H2020-NMBP-HUBS-2019

FlexFunction2Sustain

Open Innovation Ecosystem for Sustainable Nano-functionalized Flexible Plastic and Paper Surfaces and Membranes

Starting date of the project: 01/04/2020
Duration: 48 months

= Deliverable D8.5 =

Report from 2nd joint workshops with cluster initiatives

Dissemination level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862156

DISCLAIMER

Any dissemination of results reflects only the authors' view and the European Commission, or the European Health and Digital Executive Agency (HaDEA) is not responsible for any use that may be made of the information Deliverable D8.5 contains.

Executive Summary

Deliverable 8.5 summarises the outcomes of the clustering and integration activities of the FlexFunction2Sustain project with other Open Innovation Test Beds (OITBs) and complementary cluster initiatives, namely the European Materials Characterisation Council (EMCC), European Materials Modelling Councils (EMMC) and the NanoSafety Cluster, all linked through members of the Project External Advisory Board (EAB).

Currently there are 25 OITB projects in the areas of advanced medical technologies, nano-phamarceuticals, lightweight nano-enabled composite materials, materials characterization and modelling,, membranes and surfaces, bio-based materials and materials for building envelops

This open innovation ecosystem aims at gathering all the relevant actors while covering all relevant enablers and services needed for innovation based on new materials, therefore reducing technological risk thus attracting more users and investors and cutting the time to market.

In practical terms, this clustering and integration with the OITBs ecosystem is aimed at taking stock from current policy initiatives and open innovation test beds in order to share good practices and lessons learnt as well as to get new ideas to effectively support the industry enabled using nanotechnologies and Advanced Materials European Innovation Ecosystem in the context of the new framework programme Horizon Europe. While the original idea was to promote this exchange through the organisation of annual joint and hands-on workshops involving all the relevant stakeholders (OITBs, representatives from EU cluster initiatives and companies and other end-users), the COVID-19 pandemic situation made it unfeasible to organise a public gathering and has led to some adjustments in the implementation of task 8.2 - Clustering and Integration to the OITB Ecosystem.

In this context the implementation of task 8.2 has kick started with the organisation of regular bilateral exchange meetings with some of these initiatives. In addition to that, a first joint workshop has been held by month 14 (May 2021) as a satellite event of the EuroNanoForum 2021. The EuroNanoForum 2021 is the benchmark European event in the areas of nanotechnology and nanoscience, as well as advanced materials. In 2021 the event was held as full on-line event organised by INL, the International Iberian Nanotechnology Laboratory, under the auspices of the Portuguese Presidency of the Council of the European Union. This first workshop gave participants the opportunity to share their experience, expectations and new ideas to bring nanotechnologies and advanced materials within the reach of companies and users.

A second workshop is being organised as a satellite event of the Conference on Industrial Technologies IndTech 2022, taking place at Maison MINATEC, Grenoble, France. IndTech 2022 is organised under the auspices of the French Presidency of the Council of the European Union.

This deliverable reports on the public outcomes of the first OITB workshop and gives an overview of the plans for the second workshop taking place during the IndTech 2022.

Table of Contents

1. Introduction

It is expected that test beds link with other existing OITBs with an aim of cooperating in a regular way to exchange services, as well as the outcomes of their experience in providing services, with the final goal of ensuring a systemic sustainability. This can only be achieved through coordination and networking with other test beds as well as with other innovation ecosystems in the EU, whether European, national or regional. This is the rationale behind the implementation of task 8.2 - Clustering and Integration to the OITB Ecosystem and the EPPN, EMMC, EMCC, and NanoSafety Cluster- which has led to the interactions and exchanges described in this deliverable.

