Transforming Fragmented Data from the Factory Floor into a Cohesive and Accessible Resource for Enhanced Decision-making

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FIRST RESONANCE

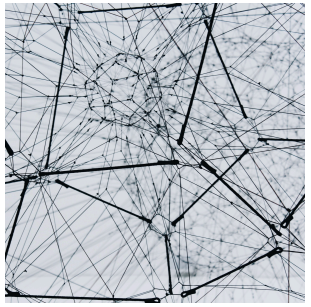
Missed Bolt Tightening

A recent Boeing 737 Max 9 revealed that a missed step in tightening specific bolts during manufacturing led to a passenger door detaching mid-flight. This is unfortunate for multiple reasons, but there are challenges and opportunities to modern manufacturing under the surface.

Manufacturing creates massive data

Massive volumes of data

Manufacturing companies produce more than **1800 petabytes** of data per year - twice as much as the next closest industry



Variety of data types

Manufacturing data includes sensor data, images, video, documents, logs etc. in both structured and unstructured formats.

Velocity of data generation

The rate of data generation is extremely fast with thousands of events per second especially from sensor data.

Manufacturing creates massive, varied and fast-moving data that holds huge potential value if leveraged properly.

Data solutions alone do not solve the problem

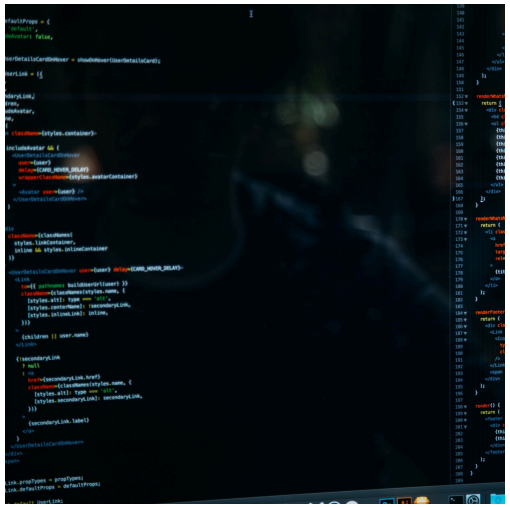
Many AI-for-manufacturing solutions will tell you that they will make you data-driven.

While it is critical to engage with software technology from the outside, many of these are going to solve a point solution. While they might solve specific problems, they do not empower your workforce to solve problems, fast.

Success at modern manufacturing enterprises

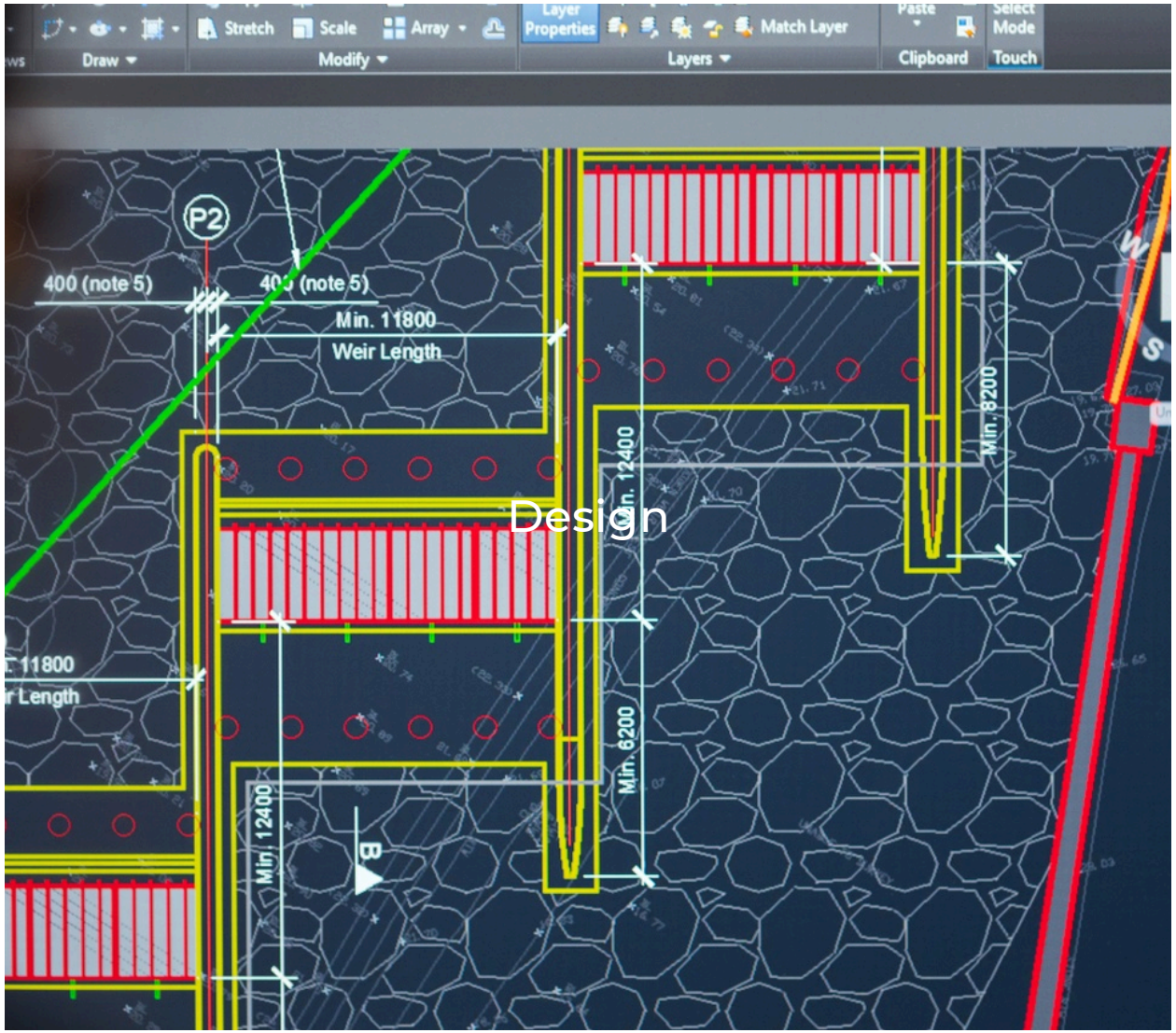
SpaceX, Blue Canyon Technologies, Saronic Technologies, and more

