



Project Title: Training in Innovation through the Consumer and Sensory Sciences

Final Report

Public Part

Project information

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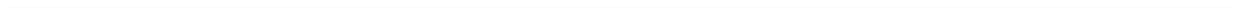
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Executive Summary

INNSENS is a project that consists in the creation of an innovative and efficient on-line training program for the Small and Medium size Enterprises (SMEs) of the Food & Drink sector, related with Sensory Analysis and Consumer Research Sciences. Therefore, the principal outcome of the project is the e-learning program framed in the vocational and educational training of the Food & Drink SME professionals.

The main objective of the project is to provide the European SMEs with abilities and competencies that will help them in the process of new products development by means of the adequate application of the Sensory Analysis and Consumer Research Sciences.

The Project involves three main phases: the exploration of needs and preferences of the targeted professionals, the creation of the on-line course (design, structure and contents) and the piloting of the course by means of fifty professionals.

During the first semester of the project, exploration of needs was conducted. Methodologies applied to achieve this task have been: getting interviews to fifty professionals and surveys to one hundred professionals belonging to Quality Assurance and Research & Development departments. In this sense, the first key result of the project has been the identification of SME's needs and preferences. These results were used as a guide for the development of the course. Therefore, during the second semester of the first year and the first semester of the second year, the training course, including all learning materials in all local languages of the project partners together with the e-learning platform were created. Once the course was ready, the third and last phase of the project was carried out. It consisted of course piloting and evaluation by means of 72 professionals of European SMEs.

INNSENS, a European Commission funded project, has been executed in collaboration with 5 European partners: ainia (Spain), IBA Bucuresti (from Rumania), SIK (Sweden), SSICA (Italy) and UCPH (Denmark). These research Institutes and companies formed a Consortium with a strong SME support research component besides the training provider component.

As future plans, it is foreseen to improve and adapt the course by means of the inputs of the piloting phase and the exploitation of the course in other SME of the sector and in related sectors.

For more information, see the project website available in 6 different languages.

www.innsens.eu

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1. Project Objectives

The general project's objective was to develop an innovative and efficient e-learning training program focused on the use of Sensory and Consumer Research sciences applied to the process of new food and drink products development.

Sensory and Consumer Research Sciences are a key discipline for consumer goods companies. These sciences consist of different methodologies to explore and identify consumer's preferences, needs and expectations. This information is really valuable when it is used as a guide for the product development process. An adequate application of the sensory and consumer sciences will make the innovation process more efficient and so useful to increase the probability of new products success. Ultimately, this will improve SME competitiveness and adaptation capability to a continuous market evolution.

Professionals of the Food & Drink sector, which are the main beneficiary of the project, have been involved in the project in two phases: exploration of the sector needs in the area of education (by means of interviews and survey) and piloting of the course (taking part in the course as students).

Besides the main objective, further objectives of this project have been:

- To improve the efficiency of the training by means of e-learning as a way to reduce the training efforts of SME and increase the cost/benefits of the action.
 - To contribute to vocational training by means of new technologies such as the e-learning platform Moodle, by targeting participants' relationships and by means of visual, attractive and exemplifying contents.
 - To trigger others web based training initiatives in this field at a European level for other possible beneficiaries.
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2. Project Approach

The project has included the development of the following big tasks to assure the fulfilment of its main objectives:

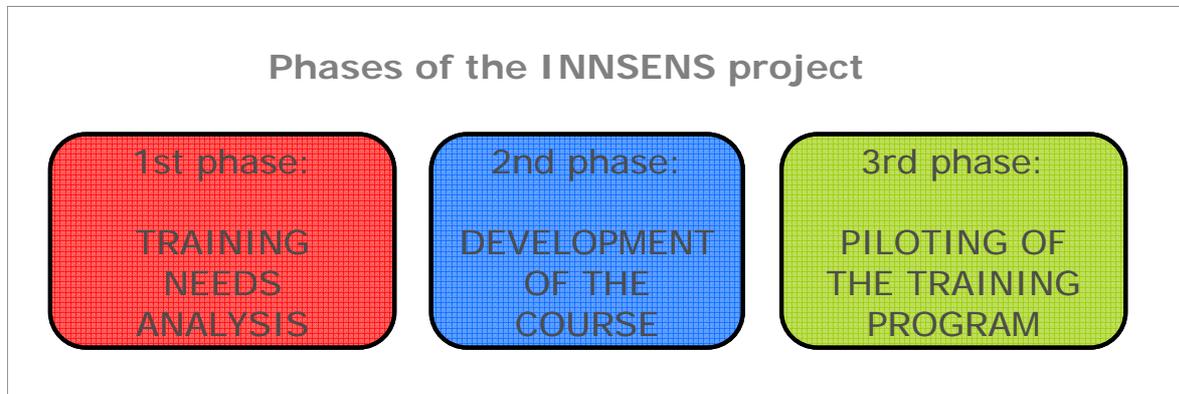


Diagram showing implementing phases of the INNSENS project.

1st phase: Training Needs Analysis

The first task was the exploration and identification of the major needs affecting European food SME related to Sensory and Consumer Research sciences involved in the innovation processes. Knowledge about training contents and related training characteristics have been explored (e-learning preferences, duration and structure of the course, interaction between participants...). Methodologies used for this task have been individual interviews with professionals of the Food & Drink SME sector as well as a quantitative study by means of an on-line questionnaire. Guide for interviews and questionnaire for the survey have been developed for the project and used by all partners in its own country. The on-line questionnaire included a question in which more than forty different topics were included to explore which areas of sensory and consumer science were of main interest for the companies. The leader of the task (SSICA) has elaborated all results and created a report about training needs.

2nd phase: Development of the course

Based on results collected from the Analysis of European SME Needs, the development of the online training course has been done. The development has involved the definition of the course structure, the creation of the training content and of the interactive e-learning platform.

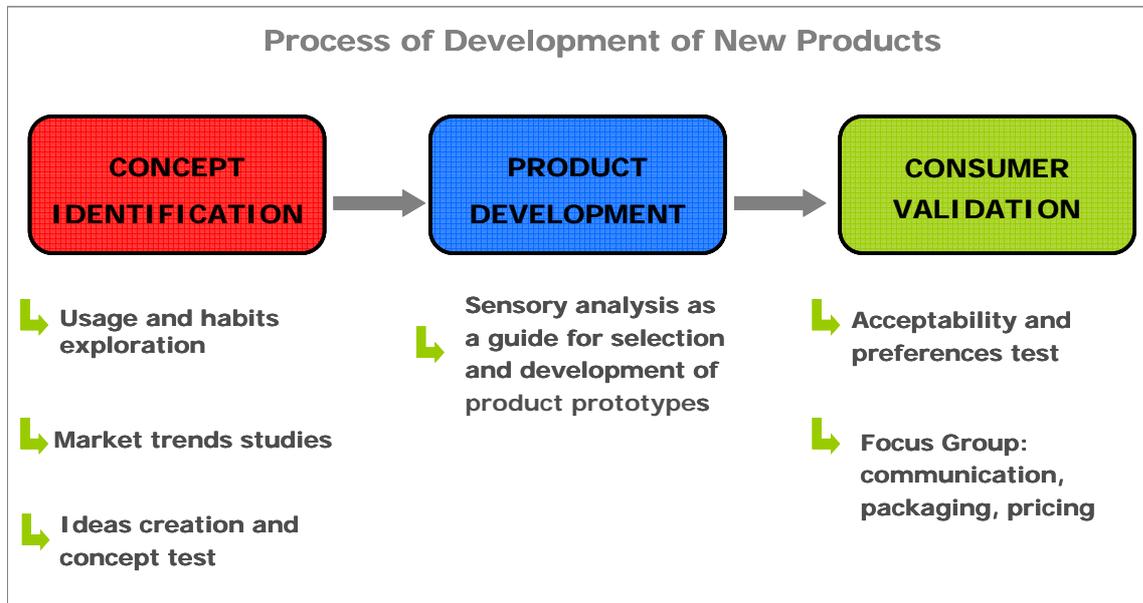


Diagram summarizing the sensory and consumer research tools in the product development process.

