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# DATA MESH OR DATA MESS

Introduction and pitfalls



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# ALL ABOUT ME

 **ust-oldfield**

 **@UstDoesTech**



Principal Advanced Analytics Consultant specialising in Data Engineering, Analytics and Strategy.

Over 10 years' experience in BI and Data Engineering, leading and creating data teams and functions.

Data and Tech enthusiast – looking to make data accessible to all





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# WHY DO WE NEED MESH?



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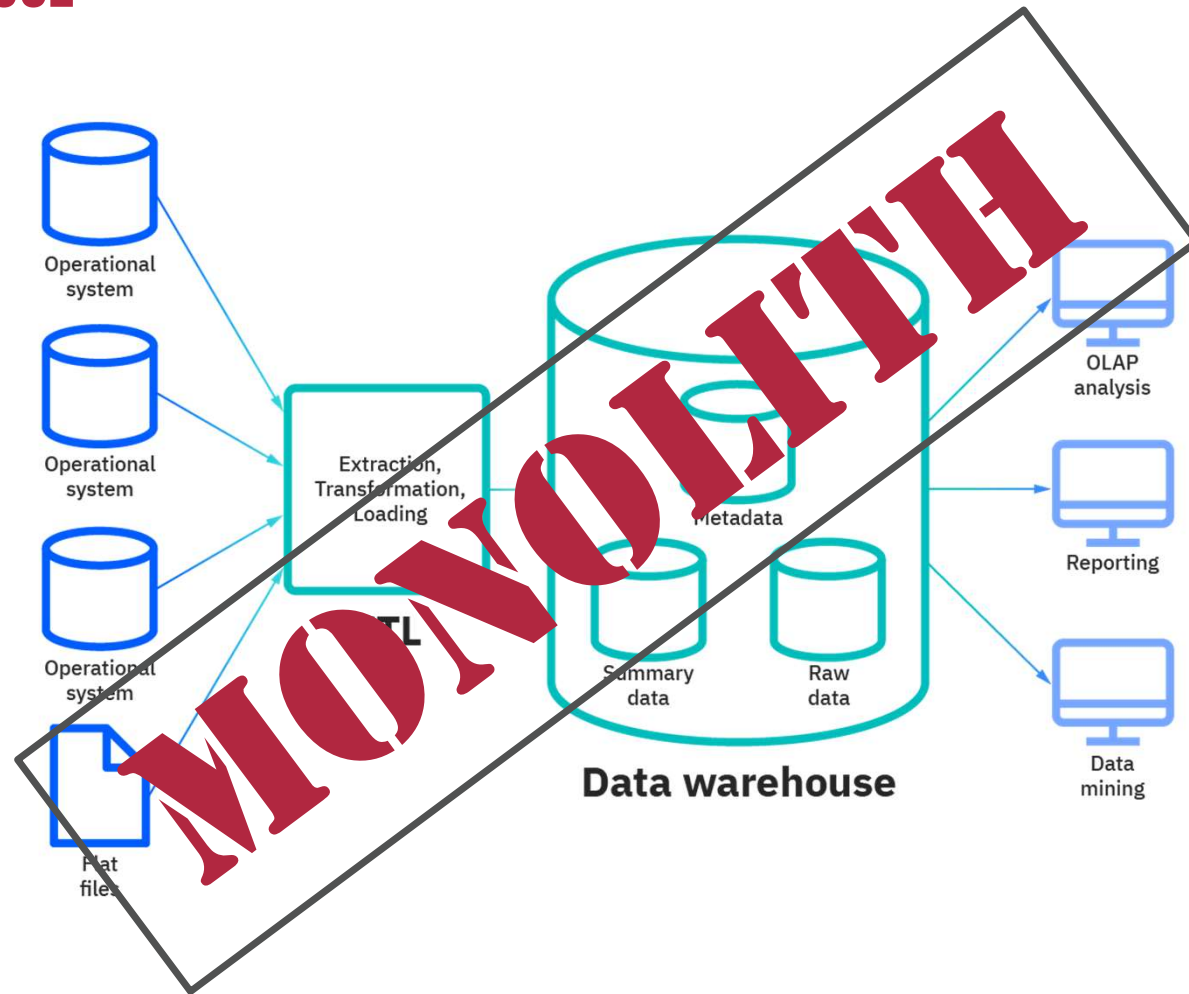
## MONOLITHS





