

## ABSTRACT

As more and more 5G networks are deployed, the limitations of 5G networks are not only being discovered but are driving exploratory research into 6G networks as a next-generation solution. Part of these investigations includes the fundamental security and privacy problems associated with 6G technologies. Therefore, to consolidate and solidify this foundational research as a basis for future investigations, we have prepared this poster on the current state-of-play in 6G-related security and privacy. The background of 6G networks have also been presented. Moreover, this poster also separately shows what role the blockchain plays in the 5G and 6G networks. The issues and problems in blockchain network have also been introduced in this poster. What's more, the references and the future research of blockchain in 6G networks are also been detailed.

## BLOCKCHAIN IN 5G NETWORKS

This part shows what role the blockchain plays in the 5G network through both technology and application.

Blockchain-enable technologies

- Authentication.
- Access control.
- Verification.
- Spectrum management.
- Network slicing.
- Software-defined networks (SDN).
- Edge computing.

Application and service via blockchain in 5G networks

- Smart transport.
- Smart Health.
- Internet of Things (IoT).

## REFERENCES

- [1] Minghao Wang. Security and privacy in 6g networks: New areas and new challenges. 2020.
- [2] Minghao Wang. Blockchain in 5g and 6g networks., 2020.

## INTRODUCTION

With the rapid development of the internet, the arrival of 5G networks has made the internet enter a new stage. Moreover, the blockchain plays an important role in the 5G network. There are several blockchains enable technology such as authentication, access control, spectrum management and so on, and some services and applications via blockchain in 5G networks such as Vehicle, Edge computing and so on. These blockchain-enabled technologies, application and services consist a part of 5G networks. Even though the era of the 5G network has not yet fully arrived, the limitations of 5G technology mean we must begin researching 6G networks now. To date, the 6G network has no standard functions or specifications, just many possibilities. In this poster we will have a brief introduction of security and privacy issues in 6G networks and how blockchain works in 6G networks.

## BLOCKCHAIN IN 6G NETWORKS

This part shows what role the blockchain plays in the 6G network through both technology and application.

Blockchain-enable technologies

- Spectrum Sharing.
- Blockchain with AI.

Application and service via blockchain in 6G networks

- Distributed ledger technology.
- Edge AI.
- Internet of Everything (IoE).

## FUTURE RESEARCH

In the future, we will design a blockchain-based crowdsourcing system in 6G IoE networks. This system could solve many problems in traditional