An OITB is a set of entities providing common access to physical facilities, capabilities and services, to companies and users, required for the development, testing and upscaling of nanotechnology and advanced materials, covering from validation in a laboratory (TRL 4) to prototypes in industrial environments (TRL 7). Currently there are 25 OITB projects running in six technology domains:

- Lightweight nano-enabled multifunctional materials and components
- Safety Testing of Medical Technologies for Health
- Nano-enabled surfaces and membranes
- Bio-based nano-materials and solutions
- Functional materials for building envelopes
- Nano-pharmaceuticals production

Three Open Innovation Test Beds for materials characterisation and three Open Innovation Test Beds for modelling have also been funded. A list of the OITBs is provided in Annex I. The start of three more OITB projects related to circular and carbon neutral materials technologies is foreseen for Q4 – 2022.

Test beds are expected to form European networks of competences along the entire value chain and match the needs of industry by providing users with easy access to facilities, at different locations as needed. Besides pooling resources, OITBs are expected to setup networks among themselves as a way of accessing complementary services according to users' needs. System sustainability can only be ensured if testbeds cooperate in a regular way with the central aim of addressing industry needs by promoting a broad and consolidated access to physical facilities, capabilities and services across Europe. The FlexFunction2Sustain consortium is therefore committed with the creation of a more open and connected European innovation ecosystem.

Deliverable D8.5 is divided in two main sections:

- Section 2 reports on the outcomes of the 1st OITB workshop.
- Section 3 describes the short-term plan in terms of integration with other OITBs, namely those planned during the IndTech 2022.

2. Outcomes of the 1st OITB workshop

Within the aim of task T8.2 - Clustering and Integration to the OITB Ecosystem, FlexFunction2Susain took the lead in organising the first stakeholders' joint workshop as a satellite event of the EuroNanoForum 2021 conference. The workshop has been planned and organized with the support of the Safe-N-Medtech project, a OITB providing the knowhow, networks and services required for the development of nanotechnology-based medical and diagnostic devices.

The objective of the workshop was mainly to take stock from current policy initiatives and open innovation test beds in order to **get new ideas to support the Advanced Materials European Innovation Ecosystem**. OITBs, related clustering initiatives and end-users had the opportunity to share their experience, expectations and new ideas to bring nanotechnologies and advanced materials within the reach of companies and users. The workshop was divided in two sessions: a **closed session** only with the European Commission and OITB participants to exchange lessons learnt and good practices in terms of the open calls, transition to the sustainable phase, business model and legal structure of the Single Entry Point (SEP); and an **open session** with the presence industry stakeholders and other projects likely to integrate results to OITB service portfolio. The workshop agenda is provided in Annex 2.

Learning from the workshop closed session

Main advices for OITBs:

- Start early with the business plan and hear the customers' voice on their needs;
- Start early thinking about the legal entity and plan this together with all partners;
- There are multiple possible legal structures for the SEP, each OITB needs to find out what's the best model suiting partners' common interests;
- Customers will probably need to be educated on what is an OITB, and on which services an OITB can provide;
- Liability, risk and IPR management within the context of the SEP require further discussion in most OITBs;

One of the goals of this workshop was to promote a continuous exchange between the OITBs. As next action, The FlexFunction2Sustain jointly with the Safe-N-Medtech OITB propose the following approach:

1. Organising follow-up workshops (interim sessions) focusing in specific themes:
    a) How to minimize liability risks (quality, other liability risk, reserve);
    b) IPR management strategies;
    c) Synchronize Open call of the different OITB
    d) How can we improve the general information flow between OITB
2. Organise a subsequent OITB Workshop. For this activity we would propose a rotation between the OITBs for workshop organizing:
    - Safe-N-Medtech, which supported FlexFunction2Sustain in organising this first workshop, will organise the next workshop with the support of another OITB;
    - Suggested topics for the closed session: discuss outcomes of the interim sessions; OITB and quality management systems;
    - The open session will include customers' talks (possibly SMEs coming from the open calls), pitch session prioritising 3rd generation OITBs and other relevant thematic focus.

