

# NAGARJUNA COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous College under VTU, Belagavi)



A Technical Seminar Synopsis

On

**“ 7G – A HIGH SPEED MOBILE AND INTERNET  
CONNECTIVITY ”**

Submitted in partial fulfillment for the award of the degree in

**BACHELOR OF ENGINEERING**

**IN**

**COMPUTER SCIENCE & ENGINEERING**

Submitted by

Mr. Abhishek Kumar

1NC19CS116

Under the guidance of

**Dr. Gopinath A R**

**Associate Professor**

**Dept. of CSE, NCET**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**NAGARJUNA COLLEGE OF ENGINEERING & TECHNOLOGY**

(An Autonomous College under VTU, Accredited by NAAC with “A” Grade)  
Mudugurki (V), Venkatagirikote (P), Devanahalli (T), Bengaluru-562164.

**2022-23**

# 7G – A HIGH SPEED MOBILE AND INTERNET CONNECTIVITY

## ABSTRACT

The concept of 7G cellular technology aims to enable space roaming, providing uninterrupted access to information anytime and anywhere with better quality, high speed, increased bandwidth, and reduced cost. However, the standard and protocol for cellular to satellite systems and for satellite to satellite communication systems need to be defined, and issues such as handoff and roaming in 6G with different networks and standards must be addressed. The commercial availability of 5G is expected around 2020, with 6G and 7G predicted to emerge in 2030 and 2040, respectively. While high infrastructure and security costs remain a challenge for future technologies, the evolution in standard and technology will continue, leading to new horizons in computing research.

## AIM AND OBJECTIVES

To develop a mobile wireless network that enables space roaming and provides uninterrupted access to information with better quality, high speed, increased bandwidth and reduced cost.

Objectives:

- To define all necessary standards and protocols for 7G network to achieve its aim
- To overcome the issues of data capacity coverage and hand-off between different networks
- To enable space roaming by integrating cellular and satellite communication systems
- To reduce the cost of mobile phone calls and services for the end-users
- To open up new horizons for computing research by introducing new technology
- To ensure security and privacy of the 7G network
- To develop infrastructure that can support 7G network
- To replace old devices with new ones to support 7G network
- To commercialize 7G network in the market.

# INTRODUCTION

The world of mobile wireless communication is rapidly evolving and the demand for faster and better quality services is increasing. This has led to the development of various mobile network technologies such as 2G, 3G, 4G, 5G, and the upcoming 6G and 7G. The aim of each generation is to provide faster speeds, increased bandwidth, and better connectivity. 7G is expected to be the most advanced generation in mobile communication and aims to provide global coverage with space roaming capabilities. In this context, this report aims to explore the concept of 7G and its potential benefits and challenges. 7G technology is still in the conceptual phase, with no concrete standards or protocols established yet. However, it is expected to be the most advanced mobile wireless communication technology, offering global coverage with no limitations. Its main aim is to provide uninterrupted access to information anytime and anywhere with better quality, high speed, increased bandwidth, and reduced cost. With the advent of 7G, there will be a revolution in the technology for the cost of mobile phone calls and services, which could potentially be called 7.5G or 8G. It is expected that 7G technology will be commercially available sometime in the 2040s.

## BACKGROUND & PREVIOUS WORK

The fifth generation (5G) of mobile wireless networks aims to provide a real wireless world with no limitations, demanding uninterrupted access to information anytime and anywhere with better quality, high speed, increased bandwidth, and reduced cost. It has been designed to deliver significantly faster and more responsive mobile broadband experiences as compared to the existing 4G networks.

4G, on the other hand, is a wireless communication standard that stands for Fourth Generation. It is the successor to 3G and offers faster internet speed, better network stability, improved coverage, and lower latency. It supports internet speeds of up to 100 Mbps for mobile devices and up to 1 Gbps for stationary devices.

6G is the sixth generation of wireless network technology and aims to integrate 5G networks with satellite systems. The handoff and roaming between these different networks are

big issues, and 6G is expected to address them. It is also expected to provide even faster speeds and lower latencies, as well as the ability to support more connected devices.

## ANALYSIS

<b>Generation (s)</b>	<b>5G</b>	<b>6G</b>	<b>7G</b>
<b>Starts from</b>	2015	Soon Probably	Probably by 2035
<b>Frequency range</b>	Low band up to 1GHz  Mid band up to 6GHz  High band up to 100GHz	95GHz – 3THz	95GHz – 3THz
<b>Service</b>	Dynamic Information access, wearable devices with AI compatibilities	Secure and Global Cellular Service	Secure and Global Cellular Service
<b>Multiplexing</b>	CDMA	CDMA	CDMA
<b>Switching Type</b>	All packets	All packets	All packets
<b>Core network</b>	Internet	Internet	Internet
<b>Data rates</b>	Higher than 1 Gbps	About 11 Gbps	About 11+ Gbps
<b>Handoffs</b>	Horizontal and vertical	Horizontal and vertical	Horizontal and vertical

The capabilities expected from 7G technology are revolutionary and ambitious. The non-existent delay in communication and very high-speed connectivity will enable real-time communication and seamless integration of various applications. The utilization of Artificial Intelligence based core networking solutions will lead to more efficient and reliable network management.

The virtual space environment with realistic sensations will open up new possibilities for entertainment, gaming, and virtual meetings. Internet cognition will enable the network to analyze user behavior and provide personalized services. The use of satellite networks for better global coverage will be a game-changer for remote areas and underdeveloped regions.

The Internet of everything will connect all devices and enable data exchange between them, leading to more automation and efficiency. Better remote access for diagnosis, learning, etc. will enable access to high-quality services and education from anywhere in the world.

Overall, 7G has the potential to revolutionize the way we interact with technology and each other, leading to a more connected and advanced society. However, the implementation of such capabilities will require significant advancements in technology, infrastructure, and security.

## CONCLUSION

In conclusion, 7G is expected to bring significant advancements in mobile wireless communication by providing non-existent delay, very high-speed connectivity, AI-based core networking solutions, a virtual space environment with realistic sensations, internet cognition, better global coverage using a satellite network, and better remote access for various purposes. However, the development and implementation of 7G will require significant investment and technological advancements. Therefore, it may take several years for 7G to become a reality. Nevertheless, the possibilities that 7G can bring are vast and can revolutionize the way we communicate and access information in the future.

## Reference

- [1] 7G Network: A Game Changer For Mobile And Internet Connectivity

<https://ttconsultants.com/7g-network-a-game-changer-for-mobile-and-internet-connectivity/>

- [2] 4G, 5G, 6G, 7G and Future Mobile Technologies

<https://www.imedpub.com/articles/4g-5g-6g-7g-and-future-mobile-technologies.php?aid=35398>

- [3] Overview of advances in communication technologies

<https://ieeexplore.ieee.org/abstract/document/8055856>

