



## Regional SRVSOP Workshop eVTOL

# L18 Traffic Information Service (TIS)

*EU-Latin American Caribbean Aviation Partnership Project II  
(EU-LAC APP II)*

*This project is funded by the European Union and implemented  
by the European Union Aviation Safety Agency - EASA*

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# Objectives

1. Explain how UTM is being progressively built in EU
2. List providers of information for TIS
3. List user of TIS

# Lecture contents

1. EU Roadmap towards UTM
2. What is Traffic Information Service (TIS)?
3. TIS requirements in EU Reg. 2021/664

# L18

## EU roadmap

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# U-space blueprint

# U4

Scope EC 2021/664

# U3

Full services

# U2

Advanced services

# U1

Initial services

Foundation services

Level of drone automation increases  
Level of drone connectivity increases  
Vehicle to vehicle, Vehicle to infrastructure

Time

SESAR Joint Undertaking  
(2017)

# U-space – U1 foundation services

Service	ICAO UTM	EC 945 & 947	EC 664	ISO 23629-12	This Wshop
E-registration	YES	YES	NO	ERS	L12
E-identification (DRI)	YES	YES	NO	NO (-8)	L12
Geoawareness service	YES	NO	YES	GAW	L15
Geofencing airborne functions	YES	YES	NO	NO	L15

# U-space – U2 initial services

Service	ICAO UTM	EC 945 & 947	EC 664	ISO 23629-12	This Wshop
Operational Plan Preparation	YES	SORA	NO	OPP	NO
Flight Auth.	YES	NO	YES	FCS	L17
Tracking	YES	NO	YES	TRS	L13
Dynamic airspace reconfiguration	YES	NO	YES	DCM	L11
Procedural interface with ATC	NO	SORA	NO	PIA	NO

# EU Roadmap towards UTM



**U3**

**664: CMS + WIS (Optional)**

**664: TIS (Mandatory)**

**U2**

**664: FCS + TRS/NIS + Dyn. airspace**

**SORA: OPP + ATC interface**

**U1**

**664: CIS + GAW**

**ERS + DRI + Airborne Geolimitations**



# L18

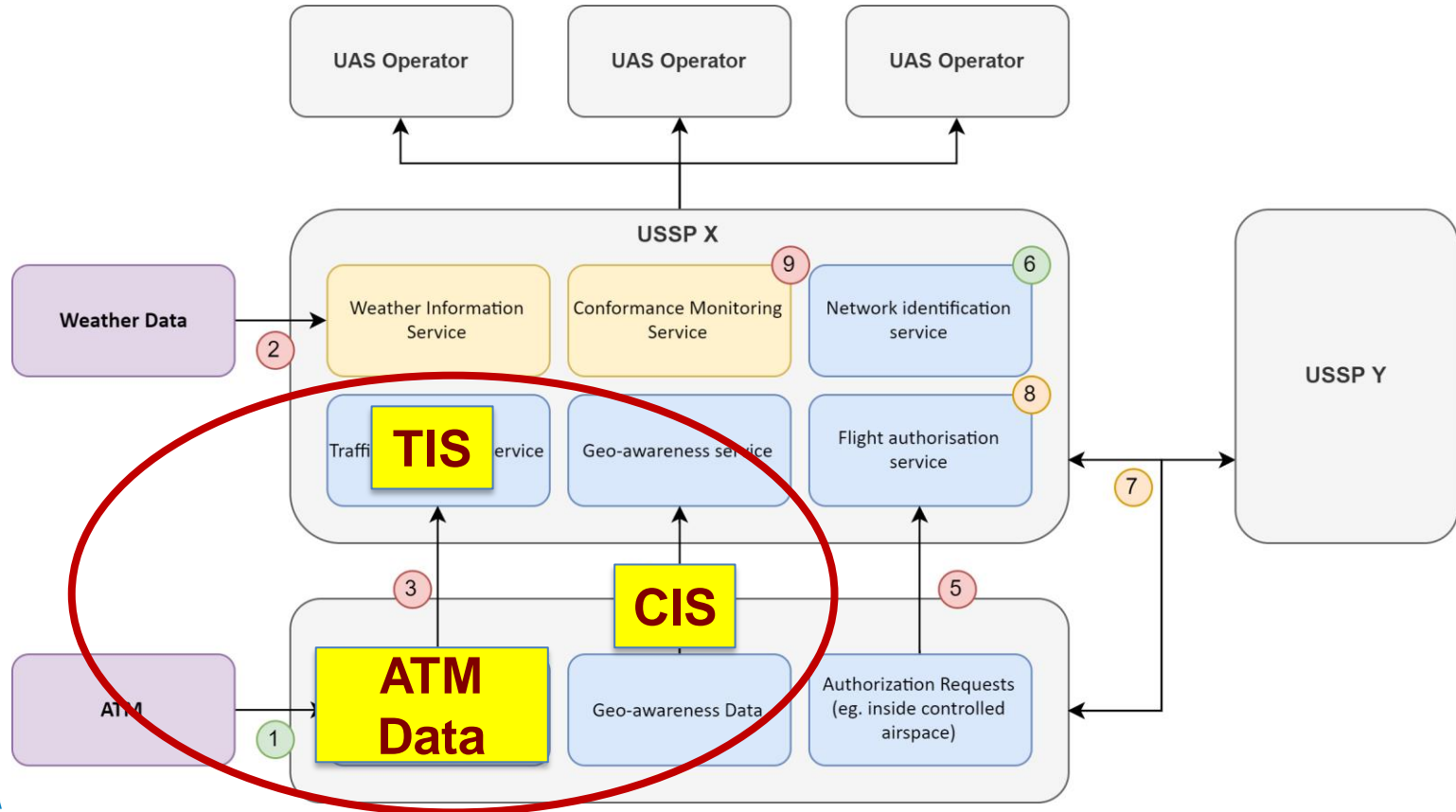
## Traffic Information Service (TIS)

