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Clustering activities with OITB M20

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Executive Summary

Bio-NanoMaterials (BNM) are the combination of biomass with nanomaterials. The latter is a promising new field that expands into most of technical disciplines and brings new and surprising characteristics of materials, when they are constructed on the nano scale, rather than using bulk material. The former (biomass) will make this new development sustainable by supplying biomass as base material. Therefore, the European Commission is giving a generous support to the four consortia, which is developing services to enable this development.

These consortia are partly working on similar areas and are therefore in close contact with each other in order to make the effort more uniform on all the application areas but also to inform the potential users of the services and avoid an overwhelmed and therefore stagnant demand side.

After a period of development of BNM in directions that were defined by the partners, the four consortia will enter the second period with an Open Call for Test Cases, where the market can determine the direction of the R&D. This will be enabled by the Open Innovation Test Beds (OITBs), where the consortia will not only offer technical facilities to innovative SMEs, research organisations and others, but also support them with issues like market research, Intellectual Property Rights and many other services that are essential to bring innovation into the market.

This interim report describes the first half of the Biomac project execution and its cooperation with the other consortia and envisages the development of the second half, which will be market oriented.

Introduction

Bio-NanoMaterials (BNM) are the materials made from biomass and transformed to very small particles, ranging from 1 to 100 nanometres. At this dimension, materials start to behave in ways different to their bulk counterparts. Nanomaterials have peculiar physical, mechanical, chemical and electronic properties and find revolutionary applications in a broad reach across diverse fields. Nanotechnology in general is one of the European Union's key enabling technologies and stands on the verge of launching a new technological revolution. Bringing biomass into this technology field adds the advantage of turning the society into a circular community. In this way two important advantages are obtained that are both core elements of sustainable progress.

To fuel this progress, services have to be offered to lead SMEs and scientists through the many complex procedures to bring their innovation into the market. Open Innovation Test Beds (OITBs) have the task to offer access to demonstration and upscaling facilities, as well as services to advanced technologies from laboratory validation to prototypes in industrial environments. OITBs are seen as key elements in accelerating the

green and digital transition, increasing European competitive and technological leadership, supporting the move to climate-neutrality and circularity, and accelerating industrial innovation.

From the other side, this service has to be offered to many organisations that are involved in this vast field: we are talking about an innovation tendency that touches numerous areas, as can be seen on any of the Horizon 2020 projects that are working on BNM. It is therefore a very labour-intensive endeavour and the risk is that many potential users of the offered services even have no clue about their availability.

In the context of WP9, a special task dedicated to “Clustering Activities” seeks to create synergies among projects and initiatives in the field of bionanobased materials. This interim report describes the activities carried out so far until M20.

Overview

OITBs

Besides BIOMAC, there are 3 other projects that received funding from the European Commission under the Horizon 2020 program in the field of BNM.

[Biomat](https://biomat-testbed.eu) (https://biomat-testbed.eu)

[Bionanopolys](https://www.bionanopolys.eu) (https://www.bionanopolys.eu)

[Innpress Me](https://www.inn-pressme.eu) (https://www.inn-pressme.eu)

BNMs are useful to a vast number of areas. As written above, nanomaterials have peculiar physical, mechanical, chemical and electronic properties and it can be no surprise to find revolutionary applications in a broad range across diverse fields. The matrix presented below maps the different field of application of the Test Cases considered in each project (including BIOMAC).

	BIOMAC	BIOMAT	BIONANOPOLYS	INN PRESSME
AUTOMOTIVE				
PACKAGING				
CONSTRUCTION				
CONSUMER				
FURNITURE				
3D PRINTING				
AGRICULTURE				

ENERGY				
OTHER				





A few partners from BIOMAC are in more than one of these projects, as they may be large organisations with several departments, even within the area of BNMs. This fact can improve the inter-project cooperation. September 2021, EUBIA, as WP9 leader of Biomac, has established contacts with the representatives of such projects, involving also AUTH and RDC.

From September 2021 to July 2022 there have been several closed meetings with a few key persons from the four OITBs. These meetings have produced cooperation opportunities which are reflected in the activities listed in the next paragraph.

Activities for cooperation between the OITBs

The first clustering event: “Open Innovation Test Beds Workshop” described [here](#). This online workshop on Wednesday 20 October 2021 brought together OITBs, SMEs, industry associations, clusters, universities, and research centres. The goal was to build awareness on the OITB services for customers and SMEs, which will bring their own ideas and materials to be scaled up by the Test Beds. During the online discussion, the main topic of interest among the audience was the nature of the Single-Entry Points (contractor or business partner) of each OITB, as there are different approaches from the OITBs. Another important aspect that was discussed was the modalities to access the open call and the type of entities allowed. Other questions called for more clarifications regarding the equipment/facilities provided by the OITBs. During the discussion, the capabilities of the BIOMAC OITB regarding its Pilot Lines that cover the whole value chain from biomass to final products as well as the complementary services were communicated to the audience.

Open Innovation Test Beds Online Workshop

EMPOWERING SMES TO ACCELERATE MARKET ACCESS
OF NANO-ENABLED BIOMATERIALS

Four Open Innovation Test Beds are presenting their services & solutions for
SMEs to scale up their biomaterials & reduce technological risks

Wednesday 20 October 2021 | 10:00-11:30 CET | Online

Figure 1. The first OITB workshop.



Figure 2. Professor Bikiaris with the other OITB representatives.

Even though the event was properly disseminated by the four different OITBs participating, we could not manage to attract the desirable number of stakeholders to participate in the online event. Engaging events and workshops can usually benefit from the physical attendance, especially when promoting an innovative approach that seeks the public approval. Therefore, all four OITBs are considering the next workshop they jointly organize to be in a physical event.

