D8.1 ASHVIN IMPACT MASTER PLAN

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ABSTRACT

Communication, Dissemination and Exploitation are vital elements of any successful H2020 funded project. The present document presents a detailed overview of **ASHVIN's** strategy while defining the goals, priorities and any potential implementation mechanisms to achieve all desirable outcomes. To this end, **ASHVIN's** Impact Master Plan sets out the objectives, tools, materials, and channels to be exploited in order to effectively spread **ASHVIN's** activities, achievements and tangible results to targeted audiences, also becoming the cornerstone for the successful commercialization and market uptake of **ASHVIN** solutions.

KEYWORDS

Digital Twin, Building Information Modelling, Dissemination, Communication, Exploitation, Standardisation, Impact, Planning, Strategy

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DISCLAIMER

ACRONYMS & DEFINITIONS

AI	Artificial Intelligence
AR	Augmented Reality
BCF	BIM Collaboration Format
BIM	Building Information Modelling
CEN	European Committee for Standardization
HSE	Health, Safety and Environment
IEC	International Electrotechnical Commission
IEE	Institute of Electrical and Electronics Engineers
ISO	International Organization for Standardization
PEST	Political, Economic, Socio-Cultural, Technological
R&D	Research and Development
R&I	Research and Innovation
RTD	Research and Technical (or Technological) Development
RTOs	Research and Technology Organisations
SDOs	Standards Developing Organizations
SMEs	Small and Medium Enterprises
SWOT	Strengths, Weaknesses, Opportunities, Threats
TRL	Technology Readiness Level
VR	Virtual Reality

ASHVIN PROJECT

ASHVIN aims at enabling the European construction industry to significantly improve its productivity, while reducing cost and ensuring absolutely safe work conditions, by providing a proposal for a European wide digital twin standard, an open-source digital twin platform integrating IoT and image technologies, and a set of tools and demonstrated procedures to apply the platform and the standard proven to guarantee specified productivity, cost, and safety improvements. The envisioned platform will provide a digital representation of the construction product at hand and allow to collect real-time digital data before, during, and after production of the product to continuously monitor changes in the environment and within the production process. Based on the platform, **ASHVIN** will develop and demonstrate applications that use the digital twin data. These applications will allow it to fully leverage the potential of the IoT based digital twin platform to reach the expected impacts (better scheduling forecast by 20%; better allocation of resources and optimization of equipment usage; reduced number of accidents; reduction of construction projects). The **ASHVIN** solutions will overcome worker protection and privacy issues that come with the tracking of construction activities, provide means to fuse video data and sensor data, integrate geo-monitoring data, provide multi-physics simulation methods for digital representing the behaviour of a product (not only its shape), provide evidence based engineering methods to design for productivity and safety, provide 4D simulation and visualization methods of construction processes, and develop a lean planning process supported by real-time data. All innovations will be demonstrated on real-world construction projects across Europe. **ASHVIN** consortium combines strong R&I players from 9 EU member states with strong expertise in construction and engineering management, digital twin technology, IoT, and data security / privacy.

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1 INTRODUCTION

It's not a secret that part of the success of an innovation depends on the awareness about this innovation. Through an effective dissemination and communication strategy, the project and its results can gain widespread attention. Therefore, a solid dissemination and communication strategy ensures the involvement of relevant stakeholders in the project and can offer opportunities for future development. The same applies to exploitation; there are numerous cases where excellent innovations have failed to successfully commercialise due to unclear or business models. Thinking beforehand and knowing where you want to reach, allows you to create an exploitation plan which could lead the way to a successful commercialisation.

For **ASHVIN** all of the above are key, therefore preliminary plans have been developed and are presented in this document. **D8.1** outlines the initial **ASHVIN's Impact Master Plan** comprising communication, dissemination and exploitation plans aiming to provide a holistic outreach strategy of the project, leading to success.

To achieve this, **ASHVIN** has made a clear distinction between the three main concepts and plans[1]:

- **Communication** means taking strategic and targeted measures for promoting the action itself and its results to a multitude of audiences, including the media and the public, and possibly engaging in a two-way exchange. The aim is to reach out to society as a whole and in particular to some specific audiences while demonstrating how EU funding contributes to tackling societal challenges.
- **Dissemination** is the public disclosure of the results of the project in any medium. Disclosure may sound passive, like a shop opening up, but it is an activity, like a shopkeeper attracting customers. It is a process of promotion and awareness-raising right from the beginning of a project. It makes research results known to various stakeholder groups (like research peers, industry and other commercial actors, professional organisations, policymakers) in a targeted way, to enable them to use the results in their own work. This process must be planned and organised at the beginning of each project, usually in a dissemination plan.
- **Exploitation** is the use of the results during and after the project's implementation. It can be for commercial purposes but also for improving policies, and for tackling economic and societal problems.

ASHVIN's Impact Master Plan has been developed through an extended fermentation and zymosis process among project partners, each of one representing different stakeholder groups, to reflect their positions and views within this plan for ensuring maximum impact. This plan is a living document which will be revised when needed while mitigation actions will be implemented if required.

In terms of structure, **D8.1** consists of 6 interlinked sections. While sections 1 and 6 are the introductory and conclusive sections of the document, the other 4 section present and discuss the key plans and frameworks that the project will follow throughout its lifetime. More specific, the sections 2 to 5 discuss the following subjects:

[1] https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/support/faq;keywords=/933

- **Section 2** provides a clear overview of ASHVIN's Engagement Framework, the methodology of identifying and engaging with high-interest stakeholder (groups or individual).
- **Section 3** introduces the principles of ASHVIN's Communication & Dissemination Plan while showcasing the tools and channels.
- **Section 4** reveals some key exploitation principles related to the project while introduce a clear plan for defining the right exploitation channel for all project's results.
- **Section 5** initiates the discussion around the standardization plan of the project and its contributions to standardization activities.

2 ASHVIN'S ENGAGEMENT FRAMEWORK

As an H2020 action, **ASHVIN** is an initiative that is decentralised by nature, but with the need for managing an ecosystem of organisations, initiatives and players with a given position of influence on the project's performance - the stakeholders. What's more, the initiative requires a responsive growth factor capable of prospecting and creating brand new synergies over the project's lifetime, facilitating a greater advantage and extending its range of action. For that, **ASHVIN** is implementing an **Agile Stakeholder Engagement Framework** - a methodology designed to continuously develop and strengthen work streams with key stakeholder groups, empowering the operation of the programme as introduced in the Grant Agreement.

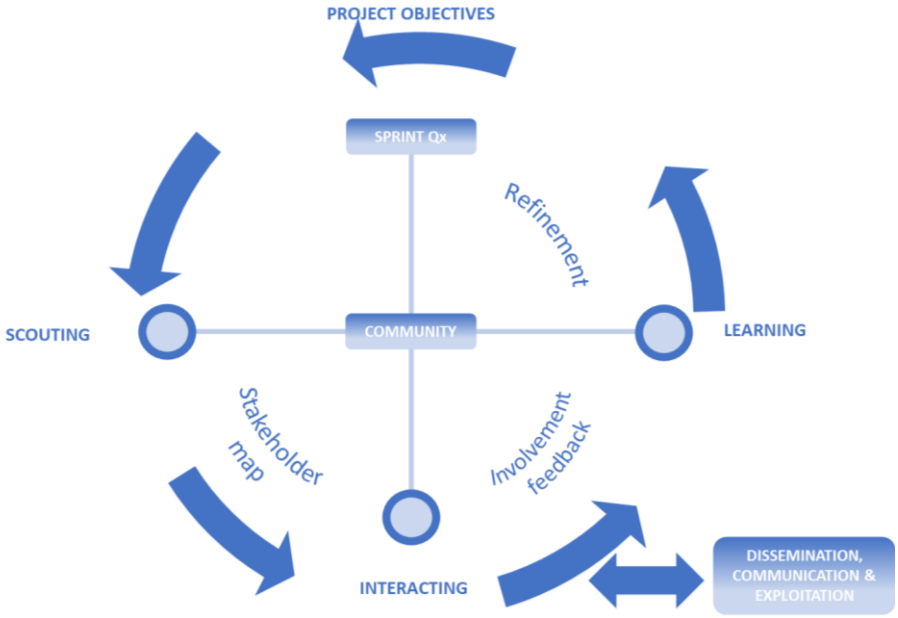

Figure 1: ASHVIN's Stakeholder Engagement Framework

2.1 MECHANISM'S PHASES

This mechanism follows an **iterative approach** based on **Sprints**; time-boxes of **6 months** with 3 **phases** where the main goal is to increase and reinforce such engagement incrementally.

