

# UAV Integration: European and Spanish Situation, Challenges and Potential Solutions

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- 1. THE SPANISH CIVIL RPAS SECTOR**
- 2. THE SPANISH RPAS REGULATION**
- 3. THE SPANISH RPAS CENTER OF EXCELLENCE**
- 4. EUROPEAN REGULATION**



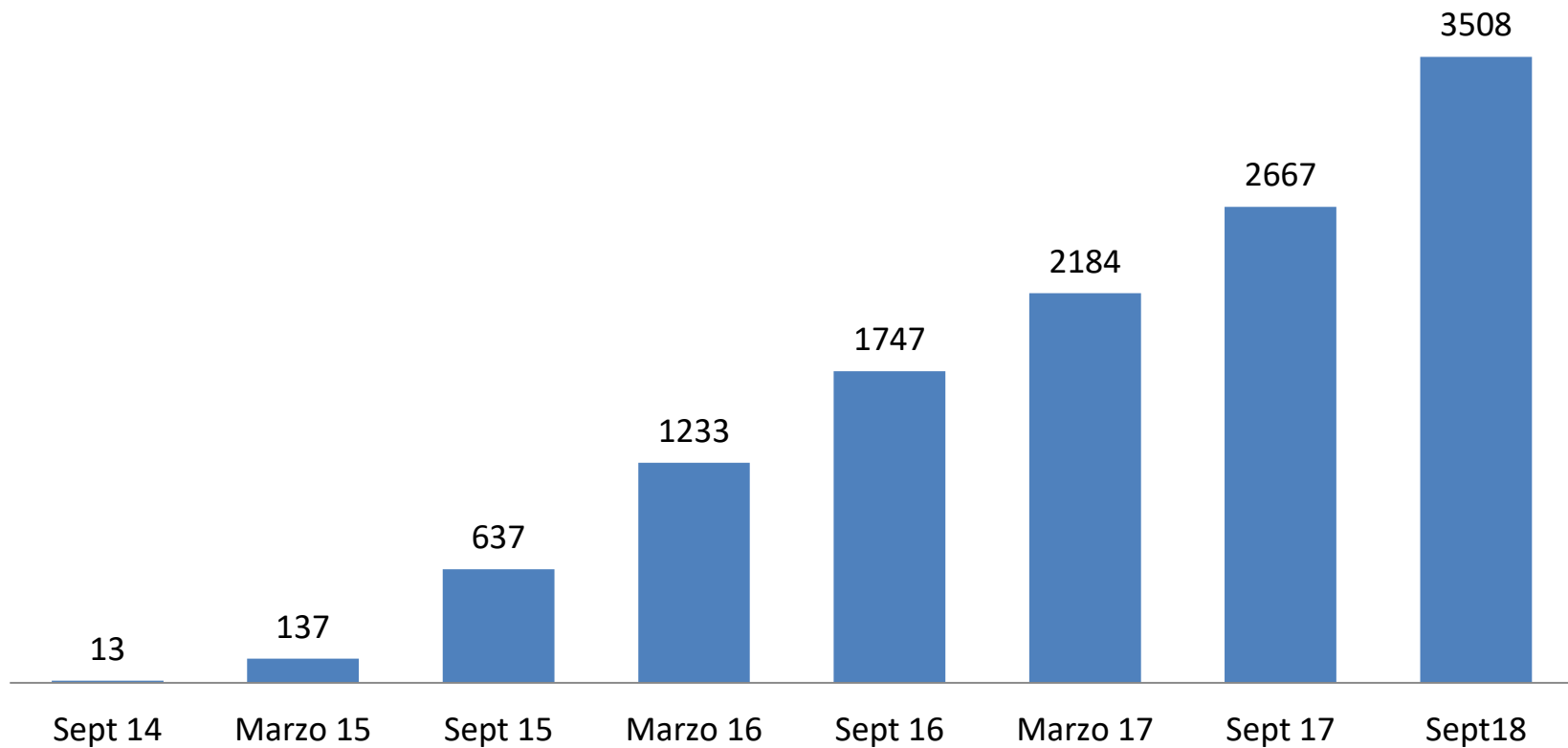
## AS OF 15/09/2018

- 3.508 Professional Operators for RPAS<25Kg
- 5.334 registered RPAS
- 4.607 registered pilots
- 85 Operators qualification organizations
- 78 Manufacturers / 40 Organizations authorized by Manufacturers
- 74 Training Organizations registered in AESA (“ATOs”)



