

# 5 benefits of 5G



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# Agenda

- This presentation explains 5 unusual and perhaps less known applications of 5G mobile broadband technology where greater **bandwidth** and lower **latency** matters

	4G	5G
Latency	10-100ms	< 10 ms
Download speed	1 gbps	20 gbps
Allowed maximum mobility speed	350 km/h	500 km/h

Please note, that the following use-cases are highlighted scenarios of complex solutions and does not represent the full landscape of 5G capabilities



A high-speed train is shown on tracks at night, illuminated by its headlights. The scene is overlaid with a semi-transparent blue rectangle containing white text. In the background, another train is visible on a parallel track, and various railway infrastructure like signal masts and overhead wires are present.

# #1 Railway industry

## Driverless & remotely operated trains

- **FRMCS** Future Railway Mobile Communication System (replacing GSM-R)
  - EU project to introduce 5G as the main railway communication and signaling platform
- **Automatic Train Operations (ATO) levels 0 – 5**
  - Driverless operation (level 3 & 4)
  - Unattended (level 5)
- Critical video support for driverless trains

# #2 Enterprise applications

## High-speed falling conductor protection

- Fallen power lines are among the top reasons for wildfires in the US
- With 5G's extreme low latency feature it is possible to instantly transmit information about line break detection and immediately shut down the affected string(s)
- Cut-off electricity before the broken cable reaches ground (resulting a high-power electric arc)



# #3 Agriculture



- High quality video streaming of drones
- Detect pests and plant diseases on the fly
- Targeted spraying against diseases using on-the-fly video detection

# #4 Industrial IOT

## Manufacture process

A photograph of a modern industrial factory floor. In the foreground, a white ABB robotic arm is mounted on a black base, positioned over a workbench. In the background, another similar robotic arm is visible, working on a production line. The environment is clean, well-lit, and filled with various pieces of industrial machinery and equipment. The overall scene conveys a sense of advanced manufacturing technology.

- Manufacturing robots are extremely sensitive of latency
- Delayed packets may cause timing issues and automatic emergency stop of manufacture process (for safety reasons)
- 5G connectivity does the job w/o wiring
  - Reconfiguration of factory layout between model or product changes are significantly faster and simple to do
  - Precise positioning within factory area



# #5 First response services

## On-the-fly translation service

- AI driven natural language translation during call
- Speech processing and translation can be done on the Edge Cloud
- Can be used by first response services (eg. 911 or 112 call centers)
- 5G enables fast translation and almost unnoticeable delay in call

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