

**Service ID** S00009



**Location** At user's premises, Sweden

## Compliance assessment for robotic machines

### Provider service

Research Institutes of Sweden (RISE)

### Link to content

<https://www.agrifoodtef.eu/services/compliance-assessment-robotic-machines>

### Type of Sector

Arable farming, Food processing, Horticulture, Livestock farming, Tree Crops

### Accepted type of products

Design / Documentation, Physical system

### Type of service

Desk assessment, ELSA assessment

### Description

Ensure your company develops robotic machinery that complies with all relevant regulations, standards, and directives with the support of expert guidance. Beyond meeting existing requirements, expert assistance is provided in areas where the rules are unclear or undefined. For situations with ambiguous or missing guidelines, practical solutions are offered based on extensive experience in functional safety. Autonomous robotic machinery often relies on complex sensor technologies, such as radar, LIDAR, and cameras, to detect nearby individuals. Demonstrating how these advanced sensors can be integrated into safety functions is challenging, as it involves considering not only traditional functional safety aspects but also emerging factors like AI and Safety of the Intended Functionality (SOTIF). Support includes performing comprehensive risk assessments, identifying relevant safety functions, and establishing high-level safety requirements for each. Depending on the project's focus, further guidance can be provided to ensure the selected safety concept aligns with applicable functional safety standards.

## How can the service help you

For innovators developing AI or robotic solutions in the agricultural sector, this service ensures your product not only complies with current regulations but is also prepared for future standards. Navigating the maze of machinery standards and safety directives can be daunting, especially when dealing with advanced technologies like AI-driven robots. This service bridges that gap, making sure your product is safe, compliant, and market-ready.

**Before using this service:** You have a promising AI or robotic solution for agriculture and some understanding of the relevant regulations, standards, and directives, but you're unsure how to apply them effectively in your product development.

**After using this service:** You'll have a clear roadmap from requirements to implementation. Whether you need help conducting a thorough risk assessment or evaluating your safety concept to ensure your hardware and software meet functional safety standards, this service adapts to the specific stages of your development process where extra support is needed.

## How the service will be delivered

This service is fully adaptable to the specific needs of each customer. The assessment process begins with a joint meeting where the customer discusses their options with agrifoodTEF's technical team, including experts from RISE or Asta Zero. Our team is here to guide you through each step.

Examples of possible adaptations:

- **Safety Concept Review:** Assist in determining whether the safety concept for your person detection and position determination systems meets the requirements of relevant safety standards. This can include both traditional functional safety aspects as well as newer considerations like SOTIF and AI integration.
- **Sensor Requirements:** Investigate which standards your physical input sensors need to comply with.
- **Safety System Architecture:** Evaluate the architecture of your safety system, such as a geofencing system, to determine what should be part of the safety-related components and what can be non-safety-related.
- **Operating Design Domain (ODD):** Provide guidance on the definition and application of the ODD for your product.

## Service customisation

This service is designed to help companies comply with existing regulations, machinery standards, and directives, while also providing support in situations where clear requirements are lacking. For example, the service can assist with risk assessments or evaluating the quality of a safety concept.

Examples of services provided by the agrifoodTEF project include:

- **Facilitation of hazard and risk analysis workshops:** Expert-led sessions with specialists from RISE and the customer team. This typically includes one in-person workshop, followed by online meetings via Teams.
- **Evaluation of the safety concept:** Focused on ensuring safety functions meet the required standards, especially in minimising risks posed by autonomous robotic machinery to nearby persons.
- **Deliverables: Hazard and risk analysis support:** Guidance during the development of a hazard and risk analysis according to EN ISO 12100. This includes defining the machinery's limits and structuring the analysis. Support is provided both during Teams meetings and through written feedback, but not in the form of a formal RISE report.
- **Safety concept evaluation:** Assistance in ensuring that the safety concept aligns with state-of-the-art standards and technical reports. This might include structuring safety functions into subfunctions and achieving a specific AgPLr level according to ISO 25119.