

# A united front

Dr Sjaak Wolfert discusses how the development of a common data exchange system presents untold opportunities to improve information sharing across Europe's fragmented agricultural sector



## Firstly, can you outline the drivers that have prompted the agriXchange project?

From discussions in communities such as the European Federation for ICT in Agriculture, Food and the Environment (EFITA) the EC acknowledged that the current situation on information exchange and standardisation in agri-food is far from ideal. As things stand, global standards only exist in certain areas, such as the ISOBUS standard for agricultural machinery. In some countries, such as Germany, France and The Netherlands, different standards are used for crop and animal production, while in many other

Member States almost no standards are used. As a result, information exchange remains very inefficient. Although improving this situation is primarily a matter for the agri-food business itself, the EC has taken some responsibility by supporting a project to initiate a first step towards a more harmonised approach. This is where agriXchange comes in.

## What are the main aims you hope to achieve from this work?

The objective is not to develop a new system for common data exchange itself, but to set up a network in agri-food business to realise this. What agriXchange primarily does is create a platform of European communities around different areas of information exchange, such as animal identification or land parcel registration. In doing so, this project tries to bring knowledge and people together, stimulating the development of common information exchange. This is supported by a web portal that functions as a concrete repository for such knowledge. The portal contains documents as well as example references to standards, and how these should be used in practice. But it is also more than just a platform or community of practice. We are working on a basic design of an architecture and infrastructure that in the future will provide a basis for seamless integration of different pieces of information in a modern ICT environment, which nowadays is indicated as cloud computing: loosely coupled

internet applications that provide services for the agri-food business. Based on several case studies (eg. variable rate fertiliser application and animal registration) we hope to provide 'proof of concepts' of this basic design and at the same time develop a set of general guidelines on how to develop standards and other required components for different fields.

## Who is the target audience of the agriXchange network for data exchange in agriculture?

The primary target groups of agriXchange are ICT system developers for agri-food businesses, as they have to implement interfaces and standards for smooth information exchange. However, the agri-food business determines its own business processes that are created in this exchange. Therefore the business itself has to be included. At the same time researchers must be involved because of the complexity of the challenges. Hence we organise our platform as a 'Living Lab' approach in which these three groups should be equally involved in an open innovation approach.

## Can you describe the type of information made available through the network and how users will be able to access it?

We have created a web portal which is an open community concentrated around various 'use cases'. In each use case, a process

# Smoothing the agri-info highway

A project to harmonise agri-information systems is stimulating the development of common knowledge sharing within the EU agricultural sector, enabling it to increase its competitiveness in the global market

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model forms a starting point to describe and discuss information exchange. For each use case, knowledge is gathered and then the available interfaces and standards are described, with details of where to find and how to use them. Most importantly, unsolved issues and problems are identified through this process.

### What progress have you made in analysing current data exchange in the EU-27 Switzerland?

Basically, this is an ongoing activity and at times it has been difficult to retrieve the relevant information. Through our work a number of important weaknesses and opportunities have been identified. For example, there are big differences between areas within the EU in terms of level of data integration and standardisation, and this can create problems. The ageing of farmers in conjunction with the lack of adoption and investments on ICT is also a key issue, as is the lack of broadband internet in many rural areas. Additionally, while the potential of computing-based mobile devices (smartphones and others) is recognised, there are problems around mobile technologies. We have found that one of the key opportunities is that rapidly upscaling agricultural countries have the potential to build new infrastructures while avoiding the old structures of others.

**THE AGRICULTURAL INDUSTRY** is one of the largest and most complex sectors within the EU. The combined agricultural and food sector forms an important part of the EU economy, accounting for around 15 million jobs and 4.4 per cent of total GDP. It is therefore critical that the economic viability of the sector is protected and its growth supported. One of the key issues hampering this is the sharing and exchange of important information, resulting in inefficient business processes and reduced uptake of new technology. Conflicts between individual country interests and state intervention have complicated the exchange and flow of information.

