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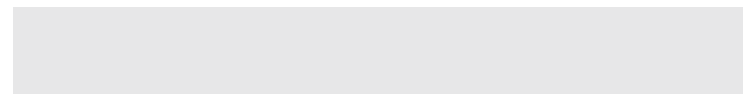
# Building Digital Supply Chain Capability

## Overview and Use Case Demonstration

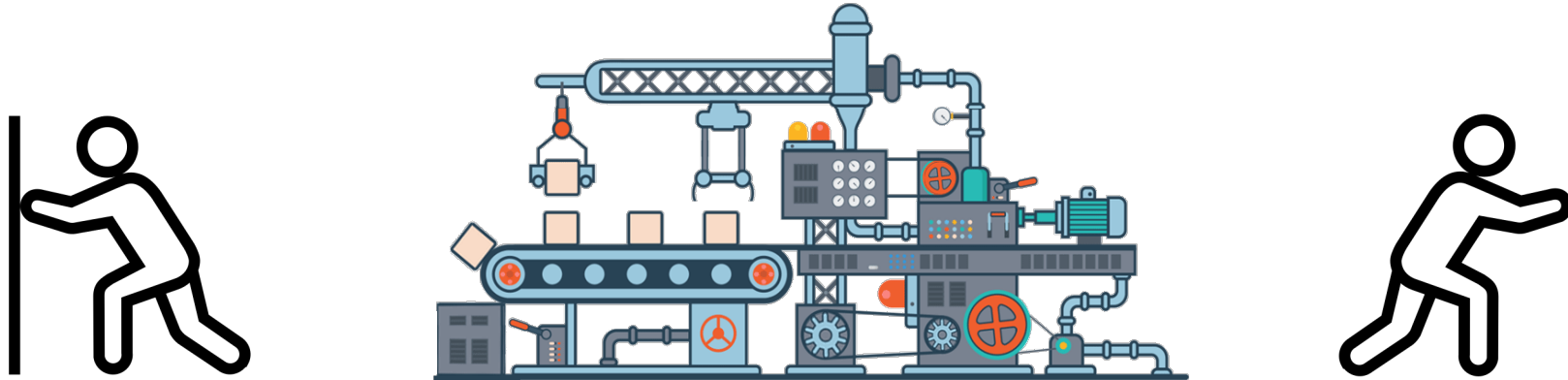
Associate Professor Hadi Ghaderi  
Swinburne University of Technology  
15<sup>th</sup> Feb 2023



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# Manufacturing Firms' Challenges in Dynamic Markets



Fragile Supply Base

Limited Production Flexibility (Volume/Mix)

