ACTIA & SHERPA Engineering accelerate the automation and robotization of agricultural machinery

ACTIA and SHERPA Engineering announce a strategic partnership aimed at integrating SHERPA's autonomous navigation technological module into ACTIA's high-performance HPC controller. This collaboration targets the development of a unique solution on the market: a robust, industrializable HPC capable of running, in real time, the advanced perception, 3D localization, planning, and control algorithms required for the automation of agricultural machines and robots.

A partnership serving next-generation agricultural robotics

The agricultural sector is facing a major shift: robotization is becoming a necessity. Farms increasingly operate in unstructured and difficult-to-access environments—rugged terrain, terraced crops, forested areas, fields with complex topographies, or unmapped environments. In such conditions, operators must simultaneously handle vehicle driving, the agricultural implement, safety, and decision-making—a significant cognitive load.

At the same time, several studies show that robotics combined with artificial intelligence is a powerful lever to accelerate the agroecological transition. The targeted and precise use of robots can significantly reduce the use of plant protection products while limiting environmental impact. Robots can also take over physically demanding, repetitive, or time-consuming tasks, freeing up time for farmers to focus on higher-value activities.

At both national and international levels, momentum around agricultural robotics continues to grow: research programs, innovation funding, testing platforms, and technology competitions all demonstrate the urgency and strategic importance of integrating robotics into agriculture.

Market demand is therefore clear: robust, autonomous or semi-autonomous agricultural robots and machines capable of operating in real environments. The convergence of SHERPA Engineering and ACTIA provides a concrete and industrializable response to this need.

By combining:

- **ACTIA's HPC**, a high-performance embedded controller designed for harsh environments,
- **and SHERPA's software module**, integrating real-time perception, 3D localization, planning, and control,

the two partners offer a comprehensive solution to accelerate the integration of autonomous robotics into agricultural machinery.

The partnership between SHERPA and ACTIA provides a complete industrial solution for the robotization needs of the agricultural sector

The partnership aims to port SHERPA's autonomous navigation software module—integrating multi-sensor perception, 3D localization, planning, and control—currently running on Nvidia platforms, onto ACTIA's high-performance HPC controller, in order to turn it into an industrializable solution.

Through this integration, ACTIA's HPC will embed key machine-safety functions: secure geofencing (defining a virtual work area), and obstacle and human detection/avoidance.

Manufacturers of agricultural machines and robots will therefore have access to a ready-to-use solution combining autonomous navigation and operational safety on a single controller.

Use cases for farmers notably include:

- Autonomous row guidance (vineyards, orchards, vegetable crops)
- Trajectory following for repetitive operations (mechanical weeding, targeted spraying, grass mowing)
- Partial autonomous vehicle management: the operator can focus on the implement or quality of operation while the vehicle manages its own movement
- Navigation in complex terrain (uneven grounds, terraced crops, etc.) for safe, robust, and controlled operations.

Thanks to the ACTIA platform and the SHERPA module, manufacturers benefit from:

- Advanced software content (SHERPA)
- Industrializable and robust hardware (ACTIA HPC)
- A testing and validation center (via AgroTechnoPôle and SHERPA's testing infrastructures)

Perspectives: ACTIA x SHERPA

"With ACTIA's HPC, we are providing the agricultural market with a robust, secure, and industrializable hardware platform capable of running very high-performance algorithms in real conditions. By collaborating with SHERPA Engineering, we are taking a major step forward: offering agricultural machinery manufacturers a complete solution—from controller to software—to integrate autonomous functionalities into their vehicles. Our ambition is to give manufacturers the means to design smarter, more efficient, and more sustainable agricultural machines."
Davide LOY, Vice-President Off-Highway Market, ACTIA

"This partnership with ACTIA addresses a major need among manufacturers and integrators of agricultural robotic solutions: access to a ready-to-integrate solution for autonomous navigation, combining high-performance embedded computing with advanced software intelligence. With our modular technological module, the machine becomes capable of perceiving its environment, localizing itself in 3D, and making decisions in real time.
By relying on ACTIA's HPC, we offer manufacturers a fast track to automation. Our objective is simple: put robotics at the service of farmers and the performance of their machines."
Dieumet DENIS, Head of Advanced Autonomous Systems & Co-Director of the i-SMART Joint Laboratory (SHERPA Engineering / INRAE)

SHERPA, a recognized specialist and pioneer in agricultural and off-road robotics

In a market where agricultural robotization is becoming strategic, SHERPA stands out with a rare expertise: transforming advanced navigation algorithms into fully operational autonomous solutions in real-world conditions.

Originating from the demanding automotive and aerospace sectors, SHERPA Engineering draws on more than 25 years of expertise in multiphysics modeling, advanced simulation, embedded AI, and the validation of complex systems. This longstanding mastery of embedded systems has naturally led SHERPA to become a key player in agricultural robotics and autonomous off-road mobility.

The company does not simply develop algorithms: it designs, integrates, and tests autonomous navigation solutions in real operating conditions, directly in the field alongside agricultural machinery manufacturers and robot producers.

SHERPA now occupies a pivotal position within the agricultural innovation ecosystem:

- A reference company and operator for robotic trials at the AgroTechnoPôle (INRAE), the national platform dedicated to the agriculture of the future.
- Co-founder, with INRAE-TSCF, of the Associated Partnership Laboratory (LPA) i-SMART, dedicated to agricultural robotics and off-road mobility.
- Winner of the MOBILEX Challenge, funded by AID, CNES and AIT, as part of the MOBITER consortium (INRAE + Institut Pascal), demonstrating state-of-the-art performance in autonomous navigation in unstructured environments.

SHERPA's technological framework is fully modular, enabling progressive integration by industrial partners:

- Multi-sensor perception (AI, LiDAR, radar, camera)
- Multi-sensor 3D localization & SLAM (LiDAR / GNSS / IMU / odometry)
- Trajectory planning & control

Thanks to this unique combination—cutting-edge algorithms, integration capability, and real-world testing platforms—SHERPA is now one of Europe's leaders in autonomous off-road navigation, supporting both agricultural machinery manufacturers and robot makers.

About SHERPA Engineering
SHERPA Engineering (Headquarters in Nanterre, with offices in Clermont-Ferrand, Nantes, and Villaroche, and subsidiaries in Morocco, Tunisia, Romania, and India), founded in 1997, specializes in systems engineering, control and command system development, multiphysics modeling, and artificial intelligence. SHERPA Engineering provides innovative technological solutions tailored to the specific needs of various industrial sectors such as automotive, aerospace, agriculture, defense, space, energy, and process industries.