

# Sports and health enter the sensory era



**Transform sports equipment, health devices  
and connected objects into intelligent sensory  
systems.**

Ellona enables devices to analyze biological and environmental signatures to help individuals enhance their health, performance and well-being.

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

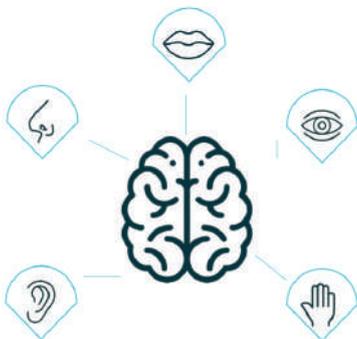


# A new generation of connected health devices

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

- **Monitor** non-invasive physiological markers
- **Identify** biological signatures from bodily fluids
- **Detect** potential health risks
- **Track** sports habits and physiological performance
- **Help** users improve their quality of life

> **A deeper understanding of the human body.**  
> **Personalized health prevention.**  
> **Strong technological differentiation.**



Human perception as the reference



Human Sensory Digitization (HSD)

## Biomimicry applied to health and sports

**Ellona brings the digitization of human senses into sports and medical devices.**

**Our technology combines:**

- Miniaturized multi-sensor modules
- Advanced multisensory data fusion
- Self-adaptive artificial intelligence
- Biological, physiological and environmental signature databases

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

# High-value applications

1

## Exhaled air – Biomarker analysis

- Exercise-related metabolites
- Ketosis and fat burning
- Early respiratory signals (asthma, sleep apnea...)
- Dietary imbalances and bacterial proliferation



2

## Sweat – Physiological monitoring

- Sports dehydration
- pH and lactic acid
- Fatigue and exertion indicators
- Kidney dysfunction indicators (pH, uric acid)



3

## Saliva – Health markers

- pH and acidity
- Oral health
- Metabolic indicators



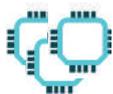
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## Urine – Biological indicators

- Diabetes-related signals
- Urinary tract infections
- Physiological imbalances



# Multisensory data fusion technology

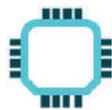


## Intelligent sensor selection

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.

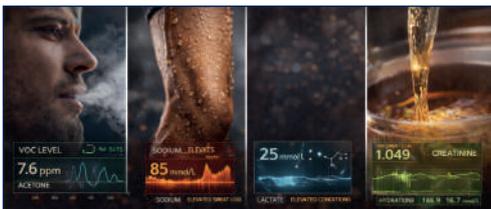
## Adaptive intelligence and environmental signatures

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

- Respiratory biomarkers
- Volatile compounds
- Metabolic signatures
- Biological sources (exhaled air, sweat, saliva, urine)



### Vision

- Posture
- Movement
- Facial expression



### Touch

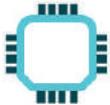
- Température
- Vibration
- Texture



### Audition

- Breathing
- Vocalization
- Sound signature

## 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 equipment to:

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

**Devices 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:**

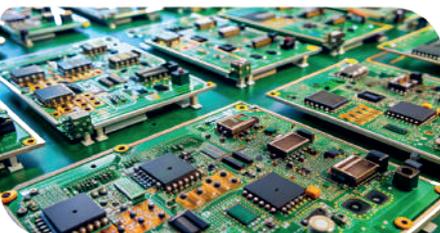
We rigorously assess the technical and operational feasibility of the proposed solution by simulating real-world conditions to ensure its effectiveness and reliability.



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

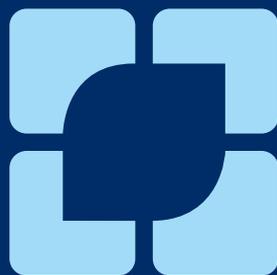
Ellona provides:

- 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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