



AGREENCULTURE



OECD

Christophe Aubé
CEO AGREENCULTURE

06/12/2022



AGREENCULTURE



LES ENJEUX DE L'AGRICULTURE



Worldwide population increase

10 Billion in 2050



Decrease the use of **pesticides**



More sustainable **food**



Less **farm workers** available



The use of pesticides allows to spare up to 20 times in comparison with an equivalent mechanical weeding



Worker are up to 400 times more expensive than a pesticides + spraying application



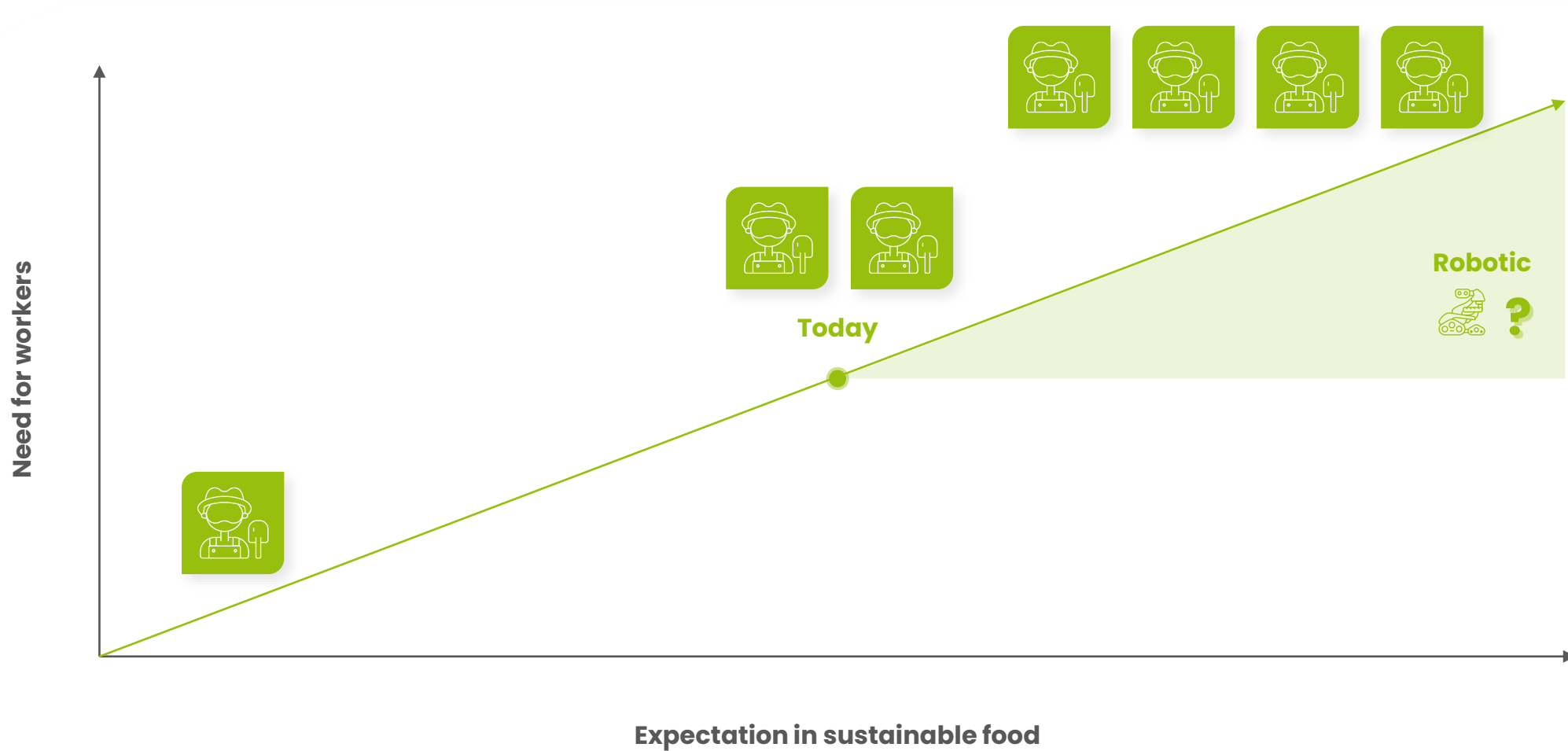
Workers represent up to 30%-50% of a vegetable final price



Our farming production model has to change to something else ?



