

Satellite Applications

SME Case Study

WeatherSafe

Agriculture meets big data





The Company

Company Name	Weather Safe Ltd
Managing Director	David Mills, Graham Mills, Francesco Liucci
No. of Employees	8
Launched	December 2012
Location	Harwell, Oxfordshire and London
Sector	Agricultural intelligence solutions

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WeatherSafe has developed easily accessible apps for the coffee market, for small farmers up to government departments.

Coffee is the second most valuable commodity in the world but can be wiped out overnight by weather, pest or disease.

Overview

WeatherSafe emerged from a Satellite Applications Catapult Hackathon and is now launching a range of agricultural data products for the coffee market in Rwanda, developing easily accessible apps for small farmers up to importers and government departments. The company is currently engaged in fundraising activities to support the next stage of business development. Over the next five years the company plans to expand its coverage to other coffee-growing countries in Africa and Latin America, and to develop apps targeted at producers of similar crops.

- WeatherSafe apps provide remote management information and intelligence to help stakeholders across the agricultural supply chain.
- The apps are powered by a data platform that integrates high resolution satellite data with hyper-local weather forecasts, agronomic models and best practice farm modelling.
- WeatherSafe was the Catapult Hackathon winner in 2012, awarded funding from Innovate UK and European Space Agency (ESA) in 2013, and is a finalist in Mass Challenge UK in 2015.

Supporting Small Farmers with Big Data

Coffee is the second most valuable commodity in the world after oil and a huge global business: in 2011 it was worth £42.6 billion¹. Yet the majority of the people who grow coffee plants exist on a subsistence level and can see their crops – and therefore their income – wiped out overnight by weather, pest or disease. Climate change is compounding these challenges, altering the optimum conditions required to grow quality coffee and endangering wild indigenous Arabica species which are essential for the long-term health of locally cultivated plants.



Coffee Leaf Rust can wipe out entire plantations

Rwandan coffee is one of the world's premium quality crops but farmers lack access to timely and accurate weather data to help them improve their yield and farming practices. This issue was identified by attendees at a Catapult Hackathon in 2012, which resulted in Francesco Liucci pairing up with brothers David and Graham Mills to create the WeatherSafe Coffee concept as

The apps use optical satellite data integrated with hyper-local weather forecasts updated several times a day for targeted recommendations.

Early warnings about specific location and timing of risks can mean protecting the yield or saving an entire plantation.

their solution to the challenge of improving the Rwandan Meteorology Agency website.

The idea behind the app was to update Rwandan coffee farmers with easily accessible alerts based on weather information, although the application has since grown to offer far more than this. The team won the Hackathon competition, garnering itself a package of business and technical support from the Catapult and attracting interest from industry and governments alike.

Supporting the Supply Chain

Since its auspicious start, WeatherSafe has continued to grow and attract attention while fine-tuning its products. The coffee supply chain is notoriously complex and variegated, with a range of players who have different stakes in the production process, so WeatherSafe has identified common needs and demands while considering how to help them all increase the volume and quality of their crop.



Coffee - second most valuable global commodity

David and Graham Mills are now CEO and CTO respectively and a fourth board member, Pdraig Dowd, joined in November 2013. Prototypes have been developed, visits made to Rwanda and Guatemala and partnerships agreed with satellite and weather data providers. In the meantime, in 2013 the company won funding through Innovate UK's Harwell Space Launchpad award and further funding plus office space from the ESA Business Incubation Centre at Harwell, Oxford.

In early 2014, the company received its first investment from a 'business angel'. WeatherSafe now has three related products targeted at different sectors of the coffee supply chain which are about to be formally launched. The apps use optical satellite data from a constellation of satellites with a five meter spatial resolution integrated with 'hyper-local' weather forecasts, based on data points just two miles apart, which are updated several times a day. This kind of precision is needed in order to provide very geo-targeted recommendations, so that even for a small farm WeatherSafe can provide support that is specific to a farm's location.

