



CONNECTED DRONES / CELLULAR UTM

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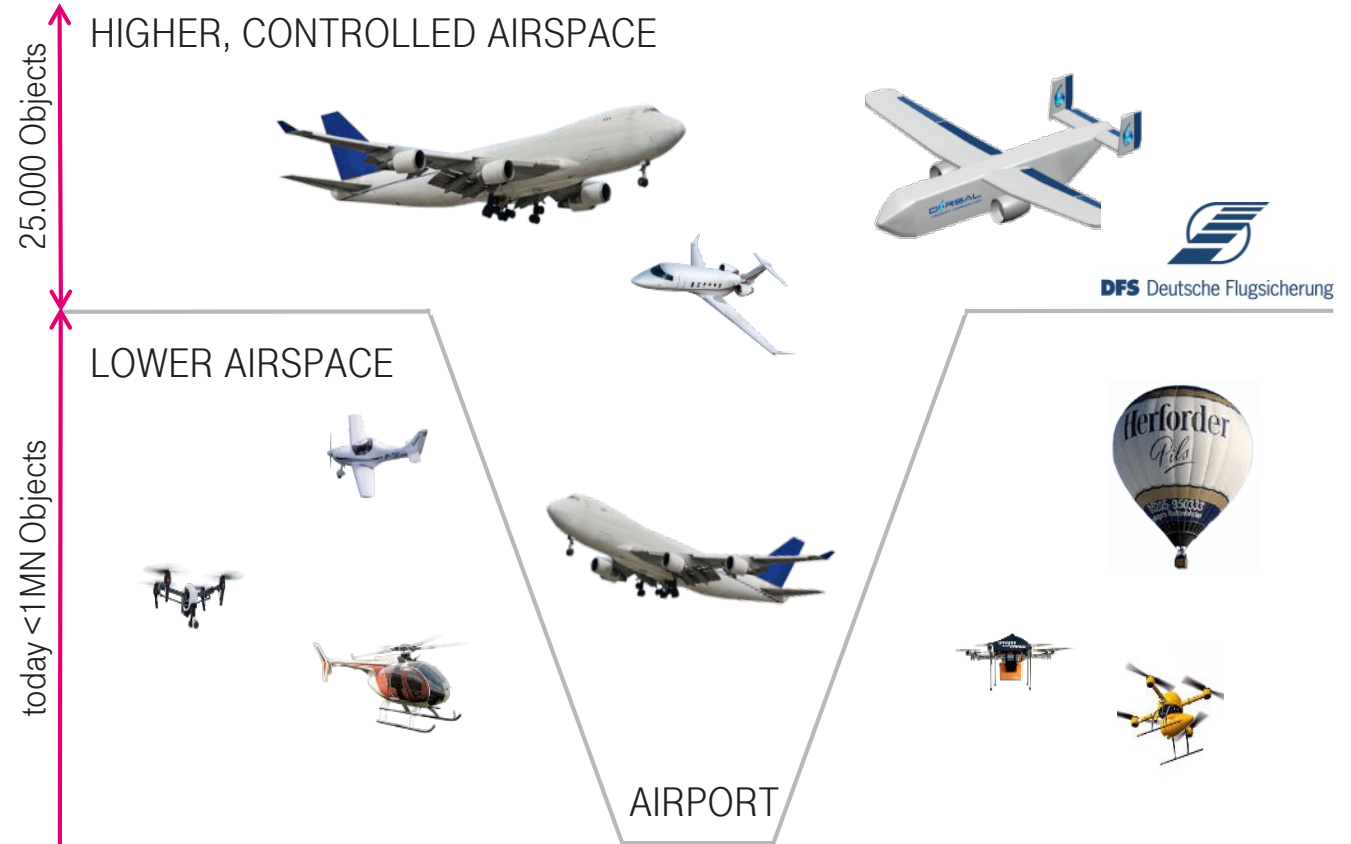
29.05.2018