AVAILABILITY AND NEED OF FARM WORKERS IN THE WORLD





**FARM ROBOTICS : A SOLUTION FOR
SUSTAINABLE FOOD PRODUCTION**



PRECISION FARMING : **FIRST STEP FOR AGROECOLOGY**



Robotized Mechanical weeding for vineyard

Less herbicides



Robotized Precise mechanical weeding for corn

Less herbicides
Less soil compaction



Spot spraying

Less
herbicides
(- 70%)



Fleet management with tractors


Less herbicides
Less soil compaction



Robotized Precise fertilization for corn

Less
Fertiliser (-30%)

All those operations are possible thanks to accurate and high integrity **guidance and positioning**

A small, autonomous tractor with a bright orange body and blue accents is driving through a vineyard. The tractor is viewed from the front, moving away from the camera down a dirt path between rows of green grapevines. It has a white dome-shaped sensor on top and two large black tires with tread. The scene is brightly lit, suggesting a sunny day.

**AGREENCULTURE : SUPPORT
SUSTAINABLE FOOD PRODUCTION
THANKS TO ROBOTS**





AGREENCULTURE

Agreenculture helps businesses meet the challenges of **safe** machine **automation** according to **2006/42/EC** (machine directive)

We provide the technologies and the network of experts needed to make machines **autonomous**, **precise**, **intelligent**, **connected** and **safe**.

2 main **risks** to allow farmer to trust our solutions:

- Leave **working area** : **SAFENCING**
- **Damage** goods or people: **OBSTACLE AVOIDANCE**





AGREENCULTURE

Founded in 2016

**Based in Toulouse
(France)**

52 Employees

8 Nationalities

3 Patents

Sales :
2020 : 665k €
2021 : 1 273k €
(2022 : 2 400k €)





