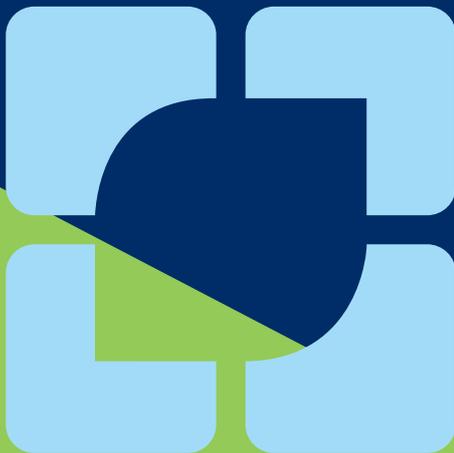


# Food industry enters the sensory era.



**Transform your food products and processes into intelligent sensory systems.**

Ellona transforms the food chain into systems that can sense, analyze and decide.

**Beyond connected.  
Sensing. Adaptive. Intelligent.**

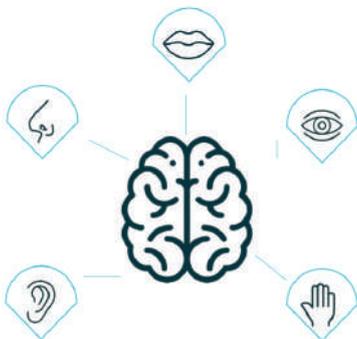


# The next-generation food chain

With **Human Sensory Digitization™**, your products and processes can:

- **Detect** food freshness and spoilage
- **Identify** aromatic signatures and volatile compounds
- **Monitor** food processes (fermentation, cooking, ripening)
- **Optimize** storage and transport conditions
- **Ensure** product quality and food safety

- > **Improved food quality.**
- > **Reduced food waste.**
- > **Product and process differentiation.**



Human perception as the reference



Human Sensory Digitization (HSD)

## Biomimicry applied to food

Ellona digitizes human senses and integrates them into food systems.

**Our technology combines:**

- Miniaturized multi-sensor modules
- Advanced multisensory data fusion
- Self-adaptive artificial intelligence
- Environmental signature databases linked to human perception

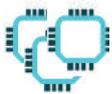
**We don't just measure parameters.  
We decode complex sensory signatures.**

# Sensory intelligence from farm to fork

- 1 Agriculture & livestock**
  - Monitoring of crops and environmental conditions
  - Optimization of agricultural inputs
  - Animal welfare monitoring
- 2 Food processing**
  - Monitoring of production processes (fermentation, mixing, roasting)
  - Detection of production deviations
  - Optimization of quality and yields
- 3 Food transport**
  - Preservation of product freshness
  - Detection of incidents and anomalies
  - Monitoring of transport conditions
- 4 Storage**
  - Product quality control
  - Detection of spoilage or contamination
- 5 Distribution & Retail**
  - Verification of product quality and freshness
  - Detection of odors and anomalies
  - Improved customer experience



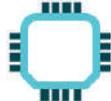
# Multisensory data fusion technology



## Intelligent sensor selection

Ellona selects and configures the most appropriate sensors for each operating environment. The architecture optimizes both electronic performance (signal-to-noise ratio) and fluidic design to enhance measurement quality and stability.

Exemples : MOS (odeurs), PID (COV), électrochimiques (gaz spécifiques).



## Advanced multisensory data fusion

Various miniaturized sensor technologies are combined to capture and correlate complex environmental signatures.

Examples: MOS, PID, electrochemical, optical, acoustic, NIR and IR sensors — orchestrated within a coherent and optimized architecture.



## Virtual sensors and data enrichment

Data modulation and fusion algorithms enable the generation of virtual sensors from a limited number of physical sensors.

Example: multi-sensor signatures enabling the identification and differentiation of multiple odor or gas sources.



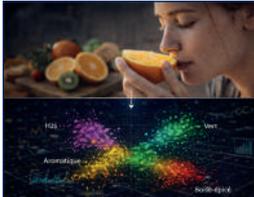
## Adaptive intelligence and environmental signatures

Data is analyzed in real time to identify sensory signatures and build continuously evolving databases.

