Drones in Arctic Environments

WP 8

Drones in Arctic Environments

Tasks – quick overview

- Evaluate requirements for scientists at Arctic research facilities
- Increased knowledge on drone technology and sensors used
- New applications through cooperation between arctic researchers and technology industry (drones, sensors)
- Technology transfer from industry to scientists
- Identify sensors for UAV's specifically for Arctic research currently underrepresented
- General rules and legislation with an application on the Arctic environment and their respectively countries
- Produce a best practice scheme for use of drones with sensors at Arctic research stations

Drones in Arctic Environments

Typical applications

- Automated samples: water, snow, soil, air, etc.
- Sensors mounted or located in terrestrial areas, read by a sonar on a drone
- Photogrammetry: 3D models, orthophotos, point clouds, volume measurement
- Snow depths and layers
- Pick up and deliveries
- Search and rescue

Drones in Arctic Environments

Challenges

- Climate, harsh weather
- Cold climate – humans, machines, batteries
- Icing, sunny – contrasts
- Human factor, ”you should do what you’re best at”
- Compass malfunction/disorientation north of 85°N
- Different countries – different legislation
- Delicate and sensitive environment

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Work in progress WP8…

- Collected information from several different companies providing different drone technology and sensors to be carried by drones
- Collected information from several scientists at various INTERACT stations and their typical applications where drones could be used
- Contents from three master thesis will be integrated in final reporting
- Field study in Tarfala Research Station. Established relation with University of Stockholm.
- Finalizing legislation report
- Drone workshop Svalbard
- Informal cooperation with largest test area in Europe for drones
- 2 drone seminars, gathered stakeholders and related drone technology organizations. A great opportunity to spread the vision of INTERACT.

Drones in Arctic Environments

Outside WP8

- Successful media and social media response
  - Arctic and drones – climate change and technology
  - Several articles in national and international magazines and newsletters
  - Many requests on how to contribute
  - ÅF corporate division has performed promotion within a academic and career networks
- ÅF Green Advisor Report
  - Distributed on a corporate level to leaders, stakeholders and decision-makers
- Extensive collaboration with KTH Royal Institute of Technology
  - Construction of a water sampler for drones
  - Course Innovative design, autumn 2017
  - Mechatronics, Advanced Course. Spring 2018
- 3-5 master thesis.
  - Water sampler and measurement of snow
  - Financed outside work package.
- Commercial Drone Operator program
  - One of the first in Europe
  - Swedish National Agency for Higher Vocational Education, University of Lund, ÅF
  - One year education, 35 students
  - Unique opportunity for you to use their knowledge during their work placement [Learning in a work environment]

Drones in Arctic Environments

Deliverables

- **D8.1: SMF Drone Workshop Report (Month 12)**
- **D8.2: Report on drone legislation (Month 12)**
- D8.3: Report requirement specifications for drones in arctic environments, including drone types, drone projects and sensor technology (Month 18)
- D8.4: Report on recommendations for new sensor development (Month 18)
- D8.5: Guidelines for drone usage in arctic environment (Month 18)
- D8.6: TA Drone Workshop Report (Month 19)
- March 2018: Project end