OITB Stakeholder Workshop December 2-3, 2021

The "Second OITB workshop" was an online event, organized by [Safenmt](#) and [FlexFunction2 Sustain](#). SafeNMT.com has an innovative open access platform to offer companies and reference laboratories, the capabilities, know how, networks and services required for the development, testing, assessment, upscaling and market exploitation of nanotechnology-based Medical and Diagnosis Devices. FlexFunction2 Sustain: offering pilot production facilities with Business Development, Networking and Intellectual Property Experts.

The core aim of this workshop was to promote experience exchange and networking between OITBs (1st session on December 2nd) and promote OITBs as a service to the industry (2nd session, December 3rd). The workshop agenda includes a slot dedicated to success stories from OITB open calls and use cases. BIOMAC participated in the workshop as audience and to gain useful information from the experience of the other OITBs. External stakeholders participated in the event and the discussion was focused on the services offered, the practical procedure of the open call. We concluded that the

platform of the open call must be user friendly and with clear instructions to make the application process easy.



Figure 3. The December OITB stakeholder workshop.

Bionanopolys & BIOMAC Stakeholder Online Event – CROATIA

On 17th of March 2022, there was this joint event between the Horizon 2020 projects BIONANOPOLYS and BIOMAC. The goal of the virtual event was to disseminate both projects among academic and business partners in the Republic of Croatia. Questions from the stakeholders asked more info on the services provided within the Open calls, in particular, if there was cascade funding available or not.



Figure 4. The Croatian stakeholder event.

Open Innovation Test Beds Village and Workshop at IndTech 2022 in Grenoble

In June 2022, more than 15 OITBs, including INN-PRESSME, Bionanopolys, BIOMAT and BIOMAC participated in the Open Innovation Test Beds village at the Conference on Industrial Technologies – [IndTech 2022](#), in Grenoble, France. This participation was coordinated during the regular meetings among the four mentioned OITBs.



Figure 5. BIOMAC IndTech 2022, Grenoble.

Project partners and stakeholders present at the OITB village, discussed several aspects connected to the OITBs activities, mainly regarding the Single-Entry-point, the Legal documents and the Open call features.

SEP

The form of the SEP varies in the different OITBs, from the establishment of Non-profit association (NPA) established in Brussels or for-profit company with the involvement of as many partners as possible, to the SEP being an interface and partners collaborating based on contractual agreements. OITBs identified some common challenges regarding the establishment of a new entity and liability issues were the most important factor to be considered. Apart from the final legal form that would be decided, there were also difficulties in respect to the establishment process and collaboration of multiple partners during such a demanding process.

The delays in establishment process or the finalization of the form of the SEP were notable in the majority of the OITBs. BIOMAC's clear definition of the SEP in the GA,

allocating this role to a specific partner, IBB, is surely a significant advantage, allowing the SEP to be involved in the OITB operation, to draft the legal documents and launch the open call.

Legal documents

Considering the difficulties OITBs faced in the development of legal documents that will outline their operation, it was requested from EU to provide support, developing a common template that would cover most aspects that should be regulated, similarly to the Consortium Agreement Template that is available.

Open call

Despite the differences in the launch of the open call, with some OITBs having multiple open calls, common challenges were identified. In some past experiences, many open calls attracted limited applications, affected by the absence of physical dissemination events due to covid-19. For this reason, it was recommended that the open calls should be promoted by EU in a common platform, or cross-promoted by other OITBs to attract more applicants.

Another aspect that was discussed among OITBs was the limited resources of SMEs and the need to identify ways to support them in financing and funding, so that they can enter the OITBs and request services. The information we exchanged with other OITBs was extremely useful, so that we can be prepared and overcome common challenges.

Additional considerations

From gathering the experience of single BIOMAC partners regarding stakeholder feedback, additional notes can be made here. When presenting the BIOMAC projects stakeholders are interested in multiple perspectives. Researchers show interests in the possibility to directly connect with a large set of partners with different expertise as well as to interact with R&D department of firms. Firms – specifically SMEs – are attracted by the possibility to have access to a research and supply ecosystem that could solve innovation and market-related problems and open new opportunities. Moreover, there is interested in the opportunity to participate to the open call hence exploiting the BIOMAC services and competences for free/low risk innovation activities. The main needs of stakeholders refer to the speed in the identification of skills and competences related to bio-based and nano materials, in the reduced risk of innovation connected to the ecosystem and its rules (OITB), as well as in the collaborative dimension of the sustainable innovation, which can be particularly attractive for SMEs. Dedicated, international research networking opportunities may also be of interests.

The road ahead

Between May and July 2022, the four OITBs have discussed on the possibility to hold a new joint event, this time in person. The common idea was to present the respective projects and in particular the upcoming Open Calls. The group initially identified the venue of the Greener Manufacturing show, a large event taking place in Germany in November. However, logistical and pricing issues have forced the group to give up. In the following months, each project will focus on the promotion of the respective open calls and activities.

Nonetheless, the cooperation remains a priority based on the experience of the previous months, the OITBs will seek to convey a message to the European Commission, asking for support in the dissemination of the upcoming Open calls. This should help to ensure a significant level of participation, avoiding the risk of underperformance.

The option of organizing a joint event prior to the launch of the various open calls, remains an objective of the OITB group formed by the sister projects BIOMAC, BIOMAT, BIONANOPOLYS and INN PRESSME.

We also welcome any other OITB workshop, such as the one in Grenoble, to discuss with multiple OITBs that are in different phases of their operation, as well as the European Commission, and identify common challenges and common strategies to ensure achieving the maximum impact. As discussed in the final workshop of the IndTech conference, a second workshop shall be held to further discuss these topics, but also to attract more external stakeholders.