## BACKGROUND OF 6G NETWORKS

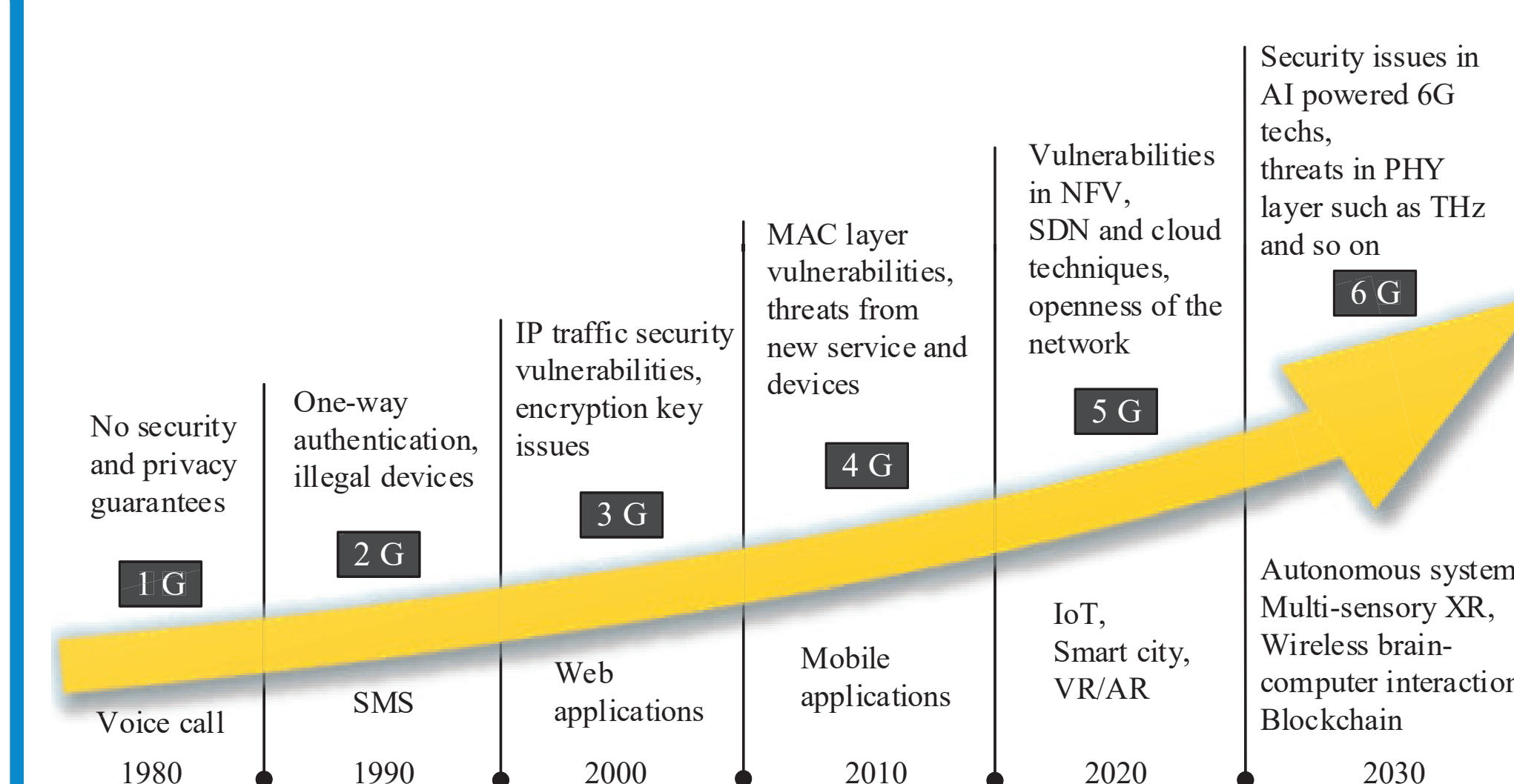


Figure 1: Overview from 1G to 6G

This figure provide a high-level overview of the evolution of security and privacy in wireless networks from first-generation technology standard for cellular networks (1G) to fifth-generation technology standard for cellular networks (5G). In the previous generation of networks, we could see that there were nearly no security and privacy guarantees such as 1G or 2G. But in the late generation of networks, people have started to pay more attention to security and privacy guarantees, and the applications are also increasing.

## ISSUES AND PROBLEMS IN BLOCKCHIAN NETWORKS

There are several security-related issues exists in blockchain networks we will list some main issues in the following.

Security-related issues:

- Majority attack (51% attack).
- Fork problems.
- Double-spending problem.
- Selfish mining attack.
- Sybil attack.
- Distributed Denial of Services (DDoS) attack.

