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Vendia

# Powering Semiconductor Industry Solutions via Blockchain : PDF + Vendia

Reducing MTTD of Failures, Eliminating Counterfeit Components and Unlocking Deeper Analysis

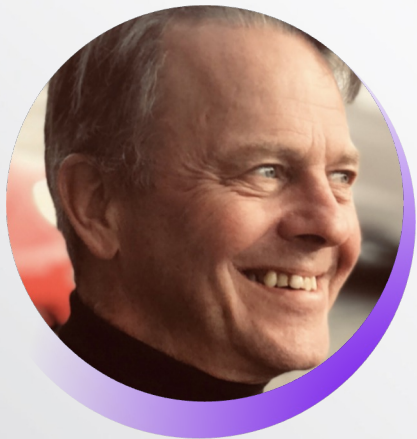




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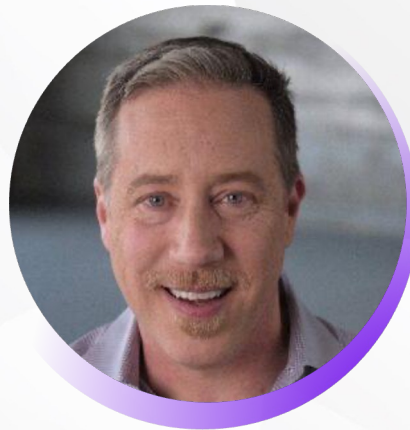
# Speakers



**Dave Huntley**

Strategic Marketing, Business Development  
& Standards Liaison

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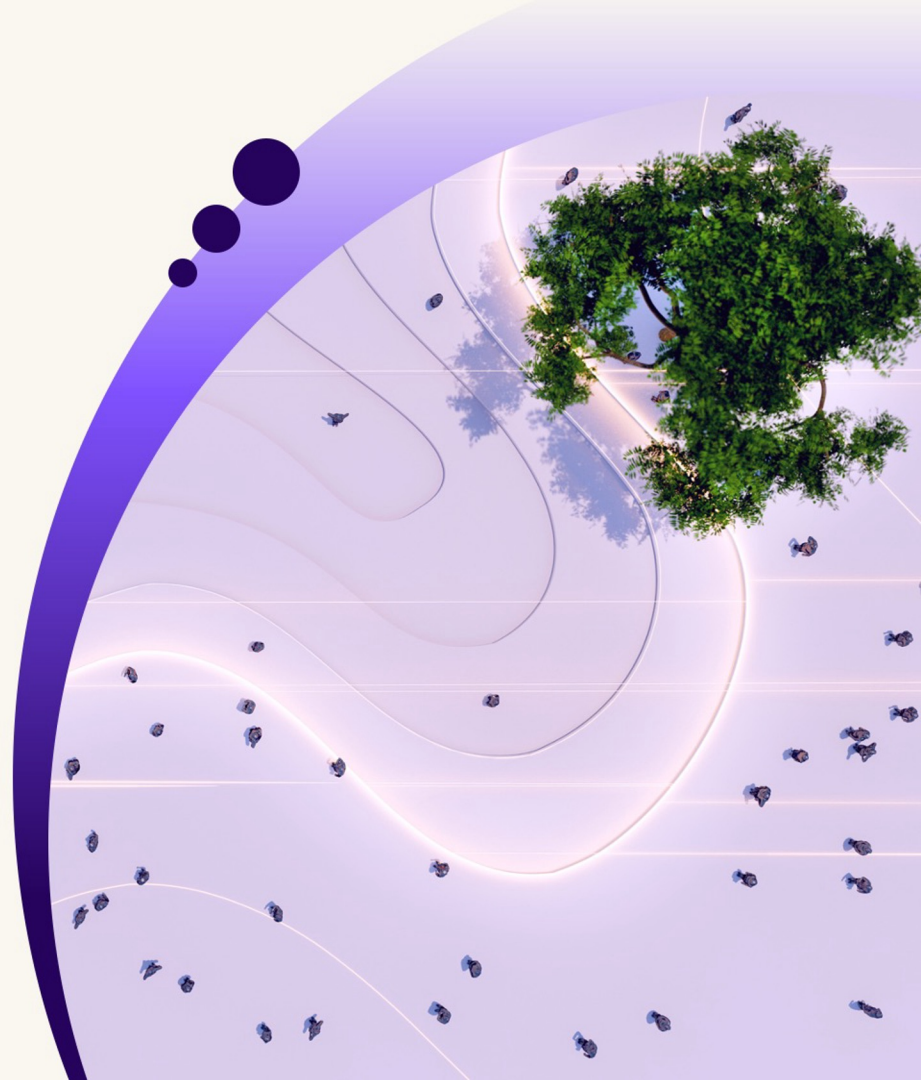
**Dr. Tim Wagner**

