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SMARTRAIN

# INTELLECTUAL OUTPUT O1

## INNOVATIVE OPEN TRAINING MATERIAL ON CIRCULAR ECONOMY AND DIGITISATION FOR VET LEARNERS IN THE WOOD&FURNITURE SECTOR

## UNIT 6. Related research/innovation projects illustrating the latest developments in the sector.

# 1 PSYMBIOSIS PROJECT

In the facing of Asian competition and cheaper labour from abroad, Europe's manufacturing industry must stay ahead of the curve and remain competitive by offering superior services and value. The EU-funded PSYMBIOSYS project worked to revolutionize the product-service engineering environment through better intelligence technologies. "PSYMBIOSYS, which stands for Product Service Symbiotic Systems, overcomes key barriers to service innovation in the EU," explains Sergio Gusmeroli, project coordinator. These barriers include issues such as increased service orientation, acceptance of the digital world, mediation between product promotion and market psychology, and the improvement of value chains using better IT architectures.

AIDIMME actively participated in a pilot application to the furniture industries.

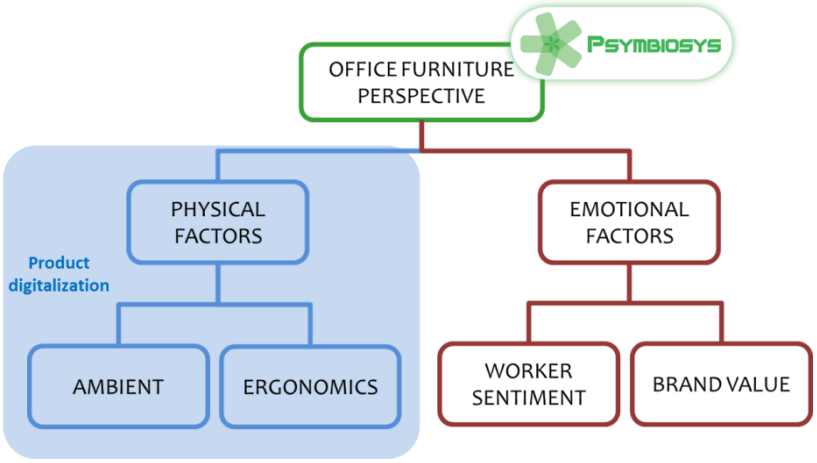


Figure 1. Basic description of PSYMBIOSIS pilot application for Furniture

The furniture use case proposed by AIDIMME is based on a user-centric office furniture renovation Product-Service (PS), considering the experience, sentiments, suggestions and feeling of the workers at the office during the use of the furniture elements in the office environment.

This PS is made of granular services offered by both AIDIMME and the furniture manufacturer. The customer company may acquire a personalized selection of the different services offered, creating its own PS configuration. The most relevant features of this PS are

- **Monitoring of the use of the furniture** in the working environment,
- **Analysis of postural hygiene of the employees** detecting through sensors wrong habits and non-recommended situations at the office environment regarding ambient parameters,
- **Collection and analysis of the opinions and sentiment** of workers towards the furniture in use,

- **Evaluation of the Brand Value** of the customer company from the vision of workers and visitors, also considering social media resources to analyse the furniture market regarding trends and innovation aspects on design,
- **Integration of eco-impact information** to be shown to the customer of the renovation project,
- **Generation of reports** containing the conclusions of the analysis of all the parameters evaluated during the length of the PS

