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¹ PU = Public

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Summary

The UNLOCK project aims at unlocking a feather bioeconomy for keratin-based agricultural products. The overall objective is to contribute to replacing fossil-based raw materials with biobased, renewable material by valorizing current underused by-products of poultry processing.

This deliverable includes a summary from the organization of online matchmakings as part for the dissemination events, feather-based clustering and support for establishing of Pan-European platform in the field of agri-food (S3) to ensure that UNLOCK concept, solutions and legacy will be disseminated at wider level.

In total, 38 online matchmakings were organized using a variety of tools and approaches that were aligned with the UNLOCK activities, staged process of engaging cross-sectoral communities in clustering process. In the process, five main formats of online matchmaking were used and included interproject online matchmaking, cluster-facilitated direct introductions, Pan-European virtual brokerage and networking meetings, thematic virtual collaborative workshops and bilateral / multilateral online matchmakings with specific collaboration topic.

Their implementation was done with the view of building bridges for UNLOCK developments uptake, exploration of further cooperation and development of new, joint and interregional projects, as well as to support relationships and cross-sector connections building in bio-based economy.

Online matchmakings were fully aligned with the Stakeholders and project mapping (D8.3). They supported the organization of dissemination and clustering events in Poland, Spain, France and at European level (D8.11), organization of two pilot workshops for bio-based job opportunities creation (D8.12) and setting up of the thematic platform (D8.10) for wider outreach and further uptake of UNLOCK legacy.

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1. Introduction

The European poultry sector produces 3.6 million tons of waste feathers annually, mainly valorised in low added value products. In line with EU Bioeconomy strategy, the UNLOCK project aims to transform this waste into valuable raw material to create a new sustainable value chain.

UNLOCK is led by CIDETEC and driven by a well-balanced consortium of 15 partners that covers the whole value chain, from feedstock and supply chain analysis to processes, end-product fabrication and sustainability assessments.

The main objective of the UNLOCK project is the design and demonstration of an economically and environmentally sustainable supply-chain for a feather-based bioeconomy which will generate innovative bio-based functional materials for agricultural applications.

The initiative is working on the creation of bio-based products for agriculture, such as:

- Seed trays
- Mulch films
- Hydroponic foams
- Nonwoven geotextiles

And to do it, is using three different technologies for feather treatment:

- Mechanical grinding
- Steam explosion
- Microbial fermentation.

This project has received funding from the Bio-based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement N° 101023306.





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2. Objectives

The UNLOCK online matchmaking were organized as part of the communication, dissemination and exploitation activities within the UNLOCK project to promote feather-based bioeconomy clustering, support the implementation of UNLOCK activities and contribute to their further uptake. They played a supportive role in building cross-sectoral, cross-border and cross-industry bridges to foster linkages and collaboration at regional and Pan-European level within the holistic process of developing feather-based bioeconomy.

The main objective of online matchmakings was to create a dynamic and multi-level cooperative environment to promote innovation and business development in the feather-based bioeconomy. Especially, they were aimed :

- To facilitate connections among diverse stakeholders mapped in UNLOCK Stakeholders and project mapping (D8.3), as well as new ones participating in the clustering activities,
- To enable and raise awareness of the UNLOCK project and their developments, especially in terms of further update and post-project cooperations,
- To serve as a bridge for cross-fertilization with projects and initiatives related to circularity, sustainable innovations and bioeconomy developments to discover new areas for collaborations,
- To interact directly with current and future stakeholders to explore technological, project and business cooperation opportunities,
- To create interactive learning and networking environment using dynamic tools that encourage participation and collaboration,
- To connect participants with industry experts, potential investors, and other stakeholders in the bio-based sector, facilitating future partnerships and collaborations,
- To explore new possibilities for use, UNLOCK innovations, funding, learning and partnerships opportunities.