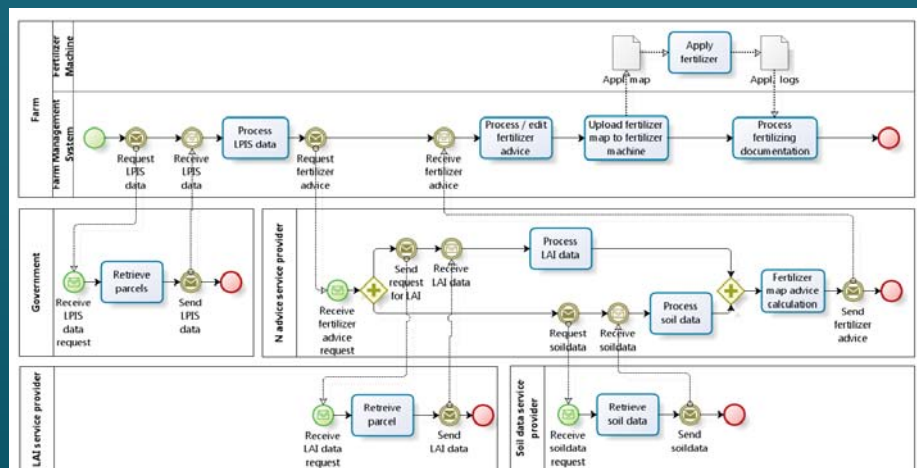
An EU project is now set to change all this. Known as agriXchange and coordinated by Dr Sjaak Wolfert from Wageningen University and Research Centre, The Netherlands, the initiative focuses on developing a system for data exchange within the agricultural sector through a specialised platform. Wolfert's vision is to considerably improve the use of ICT in the agri-food sector to streamline data collection, make knowledge more accessible and combine this knowledge and data into meaningful decisions in appropriate contexts. A formidable task maybe, but one that Wolfert is comfortable with undertaking: "It seems difficult to start to work on these challenges, because no individual stakeholder feels responsibility to take the lead in a common approach, while everybody sees the clear benefits of further harmonisation," he reflects. "With the agriXchange project we think that we can challenge the status quo by initiating

the platform for agricultural information exchange".

The project consortium is made up of 15 partners from 11 countries across Europe, resulting in many differing and divergent stakeholder views, experiences and opinions to take into consideration. Close interaction with the partners and stakeholders is critical, and much of this is done through the web-based platform as well as international workshops. The consortium hopes that better and more consistent information exchange will contribute to a higher efficiency of the agri-food business and that this, indirectly, will lead to improved transparency and food safety.

### DEVELOPING A WEB-BASED PLATFORM

The overriding remit of agriXchange is to coordinate and support the establishment of sustainable networks. Three key approaches are being used to achieve this: establishing a platform for data exchange, developing a reference framework for this data exchange, and identifying the main challenges for harmonising it. The project team has been carrying out in-depth analysis and investigation into activities in EU Member States; from this, a platform was built up facilitating communication and collaborative working groups. The platform is basically a community of practice and knowledge base using hyperlinked text and graphics, and is based on criteria developed from both desk research as well as the analysis of the current situation



**FIGURE 1.** A business process model for the case 'variable rate fertiliser application'. It provides a compact overview of relevant information exchange messages between various actors in the whole network, embedded in a process workflow.



## INTELLIGENCE

# AGRIXCHANGE

### OBJECTIVES

The agriXchange platform is a web based community platform on data and information exchange in agriculture. It facilitates the sharing and discussing of experiences, questions, literature references and use cases. At a later stage, metadata about information technology standards like application areas or location and availability of specifications will be provided.