Summary of the Open Session

Advanced Materials and nanotechnology are critical technologies for Europe's competitiveness. They contribute towards giving EU industries the competitive edge they need for industrial leadership in global markets and promise breakthroughs to solving globalchallenges towards the green and digital transition. To this respect, European Commission DG RTD, Head of Prosperity Directorate **Peter Dröll** emphasised the updated European Industrial Strategy which takes the lessons learnt in this one year of pandemic: *a single market matters if borders are closed and if there's no free movement of goods. Secondly, we are critically dependent in some areas, with not surprise we are dependent on, for example, pharmaceutical products and on materials needed for the energy transition. A third element very important to the OITB discussions is about accelerating the green and digital transition – in this context OITBs' tools can make a substantial contribution in the EU – increasing European competitive and technological leadership, building-up and strength the digital capacity and capabilities, supporting the move to climate-neutrality and circularity and embedding the spirit of industrial innovation.*

The materials development cycle is long and entails several steps such as characterisation, modelling, processing, upscaling and engineering, including a lengthy assessment in industrial environments. **To enable uptake by industry, especially SMEs and start-ups, the Horizon 2020 Framework Programme has supported the creation of an open innovation ecosystem in advanced materials.** Within the previous European Research and Innovation Framework Programme – Horizon 2020, the Commission has invested approximately 250 million euro in **Open Innovation TestBeds** (OITBs) with the aim to bring nanotechnologies and advanced materials within market reachby providing access to demonstration and upscaling facilities as well as advisory services to advance technologies from laboratory validation to prototypes in industrial environments. Scaling-up is the main objective. To reach this objective a couple of functions are key for OITBs, including: reducing costs, reducing the time to market, reducing the material usage making the path to the circular economy, accelerating the maturity of products, reducing the risk of investment and increasing the return on investment.

This open innovation ecosystem aims at gathering all the relevant actors while covering all relevant enablers and services needed for innovation based on new materials, therefore reducing technological risk thus attracting more investors and cutting the time to market.

European Commission DG RTD, Head of Prosperity Directorate **Peter Dröll** said: *these Open Innovation Test Beds provide an important element in the EU ecosystem for research and innovation. They can only reach their full potential if they are interconnected. This workshops is also about this interconnection so that OITBs can provide integrated support to innovators at different stages of technological development. We expect that this network of European Open Innovation Test Beds reach out and deliver services to many users, especially Small and Medium Enterprises. These OITBs are expected to provide services in a sustainable way, for many years and beyond the end of the projects' duration. These test beds will provide improved industry productivity and accelerate innovation in their specific dedicated domains. And this is already happening.*

Peter Dröll also highlighted that i*f we look ahead in the new Horizon Europe, the first calls will be published very soon and we can already say that the support to Open Innovation Test Beds will continue and we will fund actions related to plans that are at the heart of the European Commission: the Green Deal. So the topic selected is about decarbonising industry and it will mainly focus in scaling-up breakthrough and market and innovation support to the enhancement of the European ecosystem.*

The workshop also helped creating a common understanding on how OITBs van make industries' life easier. End-users' talks where industrial stakeholders provided feedback on how the OITB are delivering their services and boosting innovation also helped us learning about the expectations of users towards an OITB. First and second generation OITBs presented their portfolio of services and added value to customers. We invite you to watch the workshop recording here.

3. Plans for the Second OITB workshop

The second OITB workshop is being planned as a satellite event of the IndTech 2022. OITBs participation will include an exhibition area during whole the public event and the organization of a closed workshop targeting the OITB community and the European Commission. Presence of OITBs at the conference is described below:

OITBs Village at the public event (June 28 and 29)

The OITB village will be installed in a tend fully dedicated to the OITBs and open during the whole public event. Activities include:

- Exhibition booths showing OITBs demonstrators, technologies, prototypes (capacity: up to 16 OITBs)
- Lunchbreak sessions presenting:
  - OITB pitch their services to SMEs
  - Impulse speeches from SMEs (to understand their needs and present success stories)
- OITB dinner at the first evening of the public event

Preliminary agenda for the OITB closed workshop (June 30, 8:30 – 15:30)

