



Air Traffic Management

Defence

Maritime

Public Transport

Public Safety

FREQUENTIS

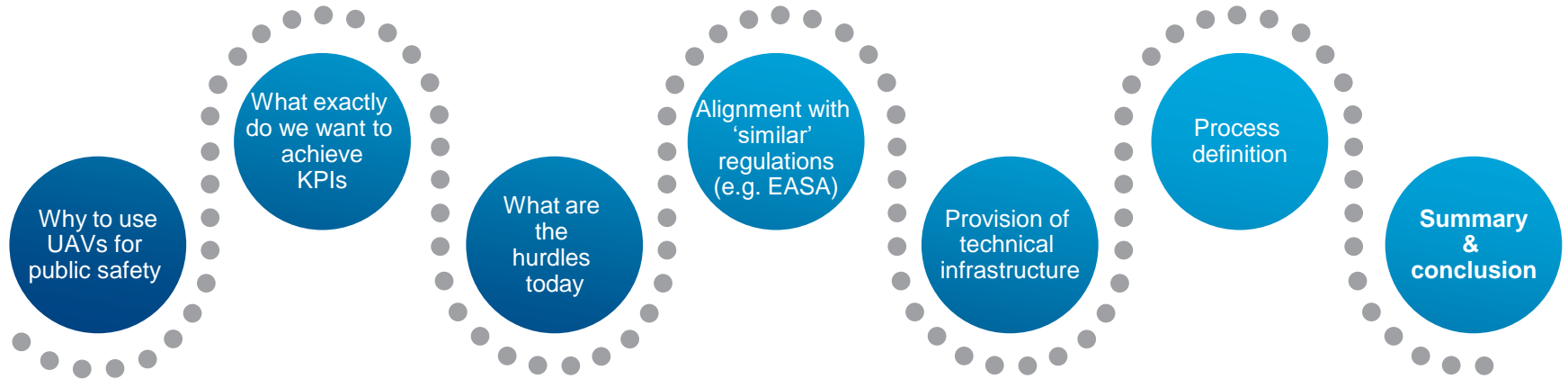
FOR A SAFER WORLD

Future Control Rooms with Drone applications

Jan Ziegler, PSCE Conference in Brussels
May 24th 2018

Drones in public safety

Introduction



Legal baseline

Technology

Process

Collaboration

EASA Opinion 1/2018

Frequentis UTM components

Dispatch- and mission process definition

We have to learn from each other to achieve our common goal


Drones in Public Safety?

Wales | Wales Politics | Wales Business | North West | North East | Mid | South West | So

RNLI and Maritime & Coastguard Agency carry out drone tests

© 25 April 2018

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North Wales Police use drones to fight crime

© 10 January 2018

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Technology

Drones used to disrupt FBI hostage situation

By Mary-Ann Russon
Technology Reporter, BBC News

© 4 May 2018

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Scotland | Scotland Politics | Scotland Business | Edinburgh, Fife & East | Glasgow & West

Police Scotland to trial use of drones

© 19 December 2017

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Drones 'to spot potential arsonists' in south Wales

© 16 March 2018

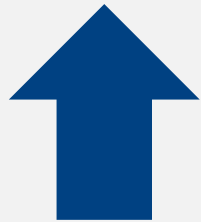
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Figures and examples

Example U.S. Agencies

518% growth in drone use over 24 months



Search & Rescue

- When seconds can mean life or death.
- UAVs can scan huge areas and easily spot human subjects.
- Quick reaction time and resource efficient



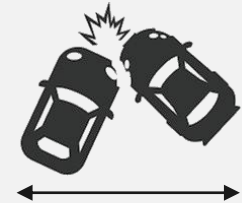
Surveillance / Monitoring

- Enables law enforcement for crowds and public events
- UAVs can track and monitor suspects from a "bird"-perspective
- Identification of human subjects needing assistance



Car accident support

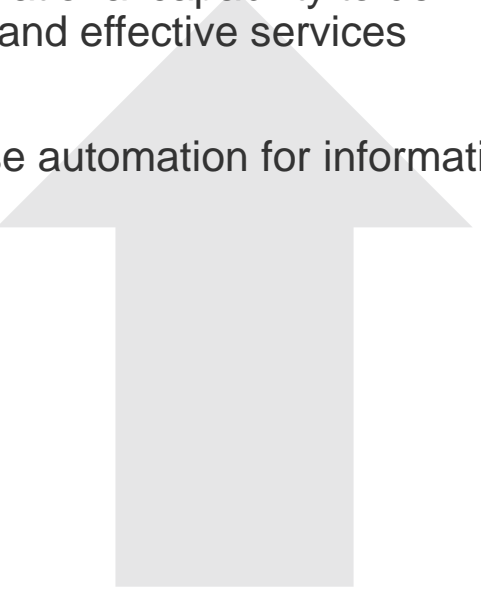
- Increases efficiency by replacing manual measurements
- UAVs can provide data to calculate distances and pictures for further evaluation



