CREATING ADDED VALUE
by protecting users

Data flow on a farm means that the information gathered can be utilised beyond the purpose of the tools used to collect it.

The flow of data throughout the farm enhances the efficiency of the farmer's information system. Sharing this data outside the farm would further add value to it by benefiting the whole agricultural community.

Typically, agricultural services are based at field level; field names, varieties and sowing dates are the first pieces of information to record before giving any technical advice. This data is not currently widely accessible and must therefore be re-entered into each tool used by the farmer. This has an impact on their level of use.

The re-entry process could be avoided if data could be shared between the different applications used on the farm. This type of data sharing will make it possible in the future for tools to combine data from various sources, to give farmers a panoramic view of their farm. Field management software is already including increasing amounts of data from field sensors. This information

sharing is possible because sensor suppliers have already established ways of disseminating their data.

However, innovation should not be the data collecting tool manufacturers' preserve. Data sharing between farms or with research organisations helps gain new knowledge from this enormous collection of information. This should help to identify innovative practices including a weed control element, that improve yield or the quality of the production.

At the moment, this type of data exchange is limited because, often, there are no exchange "channels", or different applications do not "speak the same language".

But the main stumbling block remains businesses' reticence to facilitate the sharing of what they consider as strategic information for their activity. To address this issue, two projects have been set up to encourage the creation of innovative services based on utilising agricultural data and facilitating their exchange, while reassuring actors in the agricultural industry.

Data sharing according to API-AGRO

The technology used to develop this type of application is known as API (Application Programming Interface). With it, an app developer can connect and interact with one or more databases or calculation devices in an automated manner that offers transparency to the end user (farmer, technician or scientist, for example).

It is then possible to gather several service providers' expertise (weather, fertilisation or sowing advice, etc.) into one tool. Each of them keeps their own expertise, but makes it available via APIs.

As part of a collective, the French Technical Institutes have decided to make their data and calculation functions available via the API-AGRO platform, which raises their profile and facilitates their dissemination. API-AGRO is open to all the stakeholders in the agricultural ecosystem, connecting data users and providers, while ensuring data security and, above all, complete communication traceability. This platform supports open innovation through facilitation of data connection and utilisation.

Reassuring the agricultural sector

At the moment, farmers do not have control over their data, which is fuelling the fear that it will be used without their consent, or even against them. This is already an issue for personal data and its use by GAFA (Google, Apple, Facebook and Amazon). Data collectors themselves find it difficult to determine what data provision and reutilisation rights they can grant. The issue of governance over a farm's data, which comes under contractual relations, has, so far, not been clearly resolved, be it from a legal, economic or ethical point of view.

Considering that farmers must be able to choose where to send their data, to the tool that will best utilise it, and with whom to share it, Arvalis and the other Institutes are currently examining how to protect those exchanges, making sure that a farmer's consent has been obtained before his or her data is utilised. Let's imagine a data passport, where farmers give their consent to an organisation regarding a specific part of their data, for a given purpose.

The MULTIPASS project, which takes into account the wishes of the farmers from whom data has been collected, is aiming to strengthen their trust, and give them back control over their data. Consent is recorded in a secure database that provides transparency over the uses that have been allowed. The proposed ecosystem will combine existing solutions (albeit rare) with an innovative one based on the benefits of blockchain[1] technology. It will also include the necessary conditions of complementarity and interoperability between existing or future systems.

(1) Based on decentralisation of security, blockchain technology is described in an article published in Perspectives Agricoles N°440, *in January 2017 under the title "La technologie blockchain en agriculture : pour des échanges transparents et sûrs" ("Blockchain technology in agriculture: for transparent and safe exchanges")(In French)*

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API technology is already used to connect data and models such as the Taméo Decision Support Tool, produced by a MétéoFrance-Arvalis collaboration.

« **150 sets of data and models from the API-AGRO platform have been set as reference.**
https://api-agro.eu/ »

« **Farmers must be able to choose where to send their data, to the tool that will best utilise it, and with whom to share it** »