

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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(1) decentralized 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 22, 2021 | [Edit article](#) | [View stats](#)

Jeffrey T. Pollock
Vice President Product Development

This is the first of a multi-part series that I plan to cover here. I am basing this series of posts on content I developed 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 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



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

January 2021, Version 2.2
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Oracle Engagement on Data Mesh

Thought Leadership



Tools for data products

Decentralized event-driven architectures

Streaming patterns



Data as Capital, and Liquidity of Data

PAUL SONDEREGGER
SENIOR DATA STRATEGIST
ORACLE

DATA LIQUIDITY

Ability to get data from its point of creation to its many points of use efficiently

SUPPLY DEMAND SUPPLY DEMAND SUPPLY DEMAND

Public Cloud Local Cloud On Premises

Apps Analytics Algorithms

1:13 / 12:32

1x HD 4+

Gartner

Selecting an Information Valuation Method



gartner.com/SmarterWithGartner
Source: Why and How To Measure the Value of Your Information Assets, August 2015
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Accelerate Business Transformation Goals

Scope of Data Mesh Concepts

Organizational/Systems



Strategy: Data Product Thinking



Design 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

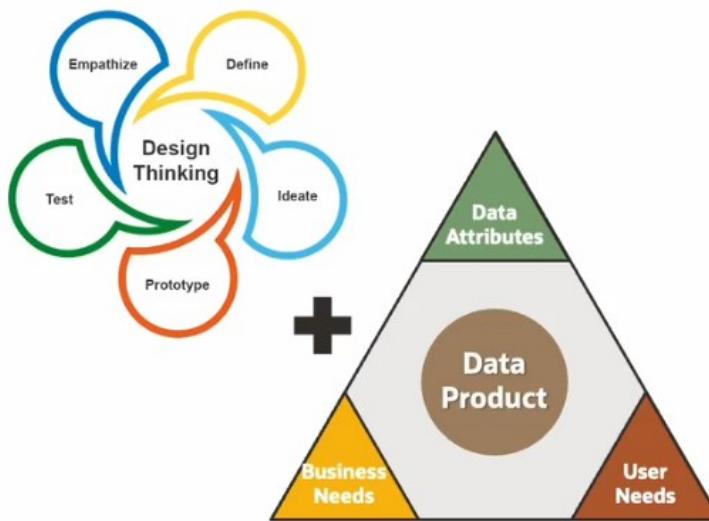


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Organizational/Systems



Strategy: Data Product Thinking



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Digital Capital and Superstar Firms¹

