Project 2016-1-ES01-KA202-025558

INTELLECTUAL OUTPUT O1

OPEN EDUCATIONAL METHODOLOGICAL GUIDE ON TECHNOLOGICAL SURVEILLANCE.

INDEX:

1.- INTRODUCTION

Definitions:

According to Spanish Standard UNE 166006: 2018 "R&D&i management: Surveillance and intelligence system", the technological surveillance is an organized process, selective and permanent, to get information from the outside and from the company itself, regarding science and technology, selecting, analysing and reporting it, in such a way this information becomes in knowledge. Consequently, the company is able to take decisions with a lower risk, foreseeing the changes.

The technological surveillance must be useful for the different company's departments and have to be focused on both, current technologies and new ones, with the objective to manufacture new products and to obtain new processes

The benefits of the Technological surveillance are:

- To carry out the observation and searching for change signals and for novelties, in a methodical way
- To allow the identification of interesting technological areas for the company
- To allow the relationship between providers, whether internal or external, and their clients in the organization.

The Technological surveillance takes into account all kind of documents and forums useful for analysis and reflection about business strategy, such as:

- Fairs and Events
- Benchmarking
- News about sector
- Opinions about sector (experts, users, …)
- Publications (standards, patents, magazines, …)

The objective of this handbook is to apply the concepts and methodologies for establishing a Technological surveillance system, in order to build an efficient and reliable system to obtain information about innovative materials in the market, regardless of its sector. In this way, the company will be able to study the possibility to use them in the furniture sector, leading to new products with innovative properties.

It is important to draw the attention to the difference between novel or innovative material, as in this case, it depends on the application. A material can be innovative or novel in the market, and be very far away from the VET centres utilization. Nevertheless, a material can be innovative or novel for a VET centre, but not in the market.

2. - OBJECTIVES

The main objective is to establish a methodology allowing, for innovative materials, to structure the search and obtain of innovative information about materials, marking the criteria to carry out the monitoring of information sources, the selection of interesting materials for sector and the definition of an assessment system for obtained results.

3.-INFORMATION SOURCES: WHERE AND HOW TO GATHER INFORMATION

Several media and sources have to be taken into account in order to carry out an exhaustive compilation about new materials, or current innovative materials from other sectors, in order to be used in habitat sector.

There are several steps that must be followed in order to obtain the desired result:

- Selection of watch areas and definition of groups/families of materials and products
- Selection of information sources
- Methodical system for searching
- Definition of information flow for its management:
  - Communication
  - Analysis
  - Selection of innovative materials
- Definition of codification and digital storage of information
- Definition of a technical sheet draft
- Definition of criteria for user's management tool

Among the sources to be reviewed or monitored are:

- News, magazines, articles, data base, company's webs
- Innovative products from other sectors
- Fairs

4. - INFORMATION MANAGEMENT

Once the information sources are established, the management criteria must be defined.

With this aim, all the obtained information has to be organized depending on the source:

- Free subscriptions to magazines, news, …
- Subscriptions to alerts
- Subscriptions to RSS
- Monthly access to non-programmable sites
- Fairs

For internal management, the flow of information has to be stated, from communication and analysis to selection of innovative materials:

1. - Compilation, reading and selection of the upcoming news about materials and products, taking into account:
   - Innovation level
   - Main properties
   - Special behaviour/performance
   - Applicability to the furniture sector (habitat)
   - Environmental, ecologic and sustainability aspects
2. - Analysis of information
3. - On-line storage of the information
4. - To establish the type of communication among users

5. - INFORMATION SOURCES

From a general point of view, the documentary areas to search information could be the following ones:

DOCUMENTARY AREAS
MATERIALS DATABASES
MATERIALS DIGITAL MAGAZINES
BLOGS OF ARCHITECTURE AND INTERIOR DESIGN
ARCHITECTURE AND INTERIOR DESIGN MAGAZINES
SPECIALIZED MATERIALS MAGAZINES
FAIRS: CATALOGUES AND DOSSIERS
TECHNOLOGICAL OFFERS
PATENTS
RESEARCH PROJECTS
FORUM FOR SECTORS OBSERVATORIES
REPORTS OF ASSOCIATIONS
NEWS DATABASE

