



# Artificial intelligence for high precision agriculture



dilepix

Solution for data analysis and optimization  
of agricultural productions, equipment and resources



Brochure



## Agriculture at the forefront of artificial intelligence

Farmers have been working for a long time on a daily basis with machines equipped with digital functions (milking robots, seeders, fertilizer spreaders, etc.). But the democratization of this use in the agricultural sector and the sophistication of equipment represent a new revolution, comparable to what the industry has experienced. The technological leap of the 4.0 agriculture now brings a power of communication and interaction between the tools paving the way for possibilities of performances optimization of the exploitation, economic in particular.

**Around the world, a growing population of farmers uses the Internet at least once a day for their farming activity** (weather forecast, business news, banking services) and half of the contents consulted concern farm data. The new technologies have largely integrated operating modes of farm operations: Smartphone applications, humidity sensors, thermal cameras, drones... The multiplication of data collected by these equipment installed on the farm leads to an agricultural model increasingly carried by new technologies. These information flows need to be mastered to collect the best lessons.

In this context, the use of artificial intelligence is essential to enable farmers to benefit from the wealth of information obtained and use it in their decision-making along the agronomic routes.



**Dilepix, a 4.0 response to the evolution of the agricultural world**

***Dilepix is one of Agtech's innovative companies around the world that are paving the way for a new model of operating farm management, that of micro efficiency.***

Dilepix solutions have been developed to complement operational observation equipment with a clever visual data analysis system. These are aggregated and analyzed to signal risks and opportunities by immediate alerts accompanied by instant diagnostics, in both crops and livestock.

The lessons learned from the analysis of the data allow the technicians of agricultural cooperatives or agroholdings, according to the situations, to anticipate the events, to better evaluate them and to act more rationally. « *It is, for example, not to systematically spray a product preventively, but to do it at the right time, in the right place, in good quantity. This automated monitoring improves both economic performance and environmental performance. It limits low value-added actions and favors optimization in the broad sense* ». Explains Aurélien Yol, co-founder and Chief Technical Officer of Dilepix.

