DELIVERABLE 8.1

Project-Specific Innovation Approach and Innovation Management Process

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1 Introduction

This deliverable is based on Task 8.1 which developed a project-specific Innovation Management approach and plan, employing innovation/exploitation theory and process concepts applied to the food packaging and food manufacturing domain. Innovation Management is the capability to manage an invention/idea for a new product, service, process or method up to its successful realisation[1]. It provides for a conceptual framework for all partners to work towards the final outcome of this project, namely, to demonstrate the commercial and industrial viability of a novel next generation food packaging. The conceptual framework will ensure that a focused, concise innovation pathway is followed in the project to capitalize on the market opportunities through a clear understanding of the markets that will be served, business case development, business planning and preparation for market introduction as well as mitigating non-technological barriers, such as those related to regulation and consumer perception with regard to reluctance to use nanotechnology in food related products. It will assure a focused, concise innovation pathway to be followed, including preparation for the final business case and drafting of the business plan, based on and informed by a market analysis (task 8.2), IPR management and technology transfer arrangements for protecting the created value (task 8.7), consumer perception of nanotechnology in food packaging (task 8.3), additional barriers identified by the Stakeholders Forum (task 8.4) and including the lessons learned in WP7 related with the environmental, economic and social sustainability. Likewise, the Innovation Management will include a close, interactive exchange of knowledge, data and experience gained from the four pilot sites.

The innovation & exploitation activities will be supervised and managed by the Innovation Board, composed of an appointed representative from each industrial partner in the consortium as well as all partners that produce Foreground IP. Additional team members qualified and experienced in this domain may be nominated by the core partners interested in the exploitation and business planning for project outcomes. The Innovation Management will manage the different groups - specific partners and designated experts from these partners - to work together towards the introduction of the new products. It also includes a close, interactive exchange of knowledge, data and experience among the partners. The Innovation Manager, a member of the Project Executive, will be the Chairperson of the Innovation Board.

As stated on the European Commission's Horizon 2020 website, "Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness.[2]" In this respect, the EU recognizes that more emphasis needs to be placed on funding research and innovation that will eventually lead to commercial opportunities both within and beyond the borders of the EU. Within this context, the EU funded Innovation Actions, such as the NanoPack project, are specifically aimed at bringing new technologies to a (close to) market readiness level, with the expectation that they will be commercialised shortly after completion of the project. In the implementation of such projects, it is no longer sufficient to simply develop new technologies; rather, the eventual exploitation and business potential must be considered and planned as part of the project activities. To achieve this, the development of a project-specific Innovation Management approach and plan are required. These can be built based on innovation/exploitation theory and process concepts.

[1] European Commission (2004), *Innovation Management and the Knowledge-Driven Economy*, Luxembourg: Directorate General for Enterprise.

[2] https://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020

In this deliverable (D8.1), the Innovation Management process, which will facilitate all deliverables of WP8 and eventually lead to the development of the final business plan, will be described in more detail.

2 Problem Statement

Knowledge is a driving force for economic development.[Error! Bookmark not defined.] The countries with the highest l evels of economic development, such as Switzerland, Japan and the Scandinavian countries, are also those with the highest Knowledge Economy Index.[3] Within these knowledge-driven economies, innovation plays an important role, allowing for organisations to differentiate themselves in an ever increasingly competitive market. However, creating an environment that fosters and capitalises upon innovation still presents problems for many. In particular, **the ability to bring together the right players that will facilitate the innovation, and subsequently the introduction of a new product/process on the market, remains one of the biggest challenges**, thus necessitating Innovation Management.

The following sections will address this challenge along with the following questions:

- What are the steps that we as a consortium need to take to be able to sell the technology to the relevant stakeholders?
- Whom do we need to achieve this?