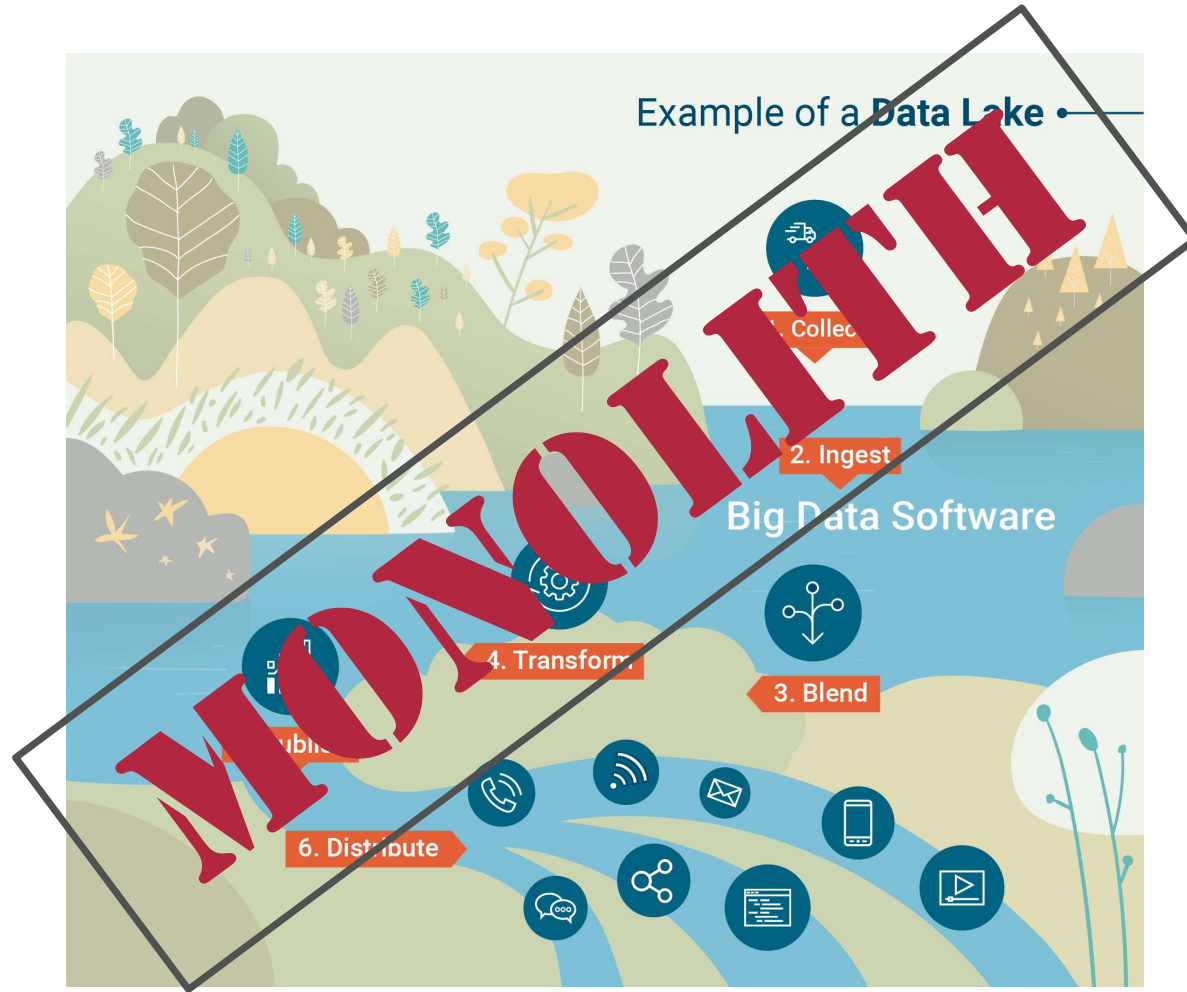


# DATA WAREHOUSE



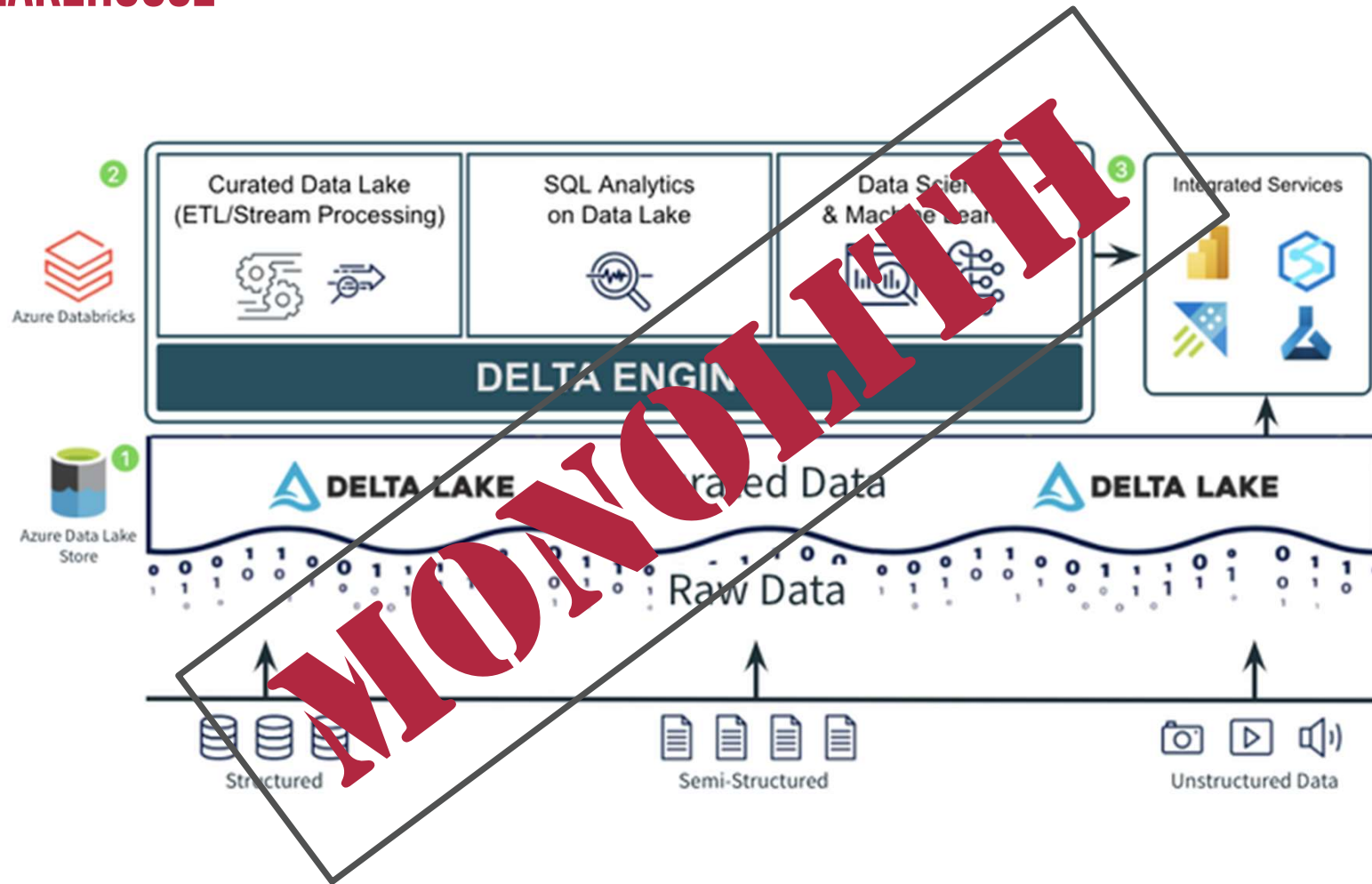


## DATA LAKE



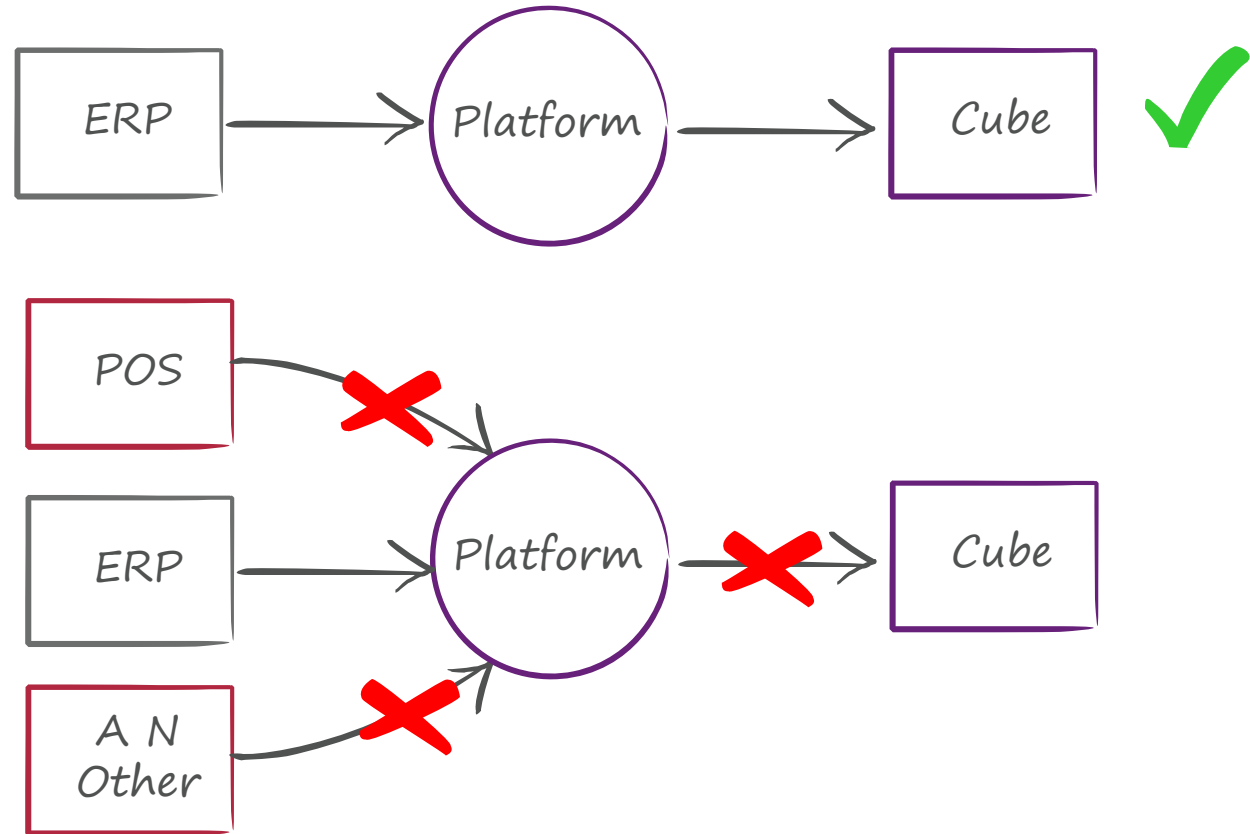


# DATA LAKEHOUSE





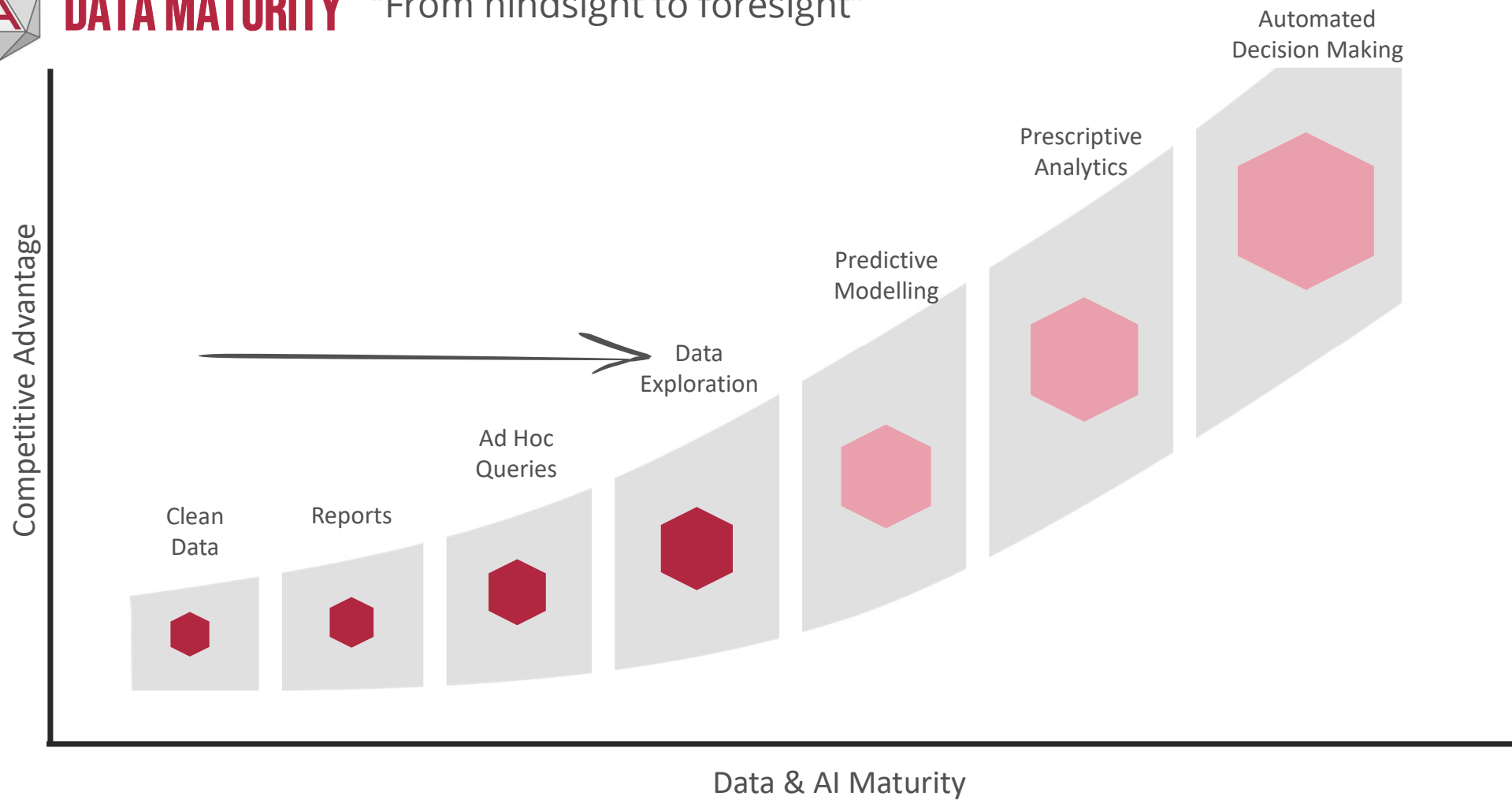
# MONOLITHS





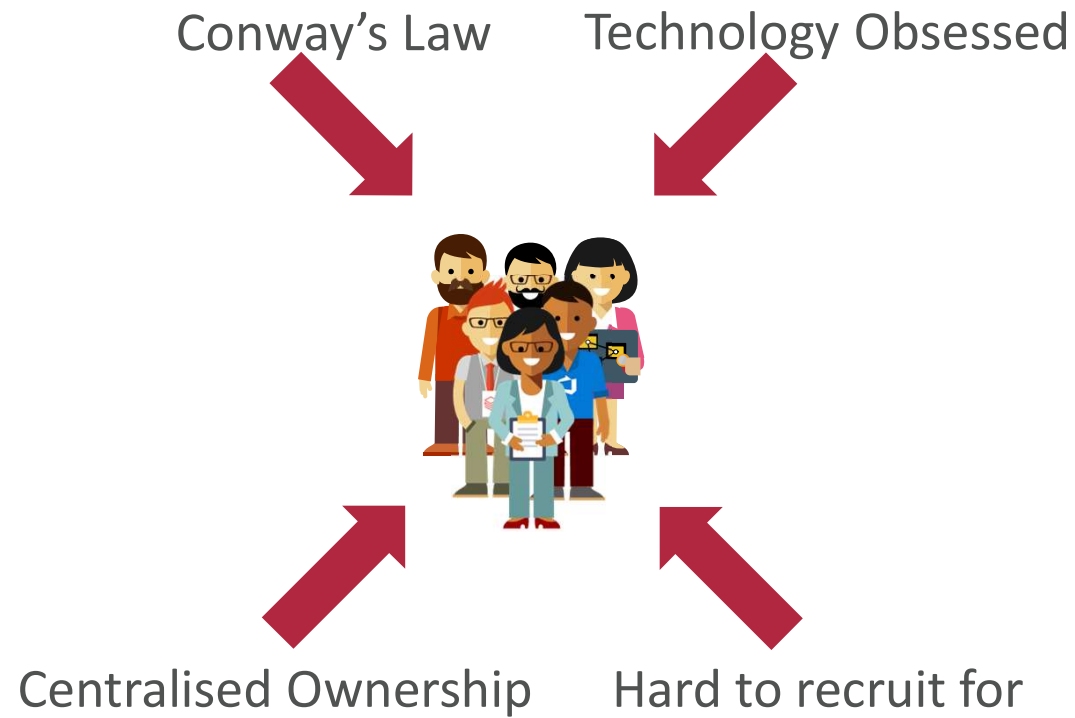


## DATA MATURITY “From hindsight to foresight”





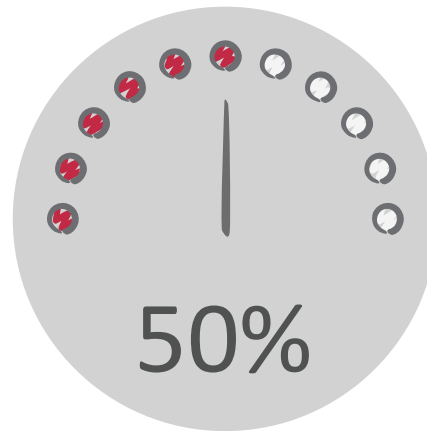
## MONOLITHIC CHALLENGES





## SPECIALTY SHORTAGE

<https://www.gov.uk/government/publications/quantifying-the-uk-data-skills-gap/quantifying-the-uk-data-skills-gap>

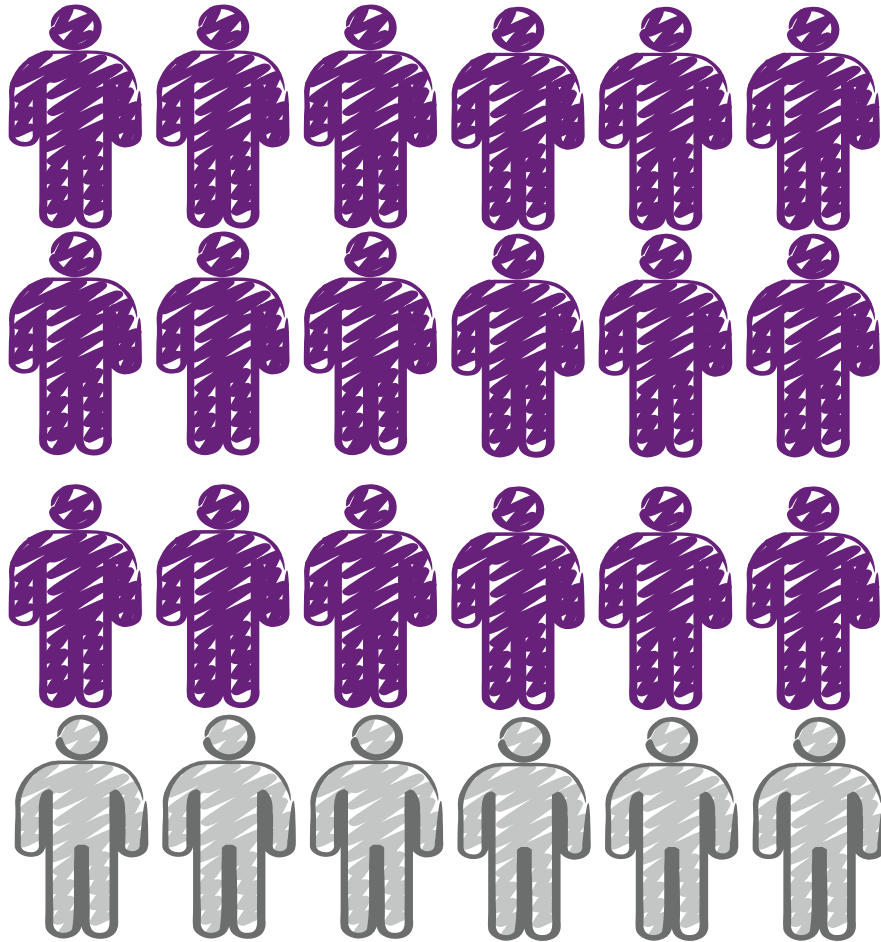


Business recruiting for and struggling  
to fill roles with data skills



## SPECIALTY SHORTAGE

<https://www.gov.uk/government/publications/quantifying-the-uk-data-skills-gap/quantifying-the-uk-data-skills-gap>



