

# UTM/ATM Transitions from a Non-Traditional Perspective

## What if today follows tomorrow

Large scale BVLOS operation challenges - ANSP perspective



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## *Agenda*

# Communication between involved parties

Uspace/UTM infrastructure

BLVOS challenges

## Wrap-up

Recommendation

Challenges



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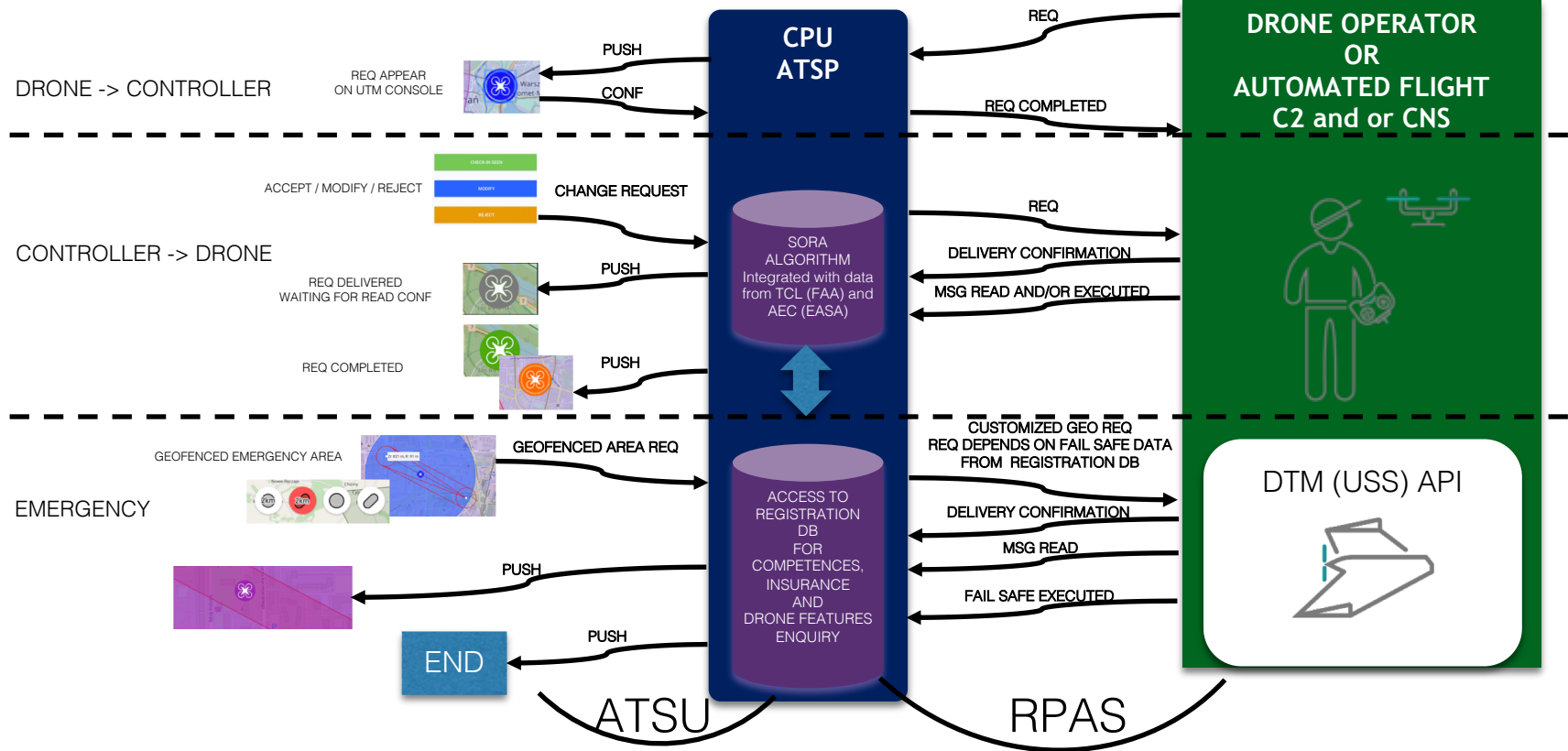


# Communication between involved parties CPDDLC

## PROPOSAL FOR JAR\_DEL\_WG5\_D.04

- REQ TRANSPORT LAYER
- SECURE CONNECTION
  - PUSH NOTIFICATION
  - SMS

IN FLIGHT SCENARIOS



## CDDL use case for (EASA: AEC Airspace Encounter Categories) in FIR EPWW

AEC Code proposal	Operational Airspace	ARC (Air Risk Category)	CDDL VLOS	CDDL BVLOS	ACM Automatic Capacity Management
1	Ops within Class A, B, C, D, E or F Non-Airport Env. Above 500ft	1	Yes	Yes	Yes, except collision areas, where flight is coordinated manually
2	Ops within an Airport Environment above 500ft	1 for controlled Airports, 2 for others	Yes	Yes	Yes
3	Ops within Class G airspace above 500ft AGL within Mode C/TMZ	2	Yes	Yes	Yes
4	Ops within Class G airspace over Urban population	3	Voluntary	Yes	NIL except U-space
5	Ops in Class G airspace above 500ft over Rural population	2	Yes	Yes for Collision Avoidance	NIL except U-space
6	Ops within Class A, B, C, D, E or F Non-Airport Env. Below 500t	1	Yes	Yes	Yes, except collision areas, where flight is coordinated manually
7	Ops within an Airport Environment below 500ft AGL	1 for controlled Airports, 2 for others	Yes	Yes	Yes, except collision areas, where flight is coordinated manually
8	Ops within Class G airspace below 500ft within Mode C/TMZ	2	Yes for traffic information	Yes	Yes
9	Ops within Class G airspace below 500ft over Urban population	3	Voluntary	Yes	NIL except U-space
10	Ops within Class G airspace below 500ft over Rural population	2	Voluntary	Yes	NIL except U-space
11	Ops in airspace above FL600	---	---	Yes	NIL
12	Ops in atypical airspace	?	Optional	Yes	Optional

# ANSP Conclusion on CPDDLC within Controlled Airspaces

SAFETY IN OUR HIGHTES PRIORITY

ANSP (ATCO/FISO) are not interested where drones are unless....

