INNOVATION CLUSTER ACCELERATING REMOTE SENSING

Interreg 2 Seas Mers Zeeën

EUROPESE UNIE

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Report on organisation and cooperation between all test sites in the 2 Seas region

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Content

"Development of one central test/demo site and one mobile demonstration facility with equiptment / facilities for remote sensing/drones"

ICAReS

Common challenges

Within the 2 Seas area the three major sectors (agriculture, nature and water) constantly face important challenges which require innovation to help tackle them. Greater use and development of remote sensing (RS) and data processing methods will help provide this innovation, and both will create and support new solutions to face these challenges. Moreover, it will greatly improve the efficiency of these sectors.

However, there are obstacles in the way when looking at remote sensing. For example, there is a lack of knowledge and awareness of the possibilities remote sensing can bring; there is a lack of suitable testing and demonstration locations for companies to further innovations; and the policy on legislation and the use of drones for remote sensing is unclear.

From this the following challenges need to be addressed: the aggregation of sector demands, communication with RS companies and knowledge institutions, creation and advertisement of sites for demonstrating new remote sensing applications, harmonisation of legislation and regulations and finally the formation of a durable cluster to work together on these issues.

Overall Objective

The overall object of the ICAReS project is:

To develop a cross-border innovation cluster and create the necessary conditions for innovation in the field of remote-sensing and advanced data-communication and -processing, based on the needs of the priority sectors: nature, agriculture and water & infrastructure.

A durable cluster will result in some key benefits. There will be cross-border collaboration within the sectors allowing the demands to be aggregated and jointly tackled. The innovation of remote sensing products and services will accelerate. This will allow business operations to improve through the increased use of remote sensing. Finally, the cluster will bring clarification of different national legislations and a joint lobby for better regulations to create business opportunities.

Summary Workpackage 2

A second important issue for innovation is the development of facilities and services so that partners in the cluster can find each other, get a good picture of the demands and have appropriate facilities to test innovative applications. The main services and facilities for the RS innovation cluster are: well-equipped test- and demonstration sites including a kind of central organisation that coordinates demo flights, an office or virtual desk for demands, aggregation of demands and transferring demands to research institutes and SMEs and a (virtual) desk or info point for questions about regulation and legislation in the different countries. In this work package the majority of the ICAReS partners will participate in workshops to outline and describe the conditions for these 3 facilities/services. They will also make an inventory of existing and planned test sites in the 2Seas region and describe the facilities of those sites, including what is missing.

Activity A 2.1

One of the activities in ICAReS is to investigate all test- and demonstration sites (incl. actual facilities). Conditions and facilities for test- and demonstration sites in the future will be investigated based on demands from end-users, SMEs and research institutes. Based on this information the ICAReS project will develop an equipped site and in addition they will organise the cooperation to build cross border networks in demanding organisations of the agriculture, nature, water & infrastructure sectors.

Test and demosites in the EU

Based upon the investigation of report D.2.1.1 it has been determined that more than 26 test-sites for drone application are located in the EU. These test-sites are all different in size, location and facilities.

This report focus on the cooperation of test and demonstration sites in the 4 member states of the 2Seas area.

New drone regulations

To ensure the free circulation of drones and a level playing field within the European Union, EASA has developed common European rules. The approach taken is to apply the highest safety standards achieved in manned aviation to drones as well. The rules are based on an assessment of the risk of operation, and to strike a balance between the obligations of drone manufacturers and operators in terms of safety, respect for privacy, the environment, protection against noise, and security.

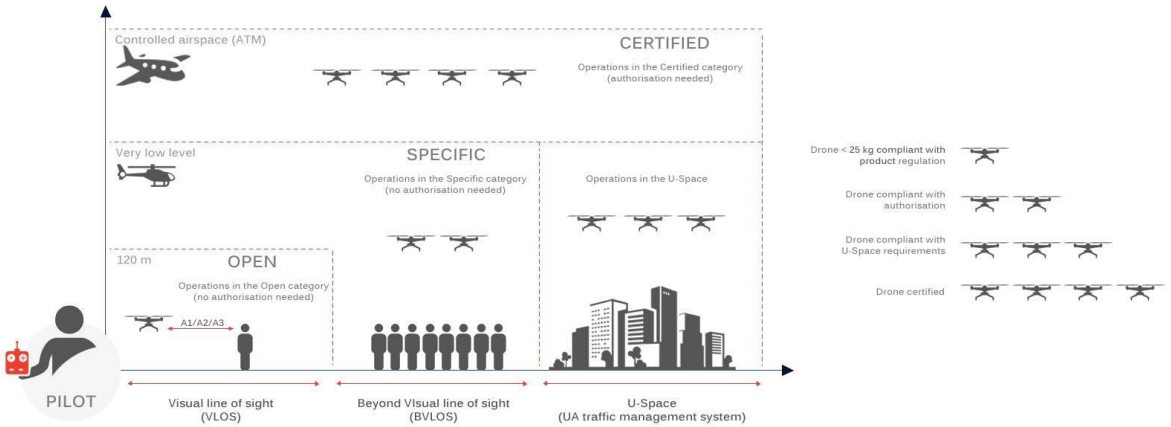
The EU regulatory framework will cover all type of existing and future drone operations, fostering the development of innovative applications and the creation of a European market for unmanned aircraft services.