Co-Founder & CEO

 **Vendia**

# Agenda

- 1 Market Needs
- 2 SEMI traceability standards
- 3 End to end approach to traceability
- 4 Why blockchain





# What is the market need?

Reliability and security events are costly

**Reliability** – The road to zero defects

- [Reliability Becomes The Top Concern In Automotive](#) (2019)

**RMA** - Failures in the field

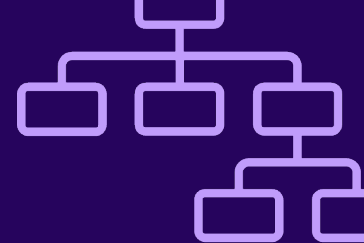
- [Return to sender: Resolving the automotive-recall resurgence](#) (2019)
- [Automotive recalls cost \\$22 billion in 2016](#) (2018)

**Security** - Suspected counterfeits, gray market parts, malware, etc.

- [Combating Counterfeit Components in the DoD Supply Chain](#) (2015)
- [Trade in fake goods is now 3.3% of world trade and rising](#) (2019)

**Regulation** – Compliance with regulations

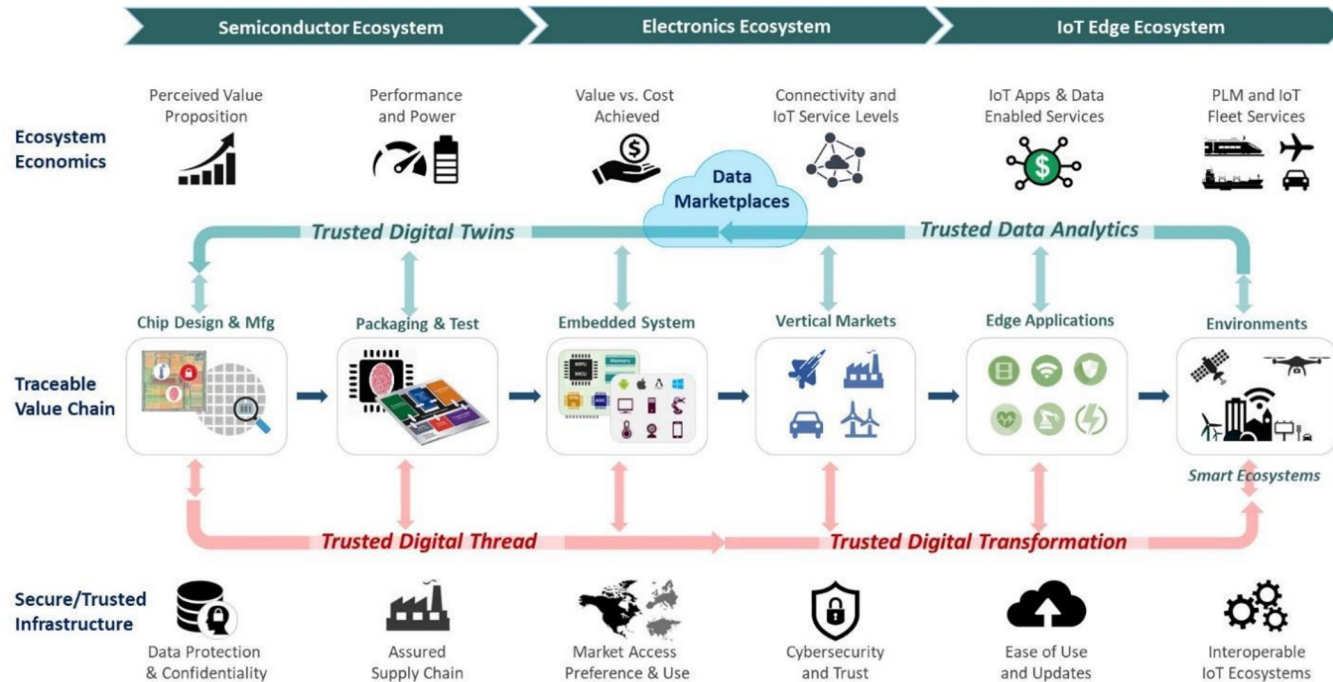
- [Export Administration Regulations \(“EAR”\)](#) (2022)