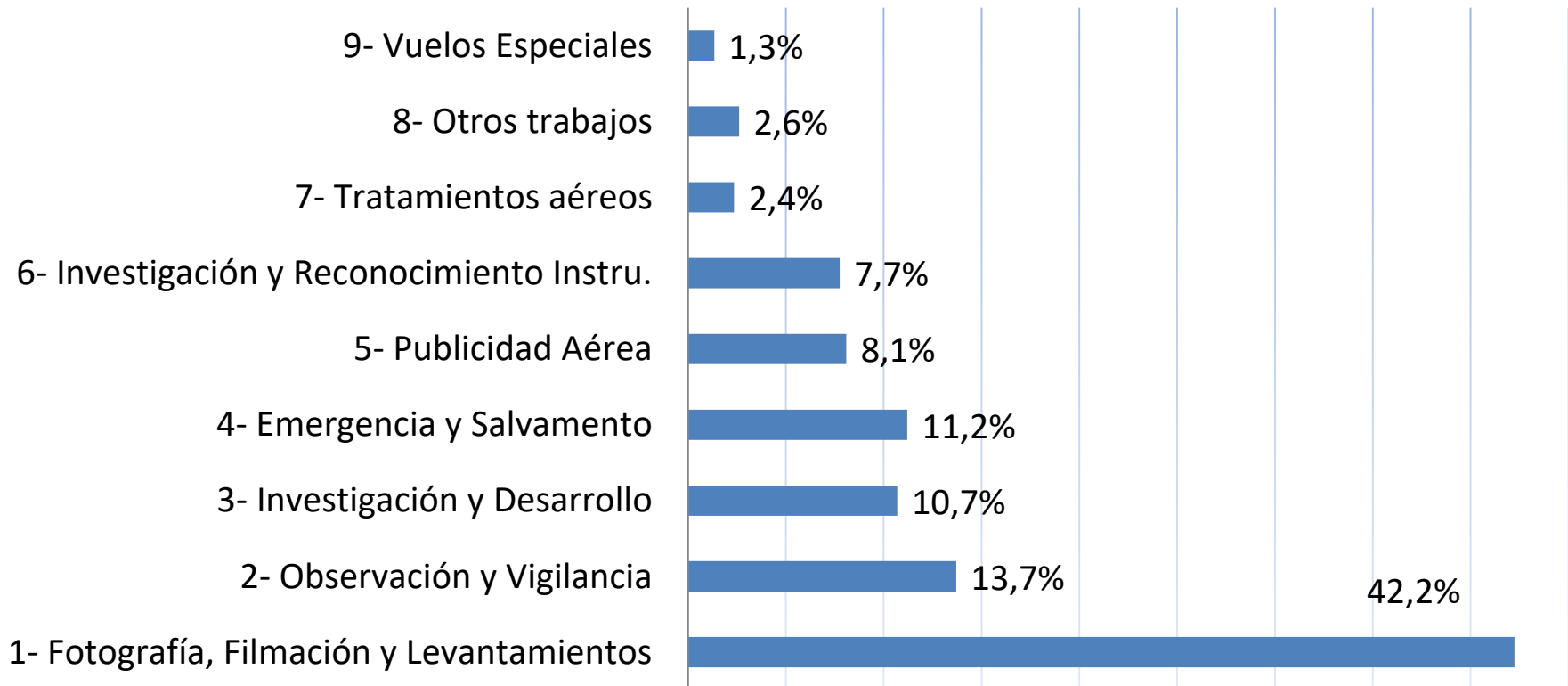
## EVOLUTION OF NUMBER OF SPOs

### Professional Operators



## MAIN ACTIVITIES OF PROFESSIONAL RPAS IN SPAIN

Actividades por %



### Spanish regulatory framework: Law 18/2014 & Royal Decree 1036/2017

**Air Navigation**

**Air Safety**

**Rules of the Air**



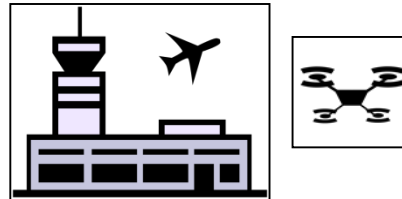
## NEW OPERATIONAL POSSIBILITIES PER RD 1036/2017

