Service ID S00380

Location Remote

Assessment of Hazard and Risk for Autonomous Agricultural Robots

Provider service

INRAE

Link to content

https://agrifoodtef.eu/catalogue-of-services/assessment-hazard-and-risk-autonomous-agricultural-robots

Type of Sector

Arable farming, Greenhouse, Horticulture, Livestock farming, Tree Crops, Viticulture

Accepted type of products

Design / Documentation, Physical system, Software or AI model, Other

Type of service

Desk assessment, ELSA assessment, Test design, Test execution, Test setup

Description

Designing agricultural robots that operate safely and meet regulatory expectations is essential for market deployment and stakeholder trust. This service offers a structured risk assessment tailored to autonomous robotic systems in agriculture. It supports manufacturers by: Reviewing system architectures and identifying potential points for improvement. Reviewing estimation risk levels and appropriate safety integrity targets. Ensuring alignment with safety standards such as ISO 18497, ISO 25119, and ISO 13849. Through a third-party expert perspective, the service strengthens your risk management approach and enhances the credibility of your safety documentation.

How can the service help you

Before using the service, you may face uncertainty about how to properly structure your risk analysis, estimate integrity levels, or ensure your design complies with safety standards. Your team might also lack internal experience with functional safety approaches specific to agricultural robotics.

After using this service, you will have a detailed and structured hazard and risk analysis, reviewed by experts.

Each risk will be evaluated with justified integrity levels, and your team will receive concrete recommendations to improve system safety and documentation. This helps reduce technical risk, enhances your credibility with testing bodies, and supports a faster path to compliance. This service helps improve the safety of agricultural robots by providing a more accurate assessment of risks in accordance with ISO 25119, ISO/PAS 21448, or ISO 13849 standards.

The determined safety integrity levels are more precise, duly justified, and at the optimal level. As a result, the architecture

How the service will be delivered

This assessment is specifically designed to evaluate the agricultural functionalities of each robot, taking into account its unique aspects. Our approach aligns with the standards and regulations chosen by the manufacturer, ensuring thorough compliance. For highly specialised areas concerning safety and regulations, we can engage additional experts to provide insight. These collaborative services pave the way for the development of a secure functional architecture and, ultimately, a reliable technical architecture.

Service customisation

The assessment includes familiarisation with the operation of the robotic system and the operational design domain by experts. Discussions need to be planned to ensure a thorough understanding of the system and its use cases. The review of the risk analysis requires the participation of the development teams.

Estimated Duration: 2 to 5 weeks, depending on system complexity and the readiness of documentation.

Customer Inputs Required: Technical documentation of the robotic system. Existing risk analysis (if any).

Functional analysis.

Description of the robot’s Operating Design Domain (ODD).

Overview of safety-related functions and design goals Delivery format: Remote assessment (standard) Optional on-site session (1–2 days) to complement document review.1-to-1 meeting presentation about the assessment report.Final report with identified hazards, risk levels, and recommendations Online debrief and Q&A session with your team. Service Process: Introductory technical exchange with the development team