Ref. Ares(2021)6248881 - 13/10/2021

IANOS

SUSTAINABLE SOLUTIONS
for islands' decarbonisation

# D10.8 - IANOS Exploitation Plan (PUDF and identification of project KERs) (T10.4)

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**H2020-LC-SC3-2018-2019-2020 / H2020-LC-SC3-2020-EC-ES-SCC**
**EUROPEAN COMMISSION**
Innovation and Networks Executive Agency
Grant agreement no. 957810

## PROJECT CONTRACTUAL DETAILS

| | |
|---|---|
| ***Project title*** | IntegrAted SolutioNs for the DecarbOnization and Smartification of Islands |
| ***Project acronym*** | IANOS |
| ***Grant agreement no.*** | 957810 |
| ***Project start date*** | 01-10-2020 |
| ***Project end date*** | 01-10-2024 |
| ***Duration*** | 48 months |
| ***Supplementary notes*** | - |

## DOCUMENT DETAILS

| | |
|---|---|
| ***Deliverable No*** | D10.8 |
| ***Dissemination level*** | Public |
| ***Work Package*** | WP10 - Dissemination, Exploitation, Promotion & Knowledge Transfer |
| ***Task*** | T10.4 - Exploitation Strategy & IPR Management |
| ***Due date*** | 30th September 2021 (M12) |
| ***Actual Submission date*** | 13th October 2021 |
| ***Lead beneficiary*** | RINA-C |

| ***Version No.*** | ***Date*** | ***Beneficiary*** | ***Changes*** |
|---|---|---|---|
| V1 | 20/07/2021 | RINA | First Draft |
| V2 | 09/08/2021 | RINA | Second draft: first KERs list with partners and preliminary results update |
| V3 | 08/10/2021 | RINA | 1st Review from WP10 leader |
| V4 | 08/10/2021 | CERTH | Partner's review and comments |
| V5 | 11/10/2021 | NEC | Partner's review and comments |
| V6 | 11/10/2021 | RINA | Comments and feedback implemented and final version submission. |

## DISCLAIMER





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# Executive Summary

The present deliverable D10.8 has been developed in the framework of WP10 activities related to the “Dissemination, Exploitation, Promotion & Knowledge Transfer” of IANOS project results and it is the first release of the main outcome of T10.4 “Exploitation Strategy & IPR Management”.

Indeed, this deliverable represents the first version of the Plan for Use and Dissemination of Foreground (PUDF) for the IANOS project consortium, thus aimed at updating the first release of the exploitation strategy supported by a lean approach to market outreach and reliable routes to market to make sure that IANOS outcomes are tangible and sustainable once the project and the funding are over.

In this framework, this first version provides a view on the methodology and a preliminary overview of the main Key Exploitable Results (KERs) under a market perspective as well as an analysis of the IANOS partners responsible for their development, focusing on the related IPR management. In this way, the document clarifies the main roles and responsibilities of the project partners towards personal and/or joint exploitation of project results.

D10.8 will be then updated along the project duration; the next intermediate version (D10.9) is foreseen at the end of M24, and thereafter will be continuously updated in D10.10 in month 36 and finalized in D11.11 at month 48.



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# Abbreviations & Acronyms

| Abbreviation | Definition |
|---|---|
| KER | Key exploitable results |
| PR | Project Results |
| SGAM | Smart Grid Architecture Model |
| BEMS/HEMS/CEMS | Building/Home/City Energy Management System |
| BFMULO Analysis | Background information(B), Foreground information (F), Making (M), Use (U), License(L), Other (O) |
| CA | Consortium Agreement |
| CHP | Combined Heat and Power |
| DSM | Demand Side Management |
| DSO | Distribution System Operator |
| ETT | Energy Transition Track |
| EV | Electric Vehicle |
| FI | Follower Island |
| GA | Grant Agreement |
| HHP | Hybrid Heat Pump |
| IE | Innovative Element |



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| | |
|---|---|
| INEA | Innovation and Networks Executive Agency |
| IVPP | Intelligent Virtual Power Plant |
| LEC | Local Energy Community |
| LH | Lighthouse |
| LV/MV | Low Voltage/Medium Voltage |
| P2P | Peer-to-Peer |
| PC | Project Coordinator |
| PCM | Phase Change Materials |
| PEB | Positive Energy Building |
| PV | Photovoltaic |
| PUDF | Plan for Use and Dissemination of Foreground |
| RES | Renewable energy sources |
| SGAM | Smart Grid Architecture Model |
| TRL | Renewable energy sources |
| UC | Use Case |
| V2G | Vehicle to Grid |
| VPP | Virtual Power Plant |
| WP | Work Package |



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# 1 Introduction

IANOS brings together two Lighthouse (LH) islands (Terceira-PT, Ameland-NL), and three Fellow islands (FI) (Lampedusa-IT, Bora-Bora-FR, Nisyros-GR), all sharing a common vision of decarbonizing their energy systems and be energy independent until 2050. Thirty-four (34) strongly experienced partners from nine (9) European countries, join forces to deliver smart technological, economic, and social innovations, providing systemic optimization starting from an Energy Community-centric approach. IANOS adopts an Island Energy Transition Strategy built around three (3) Island Energy Transition Tracks that focus on: a) Energy efficiency and grid support for extremely high-RES penetration, b) Decarbonization through electrification and support from non-emitting fuels, c) Empowering Local Energy Communities (LEC).

Within this context this deliverable was prepared within the framework of Work Package 10 "Exploitation of the project Results and Impact assessment" and refers to activities carried out by RINA-C within Task 10.4 "Plan for Exploitation of Key Exploitable Results and IPR Management".
The purpose of this document is thus to start preparing the ground for a proper Exploitation Strategy developed at Consortium as well as at individual partner levels. Furthermore, together with the dissemination activities managed in WP10, it is forthcoming to guarantee the maximum visibility to the Key Exploitable Results, ensuring their exploitation by the partners and to reach the maximum share of knowledge out of the project foreground. In this context, it is of utmost importance to support the partners in the development of the most appropriate strategy for exploiting the IANOS results.
To this aim, the commercially exploitable outcomes within the project shall be screened and the possible exploitation routes and actions to be undertaken shall be recommended, ensuring at the same time the compliance with the IPR rules laid down in detail within the Consortium Agreement.
In this framework, activities have been initially focused on the definition of the IANOS Key Exploitable Results. The list of Key Exploitable Results proposed at the proposal stage was thus updated accordingly and to each result a partner/more partners identified as main leader and responsible for the results' development and in coherence with the WP1 adopted SGAM methodology from T1.2 but adapted for the specific purpose of this task. Once defined the main KERs and related responsible partner/s, the characterization of each result, in terms of description of competitive advantages, market perspective and IPR management, will be preliminary assessed by responsible partners and then will be dedicated in individual calls, organized by RINA, with each of them to comment, discuss, update, and finalize the KERs characterization, finally provided in the next coming deliverables 10.9, 10.10, and the final version in D10.11.

The IANOS project represents a unique opportunity for the project partners to reinforce their market positions or enter into new markets, properly exploiting the results developed within the project. For this reason, a proper exploitation plan is crucial in order to maximize the potential benefits for each project partner.



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This document represents a “living document” that will be updated along the project as long as the results are developed and validated, and partners define the related exploitation perspective according to the developments they have been involved in.
The project is currently at Month 12 (out of 48) and thus it is not yet sufficiently mature for outlining a complete exploitation plan. Nevertheless, this preliminary document aims to provide common guideline and methodology. It is to be intended as a common plan for the participants to undertake exploitation actions with a structured and well-organized approach for the following months, as only in this way the widest communication and dissemination of the foreground generated by the project can be reached and the foreground can be adequately protected and exploited.