## Supply chain traceability would:

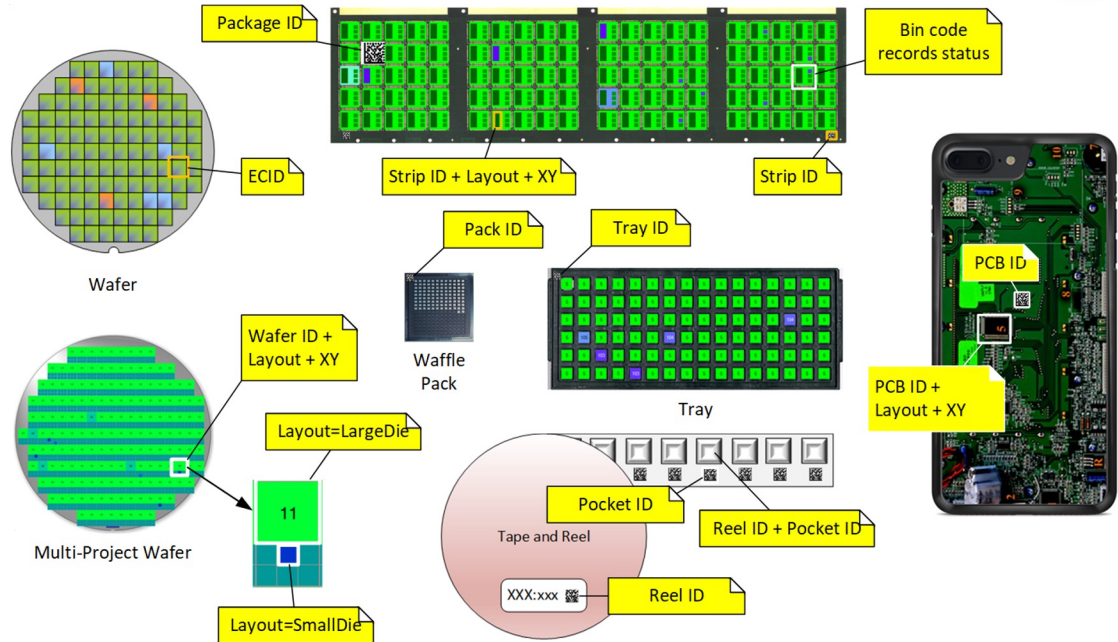
- ✓ Provide fast and precise analysis of a reliability or security event
- ✓ Enable short- and long-term containment plans to reduce cost and preserve brand
- ✓ [Assurance & Preferred Supply through Provenance & Traceability](#)