PHASE 1: SCOUTING

Building upon the objectives of **ASHVIN** and the findings from previous Sprints, this phase explores, maps and assesses **Target Groups** -and specific candidates- with different degrees of relevance for the scope and impact of the work plan. **ASHVIN** builds upon the sound experience and active involvement of the consortium members in initiatives and players that must be considered as the baseline for engagement, taking advantage of new leads generated by second-degree partnerships and new opportunities as an outcome of the Interaction phase, including emerging PPPs and H2020 projects. The key result will be the '**Stakeholders Map'**, a graphical instrument to 1) list key actors -and specific candidates within them; 2) thoughtfully organise and correlate these audiences; 3) define a common terminology to be used in all the project's reference.

PHASE 2: INTERACTION

The next stage implies the interaction as such with the identified target groups, supporting the activities outlined in **the Dissemination, Communication and**

Exploitation strategies. This is the phase where **ASHVIN** will collaborate with initiatives having a specific mandate on industrial digitisation. Whenever relevant, the project will formally join specific Task Forces and Working Groups, contribute to scientific publications and participate in events. Feedback extrapolated from previous Sprints will be used to enhance the efficiency and impact of these measures;

PHASE 3: LEARNING

From the actions performed during the interaction, the consortium will learn lessons and collect findings that will feed the next Sprint. This will also include insights obtained from the consultation (i.e., in the form of quick questionnaires or interviews), gathering valuable external remarks about the project and its operation.

2.2 KEY AUDIENCE

Promoting **ASHVIN** and encouraging stakeholders to engage with the initiative requires understanding the 'target audience'. Understanding stakeholder profiles and their influence in the value chain is essential to craft the Dissemination, Exploitation and Communication Plans.

Figure 2: ASHVIN Audience

2.2.1 CONSTRUCTION INDUSTRY

This category outlines the beneficiaries in terms of productivity, resource efficient management and safety of applying digital twin technologies to the construction sector. The involvement of different actors from the value chain will be extremely meaningful to **ASHVIN** when it comes to 1) obtaining integrated requirements and feedback to support the implementation of the project, understanding internal processes, risk allocation and sustainability a as a whole, reducing the effect of the fragmented nature of this industry; 2) facilitating access to the data collection; and 3) raising awareness on the potential advantages the deployment and operation of digital twin creates in

real-world scenarios. The following target groups, within the construction industry have been identified and will be updated throughout the project duration if and when necessary:

- **Site Owner** is the part of ordering the construction contract. It can represent an individual, a private corporation or a public agency, posing certain objectives and constraints;
- **Design & Engineering** supports the owner as technical service with the designing, planning and management of infrastructures. **ASHVIN** will allow designers and engineers to already account for the aspects of productivity, resource efficiency, and safety already during the design phase, allowing for the use of digital twin technology early in the product development lifecycle;
- **Construction Manager -or General Contractor-** takes responsibility as a prime professional to manage the entire process of a construction project. This profile is knowledgeable about the labour force employed in construction. The general contractor often makes use of s**pecialty contractors** as subcontractors to the general project that mechanical, electrical, foundation, excavation, demolition and space contractors, among others. SME' s among the sub-contractors accumulate up to 98% of the construction chain. Digitisation of SMEs in the construction sector is strategic for the EU and will be a focus of **ASHVIN** dissemination.
- **Construction Labour Force** categorises the skilled construction workers under the management of the (sub)contractor, which can include the site manager, general foreman, site foreman, trade foreman, ganger, site engineer, site supervisor and workers. **ASHVIN** will engage young professionals who are more receptive to adopt and use new technology and practices.
- **Material and equipment suppliers** include manufacturers of generators, boilers and piping and other equipment. Many suppliers handle the on-site installation to ensure that the requirements and contractual specifications are met. As more and larger structural units are prefabricated off-site, the distribution between specialty contractors and material suppliers becomes even less obvious.
- **Construction Machinery Suppliers** include SMEs or large companies that provide machinery (either light or heavy) used during all construction phases. Many of these suppliers handle their equipment on-site therefore are key in the construction value chain.
- **Operation & Maintenance Manager** are the end users after the construction process is completed. They will benefit from the datafication when using cutting-edge instrumentation and control for infrastructures, multi-physics numerical models and predictive maintenance tools embedded within **ASHVIN**'s platform with continuous feed from models and sensors.

2.2.2 DIGITAL TWIN TECH PROVIDERS

ASHVIN will target organizations involved in technological innovation efforts, research contribution, business activity or commercial enterprise seizing the full potential of the digitisation of the construction sector. Candidate members will be subject to consideration when targeting scientific publication, technology spreading and contribution to standardisation and open source.

- **Large industry**: large technology companies are investing billions all over the world in R&D and acquisitions to lead the data analysis and simulation field within the industry.

- **Technology small providers**: although with fewer resources to invest, small and medium-sized enterprises (SMEs) and start-ups are currently driving a large part of the technology innovation in the industry.
- **Data brokers/ aggregators**: data brokers operate in the shadows of the Internet and most consumers are unaware or unsure how to put restrictions on their activity. **ASHVIN** will put emphasis to develop a narrative for an ethical and transparent use of good-quality data, fostering better practices among smaller entities without access to user data with the Big Data collected from construction projects;
- **Research & Technology Organisations (RTOs)**: a large amount of research, development and innovation for digital twin-based data analysis and simulation is taking place on academic organizations. They are a prime source in the field of AI of a field that will be shaped by a vast array of academic researchers and data scientists, and not just a handful of corporate giants;
- **Standards Developing Organizations (SDOs)**: The construction industry is regulated by a myriad of standards, guidelines, codes of practice and regulations, where formal international standardization for BIM is organized by ISO (together with BuildingSmart) and on the European level by CEN. **ASHVIN** will identify and contribute to those bodies and technical committees working in advanced research towards global standards infrastructures from data capturing to advanced knowledge and decisions;

2.2.3 DIGITAL TRANSFORMATION ADVOCATES

There are several initiatives and organizations actively advocating the digitisation of the construction sector, promoting innovation, competitiveness and sustainability, with special focus on SMEs and start-ups. ASHVIN will seek synergies to resonate with the impact of the activities envisioned.

- **EU BIM Task Group** – A pan-European approach of public procurers, policy makers and public estate owners to encourage the common use of BIM, as 'digital construction', in public works. The group published a handbook to facilitate the use of BIM by the European public sector across 21 countries[13];
- **European construction associations** – private organisations are representing the interests of their members -often from the industry- and facilitating prospects and road maps of the sector. the European Construction Industry Federation is structured in 32 national member federations, that are in charge of the "Construction 4.0 Working Group" to follow relevant policy developments, inform member federations and select priority issues for more in-depth research and discussion. Other initiatives include the European International Contractors and the Global Alliance for Buildings and Construction – the mission by the United Nationals Environment Programme as a catalyst to encourage "greater pace and impact of climate action in the buildings and construction sector". **Most importantly, however, ASHVIN will make use of the large networks of the European Builders Confederation who committed in supporting all ASHVIN dissemination activities.** To further increase the outreach towards architects (who need to play an important part in the transition) ASHVIN will work together with the Architects' Council of Europe.
- **Green Building Councils** – non-profit organisations made up of businesses and organisations working in the construction of 'green buildings', that, in its design,

construction or operation, reduces or eliminates negative impacts, and can create positive impacts, on our climate and natural environment;

- **Enterprise Europe Network** – one of the most relevant networks for supporting innovative SMEs in Europe, with 600+ active member organisations in 60+ countries worldwide;
- **Digital Innovation Hubs** – a pan - European network of one - stop - shops that help companies to become more competitive with regard to their business/production processes, products or services using digital technologies.

2.2.4 H2020 FUNDED PROJECTS

The topic covered by **ASHVIN**, LC-EEB-08-2020, is part of the H2020 focus area on 'Energy-Efficient Buildings (EEB)'. Therefore, the project will actively seek and create synergies with ongoing and upcoming projects from this context to reinforce the impact of mutual actions in dissemination and communication.

2.2.5 POLICY MAKERS

Members of government departments, legislature, or other organizations responsible for making new policies and for promoting strategies responsible for buildings, energy and infrastructure. Policy makers related to enhancing productivity through skilled workforce and talent are also within the spectrum of our project. In the specific case of **ASHVIN**, the main reference will be the European Commission. The project will require to align its objectives to the European Green Deal, the most ambitious package of measures that should enable European citizens and businesses to benefit from a sustainable green transition to become the world's first climate-neutral continent by 2050.

