

## CONTRIBUTING STAKEHOLDERS

# UAS Norway

By Ole Vidar Homleid, President



UAS-Norway was established in January 2008 as the national UAS organization of Norway. The organization is non-profit and independent, open to all private and public businesses and organizations interested in unmanned aircraft. The main areas of activity for UAS-Norway are to:

- Represent the UAS forum in Norway;
- Promote a UAS policy that are in line with Norwegian interests;
- Suggest national UAS related committees for Norway;
- Promote Norwegian interests in international forums;
- Establish UAS-Norway as a natural hearing body in UAS-related matters;
- Participate actively in the co-ordination of the establishment of rules and regulations in co-operation with the national Airspace Authorities;
- Coordinate UAS activities with other airspace users, mainly Avinor and the Airsport Federation;
- Promote the knowledge about UAS, their usage and benefits;
- Yield a spectrum of services to its members.

### 2008-2009 Activities

- Participated at EUROCONTROL UAS ATM Integration Workshop, Brussels, Belgium;
- Input to the EUROCAE WG-73 SG4 draft regulations for small UAVs;
- Participated in the AMAP Workshop: «Necessary Steps for Using Unmanned Aircraft to Monitor the Arctic Environment» in Oslo, Norway;
- Participates with members in COST ES0802 «Use of unmanned aerial systems (UAS) for atmospheric research»;
- Participated at UAS 2008 in Paris, France;
- Participated at Norwegian Flight Operational Forum, Oslo, Norway;

For additional information see: [www.uasnorway.org/](http://www.uasnorway.org/)

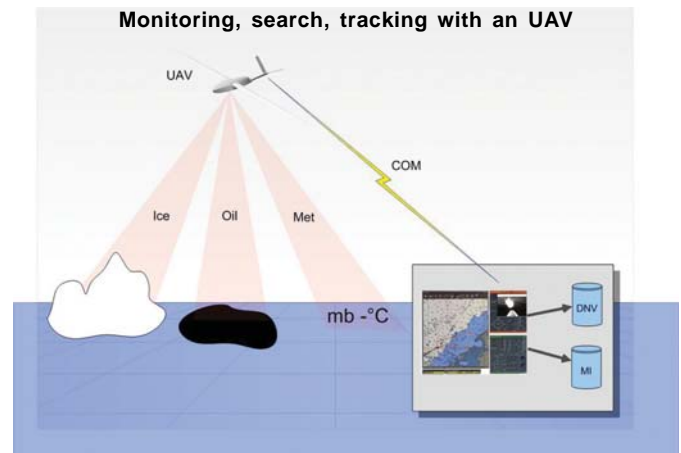
Hereafter, some of the corporate members of UAS Norway are presented.

**Simicon** is leading a Norwegian Arctic UAS research project. The objective of the project is to develop and demonstrate applications that can improve environmental monitoring and the safety of ship transport and offshore operations in the Arctic.

The project is funded by the Norwegian Research Council and the participating partners:

- Simicon
- Norwegian Coastal Administration
- Det Norske Veritas (DNV)
- Meteorological Institute (Met.No)
- Northern Research Institute (Norut)
- Andøya Rocket Range
- Norwegian University of Science and Technology (NTNU)
- Odin Aero
- Maritime Robotics
- CybAero

The plan is to modify «off the shelf» UAS and sensors as required to operate in an Arctic environment and to



demonstrate monitoring, search, tracking as well as real time update of databases for predictions, forecasting and decision support.

The main research topics are automatic detection, object classification and guidance. The project is planned for a 3 years period (2009 – 2011) and has been approved as a Eureka project (E!3967 MARIDRONE).

For additional information see: [www.simicon.no](http://www.simicon.no)

**Alfatroll AS** is a small system software company with an ambitious goal: To develop and sell certified knowledge-based systems for the guidance of unmanned aircraft, including software certified for use in non-segregated airspace. In order to do this, a new, patented knowledge based software system has been developed. A prototype of its patent applied technology is being used as a demonstrator to fly an advanced simulator, including an artificial atmosphere and other air traffic in the region.