Non-verbal comprehensive structured communication is useful especially in congested areas:

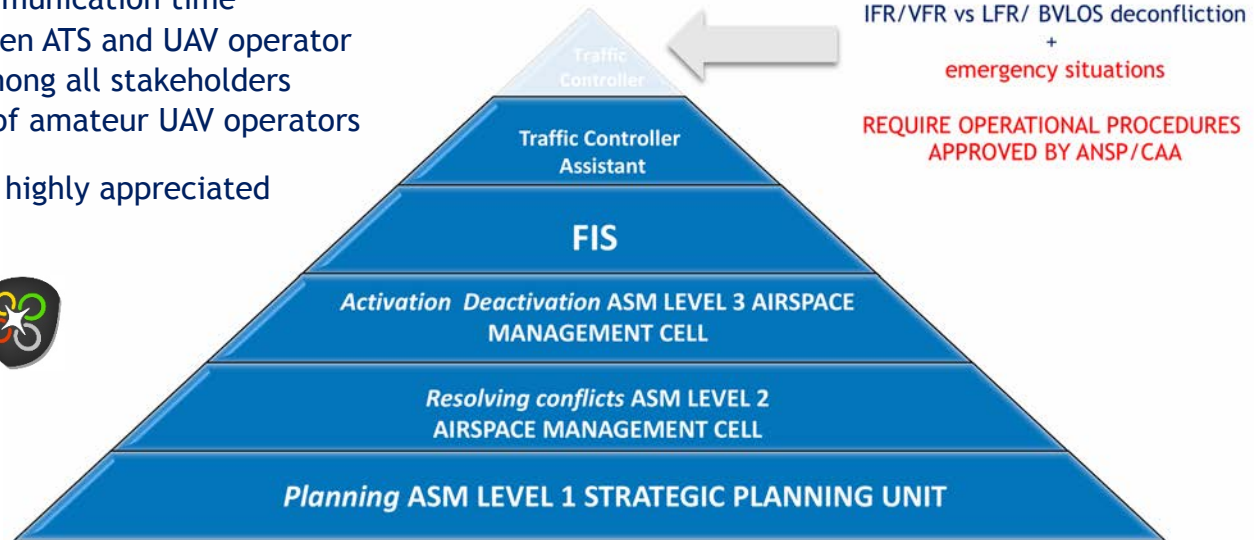
- significantly reduce communication time
- minimizing errors between ATS and UAV operator
- increasing awareness among all stakeholders
- increasing involvement of amateur UAV operators

Educational activities are highly appreciated

Positive-shield Approach



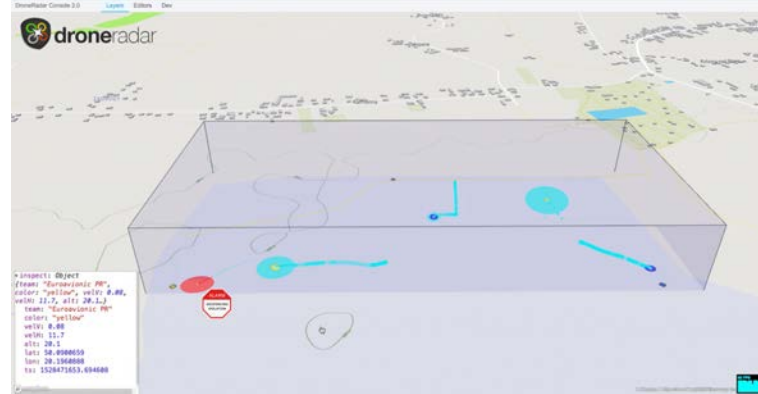
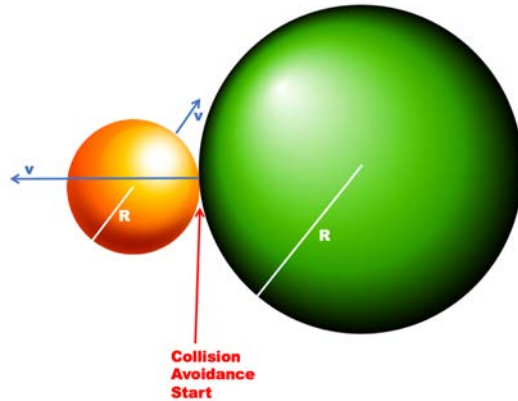
Separation management





# Autonomous Drones Testing Site

Goal: implement a detection and avoidance algorithm so that no danger came to other teams and the public



## Conclusions:

- The task can be replicated on commercial scale via regulation
- Safety anti collisions buffer sizes, should be considered individually (SORA)
- TMZ (Transponder Mandatory Zones) should be considered as a quickest method to avoid airspace segregation
- ANSP' operation procedures must be implemented (Fail Safe behavior)
- Infrastructure certification and software authentication

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