### Over agglomerations of buildings and persons

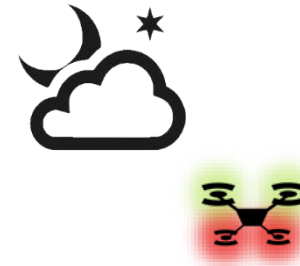
RPAS - MTOW  $\leq$  10 kg



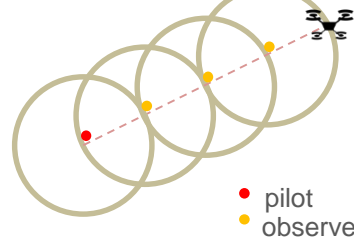
### Controlled airspace



### Night flights

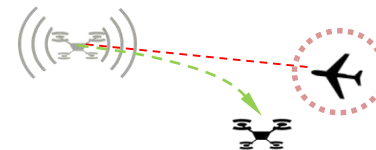


### Extended Visual Line of Sight (EVLOS)

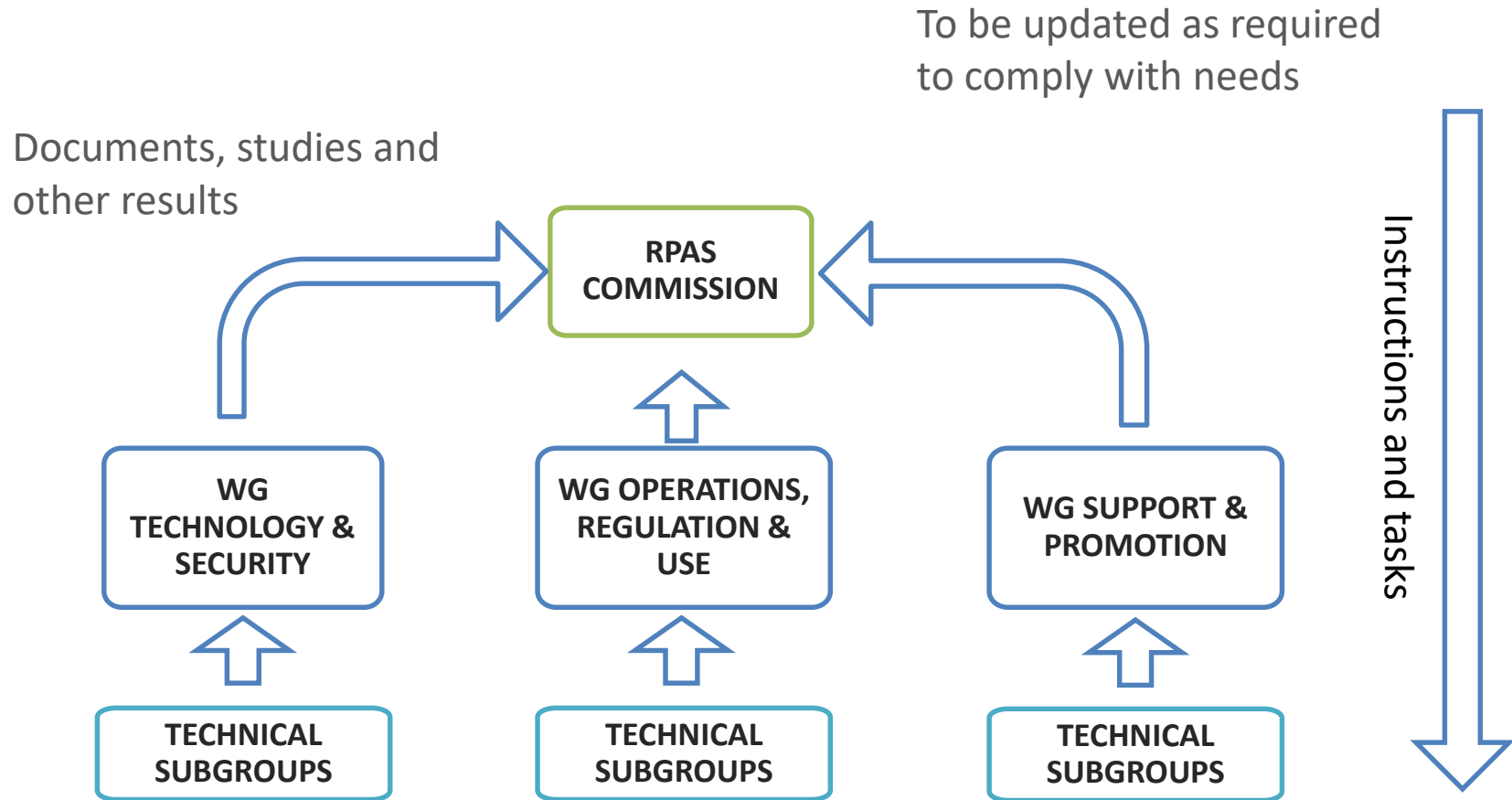


### Beyond the visual line of sight

MTOW  $>$  2 kg.  
"Detect & Avoid" systems



## The Spanish commission on RPAS





## OBJECTIVES

- ➔ **Develop a network that integrates the research and development with help from AESA and coordination of universities and industrial sectors, identifying, supporting and promoting the accessibility to the initiatives of the sector of aeronautical organizations and aeronautical industries, encouraging the most important endeavors for the development of the sector in Spain**
- ➔ **Coordinate those activities with the stakeholders and other similar initiatives in Europe and overseas**



# 3. THE SPANISH RPAS CENTER OF EXCELLENCE

EXPERTS COMMITTEE WITH AESA AS SECRETARY

MOMENTUM AND LEADERSHIP



MAIN R+D LINES AND DECISIONS

DEVELOPMENT AND SUPPORT

SECRETARIAT OF THE CENTER OF EXCELLENCE

ENVIRONMENT



POLITÉCNICA



Universidad Carlos III de Madrid

RPAS



