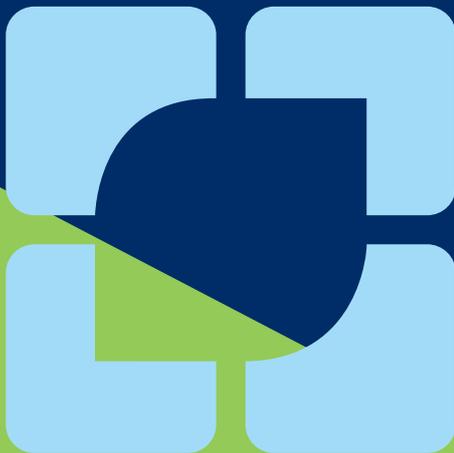


# Home appliances step into the sensory era.



**Transform your appliances into intelligent sensory systems.**

Ellona turns home appliances into intelligent systems that sense, analyze and act.

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

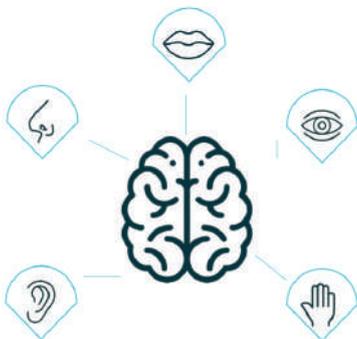


# A new generation of smart appliances

**With Human Sensory Digitization™, your appliances can:**

- **Detect** food spoilage and identify its source
- **Adapt** cooking dynamically to the dish and its environment
- **Automatically optimize** energy consumption
- **Detect** and **analyze** odors, vapors, gases and particles
- **Adjust** operation based on real user behavior

- > **An enhanced user experience.**
- > **Optimized energy performance.**
- > **Tangible product differentiation.**



Human perception as the reference



Human Sensory Digitization (HSD)

## Biomimicry applied to industrial systems

**Ellona digitizes human senses and integrates them into embedded 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.**

# High-value applications

1

## Refrigerators & Freezers

- Early detection of food spoilage.
- Reduced food waste.
- Identification of odor sources.

2

## Ovens & Cooktops

- Real-time energy optimization.
- Smart detection of smoke and gases.
- Controlled activation of pyrolysis.

3

## Washing Machines

- Advanced textile recognition.
- Automatic cycle adjustment.
- Water and energy optimization.

4

## Range Hoods

- Autonomous activation based on steam and odors.
- Intelligent airflow regulation.

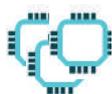
5

## Smart vacuum cleaners

- Mapping of contaminated or dirty areas.
- Dynamic adjustment of suction power.



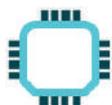
# Multisensory data fusion technology



## 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.



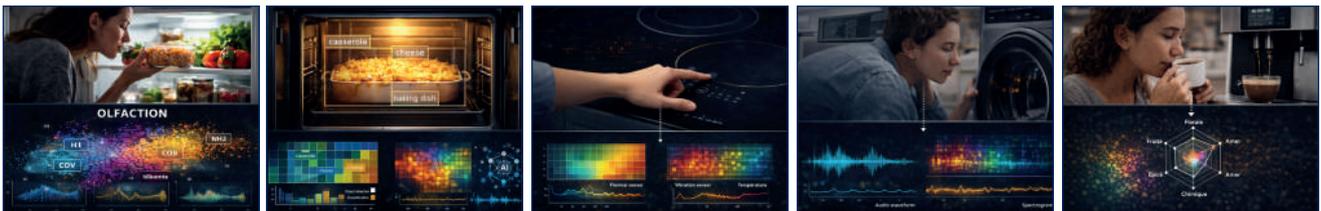
## Adaptive intelligence and environmental signatures

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

- Object recognition
- Shape · Color · Texture
- Motion

### Touch

- Temperature
- Vibration
- Texture

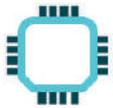
### Audition

- Noise · Frequency
- Intensity
- Sound signature

### Gustation

- Aroma · Flavor profile
- Intensity
- Composition

## 2 Human Sensory Digitization (HSD)



### Miniaturized sensors

Environmental sensing



### IoT infrastructure

Data transmission and connectivity



### Artificial Intelligence

Sensory signature analysis



### Databases

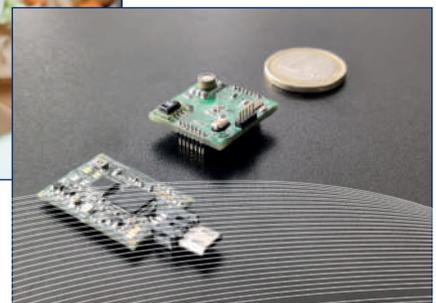
Learning and recognition of sensory signatures

## 3 Industrial integration into your devices

Ellona's sensory perception technologies are integrated directly into appliances, enabling them to:

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

**Appliances 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

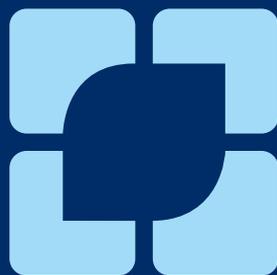
Ellona provides:

- 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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