# Assurance & Preferred Supply through Provenance & Traceability



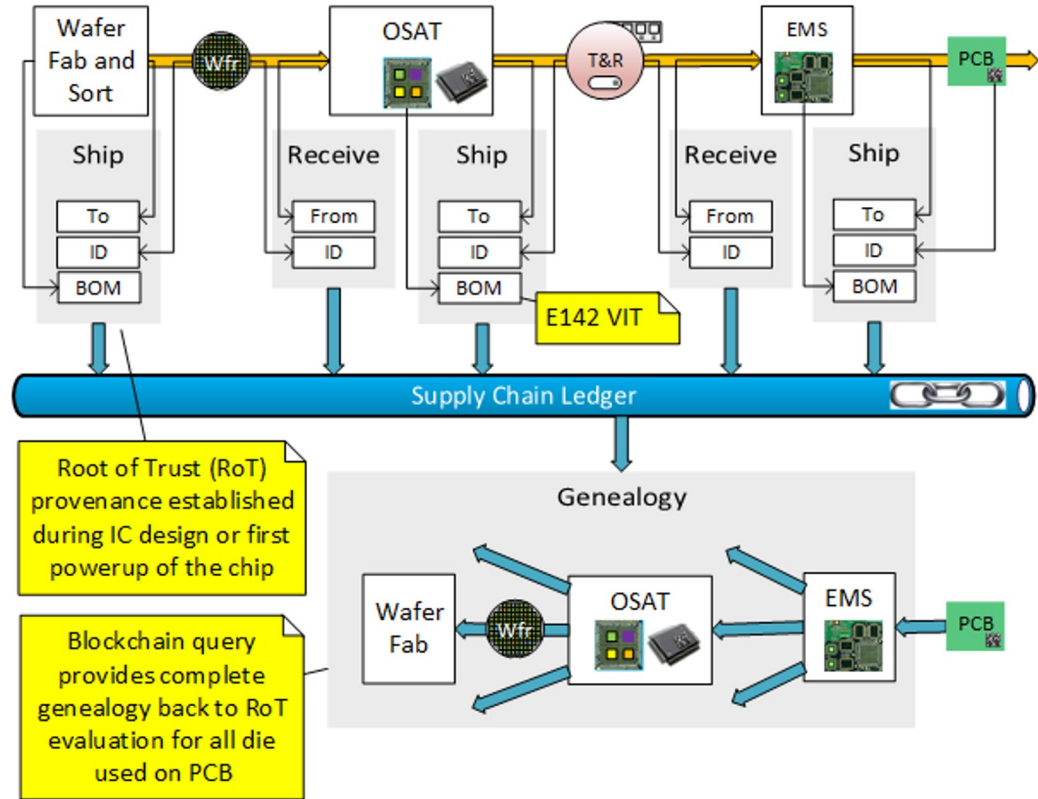
# SEMI E142 Substrate Mapping

- SEMI E142 standard defines a data model for devices within a wafer or complex assembly
- Devices have a virtual identifier (VID) based on this model
- Bin codes, transfers, device ids and other data are associated with device via the VID
- SEMI E142 forms the basis for single device tracking of complex assemblies both within and between supply chain nodes
- Published 2006, Revised 2021



# SEMI 6504 standard proposal

- SEMI 6504 is a standard proposal to record chain of custody and provenance across the supply chain on a distributed ledger technology (DLT)
- Under development by the Single Device Tracking Task Force at SEMI



# The unique value of blockchain

1. A distributed ledger technology such as blockchain offers trusted decentralized data approach to help manufacturers and critical infrastructure sectors to secure their supply chains and end operating environments
2. PDF anticipate [Manufacturing Supply Chain Traceability Using Blockchain Related Technologies \(NIST\)](#) will be needed to connect the supply chain nodes
3. Standards based solution should link all supply chain nodes (not only PDF customers)
4. PDF holds several leadership roles at SEMI including liaison with NIST, JEDEC, IPC, ... and will drive the standardization of the solution chosen by the industry
5. Other industries have successfully implemented supply chain traceability solutions based on blockchain
6. Partnering with a vendor of such solutions ensures access to the learning from other industries



# PDF Solutions partner with Vendia for supply chain traceability

## Analytics across semiconductor product life cycle

powered by **PDF/SOLUTIONS™**



## Supply chain traceability

powered by **Vendia**

# An Innovative Solution

**PDF/SOLUTIONS™** |  **Vendia**

“

Approximately 10% of components that reach an electronics service line are compromised.

“

In today's complex global supply chain, components for a single semiconductor chip can travel 25,000 miles to numerous specialized contractors before they are ready for installation.”

“

Data and devices are so complex that audit trails have become daunting tasks.

“

Recent occurrences of US microchips showing up in sanctioned geographies.

“

80% of company data lives outside of the organization.

# Blockchain: Building trust in a digital world



“Don’t  
gaslight me.”



Immutability &  
Tamper-proofing



“Here’s your  
receipt.”



Lineage &  
traceability



“Meet me at 5pm  
on Tuesday.”



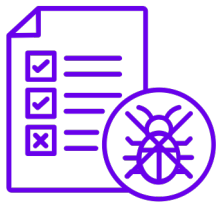
Transactions



“I’m in charge of  
doing the chores  
today.”