8:30 – 8:45	**Welcome and practical aspects**
8:45 – 9:45	**Sustainability, Business Model and legal challenges**
09:45 – 10:30	**Panel discussion on business models and OITB sustainability**
10:30 – 10:45	**Coffee break**
10:45 - 11:45	**Services and Open Calls, IP**
11:45 – 12:30	**Panel discussion**
12:30 – 13:15	**Lunch Break [finish for everyone except coordinators, HaDEA and EC)**

13:15 – 15:00	**Recommendation toward EC for future OITB support and strategy.**
15:00	**Wrap up and end of the meeting**

4. Conclusions

The FlexFunction2Sustain team will continue to promote the regular exchanges with an increased number of OITBs and cluster initiatives. Our aim is to promote the organization of a regular annual events so to foster cohesion among testbeds, service integrations, exchange of good practices, jointly dissemination to stakeholders (industry, investors, policy makers, social innovators) and networking.

5. Degree of progress

The deliverable is 100% fulfilled.

6. Dissemination level

The Deliverable D8.5 is public and therefore it will be available to download on the project's website.

ANNEX I. List of OITBs per funded topic and technology domain

Project Topic Code	Topic Descr	Project Acronym	Project Name
DT-NMBP-01-2018	Open Innovation Test Beds for Lightweight, nano-enabled multifunctional composite materials and components (IA)	LEE-BED	Innovation test bed for development and production of nanomaterials for lightweight embedded electronics
		LightCoce	Building an Ecosystem for the up-scaling of lightweight multi-functional concrete and ceramic materials and structures
		LightMe	An Open Innovation Ecosystem for upscaling production processes of lightweight metal alloys composites
		OASIS	Open Access Single entry point for scale-up of Innovative Smart lightweight composite materials and components
DT-NMBP-02-2018	Open Innovation Test Beds for Safety Testing of Medical Technologies for Health (IA)	MDOT	Medical Device Obligations Taskforce
		Safe-N-Medtech	Safety testing in the life cycle of nanotechnology- enabled medichal technologies for health
		TBMED	A testing bed for the development of high-risk medical devices
DT-NMBP-03-2019	Open Innovation Test Beds for nano-enabled surfaces and membranes (IA)	FlexFunction2Sustain	Innovation for nano-functionalised flexible plastic surfaces
		INNOMEM	Open Innovation Test Bed for nano-enabled Membranes
		NewSkin	Innovation Eco-system to Accelerate the Industrial Uptake of Advanced Surface Nano-Technologies
		NextGenMicrofluidics	Next generation test bed for upscaling of microfluidic devices based on nano-enabled surfaces and membranes
DT-NMBP-04-2020	Open Innovation Test Beds for nano-enabled bio-based materials (IA)	BIOMAC	European Sustainable BIObased nanoMAterials Community
		BIOMAT	An Open Innovation Test Bed for Nano-Enabled Bio-Based PUR Foams and Composites
		BIONANOPOLYS	Open Innovation Test Bed For Developing Safe Nano-Enabled Bio-Based Materials And Polymer Bionanocomposites For Multifunctional And New Advanced Applications