Examples: dynamic calibration, drift compensation, and inflection point detection in sensory signals.

# Transforming human perception into technological intelligence

## 1 Signal recognition



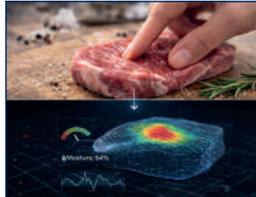
### Olfaction

- Odor • Intensity
- Signature
- Source



### Vision

- Color • Shape
- Texture
- Ripeness



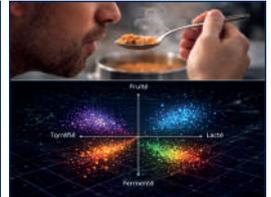
### Touch

- Temperature
- Consistency
- Texture



### Audition

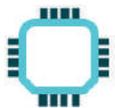
- Process noise
- Sound
- Mechanical anomalies



### Gustation

- Flavor
- Aroma profile • Intensity
- Composition

## 2 Human Sensory Digitization (HSD)



### Miniaturized sensors

Environmental sensing



### IoT infrastructure

Data transmission and connectivity



### Artificial Intelligence

Sensory signature analysis



### Databases

Learning and recognition of sensory signatures

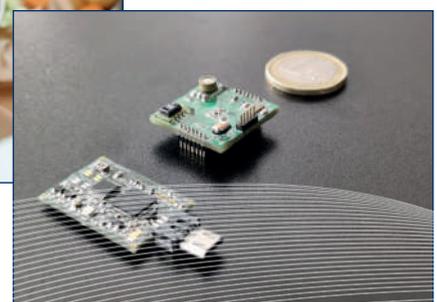
Ellona's sensory intelligence enables the identification of: aromatic compounds, fermentation gases, volatile organic compounds (VOCs), spoilage markers, and characteristic sensory signatures of food products.

## 3 Industrial integration into your devices

Ellona's sensory perception technologies are integrated directly into equipment to:

- **detect** their environment
- **analyze** complex signatures
- **interpret** situations
- **trigger** appropriate actions

**A food chain capable of sensing, understanding and acting.**



# OEM

## From prototype to industrialization



01

### **Definition of business needs:**

We work closely with you to define the requirements and objectives of your OEM project, taking into account your specific challenges and market opportunities.



02

### **Tailored solution proposal:**

By integrating our advanced technologies, we design a customized solution that meets your specific environmental monitoring and risk management needs.



03

### **Proof-of-concept validation:**

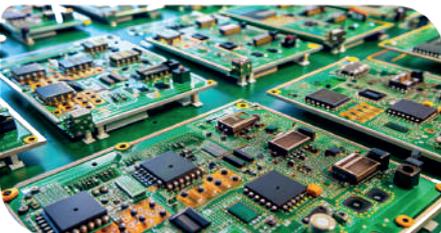
We rigorously assess the technical and operational feasibility of the proposed solution by simulating real-world conditions to ensure its effectiveness and reliability.



04

### **Demonstration of added value:**

We analyze the results to highlight the tangible benefits of our solution, including improved performance, reduced costs, and compliance with regulatory standards.



05

### **Seamless industrial integration:**

We ensure smooth integration of the validated solution into your existing production environment, minimizing disruptions while maximizing operational efficiency.

# An end-to-end solution

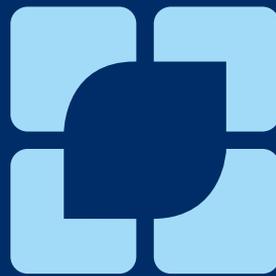
Ellona provides:

- Custom miniaturized hardware modules
- Embedded firmware
- Edge databases
- Cloud software suite
- IoT integration & mobile applications

**A complete, scalable and industrial-grade architecture.**

# A dedicated and experienced team

- Chemists, sensor experts, electronics engineers and data processing specialists: a multidisciplinary team dedicated to your projects.
- Extensive experience in OEM partnerships, from design to industrial deployment.



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