

# Proposing an Algorithm for UAVs Interoperability: MAVLink to STANAG 4586 for Securing Communication



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**Abstract** Recently, the use of unmanned aerial vehicles has become increased rapidly in both civilian and military applications. With the increased popularity and wide range of applications, these systems' global manufacturer market has also been improved. UAVs play a vital role in modern warfares, and the country with this technology has many advantages over its enemies. A typical UAV interacts typically with a ground control station or a control station with different communication protocols. Among these protocols, an open-source protocol, MAVLink, is the most common and widely used protocol in the private sector. Despite being most commonly used, this protocol is weak, insecure communication. For military UAVs, the protocols and standards are generally different, and they are not openly available. NATO countries use such a protocol to agree on a standard protocol called STANAG (Standard and Agreement) 4586 for unmanned aerial vehicles. While other countries show interest in buying military UAVs, they need to upgrade their existing UAVs or ground control stations to be compatible with the standards. This paper proposes a communication bridge between MAVLink and STANAG 4586 to interoperate like AV Rodrigues et al. proposed. Additionally, this work will make the STANAG 4586 compliant GCSs operate with MAVLink supported UAVs more securely using our proposed algorithm to secure the MAVLink communication.

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## 5 Conclusion and Future Work

The increase in UAVs' application promises this industry's future, and they are becoming part of our everyday life. This research proposes a communication bridge between a NATO standard STANAG 4586 and an open-source communication protocol for UAVs and MAVLink. The bridge connects a STANAG 4586 compliant GCS to operate a MAVLink supported UAV like the work proposed by AV Rodrigues et al., adding a security feature to the MAVLink packet, thus bringing interoperability and making the communication secure among the unmanned aerial systems.

We are working on this project already. For further hardware and practical implementation, we are looking forward to applying for funding.

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