While aiming primarily at ensuring safe operations of drones, the European regulatory framework will also facilitate the enforcement of citizen's privacy rights and contribute to addressing security issues and environmental concerns in the benefit of the EU citizens. It will in addition enable the deployment of an Unmanned Traffic Management System, the U-Space, to support the development of drone operations in low-level airspace, beyond visual line of sight and congested areas.

The European regulatory framework will be based on the following principles:

1. A risk-based and proportionate approach:

   The new framework will introduce three categories of operations (open, specific and certified) according to the level of risks involved. A different regulatory approach will be adopted for each category. Low-risk operations (“open” category) will not require any authorisation, but will be subject to strict operational limitations. For medium risk operations, operators will have to require an authorisation from the national aviation authority on the basis of a standardised risk assessment or a specific scenario (specific category). Finally, in case of high risk operations, classical aviation rules will apply (certified category).



2. A sharing of responsibilities between the EU and the Member States:

   To bring the necessary flexibility, Member States will be able to define "zones" to restrict the access of certain portions of their airspace or, on the contrary, relax the conditions there. By doing so, national specificities will be addressed at the most appropriate level. Registration and authorizations will also be implemented at national level on the basis on common rules.

Open category

Operations in the open category do not require prior authorisations or a pilot's license. However, they are limited to operations: in visual line of sight (VLOS), below 120 m altitude and performed with a privately built drone or a drone compliant with the technical requirements defined in the regulations. To demonstrate this compliance, drones that can be operated in the open category will bear a class identification label. Additional operational restrictions apply to each class of drone, in particular with regard to the distance that must be maintained between the drone and non-involved persons.

Specific Category

When the intended operation exceeds the restrictions of the “open” category, the operator should consider operating under the "specific" category (medium risk). Only high-risk operations require compliance to classical aviation rules under the "certified" category (like operating in controlled airspace). Operations involving drones of more than 25 kg and/or operated beyond visual line of sight will typically fall under the “specific” category. Before starting an operation in the specific category, operators must either perform a risk assessment (using a standardised method – the SORA – that will be provided by EASA) and define mitigation measures or verify that they comply with a specific scenario defined by EASA (or the national aviation authority). On that basis they will be able to obtain an authorisation from the national aviation authority (in some cases a simple declaration may be enough). The authorisation or the specific scenario will define the authorised operation and the applicable mitigation measures (drone technical requirements, pilot competence, etc.).

Certified Category

The “certified” category (high risk) includes operations involving large drones in controlled airspaces. Rules applicable to the “certified” category will be the same as for manned aviation: drones must be certified for their airworthiness, pilots shall be licensed, and safety oversight will be performed by the relevant National Aviation Authorities and EASA. EASA is currently working on the necessary amendments of existing regulations in order to accommodate drones. Particular elements of the high-risk UA operations are:

- the approval of design, production and maintenance organisations;
- air operator certificates;
- operations of UA; and
- licences of personnel.

Urgency to cooperate

With the new EASA regulations and the harmonisation of the national approaches concerning the new regulation, a EU wide effort has been initiated to implement the drone regulation. Test and demonstration sites have a lot to gain if they can contribute to the implementation especially in the *specific* and *certified* category.

Drone Regim

The objective of this community action is to create a structure & work methodology permitting to federate European drone community members (including SMEs & SMIs) in multi-national working groups with the intent to produce consensually agreed on guidance documents, define community-based standards, contribute to existing standards efforts, and, in coordination with National Aviation Authorities (NAAs), propose consensually agreed recommendations on topics identified by the drone community and that have been drawn up by focused activity & competence groups using their specialised compentencies & experience.