Reliance on Forecasting and Inventory

Limited Supply Chain Visibility

Limited Capital and Resources

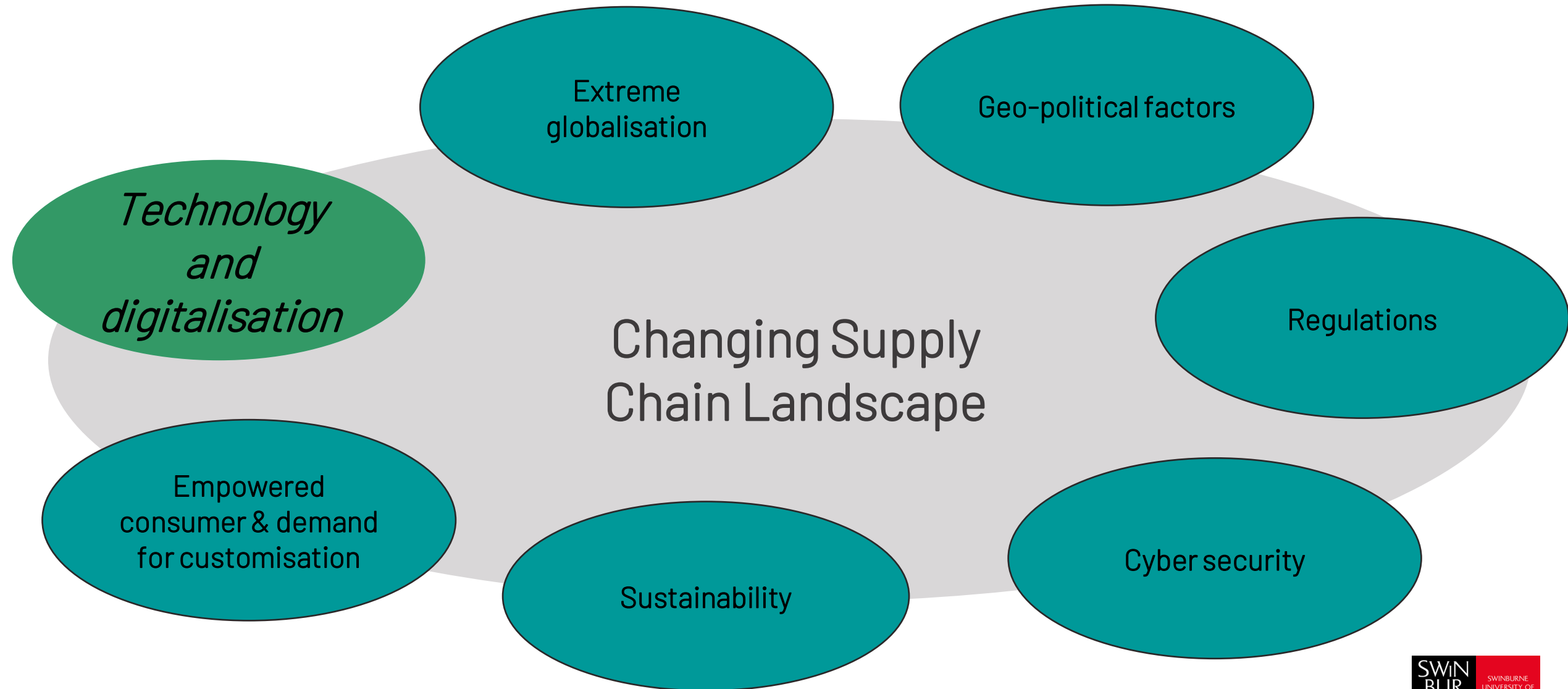
Too much focus on production capabilities and ignoring the position of your firm in the supply chain?

# "Supply chains compete, not companies"

*"Individual businesses no longer compete as stand-alone entities, but rather as supply chains. We are now entering the era of 'network competition' where the prizes will go to those organisations who can better structure, co-ordinate and manage the relationships with their partners in a network committed to better, faster and closer relationships with their final customers."*

Martin Christopher

# The External Forces of Supply Chain Transformation



# Traditional SUPPLY CHAIN

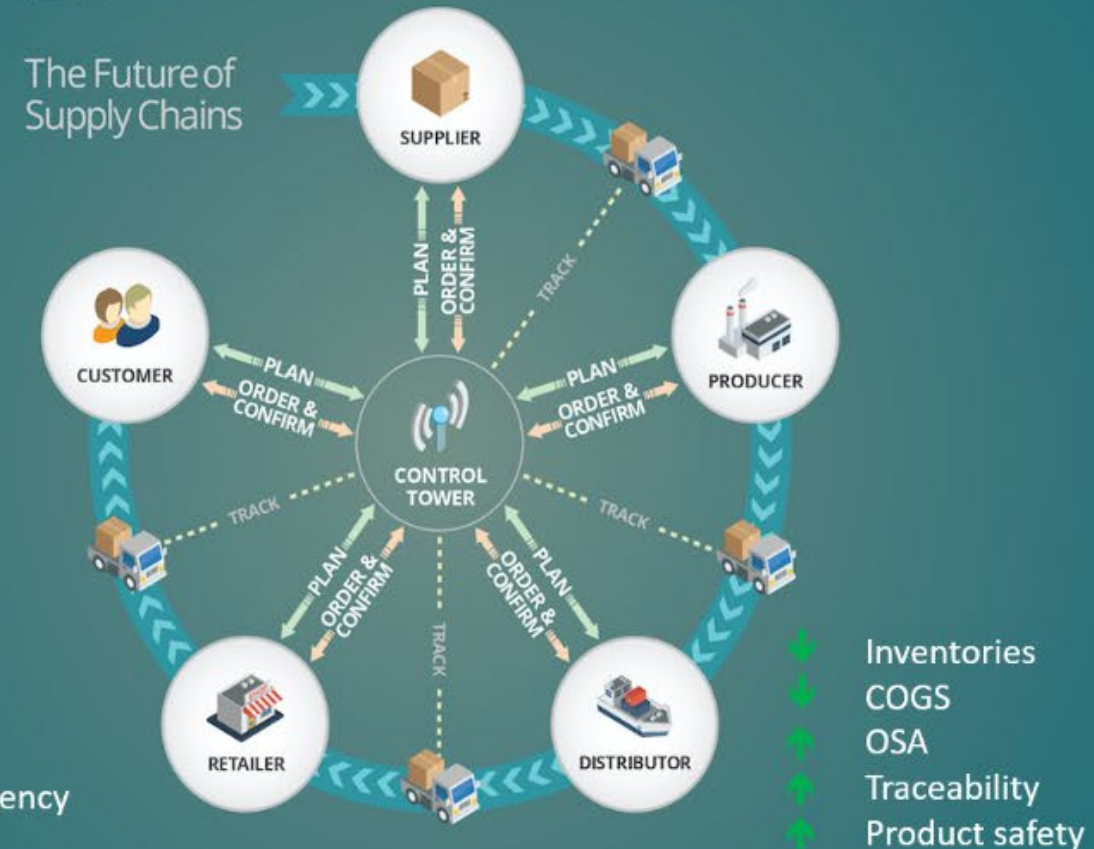
Limited visibility throughout the supply chain, lack of real-time data updates, cannot adapt or less responsive to changing market conditions.