2.2.6 THE SOCIETY

ASHVIN will encourage a common understanding of the benefits that digital transformation brings to the construction industry, incentivising a low-carbon strategy towards the world's largest consumer of raw materials, and constructed objects account for between 25 and 40 percent of total carbon emissions in the world.

2.3 STAKEHOLDERS MAP

Figure 3 below contains the first version of the **ASHVIN** Stakeholders Map, that graphically summarises the main target audiences at this stage. The diagram has been defined by taking into consideration the different target stakeholders' groups identified so far, as the outcome of, the ongoing, Sprint Q1 of the Agile Stakeholder Framework. The figure below provides a framework for managing stakeholders based on interest and influence as:

- Y-axis depicts the "Influence" potential of the project to this target group and vice versa
- X-axis depicts the "Interest" that the target group may have towards our project and vice versa.

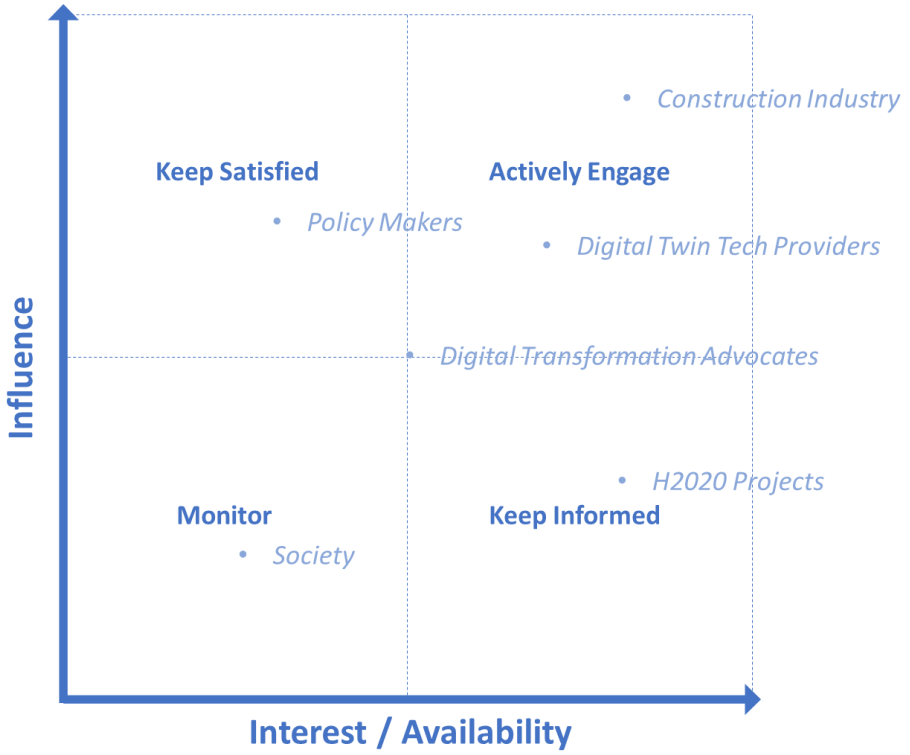

Figure 3: Stakeholders Map

2.3.1 ACTIVELY ENGAGE QUADRANT

This quadrant emphasises on stakeholders and target groups that have high influence towards the project while the project has great interest towards them. These are usually organisations or individuals who could potentially "stir", "influence" or "kill" the activities of the project as their views, visions and feedback can be considered as key "beacons" for the project. These target groups need to be approached and activated early in the project while maintaining an active and frequent communication channel.

2.3.2 KEEP SATISFIED QUADRANT

This quadrant includes organisations and/or individuals who have significant decision-making influence and authority while having limited availability or interest to be actively engaged to the project activities. It is usually very difficult to have consistent touch points with this target group, however the project should take into consideration their limited but valuable feedback, while synchronise its activities with their directives.

2.3.3 KEEP INFORMED QUADRANT

The "Keep Informed" quadrant, depicts organisations and individuals (or EU projects in our case) who are directly correlated or associated with our project. This target group may not be significantly impacted by **ASHVIN** or have low influence to project activities, however synergies, especially towards joint communication and dissemination, must be explored.

2.3.4 MONITOR QUADRANT

The current quadrant includes organisations, individuals or associations who may have low influence to the project activities and simultaneously show limited availability to get engaged into project activities. These target groups are not expected to be heavily involved in the project activities. However, the project needs to frequently communicate with them while staying alerted if they move to other quadrants.

3 COMMUNICATION & DISSEMINATION PLAN

Communication and dissemination sit in the heart of any **Horizon 2020** project and **ASHVIN** is no exception. A well planned, vivid and agile communication and dissemination plan, taking into account the possibility of external factors and challenges (such as the recent Covid-19 crisis) which might affect the execution and effectiveness of this plan, has the potential to achieve maximum impact for the benefit of the project. Although communication and dissemination are two interlinked activities, in this plan we choose to treat them as different but closely depended to each other. It is obvious that similarities and convergences exist and will be examined throughout the whole lifespan of the project.

3.1 COMMUNICATION PLAN

ASHVIN takes into account the versatility and agility of a coherent communication plan and is adopting a funnelled approach [2] to ensure that a targeted but wide communication towards all possible target groups and stakeholders, will be deployed and achieved. Such an approach primarily focuses on generating awareness by conveying key aspects and benefits of the **ASHVIN** project to all target audiences and end users. Easy to interpret, understand and recognize visual material will be designed and communicated allowing **ASHVIN** concepts and benefits become instantly identifiable to the wider audience while growing and cultivating further interest towards the project and its key outcomes. Additional customised content will be produced and communicated towards specialised target group audiences aiming at creating and maintaining an active stakeholders' ecosystem. Similarly, relevant information will be extracted from project deliverables; interviews with partners, pilot case studies; industry reports; and will be relayed through the **ASHVIN** communication channels to further support active user engagement, aimed at building an **ASHVIN**'s potential clientele base.

Figure 4: Communication Funnel

[2] Boosting Agricultural Insurance based on Earth Observation (BEACON) D7.1: Dissemination, Exploitation and Communication (DEC) Plan

3.1.1 OBJECTIVES

The communication plan is being driven by some key objectives which are crucial for the deployment of such plan. Although communication objectives may be treated and tackled as a single block, some objectives are being related to specific target groups only and will approached with specific tools and activities throughout the lifespan of the project. The overall objectives are:

1. Increase general awareness and interest about the project for building a sustainable customer base/ecosystem for future expansion;
2. Communicate technical, scientific results and benefits to specialised target groups and stakeholders;
3. Deliver top level messages about the project to non-technical target groups and audiences;
4. Raise awareness to non-specialised audiences of the added value of ASHVIN to the widest possible community;

Table 1: Communication Objectives per Target Group

	Awareness about & interest in	Communicate technical & scientific results	Deliver top level messages about the project	Raise awareness to non-specialised audiences
Construction Industry	x	x		
Digital Twin Tech Providers	x	x		
Digital Transformation Advocates	x		x	
H2020 Funded Projects	x	x		
Policy Makers	x	x	x	
The Society	x			x

3.1.2 PHASES & TIMING

Communication activities will be implemented in three different phases, which are closely related to dissemination as well. The common goal of all three phases is not only to create a “buzz” around the project, but also to mobilise a community of end users which will interact and provide feedback to other project activities as well.