Knowledge, abilities and competences in which SME's professionals should improve have been structured in 9 critical subjects or modules. Each module had its learning outcomes in which participants should improve.

Each module was made up of a different number of narrated lessons. A narrated lesson consisted in an mp4 file: a power point presentation in which a narrating voice explained the lesson contents. Besides narrated lessons, each module included complementary learning elements such as assignments and tests for self-evaluation.

An additional informative module describing the project, the course and how to proceed was developed to simplify the following of the course to participants.

All material included in the INNSENS course was created for approximately 80 hours studying, as it was agreed with the European Agency.

Besides the course contents, the e-learning platform was created in a free e-learning website called Moodle. Therefore, Moodle was adapted for the particular course in terms of project corporative image, modules structure and filled with all the course contents.

The development of all the learning contents, which was the biggest task, was done by UCPH with the collaboration of the other partners who reviewed and gave

contributions. Contents were originally created in English and then translated by each partner into local languages.

Achievement of all tasks involved in the course creation in the foreseen time was a **challenge**. **Good coordination** among partners turned out to be a strong point at this stage of the project. Tasks were grouped and scheduled in a document and tracing of the schedule was carried out to foreseen difficulties and avoid delays.

3rd phase: Piloting of the Training program

Once the courses in the 5 local languages were created, these were run for first time as a piloting test in each of the five partner countries by means of professionals of the European Food and Drink SMEs.

A pre-pilot at a lower scale was carried out in Sweden to foreseen possible problems and difficulties. The five pilot courses started simultaneously in the five countries and finished around three and a half months later.

The course was entered via INNSENS webpage, www.innsens.eu with individual usernames and passwords for all participants. The modules (have been inserted in Moodle platform within a strict timetable) were released progressively and according to a schedule time during the e-learning program. Participants had permanent support by tutors during all the training process. In this sense, a seminar about how to train by means of the e-learning tool Moodle was followed by tutors from each country previous to the launch of the course.

After each course module, the participants answered an evaluation questionnaire of the module including how well the learning outcomes were fulfilled. After the last module, there was also a detailed final evaluation questionnaire about the whole e-learning program. Additionally, in-depth interviews in English with 1-2 participants from each country were also carried out.

A certificate of participation in the “Innovation through the Consumer and Sensory Science” Course was delivered.

The single module evaluations, final evaluations and in-depth interviews were used for assessing the participants’ improvements, the e-learning training program itself and to collect participant ideas on how to improve the course even further. A final report about the course impact and possible improvement aspects has been created.

All project partners contributed in the piloting by running the program in their respective countries and being responsible for the guide and follow-up on those SME’s participants.

Dissemination has been another important task that has included different activities that have been carried out during the project lifetime. Dissemination activities were planned to spread results, raise awareness of its benefits and encourage participation and interest of SMEs.

Main activities for dissemination were as follows:

- Web for the project (www.innsens.eu).
- Visible element of Logo in all dissemination materials.
- 6 Newsletters released to keep stakeholders informed about the project progresses.
- Leaflets, posters and oral communications distributed in fairs, industrial and educational events at national and international levels have significantly contributed to increase the interest in the INNSENS project.
- Articles and press releases published in different media (online and offline) in the consortium countries have been one of the main dissemination elements. Different digital channels were used from more generic ones to more specialized sites (Industrial context, Agro-Food sector, educational sector).

Finally, guidelines for the **exploitation** of the main tangible result, which is the INNSENS Course, have been discussed and defined in an Exploitation Plan. The business proposition of INNSENS Consortium is mainly to train Food and Drink sector professionals belonging to SMEs or big companies in Sensory and Consumer Sciences by the use of the INNSENS course. Besides, the objective is also to extend the use of the course to other related sectors (such as drugs and cosmetics), other countries different from the European ones and other trainees not professionals. The exploitation activity could result in a commercial activity or in a non-commercial activity. Each partner is owner of its own local course. The English version has a co-ownership among all five partners.