COORDINATION WITH OTHER CES

UNIVERSITIES  
INDUSTRIES  
OPERATORS  
INFRASTRUCTURES

SUPPORT 



## FRAMEWORK AGREEMENT WITH FAA



### OBJECTIVES

- Cooperation in research and development activities  
Exchange of policy programs, projects and R & D results
- Cooperation in the area of alternative fuels and climate change

### METHOD

Coordination center of excellence of the USA

ASSURE

ASCENT



# 3. THE SPANISH RPAS CENTER OF EXCELLENCE



ARBOREA INTELLBIRD



Universidad Carlos III de Madrid



UNIVERSITAT POLITÈCNICA DE VALÈNCIA



Airbus Defence and Space.



colegio oficial ingenieros de telecomunicación



## EXPECTED BENEFITS FOR UNIVERSITY AND INDUSTRY

### ➡ UNIVERSITY

- CE structures with sector or authority support the research program to be carried out
- Direct contact with the sector for the creation of talent
- Better training of new professionals with a real vision of the sector
- Better support of the research to be carried out

### ➡ INDUSTRY

- Supports the tailoring of the need for real innovation adjusted to reality
- Support for research in areas of special interest and coordination relationships
- Support for programs under the CE research framework activities
- Encourages participation and collaboration initiatives