178 000

of 234 000 roles  
requiring data skills are  
specialist roles



## BIGGEST SPECIALTY CHALLENGES

<https://www.gov.uk/government/publications/quantifying-the-uk-data-skills-gap/quantifying-the-uk-data-skills-gap>

### Barriers to establishing a data role/team in UK businesses

Salary expectations for new hires	22%
Financial cost of implementation	21%
Lack of people with the right level of experience/ skills	20%
Lack of people with the right mix of data skills	20%
Lack of local staff expertise	18%
Limitations of current IT architecture	18%
Extensive training required for data role hires	17%
Risks associated with data (i.e. GDPR, IT security, Ethical Considerations)	14%
Cultural barriers within the organisation	12%
Expediency of implementation	11%

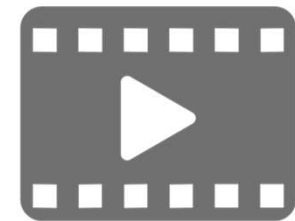
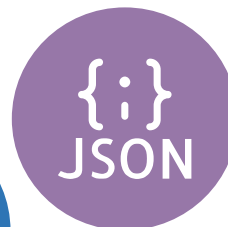
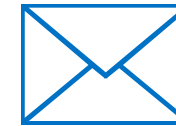
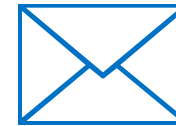
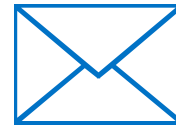
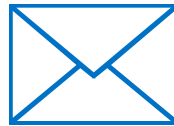
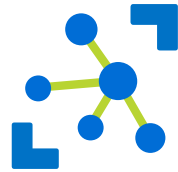
### Skills Gap

	Importance (employers)	Individual performance (Workers)	Gap
Programming	68%	27%	41%
Knowledge of emerging technologies and solutions	80%	44%	36%
Advanced statistics	72%	37%	35%
Data visualisation	79%	49%	30%
Database management	84%	56%	28%
Analysis skills	84%	57%	27%
Data processing	81%	54%	27%
Data literacy	84%	60%	24%
Data ethics	84%	61%	23%
Information management	87%	65%	22%
Data communication skills	84%	62%	22%
Machine learning	68%	51%	17%
Basic IT skills	87%	75%	12%



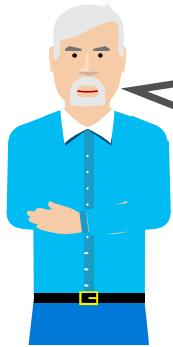


## DIVERSE DATA



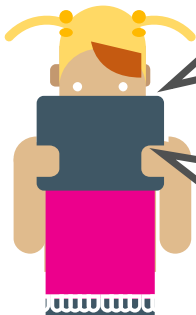
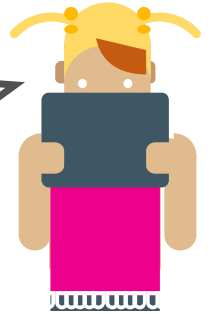


## TIMELY DATA



Should we change our current marketing promotion?

I don't have the data – I'll ask the BI team



Hey! Can we get the marketing data added to this report?

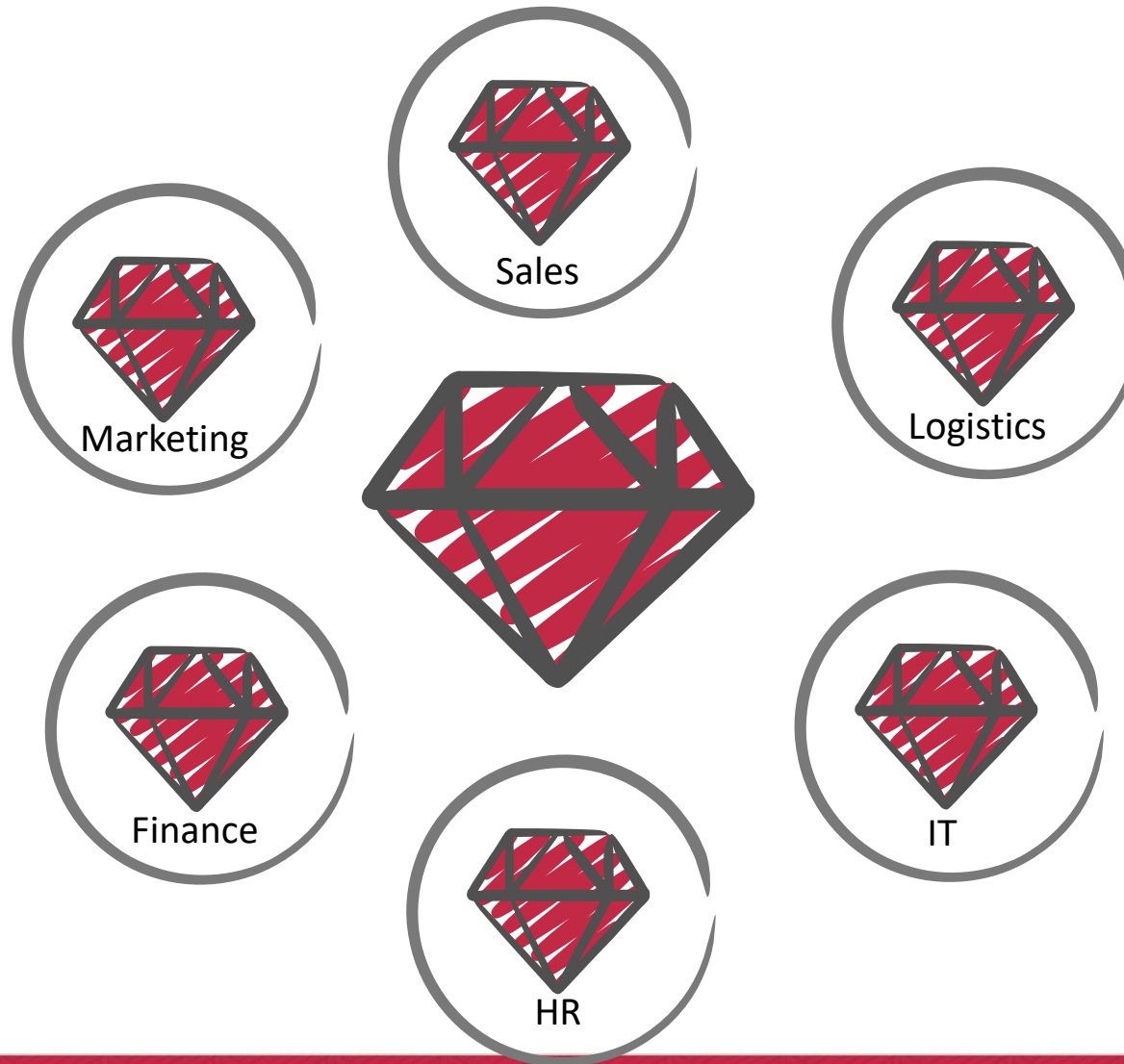
Oh no! I need it now!!

Sure thing! It'll be ready for UAT in 2 months





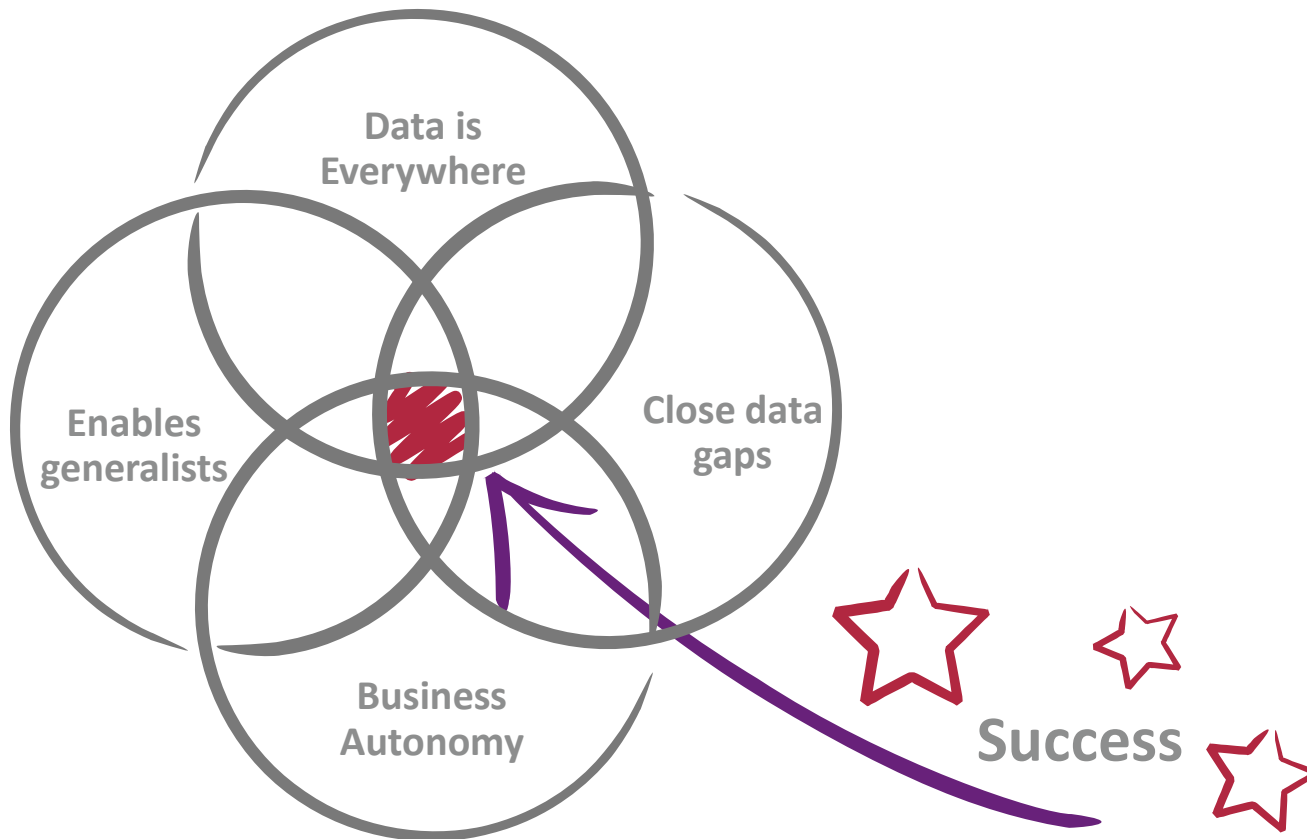
**TRUTHFUL DATA**



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ANALYTICS**



## WHY DOES DATA MESH HELP ADDRESS THESE CHALLENGES?





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# HOW DOES DATA MESH HELP?



