



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Bundesamt für Zivilluftfahrt BAZL  
RPAS WG

# Drones

# Legal framework

5. November 2016



# Basics

**Unmanned Aircraft Systems (UAS)**

**Remotely Piloted Aircraft Systems (RPAS)**

**Drones**



# Legal Basis

## ICAO Annex 1, Annex 6 Part I Art. 1

An aircraft is any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface (Hoovercraft)

## SR 748.0 Bundesgesetz über die Luftfahrt LFG

Als Luftfahrzeuge gelten Fluggeräte, die sich durch Einwirkungen der Luft, jedoch ohne die Wirkung von Luft gegen den Boden (Luftkissenfahrzeuge), in der Atmosphäre halten können



**A DRONE IS AN AIRCRAFT**



# Legal Framework

## Ordinance on Special Category Aircraft OSCA (SR 748.941)

- Applies to hang gliders, kites, paragliders, tethered balloons, parachutes and unmanned aircraft.
- Not in the register
- Airworthiness is not checked
- No noise certificates
- No obligation to take off or land at an aerodrome
- No authorization required for public airshows
- No authorization required for commercial flights
- SERA applies (partially)



# Legal Framework

## Unmanned aircrafts OSCA section 6 & 7

- SFR. 1'000'000.– insurance required
- Distinction depending the max. weight (> or < 30kg)
- SERA applies to unmanned aircrafts (?)
- For Modellaircrafts only SERA 3101, 3115, 3120 & 3145 applies
- No distinction between RPAS and Model Aircrafts
- No requirements for operators and pilots
- Shared responsibility between FOCA & Skyguide, Airports
- Additional requirement from the cantons possible



# Swiss FOCA responsibility

## No Authorisation required as long:

- Below 30kg
- Within direct visual contact (VLOS)
- Not within a distance of less than 100 meters around crowds (outdoors)
- In compliance with SERA 3101, 3115, 3120, 3145

**Authorisation foreseen and possible if not in the above framework.**

**This authorisations may contain conditions.**

- ✓ SFR. 1'000'000.– insurance required



# Not in Swiss FOCA responsibility

## **ANSP (Skyguide) or Airport responsibility:**

- > 5km Distance to civil & military airports/aerodromes
- < 150m AGL within a CTR

## **Authorisation foreseen and possible**

## **Cantonal or Communal responsibility:**

The cantons may issue additional regulations for unmanned aircraft:

- If the weigh is less than 30 kg
- Reduction of environmental pollution and
- Reduction on the risk to persons and property on the ground

## **Authorisation foreseen and possible**



# Safety in Aviation

**Any aircraft is normally not a danger by itself. It is the operation in which the aircraft takes part, which can create a risk.**

➤ Risk for



craft

➤ Risk for people on ground



in case a collision

➤ Risk for critical infrastructure



➤ A crash can







# Traditional Safety in manned Aviation

- 1. An Operation is sufficiently safe to accept the risk when:**
  - ✓ The Organisation behind the Operation is approved to accepted standards
  - ✓ They use a crew, which is approved to accepted standards
  - ✓ They use aircrafts which design, production & maintenance as well as the organisations behind are approved to accepted standards
  
- 2. The Operation is not sufficiently safe and therefore to prohibit**



# Safety in unmanned Aviation

1. Operation is **sufficiently safe** to accept the risk.  
All is approved to accepted standards  
Within a legal framework which provides sufficient safety
2. Operation is **not sufficiently safe** and therefore to prohibit
3. Operation is **not sufficiently safe** and additional safety barriers are required to accept the risk.



# Resulting Concept in Switzerland

Open	Specific	Certified
<ul style="list-style-type: none"><li>• Within the legal framework</li><li>• Provides sufficient safety</li></ul>	<ul style="list-style-type: none"><li>• Not sufficiently safe</li><li>• Safety barriers required</li></ul>	<ul style="list-style-type: none"><li>• Approved to accepted standards</li><li>• Ensures sufficient safety</li></ul>

