DARETO

The Data Dilemma:

Balancing Access and Protection in Manufacturing

Cham, 25.09.2024

Agenda

1) Introduction: Data-Driven Economy
2) Stakeholders & Interests
3) Value of Data Exchange
4) Real World Example
5) Challenges in Data Exchange
6) Core Principles
7) Community Driven Collaboration Platforms
8) Conclusion

Data-Driven Economy

Traditional Economy:

Based on physical assets such as capital, labor and raw material

Success is driven by:

- production capacity
- human resources
- physical infrastructure

Innovation from incremental improvements in products or processes

Data-driven Economy:

Data is key asset

Success is driven through:

- data-driven decision-making,
- personalized services
- process optimization

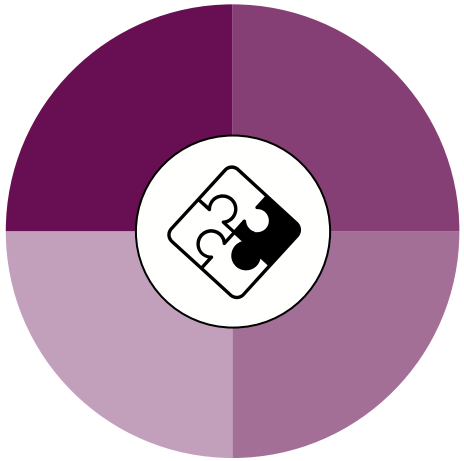
Innovation is fueled by data insights, enabling rapid development of new products, services, and business models.

Data Exchange is key for maximizing system performance, optimization and predictive maintenance.

Different Stakeholders with different interests!

Stakeholder & Interests

Customers:
- Personalized Services & Products
- Data Privacy and Security
- Improved Customer Experience



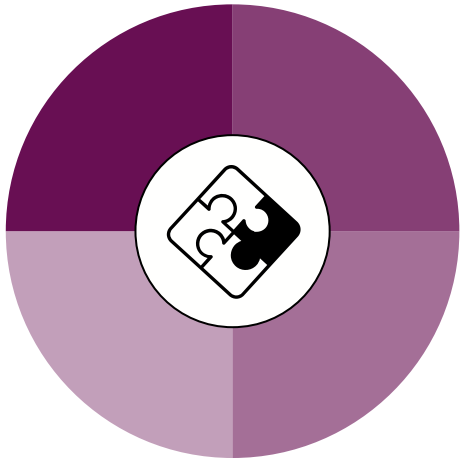
Suppliers:
- Efficient Supply Chain Management
- Collaborative Innovation
- Transparency and Trust

Governance:
- Data Security and Privacy Compliance
- Economic Growth and Innovation
- Regulation of AI and Automation

Producers:
- Operational Efficiency
- Innovation and Competitiveness
- Supply Chain Efficiency

Value of Data Exchange

Customers:
- Loyalty
- Improve services
- Shaping new trends



Suppliers:
- Supply chain efficiency
- Innovation Partnering
- Flexibility
- Responsiveness

Governance:
- Creating safe environment
- Boost innovation
- Fair competition
- Ethical use of data

Producers:
- Reduces waste and costs
- New Products and business models
- Improving forecast
- Reducing delays

Real World Example

DARETO

Car **producer** and machinery **suppliers**
in a data-driven ecosystem

Relation: the producer relies on the supplier for robotic arms and assembly-line machinery

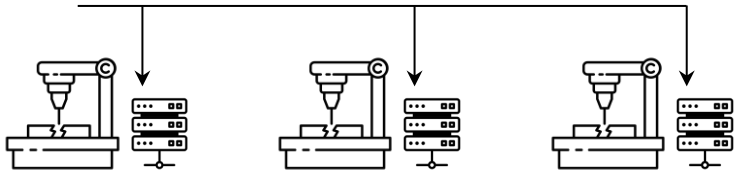
Target: improve operational efficiency and innovation through:

- Predictive Maintenance
- Real-Time Monitoring
- Automatic Parts Reordering
- Inventory Management
- Collaborative Innovation
- Continuous Improvement

