Tec4MaaSEs

Technologies for Manufacturing as a Service Ecosystems

Deliverable 6.2

Dissemination and communication activities report v1

WP6: Impact Creation and sustainability

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Executive Summary

This deliverable presents the activities conducted by the Tec4MaaSEs project and the partners in the first eighteen months of the project. It summarizes and presents the outlets of the projects (both online and offline), as well as documents the participation in clustering activities and events as well as the joint and individual communication and dissemination activities successfully executed. Furthermore, it presents a list of academic publications made by the Tec4maases partners. It follows the overall execution of the dissemination and communication plan developed in M6 and presented in the deliverable D6.1 Dissemination and Communication Plan.

Overall, the dissemination and communication efforts have led to a wide reach of a broad audience as explicated in the chapters relevant to the Website, Social Media and partners' efforts, cumulating in a reach of over 28k individuals across all outlets with respective reactions and engagement. It is notable that following the plan that each partner also disseminates and tracks the project-related news, they have accumulated another 28k+ reach.

Additionally, the different project partners have participated in 14 events and workshops showcasing the Tec4MaaSEs project as well as have liaised with various projects (MASTT2040, M4ESTRO, ALICIA, RENÉE, DMaaST, NARRATE etc.)

Lastly, the academic output of the current period amounts to 1 journal paper and 5 conference papers (with two conference papers to appear) as well as 1 journal paper under revision and 1 journal and 1 conference planned.

Furthermore, important marketing activities have taken place in the first 18 months of the project.

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Acronyms and Abbreviations

Acronym	Description
IoT	Internet of Things
D&C	Dissemination and Communication
EEIG	European Economic Interest Grouping
IDO	Industrial Data Ontology
T4M	Tec4MaaSEs
EFFRA	European Factories of the Future Research Association
WP	Work Package
KPI	Key Performance Indicators
DoA	Description of Action

1 Introduction

1.1 Purpose and Scope

This deliverable constitutes the official report for **Task 6.1 – Dissemination activities plan**, initiated in Month 1 of the project and is ongoing until the end of the project lifespan. It integrates contributions from all consortium partners and serves to coordinate the monitoring and evolution of the dissemination and communication activities of the Tec4MaaSEs project, targeting industrial and scientific communities as well as the general public. These activities have been implemented per the dissemination plan outlined in Deliverable D6.1 and the planned actions detailed in Section 2.3.2 of the Description of Action (DoA) and the Grant Agreement.

In addition, the report provides a comprehensive overview of all academic publications produced by the Tec4MaaSEs consortium during the first 18 months of the project, together with the status, as of Month 18, of all Key Performance Indicators (KPIs) related to dissemination and communication activities.

1.2 Relation with other deliverables

This deliverable is the first report out of the two foreseen that reports on the conducted outreach activities. The second report (D6.3 Dissemination and communication activities report v2) will be delivered at the end of the project showcasing the final achieved communication and dissemination results. Both results follow on the overall strategy for communication and dissemination as presented in D6.1 Dissemination and Communication Plan.

1.3 Structure of the document

The Deliverable is structured around 8 sections as follows:

- **Section 2** outlines the communication achievements of Tec4MaaSEs, including information relevant to the website, the social media, the newsletters as well as the joint efforts of partners through their owned media outlets.
- **Section 3** details the dissemination activities of the Tec4MaaSEs project presenting the academic publications achieved as well as the events the project partners have participated in.
- **Section 4** explains the clustering activities conducted and the liaisons between the Tec4MaaSEs project and other sister projects.
- **Section 5** provides a list of aggregated KPIs as presented in Section 2.3.2 and their current status.
- **Section 6** serves as the chapter presenting the marketing activities conducted by the Tec4MaaSEs project and lastly
- **Section 7** presents the next steps of the project and concludes the deliverable D6.2 Dissemination and communication activities report v1.

2 Communication Activities up to M18

2.1 Project Website

The official Tec4MaaSEs project website has been designed, developed and made online since the early months of the project, constituting the main placeholder of the project's public results as well as a portal from which the dissemination and communication activities as well as the project's output are accessible to the interested third parties. Its current appearance is illustrated in the following figure and efforts are ongoing in its monitoring and constant update. Throughout the first 18 months of its operation, the website has undergone several updates, both in terms of its visual design across various pages as well as in the News & Events section, where significant project-related announcements are published, highlighting the contributions of Tec4MaaSEs in an approachable and understandable manner. The Tec4MaaSEs website is accessible https://tec4maases.eu/

The key areas developed include:

- The Value Networks page, where the presentation of the three value networks takes place and where different value-network-specific achievements are/will be hosted.
- The Consortium page where the presentation of the project partners takes place as a means of individual presentation of the key partners involved in the Tec4MaaSEs project
- The Objectives and Governance pages highlight the overall vision of the project and its operational approach to achieving it
- The Deliverables page where the public deliverables and reports of the project are accessible and easily downloadable for the wide distribution of the outcomes
- The News section, which in blog format present key achievements and the participation of project partners in events promoting Tec4MaaSEs.