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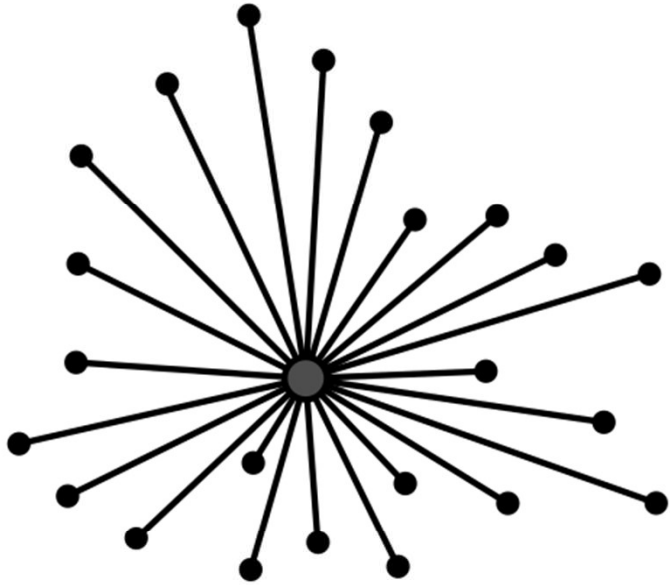
@ADVANALYTICSUK



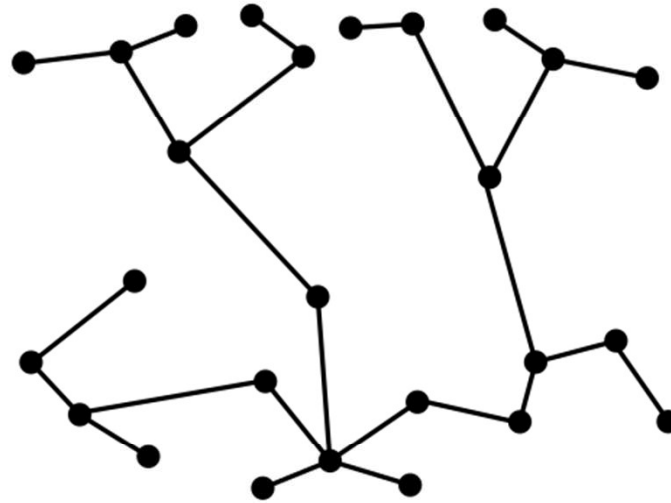
/ADVANCING ANALYTICS



## DECENTRALISED DATA OWNERSHIP



CENTRALIZED



DECENTRALIZED





*Domain*



*Domain A*

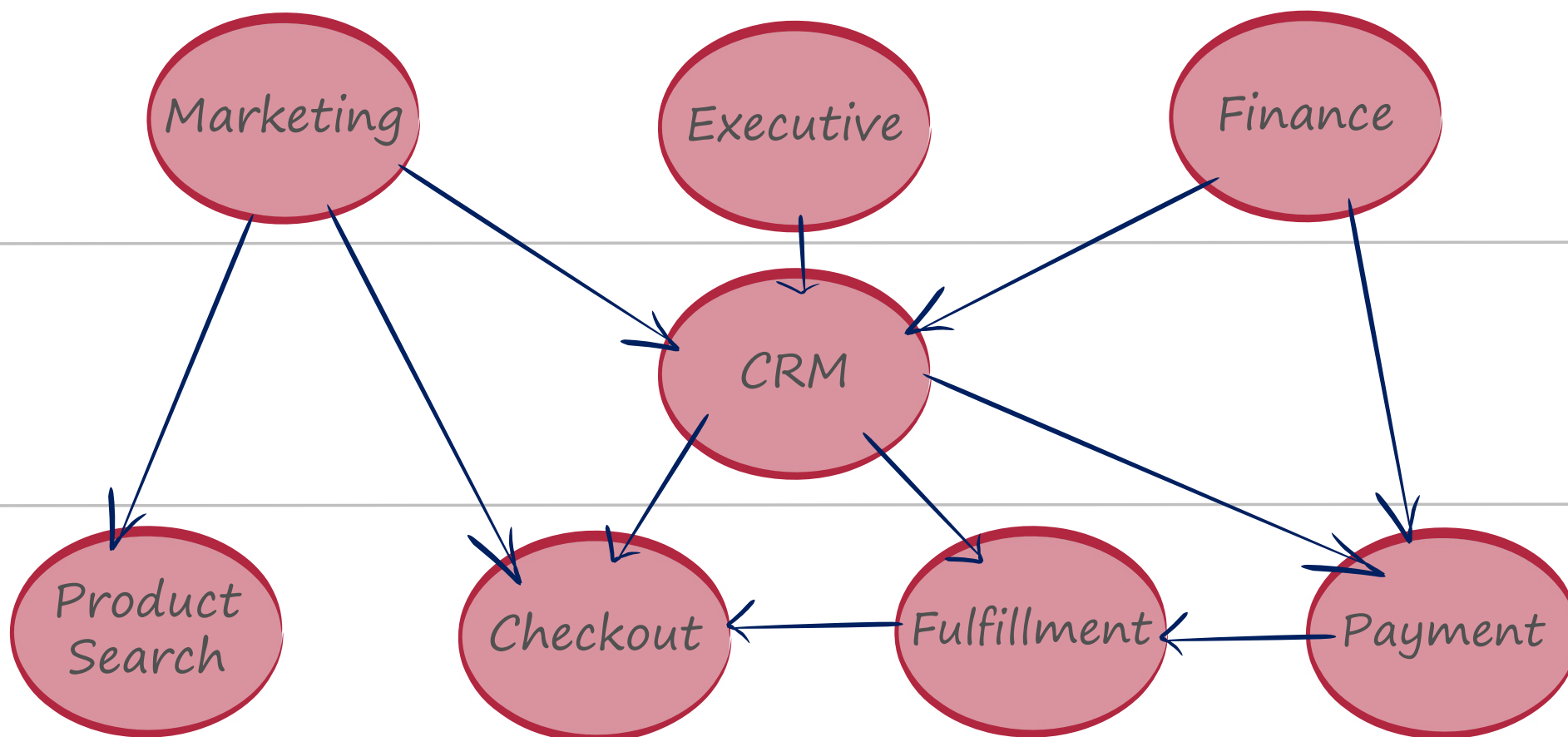
Net Sales =  
Net Sales,  
Inc.  
Commission

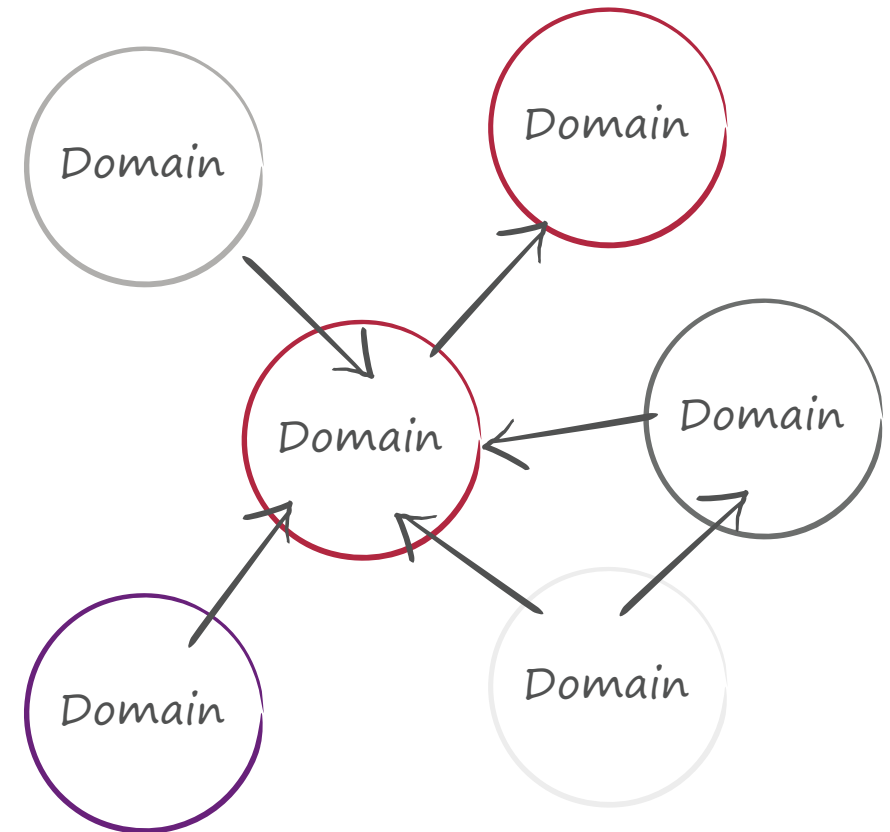
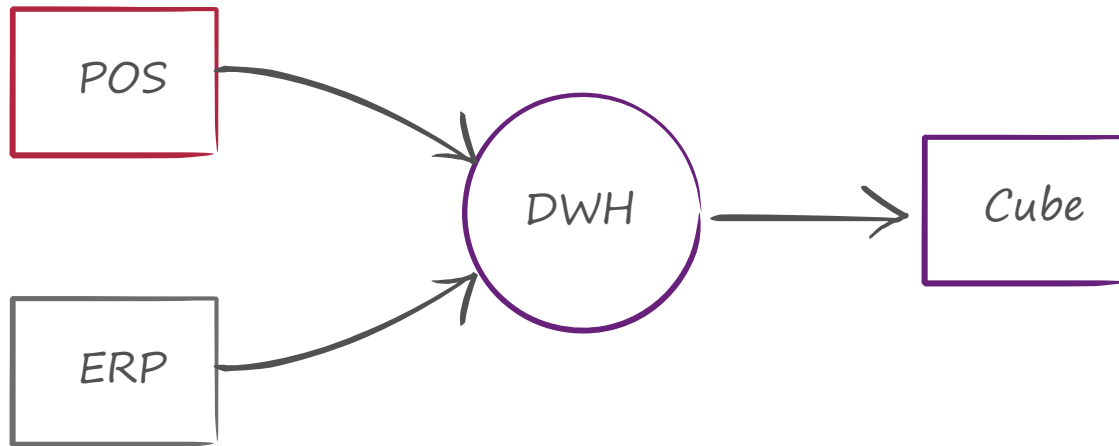
*Domain B*



## DOMAIN TYPES

Consumer-aligned  
Aggregate  
Source-aligned

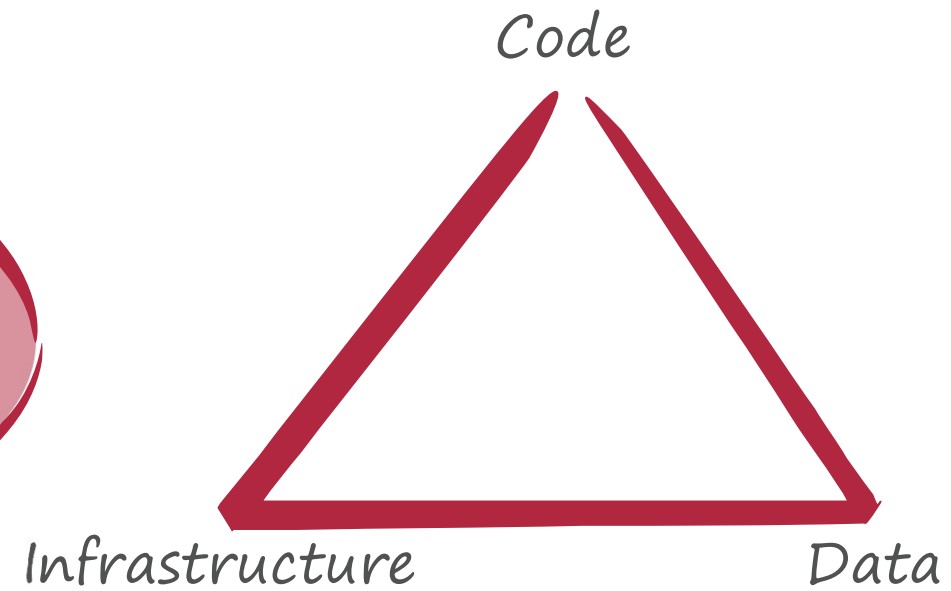
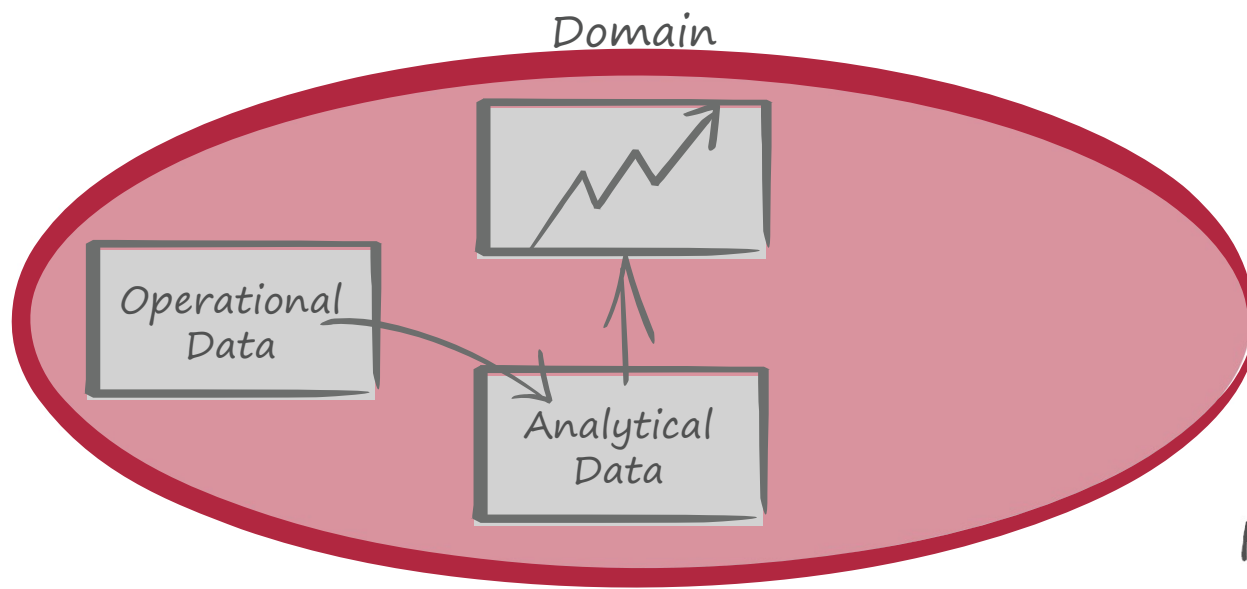