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# 2 IANOS Exploitation model

As a first step towards exploitation, a definition of Key Exploitable Results has been provided in order to help the consortium in their clear identification. These Key Exploitable Results have been preliminarily identified and properly characterized, according to their actual development status, with the aim to evaluate their readiness towards the market. Then, a preliminary analysis of the main expectations of project partners with respect to their main developments has been done targeting the evaluation of roles and single or joint market intentions.
The final goal of this analysis is the identification of the exploitation framework, towards the definition of proper strategies for market penetration including all aspects related to the IPR management.

## 2.1 Definition and identification of IANOS Key Exploitable Results

The European commission defines a Project Results (PR), as follow:
*"A Project Result is defined as any tangible or intangible output of the action, such as data, knowledge and information whatever their form or nature, whether or not they can be protected."*
According to the above description a Key Exploitable Results (KER) is defined as a results (as defined above) emerged during the project specifically selected and prioritized due to its high potential to be "exploited" by project partners or other stakeholders. The main criteria to select and prioritize KERs according to EC are the degree of innovation, exploitability, and impact.
KERs can be used and replicable in different forms such as inventions, prototypes and services or they can be a part of further research or innovation as knowledge, technology advancement and element of process or a network.

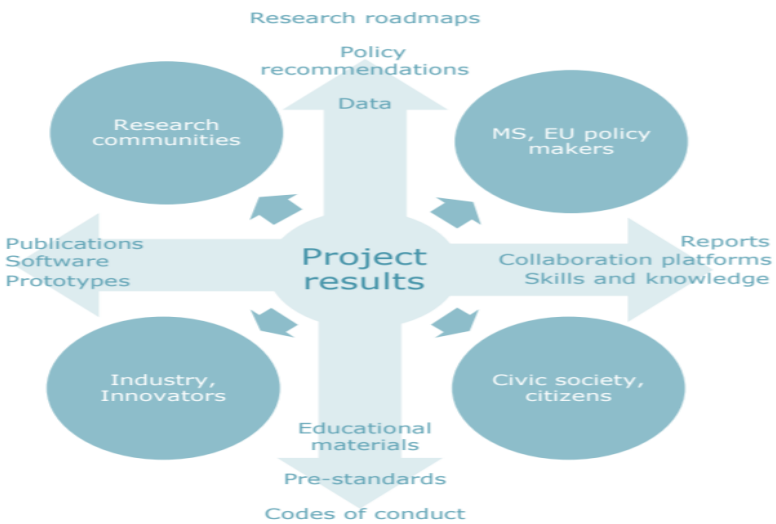


*Figure 2-1: Scheme of Project Results*[1]

[1] https://ec.europa.eu/research/participants/data/ref/h2020/other/events/2018-09-21/9_dissemination-exploitation-activities_en.pdf



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Figure 2-1 shows a potential direction that a KER can follow according to the various development axis both in terms of potential end-users and final outcome.
The main concept underneath Exploitation is to evaluate the utilization of the emerging results from the project with the purpose to create, develop and market a product or processes, providing services or constitute standards.

Figure 2-2 extracted from European Commission slides about Exploitation and Dissemination clearly show the need to:

- Make use of the results for scientific, societal, and economic purposes, or for improving public knowledge and action (e.g., recommendations for policy making); recognizing exploitable results and their stakeholders, as group of entities that are making concrete use of results
- Concretize the value and impact of the Research & Innovation activity for societal challenges; with this respect, partners shall make best efforts to exploit the results it owns, or to have them exploited by another legal entity e.g., through making results available under open licenses).

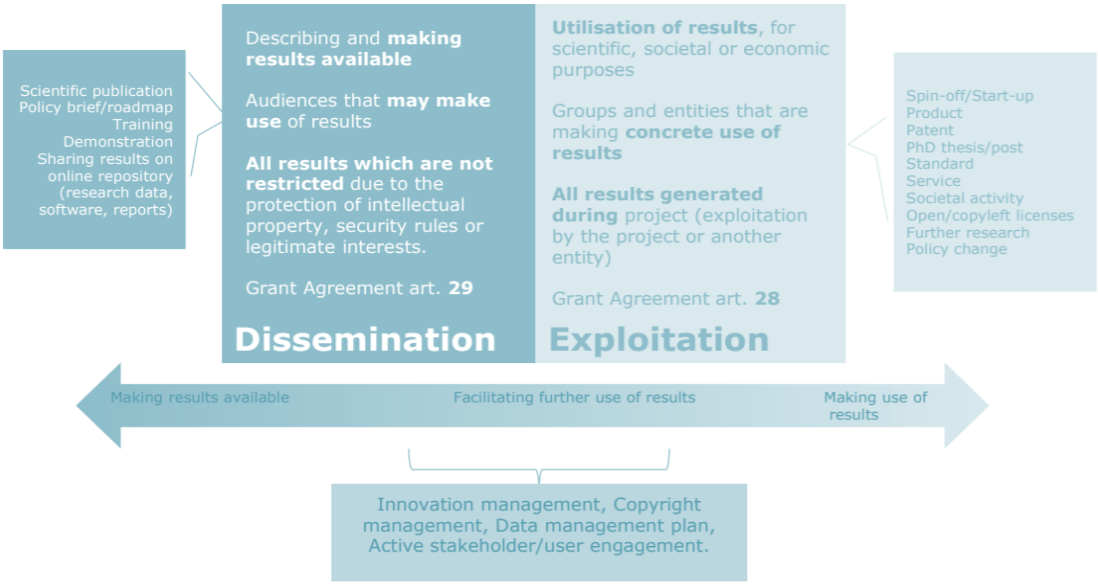


*Figure 2-2: Dissemination and Exploitation of Project Results*[2]

## 2.2 Preliminary definition of the Key Exploitable Results

According to the definition of KER in section 2.1, below in Table 2-1 are present the identified Key Exploitable Results emerging till the month 12 of project from the outcomes of T1.2 and the preliminary KERs identified in the Grant Agreement subsequently partially confirmed and revised by the lead partners of the consortium. Some of the KERs in the list below are ongoing and under discussion and need further development to be fully confirmed by the Lead partners. Therefore, this preliminary report could be subject to further revision, changes, and additions of new outcoming project results in thereafter project's months.

[2] https://ec.europa.eu/research/participants/data/ref/h2020/other/events/2018-09-21/9_dissemination-exploitation-activities_en.pdf



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Table 2-1 presents a simple structure with the ID number hereafter the KER number, an assigned name to each single KER together with a short description, the related ownership including the involved partners and a first assumption about the expected TRL improvement within the project.

*Table 2-1: IANOS Key Exploitable Results overview*

| KER# | Name | Description | Ownership |
|---|---|---|---|
| 1 | iVPP platform[3] | Virtual Power Plant platform to provide optimal modularity and scalability, offering secured monitoring, aggregation, and predictive energy management features, complemented by a set of cloud and fog-enabled software and hardware modules, oriented to serve the needs of island energy market stakeholders. | NEROA (island: Ameland) + VPS (island: Terceira), AEC, REPOWERED, TNO, CERTH[4] |
| 2 | FEID PLUS | FEID (Fog Enabled Intelligent Devices) is equipped with embedded communication interfaces, either directly on the main unit or in the form of add-ons; it can communicate unobtrusively with most commonly used wired or wireless communication protocols | CERTH |
| 3 | PCM Thermal Storage Heat Batteries | Innovative thermal storage solution that immerses a powerful heat exchanger into the PCM capsules and therefore maximizing its thermal power will be included in the iVPP, along with SoC monitoring controllers for optimal storage utilization. | SUNAMP |
| 4 | V2G Charging & Services on Terceira | The EV Charger is constituted by several high efficiency power electronic conversion stages, using the latest technology in terms of semiconductors and conversion topologies for the inclusion of the bidirectional power capability. The charger will incorporate a dedicated interface and control module with the digital algorithms for the implementation | EFACEC |

[3] The iVPP platform has been confirmed to be composed by different technologies here in this deliverable not specified. It is expected in the next deliverable to be updated and split accordingly.
[4] Preliminary list of potential ownerships of the underneath technologies of the iVPP platform.



