



D10.1 Trust building ecosystem

Deliverable No.	D10.1	Due Date	31/08/2022
Description	Report on the requirements elicited and the strategy actions towards ODIN ecosystem enlargement and decision makers and stakeholder engagement.		
Type	Report	Dissemination Level	PU
Work Package No.	WP10	Work Package Title	Open Innovation Approach
Version	1.0	Status	Final



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History

Date	Version	Change
04/10/2021	0.1	Table of contents
30/06/2022	0.2	First draft
27/07/2022	0.3	Draft ready for peer review
08/08/2022	0.4	Draft ready for quality review
29/08/2022	1.0	Ready for submission

Key data

Keywords	business ecosystem, stakeholder collection,
Lead Editor	Gisela Hagmair
Internal Reviewer(s)	University of Warwick, INETUM

Abstract

Opening and widening the market by creating a proper business ecosystem in the field of smart hospitals is one of the main objectives within ODIN. Taking the project consortium as core ecosystem, this existing ecosystem is to be expanded by various means, such as initiating an Open Call or creating a Community of Interest (CoI). The deliverable describes the concept of the ODIN Trust Building Ecosystem and first steps of its enlargement which already have taken place, including an intensive stakeholder collection which form basis for approaching further possible partners for the ODIN ecosystem.

Finally, it also presents an engagement plan and gives an outlook in future activities as well as how the expanded ecosystem is going to be used for exploitation.

Statement of originality

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

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List of abbreviations

Abbreviation	Explanation
ODIN	“ODIN - Leveraging AI based technology to transform the future of the health care delivery in Leading Hospitals in Europe” Grant agreement number 101017331
AI	Artificial Intelligence
API	Application Programming Interface
CoI	Community of Interest
EIT	European Institute of Innovation & Technology
DIH	Digital Innovation Hub
DoA	Description of Action
Dx.x	Deliverable number x(WP number).x(number of the deliverable)
ICT	Information and Communications Technologies
IoT	Internet of Things
IPJ	Innovative Procurement Journey
IPR	Intellectual Property Rights
KET	Key Enabling Technologies
KER	Key Enabling Resources
NCP	National Contact Point
Mx	Project Month x
R&D&I	Research, Development and Innovation
SME	Small and Middle Enterprises
Tx.x	Task x(WP number).x(number of the task)
URL	Uniform Resource Locator
WP	Work Package

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1 Introduction

The main overall objective within ODIN is to enhance hospital safety, productivity and quality through Artificial Intelligence (AI) centred technologies such as Internet of Things (IoT) or Robotics. Increasing research and development activities around these technologies are resulting in increased usage in various fields. While these kinds of technologies have been integrated in industry a long time ago, the health system is lagging behind. The reasons for this are diverse: On the one hand, the field of applications within the health sector are not as large as those in industry in general. On the other hand, departments and employees block the integration of such technologies. A lack of trust and the associated lack of understanding of these solutions are one of the reasons for this rejecting attitude (Löber et al. 2015) not at least also because health is an extremely sensitive area, as interventions can have a far-reaching impact on the patients.

ODIN is set out to strengthen trust in new technologies to be used in hospitals and to bridge the gap between health suppliers and the needs of healthcare organisations. Especially WP10 Open Innovation Approach and T10.1 Trust building and Ecosystem Enlargement is designed to expand the ecosystem and thus increase the impact and scale of the project:

1. Maintaining and expanding the offer catalogue generated around ODIN
2. Participation to relevant flagship initiatives in digital health
3. Integrating new entities through an open call
4. Establishing a close collaboration with other European, regional or local public and private initiatives working in the smart hospital domain.

As a critical success factor, trust is a cross-cutting issue within ODIN and plays an important role throughout the whole project. It is integrated into tasks from various WPs and is also seen from different angles and perspectives. Within this deliverable trust is mainly treated in relation to the functioning of the ecosystem and its enlargement for a maximum impact and connects to:

- **WP2 Demand and Supply Cocreation**, which is set out to identify functional requirements of suppliers and demanders, with a focus (and own deliverable) on acceptance, trust and change management
- **WP3 Platform integration, Privacy, Security and Trust + knowledge + condition**, which includes reports on Privacy Security and Trust.
- **WP10 Open innovation Approach**, which includes a task specifically dealing with trust building and ecosystem enlargement.

The ODIN project wants to build a dynamic and collaborative co-creation mechanism for Innovative Procurement Journey (IPJ) between healthcare suppliers and providers that identifies, understands and specifies the challenges and needs – including trust - of the healthcare sector in terms of functional requirements in order to ensure the delivery and expansion of innovative services that are accepted, safe and trustworthy and comply with the applicable standards and regulations according to the national and European legal frameworks. This co-creation mechanism aims to involve not only the ODIN partners but also previously identified, additional stakeholders. Communities in the health and industry sector in the vicinity to the European Institute of Technology and the European Digital Innovation Hub networks also play an important role.

From the objectives mentioned above another one derives: maximising the reach and the impact of the ODIN project through a clearly defined dissemination programme and an exploitation

strategy, which is covered by **WP9 Dissemination, Communication, Exploitation and Sustainability**.

Within Task 10.1 Trust Building and Ecosystem Enlargement the results from WP2 (including the results of all the other WPs) and the activities from WP9 will be aligned and give the direction of the planned Ecosystem Enlargement. The aim – as stated in the DoA - is to develop a strategy to manage and extend the OFFER catalogue generated around ODIN (see above).

1.1 Deliverable context

Table 1: Deliverable context

PROJECT ITEM IN THE DoA	RELATIONSHIP
Project Objectives	The deliverable is relevant for the objectives one, two, and four as it contributes to bridge the gap between health suppliers and demanders, ensures the delivery and scale-up of innovative services that are accepted, safe, trusted and compliant with current standards and rules, according to national and European legal frameworks, and goes hand in hand with WP9's communication and dissemination program and exploitation strategy to reach a critical mass of users and business partners to allow the ODIN solutions be delivered.
Exploitable results	This deliverable does not contribute to any specific exploitable result in particular. It aims at expanding the ecosystem and thus foster the exploitation of ODIN solutions and maximise the projects' impact in general.
Workplan	This deliverable receives input from multiple WPs and contributes to multiple WPs in return. The tools of WP9 "Dissemination, Communication, Exploitation and Sustainability" are used for ecosystem enlargement. At the same time, the objectives of WP9 are supported by the Ecosystem Enlargement. It also builds upon the stakeholder collection having been carried out within WP2 "Demand and Supply Co-creation" . Subsequently, the activities carried out within T10.1 and described in this deliverable are a starting point for the other tasks within WP10 "Open Innovation Approach" .
Milestones	D10.1 combines activities that attribute to several milestones by creating a bigger basis for procurement. These milestones are MS2 - Procurement Procedure Simulation, MS3 - Implementation, and MS4 - Pre-commercial Procurement .
Deliverables	D2.1 ODIN co-creation workshop and end-user requirements D9.2-4 Plans for dissemination, communication, and exploitation D9.5-7 Exploitation driven dissemination and communication activities D10.4-6 Open Call reports
Risks	There are no pre-defined risks related to this deliverable

1.2 Deliverable structure

This deliverable is set out to describe the ODIN trust building ecosystem. For putting it into a proper context it starts with describing the underlying concept of business ecosystems used within ODIN and the role of trust in such ecosystems in general.

In a next step it elaborates on how the ODIN ecosystem in specific looks like, which stakeholder groups had been identified for playing an important role in the context of smart hospitals. Another focus is laid on the way how it is linked to the open innovation approach. The strategy applied for setting up the ODIN ecosystem is explained, starting with the problem to be solved, the single parts of the ecosystem, its governance model and the values that have been elaborated in WP2 before. Further, it shows how the ODIN ecosystem should evolve and how to grant its sustainability.

The third chapter deals with ecosystem enlargement and the existing and planned stakeholder engagement. We describe the way ODIN choose for identifying and collecting publicly available contact data of stakeholders with support by the project partners. This data serves as a basis for the ecosystem enlargement and for the engagement with stakeholders who might have a legitimate interest in ODIN.

It also shows how ODIN intends to address the stakeholders and involve them in the project. It gives a brief outline over the strategies being used for evolving the ecosystem.

Finally, we set our measures into a timeframe and give an overview of already fulfilled and further planned actions.

2 Defining the ODIN trust building ecosystem

2.1 Ecosystems

According to the Cambridge dictionary, an ecosystem can very generally be defined as

“all the living things in an area and the way they affect each other and the environment.”

Starting from this very general definition a lot of different other definitions have been developed, depending upon the thematic area for which this term is being applied. Within ODIN the relevant areas would be technology, which is not going to be part of this deliverable, and business.

2.1.1 Business ecosystems

The concept of a business ecosystem goes back to James F. Moore, who provided the first definition of a business ecosystem in his book “The Death of Competition: Leadership and Strategy in the Age of Business Ecosystems” (Moore 1996):

“An economic community supported by a foundation of interacting organizations and individuals - the organisms of the business world. This economic community produces goods and services of value to customers, who are themselves members of the ecosystem. The organisation members also include suppliers, lead producers, competitors, and other stakeholders. Over time, they coevolve their capabilities and roles, and tend to align themselves with the directions set by one or more central companies. Those companies holding leadership roles may change over time, but the function of ecosystem leader is valued by the community because it enables members to move toward shared visions to align their investments and to find mutually supportive roles.” (Moore, 1996).

Accordingly, the purpose of a business ecosystem is to achieve common goals and interests by collaborating and pooling resources to make them more efficient and thus have mutual benefit by being part of it.

According to Pidun et al. (2022) organisations can - by becoming a member of an ecosystem:

- *Expand market access for existing offerings*
This would be one of the main goals within the ODIN ecosystem and reason for the enlargement efforts. This refers to enlarge the demand side of the system.
- *Strengthen the core business through complements*
This addresses the open calls and refer to the supply entity group of the ODIN ecosystem.
- *Protect the core business from other ecosystems*
In recent time the number of business ecosystems increases tremendously. Through the offer of having a platform for communication and discussion on current topics in the field of smart hospitals ODIN aims to keep stakeholders interested in the project and its objectives.
- *Tap revenue pools adjacent to the core business*
This can be achieved by connecting with sister and other related projects.

- *Launch new ventures separate from the core business.*

Currently, this is no explicit goal of ODIN. On a different level it could be nevertheless. Through getting in touch with other organisations, new partners for new consortia might be found and ideas for new projects could be developed.

Health care and life sciences are especially complex and fragmented, including various companies offering products and services in this field, but also universities, research institutions and intermediaries such as innovation catalysers, incubators, trade organisations, angel investors and venture capital firms. In order to foster innovation in this field a number of powerful stakeholders including health care providers, doctors, patients and regulatory agencies must support the new innovation, but also research intensiveness, long development and approval cycles, a third-party payment system and strong involvement of regulators make ecosystems within this field special (Majava, 2014). Within the ODIN ecosystem we try to interconnect as many groups as possible and to create a sustainable collaboration to the benefit of all partners.

2.1.2 Trust in (Business) Ecosystems

Trust is fundamental precondition not only in relationships in general, but also and especially within business relationships and thus also within business ecosystems. It is needed in order to balance co-operation and “coopetition” (i.e. a strategic alliance between competing organizations designed to grow the overall marketplace in which they compete) and requires common attitudes among partners on how to interact with each other (Kindle et al., 2020). Trust also tends to be very fragile and has to be taken care of, if an ecosystem is intended to be sustainable.

According to Pidun et al. (2020) trust-related issues are a major cause of ecosystem failure. If the level of trust falls or if – even worse – there is no trust at all, participants in an ecosystem are less likely to co-operate and the focus shifts from growing the ecosystem’s value to capturing value only for themselves and the ecosystem implodes at the end.

Aguiar et al. (2021) suggest taking **five action steps in order to maintain trust within ecosystems**:

<p>Surface trust-related frictions</p> <ul style="list-style-type: none"> • It is advisable to keep eyes open for early signs of friction or slight erosion of trust and take quickly countermeasures to foster trust and eliminate distrust 	<p>Identify the drivers of trust</p> <ul style="list-style-type: none"> • There are usually three key criteria to engage with an ecosystem: competence, fairness and transparency. For this value delivery from each of the participants has to be ensured.
<p>Reshape the games ecosystem participants play</p> <ul style="list-style-type: none"> • Game theory suggests that the interactions among ecosystem participants create incentives that shape their behavior. Participants will decide whether or not to cooperate with one another depending on the nature of the incentives. Reshape the games, so that they become the rationale for the cooperation. Each of the participants should be clear about the roles they have. 	<p>Embed trust into platforms</p> <ul style="list-style-type: none"> • Through embedding trust into the working of platforms in order to become part of day-to-day operations, interactions and relationships between participants should generated and thus trust sustained.

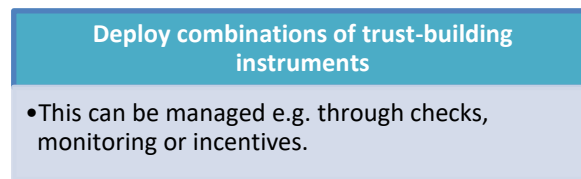


Figure 1: The Five Elements of a Trust-Building Framework

Within ODIN most of these steps have been built in as shown in 2.2.2 ODIN business ecosystem strategy and in chapter 4 Trust building ecosystem roadmap.

2.2 ODIN trust building ecosystem

Trust is preconditional for openness, which is underlying to the concept of a business ecosystem. It is essential to have trust among the existing ODIN partners and it is also needed for collaboration with the potentially new partners in the ecosystem, the applicants on the supply side, who give information about their solutions not yet being on the market, and the consumers on the demand side who not only need to have trust in the ecosystem itself but also in the technologies represented.

2.2.1 Ecosystem building and Open Innovation Approach within ODIN

Henry Chesbrough (2006), who was coining the term “Open Innovation”, has defined it as the *“use of purposive inflows and outflows of knowledge to accelerate internal innovation”*. This originally referred to transferring knowledge, expertise and even resources from one company or research institution to another. It assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to the market, as they seek to improve their performance. This concept of open innovation suggests that external information and ideas can contribute to the own development. It allows to go beyond the own core business and takes advantage of having access to a broader market and of the use of external knowledge, patents and licences (Annanperä et al., 2015).

