Autonomous and Self-organized Artificial Intelligent Orchestrator for a Greener Industry 4.0

Deliverable

D6.1 Dissemination, Standardisation Regulation & Business Plan

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Definitions and acronyms

AHP	*Analytical Hierarchy Process*
AI	*Artificial Intelligence*
AR	*Augmented reality*
BDVA	*Big Data Value Association*
BMC	*Business Model Canvas*
CA	*Consortium Agreement*
CAA	*Civil Aviation Authority (Greece)*
CAGR	*Compound Annual Growth Rate*
CEAP	*Circular Economy Action Plan*
CEN	*European Committee for Standardisation (Comité Européen de Normalisation)*
CENELEC	*European Committee for Electrotechnical Standardisation*
DIH	*Digital Innovation Hubs*
DoA	*Description of Action*
EASA	*EU Aviation Safety Agency*
EC	*European Commission*
EU	*European Union*
GA	*Grant Agreement*
HRC	*Human-robot-collaboration*
IATA	*International Air Transport Association*
IEEE	*Institute of Electrical and Electronics Engineers*
MS	*Milestone*
PPE	*Personal Protection Equipment*
PC	*Project Coordinator*
SDN	*Software Defined Networking*
SDO	*Standards Developing Organisation*
SME	*Small and medium-sized enterprise*
SW	*Software*
SWOT	*Strengths, Weaknesses, Opportunities, Threats*
TC	*Technical Coordinator*
UATV	*Unnamed arial and terrestrial vehicle*
VR	*Virtual reality*
WP	*Work Package*
XAI	*Explainable Artificial Intelligence*
ZDM	*Zero Defect Manufacturing*

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Executive Summary

The present deliverable provides a comprehensive account of the activities that will be carried out throughout the duration of the TALON project, encompassing dissemination, communication, exploitation, standardisation, as well as business planning and market analysis.

The successful dissemination and communication of project outcomes is a crucial element in maximising the impact of innovative results and reaching the appropriate audience in both research and industry. This applies not only to the telecommunications and networks sector but also to vertical industries, especially bearing in mind the gradual transition from I4.0 to I5.0.

The value creation of TALON's envisioned solution will also cover activities relating to Standardisation, Regulation and Clustering, together forming the complete picture of the project's impact. In terms of Standardisation, consortium partners in their respective fields of responsibility will seek to track and monitor the standards that refer to the corresponding area of research and development. In that respect, four main R&D fields have been identified, namely: Networks and User Access Security, AI-fuelled Orchestration, Advanced AI Capabilities and Data Operations. For each of these areas, notable results that are derived throughout the project's lifetime, will be fed back to the corresponding Standardisation organisations / bodies. In terms of Regulation the consortium will seek to monitor relevant regulatory developments. As AI plays a central role in TALON's vision and that being a field of high regulatory activity in the EU (notably with its AI act), the main part of Regulation related work will be focusing in the direction of AI regulation. Additionally, regulation relating broadly to I5.0 applications, and local, regional and or international regulations with respect to the project's usage scenarios, will also be screened and monitored, as applicable. In terms of Clustering TALON will seek to participate in clusters of EU-funded projects with high degree of similarity. In fact, a cluster of projects funded under the same topic has already been formed on TALON's initiative, and further activities planning is currently underway.

Business Planning and Market Analysis referring to TALON's final product is planned to be carried out using a blend of well-recognised Strategy and Business Analysis methodologies and frameworks. This is to evaluate a set of aspects and variables with respect to TALON's own value proposition, as well as the broader market environment. A preliminary market data analysis indicates a market ecosystem that consists of a variety of market players, of different sizes and backgrounds aiming for a share in a market that is estimated to grow at significant rates. Even though product propositions matching the innovations envisioned by TALON, are not currently available in the market, and therefore the competitive landscape can only be roughly approximated, the existing data are consistent with a market environment that is highly competitive, and fast evolving.

1 Introduction

This report details the activities pertaining to the tasks of WP6 that were completed during the initial year. All these tasks exhibit continuity throughout the duration of the project. The project's impact and visibility among diverse communities and the general public are regularly evaluated through a project Dissemination tracker.

In **Section 2**, the activities of T6.1 are outlined with regard to the distribution and transmission of the knowledge generated by the project. Facilitating collaboration is a crucial factor in advancing project implementation and fostering beneficial partnerships with stakeholders from both academic and industrial sectors. Diverse communication channels have been established, encompassing social media and websites, with additional channels currently in development, such as flyers and videos. Despite the fact that certain project outcomes have been showcased at conferences, their dissemination has been restricted to virtual platforms owing to the ongoing pandemic.

Section 3 presents the activities related to the project's Standardisation, Regulation and Clustering. These are three distinct areas that play a central role in TALON's value creation, and all consortium partners, according to their domain expertise and experience will contribute to achieving the targeted outcomes, in the most efficient way. Given that the work to be done in relation to these three areas requires a rather specific course of action, the objectives and the ways to achieve them are presented and discussed individually for each one of the three areas.

Section 4, the final section of the present report, addresses TALON's Business Planning and Market Analysis. TALON's envisioned solution, being one that consists of multiple innovations, addressing a number of diverse needs and in a transition landscape from I4.0 to I5.0, that is fast evolving, calls for an assessment of its commercialisation prospects. Task 6.3 will carry out an evaluation of TALON value proposition's strong and weak points, and establish any specific entry barriers, through a dedicated SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis. Moreover, it will work towards defining and establishing the main elements of a potential Business Model, and also create a technology roadmap, using a set of widely-acknowledged methodologies, as discussed in Section 4.

With respect to all the points previously mentioned, the present report sets the baseline foundations of the work to be done in the following periods, and which is to be completed by the end of this project in month 36. The full set of relevant activities and their respective outcomes realised during the project's lifecycle will be presented in Deliverable D6.2, which also corresponds to Milestone 7 (MS7) - Availability of the Dissemination, Standardisation, Regulation and Business Report.

2 Dissemination & Exploitation Activities

The main focus of TALON is the development of prototypes and testbeds that incorporate the project's innovative concepts, with the ultimate goal of promoting the future commercialization of AI products and services based on these concepts. To achieve this main goal, it is essential to (i) implement and test the project's technology, (ii) produce patents that protect the key ideas behind this technology, (iii) push the required interfaces into standards, and (iv) disseminate the advantages of the technology into the re-search community.

The partners of TALON have expressed their dedication to fostering robust collaboration with the objective of optimizing their gains from the cutting-edge research that is planned within the project. The TALON project will employ targeted dissemination and communication strategies tailored to various relevant audiences, utilizing appropriate channels to enhance project awareness. The TALON project has initiated dissemination and exploitation endeavours since its inception and will persist in doing so throughout its duration.

In order to optimize the effectiveness of the project outcomes and to enhance their visibility, the dissemination strategy will adopt a dual approach. Firstly, it will target the industry ecosystem, and secondly, it will showcase the research findings to the scientific community.

2.1 Dissemination strategy

The dissemination strategy for TALON will define and monitor regular activities throughout the 36 months ensuring continuous content production (web, social media), outreach and stakeholder engagement based on the SMART approach. The Strategy is defined under WP6 and will integrate dissemination and exploitation actions and assess KPI impact for communications, dissemination and exploitation. Impact will be reported in planned deliverables and will include an in-depth assessment of impact in terms of community engagement and visibility. Mobilizing partners in creating an engaged and vibrant community around the project's robotics results is a top priority objective. To this end, it will identify different types of relevant events per stakeholder category and potential synergies (as defined in the dissemination strategic goals) to raise awareness of TALON from the very outset of the project and ensure interaction leads to concrete actions.

2.1.1 Objectives

TALON has identified the following concrete and measurable objectives in terms of the output to be produced:

- Prototypes: Based on TALON innovations, 4 prototypes accompanied by their corresponding functions will be implemented: (i) an AI orchestrator, (ii) a resource mobility manager, (iii) edge computing nodes, and (iv) Digital Twin (DT)-based learning
- Testbeds/Demonstrators: Building on the prototypes, TALON deploys four (4) testbeds: i) Automatic unnamed arial and terrestrial vehicle (UATV) Coordination, ii) I5.0 automatic and planning, iii) Augmented reality (AR)/VR for training & maintenance, and iv) Human-robot-collaboration (HRC) to ability TALON's ability to satisfy the stringent requirements of diverse use cases.
- Patents: To protect the novel concepts developed by TALON as well as their strategic value for the partners developing these concepts, the consortium plans to patent the key ideas. By taking into account the key innovations included in the Description of Action and the various mechanisms required for them, we strongly believe that there are more than ten (10) ideas worth patenting. Now, by further considering the patent portfolio of project partners, and new ideas that will be developed within the execution, the consortium is expected to submit more than five (5) patent applications.
- Publications: To disseminate the advantages of the technology developed to the research community and thus contribute to the long-term adoption of the most futuristic ideas, it is important to publish these ideas in the most prestigious conferences and journals in the field. Based on the publication record of the project partners, we estimate that the project may produce >40 publications. However, rather than the number of publications, the focus of the

project will be on their quality (IEEE Transactions, Magazines, and Letters), and their impact (e.g., the eventual number of citations that they may receive).

- Scientific events: Scientific events are an excellent means to push ideas into the academic & industrial scientific community and promote the adoption of these ideas in the long term. TALON partners already organised several very successful conferences, workshops and tutorials. TALON will organise or co-organise at least 1 workshop/year targeting prestigious conferences.
- Small and medium-sized enterprises (SMEs), spin-offs & start-up companies: Accounting that (i) the key TALON innovations are based on software (SW), reducing the investment required to exploit these innovations, and (ii) the business model behind TALON leads to a new ecosystem with new players, we believe that some of the ideas of TALON could potentially be exploited by the SMEs involved in the consortium or even by new start-up companies. Indicative examples could be the development of the blockchain toolbox and the AI-based orchestrator. A more detailed presentation of the key exploitable assets is presented in Section 2.4.1.

2.1.2 Stakeholder analysis

TALON's dissemination actions are integrated into the project's workplan (WP6), based on a SMART approach (specific-measurable-achievable-realistic-timely & targeted), and regularly updated. Key pillars of the TALON dissemination strategy with regard to the major identified stakeholders include:

- Integrating the project into the global AI and I4.0/ I5.0 ecosystem, based on liaisons and collaborations with related AI and I4.0/I5.0 communities where several partners participate with leading roles. Furthermore, the project will also reach out to international research organizations working on robotics and AI standards for sustainable production and critical raw materials and relevant standardisation organizations.
- Federating communities of Innovators and Experts in the full range of the digital technologies (e.g., Robotics, AI, Big Data, Industrial Internet of Things) research and used in TALON. In this direction, TALON will link incubators and Digital Innovation Hubs (DIHs) for AI, as well as with relevant Horizon Europe projects. This first level of established ecosystems of the DIHs of the project partners will be supported by a second level of related ecosystems in Europe that are linked to the business networks of the partners, including other DIHs and participants to national manufacturing initiatives. The project will also build upon the EIT Digital and EIT ICT Lab initiatives as a support and link to European innovators.
- Stimulating additional private investments around the TALON exploitable results based on connections with potential investors. The project will link to institutional investors with strong interest in and commitment to ESG (Environmental, Social and corporate Governance) investments, commercial banks in the partners' countries, as well as green investments incubators and funds.
- Engaging with relevant stakeholders' developing robotics and AI solutions for Industrial Applications. In this direction, WP6 will mobilize the business networks of the AI experts (e.g., INTRA, ENG) of the consortium, which comprise tens of integrators of industrial solutions. Furthermore, the project will liaise with the business networks of the use cases integrators and detail the project's pilot use cases and their potential business models. The latter will be communicated to, and integrators of industrial solutions based on advanced AI systems towards boosting the adoption of TALON solution and growing the project's ecosystem.
- Supporting the commercialization and market uptake strategy of the project, through targeted dissemination activities (in form of pre-marketing activities) toward industrial end-users, OEMs and integrators of relevant industrial solutions based on targeted messages about the merits of the TALON platform and its assets. Relevant dissemination activities include direct contacts with regional/national digital industry ecosystems; participation in high-profile exhibitions about AI solutions in different industrial sectors (e.g., manufacturing, transport, healthcare, energy), presentations and live demonstrations of the demonstrators.

2.2 Dissemination plan

To optimize the impact of the technologies produced in TALON, appropriate measures have been devised with regards to industry dissemination, publication and conference participation, and standardization.

The primary mode of disseminating scientific findings of the project is through publications in prominent international journals and magazines, as well as in conference proceedings that are relevant to IEEE/ACM and other related fields. In order to maximize the reach of its content, TALON is striving to publish in open access proceedings and journals. The project-related ideas will be promoted and the impact of research results within relevant scientific communities will be increased through the consideration of special issues in journals and special sessions at conferences.