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**CONGESTION  
AHEAD**

# U-space Services architecture



# Why Traffic information service ?

Recital (21) EC 2021/664

Traffic Information Service (TIS) should **alert** UAS operators about **other air traffic** that may be present in **proximity** to their UAS


possible risk  
of collision



**Situational awareness**  
TIS presents “air situation”

# Which information to which traffic ?

Art. 11 (TIS)  
EC 2021/664



"SERIOUS RISK OF COLLISION"

TIS provides to UAS operator information on any other **conspicuous air traffic**, that may be in **proximity** to position or intended route of UAS flight

# 'Conspicuous' ... meaning?

## iConspicuity

'in-flight capability' to transmit position and/or receive, process and display information about other aircraft, airspace or weather in a real time with the objective **to enhance pilots' situational awareness**



**Source: EASA Webinar 23  
FEB 2022**

**<https://www.easa.europa.eu/en/downloads/134980/en>**

# Which is the involved traffic?

Art. 11 (TIS)  
EC 2021/664

**Conspicuous air traffic**...which aircraft are included?

Air traffic comprises drone traffic as well as conventional aviation, with limitation that **only conspicuous** aircraft are considered



OR/AND



=



**Only electronically  
conspicuous traffic  
in U-space**

# Which is the involved traffic?

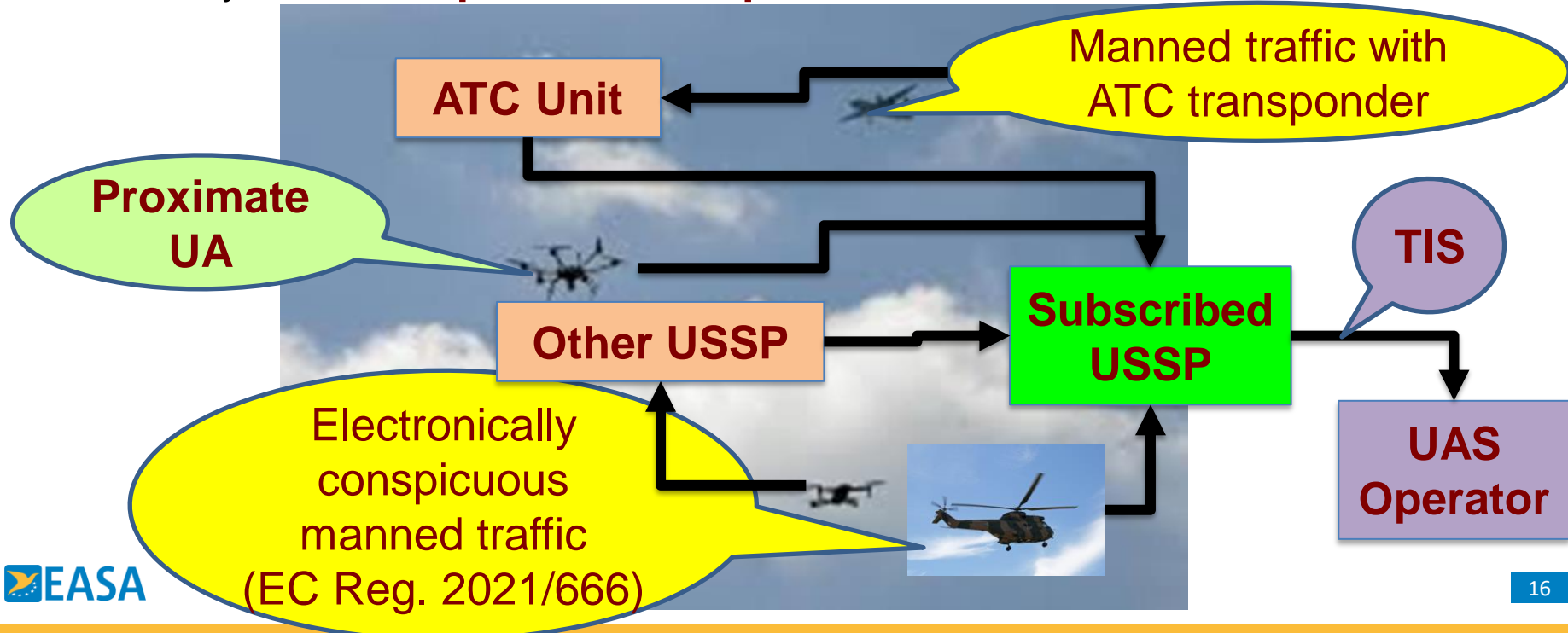
EASA GM1 to Art.  
11(1) EC 2021/664

- **Unmanned aircraft** that broadcast identification and navigation information based on EC Regulation 2019/945: **Direct Remote Identification (DRI)**