Alfatroll is targeting one of the most challenging of all applications in the UAS arena: reliable and comprehensive systems for controlling unmanned aircraft. The technology is useful for simple tasks like actually flying a pre-defined mission, but can equally well be used to deal with unexpected events and improvising actions on the basis of its stored knowledge base.

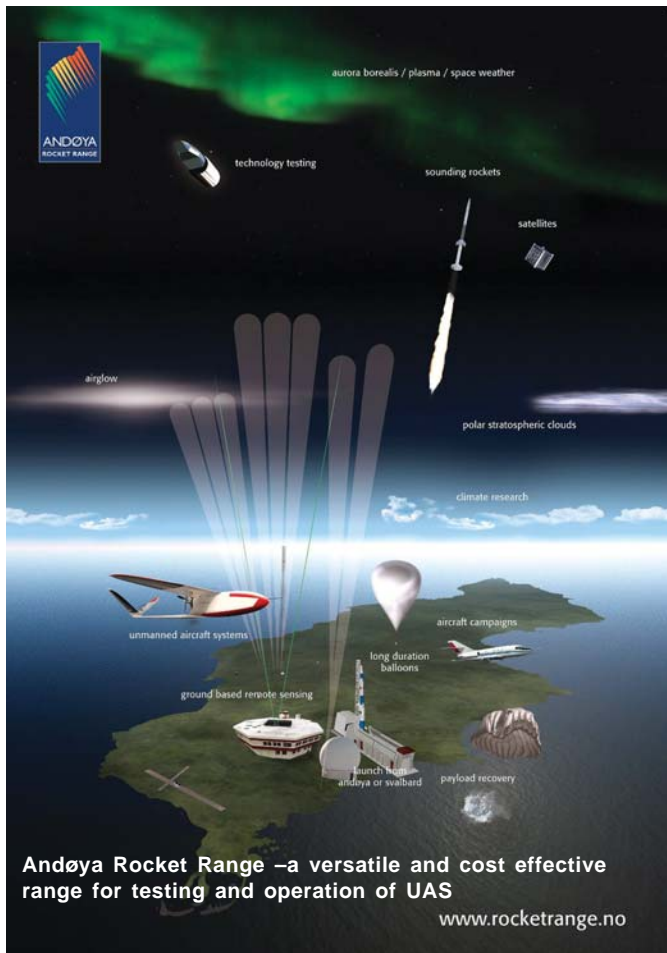
Due to its unorthodox design, the Alfatroll system is small and simple, yet fully deterministic, powerful and comprehensive. This is also the key to certification of airborne equipment standards. The people behind Alfatroll are experienced in flying and software development, as well as international management.

For additional information see: [www.alfatroll.com](http://www.alfatroll.com)

**Andøya Rocket Range (ARR)** is offering a unique and unprecedented test and operating facility to the international UAS community. ARR has more than 45 years of experience as a service provider to the space research community by the use of Scientific Rockets, Scientific Balloons and ground-based instruments. We operate out of Andøya (Norway) and Spitsbergen (Svalbard islands).

At these facilities we have a wide range of instrumentation and equipment that can be utilized by UAS operators or scientific researchers.

The use of UAS in atmospheric research is to introduce a



new tool that can fill the gap between rockets and ground based measurements. In addition this introduces a wide range of new possibilities.

ARR is mainly focusing on two areas:

- To provide services for test and validation of UAS platforms and sensors (Andøya and Spitsbergen).
- Operator of UAS systems for scientific purposes.

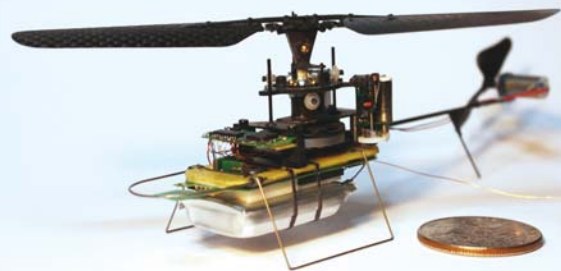
For additional information see: [www.rocketrange.no](http://www.rocketrange.no)

**Northern Research Institute Tromsø** (Norut Tromsø) is a Norwegian research institute where information and communication technology and earth observation are among the core research activities. In cooperation with suppliers, Norut has developed an unmanned aerial system (UAS) for atmospheric and environmental research. The UAS has so far been deployed for scientific missions off the Svalbard Islands, and in the Antarctic.

