ACM Journals

# CALL FOR PAPERS

**ACM Transactions on Distributed Ledger Technologies: Research and Practice**

*Special Issue on Distributed Ledger Technology (DLT) for Beyond 5G Systems*

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## Background

The next generations of mobile networks, 5G which is undergoing the phase of deployment and 6G which is in its very early stage and is limited to research space, are going to be highly capable networks in terms of super-high data rate, huge traffic volume, hyper connectivity, ultra-low latency, massive heterogeneous applications. To fulfil these expectations research communities and telecommunication standarization bodies are working towards making the next generation of networks sofwarized, virtualized, cloudified and edgified. Some of the interesting anticipated uses case of future softwarized networks are (Virtual Reality), AR (Augmented Reality), and MR (Mixed Reality) applications, M2M type applications, 3D holographic imaging, 5D communications (sight, hearing, touch, smell and taste), smart clothing and wearables, fully autonomous (Level-5) vehicles. Another set of use cases come with integration of IoT with future networks which are Industrial internet, healthcare, smart-energy, smart-cities, smart-agriculture, smart-home etc., With the roll-out of such new services there will be pressing need of high security, enhanced scalability, optimal utilization of network resources, efficient energy management and low operational cost. Moreover, the increasing number of connected devices and new services will result in increasing demand of capacity. Thus, ensuring secure connectivity and secure data sharing for this expected traffic growth is vital. Although the existing security architectures so far are able to provide a sufficient level of security, however, they are suffering from impediments such as limited scalability, over utilization of network resources (leading to increased networklevel delay & congestion) and high operational cost, mainly due to the complex and static security management procedures.

To reconcile the pertinent issues blockchain/DLT technologies, featured with decentralization, cryptographic techniques and consensus-driven mechanism, can be leveraged. Also, the combination of cryptographic processes behind it can offer an intriguing alternative. Though still in infancy, blockchain technology is turning out to be disruptive by proving its efficacy. The distributed nature of blockchain allows industrial entities and various 5G/6G enabled IoT data users to access and supply IoT data from and to peers respectively thereby omitting the need of centralized operations and management. Moreover, the stakeholders of the 5G ecosystem can verify the veracity of each transaction and thus brings-in accountability, auditability, along with provenance and non-repudiation for every user. To summarize, it is worth exploring the role of blockchain in the realm of softwarized networks along with the different use cases, opportunities and challenges.

## Topics

Researchers and engineers from academia and industry are invited to submit their recent results and innovations. The list of topics includes, but is not restricted to the following topics:

- Blockchain and DLT oriented B5G networks infrastructure
- Novel theoretical concepts and applications of blockchain for 5G/6G systems
- High performance blockchain/DLT architecture for B5G networks

- Ultra-Low latency blockchain/DLT architecture for B5G networks
- Experimental evaluations of blockchain/DLT-based B5G applications
- New consensus protocols for B5G networks
- Quantum resistant Security, privacy, and trust models for B5G blockchain/DLT systems
- Blockchain/DLT based security frameworks for 5G/6G networks
- Formal methods and modeling of blockchain/DLT enabled B5G use cases
- Scalable services for blockchain/DLT enabled B5G networks
- Service-oriented blockchain IoT and cyber-physical systems
- Mobile edge computing and Network Slicing for Blockchain/DLT empowered B5G networks
- Blockchain/DLT based resource and spectrum management for B5G networks
- AL enables Blockchain/DLT for B5G networks
- Testbeds and debugging tools related to blockchain for 5G/6G
- New opportunities, challenges, case studies, and applications for blockchain/DLT in B5G networks

**Important Dates**

- Submissions deadline: September 15, 2022
- First-round review decisions: December 15, 2022
- Deadline for revision submissions: February 15, 2023
- Notification of final decisions: April 15, 2023
- Tentative publication: Quarter 2 or 3, 2023

**Submission Information**

Submissions should be made via https://mc.manuscriptcentral.com/dlt. Please select the "Special Issue on Distributed Ledger Technology (DLT) for Beyond 5G Systems" as the paper type.

Further detail about each category of contributions, as well as the author guidelines, can be found at https://dl.acm.org/journal/dlt/author-guidelines.

For questions and further information, please contact dlt_dlt5g@acm.org