Apart from conventional media, social media platforms such as LinkedIn, Twitter, and YouTube will be utilized to effectively communicate the findings, with a focus on reaching out to the wider audience.

The establishment of a TALON project website has been undertaken to facilitate the dissemination of project findings, encompassing comprehensive details regarding the project and its outcomes. The website is anticipated to serve as the primary avenue for disseminating information and promoting the project.

The three-phase plan for TALON envisioned for exploitation and dissemination is provided below, indicating the expected timelines and main actors.

Table 1: TALON dissemination plan

	Action – Description	Time
Phase 1	**Planning:** Dissemination plan both for scientific and industrial dissemination activities.	M1-6 + updates
	Dissemination Guidelines: Guidelines ensure that the shared vision and message will be communicated to target audiences coherently (what and how).	M1-6 + updates
	Target audience identification and market analysis: Relevant scientific and industrial communities will be identified to ensure well targeted dissemination and communication strategy. The means for exploitation and the dissemination messages will be tailored to fit to the needs of each group.	M1-12 + updates
	Corporate level design and branding: TALON will engage graphic design, social media and public relation experts drafting logos, print and social media templates for all sorts of public relation activities to ensure high quality and visibility.	M1-12 + updates
Phase 2	**Case studies results:** Development of analysis of case studies and potential routes for exploitation in order to drive the exploitation strategy.	M12-24
	Exploitation targets: Identification of exploitation targets following the market analysis performed in Phase 1.	M12-24
Phase 2 / Phase 3	**On-line dissemination:** Social networks and relevant online communities and platforms, e.g., LinkedIn, Twitter, etc.	M12-36
	Additional dissemination material: Press releases, flyers, project leaflets, brochures, and posters will be elaborated to support on-line dissemination. An active writing campaign in press releases, trade journals, industry press and websites will further TALON 's reach to the community. Towards the middle of the project a printed brochure guide will be created, concentrating on the first-year results, as well as a clear vision of the remainder of the project and the lasting impact of TALON beyond its run.	M12-36
	Scientific community: Scientific papers and publications in Journals, Presentations in the conferences, Collaboration with other EU projects.	M12-36
	Industrial community: Actions to encourage TALON results adoption: Articles in industrial magazines, presence in industrial led conferences, clients' presentations	M12-36

Phase 3	**Exhibitions, Trade Fairs:** Participation in exhibitions and trade fairs, organization of road shows in order to demonstrate the TALON outcomes to different potential clients.	M24-M36
	Use case demos: Use case demonstrations in real-world scenarios utilized to showcase the added value of TALON outcomes to different stakeholders – invited in the live demos.	M24-M36
Finish	**TALON Exploitation Agreement:** Signature of an MoU between the partners as an initiative to exploit project results jointly.	M36+

The plan for dissemination activities shall undergo periodic review and revision, consistently aligned with the progress and outcomes attained by the technical work packages.

The forthcoming events outlined in the subsequent sections were collated at the project's inception and are regarded as dynamic documents, subject to revision upon the emergence of fresh deadlines and calls for papers that correspond to the activities of the various project tasks and the schedule stipulated for the project's deliverables.

The already published journals and conferences are outlined in Table 2.

Table 2: TALON´s publications

No.	Citation	Type	Date
1	S. Trevlakis, A.-A. A. Boulogeorgos, D. Pliatsios, K. Ntontin, P. Sarigiannidis, S. Chatzinotas, and M. D. Renzo, “Localization as a key enabler of 6G Wireless Systems: A comprehensive survey and an outlook,” TechArxiv, Jan. 2023.	Preprint	1/2023
2	F. Psarommatis, F. Fraile, and F. Ameri, “Zero defect manufacturing ontology: A preliminary version based on standardized terms,” Computers in Industry, vol. 145, p. 103832, Feb. 2023.	Journal	2/2023
3	K. Voulgaridis, T. Lagkas, C. M. Angelopoulos, A. A. A. Boulogeorgos, V. Argyriou, and P. Sarigiannidis, “Digital Product Passports as Enablers of Digital Circular Economy: a Framework based on Technological Perspective”, TechRxiv, Mar. 2023.	Preprint	3/2023
4	V. Azamfirei, F. Psarommatis, and Y. Lagrossen, “Application of automation for in-line quality inspection, a zero-defect manufacturing approach,” Journal of Manufacturing Systems, vol. 67, p. 1-22, Apr. 2023.	Journal	4/2023
5	A. Nagy, G. Amponis, K. Kyranou, T. Lagkas, A. A. Boulogeorgos, P. Sarigiannidis, V. Argyriou, “AI-Powered Interfaces for Extended Reality to Support Remote Maintenance”, CLEF: Cloud, Edge, and Fog for Smart Industries, May, 2023.	Conference	5/2023
6	F. Psarommatis, G. May, and V. Azamfirei, “Envisioning maintenance 5.0: Insights from a systematic literature review of Industry 4.0 and a proposed framework,” Journal of Manufacturing Systems, vol. 68, pp. 376–399, Jun. 2023.	Journal	6/2023

2.2.1 Journals and magazines for publications

The outcomes of TALON, which cover its fundamental pillars, will be communicated through high-quality publications in a magazine format. The target audience for these publications will include both industrial and academic readers. The IEEE Communications, Networking, and Computing Theory and Techniques societies' magazines will be among the publications that will be taken into account.

The outcomes will be distributed independently and published in prominent academic journals, including but not limited to IEEE Transactions (such as OJCOMS, OJCS, TMLCN) and Letters, EURASIP (such as JWCN), and Wiley (such as Wireless Communications & Mobile Computing).

Table 3: Table of targeted journals and magazines

Robotics	Artificial Intelligence
IEEE Robotics and Automation Letters	IEEE Transactions on Neural Networks
IEEE Robotics & Automation Magazine	IEEE Transactions on Pattern Analysis and Machine Intelligence
IEEE Transactions on Robotics	IEEE Transactions on Artificial Intelligence
IEEE Transactions on Automation Science and Engineering	IEEE Transactions on Systems, Man, and Cybernetics: Systems
IEEE Transactions on Haptics	IEEE Transactions on Cybernetics
Science Robotics	IEEE Systems Journal
Robotics and Computer-Integrated Manufacturing	IEEE Transactions on Neural Networks and Learning Systems
	IEEE Transactions on Fuzzy Systems
	IEEE Transactions on Evolutionary Computation
	IEEE Computational Intelligence Magazine
	Journal of Machine Learning Research
Communications	**Networks**
IEEE Communications Surveys & Tutorials	IEEE Networking Letters
IEEE Communications Magazine	IEEE Transactions on Mobile Computing
IEEE Communications Letters	IEEE Network
IEEE Access	IEEE Spectrum
IEEE Transactions on Communications	IEEE Transactions on Network Science and Engineering
IEEE Transactions on Vehicular Technology	IEEE/ACM Transactions on Networking
IEEE Wireless Communications Letters	IEEE Transactions on Cloud Computing
IEEE Journal on Selected Areas in Communications	IEEE Transactions on Services Computing
IEEE Transactions on Wireless Communications	IEEE Transactions on Network and Service Management
IEEE Wireless Communications	IEEE Transactions on Affective Computing
IEEE Communications Standards Magazine	IEEE Internet of Things Magazine
IEEE Open Journal of the Communications Society	IEEE Internet of Things Journal
IEEE Transactions on Green Communications and Networking	
IEEE Transactions on Machine Learning in Communications and Networking	
Journal of Communications and Networks	
IEEE Open Journal of Signal Processing	
IEEE Open Journal of the Computing Society	
Manufacturing	
Journal of Manufacturing Systems	
International journal of Production Research	
Computers in Industry	
CIRP procedia	
Procedia manufacturing	

2.2.2 Scientific conferences and workshops

TALON aims to enhance industry awareness through its active participation and demonstration at various Conferences and Workshops, including but not limited to IEEE conferences and EU concertation/dissemination events. The project aims to establish a presence in pertinent events to exhibit Proof-of-Concept demonstrators and facilitate interaction with attendees to enhance the comprehension of the project's vision.

The project aims to arrange a minimum of one workshop and one special session per year at chosen conferences as public events. The possibility of co-organizing these events with other related projects, such as those from the 5G PPP and other projects that have been granted in the same call, will also be taken into consideration.

Table 4: Table of targeted conferences and workshops

IEEE International Conference on Communication (ICC) 2023	IEEE Fifth International Workshop on Data Driven Intelligence for Networks and Systems (DDINS)
IEEE International Conference on Blockchain and Cryptocurrency	IEEE ICC 2023 Workshop on: Industrial Private 5G-and-beyond Wireless Network
6th Conference on Cloud and Internet of Things	IEEE ICC WORKSHOP ON EDGE LEARNING FOR 5G MOBILE NETWORKS AND BEYOND
ACM Symposium on Access Control Models and Technologies (SACMAT)	IEEE ICC 2ND WORKSHOP ON GREEN AND SUSTAINABLE NETWORKING (GREENNET 2023)
16TH INTERNATIONAL WORKSHOP ON WIRELESS SENSING AND ACTUATING ROBOTIC NETWORKS (WISARN 2023)	IEEE ICC 1ST WORKSHOP ON BEYOND URLLC
IEEE INFOCOM International Workshop on AI-Driven Trustworthy, Secure, and Privacy-Preserving Computing (AidTSP 2023)	IEEE ICC WORKSHOP ON BLOCKSECSDN: BLOCKCHAIN FOR SECURE SOFTWARE-DEFINED NETWORKING IN SMART COMMUNITIES
IEEE INFOCOM The 6th Age of Information Workshop	IEEE ICC 2ND WORKSHOP ON SIGNIS: SOFTWARIZED NEXT GENERATION NETWORKS FOR IOT SERVICES
IEEE INFOCOM & IEEE ICCC - The Fifth International Workshop on Intelligent Cloud Computing and Networking (ICCN)	IEEE ICC 2ND INTERNATIONAL WORKSHOP ON CYBERNET: CYBER-PHYSICAL SECURITY IN MISSION-CRITICAL TACTICAL NETWORKS
IEEE INFOCOM The Seventh IEEE International Workshop on the Security, Privacy, and Digital Forensics of Mobile Systems and Networks (MobiSec 2023)	EuCNC & 6G Summit 2023
IEEE INFOCOM & IEEE ICCC - Workshop on Next-generation Open and Programmable Radio Access Networks (NG-OPERA)	IEEE/ACM International Symposium on Quality of Service
IEEE INFOCOM & IEEE ICCC - Workshop on Pervasive Network Intelligence for 6G Networks (PerAI-6G)	20th International Conference on Ubiquitous Robots (UR 2023)
IEEE INFOCOM The 8th IEEE Workshop on NextG (5G and beyond) Wireless Security (8th IEEE Wireless-Sec)	BalkanCom 2023
IEEE INFOCOM 16th International Workshop on WIreless Sensing and Actuating Robotic Networks (WISARN 2023)	International Conference on Modern Circuits and Systems Technologies (MOCAST) on Electronics and Communications
ACM Workshop on Secure and Trustworthy Cyber-Physical Systems (SaT-CPS 2023)	32nd International Conference on Computer Communication and Networks (ICCN)
9th IEEE International Conference on Network Softwarization (IEEE NetSoft 2023)	Global IoT Summit (GIOTS)
2ND INTERNATIONAL WORKSHOP ON AUTONOMOUS NETWORK MANAGEMENT IN 5G AND BEYOND SYSTEMS (ANMS 2023)	ATC 2023 International Conference On Advanced Technologies For Communications
2ND IEEE/IFIP INTERNATIONAL INTELLIGENCE PROVISIONING FOR NETWORK AND SERVICE MANAGEMENT IN SOFTWARIZED NETWORKS (IPSN 2023)	IEEE International Conference on Mechatronics and Automation (IEEE ICMA 2023)

IEEE ICC 2023 Workshop on: The Evolution of Digital Twin Paradigm in Wireless Communications	14th IEEE International Conference on Smart Grid Communications (SmartGridComm 2023)
International Conference on Manufacturing Systems (CIRP CMS)	IEEE GLOBECOM
Advancies in production management systems (APMS)	International Conference on Industry 4.0 and Smart Manufacturing (ISM)
Flexible Automation and Intelligent Manufacturing International Conference (FAIM)	

2.2.3 White papers

The TALON consortium will create white papers in order to provide potential stakeholders with the necessary information to determine whether they should further investigate the project or commit to supporting it. TALON white papers will serve as a valuable tool for drawing in potential collaborators such as other industry and/or research members to collaborate with the project. White papers are frequently solicited by corporations and Federal agencies as a means of acquiring insights into state-of-the-art research activities. Subsequently, these stakeholders may inquire more comprehensive proposals.

