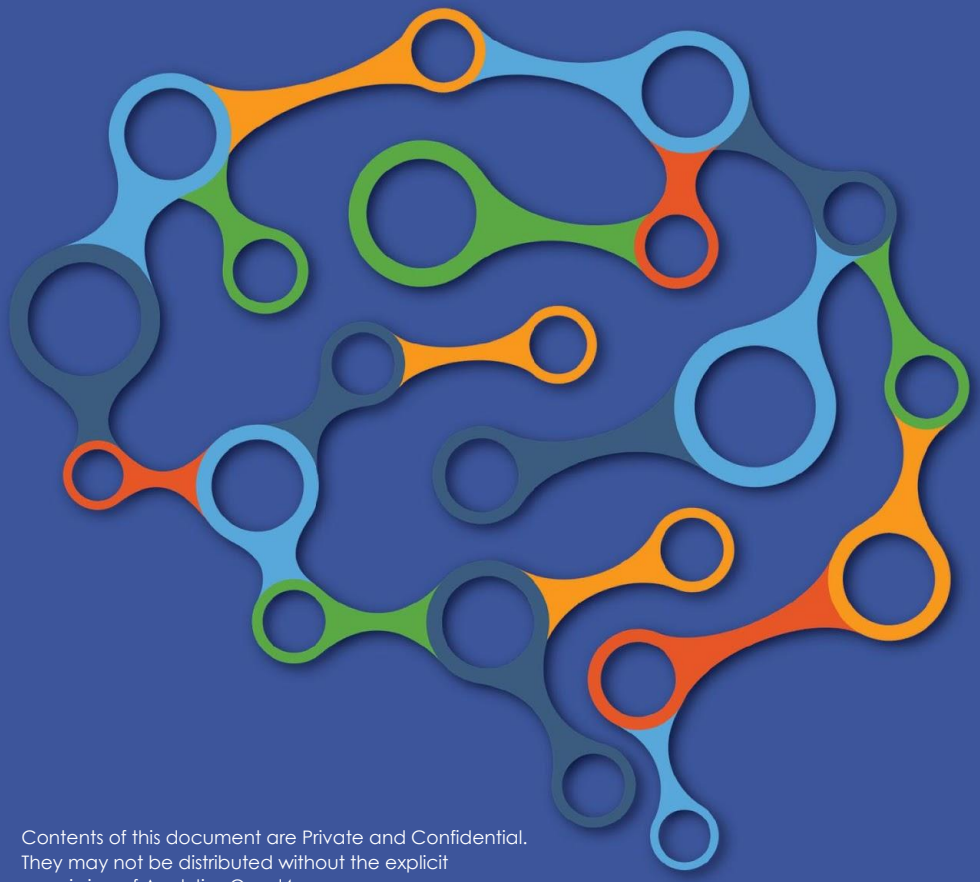

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Digital Twins in Supply Chain

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Digital Twins in Supply Chain

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May 2021

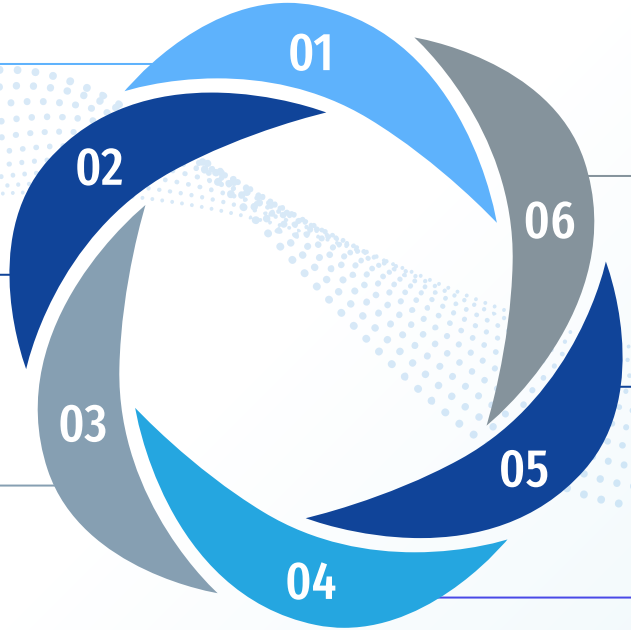
Supply Chain

- Series of steps involved to get a product or service to the customer.
- Includes different activities, people, entities, information, and resources.
- Supply chains reduce costs and help remain competitive in the business landscape.

End to End Visibility

The number one factor cited in creating a successful supply chain

The Challenges so Far..