Example of the information sources to be considered are:

DENOMINATION	PROVIDER
MATERIA	Materia exhibitions B.V.
INNOVATHEQUE	FCBA
MATERFAD	FAD Foment de les Arts i el Disseny, centro de materiales de Barcelona
MATERIAL CONNEXION (DATABASE)	MATERIAL CONNEXION
MATTER BULLETIN(Blog)	MATERIAL CONNEXION
GOODFELLOW (metals)	Company: GOODFELOW
JEC Composites Magazine Digital Releases	JEC GROUP
AMAZINGS (ELECTRONIC BULLETIN)	News about science and technology.
ELECTRONIC BULLETIN AQUIJASTER, news for architects	ARQUIMASTER
ARCHITECTURE AND INNOVATIVE MATERIALS BLOGS	IS- ARQUITECTURA
TECHNOLOGICAL OFFERS	CSIC (research projects from centers depending on Spanish government)
FAIRS CATALOGUES	IINOVATIVE COMPANIES
FAIRS DOSSIERS	INTERZUM MADERALIA
PATENTS	ESPACENET WPO
INNOVATIVE MATERIALS DEVELOPPED BY TECHNOLOGICAL CENTRES	EUROPEAN TECHNOLOGICAL CENTRES

6.- ADAPTATION TO MATERIAL INNOVATIONS AND CHANGES OF INFORMATION SOURCES

The constant innovation in the field of materials and productive processes generates that companies have to be adapted to novelties. Therefore, the companies have to face challenges and adjustments, but also, they can gain competitiveness. That is the reason why we must be attentive to the appearance of these changes in the market.

The best way to face the changes in the market is analysing and identifying the information INPUTS, e.g., evaluating the number of the same news related to a specific new material, noticing its different final uses, comparing its behaviour to the one from traditional materials, its new functionalities, …

Therefore, a permanent revision and updating of the information sources are needed, in order to know the new information sources and to study their usefulness for the furniture sector.

In a technological surveillance, the capability to adapt the changes and novelties, modifying the search criteria and materials organization, is important. Therefore, the data base must be flexible, open to modifications and able to be adapted to new technologies.

7. - ANALYSIS OF INFORMATION RESULTS

Once the surveillance areas are stated, the following items must be taken into account:

- Non common materials
- Materials from other sectors susceptible to be used in furniture pieces
- Materials from furniture sector: narrow surveillance to suppliers (solid wood and wood based panels, laminates, paints and varnishes, furniture hardware, glass, metals, textile, etc.), in order to know the novelties released from the sector
- Materials with special performance, regarding technical, visual, tactile or environmental aspects

8. - INFORMATION MANAGEMENT IN THE STORAGE SYSTEM

As the information arrives, it must be coded, which will allow us to identify the materials, facilitate access to information and establish the appropriate group/family of materials.

Regarding the storage system, the following items should be taken into account:

1. To carry out a sheet/file showing all the material data
2. Code the sheet/file and, consequently, the material, according to the group/family to whom it belongs, with the information date of this material
3. If a sample of these kinds of materials is provided with the information, this sample should be properly coded
4. Relationship with the provider of information of the innovative material
5. Processing of information in database for digital access

Information sheet/file

The information sheets, where all data from material are recorded and classified, must include:

- Photograph / YouTube Video of the material (with link)
- Name of the material
- Provider
- Category
    - Wood and wood-based materials
    - Ceramics, stone and concrete
    - Composite materials
    - Other natural materials
    - Glass
    - Adhesives and coatings (paints, varnishes, laminated, PVC edgings…)
    - Textile and leather
    - Metal
    - Plastic