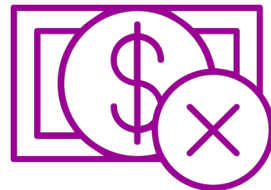
Smart contracts



Achieve **near zero**  
product defects



Mitigate and control  
**security threats**



Prevent  
**counterfeiting**

improving traceability across the entire  
semiconductor supply chain can...



# We need a solution that offers...



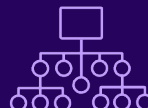
## Single Source of Truth

Always  
**synchronized** and  
**harmonized** data  
across all systems



## Policy Management

**Complete**  
**control** and  
ownership of your  
data across your  
ecosystem



## Custodial Control

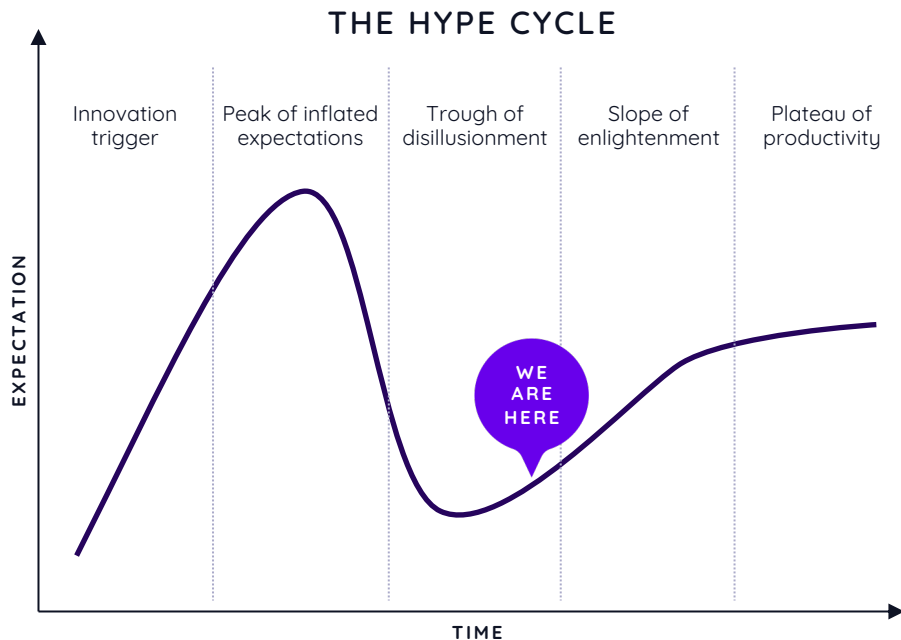
**Complete**  
traceability with  
lineage and  
accountability of  
changes as they  
happen