Democratized access to data



Paradigms for building applications to empower workflows

Empower data operations in all of your operations



Data Accessibility

Enabling Access is Vital

Making data accessible throughout an organization is crucial for leveraging its full potential and value.

Misses Can Be Costly

As seen in the Boeing 737 Max case, missed data on bolt tightening led to an in-flight door failure.

Start with Observability

Build a data observability layer to aggregate and structure data from across the organization.

Enable Applications

With an observability layer in place, applications can be built on top of the data to power analytics and insights.

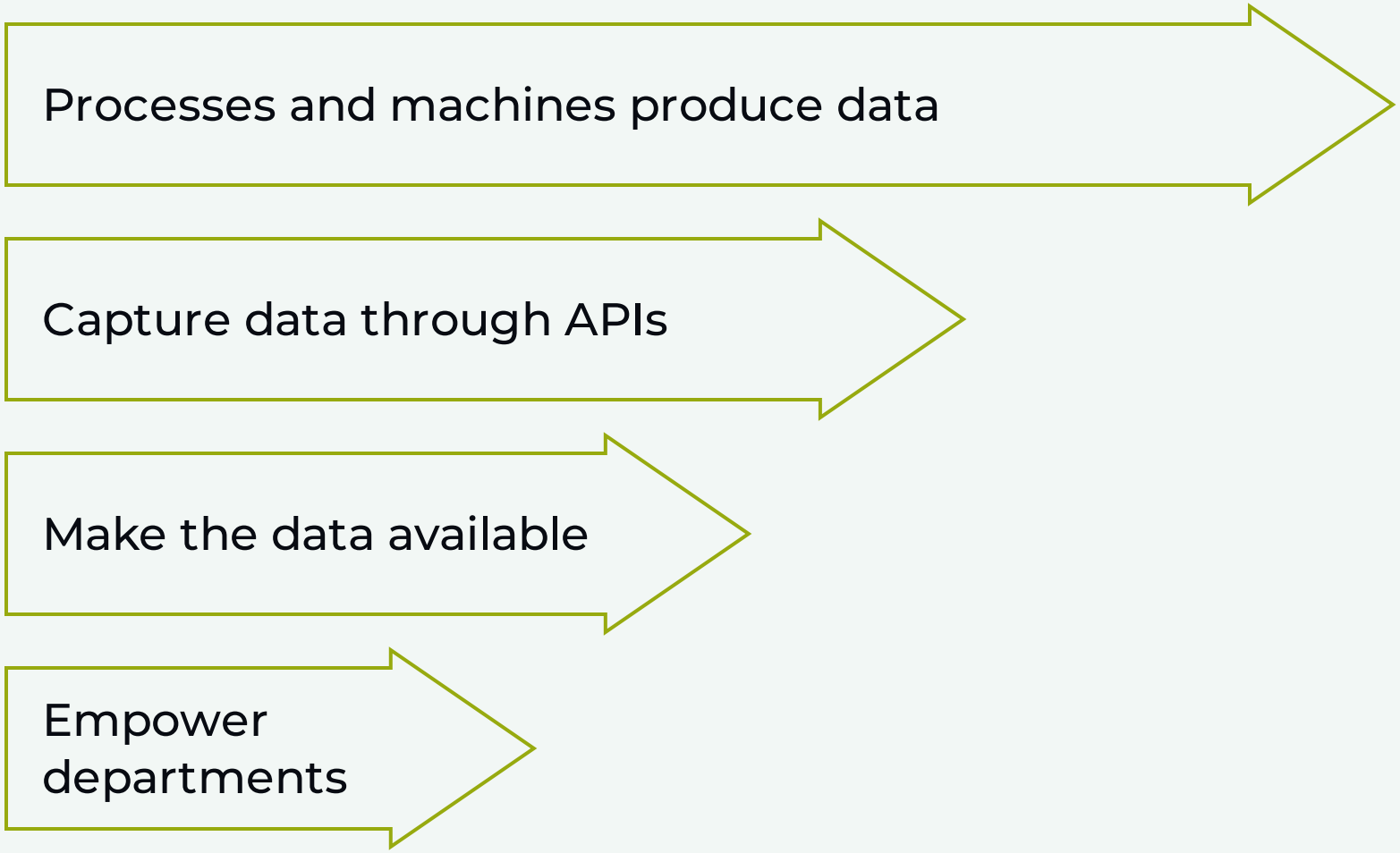
Train Employees