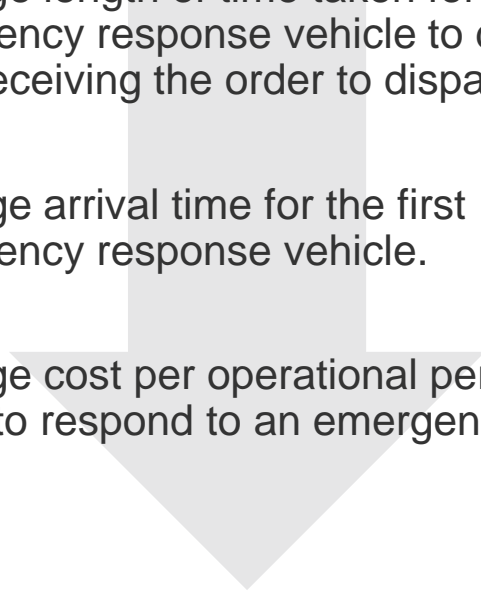
Key performance indicator

What exactly do we want to achieve

Increase

- Organizational capability to deliver timely, quality and effective services
 - Increase automation for information sharing
- 

Decrease

- Average length of time taken for the emergency response vehicle to depart after receiving the order to dispatch.
 - Average arrival time for the first emergency response vehicle.
 - Average cost per operational personnel ready to respond to an emergency
- 

Status quo - why don't we do this today?

- National law / EASA regulation:
 - [...] *Basic Regulation, extending the competence of the EU to all UAS, except those used for 'state' operations (e.g. military, customs, police, firefighting, etc.),[...]*
EASA Opinion 1/2018
- Safety:
 - UAVs may have an impact on safety
 - during VLL operations close to terrain and buildings (lots of ground hazards)
 - with manned aviation near and within control zones (airports)
 - Limited coordination means can impact safety due to increased number of stakeholders (other drone operators, Air Traffic Control, ...)
- Technical infrastructure:
 - Missing standards for data sharing (flight plans, weather, ...)
 - Missing solution to handle distributed and remote drone deployment (BVLOS)
- No defined standardized processes for UAV usage aligned with current public safety processes

How can we overcome this hurdles

First - align with EASA regulations

EASA Opinion 1/2018 excludes 'state' operations. Even though three UAV categories are defined:

'open'

Not applicable (VLOS)

- does not require a prior authorization before the operation takes place

'specific'

Applicable (BVLOS)

- Risk assessment needed
- requires an authorization before the operation takes place,
- except standard scenarios when the operator holds a light UAS operator certificate (LUC)

Public safety mission =
standard scenario

'certified'

Not applicable

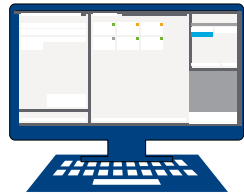
- requires the certification of the UAS,
- a licensed remote pilot and an operator approved by the competent authority

How can we overcome this hurdles

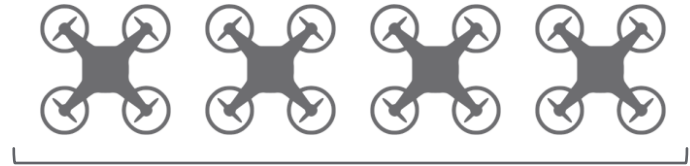
Second – Provision of technical infrastructure

Flight permission & Protected Airspace management

Control room



ATC   Police



LifeX Adapter (or 3rd party system)