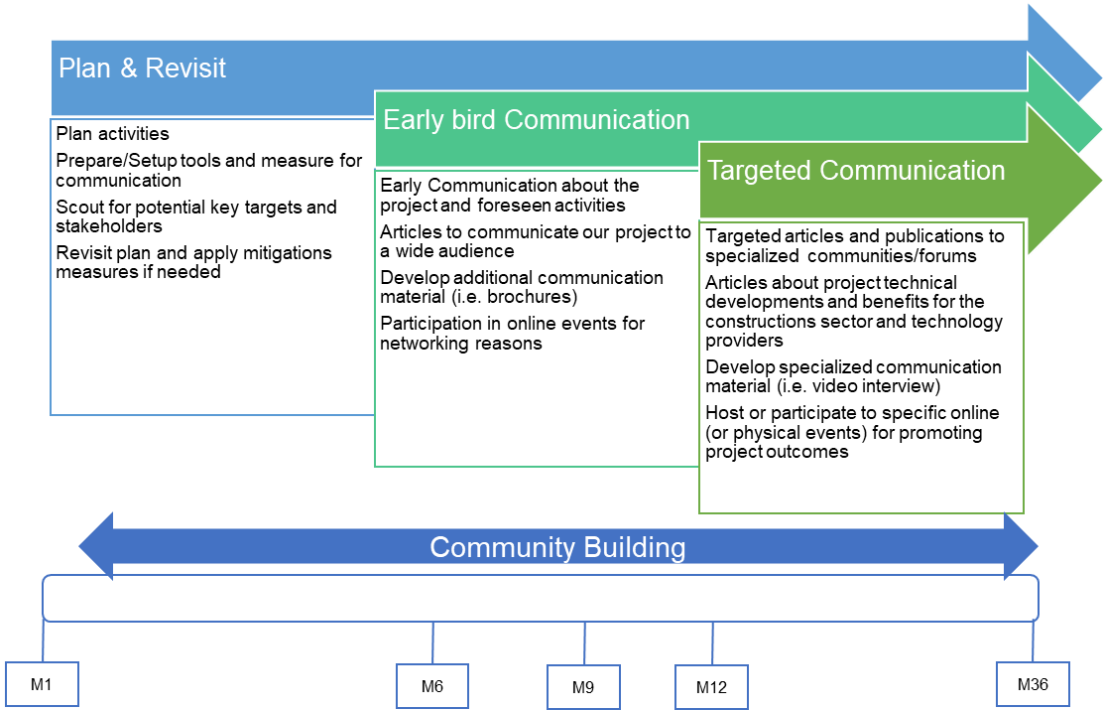

Figure 5: Communication Plan Phases & Timing

3.1.2.1 PHASE 1: Plan and revisit

The first communication phase will start in M1 of the project and primarily aims at planning all activities, setting up the main communication tools and channels (Website, Social Media), and identify potential target groups and stakeholders. However, the latter is an activity that will be implemented throughout the whole project. This first phase also includes the concept of revisiting the plan: whenever this is required, the communication plan will be revisited and adjusted according the needs or circumstances that may exist at a specific period of time. During this phase, initial communication activities (i.e. press releases) will also take place.

3.1.2.2 PHASE 2: Early bird Communication

The second phase will start in M3. During this phase early bird communication activities will take place aiming to communicate both to a wider public and to specific communities, the existence of the project as an instance and its forthcoming activities and actions. Emphasis will be given to the online tools and measures as they tend to have a wider reach than traditional measures. During this phase, participation for networking purposes to webinars or other online events, articles over the internet about the project (i.e. EU BUILD community, CORDIS, etc.) will take place. This phase will last for the whole duration of the project as it mainly focuses on communicating the generic aspect of the project to a wide stakeholder base.

3.1.2.3 PHASE 3: Targeted Communication

The third communication phase will start around M8 as it requires the project to be in relative maturity stage while the first, initial and concrete outcomes are released. During this phase targeted communication activities will take place such as producing and communicating articles, blogs or posts specifically to certain project outcomes and benefits, hosting and/or participating in online events (or physical if possible) for the communication of **ASHVIN's** innovations, production of targeted communication material (i.e. videos) for the community, etc. This phase will run in parallel with phase

2 as it focuses on targeted communication actions for specific audiences and not to actions for the whole community.

3.1.3 COMMUNICATION TOOLS & MATERIAL

A number of communication tools will be developed to allow the project to reach the right audiences in a communication friendly and synchronous way. All communications tools will be produced throughout the whole lifetime of the project and will be customised if and when needed, while will be available for all phases above.

3.1.3.1 Online and Digital Tools

Table 2: Online and Digital Tools

What	Why	How	For whom
Project Website	The Project website is a key instrument for enhancing visibility of the project, introducing visitors to **ASHVIN's** rationale and educates them about the project concept. All project findings are published on the website to allow anyone interested in the subject to follow the progress of the project while optimising search engines.	Establish online presence – website where general public and interested individuals can read about the project progress and findings, including news, articles and public deliverables.	For all target groups
Social Media	Social media are fast, low-cost channels of reaching interest groups and communities that are normally not present at any events or conferences (physical or digital).	**ASHVIN** will create and maintain actively its presence in a number of social media channels, with particular focus on Twitter and LinkedIn as they have proven to be the most effective tools when engaging with technology communities.	For all target groups
Newsletters	Project newsletter shows the progress of the project to all stakeholders and keeps their interest high	Complementary to email engagement, online newsletters will provide a snapshot of the main activities and achievements of. The project will pursue contributing to other Newsletters by the European Commission or associated initiatives. Professional marketing platforms (e.g. MailChimp) will be used to automate the distribution among all contact points	For all target groups
Press Releases	Within the Communication tactic, press releases can also target specific stakeholders depending on the journal/paper/website where the press release is published or distributed.	**ASHVIN** will develop and distribute press releases to mainstream and specialist media as well as relevant civil society newsletters, magazines and journals. Press releases will be also distributed individually by partners to communicate the project to their network of customers, members and collaborators.	-Construction Industry -Digital Twin Tech Providers -Digital Transformation Advocates -Policy Makers
Slide Decks & One Pagers	Digital slide decks and one-pagers, often integrated with email campaigns, may replace in some cases the	Design Digital Slide Decks and One-Pagers, for sharing the communication the vision of the project with specialised audiences.	-Construction Industry -Digital Twin Tech Providers

What	Why	How	For whom
	website as 'Point of Market Entry'.		-Digital Transformation Advocates -H2020 Funded Projects
General Spreading	Creating and deploying a number of articles in several online media targets at shaping a communication globe around the web sphere to maximise the outreach of the project's results and scope to all stakeholders.	Publish online articles to various international platforms (i.e. Cordis, Medium, etc,) and on national/local portals, to leverage the **ASHVIN's** scope and results.	For all target groups
EU BUILD UP Portal	The BUILD UP web portal is intended to reap the benefits of Europe's collective intelligence on energy reduction in buildings for all relevant audiences. It targets professionals working in the building sector (public or private) with an interest on the latest developments at technical or practice level, policy legislation, financial issues, etc related to energy efficiency.	**ASHVIN** will seek to establish synergies with the EU Build Up Portal, for utilising its communication facilities including webinars; video, tool, publication libraries; case study database; and EEB networking.	-Construction Industry -Digital Twin Tech Providers -Digital Transformation Advocates -H2020 Funded Projects -Policy Makers

3.1.3.2 Printed & Digital Promotional Material

Table 3: Printed & Digital Promotional Material

What	Why	How	For whom
Printed Material	Project collateral distributed at various events, conferences, workshops, etc. gain the project visibility with the general public and the national and European media	The most common items include brochures, catalogues, posters and any other laid out paper-based resource. Most of the PR material will be available as e-documents and printing will occur as required (e.g. for events, workshops, etc.). **ASHVIN** will also explore other innovative alternatives to the traditional informative material. Labelled gadgets and merchandise have turned out quite effective means of promoting initiatives among a less specialised audience, while encouraging a more sustainable approach when considering long-lasting items.	For all target groups
Multimedia Material	Visual content has always proven to be a very effective mean for communication	The project will produce multimedia material to have a self-explanatory and appealing presentation of the project, leveraging other available distribution channels of promotion (e.g. YouTube). The team will organise a set of video interviews throughout the project to collect inputs, taking advantage of plenary meetings and events of relevance. The final results will be edited to mix such interviews with animations.	For all target groups

3.2 DISSEMINATION PLAN

Dissemination is key for **ASHVIN** as it aims not only on sharing results with potential users - peers in the research field, industry, other commercial players and policymakers, but also at making these results available to the community contributing to the progress of science and technology in general. To this end, **ASHVIN** has developed a flexible and adjustable dissemination plan that aims on building effective awareness of the project results, creating understanding and aiming for action among the key target audience identified. The execution of this plan will facilitate the best use and uptake of the outcomes and research insights generated throughout the project lifetime, reinforcing each of the impacts aimed in the work plan. As already mentioned in **section 3**, this plan is closely linked to the communication plan as well, however we prefer to tackle this as a separate element.

3.2.1 OBJECTIVES

Dissemination objectives have been predefined since the beginning of the project. However, these objectives are closely interlinked both with communication objectives and with the overall project objectives, all to create impact beyond the boundaries of this project.