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 Firms¹

25%

Total clarity

Operational data availability

Faster innovation cycles

Reduction in data engineering

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Hidden Data Economy

Wide variety of shapes and structures

Applications

Sensors

Devices

Demand side

Analytics

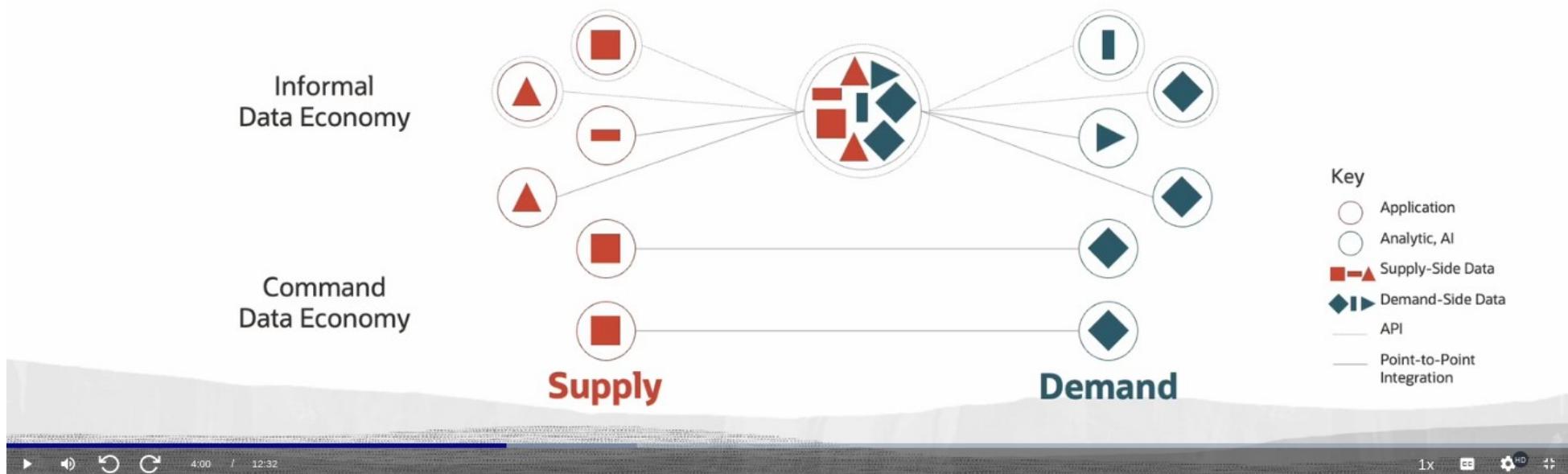
AI



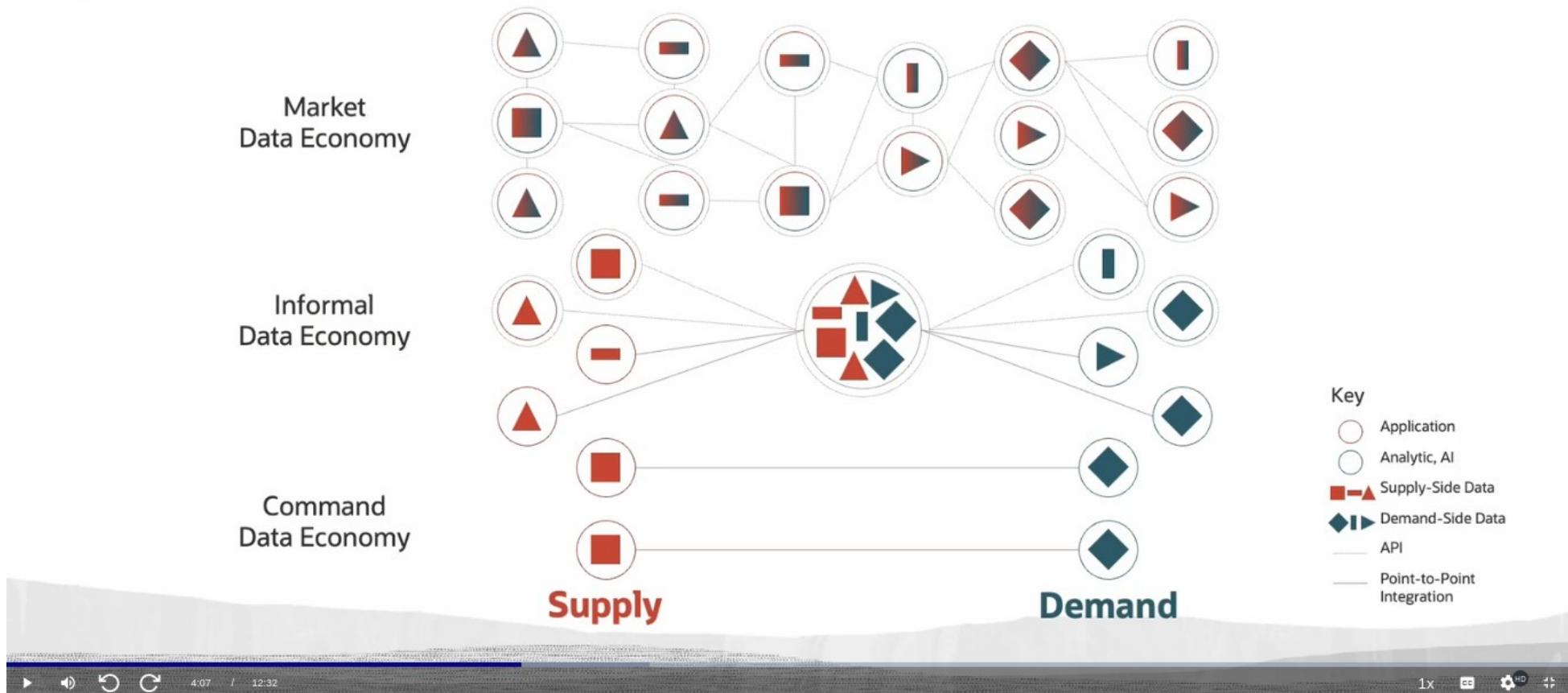
Hidden Data Economy

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