The white papers published by TALON will present an overview of the investigated issues and their related challenges, along with a proposed strategy for addressing them. Additionally, they may provide a rough estimate of the associated costs and outline the anticipated benefits of the proposed solution. Thus, they will serve the dual purpose of outlining a particular issue and presenting a recommended course of action. The proposed undertaking is further intended to serve as a marketing tool, aimed at stimulating interest in the project. Finally, white papers detailing the concept, scenarios, and envisioned enablers of the TALON system will be released and made accessible to the public via the project website.

2.2.4 Events and exhibitions

TALON has initiated a series of webinars and seminars with its partners to disseminate the multidisciplinary competencies within the project and to provide training on the various research topics that are being integrated into the project's advancements. In many instances, the seminars are co-located with plenary sessions to minimize travel expenses and take advantage of the in-person gatherings.

Upon being deemed of public interest, the webinars shall be made available to the general public through the project website. Additionally, the partners and project communication channels, as well as the 5G PPP website and communication lists, shall be utilized for dissemination purposes. Moreover, the webinars will be extended to the target groups outside the project consortium as deemed suitable.

The series of webinars and seminars aim to utilize the diverse range of competencies within the consortium's multidisciplinary team. Thus far, two (2) webinars/seminars have been conducted within the consortium:

- The Adra-e and AI4Europe Coordination and Support Actions have co-organised the “Paving the way towards the next generation of R&I excellence in AI, Data and Robotics” webinar to introduce and take stock of the newly funded R&I landscape and to identify common themes and challenges for future activities and collaboration with AI-on-demand Platform. TALON was one of the projects that participated in the webinar presenting its vision, objective, and its expected impact. The banner of this event is illustrated in the following figure.

Figure 1: Paving the way towards the next generation of R&I excellence in AI, Data and Robotics.

- The H2020 project ELECTRON hosted the International Hybrid Event on Energy Crisis and Cybersecurity. The hybrid event took place in Baku, Azerbaijan between the 5th and 7th of December 2022. TALON was one of the projects that participated in the webinar presenting its vision, objective, and its expected impact. The banner of this event is illustrated in the following figure.

Figure 2: International Hybrid Event on Energy Crisis and Cybersecurity.

2.2.5 Webpage and social media

The TALON consortium intends to promote activities aimed at propagating the outcomes of the project to the scholarly and commercial scientific sectors, with the ultimate goal of generating influence on forthcoming benchmarks and commodities. The dissemination of the project's news and discoveries will be directed towards specific demographics as well as the wider populace.

The ensuing instruments will be employed to facilitate the dissemination of project outcomes:

- The TALON project **website** (https://talon-project.eu/) is expected to serve as the primary communication channel for the project. The TALON project website's home is illustrated in Figure 3. The system will be developed and consistently upheld to ensure a consistent and ongoing dissemination of information regarding the advancement of the project and the outcomes achieved. The website will serve as a repository for all public deliverables and publications, and a distinct section will be designated for the presentation of all project

dissemination activities. The website is expected to remain operational for a minimum of one year subsequent to the conclusion of the project.

- The project intends to release a minimum of two press releases, one at the commencement and the other upon the conclusion of the project. The project website will serve as a platform for uploading the press releases.
- Three (3) promotional videos will be produced with the aim of promoting the project's activities and advancements to the wider public. The videos will be made available for viewing on the project's website as well.
- The relevant communities will be engaged through the utilization of social networks such as LinkedIn, Twitter, Facebook, and YouTube.

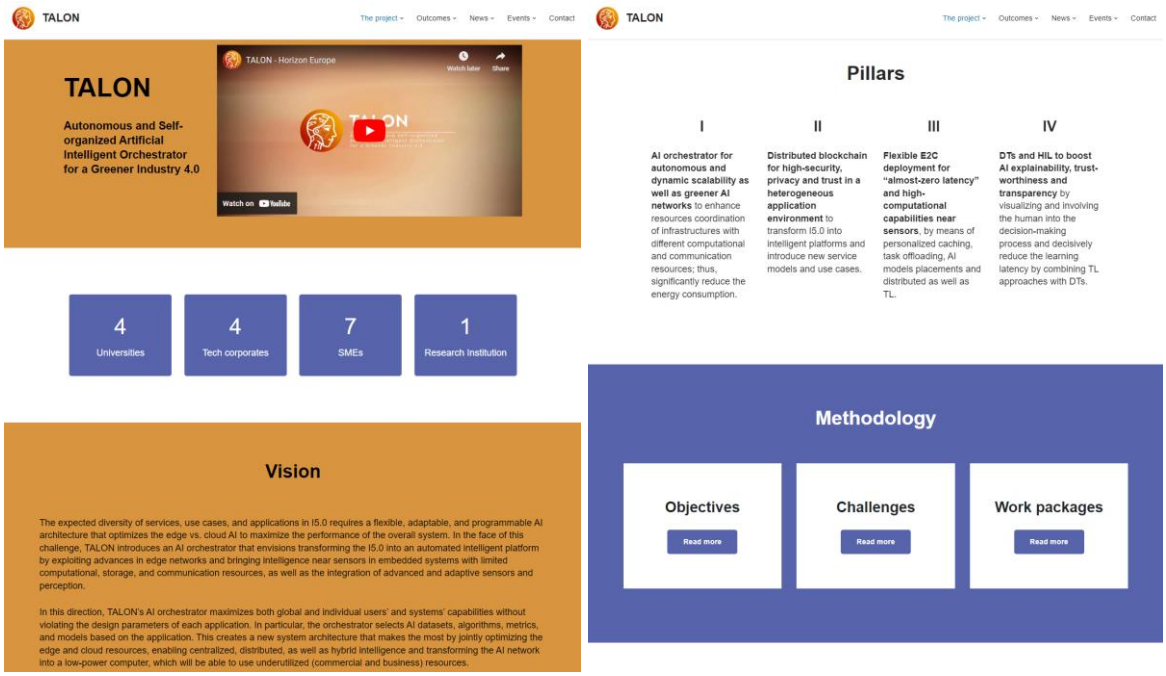

Figure 3: TALON´s website.

The TALON project has a presence on various **social media** platforms to disseminate project-related information to a global audience. The TALON project has established a presence on LinkedIn, Twitter, and Facebook to facilitate discourse regarding the project's outcomes and accomplishments, as detailed in the following sections. Additionally, the project may create a YouTube channel contingent upon the relevance and quality of the video content produced. The project's social media accounts are accessible through the project website and are also included in the project flyer for dissemination.

2.2.5.1 LinkedIn

The TALON initiative distributes relevant information and current developments through its LinkedIn profile, which is accessible at https://www.linkedin.com/company/talon-project/. Furthermore, the account monitors pertinent communities within the scope of the project.

The illustration presented in Figure 4 portrays a view of the LinkedIn profile attributed to TALON.

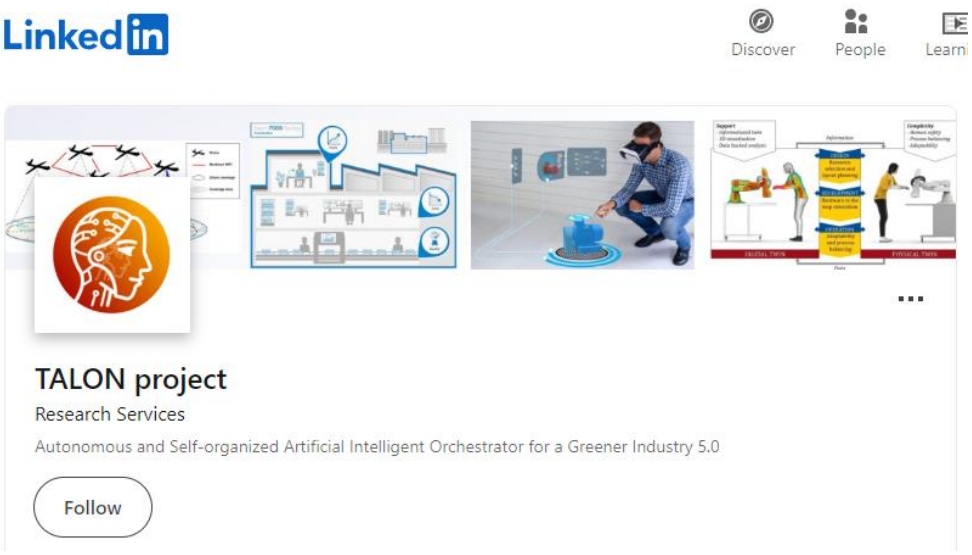

Figure 4: TALON´s LinkedIn account

2.2.5.2 Twitter

The TALON project disseminates pertinent news and updates via its Twitter account, which can be accessed at https://twitter.com/talon_project. Additionally, the account tracks relevant communities within the project's purview.

The illustration provided in Figure 5 depicts a snapshot of the Twitter profile belonging to TALON.

Figure 5: TALON´s Twitter account

2.2.5.3 Facebook

The TALON project's Facebook page, which can be found at https://www.facebook.com/TALON-project, is a reliable source of information on the latest developments in the group.

The image displayed in Figure 6 is the main view of TALON's Facebook account.

Figure 6: TALON´s Facebook account

2.2.5.4 YouTube

The TALON team maintains a YouTube account (https://www.youtube.com/channel/talon) where they provide project updates, follow communities that are important to the project, and more.

A screenshot of TALON's YouTube page is shown in the accompanying illustration.

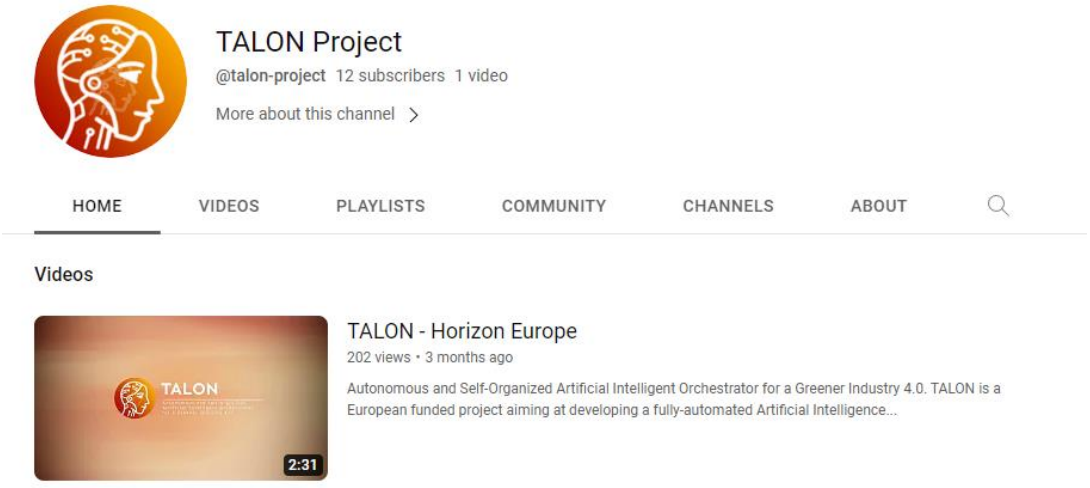

Figure 7: TALON´s YouTube account

2.2.6 Mailing lists

TALON partners may contact one another on mailing lists to discuss various elements of the project and to get project notifications. Generally, the type of project determines how mailing lists operate:

- The project coordinator may permit only limited membership.
- Only authorised subscribers are allowed to send and receive emails.

TALON's mailing lists are created on three levels:

- WP-level mailing lists.
- Scientific and Technical Committee mailing list.
- Sustainability Board mailing list.

2.2.7 Newsletters

Newsletters shall be generated to disseminate the latest news and activities of the project, including its participation in various workshops, conferences, and events, emphasising noteworthy activities and significant outcomes, as well as other pertinent information.

The utilisation of TALON newsletters is intended to enhance the level of cognizance regarding the project, with a focus on engaging all relevant stakeholders. The already published newsletters are outlined in Table Table 5.

Table 5: TALON´s newsletters

No.	Description	Date
1	This is December's newsletter of the TALON project, an EU Funded Horizon Europe Project. In this edition, details concerning the kick-off meeting of the project are provided, the public profiles of TALON are introduced, participation of TALON's partner in dissemination events are presented, and the research efforts of the consortium are highlighted.	12/2022
2	This is April's newsletter of the TALON project, an EU Funded Horizon Europe Project. This newsletter contains mainly research publications in esteemed journals and conferences, as well as communication and clustering activities in events where TALON partners have participated.	5/2023

2.2.8 Promotional material

2.2.8.1 Project branding

The TALON emblem was generated during the period of proposal preparation and submission with the aim of establishing the TALON brand by providing a distinct character to the project's documentation.

Figure 8: TALON´s Logo

2.2.8.2 Flyers

The design of the project flyer serves the purpose of effectively communicating information about the project and promoting the TALON website as the primary communication channel. Additionally, the flyer aims to promote other communication channels such as social media accounts.

