

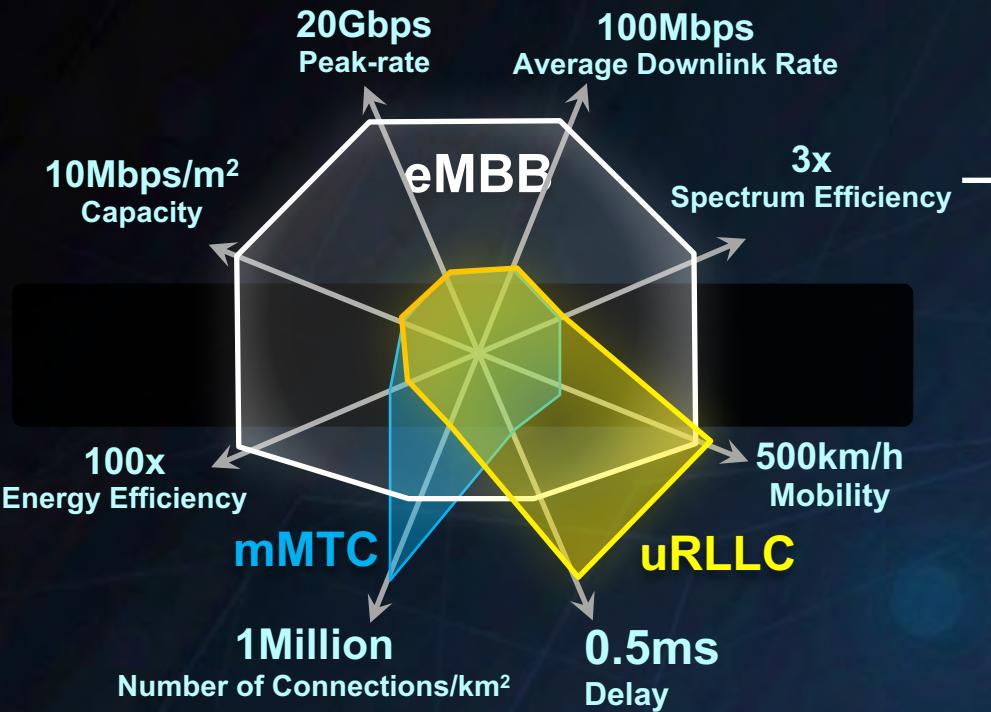
The background of the slide features a wide-angle photograph of a two-lane asphalt road stretching from the foreground into the distance. The road is flanked by green grass and a white and black striped guardrail. The sky above is filled with large, billowing clouds colored in shades of orange, yellow, and white, suggesting a sunset or sunrise. The overall atmosphere is one of vastness and forward movement.

# EMERGING TECHNOLOGIES

– the balance between legacy and innovation

Wang Yufeng | HUAWEI Wireless X Labs

# 5G Will Reshape the World



3GPP Standardization Targets for 5G NR

# Cellular Network Safe Flight Trial in China

## Challenges of Drone Supervision

- Lack of verification in Real-name Registration System
- Inflexibility of Electronic GEO Fence
- Position reported by Drone could be fake
- No Real-time supervision