3. Project Outcomes & Results

The **main result** of INNSENS project is the 5 versions (5 European languages) of the course “**INNOVATION THROUGH THE CONSUMER AND SENSORY SCIENCES**”.

Besides, during the project life, different results have been achieved: Training needs Analysis, Development of the Course and the Piloting of the E-learning program. A description of these results is reported in this section, as well as the results obtained in the Dissemination tasks.

Training Needs Analysis

During the Training Needs Analysis a total of fifty SMEs professionals were interviewed and more than one hundred of SMEs professionals representing different food and beverage industries participated in the on-line survey.

Main results are summarized as follows:

- Lack of knowledge: all countries are aware of the need of training on sensory and consumer analysis techniques to develop new products.
 - Duration of the course: the 80 hours duration course that was planned in the initial phase of the project represented a time commitment conflicting with normal companies activities.
 - Flexibility: almost half of the professionals enquired desired to have the possibility of running the course both at home and at work, to free manage the scheduling and to have the possibility that more than 1 person for company participating in the course.
 - Check of content learning after each learning module is preferred by companies.
 - European relationships: a great interest of SMEs professionals for facing with other European participants has been identified.
 - Main companies interest areas emerged from a list of more than 40 displayed topics.
 - Some of the most interesting topics according to the SMEs were: application of sensory and consumer science in product development, how to plan a sensory study, sensory shelf life and fast sensory methods.
 - On the contrary, some of the least interesting topics were: assessor screening, sensory genetics, and napping.
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Development of the Course

- The final INNSENS course program, according with explicit companies needs and with the partner training experience has been the following:

Training in Innovation through the Consumer and Sensory Sciences	
Module 0	Introduction to INNSENS and the training program
Module 1	Sensory attributes and the way we perceive them
Module 2	Factors affecting sensory measurements
Module 3	Introduction to quality control, shelf-life testing and product innovation
Module 4	Methods with analytical assessors
Module 5	Methods with consumers
Module 6	Essentials of sensory evaluation (subjects, samples & environments)
Module 7	Planning a sensory project
Module 8	Analysing and reporting
Module 9	Putting sensory analysis into practice

- Each module included the following learning elements:
 - lessons in the form of narrated power points presentations;
 - practical exercises and their answers (assignments);
 - tests for self-evaluation;
 - simple and illustrative videos for practical aspects;
 - a forum in each local language and a European one in English.
- The INNSENS course was designed to be implemented in the Moodle platform. The Moodle platform was adapted to INNSENS with the main objective of being attractive, friendly and flexible.
- Different guides were created with the aim to have common proceeding in how to guide participants in the use of Moodle, to guide participants in an e-learning context and in how to manage the forum.

All elements of the INNSENS e-learning course have been designed and adapted to the particular industrial context of professionals of the SME Food and Drink sector that demands flexibility, efficiency related with time and utility related with the practical application of the discipline.

Piloting of the E-learning program

- Related with the participation in the course, here we have some key figures:
 - A total of 77 participants were enrolled in the INNSENS course, 5 participants in the pre-pilot and 72 participants in the five pilot courses.
 - Of 77 enrolled, 58 participants (75%) finished the course that meant to complete at least 70% of the course contents. With this result, an internal quality target that was previously stated in the INNSENS project has been accomplished.
 - Of these 77 enrolled participants, 59 participants (77%) passed at least 50% of the critical subjects. That was another quality target of INNSENS that has been overcome.
 - A particular case is represented by the pilot course carried out in Denmark: most of the participating companies were so called micro companies according to EU-definition (2-4 employees) and this may explain the low percentage of participants finishing the course (see table below).

