

# Oracle Engagement on Data Mesh

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How It Works Today: GoldenGate for Big Data

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### Data Mesh

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Data Mesh is a data-tier architecture to integrate and govern enterprise data assets across distributed multi-cloud environments – two defining characteristics are:

- (1) De-centralized data processing; no ETL/Hub/Lake monoliths.
- (2) Event driven; real-time where possible, batch only when necessary.

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## DATA MESH 2021 & BEYOND

### Data Mesh: 2021 and Beyond

Published on February 12, 2021 [Edit article](#) | [View stats](#)

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Vice President Product Development

This is the first of a multi-part series that I plan to cover here on LinkedIn. I am basing this series of posts on content I developed for the [Oracle technical paper](#) and [Oracle technical paper about Dynamic Data Fabric](#).

#### What Next?

I will be basing the next installments of this series of posts on content I developed for the [Oracle technical paper](#) and [youtube playlist](#) on Dynamic Data Fabric and Mesh... it will include:

- [Data Product Thinking and Data Product Managers](#)
- [Decentralized, Modular Data Mesh](#)
- [Enterprise Data Ledgers for Data Integration](#)
- [Trusted, Polyglot Data Streams](#)
- [Trust, Transactions and ACID Properties](#)
- [Continuous Transformation and Loading \(CTL\) vs. ETL and E-LT](#)
- [Data Product Factories](#)
- [DevOps, CI/CD and DataOps](#)
- [Data Governance and Security in a Mesh](#)



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### Technology Brief:

## Dynamic Data Fabric and Trusted Data Mesh using the Oracle GoldenGate Platform

Core Principles and Attributes for a Trusted, Ledger-based, Low-latency Streaming Enterprise Data Architecture

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Public

# Oracle Engagement on Data Mesh

Thought Leadership



Tools for data products

Decentralized event-driven architectures

Streaming patterns



# Data as Capital, and Liquidity of Data



## Gartner

### Selecting an Information Valuation Method



[gartner.com/SmarterWithGartner](https://www.gartner.com/SmarterWithGartner)

Source: Why and How to Measure the Value of Your Information Assets, August 2015  
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Gartner

**Accelerate Business Transformation Goals**

# Scope of Data Mesh Concepts

## Organizational/Systems



## Design Thinking



## Strategy: Data Product Thinking



## Jobs to be Done Theory



## Data Architecture

- Anti-monolith/pro-decentralization
- Business domain oriented – catalog, graph, metadata, etc.
- Event-driven, real-time, and streaming

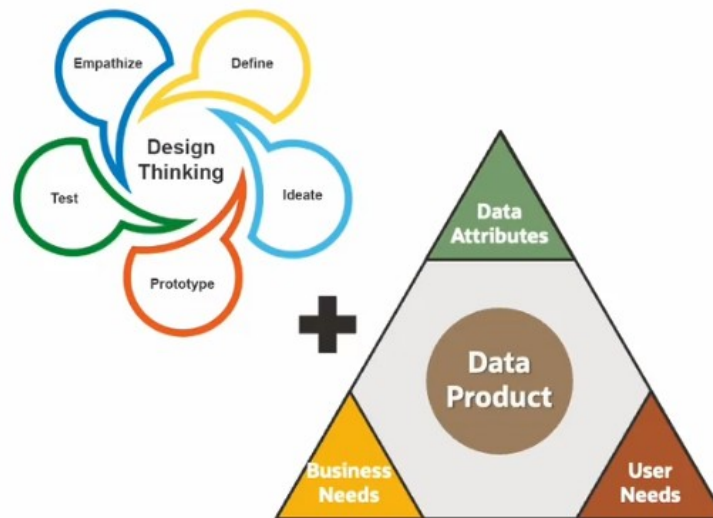


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# Digital Capital and Superstar Firms<sup>1</sup>

25%

of a firm's value is digital capital.

"Digital capital" refers to factors of production that are

- 1) complementary to IT assets, but
- 2) are not otherwise recorded on the balance sheet



Digital capital is more concentrated than any other asset class.

The most value is concentrated in the top decile of firms by market value.

Digital capital accumulation predicts firm productivity three years out.

# Digital Capital and Superstar Firms<sup>1</sup>

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"Digital capital" refers to factors of production that are

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Total clarity

Digital capital is more concentrated than any other asset class.

Operational data availability

The most value is concentrated in the top decile of firms by market value.

Faster innovation cycles

Reduction in data engineering

Digital capital accumulation predicts firm productivity three years out.