DRONE CHALLENGE NOWADAYS

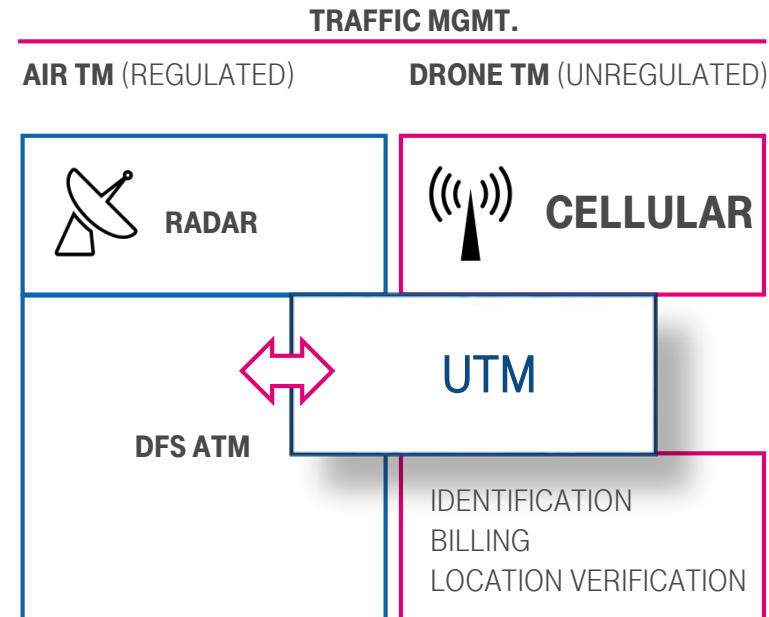
Drones are

- too small and fly too low to be seen on radar
- **No coverage**
- too many for classical human-centric Air traffic Mgmt (ATM) systems
- **No traffic mgmt.**



OUR SOLUTION - THE CELLULAR UTM - COMBINES EXPERTISE OF AIR NAVIGATION SERVICES AND TELCO

**WE DEVELOP A
TRAFFIC MGMT. FOR
UNMANNED (UTM)
BASED ON THE
COVERAGE OF THE
(EXISTING) MOBILE
NETWORKS .**



CELLULAR UTM WILL BOOST COMMERCIAL DRONE MARKET

AS IT MAKES OPERATIONS:

SAFE & COMPLIANT

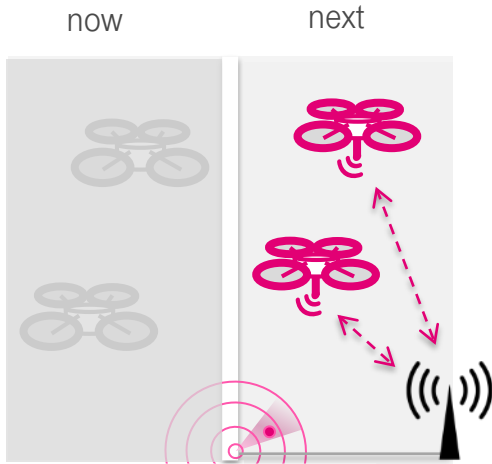
FAST & EFFICIENT

AIR TRAFFIC MANAGEMENT (UTM)

BVLOS* OPERATIONS

REAL-TIME DATA TRANSFER

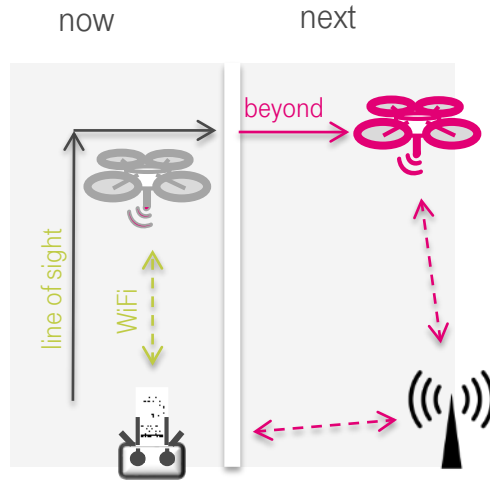
ENTRY DOOR:



REGULATORY IMPERATIVE:

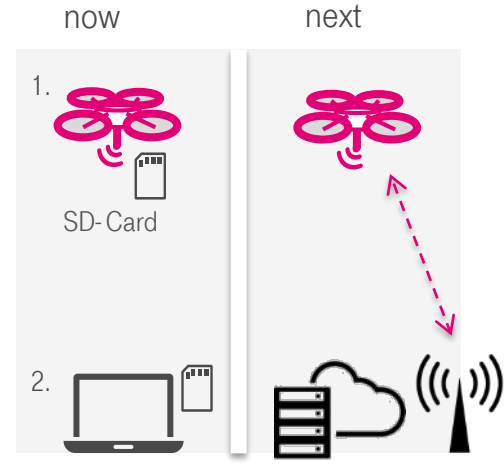
Make drones visible on the "radar"

ADD. BUSINESS LEVERS



BUSINESS NEED:

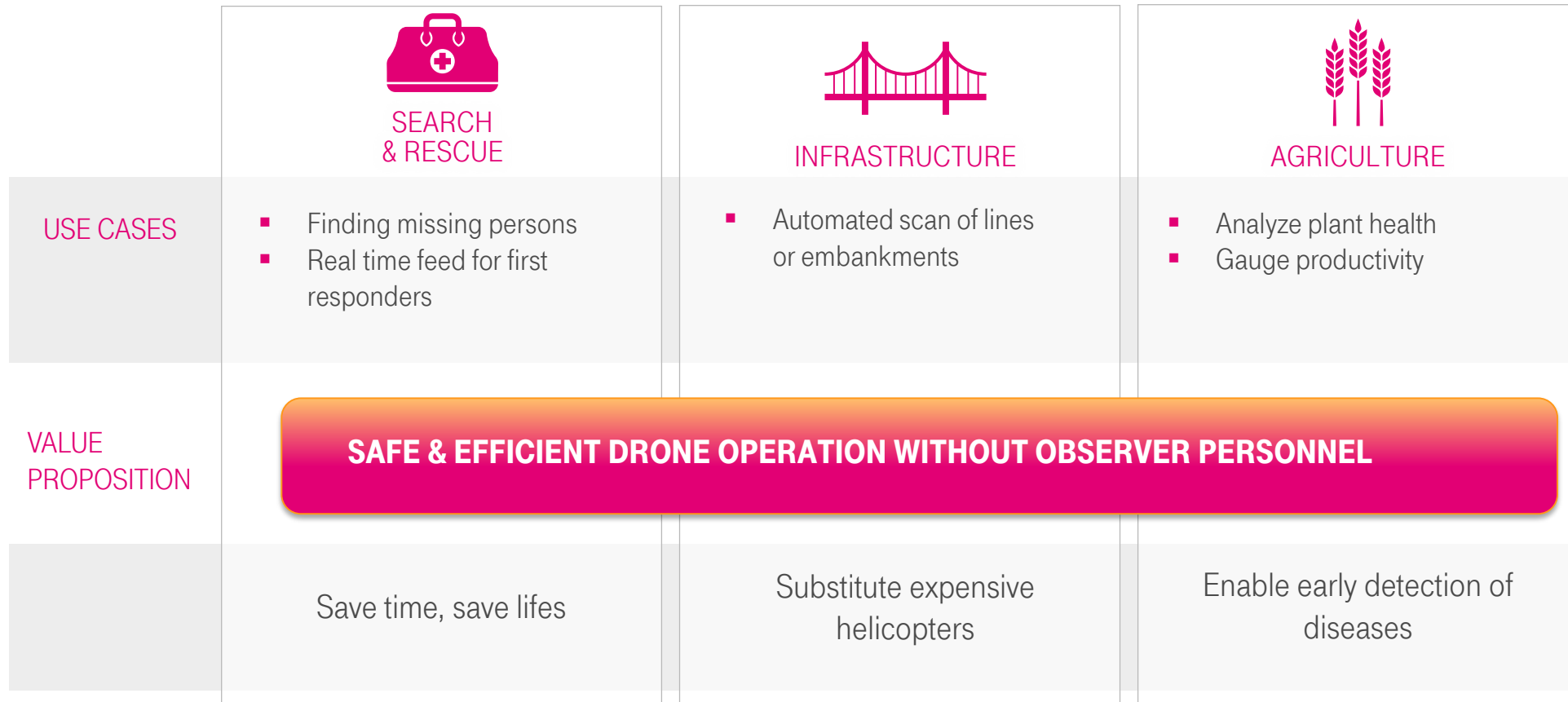
Make them fly *)beyond visual line of sight