Employees across functions should be trained in data skills to fully utilize the captured data.

Leverage Modern Tools

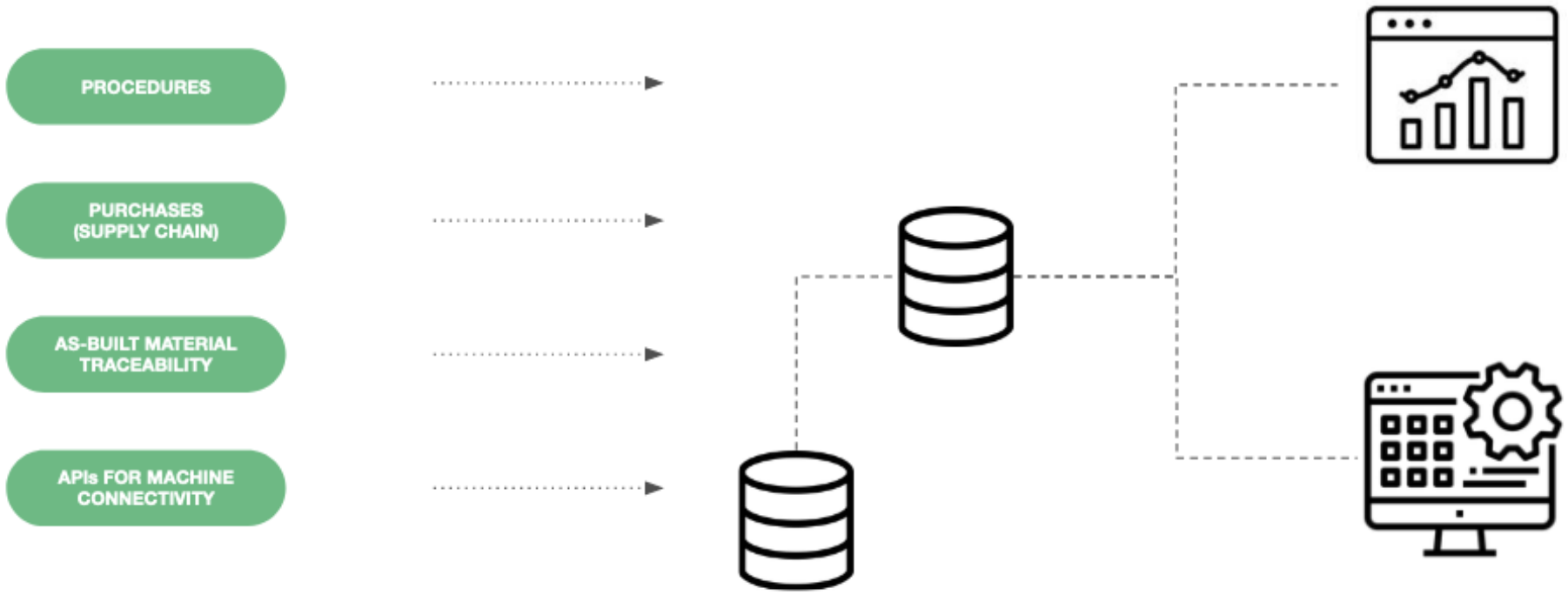
Cloud, APIs, and data lakes make large-scale data access and portability possible for organizations.

Observability Layer



Observability layer

Observability architecture



Build Apps on Data

Enable Real-Time Monitoring

Building applications on top of manufacturing data allows for real-time monitoring of operations.

Detect Issues Early

Continuous monitoring through custom applications can help detect potential issues early.

Improve Efficiency

Applications leveraging manufacturing data can optimize processes and improve efficiency.

Inform Decision Making

Data-driven applications provide actionable insights to inform better decision making.

