



ARTIFICIAL AGRIFOOD INTELLIGENCE



 IA²



A JOINT INTERVIEW WITH

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IN ANNOUNCING THEIR GROUNDBREAKING PARTNERSHIP ON 17 JANUARY 2019 **MICROSOFT AND INVIVO** GAVE A CLEAR SIGNAL OF THEIR INTENTION TO ACCELERATE THE DIGITAL TRANSFORMATION OF THE AGRI-FOOD INDUSTRY.

At the Paris International Agricultural Show, Thierry Blandinières, CEO of InVivo, and Carlo Purassanta, Chairman of Microsoft France, discussed what artificial intelligence means for agriculture and food supply and the innovative solutions that will very soon be available to farmers.



YOU HAVE JUST ANNOUNCED A PARTNERSHIP BETWEEN YOUR COMPANIES. WHAT IS THE STRATEGIC VISION INSPIRING THIS COMING TOGETHER OF FRANCE'S LARGEST GROUP OF AGRICULTURAL COOPERATIVES AND A GLOBAL DIGITAL TECHNOLOGY GIANT?

THIERRY BLANDINIÈRES:

We share a common analysis and an ambition. Given the challenge of demographics and climate change, agriculture is going to have to achieve a very significant increase in productivity while at the same time becoming a greater force for good, more sparing with resources and better aligned with consumers. This combination of factors is unprecedented in the history of the human race. The InVivo group's core mission is to help achieve it and we call this "food intelligence".

The good news is that digital and data technologies can play a role in achieving this goal if they are deployed on a large scale. Since 2015, one of the key pillars of InVivo's strategy has been the digital conversion of the agrifood value chain, from field to fork, to the benefit of farmers and consumers.

We represent 201 member cooperatives and have close links with cooperatives throughout Europe and in Brazil, China and the United States, for example. We are therefore able to bring key players together to accelerate the digital transformation of agriculture by providing cooperatives and, ultimately, individual farmers with innovative solutions to connect and enable their data to "speak", so supporting agriculture that is high performance in commercial, social and environmental terms. The power of Microsoft's technological solutions and innovation will help us.

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CARLO PURASSANTA:

We announced a partnership with InVivo in the context of AI innovation, one of the three pillars of the Microsoft plan designed to help turn France into a global leader in AI. AI Innovation aims to bring stakeholders within the same sector together and accelerate the roll-out of innovative projects in five areas of strategic importance for France (agrifood, health, environment/energy, financial services and transport, as described in Cédric Vilani's report "Donner un sens à l'Intelligence Artificielle" [Giving Meaning to Artificial Intelligence] published in March 2018).

We also chose to do this in France because it has been a focus for investment by Microsoft for over 30 years. This is a crucial time for the country, which offers a particularly favourable environment for the development of artificial intelligence through a remarkable combination of factors: the excellence of its schools of mathematics and its engineers, its philosophical tradition and its high ethical standards.

Since 2007, we have been running a joint laboratory with INRIA (France's National Institute for Research in the Digital Sciences). We have unrivalled IT strength in France, thanks to four data centres, with full confidentiality ensured and certification to European standards, and we are investing massively to develop artificial intelligence solutions here. If we wish to run this race from the front, we now just need to see a massive acceleration in the practical roll-out of projects. While we have very significant experience of the agricultural sector in the United States, India, Australia and New Zealand, it is still relatively new to Microsoft in France. Our partnership with InVivo represents an excellent opportunity to share our knowledge and experience and obtain detailed understanding of the needs of French farmers, so that we can develop tailored solutions which will accelerate the shift towards more intelligent, data driven agriculture.



... planning for the future in response to recommendations and requirements, is the role of artificial intelligence and machine learning ...

WHAT DOES THIS INTELLIGENT AGRICULTURE ALLOW US TO DO THAT WE COULDN'T DO BEFORE?

THIERRY BLANDINIÈRES:

I think that the word "revolution", frequently bandied about, is not out of place as far as agriculture is concerned. To simplify, I would say that until now we have had a measured, steady kind of agriculture with a high degree of standardisation and a relatively low level of forward planning.

With precision agriculture, we have taken a first step: we are now able to adjust cultivation practices and doses of inputs, so improving commercial and environmental performance while making life easier for farmers.

In the next step, once a large amount of data has been collected and processed, agriculture will become predictive, that is to say, able to anticipate events and, for example, to predict production volume and quantity. We will then move on from precision agriculture to decision agriculture, faster, more efficient and able to cope with complex situations.