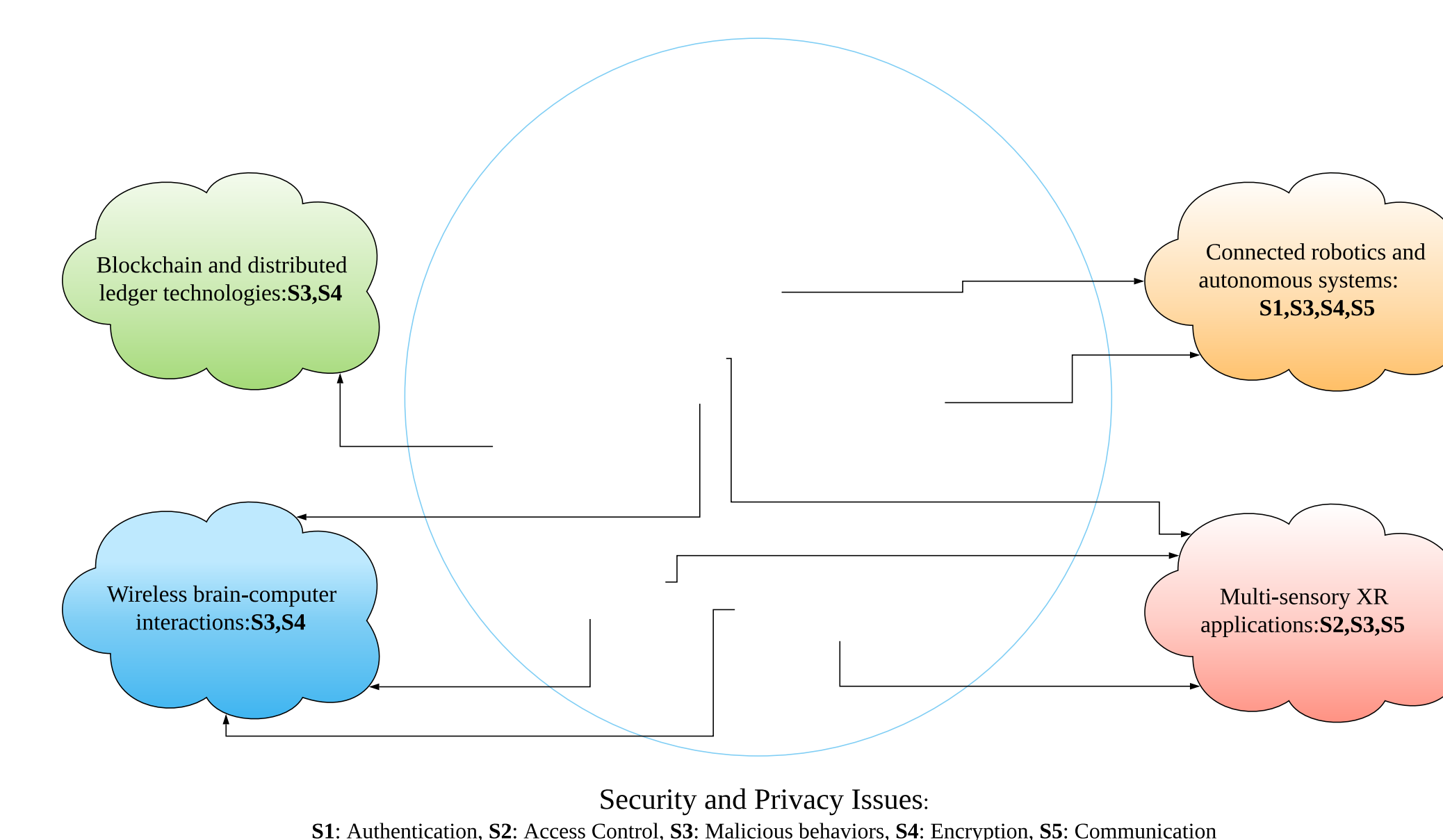


Figure 2: Security and privacy issues in 6G networks

This figure shows the security and privacy issues in 6G networks. The circles in this figure indicate the four key components of a 6G network. The technologies are denoted as square in this figure. The applications of 6G networks are shown as clouds in this figure. We could see that Different parts contains different security and privacy issues. However, what we mainly focus is the security and privacy issues in blockchain area it shows in the following.

Privacy-related issues

- Transaction privacy leakage. The protection for transaction privacy means to make transaction-related data anonymous to unauthorized nodes.
- Identity privacy leakage. As for protecting the user identity privacy, it requires the user's identity information, physical address, IP address and the public information such as the user's public key and address on the blockchain are not related in the blockchain networks.

## CONTACT INFORMATION

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