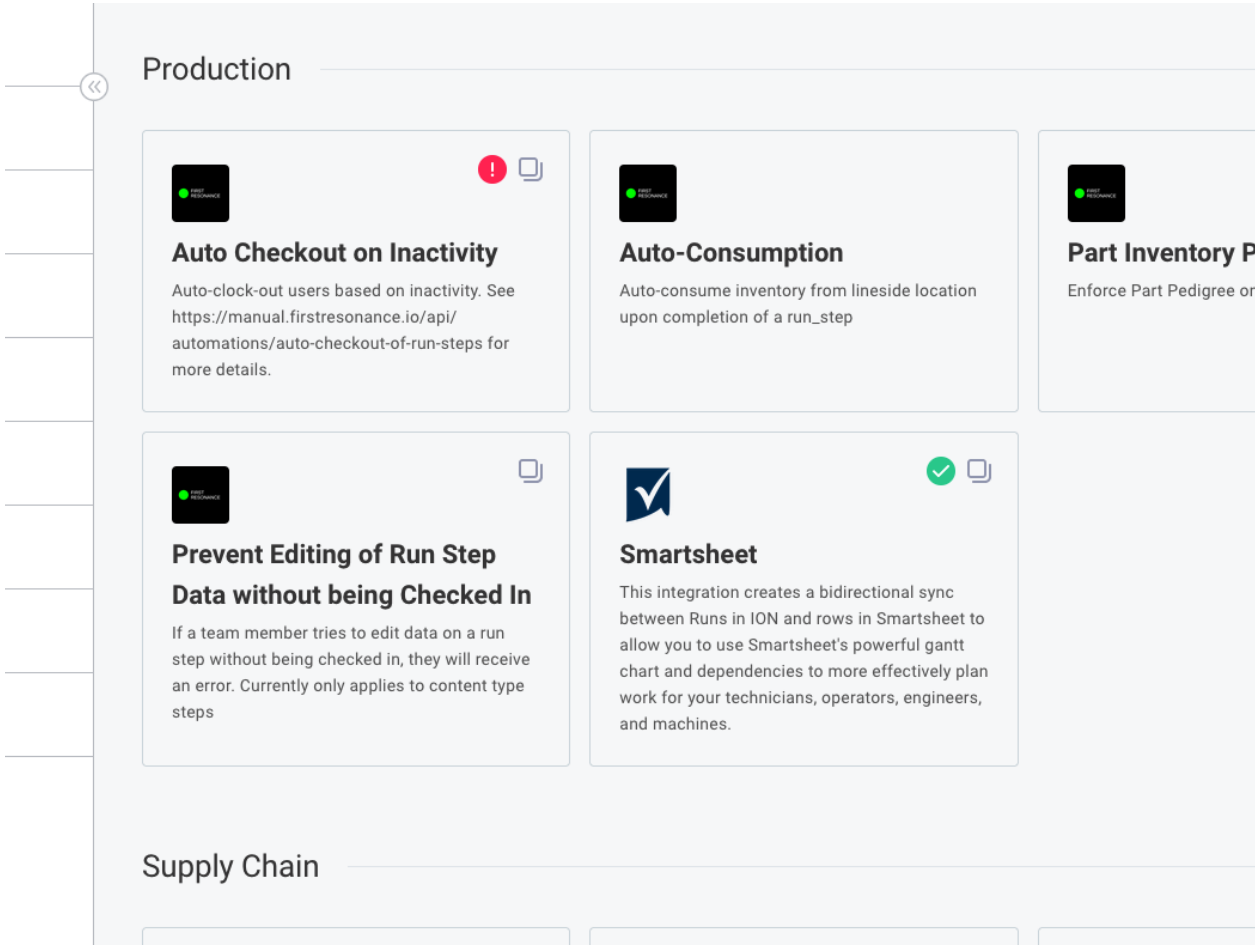
Drive Innovation

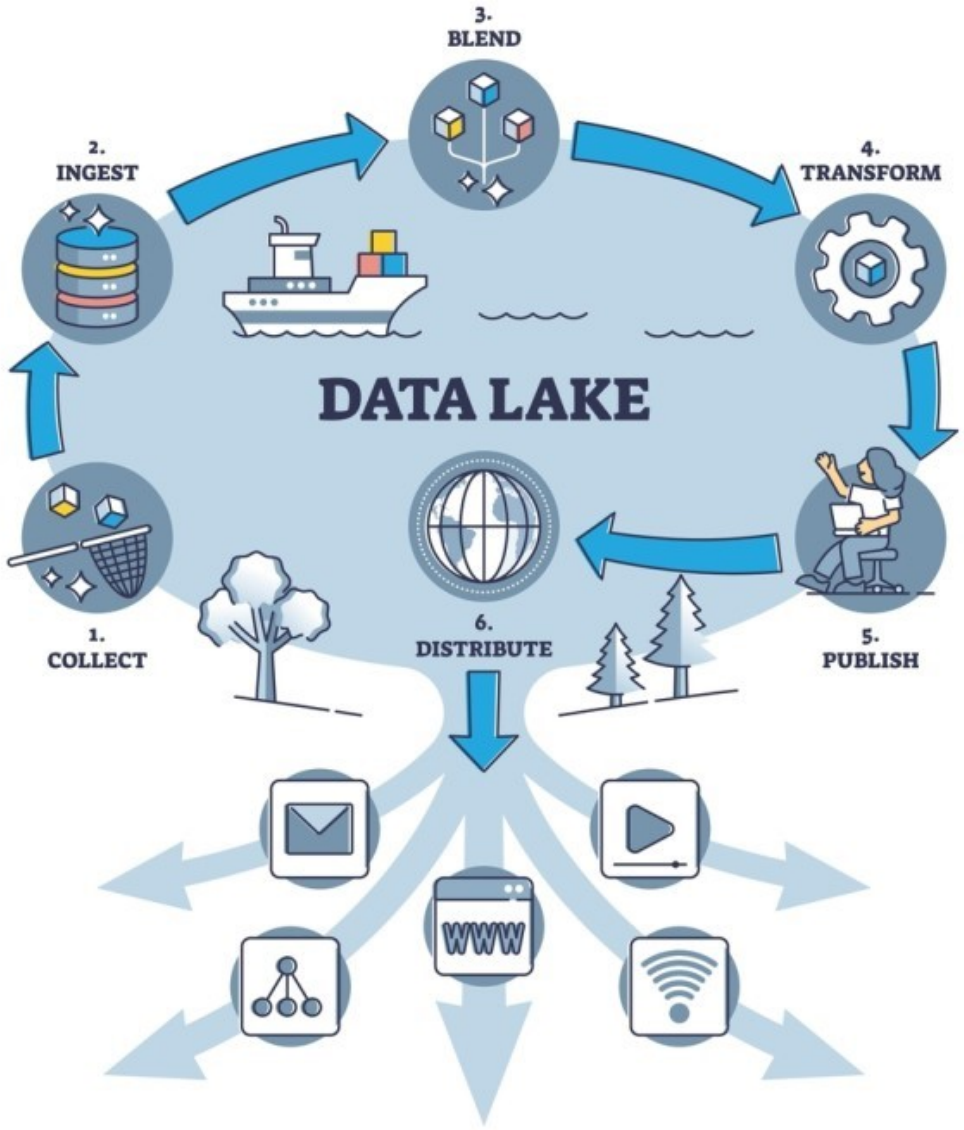
Access to rich data unlocks opportunities for developing innovative solutions.

Increase Agility

Ability to rapidly build and deploy apps on data makes organizations more agile.

Example apps in Manufacturing





APIs and Data Lakes enable Industry 4.0+

Modern advancements in standardization of APIs and Data Lakes enable new possibilities for businesses to leverage their data in transformative ways. By embracing open standards and best practices around APIs and data infrastructure, companies can more easily connect disparate data sources and build valuable analytics capabilities on top of their unified data.

Success story: Epirus Systems

While an Industrial Engineer at Epirus Systems, Jackson Lisec, built applications on top of both the application layer as well as the data lake layer to create automation applications as well as dashboards to drive daily decision-making on the factory floor.

