lower cell size and widen frequency bands [20,21]. In a completely decoupled RAN, multi-point coordination and centralized resource management may be used to provide elastic resource cooperation [14]. To allow smart applications, 6G will make extensive use of sensor, networking, and computing technology.

5. Evolution of network

The transition of 1G to 4G

The main role of the 1G network in the 1980s was to deliver solely voice communications. It transfers data using analog modulation methods rather than a specific wireless protocol. To provide voice and text messaging capabilities. A lot of individuals currently utilize GSM mobile communication.

1G was the first generation of wireless cellular technology, enabling communication between compatible devices but limited to voice calls due to interference and lack of roaming functionality.

2G technology improves phone conversations, data services such as SMS and MMS, and roaming, allowing users to answer calls and send/receive text and multimedia material while on the road.

While 3G pioneered mobile television, online radio services, and phone emails, it was video calling and mobile phone applications that truly characterized the 3G era.

3G laid the groundwork for 4G, the current mobile network generation, enabling high-definition voice and video calls, improved data rate, and advanced multimedia services, and perfecting the LTE system.

The ongoing development of 5G

5G is expected to cater to both smartphone users and enterprises due to its improved data speeds, low latency, and high throughput. Because of advances in technology and a high-security architecture, data speeds may increase as 5G network rollout nearby.

The upcoming of 6G

India plans to launch 6G services in early 2024, using indigenous infrastructure, to optimize and reduce costs for 5G use cases, such as the metaverse, which is expected to disrupt traditional and digital spaces. 6G communications is a more efficient technology compared to 5G.

It offers high data throughput, ultra-low latency, and network availability over 99.99%. 6G can accommodate devices per km and deliver services like enhanced Mobile Broadband, ultra-massive Machine Type Communication, and more. Emerging technologies like Federated Learning, Intelligent Edge computing, and Quantum Communications will enable next-generation communication networks.