		INN-PRESSME	open INNovation ecosystem for sustainable Plant-based nano-enabled biomateRials deploymEnt for packaging, tranSport and conSuMEr goods
DT-NMBP-05-2020	Open Innovation Test Beds for materials for building envelopes (IA)	iclimabuilt	Functional and advanced insulating and energy harvesting/storage materials across climate adaptive building envelopes
		METABUILDING LABS	METAclustered, SME oriented European Open Innovation Test Bed for the BUILDING envelope materials industrial sector using a harmonised and upgraded technical framework and living LABS
		MEZeroE	Measuring Envelope products and systems contributing to next generation of healthy nearly Zero Energy Buildings
DT-NMBP-06-2020	Open Innovation Test Beds for nano-pharmaceuticals production (IA)	Phoenix	Pharmaceutical Open Innovation Test Bed for Enabling Nano-pharmaceutical Innovative Products
DT-NMBP-07-2018	Open Innovation Test Beds for Characterisation (IA)	FormPlanet	Sheet metal forming testing hub
		i-TRIBOMAT	Intelligent Open Test Bed for Materials Tribological Characterisation Services
		TEESMAT	OPEN INNOVATION TEST BED FOR ELECTROCHEMICAL ENERGY STORAGE MATERIALS
DT-NMBP-11-2020	Open Innovation Platform for Materials Modelling (RIA)	MUSICODE	An experimentally-validated multi-scale materials, process and device modeling & design platform enabling non-expert access to open innovation in the organic and large area electronics industry
		OpenModel	Integrated Open Access Materials Modelling Innovation Platform for Europe
		VIPCOAT	Virtual Open Innovation Platform for Active Protective Coatings Guided by Modelling and Optimization

ANNEX II. Workshop Agenda

Open Innovation Test Beds as a Service to the Industry"

Satellite event from **EuroNanoForum 2021**

Closed Session

TARGET AUDIENCE | through invitation directed to all OITB participants

May 4th 2021 | 09:30 – 12:00	
5' **09:30 – 09:35**	**Welcome Session** • **John Fahlteich** | *Fraunhofer FEP, Research Group Leader* FlexFunction2Sustain - Open Innovation Ecosystem for Sustainable Nano-functionalized Flexible Plastic and Paper Surfaces and Membranes
50' **09:35 – 10:25**	**Lessons Learned from 1st Generation OITB business: Open calls and transition to sustainability phase** **Moderator:** • **Ozlem Cangar** | *European Commission, HaDEA – Health and Digital Executive Agency, Project Officer* **Speakers:** • **Angel del Pozo** | *Biokeralty, Deputy Manager of Programs Strategy* **OITB:** Safe-n-Medtech - Safety testing in the life cycle of nanotechnology- enabled medical technologies for health • **Ulrich Froriep** | *Fraunhofer ITEM, High-Performance Center Translational Biomedical Engineering* **OITB:** MDOT - Medical Device Obligations Taskforce • **Andrea Haiek** | *CIDETEC, Responsible of GMP unit* **OITB:** TBMED - A testing bed for the development of high-risk medical devices • **Ivana Toth** | *AC2T research, Project Manager* **OITB:** i-TRIBOMAT - Intelligent Open Test Bed for Materials Tribological Characterisation Services **Time for Q&A**
10:25 – 10:35	***10 min break***

85' **10:35 – 12:00**	**OITBs – Development of new Business Model and SEP structures (in the second generation of OITBs)** **Moderator:** • **Yanaris Ortega Garcia** | *European Commission, Health and Digital Executive Agency (HADEA), Unit B3 Industry, Project Adviser* **PART A** Business models – What are you going to sell? What is your market? **PART B** Legal structures **Speakers:** • **Eduard Piqueras** | EURECAT, *Project Leader & Program Manager* **OITB:** FormPlanet - Sheet metal forming testing hub • **Dirk Brueckner** | GEMIFO **OITB:** FlexFunction2Sustain - Open Innovation Ecosystem for Sustainable Nano-functionalized Flexible Plastic and Paper Surfaces and Membranes • **Ulrich Trog** | *Joanneum Research, Innovation Marketing and Business Development* **OITB:** NextGenMicroFluidics - Next generation test bed for upscaling of microfluidic devices based on nano-enabled surfaces and membranes • **Carlos del Castillo** | *ECCS – The European Convention for Constructional Steelwork, Project Manager* **OITB:** NewSkin - Innovation Eco-system to Accelerate the Industrial Uptake of Advanced Surface Nano-Technologies **Time for Q&A**
12:00	**End of Closed Session**

Open Session

TARGET AUDIENCE | OITBs, Industry, Industry Associations, other projects likely to integrateresults to OITB service portfolio and the European Commission)

