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# Foreword

This Group Specification (GS) has been produced by ETSI Industry Specification Group (ISG) Experiential Networked Intelligence (ENI).

# Modal verbs terminology

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# Executive summary

# Introduction

# 1 Scope

This GS will specify the use of collaborative Blockchain-based capabilities for securing the services provided and access to multi-operator telecom systems that are co-constructed and shared. Besides providing enhanced trust, transparency, security, and privacy, this GS will specify how blockchain is used to streamline operations, efficiently manage and protect data and transactions, and create new revenue models. The blockchain will be a new Functional Block in the ENI System. The primary objective is to enhance the trustworthiness and efficiency of collaboration among multiple operators.

# 2 References

## 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non‑specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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[i.1] <Standard Organization acronym> <document number><version number/date of publication>: "<Title>".

[i.2] etc.

# 3 Definition of terms, symbols and abbreviations

## 3.1 Terms

For the purposes of the present document, the [following] terms [given in ... and the following] apply:

## 3.2 Symbols

For the purposes of the present document, the [following] symbols [given in ... and the following] apply:

## 3.3 Abbreviations

For the purposes of the present document, the [following] abbreviations [given in ... and the following] apply:

# 4 Background

Due to the higher working frequency bands and smaller cell coverage radius of 5G networks and future mobile communication networks compared to 3G and 4G, as well as higher energy consumption, the construction cost of networks will increase sharply during the expansion of 5G and the construction of future mobile communication networks. Network sharing is an important trend in the construction of 5G networks and future mobile communication networks. Secondly, as the demand for vertical industry private networks gradually increases, the future construction and operation model of networks that integrates vertical industry private frequency bands, general-purpose equipment, general-purpose capability platforms, and distributed data centers for joint construction and sharing will be a key direction to significantly improve resource utilization, enhance the quality of vertical industry networks, and improve management and operation efficiency.

Blockchain technology can provide data certification capabilities for various scenarios of co-construction and sharing, providing traceability for various records and bills, and ensuring data integrity.

In terms of data security, due to the large number of access devices in 5G networks, secure access is crucial. Moreover, there will be a large amount of data transmission across IT/CT, so using the tamper-resistant characteristics of blockchain technology to supervise interactive information can make media flow transfer more open, transparent, and trustworthy. This can meet the requirements of mutual trust in security, traceability, and settlement between IT and CT, such as preventing roaming fraud and managing and authenticating the identities of a large number of device access scenarios.

In terms of data sharing, many industry applications have data synchronization relationships (such as industry application modules located at edge nodes and edge application modules located in the cloud or another edge node). Using blockchain technology for distributed storage, secure distribution, and sharing of data can achieve cross-node business layer data synchronization and sharing, edge-cloud resource sharing, and even enable sharing economy. For example, there are requirements for anti-piracy on CDNs, which can be achieved by fulfilling sharing requirements across IT/CT.

Therefore, in the context of 5G network sharing, blockchain technology can provide excellent solutions for trustworthy certification, security, and sharing requirements. Moreover, credit interconnection based on blockchain can avoid high third-party intermediary costs in distributed scenarios involving multiple parties, improve business processing efficiency, resist seriously unbalanced data value distribution systems, and establish a fair, open, trustworthy, mutually beneficial, efficient, and secure mechanism for multi-party cooperation and open win-win development.

# 5 Characteristics and general requirements

## 5.1 Introduction

Void

# 6 Functional architecture

## 6.1 Introduction

Void

# 7 Common capabilities

## 7.1 Introduction

Void

# 8 Security consideration

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