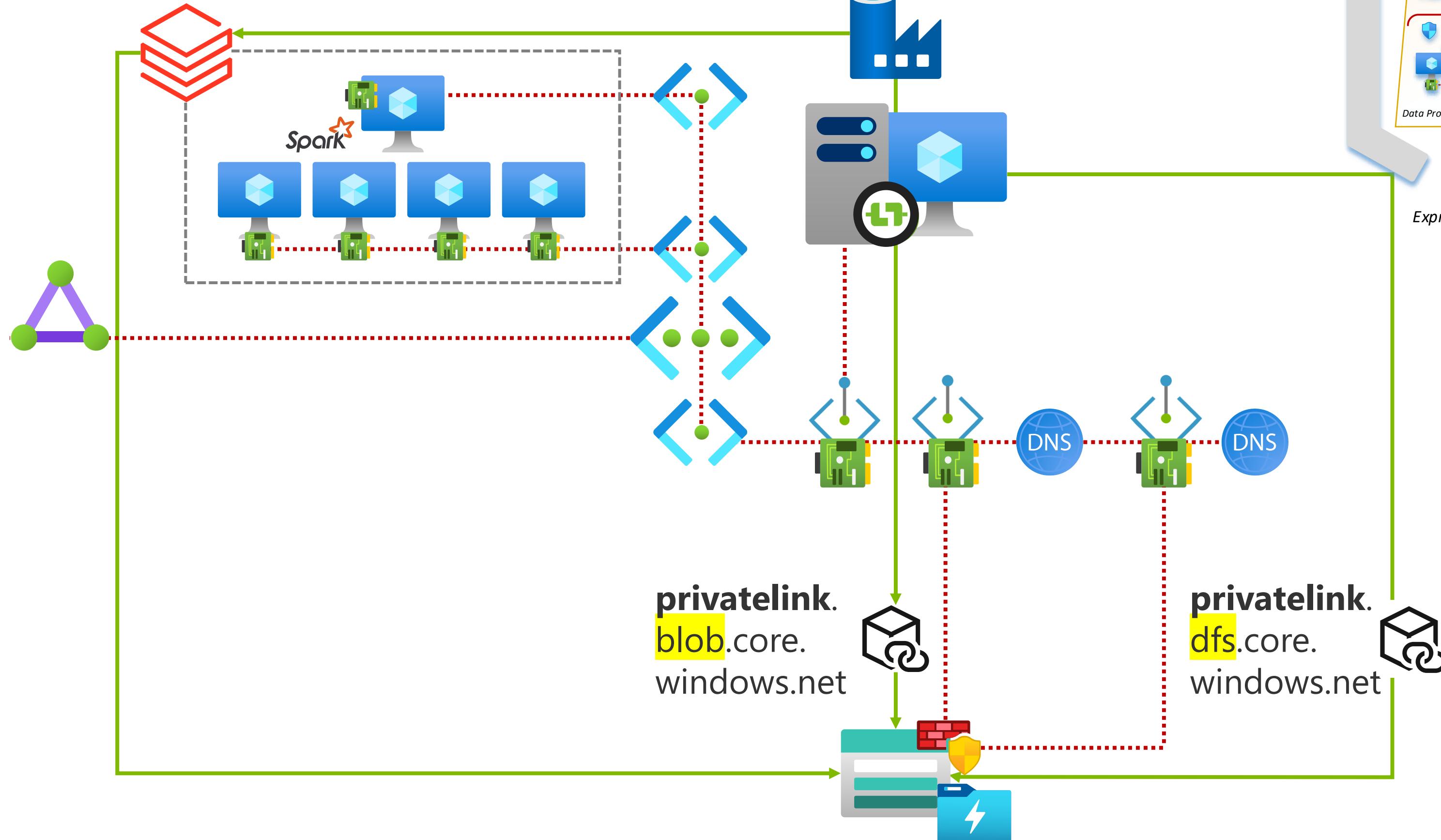
**Tertiary Interfaces**  
- resource connectivity.





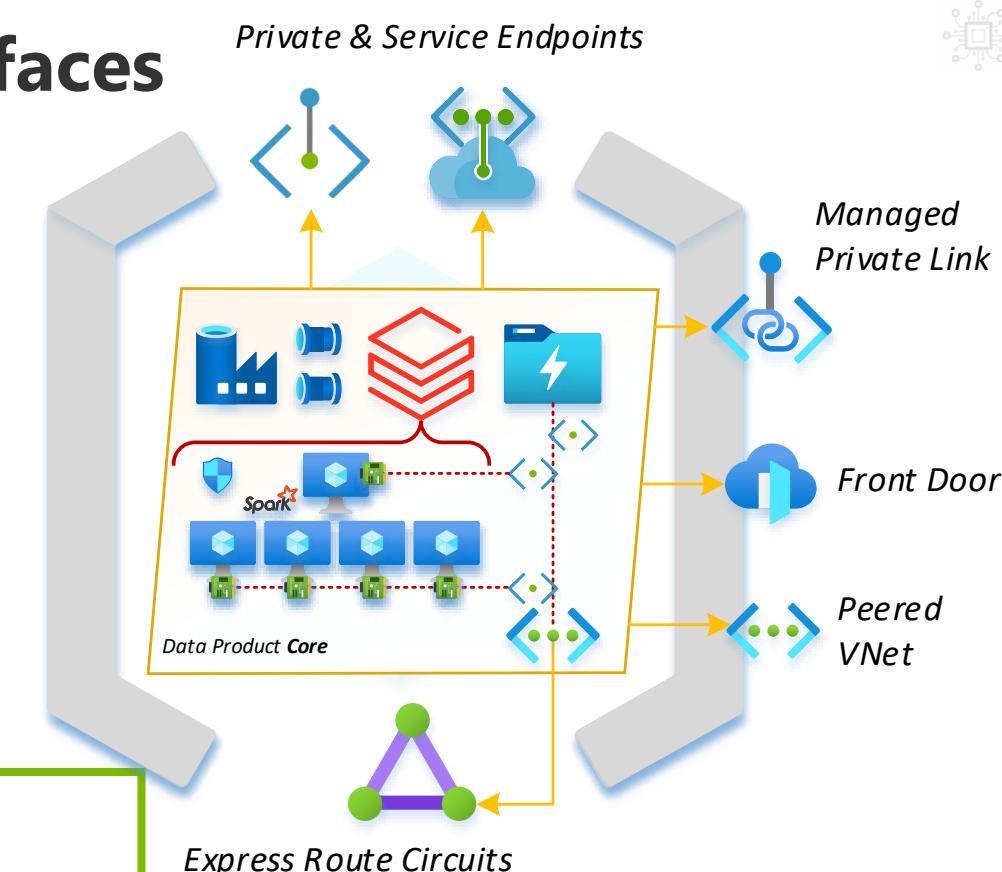
# Data Products - Azure Interfaces

VNets

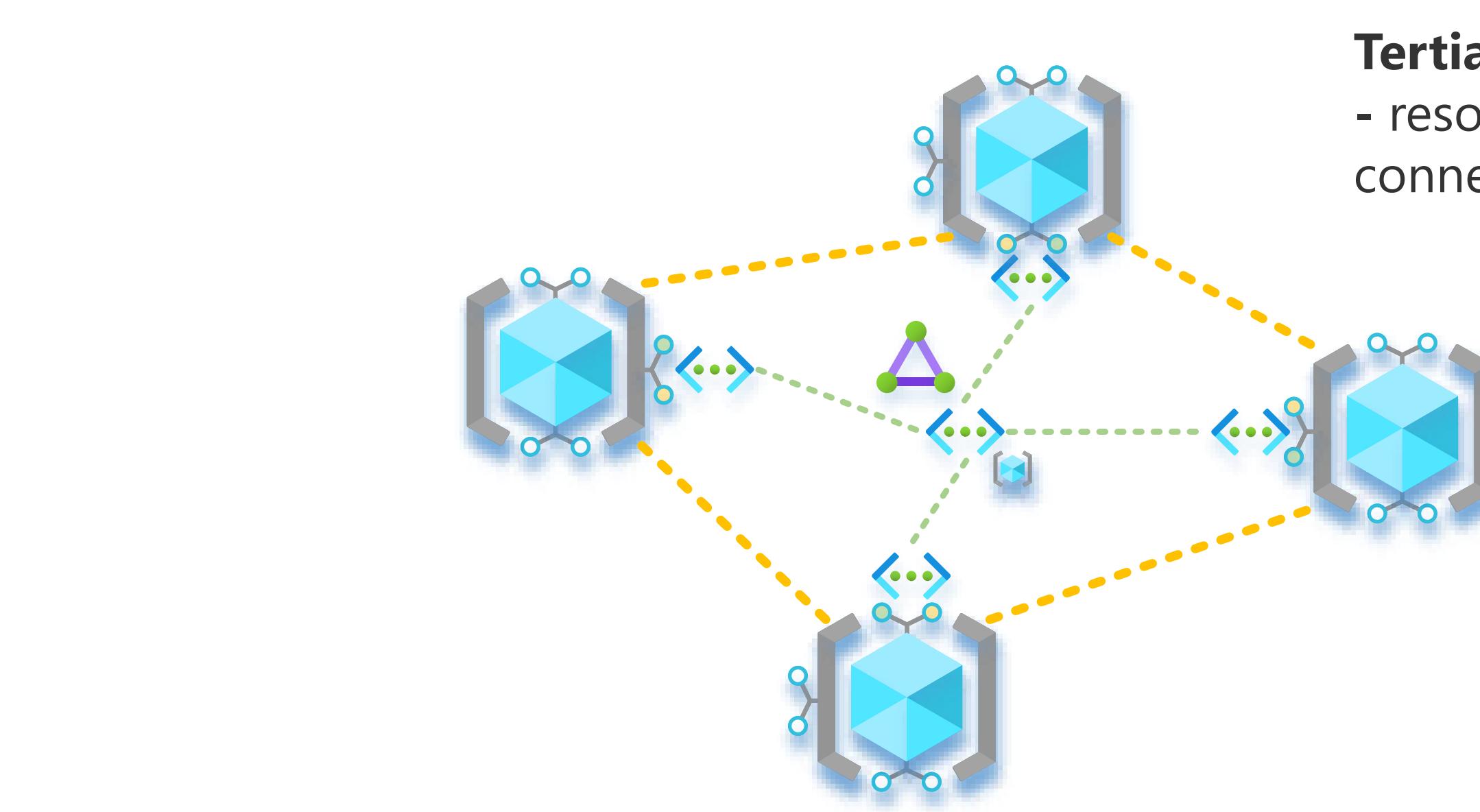


## Tertiary Interfaces

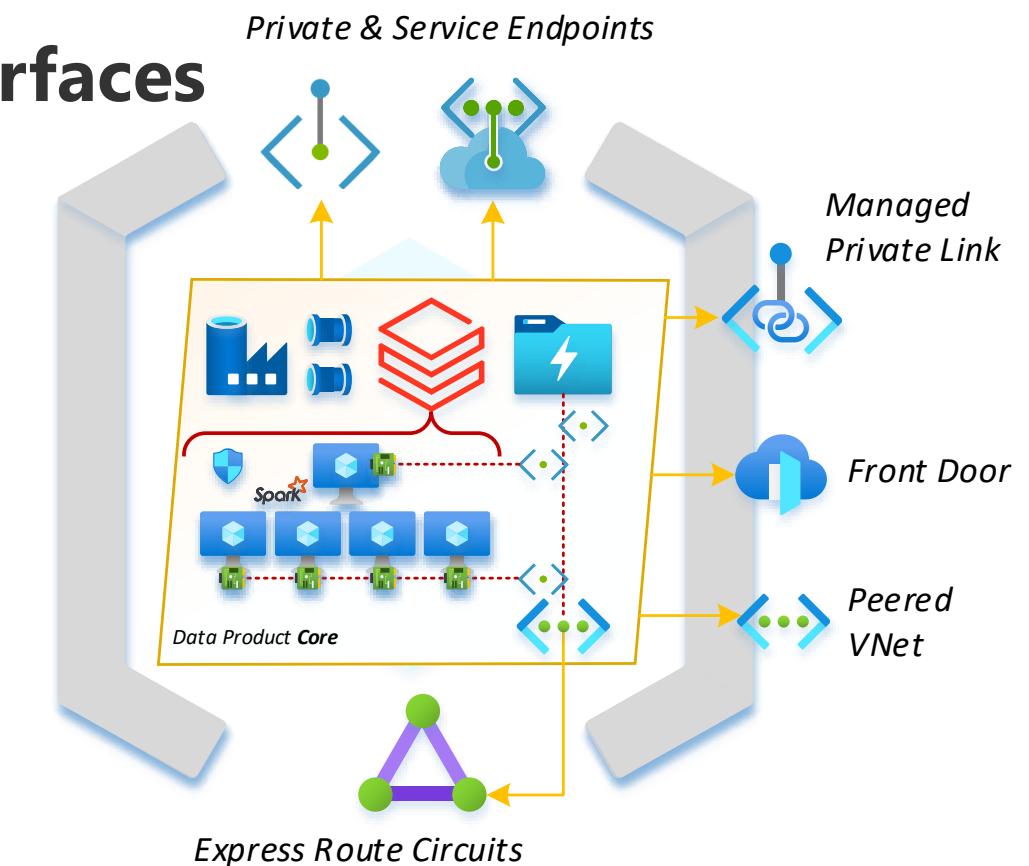
- resource connectivity.



# Data Products - Azure Tertiary Interfaces



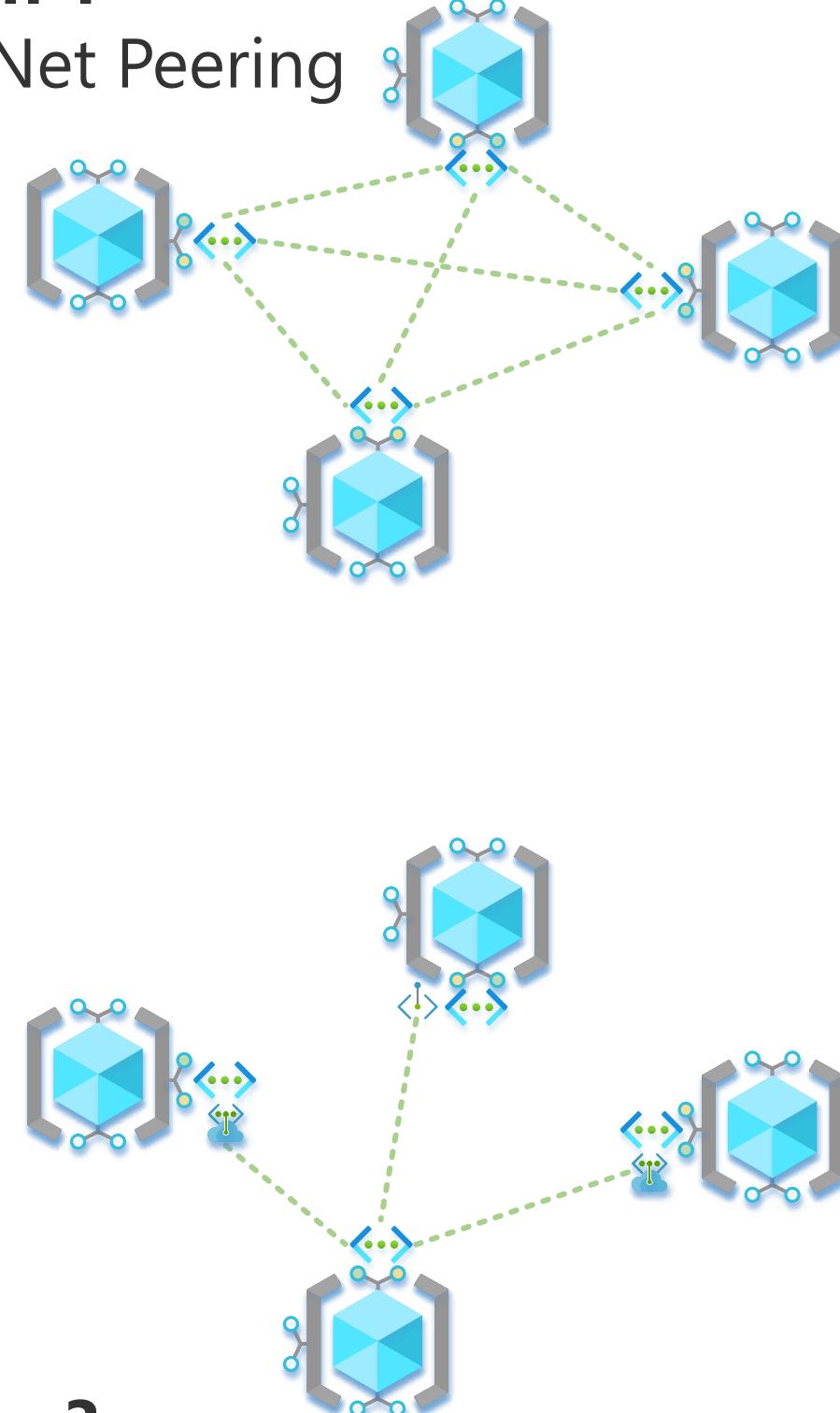
**Tertiary Interfaces**  
- resource  
connectivity.