# DATA PRODUCTS

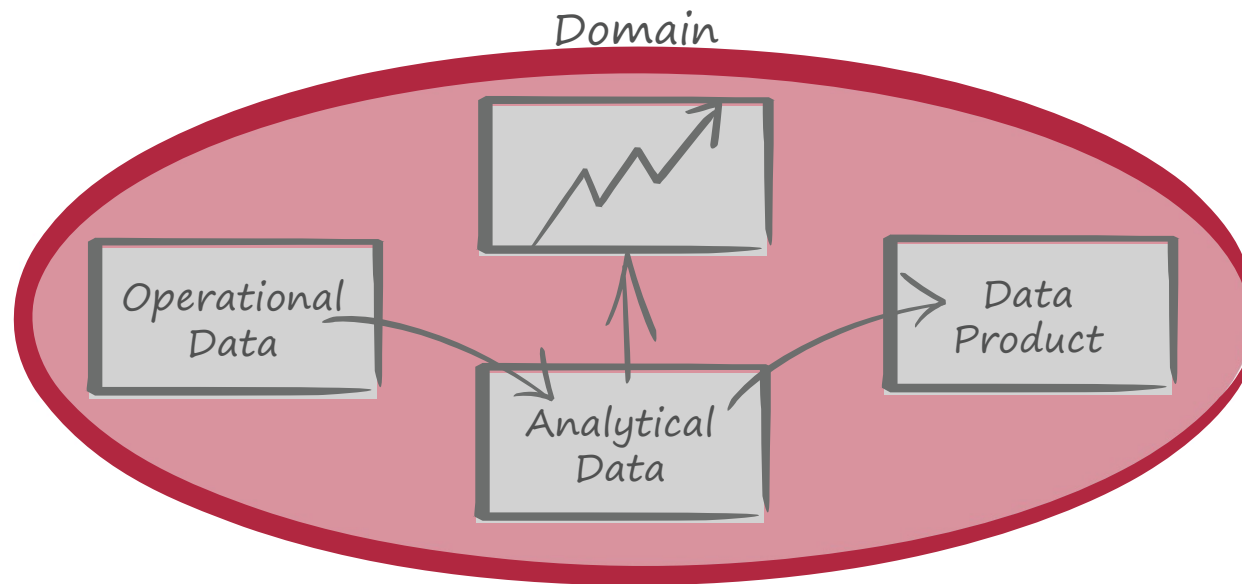


DATA PRODUCT PERSONAS



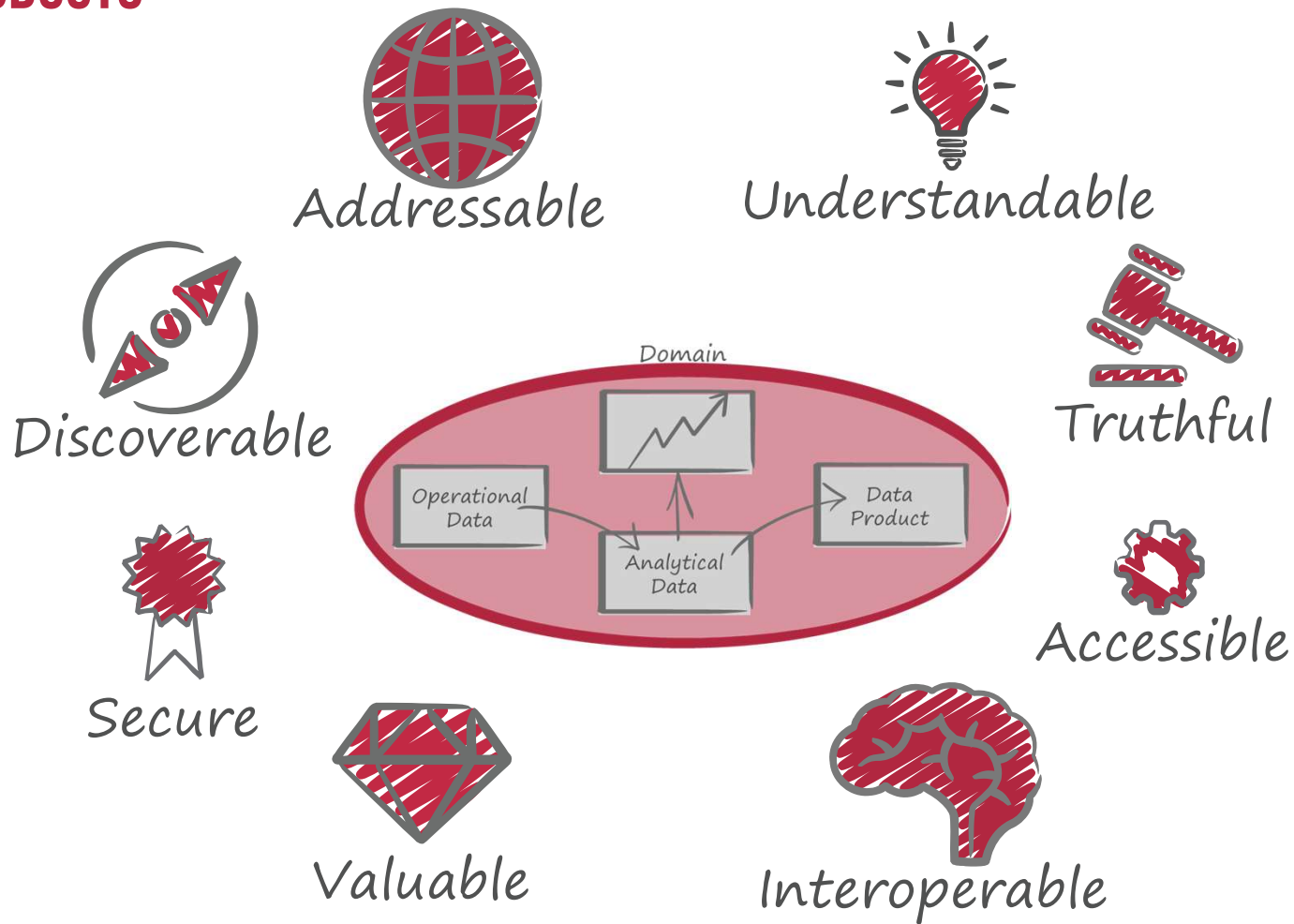


# DATA PRODUCTS



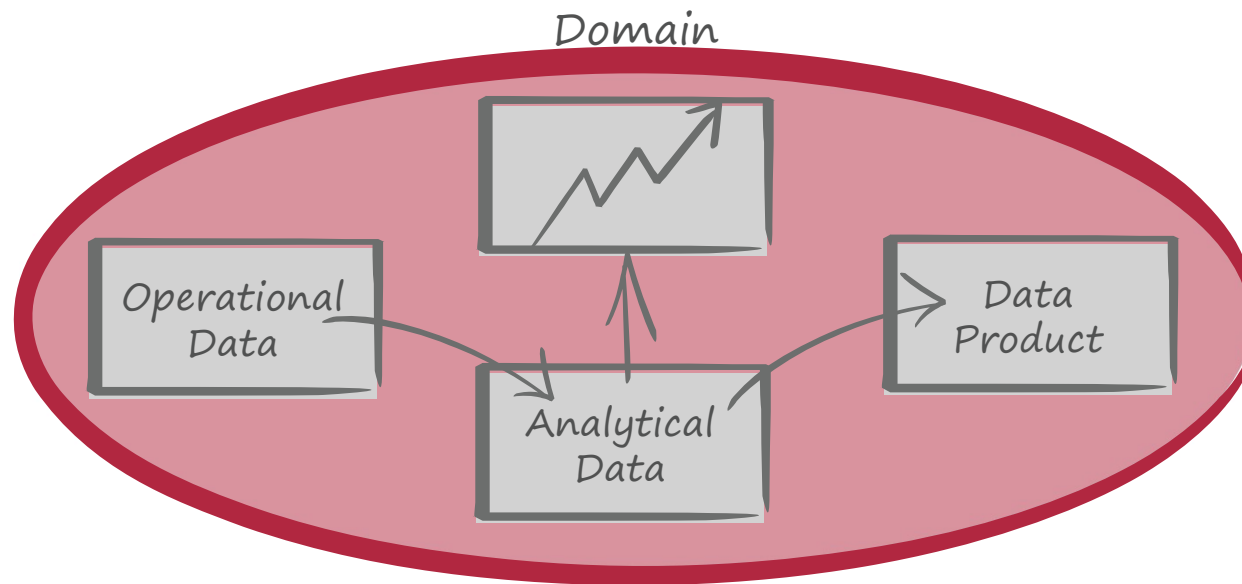


# DATA PRODUCTS



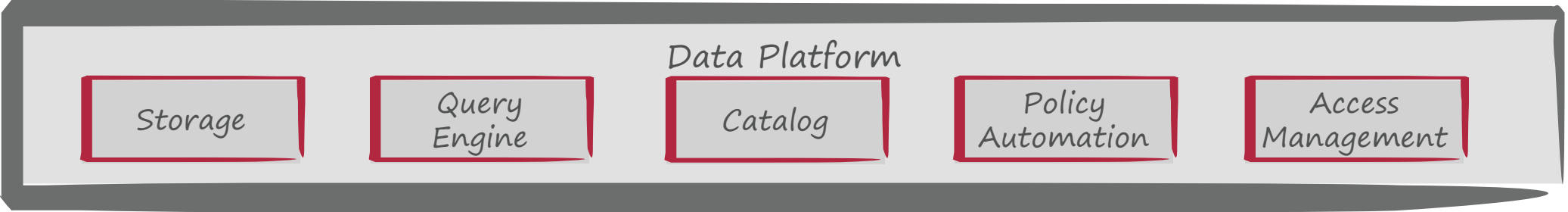
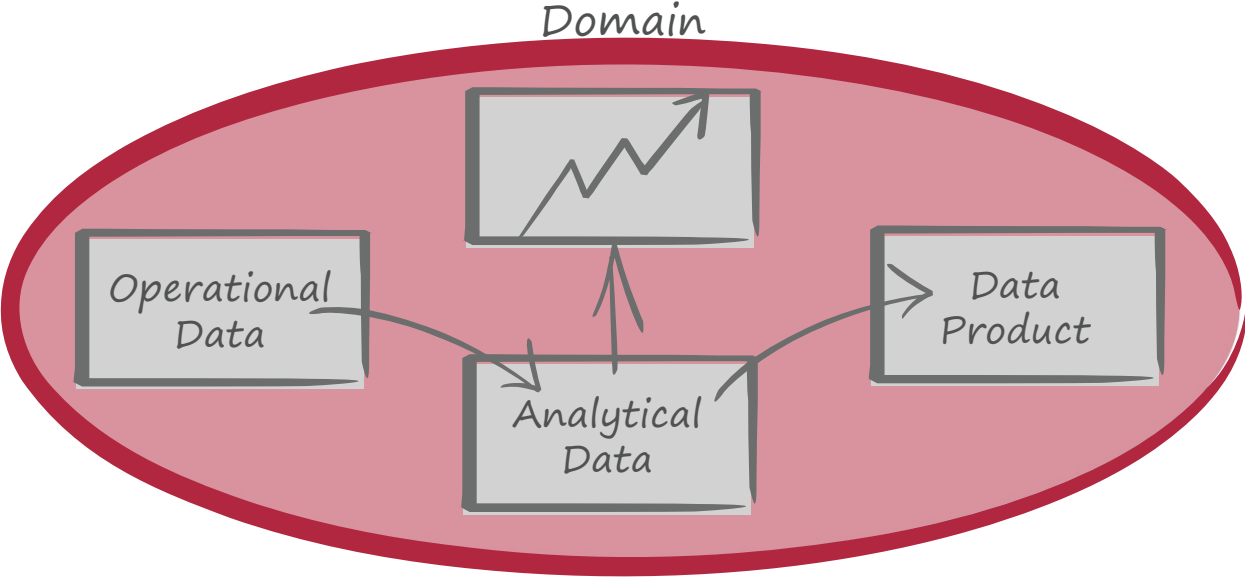