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| | | | |
|---|---|---|---|
| | | of the charge/discharge profile received from the iVPP. | |
| 5 | DefPi Platform | The DefPi-Platform is an interoperable open-source energy platform for Demand Side Management. In this universal platform, developed by TNO, various distributed asset types can be monitored and controlled. | TNO |
| 6 | Smart Energy Router | The Smart Energy Router is a power electronics device that manages the energy transfer from/to different sources (distribution grid, RES-based distributed generators), loads and electricity storage system. | UNINOVA |
| 7 | Flywheel | The Teraloop solution of a flywheel differs from conventional flywheel solutions by using a patented and prototyped hubless outer-rotor design. The flywheel will be integrated to the energy system for power management and fault ride through at a local industrial site. | TERALOOP |
| 8 | Tidal Kite | TidalKite technology is a renewable energy solution that harnesses energy from low velocity tidal streams in shallow waters. The TidalKite technology is based on an underwater kite operated perpendicular to a water stream that creates a traction force that is converted into electricity. The TidalKite technology is unique in its capability to exploit energy from low velocity tidal streams in shallow waters. | SQH |
| 9 | Auto generative High-Pressure Digester (AHPD) | A small-scale Auto generative High-Pressure Digester (AHPD) to convert sewage, swill, and other organic waste into green NG (CH4), which can be injected in the existing NG network. | BAREAU |



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| | | | |
|---|---|---|---|
| 10 | Hybrid Transformer | The Hybrid Transformer incorporates two technologies, electrical and electronic, operating simultaneously. | EFACEC |
| 11 | PVs with microinverter | BeON's microinverters allow for individual power generating PVs to directly connect to any electric socket, just like a common electric appliance, in a safe, reliable, and simple way. This bypasses the need to connect to a switchboard or to an exclusive power line for the PV, cutting down on infrastructure needs, space, and costs. | BEON |
| 12 | Biobased saline batteries | Power Battery System, 120kWh recyclable saline-based battery | SWT |

## 2.3 Methodology for the characterization of the Key Exploitable Results

To make effective the exploitation model with appropriate and adequate exploitation strategy it is necessary to identify relevant characteristics of the project results. Table 2-2 summarize the crucial aspects, which will ensure successful implementation and the market entry of the identified project results. To this aim, lead partners of the PRs will be asked to address each specific question regarding their developments and these outputs.
The questions will mainly regard four key areas:

- General description of Project Result focusing on its innovativeness and competitive advantages
- Market context in which the product will be introduced
- IPR management detailing the role of partners involved
- Exploitation Strategy

*Table 2-2: Characterization table template*

| | | |
|---|---|---|
| Project Result | Project Result # / Title | |
| | Project Result Short description/Service Description | Short description of the component and of the related service provided |



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| | | | | | |
|---|---|---|---|---|---|
| | Innovation content/ Competitive advantage/Benefits | Added value of the project result/service provided from the end-user point of view | | | |
| | Legal, normative, or ethical requirements connected to the development | Any legal, normative, or ethical requirements that shall be kept into account during the development and, potentially after the end of the project (e.g., any legal constraints for the exploitation?) | | | |
| | TRL | Before IANOS | After IANOS | | |
| | | | | | |
| Market | Targeted Market | Example of application or scenario for the project result/service | | | |
| | Customer segments and whom to address (inside the client's organization) | Target clients | | | |
| | Potential competitors | | | | |
| IPR | Owner(s) of Result | | | | |
| | Other Partners involved | If there are other partners involved, we will involve them in the exploitation call | | | |
| | Joint ownership (Need of agreement before the end of the project?) | Yes/No | | | |
| Exploitation Strategy | Exploitation claim | Consultancy service | Academic exploitation | Commercial exploitation (e.g., selling licenses) | Other |
| | | Yes/No | Yes/No | Yes/No | Yes/No |
| | Revenue streams associated to the above exploitation claim | € | € | € | € |
| | Estimated effort to bring the Project Result to the market (yearly) | Activities | Cost | Time | |
| | | | | | |
| | | | | | |

The outcome of the PRs characterization activity will produce a series of characterization table for each KER, completed thanks to the partners answers that will serve as basis for the development of exploitation strategy both at partner level and at consortium level. Ad-hoc workshops during the



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project will ensure a complete definition of the characterization table from the KER's responsible partners.

## 2.4 IANOS Draft Exploitation Strategy

### *2.4.1 Assessment of Exploitable Results Technology Readiness Level (TRL)*

The TRL, Technology Readiness Level, scale is a metric for describing the maturity of a technology[5] which consists of 9 levels. Each level characterizes the progress in the development of a technology, from the idea (level 1) to the full deployment of the product in the marketplace (level 9), as described in Table below.

*Table 2-3: Technology Readiness Levels (TRLs)[6]*

| | | |
|---|---|---|
| Level 1 | Basic Research: basic principles are observed and reported | Lowest level of technology readiness. Scientific research begins to be translated into applied research and development. Examples might include fundamental investigations and paper studies |
| Level 2 | Applied Research: technology concept and/or application formulated | Once basic principles are observed, practical applications can be formulated. Examples are limited to analytic studies and experimentation. |
| Level 3 | Critical function, proof of concept established | Active research and development are initiated. Laboratory studies aim to validate analytical predictions of separate components of the technology. Examples include components that are not yet integrated or representative. |
| Level 4 | Laboratory testing of prototype component or process | Design, development, and lab testing of technological components are performed. Here, basic technological components are integrated to establish that they will work together. This is a relatively "low fidelity" prototype in comparison with the eventual system. |
| Level 5 | Laboratory testing of integrated system | The basic technological components are integrated together with realistic supporting elements to be tested in a simulated environment. This is a "high fidelity" prototype compared to the eventual system. |
| Level 6 | Prototype system verified | The prototype, which is well beyond that of level 5, is tested in a relevant environment. The system or process demonstration is carried out in an operational environment. |

[5] https://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2018-2020/annexes/h2020-wp1820-annex-g-trl_en.pdf

[6] https://acqnotes.com/acqnote/tasks/technology-readiness-level



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| | | |
|---|---|---|
| Level 7 | Integrated pilot system demonstrated | Prototype is near, or at, planned operational system level. The final design is virtually complete. The goal of this stage is to remove engineering and manufacturing risk. |
| Level 8 | System incorporated in commercial design | Technology has been proven to work in its final form under the expected conditions. In most of the cases, this level represents the end of true system development. |
| Level 9 | System ready for full scale deployment | Here, the technology in its final form is ready for commercial deployment. |
| Beyond 9 | Market introduction | The product, process or service is launched commercially, marketed to, and adopted by a group of customers (including public authorities). |

In order to access IANOS technology readiness levels, an estimation has been given by the leaders of each of the exploitable results. It is important to note that following technology readiness levels are estimated and might change in line with the project development.