- Presentation:
  - Plate/Board
  - Bar/stick/tube
  - Sheet/film
  - Plaster/gel/liquid
  - Grainy/powder/fibre
  - Grid
  - Tape
  - Foam
  - Textile
- Special properties:
  - Water resistance
  - Fire resistant
  - Non-fire resistant
  - Light fastness
  - Acoustic properties
  - Porosity (Yes/No)
  - Elasticity
  - Stiffness
  - Flexibility
  - Thermal behaviour
  - UV resistance
  - Density (light)
  - Density (heavy)
  - Density (very heavy)
  - Odour

- General appearance:
  - Light
  - Dark
  - Metallic
  - Matt / Medium Gloss / High Gloss
  - Total / Partial transparent / Translucent
  - Opaque
  - Special effect
  - Phosphorescent / Fluorescent
- Touch appearance
  - Hard / Soft
  - Flat / Texturized
  - Hot / Cold
  - Smooth / Rough
- Ecologic aspect
  - Recycled
  - Recyclable
  - Natural
  - Biodegradable
  - VOC
  - Compostable
- Transformation process/application
  - Plastic welding
  - Metallic welding
  - Mechanized

Material codification

A correlative number according to of entry in the database is added to the code, e.g. ADH-10:

ADHESIVES	ADH
COMPOSITE	CMP
FURNITURE HARDWARE	HRJ
WOOD	MAD
METAL	MTL
OTHERS	MXX
AGLOMERATED STONE	PCH
NATURAL PRODUCTS	PDN
PLASTIC	PLT
PAPER AND CARDBOARD	PPC
COVERINGS	RCB
TEXTILES	TXL
GLASS	VDR

Registration of the physical sample of the innovative material

In the event that the sheet with information arrives with a sample of innovative material, it should be appropriately coded and should have the same name as the sheet/file.

If more than one copy is received, all must be coded and sealed with the corresponding group/family and number.

Relationship with the provider of information of the innovative material

For the exposition of the information of the material through the sheet/file, as well as the physical sample, the manufacturer, supplier or distributor must know that this information will be accessible to other companies.

This management must be done when the material information is requested and make it clear that there is no commercial transaction between information supplier and technological surveillance owner, specifying that the aim of this relationship has an educational objective.

Processing of information in database for its digital access.

From this moment, the variables of each material can be entered into a database with digital access, so that it can be consulted online. For this purpose, it is necessary:

- The design of the web must contain the same fields as the previously specified sheet/file
- The design of the data query so that it can be done by a field or by multiple search, in combination of several fields.
  - Family
  - Material
  - Date of registration
  - Company
  - Characteristic
  - Appearance
  - Application sector
  - Etc.
- The design of the registration material software, modifications and cancellations
- User management, definition of profiles to access information

9. – INFORMATION REPORT

Depending on the degree of innovation and the most outstanding characteristics or features, a selection of those remarkable materials must be made.

This monthly selection will be part of a section called "*Favourites"* and will be in a prominent place, both in the physical library and in the online database.

A compilation of *favourites* could be made monthly and sent internally by email as a *newsletter*.

12 Newsletter will be collected annually and a Dossier of the Material Information will be made.

10. - DEFINITION OF THE STUDENT ROLES IN THE SYSTEM

The following profiles must be taken into account:

- **Material experts,** who can form a search network, a working group that could be organized according to the type of material.
  - They will look for and identify the materials or products that are innovative. The collaborators of the Group will be attentive, in their daily work, to detect innovative materials and will inform the working group of the possibility of being considered a new material in *Materializa*
  - The Group will work together to achieve the objective of obtaining technological innovations in materials and the presentation of new features in the work meetings that are held
  - The group will work together to improve the service, contributing ideas and procedures that benefit the management
- The **documentation technician** who does the information management work
- The technician specialized in design and software works
- The communication-networks technician
- The **general administrator** who validates the information
- The **user**

STEPS TO STABLISH A SURVEILLANCE SYSTEM