The informational pamphlet outlines the objectives of TALON, as well as its foundational pillars and overarching vision, which serve as the fundamental framework for the project's accomplishments.

The project will generate periodic revisions of the flyer throughout its duration, in order to correspond with its advancements.

Figure 9: Outside view of TALON´s flyer

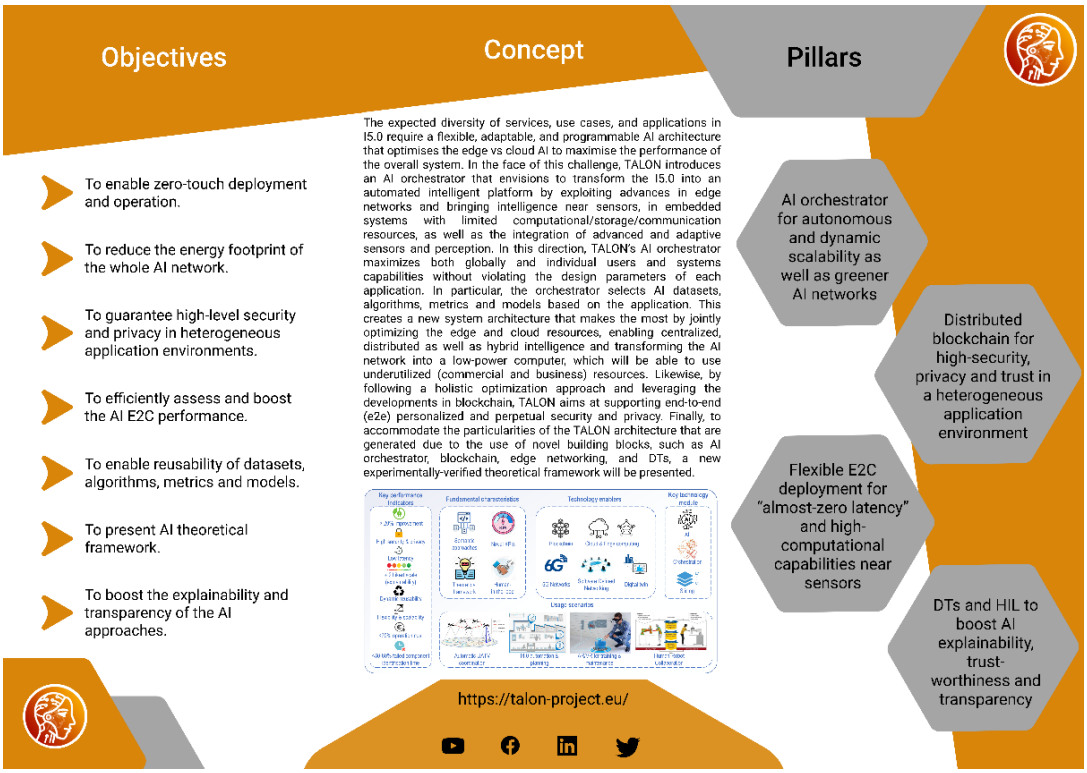

Figure 10: Inside view of TALON´s flyer

2.2.8.3 Templates

The TALON consortium is provided with various templates to ensure consistent branding and maintain the standard of public materials produced under the project's brand. The deliverables and presentations were furnished with templates in a precise manner.

The project's online shared workspace offers a variety of templates.

Figure 11: TALON´s minutes of meetings (left) and deliverable (right) templates

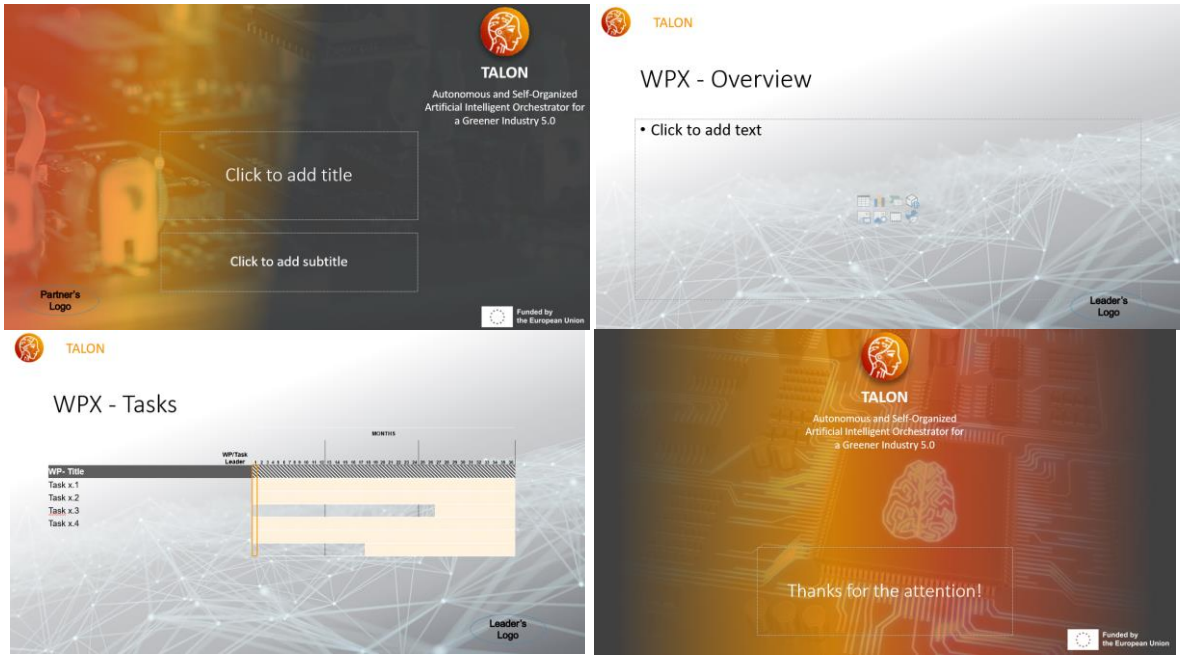

Figure 12: TALON´s presentation template

2.2.9 Individual dissemination plans

2.2.9.1 Engineering Ingegneria Informatica S.p.A.

The dissemination plan of ENG has the goal of sharing research results with potential users/ stakeholders. The activity started with the preparation of a video that was shown during a webinar organised by Adra-e project in September 2022 entitled “Launch Event: Paving the way for the next generation of R&I excellence in AI, data and robotics”. During this webinar, different projects funded under HORIZON-CL4-2021-HUMAN-01-01 were presented. Among which TALON: “Verifiable robustness, energy efficiency and transparency for Trustworthy AI: Scientific excellence boosting industrial competitiveness”. Another activity made to disseminate the knowledge of the project was the creation of a brochure with a project overview “the EC Robotics & AI brochure”. Printed brochures were distributed at the European Robotics Forum 2023 that took place from the 14th to the 16th March 2023 in Odense/Denmark, during which has been given an overview of HUMAN-01-01 new projects, among which TALON. The dissemination activity will continue by sharing project updates using mainly social media channels.

2.2.9.2 Ericsson Telecomunicazioni SPA

TEI dissemination activities will address several target audiences: from the business perspective, internal stakeholders (Product Lines and Market Units) and external stakeholders (Telecom Operators, ISPs, CSPs companies); from the industrial research perspective, the community working on the aspects related to data anonymization to be applied to end user personnel data to guarantee their privacy. Another aspect that TEI aims to disseminate is related to the novel TALON AI based energy efficiency solution: Ericsson customers are manifesting more and more their big interest for energy aware network solutions due to the fact that a large Telco provider is nowadays consuming something like 10TWh per year, with a huge related OPEX in the order of several hundreds of millions of euros. In Italy, one of the biggest Ericsson customers, for example, is the second power consumer in the country, second only after the national railway company. For this reason, TEI has a great interest about the ability to provide a specific effective solution for these customer requests.

2.2.9.3 Metamind Innovations

MINDS’s dissemination plan aligns well with the goals of the TALON project, which aims to develop trustworthy AI systems that are robust, energy-efficient, and transparent. As part of the dissemination strategy, MINDS will organize webinars featuring top experts and thinkers in the field of AI and data, where the TALON project can be highlighted along with other relevant topics. MINDS will also leverage social media platforms such as Twitter, Facebook, and LinkedIn to share updates and news about the TALON project and the company’s involvement. The content marketing strategy will also provide an opportunity to create informative blog posts and videos about the TALON project, emphasizing the expertise and experience of the MINDS team. The company’s participation in conferences and trade shows will further raise awareness about the TALON project and its contributions and outcomes. The dissemination plan will be evaluated using metrics such as webinar attendance, social media engagement, and website traffic, which can help measure the impact of the plan on the awareness and understanding of the TALON project and the outcomes.

2.2.9.4 Intrasoft International

INTRA’s dissemination plan for TALON includes presentations in relevant conferences (e.g., Data Week, IoT Week), liaisons with industrial associations (i.e., AIOTI, DAIRO) for presenting the projects results, as well as links with other AI projects and clusters where INTRA has a leading role (e.g., STAR, HosmartAI, AI4Manufacturing Cluster). As coordinator of EvenFlow, INTRA will facilitate the collaboration between the two projects as part of the relevant clustering initiative of the HUMAN-01-01 projects that has been already initiated, towards sharing results (e.g., AI/ML models, orchestration middleware), best practices and lessons learnt.

2.2.9.5 International Hellenic University

IHU is committed in notably contributing to the dissemination activities of the TALON project, which are expected to be intense and diverse involving various groups of stakeholders and target audience.

As the main field of TALON is the use of AI in modern industrial applications, the dissemination activities will target the related actors and keep them updated on the development of the project. The research aspect is of high importance, and IHU, as an academic institution, strongly focuses on it. In more detail, IHU follows the project's dissemination strategy by planning to conduct research and communication the results to conferences, journals and other related popular media. Among else, IHU studies the digital circularity principles that are related with industrial applications of TALON, and is planning to publish the results in scientific conferences, workshops, journals, and repositories, covering a large number of interested researchers. Apart from the dissemination activities related with scientific publications, IHU has planned to communicate the ongoing project findings to ICT students and practitioners through seminars, as well as by utilizing social media platforms, namely LinkedIn, Facebook, and Twitter.

2.2.9.6 Kingston University

The outcomes of the TALON project are expected to carry considerable scientific and research importance, with the distribution of its research results aimed at increasing visibility in both the academic and industrial sectors. This will be accomplished by concentrating on events and materials that engage both fields. In particular, KU will collaborate with other partners to attend selected conferences, publish research articles, and arrange special workshops and annual events that further TALON's objectives and accomplishments.

KU's research focuses on AR/VR applications for training and maintenance, as well as AI machine learning algorithms using few-shot learning, like YOLO, for object recognition, positioning, and detection. Consequently, the KU team is committed to sharing and distributing their research in the AR/VR and AI domains with TALON clients and via conferences or journal articles, where relevant. Notable events include the CLEF: Cloud, Edge, and Fog for Smart Industries Workshop, held alongside the IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing (CCGrid 2023), and IoTI5 2023 – the 5th International Workshop on IoT Applications and Industry 5.0.

2.2.9.7 Centre for Research & Technology Hellas

CERTH's dissemination plan is to disseminate TALON project from the point of view of a research institute, through academic publications, participations in conferences and events, while also showing the advantages that TALON tools can bring to the manufacturing industry. Besides, CERTH aims to be active through various communication channels, such as common social media platforms, e.g., the LinkedIn, which is the most widely used platform to share information about project activities and outcomes. That way, CERTH aims to provide its followers with timely updates and insights into the project's progress and achievements.

2.2.9.8 University of Luxembourg

TALON findings will be disseminated in well-known international peer-to-peer journals and the top-tier conferences. Open access model will be selected if available, while all papers will be uploaded in the UniLu preprint server Orbi

2.2.9.9 Universitat Politecnica De Valencia

UPVs dissemination plan is to disseminate the TALON work in the form of academic publications and via social media. UPV aims to be active through various communication channels, such as social media platforms. Among these, LinkedIn is the most widely used platform to share information about project activities and outcomes. Through these channels, UPV aims to provide its followers with timely updates and insights into the project's progress and achievements.

2.2.9.10 8Bells

Towards reinforcing its market position, 8BELLS' dissemination and communication efforts will focus on identifying and engaging potential stakeholders interested in the products and services generated by project TALON. Pan-European impact is also expected through the company's dissemination and sales channels including clients and company's current network. Also, 8BELLS plans to disseminate project results in Academia through its relationships with universities as well as take part in workshops, conferences, fairs, summits, etc.

8BELLS regularly participates in industry conferences promoting ICT innovation concepts. Specific conferences to be confirmed.

8BELLS authors and co-authors White Papers, in the context of the innovations and projects it is involved in. 8BELLS will also pursue participation and co-writing in articles, papers and whitepapers with other consortium members.