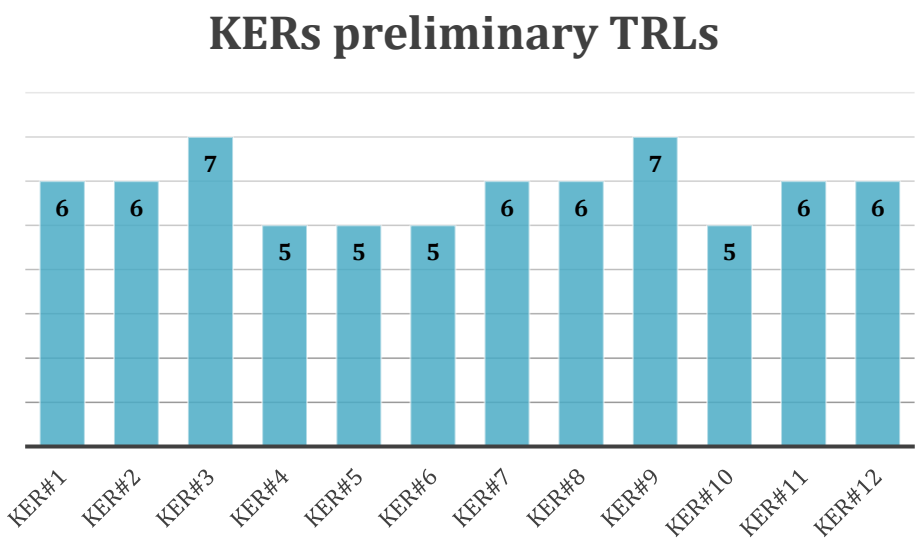


*Figure 2-3: Technology KERs at the current level of the project*

### *2.4.2 Methodology for exploitation routes*

As detailed in previous section 2.1 exploitation means that project results can be used in further research activities other than those covered by the project, or in developing, creating, and marketing a product or process, or providing a service. Therefore, the possible exploitation routes options adoptable for each PR identified can be divided into several categories, such as:

- **Use for further research** (e.g., use of the newly gained knowledge in further research activities, projects or even in enhancing products for the market uptake to find new exploitation perspectives).
- **Consultancy services** (e.g., professional service providing expert advice for a fee).



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- **Academic exploitation** (e.g., development of specific research topics, participation and/or organization of seminars and, in the case of universities, new bachelor, master and PhD thesis development).
- **Commercial exploitation** (e.g., direct sale of products/services, selling licenses).
- **Spin-off activities**
- **Cooperation agreement/Joint Ventures**
- **Standardization activities** (e.g., contribution to new standards or their revision).

Each of the above specified possible route will define the exploitation route for each specific PR. These routes will be developed with the cooperation of the Key Exploitable Results lead partner during the next months of project

### *2.4.3 Exploitation Strategy at partner level*

Deliverable D10.8 focus on the methodology and the first preliminary results gathered during the project. These are not yet analyzed from a Key Exploitable Results characterization perspective, will be further developed in the subsequent deliverables through ad-hoc workshops with the project results lead partner to build consolidated strategy.

### *2.4.4 Exploitation Strategy at Consortium Level*

Deliverable D10.8 focus on the methodology and the first preliminary results gathered during the project. These are not yet analyzed from a Key Exploitable Results characterization perspective, will be further developed in the subsequent deliverables through ad-hoc workshops with the project results lead partner to build consolidated strategy.



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# 3 IPR Management

## 3.1 General Overview and IPR Background

Effective exploitation of the project results depends, among others, on the proper management of intellectual property. There are several intellectual property-related activities, namely the evaluation of the existing knowledge of project partners, their potential contribution to the prospective project's intellectual property rights, and the potential overlap of intellectual property rights in order to formulate and prepare the shaping of the IP strategy of the consortium. Main results patent mapping studies will be specified and delivered in order to raise the IPR protection scheme. The overall IPR strategy of the project is to ensure that partners are free to benefit from their complementarities and are able to fully exploit their market position.

This chapter, relevant to the IPR management, provides an overview of the main provisions related to intellectual property rights as well as, use and dissemination of the results (also named foreground) generated by the IANOS project. It is however recommended to always refer to prescriptions included in the Consortium Agreement and Grant Agreement and to consult the Project Coordinator and the Exploitation Manager for any issue concerning IPR protection in order to elaborate exploitation agreements.

Background Information (B), in the context of Horizon 2020 programme, means "any data, know-how or information whatever its form or nature, tangible or intangible, including any rights such as intellectual property rights, which is:

- held by participants prior to their accession to the action.
- needed for carrying out the action or for exploiting the results of the action.
- identified by the participants."[7]

To summarise, Background includes pre-existing IP, know how, knowledge and any additional data that is needed for carrying out the project as well as that each partner is going to bring to the project itself.

Before the beginning of the project, it is necessary to ensure that every information needed for the smooth running of the project is accessible to all project partners, therefore matters related to access rights, have already been addressed in the IANOS Consortium Agreement.

[7] Definition from DESCA Template: https://www.desca-agreement.eu/what-is-desca/



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## 3.2 Results (Foreground) and BFMULO Analysis

Results, formerly called "Foreground" in FP7 projects, mean "any data, knowledge and information, whatever their form or nature, whether or not they can be protected, which are generated in the action as well as any attached rights, including intellectual property rights".[8]

Concerning the protection of results and dissemination, the following aspects should be considered:

- Owners must ensure adequate protection for the Results capable of industrial or commercial application in conformity with Grant Agreement and Consortium Agreement.
- In the absence of protection and transfer of Results, owner(s) shall inform EC, which may take the responsibility of protection and granting of access rights. Beneficiary concerned may only refuse if its interests are impaired.
- Any disclosure (publication, announcements etc.) shall not affect the protection of Results.

Consortium agreement may specify details concerning protection and publication but not in conflict with EC Contract.

In the specific case of the IANOS project, the Background (**B**) and Foreground (**F**) associated to the partners involved in each related exploitable result will be analysed. The methods of exploitation will be resumed in the following four cases identified by a single letter, describing the intention of the partner to exploit the results by:

- **M** = Making the products, manufacturing, and selling or directly implementing through own facilities and skills
- **U** = Using the result, implemented with own knowledge to develop new ranges of products or newer processing. Furthermore, the direct or indirect use of foreground in further research activities other than those covered by the project, or for developing, creating, and marketing a product or process, or for creating and providing a service
- **L** = Licensing the result, therefore earning from a negotiation towards third parties outside the Consortium
- **O** = Other, any other exploitation means (e.g.: consultancy, services, etc.)

The analysis of the IANOS exploitation claims will be reported in Table 3-2 on how each partner could exploit the foreseen results for instance by producing and selling them (M); by using them internally (U) (new research project, lectures in case of universities, etc.); by licensing them (L); or by providing services (O) (consultancy, etc.). Below, we reported the Table 3-1 with the preliminary list of PRs again in order to make evident the relationship between the responsible partners of each result and the exploitation claims.