Output: Location where to dispatch a drone

Input: Video streams, mission data, aggregated information

DMS & API

Inbound and outbound services to be exposed

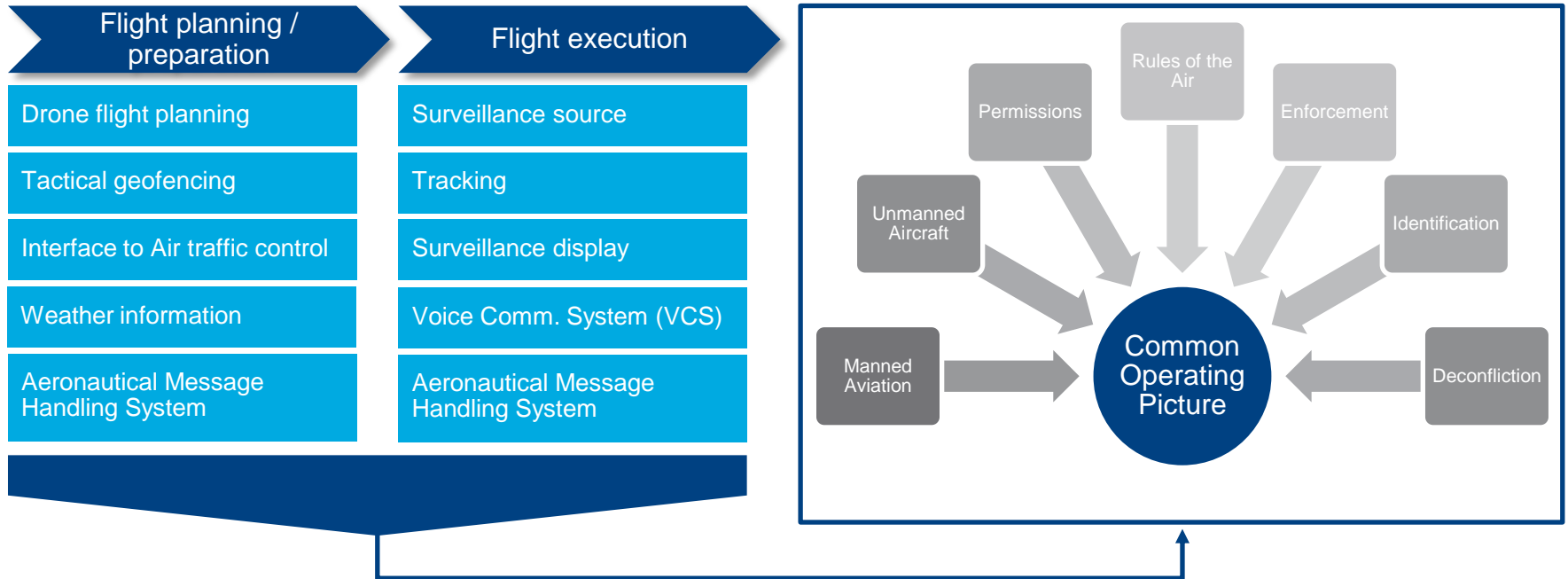
Real-time automatic drone flight control

Drone Operation

- Manual flight supervision
- Maintenance (incl. battery charging)
- Recovery in case of emergency landing