## Integration and Data Management

**Seamless**  
bi-directional  
connectivity  
between systems  
with consensus

# Is Blockchain living up to the hype?



## NEWS

**Maersk, IBM to shut down blockchain joint venture TradeLens**

- November 30, 2022

**Microsoft is shutting down its Azure Blockchain Service**

- May 12, 2021

**Australian securities exchange cancels blockchain-based clearing system at \$168M cost**

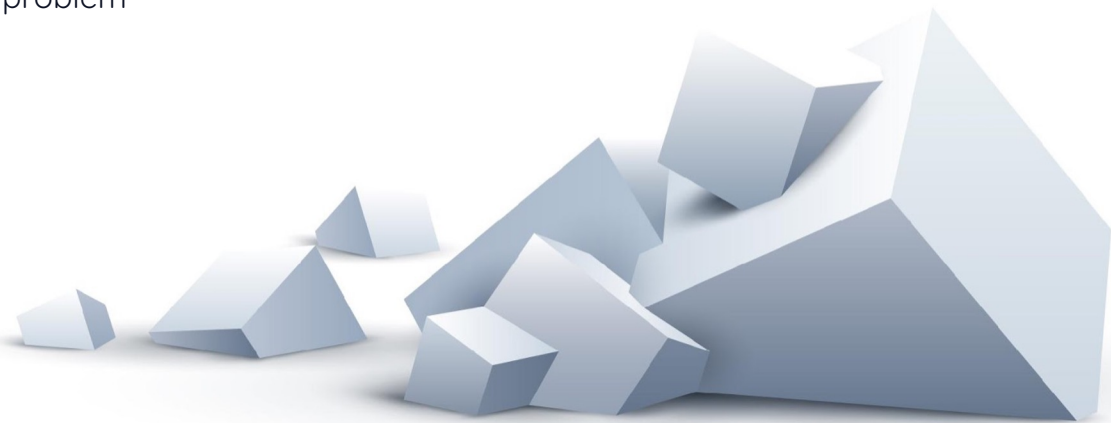
- November 17, 2022

# Why did first-gen blockchain fail?

1. Inability to scale, no fault-tolerance
2. No support for data modeling or evolution in any fashion
3. Not cloud native - built outside of, and ignoring, modern cloud technologies and best practices
4. No native file, SQL, CSV, or API support
5. No compliance - the “GDPR collision” problem

“

**If it isn't  
enterprise-ready,  
it isn't a solution.**



# A digital backbone for collective data intelligence

## Any data

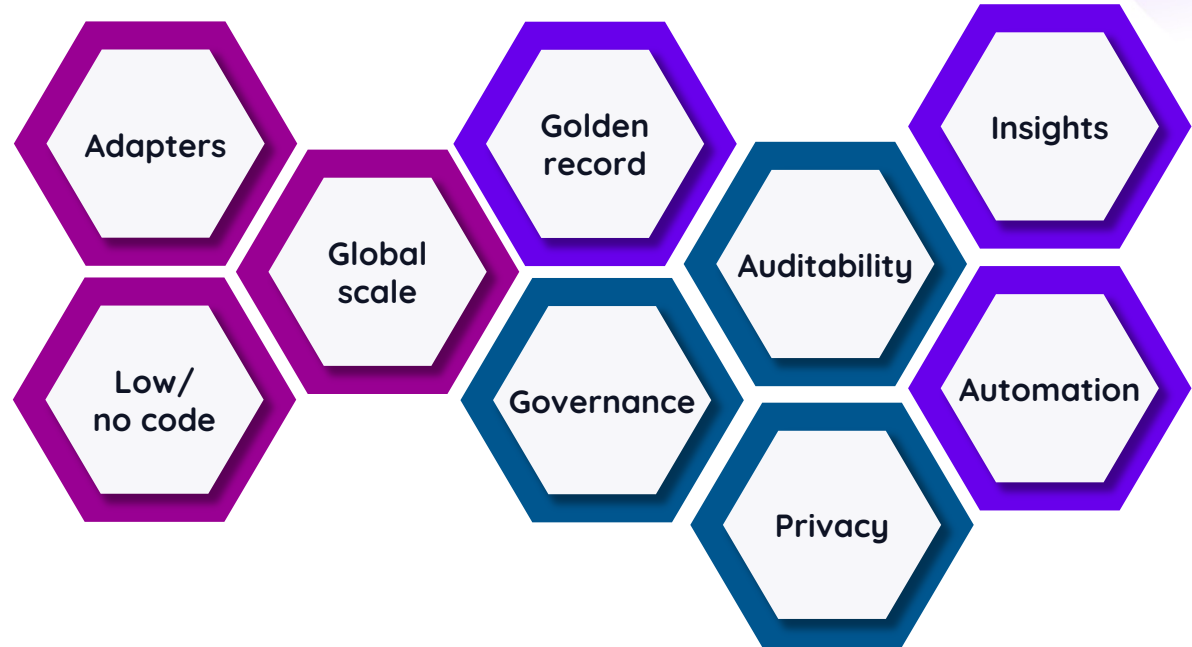
Harmonize and synchronize data in real time

## Any cloud

Share securely across multiple clouds

## Any tech stack

Integrate quickly with any solution



Real-time Trusted Agility

“

eBaaS removes a good portion of the technical obstacles for businesses looking to take advantage of the benefits of blockchain technology.

**Gartner**

2023 Hype Cycle for XaaS

## Vendia's unique offering

- **Enterprise-ready scale**  
Proprietary consensus, real-time data replication with a serverless distributed ledger delivers orders of magnitude faster than public or private chains
- **Powerful data models & schema evolution**  
Define and structure data. Evolve your schema when the need arises.
- **Multi-cloud support**  
Ability to be deployed on any cloud out-of-the-box
- **Flexible data formats**  
Support for files of any type.
- **Built-in compliance programs**  
SOC2 and GDPR are built into the core of the platform, ready for PII/PCI data handling out of the box.