*Table 3-1: List of PR's*

| # | Key Exploitable Results | Responsible Partner (s) |
|---|---|---|
| **1** | iVPP platform | NEROA (island: Ameland) + VPS (island: Terceira), AEC, REPOWERED, TNO, CERTH p |
| **2** | FEID PLUS | CERTH |

[8] Definition from DESCA Template: https://www.desca-agreement.eu/what-is-desca/



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| | | |
|---|---|---|
| **3** | PCM Thermal Storage Heat Batteries | SUNAMP |
| **4** | V2G Charging & Services on Terceira | EFACEC |
| **5** | DefPi Platform | TNO |
| **6** | Smart Energy Router | UNINOVA |
| **7** | Flywheel | TERALOOP |
| **8** | Tidal Kite | SQH |
| **9** | Auto generative High-Pressure Digester (AHPD) | BAREAU |
| **10** | Hybrid Transformer | EFACEC |
| **11** | PVs with microinverter | BEON |
| **12** | Biobased saline batteries | SWT |

*Table 3-2: BFMULO analysis – TEMPLATE to be completed*

| PR / Partners | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **EDP** | | | | | | | | | | | | |
| **UNI** | | | | | | | | | | | | |
| **EFACEC** | | | | | | | | | | | | |
| **EDA** | | | | | | | | | | | | |
| **EFAEM** | | | | | | | | | | | | |
| **RGA** | | | | | | | | | | | | |
| **VPS** | | | | | | | | | | | | |
| **TERA** | | | | | | | | | | | | |
| **SunAmp** | | | | | | | | | | | | |
| **BEON** | | | | | | | | | | | | |
| **AME** | | | | | | | | | | | | |
| **NEC** | | | | | | | | | | | | |
| **TNO** | | | | | | | | | | | | |
| **ALI** | | | | | | | | | | | | |
| **AEC** | | | | | | | | | | | | |
| **SWT** | | | | | | | | | | | | |
| **HANZE** | | | | | | | | | | | | |
| **NEROA** | | | | | | | | | | | | |
| **REO** | | | | | | | | | | | | |
| **SQH** | | | | | | | | | | | | |
| **BAREAU** | | | | | | | | | | | | |
| **GASTERRA** | | | | | | | | | | | | |
| **LAMP** | | | | | | | | | | | | |
| **CNR-IIA** | | | | | | | | | | | | |
| **BORA** | | | | | | | | | | | | |
| **AKUO** | | | | | | | | | | | | |
| **NIS** | | | | | | | | | | | | |



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| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CERTH** | | | | | | | | | | | | |
| **ETRA** | | | | | | | | | | | | |
| **ENG** | | | | | | | | | | | | |
| **RINA** | | | | | | | | | | | | |
| **EREF** | | | | | | | | | | | | |
| **HAEE** | | | | | | | | | | | | |
| **UBE** | | | | | | | | | | | | |

## 3.3 Access Rights

Access Right, in Horizon 2020, simply stands for the right to use Key Exploitable Results or Background.

During the implementation stage of the project, partners need to give access rights to their background and results being created in order to allow to other partners to carry out their work on the project and/or exploit their results. The requests should be done in written form, which could take for instance the format of an email with acknowledgement of receipt, if participants so decide in their Consortium Agreement. Participants granting access rights may request to put in place an agreement, particularly when they wish to make the access rights limited to some conditions (e.g., stronger confidentiality commitments).

The following table gives an overview of the general conditions concerning the granting of access rights as established in the GA (articles 25.2 and 25.3):

*Table 3-3: Overview of the general conditions concerning the granting access rights*

| Purpose | Access to background | Access to results |
|---|---|---|
| **Implementation of project** | Royalty – free, unless otherwise agreed by participants before their accession to the Grant Agreement. | Royalty - free |
| **Exploitation of owned project results** | Subject to agreement, access rights shall be granted under fair and reasonable conditions (which can be royalty – free) | |

The above-mentioned rules are normally valid unless stated otherwise. One new feature of Horizon 2020 concerns the granting of access rights to a project's results, not only to the European Union, but also in specific cases to Member States. Access rights for the European Union's institutions and bodies will be granted on a royalty-free basis, limited however to non-commercial and non-competitive use since their purpose relates merely with the development, implementation and monitoring of EU policies and programmes.

### *3.3.1 Access Rights on the Background of the Project*

In attachment 1 of the Consortium Agreement, the Parties have identified and agreed on the Background of the project and have also, where relevant, informed each other that access is subjected to legal restrictions or limits. Anything not identified in the Consortium Agreement shall not be object of Access Right obligations regarding Background.



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*Table 3-4: Claims for Background in Attachment 1 of the CA*

| Background provision / Partners | Yes | No |
|---|---|---|
| EDP | X | |
| UNI | | X |
| EFACEC | X | |
| EDA | X | |
| EFAEM | X | |
| RGA | X | |
| VPS | X | |
| TERA | X | |
| SunAmp | X | |
| BEON | X | |
| AME | | X |
| NEC | | X |
| TNO | X | |
| ALI | X | |
| AEC | | X |
| SWT | X | |
| HANZE | | X |
| NEROA | X | |
| REO | X | |
| SQH | X | |
| BAREAU | X | |
| GASTERRA | | X |
| LAMP | X | |
| CNR-IIA | X | |
| BORA | X | |
| AKUO | X | |
| NIS | | X |
| CERTH | X | |
| ETRA | | X |
| ENG | | X |
| RINA | X | |
| EREF | X | |
| HAEE | | X |
| UBE | | X |

### *3.3.2 Results ownership*

According to the Horizon 2020 Rules for Participation and Models Ggrant Agreement, project results belong to the participant generating them. Given the collaborative nature of European projects,



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some results can be jointly developed by several participants; therefore, situations of joint ownership might arise.

### *3.3.3 Joint ownership*

Results are jointly owned when:

- they have been jointly generated by two or more participants
- it is not possible to:
  - establishes the respective contribution of each beneficiary, or
  - separates them for the purpose of applying for, obtaining, or maintaining their protection.

Usually, joint ownership occurs in very specific situations, mainly for technological results.
It is best practice to regulate in the Consortium Agreement the rules on joint ownership of results. However, since this agreement is entered into force before the launch of the project and the development of the results, participants shall, if needed, establish a separate joint ownership agreement during the project implementation, defining practically the allocation and terms of exercising their ownership.
Unless otherwise agreed in the Consortium Agreement or in the joint ownership agreement, according to the default grant agreement rules, each joint owner may grant non-exclusive licences to third parties to exploit the jointly owned results (without any right to sub-license), if the other joint owners are given:

- at least 45 days advance notice and
- fair and reasonable compensation.

Since managing jointly owned results is a complicated issue, participants have the possibility to implement a different ownership regime from the one established in the Consortium Agreement, if the new agreement is done in a written form.
In fact, they may decide for instance to transfer ownership to one of the joint owners, in accordance with the rules on transfer of results under the grant agreement.

### *3.3.4 IANOS Project Results Ownership*

Based on the BFMULO Analysis and the individual interviews that will be carried on during the IANOS project execution, the type of ownership of each result (single or joint ownership) will be discussed. In particular, the need of Joint Agreement among partners will be investigated to agree on potential agreement that will be formalized and finalized before the end of the project.

### *3.3.5 Transfer of results*

Transferring the ownership of their results to other partners is a possibility for those participating in Horizon 2020. However, it is fundamental that, whenever transferring the ownership of their results, participants follow the requirements established in their Grant Agreement:

- The transfer should be done through an agreement (preferably in written form), since beneficiaries must ensure that the obligations of the participant(s) under the grant agreement are passed on to the new owner and that this owner has the obligation to pass them on in any subsequent transfer.



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- Prior notice is given, at least 45 days before the intended transfer, to the other consortium partners that still may have (or still may request) access rights to the results, with sufficient information about the new owner. The right to prior notice can be waived in the case of transfers to a specifically identified third party, which is usually done through the consortium agreement.
- Participants are bound to formally request authorization from the European Commission in advance, in cases of foreseen transfers to third parties established in a non-EU country not associated with Horizon 2020, including information on:
  - the identification of the results at stake.
  - the new owner and the planned or potential exploitation of the results.
  - the likely impact of the transfer or licence on EU competitiveness and its consistency with ethical principles and security considerations. This notification must be done up to four years after the end of project.