# Hidden Data Economy

Wide variety of shapes and structures

Applications

Sensors

Devices

Demand side

Analytics

AI

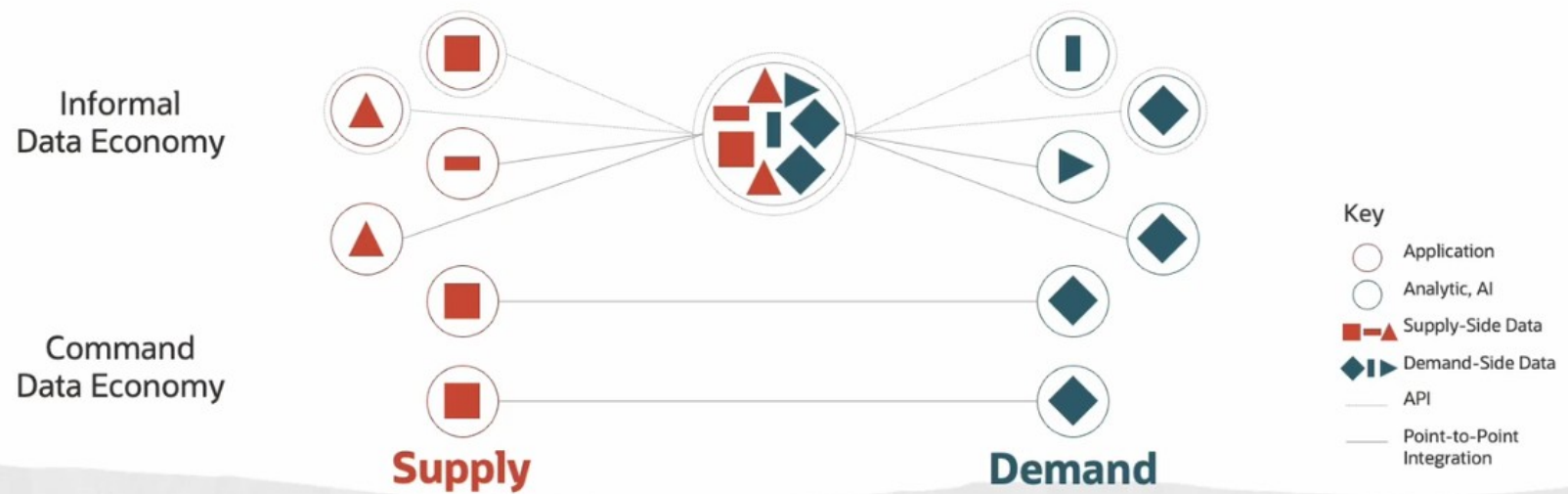




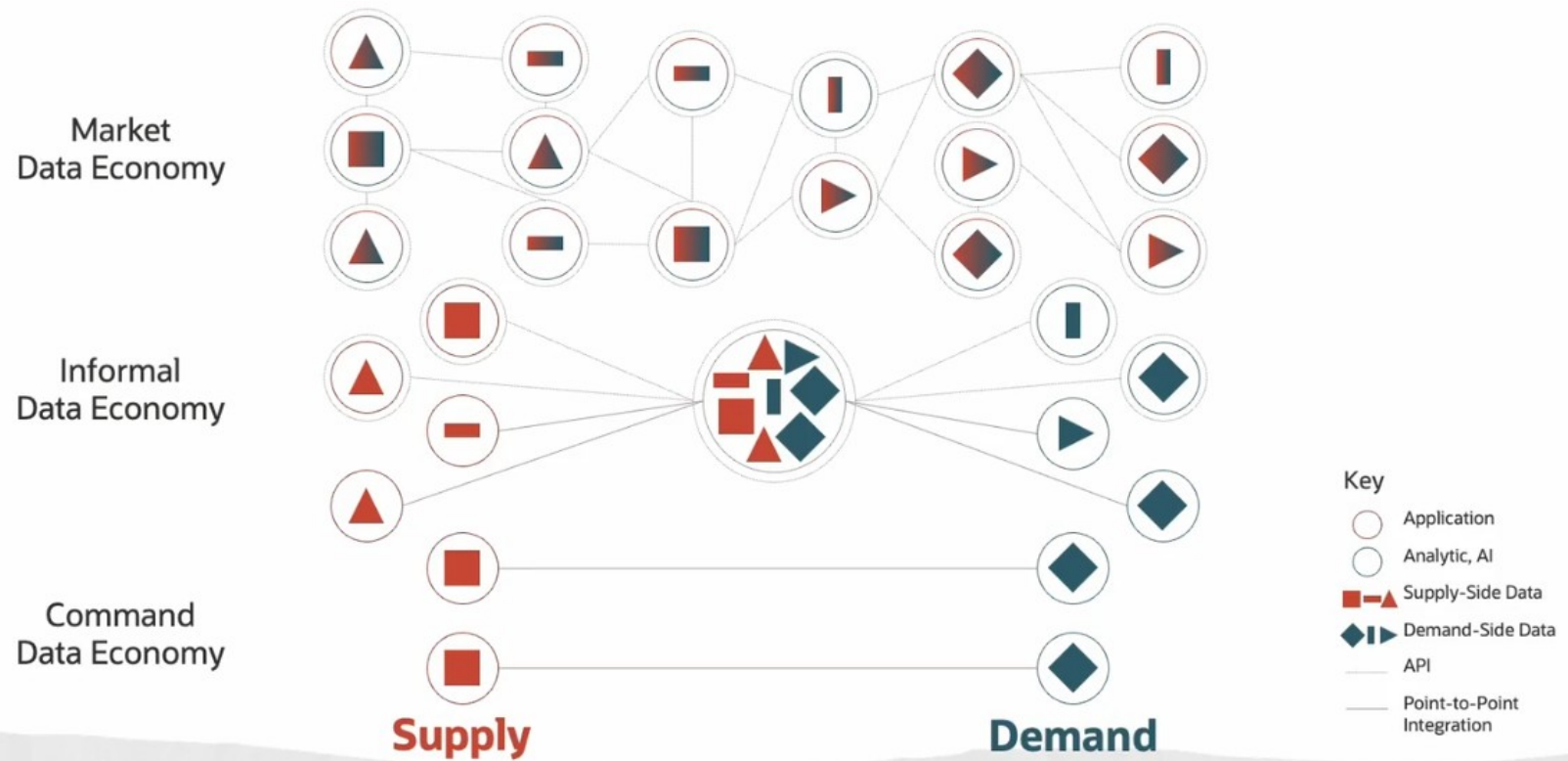
# Hidden Data Economy

Websites

Mobile Applications



# Hidden Data Economy





What does the hidden data economy lead to?