3 Collaboration

3.1 Personnel/organisation

With the NanoPack project being an Innovation Action, emphasis is placed on pilot production of the products, applying novel technology, and the consortium has been built with this in mind. To achieve the ambitious objectives necessitates a multi-disciplinary collaboration combining experts in key enabling technologies such as nanotechnology, polymer technology, production of polymer nanocomposites and active food packaging, assessment, scale up of manufacturing processes, life cycle assessment, consumer behaviour as well as regulation & safety issues. Therefore, the consortium is composed of four complementary sets of partners to include all required skills, expertise and experience:

Industrial partners and SMEs providing relevant industrial experience, knowhow and technologies to the project and will perform the pilot testing (BBEPP, Carmel, Cflex, Tommen, Dawn, Arla, PdG, CITA, VTG)

Academic partners providing European scientific expertise and knowledge for the project (Technion, FHG, DHI, NRCWE)

Demand Side partners that are providing a link between the demand side - retailers and consumers - and the supply side (AIPIA, EUFIC, EFFoST, MAPP)

Project Management partner, for overseeing the progress and outcomes of the project (Agora)

[3] World Bank Institute (2007), *Building knowledge economies – Advanced strategies for development*, Washington DC.

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The fact that the consortium covers almost the entire packaging supply chain was a strategic decision, as these are the parties needed to drive the innovation process. Moreover, this allows for the technology to be developed and tested in near to operational environments. As a result, the technology development is expected to reach at least TRL7, if not already a commercially viable product.

3.2 Project management

An important aspect to successful innovation is effective project management, which is necessary to maintain focus, facilitate progress, and make crucial decisions to be able to achieve the ultimate goal. In general, a project manager should therefore be in place to be responsible for ensuring effective coordination and communication, understanding and managing the innovation process, and understanding and guiding the actors involved. Moreover, project management should oversee all phases of the innovation process, from the idea stage to eventual implementation.

In NanoPack, the project management is the responsibility of the Project Executive that consists of the Coordinator as the chair of the committee (Dr. Ester Segal from Technion), a Scientific Manager (Dr. Andreas Hollander from Fraunhofer), an Innovation Manager (Dr. Jeroen Knol from EFFoST) and an Administrative Manager (Mr. Simon van Dam from Agora). The day-to-day management is the responsibility of two project managers (Ms. Inbal Unger-Cavari from Technion and Ms. Bracha Ehrman from Agora), reporting to the Project Executive Committee.

With regards to the Innovation Management, the supervision and management of all innovation & exploitation activities are done by the Innovation Board, consisting of appointed representatives from each industrial partner in the consortium as well as all partners that produce Foreground IP. Jeroen Knol as the Innovation Manager will be the chair of the Innovation Board, and is responsible for planning, coordinating and supervising all tasks related to Innovation Management, including exploitation and business planning. He will be assisted by Hayley Every (EFFoST), Polymeros Chrysochou (University of Aarhus) and Simon van Dam (Agora).

The industrial members are Frederik De Bruyn (BBEU), Zeev Ginor (Carmel), Omar Boukili (Cflex), Finn Robert Müller (Tommen), Peter Mooney (Dawn Meat), Sirina Gezer (Arla), Elisabete Ferreira (Pao de Gimonde) and Elisa Valderrama (CITA). The Foreground IP producing partners are Gabriel Shemer (Technion) and Mr. Christoph Wiktor Schureck (Fraunhofer).

3.3 Internal communication

Innovation relies on effective communication, both externally to the outside world and, perhaps more importantly, internally within the consortium. Developments within the consortium therefore need to be shared in an easily accessible and transparent manner to facilitate effective collaboration. Within the NanoPack project, a number of different communication strategies have been employed to ensure that information is readily shared among partners. In addition to email and phone calls, these include the use of an extranet and the organisation of dedicated meetings. The extranet, based upon Basecamp, is a secured internet platform that hosts regular updates on the project development, a project calendar, meeting documents (agendas, minutes, and presentations), manuscripts in progress, and project reports. The platform also includes a content management system, to allow partners to upload content themselves. Meetings can be held remotely by making use of virtual tools, such as Skype and conference call services. However, the most effective means of communication is via face-to-face meetings, which allow for dynamic

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and interactive exchange of information. In addition to the regular annual project meetings, smaller working group meetings are also held at least once a year, usually dedicated to specific topics.