8BELLS participates in ICT, innovation and industry events in Cyprus, Greece and abroad. This list of events relevant to TALON to be confirmed in due course.

2.2.9.11 Ubitech

UBITECH plans to disseminate the project results to relevant actors and stakeholders in the Edge-to-Cloud community, Artificial Intelligence (AI) and data management groups. It also targets the communities of the virtualized infrastructures and software engineering.

2.2.9.12 Sidroco Holdings Ltd

SID intends to promote and disseminate TALON and its components through a variety of internal and external activities. More specifically, with regard to the dissemination activities, SID plans to a) publish scientific articles in international peer-reviewed journals and conferences, b) prepare public material and c) establish communication channels in Cyprus and southern Europe. Furthermore, SID is expected to carry out high-level research, the results of which will be published in popular journals such as, IEEE, ACM, Elsevier and Springer. Moreover, SID will work with all partners to participate in acknowledged conferences and set up workshops that will further enhance TALON's scientific prestige and strengthen technical accomplishments. Apart from the active presence in scientific related communication channels, SID also maintains an active social media presence on LinkedIn, Facebook, and Twitter, where significant research accomplishments are published on a regular basis. SID also hosts a corporate website, where the news portal is updated with important information and all major project results are published.

2.2.9.13 InnoCube

INNO envisions to play a key role in TALON disseminations strategy by following a two-phase approach that aim to communicate the project's outcomes and results in i) the industrial community, ii) the scientific community, and iii) public community that consists of no-experts. In particular, the following approach will be followed: i) Phase 1-Dissemination opportunity identification and consortium notification: INNO will create an open channel with all the consortium member in which information concerning dissemination activities in different countries, in the EU, as well as in an international scale will be shared. The candidate dissemination activities will be categorized based on their target groups into: a) research, b) technical, and c) non-expert, and specific measurable goals based on the type of the activity will be set. ii) Phase 2 – Contributors' subgroup creation and material preparation and review: Based on the type of the activity, INNO will initiate the creation of material preparation sub-group(s) by identifying and inviting the most suitable partners, aiding at the material creation and review.

Expect from managing the dissemination activities, INNO aims at creating a strong impact in both the industrial and scientific community. Towards these directions, INNO will collaborate with all the project partners in order to publish, at a very early stage of the project (i.e., within the first year), a "vision" paper that explains TALON innovation and ambition to go beyond the current state-of-the-art. Moreover, it will exploit the strong publication records of its research team in order to publish several contributions in prominent journals.

INNO plans to disseminate and communicate the project scientific outcomes and innovation results by (i) submitting publications in high-impact journals (e.g., IEEE Internet of Things Journal, IEEE Networking Letters, IEEE Communications Letters, etc.), and conferences (such as IEEE ICC and IEEE Globecomm) (ii) Exploit its CEO position, who is an editor in IEEE and non-IEEE journals in order to organize special issues in prominent magazines and journals, like IEEE Communications Magazine, (iii) participating in national and regional events and exhibitions, (iv) uploading information

about the project on its website, (v) publishing news about the project in social networks, including Facebook, LinkedIn, ResearchGate, Twitter, (vi) uploading videos in INNO's YouTube channel that present the project objectives and outcomes, and (vii) informing current and potential clients, as well as potential market partners.

INNO plans to not only participate to conferences and events of high impact, such as IEEE GLOBECOM, IEEE ICC, and more, but also contribute to the organization of the project events to disseminate the results and objectives of the project.

2.2.9.14 Factor Ingeniería y Decoletaje

The FACTOR dissemination plan is to disseminate the project from the point of view of an industrial company, showing the advantages that this technology can bring to the manufacturing industry.

FACTOR will attend conferences, mainly in Valencia, that is an important industrial area in Spain. All the information related to the project will be shared with other companies through social media and through internal ways (email, presential meetings…) with industrial partners.

Last year FACTOR participated in several conferences, e.g., Digital Manufacturing Industrial Summit (https://dmis.zdmp.grisenergia.pt/) or Inndromeda Tech-Day (https://www.inndromeda.es/tech-day/). In the coming years, Factor plans to participate in more conferences.

2.2.9.15 EXOS Solutions

EXOS will focus its Dissemination Plan on the results of the TALON project, mainly through its website, but also through its social networks, with LinkedIn being the one it is currently using the most to publicise its work and services. EXOS will also inform its clients of the results of TALON so that they are aware of the latest technological advances and know how to take advantage of their use. Other dissemination channels will be those public and private institutions with which EXOS is associated, such as Chambers of Commerce, European Business Centres and Business and Sectoral Associations, where there are many companies interested in using the results of the TALON project.

2.2.9.16 PROBOTEK

PROBOTEK's dissemination plan aligns well with the goals of the TALON project, which aims to develop trustworthy AI systems that are robust, energy-efficient, and transparent. Our plans for the project results to relevant actors and stakeholders in the Edge-to-Cloud community, Artificial Intelligence (AI) and the IoT industry, including Drones. We also target groups that participate in discussion regarding computer virtualization, computing performance & complexity and finally software engineering scientific community. Finally, we will be exposing our work to the regional and EU markets.

2.3 Dissemination KPIs, tracking tools and impact

As delineated in the TALON project description, a key aim is to secure the long-term success of the project by means of standardisation and dissemination in scientific and industrial forums, as well as leveraging synergies with other 5G-PPP initiatives and projects. The present document provides an overview of TALON's initial plan to propagate project outcomes and generate consciousness, with the aim of making contributions to global standards in the domains of telecommunications and industry. In a broader sense, the aforementioned accomplishments are geared towards facilitating the utilisation of the knowledge produced within the project.

The TALON initiative intends to employ a wide-ranging and all-encompassing array of methods to effectively distribute and convey the accomplishments, outcomes, and insights gained throughout the duration of the project. The project's impact can be influenced by effectively communicating pertinent outcomes to specific target groups, thereby piquing their interest and generating engagement. The following Key Performance Indicators (KPIs) are delineated to evaluate the efficacy and efficiency of the communication and dissemination channels. The utilisation of tracking tools and KPIs will facilitate the assessment of the comprehensive influence of our dissemination endeavours.

2.3.1 Dissemination KPIs

TALON establishes a series of objectives regarding the dissemination of its activities and accomplishments. The provided KPIs are derived from the partners' prior experience in projects that are comparable in terms of scope and magnitude. The KPIs, as delineated in Section 2.2 of the work description, are summarized in the following table.

Table 6: TALON´s Communication KPIs for Stakeholders' and Community Engagement

Measure	Driver	Action	KPI
Social media content: Twitter	Grow community Regular stakeholder engagement	Publish tweets, including SMART-based campaigns & monitor outcomes	YR1: min 8/M YR2: min 24/M YR3: min 48/M
Social media content: LinkedIn	Grow community Regular stakeholder engagement gives important insights into interests/concerns	Publish posts, make relevant tweets, including SMART-based campaigns & monitor outcomes	YR1:>=1 post/month; YR2: >=14 posts/month YR3: >=18 posts/month;
Stakeholder database	Early identification of prospective marketplace and service stakeholders	Develop a database of contacts for community development and stakeholder engagement	1.500 profiled & engaged stakeholders by M12; over, 2.500 by M24, and 4,000 by M36
Exhibitions / workshops with free access,	Ensure outreach to non-specialized audiences	Show TALON use cases to visitors in lively, lightweight environment	1 exhibitions/ workshops 50 non-specialized attendees
Online and/or F2F training sessions	Ensure general public is "educated" about need to advance AI research to address their needs	Provide a service for non-IT savvy to show what the new service means for them	1 online session(s) 50 non-specialized attendees
F2F interactions with local people	Ensure engagement with "real people" at the local level	Work with use case partners to co-host an open day, including media presence	1 local events 3 appearances in local media
Free trials for general public	Facilitate and drive uptake through early trial testing	Organize trials after reaching predefined maturity	5 testers
Marketing events, e.g., trade fairs/exhibitions	Ensure direct engagement with major stakeholders	Host a stand decked with demos, videos, informative material	Min. 1 in YR2 and 2 in YR3
Monthly Web content	Regular information updates with SEO-driven approach	Identify and publish new content on a regular basis.	YR1: min.2/month(M); YR2: min. 3/M; YR3: min: 4/M
In-house newsletters	Different stakeholders are properly informed in a timely manner	Produce and circulate monthly newsletter based on stakeholder targets	YR1: min 6; YR: min 8; YR3: min 10
Promotional material, including video content	Specific audiences receive tailored and timely messages	Design and produce focused material (for stakeholders/events)	YR1: min 3; YR2: min. 6; YR3: min 12
Press releases targeting major stakeholders on supply/demand sides	Raise interest and recruit demand actors (e.g., developers, end-users of AI) & supply side actors (e.g., AI solution providers).	Produce press releases targeting different media channels and audiences	YR1: min 2 for IT audiences; YR2: min 1/stakeholder category; YR3: min 2/major categories

Press releases for general public	Raise interest amongst non-specialized audiences	Lightweight blog for non-specialized channels	2 press clippings
Visibility in channels used by different stakeholder categories	Ensure back-links/branding recognition to website via synergies and social media; General brand recognition is demonstrated	Liaise/engage initiatives with journalists/LinkedIn groups; Do a survey to verify brand recognition	20 back-links across major stakeholders; 50 responders identified (from a questionnaire)

2.3.2 Dissemination tracking tools

The TALON dissemination tracking tool will be utilized by project participants to gather information on dissemination activities. This excel-based tool is designed to monitor and manage dissemination activities and offers a convenient summary of activities and outcomes. The dissemination tracking tool is a tool that offers numerous advantages for geographically dispersed teams of considerable size.

The system allows for efficient and organized input of planned papers and associated deadlines, including abstracts and relevant documents. It also provides a streamlined process for monitoring deadlines, tracking status, and obtaining approval. Additionally, the system enables quick generation of dissemination reports and web-based publication.

The primary objectives of utilizing the tool within the TALON project are:

- The responsibilities include the planning and approval of paper and article submissions, monitoring dissemination activities, reporting dissemination activities to the Commission, and overseeing the publication of deliverables.
- The dissemination tracking tool is intended to automate the gathering of dissemination results in order to streamline updates on the project website, thereby reducing the time and effort required to publish dissemination documents online and ensuring that they remain up to date.

The primary stages involved in the process of tracking are as follows:

- The dissemination tracking tool offers dissemination contributors the option to provide and update information on their dissemination activities.
- Dissemination contributors are responsible for submitting dissemination details, which may be accepted or rejected by the project coordinator or the dissemination leader.
- Contributors are permitted to add additional details throughout the lifecycle of their disseminations.
- The project coordinator periodically extracts reporting data and utilizes it for various purposes.
- For various purposes such as periodic reports to the EC, annual review, or general project controlling, the project deliverables will be recorded in the dissemination tracking tool.
- The individual in charge of the project has the ability to regulate the visibility of dissemination contributions on the project's website.

2.3.3 Dissemination impact

The website has incorporated Google Analytics, a freemium tool, which is being used to gauge the website's influence and popularity. Google Analytics can assess web traffic and show how close a project is to meeting the aforementioned objectives. Figure 13 displays a snapshot of the statistics for the number of users.

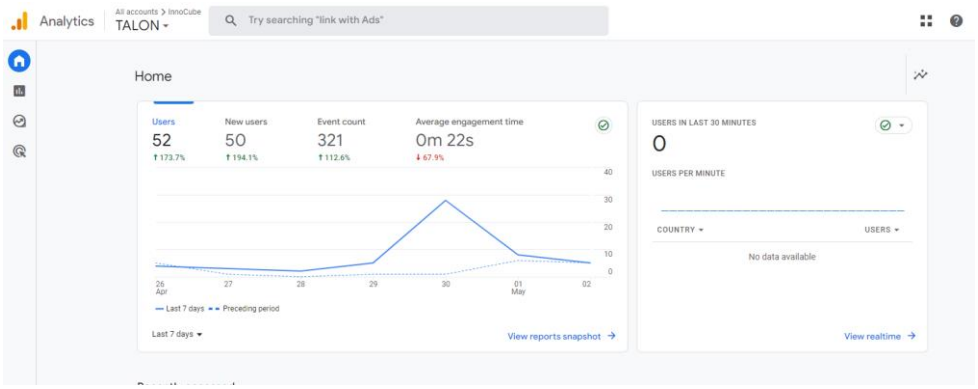

Figure 13: TALON´s Google analytics

2.4 Exploitation Plan

The project's exploitation strategy will be built around the project's exploitable assets. The strategy is based on three (3) complementary pillars:

- Joint Exploitation of the TALON Exploitable Assets: This is focused on collaborative efforts for the commercialization, sustainability and wider uptake of the project's exploitable assets. It will be based on the establishment of a vibrant community of interested and committed stakeholders around the TALON platform and exploitable assets from a single-entry point. All TALON partners will work collaboratively and intensively in community development around this joint exploitation path.
- Development of detailed exploitation plans by each individual partner: These plans will be developed in-line with each partner's business and research strategy in the robotics and I5.0 markets. These plans will concern the commercialization of the exploitable assets and solutions that the partners have developed.
- Exploitation of the pilot deployments and use cases of the project, notably the use cases that will be used to validate and evaluate the project's developments. These use cases will provide early showcases of the project's functionalities, and they will be gradually advanced in terms maturity and market readiness.