Leverage the Cloud

Easy Access

Cloud-based tools provide easy access to data and tools for all employees

Data Portability

Cloud makes data sharing and movement easy with standard APIs

Flexibility

Wide range of analytical tools from BI to Big Data available via cloud

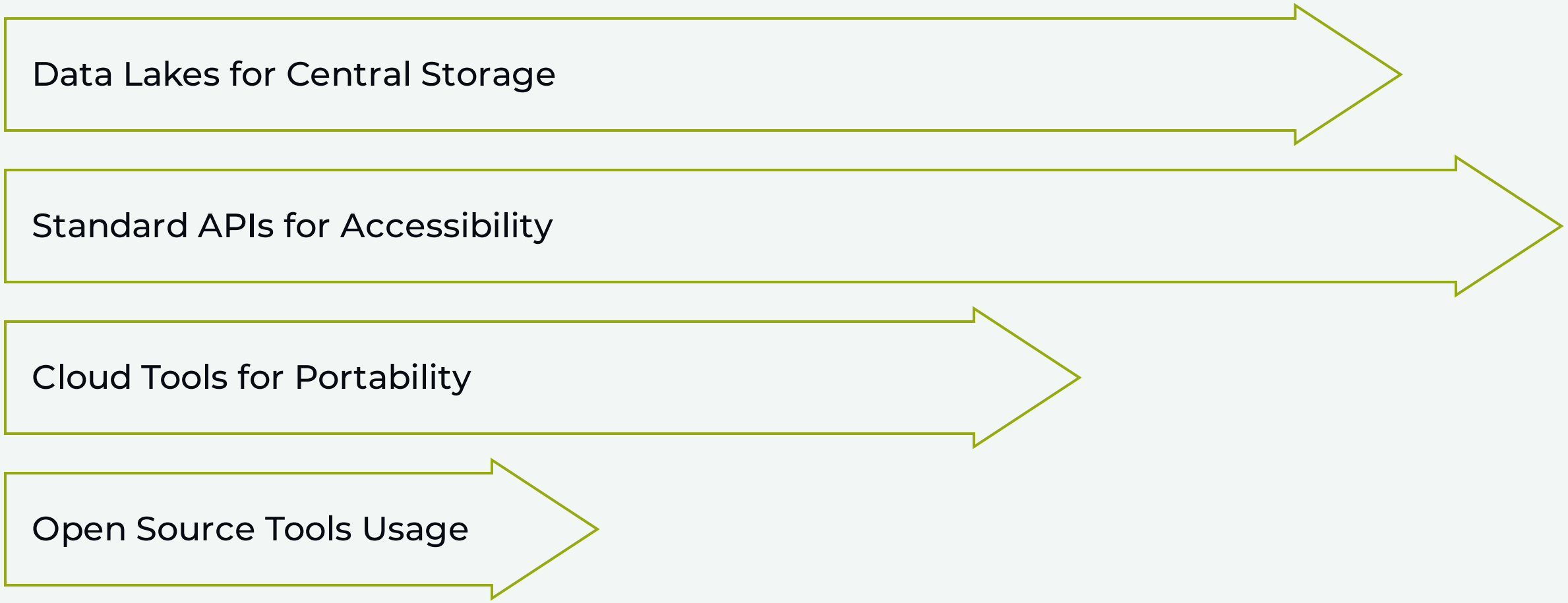
Cost Savings

Pay-as-you-go model reduces infrastructure and management costs

Scalability

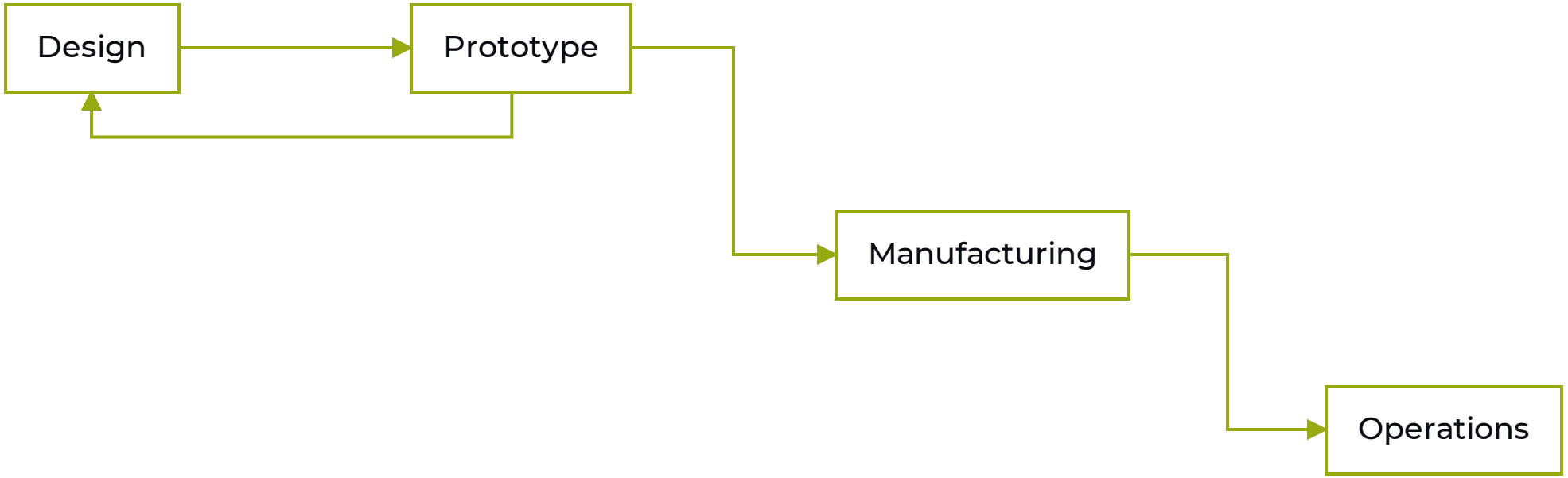
Cloud infrastructure scales elastically to meet changing needs