- **Uncontrolled manned aircraft** based on **SERA.6005** (amended by EC 2021/666): "Requirements for [...] electronic conspicuity in U-space airspace"
- **Controlled manned aircraft** about which information is provided by **ATS units** as part of CIS ... **even outside, but close to U-space airspace**

# Who provides information?

Art. 11 (TIS)  
EC 2021/664

TIS shall include information about manned aircraft and UAS traffic shared by **other U-space service providers and relevant ATS Units**



# L18 TIS Requirements

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# What “proximity” means?

EASA GM2 to Art.  
11(1) EC 2021/664

- State may support definition of ‘proximity’
  - ❑ by specifying associated ‘**surveillance volume**’ :  
range, height
  - ❑ **as part of performance requirements** established for each U-space airspace
- Regarding **UAS traffic**, a **rectangular area with a diagonal of 7 km**
  - ❑ according to **ASTM F3411-22A (Standard Specification for Remote ID and Tracking)**
- For **manned** recommended to use 3 times this value (i.e. 21 km)

Performance  
based rules



Industry  
standard

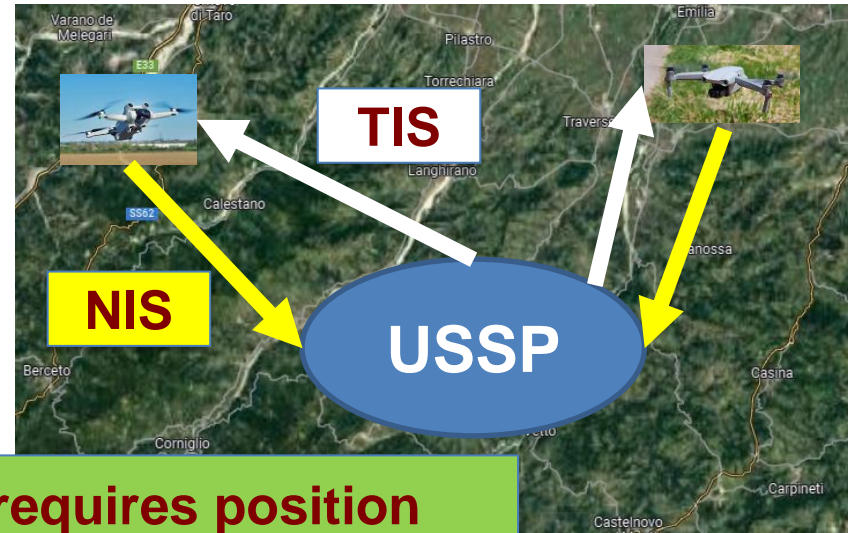
... different from PANS-ATM (Doc 4444) in which ‘proximity’ is operational judgment by human pilot or human ATCO

# Content of traffic information

TIS shall provide information about other known air traffic and shall:

- (a) include **position, time of report** as well as **speed, heading or direction** and **emergency status** of aircraft, when known
- (b) **be updated** at a frequency determined by competent authority