# Data Products - Azure Tertiary Interfaces

## Option 1

Full VNet Peering



## Option 3

Targeted Service/Private Endpoints

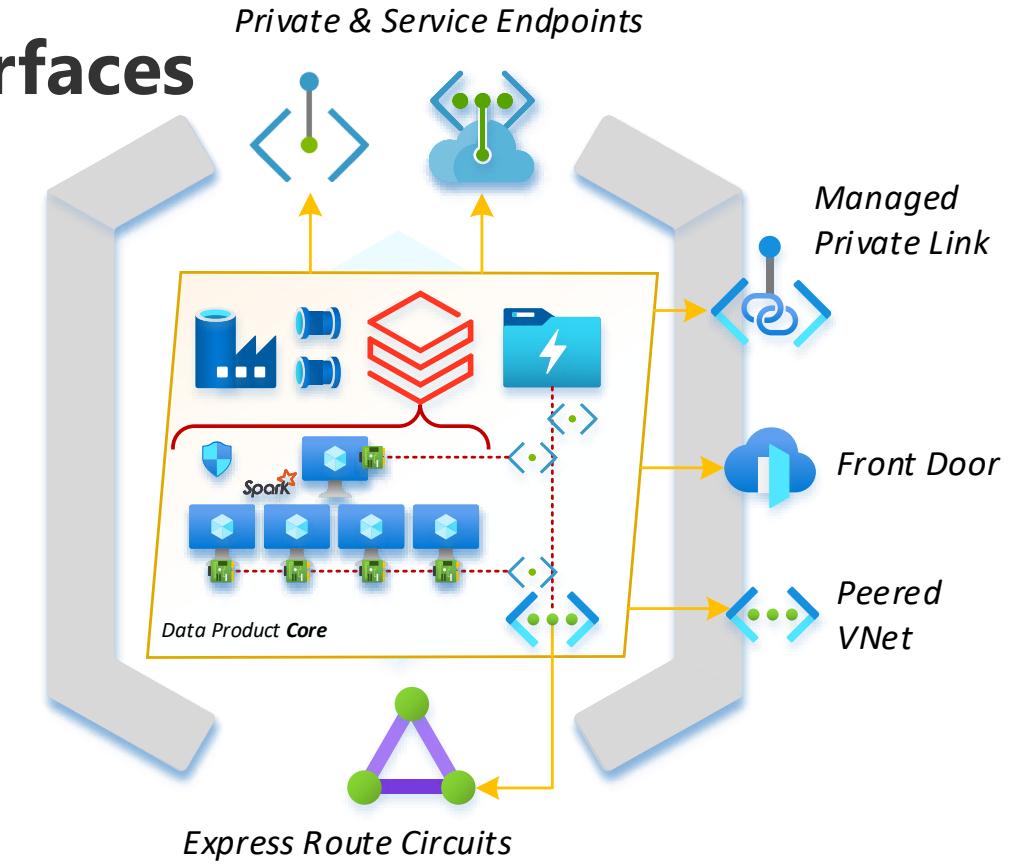


## Option 2

Hub and Spoke VNet Peering

## Tertiary Interfaces

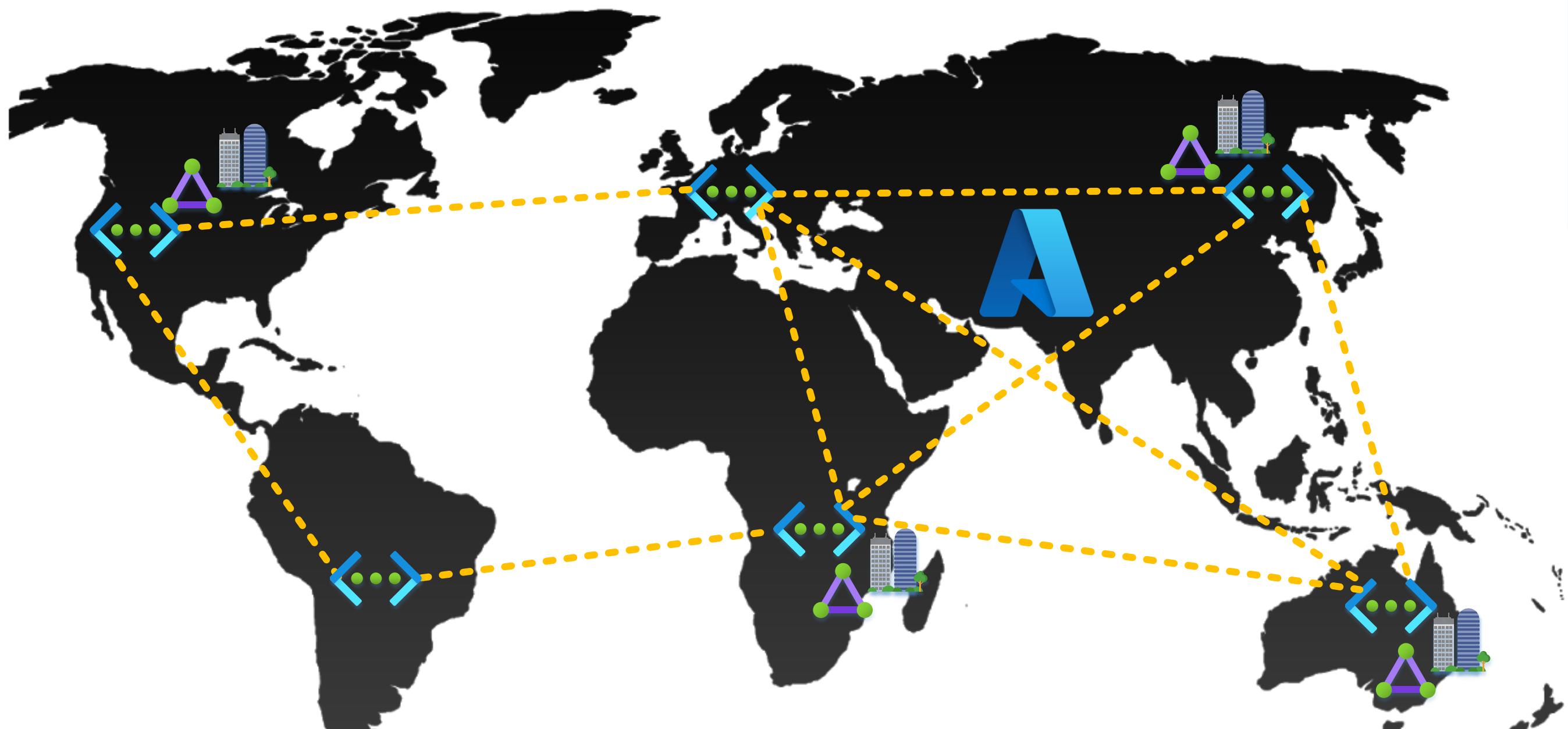
- resource connectivity.



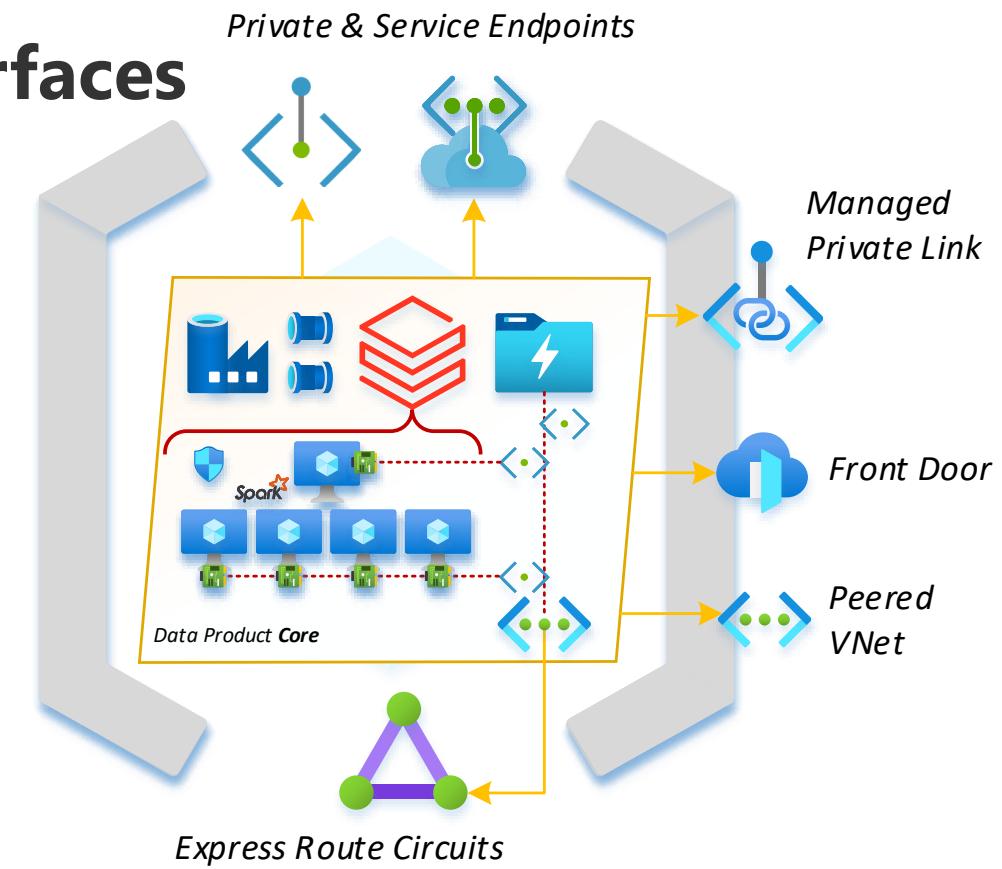
## Other Options

- Use public endpoints.
- Use local resource firewalls.
- Use Managed Private Links

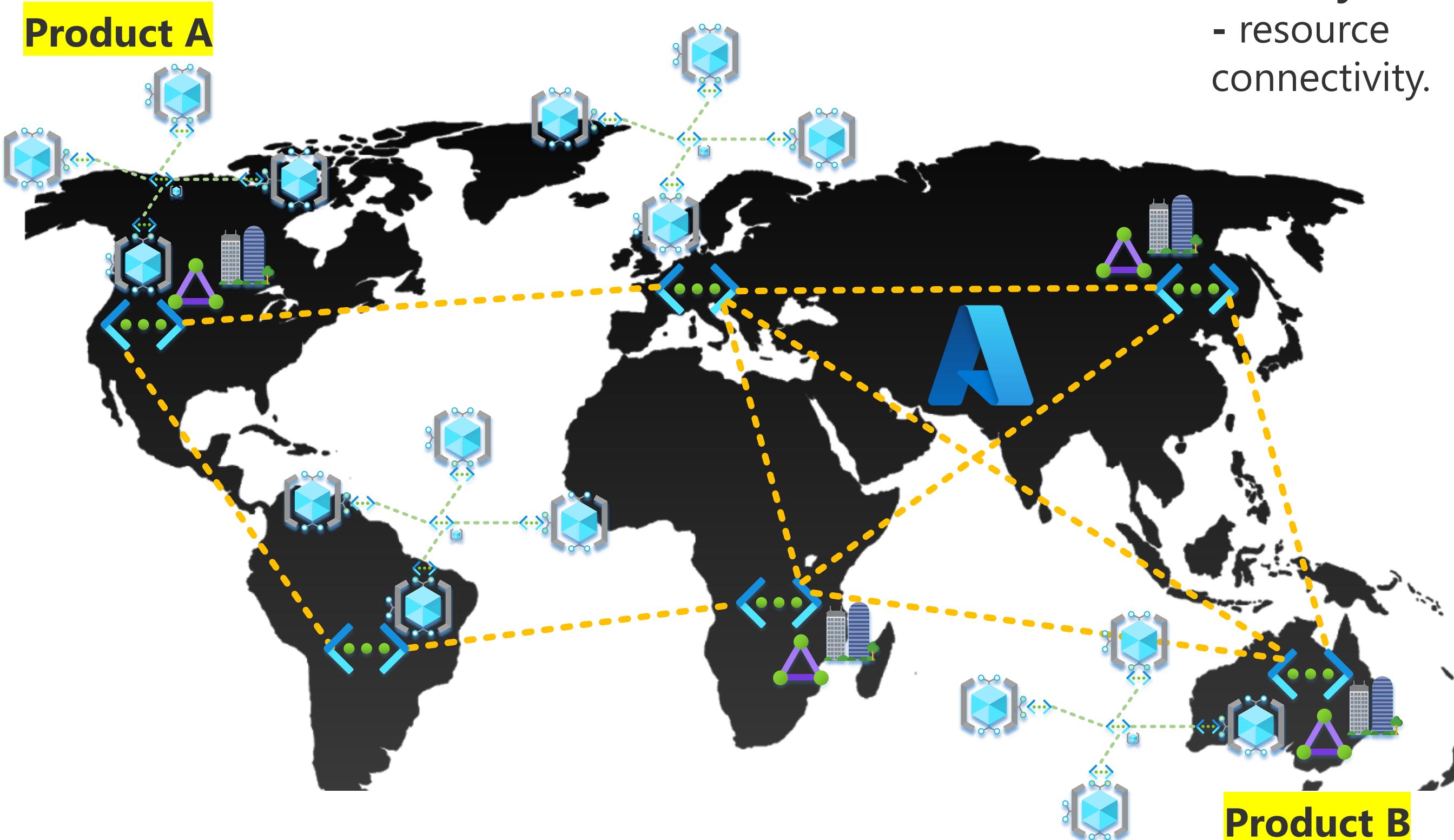
# Data Products - Azure Tertiary Interfaces



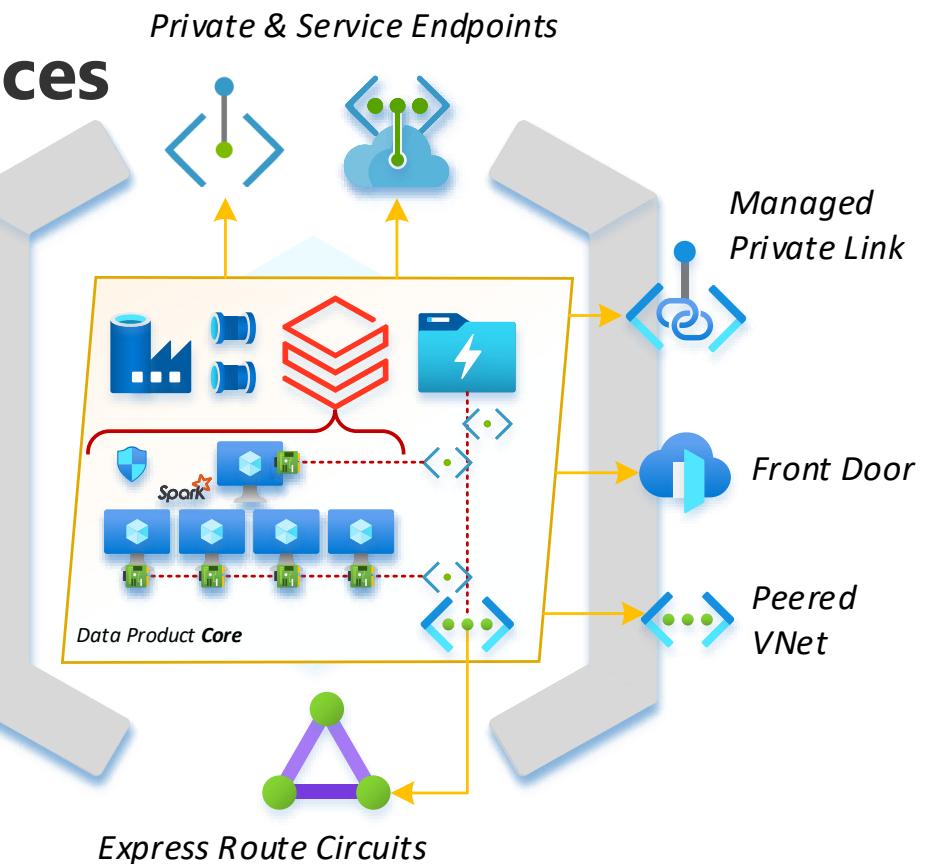
**Tertiary Interfaces**  
- resource connectivity.



