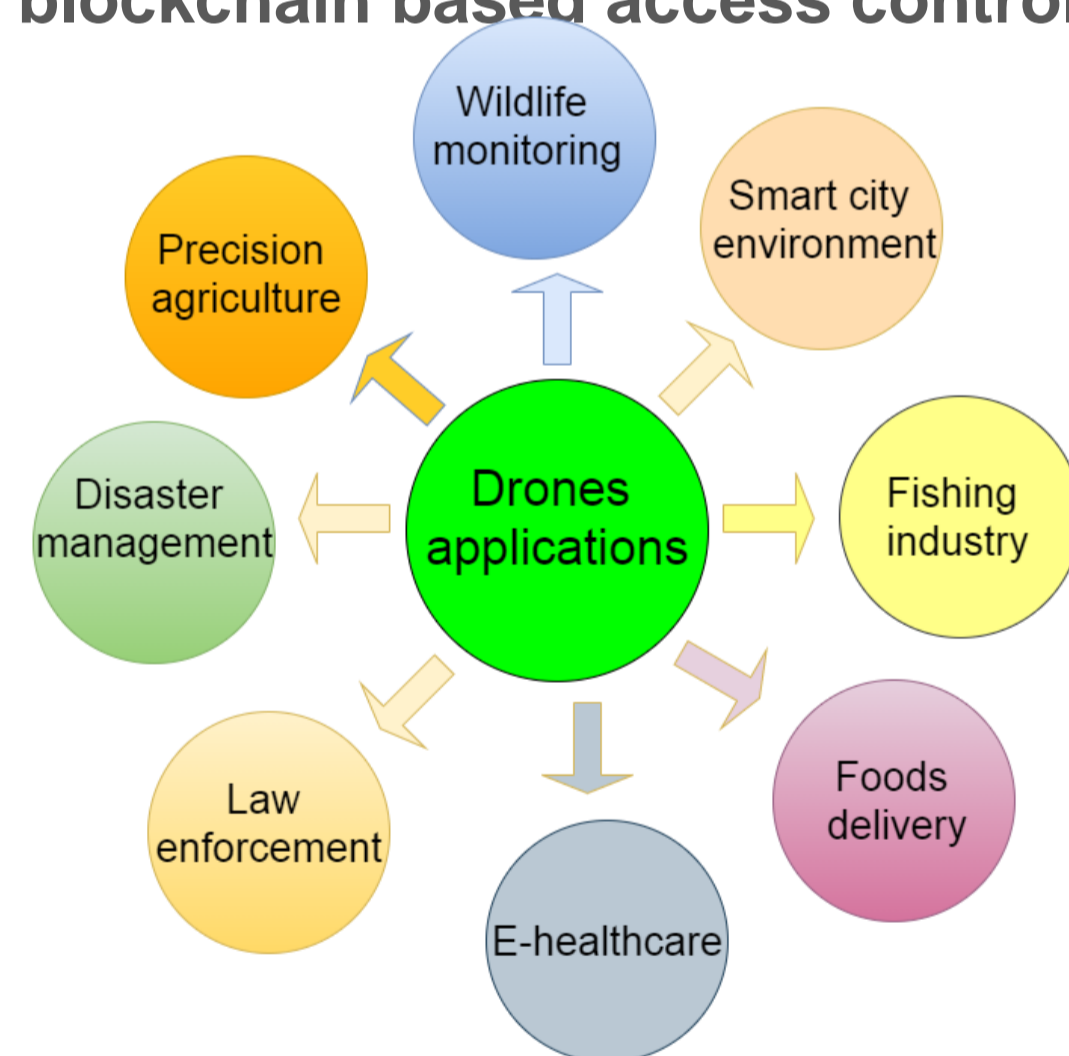




# Design and Testbed Experiments of Public Blockchain-Based Security Framework for IoT-Enabled Drone-Assisted Wildlife Monitoring

## ABSTRACTS

In recent years, the Internet of Things (IoT) enabled drones, also called as unmanned aerial vehicles (UAVs), are widely used in many applications ranging from military to civilian applications, such as wildlife monitoring. Since the drones provide a risk-free as well as low-cost facility in order to quickly and persistently monitor natural circumstances at high spatial temporal resolution, they help in wildlife monitoring research. Due to wireless communication nature, the communication among the deployed drones in their respective flying zones and the IoT smart devices installed in animal bodies, and also among the drones and their respective ground station server (GSS), is susceptible to various passive and active attacks. To mitigate these issues, we propose a public **blockchain based access control** implementation for wildlife monitoring purpose.