BUSINESS NEED:

Real-time transfer & analytics of pictures, videos and sensor data

WE DELIVER KEY BENEFITS FOR CUSTOMERS



WE WORK ON DIFFERENT FIELDS TO GET A SOLID SOLUTION

Optimize **Network and Technology** for drone operation

1



- (e)SIM Card based **identification**



- Mobile Network **interference** mitigation



- Increase **coverage** in lower airspace

Impact **Legal Framework** for safe drone operation

2



- Ensure full LTE **spectrum** availability



- Bring regulation to UAV friendly **framework**



- **EASA/U-Space** consultation



- Convince **Local Aviation Authorities (LAA)**

Perform **Use Cases** to demonstrate what is possible

3



Search
& Rescue



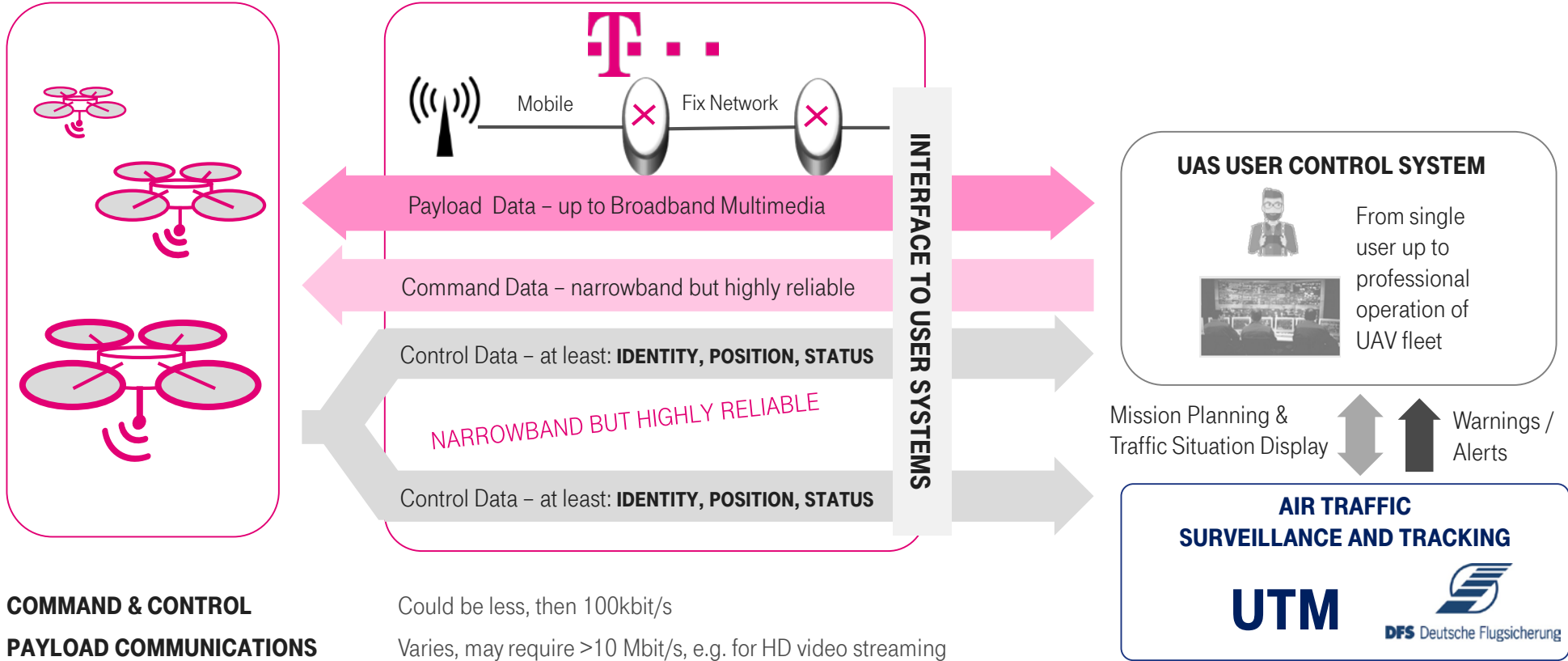
Agricultural
Sensing



Infrastructure
Inspection

COMMUNICATION NEEDS FOR UAVS

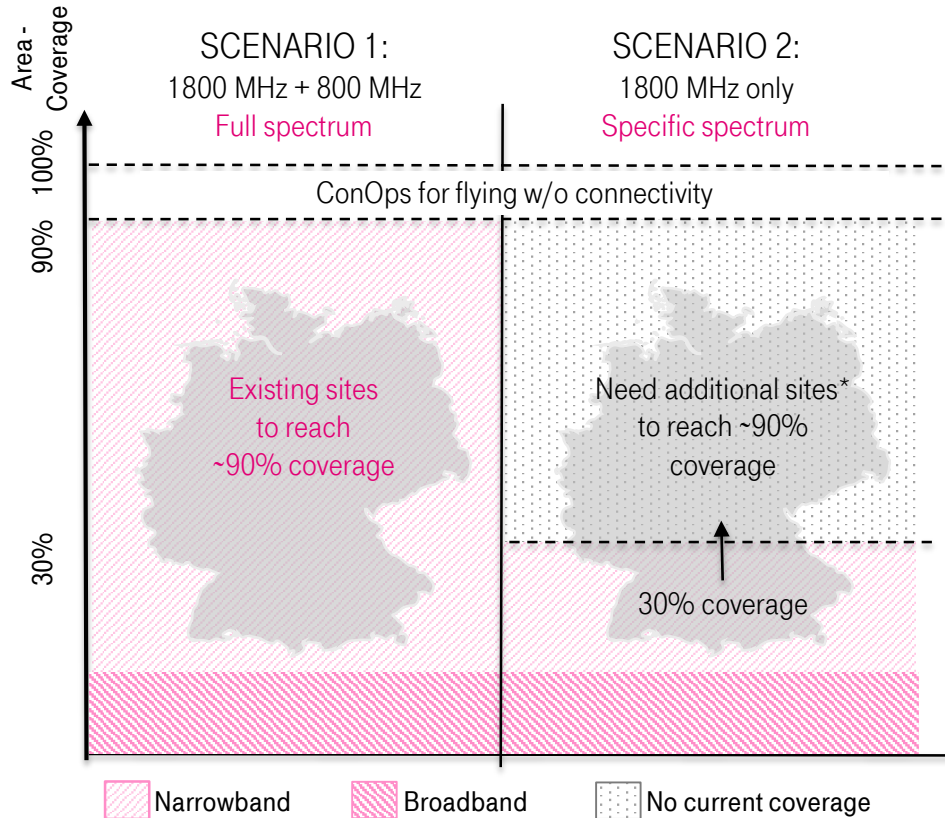
Creating an end-to-end system to support all operational needs



LIFE IS FOR SHARING.

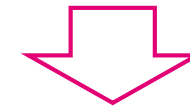
MOBILE COVERAGE IN THE LOWER AIRSPACE IS CRITICAL

Air coverage follows implementation of terrestrial network



*Simulation based on assumption: narrowband coverage in 100 m altitude

IF THERE IS NO CONFIRMATION FOR USE OF ALL MFCN BANDS FOR DRONES



NO NATION-WIDE COVERAGE POSSIBLE AND EXPENSIVE NETWORK ROLLOUT REQUIRED



THANK YOU!