- ✗ Frictions
- ✗ Delays
- ✗ Inefficiencies
- ✗ Bullwhip effect
- ↑ Inventories
- ↑ COGS
- ↑ Out-of-stocks
- ↓ Transparency
- ↓ Agility
- ↓ Velocity

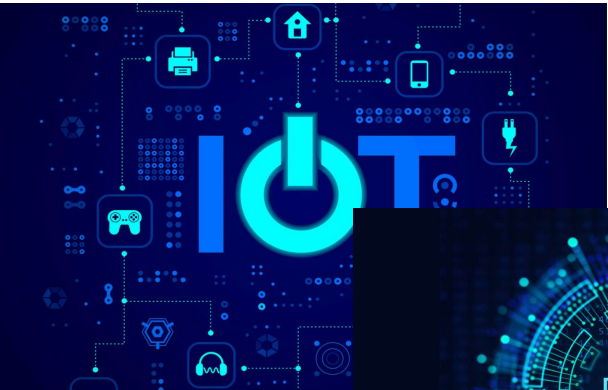
# Digital SUPPLY CHAIN ECOSYSTEM

Intelligent Control Tower monitors, manages, makes decisions and manages execution across functions and across companies to optimize the entire network. Much more efficient, responsive, and cost-effective.



## Transformation of Supply Chains

# Emerging Technologies



CAPTURING



INTERPRETATION & SENSING



AUTONOMOUS DECISION MAKING



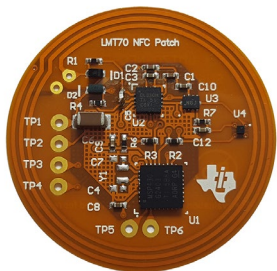
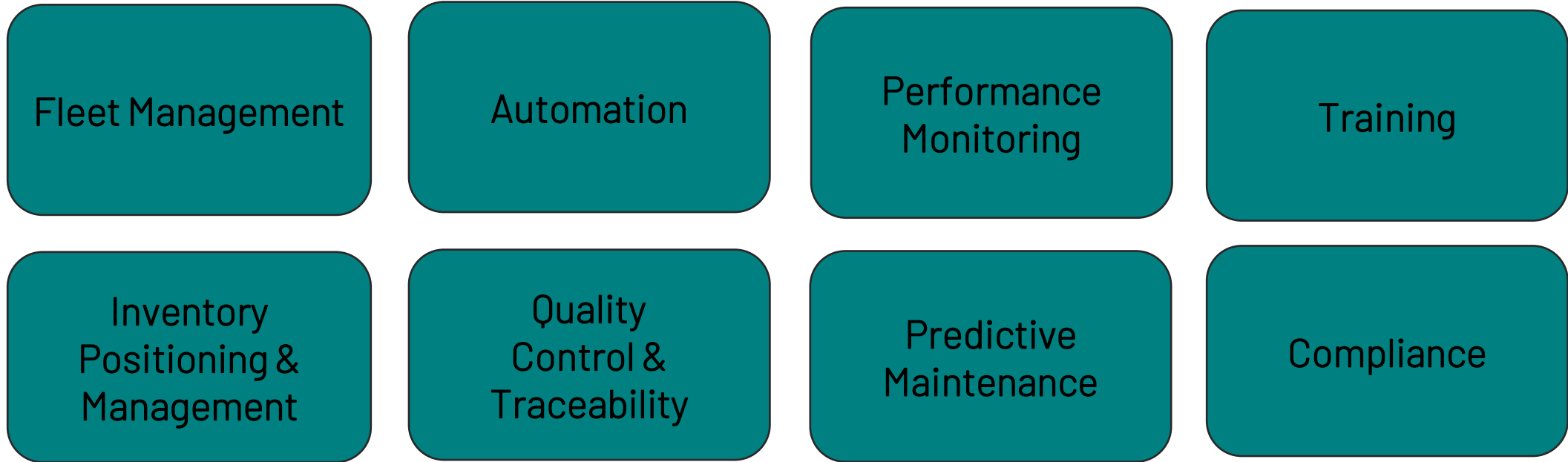
CONNECTIVITY