# DEAD DATA CAPITAL

Trapped in silos

Labor intensive to repurpose

Undiscoverable

Allowed uses unclear



4:58 / 12:32

1x



# Twin Threats of Digital Transformation

Loss of  
competitive  
advantage



Legal and  
reputational  
damage

# Data Strategy That Reinforces Competitive Strategy

Competitive Strategy

**Create unique value  
in a unique way**

Value your customer can only get from you

Through activities your rivals cannot easily copy

Data Strategy

**Create unique data assets**

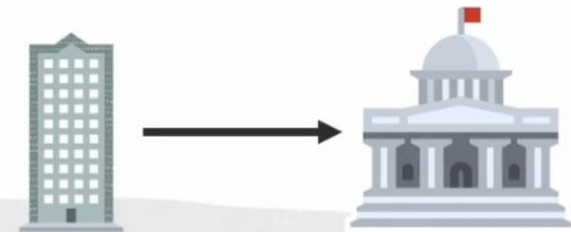
Observations only you possess

**Use them to enhance uniqueness**

Differentiation, cost position, or both

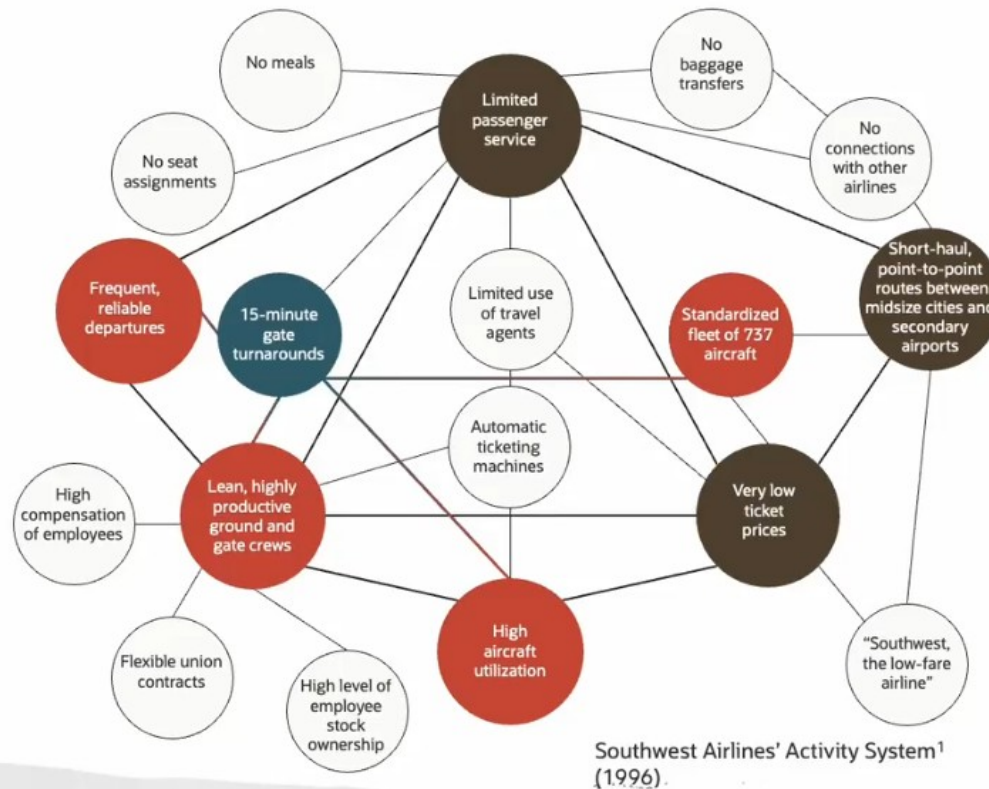
**Protect observer and observed**

Safeguards for all data stakeholders





# Activity Systems Tie Data Strategy to Competitive Strategy

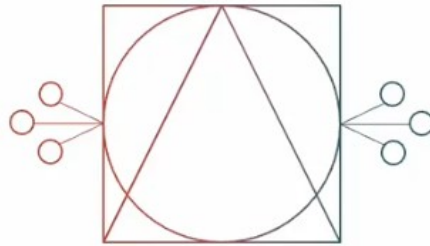


Can we use predictive maintenance to get to 10-minute turnarounds?

Sensor data  
Engines, subsystems  
Record data  
Aircraft utilization, repair and maintenance, arrivals and departures

Anonymize, mask employee records  
Monitor model for performance as planes age

# Data Products, the Building Blocks of Data Strategy



A data product is a discrete set of observations and its complementary code designed to fulfil one or more jobs to be done.