CARLO PURASSANTA:

The functionalities which the farmer needs from intelligent agriculture are in fact quite simple to understand, despite being based on incredibly complex research and innovation capabilities. The role of IoT (cameras, sensors, drones and agricultural robots) is to collect and transfer information; the cloud then stores this information, ensuring the security, protection and confidentiality of the data collected; software and decision-support systems aggregate the data and provide unified interfaces enabling a picture of reality to be built up and processing to be carried out; finally, crunching and analysing the data, whether satellite, weather or market data or data direct from the fields, enabling planning for the future through recommendations and instructions, is the role of artificial intelligence and machine learning.

To drive home the potential of AI, I like to give the example of the visual recognition system that we have put in place for vegetable sorting for one of our clients. We have an AI system which selects ripe, red tomatoes and rejects green ones, which is already pretty spectacular, but just imagine now the same application used to sort maize kernels at a rate of 14 tonnes per hour, and you will really understand what we mean by "teaching the machine".



IN CONCRETE TERMS, WHAT STAGE ARE EACH OF YOU AT REGARDING THE DEVELOPMENT AND DISTRIBUTION OF DIGITAL APPLICATIONS AND SOLUTIONS AND AI FOR AGRICULTURE?

THIERRY BLANDINIÈRES:

By acquiring SMAG, the leading French company in technological applications for the agricultural sector, in 2014, InVivo moved to the forefront in these areas and it is now making an active contribution to the distribution of digital innovation to farms and to the construction of agricultural big data. InVivo's Agridigital division is focused on these two activities.

On the one hand, we provide products and services for farmers and their supply chains using cloud software solutions and SMAG connected objects, as well as the full range of Be Api solutions for precision agriculture. On the other hand, we offer an ecosystem for the acceleration and distribution of innovation in the farming sector via a range of associated measures. The "Fermes Leader" programme aims over time to equip up to 1,000 farms with digital solutions and services in order to assess performance improvements and environmental benefits for the farmer, and to improve existing solutions. We have also put in place a system for the detection and acceleration of agtech/foodtech start-ups via the "InVivo Quest" challenge. Finally, "Digital Factory", created in 2018, aims to accelerate the digital transformation both of businesses within the group and of cooperatives.

CARLO PURASSANTA:

Azure FarmBeats is our digital solutions platform for agriculture, which will be available in the summer of 2019.

It comprises three key areas supported by the Azure Cloud: Agri IoT, Agri Data and Agri Infra. It involves a combination of technological building blocks which link the cloud to a layer of artificial intelligence, allowing us to enable all sorts of applications based on the needs of clients from the farming and agri-food sectors. Agri IoT is looking at sensors and their connection and standardisation. For example, we have developed the "TV Whitespace" solution which means that UHF frequency "white space" in digital TV broadcasting can be used to improve communication between connected objects located in the fields and the farm and to offer high-speed broadband in rural areas. There is in fact no IoT without efficient internet connectivity. Agri Data offers solutions for the integration of satellite data, weather data and data from sensors and for efficient processing to produce information that is useful as a basis for action. Finally, Agri Infra will be offering shared calculation resources to reinforce traceability and trust in the agri-food supply chain, notably via blockchain technology and smart contracts.

In addition, Microsoft has global and local partnerships enabling the delivery of comprehensive solutions. We are also supported by a start-up ecosystem and draw on contributions from it. For example, in the precision mapping sector, we are working on the one hand with DJI drones which carry Microsoft image processing algorithms and, on the other, with Altamétris, a 100% French spin-off from the railway network operator SNCF Réseau, which specialises in topographical surveys of infrastructure and works of art. This offers us a highly promising potential application for the maintenance of grain silos and, in particular, for the detection of cracks. What is interesting is that, despite their high degree of technological sophistication, some of these solutions can be adapted for use at less expense: if you don't want to invest in drones, these can be replaced by balloons and you still get very good results, as we have done on certain farms in India.

WHAT ARE YOUR FIRST PROJECTS?

THIERRY BLANDINIÈRES:

Teams from InVivo and the Microsoft innovation centre are currently working together on the needs, to identify priority areas for our 3 businesses: agriculture, retail and wine. We will soon draw up an initial roadmap to give form to this groundbreaking partnership which reflects our shared ambition to develop innovative and sustainable solutions for "Ferme France" as a whole.

... We want to promote the development of AI that makes a genuine contribution to society's greatest challenges and to accelerate the growth dynamic of French businesses ...

CARLO PURASSANTA:

The Microsoft teams are delighted to be developing products and services tailored to meet the needs of French cooperatives and farmers thanks to InVivo's long history of expertise in this area. By opening up our partnerships to vertical ecosystems, we want to promote the development of AI that makes a genuine contribution to society's greatest challenges and to accelerate the growth dynamic of French businesses.

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