Recap: Modern Data-Driven Manufacturing

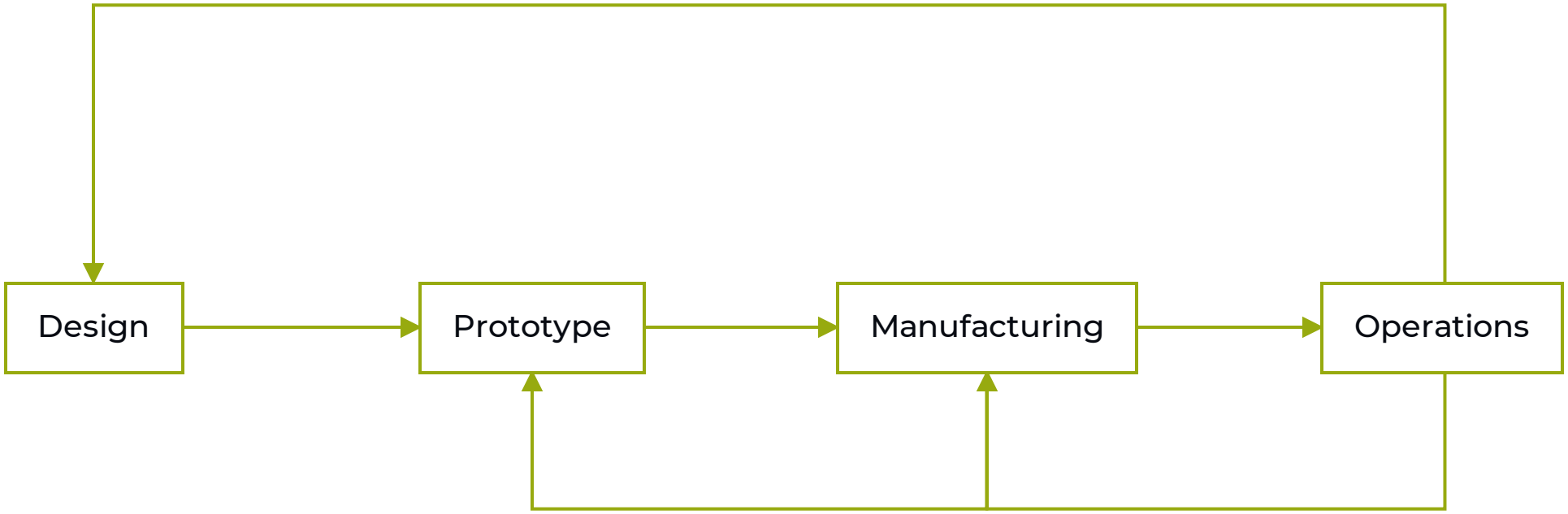



Impact in manufacturing

Industry 3.0 Provided Automation – Unidirectionally



2024 Requires Interconnected Design, Manufacturing, and Operations



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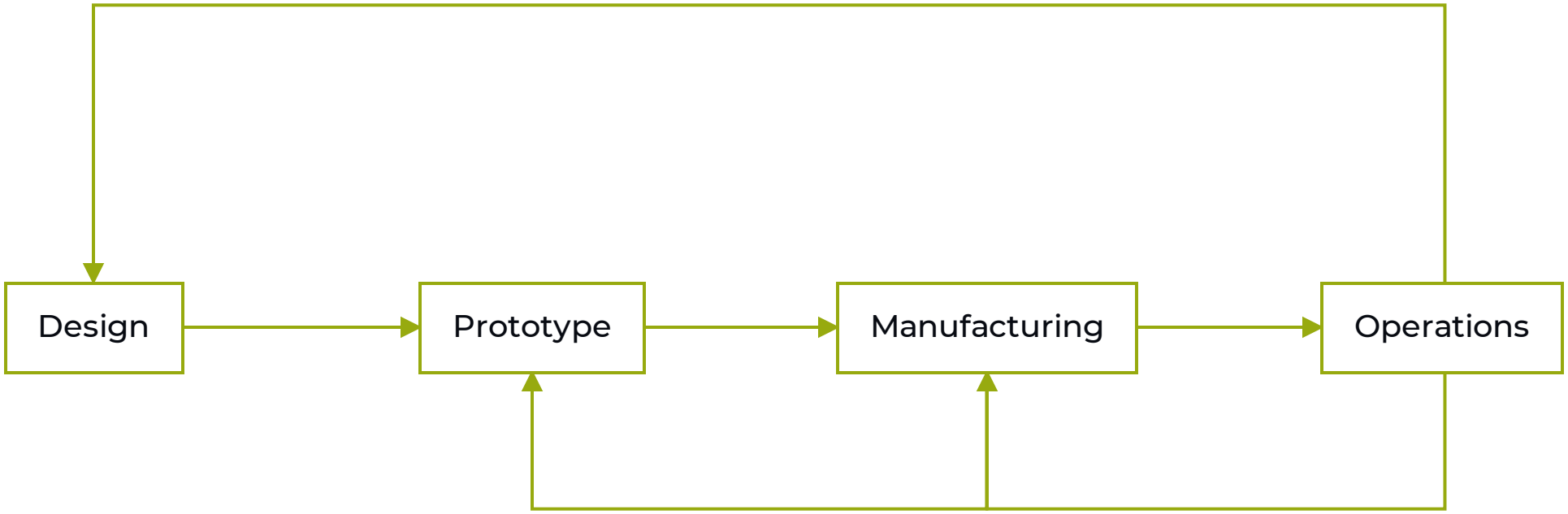