Figure 6: ASHVIN's Dissemination Objectives

3.2.2 PHASES AND TIMING

Similar to the communication plan, the dissemination plan will be implemented in three different phases. The key difference between the two plans, although they are closely interlinked, is that the 3 dissemination phases do not span throughout the whole project duration, but have a starting and an ending date. Of course, this does not mean that these phases cannot be extended if necessary or cannot be adjusted if required.

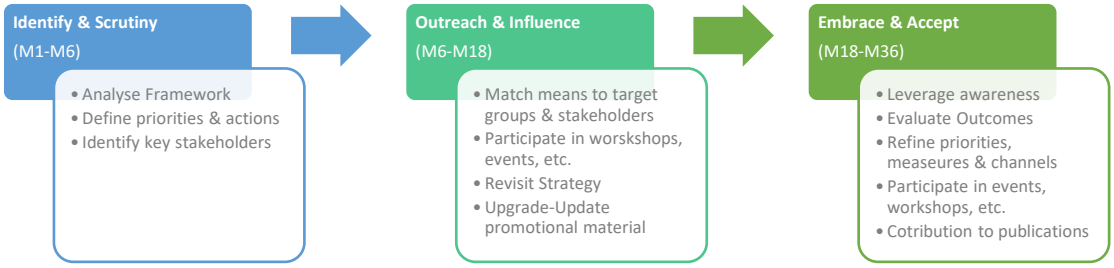

Figure 7: Dissemination Plan Phases

3.2.2.1 PHASE 1: Identify & Scrutiny (M1-M6)

During phase 1, **ASHVIN** will seek to analyse the project's framework, with a special attention to internal and external barriers and obstacles that could slow down the dissemination activities, as well as on defining the priorities and actions for the first year of the project. During this phase, a first set of promotional material, produced in the frame of **ASHVIN** communication plan will be prepared and delivered.

3.2.2.2 PHASE 2: Outreach & Influence (M6-M18)

The main objective of this second phase is to increase impact and awareness generated during the first phase and to mainly expose **ASHVIN** achievements. All channels (including communication) will be adapted to the specific needs of this phase and it will work to properly find the right means to engage and collaborate with the target groups. This will help increase the potential impact of the project's results. Participation in workshops, organisations of ad hoc events, as well as organisation of tutorials/webinars (if needed) will boost the dissemination process. Specific PR material will be also produced.

3.2.2.3 PHASE 3: Embrace & Accept (M18-M36)

This phase will leverage the general awareness raised by the two initial phases, attracting more potential end users and clientele interested in **ASHVIN** project's results. All outcomes of the two earlier phases will be evaluated and, if needed, priorities, measures and dissemination channels will be refined. Participation in events, workshops, conferences as well as contributions to publications in targeted specific media online and printed trade and research journals will be implemented.

3.2.3 DISSEMINATION TOOLS & MATERIAL

As already highlighted, communication and dissemination are closely interlinked therefore a number of tools are common for both. However, there are some dissemination tools specific to the dissemination and to creating impact for the project.

Table 4: Dissemination Tools (printed)

What	Why	How	For whom
Project Documentation	Publicly available information which can be disseminated and infused to similar to **ASHVIN** initiatives and to the community as a whole.	Documentation material in the form of public deliverables will be made available through **ASHVIN's** public repository, as well as CORDIS[3], and communicated through our communication channels.	-Construction Industry -Digital Twin Tech Providers -Digital Transformation Advocates -H2020 Funded Projects -Policy Makers
Peer-reviewed Publications	Disseminate the outcomes of the project to a wide scientific community. Showcasing outcomes to the scientific community for further exploitation.	**ASHVIN** aims at publishing and contributing to peer-reviewed publications in top refereed scientific journals and conferences relevant for digital construction. As a RIA project, one of the primary objectives is to ensure the technical achievements and experimental findings of the project will be known and exploited by a larger research community and related scientific domains.	-Construction Industry -Digital Twin Tech Providers -H2020 Funded Projects
Technical Publications	Technical articles can disseminate the project's views and outcomes to a wider scientific and technical audience, leveraging project's impact.	The project will publish and contribute to technical blogs and articles or any other reference from technology providers (bottom-up), as well as references related to the use case application domains under consideration (top-down).	-Construction Industry -Digital Twin Tech Providers -H2020 Funded Projects

Table 5: Digital Channels

What	Why	How	For whom
Open Access Library	"Open Access" Scientific & Technical material allows a wider dissemination of the project's outcome to a wider scientific and technological community.	Following the principle 'as open as possible', **ASHVIN** will provide open access to peer-reviewed publications and scientific research data. **ASHVIN** is using **Zenodo** [4] **OpenAIRE+** [5] repository, where it is possible to deposit both publications and data, while providing tools to link them. The **Zenodo** infrastructure is also used as document repository for all public deliverables.	-Construction Industry -Digital Twin Tech Providers -Digital Transformation Advocates -H2020 Funded Projects -Policy Makers
Feedback	Being able to collect feedback from external stakeholders, not only allows to expand the project's horizons and scope but also to disseminate the project's outcome to a specialised audience.	**ASHVIN** will set up online measures such as surveys and opinion polls among actors in the key application sectors and the Internet Ecosystem to gather feedback about critical issues of the project, such as validation of priorities and execution of services.	-Construction Industry -Digital Twin Tech Providers -H2020 Funded Projects

[3] https://cordis.europa.eu/
[4] https://zenodo.org/
[5] https://www.openaire.eu/

Table 6: Events

What	Why	How	For whom
Conferences/ Workshops	Participating in conferences, workshops and trade fairs is a strategic mechanism to interact actively with multiple stakeholders at a time.	The consortium will disseminate outcomes achieved by the project in the form of presentations, talks and personal engagement. This action will include events directly related to BIM, but also end use-oriented affairs with a focus on digital transformation.	For all target groups
Exhibition/ Demo Spaces	Showcasing the project's tangible outcomes through exhibitions and demo events, allows the dissemination of concrete outcomes to a wider audience.	As an initiative targeting applied technology, one of the objectives of the project is to showcase and validate publicly the outcomes achieved. Hence, ASHVIN's dissemination plan will include some exhibition activities and demos to demonstrate the feasibility of the proposed capabilities.	For all target groups

3.3 COMMUNICATION AND DISSEMINATION MONITORING

Monitoring and adjusting both the Communication and the Dissemination Plan, on a frequent basis, is a fundamental element of the project's success. Continuous monitoring allows the consortium to correct any possible deviations and improve its effectiveness by applying correction and mitigation measures when needed. It will also address possible implementation problems and identify whether further action is required to ensure that objectives are met. Emphasis is given on the pre-assessment of information needs, on the monitoring frequency and the method of collecting evidence.

The execution and effectiveness of the Dissemination and Communication Plan is dependent on close monitoring as well as flexible and prompt response mechanism. Every designed and implement activity will be monitored and evaluated according to its account and closely related to the KPIs. KPIs have been already defined but are considered to be confidential and are available for the European Commission's representatives and Consortium' Partners' eyes only. Moreover, Communication and Dissemination reporting tools have been also set up so that all partners may register their individual efforts and activities.

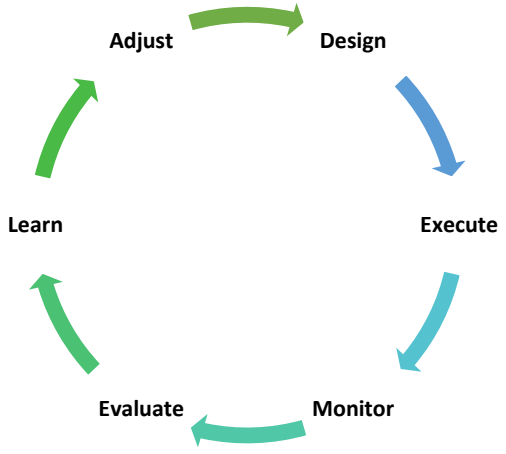

Figure 8: Dissemination & Communication Loop

- **Design:** Design is activity based on the Dissemination & Communication Plan and the desired impact;
- **Execute:** Execute according to plan;
- **Monitor:** Closely monitor the activity and collect input and results. Monitoring will be based on a template that is available only to partners through the internal website;
- **Evaluate:** Evaluate the outcomes of the activity in a collaborative way according to the desired targets set in the design phase;
- **Learn:** Learn through this evaluation and try to extract the most valuable outcomes out of it;
- **Adjust:** Absorb findings and lessons learnt adjust the plan accordingly, if needed.