3.4 External communication and social media

As mentioned, the key to Innovation Management is bringing the right players together to facilitate the innovation process and ultimately bring the technology to the market. In the previous section, it was highlighted that internal communication within the consortium is critical for driving the innovation process, but the success of the innovation strongly relies on effective communication and engagement with a broader audience. Moreover, this external communication should go two-ways: to create awareness and inform different stakeholders about technology that is being developed and also to gauge their needs as well as response and receptiveness to the technology. To achieve this, different communication tools and channels are used, including:

A Project website creates the project identity and is used to generate awareness and disseminate information to various target audiences, including opinion leaders, the scientific community, food producers, retailers, the media, consumer organisations and the general public. This is the main information resource for the project.

Social media platforms provide a direct link to specific audiences, in particular opinion leaders, the scientific community and the media. Given the immediacy of posts on such platforms, they allow for regular updates and insights into the developments that are happening within the NanoPack project, but also generate buzz and discussions about related subjects.

A Stakeholders forum has been established via a LinkedIn group, to engage key players including food producers, retailers, food associations, the packaging industry, and opinion leaders. The goal is to stimulate discussions about active packaging, antimicrobial packaging, nanotechnology and food waste, and, in doing so, gain valuable insight into the possible threats and opportunities for the NanoPack technology. Moreover, it is also hoped that some members of this forum may fulfil the role of ambassador, and champion the NanoPack technology to others even beyond the food industry.

4 Market Intelligence

The objective of any innovation development is to ultimately be able to sell the outcome, whether it be a product, process or service. To achieve this, it is important to have a comprehensive understanding of the commercial landscape, including potential competitors/competing technologies, current trends in the market, and the potential barriers to a successful launch of the products/process on the market. In gaining such intelligence, it is also expected that potential customers and market uptake strategies will be identified. Below are some early results of this process.

4.1 Market opportunity

In 2012, an estimated 88 million tonnes of food (edible and inedible) was wasted in EU-28, corresponding to 173 kg food waste per person. Given that food production was approximately 865 kg/person, this equates to

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20% of the total food produced being wasted.[4] Of the food that is wasted, more than half (53%, 47 million tonnes) is from households, while only 5% (5 million tonnes) is from wholesale and retail.[4]

From a study conducted in the Netherlands,[5] the main reasons why consumers throw away food are that **it is past the best-before date**, too much food was prepared (and leftovers will not be eaten later), the product is spoiled or the product was not consumed because it was not tasty. Within this study, the most wasted foods are dairy products.[5] This data suggests that **one strategy for reducing food waste would be to increase the shelf-life**, to give the consumer more time to eat the product before it was past the best-before date.

The innovation within NanoPack is therefore derived from this market need (pull), and in particular that:

- Fresh foods have limited shelf-life
- Spoilage or even perceived spoilage leads to substantial food waste

Thus, there is clearly a need for improved packaging options that offer high quality products with increased shelf-life that will in turn enable a reduction in food waste. The partners within the NanoPack aim to address this problem and seize a market opportunity by developing an innovative packaging solution using nanotechnology to deliver essential oils, which act as antimicrobial agents to reduce the spoilage of food products.

During the project implementation period, a more detailed analysis will be conducted to evaluate the market opportunities. Such analysis will consider the types of product to be commercialised, who may be the launching customers, in which territories will the products be launched and what share of the current market can be captured with this new technology.

4.2 Competitor analysis

In order to understand how the innovation from NanoPack is positioned within the market, it is necessary to evaluate which companies are developing similar technologies and what potentially competing products are on the market. Given the breadth of packaging technologies available, such a competitor analysis will primarily focus on comparable types of packaging, for which the NanoPack technology can be considered an alternative.