# Data Products - Azure Tertiary Interfaces

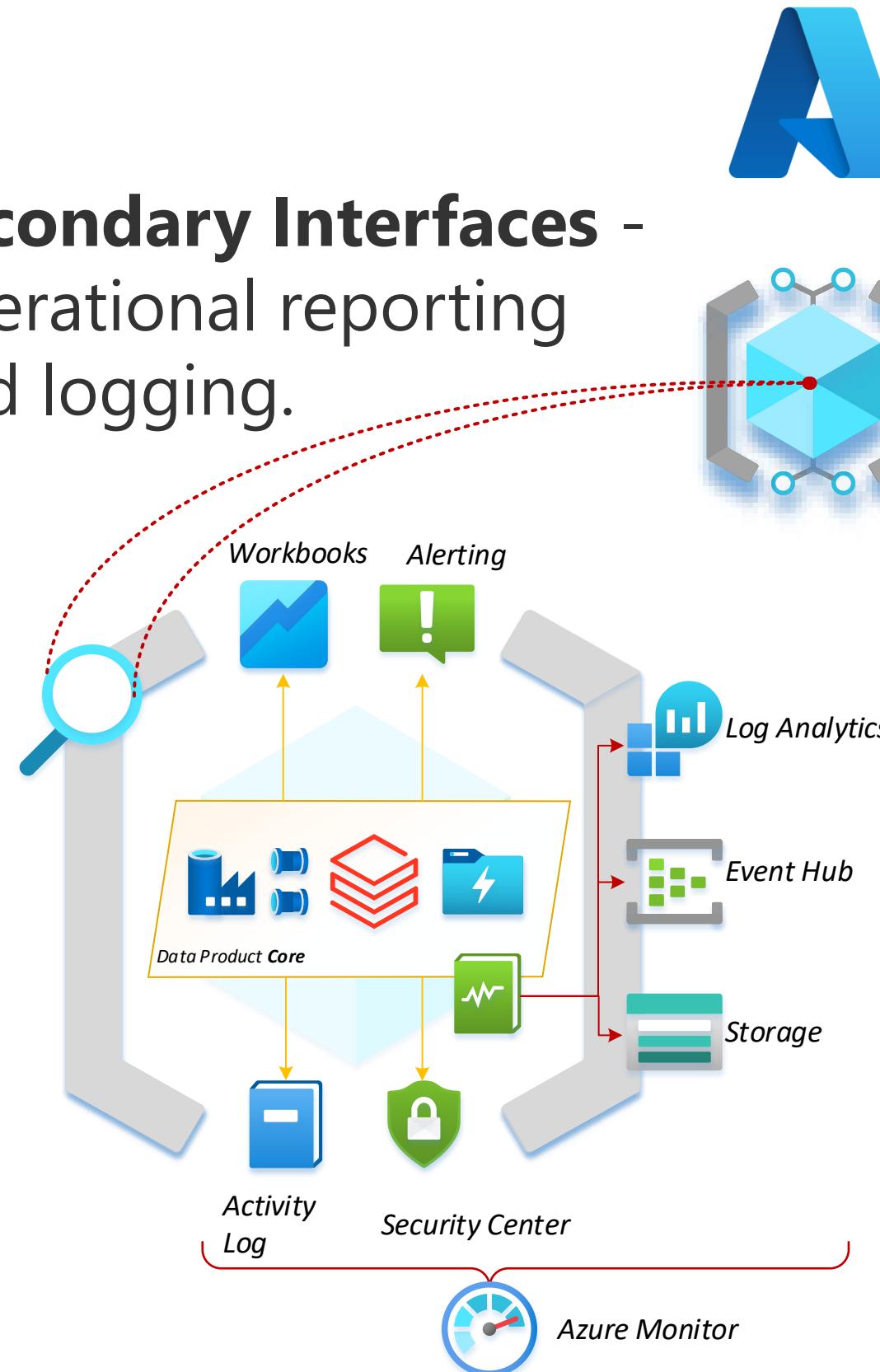


**Tertiary Interfaces**  
- resource  
connectivity.

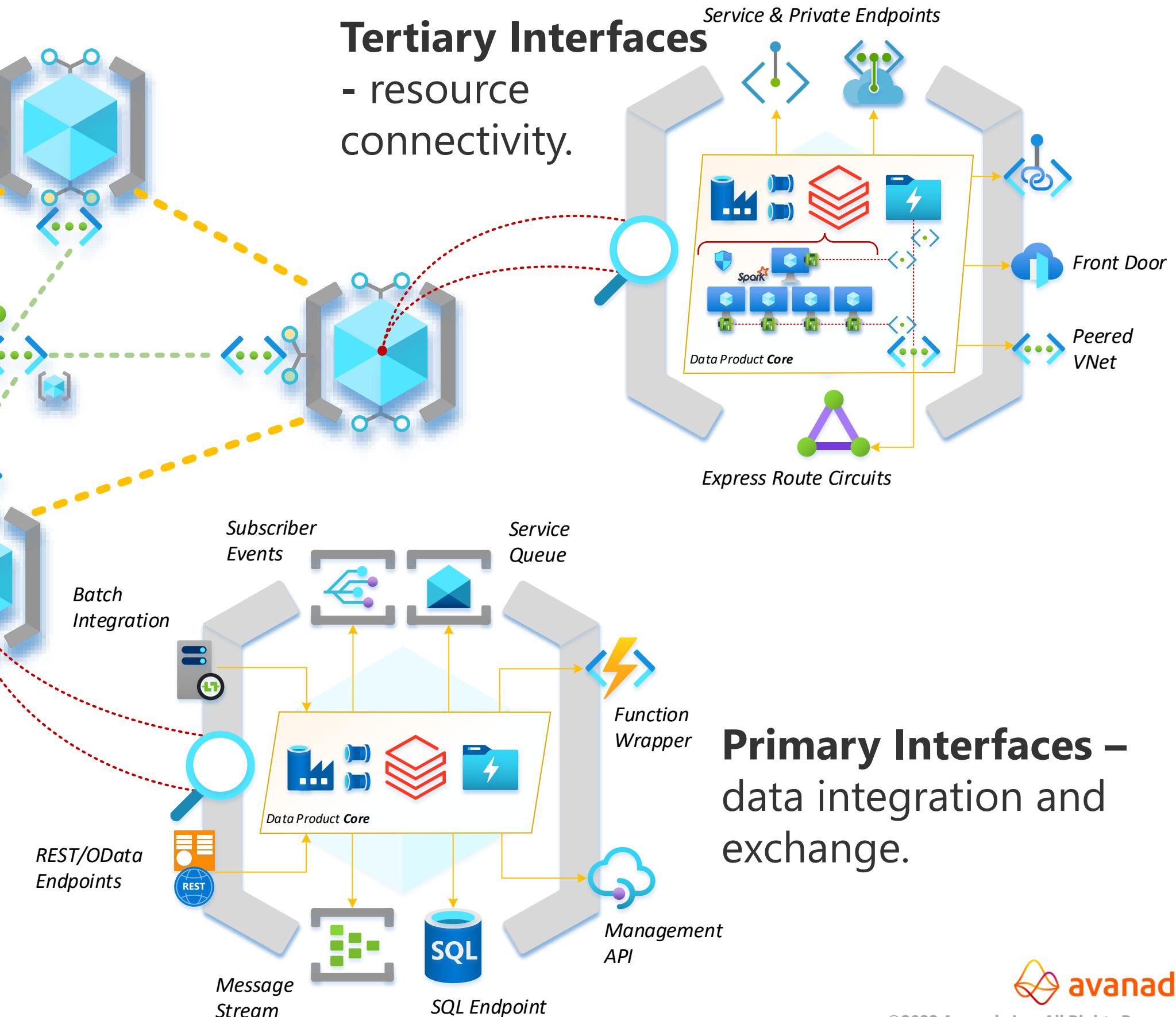


# Data Products - Azure Interfaces

**Secondary Interfaces** - operational reporting and logging.



**Tertiary Interfaces** - resource connectivity.

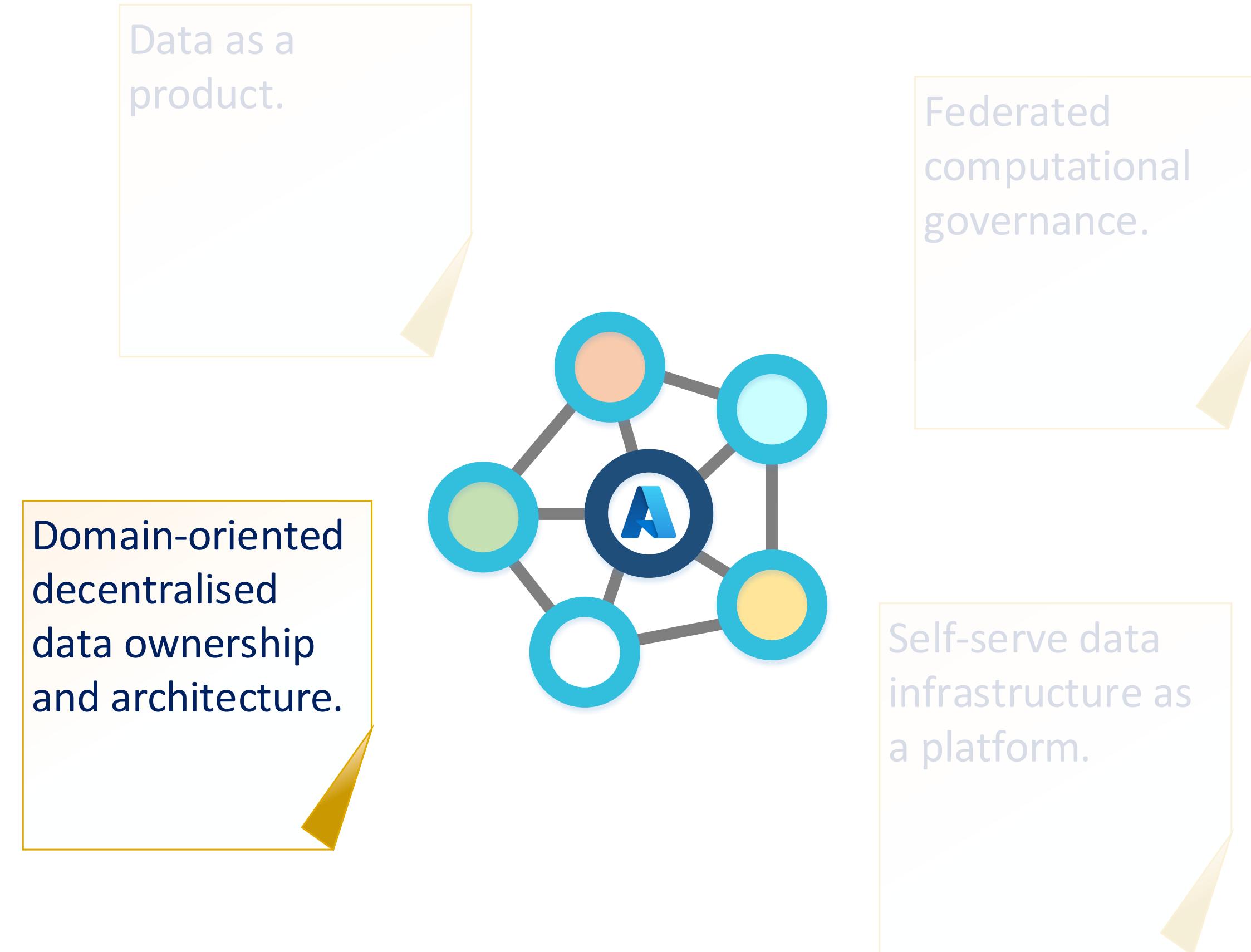


**Primary Interfaces** – data integration and exchange.



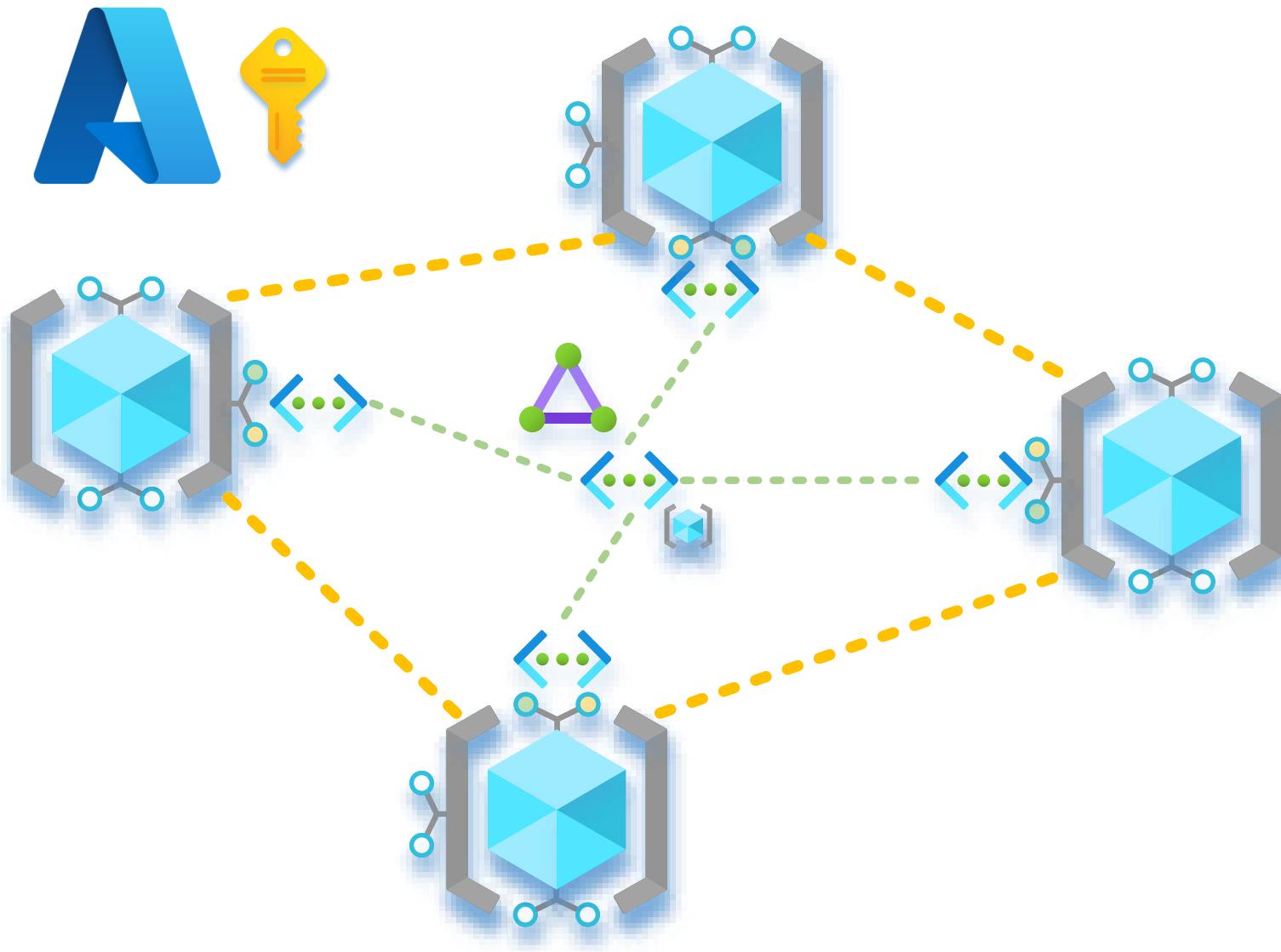
# Data Mesh: *How...* *Domains*

# Data Mesh Principals - Theory vs Practice



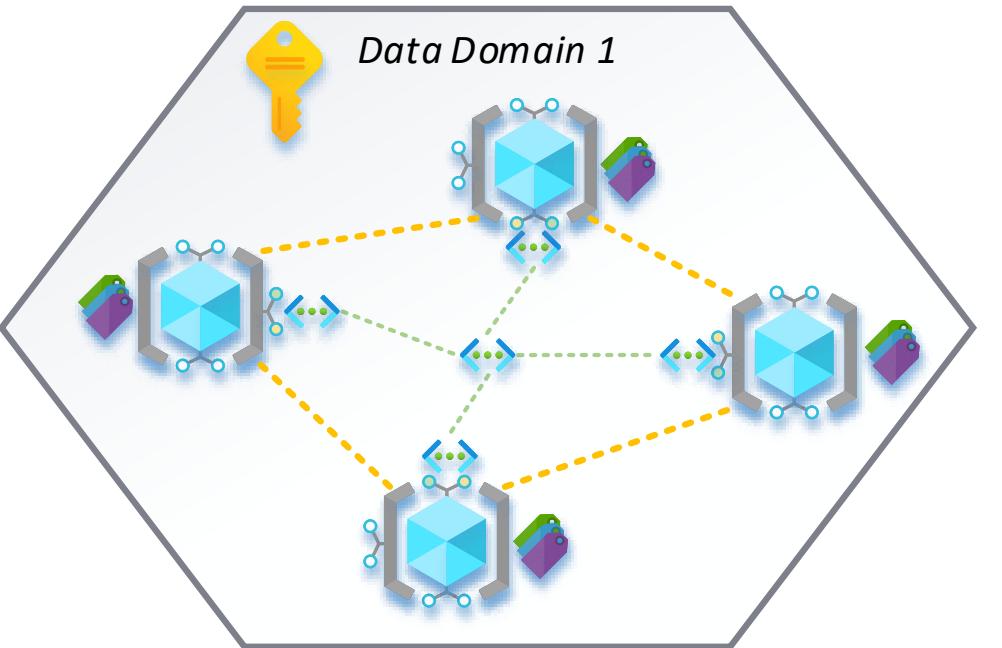