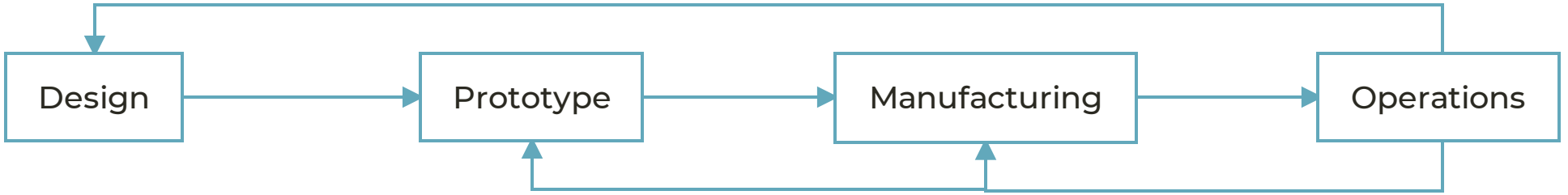
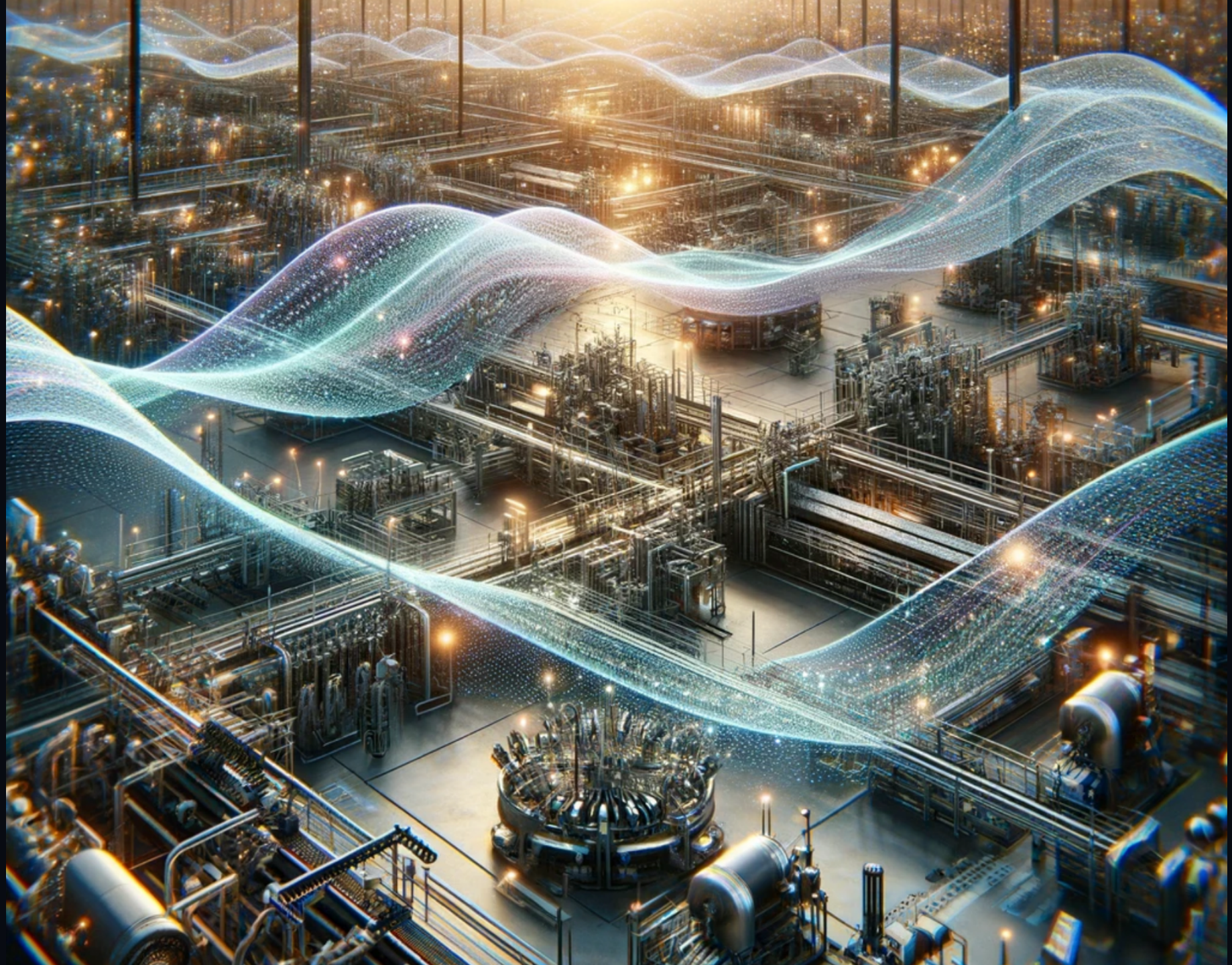


From Design for Manufacturing to **Design with Manufacturing**

Interconnected Design, Manufacturing, and Operations Enables New Business Models






Thank you!