Figure 1: The Tec4MaaSEs project website

As the News section is progressively updated with new information relevant to the highlights of the projects' lifespan (e.g. meetings, participation in events etc.) the following news items have been developed.

- Tec4MaaSEs Kick off
- Tec4MaaSEs January-February 2024

- Tec4MaaSEs Technical Meeting
- Dive deep into the Value Networks
- Oslo Plenary Meeting
- Enabling technologies for Manufacturing as a Service at Madeira Digital Transformation Week
- Collaboration in action Tec4MaaSEs and MASTT2040
- 9-10.10.2024 Plenary meeting, Bilbao, Spain
- Tec4MaaSEs – Technical review meeting
- Tec4MaaSEs – Technical meeting for Value Network 1
- UiO and Tec4MaaSEs at Nemo Summer school
- Tec4MaaSEs plenary meeting in Ankara Turkey
- Tec4MaaSEs at the Digindustry 2025
- Tec4MaaSES at the FSDET 2025

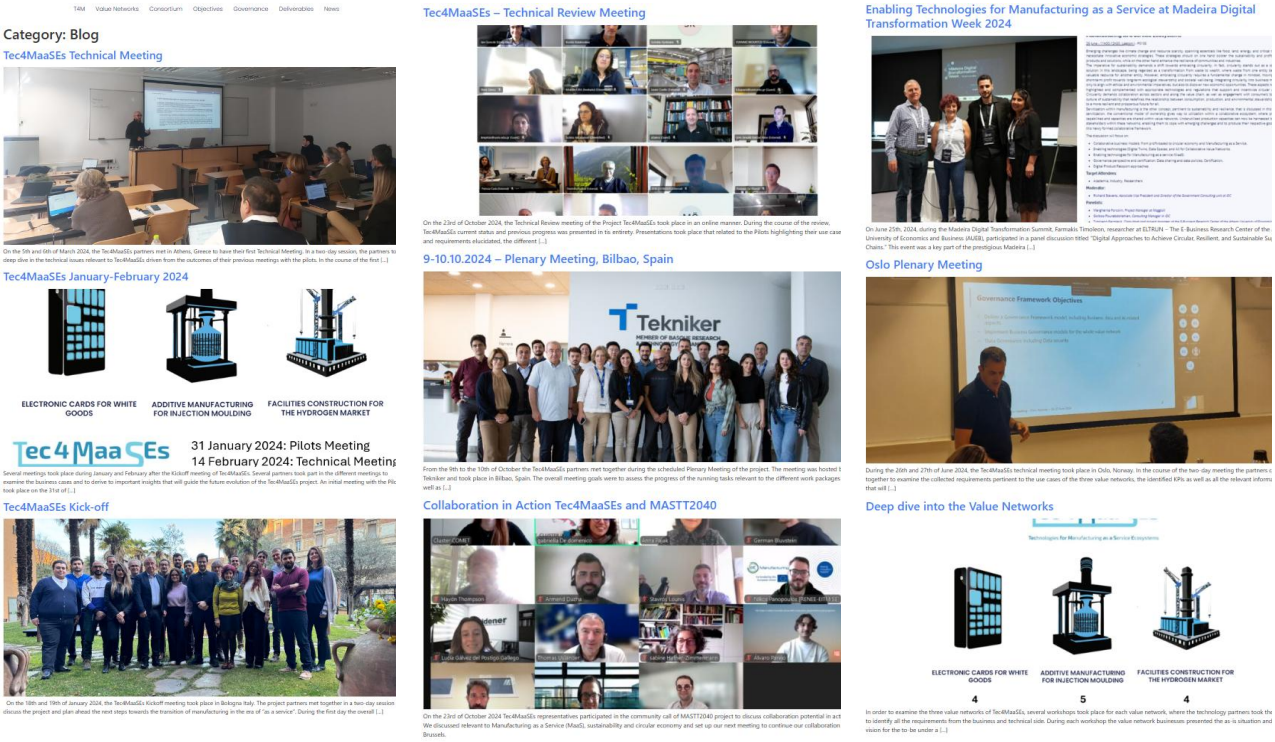


Figure 2: Tec4MaaSES indicative News pieces

In the first 18 months of the Tec4MaaSEs project the outreach activities stemming from the website have led to a cumulative 1.100 active users that contributed 2500 views through direct, organic search, organic social, referral and paid social traffic sources, from a variety of countries including Greece, USA, Spain, Portugal, the Netherland, China and Turkey among others. The diffusion of the project website can be seen in the following figure

