

BLOCKCHAIN TECHNOLOGY IN FUTURE MULTI-DOMAIN OPERATIONS

Although blockchain technology (BT) was originally developed for digital currency, different potential uses cases are discussed in the military communities. Blockchain can be defined as a digital information system, which stores data in an encrypted, distributed format on the combat field in different domains. In this regard, BT can be considered as the transfer bridge from traditional data networking to using Quantum Entanglement communication.

The list of possible use cases of blockchain in MDO includes crypto-secure digital identification and access to digital twins, smart contracts as a procedure for issuing orders to troops and making of logistic requests, combat IoTs, sharing of Augmented Reality data on the battlefield, monitoring the health of soldiers and weapons or military equipment, etc. BT does not replace the means to exchange data between devices or nodes. Instead, BT provides the possibility to store securely all transactions between different domains (at each domain level). In case a problem occurs, the BT will detect this and displaying all transactions safely stored and will then contribute to identifying which domain failed and is at the origin of the problem.

On the other hand, BT should be combined with machine learning (ML). As an example, BT can be used to distribute the structure and weights of trained neural networks (NN) based on tensor matrix theory in the process of mass replication of Edge ML units. BT can be used also to coherently update multiple identical NN of swarm drones for adaptation to new situations or increase accuracy etc. The same data set can be shared via BT to distributed Clouds ML (Fog Computing) or hierarchies of NN clusters for training and classifications.