AI-enabled component recognition and automated listing technology to support circular marketplaces and the reuse of spare parts

Summary

Profile type	Company's country	POD reference
Technology request	**France**	**TRFR20251216013**
Profile status	**Type of partnership**	**Targeted countries**
PUBLISHED	**Research and development cooperation agreement** **Commercial agreement with technical assistance**	• **World**
Contact Person	**Term of validity**	**Last update**
Enrico FRANZIN	**16 Dec 2025** **16 Dec 2026**	**16 Dec 2025**

General Information

Short summary

A French company developing a B2B marketplace for refurbished bicycle components seeks partners to co-develop an AI-based technology capable of identifying parts from images and generating pre-filled listings. The aim is to build a transferable technological foundation supporting circular economy models across multiple industries.

Full description

A French SME active in the circular economy and the refurbishment of bicycles has developed secondo.bike, a B2B marketplace enabling professional users (repair workshops, fleet operators, associations, manufacturers) to exchange and purchase refurbished or dormant spare parts.

While the marketplace is operational, adoption is slowed by a structural barrier: spare parts typically have a low unit value, making manual listing (photography, measurements, detailed descriptions, compatibility information) too time-consuming for most professional users.

To address this challenge and scale up reuse practices, the company is initiating the development of a shared technological foundation based on artificial intelligence and computer vision. The objective is to enable users to identify a component from a single photo, retrieve structured data from dedicated product databases, and automatically create a pre-filled listing suitable for circular marketplaces such as secondo.bike.

The problem addressed is not specific to the bicycle industry. Similar constraints exist in many sectors: home appliances, power tools, machinery, electronic equipment and more. In these fields, the ability to reliably identify a component and source a replacement — whether new or reused — is a prerequisite for repairing and extending product life.

The envisaged technological platform would include:

- domain-specific databases of components and product structures,
- AI-based image recognition and similarity search,
- automated generation of structured product listings,
- optional diagnostic support tools,
- mechanisms enabling manufacturers to provide official component images and data to improve recognition accuracy.

By co-developing this technological layer with international partners, the project aims to support large-scale reuse, improve product repairability, and offer manufacturers a pathway toward “repair-ready” labelling frameworks.

Advantages and innovations

Existing solutions for spare parts identification are either:

- highly domain-specific,
- proprietary to manufacturers, or
- incomplete, requiring manual search or expert knowledge.

The proposed technology differs in four ways:

1. Cross-industry relevance
The system is designed to support multiple sectors by separating the recognition engine from domain-specific databases.

2. Integrated listing automation
Unlike standard recognition tools, the output is directly formatted for circular marketplaces (attributes, compatibility fields, condition, etc.), drastically reducing the effort required from professional users.

3. Manufacturer-compatible architecture
The infrastructure allows manufacturers to contribute official images, exploded views, and component metadata — improving accuracy and enabling future repairability-oriented certification schemes.

4. Circular-economy orientation
Most digital tools focus on sourcing new components. This project specifically facilitates the circulation of reused parts, which requires handling variability, non-standardised conditions, and non-uniform photography.

Technical specification or expertise sought

The company seeks international partners for R&D collaboration to co-design and train recognition models, enrich databases, and test the tools in multiple industrial domains. Commercial agreements with technical assistance may also be envisaged for partners integrating the technology into existing digital platforms. Investment partnerships may be relevant for scaling the solution globally.

Stage of development

Under development

Sustainable Development goals

- **Goal 12: Responsible Consumption and Production**
- **Goal 13: Climate Action**
- **Goal 17: Partnerships to achieve the Goal**
- **Goal 9: Industry, Innovation and Infrastructure**

IPR Status

No IPR applied

IPR Notes

IPR Notes

Partner Sought

Expected role of the partner

The company seeks two categories of partners:

1. Technology partners (R&D and implementation)

Organisations with expertise in:
- computer vision and deep learning,
- image similarity and component recognition,
- development of structured product databases,
- large-scale data management for multi-sector applications.

Their expected role:
Co-develop the recognition engine, integrate domain-specific datasets, test the technology, and explore scalability across multiple industries.

2. Industrial and repair-sector partners
Companies or organisations from sectors such as bicycles, appliances, tools, machinery, electronics, or mobility systems that:
- manage significant volumes of spare parts or end-of-life equipment,
- face challenges in component identification and sourcing,
- are interested in testing AI-assisted repair and reuse tools,
- seek to evolve from a linear manufacturing and after-sales model toward more circular, repair-driven business practices.

Their expected role:
Provide product datasets, validate use cases, pilot the technology in real operational contexts, and contribute to designing a transferable technological framework.

Type of partnership

Type and size of the partner

Research and development cooperation agreement
Commercial agreement with technical assistance

- **Big company**
- **R&D Institution**
- **SME 50 - 249**
- **Other**
- **SME 11-49**
- **SME <=10**

Dissemination

Technology keywords

- **01003010 - Databases, Database Management, Data Mining**
- **01003003 - Artificial Intelligence (AI)**
- **01003012 - Imaging, Image Processing, Pattern Recognition**
- **01003006 - Computer Software**

Market keywords

- **03004003 - Other electronics related equipment**
- **08003007 - Other industrial equipment and machinery**

Targeted countries

- **World**

Sector groups involved