The primary features of the NanoPack technology are:

- ***Flexible packaging*** – rather than rigid packaging that is used to make bottles, pots and cans, flexible packaging is used in the preparation of films, bags and wraps
- ***Active packaging*** – rather than being simply a passive material, the packaging has an active function that improves the product quality, such as providing an additive that extends shelf-life or a sensor/indicator that monitors freshness/quality
- ***Antimicrobial packaging*** – in addition to being an active package, it has the specific function to introduce an antimicrobial agent, that reduces product spoilage due to microbial growth

The competitor analysis will primarily focus on these packaging attributes and evaluate the companies/organisations that are developing (or have developed) similar types of packaging concepts. Moreover, the analysis will also take into consideration the types of products that are to be packaged using

[4] Estimates of European Food Waste Levels, FUSIONS EU Project, March 2016.

[5] Consumer food waste – Fact sheet, Netherlands Nutrition Centre, December 2014.

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the NanoPack technology. Within the project, the shelf-life and product quality is being evaluated for the following applications:

- Meat products
- Fish products
- Dairy products
- Bread and bakery products

Although not limited to these categories (it could be foreseeable that the NanoPack technology is used in other fresh products, such as fruit and vegetables), they are the products for which the technology is initially being considered. Thus, it is also important to evaluate existing technologies that are already on the market for improving the shelf-life in these fresh food product categories.

4.3 Technology watch

Active packaging that releases an antimicrobial additive (as in the case of NanoPack) is by no means the only option for increasing the shelf-life of food products and reducing waste. Given the gravity of the food waste problem, it is logical that different options to increase and/or evaluate shelf-life are under consideration, to ensure that products remain fresh and safe for as long as possible. Some of these include methods for tracking and tracing products along the supply chain, monitoring product attributes, such as temperature, moisture content or gas release during transportation and storage, or developing scavenging materials (rather than additives) that absorb unwanted compounds. While it is not intended to conduct an exhaustive assessment of all the technologies available, it will be useful to identify those that could potentially compete with or possibly eliminate the NanoPack technology.

4.4 Customer Relationship Management (CRM)

In addition to understanding the competitive landscape of active and anti-microbial packaging technologies for food applications, it is also necessary to identify the potential customers for the NanoPack technology. Although the NanoPack consortium consists of several partners who could be launching customers, they will only capture a fraction of the potential market for the technology. Thus, there will be the need to build and manage a possible client base.

As mentioned earlier, the challenge with Innovation Management and bringing a new technology to the market is to bring together the right players. Perhaps an even more pertinent question is who are the right players. In general, the right players are those that see the value in and/or will benefit from the technology. However, they should also be in a position to adopt the technology, or influence others to do so. Ultimately, the right people will be those that will be champions for the technology.

A part of the Innovation and Customer Relationship Management process is to identify and build relationships with these potential champions. This will be done by evaluating which companies/industries are expected to benefit most from the technology, and who within these companies would be best to approach. It is anticipated that the motivation for these companies to adopt the technology will be related to current pain points and/or incentives, putting them in a position where they are ready to make a change. The individuals to approach within companies will likely be those that feel these pain points the most.

To understand what the pain points are, industry players will be invited to engage in conversations and participate in workshops/events about active packaging, antimicrobial packaging, nanotechnology and food

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waste as a part of the Stakeholders Forum. These discussions will be used to gauge the level of interest but also scepticism in the technology, to understand what information or data is be needed to alleviate any concerns or doubts about the technology, to identify the triggers that will pique someone's interest in the technology and to ascertain how the technology can best cater to their needs. Acquiring such insights will help to define strategies on how to approach the companies that are most likely to adopt the technology, thereby maximising the impact of the technology on the market.