# Focus on business outcomes, not tech complexity

## Single copy of truth

Guarantee a consistent view across the digital ecosystem

## Security and compliance

Built-in compliance for GDPR, PII/PCI, and more

## Low code, zero ops

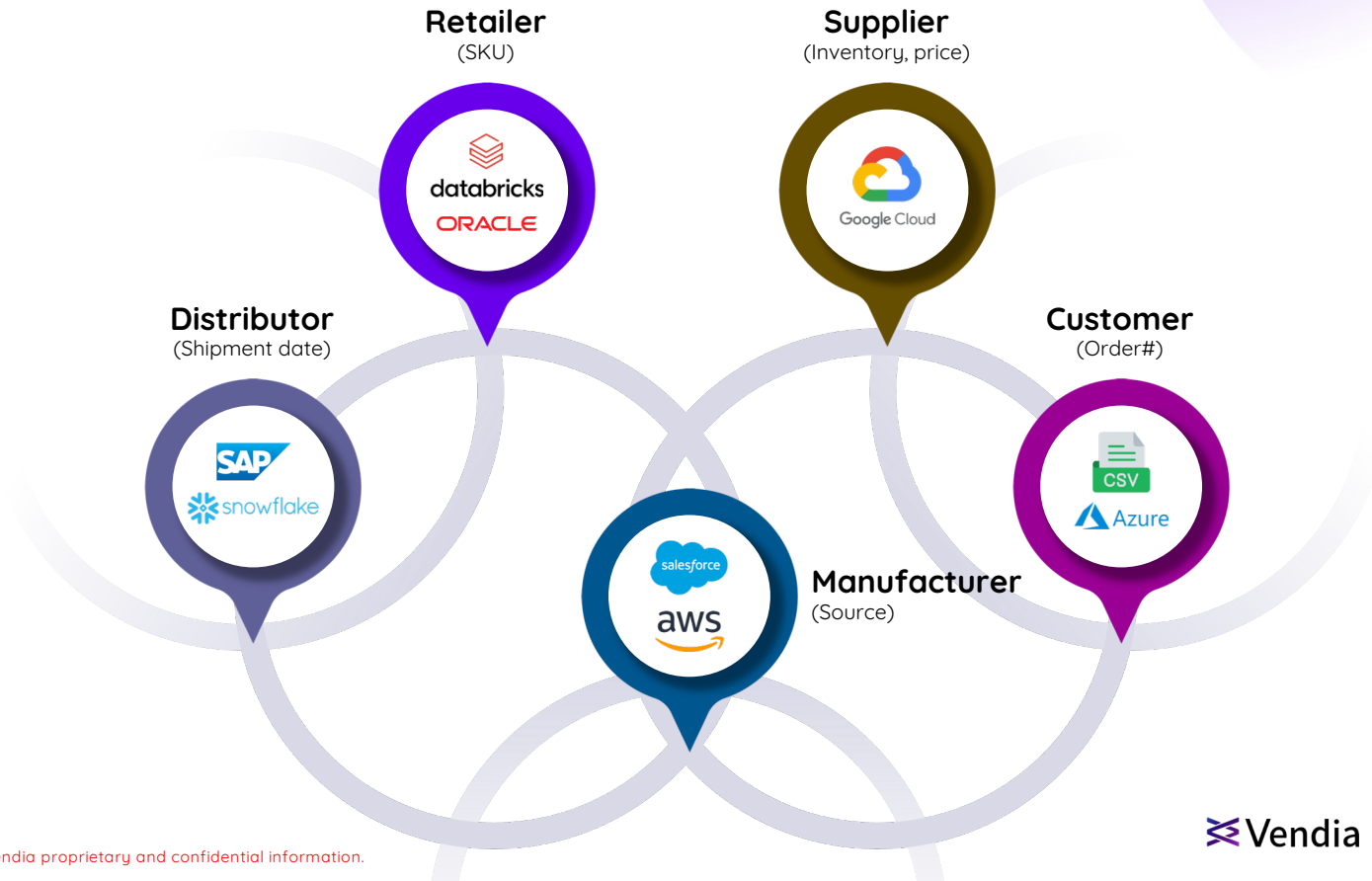
Powerful data sharing without the costly overhead