More on the Norut UAS project can be found at: <http://uas.norut.no> and the article «Scientific UAS Missions in the Polar Regions».

**Prox Dynamics** is developing what is believed to be the world's smallest helicopter based Nano-UAS. The company passed its first year of operation on April 1<sup>st</sup> 2009, and has so far produced and flown five prototype helicopters, the latest being the Hornet-3a. Prox Dynamics is growing rapidly and will by the end of 2009 have a team of 10 engineers and specialists working on Nano-UAS development. The company's PD-100 Black Hornet will be a complete pocket sized system comprising three aircraft (micro helicopters) and a Ground Control Station that doubles as a protective transport container. The GCS will include all necessary functions and features. The aircraft inside the GCS may be made ready to fly in less than one minute. The total system will be approximately 15 x 15 x 5 cm (6 x 6 x 2 inches) with an estimated weight of 0.5 kg. Due to their small size (10 cm) and low mass (15 grammes),

Hornet-3 from Prox Dynamics AS.



The coin is an US quarter-dollar

these aircraft have a number of unique properties including stealth, indoor operations and operations in confined areas. The small aircraft will have an extremely low inherent risk of inflicting any kind of damage, thereby allowing operations without the need for airspace coordination. Nano-UAS will be able to perform both military and civilian operations. They will be able to fulfil some of the mission requirements of current micro systems, but more importantly provide new and unique capabilities to the user, such as:

- Immediate reconnaissance capability to the police, fire fighters and individual soldiers.
- Reconnaissance capability in confined areas and indoors.
- Inspection of safety critical buildings and installations.
- Covert operations.

The latest Hornet-3a prototype features a new brushless motor, a complete array of flight sensors including a pressure sensor, gyros, accelerometers, magnetometers, a colour video camera and a two way digital radio link, with plenty of signal processing power for video compression. First flight of the Hornet-3a was achieved early in 2009 and a number of test flights have been performed indoors at the Prox Dynamics premises. Even though being designed as a very responsive and unstable aircraft, the advanced flight controls system makes the Hornet-3a very easy to fly, including stable «hands off» hovering. The helicopter has also been flown outdoors in light variable wind up to 2 m/s and showed no adverse controllability issues either in hover or during high speed passes. Over distance the aircraft was able to maintain an average horizontal airspeed speed of 7 m/s with a maximum of 8 m/s. At a distance of approximately three meters the sound from the helicopter is completely drowned by the ambient noise. Hornet-3a has already demonstrated more than 25 minutes continues flying on a single battery charge.

The technological development of the PD-100 Black Hornet UAS is progressing according to plans. One more family (Hornet-4) of prototypes is planned before work on the final



version of the system is started. Prox Dynamics have so far reached all critical milestones and first delivery of an operational system is expected by the end of 2010. Potential users, especially military customers, continue to show a lot of interest.

For additional information see: [www.proxdynamics.com](http://www.proxdynamics.com)

**Robot Aviation AS** is a Norwegian company with main objectives to develop, manufacture, and operate unmanned aircraft for the Norwegian and international market. The main focus of the company is the development of a fixed-wing aircraft in the 20–150 kg weight range, for customer-supplied sensor loads up to ca 50 kg. Depending on sensor weight, it is

envisaged that the useful operation range (A to B) shall exceed 2000 km, with operating altitude up to ca 5000 meter. Particular emphasis is made to the need for reliable operations under environmental conditions typical for Norway and Arctic regions. Robot Aviation is also engaged in rule-making work, particularly that of EUROCAE WG-73.

For additional information see [www.robotaviation.com](http://www.robotaviation.com) and the article «Scientific UAS Missions in the Polar Regions» in this publication.

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