In the context of the implementation of the European Union's drone regulation, the purpose is to:

a) Address regulatory-related matters that are the responsibility of the individual EU Member States;
b) Contribute to the harmonization of the national approaches concerning these matters, taking relevant existing documents & best practices into account;
c) Contribute to speeding up the European harmonisation process.

Workgroups

UVS-international with cooperation of ICAReS issued a Call For Interest for participation in drone-related working groups, which would address the topics identified by the drone community. Participation was open to all interested parties. 104 persons representing 81 companies & organisations in 20 countries registered to participate in 8 Focus Groups which in total consisted of 48 Working Groups (150 Active Members & 347 Observers). 22 candidacies for Working Group Leaders were received.

Comments on Working Group Activities

All Round 1 registered participants were invited to supply their written views on & suggestions relative to the activities of the Working Groups for which they had registered. The replies received were compiled in a 14-page document and made available to all Round 1 registered participants.

Drone REGIM Kick-off Meeting

The conclusion of an online survey sent out with the Round 1 registered participants indicated that a sigificant number of them desired to have a face-to-face Drone REGIM kick-off meeting to discuss practicalities. This kick-off meeting took place at the BeNeLux General Secretariat in Brussels, Belgium on 23 May 2019. With the intent of making the initiative more effective, and taking into account the declared participation and the large number of working groups, as well as recently published documents and recently received information, the meeting attendees consensually:

a) Refocused the Drone REGIM activities on several key points;
b) Reduced the quantity of the Focus Groups & Working Groups;
c) Redefined the composition of the Focus Groups.

Round 2 - New Focus & Structure

In follow-up to the Drone REGIM Kick-off Meeting, and taking its conclusions into consideration, the following structure has been decided on:

FG1 WG1.1 WG1.2 WG1.3 WG1.4 WG1.5 WG1.6 WG1.7	**Focus Group 1 - Training & Qualification** Training Operators in the Use of SORA Drone Operations Manual Flight School & Examination Qualification Specific Category Drone Pilot Training & Licensing (theory & practical) & Examination Making Professional Drone Pilot an Officially Recognized Profession Open Category: Online Pilot Training & Examination Safety Rules for Training / Test / Validation / Demonstration Sites	**Educational & Training & Related Matters**
FG2 WG2.1 WG2.2 WG2.3 WG2.4	**Focus Group 2 - Operations** UTM / U-Space Implementation & U-Space Service Provision Controlled Airspace Operations Air Navigation Service Providers (ANSPs) Regulatory Oversight & Enforcement	**Operational & Regulatory Matters**
FG3 WG3.1	**Focus Group 3 - Awareness Creation** Awareness Creation & Communications (at national, European, international level)	**All Focus & Working Groups Feed In**
FG4 WG4.1	**Focus Group 4 - Standards** Review of EUROCAE (draft) documents	**Flight-related & Non-Flight Related Matters**
FG5 WG5.1 WG5.2	**Focus Group 5 - Standard Scenarios** Standard Scenarios (EU & non-EU) & Database to Compare Them Standard to Produce a Standard Scenario & Relevant Template	**BVLOS Flight Altitude: <500 ft**

In this structure Workgroup 1.3, 1.4 and 1.7 covers areas of the test and demonstration sites in the EU. Based upon the inventory of the test and demonstration sites done by the ICAReS project most of all test and demonstration sites are located in controlled airspace. Therefore Workgroup 2.2 is also very important for test and demonstration sites to be involved in.

Workgroup activities

For every Workgroup a description has been made about their activities. In this paragraph a description has been given for the Workgroups that could be interesting for test and demonstration sites.

WG1.3 Flight School & Examination Qualification

Bring into map currently existing drone flight schools in the EU & beyond (Australia, Canada, South Africa). Create a depository of the currently existing syllabuses/courses (theoretical & practical). Produce a comparison of proposed theoretical & practical courses, indicating:

- The type of drones concerned;
- The certificates issued;
- The flight schools currently approved/accepted by their national aviation authority).
- Identify the standards (criteria) to which flight schools are approved/accepted by their national aviation authority.
- Identify according to what criteria instructors are qualified.
- Identify how & by whom are the exams conducted.
- Identify what type(s) of insurance is/(are) obligatory.
- Identify if the issued pilot licenses are recognised by the insurance companies?