May 4th 2021 | 14:00 – 17:30	
15' **14:00 – 14:15**	**Opening Session** • **Peter Dröll** | *European Commission DG RTD, Head of Prosperity Directorate*
10' **14:15 – 14:25**	**What Is an OITB and How Does It Make Industries' Life Easier?** • **Rudolf Fryček** | *AMIRES, CEO*
50' **14:25 - 15:15**	**Expectations of Users Towards an OITB** **Moderator:** • **John Fahlteich** | *Fraunhofer FEP, Research Group Leader* **Speakers:** • **Marlos Silva** | *SONAE, Director R&D and Incentives* • **Quentin Pankhurst** | *RCL - Resonant Circuits Ltd., Business Director* • **Johannes Maui Jepsen** | *Stryker, Project Engineer R&D* • **Joana Paiva** | *iLof, CTO* • **Florian Schmitt** | *i3 Membrane, CTO* **Time for Q&A**
15:15 – 15:25	***10 min break***
55' **15:25 – 16:20**	**Open Innovation Test Beds as a Service to the Industry (Part I)** **Moderator:** • **Marina Dias** | *INL, Business and Strategic Relations* **Speakers:** • **Angel del Pozo** | *Biokeralty, Deputy Manager of Programs Strategy* **OITB:** Safe-N-Medtech - Safety testing in the life cycle ofnanotechnology- enabled medical technologies for health • **Ulrich Froriep** | *Fraunhofer ITEM, High-Performance Center Translational Biomedical Engineering* **OITB:** MDOT - Medical Device Obligations Taskforce • **Andrea Haiek** | *CIDETEC, Responsible of GMP unit* **OITB:** TBMED - A testing bed for the development of high-risk medicaldevices • **Carlos del Castillo** | *ECCS – The European Convention for Constructional Steelwork, Project Manager* **OITB:** NewSkin - Innovation Eco-system to Accelerate the Industrial Uptake of Advanced Surface Nano-Technologies • **John Fahlteich** | *Fraunhofer FEP, Research Group Leader* **OITB:** FlexFunction2Sustain - Open Innovation Ecosystem for

	Sustainable Nano-functionalized Flexible Plastic and Paper Surfaces and Membranes • **Martin Smolka** | *Joanneum Research, Researcher and Project Coordinator* **OITB:** NextGenMicroFluidics - Next generation test bed for upscaling of microfluidic devices based on nano-enabled surfaces and membranes **Time for Q&A**
16:20 – 16:25	***5 min break***
55' **16:25 – 17:20**	**Open Innovation Test Beds as a Service to the Industry (Part II)** **Moderator:** • **Marina Dias** | *INL, Business and Strategic Relations* **Speakers:** • **Sandrine Lebigre** | *IPC, Head of R&D Program - High Added ValueProducts* **OITB:** OASIS - Open Access Single entry point for scale-up of Innovative Smart lightweight composite materials and components • **Zachary J. Davis** | *Danish Technological Institute, Team Manager* **OITB:** LEE-BED - Innovation test bed for development and production of nanomaterials for lightweight embedded electronics • **Luca Magagnin** | *Politecnico di Milano, Full Professor* **OITB:** LightMe - An Open Innovation Ecosystem for upscaling production processes of lightweight metal alloys composites • **Eduard Piqueras** | *EURECAT Technology Center, EU Programmes* **OITB:** FormPlanet - Sheet metal forming testing hub • **Philippe Azais** | *CEA, Deputy head of CEA programme, Energy Storage Solutions and Flexibilities* **OITB:** TEESMAT - Open Innovation Test Bed for Electrochemical Energy Storage Materials • **Franz Pirker** | *AC2T research, Business Development Manager* **OITB:** i-TRIBOMAT - Intelligent Open Test Bed for Materials Tribological Characterisation Services **Time for Q&A**

10' **17:20 – 17:30**	**Final Notes** • **John Fahlteich** | *Fraunhofer FEP, Research Group Leader*
17:30	**End of Meeting**