ADVANCED USE OF CONNECTIVITY FOR DRONE OPERATIONS Connected Skies Webinar 1 APRIL 10:30AM CET



















Panelists

ADVANCED USE OF CONNECTIVITY FOR DRONE OPERATIONS

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Drones Operations and Traffic Management Relevance of C-V2X Communications

GUTMA Webinar – April 2020 AMIT GANJOO Founder And CEO



ANRA Technologies - Global Footprint





C-V2X – Vehicle to everything

C-V2X defines two transmission modes that work together to enable a broad range of use cases.

Direct C-V2X, which includes V2V, V2I, and V2P communications, provides enhanced communication range and reliability in dedicated ITS 5.9 GHz spectrum, independent of a cellular network, as well as network communications (V2N) in traditional mobile broadband licensed spectrum.



V2V communication technologies support safety systems with non-line-of-sight and latency-sensitive collision avoidance capabilities.



When combined with longer-range cellular communication, short range V2I communications can help with variety of safety and interactivity applications.



V2C handle everything from firmware updates and security authentication to locating landing spots and more.



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Welcome to D2X – Drone to everything

Drone-to-everything (D2X) complements all other types of ground V2X including vehicle-to-infrastructure (V2I), vehicle-tonetwork (V2N), vehicle- to-vehicle (V2V), vehicle-to-device (V2D) vehicle-to-grid (V2G), vehicle-to-pedestrian (V2P), and so on.



Vehicular ad hoc network (VANET) applications require intensive communication and computation requirements.



Fog computing can enable migration of computational resources toward the edge of the network to meet the VANET, increasing processing and storage requirements.



New V2X features enabled by Rel-15 Long Term Evolution (LTE) systems will support features such as carrier aggregation, higher order modulation, low latency support, and new resource management solutions.





In this use case communication occurs node to node, when UAV is beyond line of sight communication occurs through the mobile network (WAN).







Figure depicts how communication will occur, in this use case communication occurs through the mobile network (WAN). Communication does not occur node to node



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Network Service – Requirements Mapping for Drones



Round trip latency of 150 ms, including all network components. Remote command and control requires a round trip latency that is similar to human reaction time for human assist for applications to emergency landings.



Faster latency requirements are not needed due to human reaction times that cannot keep up.



The 3GPP system shall support high reliability even in high mobility scenario (e.g. 120km/h); reliability goal is near 100%



Key UTM Principals – Cellular Relevance

A set of distinct underlying principles need to be developed against which an operational UTM solution can be measured and cellular has a role to play.







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5G x Drone Trials by KDDI/au GUTMA Connected Skies webinar session

Tetsuya CHIBA, Director, KDDI European Research Office, KDDI

2020/4/1

Tomorrow, Together おもしろいほうの未来へ。







Creating Innovation by 5G



Promoting Digital Transformation to contribute to clients' businesses

Drone Race - 5G Pre-Service by KDDI / au



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Real-time Control of 5G Drone Utilizing 4K HD Video



While watching 4K high definition video on the ground, we confirmed that delicate drone control would be possible.



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Mountain Rescue System using 5G Drone

1. A drone equipped with a 5G tablet, a 4K camera, and a loudspeaker searches for possible distress in an autonomous flight.





au 5G 17





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Predictable revolution of the UAV operations

The big market and wide prospect of UAV



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Sustained Growth In Market Space







Various Application Scenarios 202

The challenges of UAV operations

Supervisions:

Supervision system of UAV is not completely established. Unregulated drone flights may threaten the airspace and flight safety.

Control:

the satellite communication and point-to-point remote control cannot meet the industry requirements. Connecivity Mobile network 4G/5G

01. Real-time data transmissions involving control commands, telemetry and service contents.

02. Reliable and stable air-to-ground communication capacity.

03. High-level autonomous flying and low-latency access control to simplifying operations and improving safety.

The chances for Telecom operators



Provide LTE/5G the network to support long-distance flight control and data realtime transmission.

Provide the customized UAV services: airspace approval, weather insurance, route planning, module customizing



Provide the cloud based platform to achieve the UAV data analysis, image identification, mapping modeling.

China Unicom built the UAV industry ecology







Q&A



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