# Data Domains in Azure



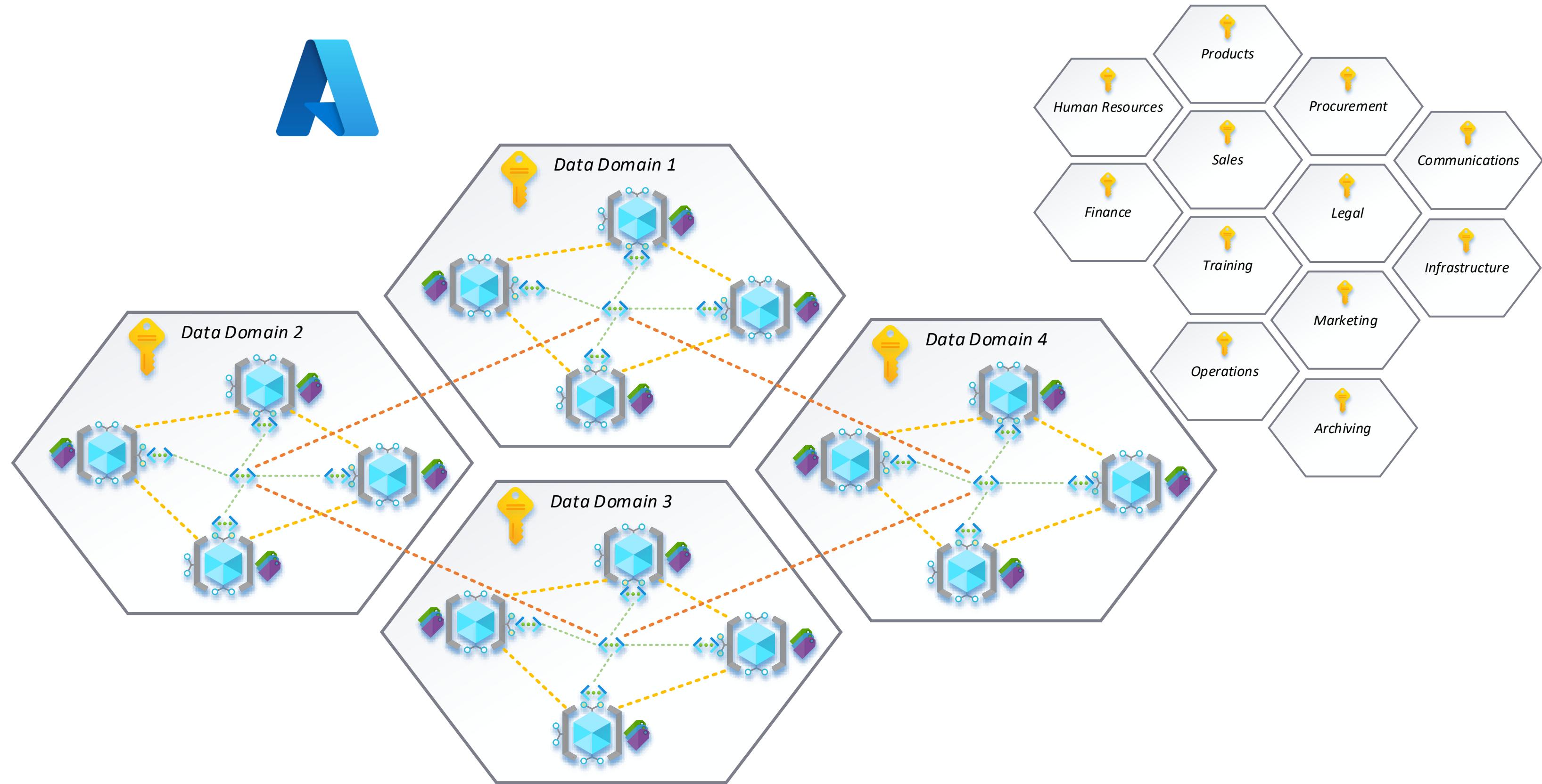


# Data Domains in Azure



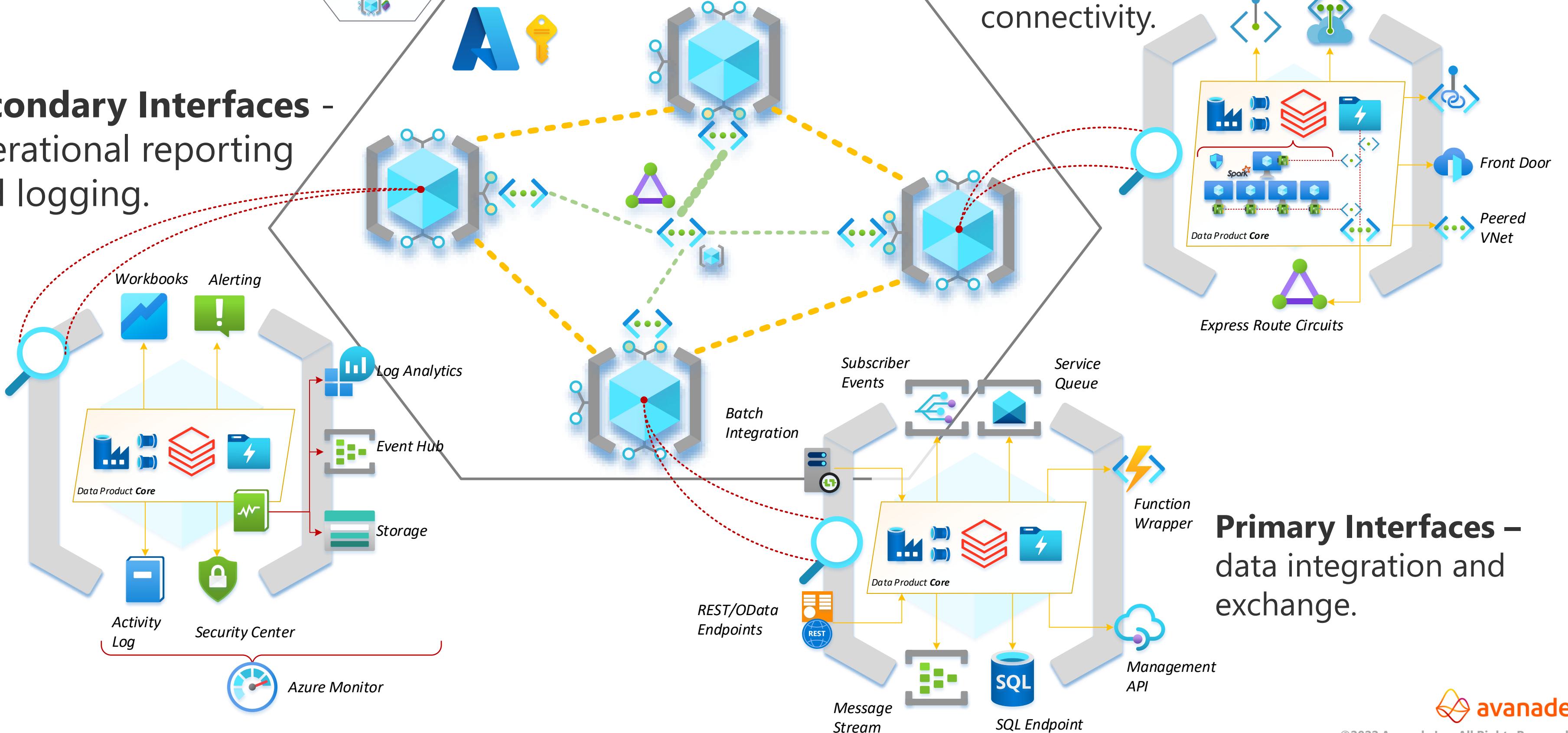


# Data Domains in Azure



# Data Mesh – Products & Domains

**Secondary Interfaces** – operational reporting and logging.



## Tertiary Interfaces

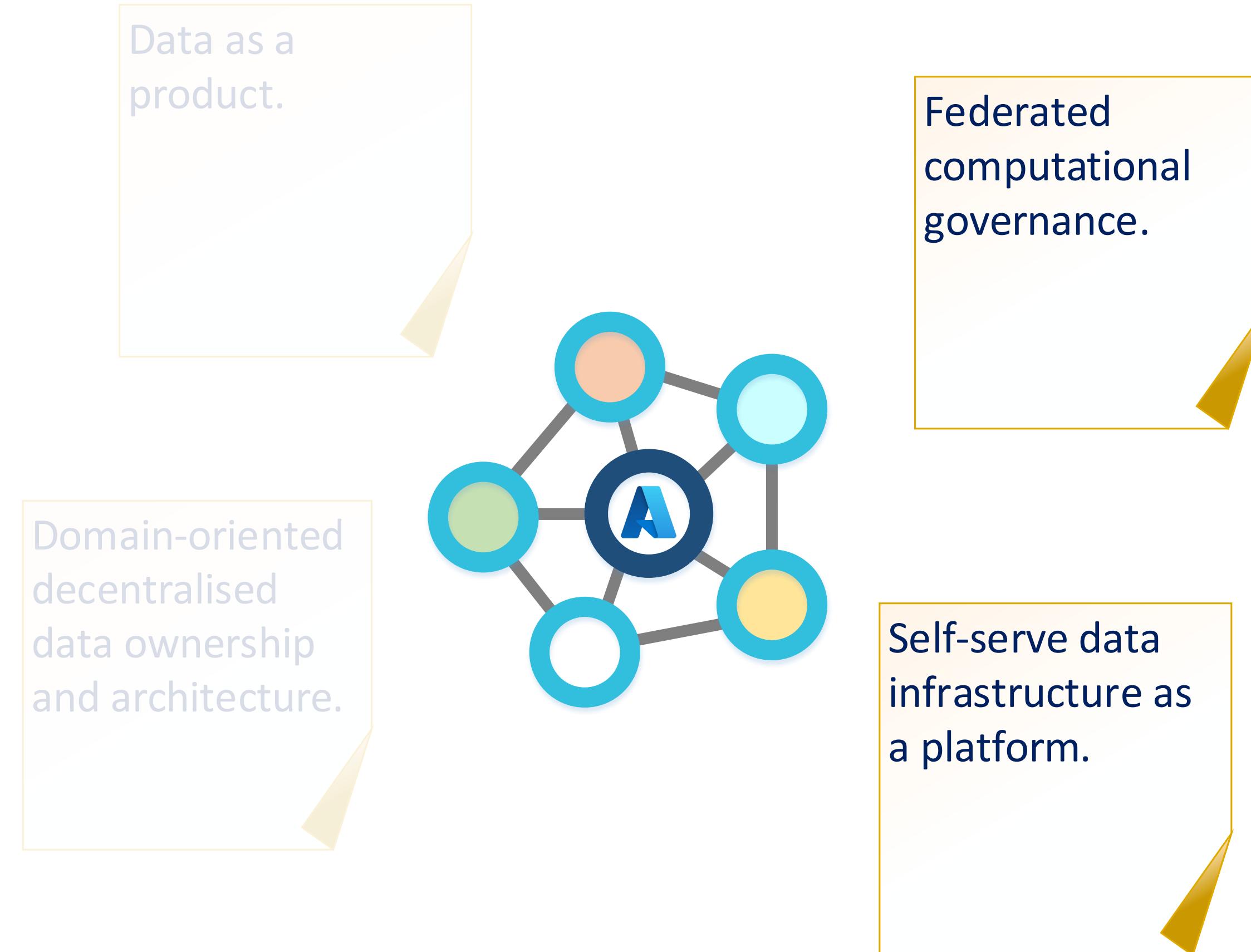
- resource connectivity.



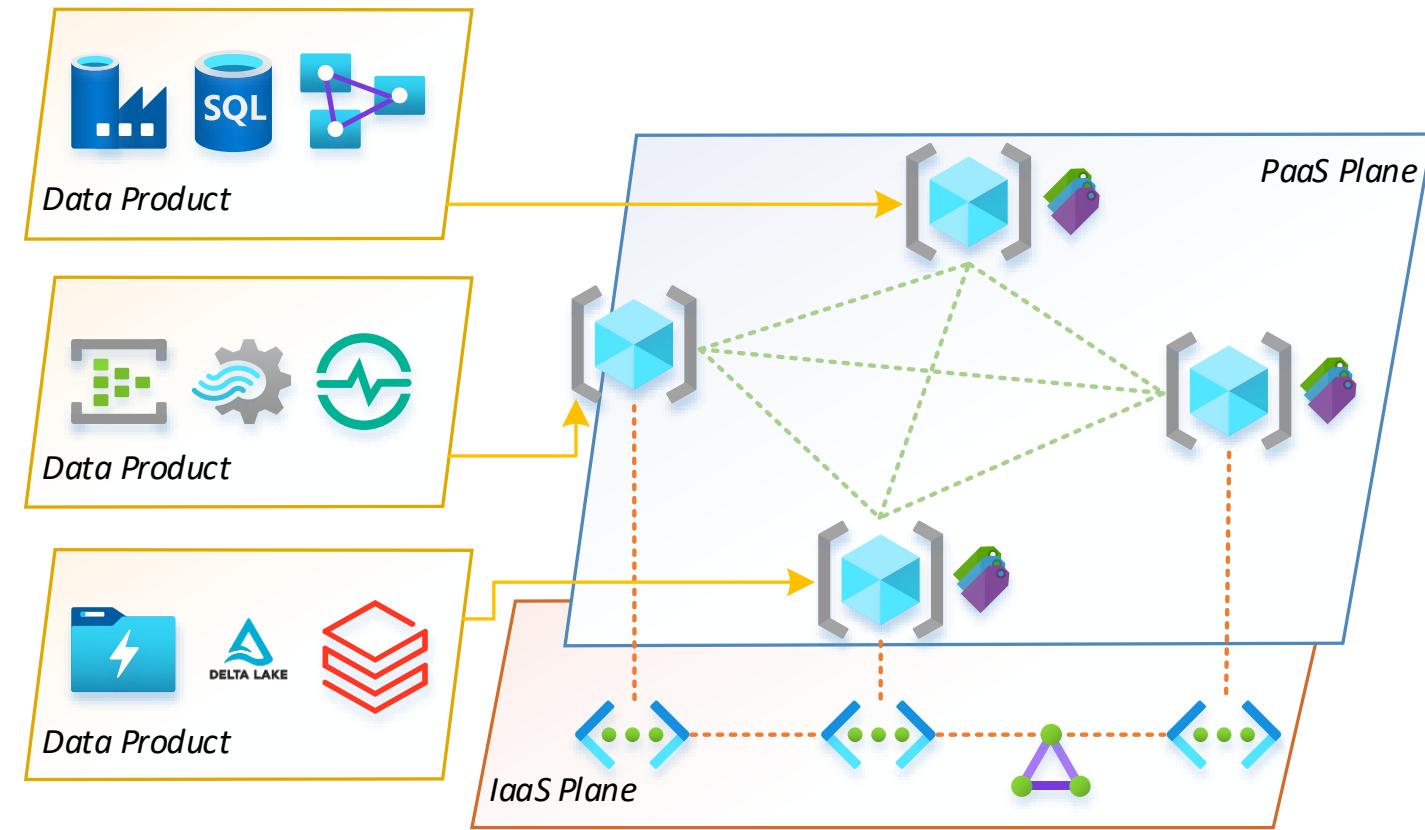
# Data Mesh: *How...* *Governance & Planes*

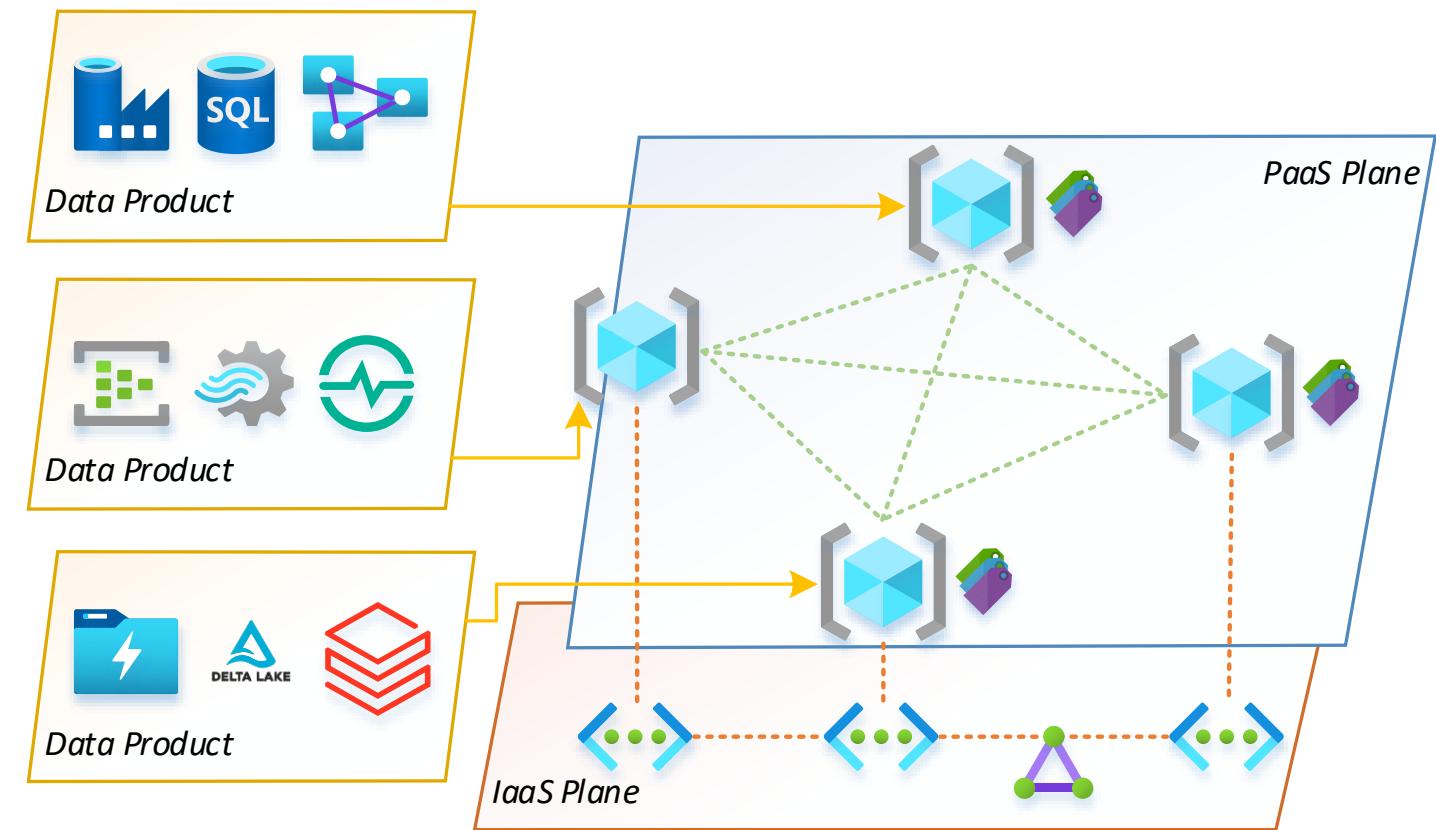
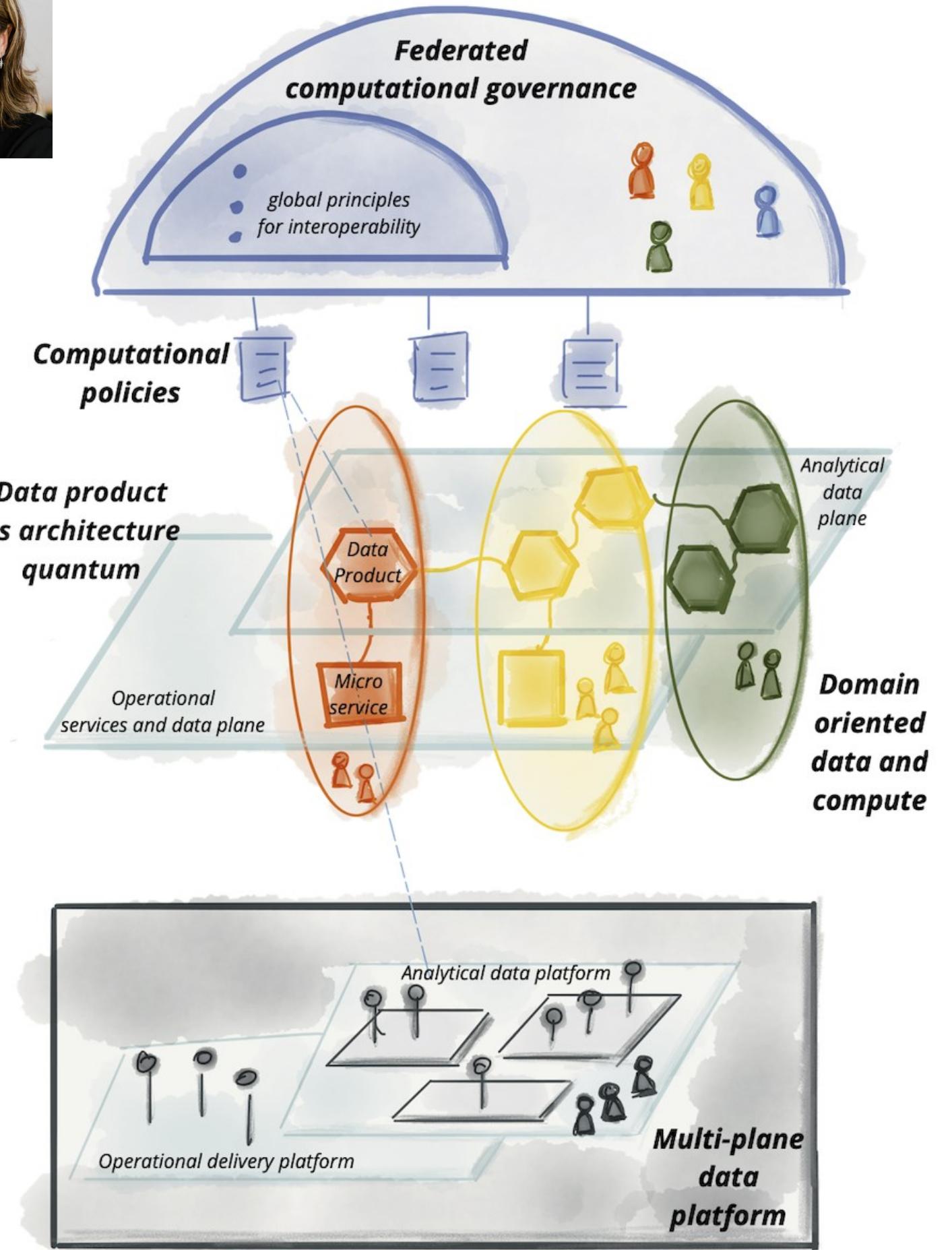