# DATA PRODUCTS

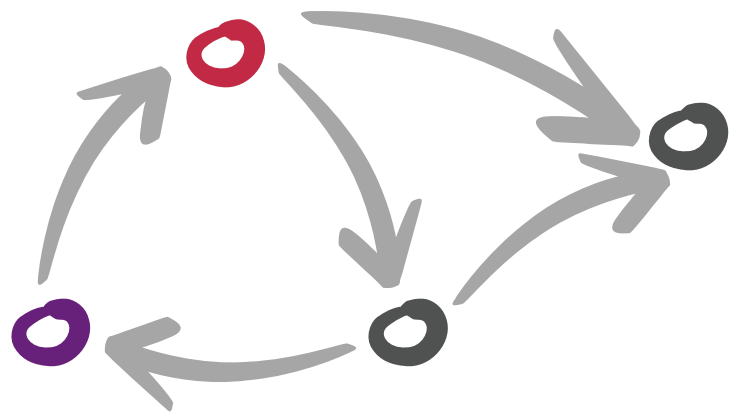




# SELF-SERVE DATA PLATFORM



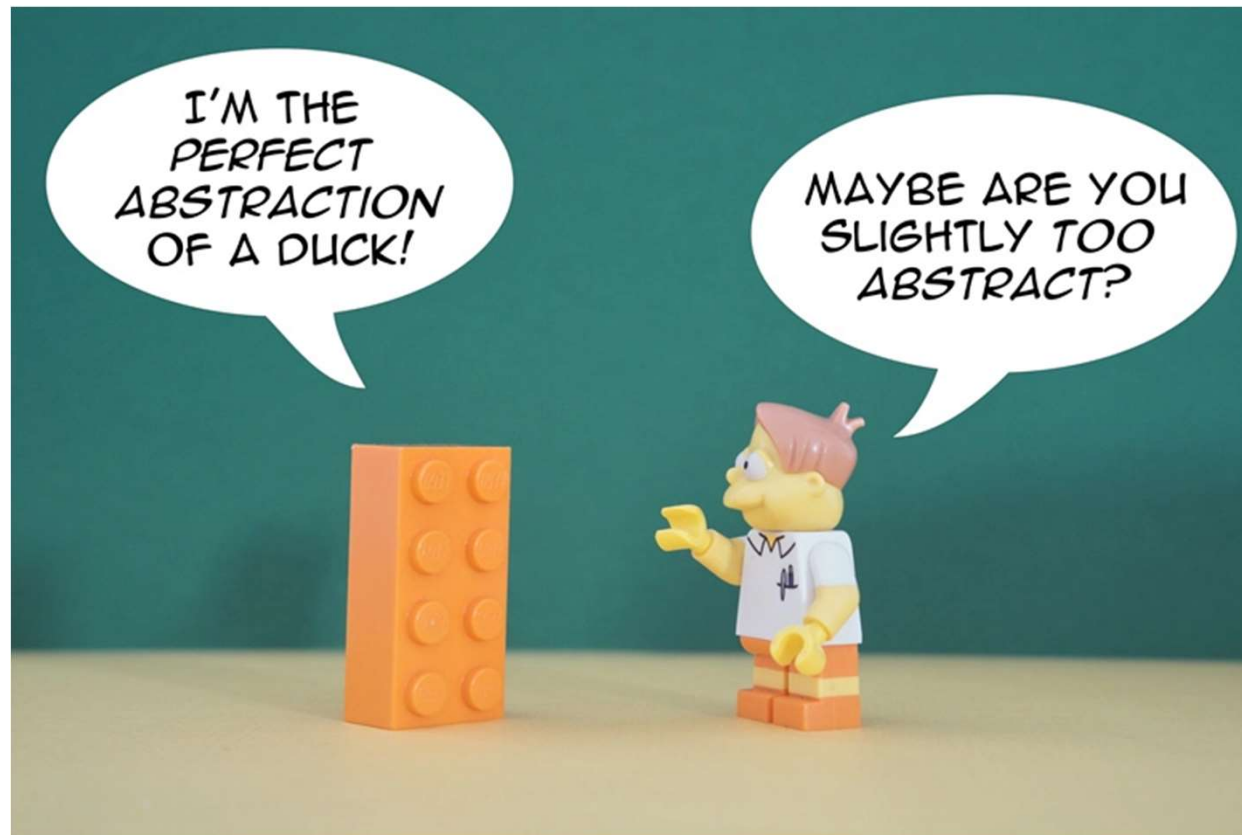
# SELF-SERVE DATA PLATFORM





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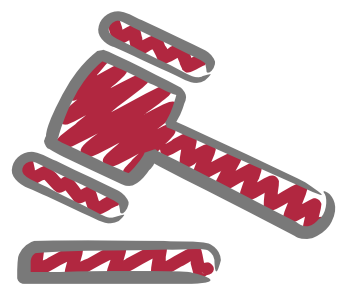
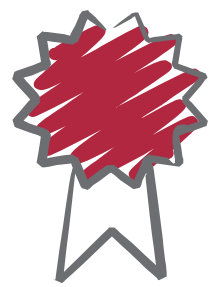
# SELF-SERVE DATA PLATFORM



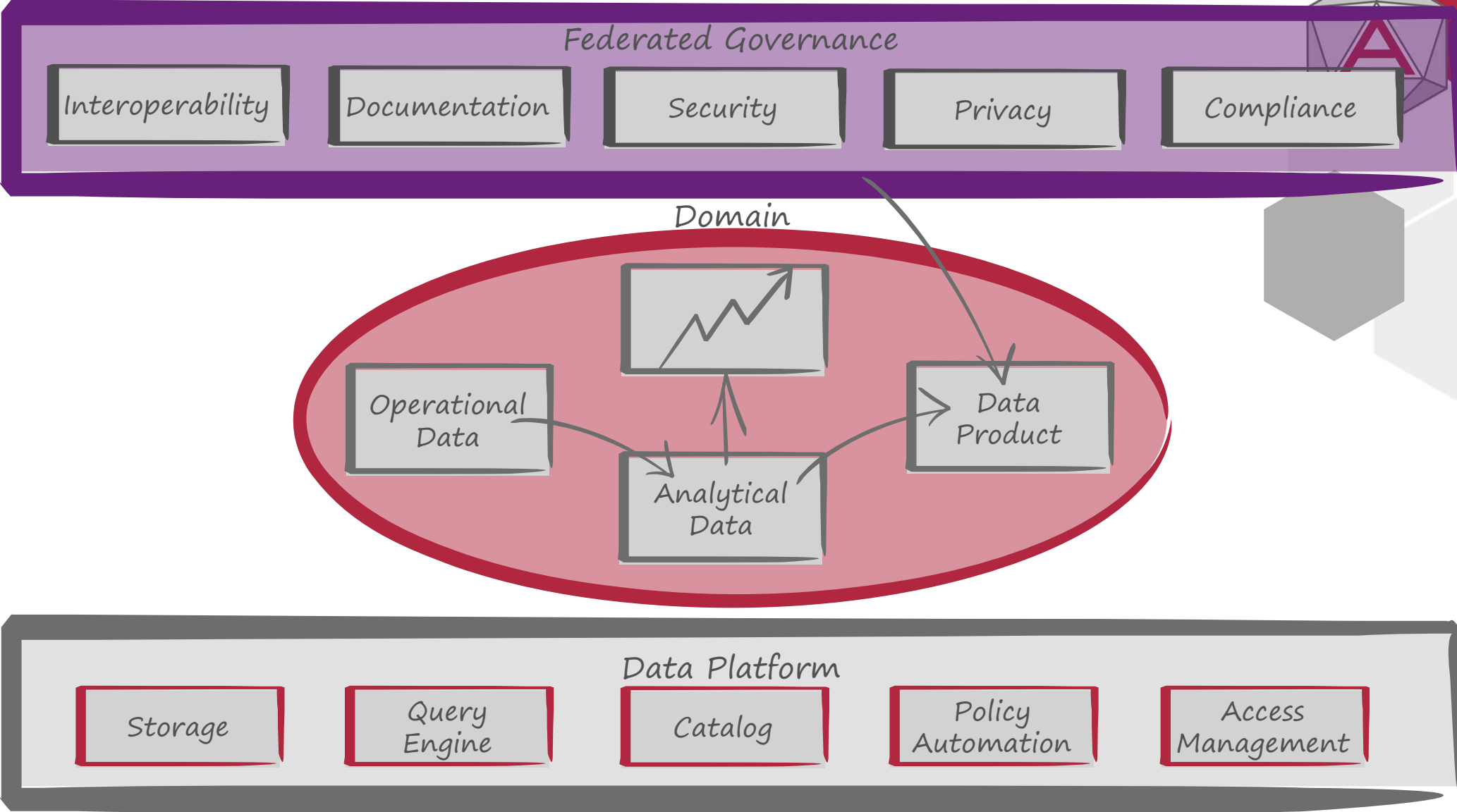
<https://thevaluable.dev/abstraction-type-software-example/>



# SELF-SERVE DATA PLATFORM

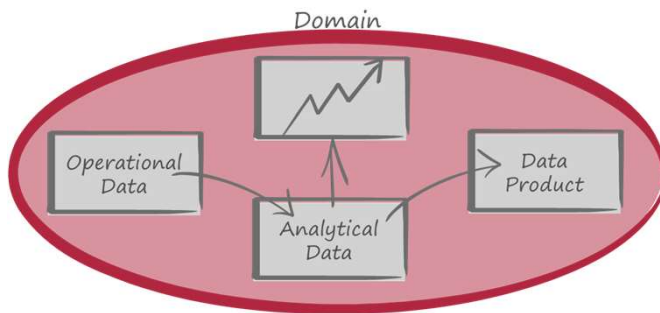


# FEDERATED COMPUTATIONAL GOVERNANCE





# FEDERATED COMPUTATIONAL GOVERNANCE

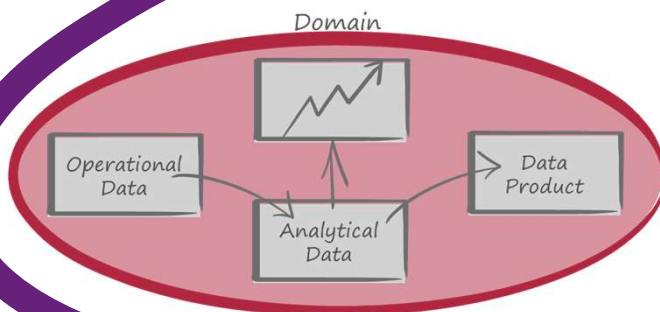


## Schema:

Row	INT
SKU	STRING
Location	STRING
Qty	INT
Updated	DATE

## Metrics:

Rows	150M
Duplicates	0
Freshness	2 mins ago
# Users	50



## Schema:

Row	INT
SKU	STRING
Location	STRING
Qty	INT
Updated	DATE
Created	DATE

## Metrics:

Rows	150M
Duplicates	20
Freshness	5 mins ago
# Users	5





## FEDERATED TEAM



Domain Representatives



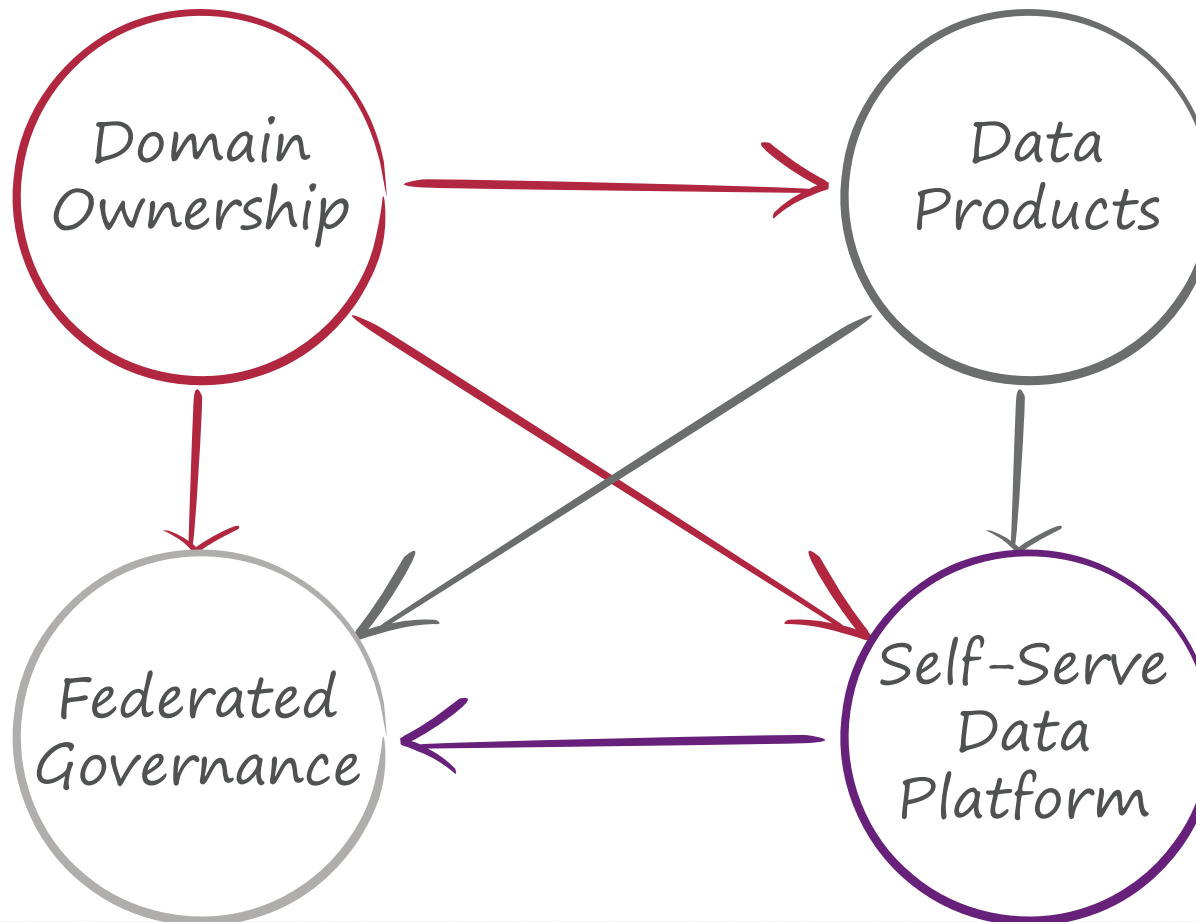
Platform Representative



Subject Matter Experts



## HOW DOES IT ALL WORK?





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# PRACTICAL CONSIDERATIONS



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## TRANSITION PERIOD...