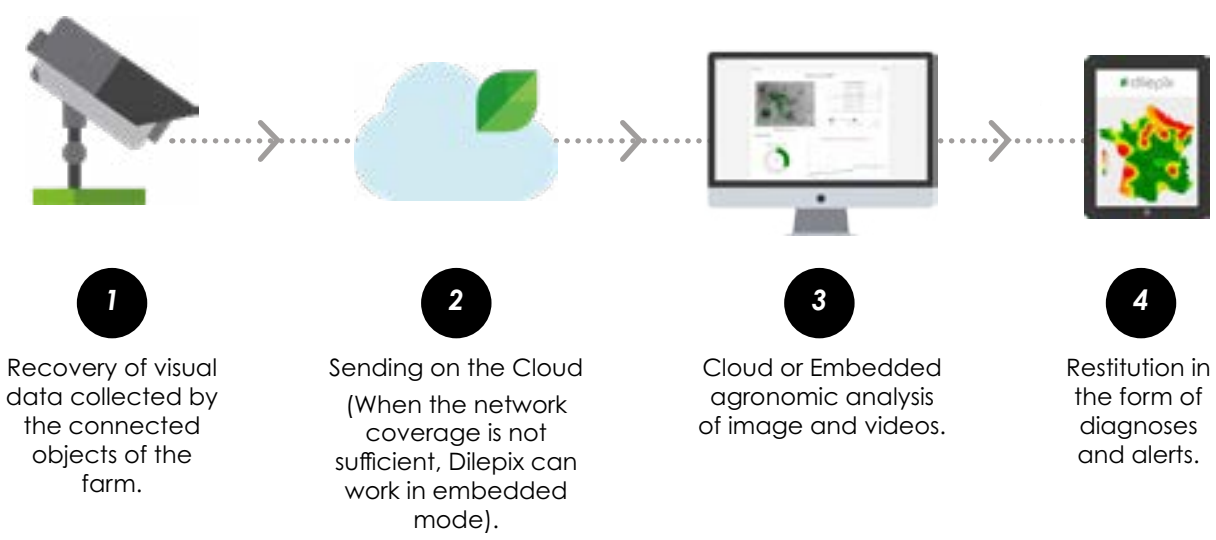
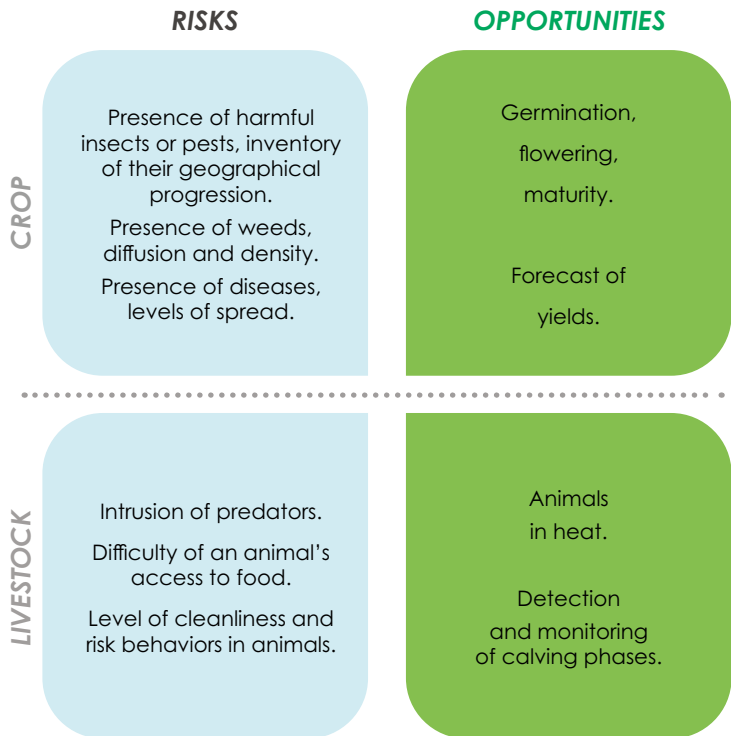
# Solutions from Dilepix

## IoT and connected devices

Dilepix is a digital remote analysis solution that links the connected objects of a farm, in the cloud and ultimately, in « embedded mode »: surveillance cameras in farm buildings, insect traps in the field or under greenhouse, drones over crops and meadows, sensors on robots and other equipment.

These **connected tools** report high-precision images that are automatically supported by **agronomic analysis software** that instantly generates **risk or opportunity alerts**.

Risk and opportunity databases were created by and for agricultural researchers, agronomists and professionals to adapt to the needs and skills of agronomy co-ops and technicians.





