

Population density workshop



Agenda

October 6 th	Topic
09:00 – 09:30	Welcome and Introduction (EASA)
09:30 – 10:30	Presentation: Eurostat
10:30 – 11:00	Presentation: EUSPA, JRC - Copernicus
11:00 – 11:15	Break
11:15 – 11:45	Presentation: LBA
11:45 – 12:15	Presentation: ENAC
12:15 – 12:30	Q&A session
12:30 – 13:30	Lunch
13:30 – 14:15	Presentation: Ericsson, Proximus and Swisscom
14:15 – 14:45	Presentation: ACJA and Vodafone
14:45 – 15:00	Q&A session
15:00 – 15:30	Presentation: Umlaut
15:30 – 16:00	Presentation: Wizipisi
16:00 – 16:15	Break
16:15 – 17:00	Q&A and open discussion
17:00 – 17:30	Wrap-up and conclusions (EASA)

Why do we need population density information?

SORA 2.0 today
applicable in EU

Intrinsic UAS Ground Risk Class				
Max UAS characteristics dimension	1 m / approx. 3ft	3 m / approx. 10ft	8 m / approx. 25ft	>8 m / approx. 25ft
Typical kinetic energy expected	< 700 J (approx. 529 Ft Lb)	< 34 KJ (approx. 25000 Ft Lb)	< 1084 KJ (approx. 800000 Ft Lb)	> 1084 KJ (approx. 800000 Ft Lb)
Operational scenarios				
VLOS/BVLOS over controlled ground area	1	2	3	4
VLOS in sparsely populated environment	2	3	4	5
BVLOS in sparsely populated environment	3	4	5	6
VLOS in populated environment	4	5	6	8
BVLOS in populated environment	5	6	8	10
VLOS over gathering of people	7			
BVLOS over gathering of people	8			