Ecosystems go even one step further as dynamic and co-evolving communities of diverse actors who create new value through more and more productive and sophisticated models of both collaboration and competition.

ODINs objective is to attract innovation and open collaboration with the best talent in the search for new formulas that help to turn challenges into opportunities. ODIN aims to be a connection point with the entrepreneurial world in an environment designed for co-creation, where highly qualified researchers work. We innovate together to move towards the future with the focus on our goal of being a smart hospital reference, an initiative focused on promoting innovation and entrepreneurship throughout the entire health value chain.

For creating new products or service innovation within an ecosystem setting, the environment requires – as already mentioned - **openness**. Ecosystem participants have varying knowledge, resources, and interests in the innovations. They can be part of the process in one or several points. Possible roles of the partners can include the **management of hierarchical resources** (power promoter), **technical knowledge** (expert promoter), **intraorganizational know-how** (process promoter), and **forging ties outside one's organisation** (relationship promoter).

Additionally, teamwork and innovation systems provided by management play an important role in successful networks (Chesbrough, 2006).

Nevertheless, open innovation within a business ecosystem also has its challenges, due to the nature of interdisciplinarity and collaboration of different (also enterprise) cultures. They might use different terminology and have different expectations. In addition, trust and ownership are sensitive topics of course, which play a crucial part when it comes openness in the ecosystem (Chesbrough, 2006).

As stated in the DoA, one of the main objectives of ODIN is

“To set up a communication and dissemination program and an exploitation strategy to reach a critical mass of users and business partners to allow the ODIN solutions to be delivered, DURING and AFTER the project lifetime. An Open and Responsible Research Innovation approach, making use of the open call and existing open innovation initiatives from the DEMAND and SUPPLY side, will reach a critical mass of stakeholders.”

So, after setting up the initial ODIN ecosystem, it is necessary to attract more stakeholders in order to reach a critical mass of possible users and business partners for better innovation and exploitation opportunities and to make the ecosystem work properly.

On the supply side, open calls are an important tool for the ecosystem enlargement - in combination with previously identified dissemination activities on all levels reaching out to stakeholders, networks, hubs and sister projects on the demand side. Direct mailings, the community of interest, collaborations with sister projects and an open call are additional tools aiming at the enlargement of the ecosystem.

In line with the Ecosystem building and Open Innovation Approach (DoA, p. 25), ODIN will enlarge its ecosystem through:

Table 2: ODIN enlargement measures

Stakeholder group	Enlargement measure
General	<ul style="list-style-type: none"> building up capacity by increasing the network effect on the demand and the supply side, mainly from healthcare and ICT domains.
Supply side	<ul style="list-style-type: none"> enlarging the core ecosystem through already existing current and established networks as well as through involving participants from the open call. Digital Innovation Hubs, which connect incorporated and accelerated new technologies and applications from start-ups and SMEs (supply side), which are already part of the ODIN ecosystem. Thus, they are able to demonstrate benefits from their AI enabled applications. The “Trusted evidence chain”, that can create evidence of application benefits to achieve communication of the capacity of the application while measuring the impact produced over the healthcare environment. Replication of best practices and transfer of know-how, standards, tools and APIs. This facilitates the market growth for AI enabled applications (including robots and IoT).

Demand side	<ul style="list-style-type: none"> • Connecting the ODIN platform with the European Hospital Living Lab Hub. This hub is part of the EIT Health Living Labs and Testbed Network coordinated by Giuseppe Fico from UPM. They are the potential adopters and users of the ODIN platform who will validate the supply side tools and applications from the supply side point of view (DIH offering). • Early adopting, testing, and validating: these offers in the pilots or potential users' facilities complete the "journey" and allow to create an ODIN enlarged ecosystem. • Connecting with the EIT Health and DIH ecosystems which allows to further enrich the demand and supply side with new actors and stakeholders (i.e. start-ups, entrepreneurs, investment funds). Additional networks and initiatives will be also included through the open innovation approach defined in WP2 – Demand and Supply Co-Creation and implemented in WP10 – Open innovation approach.
Demand & Supply side	<ul style="list-style-type: none"> • Capturing innovation aspects and needs from potential users during the co-creation phase under WP2. This will support services optimization and scaling them up. In ODIN the supply partners will provide a catalogue of technologies that will be completed and expanded through the ODIN open call as required. The demand partners will perform an internal health technology management cycle assessment (test, install, deploy) in order to identify potential challenges, needs, bottlenecks and opportunities.

As stated in D2.1 the ODIN Ecosystem is one out of three pillars for market take-up (p. 44). After having defined the core ("seed") Ecosystem, the next goals are "consolidating it through long-term partnerships and alignments towards growing and expansion objectives; maturing the Value Proposition and Operating Leverage; and enlarging the network with new members to reach the critical mass."

2.2.2 ODIN Business ecosystem strategy

Creation of a business ecosystem is complex. It has to take into account several groups of participants and imply more layers of interaction and unintended emergent outcomes than it would be for just one single company. For making it work, a critical mass of partners and customers is needed including a true system perspective. In addition to a value creation and delivery model, design must also explicitly consider the distribution of value among ecosystem members. And due to limited hierarchical control in an ecosystem, specific governance challenges can emerge.

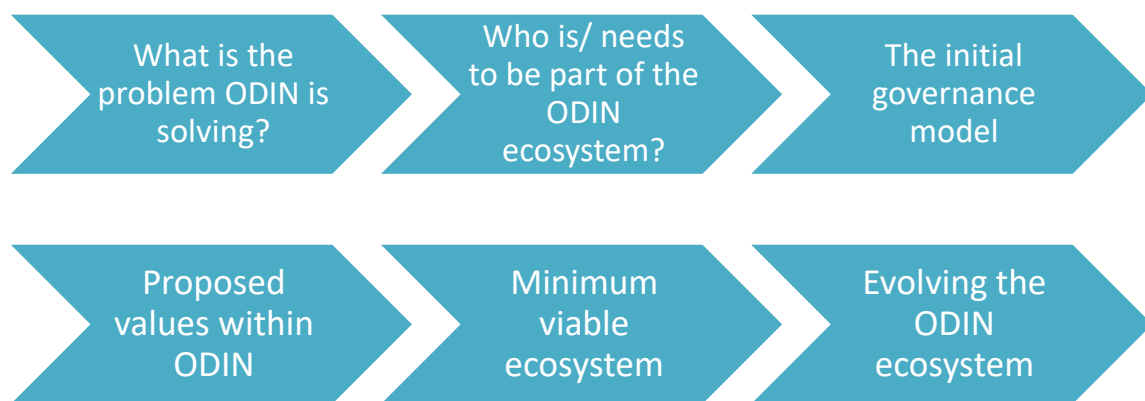


Figure 2: Six-Step Journey of Business Ecosystem Design
(BCG Henderson Institute, Pidun 2022)

According to the figure above there are six steps to be considered when setting up a business ecosystem.

Identification of the problem ODIN is solving

As stated on the ODIN project website

“The main objective is to deliver an open digital platform, supporting a suite of services and Key Enabling Resources (KERs) empowered by robotics, Internet of Things (IoT) solutions and specialized AI. These resources will be implemented in three Reference Areas of Hospital Interventions: workers, robots and medical locations and will be tested through seven Clinical User Cases in leading hospitals of six European countries: Spain, France, Germany, Poland, Netherlands and Italy.

The platform will gather information and data from the participating hospitals and through high levels of AI, it will enable Problem Perception, Cognitive Reasoning and Knowledge Optimization. The utilization of the resulting data will translate into an **optimized management and innovative products and services, enabling Value-Based Healthcare and fostering an open innovation approach between hospital partners and industrial partners to collaborate with research institutions, academia and regulatory experts, bridging the gap between healthcare suppliers and providers.**”

ODINs main objective is to create a functioning ecosystem, bringing together healthcare in hospitals and tech providers, especially in the field of robotics, internet of things solutions and specialised AI. As hospital health care is a very special business case, which involves so many different stakeholders and as it is a sensitive area with high ethical standards and policy influence, the ecosystem model makes sense in many respects.

Parts of the ecosystem

The main stakeholder groups of ODIN have been divided into Demanders and Suppliers on the one hand and partners and external stakeholders on the other (including overlaps), see also figure 3 below:

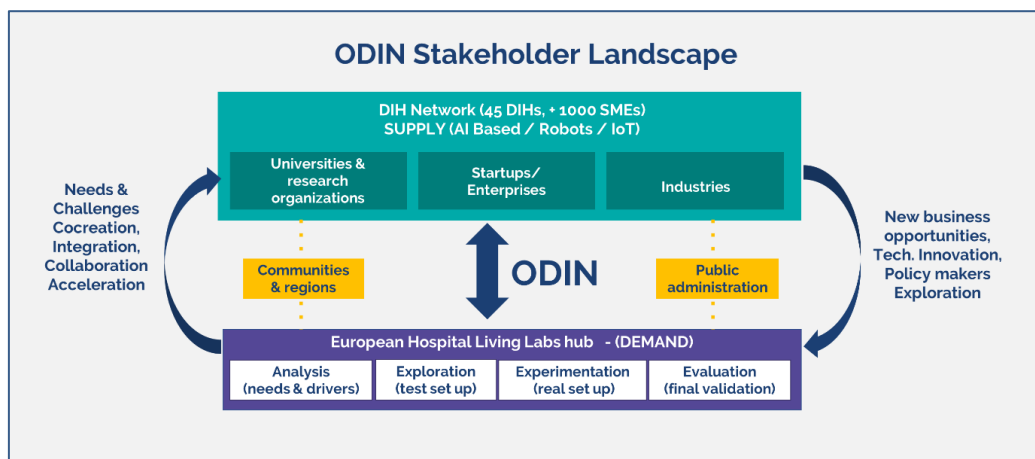


Figure 3: ODIN open innovation paradigm

The ODIN consortium itself with its partners is reflecting various stakeholder groups, supporting and benefiting from one another and can be considered as the core of the ODIN.

This first draft of the ODIN ecosystem (figure 3) was created already at the proposal stage. It introduced the segmentation into SUPPLY and DEMAND on the one hand and into impact entities - as they were specified within D2.1 ODIN co-creation workshop and end-user requirements - on the other (see also table 3 below):

Table 3. ODIN Ecosystem Group Table (from D2.1)

ENTITY GROUP	DESCRIPTION	ENTITY TYPE
IMPACT Entities	Entities not involved in the continuous interactions that are happening in the ecosystem	Platform Owners/Shapers Platform Stakeholders
DEMAND Entities	Entities that are interested in “consuming” the value produced in the ecosystem. Entities involved in continuous interactions.	Peer Consumers
SUPPLY Entities	Entities that are interested in “producing” the value consumed in the ecosystem. Entities involved in continuous interactions.	Partners Peer Producers

Information collected within Task 2.1 *Co-creation strategy, stakeholders’ definition and mapping* (interviews with partners from the pilots, workshop), led to a further definition and more detailed specification of types of stakeholders:

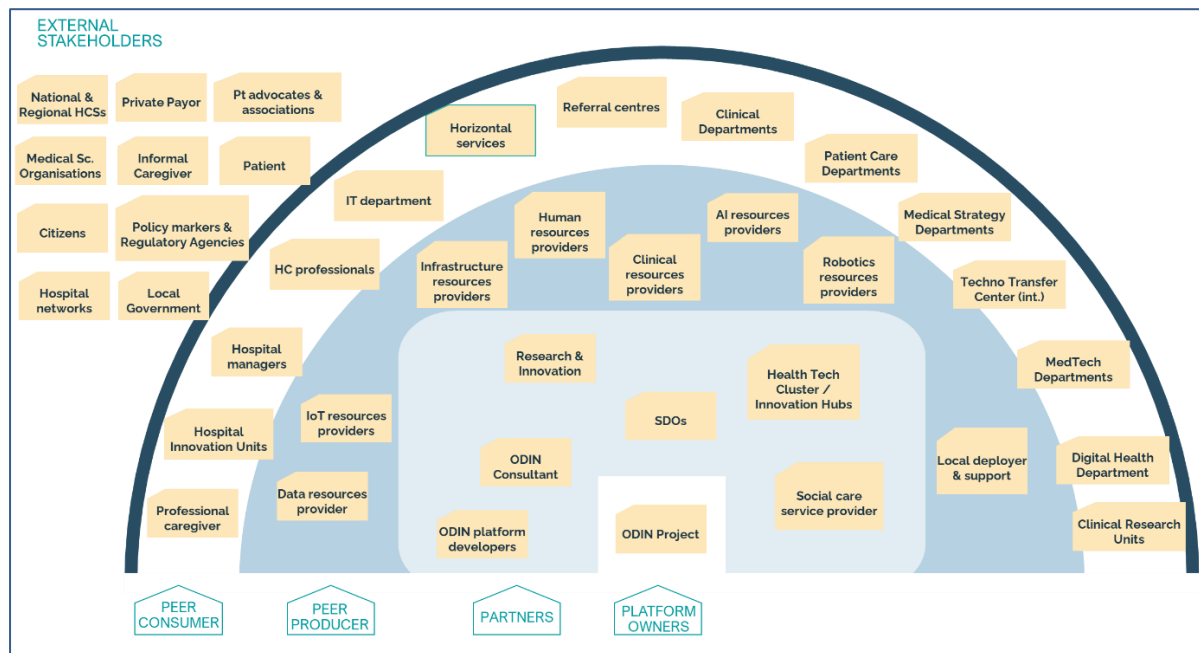


Figure 4: ODIN Ecosystem Canvas

Peer consumers and peer producers are describing entity types and equal the entity groups of demanders and suppliers (see table 3 above). They are distinct from the project consortium. System, methodology and categorisation of the stakeholder's definition and mapping are described in more detail within D2.1.

When comparing the results of the stakeholder workshop to the ODIN Ecosystem canvas in Figure 3 (see below, p. 19), it shows that there are several stakeholder subgroups which have been identified as being part of the concept but are not part of the actual ecosystem so far. This reveals gaps which will be especially considered in the ecosystem enlargement process.

Else, ODIN is building upon the list of stakeholders as already have been collected so far with a special focus on the special needs of the project in order to reach the critical mass (see below, chapter 3).

