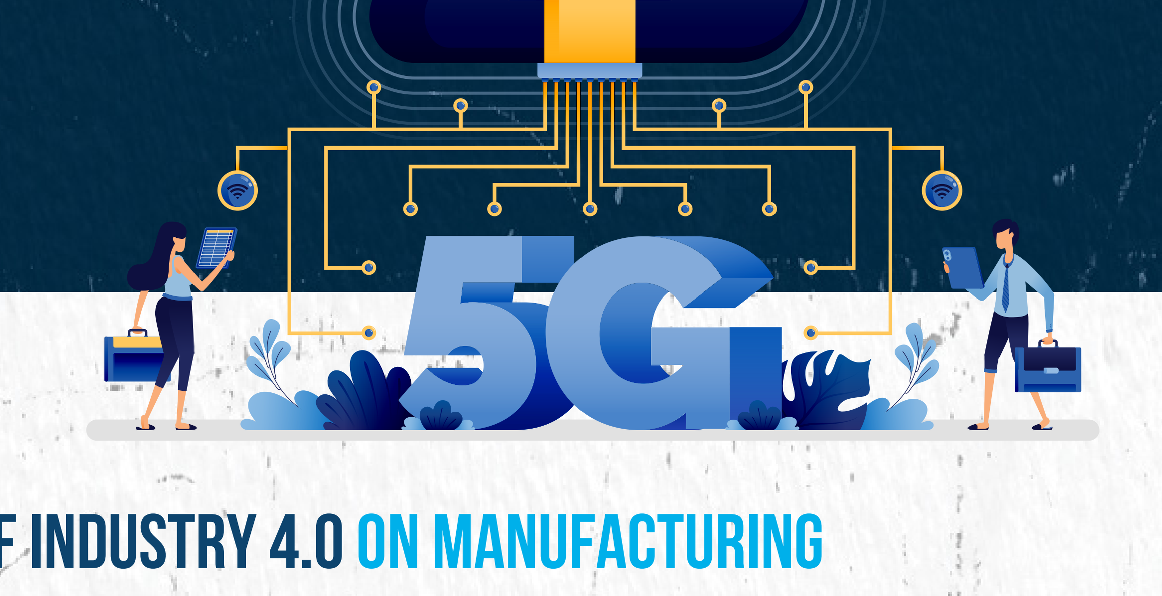
5G ENABLING INDUSTRY 4.0 AND BEYOND

Redefining the factory of the future with 5G technology in the **MANUFACTURING** sector

Fortune Global 500 manufacturing and industrial companies lose an estimated **3.3 million** hours annually, translating into **$864 billion** per year from unplanned downtime.[1]

For manufacturers where margins remain under extreme pressure, getting the cost dynamics right keeps them competitive. Embracing 5G will be inevitable as the industry heads towards lights-out manufacturing as it can support manufacturers in driving down costs, addressing changing customer demands and managing carbon footprint and sustainability practices.



THE IMPACT OF INDUSTRY 4.0 ON MANUFACTURING

Industry 4.0 has been unlocking numerous opportunities across the manufacturing space, driven by the adoption of technology like IoT, cloud computing and artificial intelligence (AI).

With 5G, manufacturers can leverage extensive networks of sensors, robots, drones, and automated guided vehicles and prevent equipment breakdown or fatal accidents by triggering action based on real-time actionable insights.

Real-time critical information is collected about equipment performance, enabling manufacturers to obtain key insights for predictive maintenance by leveraging AI/ML. Production quality consistency ensures plants and factories operate at optimal operational efficiency, limit waste, and reduce costs.

Smart Logistics

CONNECTED
- Continuously pull sensor and location-based datasets
- Real-time collaboration with suppliers & customers
- Cross departments collaboration

Smart Factory

OPTIMISED
- Reliable and predictable production
- Increased asset uptime, production efficiency, and quality
- Automated production and material handling
- Reduced cost

TRANSPARENT
- Live metrics for rapid and consistent decision making
- Real-time link to demand forecasts & transparent order tracking

PROACTIVE
- Predictive maintenance
- Automated restocking
- Early identification of supplier quality issues
- Real-time safety monitoring

Connected Customers

AGILE
- Flexible scheduling and changeovers
- Product changes simulation to assess impact in real-time
- Flexible factory layouts

Value Potential
- up to 25% increase in labour and productive efficiency
- up to 30% increase in machine availability
- up to 50% reduction in maintenance cost
- up to 40% reduction in downtime
- up to 30% increase in plant machinery life
- up to 20% inventory-holding cost reduction*
- up to 85% forecasting accuracy improvement*
- up to 20% cost-of-quality improvement*

