2017 EASA-FAA
International Aviation Safety Conference

Technical session 3
Challenges and opportunities:
Unmanned Aircraft Systems

Agenda and guidelines
16 June 2017

Proposed discussion topics

1. How do we balance Safety and Security/Privacy considerations? (priority 1); Yves Morier
2. How will we handle UAS Traffic Management (UTM) in the future? (priority 2): Stephane Morelli
3. As regulators move to performance based regulations, what are the key standards for UAS/RPV? (Priority 3): Yves Morier
4. As regulators, how do we find the right balance in defining vehicle requirements vs pilot requirements in achieving safety? (Priority 4); Mitsuo Kawakami
5. What are the key challenges for the future (e.g. autonomous UAS; Flying taxis, etc.)? (Priority 5); John Duncan

Review of proposed topics and priorities

- Using SLIDO:
  - Please review priorities
  - Propose other topics

How do we balance Safety and Security/Privacy considerations

- UAS may be used for criminal of terrorist purposes
- UAS have changed the paradigm for Privacy
- Security and privacy are key issues for social acceptance
- How to address these issues:
  - We are safety regulators so in many cases we will only be able to contribute to such issues (See next slide the example of EASA)
- They must be properly integrated

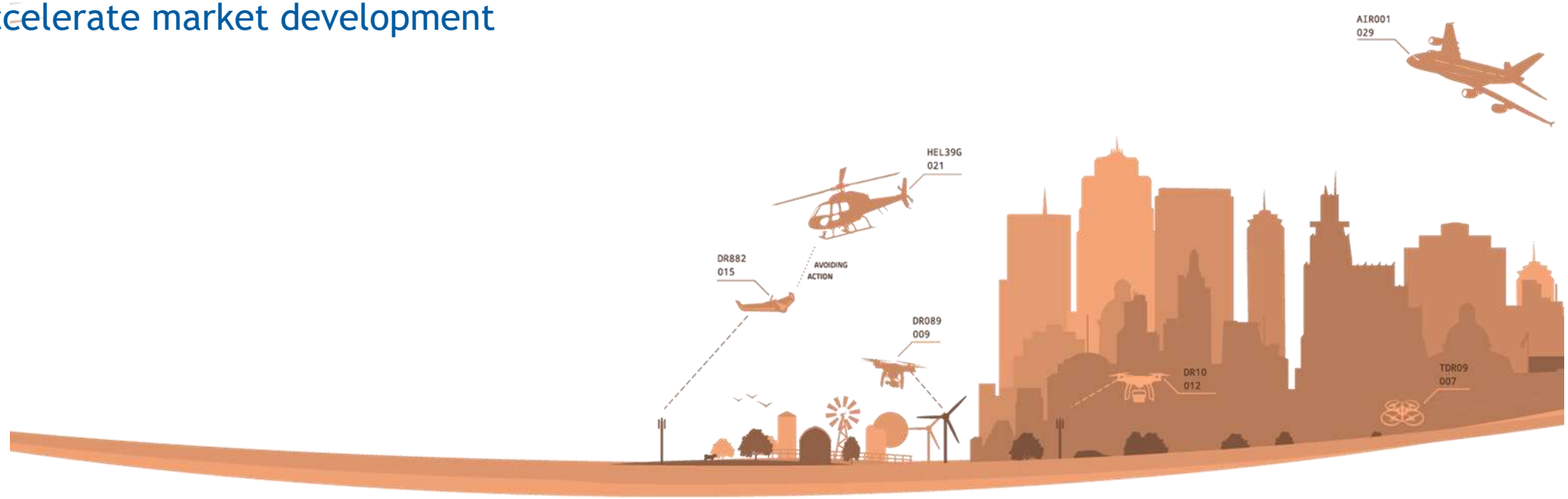
Contribution to Security and Privacy in the EASA NPA: examples

- **Registration**: UAS operators must register the UA except those operating UAS with an MTOM of less than 250 g. For security considerations, the UAS operator must also register the UA when the UA is heavier than 900 g.
- **Electronic identification**: functionality required for class C1 when equipped >5 megapixels camera, or class C2 or when required by the zone of operation.
- **Geofencing**: functionality is required for UAS in class C2, or required by the zone of operation.
- **Lights**: C1 required for controllability; C2 and C3: as required for the operating conditions;
- MSs may define **zones** also for security or privacy reasons.
- The **obligation of the operator** to comply with security requirements: defined in Article 3 .
- Remote pilot of a UA to **avoid flying close to emergency response eff**orts.
- The basic remote-pilot competence in open category: **must demonstrate knowledge of relevant EU security and privacy/data protection regulations**.