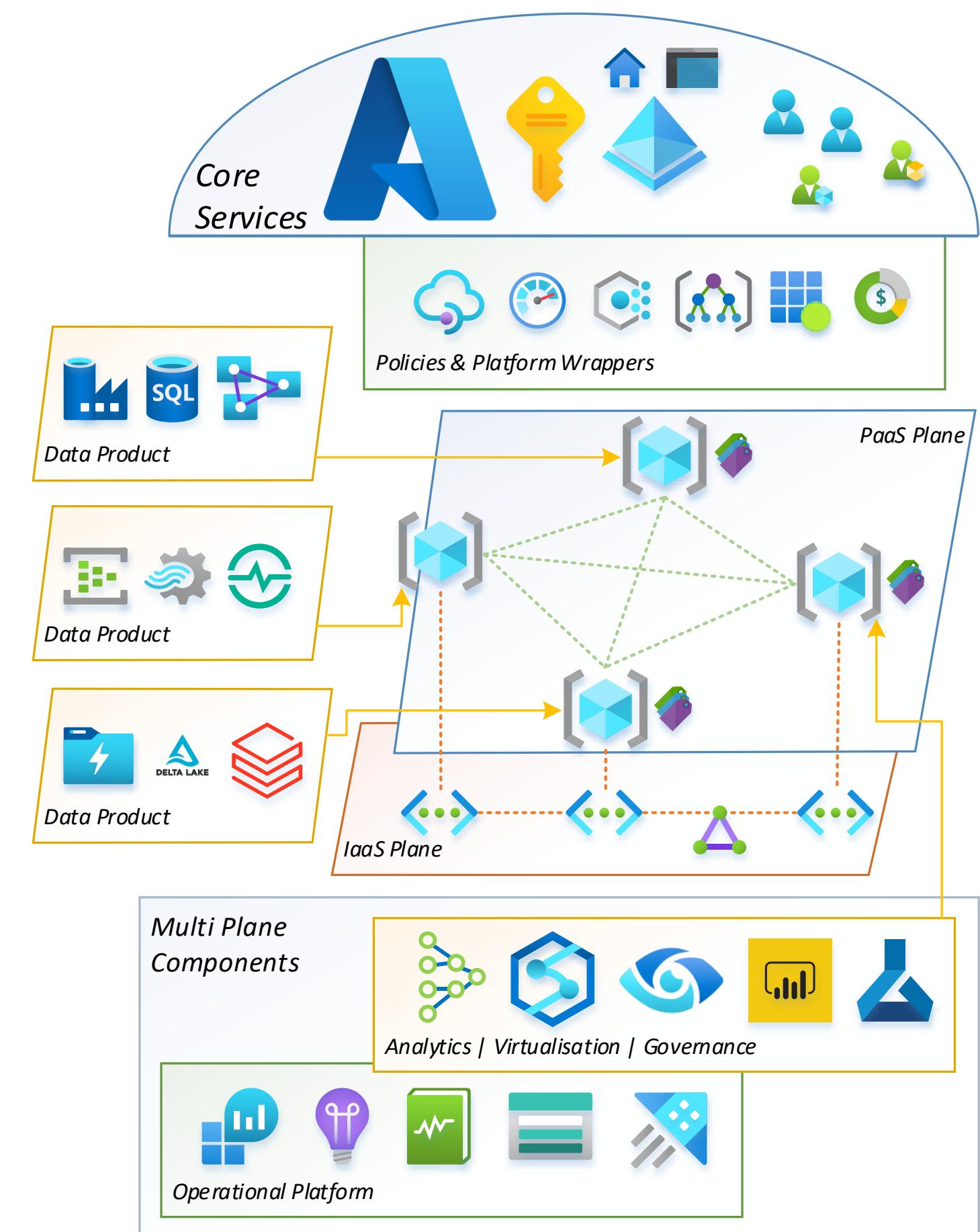
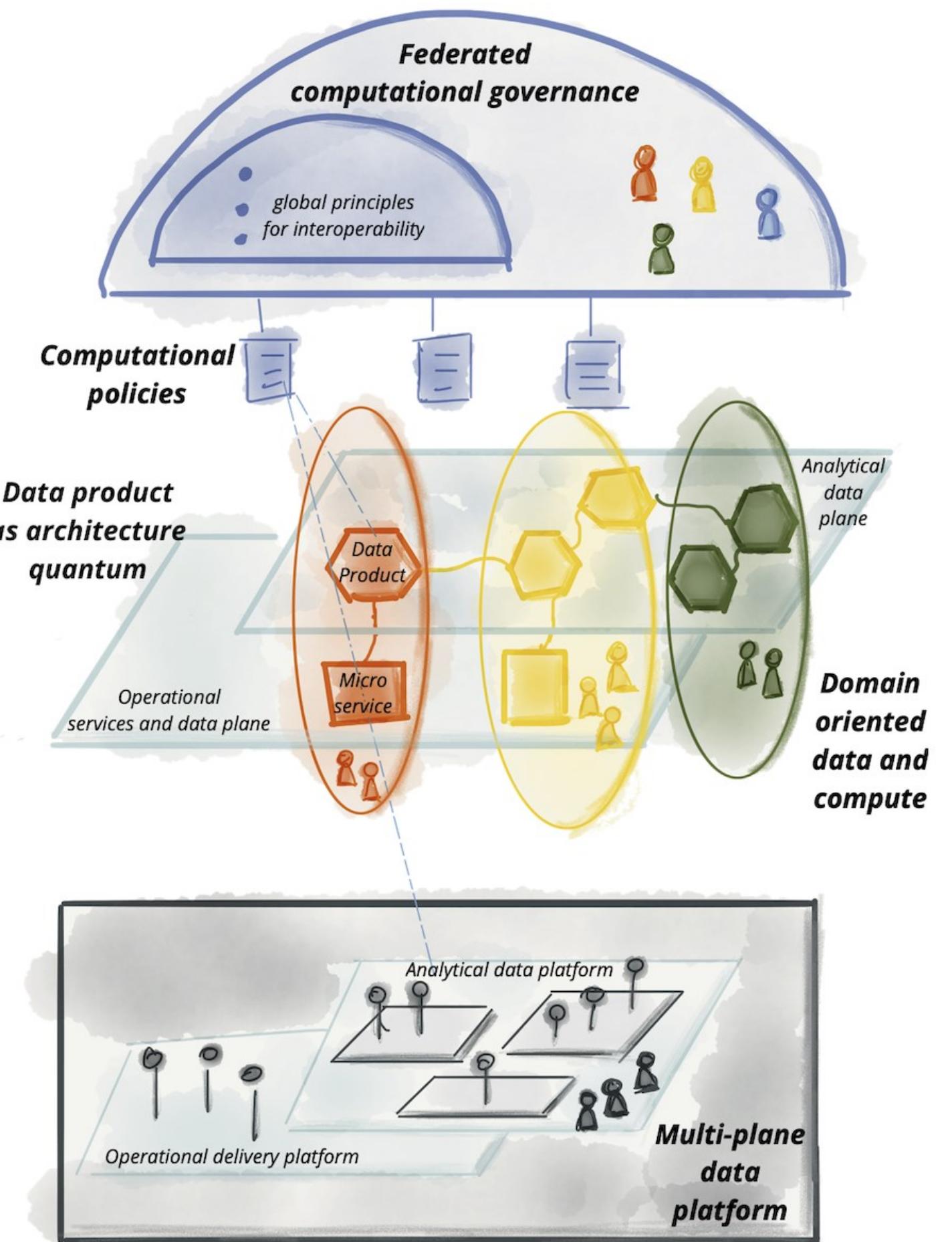
# Data Mesh Principals - Theory vs Practice

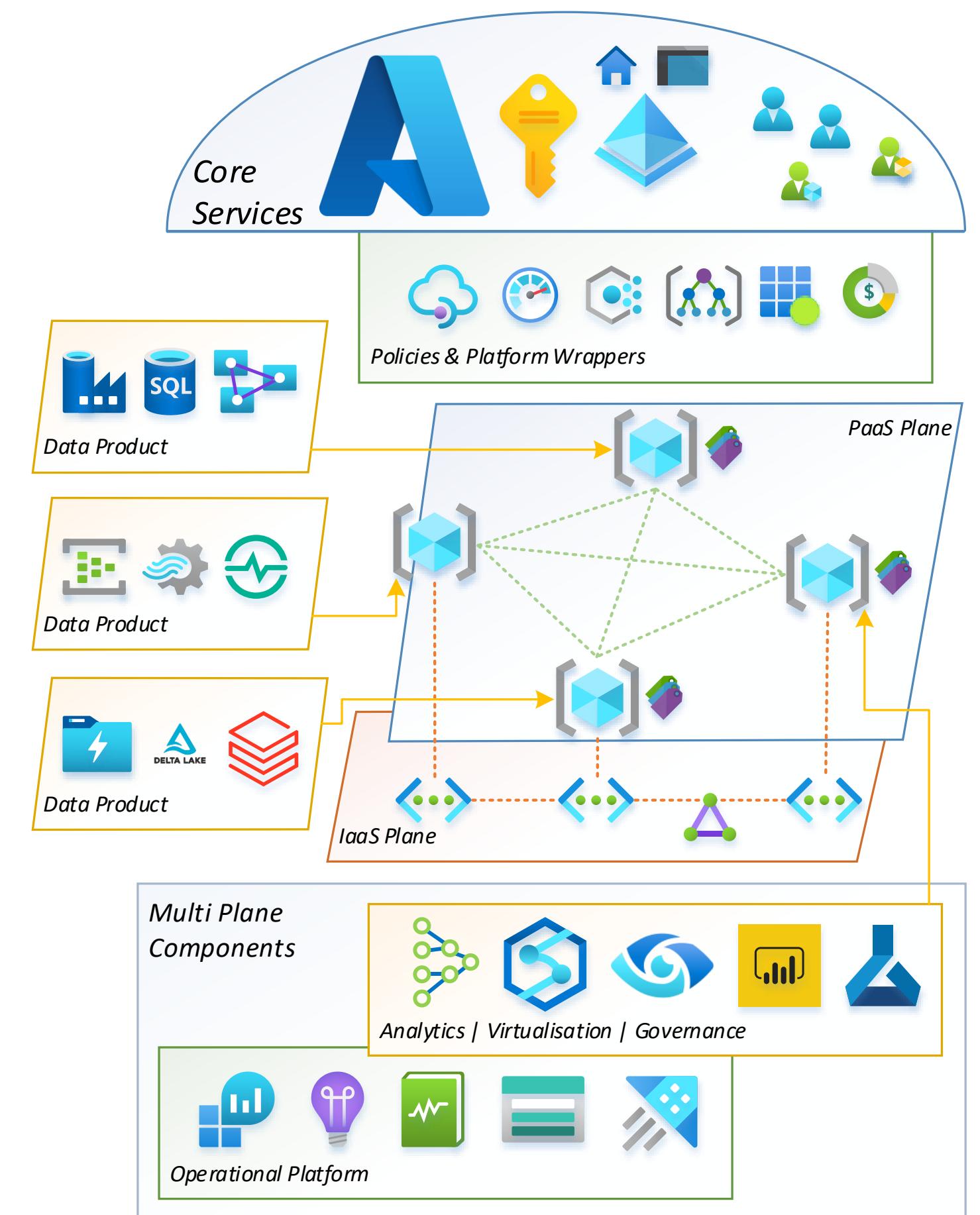


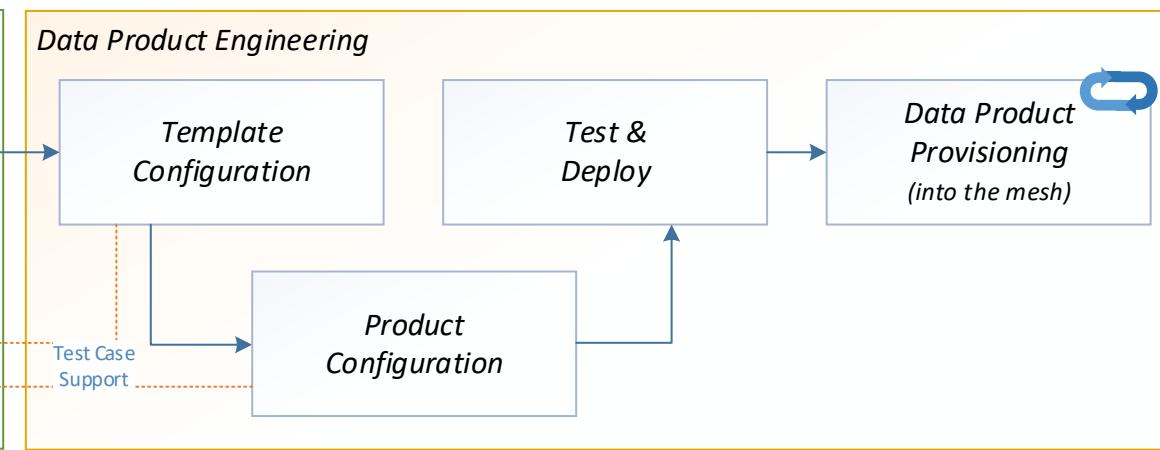
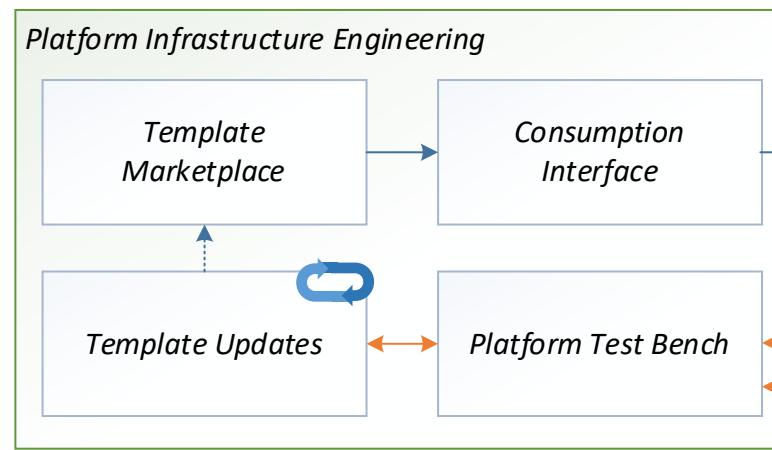
# Data Mesh in Azure



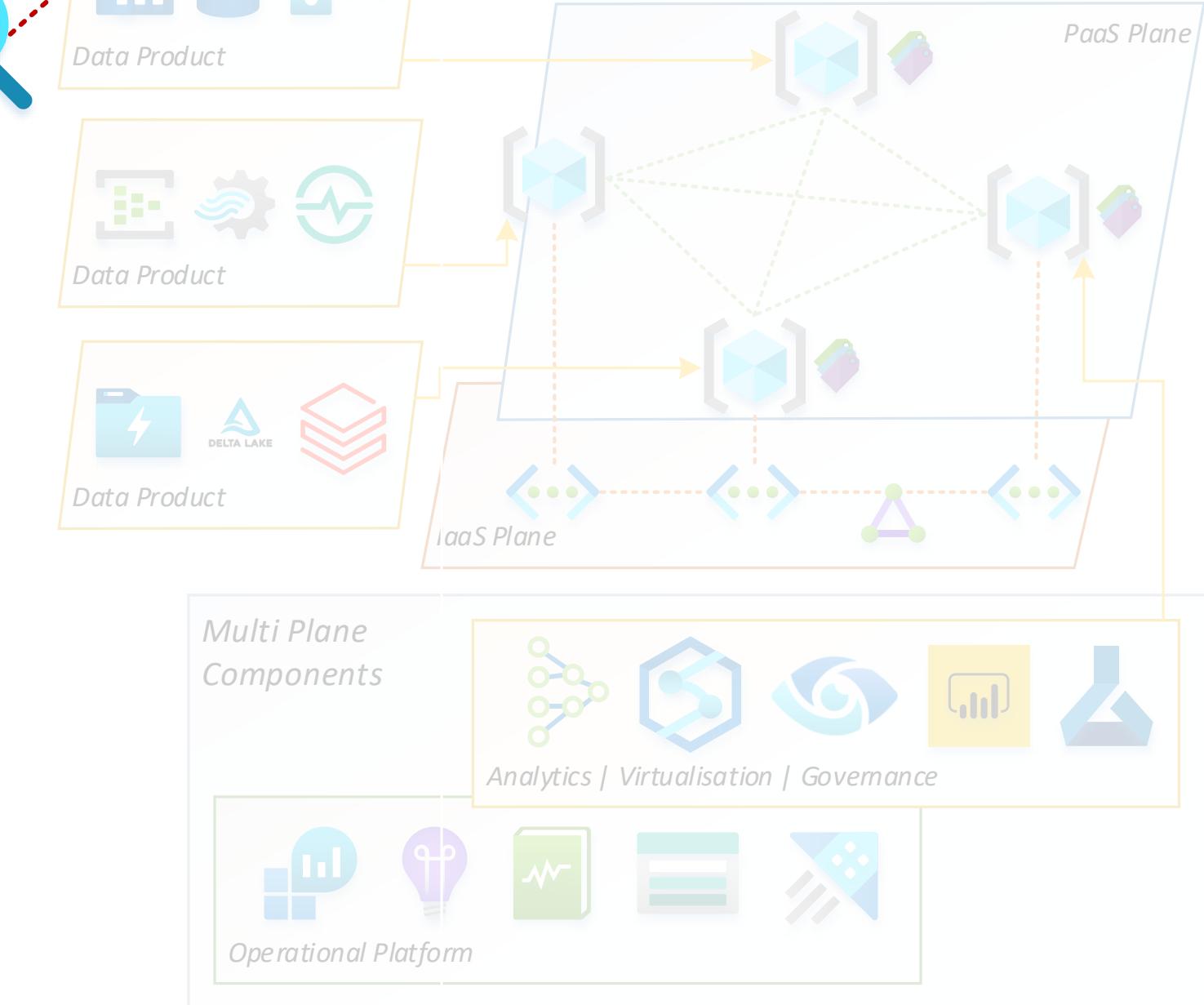
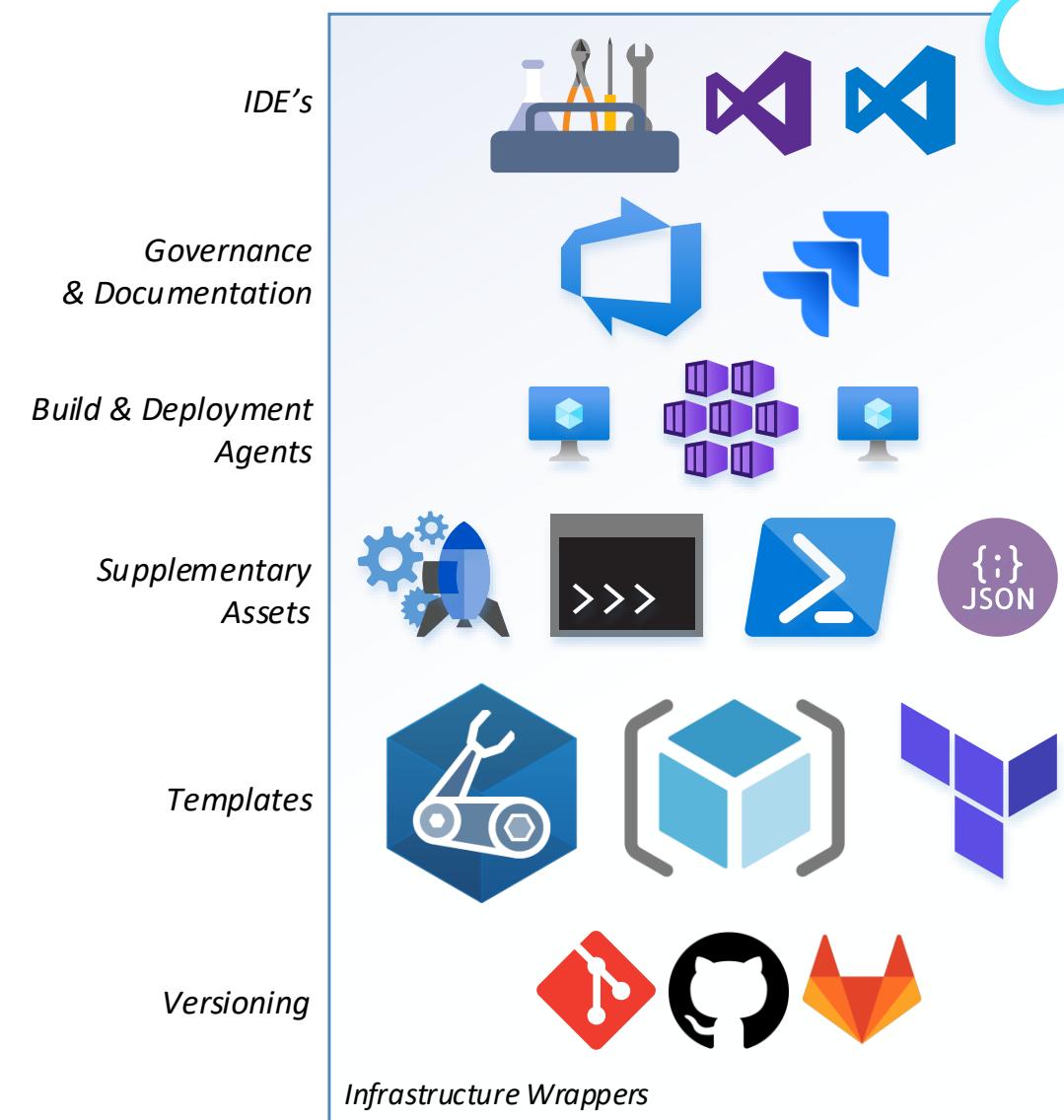


