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What Are The Reasons For Transition To 5g Technology?

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Abstract

This poster explains technological expectations from 5G technology due to the technological improvements of today's world by giving real-life examples. As a piece of background information, the timeline of generations from beginning to today is explained.

Introduction

Digitalization and process speed of the data gain importance in every commercial or non-commercial industries. Emerging new technologies and improvements on existing technologies are used to meet demand. Transition to 5G technology seems like a game changer at this point.

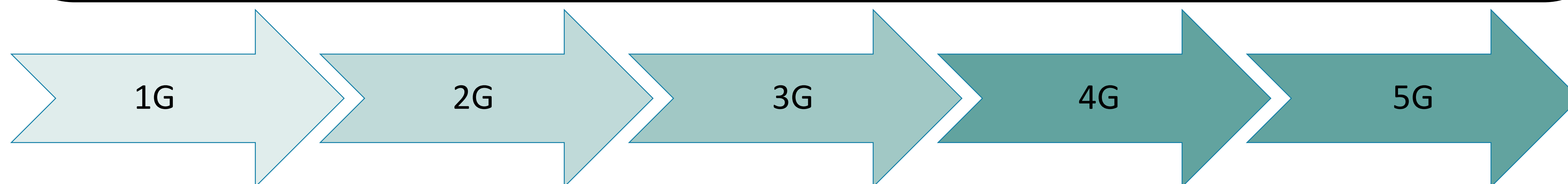
Today's Technology and Increasing Demands:

- 1) Industrial Automation: Connected Devices
- 2) Use of Cobotics in Production Bands: Low Latency Requirement
- 3) Entertainment Industry Improvements: Watching Netflix or Playing Games on VR
- 4) Public Safety and Smart Cities: Automated Systems, real time monitoring and response (e.g. Fire)
- 5) Remote Surgeries
- 6) Autonomous Vehicles – Dynamics Response (Thornton, 2019)

1G to 5G Timeline

- | | | | | |
|--|--|--|---|---|
| <ul style="list-style-type: none"> • 1980 • Analog Voice • No Encryption /Security • No Industrial Implication • 2.4 kilobyte per second (kbps) • Motorola DynaTac «The Brick» | <ul style="list-style-type: none"> • 1990 • Digital Voice • Encrypted Connections • SMS and MMS • Remote Machine Controls • 0.2 Megabyte per second (Mbps) • Nokia 3210 | <ul style="list-style-type: none"> • 2000 • Video Streaming • Live Video Chats • Surf on Internet/ Emails over phones • Remote Machine Monitoring • 2 Mbps • Blackberry and Apple | <ul style="list-style-type: none"> • 2010 • High Quality Video Streaming/ HD Videos • Online Gaming • Remote Machine Technicians/ Services • 12.5 Mbps • Netflix Boomed | <ul style="list-style-type: none"> • 2020 • 20 times faster than 4G • Reduced Latency • Larger Working Range • IoT Deployments • Smart Cities • Game Changer |
|--|--|--|---|---|

(Galazzo, 2021)



Expectations From New Technology

- 1) Requirement of High Data Transmission Speed
 - i. Connected Devices, Smart Cities
 - ii. Entertainment Industry Needs
 - iii. More Industry Oriented Needs
- 2) Requirement of Low Latency
 - i. Remote Surgeries
 - ii. Cobotics
- 3) Requirement of High Liability
 - i. Autonomous Vehicles

Conclusion

Digitalization leads to increasing technological demand. Similar to improvements, the technology demand is not growing linearly but exponentially. The 5G technology is required to establish new technologies and improve the existing ones to increase efficiency of productions, ease people lives, etc. Three main reasons can be considered as high data transmission speed with high liability and low latency.

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