Having in mind those objectives, the format of online matchmakings was aligned to the needs, participants, digital skills and competences, as well as with benefits and added value to UNLOCK's project, partners and stakeholders.





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3. Approach and methodology

Online matchmakings were organized between industries (agri-food, bioeconomy, packaging, logistics, transport, etc.), sectors (public, private, academia, business support) and projects (H2020, BBI, COSME) engaging multilevel cooperation in feather-based bioeconomy have taken place during the implementation of the UNLOCK project.

In line with the UNLOCK communication, dissemination and clustering activities, they were based on building trust and strengthening linkages between stakeholders engaged in multilevel cooperation in feather-based bioeconomy. They also served to prepare foundations for the UNLOCK exploitation activities and for setting up of the Pan-European Platform that will enable wider dissemination of UNLOCK developments.

The approach used took into consideration synergic, multilevel and complementary approaches be used in UNLOCK stakeholder mapping:

- Quadruple Helix (4H) Innovation Framework – where academia (R&D, universities), government (local, regional, European policy makers), industry (SME, start-ups, large companies) and users/civil society collaborate with each other in order to create or discover new knowledge, technology, products and services along the biotech innovation process.
- Cross-cluster cross-fertilisation via European Cluster Strategic Partnerships (ESCP) and other EU and non-EU instruments – based on cross-sectoral focus based on capacity-building, facilitation of learning exchanges, mobilisation of knowledge flows, promotion of digital and circular innovations and international expansion. It was leveraged by connections and links between ESCP, H2020 INNOSUP projects and other BBI JU initiatives.

The above-mentioned approach was enriched with the combination of different research concepts and embedded into the UNLOCK clustering and dissemination framework. It included, among others:

1. Dynamic capabilities concept (Teece, 2007) that refers ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments, putting special focus on the ability to mobilize them effectively to support innovation, adapt to market changes and shape new opportunities. For UNLOCK, this concept was strategic in terms of as identifying emerging trends,





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needs, and challenges in feather-based bioeconomy gathered on the ground with the organization of regional and Pan-European events and its further seizing within the online events, as follow-up activities, partnership building and creating value for the UNLOCK partners and project developments. This way, stakeholders from various sectors were enabled to collaborate, share insights, and leverage each other's expertise. Moreover, this approach fostered collaboration between historically separate sectors, allowing them to reconfigure their relationships and open new avenues for business, research and collaboration. The usage of dynamic capabilities also encouraged continuous feedback and iterative learning.

2. Collaborative dynamic capabilities (Kodama, 2018) defined as 'unique hard-to-replicate capabilities, which accelerate the asset orchestration process through strategic collaboration within and outside companies and promote the processes of co-creation and co-evolution that lead to the creation of new business models and value chains. Having in mind dynamic and multilevel framework of UNLOCK activities, cross-stakeholder orchestration capability concept was also used in an entrepreneurial manner to increase agility and better shape new opportunities for UNLOCK developments.

With those approaches, online matchmakings were designed to support catering to different types of connections:

- B2B (Business-to-Business): facilitating partnerships between companies within the feather-based and connected industries.
- B2A (Business-to-Academia): bridging the gap between businesses and academic institutions for research and development purposes, as well as promotion of bio-based solutions in teaching and learning programmes.
- C2B (Cluster-to-Business): encouraging collaboration where clusters support individual businesses in developing and scaling their operations.
- Multilevel matchmakings: connecting multiple actors and projects in dynamic environments to maximize UNLOCK impact, outreach and exploration of uptake opportunities.
- Interprojects matchmaking: facilitating synergies and joint actions between EU-funded projects that can be mutually beneficial and reinforce their outreach and impact.