2.4.1 Key Exploitable Assets (preliminary list)

The partners of TALON demonstrate distinctive inclinations towards exploitation that are congruent with their individual core pursuits. It is expected that the TALON project will produce a significant range of innovative tools and results. The aforementioned outcomes have the potential to create a wide array of prospects for both communal and personal utilisation. A summary of the major key exploitable assets (KEAs) of TALON is presented in the following table.

Table 7: TALON's key exploitable assets

No.	Key Exploitable Assets
KEA1	An automated AI E2C orchestrator
KEA2	Mobility manager and social-aware caching mechanisms
KEA3	Automatic off-loading mechanism
KEA4	AI self-healing, self-recovery, self-organizing, and self-configurating mechanisms
KEA5	An AI models repository that enables reusability
KEA6	Optimized few-shot learning models that reduce the data exchanging overhead
KEA7	Optimized in terms of information exchange federated learning strategies for distributed and centralized scenarios
KEA8	Optimum joint AI and data placement policies
KEA9	Smart pricing policies
KEA10	Decentralized and hierarchical blockchain-based mechanisms

KEA11	Novel KPIs that capture the performance improvement of the AI-enabled systems
KEA12	Data-driven real-time optimizer with AI to improve the E2C deployment, management and recourse reusage.
KEA13	DTs-initiated GAN-based simulation mechanisms that enable fast learning
KEA14	Semantics that enable reusability and decisively reduce the learning latency
KEA15	An experimentally-verified game theory and probability based theoretical framework that quantifies the performance of AI algorithms
KEA16	Experimental-driven analytical models to quantify and optimize AI algorithms operations
KEA17	LIME schemes for each one of the tasks identified by the decision-making process
KEA18	Counterfactual-based mechanisms
KEA19	DTs that enable the visualization of the AI decision making process and thus boost explainability

2.4.2 Individual Exploitation Plans

2.4.2.1 Engineering Ingegneria Informatica S.p.A.

ENG's aim is to exploit the innovative features of the TALON project through networking contacts where project results can be promoted (e.g., BDVA) as the main objective of the exploitation plan is to propose tools developed in TALON that can have a positive impact on energy optimisation. Collaboration with industrial and academic partners is an activity that ENG intends to pursue in order to share new technologies and solutions developed within the project that can be applied across a range of sectors and domains. In addition, ENG will focus on seeking opportunities for technology transfer to industry by sharing the technological expertise developed within the project. This will provide access to opportunities for future research projects and initiatives with potential industrial partners. An example of the application of TALON results can be the use of the E2C AI Orchestrator to reduce the energy footprint of the AI network. The exploitation plan will focus on sharing the E2C performance improvement goals with industrial companies to address specific market needs. (e.g.to exploit the project tools by developing predictive maintenance solutions).

Within the development activities in TALON, ENG will carry out some exploitable components in the context of some internal assets (micro-service based, big data analytics and ML platform) and on distributed systems using Kubernetes:

- Zero-Touch AI Orchestrator (TRL 3 - 4); and
- Big Data analytics algorithms to be included in ENG asset portfolio (TRL 3 - 4).

2.4.2.2 Ericsson Telecomunicazioni SPA

TEI is involved in developing Mobile Telecommunication infrastructure with a strong commitment on beyond 5G architecture and service evolution. TALON gives the opportunity to develop and test in significant use cases several outcomes in the field of AI based energy efficiency and predictive maintenance on mobile networks: it represents a unique opportunity for TEI to gain experience and competences that can be exploited in the development and extension of future Ericsson products. In this landscape, TEI intends to exploit results to further validate and evolve the 5G portfolio: Presentations and workshop related to project outcomes will be foreseen at both internal Mobile Core organization.

2.4.2.3 Metamind Innovations

MINDS is dedicated to utilizing the technical know-how and technological advancements of the TALON project to improve its current cybersecurity and AI/data solutions. The business wants to improve its offerings and competitiveness in the public and private sectors, especially in markets that can profit from reliable and cutting-edge solutions. By leveraging the four clearly defined pillars of the TALON approach, MINDS hopes to deliver reliable AI solutions that are scalable, energy-efficient, safe, and privacy-preserving in the TALON project. To improve its current solutions for AI and data, MINDS will specifically use the AI orchestrator, distributed blockchain, and flexible E2C deployment.

In order to provide creative and practical solutions that promote the company's growth and development, MINDS also seeks to research and discover prospects for additional collaboration with industrial partners.

MINDS can use TALON's cutting-edge methods and approaches to improve the security, privacy, and energy optimization of its current data and AI solutions.

The experimental verification and real-world demonstration platforms of the TALON project can provide MINDS new technologies and techniques that can be improved and adapted to satisfy particular market demands. In order to accelerate the company's growth and development while offering its clients cutting-edge AI and data solutions, MINDS can work with TALON partners to improve and optimize the TALON prototypes and incorporate them into its current solutions. In addition, TALON's federated learning and explainable AI techniques can further enhance MINDS' capabilities in providing secure and privacy-preserving AI solutions. By incorporating these cutting-edge techniques, MINDS can offer its clients improved and transparent AI models while ensuring the protection of sensitive data.

2.4.2.4 Intrasoft International

INTRA's exploitation plan for TALON will be built around the integration and AI orchestration efforts of the company in WP5. Specifically, INTRA will endeavour to advance the TALON orchestrator and include in the company's portfolio of AI solutions as an integration tool. As an integration of complex AI-based systems and solutions, INTRA is implementing AI orchestration in the cloud/edge continuum in conjunction with the company's own ML solutions or using third-party ML frameworks. In this context TALON will enrich the orchestration/integration options of the company. INTRA will organize internal exploitation workshop(s) with AI development and integration teams from different departments in order to present the TALON solution and plan its uptake. To advance the TRL and overall maturity of the TALON integration/orchestration solution, INTRA will plan to reuse TALON in other projects (HEU, DEP) that are closer to the market. Finally, INTRA will participate in the joint exploitation efforts of the project, as a contributor/integrator to the integrated TALON platforms and applications.

2.4.2.5 International Hellenic University

IHU is an academic organization that is dedicated to facilitating the processes of transferring research results to the market. As such, it plans to contribute to all exploitation activities related to the TALON project, in order to showcase the business benefits of the developed solutions. Through its networking with local and international stakeholders, it will communicate the advantages of adopting TALON solutions in enhancing industrial processes through advanced AI techniques. Particularly, the Department of Computer Science is located in North-East Greece with several industries operating in the broader area, which are good candidates for potentially adopting such solutions. IHU does not bring a specific tool to be developed and exploited in the context of TALON, however, it plans to exploit the project results for strengthening its research profile, develop the related “Laboratory of Industrial and Educational Embedded Systems – IEES Lab”, attract research students, build on new classes and educational programs, and be involved in further activities for research funding.

2.4.2.6 Kingston University

As an educational institution, KU seeks to harness the TALON project's progress and expertise in deep learning and predictive analytics by applying ground-breaking learning techniques to expand research and incorporate findings into educational curricula. KU regards these results as a springboard for R&D endeavours, with plans to create and disseminate innovative immersive training solutions and tools through esteemed conferences and journals (e.g., CVPR, ICCV, ECCV, IEEE TIP, IEEE PAMI, etc.), all while advocating for open access policies.

KU's primary objective in leveraging the TALON outcomes is to aid industries with tailored solutions and pursue ongoing research in the area. To this end, KU will share their results with professionals and the general public at events they either organize or take part in, such as summer schools and workshops, with the aim of solidifying industry alliances and fostering research growth in the field.

2.4.2.7 Centre for Research & Technology Hellas

CERTH is a research institute, which will also act as a pilot in the specific project. So, the exploitation of the TALON results will need the support of industries together with the developed solutions in order further research in the domain to be conducted successfully.

Software for data fusion and analysis (TRL5-6): a tool that will be capable of preparing manufacturing data for microservice applications. The tool will provide a number of pre-processing functions that will convert raw data received from manufacturing operations and convert these to the appropriate format for further use.

2.4.2.8 University of Luxembourg

Regarding result exploitation, innovative AI/Machine-learning algorithms that will be developed within TALON will be protected through patent applications and their potential commercial exploitation will be explored. It should be noted that SnT has established a specialized Technology Transfer to facilitate the process.

Novel AI techniques will be investigated by UL in the course of TALON that decide where each task should be executed, aiming at maximizing the network energy efficiency and taking into account the computational constraints and energy resources of the devices. We target to reach these envisioned AI methods to TRL 4.

2.4.2.9 Universitat Politecnica De Valencia

UPV is a university, therefore the exploitation of the TALON results are limited to the support of industries with our solutions and conduct further research in the domain.

2.4.2.10 8Bells

8BELLS' exploitation plans are based on the incorporation of individual research results into already existing products in order to strengthen its market potential. Significant benefits are to be gained by commercialising the individual R&D results through their integration with current solutions. 8BELLS will also contribute to the commercialisation of the overall solution by participating in agreements between partners, performing activities together in specific tasks and establishing measures for joint exploitation.

As per the project proposal, 8BELLS will develop and contribute the following items:

- 8BELLS Analytic Toolset Forecasting Demand/Sales (TRL: 3 → 5)
- 8BELLS Questionnaire Tool (TRL: 7 → 8)

2.4.2.11 Ubitech

UBITECH aspires to reinforce its solutions portfolio through the offering of innovative and specialised applications and services not yet present in the market or through the expansion and optimization of its current services and prototypes (in particular, exploiting the outcomes of the H2020 RAINBOW, H2020 SANCUS and HEU FIDAL projects) exploiting the acquired know how and the technological results in services and apps orchestration, Software Defined Networks and virtualisation environments from the network to the application level. This way, it will increase its competitiveness, targeting in both the public and private sectors and especially the industry. Thus, UBITECH aspires to include the TALON's project exploitable outcomes to the overall corporate offerings and promote, exploit and commercialize the developed framework and mechanisms to its existing clients.

- MAESTRO (TRL4→TRL6): Cloud Orchestrator; available at: https://themaestro.ubitech.eu/. MAESTRO is an advanced developer framework for cloud orchestration and infrastructure automation. It is a full-scale software solution that give you the power to design, deploy, and manage cloud-native containerized components in both public and private cloud environments.
- SDN programmability (TRL3→TRL5): Network programmability and policies enforcement at network level. It includes scripts, templates, and sample switch configurations to aid admins in deploying the Software Defined Networking (SDN).

2.4.2.12 Sidroco Holdings Ltd

SID will exploit the results of TALON by extending and expanding its cybersecurity products and solutions with cutting-edge technologies for manufacturing and human-robot collaboration. The goal is to promote:

- The utility of SiVi tool, making its backend more capable in the detection and identification of advanced cyber-threats.
- The addition of new cyberthreats and cyberattacks to CiPenttest's arsenal.

SID will make use of TALON's findings by enhancing the durability and perpetual security of edge devices and cloud services. Additionally, the TALON results will be used to expand SID's technical and security-focused knowledge. SID will use its expertise in cybersecurity threat analysis and visualisation to provide organisations and businesses practical technological solutions and consultancy. Security and guidance requirements will be met in any manufacturing environment or plant establishment against any significant adversarial actions. Finally, to illustrate the advantages of the TALON's skills in handling and combating cyber threats, connections and exchanges with businesses in Cyprus' private sector will be utilised.

2.4.2.13 InnoCube

INNO will promote its current intelligent solutions to develop theoretical models, enable distributed intelligence, efficient network orchestration, as well as improve them with regard to edge-to-cloud intelligence, thus creating novel tools capable of revolutionizing the industry sector. Moreover, INNO aims to take advantage of the knowledge acquired throughout the TALON project in different scenarios by means of transfer learning strategies.

INNO will use the advancements achieved in TALON to improve the currently offered tools and services, which will aid in consolidating existing clients, and widening its clientele. Also, new algorithms and systems will be applied in system management tools to improve their robustness and cybersecurity, and therefore improve the quality of these services and consolidate INNO’s market position. Specifically, INNO will improve its arsenal by developing holistic risk management services that enhance the internal AI decision making processes by adding a layer of explainability and facilitating an increase of clients’ trust towards. The developed system will be capable of dynamic identification of various energy related IoT devices, sensors and components (both physical and software).