Initial governance model of the ODIN ecosystem

According to Pidun et al (2020a) choosing the wrong governance model is the most frequent reason for ecosystems to fail and also therefore it is crucial to choose with care. As the initial ("core") ecosystem is the ODIN project consortium, the governance structure has been taken over for the ODIN ecosystem, which also already represents the most important groups of stakeholders and is respected and accepted by all partners, right from the start.

The core ecosystem members are following the work plan as stated in the ODIN grant agreement, following the objectives and obligations stated there. IPR is regulated within the consortium agreement and for new partners answering the open call, the rules are set out in the open call regulations. In the following the process will be focused on the consolidation through long-term partnerships and alignments towards growing and expansion objectives; maturing the Value Proposition and Operating Leverage; and enlarging the network with new members to reach the critical mass.

Proposed value and minimum viable ecosystem

This depicts the minimum of elements needed for a functioning ecosystem. The minimum viable ecosystem in combination with the proposed values for the ecosystem mark its starting point.

“The minimum viable ecosystem involves a minimum of one actor of each market role to pilot and improve the system and value streams.” (Lewrick, 2018)

Within the workshop - which has been organised by WP2 - partners of the core ODIN ecosystem (= project consortium) has been asked for the gains and values of this system. These answers are addressed by strategies and activities within T9.1 and T10.1 that include propositions of how to reach the critical mass and which are displayed in the table below:

Table 4: Values and gains of the ODIN ecosystem in general

Expected gains and values when joining the ODIN ecosystem	Addressed by ODIN ecosystem (enlargement) activities
Partners and/or Peer Producers (SUPPLY)	
Expand the adoption of IoT, robotic and AI knowledge in real hospital environments, while ensuring their sustainability and easy access into the market	<ul style="list-style-type: none"> ⇒ Open call (+ 2 resulting use cases) ⇒ Interconnect with sister projects, clusters, hubs; also, with demanders and decision makers ⇒ Public webinars ⇒ Classic dissemination activities (e.g. presentations on fairs, conferences; publications; social media etc.)
Supply solutions and technologies compliant with the ODIN platform	<ul style="list-style-type: none"> ⇒ Promoting existing technologies ⇒ Open call
Extensive and heterogeneous datasets to exploit and expand data-driven models	<ul style="list-style-type: none"> ⇒ Open call ⇒ Delivered by pilots within the project
Know-how and expertise on application of IT solutions in healthcare and being a reference in R&D&I in terms of ODIN-related KETs	<ul style="list-style-type: none"> ⇒ Community of Interest (CoI) ⇒ Classic dissemination activities (e.g. presentations on fairs, conferences; publications; social media etc.)
Find pilots available to open their environment to test technologies and work with them and other partners in other European projects and achieve successful relationships	<ul style="list-style-type: none"> ⇒ Open Call ⇒ Classic dissemination activities (e.g. presentations on fairs, conferences; publications; social media etc.)
Understand the needs and requirements from hospitals	<ul style="list-style-type: none"> ⇒ Community of Interest (CoI) ⇒ Definition of hospital requirements (WP2) / Cooperation within the project

Peer Consumers (DEMAND)	
Implement AI technologies to improve efficiency and solve problems in hospitals	⇒ Open Call ⇒ Collaboration with existing project/ ecosystem members
Recognize the work done by Innovation Units in hospitals	⇒ Classic dissemination activities (e.g. presentations on fairs, conferences; publications; social media etc.) ⇒ Webinars ⇒ Open Call

Table 5: personal gains of being part of the ODIN ecosystem

What do the rest of the stakeholders in the ecosystem bring to you? What would it be ideal for you to get from the rest? Why is it interesting for you to join ODIN?	
Partners and/or Peer Producers (SUPPLY)	
Bring new knowledge, know-how and complementary expertise to validate and implement technology in healthcare	⇒ Internal communication activities like webinars ⇒ Open calls ⇒ Community of Interest (Col)
Establish partnerships with experts on smart hospitals to develop innovative solutions	⇒ Cooperation within the project ⇒ Clustering ⇒ Open Calls
Get a broader understanding of real problems in hospital and the technologies (especially AI and IoT trend) that are needed to meet healthcare needs.	⇒ Cooperation within the project ⇒ Open Calls
Partners and/or Peer Producers (DEMAND)	
New technologies (such as AI tools) and experience of technology companies to overcome hospital internal barriers	⇒ Cooperation within the project ⇒ Clustering ⇒ Open Calls

Table 6: possible gains for external stakeholders of being part of the ODIN ecosystem

What exactly do you get out when entering in the ecosystem?	Implications for T10.1
Partners and/or Peer Producers (SUPPLY)	
Knowledge transfer (research connected to market) thanks to a big consortium of experienced partners and potential partnerships	⇒ Cooperation within the project ⇒ Clustering
Knowledge, tools, materials, know-how, best practices procedures and implementation guidelines for the Hospital of the Future	⇒ Cooperation within the project ⇒ Clustering
A trusted platform to perform data and technology integrations and the data itself, to train or validate products or services in development	⇒ Cooperation within the project ⇒ Open Call
Reshape and automatize processes to get better patients' outcomes and contribute to healthcare systems, understanding their needs	⇒ Cooperation within the project ⇒ Open Call
Partners and/or Peer Producers (DEMAND)	
Improved patient care	⇒ Cooperation within the project
Improved staff satisfaction	⇒ Cooperation within the project
New opportunities to optimize current internal procedures and technologies	⇒ Cooperation within the project ⇒ Open Call

All these assumptions made within the ODIN project have to be validated externally with other organisations and people potentially in the ecosystem, potentially interested in being part of ODIN platform. This can be done within the frame of the Community of Interest (CoI), e.g. within a webinar or a workshop.

Evolving the ODIN ecosystem

One of the characteristics within business ecosystems is that they develop through self-organisation, emergence and co-evolution. In order to ensure the evolvability of the ODIN ecosystem, it is important to understand how scalable it is. It has to be defended, will be expanded and should be protected against backlash.

According to Aguiar et al. (2019) an exact route of expansion of a business ecosystem neither can nor should be planned in advance. A key benefit of ecosystems is their responsiveness to changing consumer needs and technological opportunities. It is thus important for an ecosystem orchestrator to be open to the creative potential of consumers and complementors, and to build flexibility and adaptability into the model.

Ecosystems have to adapt their design and strategy accordingly to their scale. However, to thrive in the long run, the ecosystem also needs to be defensible.

Ecosystems have some built-in defensibility advantages. Once they have achieved a dominant market position, strong barriers to entry result from the network effects and scale advantages on

costs and data mentioned above. Ecosystems compete at the system level (not on product level), which gives them a deeper type of competitive advantage that is more difficult to copy and attack than just a superior product or service.

In the end, the only way to defend the leading position as an ecosystem is to be the technology and innovation leader in this industry, to encourage all partners in the ecosystem to relentlessly innovate, and to continuously adapt and reinvent the own ecosystem, before others do.

Sustainability for the ODIN ecosystem

An ecosystem is influenced by many factors, such as competition, regulation, the evolving needs of customers, and your resources, underutilized assets, and appetite for risk. But also, one of the major strengths of ecosystems is their adaptability. According to a study cited by Pidun et al (2020b) most business ecosystems fail nevertheless and less than 15 % were sustainable in the long run. Thus, it is even more important to have an eye on sustainability and for watching out.

When thinking of future development of the ecosystem, several directions or vectors as Pidun et al. (2022) call it, can be pursued (see below):

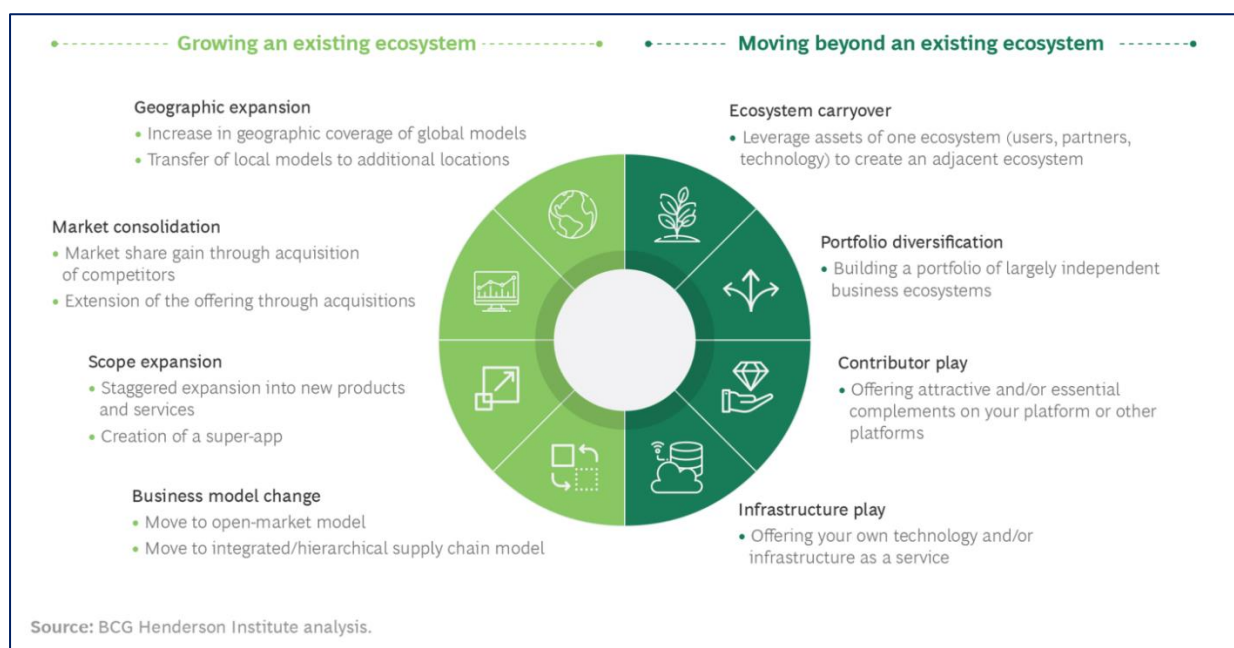


Figure 5: Methodological approach
(from: Pidun et al. 2022)

For ODIN especially two directions are headed for:

- Scope expansion

One aim of the ODIN ecosystem enlargement is to increase the range of products and solutions in the field.

- Geographic expansion

Another goal is to interconnect also with other suppliers and demanders, reaching out to additional markets.

3 ODIN ecosystem enlargement and stakeholder engagement

Expanding the offer catalogue is one of the main objectives of ODIN. Ecosystem enlargement and stakeholder engagement are the preconditions to reach this goal. ODIN follows a structured approach on this:

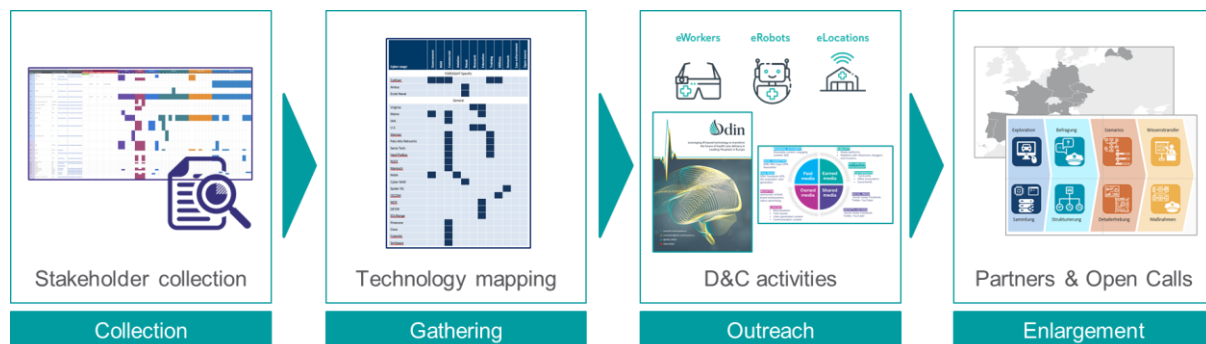


Figure 6: Structured approach for the ODIN ecosystem enlargement

Starting with a Stakeholder collection and a technology mapping that identifies the gaps and additional use cases, the data is used for targeted dissemination and communication activities which will finally lead to the enlargement of the ODIN ecosystem.

3.1 Collect data/ Stakeholder collection

The primary task of the ODIN ecosystem enlargement is to identify and involve stakeholders and decision makers from outside of the ODIN consortium, who might have an interest in the ODIN ecosystem and who might be interesting for ODIN. For this purpose, one of the first activities within T10.1 “Ecosystem enlargement and trust building” was the identification of decision-makers and stakeholders who might be interesting for the enlargement of its ecosystem from the project’s point of view and who also might be interested in being part of the ODIN ecosystem as well.

The stakeholder collection process started in November 2021 and – designed as an ongoing task – will be continued until the end of the project. Only publicly available contact data was collected. The resulting data will be used to enlarge the ecosystem in terms of connecting and engaging with the identified decision-makers and other stakeholders in a targeted way, e.g., for dissemination or exploitation. One important goal in this respect is to use the stakeholder collection and especially the collected contacts for disseminating the Open Calls to acquire new pilots and technology providers. Another one is to connect with other experts in the field in order to create synergies and inform them about the ODIN Community of Interest. As a side effect, it also provides a rough overview of the AI-based health market. The following chapter provides an insight into how the stakeholder collection is structured, how it is set into practice and what results are currently available.