Taking into account its dynamically evolving multi-actor approach in the UNLOCK implementation, online matchmakings were tailored and aligned with the specific needs, challenges and opportunities resulting from the staged clustering process, especially resulting from the organization of regional cross-sectoral workshops,





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roadshows and dissemination events in Poland, Spain and France. Additionally, Pan-European approach and perspective have been integrated from the very beginning to create a basis for wider platform that will contribute to further UNLOCK developments. Moreover, cross-cluster cross-fertilisation perspective to interact with synergic EU-funded projects to jointly promote and support circular innovations and releasing the potential of feathers to create feather-based bioeconomy was integrated from the very beginning.

4. Organization of matchmakings

To maximize the impact of the UNLOCK project, activities and results, a variety of formats of online matchmakings has been used to generate a pipeline for new collaboration and innovation opportunities, aligned with concrete needs, digital skills, stakeholder preferences and type of collaborations developed.

The main formats used for online matchmakings included:

1. Interproject online matchmaking
2. Cluster-facilitated direct introductions
3. Pan-European virtual brokerage and networking meetings
4. Thematic virtual collaborative workshops
5. Bilateral / multilateral online matchmakings with specific collaboration topic

In total, at least 38 matchmaking events were organized using different digital tools and included 9 interproject online matchmaking, 9 cluster-facilitated direct introductions, at least 16 online/hybrid matchmakings held within Pan-European virtual brokerage and networking events, 1 thematic virtual collaborative workshop and 3 bilateral / multilateral online matchmakings with specific collaboration topic.

Interproject online matchmakings

Interproject online matchmakings are referred to virtual collaborations based on interlinkages identified between UNLOCK project and complementary projects, networks and initiatives, mostly funded from the European Union. This approach was meant to lay the ground for cross-border, cross-cluster and cross-sectoral synergies and collaboration opportunities to be transformed into joint actions, maximizing resources and impact.





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In line with UNLOCK stakeholders and project mappings, the following linkages with EU-funded projects have been established:

1. **AURORA** (COSME funded project) – was aimed at driving digital and green transformation forward towards safe, resilient, healthy and environmentally friendly food systems. The project had a special focus on food quality, food safety and food authenticity and the application of novel, deep and Industry 4.0 technologies.
2. **BIO-Boost** (Horizon Europe funded project) – aimed at interconnecting European innovation ecosystems and boosting innovation agencies for bioeconomy value chains. It focuses on building and expanding networks, cooperation and enlarging the participation of more diverse innovation stakeholders and territories to existing successful initiatives in the field of bioeconomy.
3. **SCALE-UP** (Horizon Europe funded project) - aimed at boosting community-driven bioeconomy development and supporting regional multi-actor partnerships - consisting of private businesses, governments and policymakers, civil society organisations, and researchers - in identifying and scaling-up innovative and sustainable bio-based value chains that build on regional resources.
4. **SUAVE** (Euroclusters, Single Market Programme) - focused on boosting urban agriculture towards sustainable and resilient urban food systems and support European small and medium enterprises (SMEs) in European and international development for the green and digital future of urban food supply.
5. **B-Resilient** (Euroclusters, Single Market Programme) – aimed at strengthening resilience and accelerating the dual transition (green and digital) and linking the agri-food ecosystem to key sectors working with bio-based ingredients, with the aim of stimulating cross-sector fertilization in the search for new products to meet customer demand.
6. **Brilliant** (CBE JU) is aimed at supporting the adoption of sustainable and cooperative business models in rural areas, to incorporate agricultural by-products valorisation, seeking to increase and diversify primary producers' income.
7. **BioSoilutions** (Horizon Europe funded project) is an innovation project that strives to tackle soil degradation and focusing on optimising four different biowaste valorisation routes to develop advanced soil improvers.
8. **Biopyrania** (CBE JU) is aimed at developing safe and sustainable processes for the creation of bio-based building blocks starting from second-generation biomass of European origin, addressing challenges in sourcing and production efficiency. It also supports the development of new bio-based polymer types- polyamides and polybenzimidazoles - using safe and sustainable processes.