INNO will continue with its planned roadmap while enriching its portfolio with new tools and functionalities. The aforementioned results that will be developed by INNO in the TALON project will foster the increase of its current business and provide new type of innovative services.

2.4.2.14 Factor Ingeniería y Decoletaje

The objective in Factor is to use the results and the knowledge of the project and to implement, in the future, solutions that can be exploited in the company and in the industry.

2.4.2.15 EXOS Solutions

EXOS’ Exploitation Plan is closely linked to its Dissemination Plan, as the main objective of EXOS as an SME is to sell products and services, so by publicising the results of the TALON project it will be carrying out an exploitation/marketing task.

As a partner of the Demonstrator #2: I5.0 Automation & Planning, with FACTOR company, so the exploitable items are with the solutions to be implemented, i.e, Few-Shot & Hybrid Learning Approaches (TRL 3 - 4).

2.4.2.16 PROBOTEK

Regarding results exploitation, innovative AI/Machine-learning algorithms that will be developed within TALON will be protected through patent applications and their potential commercial exploitation will be explored. It should be noted that PROBOTEK has already developed certain proprietary

technologies that are verified the market and functioning at a TRL 5 or TRL 6 and focuses on extending them to TRL 8 or TRL 9 throughout the years of the project with active participation.

Software:

- Swarm control over multiple drones (DRAGONFLY system)
- Mission Control System (MCC-X) interface eXtended for controlling the formation.
- Use of PHAISTOS - A generalized data exchange framework and validation tool developed to assist in normalization and standardization of data exchange.
- AI Orchestrator based on PROBOTEK's Autonomous & Intelligent Robotic Fight for Orchestrated Work (AiRFLOW) platform.
- Inter-drone exchange of information based on PROBOTEK's proprietary Zer0-Connect (Z0C) connectionless protocol.

Hardware:

- TALOS – Our proprietary mobile Ground Control Station/Server (GCS)
- Drone additions both in hardware and firmware
- Low latency and smart low bitrate link to the Cloud

3 Standardisation, Regulation & Clustering Activities

3.1 Standardisation

The present section presents the Standardisation related work of TALON partners.

3.1.1 Standardisation objectives overview

In connection with the technologies employed in its development, as well as with the associated results to be achieved, TALON aims to monitor and interact with relevant Standards Developing Organisations (SDO) and other actors of the Standardisation ecosystem. In doing so, TALON's overall objective will be to track and match the specific Standards per specific technology component, as appropriate, and align with already standardised technology practices and policies. Subsequently, TALON will feed back the results and outcomes achieved to the respective Standardisation actor, as applicable, so as to support the further development of each of these.

The above described objective is to be achieved, based on the technology domain expertise and relevant connections of the involved TALON consortium partners, so as to have the best possible outcomes.

3.1.2 Standardisation proposed actions

Following an extensive discussion and internal consultation among TALON consortium partners, a baseline activities plan has been already devised. So as to facilitate the identification of pertinent standardisations, as well as the activities' follow-through, the plan is distinctly defined with reference to each of TALON's major areas of research and development, namely:

- Network and User Access, Security
- AI-fueled Orchestration
- Advanced AI capabilities
- Data operations

The plan for each of the above, is presented in the following tables.

Table 8: Standardisation plan referring to Network and User Access, Security

Ref.	Standardisation body/organization name	Scope of Standardisation	Activities to pursue
ST01	DIN	Standards for data security	Ensure data security, data anonimisation and trustiness during their use in the TALON solutions, their formation/processing, exchange and transportation to other TALON components.
ST02	MOPA Alliance	Optical modules	To better support use cases with machine-based learning
ST03	IEEE Blockchain	Standards for blockchain and distributed leger	Identification and proposal of standards, policies, and guidelines related to blockchain and distributed ledger
ST04	One6G	6G connectivity, computation, energy consumption, and	Monitoring the activities of Working Group 1: Use cases,

		communication including wireless and cellular access networks, security, trust, functional safety, privacy, authentication, distribution cloud architecture, technology associations, radio technologies, protocols and data format principles.	KPIs and future market and business scenarios

Table 9: Standardisation plan referring to AI-fuelled E2C Orchestration

Ref.	Standardisation body/organization name	Scope of Standardisation	Activities to pursue
ST05	AIOTI	IoT & Edge computing. HLA	Whitepaper and/or presentation of project activities
ST06	ISO (International Organization for Standardisation) /IEC	Cloud Computing Patterns, relevant to TALON architecture	Identification and proposal of standard to be pursued within the architecture
ST07	ISO (International Organization for Standardisation) / IEC	Cloud Computing Patterns, relevant to zero-touch AI Orchestrator, edge apps layer	Identification and proposal of standard to be pursued within zero-touch AI Orchestrator, edge apps layer

The items included in the Standardisation plan in table 8 above, link and are in alignment with the following items listed in GA, namely:

- International Electrotechnical Commission (IEC) – Standardisation Evaluation Group 10
- OASIS Topology and Orchestration Specification for Cloud Applications (TOSCA).

Table 10: Standardisation plan referring to Advanced AI capabilities

Ref.	Standardisation body/organization name	Scope of Standardisation	Activities to pursue
ST08	CEN/CENELEC	EU Standardisation related to AI	Identification and proposal of standards related to AI, such as object detection
ST09	IEEE-SA (P2048)	International Standardisation related to augmented reality and virtual reality	Identification and proposal of standard related to Virtual and Augmented Realities and Human Interaction.
ST10	IEEE-SA (P2976)	Standard for XAI – eXplainable Artificial Intelligence - for	Addition or contribution to existing XAI standards in

		Achieving Clarity and Interoperability of AI Systems Design	respect to the requirements of the TALON pilots, i.e., new visualisation, interoperability procedures, etc.
ST11	CEN/CENELEC & DIN	Principles for implementing Zero Defect Manufacturing (ZDM)	Identify how ZDM can be implemented for TALON pilot and identify also the key principles for deploying ZDM

The items included in the Standardisation plan above, link and are in alignment with the following items listed in GA, namely:

- Institute of Electrical and Electronics Engineers (IEEE)
- European Committee for Standardisation (CEN)-European Committee for Electrotechnical Standardisation (CENELEC)

Table 11: Standardisation plan referring to Data Operations

Ref.	Standardisation body/organization name	Scope of Standardisation	Activities to pursue
ST12	BDVA/DAIRO	Standardisation related to data driven services	Data related activities and TALON representation at DAIRO days regarding the evolution of data operations of WP4 tasks (T4.1)
ST13	BDVA/DAIRO	AI-driven data operations and trustworthy AI	Data related activities and TALON representation at DAIRO days regarding the evolution of data operations of WP4 tasks (T4.2)
ST14	BDVA/DAIRO	Data AI and Robotics	Whitepaper and/or presentation of project activities

3.2 Regulation

The present section presents the Regulation related work of TALON partners.

3.2.1 Regulation objectives overview

TALON during the course of the project's lifecycle will monitor the latest regulatory frameworks, legislations etc. that are expected to potentially have a significant relation to its development, evolution and mission, paying particular attention to those associated with the core innovations to be incorporated. This is going to be done primarily at the EU regulations level. In addition, local, country

specific regulations may also be considered, as appropriate, specifically in conjunction with the locations where TALON's use cases/pilots are to take place.

In line with the above, and taking into account that AI plays a key role in TALON's overall value proposition, regulations pertaining to AI will especially be in focus. This is all the more so given the fact that AI is nowadays, out of all the emerging tech, the one that attracts probably the most attention, from all possible directions. Furthermore, the anticipated increased utilization of AI in different modern world applications, has resulted in a regulatory field of high activity and intense debate, among policymakers and stakeholders.

3.2.2 Regulation planned activity

In accordance with the previously described objectives overview, the specific regulatory frameworks, both existing and emerging, outlined below, are going to be particularly monitored.

1. The **EU Artificial Intelligence Act** (AI Act), refers to an EU initiative, aiming to create a common regulatory and legal framework, encompassing the use of Artificial Intelligence, as a whole. This is meant to address all types of Artificial Intelligence, and all its uses apart from military [1], whilst it will take the form of regulation, meaning that once it is passed, it becomes immediately enforceable as a law in all member states simultaneously [2]. Initially proposed in April 2021, the AI act had a general approach position on the legislation adopted by the European Council in late 2022, and is currently in discussions phase [3], [4], with definitions for AI, and risk-based classification of AI applications being at the centre of discussion [5]. Given the importance of the classification of high-risk applications, particular attention will be paid with respect to this topic and specifically to the risk classification of I5.0 related applications. Additionally, presenting how TALON architecture & technologies (e.g. XAI) contributes to industrial systems compliance to the emerging AI regulation, will also be considered. Finally, it is worth noting that once fully passed, the EU AI act is generally expected to have a global impact, comparable to GDPR.
2. The **Circular Economy Action Plan** (CEAP), adopted in March 2020, is one of the core components of the European Green Deal, that is Europe's new agenda for sustainable growth. The CEAP introduces legislative and non-legislative measures targeting areas where action at the EU level brings real added value [6], [7]. Having objectives pertaining highly to I5.0, part of which the TALON envisioned solution is going to be, the CEAP is going to be monitored in relation with the Sustainability, Resiliency and Human-Centric aspects, as applicable to the project. More specifically, the association between TALON objective O-5, which refers to enabling reusability of datasets, algorithms, metrics and models, and CEARP is going to be examined.
3. In addition to the main regulation pillars presented in the above points, local and/or regional regulations with a particular relevance to the use cases (testbeds) included in TALON will also be screened and monitored so as to ensure that respective regulation(s), will be taken into account and duly respected. Use case (a) featuring UAV coordination, provides a suitable case in point with a combination of local, regional and international drone flight regulations being of relevance. These indicatively include the following:
    - International Air Transport Association (IATA)
    - EU Aviation Safety Agency (EASA)
    - Civil Aviation Authority of Greece (CAA)

3.3 Clustering

The present section presents the Clustering related work of TALON partners.

3.3.1 Clustering objectives overview

In relation to the project's impact creation TALON will pursue clustering opportunities with other EU funded Horizon projects, active in adjacent domains and with which it shares common visions. By doing so, it will explore and engage in activities of mutual interest which will have as objective to maximise value generation. To this end, this interaction will support the amplification TALON's vision communication, dissemination and its future tangible results. A major way to move ahead will be the creation of a cluster with other projects financed under the same topic (HORIZON-CL4-2021-HUMAN-01-01) is included, following the topic guidelines.

3.3.2 Clustering activities plan

Organised and initiated by the TALON consortium, a cluster of projects funded under HORIZON-CL4-2021-HUMAN-01-01 has been already created, and had its first Workshop / Remote meeting on March 2, 2023. Being the first meeting among the participating projects, it served as kick-off meeting of the cluster where each project presented itself through its representative(s).
The participants in this cluster are nine projects in total, namely:

Table 12: Participant projects in TALON initiated clustering

Project Name	Grant agreement ID	Current status	Project's website
AutoFair	101070568	Ongoing	na
ENEXA	101070305	Ongoing	https://enexa.eu/
EVENFLOW	101070430		https://evenflow-project.eu/
REXASI-PRO	101070028	Ongoing	https://rexasi-pro.spindoxlabs.com/
SAFEXPLAIN	101069595	Ongoing	https://safexplain.eu/
SustainML	101070408	Ongoing	https://sustainml.eu/
TALON	101070181	Ongoing	https://talon-project.eu/
TUPLES	101070149	Ongoing	https://tuples.ai/
ULTIMATE	101070162	Ongoing	https://ultimate-project.eu/

For the above event a promotional banner was created, while the event was promoted through TALON's social media and digital channels.

Figure 14: Promotional banner for 1st Clustering workshop organised by TALON

The said first meeting was also communicated via TALON's website, on the following page: https://talon-project.eu/eventsestablishing-the-next-level-of-intelligence-and-autonomy-clustering-workshopevents/

Following the first meeting, a second meeting among the projects was organised on April 26, 2023 so as to discuss ways to move forward including: organizational matters, creation of common visual identity (banners etc.), near future dissemination opportunities, events to potentially participate in etc. In addition to the above described main clustering initiative, the TALON partners will keep screening for other potential clustering opportunities with similar projects.

4 Business Planning & Market Analysis

4.1 Business Planning & Market Analysis objectives

As an integral part of TALON's impact maximisation, T6.3 will deal with the aspects of the project's Business Planning and Market Analysis. Given that TALON is set to generate significant innovations in the domains that will encompass, this task's mission will be to carry out the analysis and deliver the respective insights relating to the Business prospects of TALON's finished product(s). In this respect, T6.3 will aim to provide an as complete as possible evaluation of all aspects to be considered in the project's commercialization, while tracking relevant market data, developments and the greater competition landscape.