## Multi-cloud, multi-party

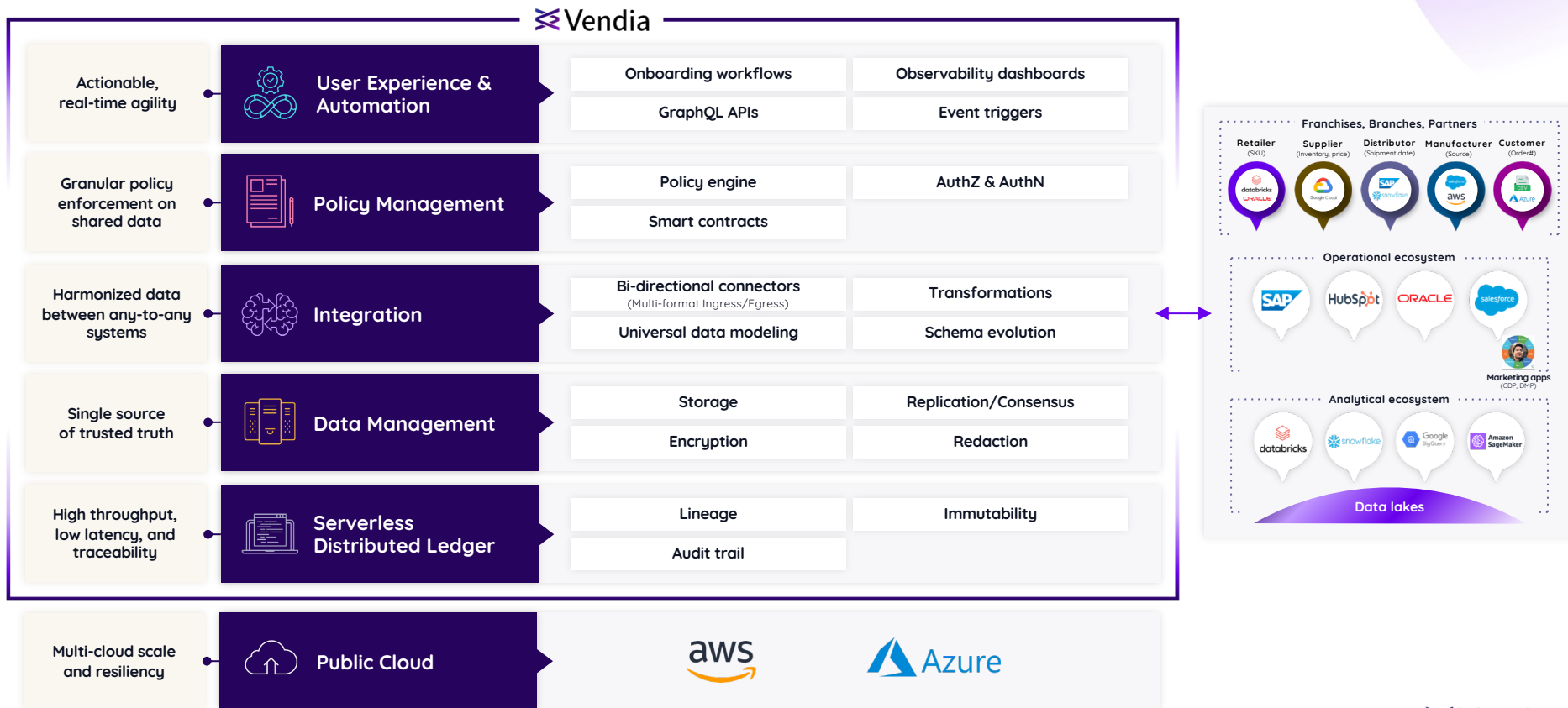
Share trusted data across clouds and companies

## Global scale

Grow and scale the partner ecosystem alongside business needs



# Vendia platform architecture



**Better  
together.**

**Powering the data  
expressway for collective  
data intelligence**

A strategic partnership and joint offering for Semiconductor Industry delivering end-to-end supply chain traceability and anti-counterfeiting



Q & A



Thank you