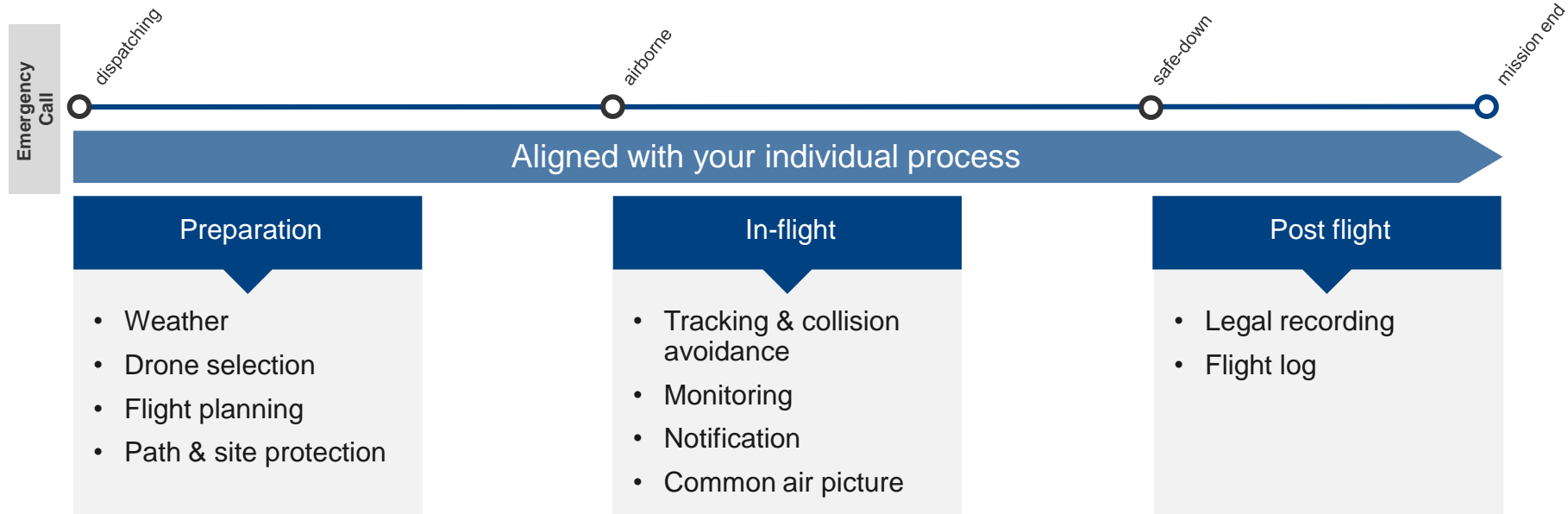
How can we overcome this hurdles

Second – Provision of technical infrastructure

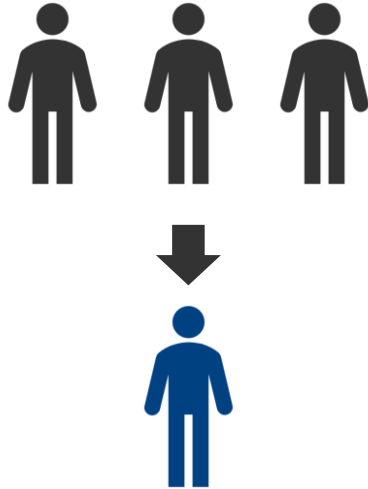


Re-thinking drone operations for public safety / Potential scenario

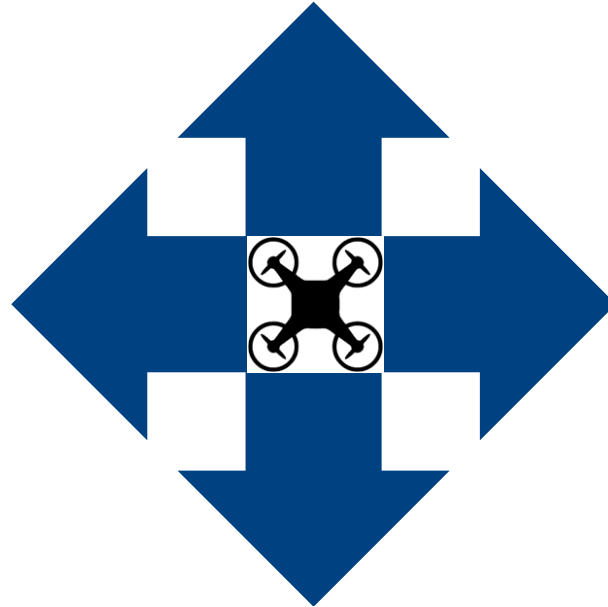
- Technology aligned with processes and legal aspects
- Provide drones with a connection into dynamic airspace scenarios
- Handles communication automatically between manned and unmanned traffic
- Enables the human operator to be removed from the loop, **safely**



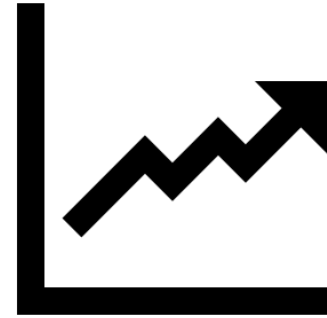
Benefits



Reduction of necessary resources to operate a drone (from 3 to 1)



Simplification (automatization) of the drone operation



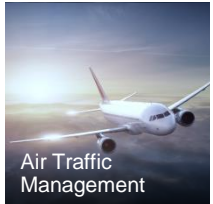
Better information sooner

Summary and conclusions

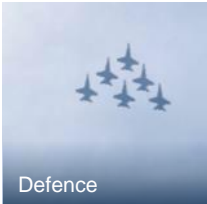
- **Frequentis** technology is unlocking the potential of drones within the context of public safety
- Drones can greatly improve public safety when control room operators can dispatch drones directly, that will automatically coordinate the navigation and mission
- Drones are much cheaper than helicopters, enabling greater numbers to be used at once, to shorten search times and enable more cost-effective reconnaissance and shared situational awareness
- **Frequentis** is looking for partners to define public safety processes to be adapted for drone control

Q&A

1. Technology + Legal framework / What are the next steps?
2. What is the preferred implementation model? Infrastructure (CAPEX) vs. Service (OPEX)



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