

## **Application of unmanned aerial vehicles in the field of telecommunications and the Internet of things**

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UAVs or drones, as an alternative solution for providing high-quality Internet service in hard-to-reach areas, are environmentally friendly and do not consume electricity during the day, as in the case of communication towers. But network developers face challenges in the drone's communication system, related to the need to take into account unpredictable weather conditions and terrain, as well as the short life of the drone's batteries. Therefore, the object of research is the UAV traffic management process using gNB-IoT in 5G.

The possibility of using a UAV mobile repeater during traffic management using the use of radio resources (RR), radio access network (RAN) infrastructure with means of broadcasting and dynamic connection using MU-MIMO modulation is shown. Using these tools allows you to connect the drone to the carrier core network from the ISP and then recover the RF signal and broadcast to another coverage area where that subscriber does not have network coverage, use the Channel Quality Indicator (CQI) display as a QoE feature.

There is no doubt that traffic management is the process of obtaining traffic management information from one endpoint to another, which confirms the reliability and control of data transmission. Meanwhile, UAV traffic management can be used to reduce latency and eliminate interference through the network by relying on IoT applications that use NB-5G technology. The UAV Traffic Management Enhancement Process uses the proposed algorithm to generate dynamic control flow data to enhance flow control traffic processing in IoT.

Due to the recent development in communication and internet technologies and the high cost of the BTSs, Drones have utilized as a Base Transceiver Station (BTS) in areas with no population density, like a forests, to provide communication as support for critical cases or injuries. IoT technology provides a new role in drone applications, as it is considered a base station controller (BSC).

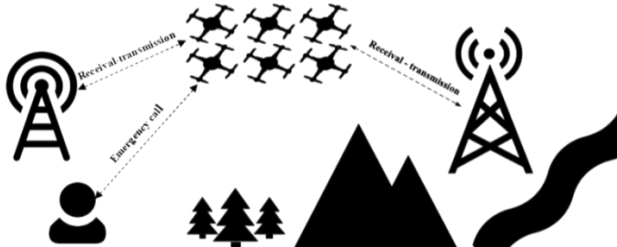


Fig. 1. Increasing the coverage area with the use of an unmanned aerial vehicle.

The formation of a 3D beam with a massive MIMO, which increase throughput, depends on the efficiency of using the spectrum. Drones will provide coverage as the main technologies for traffic control, mobility, and data management. Advantages Provided by Drone Applications

1. High resolution images and video (new digital capabilities);
2. Cheap inspection and access to hard-to-reach infrastructure elements (cost and access);
3. Safer and quicker than dangerous inspections by humans (safety and efficiency);
4. No need to disconnect operations (availability and reliability);
5. Improve and new business processes based on regular and precise inspection (new opportunities).

Summary and conclusion

1. Drone technology is developing very fast, creating a range of new application opportunities
2. Many challenges related to the technology capabilities, risks, regulation (or lack of) and human control

3. Emerging military, commercial, and agricultural applications for inspection and survey of infrastructure systems, power and utilities:
  - Cost-effective solutions
  - Replacing dangerous work by humans
  - Increasing availability of infrastructure systems
  - High quality images and video, including live streaming and monitoring
  - Variety of cameras, different purpose payload and sensors can be used.

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