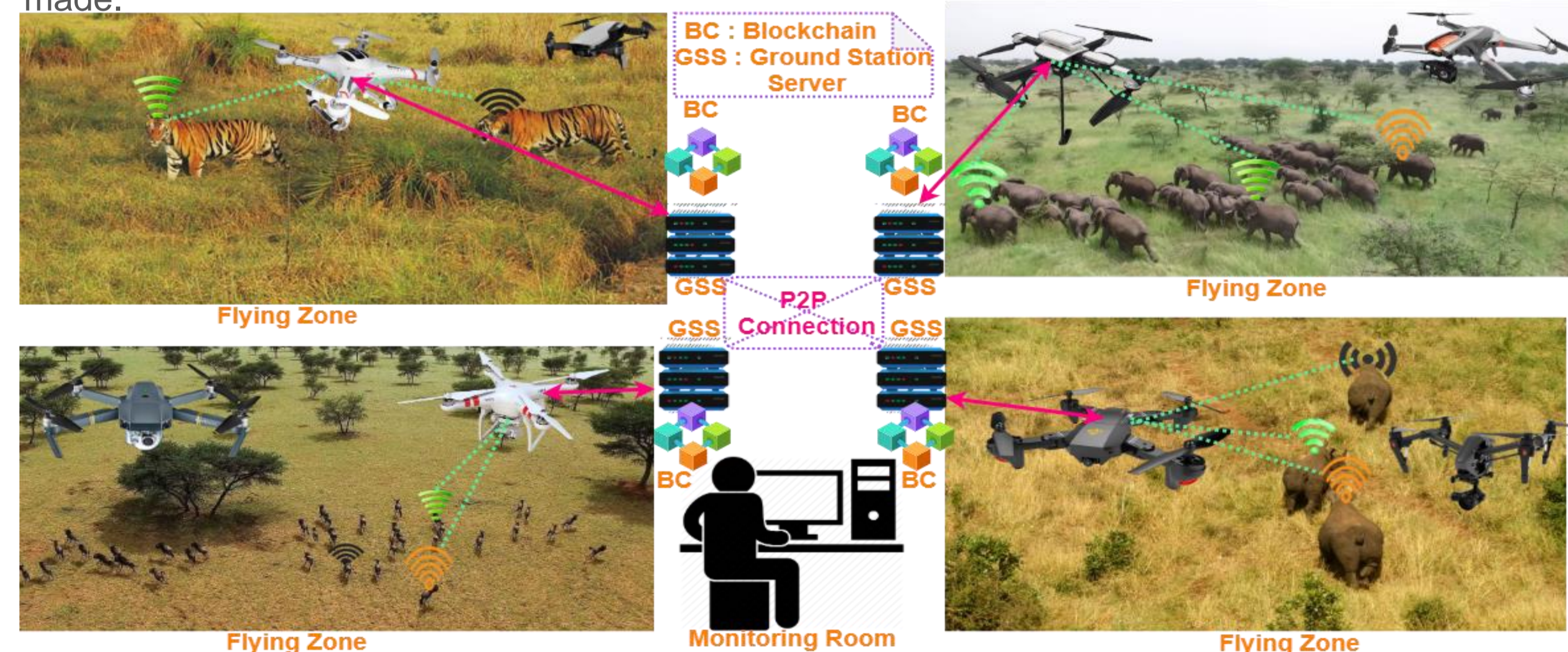
Block Header	
Block Version	$BV$
Timestamp	$TS$
Previous Block Hash	$PBHash$
Merkle Tree Root	$MTR$
Owner of Block	Id of GSS
Public key of signer (GSS)	$Pub_{gss}$
Block Payload (Encrypted Transactions)	
List of Transactions $\#i (Tx_i)$	$\{(Tx_i)   i = 1, 2, \dots, n_t\}$
Current Block Hash	$CBHash$
Signature on $CBHash$	$ECDSA.Sig(CBHash)$

## METHOD

We used blockchain-based security framework for IoT-enabled drone-assisted wildlife monitoring deployment. We executed the suggested access control mechanism by considering the existing access control scheme designed by Bera et al. For storing the data in distributed server we have used blockchain. The side figures describe simulation results and test-bed experimental setup.

## OBJECTIVE

Drones are used for wildlife monitoring as these are remote-controlled devices having the capability for collecting wildlife information from difficult-to-access places with minimum disturbance. Unconditional growing human activities make an environmental situation that creates a threat to wildlife. The purpose of utilizing a drone in a wildlife environment is not only for monitoring the population of wild animals, wildlife species, quantity, habits, and quality of life, but can also be used for a routine survey that reveals the actual state of biodiversity. In addition, use of drones in such an environment should guarantee a quick response for any strange environmental activity that can affect the wild animal population and take a precaution before any permanent damage has been made.



## SIMULATION RESULT

