



2016 RESULTS

How can we use Satellite Technology to Improve Agriculture
And Reduce Environmental Impact?



European
Global Navigation
Satellite Systems
Agency



European
Environment
Agency



Science For A Better Life

CLAAS

Farming by Satellite Prize Results



The European winners at the Award Ceremony in Berlin

Winners

1st Prize – € 5,000

Team ISA Lille – France

Optimization of plant cover properties using satellite imagery

3rd Prize – € 1,000

Ambrogio Zanzi

A new forecasting system for rice production

2nd Prize – € 3,000

Team TTT Solutions – Czech Republic

Crop Type Detection and Evaluation System

Special Africa Prize – € 4,000

Team Shamballite – Kenya

A Mobile and Satellite based Farm Information System



European Finalists and Judges together at the Award Ceremony in Berlin.

Finalists

European Finalists

Team CleverIrrig – Portugal

Software development to support agricultural water management using remote sensing data

Blaise Duthoit – Belgium

Organisation of a flow of organic matter using satellite data

Josef Nießen – Germany

Add on for implements enabling autonomous driving and optimal working depths

Team Eyecrop – Portugal

Scanning pivots with multiple features such as irrigation decision support, detection of plagues and diseases, weather monitoring, measurement of crops

African Finalists

Anselme Muzirafuti – Morocco

Geological mapping and soil characterization in identifying agricultural related hazards

Kennedy Ng'ang'a – Kenya

Smart Agricultural Resource Optimization System (SAROS)

1st Place



Reinhard Blasi (left) presents ISA Lille with 1st Prize in Berlin.

Team ISA Lille – France

Students at ISA in Lille

Title of Entry

Optimization of plant cover properties using satellite imagery

About ISA Lille

The Team is composed of four students (left to right): Charlotte Lejoyeux, Marie Rolloy, Geneviève Baumann and Louise Vernier. They are all fourth year students at ISA Lille (North of France). They all come from different places: Genevieve and Marie both come from Paris whereas Charlotte comes from Le Mans (West of France) and Louise from a small village in the North of France.

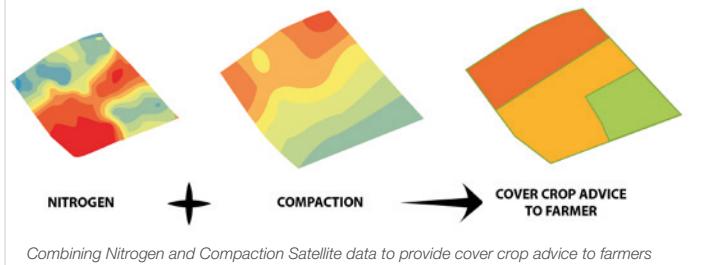
Except Louise, all the students had no experience in agriculture before studying at ISA Lille. This school offers the opportunity to learn about environment, food industry, landscape or agriculture and to become an engineer. They chose to take part in this prize because they are all interested in improving agriculture with techniques that respect the environment. Moreover, this was an opportunity for them to work on a transdisciplinary project.

Mentors

Bertrand Vandoorne and Eric Taisne

Judges' comments

This team really impressed us with their “smart” concept which is a great use of earth observation data. We particularly liked the idea of pairing the issues of managing nitrogen levels together with soil compaction, and using cover crops to address this in an environmentally sensitive way. They showed great teamwork, everyone contributed to the project and we think their idea has potential for further development, linking satellite navigation systems to field operations, using all the instruments in the ‘orchestra’ of effective agri-business.



About their Entry

Cover crops improve the soil structure and its level of organic matter, reduce erosion and leaching, and avoid phenomena of slaking. Team ISA Lille's model will optimize the properties of the cover crops to improve soil composition. The main purpose is to create a simple guide for farmers on how to best apply cover-crops to improve the nitrogen and compaction levels.

This requires mapping of an agricultural plot, bringing together information of the last crop nitrogen deficiency, the soil moisture and its structure. Then we select the best species from each zone: a specific mixing of plants for each kind of agricultural plot of land. With this map, we can give some advice about the composition of the mixing to maximize the benefits related to each plant species.

2nd Place



Tomáš Pour and Tomáš Pohanka of TTT Solutions receive 2nd prize.