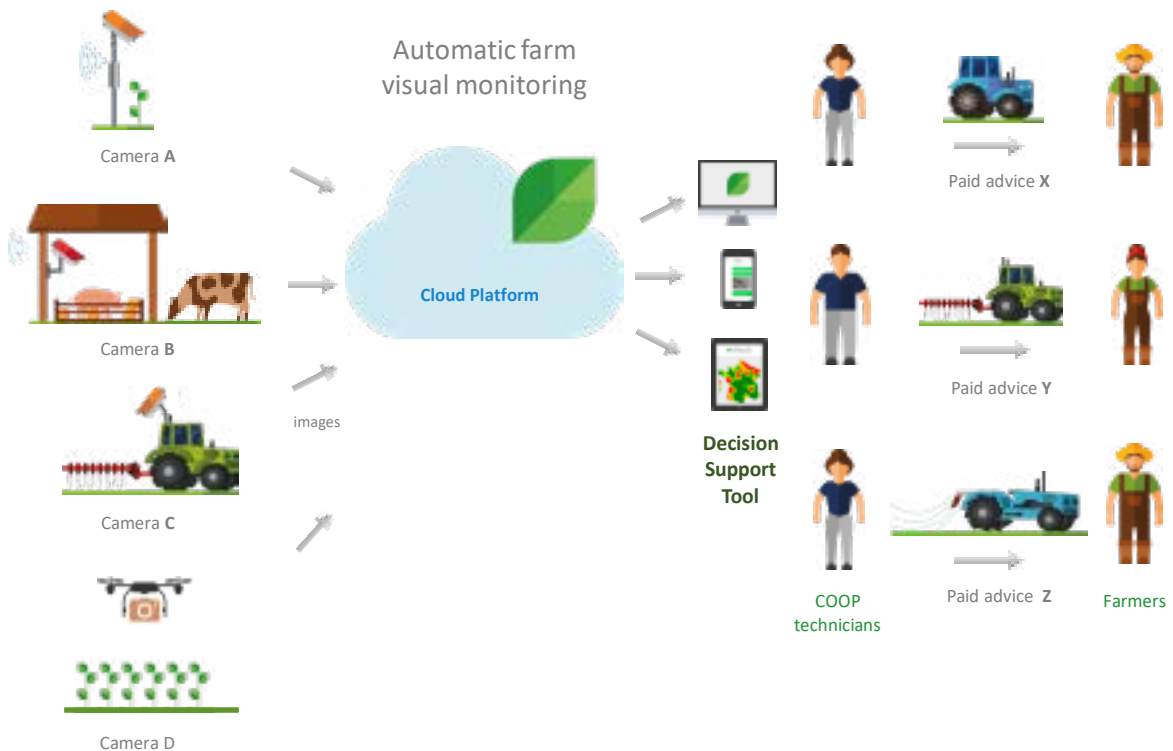
## What needs does Dilepix meet?

The agricultural sector needs to **improve its technical, economic and environmental performance**.

For this, it particularly needs objective and automatic tools performing tasks of **early detection of threats** to avoid preventive treatments and thus reduce the quantities of synthetic products sprayed on the plots (or antibiotics in the case of livestock) and detection of opportunities (seedling emergence, appearance of flowers, fruits, grains) to **optimize agronomic routes and production logistics**.

## What is its added value?

Dilepix's solutions **significantly reduce** farmers' production costs and the workload of technical consultants in their monitoring, by offering to automate the detection of threats and opportunities for agricultural production and by enabling the implementation of intelligent and automatic surveillance services for crops and livestock.



### Monitoring

Real-time alerts when agronomic problems are detected by the system, indoors or outdoors, from the cameras and other smart devices on the farm.



### Diagnosis

Immediate diagnostics and production goals via integrated solutions, along with online analysis reports.



### Affordable

Dilepix provides its solutions with monthly subscription or according to the surface of production area of the farm.

# Evolution of Dilepix technology by 2020-2021

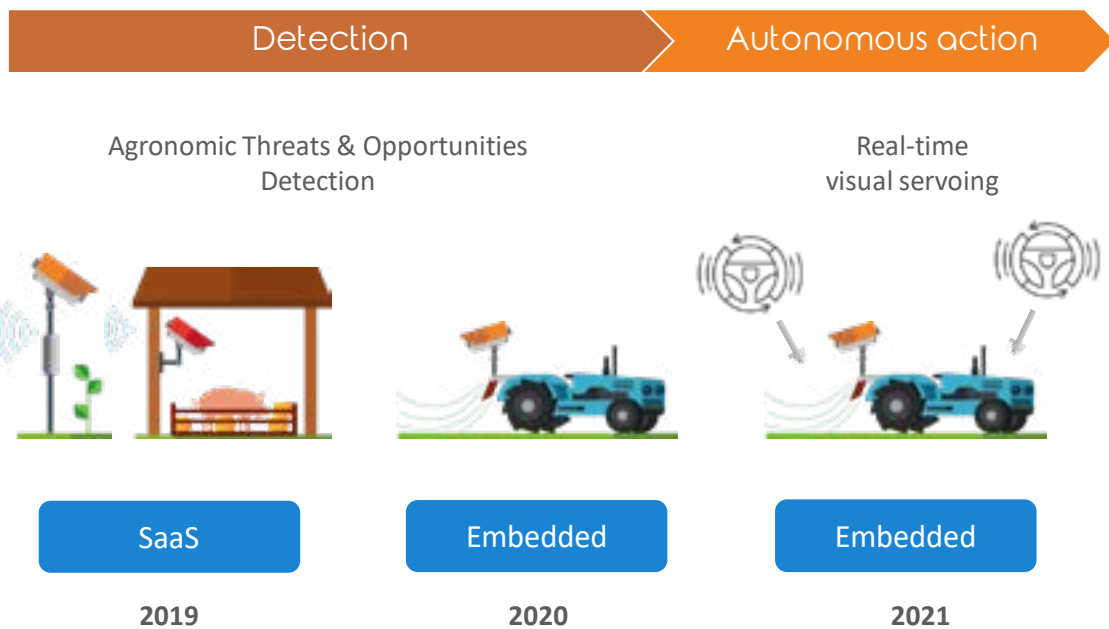
Dilepix has started on 2 features:

- **automated monitoring** (image analysis and autonomous alert generation);
- the **diagnosis of crops and livestock** (from objective analyzes).

The development of solutions continues towards robotics for precise actions in the open field, in greenhouses or any other agricultural environment. The elaborated process will include a complete autonomous embedded image analysis system, from detection to data processing to the in situ intervention phase.

The automation and the increase of the capacities of the various equipment of the farm (cameras, robots, implements...) are developed thanks to the use of algorithms of vision and intelligent control.

Dilepix plans to develop applications for the detection of agronomic threats from fixed cameras, then embedded cameras, to finally offer intelligent, real-time control solutions for agricultural equipment and robots.





Creating value for everyone

  
dilepox



Manufacturer

→ Extend the action capabilities of agricultural robots, tractors & implements, using computer vision and artificial intelligence



COOP

→ Replace the sale of non sustainable chemicals by selling monitoring service



Technician

→ Less travels to farms  
→ More business opportunities



Farmer

→ Save money on chemicals, fuel and human power  
→ Better well being

# Dilepix founders



## Alban POBLA, CEO

- ENS Lyon, Mines ParisTech, EM Lyon, HEC Paris.
- MS in Computer Vision & Robotics.
- Research missions in USA at Massachusetts Institute of Technology (MIT) with Marc Raibert, founder of Boston Dynamics & for the Robotics Institute at Carnegie Mellon University.
- Research missions in France at the French Defence Agency (DGA) on Neural networks & Computer vision.
- Business developer & Founder of several startups.
- Industrial Expert in Robotics and Precision Agriculture at the European Commission.



## Aurélien YOL, CTO

- R&D engineer at Inria<sup>7</sup> Rennes-Bretagne Atlantique.
- MS & Expert in Computer Vision.
- Administrator of technologies transferred from Inria.
- Member of the Council for Labeling and Orientation of Science and Innovation Projects (CLOSI) of Vegepolys Valley.

### About us

Dilepix solutions are the result of a technology transfer from Inria Rennes-Bretagne-Atlantique, specialist in robotics control by vision after 15 years of research and development in various industrial sectors with prestigious partners (Airbus, Dassault, Ifremer, Orange, Intel ...).

The start-up was created in March 2018 by Aurélien Yol, former engineer of Inria and Alban Pobla, former regional director of economic development at the Chamber of Commerce and Industry of Brittany. Winner of the prestigious iLab<sup>8</sup> competition in 2018, Dilepix is hosted and supported by the Village by CA d'Ille-et-Vilaine, accelerator of innovative companies.

<sup>7</sup> France National Institute for Research in Computer Science and Automation, dedicated to digital sciences.  
<sup>8</sup> National competition for the creation of innovative technology companies created in 1999 by the French Ministry of Higher Education and Research.

### Did you know?

Dilepix takes its name from *dilepis*, scientific name of the chameleon, whose visual skills are exceptional.



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