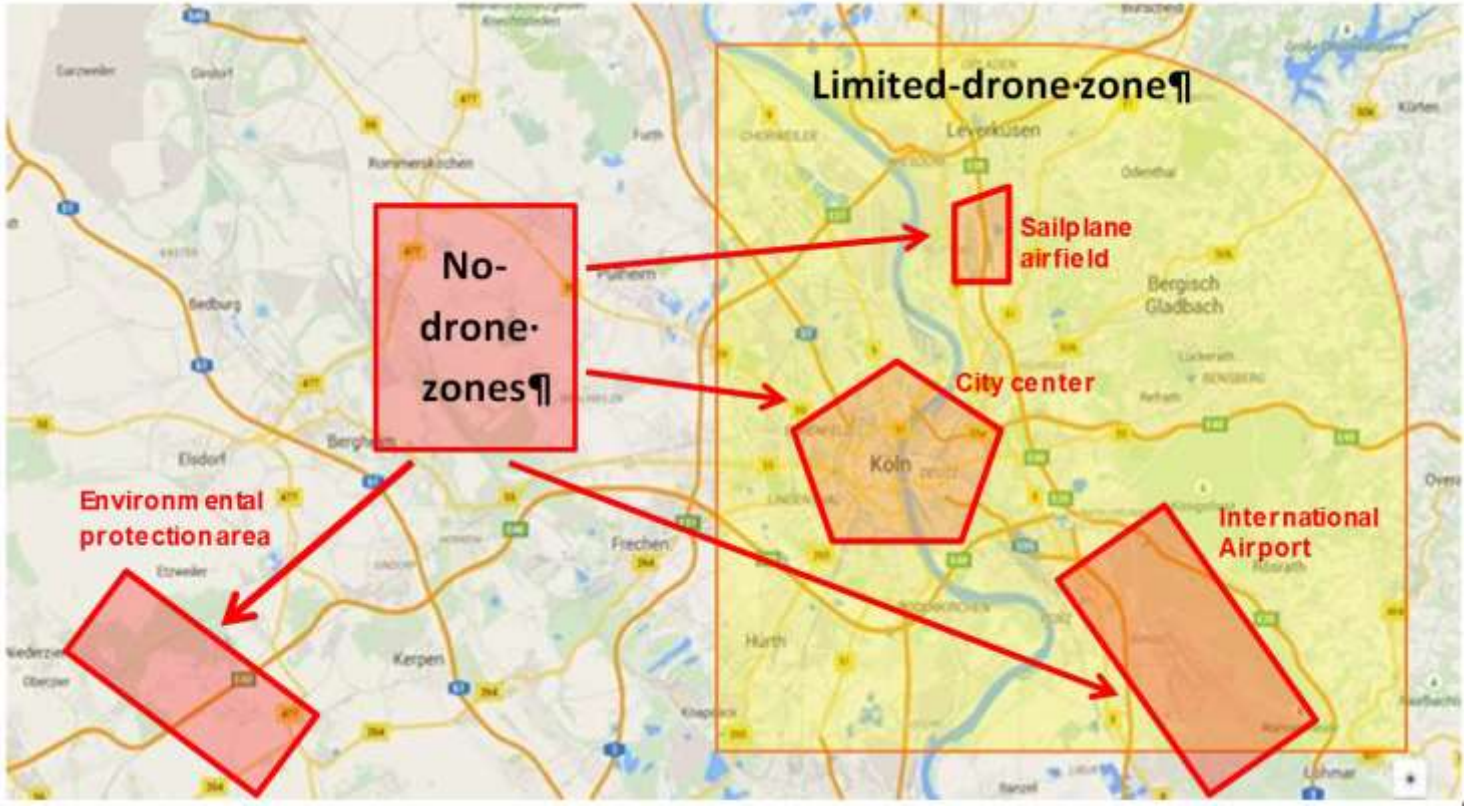
Unmanned Trafic Management (UTM)

Securing the integration of drones in airspace by delivering a new service :

- Prefer the information and distributed intelligence in a network to a system only integrated on the drone (detect & avoid)
- Automate the exchange of information
- Taking advantage of new telecommunication technologies
- Accelerate market development