TTT Solutions – Czech Republic

Ph.D. students at Palacky University in Olomouc

Title of Entry

Crop Type Detection and Evaluation System

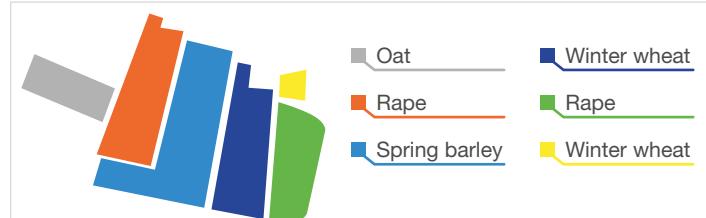
About TTT Solutions

All three members of TTT Solutions are ph.D students at Palacky University at Department of Geoinformatics in Olomouc, Czech Republic.

Tomáš Pour: His specialization is remote sensing, image analysis and thermography. He studied both bachelor and master degrees at the department of Geoinformatics.

Tomáš Pohanka: He specializes in administering spatial databases, creating Python scripts for spatial analysis and data mining.

Antonín Benc (absent): His work focuses on Geoinformatics in environmental applications, modelling and prediction of landscape units. In 2015 he co-founded SpatialComp, which deals with the collection of spatial data, analysis for municipal administration, property records, and environmental applications.



Using Sentinel 2 Satellite data to detect the crop type

About their Entry

Crop type Detection and Evaluation System (CDES) is a project focused on improving the control capabilities of government regarding subsidies for agricultural purposes, agricultural market predictions and precision farming.

The project uses Sentinel 2 system data supported by national LPIS (Land Parcel Information System) data. This workflow will serve not only as a practical tool but as a scientific platform as well. That will allow us to improve the methodology in the future and extend the range of applications.

Judges' comments

TTT solutions is a very strong team, comprising software, sensing and environmental specialists and they made great use of Sentinel satellite data. We noted the excellent teamwork which looks beyond the existing regulation to make sure that a larger agricultural community can benefit from it. Their project will improve the control capabilities of government regarding subsidies for agricultural purposes, agricultural market predictions and precision farming.

3rd Place



Christian Radons (CLAAS) presents Ambrogio Zanzi with 3rd Prize.

Ambrogio Zanzi (GLORIFY) – Italy

GIS solutions Consultant

Title of Entry

A new forecasting system for rice production

About Ambrogio Zanzi

Ambrogio Zanzi holds a bachelor and a master degree in agricultural science both from Università degli Studi di Milano (Italy).

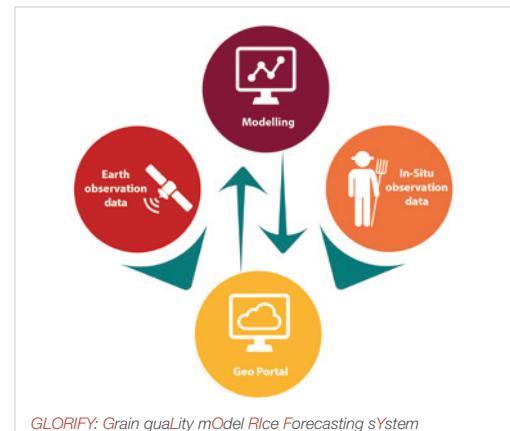
He graduated magna cum laude with a dissertation on the development of a new crop forecasting system – the subject of this entry – to foresee both quantitative and qualitative aspects of rice harvest. Then, he completed his studies at University of Massachusetts Amherst (USA). He is currently working as a consultant for his family company all over Italy promoting the use of GIS solutions into the fields of arboriculture and urban environmental management. Moreover, he has been involved in different European founded projects regarding environmental protection and agricultural working safety, such as the Interreg project “Pro Arbor” and the Erasmus Plus project “Vet Safety”.

Mentor

Dr. Giovanni Cappelli

Judges' comments

Ambrogio Zanzi presented a solid approach to mathematical modelling to a high academic standard. His idea focusses on rice, a highly relevant crop that feeds the world, but one that we don't tend to see in European precision agriculture applications. He has proven his concept in Italy, but it could apply to other regions of the world.