		Total no. of participants	Participants with ≥50% of critical points (Total no.)	Participants with ≥50% of critical points (%)	Finished participants (Total no)	Finished participants (%)
Sweden	Pre-pilot	5	5	100%	5	100%
Sweden	Pilot	13	12	92%	12	92%
Spain	Pilot	19	14	74%	14	74%
Romania	Pilot	22	17	77%	16	73%
Italy	Pilot	11	10	91%	10	91%
Denmark	Pilot	7	1	14%	1	14%
Total	Total	77	59	77%	58	75%

Table summarizing participation in the pre-pilot and pilots of the INNSENS course

- Related with the evaluation of the course and the in-depth interviews, the following key results have been extracted:
 - In general, the participants approved the complete INNSENS e-learning program: 87% were satisfied with it.
 - The course was also found to be relevant since 90% stated that the course was useful for their profession.
 - The e-learning platform, Moodle worked fine, 85% of the participants felt that it was easy to use.
 - For the workload of the course most of the participants, 60% felt that the workload was ideal and 65% spent less than 40 hours on the course.
 - Most of the participants, 77% answered that the narrated lessons were helpful.
 - The assignments in the modules were also appreciated by the participants: 68% answered that the assignments were helpful.
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- After each module, the participants filled in a test to assess if they had learned the content in the module. 74% agreed that the tests reflected the content in the module.
 - For 53% this was their first e-learning course and as much as 81% of the participants would consider taking another e-learning course.
- Related with improvement aspects of the e-learning program
 - Despite the e-learning program has been well evaluated, there were also elements that did not work so fine. The forums were not so much used, only 40% took the opportunity to interact with the other participants, mainly due to lack of time. In order to improve the activity in the forums, national or international, a kick-off was suggested by some of the participants.
 - Other possible improvements on the INNSENS e-learning program were that the sound quality was poor in some partner countries registrations so, when the course will be used again, the sound quality of the narrated lessons should be checked and improved.
 - There are lessons that have been identified as most difficult and time consuming. These lessons must be divided into shorter ones, as the lack of time has been one of the main problems for the participants.

The INNSENS e-learning program has increased the knowledge in Sensory and Consumer Research Sciences of professionals of the SME's of the food and drink sector. Although some learning elements can be further improved, the content of the course had many very satisfied participants (87%). The e-learning method seems an adequate tool to train professionals in Sensory and Consumer Research Sciences.

Dissemination outcomes

Regarding dissemination, one of the more visible elements has been the **website**. It has been translated into 6 different languages, corresponding to the partners' own languages. The website acts displaying and spreading the knowledge about the project for all different target groups. The website has *Documents* and *Agenda* sections, which have been updated following the project progresses. It has been designed according with the image created for the project, as all the other dissemination elements. The number of visited pages of the INNSENS website until 31th October 2015 has been 10.993.

Brochures were created in agreement with all partners and translated into local languages so the project has been also disseminated by means of their delivery in different national and international events of the food sector, but also of other sectors such as the chemical one.

INNSENS was present by means of brochure delivery but also with a poster in two **important international events**: PANGBORN 2015, the world major conference in Sensory Science – with more than 900 delegates and INTED 2015, one of the largest

international education conferences of the educational sector, with more than 700 delegates.

Another dissemination element already created has been the newsletter. Six of them were created and translated into the five local languages and distributed directly from the central system adopted to 87 subscribers.

Several digital communication actions at a national level have been created in digital publications with high number of readers (such as ainia.es with more than 500.000 estimated readers and eurocarne.es with more than 600.000). Different digital publications have echoed the news, with the corresponding multiplier effect and enlarged the coverage. Different dissemination materials have been created and released: leaflets circulated in numerous and different events (i.e. Expo Milano 2015, meetings of committees, networks, associations, etc.); posters displayed in national events (national conferences, association of professionals, presentations to the partners' clients, etc.).

All these dissemination activities were previously planned in the Dissemination and Communications Plan. Other Plans developed at the beginning of the project for its internal management and monitoring have been the Management Plan and the Quality Plan.

All the public results are available in the website of the project (www.innsens.eu) and in the Leonardo Da Vinci Projects and Products Portal (www.adam-europe.eu).