5 Business Creation

5.1 Developing the business cases

The NanoPack business case is based upon changing global demographics, lifestyles and consumer preferences and their impact on global demand for food packaging. The business case will also be based upon providing advantages in terms of value for the customer in each part of the value chain, as NanoPack offers advantages over existing nano anti-microbial packaging in terms of cost, safety and performance.

The NanoPack business case will demonstrate the expected impact of the technology, in terms of enhanced market opportunities and manufacturing capacities for the industrial partners of NanoPack and thus growth and jobs in Europe, in the short to medium term. It will describe the targeted markets, in terms of targeted sectors, estimated size in Europe and globally and user, customer and consumer needs; it will also demonstrate that the solutions will match the market and user needs in a cost-effective manner and describe the expected market position and competitive advantage.

Given that the NanoPack consortium consists of partners from most stages of the supply chain, the business cases will be considered at each level, as well as for a range of food product applications.

5.2 Roadmap to achieving TRL9

By the end of the NanoPack project, it is expected that the **innovation will be brought to an industrial validation level through pilot testing in three different food types in operational production facilities**, thereby achieving a Technology Readiness Level (TRL) of 7. For the technology to reach TRL9, and eventual commercialisation, it must be incorporated into a commercial setting and prepared for full scale deployment. The steps and timeline necessary to achieve this will be outlined in a roadmap that will consider the following aspects:

Demonstration activities may be needed to confirm that the technology works in its final form and under real operating conditions. These activities are aimed at showing that the technology meets all the desired safety, quality and performance specifications and can be produced at the required volumes needed to fulfil the commercial requirements. Such activities are also intended to further build trust with potential clients, which may facilitate a smoother transition to the market.

Protocols and methods will be established in order to ensure that the production processes are performed in a controlled manner and in accordance with the European regulations. This will involve the development of SOPs for personnel, production, equipment, materials and quality control. These are of particular importance for the handling and use of the nanoparticles in the preparation of the NanoPack films.

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Regulatory compliance of the NanoPack technology is critical for commercial implementation and is currently being addressed within the project. Based on the evaluation of the regulatory requirements for Active and Intelligent Packaging (EC 450/2009), Plastic Materials and Articles intended to come into Contact with Food (EC 10/2011) and Food Additives (EC 1333/2008), dossiers may need to be prepared and submitted for regulatory approval.

Full quality assurance procedures and systems such as ISO 22000 for food safety and security as well as ISO 9001 quality management system will be put into place by the regulation experts of the consortium (FHG IVV and DHI), to ensure compliance with EU standards and regulations at each level of the supply chain.

Market certification can only be achieved once all the necessary protocols, methods, regulations and quality assurance systems have been approved. Upon achieving this, the technology may then be authorised to be sold commercially.

To contribute to the Circular Economy, various alternatives for handling potential product waste will be considered. If waste cannot be avoided, it will be treated as a resource, to be reused or recycled in order to obtain "zero waste". This plan may include the use of waste products, either HNTs (pristine and loaded) or polymers loaded with HNTs, for energy production from combusting plastic and cooperation with waste management vendors to recycle or reuse solid waste.

Additional financing will most likely be needed to be able bring the technology to TRL9 and the early stages of market introduction. This will be used to support the activities related to the above-mentioned steps, which are critical for commercial launch of the technology. While at this stage, no capital investments are anticipated, it may become necessary prior to commercialisation. A lack of available financing is often a barrier for launching new innovations on the market, with the funding gap typically referred to as the 'Valley of Death'. Possible sources of financing include both public funding, such as (EU) subsidies, or private equity that may be derived from internal investments or venture capital. The Roadmap for achieving TRL9 will include a detailed overview of the funding needed to bring the technology to market.

Commercial agreements will need to be put in place, in order to bring the NanoPack technology to the market. As the NanoPack consortium covers almost all of the supply chain, there have already been a number of discussions on the types of agreements that will need to be established. These may include license agreements, toll manufacturing agreements and supply agreements. The terms of these agreements are also under discussion, and it is intended that by the end of the project, that these will be at a stage where they can be agreed upon by all relevant parties.