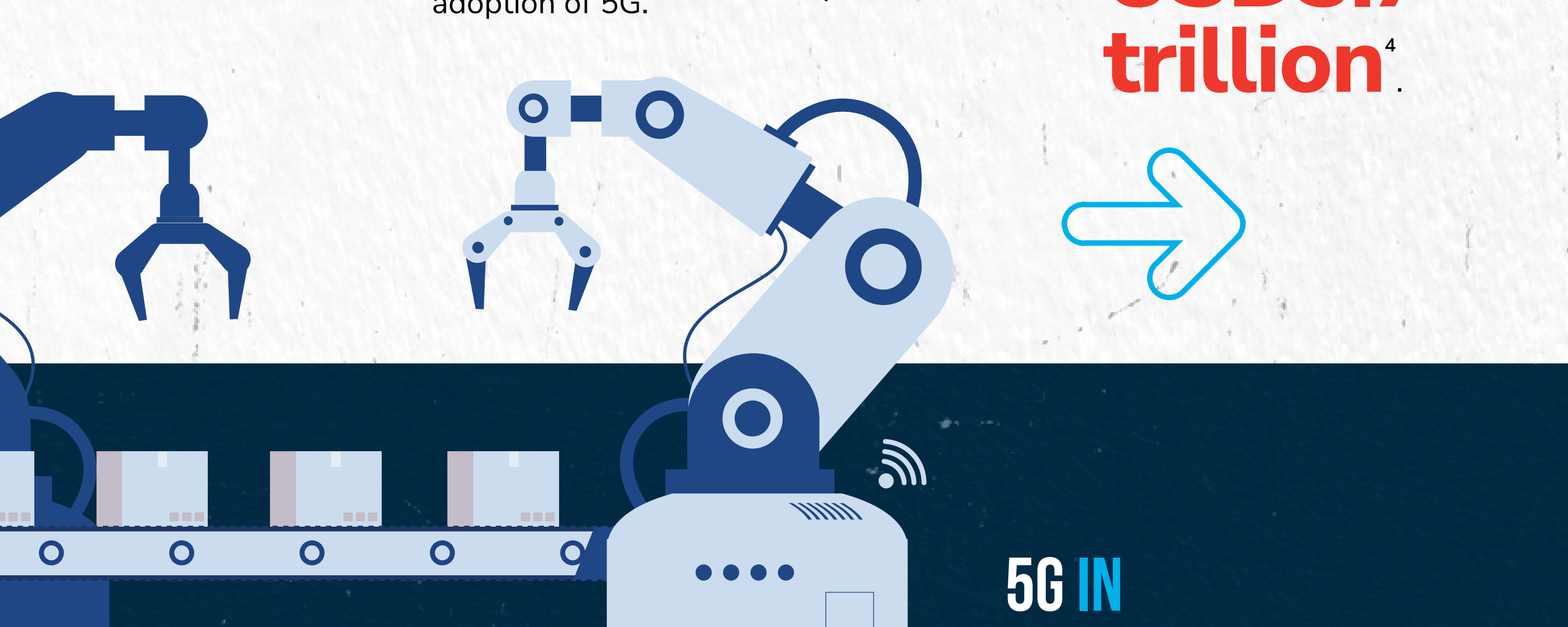
Source: Frost & Sullivan[2], McKinsey[3], Investcorp[4]

91% of manufacturers believe 5G connectivity will be important to the overall future of their business.[5]

Large-scale 5G implementations are allaying fears about the technology and paving the way for future progress. With scale, solution costs will come down to enable more widespread adoption of 5G.

The total number of IIoT devices will grow to reach close to **11.6 billion** by 2026 i.e., nearly four times the adoption in 2020[6].

By 2025, the combined IIoT applications targeting operations optimization, predictive maintenance, inventory optimization, and health & safety is expected to impact the global economy of up to **USD3.7 trillion**[4].



5G IN MANUFACTURING

Today, multiple manufacturers have started implementing 5G-enabled IoT devices to enhance their factory operational intelligence. Innovative companies such as Hyundai Motor Group is using 5G technology to personalize vehicles for their customers[7].

Manufacturing and industrial companies are increasingly adopting AR/VR technology, powered by 5G, to support:

- **Production Line Design**
- **Predictive Equipment Maintenance**
- **Hands-on Employee Training**
- **Ensuring Safety & Security**

5G ENABLING A MORE INTELLIGENT AND NET ZERO FUTURE

Intertwined with other pillars of Industry 4.0, 5G has the potential to significantly drive sustainability by enabling new operating models.

5G technology will be critical in:

- **Driving efficiency of operations**
- **Reducing energy consumption**
- **Reducing wastes in production**
- **Improving predictive maintenance to reduce machine breakdown**

COSTS & CYBERSECURITY CONCERNS AROUND 5G

Fear of change, the implications on costs and cyberattack vulnerabilities can trigger risk aversion and keep manufacturing companies from embracing 5G. However, in a digital economy, the failure to act and activate change can be detrimental to business.

Frost & Sullivan is seeing an increased focus on cybersecurity, with mobile operators taking essential steps to secure private 5G networks.

Adequate planning with the right partner can help hedge risk and manage the cost of implementing 5G.

IS 5G RIGHT FOR YOUR ORGANISATION?

5G brings the biggest opportunity for mission-critical services such as manufacturing, where it is critically required and monetisable.

Manufacturers that will benefit from 5G need to have:

- **Scale**
- **Value proposition that addresses a specific market need and target segment**
- **Digital maturity**

Monetisation of 5G Enterprise will work better with the right "**enablers**" and with the right "**attributes**"

ENABLERS

Business Objective
1. Direction
2. Clarity on End Goal - Target Customer, Pricing and Cost
3. Value Proposition for Use Case supported by a viable business model for Partnership to leverage on solutions

5G Attributes
1. Low latency
2. High bandwidth

+

5G Capabilities
1. Network Slicing
2. Broadcasting
3. Location based

Coverage Requirement & Approach
1. Limited - Private Networks
2. Nationwide
3. Seamless
4. Roaming and Redundancy

Computing Requirements & Approach
1. Compute
2. Analytics
3. Storage
4. Networking
5. Security

Optional Edge Capabilities
1. Compute
2. Storage

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ATTRIBUTES

1. **Simple**
   - Less complexity
   - Easy to use
2. **Flexible**
   - Modular or template-based concepts
   - Customisable
3. **Real time**
   - Any time
   - Any where
   - Any one
4. **At the Right Cost**
   - Minimum customers
   - Scale

FOR MORE INFORMATION, DOWNLOAD THE FULL WHITEPAPER - 5G: ENABLING INDUSTRY 4.0 AND BEYOND

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