All outcomes and results of the Dissemination and Communication plan will be reported in **D8.2 Dissemination and Communication Interim Report** at Month 18 and **D8.4 Dissemination and Communication Final Report** at Month 36.

4 EXPLOITATION PLAN

Under Horizon 2020, beneficiaries should engage in **dissemination and exploitation** activities. As Horizon 2020 is financed by EU citizens, it should benefit to the largest number and the fruits of the research reach society as a whole. **Dissemination** means sharing research results with potential users - peers in the research field, industry, other commercial players and policy makers. By sharing your research results with the rest of the scientific community, you are contributing to the progress of science in general. Whereas **exploitation** is the **use of results for commercial purposes** or in public policymaking. Therefore, **ASHVIN** is working towards creating a solid exploitation plan, that includes activities and actions to be implemented throughout the whole lifespan of the project, aiming on defining the most suitable exploitation scenario(s). Having a big innovative idea like **ASHVIN** is not the end of the journey. Objective is to make a profitable product out of it. The process of transforming that idea into a marketable product is a path full of challenges. Challenges that need to be addressed to reach the biggest goal: bringing the big idea to the market.

4.1 EXPLOITATION ROUTES & MODEL

ASHVIN recognizes **three main exploitation routes** for all project results**:**

1. **The commercial exploitation route**, which implies the paid provision of the project results to the end users, complying with a licensing scheme which will be defined in the business plan,
2. **The research exploitation route**, which implies the reutilisation of the research know-how acquired in future research activities, and
3. **The technological exploitation route**, which implies the reutilisation of the technological know-how acquired for the development of innovative products and the provision of advanced services built on top of them. However, not all project partners and interested stakeholders need to exploit all project results using these three models.

Figure 9: Exploitation routes (example)

All three routes will be explored independently as the project evolves while the most appropriate exploitation model or model will be selected. At this point, it is important to highlight that **ASHVIN** will not produce only one exploitable result but many. All exploitable results will be treated on equal terms therefore the most appropriate model for each one will be proposed. However, it also needs to be addressed that the exploitation models of the project's results will be dependent upon three main parameters: **a) the nature and interests** of the project partners and stakeholders in

general, **b) the distribution model** (commercial or non-commercial) of the project results and c) **the distribution of the IPRs** amongst the project partners.

Based on these limitations, **1) ASHVIN industrial partners** are mainly interested in commercially exploiting the project results, **2) the consortium (as well as external) academic and research organizations** are mainly interested in adopting the research exploitation model for project results that will be provided as open source components, integrating them in their research and/or teaching activities and/or setting up future research projects further promoting the project results, and **3) external industrial partners are mainly interested** in adopting the technological exploitation model for the project results. **Partners' exploitation interests be provided as open-source components for know-how transfer in other products/services.**

4.2 ASHVIN DOMAINS

The project is dealing with several domains either technical/scientific or market. These domains are presented below in an upper-level way:

4.2.1 SCIENTIFIC DOMAINS

Digital Twins are changing how technologies such as IoT, AI, ML, and Big Data analytics are being thought about. These innovative technologies are utilized to create virtual representations of physical processes/entities and understand their behaviour anticipating their possible reactions to simulated events. Digital Twin is based on a multi-disciplinary approach and team, playing an important role to advance the scientific state-of-art. Physical domain experts must work with engineers, computer scientists and process experts to develop an effective (e.g., self-learning) Digital Twin. The range of disciplines needed will widen as applications diversify.

This is particularly important to contribute to the **European Green Deal strategy**[6], where key objectives are, for example, the energy efficiency of the built environment (i.e., the most important decarbonization strategy) and the adaptation of our Society and economy to the climate change –such as the resilience of urban centres, the adaptation of agriculture production, and the risk reduction to natural hazards.

Today, Digital Twin technology is commonly used as a key instrument towards the implementation of the Digital Earth concept –i.e., a comprehensive virtual representation of the planet. Several projects and initiative have developed virtual/digital representations of natural or social entities, processes or phenomena.

Academia and Research are asked, in addition to improving modelling techniques, to further focus on data optimization and interoperability with modelling platforms. According to a manuscript recently published by Nature on pushing Digital Twins[7], the scientific sector must work on four challenges:

1. Unify data and model standards;
2. Share data and models;
3. Innovate on services;
4. Establish forums.

[6] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
[7] Tao F, Qi Q. Make more digital twins. Nature. 2019 Sep;573(7775):490-491. doi: 10.1038/d41586-019-02849-1. PMID: 31554984.

4.2.2 MARKET DOMAINS

ASHVIN's market domains can be categorised in the following three categories. All three categories are related to the overall Digital Twin Market. Further analysis of these markets will be presented in the respective exploitation deliverables, where possible additions and changes will be presented.

4.2.2.1 ASHVIN's Market Categorisations

By End-user	By Project Lifecycle	By Industry
•Government •Engineers •Architects	•Pre-Construction/Design •Construction •Operation	•**Primary Market** •Construction •**Secondary markets** •Commercial •Residential •Healthcare •Entertainment •Sports •Industrial •Oil & Gas industries •Others

Figure 10: ASHVIN Market Domains

4.2.2.2 Digital Twin Market Challenges

Within A**SHVIN** we have identified some preliminary challenges that are related to the Digital Twin Market and will be taken into account throughout the whole duration of the project. These challenges can be categorised in three sub-categories: Limited Interoperability, Market Confusion and High Stakes.

1. **Limited Interoperability**
    a. There is no standardisation, definitions and common language
    b. Digital twins can be difficult to apply across product lifecycle
    c. Often there are multiple digital twins, versions or views that don't interoperate
    d. Efficiency could be limited by data silos
    e. Required to fit digital twin technology within legacy environments
2. **Market confusion**
    a. Limited use cases and research available to learn from others
    b. It's difficult to know where to start to quickly get value
    c. What is your minimally viable digital twin?
    d. How do you decide what technologies to use?
    e. In most cases, your employees haven't done this before
    f. Many companies re-brand as "Digital Twin" overnight
3. **High stakes**
    a. Once you chose a digital twin path you have to stay on it
    b. The software world does not apply to the digital twin world
    c. Digital twin projects require heavy investment of both hard and soft costs: money, people, time & equipment
    d. No defined answers to what to use, when to use it and how to use it
    e. If you get it right, the payoff is worth the risk

As already mentioned in previous sections, the actual analysis will be presented in **D8.3: Impact Assessment and Exploitation Interim Report** (M18), **D8.5: Impact**

Assessment and Exploitation Final Report (M36) and **D8.6: ASHVIN Asset Portfolio** (M36).

4.3 EXPLOITATION STAKEHOLDERS

ASHVIN identifies three main stakeholders categories that may be interested in the exploitation of the project results: **1) The industrial community**, with a commercialisation interest of products and/or services that may be developed and delivered on top of the project open source results, **2) The research and academic community**, including universities and other research organisations, and **3) The end-users community**, which includes municipalities, private sector and clinical organizations interested in delivering high quality solutions to their beneficiaries.

Figure 11 below categorises the ASHVIN stakeholders, as these have been presented in section 1, under the three exploitation related categories.

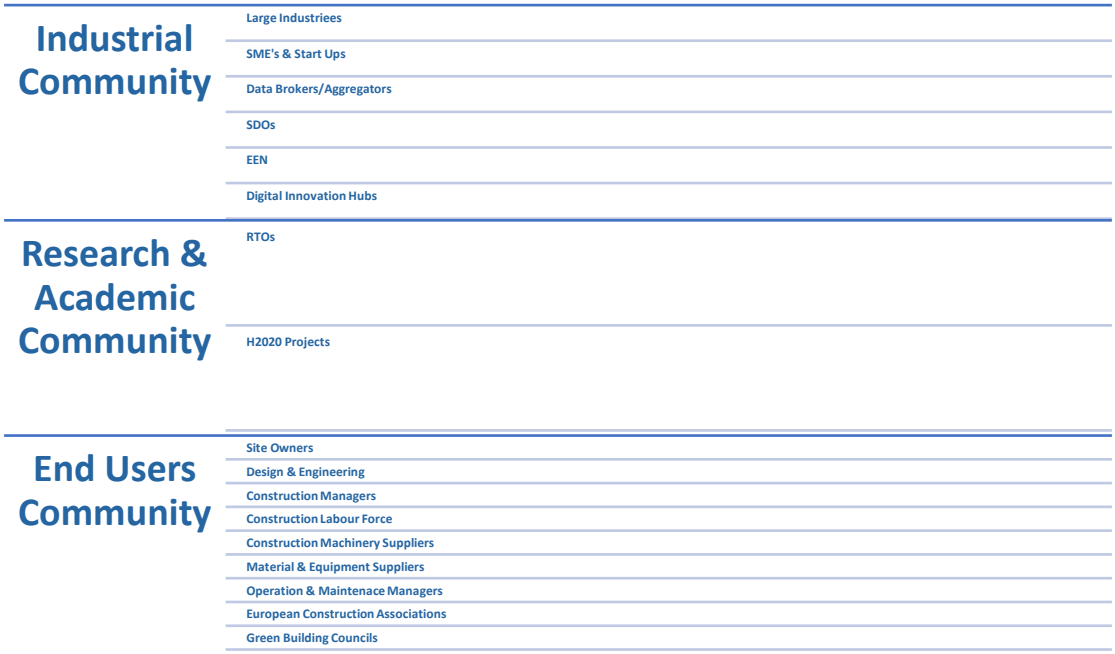

Figure 11: Exploitation Stakeholders

Categories and stakeholders above could be altered or enriched as the project evolves and produces/publishes its exploitable results. This is an ongoing exercise which results will be reported in future deliverables