5.3 Business plan

The NanoPack business plan will combine information from the various inputs mentioned in this document and be used to develop a strategy for commercialisation. It will involve all partners and reflect their common as well as proprietary interests in achieving the outcome of a sustainable and successful food packaging technology. The business plan will address a number of key issues that relate both to the "products" and/or "services" that will be offered as well as the "markets" that will be served for each level and how they will be served. Given the fact that different segments of the supply chain are represented in the Consortium, the definitions of "products" and "markets" differ for each. For instance, each product offering has to be defined as well as what (physical) shape it will have. Similarly, for each product, the markets to be served must be defined including the end users of the particular product and which "needs" will be met.

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6 Barriers to Commercialisation

In undertaking any venture, it can be expected that there will be certain barriers or hindrances when launching a new technology on the market. Understanding the nature of these barriers can mitigate their impact and/or spur development of alternative strategies for bringing the technology to the market.

6.1 Consumer and retailer behaviour analysis

Consumer and retailer behaviour analysis is conducted, to understand how the NanoPack technology is perceived by these customer groups, and whether they would be willing to purchase products that make use of this technology. Through a series of surveys and workshop sessions, the feedback will be used to understand the acceptance level of the end users to the technology, how to best position the products on the market, and develop proper marketing and communication strategies. Input from several EU countries and China will be used to gauge the commercial potential in both local and export markets. The studies focus on the following:

- Acceptance of Novel Food Packaging, and in particular the use of nanotechnology-based smart, active food packaging, from focus group sessions with consumers and interviews with retailers
- Preference for Novel Food Packaging, to explore ways to increase the effectiveness of communication for products implementing the NanoPack technology
- Strategy Design to Improve Consumers/Retailers Acceptance, which will combine inputs from the above-mentioned studies with the potential environmental, economic and social benefits of the technology

These studies will be complemented with input from other sources, such as scientific and popular articles, feedback from online forums and (social) media postings on the scientific, media and general public's perception of nanotechnology and active food packaging. Overall, this will be used to assess whether the consumers and retailers' behaviours are a potential barrier to commercialisation.

6.2 Regulatory aspects

Any new technology that is to be brought to the market must comply with specific regulations in accordance with EU legislation. Regulations are established to ensure that products or procedures conform to a certain legal standard. In the context of NanoPack, the regulations in question relate to the handling and application of the packaging materials, to ensure that the quality and safety standards are met.

To determine whether the NanoPack technology meets the regulatory requirements, the current regulations should be evaluated in detail, to understand what steps must be taken to ensure compliance. Should it become apparent that the technology is not covered by the current regulations, a dossier may need to be prepared to file a petition for approval with the regulatory body. In an extreme case, it may also necessary to propose changes to the current regulations or possibly even establish new regulations. As the approval process for filed petitions can take several years, changing or implementing new regulations would not be a trivial process, and will clearly be a barrier to introducing the technology on the market. Thus, identifying potential strategies for meeting the regulatory requirements is an integral part of the innovation process.

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7 Knowledge Management

Innovation is based on the Knowledge that has been generated both prior to (Background IP) and during the NanoPack project (Results = Foreground IP). It is important to ensure that these aspects are identified and documented, so that the generated IP can be appropriately protected and an effective exploitation strategy can be implemented.

7.1 Background Knowledge/IP

The NanoPack project is a Horizon 2020 Innovation Action that builds upon existing IP that has been brought by the partners to the project. While the main Background IP is associated with the preliminary research on the packaging technology, the partners also contribute specific know-how and expertise that is used to further develop the technology within the project.

In the Consortium Agreement, Attachment 1 lists the Background that the partners have identified and agreed on for the project. In this same attachment, they have also stated if access to specific Background is subject to legal restrictions or limits. While each partner can propose to modify their own Background upon written notice to the other partners, approval of the General Assembly is required should a partner wish to modify or withdraw its Background.