Twin Threats of Digital Transformation

Loss of
competitive
advantage

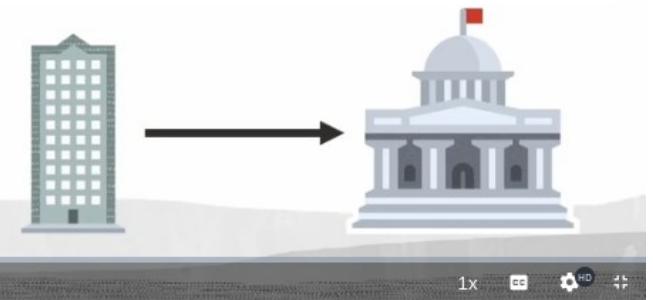


Legal and
reputational
damage

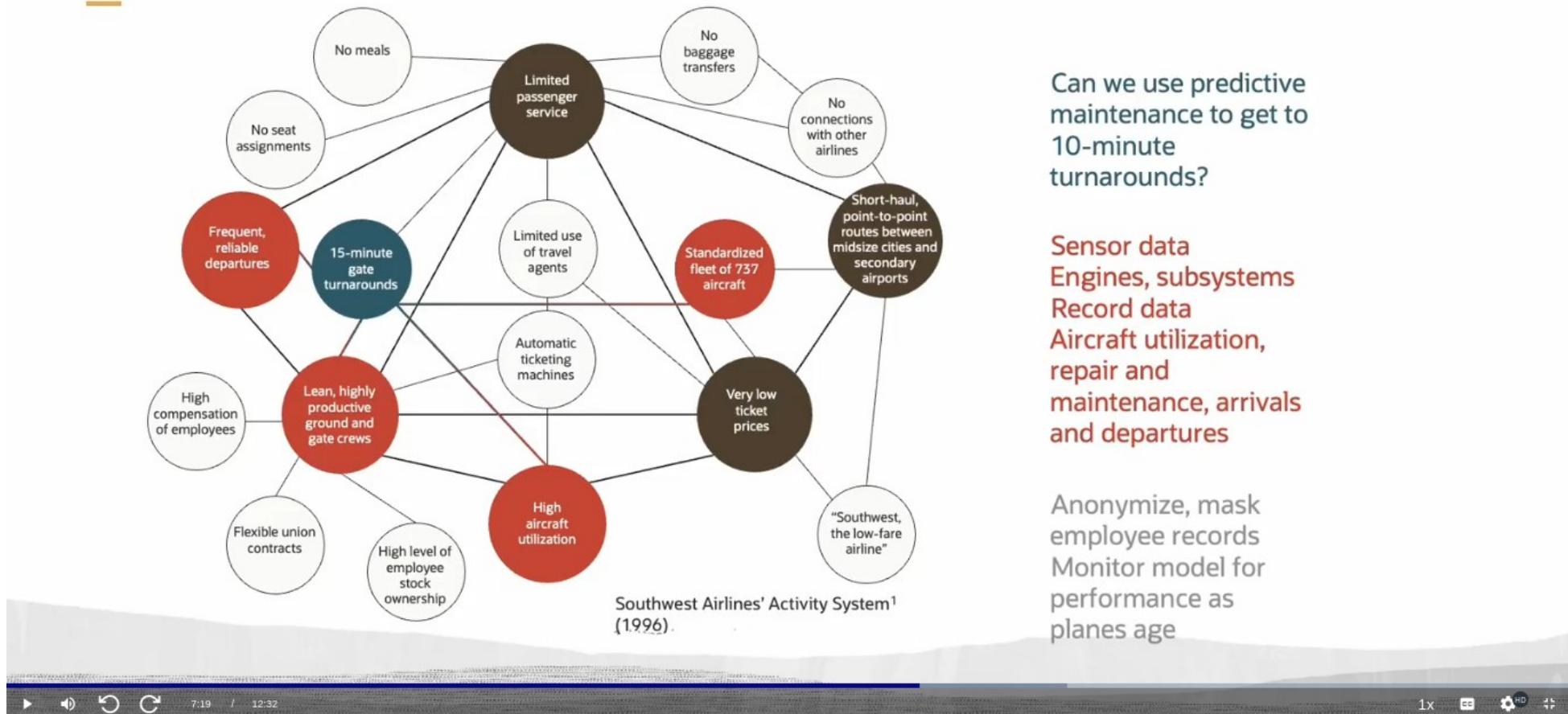
Data Strategy That Reinforces Competitive Strategy

