

6G is expected to be different from 5G in several aspects. From the perspective of application requirements, 5G extended the "Mobile Internet" in 4G to the "IoE". Based on 5G, 6G will continue to enhance the mobile Internet and IoE but will also deeply integrate them with AI and big data to realize the intelligent IoE. As for technical requirements, compared with 5G, 6G will pursue wider coverage, higher rates, more connections, ultra-low latency, ultra-high positioning accuracy, integration of communications and sensing, more intelligence, more security, and better substitutability. Note that 6G will be a network that goes beyond communication. These application requirements and technical requirements lead us to envision what the 6G will be like. While 5G is being rolled out globally, a number of research initiatives have proposed ideas for the 6G vision. In Sept. 2019, the 6G flagship led by the University of Oulu published the world's first 6G research white paper and proposed the vision of "ubiquitous wireless intelligence" for 6G [4]. In Mar. 2020, the white paper on 6G concept and vision published by the CCID envisaged 6G to open up a unified network of ubiquitous intelligent connection between virtual and real worlds [25]. In Nov. 2020, UNISOC published a white paper, hoping 6G can achieve the link between macro and micro, the fusion of virtual and reality, the mapping between digital and physical, the crossing of past and future, and the matching between technologies and requirements, emphasizing the importance of AI [30]. In Dec. 2020, it was expected by DATANG Mobile that the 6G capability of basic communication, intelligence, wireless sensing, network security, and network computing power would be enhanced [31]. In June 2021, the IMT-2030 promotion