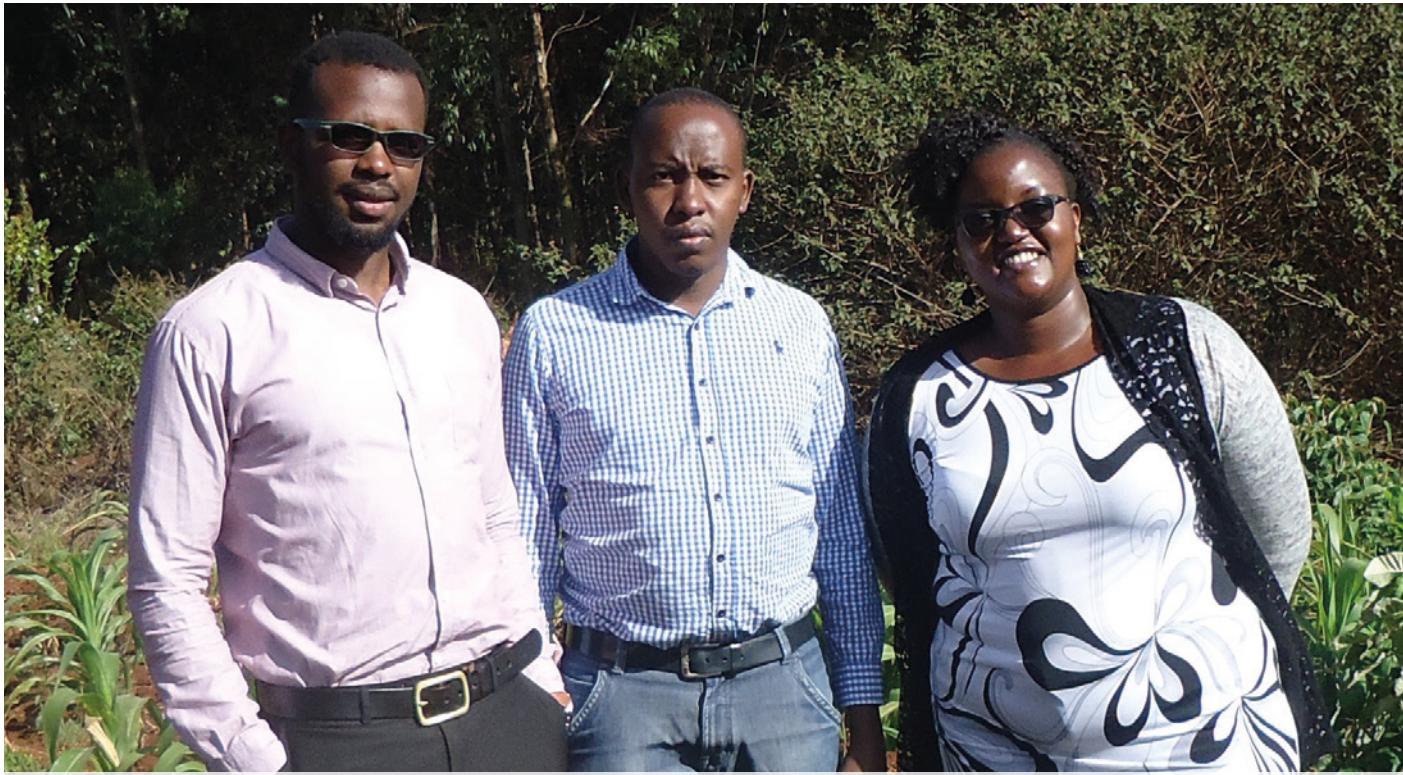


About his Entry

GLORIFY is a new forecasting system that combines earth observation and crop modelling to provide estimates of the rice production both on quantitative and qualitative aspects. It has been tested in the Northern Italian rice district considering as quality variable the Head Rice Yield (HRY) – one of the main determinants of rice market price – with encouraging statistical results.

Applying this combined forecasting method to different crops, it can be possible to have more reliable prevision of the agricultural performance under different conditions, allowing authorities to better control and foresee agricultural production.

Special Africa Prize Winners



Wawa Abe (left) Stephen Murimi (centre) and Catherine Irura of Team Satellite win Special Africa Prize.

Shamballite – Kenya

Environmental Engineers and Lawyers

Title of Entry

A Mobile and Satellite based Farm Information System

About Shamballite

Catherine Irura is an environmental lawyer and sustainability enthusiast with a Bachelor of Law (LL.B) from the University of Nairobi and a MSc. in Environmental Governance at the University of Freiburg. She works at a renewable energy company, undertaking land securing; social economic and environmental impact assessments; and other aspects of project development.

Stephen Murimi is an alumnus of Jomo Kenyatta University of Agriculture and Technology where he gained knowledge in both agriculture and technology. As a Civil Engineer, he has a keen interest in water resources, environmental engineering and farming. He is currently involved in design of wastewater recycling plants in Nairobi.