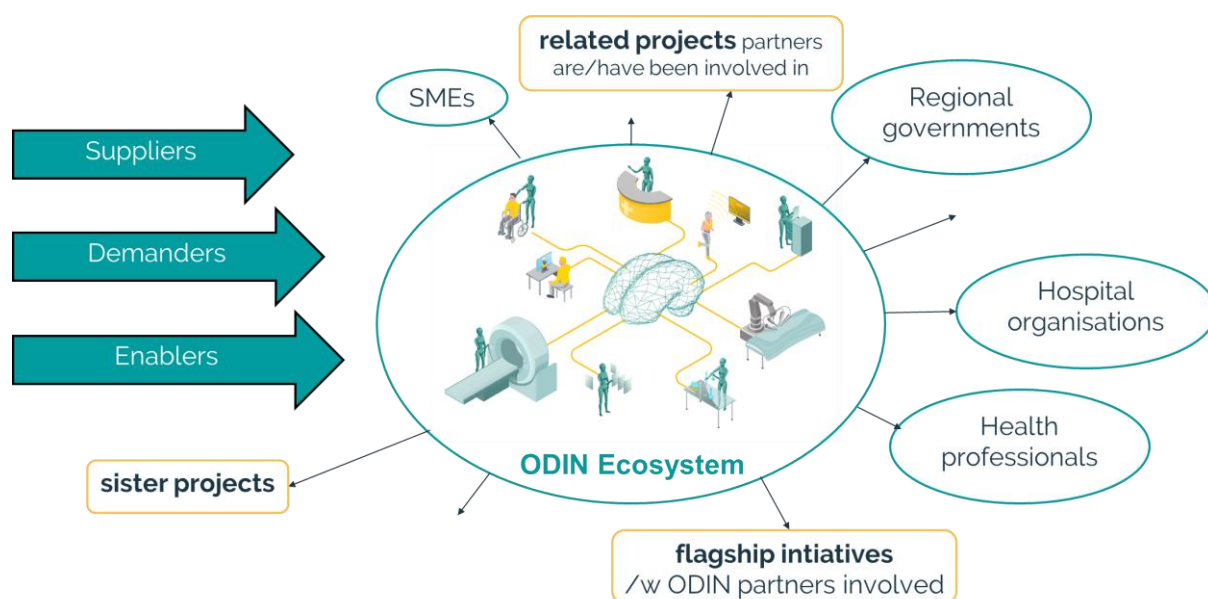


Figure 7: ODIN Ecosystem Enlargement

Additionally, the ODIN's ecosystem approach is connected with the European Commission's objectives for the construction of a network of Digital Innovation Hubs (DIHs), which also allows SMEs to expand their digital skills. As a result, particular measures will be defined to integrate all of the regions and unify the vision under one ecosystem. Two major mechanisms underpin these actions: dedicated interaction with DIHs and the project's network of National Contact Points (NCPs).

3.1.1 Methodological approach

As a first step, the ODIN ecosystem was divided into four different groups of stakeholders - **Demander**, **Supplier**, **Enabler**, and **Projects** – which were to be collected (for more information see below, 3.1.2 Stakeholder segmentation). For three of the four identified groups - Demander, Supplier and Enabler - collection sheets were created to be filled by the whole consortium. In addition, related projects have been collected only by M&S.

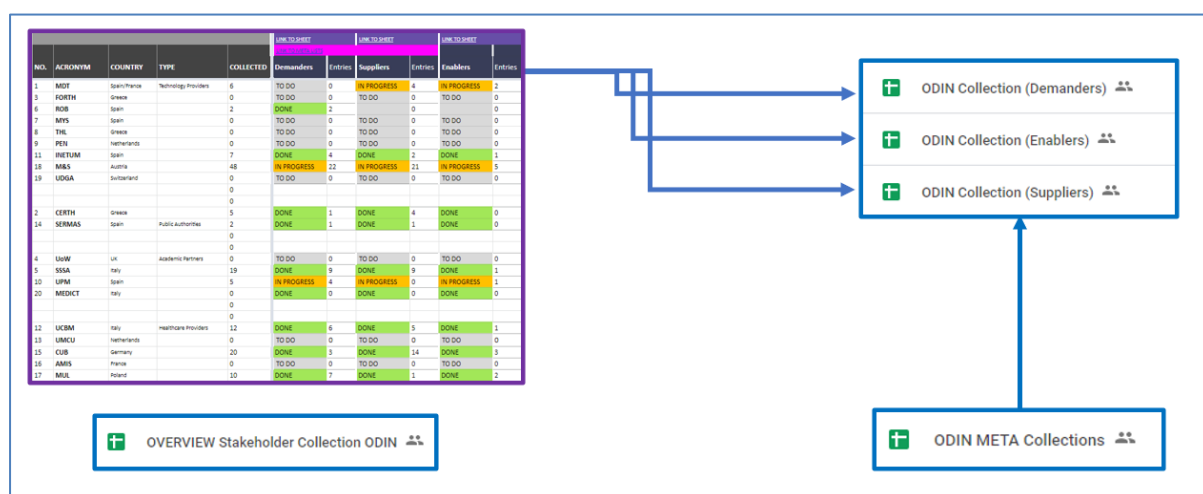


Figure 8: Methodological approach

An additional overview document was created for coordination purposes of the collection. In this overview document, the status of the collection was tracked, and the corresponding collection sheets can be accessed directly via links. For the collection process, the partners were tasked with collecting entries for each of the three different collection sheets. The main focus of the partner's collection is the partner's country of origin. The best possible results could be achieved through desk research combined with local knowledge. However, the collection tasks of the partners are not limited to their country of origin as all of the EU countries are supposed to be covered. The overview sheet can be updated by consortium partners according to the collection process, making it easier to track status.

3.1.2 Stakeholder segmentation

Prior to starting the stakeholder collection, the different stakeholder groups have to be defined and segmented. Defining and segmenting the stakeholders is a prerequisite for the collection process. Without a precise definition and segmentation, a serious stakeholder collection is impossible and the enlargement process might fail. These tasks require a definition of stakeholder groups of interest. At this point, it is important to note that the stakeholder's definition used for the stakeholder collection slightly differs from the stakeholder description in chapter 2 or at the project level. At project level, the focus is on external and internal stakeholders, while in the case of the ecosystem enlargement, the external stakeholders are of particular interest, for instance, networks or other EU projects. The following sections provide an overview and a detailed description of the defined stakeholders for ecosystem enlargement.

Stakeholder segmentation – overview

For the stakeholder collection the stakeholders have been segmented in four different stakeholder groups.

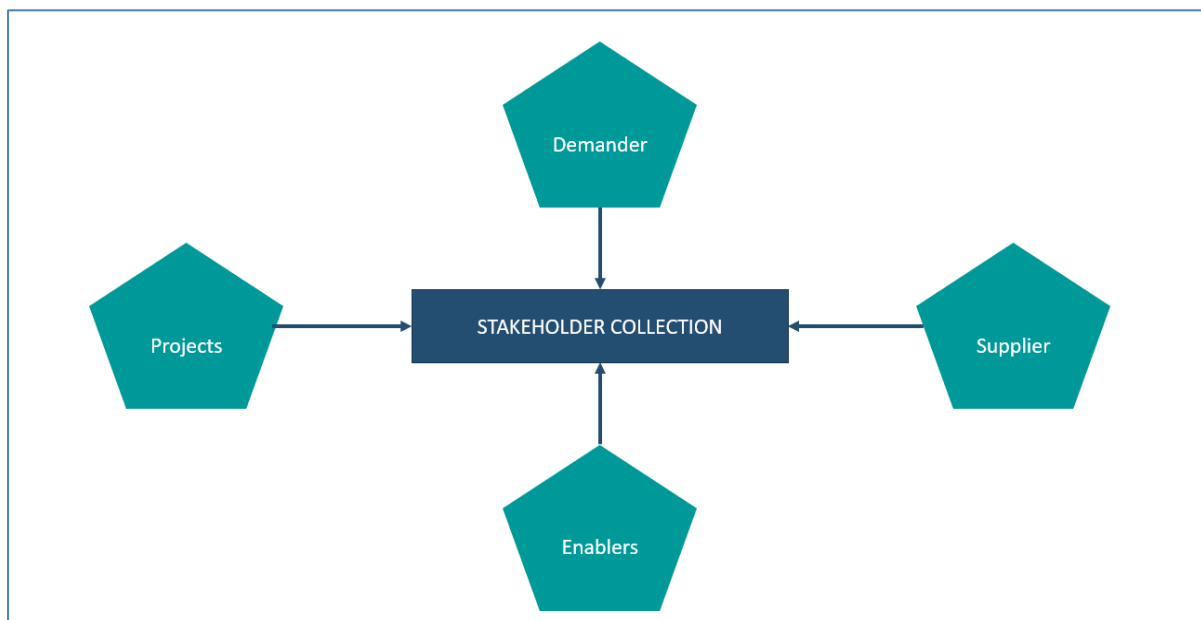


Figure 9: Stakeholder groups

The following table gives a brief overview of these stakeholder groups as well as a short description and a few example stakeholders:

Table 7: Stakeholder collection - segmentation overview

Stakeholder	Description	Examples
Demanders	Demanders are stakeholders that buy and implement products and/or services in the context of the project. Demanders are hospitals, living labs, accelerators and innovation centres.	Vienna General Hospital, LMU Klinikum Munich
Suppliers	Suppliers are manufacturers, developers and/or vendors of products in the project context. In addition, suppliers can offer services that are used by demanders. This includes companies in particular providers of HealthTech products and services.	Siemens Healthineers, IB Lab GmbH
Enablers	Enablers create economic opportunities through the involvement in the process between the exchange of demanders and suppliers. In other words, enablers exist to keep the different stakeholders connected as well as to connect new stakeholders through events such as fairs. Enablers are stakeholders e.g., associations, foundations, networks and initiatives.	AAL Europe, Smart Lives Conference
Projects	Besides the ODIN project, there are many other EU projects with similar goals and challenges. Due to the common objectives, it is therefore recommended to pool the resources of the different projects in order to achieve maximum impact.	GATEKEEPER. PHAR-ON

As already mentioned, for each of these stakeholder groups a google sheet was created to collect the stakeholders. In addition, an overview sheet was created as a central orchestration element. Using links, the individual collection sheets can be accessed directly as well as the status of the collection can be checked. An overview of this sheet is shown in the next figure. The stakeholders being already part of the ODIN ecosystem are not included in the overview sheet.

					LINK TO SHEET		LINK TO SHEET		LINK TO SHEET		HOST COUNTRY	HOST COUNTRY	HOST COUNTRY	HOST COUNTRY	HOST COUNTRY	HOST COUNTRY				
NO.	ACRONYM	COUNTRY	TYPE	COLLECTED	Demanders	Entries	Suppliers	Entries	Enablers	Entries	Italy	Netherlands	Poland	Germany	France	Spain	UK	Greece	Switzerland	Austria
1	MDT	Spain/France	Technology Providers	6	TO DO	0	IN PROGRESS	4	IN PROGRESS	2					TO BE COVERED			TO BE COVERED		
3	FORTH	Greece		0	TO DO	0	TO DO	0	TO DO	0								TO BE COVERED		
6	ROB	Spain		2	DONE	2	DONE	0	DONE	0								TO BE COVERED		
7	MVS	Spain		0	TO DO	0	TO DO	0	TO DO	0								TO BE COVERED		
8	THL	Greece		0	TO DO	0	TO DO	0	TO DO	0								TO BE COVERED		
9	PEN	Netherlands		0	TO DO	0	TO DO	0	TO DO	0		TO BE COVERED								
11	INETUM	Spain		7	DONE	4	DONE	2	DONE	1										
18	M&S	Austria		143	IN PROGRESS	22	IN PROGRESS	80	IN PROGRESS	41										TO BE COVERED
19	UDGA	Switzerland		0	TO DO	0	TO DO	0	TO DO	0									TO BE COVERED	TO BE COVERED
				0																
2	CERTH	Greece		5	DONE	1	DONE	4	DONE	0								TO BE COVERED		
14	SERIMAS	Spain	Public Authorities	2	DONE	1	DONE	1	DONE	0							TO BE COVERED			
				0																
				0																
4	Univ	UK	Academic Partners	0	TO DO	0	TO DO	0	TO DO	0								TO BE COVERED		
5	SSSA	Italy		19	DONE	9	DONE	9	DONE	1	TO BE COVERED									
10	UPM	Spain		5	IN PROGRESS	4	IN PROGRESS	0	IN PROGRESS	1							TO BE COVERED			
20	MEDICT	Italy		0	DONE	0	DONE	0	DONE	0	TO BE COVERED									
				0																
12	UCBM	Italy	Healthcare Providers	12	DONE	6	DONE	5	DONE	1	TO BE COVERED									
13	UMCU	Netherlands		0	TO DO	0	TO DO	0	TO DO	0		TO BE COVERED								
15	CUB	Germany		20	DONE	3	DONE	14	DONE	3				TO BE COVERED						
16	AMIS	France		0	TO DO	0	TO DO	0	TO DO	0					TO BE COVERED					
17	MUL	Poland		10	DONE	7	DONE	1	DONE	2			TO BE COVERED							
					59			120		52										
					TO DO						TO BE COVERED									
					IN PROGRESS						COVERED									
					DONE															

Figure 10: Overview stakeholder collection sheets

Demanders

As described in Table 7 the stakeholder group Demanders/peer consumers are those stakeholders that potentially buy and implement products and/or services in the context addressed by the project. In general, that would include all hospitals across Europe. However, in addition to hospitals also other healthcare facilities might be interested in ODIN technologies or other AI-enabled technologies. Therefore, based on the different types of health facilities they have been divided into the following segments:

Table 8: Demander segmentation

Type	Description	Examples
Hospitals	Hospitals are all health care facilities that treat patients by providing medical infrastructure, medical equipment and care and other health related services. Hospitals represent the main group of demanders collection.	Vienna General Hospital, LMU Klinikum Munich
Living Labs	Living labs are user-centred, open innovation systems that integrate the co-creation of research and the knowledge exchange in real environments. Since ODIN technologies are very close to research, or arise from research, living labs are highly interesting for the possible integration of new use cases.	Healthcare Living Lab Barcelona, Lugano Living Lab
Accelerators	Accelerators help start-ups and SMEs to get on a fast track to success by offering help in various business areas provided by successful entrepreneurs or industry veterans. This includes, for example, funding, mentoring, workshops, etc. Since accelerators actively support start-ups and SMEs, they are also demander for new technologies.	Merck Accelerator, Grants4Apps
Innovation Centers	Innovation centres provide infrastructure for technology providers. These centres are usually equipped with the latest technologies and are therefore on a level of scientific research. Often companies use innovation centres as showrooms for their own innovations.	European HealthTech Innovation Center

For the stakeholder group Demander, the collection sheet **Demander collection** was created using the segments mentioned above. An overview of this collection sheet is given in the next figure.