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9. **BEAGLE** (Horizon Europe) – is focused on an innovative methodology for value creation from the uptake of the research results applying the Blue Ocean strategy. It explores new market niches by fostering sustainable value chains in untapped markets, while promoting disruptive synergies and innovation.

The building of interlinkages had dynamic and evolving approach. In total, at least 9 online matchmakings were organized at interproject level. With AURORA project, online collaboration matchmaking was aimed at co-discovering collaboration opportunities between UNLOCK projects and members of Upcycling Community and showcasing UNLOCK developments during pilot implementation of new cluster services within the Foodleap platform developed by Dutch cluster Foodvalley NL. With BIO-Boost project, several cooperation opportunities were identified and seized, including involvement of UNLOCK bioeconomy challenges in BIO-Boost hackathon events, study visits and staff exchanges, as well as support and engagement in the implementation of UNLOCK clustering and dissemination events. The matchmaking established with the SCALE-UP project was aimed at showcasing UNLOCK developments during student competition events in Poland, perform analysis and possible stakeholders' engagements in the UNLOCK clustering events in Spain, France and Poland, as well as collaborations within the S3 Interregional Platforms related to Agri-Food, among others. SUAVE project online matchmakings were strategic in terms of building bridges for UNLOCK innovations uptake, especially hydroponic foams that can be used in urban farming and already established community of SMEs, clusters and business support organizations from UNLOCK target countries and at Pan-European and global level. The matchmaking with B-Resilient was referred to the possibility of including UNLOCK experiences, treatment technologies and solutions to be integrated in the Skills Hub that is a one-stop-shop for SMEs to access valuable information and resources to improve their resilience. Matchmaking with Brilliant, BioSoilutions and Biopyrania projects was related to joint organization of interproject exhibition at the conference « The future of Bioeconomy » organized and hosted by the BIO-Boost project in Brussels that counted with the participation of high-level policymakers from the European Commission (DG RTD, DG ENV) and bodies engaged in bioeconomy development (BIOEAST, EIT Food) that shared insights into research and innovation strategies, discussed pathways to economic viability of bioeconomy innovations and presented Bioeconomy Strategy. Online matchmaking with Beagle project was focused on the possibility to support UNLOCK uptake by participating in an open call for makers and academics that would have the possibility to work together on circular agri-food innovations in mixed-teams facilitated by clusters.





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Cluster-facilitated direct introductions

The second type of online matchmakings – cluster-facilitated direct online introductions - is referred to virtual introductions of partners and potential partners with identified collaboration, research or innovation opportunity. Its focus was on facilitating B2B, C2B, B2A and other collaborations. The introductions were organized at regional, cross-border and cross-sectoral level and were mostly implemented via dedicated mailings. The introductions were organized by UNIMOS that facilitated:

1. Three business-to-academia (B2A) matchmakings between Polish researchers and small and medium enterprise;
2. Four cross-border academia-to-academia (A2A) matchmakings between Polish and Spanish researchers;
3. Two cross-regional and cross-sectoral academia-to-academia (A2A) matchmakings between Polish researchers.

In total, 9 online introductions were organized, but taking into account the dynamic approach of clustering events, especially CBE JU Info Day 2025, more online matchmakings are foreseen in the near future to interlink potential partners and support the development of UNLOCK business cases and new bio-based value chains.

Pan-European virtual brokerage and networking meetings

Pan-European virtual brokerage and networking events were events dedicated to building partnerships, connections and new proposals and were organized using virtual community platforms with mobile app features, enabling posting collaboration opportunities, searching for potential partners and scheduling 1:1 meetings. They were organized within the Bio-Based Consortium (BIC Consortium) and CBE JU Info Days 2024 and 2025 matchmaking and brokerage platforms that supported the presentation of the UNLOCK developments, searching for funding opportunities, establishing direct online contact with UNLOCK stakeholders and scheduling b2b meetings. This kind of online networking also served as an opportunity to exploring and building Pan-European collaboration spaces within S3 interregional Agri-Food Thematic platform to ensure the continuation of UNLOCK legacy. In total, at least 16 online/hybrid matchmakings were held between 2024 and 2025 that further turned into in-person meetings held during the above mentioned event. Meetings were held with representatives of French, Belgian, Polish and Spanish clusters, as well as research organizations from Poland and Spain, coordinators of CBE JU ongoing projects and proposals developers, as well as private companies interested in collaboration with UNLOCK partners on further developing UNLOCK solutions.