OUR KNOW-HOW



Positioning & Guidance



Path planning



Surveying



Embedded Safety



R&D



Visionic & AI



Robotics



On-board electronics



Mission management



Swarm management



Cloud development



SAFENCING TO FIRST RISK FOR ROBOTS

06/12/2022



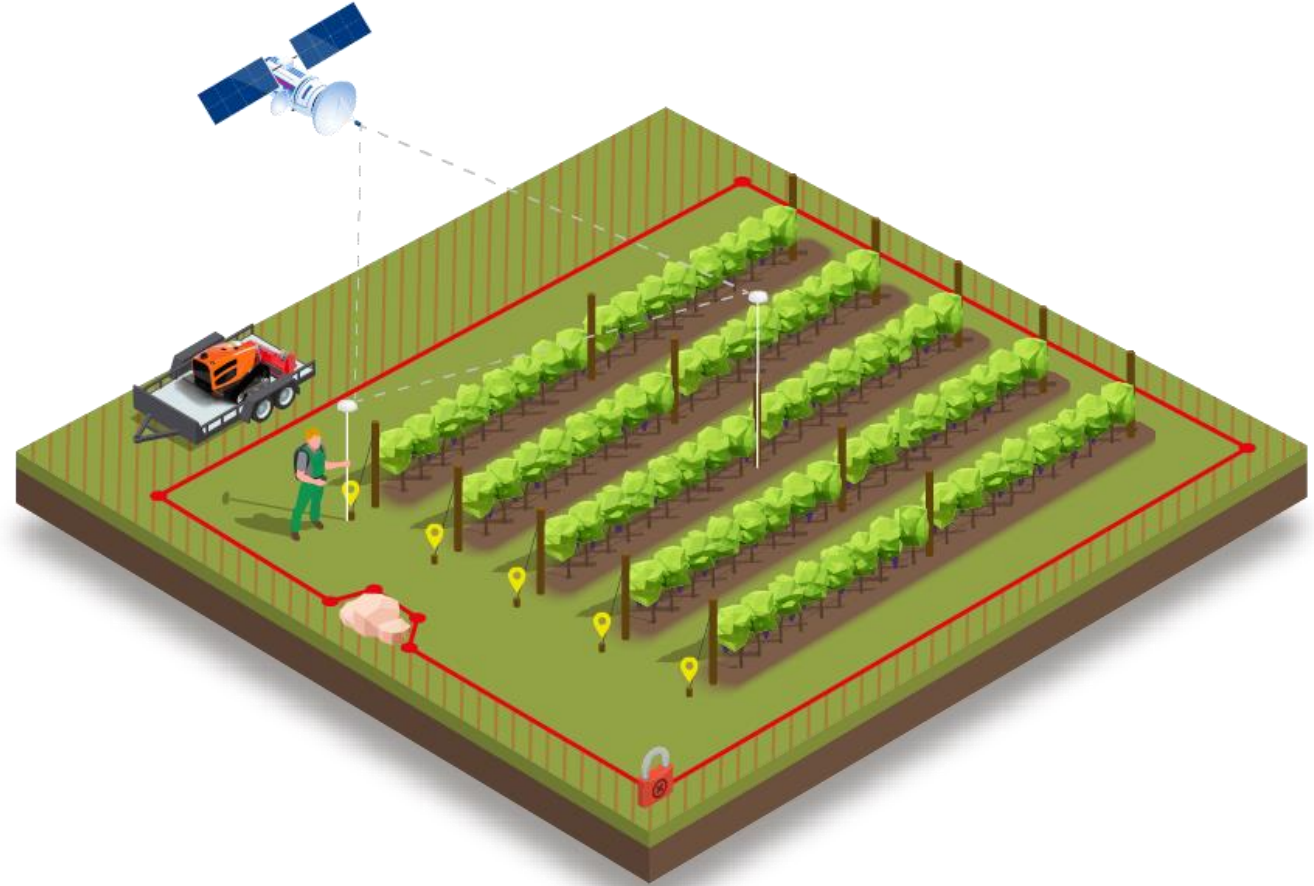
HIGH LEVEL SAFENCING® CONCEPT



Geofencing by Agreenculture



SaFencing® is a safety component within the scope of the Machinery Directive for **autonomous machines**, such as agricultural robots, whose safety function is to inform the machine if it is, or is not, in its defined working area, or if it is about to leave it. It is currently being certified to **PLc** level according to iso **13849**.





SAFENCING® CONCEPT

PRODUCTS



GRS : GROUND REFERENCE STATION

Baseline for broadcasting GNSS corrections.

GRS AGCbox



ENS : EMBEDDED NAVIGATION SYSTEM

Main system unit for RTK positioning, mission guidance and tracking, and vehicle connectivity.

ENS AGCbox



SURVEYING KIT

Equipment allowing to survey the parcel and particularly to acquire its Safety Perimeter.

Survey AGCbox, application, pole and handle, cable, batteries and chargers.



ANT : ADDITIONAL ANTENNA

Additional AGCbox to be installed on the machine. Connected by beam to the ENS AGCbox.

ANT AGCbox

SERVICES



PLATFORM : SURVEYING VALIDATION

Certify that perimeters and other critical safety information will not have changed by the time the mission is carried out with the vehicle.



QUALIFICATION TRAINING

Surveyors must be aware of the safety issues involved in surveying.