Table 2 – Intrinsic Ground Risk Classes (GRC) Determination

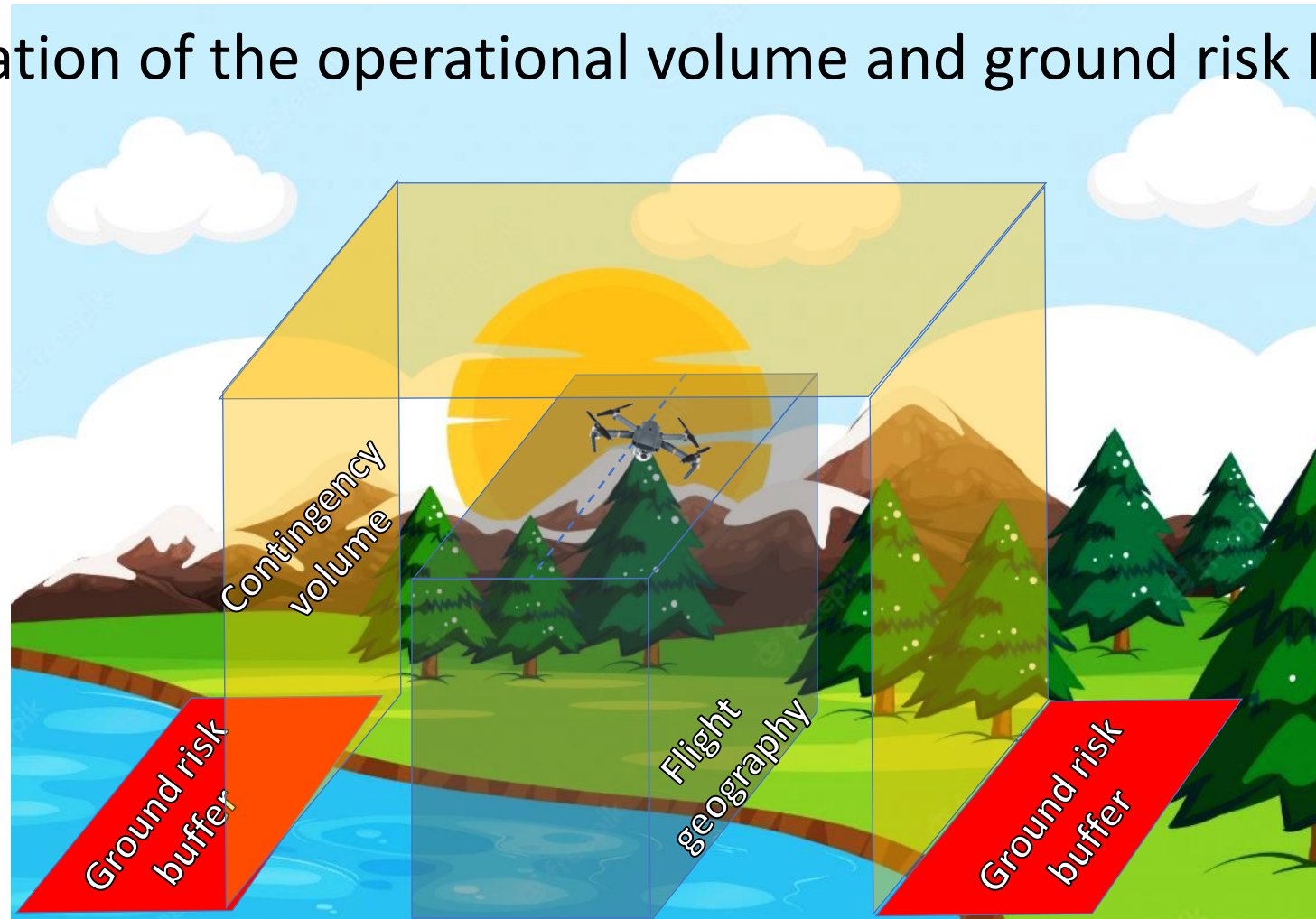
Intrinsic UAS Ground Risk Class						
Max UA characteristics dimension		1 m	3 m	8 m	20 m	40 m
Max cruise speed		25 m/s	35 m/s	75 m/s	150 m/s	200 m/s
Maximum iGRC population density (ppl/km²)	Controlled ground area	1	2	3	4	5
	< 25	3	4	5	6	7
	< 250	4	5	6	7	8
	< 2,500	5	6	7	8	9
	< 25,000	6	7	8	9	10
	< 250,000	7	8	9	10	11
	> 250,000	7	9	Category C Operations (Not part of SORA)		

Table 2 – Intrinsic Ground Risk Class (GRC) Determination

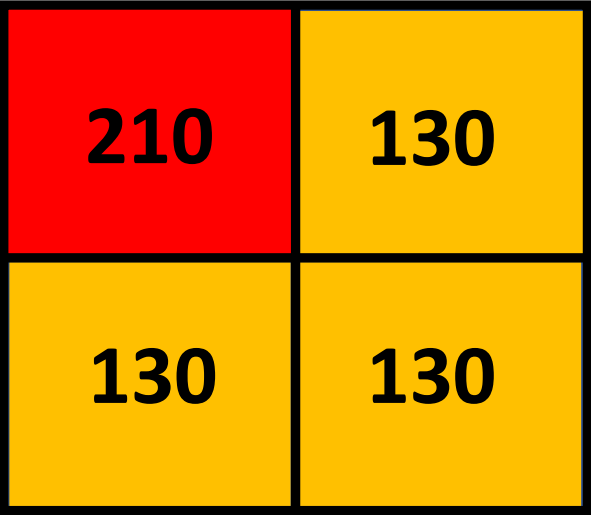
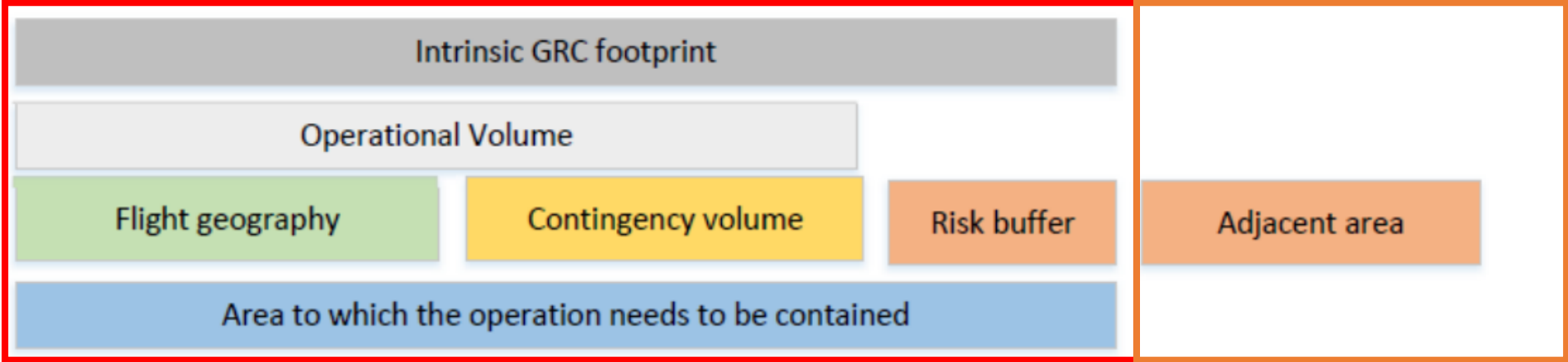
SORA 2.5
Under development by
JARUS