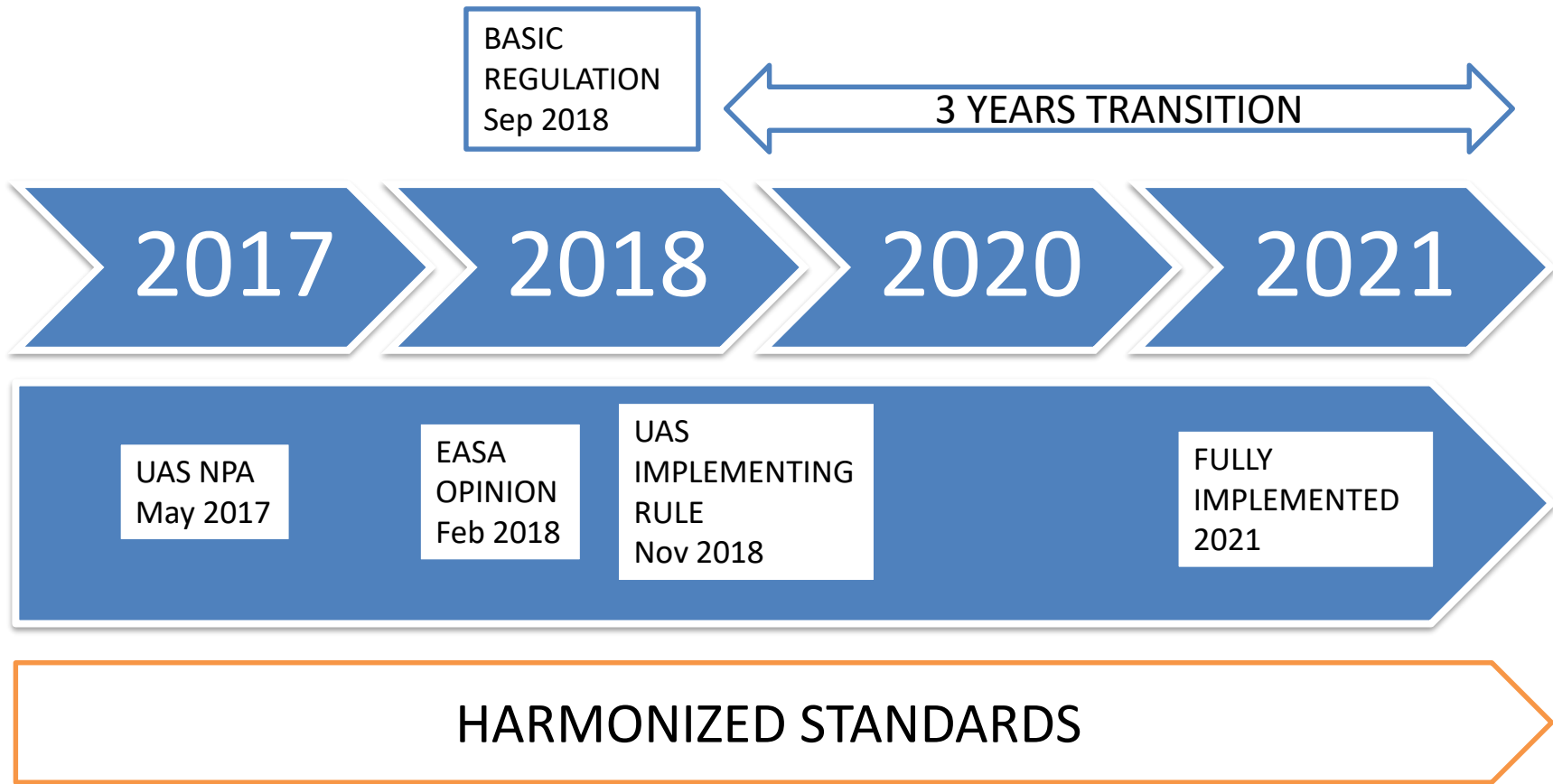
## KICK OFF TASKS OF THE CENTER OF EXCELLENCE

- Consolidation of CE Experts Committee, including new additions if necessary
- Approval and updating of the CE terms of reference
- Establishment of the lines of action of the CE (“White Paper”)
- Academic Secretary support
- Collaboration Agreements with the Administration and other Centers of Excellence (ASSURE and others)
- Coordination and collaboration activities with Research Centers and other CE