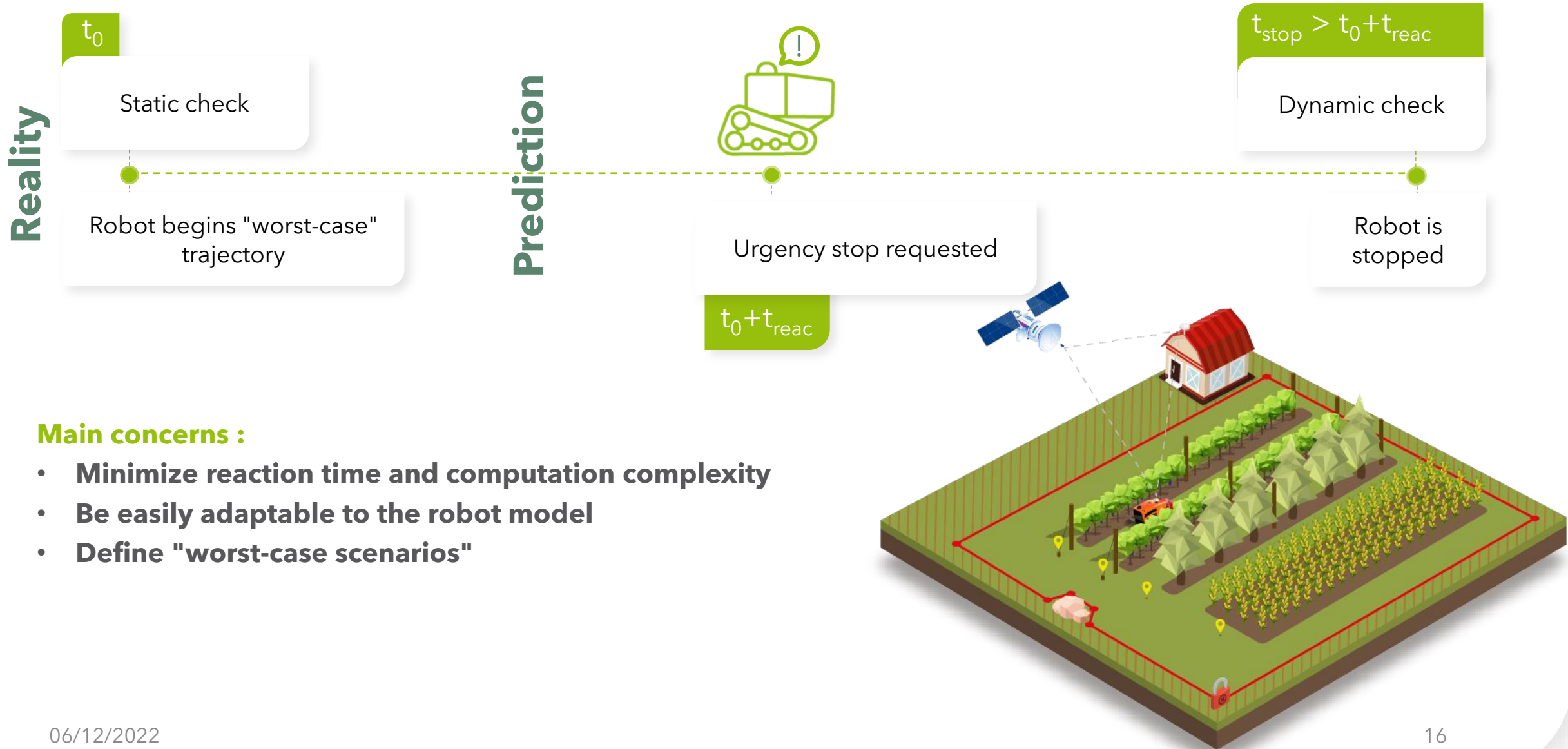
MAINTENANCE

Software updates.