SORA Step#2 – Ground risk

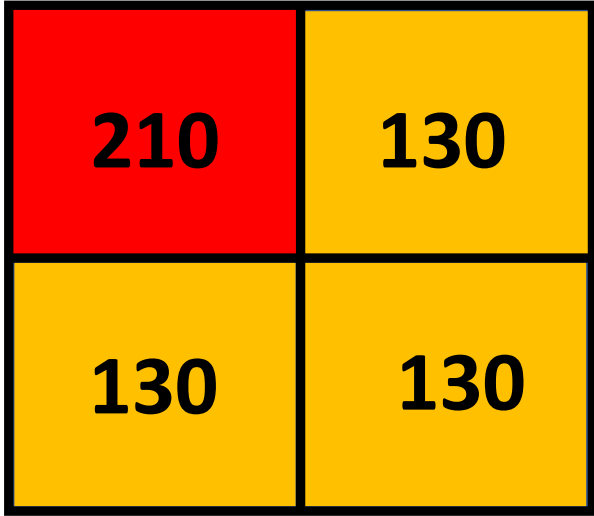
Identification of the operational volume and ground risk buffer



How will this services be used – Step#2



Maximum population density
per km2 → 210 ppl/km2



Average population density
→ 150 ppl/km2

Definitions of population density maps

- **STATIC:** information/data related to population density which is representative of only a specific moment in the day. As an example, census data represent where population is registered (e.g. may be reliable only during night);
- **HISTORICAL DYNAMIC:** information/data related to population density which are a forecast based on historical data, as an example the number of people which will be in a certain place at any time during the day forecasted basing on the number of people which was there the day(s) before at the same time;
- **REAL-TIME DYNAMIC:** actual population density data based on data detected in real-time.

What do we expect from this workshop?

- Have more information from service providers on which data are currently available;
- Is real-time/historical population density always needed?
- Understand how a population density service can be evaluated by the authorities;
- Understand which KPIs define if an information is suitable.

➤ Do we always need dynamic data?



VS



Based on historical data, do we expect that the population density in the operational volume will change of (approximately) one order of magnitude during the operation?

Questions to be answered

- ☐ Under which conditions real-time/historical population density data are needed to assess reliably the ground risk of an operation (when static data are not enough)?
- ☐ Which KPIs may be used to evaluate the reliability of population density data?
- ☐ Which is the minimum dimension of a cell in populated vs. sparsely populated area?

Questions to be answered

- ❑ What are the restrictions imposed today by the privacy requirements?
 - Which is the minimum number of person's data that should be in a group of aggregated data to ensure privacy?
 - How long may those information be stored for making forecasts?
- ❑ many data providers have access to a fraction of the real population density, is there a minimum threshold to ensure that the information are reliable?
- ❑ Referring to historical dynamic data, how long back in time you need to accumulate data in order to get a good forecast?
- ❑ Which methodology we may use to assess the declared level of confidence of the data?

Thank you