Beyang  
@beyang

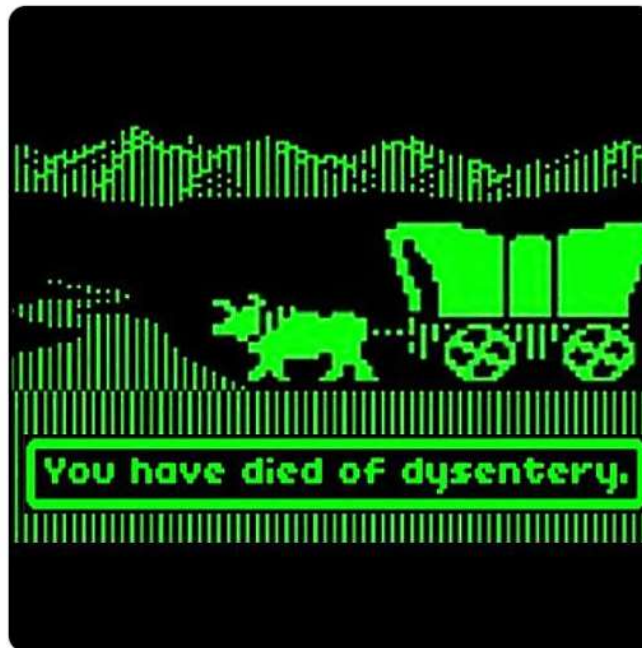
...

1 month into that monolith → microservices migration:  
"Really excited about how much faster we'll move after this bold new architecture"

3 months: "Taking a bit longer than expected, but what project doesn't?"

6 months: "You know, it's the journey that counts."

1 year later:

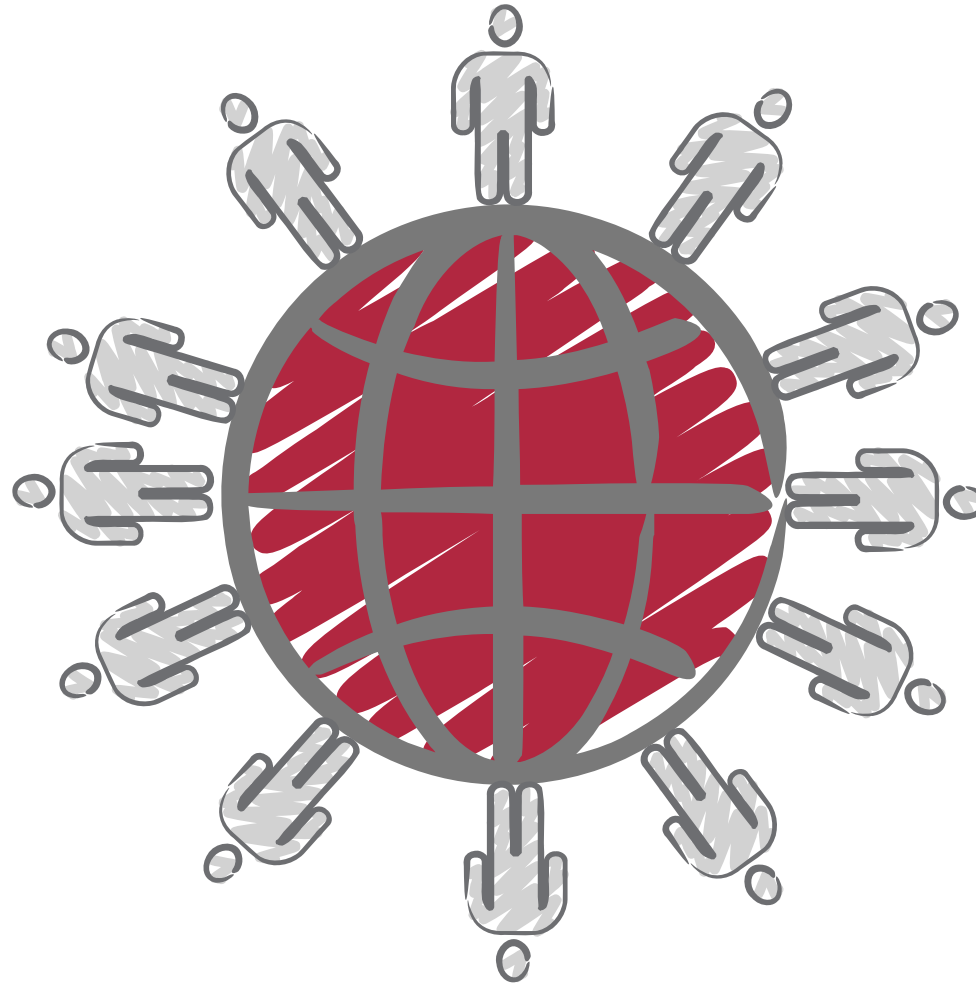


7:22 PM · Apr 22, 2022 · Twitter Web App





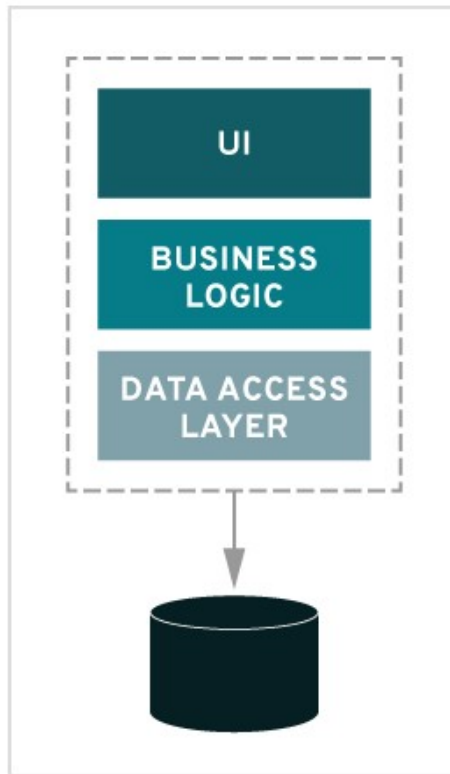
**CULTURE**



**ADVANCING  
ANALYTICS**

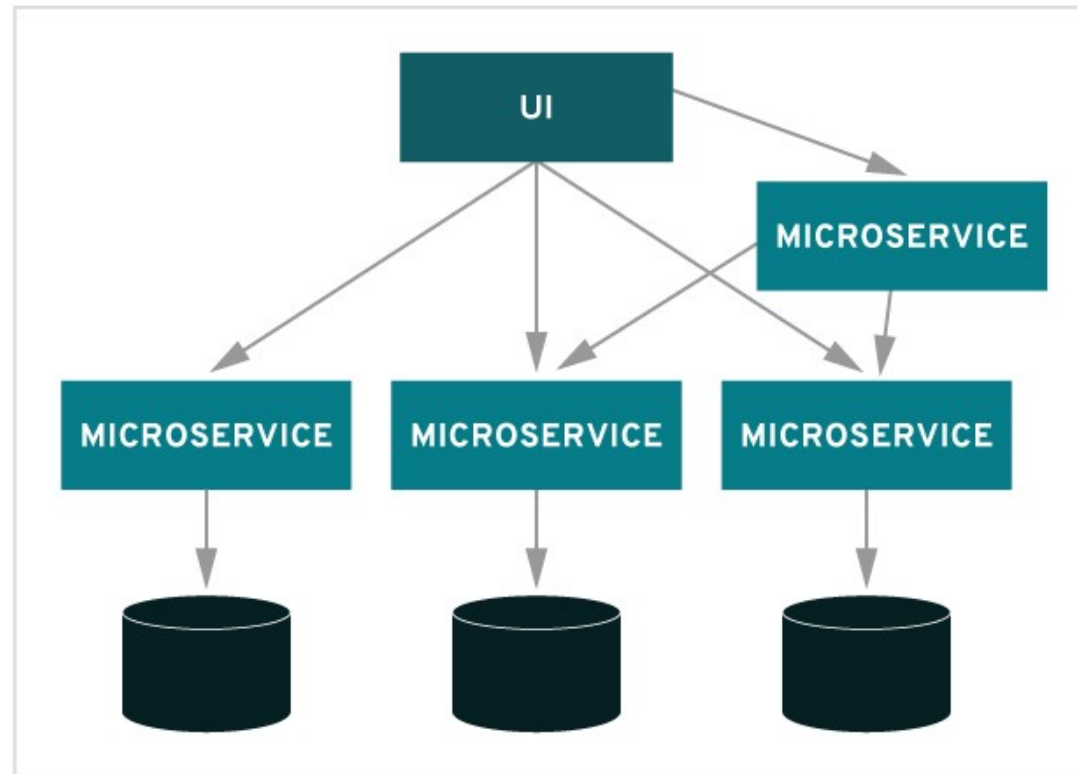


## MONOLITHIC



VS.

## MICROSERVICES







## DATA LAKEHOUSE?





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# WHERE TO BEGIN



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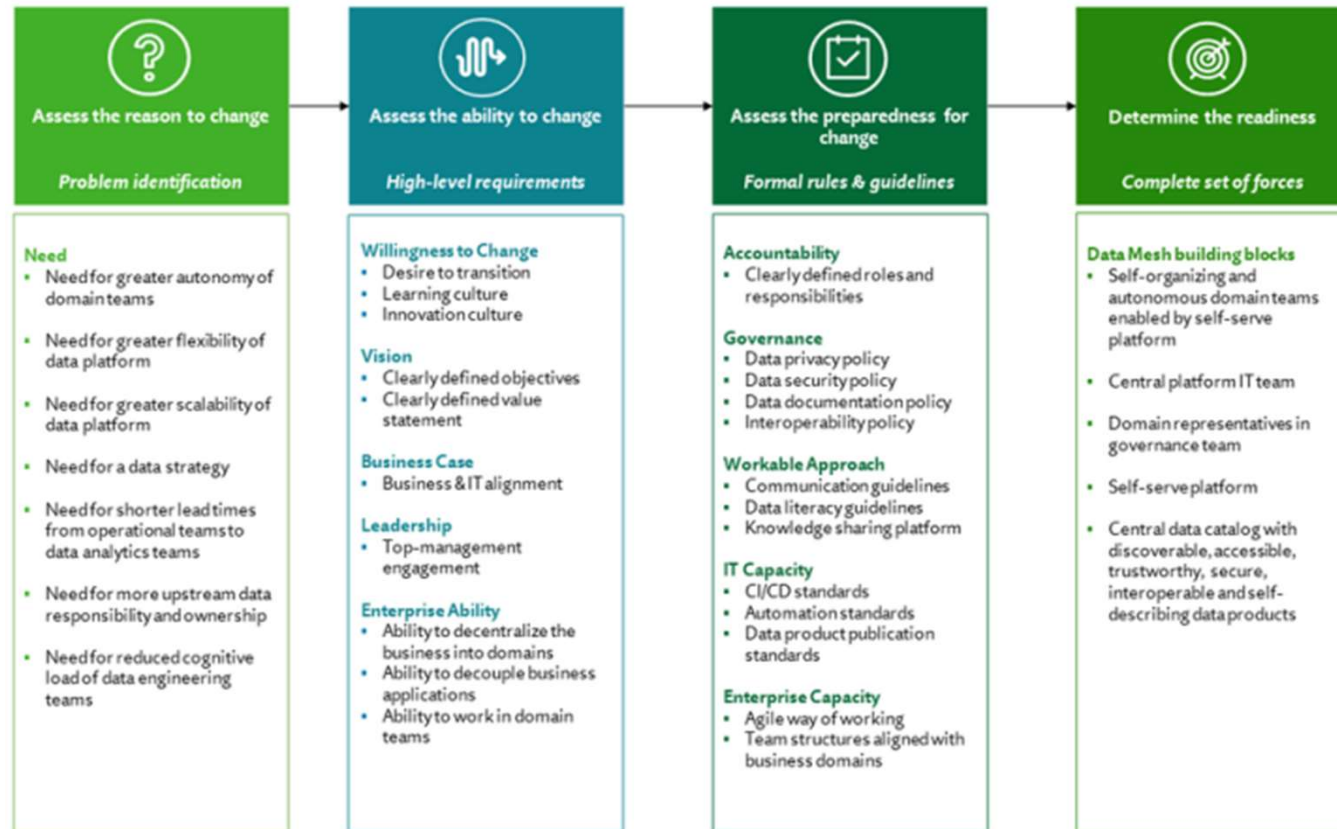