## Supply Side

Mostly passive: Data that **is** something

Data Sets

Sets of observations in different shapes, formats

Models

Domain objects, data models, ML features

Libraries

Inert algorithms, technical definitions of business semantics

## Demand Side

Mostly active: Data that **does** something

Analytics

Reports and dashboards, real-time and historic

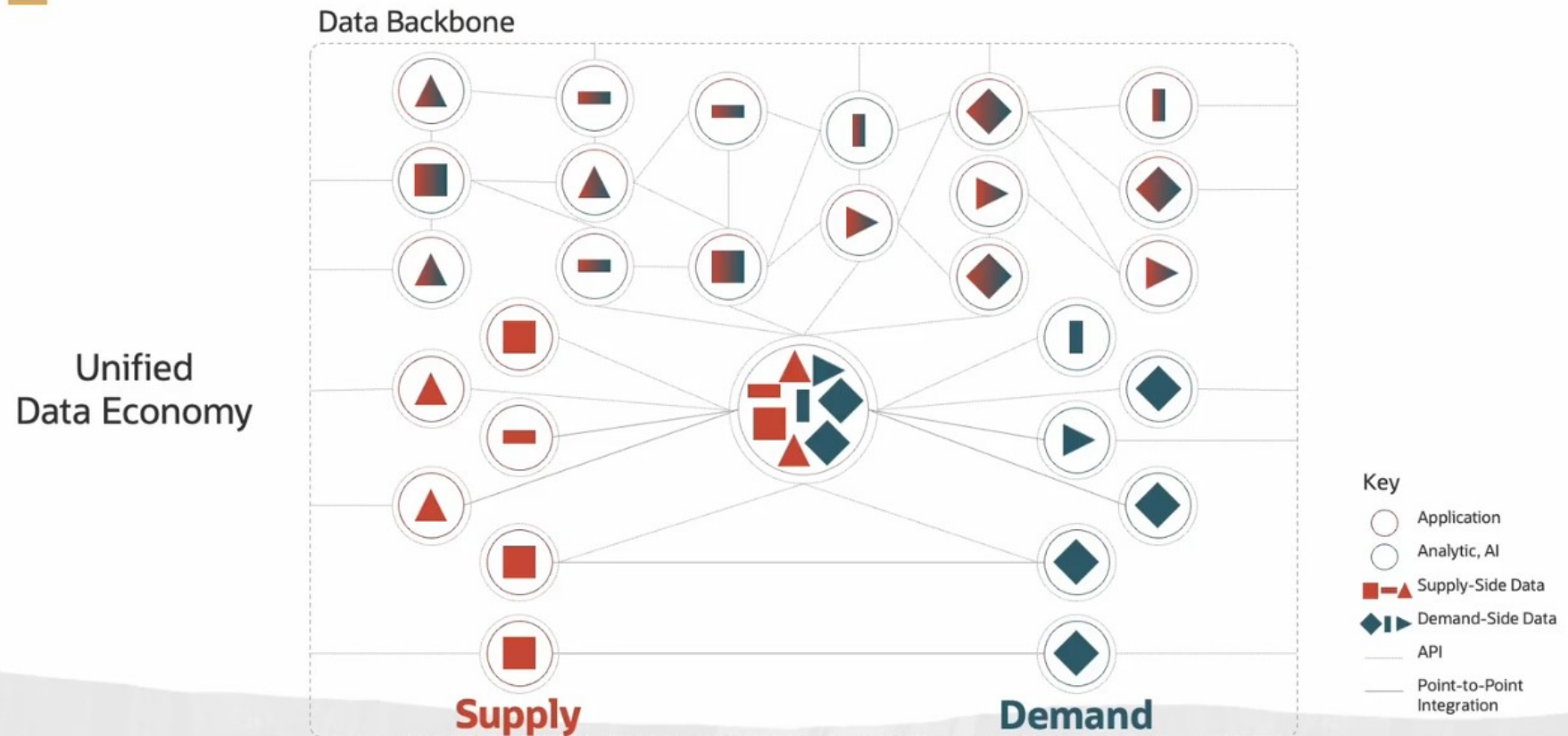
Algorithms

ML models, scoring, business rules

Data Services

Payloads, topics, authorization

# A Unified Data Economy Requires a New Data Backbone



# Principles for Translating Data Strategy into Data Architecture

## Data Liquidity

Ease of data reuse and recombination<sup>1</sup>

## Data Productivity

Value created as a result of data usage per unit of work, dollar invested, or resource consumed

## Data Security

Protections against external and internal threats

## Data Governance

Assurances of data quality, compliance, ethics



## A Data Mesh Is...

A data solution for enterprise-scale domains and/or event-driven data-centric cloud projects