WG1.4 Specific Category Drone Pilot Training & Licensing

- Review the «Remote Pilot Competency for Category A & Category B» document to be published by JARUS. Create a depository of the currently existing training tools (syllabus/course manuals) & best practices in the EU & beyond (Australia, Canada, South Africa).
- Create a comparison matrix.
- Produce recommended guidelines concerning training course syllabus.
- Provide a position paper with recommendations on:
- Drone pilots: Legal requirements EASA
- Legal requirements Member State
- Theoretical & practical requirements/skills
- Medical requirements
- Training institute: Determine:
  - Legal requirements EASA
  - Legal requirements Member State
  - Open air training facility
- Examination: Determine:
  - Independent examination board
  - Inspection rules and execution
  - Examination protocol
  - Legal documents fail/pass examination
  - Qualified examination staff
  - Secured theoretical examination facility
  - Open air examination facility
- Registration: Public registration body
- License certificate & how to exclude fraud (illegal copies)
- Duration of license: Determine renewal periods & how renewals should be obtained.

WG1.7 Safety Rules for Training / Test / Validation / Demo Sites

Produce an explanatory document defining:

- What is meant by «training / test / validation / demonstration sites»,
- Why such training / test / validation / demonstration sites are important,
- Who uses/can use them (drone & non-drone related),
- Required infrastructure & safety systems,
- How the training / test / validation / demonstration sites are used (incl. flight envelopes & accessible airspace blocks),
- What type of insurance is required for training / test / validation / demonstration sites,
- Produce a listing of the training / test / validation / demonstration sites in the EU with indication which have take-off & landing strips, control towers, official approval from national aviation authority.
- Identify the safety rules + best practices currently applicable at training / test / validation /demonstration sites in the EU;
- Draw up a comparison matrix of the currently applicable safety rules & best practices;
- Produce recommended guidelines & community-based standards for a harmonized EU approach & ensuring national & EC regulatory compliance. Operational scalability should be observed (proportional to the operation risk) (all technically feasible operations should be accommodated, irrespective of the product/ technology maturity). The following topics should be addressed:
- Site/ground requirements; required infrastructure & facilities, emergency services and third party risk;
- Airspace: (local) de-confliction / segregation, flight procedures, low/medium/high risk flight zones;
- Radio Frequencies; including intended and unintended interference;
- Operator qualification, manuals, airworthiness assurance, pilot & crew proficiency, obligatory insurance;
- Liability, to ensure a level European playing field.

WG2.2 Controlled Airspace Operations

Today all flights in controlled airspace are bound to IFR so that ATC can safely separate traffic. Once drones start entering the CTR, ATC may not be able to separate all traffic anymore. Various methods of separation are available and a variety of solutions could be considered. In many cases, drones do not need to fly higher than natural or man-made obstacles, or drone flights can be contained in geo-cages etc. Should in such cases, drones be required to be under ATC control? Is there a need for a tracking system (ADS-B; FLARM; WIFI ro 4G/5G)? Flying (unmanned) in the CTR needs to be redefined. Taking the conclusions of the CORUS project into account an analyse the possible solutions will be made and recommendations will be proposed on how drone flights can be allowed in the CTR with low, medium or high ATC involvement.

Current envolvement of test and demo-sites

Drone Regim has, based upon the registration of the open call, assigned different organization to Workgroups. Comparing the lists of all test and demonstration sites in Europe to the participants of the workgroups it can be concluded that from the 26 test sites only 3 are represented in all of the Workgroups. One from Spain and two from the Netherlands.

- Workgroup 1.3, one test-site as active member;
- Workgroup 1.4, two test-sites as active members;
- Woekgroup 1.7, three test-sites, one as active member and two as observer;
- Workgroup 2.2, two test-sites as observer members;

Call for cooperation

Based upon the previous chapters and the information that is currently known it is important for all test and demo-sites to cooperate. With the large amount of different workgroups it is impossible for only three test and demonstration sites to protect interests of the sites.

The ICAReS Partners hae invited all 26 test and demonstration sites to cooperate with each other and work on the implementation of the new EASA regulations. To this call 2 sites from Belgium, 2 sites from the United Kingdom and four sites from the Netherland have positively reacted.

Unfortunately none of the sites from France have responded.

With the completion of this report we will ask again to all test and demo-sites to sign up for the workgroups in the Drone Regim intiative.

Annex

For the central test and demonstration site of ICAReS a procedure plan has been made as possible input in Workgroup 1.7. This plan is added as annex and can be used by other test and demonstration sites as a reference plan.

Appendix A: procedure plan

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