@ADVANALYTICSUK



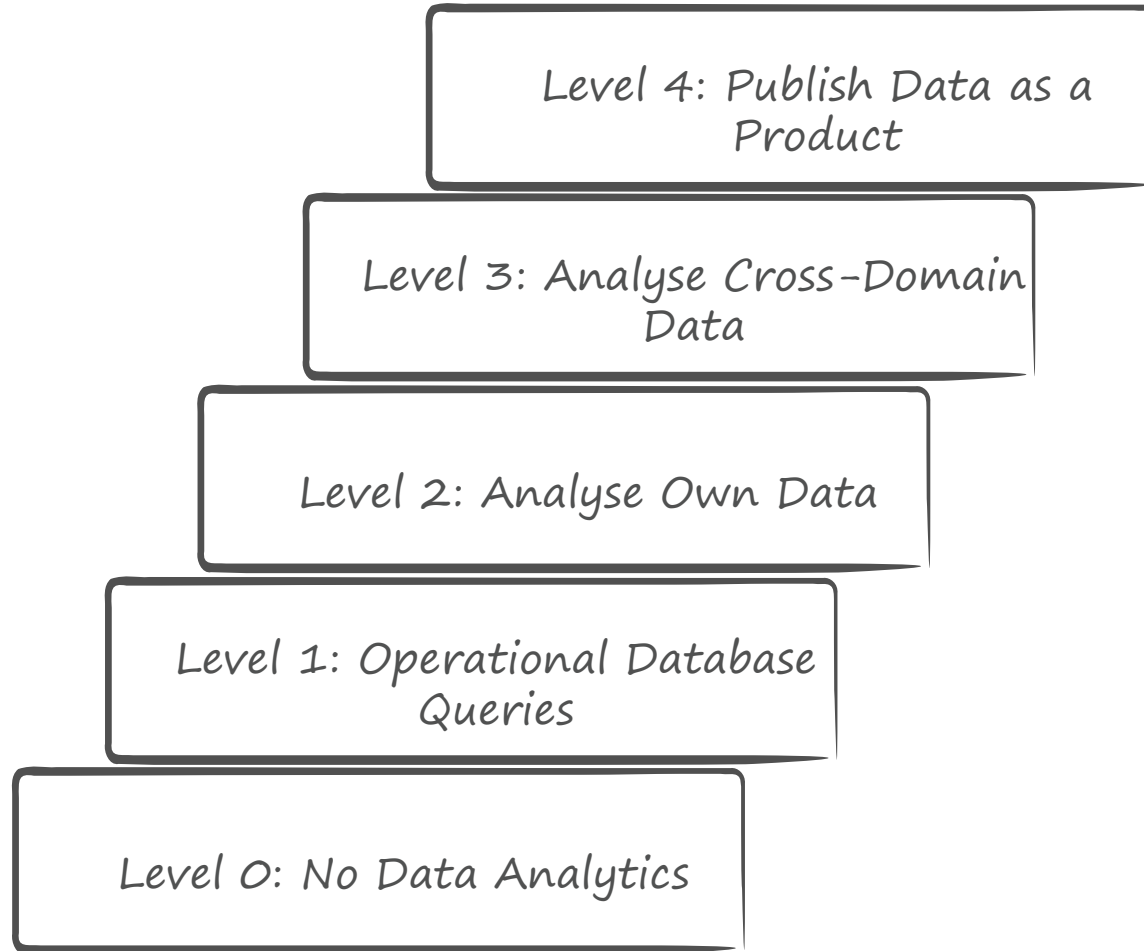
/ADVANCING ANALYTICS

# READINESS ASSESSMENT



Starburst: <https://www.starburst.io/info/data-mesh-readiness-assessment/>

# DOMAIN-BY-DOMAIN TRANSFORMATION



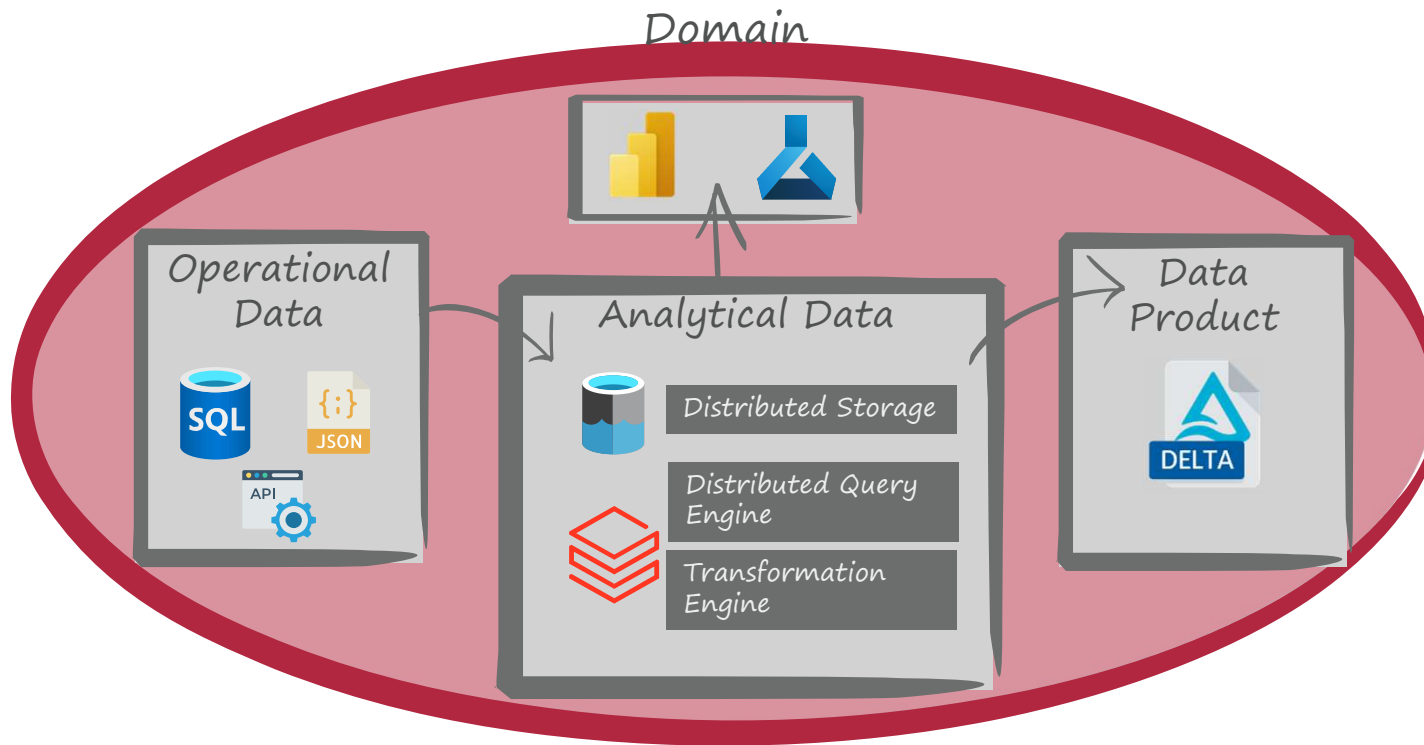
Domain Team's Data Journey



<https://www.datamesh-architecture.com/#domain-teams-journey>



## TECHNOLOGY



Blogs:

<https://mrpaulandrew.com/2022/04/19/building-a-data-mesh-architecture-in-azure-part-7/>

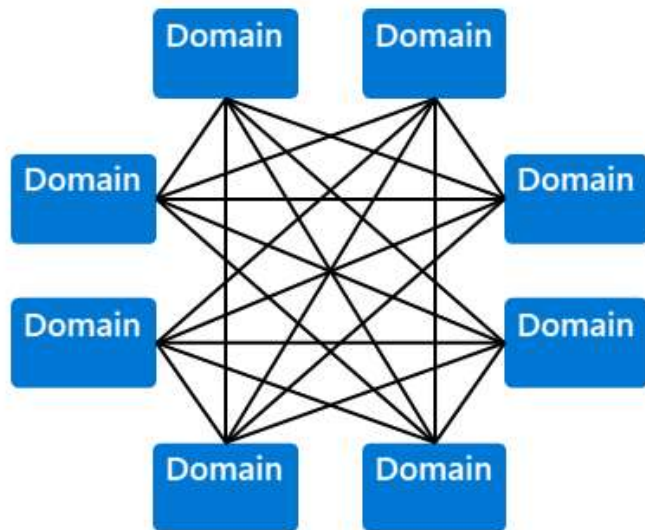
<https://towardsdatascience.com/implementing-data-mesh-on-azure-c01ee94306cd>





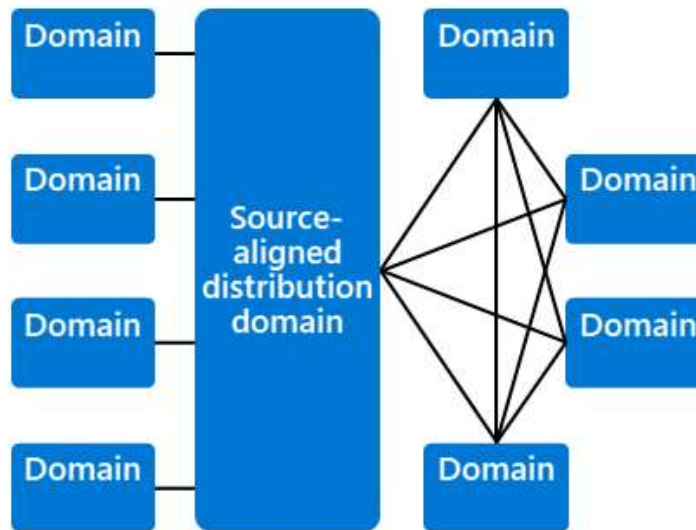
## EVOLVE TOWARDS DATA MESH

### Full mesh federation



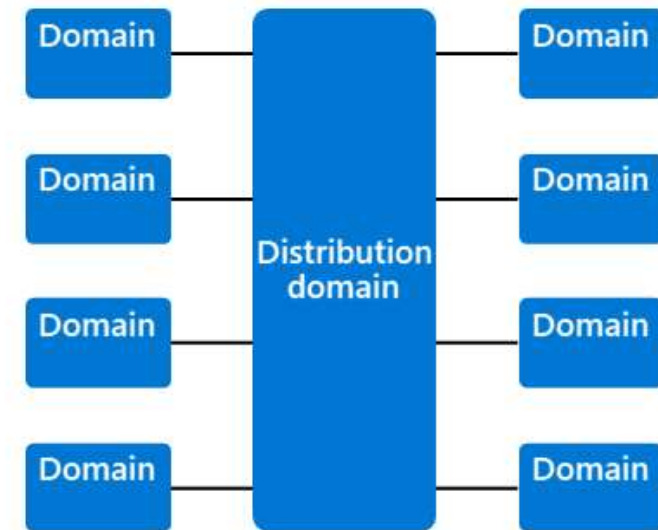
Each domain has full responsibility for its connections to other domains

### Hybrid mesh federation



Some domains, such as analytical, have full responsibility; others distribute via a central logical entity

### Governed mesh



Domains distribute data via a central logical entity

<https://towardsdatascience.com/data-mesh-the-balancing-act-of-centralization-and-decentralization-f5dc0bb54bcf>

## CLOSING THOUGHTS

- Why and How of Data Mesh
- Practical Considerations
- Where to begin on your journey
- Continue the conversation
  - <https://datameshlearning.com/community-and-people-to-follow/>
  - AA Stand

 @UstDoesTech