The third layer of data integrated into the apps is agronomic, pest and disease modelling. WeatherSafe can produce early warnings about the specific location and timing of certain risks, such as whether there is a risk of an outbreak of a particular disease or pest. The timing is really critical – in some cases it can mean saving money or protecting the yield, but in other cases it could mean saving an entire plantation. Diseases such as the Coffee Leaf Rust have, in the past, destroyed up to 70% of annual production in countries such as Guatemala.

The first of the WeatherSafe apps is the Core edition which is targeted at coffee farmers, particularly those with small holdings. This works on smartphones and older handsets, and aims to offer targeted advice that can help the farmers improve the yield and quality of their coffee, with guidance on farming practices and the latest coffee prices.

Larger coffee producers and farmer managers, plus others such as agronomists and buyers, are catered for with the more fully-featured Professional edition which works on smartphone and web platforms. This can help users to visualise the entire crop cycle, with all the environmental variables that affect the coffee quality and its production, to support planning and timing of farming practices. Finally, the Enterprise edition is a customisable solution that is targeted at other, larger organisations involved in coffee production, such as importers, community organisations, NGOs or governmental departments.

Future plans

WeatherSafe's initial target is to capture around half of the coffee farming market in Rwanda with the Core and Professional editions. The team then plans to expand over the next three to five years by developing versions of its apps for other countries in Africa and Latin America, with Ethiopia and Brazil as the primary targets as these are the major coffee producing countries in each region.

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some of the same characteristics, which are essentially being high value and high quality, and being liable to be affected by climate change. Cocoa is one of these, along with grapevines and olive oil,” says Francesco Luicci, Chief Marketing Officer.

This expansion will be underpinned by WeatherSafe’s success in being chosen as one of the finalists in the 2015 MassChallenge UK accelerator programme. With the additional mentoring and business support the team will receive through this programme, it will be well placed to capitalise on its creative approach to a formidable challenge.

Case Study:

Supporting Farmers in Rwanda

Since mid-2014, WeatherSafe has been working with an unusual organisation in Rwanda to test its Core and Professional platforms. In Rwanda, around 80-90% of the 400,000 or so coffee producers are very small farmers with typically one or two acres of land. However, WeatherSafe discovered one company running things differently: instead of farmers having to work on a subsistence model, it owns the land and pays a regular wage to its small farmers, thus protecting their livelihood and stabilising their income.



Assessing traps for antestia bugs

“One consequence of this model is that they are keen to provide support to help the farmers produce the best possible quality coffee. This is then sold in the UK and any additional revenue is given back to the farmers,” explains Francesco. This approach made it a good match with WeatherSafe. “During the trial they have been adopting and testing the system in order to augment the support they already provide to their farmers, to improve their chances of producing higher quality coffee.” Around 1,000 of its farmers have been trialling the Core app.

During the initial launch phase, this organisation will be WeatherSafe’s leading partner, supporting it during outreach ventures and promoting the product to other coffee producers.

Catapult Support

WeatherSafe is a classic example of how a curated innovation experience, such as a Hackathon, can both inspire ideas and be the spark that brings a venture to life. “The Catapult allowed us to have this opportunity through the organisation of the Hackathon – without that I don’t know if we’d have even thought about this idea, let alone brought it to a commercial stage,” admits Francesco. “The Hackathon enabled us to meet, to be exposed to what satellite data can do and to have the opportunity to work on the initial concept.”

Francesco, David and Graham then received business and technical support from the Catapult to help them set up WeatherSafe and leverage their idea. “Thanks to the Catapult we understood the critical factors needed to build a software that exceeded the capabilities of anything else commonly used in the industry today” Francesco notes.

“Since then their support has evolved into what I would call ‘outreach’ support, through events and networking,” adds Francesco. “a support that has enabled us to reach a wider audience and receiving interests from companies and organisations based in Africa, Latin America as well as Asia.”

Source

1. International Coffee Organization (ICO), 2012.