



European Commission Joint Research Centre (JRC)
Institute for the Protection and Security of the Citizen (IPSC)
4th European Crisis Management Laboratory (ECML) Workshop



United Nations Institute for Training and Research (UNITAR)
Operational Satellite Applications Programme (UNOSAT)

Unmanned Aerial Systems for Rapid Mapping

11-13 September 2013, Geneva, Switzerland

Participants

European civil protection bodies, European Commission DGs, EU Agencies, EU member states, UNITAR-UNOSAT stakeholders, partners, and beneficiaries, UAS hardware/service suppliers

Goals

Presentation, demonstration, and exploration of mature UAV systems for rapid mapping applications.

Participating systems will have to support the whole process chain of UAV flight planning, data acquisition, data post-processing, and map production.

Innovative companies are invited to demonstrate their commercial off-the-shelf systems be it e.g., quadro-copters, octo-copters, or flying wing solutions.

An exercise following a predefined scenario and tasks will allow the systems to point out their capabilities with key performance indicators including:

- **Operation:** time needed to set up UAS, preparatory efforts, training needed, mission planning, automated & manual flight
- **Specifications:** weight, payload, available sensors, flight time, costs, flight conditions
- **Data acquisition:** formats provided, live streams, data transfer
- **Data post-processing:** training needed, in field processing requirements, provided server-side services, orthorectification, required HW/SW
- **Map product(s):** accuracy, time to delivery of intermediate and final product

Please note that the various UASs will be explicitly referenced during the benchmarking exercise. The objective is not to pick winners and losers but to qualitatively compare the systems in such a way that they can showcase their various strengths and most effective uses.

Scenario Tagline

- Setup of field mission, flight planning
- Rapid mapping of disaster area of ca. 500 x 500 m
 - a) quick overview map (day 1) &
 - b) optimised map (day 2)
- Ca. 5-10 cm Ground Sampling Distance (GSD) due to clearance of 150 m AGL
- 1-4 (as needed) given reference points
- Delivery of positions of known checkpoints
- Both in field data processing (day 1) & accurate / back-end / server-side processing (day 2)

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Wednesday, 11.09.2013 – Data Acquisition

- 09:00 *Transfer to flight zone*
- 09:30 **Workshop opening**
- 09:45 **Introduction to data acquisition**, day 1 scope, tasks
- 10:15 **Gatewing UX5:** setup, flight ops, first map
- 11:15 **AscTec Falcon 8:** setup, flight ops, first map
- 12:15 *Lunch break*
- 13:45 **senseFly eBee:** setup, flight ops, first map
- 14:45 **Sky-Watch Huginn X1:** setup, flight ops, first map
- 15:45 **Trigger EasyMap:** setup, flight ops, first map
- 16:45 **microdrones MD4-1000:** setup, flight ops, first map
- 17:45 **Day 1 wrap-up: presentation of quick results**
- 18:00 *Transfer to Geneva*

Thursday, 12.09.2013 – Data Post-Processing

- 09:00 **Tour de table: end-user requirements for UAS**
- 09:30 **Introduction to data processing** Olivier Küng, Pix4D
- 10:15 *Coffee break*
- 10:30 Day 2 scope & tasks
- 10:40 **Gatewing:** Data processing, final map production
- 11:25 **In-Terra:** Data processing, final map production
- 12:10 **Ansur:** Data processing, final map production
- 12:55 *Lunch break*
- 14:30 **senseFly:** Data processing, final map production
- 15:15 **Danoffice:** Data processing, map production plans
- 15:30 *Sandwich break*
- 16:00 **Fotomapy:** Data processing, final map production
- 16:45 **Preliminary outcomes of exercise**
- 17:00 **Day 2 wrap-up & discussion**

Friday, 13.09.2013 – Application Sessions

- 09:00 **UAS: User requirements and R&D needs**
Luca Dell'Oro (UNOSAT), Frederic Moine (OSM-HOT), Peter Spruyt (EC JRC)
- 10:00 *Coffee break*
- 10:15 **(Urban) Search and Rescue – (U)SAR.**
Winston Chang (UN INSARAG), Ionut Homeag (EC DG ECHO), Bernhard Dräyer (in-Terra), Davide Scaramuzza (UZH)
- 11:15 **Applications in border situation monitoring.**
Zdravko Kolev (EU Frontex), Tobias Schuchert (Fraunhofer)
- 12:15 *Lunch break*
- 13:45 **Legal aspects of UAS operations.**
Jean-Pierre Lentz (EC DG Enterprise & Industry), Michael Hutt (USGS)
- 14:45 **Autonomy & AI, swarm deployment**
Felix Schill (EPFL), Davide Scaramuzza (UZH)
- 15:30 *Sandwich break*
- 15:45 **Outcomes of exercise**
Tom De Groeve (EC JRC), Peter Spruyt (EC JRC), Luca Dell'Oro (UNOSAT)
- 16:30 **Day 3 wrap-up & discussion, workshop closing**

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