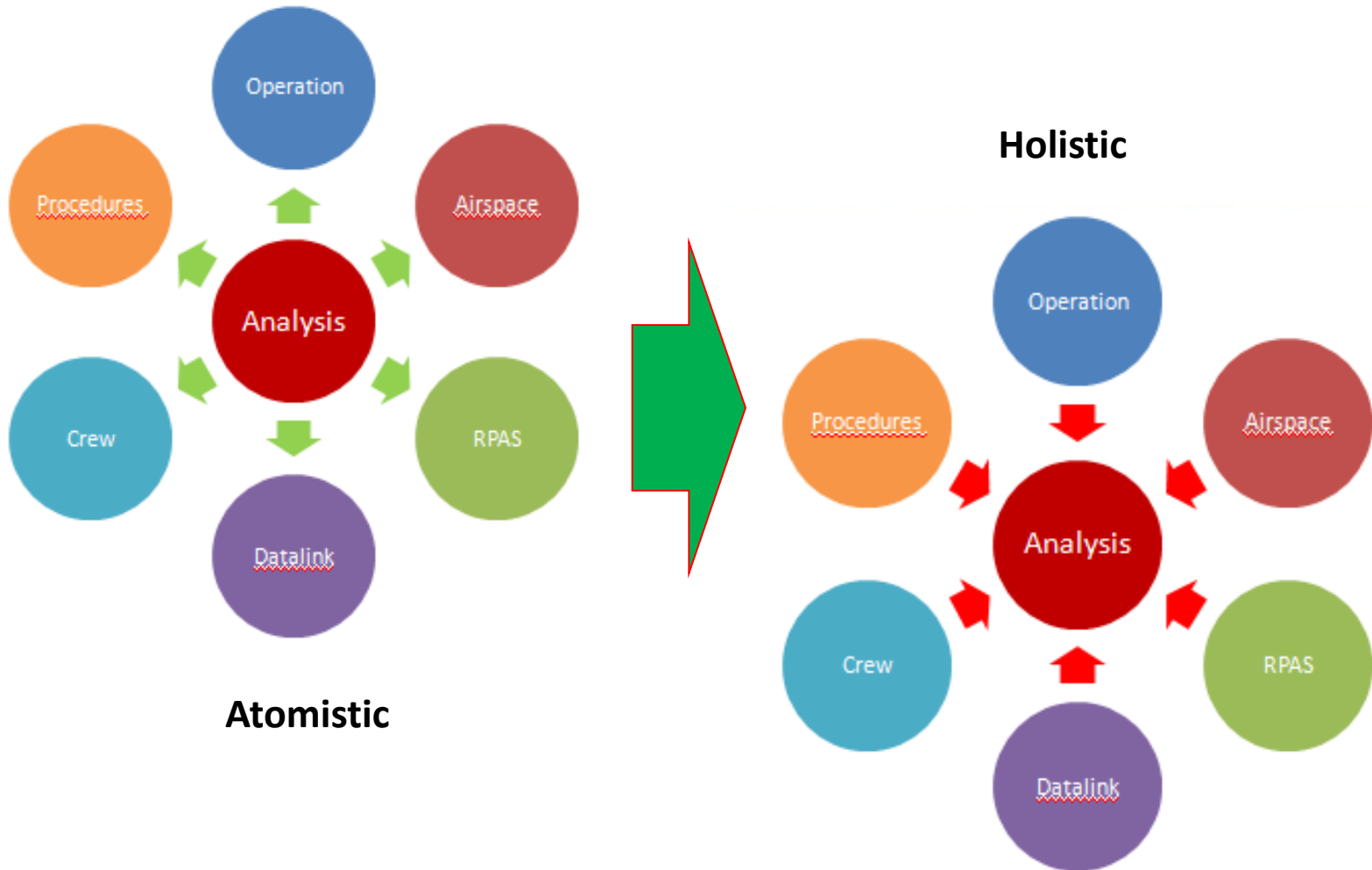


# Effect of the resulting Concept!



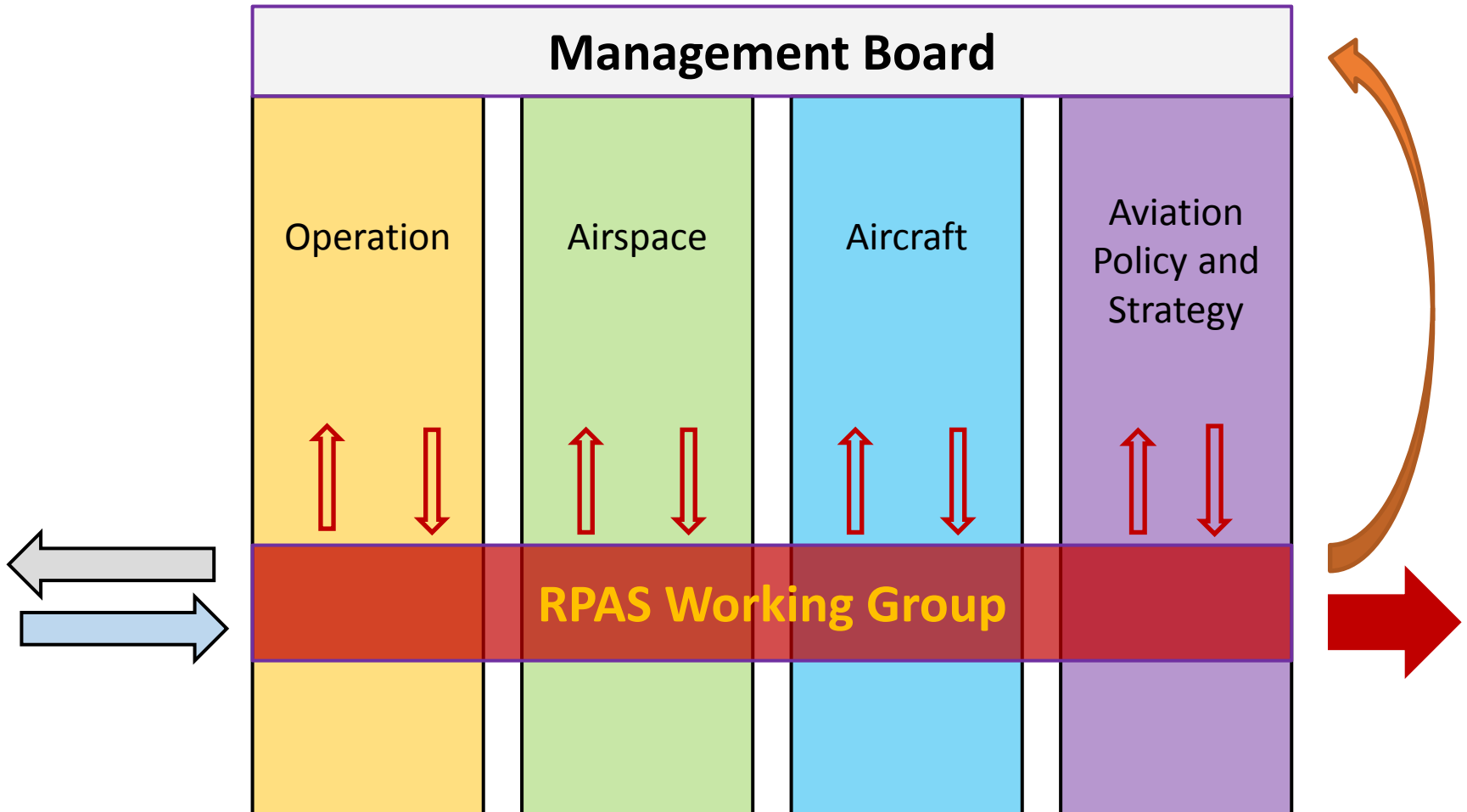


# Swiss FOCA Approach





# FOCA and unmanned Aircrafts



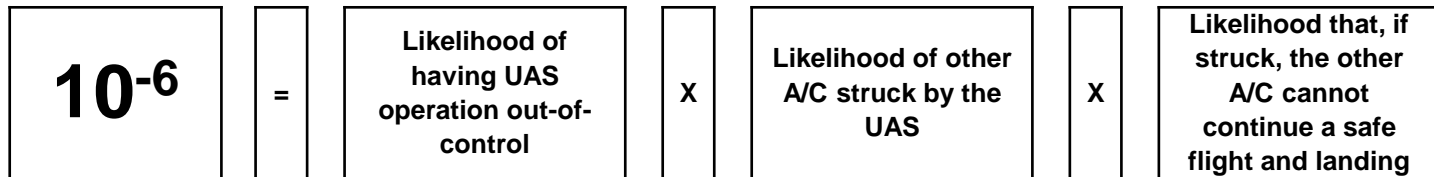


# Risk Assessment for Drone Operation



## Target Level of Safety

As numbers of fatal injuries on ground per flight hour





## **3 Basic Rules for Drones**

- 1. The level of safety shall not decrease by the incorporation of the drones in the aviation system**
- 2. The Drone must give way to all other traffic in the air**
- 3. No endangering of third parties on ground or in the air**





# Swiss Safety Network for Drones

- Endangering of third parties  
Art. 90 des Luftfahrtsgesetz
- Flying close to airports or in CTR's above 150m  
Art. 17. 2. a & b der VLK
- Offence or crime against public transport  
Art. 237 und 238 des Strafgesetzbuch
- Offence or crime against public infrastructure  
Art. 239 des Strafgesetzbuch
- Spying out safety facilities in nuclear power plants  
Art. 91 des Kernenergiegesetzes
- Privacy and Data Protection  
ZGB, EDÖB



# Managing an increasing unmanned Traffic

- Which drone is where in the air and who where is the pilot
- How to ensure safe separation to manned aviation
- How to ensure safe separation between drones
- How to prevent, drones entering airspace with restrictions

## ➤ Unmanned Traffic Management System (UTM)



# Occurrences, Incidents etc.

- We intend to act proactive
- Observe, what is going on
- Data becomes important

➤ [www.aviationreporting.eu](http://www.aviationreporting.eu)



# QUESTIONS?