Wawa Abe is a Geospatial Engineer who works in the spatial industry with interests in energy, entrepreneurship and diverse environmental matters. He has worked with various agencies that deal with environmental related issues and in local engineering projects. He hopes to provide solutions to problems faced by Kenyan and African people.



About their Entry

The lack of timely and actionable information is a major challenge to many farmers. Our idea envisions the gathering of information from terrestrial measurements, airborne sensors and satellite-based systems, to benefit farmers from an information access system. The proposed solution leverages on mobile technology to provide farmers with real-time information on rainfall, soil fertility, crop health, best crops to plant and markets, using satellite technologies. Information will be communicated to farmers through mobile platforms, allowing them to make timely decisions. This technology will enable data collection, prediction and integration as a tool for improved agriculture production.

Judges' comments

Team Shamballite presented their idea on a farmer information service very clearly. The concept had been very well thought through and addresses many issues that farmers in Kenya and the rest of Africa face with a very simple solution. Their concept works by processing NDVI satellite data and soil analysis data and then providing recommendations to farmers in real time. We also liked how their team members had a range of backgrounds, including; environmental engineers and an environmental lawyer.

About the Prize



The prize is an initiative of the European GNSS Agency (GSA), the EU agency responsible for European satellite navigation activities, and the European Environmental Agency, who provide sound and independent information on the environment for decision makers and the public. The prize is sponsored by CLAAS, a leading manufacturer of agricultural engineering equipment, and crop protection experts Bayer CropScience. It ran for the first time in 2012. This is the third issue of the prize. The aim of the competition is to promote the use of satellite technologies in agriculture and its benefits to end users and the environment.

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).

The winning team/individual receives € 5,000. Second and third placed teams/individuals will receive € 3,000 and € 1,000 respectively.

There is a Special Africa prize of € 4,000 for the best submission to the judges relating to Farming by Satellite in or for Africa.

Statistics

The 3rd Farming by Satellite Prize, promoting the use of satellite technologies in agriculture generated 85 registrations and 45 eligible submissions from 13 European and 8 African countries. From those 45 entries, an independent judging panel selected seven European teams and three African teams to take forward to the final round.

The winners were announced on Monday 23rd January 2017 at 14:00 on the European Commission stand at the International Green Week exhibition in Berlin.

Additional information

UK consultancy Helios manages the Farming by Satellite Prize. For further information about the prize please contact: info@farmingbysatellite.eu

Reviewing the winning entries this year, GSA judge

Reinhard Blasi said:

"The judges were particularly impressed with the high quality and professionalism that has evolved over time, especially for the African participants. It was this and the holistic approach focussing on a real challenge for Kenya's farmers that helped "Shamballite" to win first place. The idea sends simple mobile messages to support farmers with decision-making by closing specific information gaps."

Commenting on the environmental aspect of entries, Hans Dufourmont of EEA added:

"It has been remarkable to see how the Copernicus' European Union open data policy becomes a real game changer that boosts the uptake of satellite imagery for improving the environmental aspects of farming practices: we have seen plenty of proposals taking advantage of the free access to Sentinel satellite data."

Christian Radons of CLAAS:

"As agriculture becomes more knowledge intensive, our role extends beyond machinery design and manufacture to use science, innovation and technology to make a difference across the whole value chain. We really want to encourage tomorrow's innovators to apply their talents to the agriculture sector, which is why we have supported the Farming by Satellite Prize since the first edition in 2012. With each edition of the Prize, we notice the submissions improving in quality and applicability. This is a great signal for the future of farming and food production."

Alex Melnitchouk of Bayer CropScience:

"Today's farmers have a lot of knowledge at their fingertips, helped by the spread of mobile communications. Combine this with the latest seed varieties, detailed weather data and crop analysis tools, and they have a better chance to increase production and cope with climate change. There is a real opportunity to help farmers with decision-making and use advanced technology in simple ways to manage their businesses better, and to lower costs. The Farming by Satellite Prize is a way of raising awareness of these opportunities and tapping into the talents of young people to make them happen."



The Farming by Satellite judges (left to right): Christian Radons (CLAAS), Dr. Andrew Speedy (Chair of Judges), Alexei Melnitchouk (Bayer), Reinhard Blasi (GSA), Koji Fukuhara, Joaquin Reyes Gonzalez (GSA), Hans Dufourmont (EEA).



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