## Supervision Solution for *Connected* Drones

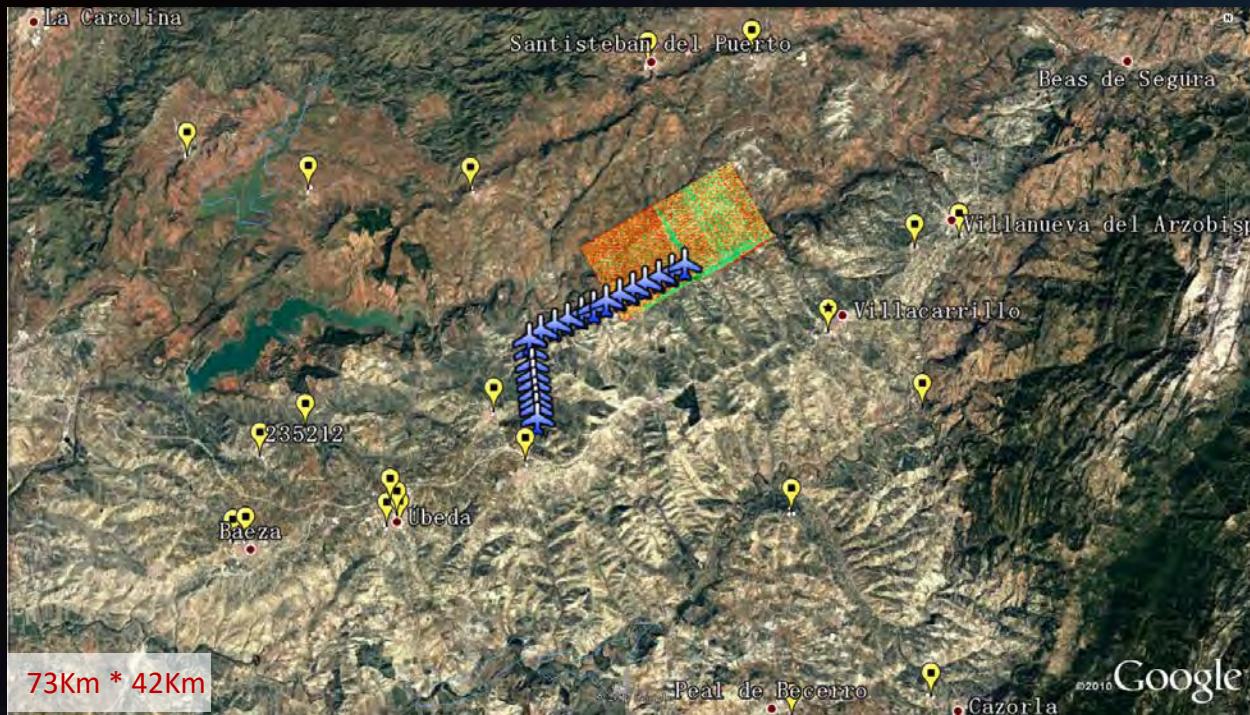


network requirements:  
real name verification  
position verification  
<300m keep online, Location  
UL supervision information: 10kbps  
DL supervision command: 5kbps

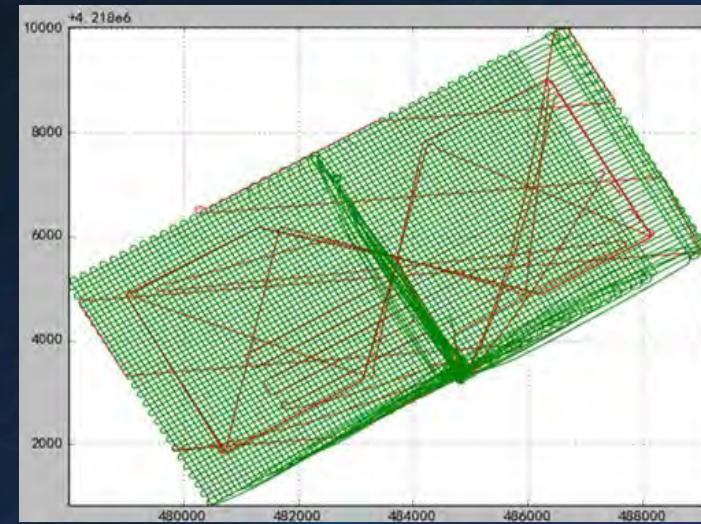
# Drone Track&Tracing with Cellular Network Spain VF

Average ISD:11606m (L800)

Dec, 2017



Database Density: 11.33 samples /50m\*50m.



**Green Line:**  
Construct the database  
**Red Line:**  
Random flights for test

Total Accuracy	@67%	@95%
RPS Baseline	2117	4948
BestCellasServing Cell	2149	5060
SpeedEstimation_2Points	3000	6257
SpeedEstimation_3Points	2290	4579
LowCell(>10km)Priority	2445	5079
LowCellPriority_MachineLearning	1067	2398
Machine Learning & KalmanFilter	892	2082
<b>triangulation</b>	<b>13732</b>	<b>17991</b>

# Cellular Communication Network Airspace Coverage Analysis

3GPP Definition

Low-altitude Airspace Coverage Target :



**300m**  
Coverage Altitude  
**>50 Mbps**  
Uptime  
**<50 ms**  
Delay

4.5G Current Network

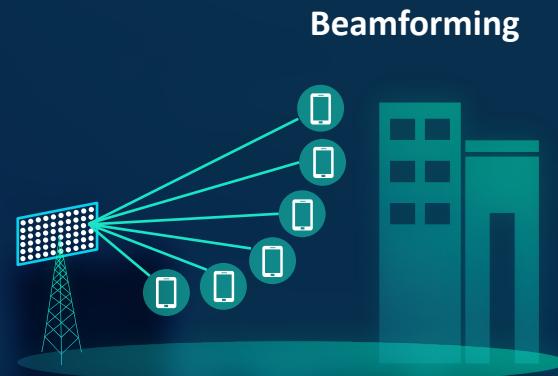
120m  
>10Mbps UL  
<50ms

5G Target Network

1,0000m  
>250Mbps UL  
<5ms latency

Result from report – <http://www.wirelessxlabs.com>

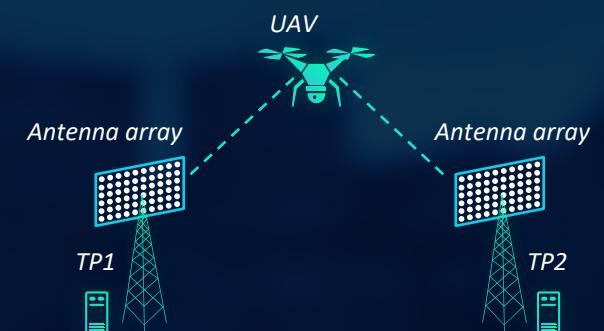
5G Enhancement for Low-altitude Airspace Coverage :



