

### 1. Entity posing the challenge

**BASQUE FOOD CLUSTER:** Artomaña Txakolina, Bodegas Itsasmendi, Cafés Baqué, Paturpat, Giraldo Food Group

### 2. Challenge statement

**How can we improve the internal traceability of products at the factory, both in terms of the product and the machine, as well as externally once they are sold?**

### 3. Possible solutions that can be applied

- Manufacturing execution system (MES)/manufacturing operation management (MOM) system or other production monitoring platforms
- Smart referencing and geolocation solutions using IoT, radio-frequency identification (RFID) or other sensors
- IoT platforms

### 4. Context

The food sector is undergoing major changes as society's demands for increased traceability of products and transformation processes grow, along with greater transparency throughout the supply chain.

In this context, **digital technologies become the perfect ally when it comes to optimising transformation processes and improving the traceability of food products**, as they can track all the stages that food has gone through from its origin, process history and transformation right up to its final destination.

**On the production side**, new technologies make it possible to obtain detailed information in real time on food transparency processes, thereby ensuring compliance with quality standards. In this respect, the companies proposing the challenge believe that they can implement improvements in their processes: **by reducing the loss of control of the product during processing** through the different machines through which it passes, and **by supervising, monitoring and controlling all the stages the product goes through in a better way.**

It is hoped that the traceability of the food can be increased by **geolocating the product** (and/or raw/processed material) or by improving the **monitoring of the operation of machines and their interaction with each other** in the factory.

Moreover, **in terms of the end customer**, good external traceability of batches and end products **will enable faster and more efficient action to be taken in the event of possible product defects**, given that the current methods of identification and control are excessively traditional and even analogue in some cases.

## 5. Subsidiary challenges and objectives

As such, the companies proposing the challenge want to improve the traceability of the food products they produce in two distinct phases:

- **Internal traceability at the factory:** Three data-related areas that companies in the food sector can work on to significantly improve the traceability of their products are: capturing and obtaining data via sensors, processing them using big data, and practically applying the data by using artificial intelligence technologies. Two areas of application are also envisaged:
  - By **adding sensors to machines** (e.g. furnaces, packaging machines, etc.) and monitoring their production lines, companies will be able to know the status of the product with certainty by collecting production parameters. However, the major limiting factor is the difference in age of machines, and the fact that they come from different vendors (which means different connectivity, controllers, operating systems and data deployments).
  - You can **track your products (with smart labels, sensorised/referenced pallets or others)** to understand how raw materials move through the plant, thereby avoiding loss of traceability in certain manual processes where multiple products with different origins are mixed together.
- **External traceability outside the factory:** smart numbering, classification and identification of batches will make it possible to provide geolocation-based traceability of batches. Smart, geolocation-based monitoring of the product once it leaves the premises will make it possible to act quickly in the event of food alerts or defective products.