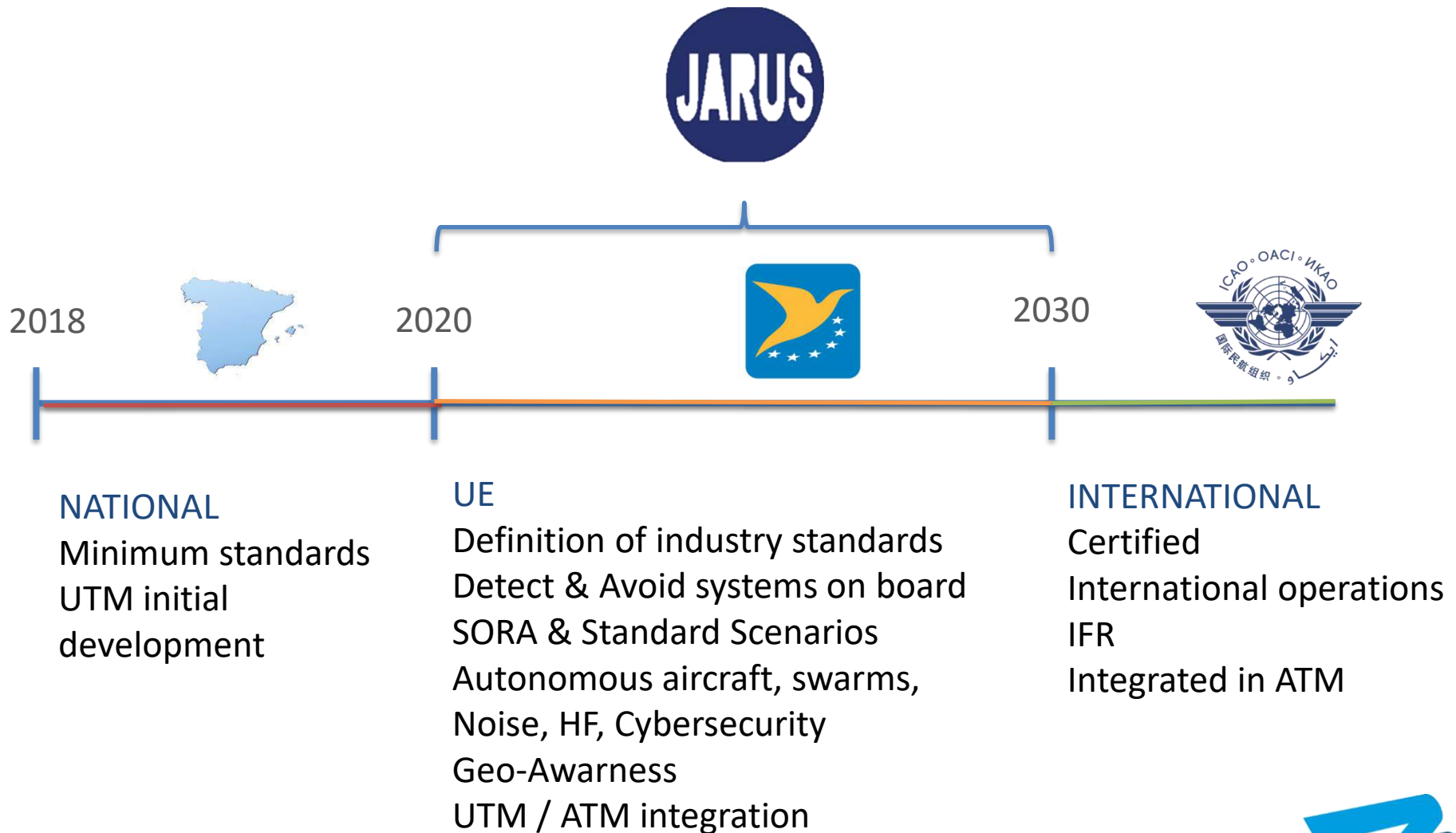


# 4. EUROPEAN REGULATION

**NPA 2017-05 (A)** 'Introduction of a regulatory framework for the operation of drones – Unmanned aircraft system operations in the open and specific category'



## ENVISIONED PHASES





### INITIAL PHASE 2018-2020+

- **Definition of minimum standards for:**
  - **FPV, follow me mode, return to home ...**
  - **Anti-collision systems**
  - **Emerging Detect & Avoid Systems**
  - **Understand the risks**
  - **Impact energy reduction systems**
- **UTM initial development and Specifications**



### DEVELOPMENT PHASE 2020-2030

- Definition of industry standards
- Detect & Avoid systems on board
- State of the art SORA and Standard Scenarios
- Autonomous aircraft, swarms, noise, HF, Cybersecurity
- Geo-fencing Geo-Awareness
- UTM / ATM integration
- Pseudo satellites





### IMPLEMENTATION PHASE 2030 ONWARDS

- **Certified RPAs, Operators and Pilots**
- **International operations below FL600 under Instrumental Flight Rules (IFR)**
- **In non-segregated airspace and aerodromes**

Outside the ICAO CONOPS, and started in the previous decade, flights that include people transport, heavy goods, logistical aspects .





**THANKS !**  
**ANY QUESTION?**

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