Predict failures due to supplier or distributor disruptions

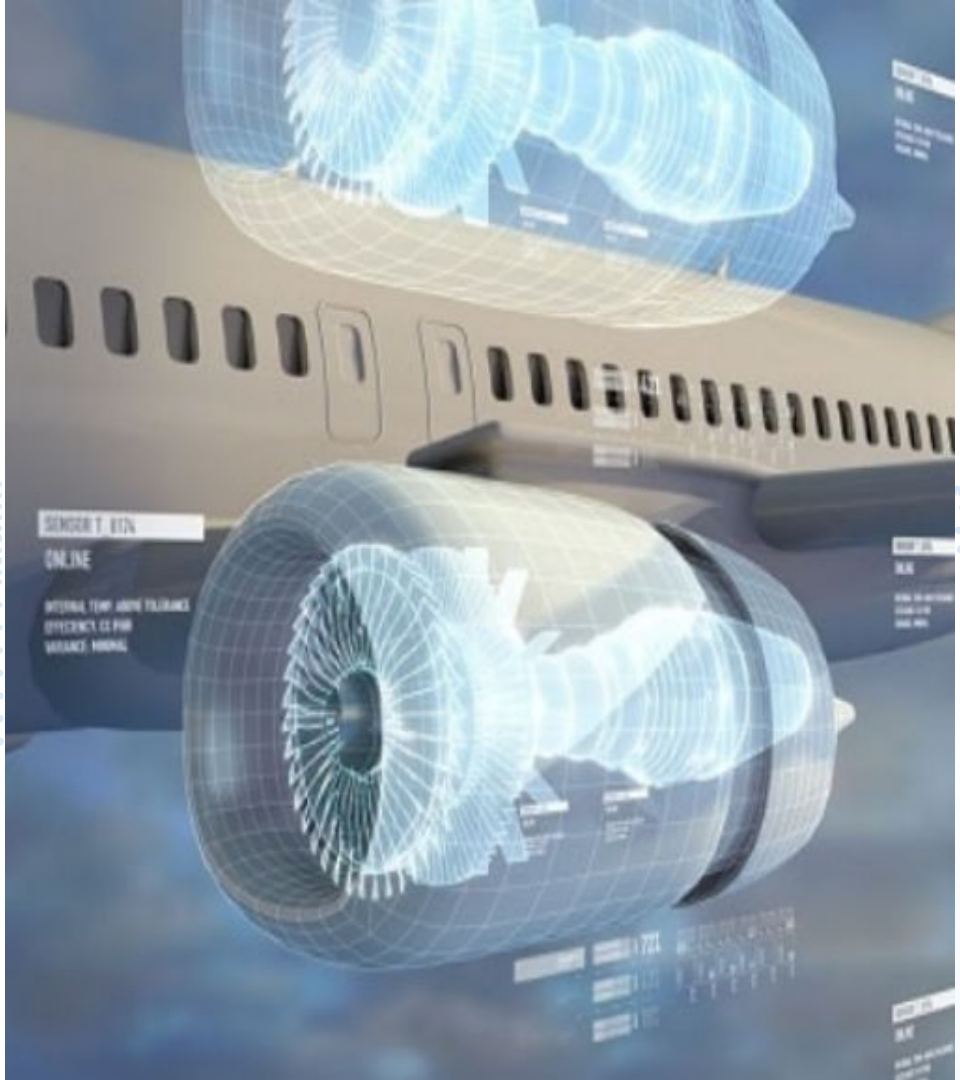
Eliminate waste and increase efficiency

Identify the scope of optimization

COVID-19 pandemic readiness - only 10% of supply chain firms

Monitoring of market and economic indicators

Forecast customer demand and adapt



Digital Twins

- Computer based digital versions of any physical entity
- Virtual image of the models is maintained throughout lifecycle
- Serves as a real time counterpart
- Tool for analysis, insights and diagnostics

$5 BILLION to $26 BILLION

That’s a huge market size (from 2020-2025)