## 3.4 Knowledge Management and Protection

Throughout the project, the Consortium continuously contribute to generating the new knowledge that is instrumental for shaping the expected project outcomes, several of which may be qualified for Intellectual Property (IP) protection. On the other side, it was an obligation and was also the interest of the Consortium to disseminate the proposed new methods and tools including qualified scientific publications, open access to which will have to be provided.
A strategy aimed at a proper management of the generated knowledge shall ensure that communication and dissemination activities is duly carried out.
This strategy will be taken into account from one hand the obligation to disseminate results as well as open access rules and obligations and from the other hand the need of safeguarding the rights of the Consortium partners to protect their IP, thus enhancing the chances of an effective commercial exploitation of the project's results. Accordingly, dedicated procedure for knowledge management and protection (see paragraph below) was already defined at proposal stage and adopted along the project duration.

### *3.4.1 Procedure for Knowledge Management And Protection*

While being instrumental for IP management within the project, the procedure for the knowledge management and protection represents at the same time a relevant input for the Exploitation Action Plan. In particular, knowledge management refers to a series of practices that enable knowledge to create value in an organization. Intellectual property management is the management of intellectual assets, which meet the protection conditions of the intellectual property law.[9]
This procedure has been developed taking into account the basic principles set in the Grant Agreement as well as the Consortium Agreement, with particular focus on the assessment of the

[9] A detailed contribution to the differentiation between knowledge management and intellecutual property management concept is available at the following document: AD-minister Nº. 31 julio-diciembre 2017 pp. 137 - 160 · ISSN 1692-0279 · eISSN 2256-4322 - Monica Henao-Calad · Paula Rivera Montoya · Beatriz Uribe Ochoa - Knowledge Management Processes and Intellectual Property Management Processes: an Integrated Conceptual Framework



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background of the Consortium partners and monitoring of the partners' potential contribution to new IP generation. Indeed, whenever certain results are identified to be attractive for the future business opportunities of one or more of the partners, the necessary steps to protect the associated IP shall be taken. IP protection measures (such as, but not limited to, patents, copyrights, trademarks, registered designs, design rights, databases, trade-secrets, confidentiality, and other forms of protection) may follow the procedures already in use by the concerned partner(s).
However, according to the procedures defined by the consortium, the Exploitation Manager (ETRA), will be informed at the earliest possible instance, about the intention by the concerned partner(s) to protect that IP. Hence, the Exploitation Manager brings the IP protection intention at the attention of the Project Coordinator, which directly inform the Project Steering Committee. In order to secure research and business interests of all partners involved, any issue that might arise from the IP protection initiative will be dealt with by the General Assembly. In case of jointly owned IP, procedures for IP protection, use and licensing will comply with the rules set in the Grant Agreement and described in the Consortium Agreement.
In addition to the above, issues related to IP protection will be handled within the Project Steering Committee on a regular basis, as well as within the General Assembly upon necessity. Below, Figure 3-1 represents the scheme of the management structure that clarifies specific roles.

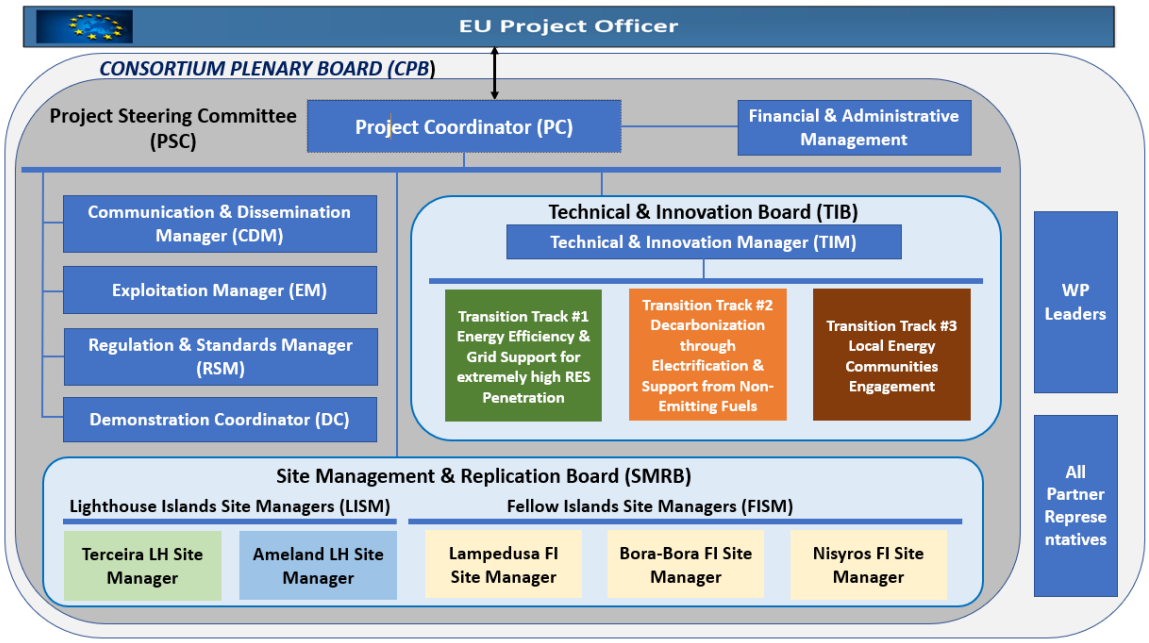


*Figure 3-1: Management Organization Structure of IANOS Project*

Each time certain results are identified to be worth IP protection; legal aspects are handled along with activities aimed at analysing and providing support for filing the IP protection application. If necessary, commercial agreements are also drafted and agreed upon among the relevant actors. Hence, for any protectable IP the following steps are carried out:

- The concerned partner notifies the Exploitation Manager about the technical contents it would aim to protect and the related ownership rights (including in case of joint ownership).



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- Preliminary copyright, trademark, or patent searches are conducted by the concerned partner as well as the Exploitation Manager, in order to check 'freedom-to-operate' with the scope of avoiding eventual infringements.
- Filing of the related IP protection application is then followed directly by the relevant partner(s), in accordance with the perimeter agreed with the other partners, as well as the perimeter of innovation and in order to maximize the potential for protection of the result.

Any filed application for protection of results will duly include information on the EU funding.

### *3.4.2 Knowledge transfer to industrial partners*

According to the Model Grant Agreement, and in line with the rules laid down in the Code of Practice annexed to the Commission Recommendation on the management of intellectual property in knowledge transfer activities,the beneficiaries belonging to the category of universities or other public research organisations will consider knowledge transfer towards relevant stakeholders as a strategic mission to maximize the impact from this project.

Accordingly, the universities and other public research organizations belonging to the consortium will ensure that knowledge is appropriately transferred, via licensing to the private industrial and commercial organisations existing in the consortium or to potential spin-off companies, should these appear to be the best option for exploitation according to the final exploitation action plan.

### *3.4.3 Dissemination and Exploitation of Results*

In the context of Horizon 2020, dissemination refers to the public disclosure of results by any appropriate means, except those resulting from protecting or exploiting results. Scientific publications, providing general information on web sites, participation in conferences or trade fairs are some examples of dissemination activities.

According to the general model grant agreement, dissemination activities have to be undertaken starting from the beginning of the project. Under the leadership of RINA-C and the supervision of the Coordinator, all partners have to proactively contribute to disseminate activities. To this end, roles and responsibilities of each partner will be clearly agreed upon at the beginning of the project through a dissemination plan and coordinated actions.

Prior to any dissemination activity, other partners must/have to be consulted in order for them to exercise their right to object in the case where such dissemination could cause significant harm to their background or results. In particular, at least 45 days prior notice of any dissemination activity shall be given to the other beneficiaries concerned that within 30 days may object about the dissemination activity.