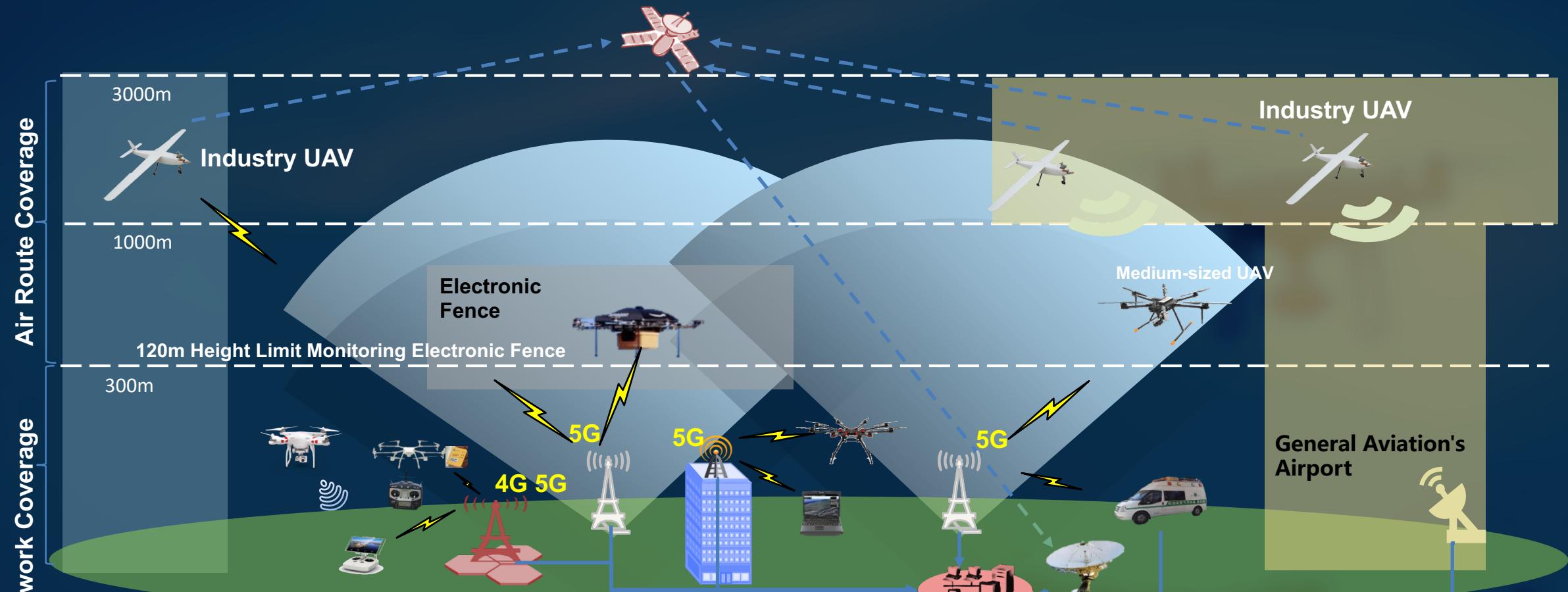
AI Automatic Elimination of Interference



Multi Base Station Collaboration



# Wide Cellular Networks Enable Continuous Coverage of Airspace



**Our vision: Digitalize the sky, Release the potential of the UAV industry**

# Digital Sky, Innovation Drives Industrial Upgrading

## Digital Sky Plan Release

- Realize the Low altitude network coverage
- Drive new application of connected drones
- Starting Digital Sky industry



### Digital Sky 1.0

Demonstration application  
Standardization Promotion

Agricultural &  
Plant Protection

10m

Grid &  
Infrastructure  
Inspection

50m

2017 – 18'

### Digital Sky 2.0

Small-scale commercial  
5 countries to achieve  
the application

Safe City &  
Low Altitude  
Logistics

100m

Professional  
Inspection

150m

2019 – 20'

### Digital Sky 3.0

Low-altitude digital  
network  
Commercial coverage 30%  
+

Flight Rental &  
Trunk Logistics

>500m



...

...

A wide-angle photograph of a city skyline at sunset. The sky is filled with warm, orange and yellow hues, transitioning into darker blues and purples at the top. In the foreground, there's a dense cluster of buildings, likely residential or smaller commercial structures. Behind them, the city's financial district rises with numerous skyscrapers of varying heights. A prominent 'THANK YOU' watermark is overlaid in the center, with 'THANK' on one line and 'YOU' on the next, both in a large, bold, white sans-serif font.

Digital Sky

THANK YOU