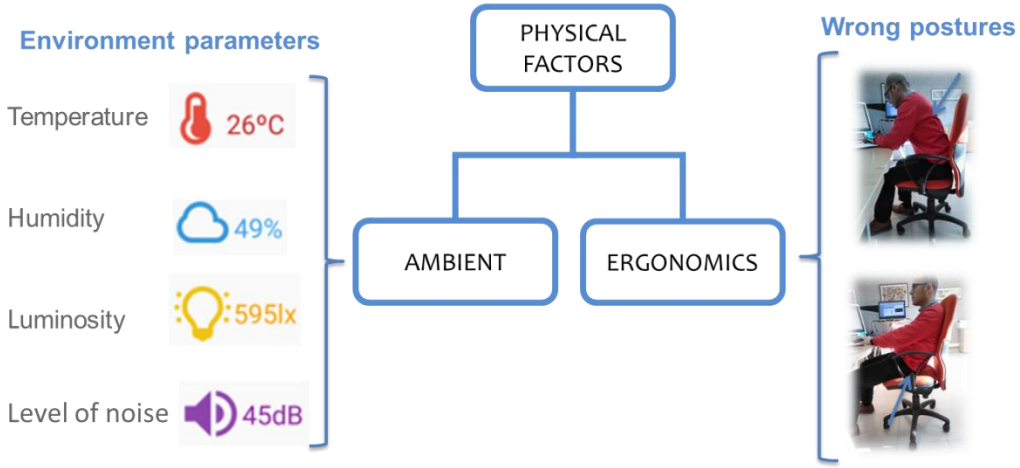


Figure 2. Physical factors considered

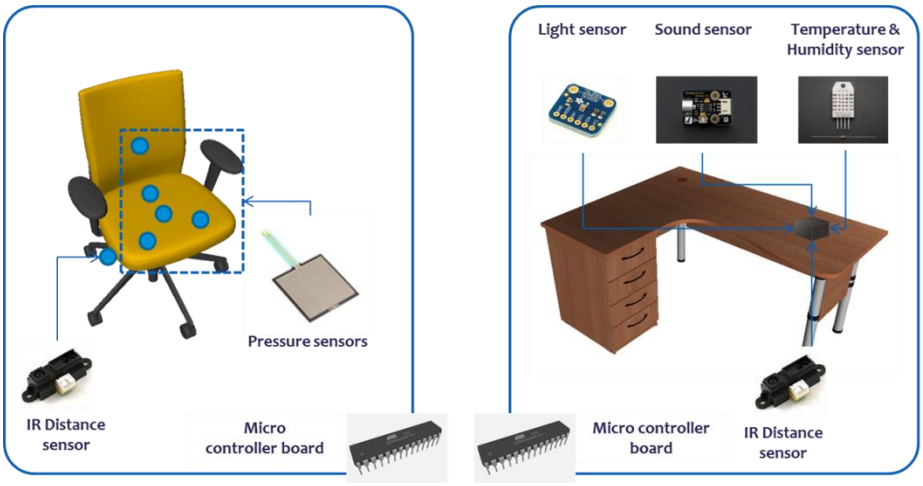


Figure 3. Location in pieces of furniture of several sensor and related components