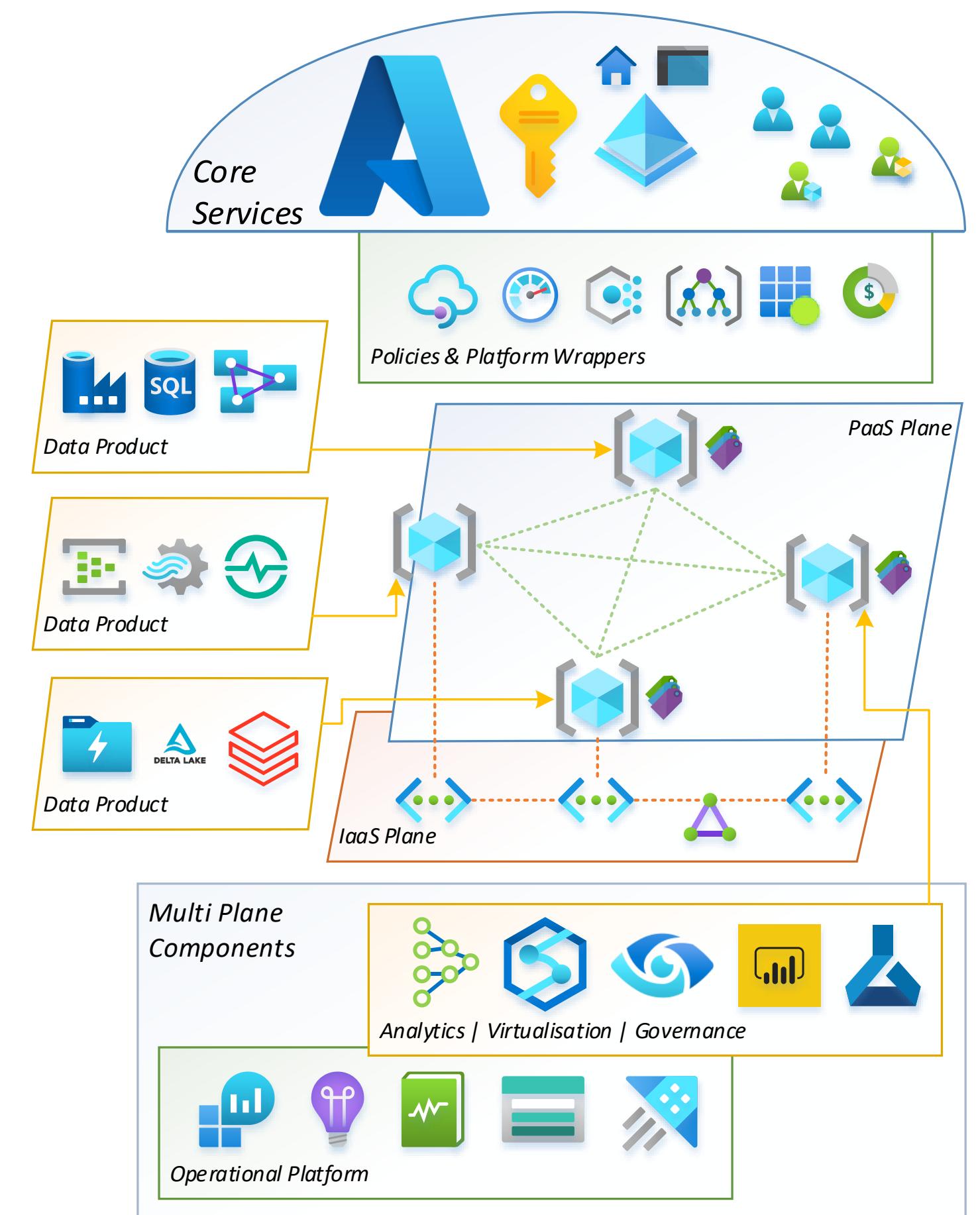






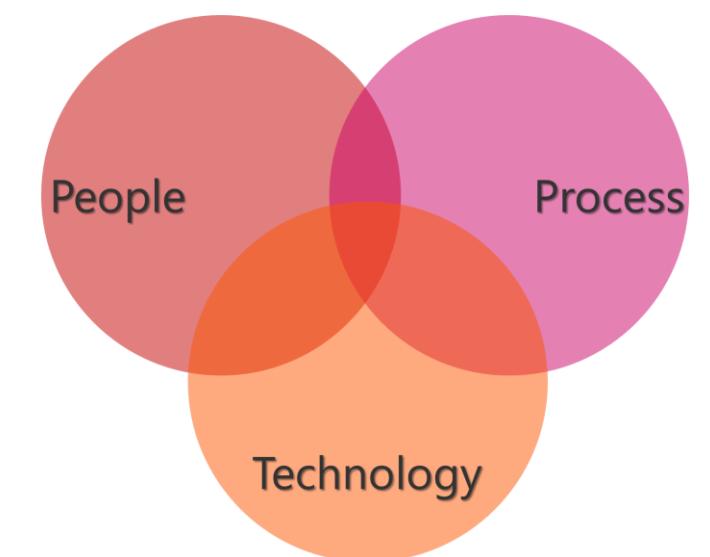
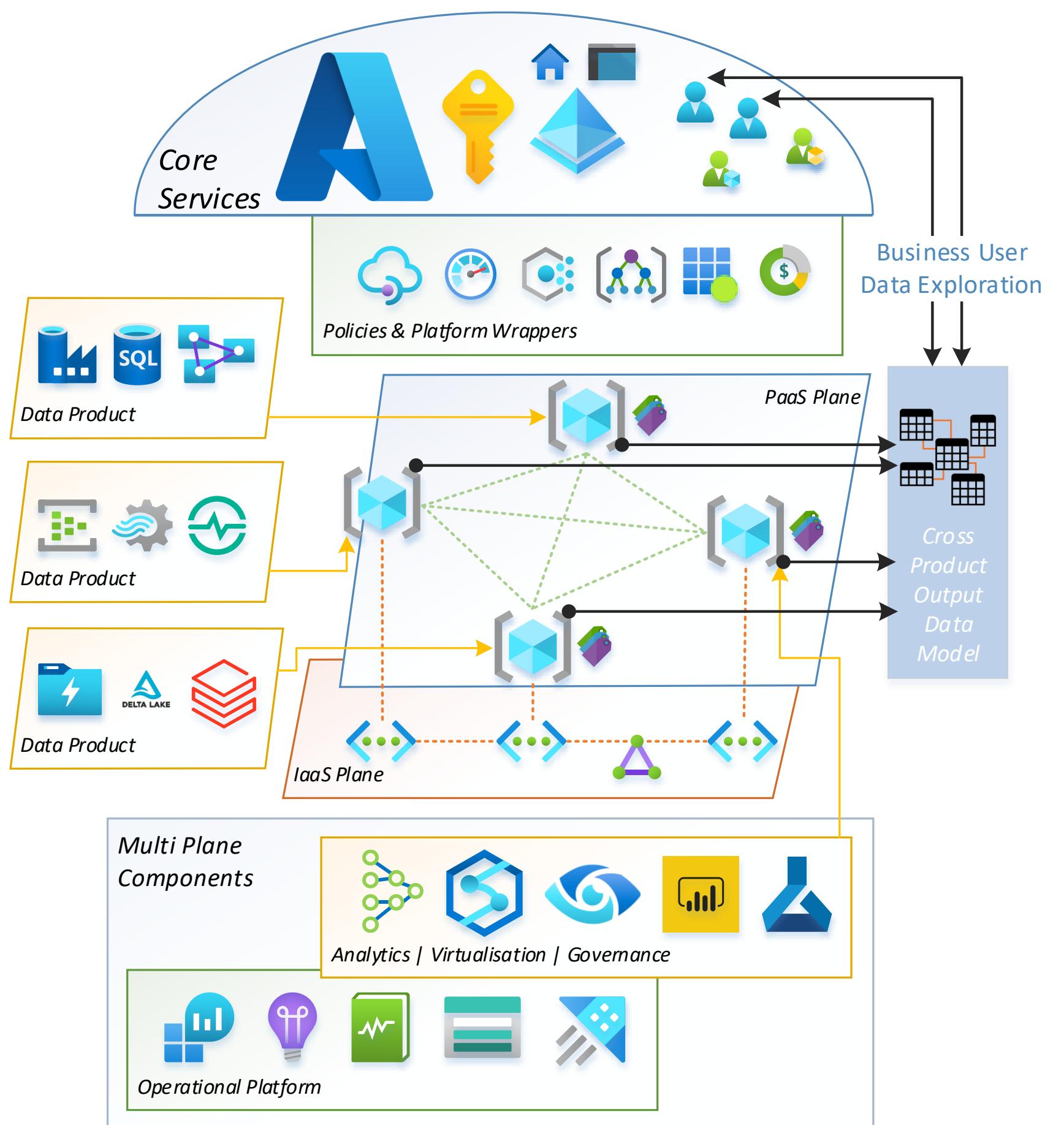
**Self-serve data infrastructure as a platform.**

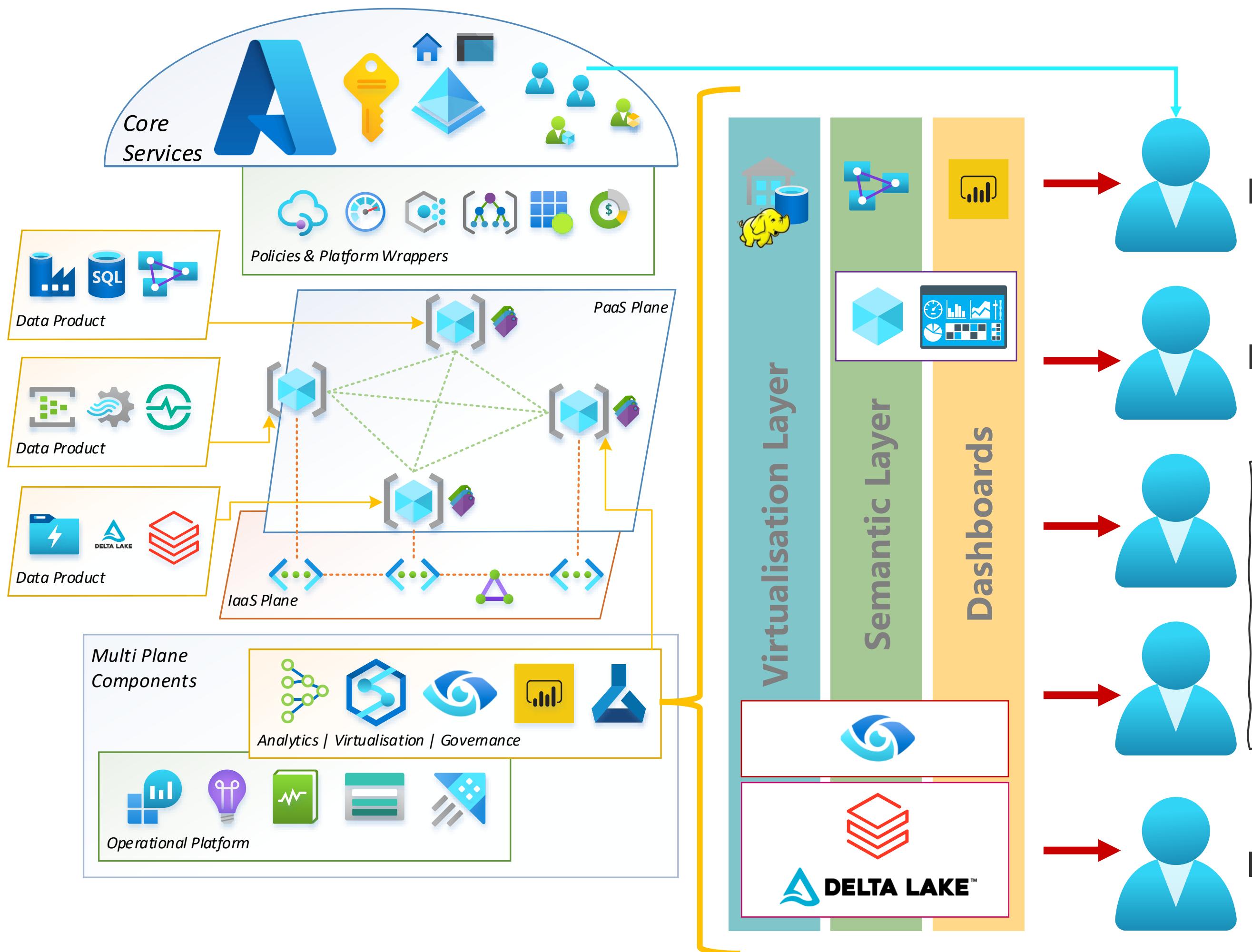






## Federated computational governance.



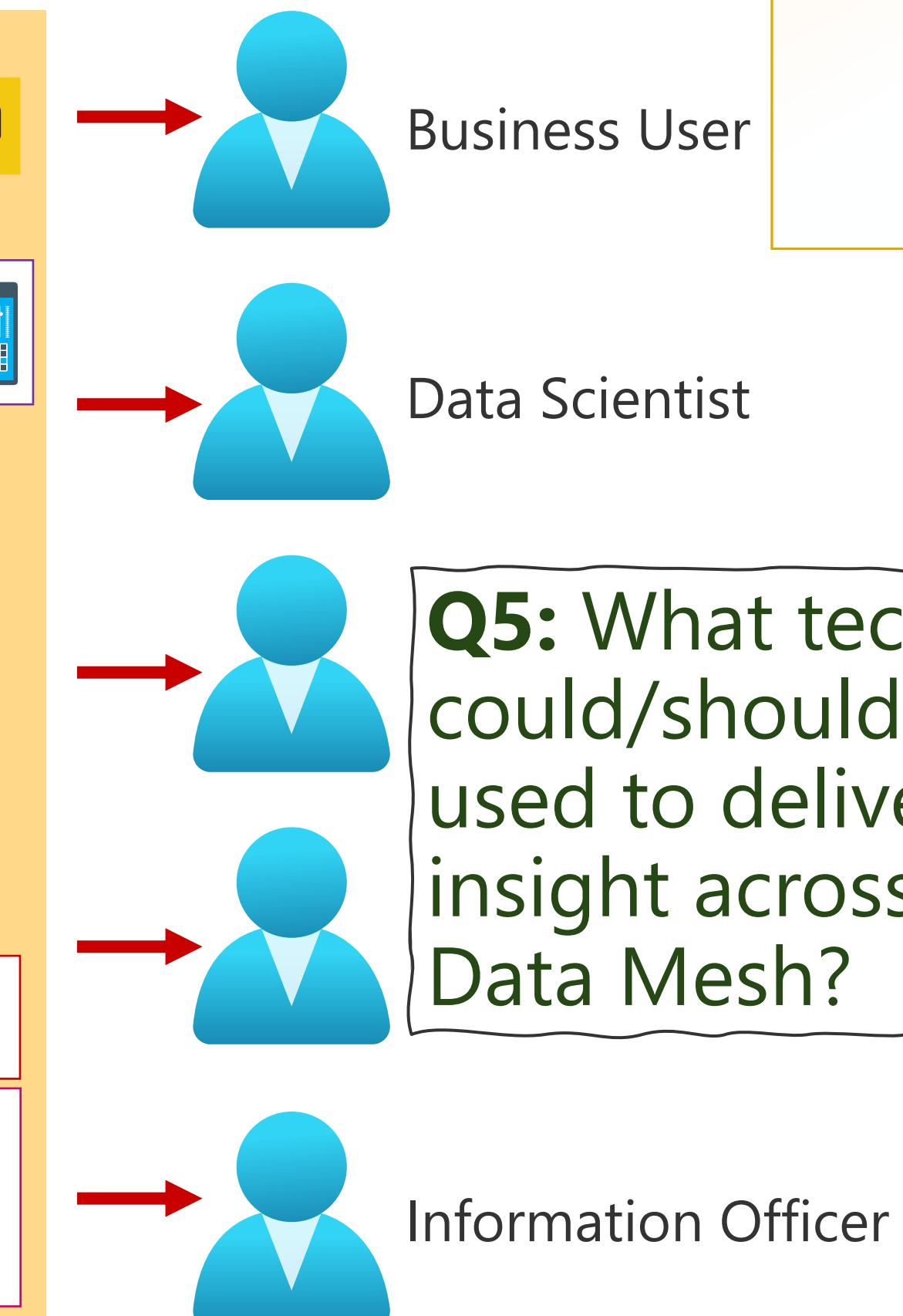
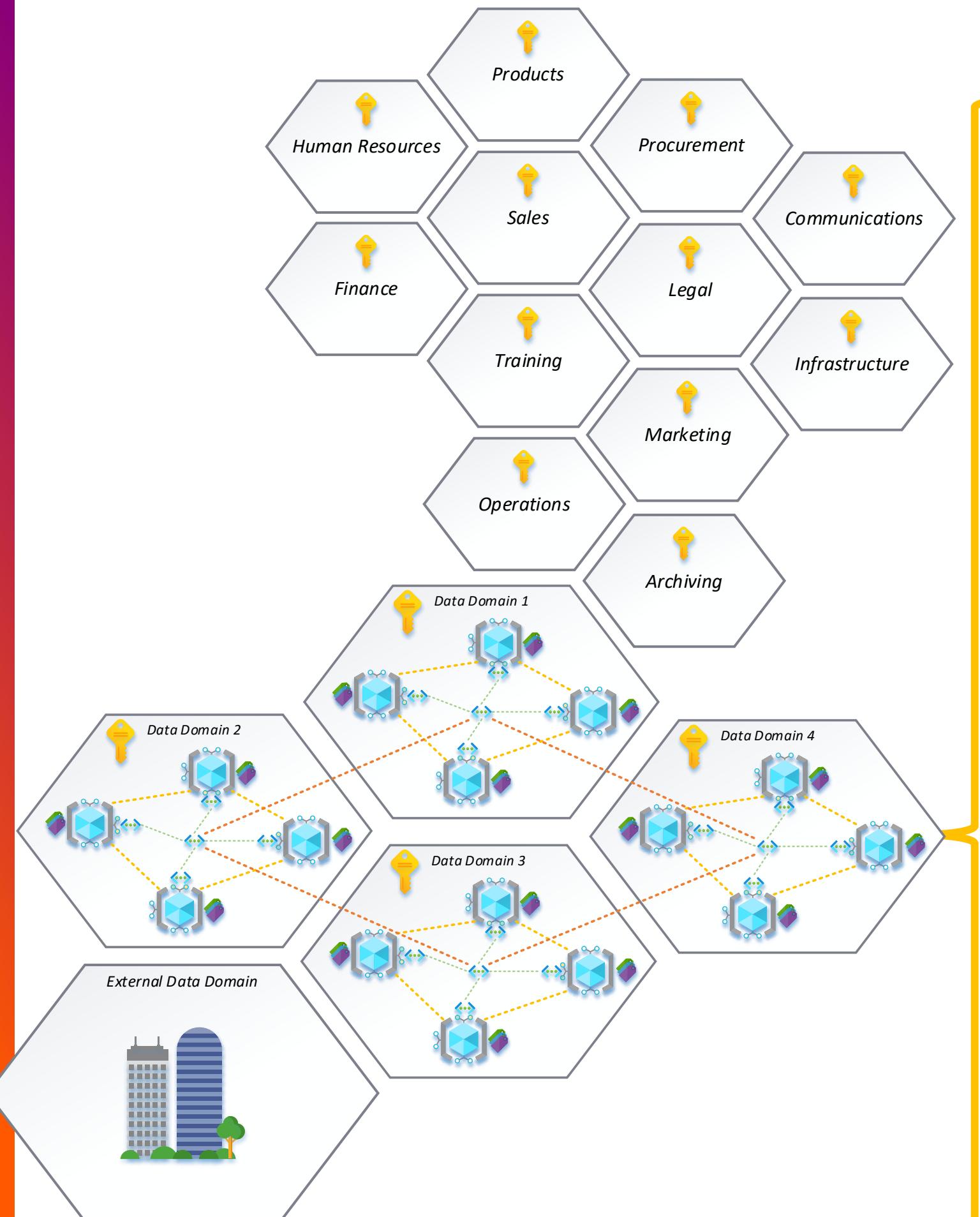


Federated computational governance.