A novelty of Horizon 2020 is the requirement for participants to ensure open access to project results that is free of charge for any user, to all peer-reviewed scientific publications relating to its Horizon 2020 project's results. This does not mean that participants have the obligation to publish their results, nor does this affect their plans for exploitation. In fact, firstly participants must decide on the protection of their results and, once the decision is taken, and they have to consider if and when dissemination should be done through scientific publication.

Participants receiving European Union funding must use their best efforts to take measures aiming at ensuring the exploitation of their results up to four years after the project. This means that participants must take steps to make sure the results they owned are used:



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- in further research activities other than those covered by the project concerned
- in developing, creating, and marketing a products or processes
- in creating and providing a service
- in standardisation activities.

The exploitation does not need necessarily to be done directly by the participants. Indirect exploitation can be performed by licensing the results or assigning them to third parties, in accordance with the requirements established in the Grant Agreement.

## 3.5 IPR Protection Strategy

Outcomes generated within the project must be properly protected, in order to guarantee their effective commercial exploitation.

Protection of results have to be ensured in a reasonable and justified way for an appropriate period of time and in a suitable territory.

In particular, Intellectual Property protection measures can be distinguished in:

- Industrial property that can be protected through Patents, Designs and Trademarks
- Non-technical intellectual creations, e.g., literature or artistic ones including software, that can be protected through Copyrights

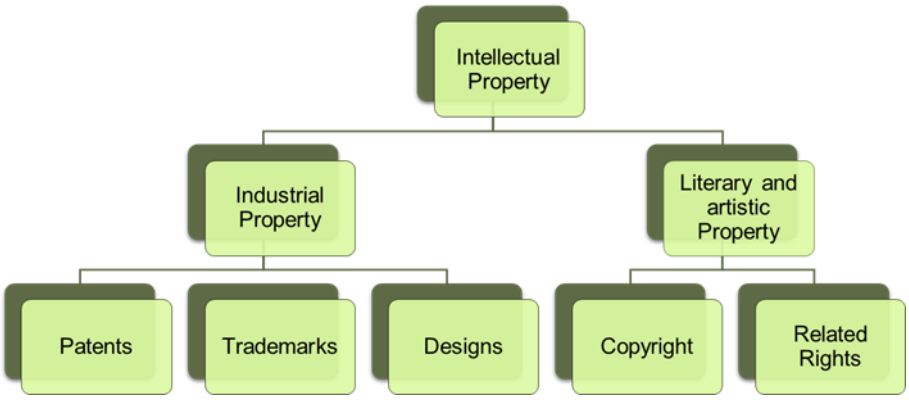


*Figure 3-2: Different Intellectual Property Rights*

The choice of the most suitable form of IP protection, as well as the duration and geographical coverage depends on the results at stake, but also on the business plans for their exploitation and on the legitimate interests of consortium partners.

Patents, trademarks, designs, and copyrights are described further in the following section, while related rights are not covered in this manual since they deal with rights that benefit to performers (e.g., actors, musicians), producers of phonograms (CDs) and broadcasting organisations (TV, radio).

### *3.5.1 Formal and informal IP protection – Intellectual Property Rights*

Formal IP is designed to provide incentives for innovation through a reward system that makes it easier for innovators to gain profits if their innovation is successful by allowing them to exclude imitators for a finite period.

A number of common formal IPRs measures are listed in the Table 3-5 below.



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*Table 3-5: Formal IP protection measures*

| | |
|---|---|
| **Patents** | A **patent** is an industrial property right that protects a technical invention for a limited period of time (generally 20 years), giving the holder an exclusive right to prevent others from selling, making, and using the patented invention. An invention to be patentable must fulfil three criteria: being new, innovative and be susceptible of industrial application[10]. |
| **Utility Models** | A **Utility Model** is an exclusive right granted for an invention, which allows the right holder to prevent others from commercially using the protected invention, without his authorization and for a limited period of time (usually between 7 and 10 years, without the possibility of extension or renewal). It may be any useful machine, implement, tools, product, composition, process, improvement, or part of the same, that is of practical utility, novelty, and industrial applicability. In practice, protection for utility models is often sought for innovations of a rather incremental character that may not meet the patentability criteria. Although a utility model is similar to a patent, it is generally cheaper to obtain and maintain, it has shorter grant lag, and less stringent patentability requirements. This kind of solution can be evaluated among the project partners to improve the IP protection[11]. |
| **Industrial Design** | **Industrial Design** is a type of protection dedicated to the intellectual creation used by designers; it is provided for a shape, configuration, surface pattern, colour, or line (or a combination of these), which, when applied to a functional product, produces, or increases aesthetics, and improves the visual appearance of the design, be it a two-dimensional or a three-dimensional product. The subject of the design protection is the outwardly visible appearance of the product or its part, packaging, or the ornamentation itself [12] [13]. |
| **Copyrights** | **Copyrights** protect non-technical intellectual creations; in practice, it refers to all of the rights owned by creators over their literary or artistic work. In order to be protected by copyright, a work must first have sufficient originality and, second, have taken form. Protection arises automatically giving the holder the exclusive right to control reproduction or adaptation[14]. This type of protection could be envisaged in the context of the IANOS project, particularly if specific software or programming codes would be developed as support for the exploitation of other IANOS results. |

[10] https://www.wipo.int/patents/en/
[11] https://www.wipo.int/patents/en/topics/utility_models.html
[12] https://www.wipo.int/designs/en/
[13] https://yourstory.com/2015/07/what-is-industrial-design-protectiontheir-designs/
[14] https://www.wipo.int/copyright/en/



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| | |
|---|---|
| **Trademarks** | **Trademarks** are distinctive signs identifying brands of products or services. Any sign that can be represented graphically may be registered as a trademark for a period of 10 years, with the option for indefinite renewal[15]. If not already registered, the IANOS acronym and logo should most probably be registered as a trademark in view of reinforcing other IPR types. |

Protection of the Intellectual Property generated within the IANOS project can be ensured also through 'informal' methods, such as[16] :

- Secrecy of information
- Restricted access to information
- Database and network protection
- Confidentiality agreement
- Technical protection (imitation difficult)
- Components and system design protection.

The previous list consists of conventional procedures, which will be adopted by each Partner in the IANOS project and will be strictly followed also post-project to ensure that no information may leak outside of the Consortium.

Below, some examples of project outcomes that may be subjected to IPR protection are reported, and possible IPR protection measures for each of them are identified (Table 3-6).

*Table 3-6: Examples of project outcomes that may be subjected to IPR protection*

| Subject Matter | Patent | Utility Model | Industrial Design | Copyright | Trademark | Confidential Information |
|---|---|---|---|---|---|---|
| **Invention** | X | X | | | | X |
| **Algorithm Software** | X | | | X | | X |
| **Scientific article** | | | | X | | |
| **Design of a product** | | | X | X | X | |
| **Name of a product, service /project** | | | | | X | |
| **Know - How** | | | | | | X |
| **Website** | | | X | X | X | |

[15] https://www.wipo.int/trademarks/en/

[16] Nber Working Paper Series - The choice between formal and informal intellectual property: a literature review - National Bureau Of Economic Research – April 2012 https://www.nber.org/system/files/working_papers/w17983/w17983.pdf



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### *3.5.2 IPR Protection procedure*

In line with the Model Grant Agreement, the project has a policy of protection of the project's results whenever results are expected to be commercially or industrially exploitable and whenever protecting them is possible, reasonable, and justified.