Necessary for Safencing certification

SAFETY CONCEPT : DISTANCE TO SAFE PERIMETER



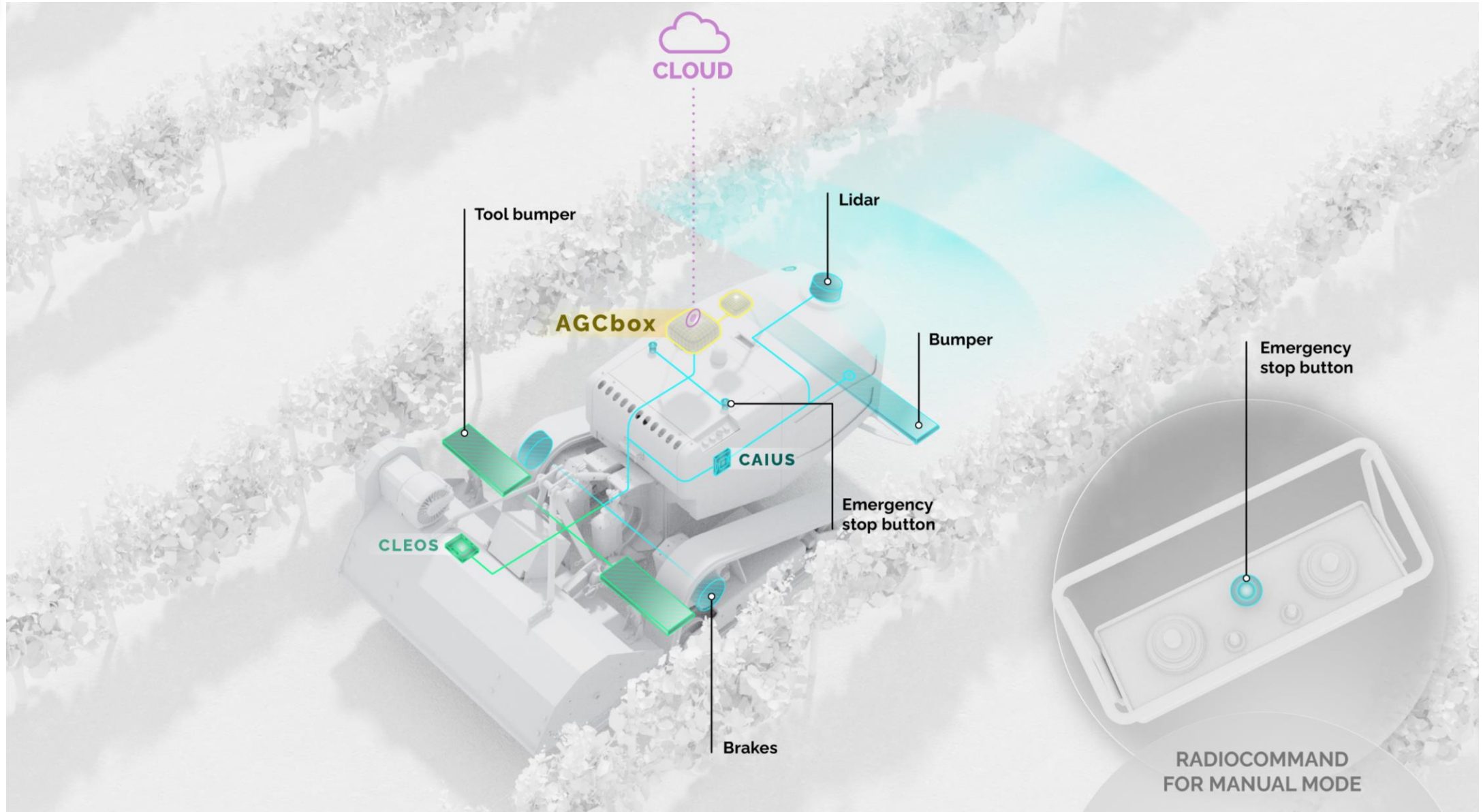


**OBSTACLE AVOIDANCE:
SECOND RISK**

06/12/2022



SAFETY CONCEPT : COMPLETE SAFETY SKELETON TO FIT REGULATION





SAFE **REMOTE OPERATION** WITHOUT PHYSICAL FENCES (CERTIFICATION 2023)





AGREENCULTURE

Visit www.agreenculture.fr



Agreenculture



@agc_robotics