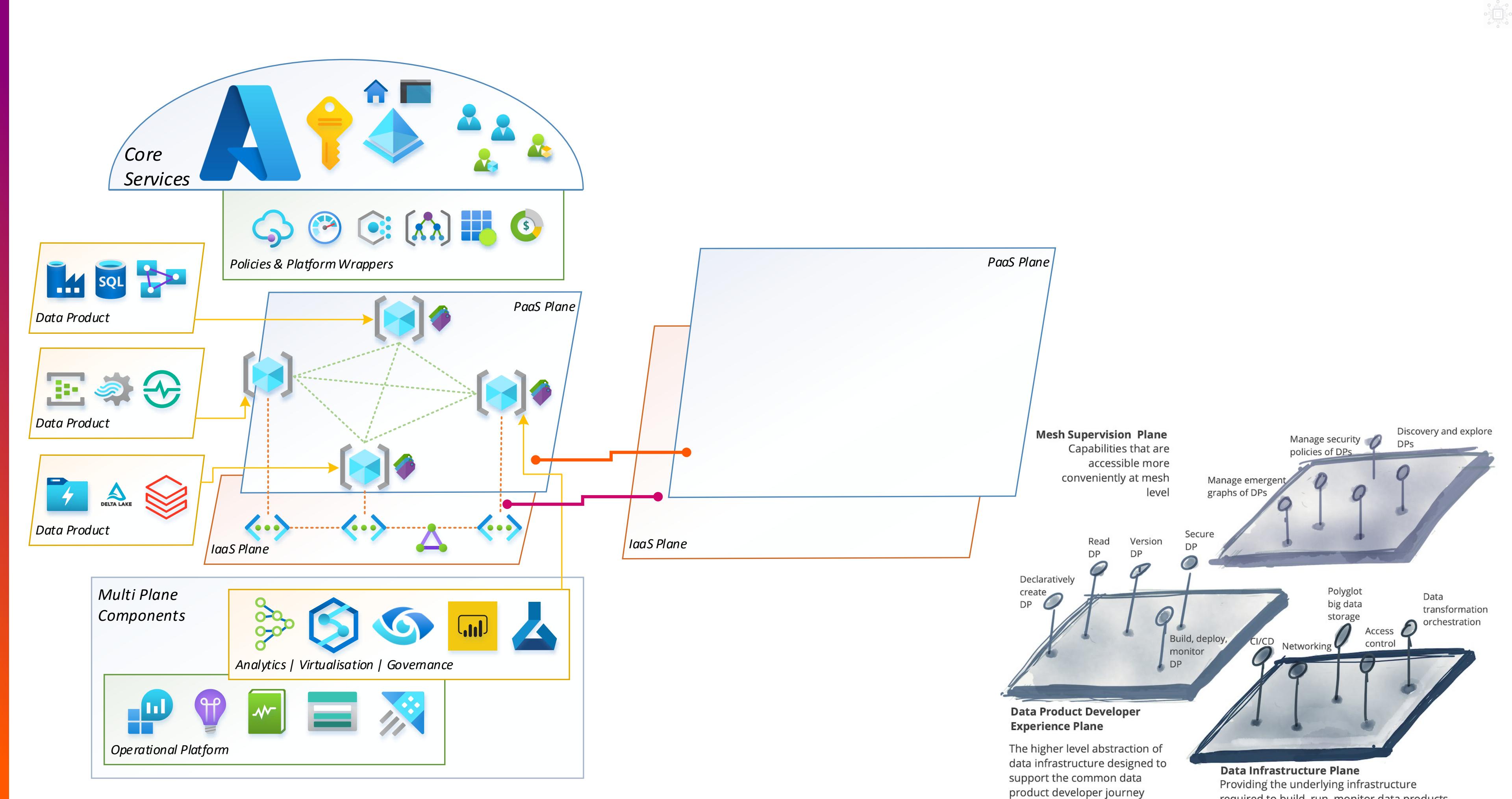
**Q5:** What tech could/should be used to deliver insight across the Data Mesh?

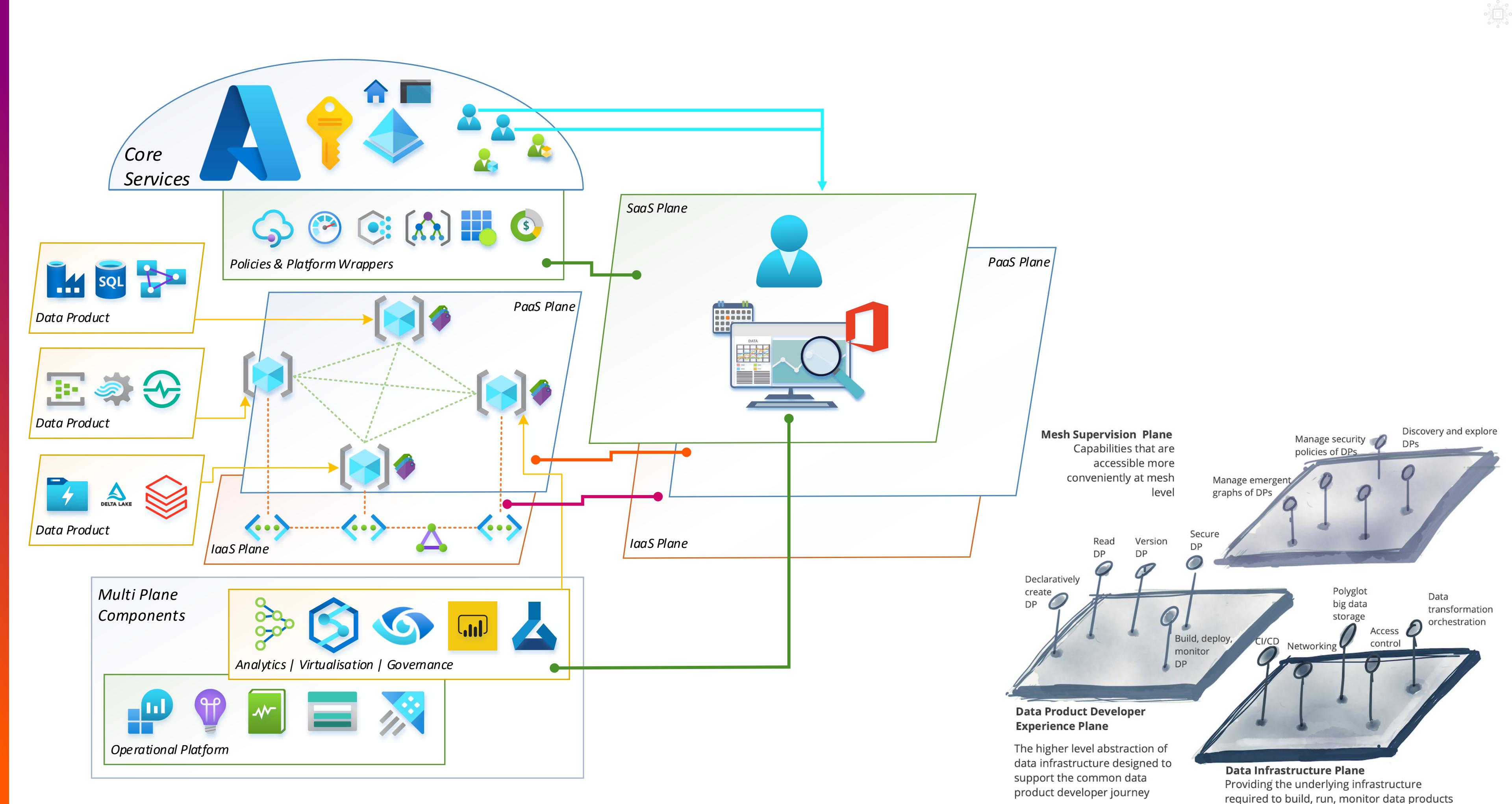


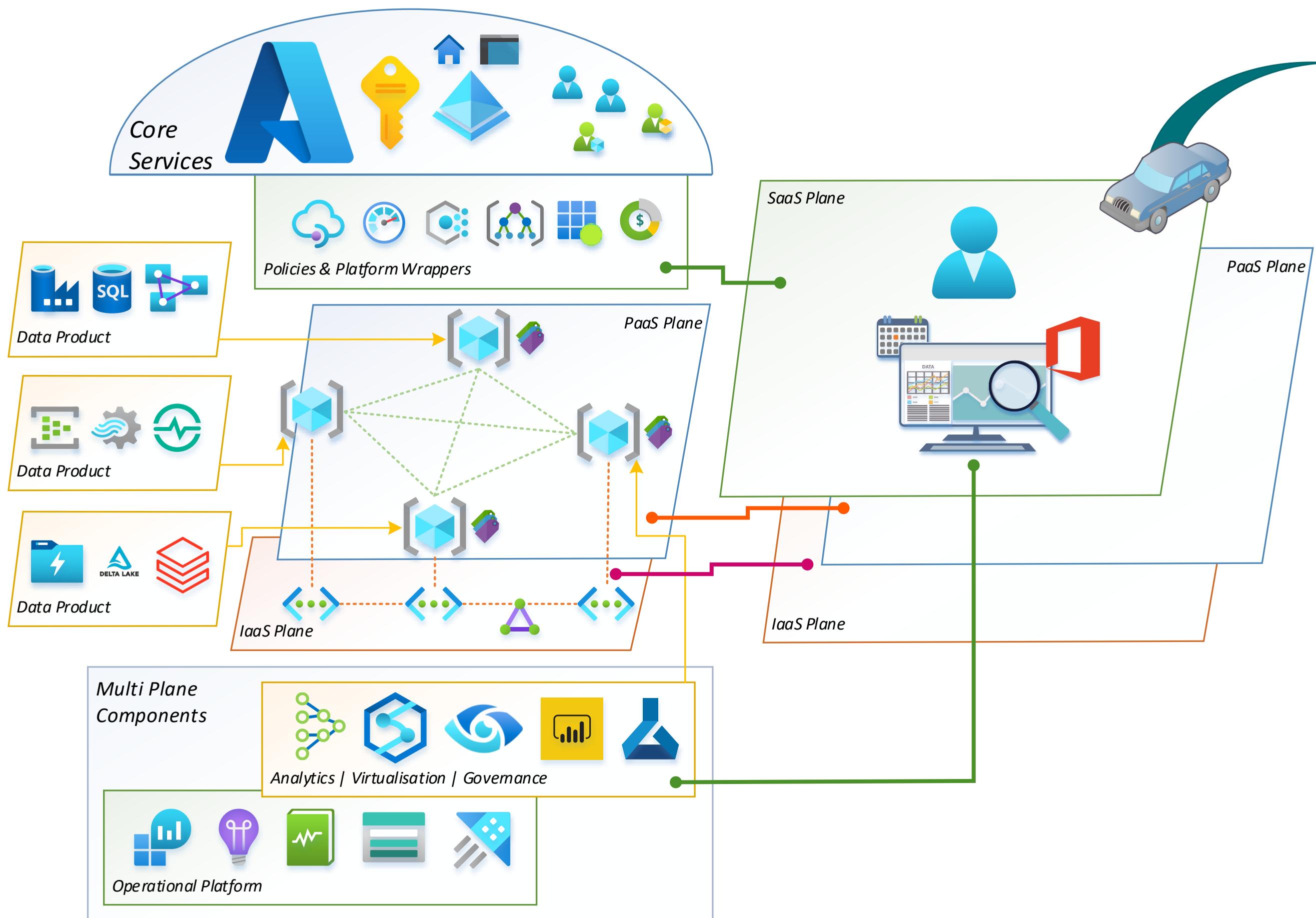
Federated computational governance.



**Q5: What tech could/should be used to deliver insight across the Data Mesh?**



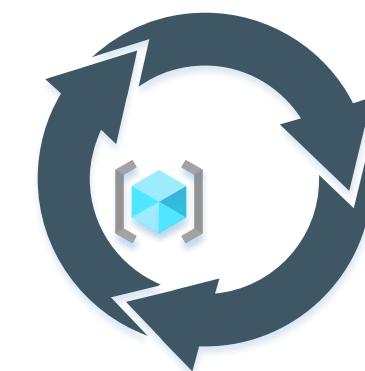




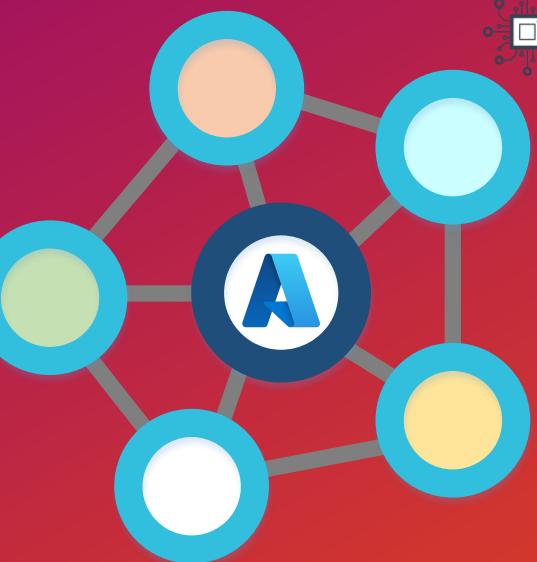
A Mesh Asset Marketplace



A Self-Service Analytics Canvas



Data Product Onboarding Framework



# Conclusions & Next Steps



# Data Mesh Principals - Theory vs Practice

## Conclusions & Next Steps

**Q1:** Should a data product handle both transactional/operational and analytical data?

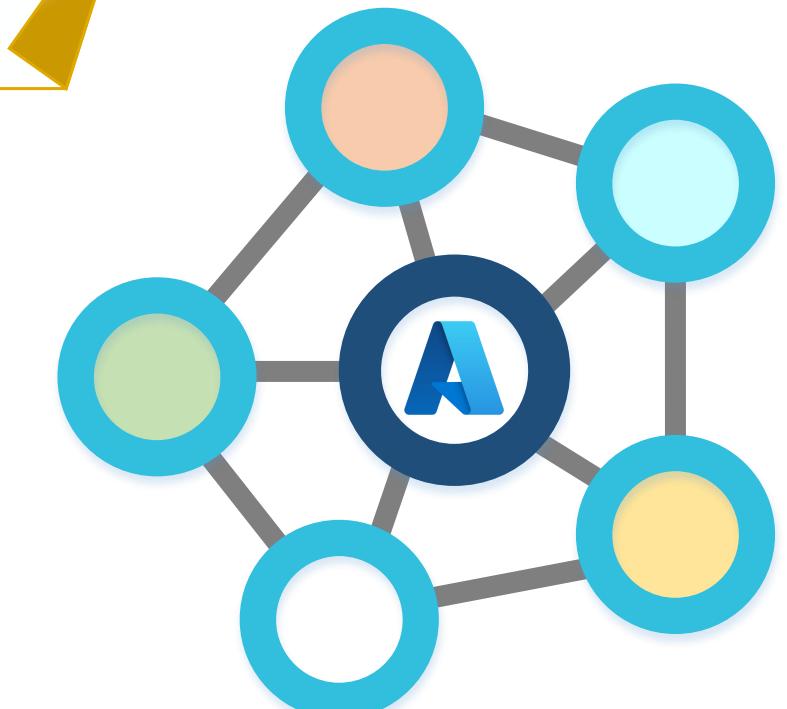
Data as a product.

**Q2:** When does a data solution become a Data Mesh?

Domain-oriented decentralised data ownership and architecture.

**Q6:** Is every Data Mesh implementation the same?

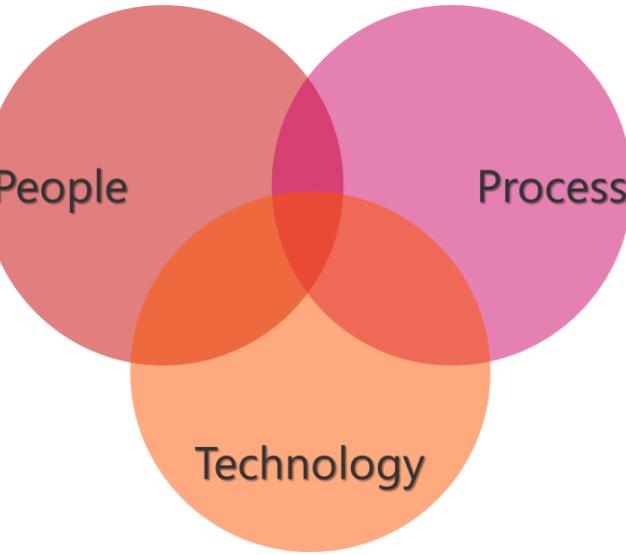
Self-serve data infrastructure as a platform.



**Q5:** What tech could/should be used to deliver insight across the Data Mesh?

Federated computational governance.