In order to ensure an adequate share in the protection of joint efforts it is recommended to notify whenever an innovation or any foreground is generated, as well as to ensure that the foreground sharing is ascertained and agreed among the partners creating it. This should occur on a case-by-case basis and under the supervision of the Project Steering Committee, in the person of the project coordinator, supported by the Exploitation Manager.

Thus, according to the procedure for knowledge and management protection that has been anticipated, each partner has to inform, at the earliest possible instance, the Exploitation Manager (ETRA) about the technical contents it would aim to protect and the related ownership rights (including in case of joint ownership). In this case, it is considered a good practice to consult with other partners involved, before deciding whether and how to protect a specific result.

Any Partner intending to apply for any of the protection measures listed in the previous section, acknowledges the Exploitation Manager of its intention. The Exploitation Manager then has to inform the project Steering Committee (SC). The acknowledgement of the intention to protect the generated foreground has to be accompanied by a synthetic description of the foreground subject of the intention for IPR protection by filling a specific template.

The template requires the following fields to be filled:

- Subject
- Description
- Type of Protection (Patent, Trademark, Industrial Design, Copyright, Other)
- Protection Rationale
- Potential Market
- Scientific Responsible
- Keywords
- Work-package(s)
- Partners involved

The Subject field enables a unique identification of the innovation (possible patentable idea): the subject should be well suited to enable a quick retrieval of the different claimed innovations. Partners are encouraged to describe in the field description the main terms of the innovation, according to simple and clear terms precisely referring to the activities performed in the project.

The Keyword field is optional; however, it is strongly recommended to provide at least one keyword for a unique identification of the innovation. This enables the Coordinator and the Exploitation Manager to perform better the work of review and evaluation of the effective potentiality of the innovation.

The different possible protection mechanisms (more than one choice is possible) can be indicated in the field Type of Protection. This is only a suggestion and a preference for the evaluator, but it will not constitute a restriction for the evaluation activity.

Other fields are related to the Protection rationale and the Potential market. The latter enables the partner to identify the possible potential market of the innovation. This can be useful both for the definition of the foreseen economic impact and for achieving a rough estimate of the potential



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geographical market penetration. Such information could be relevant for the definition of places where it can be crucial to protect the claimed innovation.
Specific fields to be filled have been foreseen in order to identify the Work Package in which the innovation has been developed and the Partners involved in the new innovation.
The description shall be sufficiently detailed to allow the Steering Committee to evaluate whether the application for protection of the IPR may endanger other Partners of the Consortium, though it shall be sufficiently general not to disclose too much information related to the subject. In any case, the Steering Committee shall deem that the application for IPR protection may have an impact on other Partners' activities or businesses, the control body shall be entitled to ask for more details on the matter of the application and eventually involve all the interested Parties in a discussion to analyse the situation.
The Coordinator shall track all acknowledgements of partners expressing the intention for IPR protection as well as the date of the acknowledgement. The intention for IPR application shall be archived. This will be useful to uniquely identify the partner's ownership and attribute a clearly defined date to the claimed invention. This, besides the short description of the invention, will provide the Steering Committee with archive information to be referred to in the case of IPR related disputes between partners.
The following Table 3-7 provides the template to be used to define the list of applications for patents, trademarks, registered designs, etc. However, according to partners' feedback, no application, so far, was registered during the duration of the project.

*Table 3-7: Template for applications for IP protection measures*

| **IANOS: List of applications for patents, trademarks, registered designs, etc.** | | | |
|---|---|---|---|
| **Type of IP Rights** | Application reference(s) (e.g., EP123456) | Subject or title of application | Applicant(s) (as in the application) |
| **Patent** | - | - | - |

### *3.5.3 Patent application*

There are different routes to patent protection and the best route will depend on the invention and the markets where the IANOS results would be exploited.
National patents
If the intention is to apply for a patent in just a few European countries, it may be better to choose the national route and file the specific application at the IP offices in the countries for which protection is sought.
Patent law in the European Patent Organisation (EPO) member states has been extensively harmonised with the European Patent Convention (EPC) in terms of patentability requirements. However, the national route generally leads to national rights that confer protection of differing extent.
European patents


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The European Patent Convention (EPC) is a multilateral treaty instituting the European Patent Organisation (EPO) and providing an autonomous legal system according to which European patents are granted.
The fees for applying for a patent at the EPO are, however, higher than those that are charged by the national patent offices. The fees at the EPO do not cover the actual grant of patents by individual countries, so one has to allow for additional official fees following grant when the patent is validated in those countries in which the patent wish to be in force.
Based on the fees related to the European grant procedure, costs for representation by a single agent and cost of conducting the proceedings in a single language, a European patent costs is as much as about three or four national patents.
In other words, if a partner wishes to gain protection in more than two or three of the countries that are members of the European Patent Convention, it will probably be cheaper to go for the European Patent route. If a partner wants just two countries, then separate national applications will probably be cheaper. If a partner would like patent protection in three countries, then a very careful analysis would need to be performed.

European or International Filing
The Patent Cooperation Treaty (PCT) is an international patent law treaty that provides unified procedure for filing patent applications to protect inventions in each of its 148 Contracting States .
A patent application filed under the PCT is called an international application, or PCT application.
A PCT application, which establishes a filing date in all contracting states, must be followed up with the step of entering into national or regional phases to proceed towards grant of one or more patents. The PCT procedure essentially leads to a standard national or regional patent application, which may be granted or rejected according to applicable law, in each jurisdiction in which a patent is desired.
If a partner decides to apply for a European patent, the choice would be to follow the direct European route or the international PCT procedure.
Due to the European scope of the IANOS project, European patent applications are the most likely to happen, reason why this route is described hereafter.
A European patent application consists in:

- A request for grant (obligatory), preferably on EPO form 1001
- A description of the invention (obligatory)
- Claims
- Drawings (if any)
- An abstract

According to the Horizon 2020 Rules for Participation and Models Grant Agreement, the project results belong to the participant generating them.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 957810

# 4 Conclusions and next activities

The present deliverable D10.8 has been developed in the framework of WP10 activities related to the "Dissemination, Exploitation, Promotion & Knowledge Transfer" of IANOS Key Exploitable Results and it is the first main outcome of T10.4 "Exploitation Strategy & IPR Management".

It represents the first release of the Plan for Use and Dissemination of Foreground (PUDF) for the IANOS project consortium, thus aimed at defining a proper exploitation strategy, based on the following actions:

- Preliminary identification of Key Exploitable Results: totally 12 results have been identified with the related Responsible Partners.
- Definition of the Exploitation Strategy, both at partner's level and consortium level
- Overview of the main principles related to the IPR management with respect to the IANOS project,

D10.8 will be then updated along the project duration (D10.9, D10.10 and D10.11); the next intermediate version is foreseen at the end of M24. In the next months the following activities will be carried on (and main results included in the second PUDF release):

- Detailed description of the identified results and creation of the characterization tables for each of them.
- Concerning the individual exploitation, an overview of each partner's intention for Key Exploitable Results' exploitation after its end will be discussed with the main responsible partners.
- The BFMULO analysis will be conducted taking into account the Background, the Foreground and the methods of exploitation associated to the partners involved in each related exploitable result.
- Concerning the overall IANOS exploitation strategy, a very preliminary overview will be provided, highlighting the consortium mix of knowledge and proper balance in terms of competences and competitiveness towards the creation of the market conditions for the deployment of the first commercial system.
- The intellectual properties mapping activities will be carried out with a focus on each Key Exploitable Result, the activities will be finalized to understand:
    - the international technological scenario
    - patents publication trend
    - the most relevant patents assignees and players of the analysed sector
    - the most relevant patents of the sector



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