- Competitive Strategy
- Create unique value
in a unique way**
 - Value your customer can only get from you
 - Through activities your rivals cannot easily copy

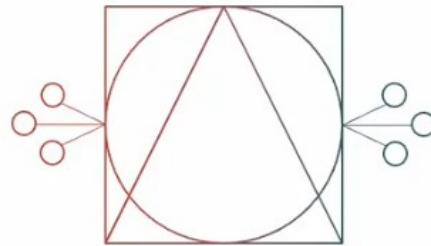
- Data Strategy
- Create unique data assets**
 - Observations only you possess
- Use them to enhance uniqueness**
 - Differentiation, cost position, or both
- Protect observer and observed**
 - Safeguards for all data stakeholders



Activity Systems Tie Data Strategy to Competitive Strategy



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

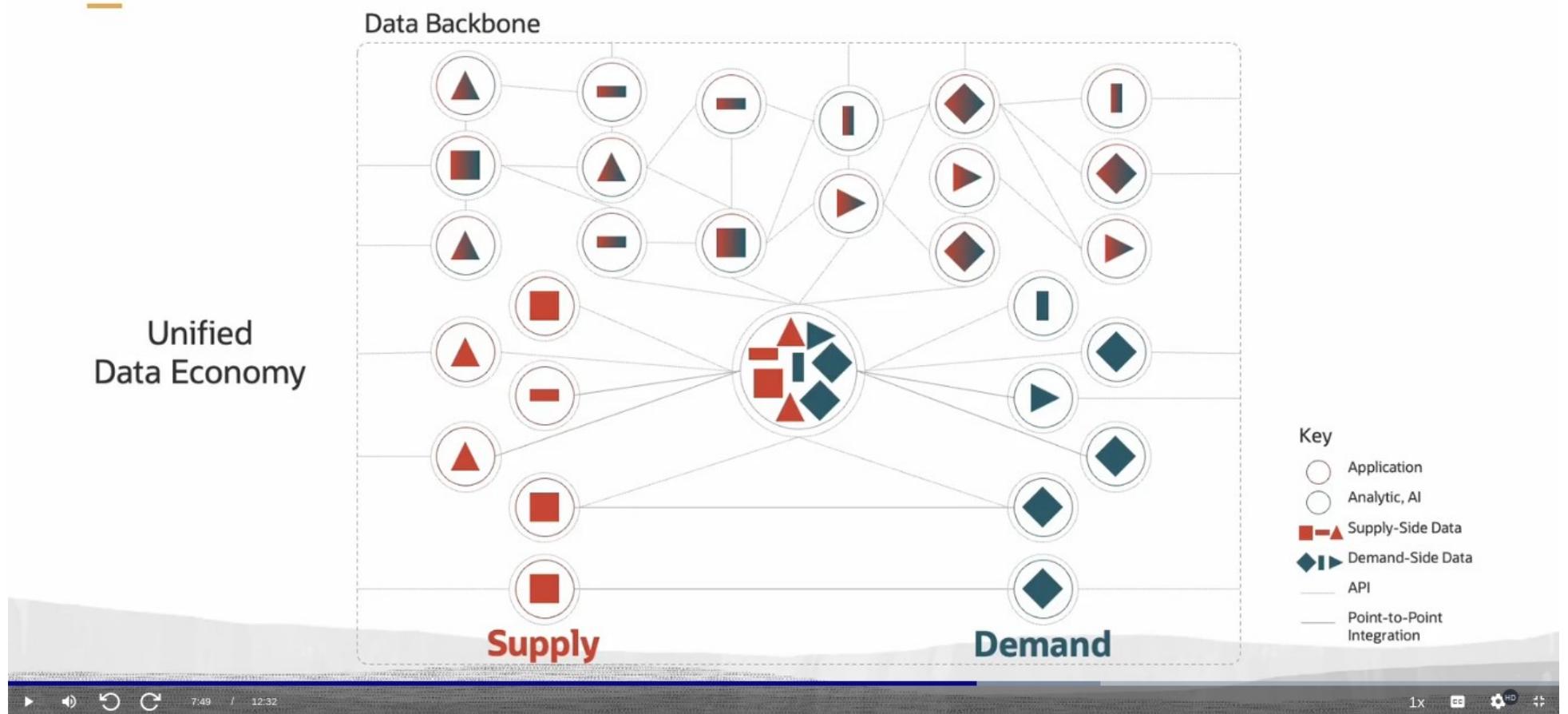
ML models, scoring, business rules

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 recombination¹

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

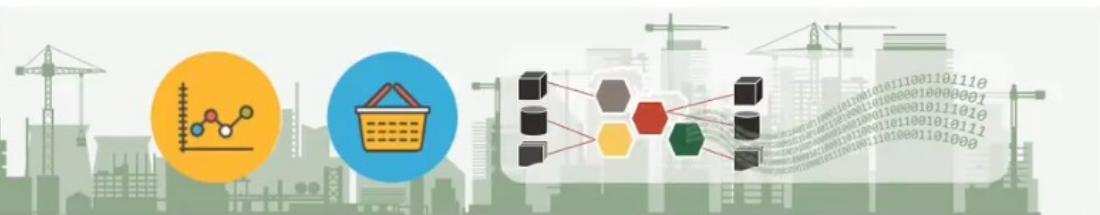


A Data Mesh Is...

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



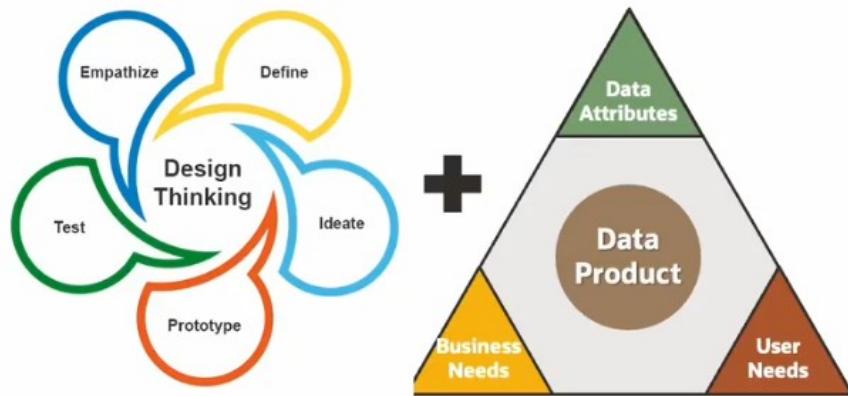
A single tool or single cloud service that you can buy