4.4 EXPLOITABLE ASSETS

As already highlighted in this document, **ASHVIN** foresees to develop, publish and eventually launch a number of key exploitable assets which could be shared with the overall community. At this early stage of the project, some assets have been defined however these are subject to change as the project progresses throughout time. Moreover, as this is a public document not all information can be revealed to the public, therefore has to be remain for the Consortium and the European's Commission Eyes only.

Table 7: Key Exploitable Assets

Tentative Key Exploitable Assets	Lead Partners	Exploitation Intentions
Automated progress monitoring	DTT, MFL	Progress monitoring verifies that the completed work is consistent with plans and specifications. Based on IoT supported site observations the percentage of work done can be determined at every stage of the project. Site managers can use this information to better plan ahead.
Real-time as-built vs as-designed comparison	DTT, TUB	With a real-time digital twin that can accurately represent behaviour (for example structural or energy-related), it is possible to track changes in an as-built model — daily and hourly. Early detection of any discrepancies with the initial design intend can be can detected and mitigated. This will allow more reliable construction, less rework, and higher quality.
Better & improved resource planning and logistics	PlanB	ASHVIN provides automatic resource allocation monitoring and waste tracking, allowing for a predictive and lean approach to resource management.
Better safety monitoring	EUR, NCC, INGEO	The real-time site reconstruction feature digital twins allows the industry's companies to track people and hazardous places on a site to prevent inappropriate behaviour, usage of unsafe materials, and activity in hazardous zones.
Improvised quality assessment	CERTH	Image-processing algorithms make it possible to check the condition of concrete through a video or photographic image. It is also possible to check for cracks on columns or any material displacement at a construction site. This would trigger additional inspections and thus help to detect possible problems early on.

4.5 PLANNING & NEXT STEPS

4.5.1 BASIC PRINCIPLES

ASHVIN's Exploitation Plan includes a preliminary approach, while the detailed business plan will be defined within the project evolution and presented in the dedicated deliverables, in M18 and M36. Adding to the above, concrete exploitation plans and models will be reported through confidential documents and reports as they are valuable assets that cannot be shared with the public.

This preliminary approach foresees the commercial exploitation of **ASHVIN**'s reference implementation, upon which additional commercial features can be delivered. Towards this end, the reference implementation per se, incorporating the developed software artefacts, the provided novel software development paradigm and the business intelligence, along with the proper information modelling techniques and the exploitation of the programmable infrastructure capabilities, can be provided with an open-source license and free of charge. The same can apply for a basic version of the

highly-distributed applications that will be delivered within the project. In addition, external industrial organisations (e.g. business critical application development SMEs) can develop applications delivered by advanced versions of the components, for which they will have to pay royalties to **ASHVIN**'s consortium. This will facilitate the development of (another) ecosystem of industrial stakeholders generating value through the exploitation of the project components and tools. Thus, the revenue of **ASHVIN** can be generated from a variety of sources which may include: **1) digital services** providers acquiring "premium" versions of the **ASHVIN** components and the applications delivered over it, **2) external partners providing added value services and applications** in the area of Digital Twins related technology, etc., **3) investors and external funders, 4) advertisements, donations, etc**. However, the previous are just preliminary thoughts which are subject to change in the near future.

For defining the right and most suitable commercialisation model, **ASHVIN** will follow and adjust when and if needed the principles of **Deloitte's Fast Track programme to Innovation**[8]. Fast Track is an intensive program in which firms bring an innovative idea to life together with clients and work on predefined phases towards a concrete business model and a go to market plan.

Figure 12: Fast Track to Innovation

4.5.2 STEPS AND PHASES

The **actual exploitation plan** has been elaborated and will be frequently updated, aiming at maximizing the exploitation levels of the project, from the involved stakeholders. It includes the following **eight phases**:

- **Phase 1:** Market insights and business requirements.
- **Phase 2:** Define project's value proposition.
- **Phase 3:** Business requirements validation.
- **Phase 4:** Business Model.
- **Phase 5:** Identify and explore open issues.

[8] https://www.youtube.com/watch?v=8-s_0UJ89Ys

- **Phase 6:** Seek partners buy in.
- **Phase 7:** Consolidation.
- **Phase 8:** Go-to-market, long-term sustainability and potential commercialization.

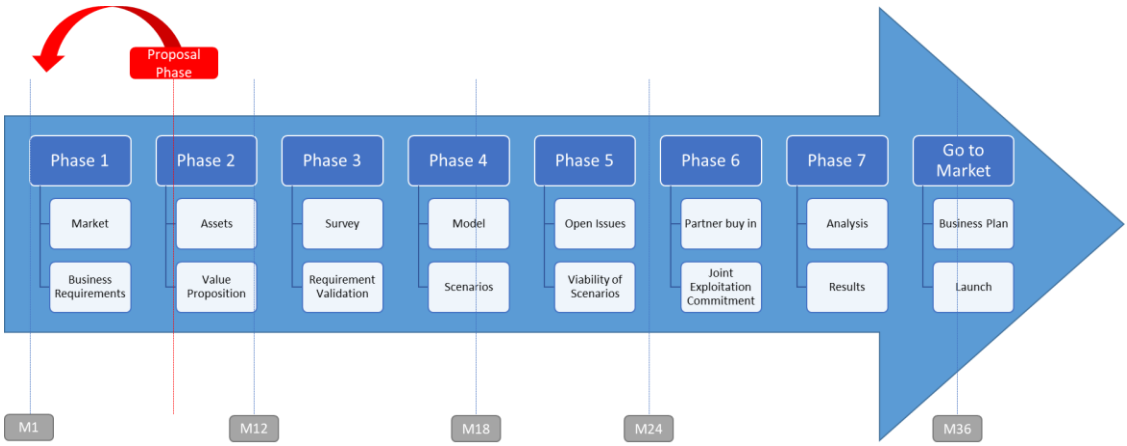

Figure 13: Exploitation Plan Phases

Phase 1: Market insights and business requirements (M12): For a potential commercialisation of the new innovative product, it is essential to have in-depth knowledge of the market and the clients that you want to serve. During the Fast-Track different models are used to get in-depth knowledge of the market:

- Market insight model: instructs the team to begin with listing market trends that are specific to their proposition. These market trends help zero down on the target groups the team would want to focus on for their offering. Based on the market trends, the next step is to identify the needs of each of the target groups.
- Client insight model: Helps in better understanding the needs of the target groups. The target group is the buyer of the service; however, there are other stakeholders for this buyer and it is as crucial for the offering to cater not only for the needs of the buyer but also its most important stakeholders.
- Competition insight model: Two of the needs identified in the market insight model are plotted on the model. It helps the team determine to what extent the proposition cater to these two needs and hence plot the ASHVIN platform as a solution provider accordingly. When plotted against competitors with offerings in the same space, the model helps identify the whitespaces and translate to differentiation.

The market is explored using standard tools, such as **SWOT**[9] and **PEST**[10] and so on, in order to identify, and to quantify the market for future forecasting.

Phase 2: Explore the project activities and derive a value proposition (M12): By applying common techniques from the management literature, the activities carried out by the project are analysed for the value they create, to whom and by whom. These activities are then organised into strong statement(s) that represents the flow of value in the project.