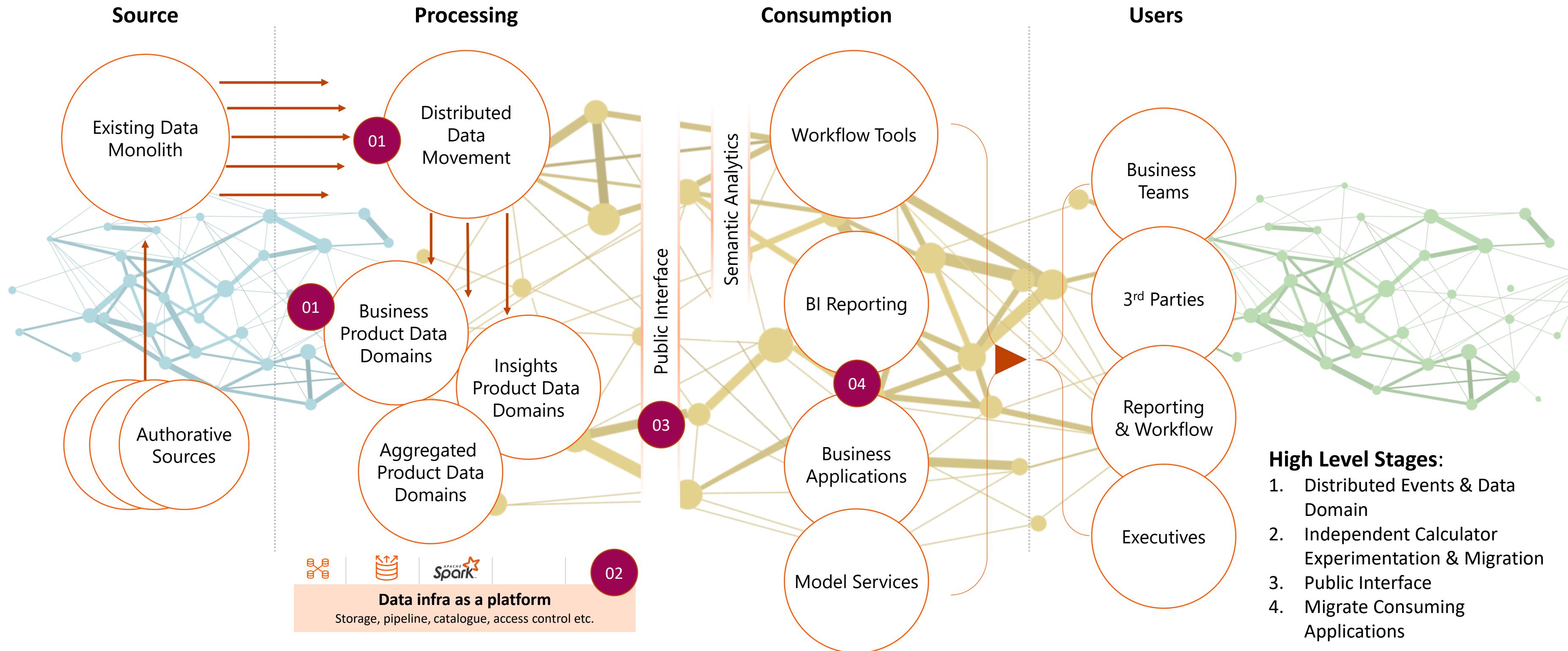
**Q:** What next?....



**Q3:** What makes minimum viable Data Mesh contain?

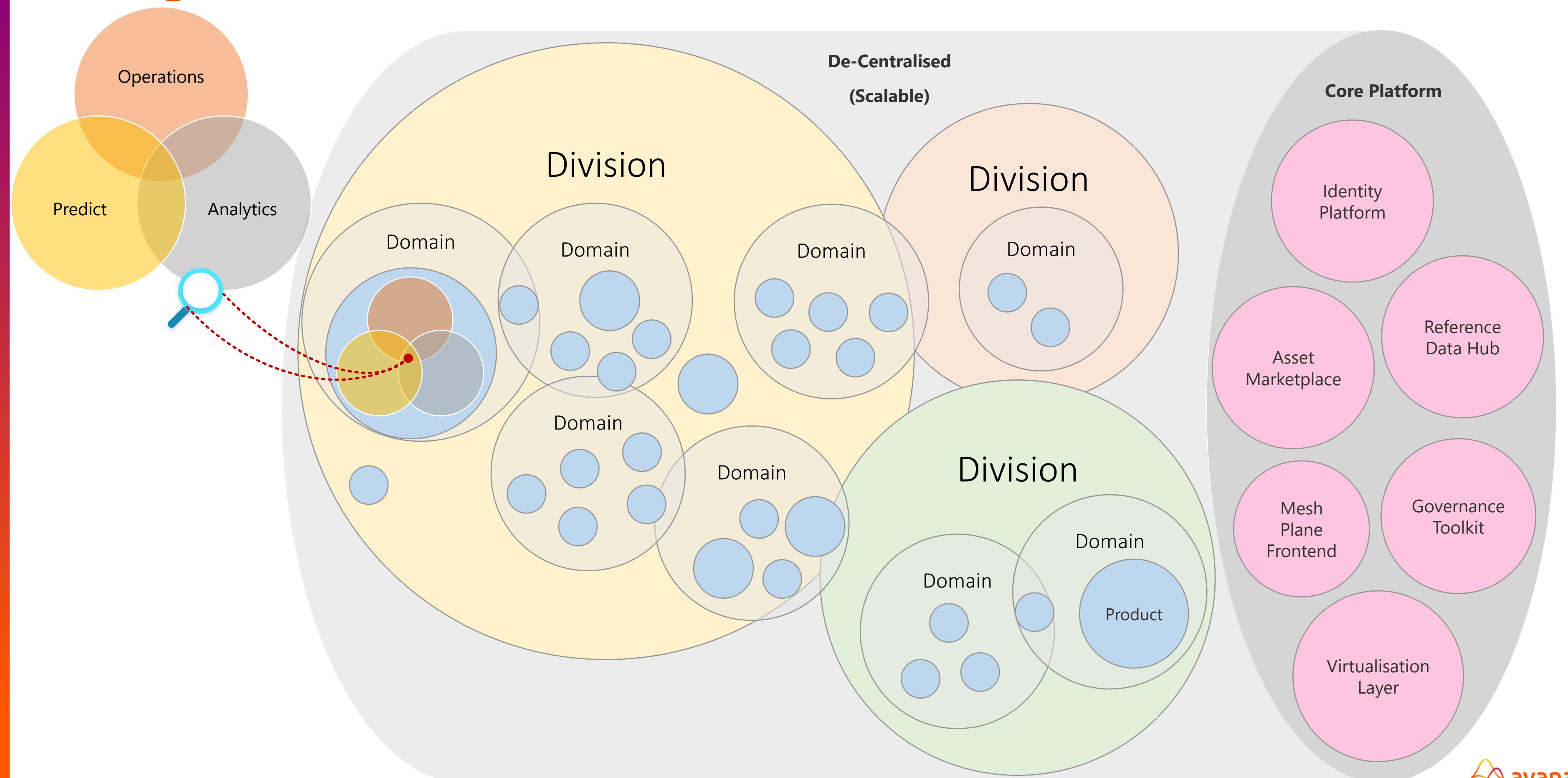


# Monolith Transition to Data Mesh



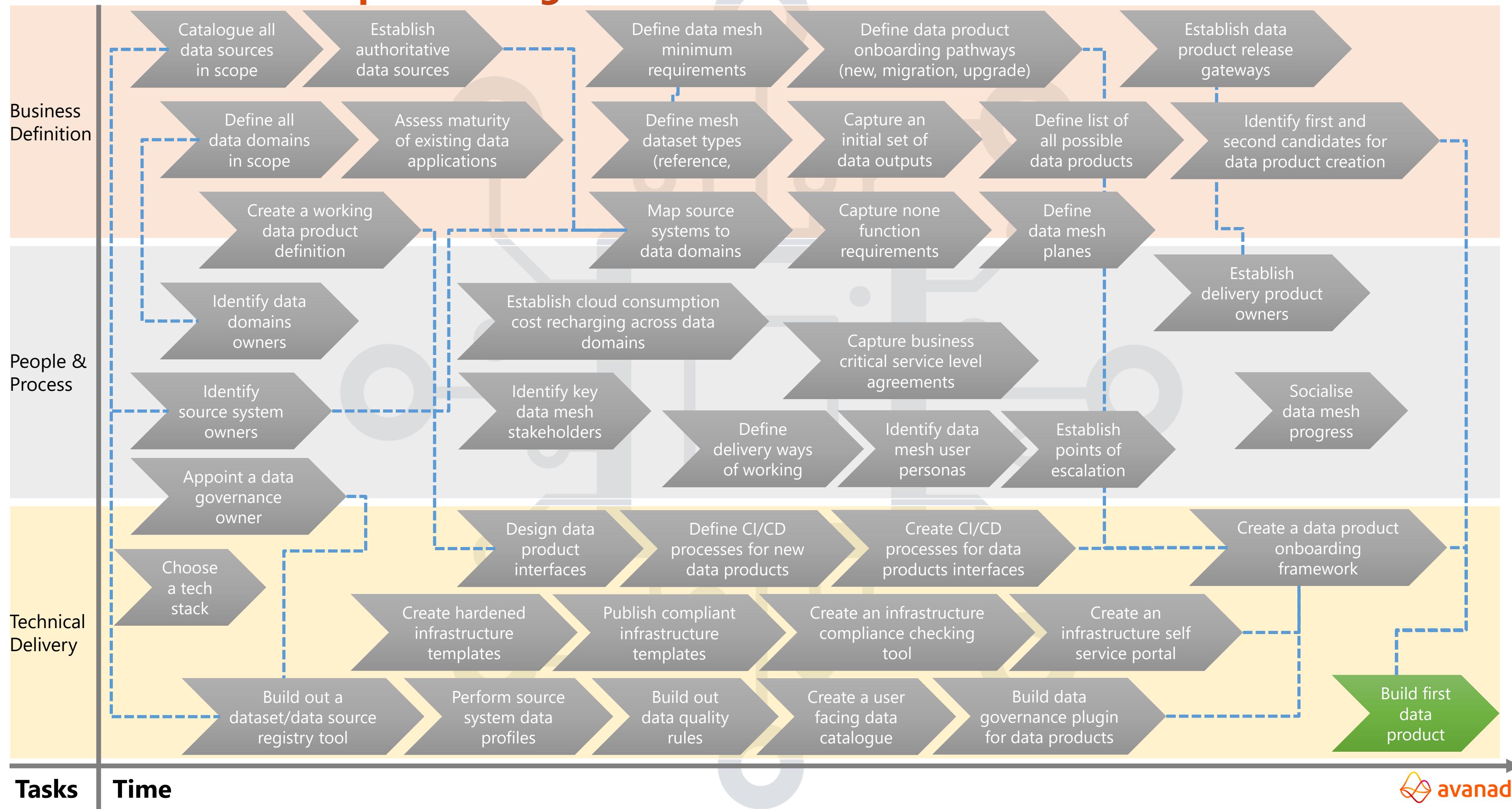


# A Logical Data Mesh Architecture

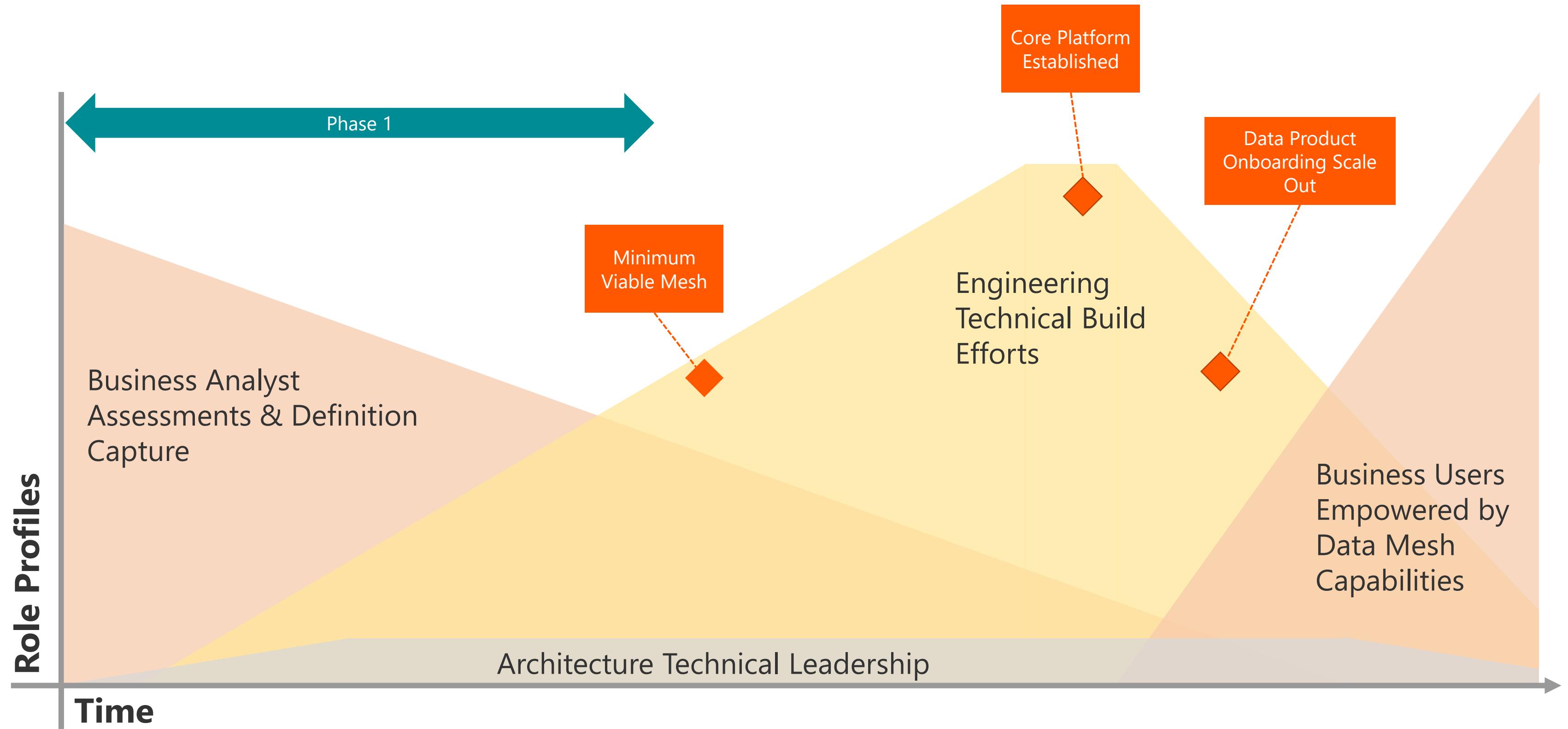


# Data Mesh Roadmap - Starting Point

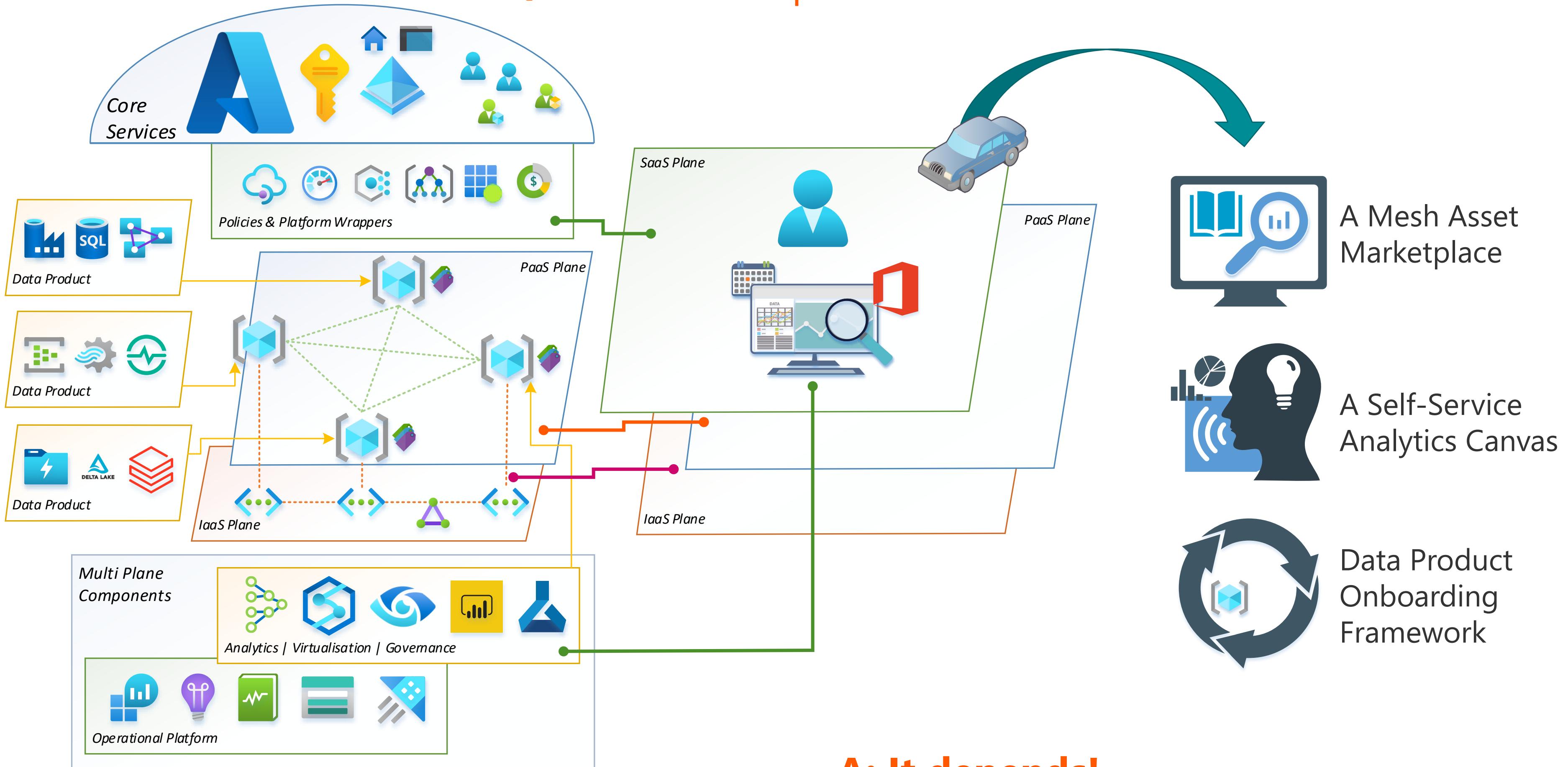
<https://mrpaulandrew.com/tag/data-mesh-vs-azure/>

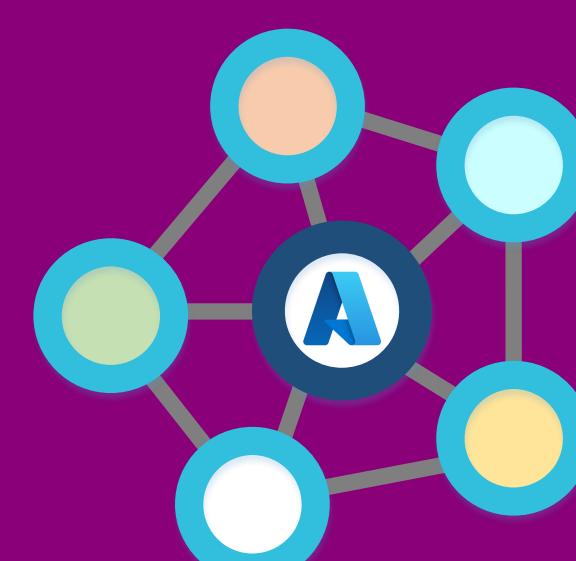


# Mesh Build Team Profile View



# Q: Should we implement a data mesh architecture like this?





# Thank you for listening.





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Data Platform MVP | Data Relay Director

