D-FTS : Drone Flight Termination System

an Advanced Drone Safety Solution for Airspace Confinement

EACP-EUROSME

Project Presentation
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Agenda

- DroneXsolution presentation

- Project presentation and objectives

- Technological barriers

- Partners Profiles

- Timeframe

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Company presentation

DroneXsolution

- DroneXsolution has developed a global expertise in the field of aerial drones and airborne systems for various aircrafts (ULM, airplanes, helicopters).

- This expertise is based on the experience of many national and international projects as well as on the fundamental and complementary expertise of its consultants in the field of civilian drones.

- DroneXsolution covers the entire value chain of the life of a UAV system, from its design to operational deployment:
    - Support for the definition of product and project funding
    - Follow-up for studies and industrial design
    - Running and following up developments
    - Guidance for exploitation and maintenance
    - Operations manager and flight direction

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Project presentation and objectives

Project D-FTS / a certifiable approach

- Why a Flight Termination system (FTS) certified ?
  - for UAS intended to be deployed in BVLOS mode into geolimited airspace (EU categories SPECIFIC or CERTIFIED)
  - Prove to the regulator in responsibility of the area of operation that the UA will NOT exit from the allocated airspace
  - Authorize the UAS operation

- Project aims to prototype and demonstrate a FTS certifiable with :
  - Independent GNSS receiver (high level of integrity and jamming resistant)
  - Standard interface proposition with the AP (autopilot)
  - Standard interface proposition to trigger at the right time the emergency devices (parachute for VTOL or emergency landing for FW)
  - Standard interface proposition to stop the system (e.g. propulsion shutdown)
  - Independent energy supply for the FTS module
  - Independent RF capability
  - Warning message possibility

- Add watchdogs or safeguards to ensure any unexpected crash (make operators confidents)

- The final product could be ether a specific equipment (add-on component) or a toolkit

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Technological barriers

Project D-FTS / unlock technological barriers

Technological barriers identified :

- GNSS reliability, precision, integrity, robustness

- Form factor : mechanical constraints for the integration into small UA of a new components

- Wiring and connectors : length, weight, interferences and compatibility

- Energy : specific ad-on battery, specific charging process or connected to the main power supply onboard

- RF and potential hazards of electromagnetic fields (EMFs) : respective interferences with the avionics, antenna integration

- Software interface with existing AP (AutoPilot) : compatibility, firewall, independence

…

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Partners Profiles

Project D-FTS / Partners domains competencies

Partners profiles identified :

Partner 1 :

Drone/aeronautic industry background

Expertise in drone regulation (national and EU)

Drone Business knowledge

Partner 2 :

Software industry already designing embedded product dedicated to airborne systems

Expertise in aeronautic SW certification mandatory

Partner 3 :

Electronic industry already designing embedded product dedicated to airborne systems

Expertise in HW certification mandatory

Partner 4 :

Drones manufacturers already selling UAS (existing products) and providing different types of UA airframe (VTOL, FW, Convertible, ...) and located in different member states

=> it'll allow to test the prototype with different configurations and to be in contact for validation with different regulators.

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Timeframe

Project D-FTS / provisional schedule

Full project timeframe estimation : 18 to 24 months

- Step 1 : WP2-WP3 / Specifications and components sourcing = 6 months

- Step 2 : WP4-WP5 / SW & HW design + development = < 12 months

- Step 3 : WP6 / UA Integration and tests = < 6 months

Total = < 24 months

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Thank you for your attention

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