Real World Example

Car **producer** and a machinery **suppliers**
in a data-driven ecosystem

Suppliers perspective:



Line: 1
Customer: B
Type: A

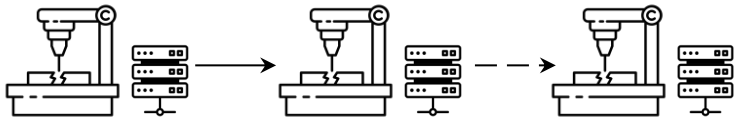
Line: 2
Customer: A
Type: B

Line: X
Customer: C
Type: C

Insights:

- Predictive Maintenance and Component Failure Data
- Benchmarking Data from Other Manufacturers
- Software Updates and Machine Optimizations

Producer perspective:



Line: 1
Supplier: B
Type: C

Line: 1
Supplier: A
Type: B

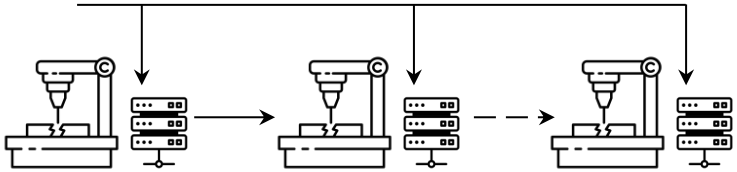
Line: 1
Supplier: C
Type: A

Insights:

- Production Volume and Machinery Utilization Data
- Error Rates and Machine Performance Data
- Energy Consumption Data
- Process Data

Real World Example

Connect the dots
and create **transparency**



A cross-company database (Digital Twin) enables:

Producer:
feedback loops to improve:

- efficiency
- reliability
- higher output
- fewer defects

Supplier:
Upgrade machine design to enhance:

- more efficient models
- custom optimizations
- updates for specific needs

Win-win Scenario!

Challenges in Data Exchange

Protecting Intellectual Property (IP):

- Loss of Competitive Advantage
- Risk of Reverse Engineering
- Confidential Business Information
- Data Misuse by Third Parties

Technical Barriers:

- Data Integration from Disparate Sources
- Data Quality and Consistency
- Scalability and Big Data Management
- Real-Time Data Processing

Data Security and Privacy:

- Unauthorized Access and Data Breaches
- Data Privacy Violations
- Data Integrity and Accuracy

Balancing Interests:

- Secure competitive advantage while still collaborating effectively with partners
- Achieving transparency in the supply chain without compromising suppliers sensitive business information

Core Principles

Decentralized Data Storage, Data Models, and Technologies

- Decentralized Storage keeps data close to its source (e.g., machines), reducing single points of failure.
- Decentralized Protocols like IPFS and Blockchain allow secure data sharing across multiple nodes.
- P2P Networks distribute data across participants, ensuring fault tolerance and scalability.

Benefits:

Enhanced security, scalability, and resilience.

Challenges:

Managing consistency across distributed nodes.

Data Access Contracts and Access Management

- Data Access Contracts define who can access data and under what conditions.
- Access Management uses technologies like decentralized identifiers (DIDs) and blockchain to enforce contracts and track access.

Benefits:

Secure, fine-grained control over data sharing.

Challenges:

Complexity in managing contracts across distributed systems.

Data Integrity

- Data Integrity ensures data remains accurate and tamper-proof.
- Cryptographic Hashing and content-addressable storage verify data authenticity and consistency in decentralized systems.