A data architecture approach focused on outcomes (data products), IT agility (service mesh), and speed (streaming data)



## A Data Mesh Is Not...

An alternative point-solution for data warehouse or data lakes



A finite project that can be run by a LoB Departmental IT org in isolation



A single tool or single cloud service that you can buy

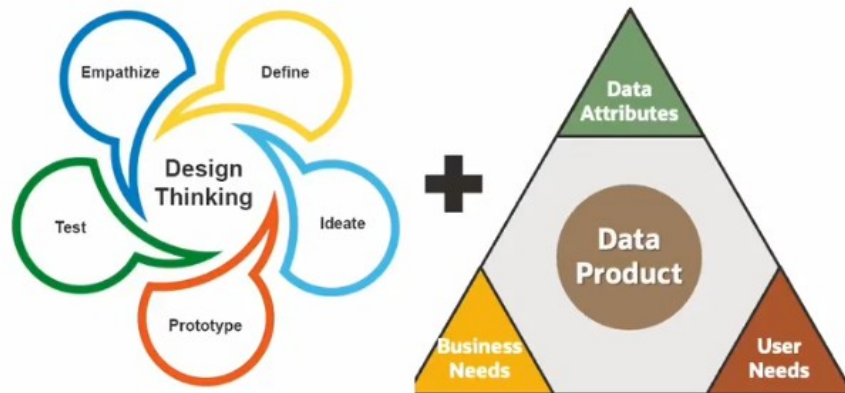




# Attributes of a Trusted Data Mesh

*Upgrade legacy enterprise data architecture, monolithic integration tools, and outmoded batch processes.*

## Value-Focused, Data Product Thinking



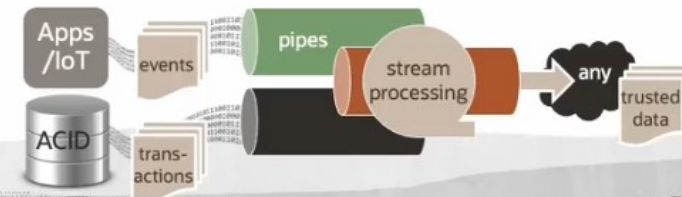
## Decentralized, Multicloud Mesh



## Enterprise Data Ledgers



## Trusted, Polyglot Streams



# What is a Data Mesh?

*A trusted Data Mesh is a data architecture approach focused on outcomes (data products), IT agility in a multicloud world (service mesh), trusted data of all kinds (polyglot data streams), and faster business innovation cycles (event-driven integration).*