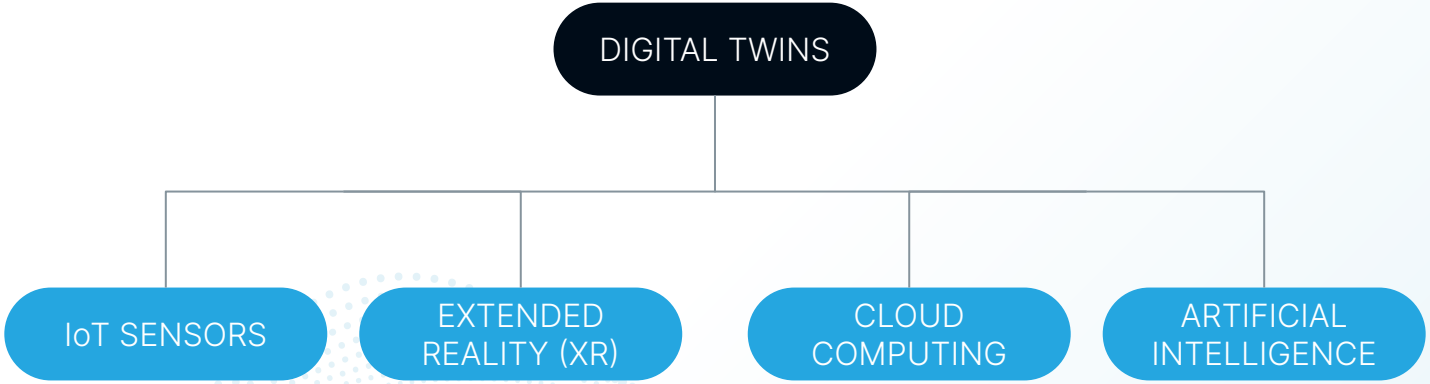
75%

And a lot of users

38.2%

With a good CAGR

Primary Technologies



Used to transmit real time data to the digital twin to enable replication.

Provides visualisation capabilities to enable creation of a digital model.

Stores data at virtual location enabling remote access & monitoring

Analyses data and provides insights to help with predictions and decision making

Use Cases in Supply Chain

Optimizing warehouse design and operational performance:
Logistics companies can test warehouse layouts and choose the most efficient warehouse design to maximize operational performance.

Creating a logistics network:
With the knowledge of road layout, logistics companies can design the distribution routes and inventory storage locations.

Create Minimum Viable Product:

A digital twin of any new asset can be used to visualize the features for demonstration purpose rather than transporting the asset to demo location.

Asset Performance Management:

Monitor the health of assets like machines, transport vehicles. Utilization of these assets can also be maximised using digital twins in integration with real time data.

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DHL

Global leader in logistics industry

Created warehouse digital twin for handling TetraPak products.
The twin is fed real time data to provide optimised storage solutions.

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Unilever

Multinational Consumer Goods Company

Built digital versions of over 300 physical factories to allow testing of operational changes based on physical conditions. Savings: $2.8 million

Business Implications

RISK MITIGATION

Enables testing of any changes before being applied to physical supply chains, hence reducing risk quotient.

REAL TIME UPDATES

Real time info helps with activities like inventory management, hence managing bullwhip effect.

Predict consumer demand according to real time macroscopic changes

FORECASTING

Enables businesses to control and operate supply chains remotely instead of someone present to monitor operations at all times.

REMOTE MONITORING

Challenges

Data Security and Quality: The business data must be protected. Data is fetched from a variety of sources, the useful data needs to be segregated

Connectivity: Good connectivity infrastructure is not available at all times to smoothly interact with the digital model in real time.

Complexity: A virtual model of a physical entity is quite complex and hence requires skilled and expert human resources.

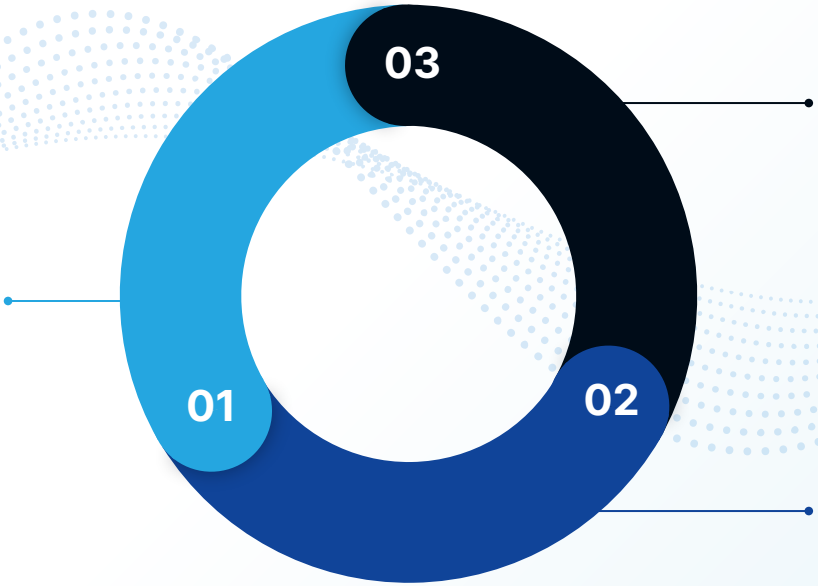
Cost vs Benefits: Digital twins is an expensive technology and cannot be afforded by all organizations wrt the uses.

Evolution of physical world: With all miniscule or large changes to physical entities, the digital version also needs to be updated.

Future Possibilities

Industry 4.0

Industry 4.0 has opened up vast opportunities for development, exploration and integration of digital twins into supply chains.



Opportunities with 5G

5G technology can provide better connectivity for seamless operation of digital twin models without any delays in response from/to digital version.

Digital Triplet

Enhancement of digital twin by adding an “Intelligent Activity Layer”

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Transform Your Business & Serve Customers Differently!

Thanks!