Phase 3: Business requirements validation (M12-M18): The Fast Track continues with a survey to test market readiness of the first results of the project with possible

[9] https://en.wikipedia.org/wiki/SWOT_analysis
[10] https://en.wikipedia.org/wiki/PEST_analysis

future clients. In the survey the results are presented to future clients and they are asked if in the future they are interested in such a product, if the product covers their business requirements, if they would like to pay for it and how much, what they see as the strong and weak points of the product, etc. The ASHVIN team will instantiate a build-measure-learn feedback loop. ASHVIN achievements will be continuously validated from potential customers (target group). Fast Track survey consist of questionnaires, focus groups and open discussions.

Phase 4: Business model (M12-M18): Besides market insight it is also very important to have a good business model to bring the new product successfully to the market. A business model describes the rationale of how an organization creates, delivers, and captures value. For the development of the business model, we shall rely on the 'Business Model Canvas', from Ostelwader, Pigneur & al[11]. This is probably the most popular tool used to design the operations of a new or refocused business. In accordance with the building blocks of the business model canvas the team will be challenged during this phase of the Fast Track to answer the questions regarding the market, the organisation, and the pricing and business case. Additionally, a chain of sequential and parallel activities of the project will be created. The analysis of these activities and having in mind ASHVIN business model, ASHVIN consortium will create multiple business scenarios that partners will be willing to follow. The identification of revenue streams and cost centres per scenarios is the final step of this phase.

Phase 5: Identify and explore open issues: In the first iteration the open issues to be identified cover the description, pros, cons, caveats and assumed viability of the scenarios. This translates to the key activities, value, clients and key partner's aspects of the Osterwalder canvas. **This first iteration concludes in M18**. In the second iteration, key resources, relationships and channels are also examined. This completes the business model canvas. **This iteration will last from M24 to M28**.

Phase 6: Seek partner buy-in: In the first iteration of this phase, partners are requested to provide their initial impression of the models and then to explore internally how their individual motivations, activities and existing partnerships can support each model. This complements the viability analysis of step 3 (where the scenario is considered in isolation) by also considering the viability of the partners to deliver the scenario. This step is also part of the individual exploitation analysis. **This iterative step lasts from M18 to M20**. In the second iteration, partners must state which resources and investments they can commit to the project, and which roles they will accept in the post-project sustainability scenario. This step is synonymous with the joint exploitation plan / joint exploitation commitment of the partners. This step runs **from M28 to M30**.

Phase 7: Consolidation: In both iterations, this step includes consolidating all the work and data collected during the period, including individual exploitation plans, joint exploitation leads, business modelling, market data, stakeholders' feedback and technical results. **This step runs from M20 to M24 and from M30 to M32**. The output

[11] *Osterwalder, Alexander; Pigneur, Yves; Clark, Tim (2010). Business Model Generation: A Handbook For Visionaries, Game Changers, and Challengers. Strategyzer series. Hoboken, NJ: John Wiley & Sons. ISBN 9780470876411. OCLC 648031756.*

of the first iteration will be delivered in the intermediate exploitation report, while the output of the second in the final report.

Phase 8: Go to market: The final phase of the Fast Track is the development of a 'Go to Market' plan. This step takes the output of the iterations, covering both the theoretical models proposed, the partner's intentions and commitments and the data through the use cases and stakeholder discussions in order to derive a full business plan for the implementation of the solution. The selected business scenario is taken as the baseline for exploitation. The completed business model canvas will complement this value proposition with other aspects of the business model and is then specified using financial projections. IPR agreements and interim results to generate the business plan are also finalised in this plan. This plan is ratified by project partners and any changes to the project and partner roles are implemented to prepare for a transition phase towards the new model. **This step runs from M32 to M36**. This will be described in the final exploitation report.

5 STANDARDISTION PLAN (PRELIMINARY VERSION)

As defined in the **Grant Agreement**, the overarching goal of the standardization activities withing the project is the development of a **Standardization Plan**, which will result in the elaboration of a proposal containing recommendations regarding future standardization activities based on the requirements of the Project Consortium. At this point, it is critical to highlight that **ASHVIN** project dedicates a **specific Work Package on Standardisation (WP6)**, which will be in charge of designing and implementing the overall standardisation plan of the project. This will be depicted in the following deliverables, **D6.1 Standardisation Plan** (to be delivered in M6) and **D6.2 Recommendations and options for future standardisation for Digital Building Twins at a European scale** (to be delivered in M36). However, a preliminary discussion text is presented here which can be also shared with the public. The work to be carried out by **ASI** will include the following steps conducted over the whole duration of the **ASHVIN** Project:

Investigation of the standardization landscape, including existing formal and non-formal standards, as well as those in development.

This activity will cover data collection from European and international Standard Development Organizations and their relevant Technical Committees, including but not limited to CEN, ISO, IEC and IEEE).

Identification of the standardization gaps and needs of the consortium members with regard to future standardization activities.

The Consortium Partners will provide information on their standardization needs that later will be cross mapped with the identified standards. This approach will allow us to identify the areas of interest not adequately covered by current standardization activities. Such gaps will be tackled during the final stages of the project.

Elaboration of the Standardization Plan that will be updated annually reflecting the latest developments in the European and international standardization community.

Based on the nature as well as on the number of identified gaps, a Standardization Plan will be elaborated with the aim to cover the most urgent among the identified issues. The Plan will be updated annually to allow for integration of newly published standards in the project-relevant areas.

Elaboration of a proposal for a future standardization deliverable that will be submitted to the appropriate Technical Committee for further elaboration.

Along with the annual update of the Standardization Plan, a proposal for a new standardization activity will be developed over the course of the project. It will be based on the outcome of the gap analysis, conducted at the earlier stage, and reflect the needs of the project partners.

These tasks will be accompanied with engagement activities with the respective standardization communities (composed of representatives from industry, SMEs, public authorities, research, and other stakeholders). This will lead into making the standardization communities acquainted with the project. Following the phase of making aware these communities will be interested to learn more about the project activities and will then support the acceptance of project recommendations resulting in new standards benefiting the exploitation of the project.

6 CONCLUSION

ASHVIN Impact Master Plan is the coordinated effort of all project partners to agree on the principles around communication, dissemination and exploitation to achieve a wider impact for the project and its outcomes. This plan takes into account both the internal and the external environment for defining the appropriate tools, methodologies and activities for channelling **ASHVIN's** scientific and technical activities towards the community.

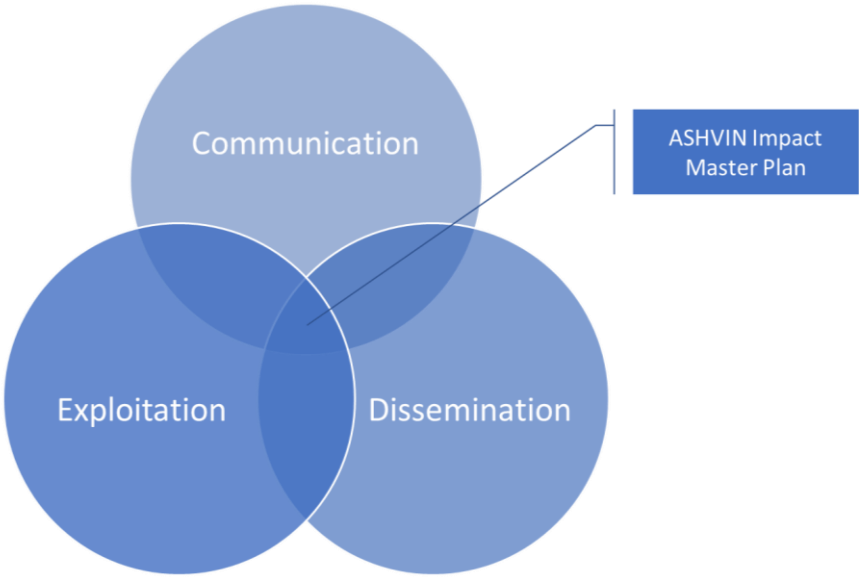

Figure 14: ASHVIN Impact Master Plan

D8.1 is more than a formal deliverable; it is a clear point of reference for all partners as it presents not only the principles and the outcomes of the project's plan but also the rationale behind each decision and activities made or to be made.

However, this is a plan and all plans tent to deviate and shift throughout any project's lifetime. Therefore, all activities will be closely monitored and assessed to define if any correction measure is needed while keeping the initial defined objectives in scope: have a wide impact to and for the community as a whole.