SUPPLY CHAIN SYNCHRONIZATION

Image Courtesy: Getty Images, analyticsinsight.net, Global AI Market, DBS

# Emerging Technologies and their Supply Chain Applications



Asset or product  
embedded Technologies



**Cost**

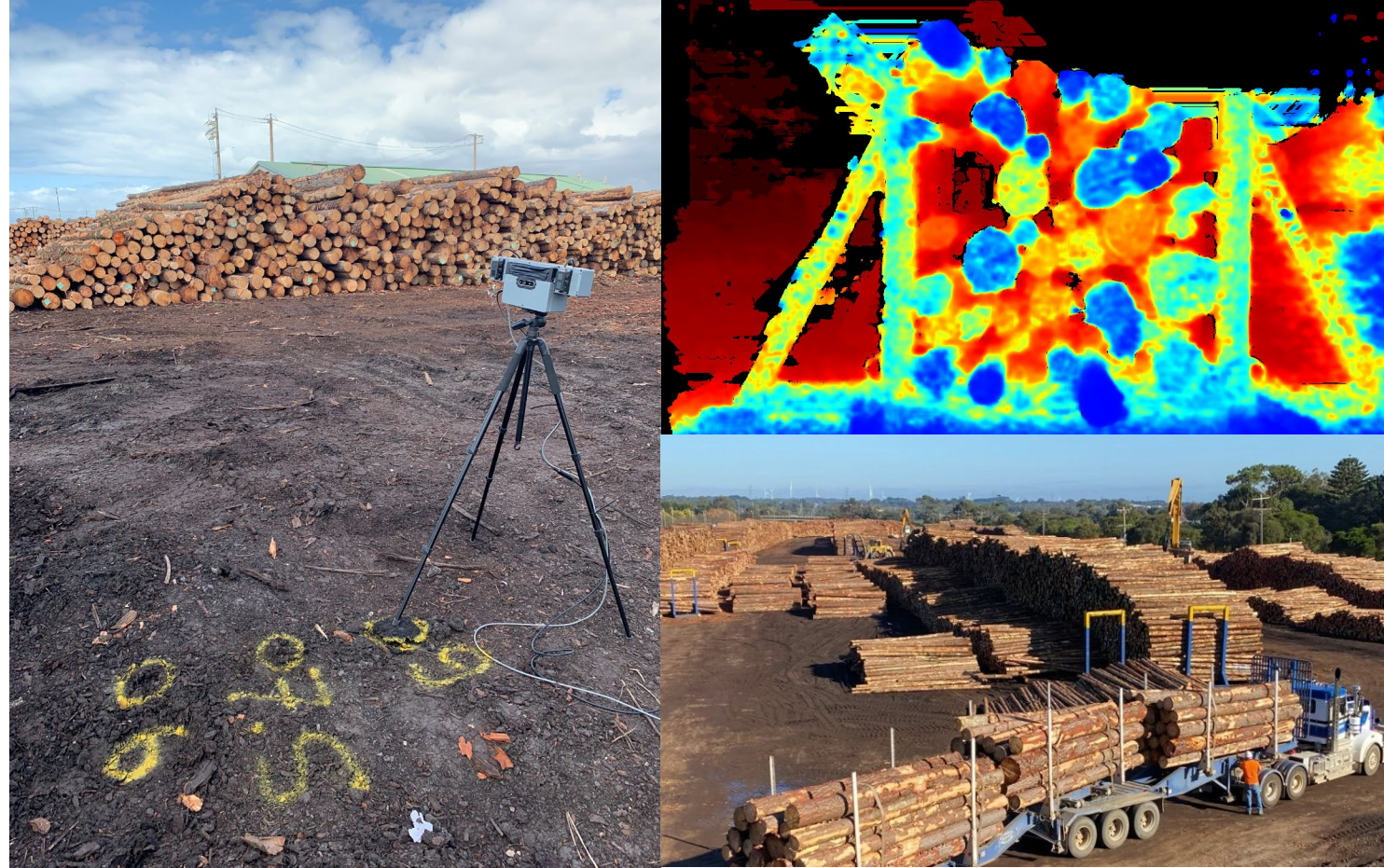


**Size**



**Computation**

# Supply Chain Efficiency



Developing an IoT solution using machine learning and image processing techniques for log inventory management

