



# What are the potential benefits of 5G adoption for transports and logistics?

## The future of Transport & Logistics

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5G connectivity can help **make travelling safer and more efficient**, as well as help to enable the **automation of logistics activities** like picking/packing goods and warehousing, which **represents an ample opportunity for the logistics industry**.



**Potential of up to 1.3 million lives saved**, through accident prevention



**Potential of up to 15% of energy efficiency<sup>1</sup>** with a platoon system



**Potential of up to 280 billion US dollars of benefits** to global GDP<sup>2</sup>

<sup>1</sup> Energy consumption/Fuel consumption

<sup>2</sup> Gross Domestic Product

## 5G as the enabler for new Transport & Logistics industry scenario

The 5th generation of mobile communications has new key features – low latency, increased data rates, and dense coverage – which can help promote the **adoption of new use cases** that may be required **to automate and optimize the Transport & Logistics industry**.

### Connected Traffic Infrastructure

Integration of sensors and cameras into traffic infrastructure to collect data and trigger real-time actions  
**Benefits:** Reduced congestion + Less accidents  
**5G key features associated:** URLLC & mMTC

### Autonomous Mobile Robots

Robot type that automates warehouse activities, and moves without being limited to a fixed, predetermined path  
**Benefits:** Mundane task automation  
**5G key features associated:** URLLC & mMTC

### Fleet Platooning

Intelligent transportation service where vehicles form a queue with a coordinated inter-vehicle distance  
**Benefits:** More energy efficiency + CO2 reduction  
**5G key features associated:** eMMB & URLLC

### Autonomous Driving

Autonomous driving refers to self-driving vehicles that move without the intervention of a human  
**Benefits:** Less accidents + More energy efficiency  
**5G key features associated:** eMMB & URLLC

### Automated Packaging Machines

Real-time motion control of a packaging machine, typically used in factories and logistic companies  
**Benefits:** Increased productivity  
**5G key features associated:** URLLC & mMTC

### Real-Time Routing & Optimization

Real-time dynamic routing and scheduling using data to improve visibility and optimize processes  
**Benefits:** More energy efficiency  
**5G key features associated:** URLLC & mMTC

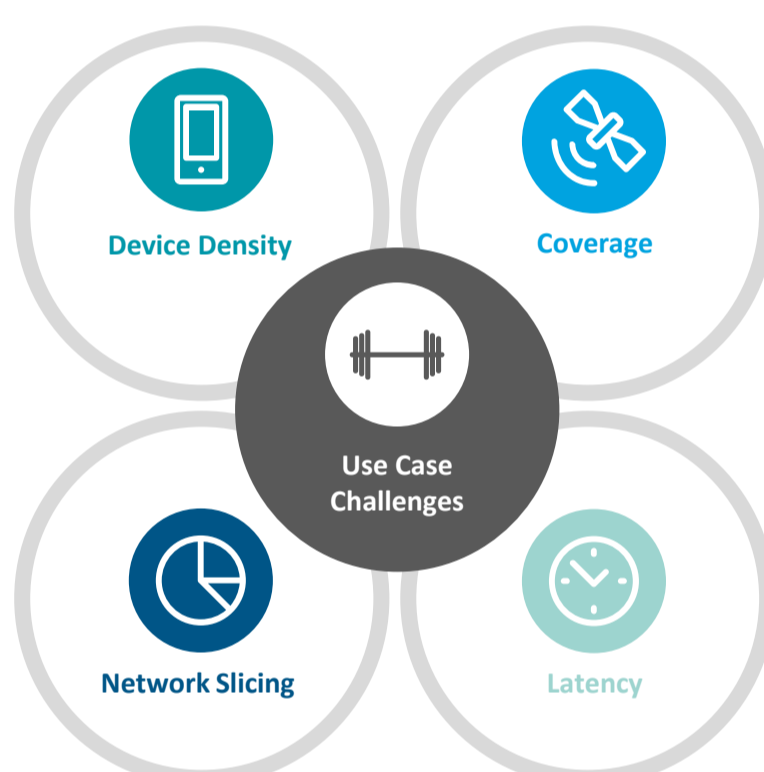
Legend: mMTC: Massive Machine-Type Communications | URLLC: Ultra-High Reliability & Low Latency Communications | eMMB: Enhanced Mobile Broadband

## Challenges to overcome for the adoption of the new use cases

The **new use cases** that are emerging will add value to the industry, but their deployment can also bring **new challenges that may need to be addressed**.

Connected Traffic Infrastructure and Autonomous Mobile Robots are examples of applications scenarios in which there may be a **high density of devices connected to the network**. This connectivity demand can be enabled by the 5th generation of mobile communications, which has a **capacity of up to 1 million devices per square kilometer**.

The Logistics & Transport Industry has a **broad range of connectivity requirements**. Some use cases (e.g., Automated Packaging Machines) may require **low latencies**, while others also require **high data rates**, like Autonomous Driving. **Network Slicing** is one of the key technological features that can help **support the unlocking of different connection requirements for each use case**, enabling one of the most efficient network resource allocation.



A challenging aspect of enabling the **new Transport & Logistic use cases is the coverage**. Autonomous driving safety can only be guaranteed if the signal can reach **all the geographical area that it needs to cover**. For extensive areas, the risk of not having coverage may be frequent, leaving devices unconnected and therefore drivers unaware of their location and status.

**Edge Computing (EC)** is the response for the industry **strict latency requirements**, since it **reduces the latency down to single-digit milliseconds**. In some scenarios (e.g. Automated Packaging Machines), the MEC nodes can be installed in the premises of the factory or logistic companies, but in others, (e.g. Autonomous Driving) it is required to have geographically distributed MEC nodes.

## How can Deloitte help?

Deloitte Global translates business and industry needs into technical requirements delivering value added end-to-end 5G solutions that can lead to **meaningful business outcomes**.

- IDEATE AND PRIORITIZE** Select the areas to be improved with 5G use cases, ideating, identifying and prioritizing the top 5G use case opportunities
- DEVELOP THE BUSINESS CASE** Formulate the operational benefits of the 5G use case(s) defined and associated business case value proposition
- DESIGN TECH REQUIREMENTS** Define and design use case technical solution architecture and requirements, considering deployment strategies and application requirements
- BUILD AND EVALUATE** Start with a point of contact (PoC) first to monitor and evaluate the 5G use case(s) performance and then proceed with global rollout
- OPERATE AND MAINTAIN** Define overall governance, operating model and procedures to ensure the sustainability in business as usual (BAU)

Sources: Deloitte Analysis, STL Partners, Boliden Aitik Use Case, Elsevier, Ericsson, DHL

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