Thematic virtual collaborative workshops

Thematic virtual collaborative workshops were organized by third parties and connected with UNLOCK objectives and clustering activities. They had a format of





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interactive online sessions focused on specific topics or themes, designed to foster collaboration, idea generation, and problem-solving among participants. UNIMOS representatives participated in online cluster workshop on Agriculture/Agrifood aimed at exploring possible collaborations at the regional level between application clusters and photonics clusters, where first drafts of potential collaborations on soil quality with Mazovia (Poland) as leading region are being developed.

Online matchmakings with specific collaboration topic

Lastly, online matchmakings with specific collaboration topic were virtual events where two or more parties discussed concrete cooperation opportunities. Here, three online matchmakings were organized to explore possibilities to jointly develop collaboration withing S3 Thematic Smart Specialisation Platforms - joint initiatives between several Directorates General of the EC to encourage regions and their stakeholders to collaborate in different areas, including Agri-food.

5. Lessons learned and follow-up

As part of its dissemination, clustering and replication process, UNLOCK partners have been organizing online matchmakings to actively boosting feather-based bioeconomy.

The process of online matchmaking has been highly interactive, following market demands, constantly identified needs and opportunities and performing partners matching done at regional, Pan-European and cross-sectoral level. It engaged a wide spectrum of representatives of public, private, scientific, cluster and non-governmental organizations identified in the UNLOCK stakeholders and project mapping and engaged in clustering process. Agile, interconnected, flexible and versatile use of different formats of online matchmaking together with a variety of digital tools aligned with stakeholders' preferences and digital skills enhanced existing and built new interlinkages between quadruple helix actors across European regions engaged in feather-based bioeconomy.

During the process of implementing online matchmaking, several insights and comments from stakeholders were gathered, including:

- Building cross-sectoral, cross-border, and cross-industry collaboration linkages requires strong networking skills to foster trust and partner relationships, digital literacy, coordination skills to organize joint activities and pilot projects, as well as cross-cultural communication skills to bridge diverse regional, sectoral, and linguistic differences.





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- Cluster and network organizations can serve as facilitators, interconnectors and bridge builders between research, business and other stakeholders, helping to identify potential collaboration opportunities and facilitate initial introductions.
- Fostering structured interproject cooperation between BBI JU / CBE JU projects and between synergistic projects financed from CBE JU, Horizon, SMP, COSME and Erasmus can be beneficial to enhance resource sharing, avoid overlaps, multiply impact and unlock new bioeconomy opportunities.
- Online brokerage and matchmaking at Pan-European networking events significantly amplify new possibilities for the use of UNLOCK innovations—both treatment technologies and end-user products—as well as potential funding, learning, and partnership opportunities at regional and interregional levels.
- Flexible digital formats and tools should be adapted to align with stakeholders' preferences, digital skills, and internet connectivity, particularly considering the needs of stakeholders from both rural and urban areas.

The online matchmaking supported both the UNLOCK implementation and UNLOCK continuation within the S3 COP platform, laying the ground and building working relationships with innovation actors interested in feather-based bioeconomy and circular economy. It was also meant to support the engagement of cross-sectoral communities and co-design of strategy axes and its implementation roadmap together with potential funding sources that can enable further activities after the end of project financing. This way, online matchmaking will serve to complete UNLOCK value chains and work together of further leveraging the UNLOCK legacy.

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