Challenge #2

Concept of Operations for UAS flying in/out of Barcelona Airport

The UAS industry is moving at a fast pace in multiple directions (low altitude, high altitude, recreational and commercial). In addition to commercial usage, e.g. journalism and agriculture, UAS are also anticipated to be used for air transport of goods and passengers. Last-mile delivery companies are in the frontline of testing new and innovative UAS solutions. Transporting medicinal supplies from airports to urban areas is not only a game changer, but a social necessity especially for aging populations in remote areas. Flying unmanned or remotely piloted drones to operate in and out of an airport will require safe and efficient integration into regulated airspace, which includes a new regulatory framework, a safety risk assessment and supporting technologies and infrastructure. In addition, security risks need to be mitigated since the use of unmanned technology increases vulnerability to cyber threats.

Your project is to develop a concept of operations (CONOPS) for the operation of a fleet of unmanned drones (UAS) between a warehouse within Barcelona Airport and residential areas on the sides of Barcelona city. The concept should take into consideration pre-defined flight paths, automation, and other factors/parameters included below. The UAS will be carrying medicinal supplies that have arrived on board an air freight to Barcelona Airport, and were stored at a warehouse within the airport itself. Your primary CONOPS should fulfill the following requirements:

- **Propose a conceptual model of operation of a fleet of 20 automated UAS, each able to carry a payload of (insert), including:**
  1. A preliminary functional diagram/illustration of operation from/to the airport, including the flight path (routes) that can be used by the UAS.
  2. Critical performance requirements and the enabling technologies and infrastructure.
  3. Identification, tracking and geofencing from an integrated systems point of view.
  4. The relationship with existing airspace users.
  5. Impact to and relationship with existing regulations, airspace and aerodrome.
  6. The need for new regulations/standards.
  7. Operational limitations, e.g. permitted hours of operation.

- **Test/simulate your solution/concept at the BCN Drone Center located at Camí de l'Espinoi, 08180 Moià, Barcelona, Spain.**
You can find in the following a list of international aviation standards and industry requirements that you should consider in your proposed solution(s):

- ICAO RPAS Manual
- IATA safety bulletins available via this link: https://www.iata.org/whatwedo/ops-infra/air-traffic-management/Pages/remotely-piloted-aircraft-systems.aspx
- European Drones Outlook Study
- SESAR JU U-Space blue print: https://www.sesarju.eu/u-space-blueprint
- JARUS: http://jarus-rpas.org/
- Airbus UTM Blue Print: https://www.utmblueprint.com/
- ICAO UAS toolkit webpage: https://www.icao.int/safety/UA/UASToolkit/Pages/default.aspx