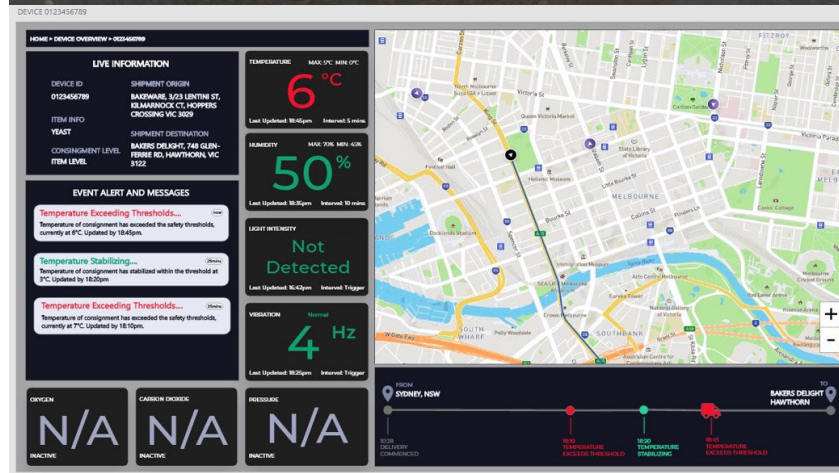
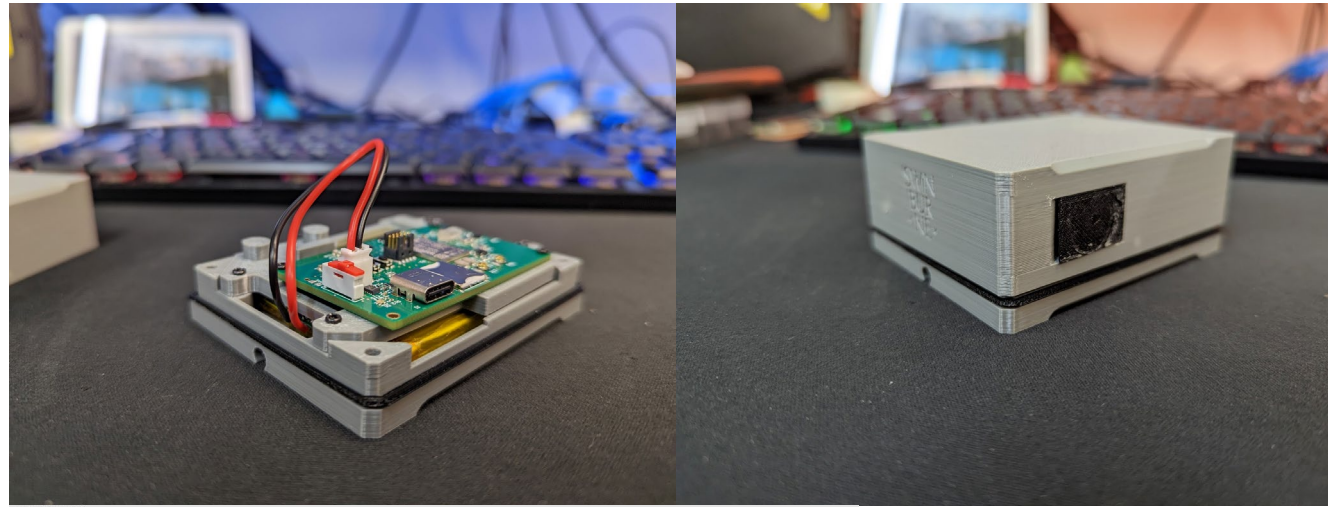


# Supply Chain Traceability and Compliance

The top left shows a label printer producing a label with a barcode and QR code. The top right diagram illustrates a scanning system with four antennas (Antenna 1-4) positioned around a box. A barcode reader and an RFID reader are also shown, connected to a laptop with verification software. The bottom left is a screenshot of a 'Quality Control Dashboard' for 2021, displaying metrics for 'Total products' (2,503,567), 'Types of products' (18), and 'Success Rate' (99.24%). It features a bar chart for 'Number of items', a line chart for 'Total Products Scanned', and a donut chart for 'Products Scanned by Tunnel'.