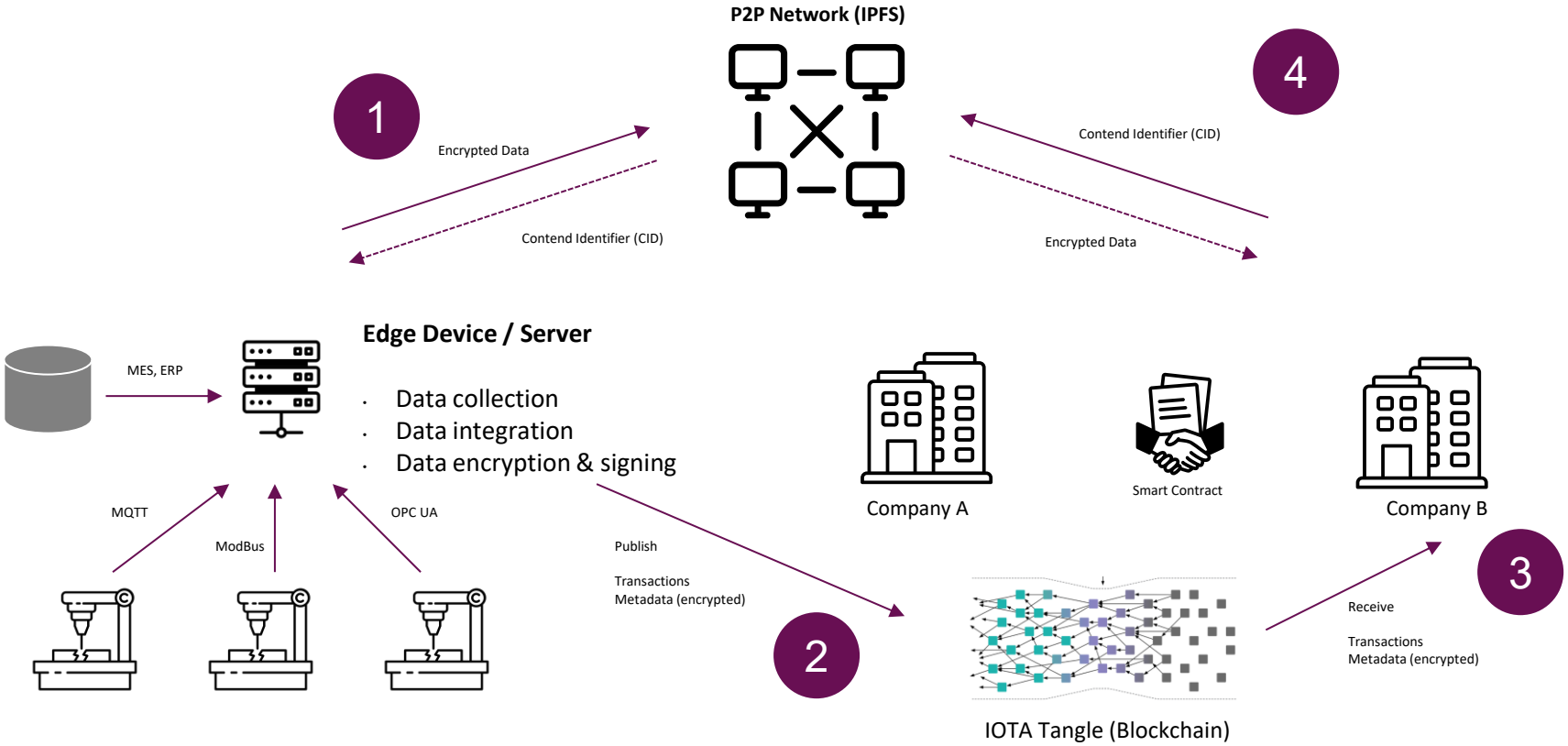
Benefits:

Trustworthy, tamper-proof data for decision-making.

Challenges:

Real-time integrity checks can be computationally expensive.

Community Driven Collaboration Platforms



Conclusion

Key Requirements:

1. Open, Community-Driven Platforms
Collaborative and inclusive, allowing wide participation without gatekeeping through central organizations or big companies.

2. Decentralized, Resilient Architecture
No single points of failure; data and control are distributed for security and reliability.

3. Web3 and Self-Sovereign Identity (SSI)
Users own and control their identity and data without relying on third parties.

This approach empowers manufacturers and stakeholders to securely collaborate, innovate, and maintain control over their data, driving efficiency and growth in the Industry 4.0 era—without sacrificing trust, transparency, or autonomy.

DARETO

Dareto GmbH

Ridlerstraße 35A
80339 München

www.dareto.tech
info@dareto.tech

+49-160-5245595