Name	Acronym	Description (short description or some keywords)	URL	Country	Type	Founded	Employees	Hospitals	Living Labs	Accelerators	Innovation Centers
Klinikum - Klagensfurt am Wörthersee	KKH	As a specialised hospital, Klagensfurt hospital offers the range of services	http://www.klinikum-klagensfurt.at/	AT	Public	1896	4,000	X			
Universitätsklinikum St. Pölten-Urfeld		St. Pölten University Hospital stands for cutting-edge medicine in Lower	https://toposchen.klin.at/	AT	Public	1894	3,000	X			
Klinikum Wien-Gründersheim		As the largest hospital in Austria run by religious orders, Klinikum Wien-	https://www.klinikum-wien.at/	AT	Public	1893	3,980	X			
Lin-Kaplan-Universitätsklinikum		On the occasion of the employment of a medical faculty in Linz/Austria	https://www.kliniken-uni-linz.at/	AT	Public	2015	6500	X			
Sekundarmag-Klinikum		Education and research are important to us in order to always treat and care	https://www.smg.at/de	AT	Public	1343	2900	X			
Landeskrankenhaus-Universitätsklinikum Graz		We are a hospital where the focus is always on people. We know that	https://www.uniklinikum-graz.at/	AT	Public	1788	7000	X			
Landeskrankenhaus-Universitätsklinikum Innsbruck		The A. O. Landeskrankenhaus - Universitätsklinikum Innsbruck, as a centre	https://www.aon.at/gesundheitsstandards/landeskrankenhaus-innsbruck	AT	Public	1888	8700	X			
Universitätsklinikum AöH Wien	AÖH	The Vienna General Hospital (German: Allgemeines Krankenhaus der	https://www.aeh.at/	AT	Public	1693	8870	X			
Klinikum der Universität München	LMU	The LMU hospital with its two Munich sites, Campus Großhadern and C	https://www.klinikum.uni-muenchen.de/	DE	Public	1498	13,070	X			
Universitätsklinikum Heidelberg	UKHD	Heidelberg University Hospital is one of the largest and most renowned	https://www.klinikum.uni-heidelberg.de/	DE	Public	1388	13,422	X			
Klinikum Chemnitz	KKC	Klinikum Chemnitz gGmbH (KC) is wholly owned by the city of Chemnitz	https://www.klinikumchemnitz.de/	DE	Public	1330	7000	X			
Universitätsmedizin der Johannes Gutenberg-Universität M		The University Medicine of the Johannes Gutenberg University Mainz is	https://www.unimedio-mainz.de/index.html	DE	Public	1675	8560	X			
Universitätsklinikum Freiburg		In its original task, the University Hospital combines research, teaching	https://www.uniklinik-freiburg.de/de.html	DE	Public	1457	14,000	X			
Universitätsklinikum Tübingen		Founded in 1805, Tübingen University Hospital is one of 34 university	https://www.medizin.uni-tuebingen.de/de/	DE	Public	1477	9900	X			
Universitätsklinikum Göttingen	UMG	With the funds from the success plan subsidy from the state of Lower	https://www.umg.de/	DE	Public	1732	7900	X			
Städtisches Klinikum Karlsruhe		The Karlsruhe Municipal Hospital is designated in the hospital requirem	https://www.klinikum-stadtkarlsruhe.de/	DE	Public	1907	4500	X			
Adaptive Governance Lab	AGL	The Adaptive Governance Lab is coordinated by the School of Architect	https://adaptivegovernancelab.stanford.edu/	IE	Public	2010			X		
Etat de Genève	GE-LAB	Genève Lab's main goal is to help improve public administration service	https://www.ge.ch/ressources/etatlab	CH	Public	<50			X		
Lugano Living Lab	L3	The Lugano Living Lab platform was created by the will of the City of Lug	https://luganolive.com/en/	CH	Public	<50			X		
Merck Accelerator		The Merck Accelerator program supports startups with the first algorith	https://www.merckgroup.com/en/research/innovation-center/accelerator.html	DE	Private	1668	52,000			X	
GrantsApps	GAA	4A is Bayer's digital health partnerships and investments team dedicate	https://www.4a.health/	DE	Private	2013				X	
European HealthTech Innovation Center	EHTIC	The European HealthTech Innovation Center (EHTIC) is a university-wide	https://www.ehtic.eu/	PL	Public	2015	<50				X
European Centre for Innovation, Research & Implementation EuroHealth		EuroHealthNet is a not-for-profit partnership of organisations, agencies	https://eurohealthnet.eu/	BE	Public	2009	<50				X

Figure 11: Demander collection sheet

Suppliers

Suppliers/peer producers are manufacturers, developers and/or vendors of products or services in the project context. These include especially companies that offer HealthTech products and services. In addition to the companies in the HealthTech sector, academic institutions are also relevant, where products and services are developed as a result from research. In the ODIN project, solutions are specifically relevant for the three priority areas of interventions. As stated in the DoA, they consist of:

- eWorkers
- eRobots and
- eLocations

Besides these three priority areas, solutions from other areas can also be relevant for the ODIN project. Therefore, for the segmentation, a further option (Other) was added:

Table 9: Supplier segmentation

Area	Description	Examples
eWorker	The aim of solutions within eWorker is to explore how to empower hospital workers (e.g., nurses, porters, technicians, doctors, etc.) through appropriate technologies in order to enhance their skills and support their daily work. Technology will be used to relieve hospital employees from the overwhelming burden of their routinely activities, so they can focus on those critical tasks which demand all their human capacities.	Machine learning, deep learning, natural language processing
eRobots	Solutions within the eRobots category address hospital processes to be automatised, which are no more in need of humans or can benefit from automations. These robots will not necessarily be anthropomorphic and will be deployed as centrally synchronized swarms with a certain degree of independency. ODIN robots will have advanced perception functions (smell, vision, tact, taste, and hearing), extreme connectivity features (with other robots, hospital assets, humans, medical locations), advanced AI reasoning capability (both locally and remotely) and capability to perform tasks (wheels, arms, hands, etc.).	Mobile robots, stationary robots, virtual robot

eLocations	eLocation solutions are medical locations instrumented to proactively support hospital processes. They will be equipped with sensors (smell, vision, tact, taste, and hearing), technologies for human interaction (screens, lights, speakers) and high connectivity in order to safely and effectively interact with workers, robots, devices and other relevant hospital assets. Moreover, eLocations solutions will have the capability to give in real-time information on their underlying technological infrastructures (e.g., electric plants, water pipes, air conditioning, medical gasses) which are critical for human safety (patients, visitors and staff), robots, medical devices and equipment.	Monitoring, maintenance, remote operations, connectivity
Other	This category summarises all other technologies that aim to optimise processes in a hospital in various ways (efficiency, effectiveness, safety ...) and that follow the idea of Smart Hospitals, as they are of interest for the ODIN ecosystem and should not be excluded.	Blockchain, augmented reality, virtual reality

Using the segmentation introduced above, the collection sheet **Supplier collection** was created:

Name	Acronym	Description (short description or some keywords)	URL	Country	Founded	Employees	Academic	SME	eRobots	eLocation	eWorkers	Other
Image Biopsy Lab	IBL	AI-driven software applications that enable orthopedists ar	https://www.imagebiopsy.com/	AT	2016	<50		X			X	
Siemens Healthineers	SH	When our health is at risk, we rely on physicians to make th	https://www.siemens-healthineers.com	DE	2017	66,000			X	X	X	
AKTORmed Robotic Surgery	AKTOR	Aktormed GmbH is a leading specialist in developing and m	https://aktormed.info/de/	DE	2005	<50		X	X			
tomedo	TOMED	We are both brothers from a family of doctors, studied con	https://tomedo.de/	DE	2011	50-100		X			X	
InterComponentWare	ICW	ICW is a leading, internationally active software provider in	https://icw-global.com/de/	DE	1998	50-200		X			X	
ada	ADA	Built by doctors and scientists and powered by a 10 million	https://ada.com/	DE	2011	200-500		X			X	
Tele Clinic	TELC	Every day, we are committed to a world in which patients c	https://www.teleclinic.com/	DE	2015	50-200		X				X
Fraunhofer	FHG	The Fraunhofer-Gesellschaft, headquartered in Germany, is	https://www.fraunhofer.de/	DE	1949	10000+	X		X	X	X	
Telocate	TLC	Telocate GmbH, based in Freiburg im Breisgau, is a technol	https://de.telocate.de/	DE	2014	<10		X		X		
SES RFID Solutions	SES	Industry leaders in ultra-thin, energy harvesting, smart we	https://sesrfid.com/	DE	2014	50-200		X		X		
Fresenius	FRS	Fresenius is a globally active health care group providing pr	https://www.fresenius.com/index	DE	1912	10000+			X	X	X	
Karl Storz	KS	As a solution provider and partner in the healthcare sector,	https://www.karlstorz.com/at/de/index	DE	1945	5000-1000		X		X	X	
ApoQlar	AQR	apoQlar is the developer of a medical mixed reality platfor	https://apoqiar.com/	DE	2017	<50		X			X	
Hyperganic	HPG	Hyperganic builds software to design objects that are as co	https://www.hyperganic.com/	DE	2015	<50		X		X	X	
Stieglmeier	SGM	Each hospital has its own processes, technical requirement	https://www.stieglmeier.com/en/	DE	1899	1200		X		X	X	
2PCS	2PCS	The 2PCS system is an alerting and locating system designe	https://www.2pcs-solutions.com/de/2k	AT	2017	<50		X		X		
ACMIT	ACMIT	ACMIT is a research and development center in the field of	https://acmit.at/	AT	2005	50-200	X		X	X	X	
AME International	AME	AME International GmbH (AME) ist ein weltweit tätiger Anl	https://www.ame-international.com/	AT	1995			X				X

Figure 12: Supplier collection sheet

Enablers

Enablers are linking demanders and suppliers. Through establishing contact with both parties, they create economic opportunities for all. Enablers are of a particular interest for actors who do not yet have a large network so far or just have entered the market. For those, enablers offer a kind of match-making function by establishing contact and can also serve as a booster for the actors. As with the demanders and suppliers, the enablers are also segmented according to various characteristics. These include following types of organisations:

Table 10: Enabler segmentation

Type	Description	Examples
Association	An association is a group of different people, companies or organisations that join together for a shared purpose. In the ODIN project, all associations whose purpose is HealthTech or Smart Hospitals are relevant.	German Medical Technology Association, Austrian Public Health Association
Foundation	A foundation in the field of business or science is an organisation or group that provides funds for companies, projects or research. In the ODIN context, foundations are relevant for companies, projects and research in the HealthTech and Smart Hospital sector.	Fundacio TicSalut, EUPATI

Network	A network is very similar to an association by bringing together different actors through a common purpose. However, a network goes beyond association. In a network, for example, knowledge is exchanged (often via a platform) or events are organised for the further exchange of knowledge.	Health Hub Vienna, Health Tech Berlin
Initiative	An initiative often represents something that needs to be achieved using a new process or new plan to solve a problem. In the ODIN case, these plans or processes would relate to the HealthTech or Smart Hospital sector. In many cases such initiatives are initiated by governments or other public institutions and are open for groups, companies and academic institutions.	Tercera Edad Activa Madrid, EIT Health

For the stakeholder group Enabler, the collection sheet **Enabler collection** was created using the segments mentioned above. An overview of this collection sheet is given in the next figure.

Name	Type	Association	Foundation	Network	Initiatives	Events	Other	Legal Name	Street
Austrian Public Health Association	governmental	X						Österreichische Gesellschaft Alser Straße 4	
Österreichische Forschungsförderungsgesellschaft m.b.H. (FFG)	governmental	X						Austrian Research Promoti Sensengasse 1	
Smarter Lives Conference	private					X		Universität Innsbruck, Insti Universitätsstraße 15	
AAL Association	non-governmental		X					Stiftung für Medizininnovation/ Jasminweg 23	
Health Hub Vienna	private			X	X			INITS Universitäre Gründe Maria-Jacobi-Gasse 1	
Health Tech Berlin	private			X				HTB HealthTechBerlin Gmb Siedlerrain 14	
German Medical Technology Association	non-governmental	X						BVMed - Bundesverband IV Reinhardtstraße	
Healthcare Innovations	private			X				Healthcare Innovations UG Im Himmelberg 10	
National Health Fund	governmental			X			X	National Health Fund Rakowiecka 26/30	
Polish Hospital Federation	non-governmental	X						Polish Hospital Federation Nowogrodzka 11	
Agencia Digital de Andalucía	governmental						X	Agencia Digital de Andaluci N/A	
Tercera Edad Activa Madrid	non-governmental	X			X		X	Tercera Edad Activa N/A	
Greek Ministry of Health	governmental								
Ministero della Salute	governmental						X	Ministero della Salute Viale Giorgio Ribotta, 5	
EIT Health	other			X	X	X		EIT Health e.V. Mies-van-der-Rohe-Str	
Toscana Life Sciences	non-governmental		X					Fondazione Toscana Life Sc Via Fiorentina, 1	
Croce Rossa Italiana	non-governmental	X						Associazione della Croce Rossa Ita Via Toscana, 12	

Figure 13: Enabler collection sheet

Projects

As mentioned before, the Projects collection is carried out by the ODIN partner M&S. The focus lies on other (mainly EU) projects that pursue similar goals and tasks. The aim is to achieve a greater impact through pooling resources. No further segmentation of the projects is made. An example of the projects collection is shown in the following figure:

Acronym	Project Title	Abstract	URL	URL Programme Platform (CORDIS etc.)	Programme	ID
Open DEI	Aligning Reference Architectures, Open Platforms and Large Scale Digital Transformation (DT) is a key priority for the EU in its efforts to support the rise of competitiveness of		https://www.opendei.eu/	https://cordis.europa.eu/project/id/857065	H2020	857065
Spider	a cybersecurity Platform for virtualised 5G cyber Range service	The telecommunications sector is very vulnerable to cyberattacks. Despite billions of euros invested in c	https://spidech2020.eu/	https://cordis.europa.eu/project/id/833685	H2020	833685
Tender Health	affective based integrated care for better Quality of Life	Europe's growing population faces serious social and health challenges especially where cognitive impar	https://www.tender-health.eu/	https://cordis.europa.eu/project/id/857325	H2020	875325
Pharson	Pilots for Healthy and Active Ageing	By 2080, one in three Europeans will be over 65, increasing the demand for healthcare services. The de	https://www.pharson.eu/	https://cordis.europa.eu/project/id/857188	H2020	857188
Smart Bear	Smart Big Data Platform to Offer Evidence-based Personalised	Ageing is a central challenge for EU societies as the number of elderly is on the rise. Ageing has signific	https://www.smart-bear.eu/	https://cordis.europa.eu/project/id/857172	H2020	857172
HOSMARTAI	Smart Smart development based on AI	The main objective of the EU-funded HosmartAI project is to promote an effective and efficient healthc	https://www.hosmartai.eu/	https://cordis.europa.eu/project/id/101016834	H2020	101016834
Secure Hospitals EU	Raising Awareness on Cybersecurity in Hospitals across Europe	Cybercrime has recently shifted from attacking big corporations to smaller industries, like financial servi	https://www.securehospitals.eu/	https://cordis.europa.eu/project/id/846497	H2020	826497
SmartHealth	Citizen-centred EU-DIR exchange for personalised health	It is important for an EU citizen to be able to access their own health data easily and securely within an	https://smarthealth.eu/	https://cordis.europa.eu/project/id/826117	H2020	826117
FATH	a Federated Artificial Intelligence solution for monitoring men	The main goal of the EU-funded FATH project is to develop a better model for mental health monitori	https://www.fath2020-fath.eu/	https://cordis.europa.eu/project/id/853358	H2020	875358
ACCELERATE	AI Accelerator - A Smart Hospital Care Pathway Engine	Improving patient care and efficiency of hospital operations has become a priority for all healthcare pro	https://accelerate.eu/	https://cordis.europa.eu/project/id/101016902	H2020	101016902
PharmaLedger	A digital boost for the healthcare industry	The internet and other digital advances are playing an increasingly bigger role in daily life by enabling in	https://pharmaledger.eu/	https://cordis.europa.eu/project/id/853992	H2020	853992
BIOSIM	Accelerating the commercialisation of a disruptive analytical ti	The global Biologic drug (including vaccines) market exceeds €500 bn with an annual growth of 8%. Bio	https://valtracell.com/	https://cordis.europa.eu/project/id/778586	H2020	778586
CBIT	Customisable Bioink Technology Platform	3D cell culture and 3D Bioprinting have become crucial to the development of health and life science re	https://www.cepiatdesign.com/	https://cordis.europa.eu/project/id/763059	H2020	763059
CELLUP	Innovative in-line Raman analytical sensor for new upstream c	The main objective of the Cellup business innovation project is to develop and commercialize the new c-	https://www.cellup.eu/	https://cordis.europa.eu/project/id/779218	H2020	779218
Fertissimo	A ground-breaking medical system selecting the most viable e	Low rates of pregnancy in IVF procedure is due to being unable to identify viable embryos for transfer. A	http://www.fertissimoid.com/	https://cordis.europa.eu/project/id/777835	H2020	767556
IBEX QDR	IBEX QDR: A Ground-breaking Technological Upgrade based o	Bone density loss is a natural process that affects us all as we age. As the loss advances, so does the risk	https://ibexinnovations.co.uk/	https://cordis.europa.eu/project/id/777835	H2020	777835
SkinCare	Integral cell-biology platform for the development of the first i	InnoHealth Group is a private company born with the mission of offering novel dermatological formulat	https://innohealthgroup.com/simhealth/	https://cordis.europa.eu/project/id/743887	H2020	743887
TheraPO	TheraPO: Smart and safer automated peritoneal dialysis by me	2.7 million People worldwide (250,000 Europeans) have kidney transplants or undergo a dialysis treatm	https://therapo.eu/	https://cordis.europa.eu/project/id/733108	H2020	733108
TRANSBIO	Cellular Biotechnology for prognosis and monitoring in renal T	Kidney transplantation is the treatment of choice for patients with end-stage kidney disease (ESKD). Ho	https://transbiohope.eu/	https://cordis.europa.eu/project/id/733248	H2020	733248

Figure 14: Project collection sheet

3.1.3 Collection process

Two different approaches are used for the collection. For the stakeholder groups demander, supplier and enabler a collaborative approach is used and for the projects a non-collaborative approach has been chosen for the collection.

Collaborative approach

The aim of stakeholder collection is not to collect information on all stakeholders possible and thus obtain a detailed view of the HealthTech market. Rather, it is to elicit suitable stakeholders to enlarge the ODIN ecosystem, like suppliers, demanders, enablers and other projects in the field. This is to ensure a sustainable and long-term success of the ODIN project and thus to achieve the highest impact possible. For this purpose, a collaborative approach is used for the stakeholder collection involving most of the project partners. Existing knowledge and contacts of the partners are seen as the key for gaining the most useful results.

The ODIN partners are spread over ten different countries representing a total of eight different languages spoken: Spanish, French, Greek, Dutch, German, Italian, Polish and English. The partners already have large networks and contacts in their own area. Therefore, the assumption was that they make use of their local knowledge about the most important actors in the field and add them to the collection. In addition, it is easier for the partners to get better results and to find additional possible ecosystem partners beyond their network by carrying out research in their own language. However, their focus is not necessarily restricted to their own country, they are also invited to add information about stakeholders in other countries.

Three tools are offered to the consortium partners to support this collaborative approach: (a) Breakdown by country, (b) Keywords and (c) a Metalist.

Breakdown by country

In the overview sheet, an overview is provided that shows on which country the focus for the stakeholder collection should lie per partner. An example is shown in the figure below.

NO.	ACRONYM	COUNTRY	TYPE	COLLECTED	PILOT COUNTRY									
					Italy	Netherlands	Poland	Germany	France	Spain	UK	Greece	Switzerland	Austria
1	MDT	Spain/France	Technology Providers	8					TO BE COVERED			TO BE COVERED		
3	FORTH	Greece		0						TO BE COVERED				
6	ROB	Spain		2						TO BE COVERED				
7	MYS	Spain		0						TO BE COVERED				
8	THL	Greece		0								TO BE COVERED		
9	PEN	Netherlands		0	TO BE COVERED									
11	INETUM	Spain		7						TO BE COVERED				
18	M&S	Austria		48									TO BE COVERED	TO BE COVERED
19	UDGA	Switzerland		0									TO BE COVERED	
2	CERTH	Greece		5								TO BE COVERED		
14	SERMAS	Spain	Public authorities	2						TO BE COVERED				
4	UOW	UK	Academic Partners	0							TO BE COVERED			
5	SSSA	Italy		19	TO BE COVERED									
10	UPM	Spain		5	TO BE COVERED					TO BE COVERED				
20	IMEDICT	Italy		0	TO BE COVERED									
12	UCBM	Italy	Healthcare Providers	12	TO BE COVERED									
13	UIMCU	Netherlands		0		TO BE COVERED								
15	CLB	Germany		20				TO BE COVERED						
16	AMIS	France		0				TO BE COVERED						
17	MIUL	Poland		10			TO BE COVERED							
					TO BE COVERED									

Figure 15: Breakdown by country

Keywords

An initial set of keywords has been provided to the partners in English. This set will be used to identify possible other stakeholders. Partners are encouraged to translate the keywords into their local language and use them in their stakeholder search. The keywords are provided on the second page in the overview sheet:

Category	Keyword (EN)	Keyword (DE)	Keyword (ES)
Demanders			
	hospitals	Krankenhäuser	Hospitales
	Ministry of Health	Gesundheitsministerium	Ministerio de Sanidad
	biggest hospitals in UK	größte Krankenhäuser in Deutschland	Principales hospitales de España
	operator of helath facilities	Betreiber von Gesundheitseinrichtungen	Operador de instalaciones sanitarias
	health care groups	Gesundheitskonzerne	Grupos sanitarios
	healthcare living labs	Living Labs im Gesundheitsbereich	Laboratorios de salud
	healthcare accelerators	Beschleuniger/Förderer im Gesundheitsbereich	Aceleradoras del sector salud
	healthcare innovation centers	Innovationszentren im Gesundheitsbereich	Centros de innovación sanitaria
Suppliers			
	Health Tech / HealthTech	Gesundheitstechnologien	Tecnología de la salud
	HealthTech SMEs / HealthTech StartUps	Gesundheitstechnologie KMUs / Gesun	PYMES / Startups de tecnología de la salud
	AI SMEs / AI StartUps	KI KMUs / AI StartUps	PYMES / Startups de inteligencia artificial (IA)
	Robotics SMEs / Robotic StartUps	Robotics KMUs / Robotics StartUps	PYMES / Startups de robótica
	IoT SMEs / IoT StartUps	IoT KMUs / IoT StartUps	PYMES / Startups de internet de las cosas (IoT)
	technology providers for hospitals	Technologiehersteller für Krankenhäuser	Proveedores de tecnología para hospitales
	technology providers for healthcare	Technologiehersteller im Gesundheitsbereich	Proveedores de tecnología para la sanidad
Enablers			
	hospital associations	Krankenhausverband	Asociaciones de hospitales
	healthcare associations	Gesundheitsverband	Asociaciones sanitarias
	hospital foundations	Stiftung für Krankenhäuser	Fundaciones hospitalarias
	healthcare foundations	Stiftung für das Gesundheitswesen	Fundaciones sanitarias
	healthcare initiatives	Gesundheitsinitiativen	Iniciativas sanitarias
	hospital communities	Krankenhaus Community	Comunidades hospitalarias
	healthcare communities	Gesundheits Community	Comunidades sanitarias
	hospital networks	Krankenhausnetzwerk	Redes hospitalarias
	healthcare networks	Gesundheitsnetzwerk	Redes sanitarias
	healthcare NGOs	Gesundheits-NGOs	ONGs sanitarias

Figure 16: Keywords

Metalist

Finally, each partner was also provided a metalist to facilitate the search. In an extra sheet (**META Collections**), each partner was assigned to a list of cities for the search of demanders, and additional meta sites for the search of suppliers that the partner could use.

Partner	Extract to	Status	Deadline	Type	Country	City	Supplier list name	Supplier list link
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Vienna	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Graz	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Linz	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Salzburg	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Innsbruck	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Klagenfurt am Wörthersee	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Villach	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Wels	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Sankt Pölten	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Dornbirn	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Wiener Neustadt	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Steyr	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Feldkirch	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Bregenz	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Leonding	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Klosterneuburg	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Baden bei Wien	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Wolfsberg	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Leoben	-	-
M&S	Link - Demander Collection	TO DO	24.01.2022	Demander	Austria	Krems an der Donau	-	-
M&S	Link - Supplier Collection	TO DO	24.01.2022	Supplier	Austria	-	Robotics Startups and Companies in Austria (2021)	Link
M&S	Link - Supplier Collection	TO DO	24.01.2022	Supplier	Austria	-	Artificial Intelligence Startups and Companies in Austria (2021)	Link
M&S	Link - Supplier Collection	TO DO	24.01.2022	Supplier	Austria	-	Medical Startups and Companies in Austria (2021)	Link
M&S	Link - Supplier Collection	TO DO	24.01.2022	Supplier	Austria	-	Health Diagnostics Startups and Companies in Austria (2021)	Link
M&S	Link - Supplier Collection	TO DO	24.01.2022	Supplier	Austria	-	Internet of Things Startups and Companies in Austria (2021)	Link
M&S	Link - Supplier Collection	TO DO	24.01.2022	Supplier	Austria	-	Blockchain Startups and Companies in Austria (2021)	Link

Figure 17: Metalist

Non-collaborative approach

For the Projects collection, a non-collaborative approach is used. This is also, because mainly EU projects will be relevant as a pooling resource to have a better impact on common goals. Making use of the already mentioned local knowledge of the partners is not necessarily required when it

comes to international projects as the information on all funded EU projects is available and accessible in English on the CORDIS website.

Therefore, the project collection was centrally carried out by task leader M&S.

3.1.4 First collection results

In several collection phases, relevant stakeholders are identified and collected through the collaborative and structured approach described above. The first major collection phase ended in March 2022 and the first results are presented in the next sections. An overview of the segmentation is given in figure 17 again.

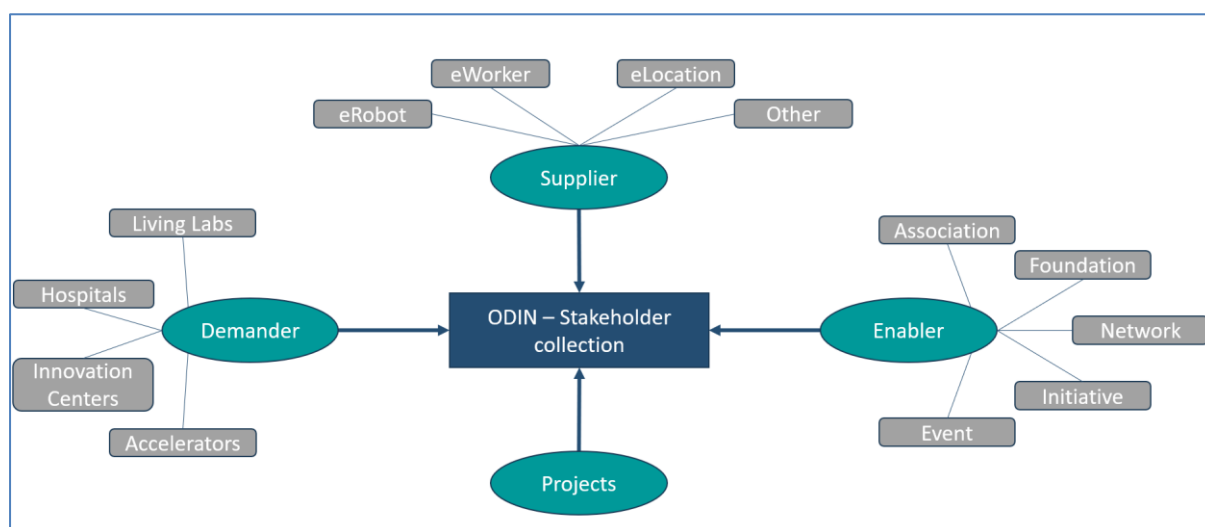


Figure 18: Stakeholder segmentation used as basis for the collection

Please note that in the following tables some of the collected entities are assigned to more than just one segment. Therefore, the sum in the table does not add up to the overall numbers given in the description.