**EC 2021/664  
Art. 11(3)**



**ASTM F3411-22a requires position updates from UA once every second**

# Quality of information

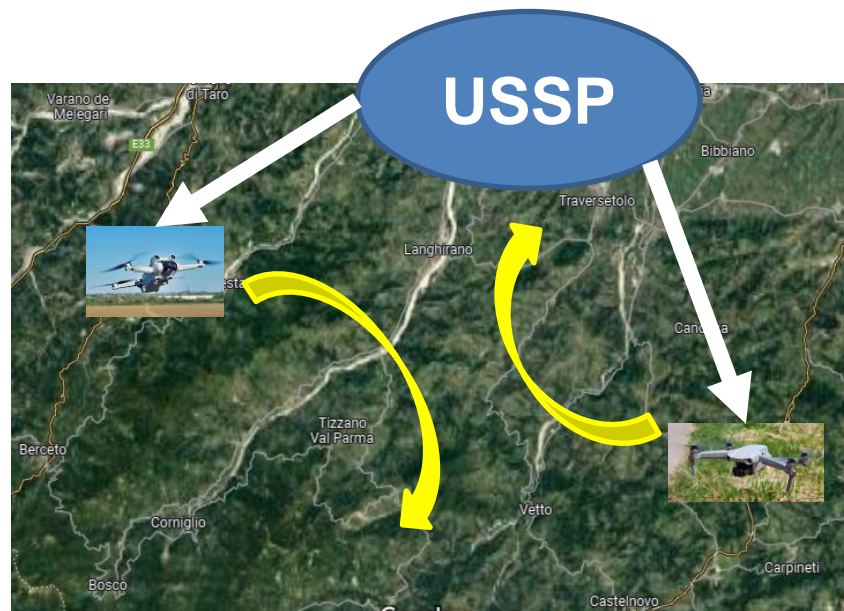
- Information about a target ("report") comprises **at least an estimated time and position**
- **Accurate** means that any measurement is provided together with a **measure** of its uncertainty
- **Real-time** means that from the point of view of UAS operators, information on a given target near a given UA should not be **older** than a given upper bound
- **Latency** for distributing traffic information lower than **5 seconds for at least 99 %** of the time

**EASA AMC1  
to Art. 11(3)  
EC 2021/664**

# UAS Operator responsibility

EC 2021/664  
Art. 11(4)

Upon receiving TIS from USSP,  
**UAS operators** shall take  
**action to avoid any collision  
hazard**



# UAS Operators and USSP (1/2)

EASA GM2 to  
Art. 11 EC 2021/664

- a) **UAS operators ultimately responsible** for safety of their flights, for meeting the U-space airspace operational constraints and for ensuring **spacing from other manned and unmanned traffic**
- b) **This responsibility can neither be transferred to USSPs nor to ATSPs. SPs NOT authorised (in the context of TIS) to:**
- give instructions such as 'climb', 'hold', etc., to UAS operators
  - provide conflict resolution advisories
  - **separate UA from other traffic**, beyond FCS (strategic) or airspace reconfiguration by ATC units

**Tactical separation by USSP goes beyond TIS ... it may come in the future**

# UAS Operators and USSP (2/2)

**EASA GM2 to  
Art. 11 EC 2021/664**

- c) U-space services support decision-making by UAS operators through timely and relevant traffic information while protecting the integrity and confidentiality of data originating from manned or unmanned aircraft
- d) Exchange of traffic information does not involve the single CIS provider
  - except when ATSP provides traffic information regarding manned aircraft in U-space airspace established in controlled airspace

**TIS mitigates absence of 'see and avoid' and lack of on-board Detect and Avoid (DAA)**

# Remain Well Clear in SORA

Tactical mitigations  
for air risk

Low (ARC-b)	Medium (ARC-c)
<p>Operator must have a <b>documented de-confliction scheme</b> explaining <b>tools for detection</b> and <b>criteria for decision to avoid incoming traffic</b></p>	<p>In addition:</p> <ol style="list-style-type: none"><li>1. Operator assesses Human/Machine Interface enabling remote pilot (RP) to make timely and appropriate decision</li><li>2. <b>Operator assesses effectiveness of tools for timely detection of traffic</b></li><li>3. Timely is defined as <b>enabling RP to decide within 5 seconds after indication</b> of incoming traffic is provided</li><li>4. <b>Operator assesses failure rate or availability of any related tool or service</b></li></ol>



# Thank you

... and now kindly group exercise

[www.eu-lac-app.org](http://www.eu-lac-app.org)

[easa.europa.eu/connect](http://easa.europa.eu/connect)



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# Exercise 17 – SRVSOP Roadmap

- Group activity
- 15 minutes
- Based on the information provided at Workshop on UTM implementation in EU
- Assess:
  - Which could be the three most urgent services or functions to be implemented in your region?
  - What could SRVSOP do to harmonise implementation?
- De-briefing (5 minutes)