Attributes of a Trusted Data Mesh

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

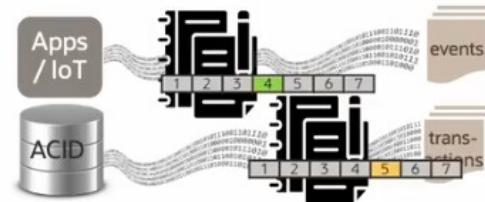
Value-Focused, Data Product Thinking



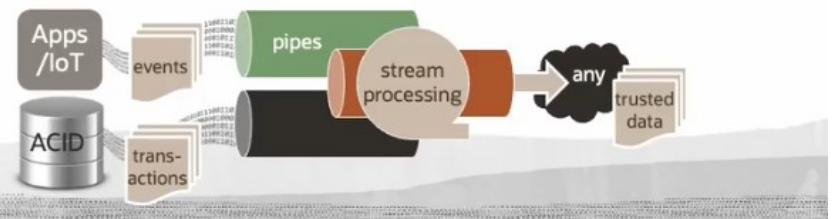
Decentralized, Multicloud Mesh



Enterprise Data Ledgers

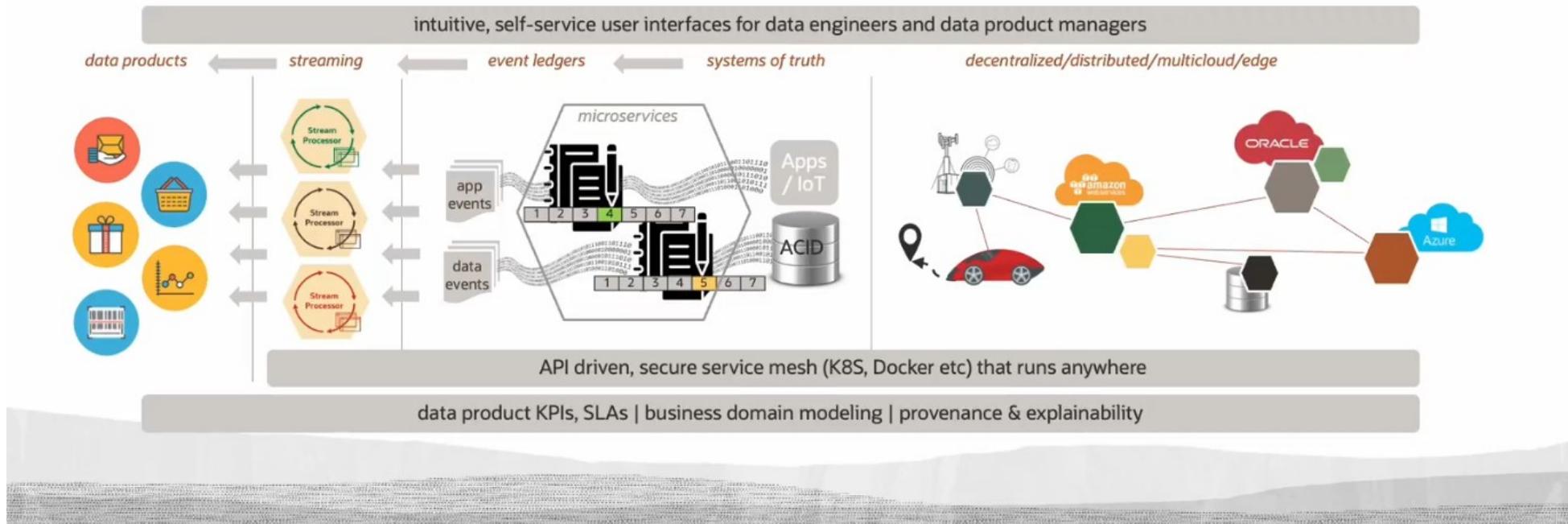


Trusted, Polyglot Streams



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).



OCI-Based Data Mesh Blueprint