Collection results - Demanders

So far, a total of **84 demanders** have been collected from eight different countries. Most of them are hospitals, but a few innovation centres, accelerators and living labs have also been collected. An overview is provided in the table below:

Table 11: Demander collection (first results)

Hospitals	Living Labs	Innovation Centres	Accelerators
70	7	6	9

Collection results - Suppliers

A total of **127 entries** were collected from the suppliers. The suppliers are spread over 13 different countries. For the Open Calls and the ecosystem expansion, it is helpful to collect even more and to have a stronger focus in the next collection phases.

Table 12: Supplier collection (first results)

eWorker	eRobot	eLocation	Other
46	33	27	40

Collection results - Enablers

For the enablers, **61 entries** were already collected from a total of nine countries. A brief overview is shown in the next table:

Table 13: Enabler collection (first results)

Association	Foundation	Network	Initiative	Event	Other
11	8	17	17	3	16

Collection results – Projects

A total of **246 EU projects** have already been collected. All of them are H2020 projects. New projects that fit the ODIN objective will be added in the project's lifetime. In the table below follows an overview by project type.

Table 14: Project collection (first results)

CSA	IA	RIA	SME	PCP	ECSEL-IA	IMI2-RIA	PPI
18	73	130	13	6	4	1	1

Some of the projects are connected a bit more to ODIN and collaboration is looked for more intensively:

Sister projects

There are three other projects being funded under the same H2020 call as ODIN and which thus deal with similar topics. ODIN will try to connect with them in order to find synergies in terms of specific dissemination and exploitation activities.

- 1) *Artificial Intelligence-driven, Decentralized Production for Advanced Therapies in the Hospital (AIDPATH)*

<https://aidpath.eu/>

AIDPATH wants to effectively exploit the new and emerging digital pathology technologies in order to process and model all data. This requires joint research projects and collaborative programmes between academia and industry. AIDPATH will research and develop:

- medical image display technology for digital pathology;
- novel image analysis solutions for future pathology diagnosis and
- solutions for biomarker evaluation and quantification.

2) *A Smart Hospital Care Pathway Engine (Alccelerate)*

<https://aiccelerate.eu/>

With the Smart Hospital Care Pathway (SHCP) Engine, the hospital challenges can be approached from two perspectives: the patients' perspective and the hospital management's one. Three different pilots will be placed to prove and test the SHCP solution, they will use partners' existing digital solutions and further develop them to enable the development of the SHCP Engine. With this proven and scalable concept hospitals shall be able to select the needed tools and data management for their use cases.

3) *Hospital Smart development based on AI (HosmartAI)*

<https://www.hosmartai.eu/>

The HosmartAI aims to guarantee the integration of digital and robot technologies in new healthcare environments and the possibility to analyse their benefits by providing an environment where digital healthcare tool providers will be able to design and develop AI solutions. Additionally, there is a space for the instantiation and deployment of AI solutions.

Other related projects

ODIN has identified a whole list of projects with more or less related topics dealt with in the project. To some of them ODIN has closer connections, e.g. because one (or more) partners are part of these related projects as well. The following list includes the most important ones:

1) *Safe, Efficient and Integrated Indoor Robotic Fleet for Logistic Applications in Healthcare and Commercial Spaces (ENDORSE)*

<http://www.endorse-project.eu/>

ENDORSE is a European funded Horizon 2020-MSCA-RISE Project. The overall objective of ENDORSE is to develop and validate a safe, efficient and integrated indoor robotic fleet for logistic applications in healthcare and commercial spaces.

ODIN is going to participate in the final workshop of ENDORSE in September 2022.

2) *Smart Living Homes – whole interventions demonstrator for people at health and social risks (GATEKEEPER)*

<https://www.gatekeeper-project.eu/>

The main objective of the Project is to create a GATEKEEPER, that connects healthcare providers, businesses, entrepreneurs, elderly citizens and the communities they live in, in order to originate an open, trust-based arena for matching ideas, technologies, user needs and processes, aimed at ensuring healthier independent lives for the ageing populations.

With GATEKEEPER cooperation on various levels is taking place. E.g. there has been rented a common booth at the IoT Week in Dublin (June 2022) together with ODIN and ACTIVAGE.

3) *ACTivating InnoVative IoT smart living environments for AGEing well* (ACTIVAGE)

<http://www.activageproject.eu/>

ACTIVAGE is a European Multi Centric Large Scale Pilot on Smart Living Environments. The main objective is to build the first European IoT ecosystem across 9 Deployment Sites (DS) in seven European countries, reusing and scaling up underlying open and proprietary IoT platforms, technologies and standards, and integrating new interfaces needed to provide interoperability across these heterogeneous platforms, that will enable the deployment and operation at large scale of Active & Healthy Ageing IoT based solutions and services, supporting and extending the independent living of older adults in their living environments, and responding to real needs of caregivers, service providers and public authorities.

4) *A digital boost for the healthcare industry* (PHARMALEDGER)

<https://pharmaledger.eu/>

PharmaLedger brings together experts from both the pharmaceutical and technology sectors as well as patients and hospitals, making it a true cross-sector, multi-disciplinary public-private partnership. As such, it is well placed to generate practical solutions that will allow blockchain technologies to be integrated into drug development and healthcare in a way that is supported by all stakeholders.

5) *Citizen-centred EU-EHR exchange for personalised health* (Smart4Health)

<https://smart4health.eu/>

Every citizen of the European Union should be able to access her or his own health data easily and securely within each EU member state. The Horizon 2020 research consortium “Smart4Health” aims to realize this vision by developing a prototype application that allows users to collect, manage, share and donate their health-related data throughout the EU.

Initiatives, Hubs, Networks

In addition to the stakeholders collected and described above, ODIN also has identified various already existing initiatives, hubs and networks, of which some partners also might already be part of, like the European Hospital Living Lab Hub. There also exist EU projects and initiatives, which are in turn interconnecting these hubs and networks. Here is a list of some of the networks, hubs and initiatives, with which ODIN aims to connect.

1) *European Network of Living Labs (ENoLL)- Health*

<https://enoll.org/>

The European Network of Living Labs (ENoLL) is the international, non-profit, independent association of benchmarked Living Labs, which aim at fostering co-creation and open innovation among the main actors of the Quadruple Helix Model, namely:

- Citizens
- Government
- Industry
- Academia

They are set out to promote the Living Labs concept in order to influence EU policies, enhance Living Labs and enable their implementation at a global level.

2) *European Institute of Innovation and Technology (EIT) Health*

<https://eithealth.eu/>

The aim of the EIT Health is to overcome obstacles to innovation so they can improve healthcare delivery in Europe and make life-changing solutions possible. By working together, barriers across borders can be removed in order to create a more resilient and dynamic European healthcare system. The vast network brings together the brightest minds across disciplines and regions so that the right people are in the driving seat.

3) *Smart Health Digital Innovation HUB (Smart Health DIH)*

<https://www.smarthealthdih.eu/>

Smart Health DIH was established to build appropriate frameworks and amounts of high-quality patient-centred health data for high performance computing, data analytics and artificial intelligence, which can help design and test new healthcare products, provide faster diagnosis and better personalized health interventions. Its solutions aim at contributing to increase in citizens' secure access to and sharing of health data across platforms, better data to advance research, disease prevention and personalized health care, providing digital tools for citizen empowerment and person-centred care.

4) *DIGITAL INNOVATION HUBS IN HEALTHCARE ROBOTICS (DIH-HERO)*

<https://dih-hero.eu/>

The DIH-HEROs primary objective is to accelerate innovation in robotics for healthcare. To connect innovators, providers, businesses, users and politicians, DIH-HERO establishes an open online portal offering multiple services facilitating collaboration on various innovations, emphasizing the sharing of best practice and enhancing the delivery of innovation throughout the value chain. DIH-HERO especially focuses on supporting small and medium-sized enterprises in maximizing their impact and reducing time-to-market. DIH-HERO enables businesses and healthcare stakeholders to develop innovative products and services that are better fitted to the needs of the healthcare systems across Europe. Additionally, DIH-HERO will engage in necessary standardization for robotics in healthcare, including ethical, legal and societal issues.

5) *Virtual healTh And weLLbeing Living Lab InfraStructurE* (VITALISE)

<https://vitalise-project.eu/>

VITALISE aims to put in place the winning conditions for researchers and communities, fostering innovative, person-centred research by creating a Health and Wellbeing Living Lab ecosystem. To do so, VITALISE will base itself on the fundamental principles governing Living Labs and proceed towards harmonization of procedures of Health and Wellbeing Living Labs by creating a Harmonization Body.

LifeSpace is one of the 17 consortium members, where Giuseppe Fico – technical coordinator within ODIN - is head of the health area. This makes it easier to connect and to identify the most feasible way to connect for ODIN.

Collection results - Summary

A total of 518 entities (stakeholders and projects) have been collected so far. In order to maximise the success of the ODIN project and achieve a high impact while ensuring the sustainability of the project, more stakeholders are needed. For this purpose, stakeholder collection is carried out throughout the entire project cycle. Especially for the suppliers and the enablers, further stakeholders are necessary.

Table 15: first collection results

Demanders	Suppliers	Enablers	Projects	Total
84	127	61	246	518

3.2 Engagement plan

The results of the stakeholder collections are being used for establishing a first contact and further to gain more stakeholders to join the ODIN ecosystem in order to reach the critical mass of involved stakeholders.

According to the Framework of good practice from the RICS / APM professional guidance paper on Stakeholder Engagement (2014) the essential points to consider are to

- identify the internal and external stakeholders
- categorise them by power and interest (or similar approach)
- identify what tools, mechanisms and processes are available to influence them
- develop a plan that details a comprehensive approach to the optimal effect on the stakeholders to deliver the project more successfully (time, cost and scope).

After identifying the level of influence (high/low) and the level of interest for the ODIN project (high/low), also the level of engagement (key stakeholder, keep satisfied, keep informed, monitor) is being assessed.

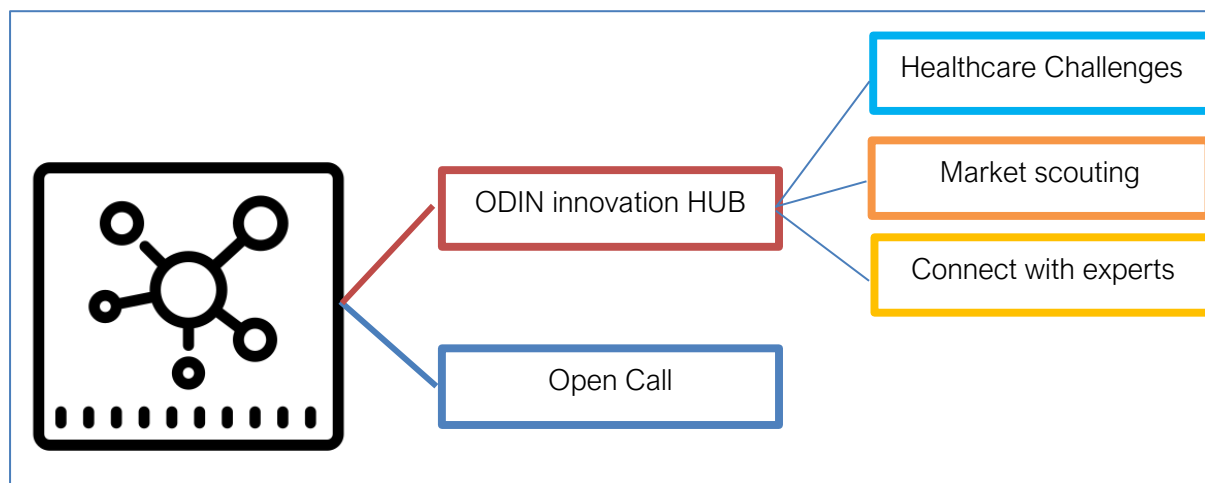


Figure 19: ODIN Engagement strategies

There are two main strategies to engage stakeholders within ODIN: the open Call and the ODIN innovation hub.

3.2.1 Open Call

The ODIN Open Call is one of the key tools to impact and attract new stakeholders around the AI/IoT/Robotics ecosystem and will consolidate the stakeholders' relationships and roles within the ecosystem.

One of the main expected impacts of the ODIN project is to ignite the market growth and future sustainability of the ODIN ecosystem. According to this, the ODIN project is planning to organize an open call as a powerful tool for attracting:

- Innovative SMEs, AI/IoT/Robotics technologies providers, entrepreneurs and investors to build, deploy, test and replicate new solutions for health across ODIN pilots, to demonstrate seamless capacity of integration and interoperability of the built a feasible ODIN ecosystem.
- External pilot projects, regions, public authorities and service providers to adopt and implement ODIN's evidence-based best practices throughout Europe.

The ultimate goal is to further expand the ODIN use cases to additional infrastructures and emerging business domains (for further information please consult D10.4 Open Calls Report v1).

3.2.2 ODIN innovation HUB /Community of Interest

The Open Innovation Hub is a place for interaction and co-creation of new value by combining state-of-the-art core technologies developed by ODIN that are based on its expertise on smart hospitals and ongoing projects with the needs and ideas of other stakeholders.

New values and ideas are created to contribute to the creation of a better healthcare delivery, improving inter-professional collaboration, optimizing information flows and business models, and implementing effective patient-centred care pathways.

Healthcare challenges

For meeting the identified healthcare challenges, it is planned to connect the best startups, SME's and others with companies in healthcare sector.

By joining **startups** can enhance the visibility of their company by showcasing and sharing information about their technologies within this innovation network. They can

- Show the technology of their startup to companies and other members of the ecosystem.
- Share their achievements, progress, and projects with the publication of articles that the entire ecosystem can read.

Startups with technological assets (pilots or ready-to-market) that have the potential to disrupt the sector can

- Discover technology challenges from large corporations in their sector.
- Find opportunities to validate or prototype their technology on-site and accelerate their startup.
- Obtain new clients by showing them how their startup can help them to become more efficient or to develop new products and services.

For **other relevant companies** the ODIN ecosystems offer the possibility of enhancing their knowledge of a specific sector in order to improve your decision-making.

