Farming by Satellite Prize goes to Germany

The promise of an all-expenses paid trip to Prague, a first prize of €5,000 with a day's business mentoring, second and third prizes of €3,000 and €1,000 respectively for European teams, plus a €4,000 special Africa prize proved especially attractive to young people involved in agriculture and life sciences this year.

The winners of the Farming by Satellite Prize were announced on Thursday 12 June at the European Space Solutions conference taking place in Prague, Czech Republic.

First prize went to **Daniel Hege, of Geisenheim University in Germany** for his submission: "Savings through RTK based guidance in field vegetable growing".

Second and third prizes were awarded to the UK and Portugal respectively. The UK team from **Harper Adams University** developed an autonomous precision seed planting robot called Demeter. The Portuguese entrant from **Instituto Superior de Agronomia** proposed selective harvesting using remote sensing management for olive groves and cork oak plantations that could also be applied to other forestry and crop groups.

The special Africa prize was given to **Faith Mwiza of Rwanda** for her proposal for using drones for agricultural development, early famine warning systems and decision support systems for farmers in Africa.

The 2014 prize generated 96 registrations and 43 eligible submissions from 11 European and 8 African countries. From those 43 submissions an independent judging panel chose a shortlist of 6 European teams and 3 African teams.

Chair of judges, Dr Andrew Speedy comments: "The standard of entries was even better than last year. Contestants showed good knowledge of the technologies and possibilities of satellite applications in agriculture. Several students described projects at their universities where they had built and tested prototype machines and measured real data in fields and

orchards. The application to improving efficiency in field operations for forage harvesting was further developed by the shortlisted Czech team, who narrowly missed out on a prize.

Others reviewed the technologies in relation to practical application in their countries, including adapting to use on small farms. This was a factor in the prize winning entry from Daniel Hege, which proved how precision agriculture benefits small vegetable growers with upwards of 34 hectares, with processing savings of up to 60% on offer.

There was much interest this year in the use of drones (UAVs) in measuring crop data through imaging and reflectometry. These data would be able to tell farmers how healthy their plants were, whether there were diseases or bugs, whether there was enough fertilizer, and enough water. This was the topic of Faith Mwiza's winning African entry. Others suggested ultra-low ground pressure vehicles and even airships as ways of gathering georeferenced data from above.

Water was also a recurring theme this year, recognising that water availability and drought stress are major factors in agricultural productivity and food security.

Contestants covered a wide variety of applications including crops, vegetables, fruit, forestry and livestock. The last of these was also the theme for several entries where GNSS can provide ways to monitor the location and even the health of animals (fitted with chips) on the farm.

The new category of African entries provided another dimension of satellite applications in farming for improved incomes and food security. Contestants covered precision agriculture, product traceability and project monitoring. There was even an entry on bee farming (apiculture) that much appealed to the judges for its innovation.

The judges looked for relevance, feasibility, innovation and potential market when judging the diverse ideas put forward. The five judges marked the entries and then discussed the scores, taking account of different perspectives from the different countries as well as the age and experience of the contestants.

All the entrants are to be congratulated on their varied imagination and innovation as well as the quality of their writing and presentation."

Further information on the winning entries will be posted on www.farmingbysatellite.eu in the coming days. For specific queries, please contact the competition organisers.

Ends.

12 June 2014

Notes to editors

Contact

The GSA has contracted UK consultancy Helios to manage the Farming by Satellite prize. For further information about the prize please contact **Andrea King** on +44 7920 107 903 or **Laurette Royer** from Helios on +44 1252 451 651 or email: info@farmingbysatellite.eu.

About the prize

The prize is an initiative of the European GNSS Agency (GSA), the EU agency responsible for European satellite navigation activities, and is sponsored by CLAAS, a leading manufacturer of agricultural engineering equipment, and crop protection experts Bayer CropScience.

The aim of the competition is to promote the use of satellite navigation in agriculture and its benefits to end users. Entrants must be under the age of 32 and can take part as individuals or as a team. They can submit case studies of trials, or new ideas and innovations, particularly those relying upon European Geostationary Navigation Overlay Service (EGNOS), the forthcoming GALILEO system and COPERNICUS (the European Earth Observation Programme).

About the GSA

The GSA, a European Union agency, works with the European Commission on a range of market development activities aimed at helping European entrepreneurs and businesses commercially exploit EGNOS and Galileo. Such promotional activities will ensure that European industry maintains a competitive edge in the global satellite navigation marketplace. For further information about the GSA contact: marie.menard@gsa.europa.eu.

Who is eligible for the prize?