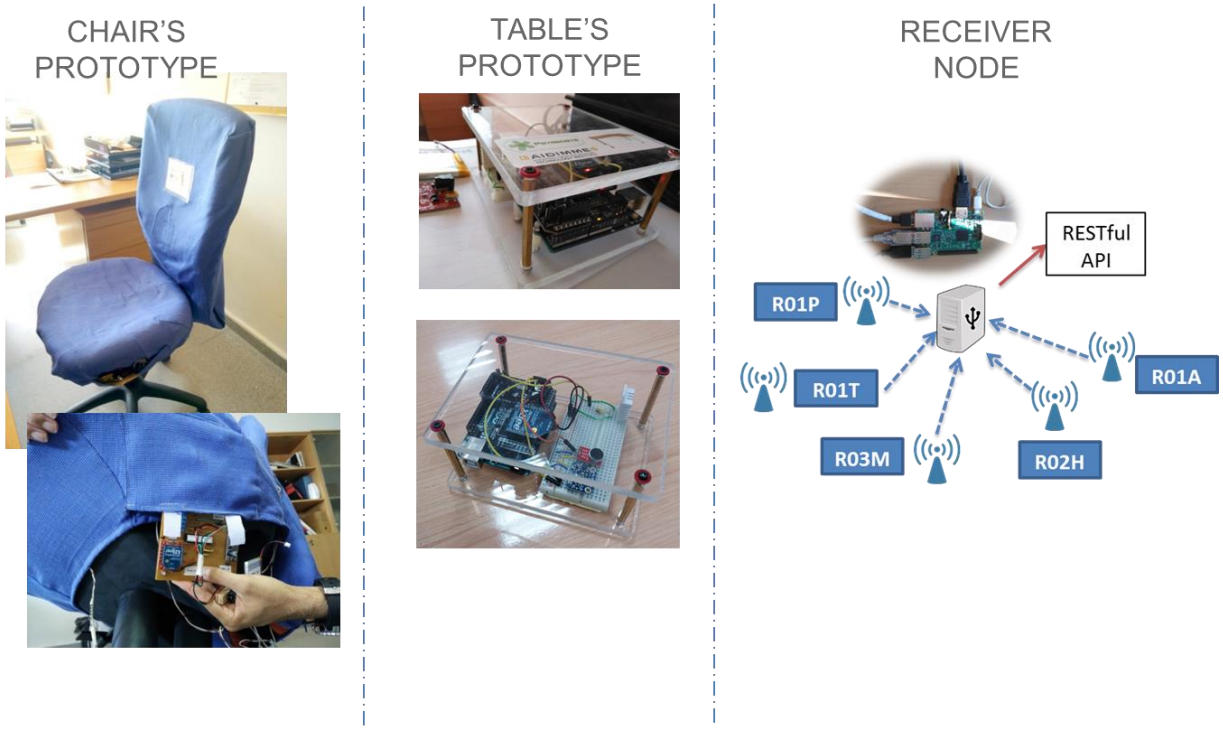


Figure 4. Description of prototypes

SOME FEATURES

- The user can see in the App information about the working environment in his office.

In addition, information about the use of his seat is available: percentage of time spent sitting, "bad posture", etc.

- The user can define for each parameter a range of values outside of which he would receive an alert.
- Alarms are received when the parameters are outside the set range.
- The daily evolution can be consulted.

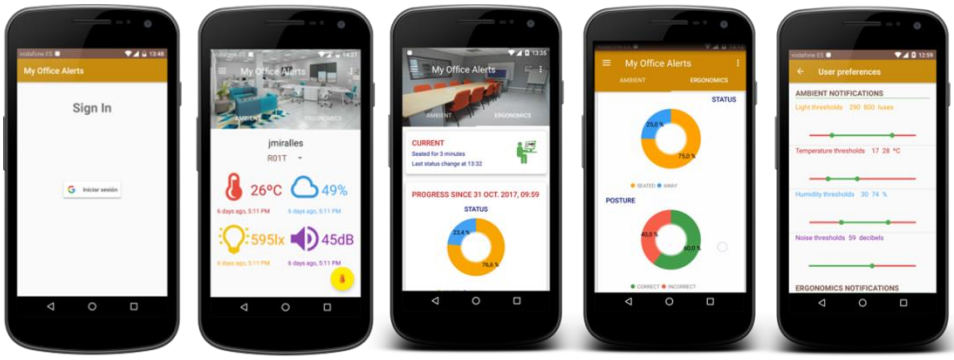


Figure 5. Detail of app screen

# 2 INEDIT PROJECT

INEDIT is a H2020 (Grant Agreement No. 869952) The project aims at the creation an open innovation European "Do It Together" or DIT ecosystem for sustainable furniture co-creation. It channels the creativity of consumers, shapes it through designers' professional skills, and makes it viable by leveraging on the expertise of production specialists in order to **deliver sustainable, smart and personalized new products** in a shorter time to market.

The interest of DIT approach is that it will be applied **by customers and professional producers**, especially SMEs, for conveying higher customer satisfaction through customer-driven production.

INEDIT will demonstrate the approach through **four cross use cases** with high societal impact:

- SUSTAINABLE WOOD PANELS MANUFACTURING
- 3D-PRINTING OF WOOD
- 3D PRINTING OF RECYCLED PLASTIC
- SMARTIFICATION

*All these use cases are of interest. Specially the last one:*

***Case study intent**: To demonstrate the smartification furniture process, as a way to improve user quality of life.*

The environment around us is becoming smart and connected, providing services and solutions to assist us or making life easier. Internet of Things (IoT) is materialized in sensing and

communication devices that connect with other devices generating data and information that become useful while analysed and deployed to services and applications.

Smartification makes use of the panoply of available devices to provide awareness of objects and the overall environmental conditions around us. If associated with intelligent systems, as those resulting from AI algorithms, using big data collections to feed machine learning analysis, it becomes supportive and proactive for a person's benefit.

Using an Open Manufacturing Demonstration Facility (OMDF) platform, it becomes possible to use smartification for the furniture industry, providing solutions for manufacturing in a DIT environment by adopting strategies, designed experimentally in a Fab Lab, tested and validated for that purpose. Those smartified furniture pieces are provided with sensors to enable awareness of the environment.

# 3 REFERENCES

PYSIMBIOSIS PROJECT:

https://www.aidimme.es/serviciosonline/difusion_proyectos/detalles.asp?id=28116

INEDIT PROJECT:

https://www.inedit-project.eu/