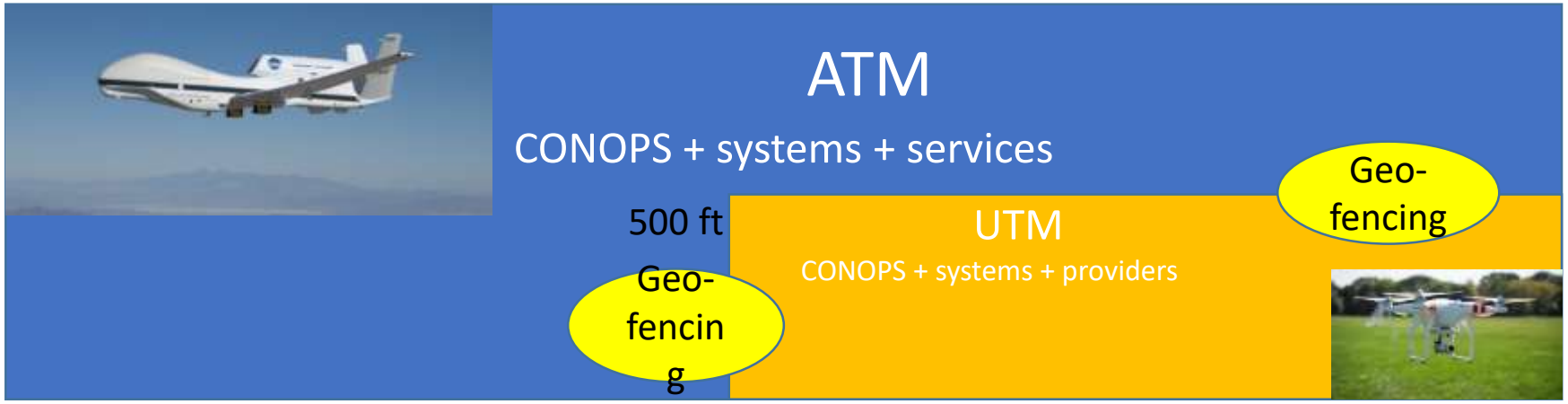


No Drone & Limited Drone zones



Geofencing is the first level of UTM

ATM versus UTM



- ATM: existing CONOPS and systems
- Services provided by ANSPs
- High level of safety
- High costs

- UTM: need to define CONOPS and systems
- Safety and security issues
- Relationship between ATM and UTM
- Business model (low costs)

As regulators move to performance based regulations, what are the key standards for UAS/RPV

- UAS exist since 1930: mostly military
- Exponential development since 2010 : arrival of Multi-copters
- Development of civil UAS (operations; technologies) is world wide
- Many actors do not come from the manned aviation community
- Great variety of UAS masses, sizes; configurations, modes of propulsion and command and control.
- Current UAS are data collector and can transport light goods
- Member States have taken action to ensure safety but rules are not harmonised
- In light of the above, following actions were taken in EU:
  - Draft revised Basic Regulation envisages that all UAS are under EU competence
  - Regulatory concept: Operation centric; performance and risk based; 3 categories (Open; specific; certified)
  - Standard are a must (next slide give some EASA views and ask two questions)

Need for standards: key of the performance based approach

- It is necessary to establish a list of standards based on the NPA (Annexes) and the U-space blueprint coordinated through EUSCG (European UAS Standards Coordination Group) to avoid duplication of work.
- Standards needed are not only for equipment but also for training and standard scenarios.
- Top priorities:
  - Registration
  - E-identification
  - Geo-fencing
- How should they be developed?
  - Avoid duplication of efforts
  - Avoid gaps
- What are the top priorities?

As regulators, how do we find the right balance in defining vehicle requirements vs pilot requirements in achieving safety?

- Risk mitigation is for the open category a combination of operational limitations; general requirements; technical requirements and requirements for pilot competence
- Risk mitigation for the specific category is done after a risk assessment which includes the UAS design and the pilot competence
- During the development of EASA Notice of Proposed Amendment, a debate occurred on the balance between the two as relying too much on technology could de-responsibilize the pilot
- Views of the panel are welcome

What are the key challenges for the future (e.g. autonomous UAS; Flying taxis, etc.)?

- Airbus, Uber and others are developing the concept of flying taxis
  - There will be people on board but they will be passengers
  - They will share the urban airspace with delivery drones.

- Autonomous drones will appear in a near future; may operate in swarms
- The highest level of autonomy: possibility to learn from experience and take decisions
- Manned aircraft and autonomous unmanned aircraft will co-exist in the sky

Thank you very much for your participation

Thank you to the panel for their contributions