The competition is open to all students and young people below the age of 32 studying or resident in any of the following countries: Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lichtenstein, Lithuania, Luxembourg, Malta, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Additionally, entries from African countries (either independent or with partners from the above countries) will now be accepted. A special prize will be awarded to ideas or applications relating to farming by satellite in African regions.

Individual or team entries are welcomed. A team may comprise up to 4 people.

About EGNOS and precision farming

EGNOS is essentially Europe's ‘pre-Galileo' system, its first concrete venture into satellite navigation. EGNOS delivers services based on GPS and GLONASS signals, providing augmentation signals re-transmitted by geostationary satellites and a network of ground stations.

EGNOS represents a European solution for the Satellite-Based Augmentation System (SBAS). There are also other SBAS systems in the world, e.g. Wide Area Augmentation System (WAAS) in the USA. EGNOS augments the two satellite navigation systems now operating, the US GPS and Russian GLONASS systems. Crucially for agriculture, EGNOS also increases the accuracy of existing satellite positioning services to about one metre or better.

Precision agriculture refers to the use of satellite navigation sensors, aerial images, and other tools to determine optimum sowing density, fertiliser cover and other inputs. It also refers to the use of GNSS for supporting machine guidance, virtual fencing, and land parcel identification. These techniques allow farmers to save money, reduce their impact on the environment and increase their productivity. EGNOS can offer an affordable precision solution.

EGNOS can support:

- Variable ploughing, seeding and spraying – Variable Rate Technology (VRT)
- Tractor guidance
- Individual livestock positioning
- Virtual fencing
- Land parcel identification and geo-traceability
- Post-harvest pick-up
- Supervised livestock tracking
- Field measurement
- Field boundary mapping and updating

EGNOS will help to:

- Enhance precision
- Eliminate waste and over-application of fertilisers and herbicides
- Save time
- Reduce fatigue
- Extend equipment lifetime by optimising its use
- Provide geo-traceability
- Optimise crop yields
- Increase profit margins

About Galileo

Galileo is a satellite system currently being built by the EU aiming to be the single European GNSS. Up to now, GNSS users in Europe have had no alternative other than to use American GPS or Russian GLONASS satellite signals. Yet the military operators of these systems can give no guarantee to maintain uninterrupted service.

Meanwhile, satellite positioning has already become the standard and essential tool for navigating and related applications. As the use of satellite navigation spreads, the implications of signal failure increase, jeopardising not only the efficient running of transport systems, but also human safety.

By being interoperable with GPS, Galileo aspires to be a new cornerstone of GNSS. This worldwide system will henceforth be under civilian control. And with its full complement of satellites, more than the current GNSS systems, Galileo will allow positions to be determined accurately even in high-rise cities, where buildings obscure signals from today's satellites.

Galileo will also offer several signal enhancements making the signal more easy to track and acquire and more resistant against interference and reflections.

By placing satellites in orbits at a greater inclination to the equatorial plane, Galileo will also achieve better coverage at high latitudes, making it particularly suitable for operation over northern Europe, an area not well covered by current GPS signals.

About Copernicus (formerly known as GMES)

The European Earth Observation programme (formerly known as Global Monitoring for Environment and Security or GMES) is an initiative led by the EU. The coordination and management of the Copernicus programme is ensured by the European Commission. The setting up of initial versions of the Copernicus services have been assigned to several projects partly financed through the 7th Research & Development Framework Programme of the EU, while the developments related to the observation infrastructure are performed under the aegis of the European Space Agency for the space component (i.e. Sentinel missions) and of the European Environment Agency and the Member States for the in situ component. The sustainability of Copernicus operational services will be ensured through public funding from the EU, intergovernmental agencies, and Member States. These services should be accessible to any organisation or citizen.

Copernicus consists of a complex set of systems which collects data from multiple sources (Earth observation satellites and in situ sensors such as ground stations, airborne and sea-borne sensors), processes these data and provides users with reliable and up-to-date information. Some of these systems and data sources already exist today, as well as prototype services, but many developments are still required in all domains.

Policymakers and public authorities - the major future users of Copernicus - will use the information to prepare environmental legislation and policies with a particular focus on climate change, monitor their implementation and assess their effects. Copernicus also supports the critical decisions that need to be made quickly during emergencies, such as when natural or man-made catastrophes and humanitarian crises occur.

Users will be (and to a certain extent are already) provided with information through services dedicated to a systematic monitoring and forecasting of the state of the Earth's subsystems. The following six thematic areas are developed:

- Land monitoring
- Marine monitoring
- Atmosphere monitoring
- Emergency management
- Security
- Climate change

Based on Copernicus services, many value-added services tailored to more specific public or commercial needs (i.e. forecasting services with a local scope, services including socio-economic data, etc.) will certainly be developed.