4. Partnerships

The need for training in Sensory and Consumer Research Sciences is common in the European Food and Drink SMEs . Nevertheless, knowledge and skills in this field is **not homogeneous** along SME, food research centres and Universities. Nordic European countries and France have been traditionally countries in which Sensory analysis is well extended and used in contrast with other European realities.

European cooperation for the development of vocational training could **promote** the **regularization** and **homogenization** of the knowledge and skills in sensory analysis and consumer research in food product development of SME and thus **mobility** of professionals between the European companies.

Moreover, working in the trans-national expert consortium will help to **reduce investment** in financial and personnel resources.

The cooperation within the multi-country partnership also allows the following aspects:

- Exchange of good practices among partners and learn new methodologies.
- Learn about vocational training in other EU countries.
- Participate in the European dialogue for exploring industry needs and providing solutions.
- Promote culture exchange between partner countries.

Collaboration of 5 European partners, ainia (Spain), IBA Bucuresti (from Rumania), SP (Sweden), SSICA (Italy) and UCPH (Denmark).



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5. Plans for the Future

The website (www.insens.eu) is going to be hosted and sustained for 5 years, as committed in the approval of the project. Therefore, the visibility and sustainability of the project during that time is guaranteed by the following targets: the project partners, the food and drink sector professionals, related sectors such as pharmaceutical and cosmetic ones and training sectors (from companies or organizations).

The Consortium, led by AINIA, has defined a plan describing exploitation activities and recommendations for the project results and products. The definition and agreement of the Exploitation guidelines addresses strategies for sustainability, exploitation and commercialization of the main outcome of the project which is the INNSENS course. Each partner will be able to exploit their own local language content of the course accordingly with their own activity while exploitation of English common course has to be in agreement with all partners.

The pilot courses have awakened the interest of other stakeholders than the participants themselves and all partners observe the possibility of running the local versions of the course to different companies at a national level.

In this sense, AINIA is showing the INNSENS course as a good opportunity. In fact, the Spanish INNSENS course has been included in the business training plan of AINIA to cover the companies demand in training in sensory analysis. The use of the AINIA communication tools allowed reaching a relevant number of subjects potentially interested in the topics. As now the guidelines for exploitation of the course have been defined, it is time for AINIA to promote the course by its own channels for commercial purposes. Moreover, the Spanish course has aroused interest in other countries different from Spain, such as the Spanish speaker countries of South America, such as in some organizations from Perú.

The University of Copenhagen (UCPH) sees the INNSENS project as a unique opportunity to increase knowledge about sensory and consumer science in Danish SMEs as well as larger companies. UCPH estimates to run the INNSENS course again within 2016-17 for up to 20 companies, depending on the interest from the food and drink sector.

SP will also consider including the INNSENS course as one of the regularly repeated courses offered to industry. Although courses in sensory and consumer science are often targeted to the food and drink sector, SP is aware of the fact that this knowledge is extremely important and useful for other sectors, e.g. drug and cosmetic one. Additionally, some parts of the course may also be suitable for seminars or workshops for professionals not regularly working with sensory, such as marketing, in order to understand the importance of the company developing and implementing sensory and consumer science.

6. Contribution to EU policies

The development of the e-learning program “Innovation through the Consumer and Sensory sciences” responds to a clear demand for training in sensory analysis and consumer research by professionals from the European SMEs of the Food and Drink sector.

Typically, sensory and consumer science is not taught through e-learning programmes. However, recent methodological developments allow for procedural and practical training implemented via informatics and communication technologies contents and methods.

By means of transnational cooperation between the European partners and answering to the common need of SME for attractive, flexible and efficient e-learning for sensory and consumer sciences a new and easy way of learning has been developed.

Sensory and Consumer Research Sciences allows the SMEs to develop new products in alignment with consumer preferences and needs, being this as diverse as they are in Europe. Thus, the vocational learning, which the project aims, promotes diversity within European tastes and products in Europe. Moreover, diversity of languages is respected by the development of local language versions of the course.