4.2 Business Planning & Market Analysis Toolkit

In this section, a closer look at the tools, frameworks and methodologies to be used in T6.3 is presented. In line with the objectives outlined above, an identification of the appropriate methods has been done, and it is to include a set of well-established and widely recognized methods of strategic management as well as market and business analysis.

4.2.1 SWOT analysis

A SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis is among the most widely acknowledged techniques employed in strategic management so as to establish both the particular favourable and unfavourable factors affecting the business / market success of a (new) product, (new) project and any venture in general that is evaluating its commercialization prospects. The favourable and unfavourable attributes are being considered with a distinction being made between internal and external factors. More specifically, Strengths and Weaknesses are considered at the internal level, meaning that these include aspects which are inherent to the product, service or project in question, and which can be directly controlled, changed or otherwise influenced. As such, internal elements that might be considered as Strengths would indicatively include a product's / service's competitive feature(s), highly performing parts, and other strong differentiator(s) (vs. competition), whereas internal elements that might be considered as Weaknesses would indicatively include product / service features missing (vs. competition), parts for improvement, potential underperformances etc. On the other hand, when considering Opportunities and Threats an external perspective is taken, meaning that these would include aspects that are largely considered pertinent to the environment that a (new) product / service operates in, and in being so, they cannot be directly changed or influenced by the owners, managers etc. of the product / service in question. Indicative examples of Opportunities to be considered would include favourable changes in market trends, favourable technological advancements available to be exploited, new market segments emerging etc.

A SWOT analysis is presented in a 2x2 matrix form, as shown in the image below, with the top row showing the internal attributes (Strengths and Weaknesses), and the bottom row showing the externally originating attributes (Opportunities and Threats). In addition, the helpful factors (Strengths and Opportunities) are arranged in the left column, while the harmful factors (weaknesses and Threats) are arranged in the right column.

Figure 15: A SWOT analysis template (source: Wikipedia)

In the context of TALON's Business Planning & Market Analysis, a SWOT is planned to be conducted so as to get the insights relating to the TALON value proposition's, inherent Strengths and Weaknesses as well as the Opportunities and Threats presented to it by external factors and the business environment overall. The analysis is going to be based on extensive internal surveying of TALON key stakeholders with a relevant expertise and involvement in the project. This is expected to provide valuable insights with respect to TALON's commercialization outlook and specific points that would need to be considered so as to enhance its chances of successful commercial exploitation. In addition, the SWOT is expected to serve as a means of identifying potential barriers to entry, as presented both by the inherent Weaknesses as well as the Threats, originating externally.

4.2.2 Business Model Canvas

In addition to the above, and so as to produce of an outline of a potential Business Model to be pursued as part of TALON's commercialization options research, a Business Model Canvas (BMC) is also envisioned. The BMC provides a succinct, though coherent, method for the mapping and representation of a (new) Business Model. It features all the crucial aspects that form a complete Business Model for a specific (new) Product / Service or Project. As such, it examines and seeks to answer questions pertaining to the three crucial pillars of feasibility, desirability and viability of a (new) product or service in question. The BMC is presented in an intuitive visual template that features nine fields, as shown in the figure below.

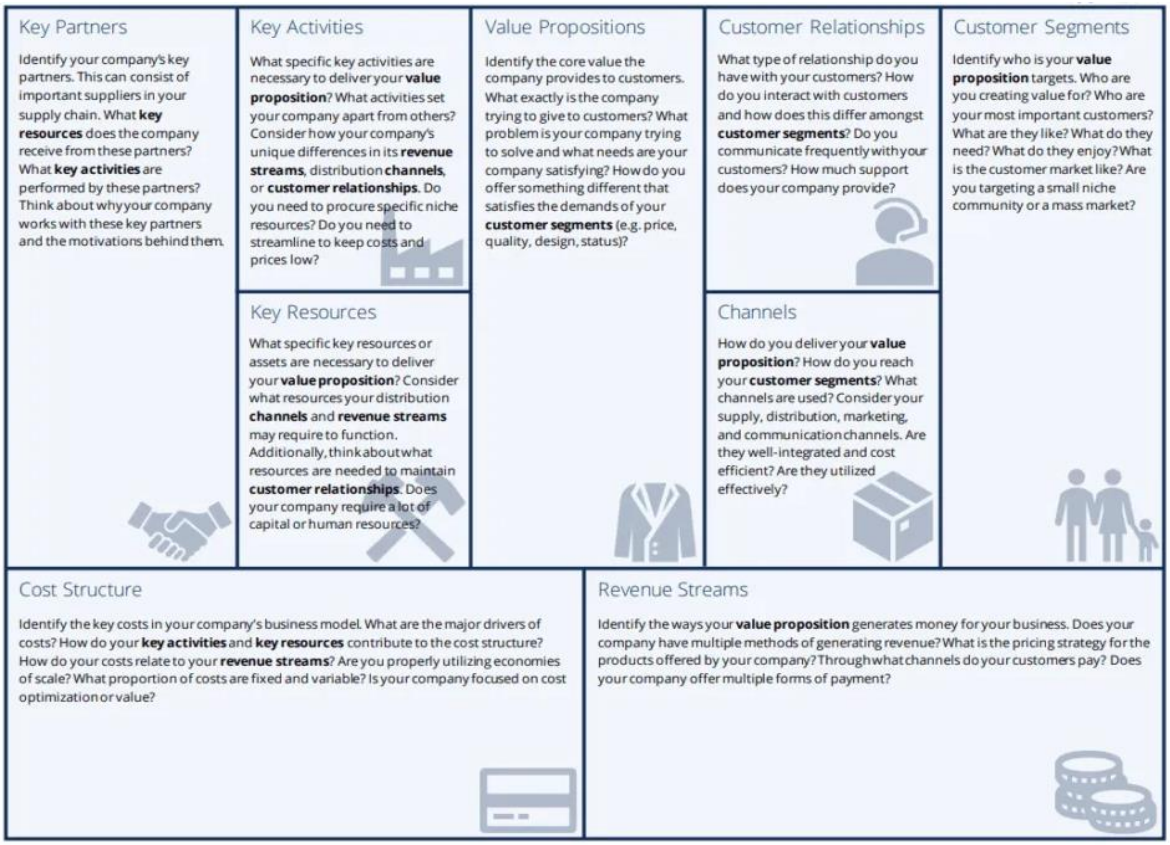

Figure 16: Business Model Canvas template (source: Corporate Finance Institute [8])

The nine featured fields can be grouped per pillar considered, as follows:

- ***Feasibility****: Key Partners, Key Activities, Key Resources*
- ***Desirability****: Value Proposition, Customer Relationships, Channels, Customer Segments*
- ***Viability****: Cost Structure, Revenue Streams*

In the context of TALON, T6.3 will engage in creating a BMC based on own research and inputs received by partners following an internal survey to be carried out. This, in conjunction with the insights drawn by the SWOT analysis as mentioned above, will complement the Business Planning part, and provide additional insights addressing the definition of TALON's eventual Business Model.

4.2.3 Analytical Hierarchy Process

An additional element of T6.3 will be the delivery of a roadmap aiming to provide a deep and thorough understanding of the factors affecting TALON's market adoption and associated technology evolution. This will also serve, among others, as a means of prioritization among different competing options with an anticipated significant impact. Given the expected number of TALON's technology innovations and alternate ways to be taken in their evolution, the Analytical Hierarchy Process (AHP) has been selected as a suitable methodology thanks to its ability to support decision-making in multicriteria settings.

In terms of its conceptual framework, the AHP provides a structured methodology facilitating the examination of complex problems, by defining relevant criteria and sub-criteria, which are compared pairwise with each other. The result of the said comparison is represented by weights allocated to each of the criteria / sub-criteria, which are subsequently ordered according to their importance, in an hierarchical form. The following figure presents the logic and mechanism of an Analytical Hierarchy Process.

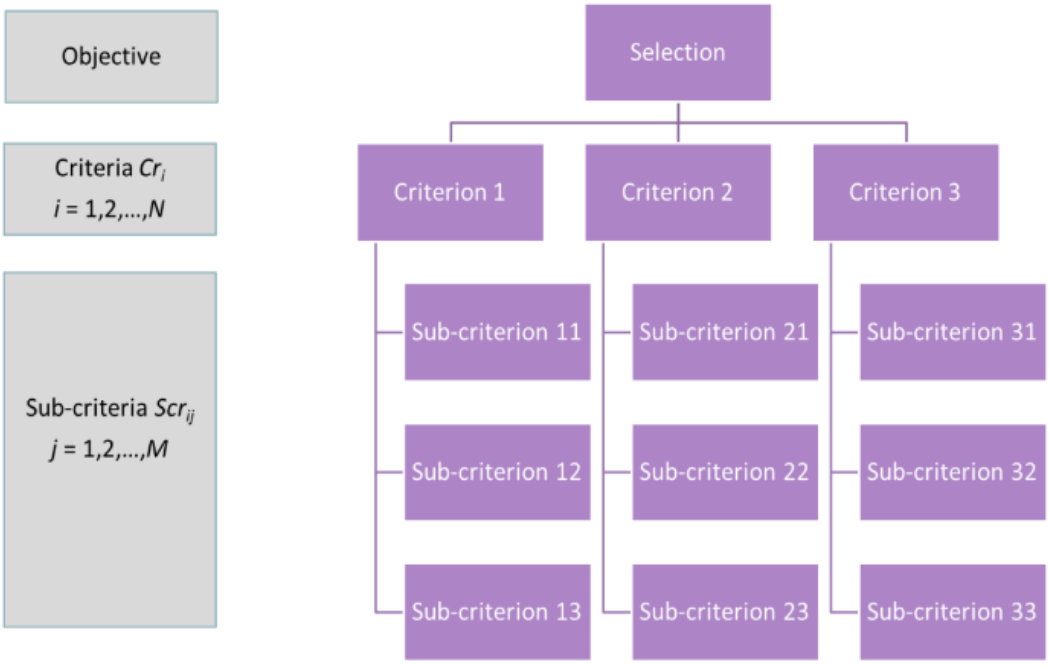

Figure 17: An AHP hierarchy structure

The AHP will be conducted according to the inputs (responses) received by TALON stakeholders and experts, on a suitably defined questionnaire survey addressing the aspects to be considered as criteria with a high pertinence in the project's adoption and evolution.

4.3 Preliminary Market Findings

TALON's envisioned solution incorporates a range of innovations and technologies, collectively creating a novel orchestrator with a clear focus in industrial settings and applications. As such, TALON finds itself at the crossroads of a number of technologies that show patterns of fast growth. This fact will allow it to explore and potentially capitalize on a diverse set of favourable market opportunities, during the course of its development and evolution.

With TALON's primary service being to address the needs of orchestration of different assets and resources, monitoring the market landscape for orchestrators becomes of particular relevance and importance. When seen from a product proposition point of view TALON's envisioned solution, will incorporate a number of groundbreaking innovations notably AI fueled computations for a range of smart policies (energy efficiency, smart placement, resources dimensioning), that will certainly act as strong differentiating points versus the currently existing (state-of-the-art) product propositions, and therefore create a competitive advantage. Despite this fact, a preliminary look at the current market, landscape, metrics and trends, still reveals some interesting insights.

A market analysis published by Insight Partners [9] shows that the global cloud orchestration market size is expected to grow from USD 13.87 billion in 2021 to reach USD 53.40 billion by 2028. That translates to an expected growth in CAGR terms of 21.5% from 2022 to 2028.

In terms of the market actors, it is noteworthy to mention that in the market for orchestrators a diverse and sizeable group of companies is active at present. As such, taking a preliminary research on propositions available currently in the market, shows offerings and tools that range from (a) niche, up and coming, and often open-source providers, to (b) products developed by well-established IT vendors that are often integrated in some greater cloud offering or ecosystem of enterprise cloud applications, developed by each respective vendor.

Providers belonging to category (a) include, notably:

- Kubernetes https://kubernetes.io/
- Red Hat Ansible https://www.redhat.com/en/technologies/management/ansible
- OpenStack https://www.openstack.org/
- ActiveBatch (by Redwood Software) https://www.advsyscon.com/
- Terraform https://www.terraform.io/
- Fugue https://www.fugue.co/ etc [10]

On the other hand, category (b) vendors include traditional IT players (product name shown in brackets), notably:

- VMware (Aria Automation Orchestrator) https://www.vmware.com/products/aria-automation-orchestrator.html
- Microsoft (Azure Automation and Azure Cyclecloud) https://azure.microsoft.com/en-us
- AWS (CloudFormation) https://aws.amazon.com/cloudformation/
- IBM (Cloud Orchestrator) https://www.ibm.com/
- Cisco (CloudCenter) https://www.cisco.com
- Ingram Micro (Cloud Orchestrator) https://ingrammicrocloud.com/ etc. [11]

In general, cloud orchestration tools and/or software that are readily available in the market, operate similarly across public, private and hybrid clouds, though the specifics of a given use case might favour the features of one over another.

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