- Learn about the needs of companies in their sector and relevant innovation news for their businesses.
- Discover other startups and their technologies and find inspiration to grow.
- Perform technology monitoring on their competitor's products and services.
- Contact other startups and SMEs in the ecosystem to establish collaboration agreements.

Market scouting

Companies: Share your project with the ecosystem to attract potential investors, clients, or collaborators. Here, you can find the showcase

Join our ecosystem and share your project: By sharing your project, you can also establish alliances with companies, carry out prototyping projects to test your technologies, and receive feedback from clients and experts.

Interconnecting with experts

ODIN offers its ecosystem members the possibility to discuss with key persons about project related topics

- German Gutierrez (project coordinator)
- Paula Curras (Project Manager)
- Giuseppe Fico (Technical Manager)
- Prof. Thomas Penzel (Scientific Manager)
- Konstantino Votis (platform Manager)
- Gastone Ciuti (Robot manager)
- Anca Bucur (AI manager)
- Pilar Sala (innovation manager)
- Leandro Pecchia (Pilot manager)
- Maria Luaces (Hospital manager)
- Pasquale Ammicchino (Ethical and Trusted Data Manager)

- Lidia Manero (Dissemination and communication manager)
- Jorge Posada (exploitation manager)

In addition, ODIN wants to involve the stakeholders according to the following plan

Table 16: Stakeholder engagement plan

Methods/Channels	Aim	Target group
Direct mailings	Better involve external interested persons or organisations, e.g. to gain their interest for the open calls or other project activities	Key stakeholders
Twitter, LinkedIn, YouTube; LinkedIn Groups, EU platforms	Share the latest news and updates; keep interested stakeholders informed about the project and its offers to people outside of the project (e.g. webinars); through the participation within thematic relevant LinkedIn Groups and the use of supportive EU-platforms	All stakeholders, new interested stakeholders/ potential new ecosystem partners
Website	Having all important information about the ODIN project in easy understandable language collected in one spot.	Key stakeholders, Keep informed stakeholders, monitoring
Newsletter	Giving an overview over the most important topics	Keep informed stakeholders
Events, conferences, fairs, exhibitions	A way to present information and provide an opportunity for discussion that focusses on building shared understanding across stakeholders.	Key stakeholders, Keep informed stakeholders, new interested stakeholders/ potential new ecosystem partners
Webinars	Offering information on topics dealt within ODIN, providing a platform for live discussions.	All stakeholders, new interested stakeholders/ potential new ecosystem partners
Community of Interest activities/ ODIN Innovation Hub	Offering a platform for discussion and networking in ODIN related topics	All stakeholders, new interested stakeholders/ potential new ecosystem partners
Open Calls	Involving additional partners into the core work of ODIN.	New interested stakeholders/ potential new ecosystem partners

4 ODIN Trust building ecosystem roadmap

During the time being following timeline for setting up the ODIN ecosystem is envisioned:

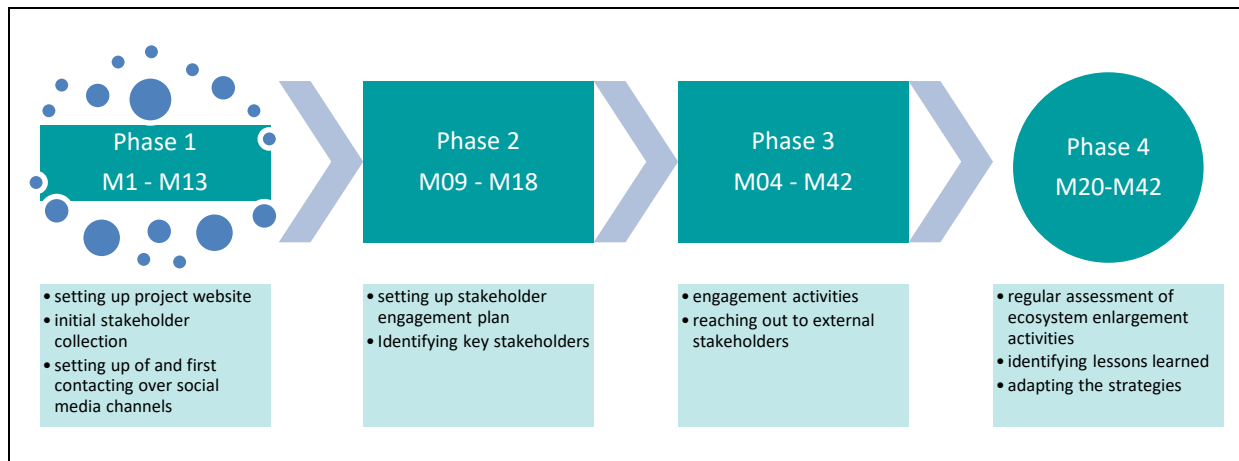


Figure 20: ODIN Trust building ecosystem roadmap

Please note that there is an overlap between the different phases as some activities already start(ed) as soon as the first channels and the first information were available and could be used.

Phase 1 (M1 – M13)

In this first phase the preconditions were created:

- The **project website** has been set up

Beside of the general information about ODIN, the website offers the possibility to subscribe to ODIN newsletter which is launched twice a year. In the meantime, it has also been completed by an own section on the Community of Interest, including the possibility to register, and a section on the Open Call which has been launched 1st of July and which is open until the 27th of September 2022, also including a possibility to register to stay updated.

- The **social media channels** have been created

Social media channels were the first communication and dissemination channels to be created. Here also the first outreach activities took place: Interconnections with other related projects and all different kinds of stakeholders have been established and the followers, contacts and thus the community is constantly growing.

- The first stage of the **stakeholder collection** has been carried out

By using a structured approach and by involving the ODIN partners including their local knowledge, the stakeholder collection has been carried out. It resulted in 518 different datasets, representing the previously identified stakeholder groups demanders, suppliers, enablers and projects.

Phase 2 (M09 – M18)

In Phase 2 the collected data is being analysed and prepared for exploitation:

- **Key stakeholders, networks and relevant projects are being identified** in order to be addressed via direct mail or direct social media messages.
- A **stakeholder engagement plan** is set up for optimising the outreach activities.
- The **Open Call** has been launched to get into contact with more organisations and projects interested in ODIN topics.
- The **ODIN Innovation HUB** has been initiated for a similar reason.

Phase 3 (M04 – M42)

The third phase is coined by reaching out to external stakeholders and thus possible ecosystem partners.

- In principle, **reaching out to external stakeholders** and **engagement activities** started as soon as the social media channels have been set up. Gaining interest with general information about the project first, the activities were boosted when ODIN started with offering webinars about the key topics of the project. In addition – and once identified –, key stakeholders have been asked to interconnect (LinkedIn) or have been followed (on Twitter) and followed back.
- ODIN could also profit from **interconnections with other projects**, like GATEKEEPER and ACTIVAGE (common booth at the IoT week 2022 in Dublin) or ENDORSE (presentation of ODIN in their final event).
- Here we will launch different activities, **workshops, elevator pitch, webinars** to attract and maintain the stakeholders from open innovation hub/community in our ecosystem

Phase 4 (M20 – M42)

In Phase 4 the circle is closing and it is dedicated to evaluation and drawing conclusions out of the experiences made.

- There will be a **regular assessment of ecosystem enlargement activities** in six months distance and with a special focus on trust (as described in chapter 2.1.2 above) in order to re-evaluate the planned measures and to adapt the ecosystem plan accordingly.
- **Identifying the lessons** learned is going to be an important part of the assessments.
- And **adapting the strategies** accordingly is a logical consequence.

5 Conclusion

“Ecosystems are dynamic and co-evolving communities of diverse actors who create new value through increasingly productive and sophisticated models of both collaboration and competition.” (Bruun-Jensen & Hagel, 2015)

The ODIN ecosystem is one of the main pillars of this project and trust is playing a crucial part in it. This project is set out to create win-win situations for organisations producing solutions as suppliers in the field of smart hospitals using new technologies including AI, robotics or IoT on the one hand and hospitals, living labs, accelerators and innovation centres as demanders on the other. In order to foster these solutions and also to enhance the approach, it is necessary to gain interest and to pool demanders and suppliers at one place: The ODIN ecosystem. During the lifetime of ODIN many different activities are initiated in order to enlarge this ecosystem and involve more of these stakeholders in the project to create more impact. The Open Call and the creation of the ODIN Innovation hub are important tools to reach this objective.

As a first step the ecosystem enlargement activities started with an intensive stakeholder collection which is exploited for having a better outreach for the open call. Parallel to the launch of the open call the initiative for the ODIN innovation hub has started, promoting the solutions created by ODIN, being a platform for discussion on the burning topics in the field of smart hospitals. ODIN also started to interconnect with other projects in the field, in order to create a community building on trust and set out to reach impact. By applying these measures and activities the ODIN Ecosystem Enlargement contributes significantly to the advancement of the ODIN ecosystem and the sustainability of the ODIN project.

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Appendix A

Registration form for the ODIN innovation Hub for demanders

Registration

Please take 1 min to subscribe to our ODIN Open innovation community before posting the challenge

** Compulsory fields*

Email address*

First name*

Last name*

Organisation*

Please choose one of the options listed below according to your organization profile:

- ☐ Professional caregiver
- ☐ Hospital innovation unit
- ☐ Hospital Manager
- ☐ HC professional
- ☐ IT department
- ☐ Horizontal services
- ☐ Referral centers
- ☐ Clinical departments/Patient care departments
- ☐ Laboratories/Pharma
- ☐ Medical strategy department
- ☐ Techno transfer center
- ☐ MedTech department/Digital health department
- ☐ Clinical research unit
- ☐ Other (space to enter name)

MY INTEREST*

Please choose one option as minimum

- ☐ Clinical
- ☐ Market/business
- ☐ Technology
- ☐ Regulatory
- ☐ Other (space to enter interest)

MY EXPECTATIONS

Please choose one option as minimum

- ☐ Be informed about the project and achievements
- ☐ Be invited to workshops or events organised by our partners
- ☐ Receive opportunities to contribute to the project
- ☐ Participate in surveys and research activities
- ☐ Other (space to enter other expectations)

HOW DID YOU KNOW US?

- ☐ Through Open Call activities
- ☐ Through Pilot Sites activities
- ☐ Social Media
- ☐ Other

Thanks for signing up!

Now it is time to explain your challenge:

Name*

Naming your challenge

Background*

Explain a briefly the background of the problem and need statement (don't be shy...)

Challenge*

Explain a briefly what the challenge is, what the impact is and type (social, clinical, process management, etc.) (don't be shy...BE CREATIVE)

What are you looking for?*

Brief description of the expectations and/or requirements

In which ODIN category do you frame your challenge?*

Please, choose one option

- ☐ Pathway accelerator
- ☐ AI and data analytics
- ☐ OR/Cath lab optimization
- ☐ Supply chain, inventory management, logistic management
- ☐ Innovative care delivery models
- ☐ Other (space to enter new category)

Button: SIGN UP AND POST MY CHALLENGE (con check box + GDPR COMPLIANCE)

*The information provided will be public in the main website.

Appendix B

Registration form for the ODIN Innovation Hub for Suppliers

Registration

Please take 1 min to subscribe to our ODIN Open innovation community before posting your service/technology

** Compulsory fields*

Email address*

First name*

Last name*

Organization*

Please choose one of the options listed below according to your organization profile:

- ☐ Data resources providers
- ☐ IoT resources providers
- ☐ Infrastructure resources providers
- ☐ Human resources providers
- ☐ Clinical resources providers
- ☐ AI resources providers
- ☐ Robotics resources providers
- ☐ Local deployer & support
- ☐ Other (space to enter name)

MY INTEREST*

Please choose one option as minimum

- ☐ Clinical
- ☐ Market/business
- ☐ Technology
- ☐ Regulatory
- ☐ Other (space to enter interest)

MY EXPECTATIONS

Please choose one option as minimum

- ☐ Be informed about the project and achievements
- ☐ Be invited to workshops or events organised by our partners
- ☐ Receive opportunities to contribute to the project
- ☐ Participate in surveys and research activities
- ☐ Other (space to enter other expectations)

HOW DID YOU KNOW US?

Please choose one option as minimum

- ☐ Through Open Call activities
- ☐ Through Pilot Sites activities
- ☐ Social Media
- ☐ Other

Thanks for signing up!

Now it is time to explain in depth your technology:

Solution/service description*

Solution/service benefits*

Features/product highlights*

Service/product limitations*

HealthTech Innovation Readiness level (HIR)*

- | | |
|--------------------------|---|
| <input type="checkbox"/> | 1. Need. Insights into unmet clinical needs and available solutions |
| <input type="checkbox"/> | 2. Idea. Through Pilot Sites activities. Potential solution described to unmet need |
| <input type="checkbox"/> | 3. Proof of Concept (PoC). Key component concepts validated in models and value proposition articulated |
| <input type="checkbox"/> | 4. Proof of Feasibility (PoF). Feasibility of whole solution demonstrated in models and in feedback from stakeholders |
| <input type="checkbox"/> | 5. Proof of Value (PoV). The potential of the solution to work and create value for all stakeholders is demonstrated (initial commercial investment) |
| <input type="checkbox"/> | 6. Initial Clinical Trail (ICT). Regulated production of prototypes and collection of clinical and economic data |
| <input type="checkbox"/> | 7. Validation of Solution (VoS). The solution is shown to be effective and its value to all stakeholders is validated |
| <input type="checkbox"/> | 8. Approval & Launch (A&L). Institutional and regulatory approval received and sales launch |
| <input type="checkbox"/> | 9. Clinical Use (Use). The solution is used successfully in day-today clinical practice |
| <input type="checkbox"/> | 10. Standard of Care (SoC). The solution is recognized as the standard of care |

In which ODIN category do you frame your technology? *

Please, choose one option

- | | |
|--------------------------|---|
| <input type="checkbox"/> | Pathway accelerator |
| <input type="checkbox"/> | AI and data analytics |
| <input type="checkbox"/> | OR/Cath lab optimization |
| <input type="checkbox"/> | Supply chain, inventory management, logistic management |
| <input type="checkbox"/> | Innovative care delivery models |
| <input type="checkbox"/> | Other (space to enter new category) |

Button: SIGN UP AND POST YOUR TECHNOLOGY (con check box + GDPR COMPLIANCE)

*The information provided will be public in the main website.