### PARTNERS

**LEI, Livestock Research and Alterra from Wageningen UR**, The Netherlands • **Association for Technology and Structures in Agriculture (KTBL)**, Germany • **MTT Agrifood Research**, Finland • **Wireless Info**, Czech Republic • **ACTA Informatique**, France • **French Livestock Institute**, France • **AltaVia**, Italy • **Research and Technology Institute for Food and Agriculture (IRTA)**, Spain • **Teagasc**, Ireland • **University of Rostock**, Germany • **Research Institute of Organic Agriculture (FiBL)**, Switzerland • **Poznan University of Life Sciences**, Poland • **Progis software**, Austria

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**DR SJAAK WOLFERT** studied Plant Science with a specialisation in Crop Ecophysiology at Wageningen University. He received a PhD degree in 2002 from the same university. His main research areas are systems analysis, information management and ICT, and sustainable development. He is involved as researcher and coordinator in several national, international and EU-funded projects. Wolfert has served as president of the European Federation of ICT in Agriculture, Food and the Environment (EFITA); he was also president of its Dutch national member organisation (VIAS).



With smart phones nowadays it is possible to scan a barcode and get additional information about a product. The current challenge is still to provide the information from the supply chain.

concerning data exchange in the EU-27 and Switzerland. The platform will be used to carry the reference framework and will be delivered through the project's website. The site provides a collection point for the knowledge and the use cases (or case studies), as well as the agriXchange platform. The main purpose of both the website and the platform is to support the agriXchange community to share knowledge and standards both during and beyond the project.

The working groups are also producing a number of 'use cases' which are guided by an integrative reference framework. Examples of use cases already completed include Animal Registration, where data is exchanged when an animal moves from one country to another; Automatic Compliance Checking, which is a service for an automated assessment of agricultural production and management standards; and Geo Fertiliser, when a farmer requires advice to optimise the application of fertiliser to the local conditions. In the near future the consortium is planning to involve other use cases from similar and related projects. Wolfert considers the SmartAgriFood project, which is part of the Future Internet Public Private Partnership, to be a good candidate because there is some overlap in the project partners.

### BUILDING ON EXISTING NETWORKS

Because agriXchange is essentially a coordination and support action project, there is not a great deal of in-depth tool and technology development. The main function of the work, Wolfert highlights, is to establish the website and the platform, while the development of any tools is left to the industry, such as the ICT developers in agri-food business. That said, the consortium does employ some technologies such as business process modelling, and they endeavour to comply as fully as possible with several basic data standards, such as extensible markup language (XML).

The main objective of agriXchange is to set up a network of various stakeholders within the agri-business. This means that successful dissemination of the information that results from the work is crucial, and the website has already proven to be an essential vehicle in achieving this. In addition, agriXchange organises a number of events which are seen as

being important for coordinating stakeholder integration and for sharing of project progress and any achievements. Wolfert believes the best way to do this is to link up with other organisations wherever possible: "We do try to avoid organising specific events for agriXchange and prefer to link up with ongoing events or activities as much as possible in order to have a larger impact".

### SETTING A SUSTAINABLE PATHWAY

The combined effect of the web-based platform and its connection with other events has led to some significant advancements. One of the very first of these was manifest in the results of the investigation on the state of the art agri-business in the EU-27 and Switzerland. This created a solid overview of the current situation and what is considered to be an excellent starting point for setting up of an EU-wide network. Forecasting future success, Wolfert notes that the project's present focus concerns the development of a basic design that provides a categorised overview of processes, interfaces and standards for the various use cases: "We have developed a solid base for this, but we still have to test and discuss the usability in different stakeholder groups".

Many collaborative projects face the challenges of sustaining results once funding has ended, and agriXchange is no different. At present, the use cases are initiated by the project itself and the communities around these consist of people who are closely related to agriXchange, so the main success factor will be the critical mass that the project partners are able to create and sustain. Instead of integrating new functions or tools into the network, Wolfert plans to use existing forums and processes to achieve a future for agriXchange. He has a number of ideas about how to do this. For example, instead of creating their own discussion forum within the portal, he believes that using a LinkedIn group will be far more effective. "This means that the agriXchange platform itself will function as a meeting place for the different stakeholder groups and this is, and should remain, the added value of agriXchange," he affirms. "Through strategic documents, such as the Cologne declaration that was established at the second agriXchange workshop, we try to influence policy makers to keep the issue of information exchange on the agenda for future developments."