While the Background IP is clearly the foundation upon which the NanoPack project is based, it is anticipated that the Results (Foreground IP) will form the basis of the exploitable IP. Therefore, identifying and maintaining this Foreground IP is the more critical aspect in the Innovation Management process.

7.2 (Foreground) IPR management

Within the NanoPack project, the Results (Foreground IP) form the basis for the technology that will eventually be brought to market. Effective management of the generated IP is necessary to facilitate the exploitation and commercialisation of the results.

IPR management involves several steps:

Maintaining overviews of all the Results from the NanoPack project. This includes both tangible outcomes, such as product prototypes, as well as intangible results, such as know-how and processes. Each partner will be asked to provide periodic updates on the Results they have developed.

Protection of IP may elicit a competitive advantage when launching the NanoPack technology on the market. Thus, possible strategies for seeking this protection, such as filing patents or maintaining trade secrets, will be assessed. Recommendations for the appropriate IP protection strategy will be made by the NanoPack Innovation Manager, subject to the considerations and decisions of the owners of the Results.

Identifying partners involved in generating the Results plays a crucial role with regards to exploitation and commercialisation. Partners who jointly own Results need to agree on the allocation of ownership and the terms under which each partner may exploit the results, which should be explicitly outlined in a joint ownership agreement. Failure to do so may result in unnecessary delays in bringing the technology to the market. When the partners are asked for updates about their Results, they will also be asked if other partners contributed to the development of these Results.

Technology transfer agreements may facilitate other manufactures to access the technology developed within NanoPack. Such agreements often take the form of licensing, where the licensor legally grants the

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licensee the right to use the technology under specified conditions for a certain fee (royalties). To be able to establish technology transfer agreements, all the above-mentioned aspects need to be in place.

7.3 Patent mapping and analysis

When managing the IP that is generated during the project, it is also important to map and analyse the patents that address similar innovations, as this can be used to:

- Assess the novelty of the Results and whether they are in conflict or infringe upon other inventions/patents that have already been filed
- Determine the 'freedom to operate', which not only considers whether it is possible to bring the technology to the market, but also the geographic locations where there is the opportunity to do so
- Identify potential acquisition targets and/or the opportunities for subsequent innovations

Nowadays, it is relatively easy to access patent databases, such as ESPACENET, either directly or via search engines such as Freepatentsonline.com and Google Patents. The mapping process involves taking the patents from related inventions and comparing these with the IP from NanoPack. The assessment will pay particular attention to the claims, field of use, geographic regions etc., to understand whether these patents impose any restrictions/limitations on the freedom to operate for the NanoPack partners. As part of the Innovation Board functionality, they will monitor ongoing patent searches performed by legal experts within the consortium and keep the partners informed in real time of any potentially competing patents.

8 Innovation Management in Progress

While this deliverable outlines the Innovation Management within the NanoPack project, this is a process that has been ongoing since the project began. Several meetings with the Innovation Board have been held in the first year of the project, to outline the strategy and discuss the inputs for developing the business plan.

- Innovation Board Meeting during the Kick-Off Meeting 23- 25 January 2017, Ghent, Belgium (M1)
- Innovation Board Meeting, 16-17 May 2017, Haifa, Israel (Month 5)
- Innovation Board Meeting during the Work Package Leaders Meeting, 13-14 September 2017, Nice, France (Month 9)
- Innovation Board Meeting, 21-22 November 2017, Bragança, Portugal (Month 11)

Moreover, the outcomes of these meetings have already been used as part of preparation of several specific deliverables:

- D8.5: Report on additional barriers from Stakeholders Forum (due M34)
- D8.6: Roadmap for achieving TRL 9 (due M36)
- D8.7 Initial exploitation strategy and business planning (submitted Month 6)
- D8.8 Intermediate Business and exploitation plan, currently in preparation (due Month 18)

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