IoT solution for Labelling Consistency and Integrity in Meat Export Supply Chains

# Supply Chain Visibility

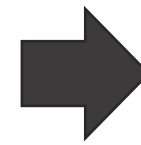
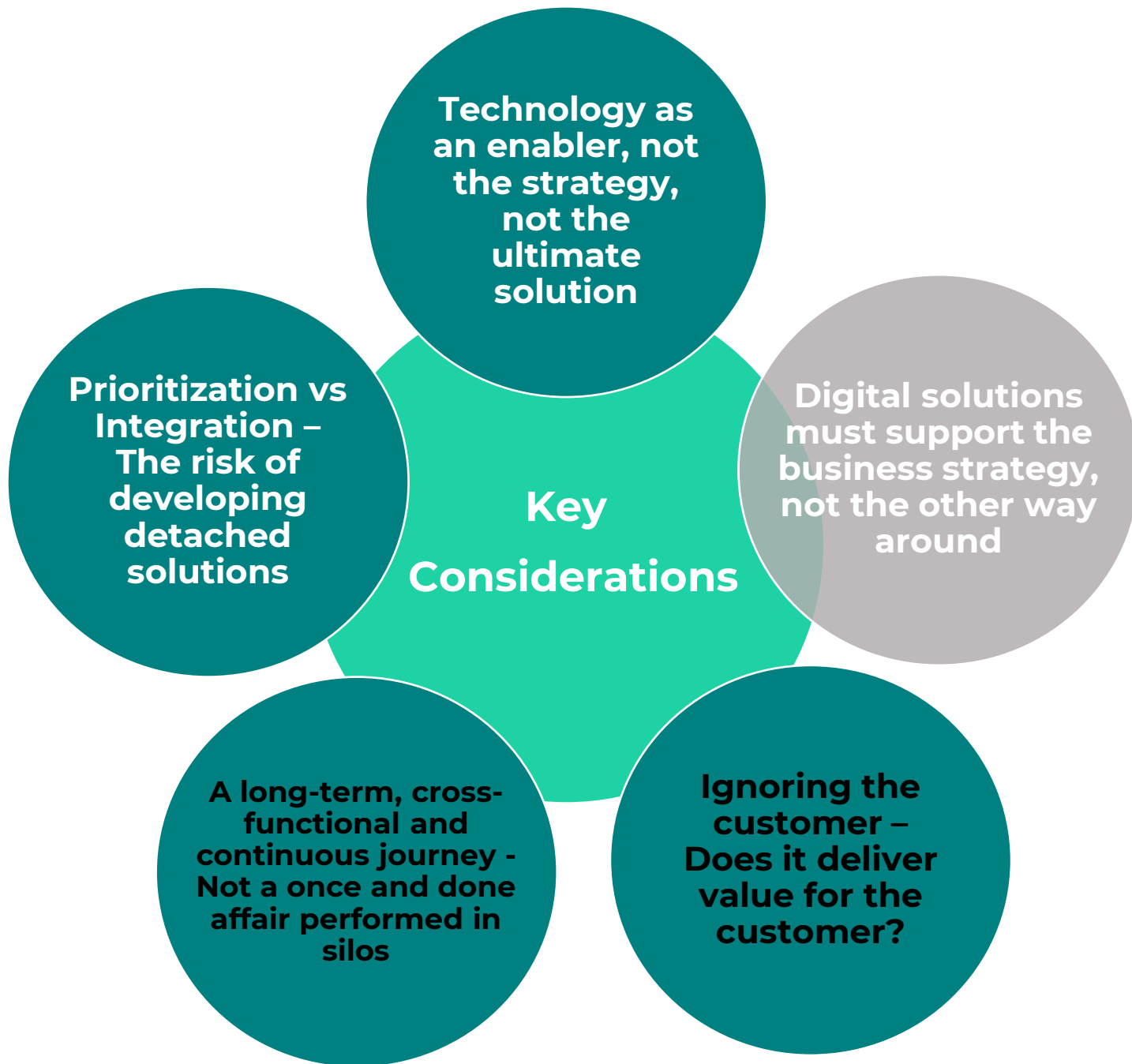


Low-cost IoT-based solution for tracking and monitoring of freight consignments

# 84% RISK OF FAILURE IN DIGITAL TRANSFORMATION INITIATIVES



(Forbes, 2016)



# Achieving a Strategic Fit



*'Aligning Supply Chain Capabilities with Business Strategies'*

# Thank You