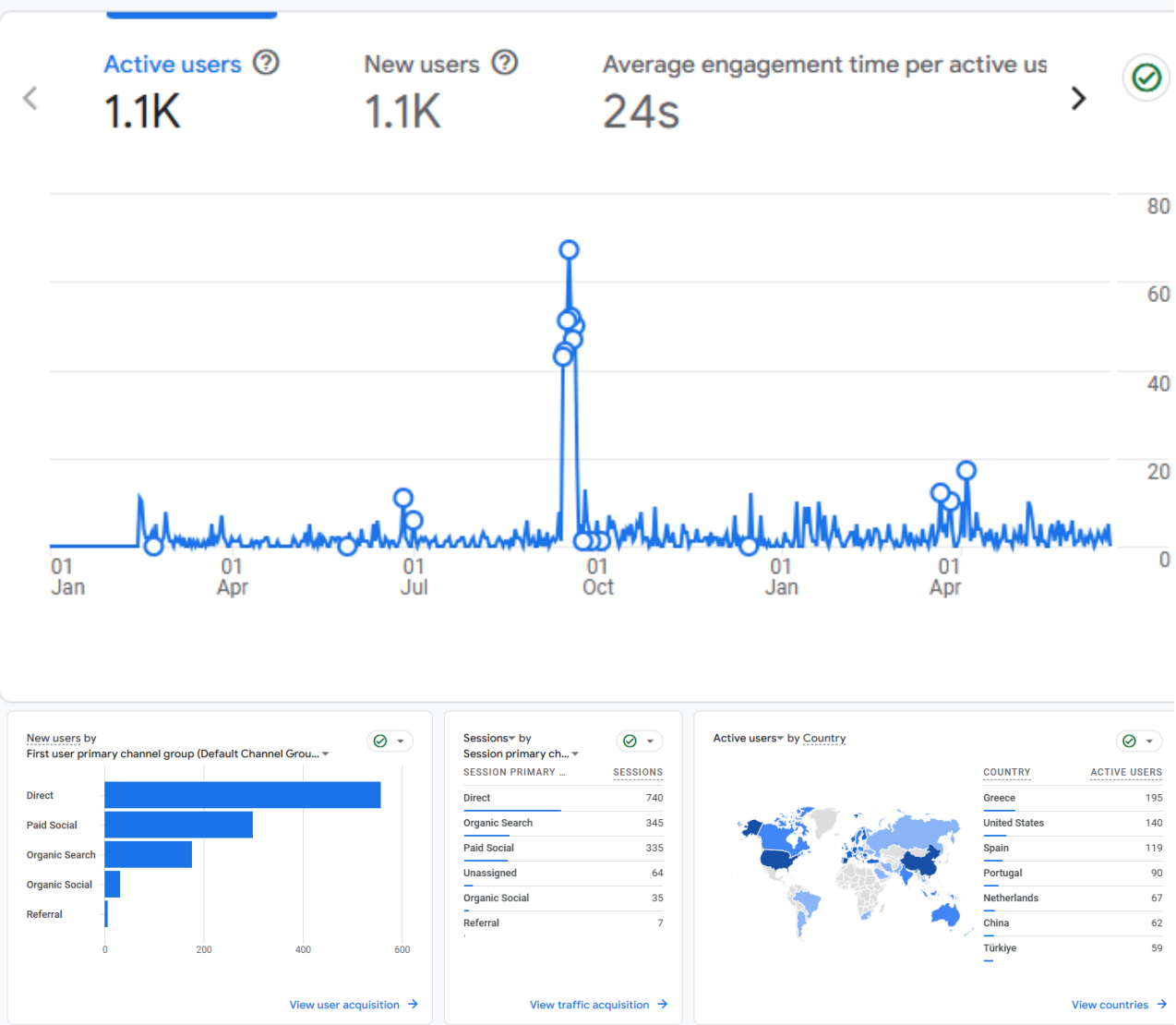


Figure 3: Tec4MaaSEs website visits and remaining analytics according to Google Analytics 1/2

Plot rows | Search...

		Page title and screen class	Views	Active users	Views per active user
☑		Total	2,500 100% of total	1,136 100% of total	2.20 Avg 0%
	1	(not set)	1,387 (55.48%)	944 (83.1%)	1.47
☑	2	T4M Consortium	219 (8.76%)	144 (12.68%)	1.52
☑	3	Value Networks	184 (7.36%)	122 (10.74%)	1.51
☑	4	Deliverables	170 (6.8%)	101 (8.89%)	1.68
☑	5	Blog	144 (5.76%)	93 (8.19%)	1.55
☑	6	Objectives	142 (5.68%)	103 (9.07%)	1.38
☐	7	Governance	114 (4.56%)	69 (6.07%)	1.65
☐	8	Deep dive into the Value Networks	18 (0.72%)	17 (1.5%)	1.06
☐	9	Oslo Plenary Meeting	14 (0.56%)	13 (1.14%)	1.08
☐	10	9-10.10.2024 – Plenary Meeting, Bilbao, Spain	13 (0.52%)	12 (1.06%)	1.08

Figure 4: Tec4MaaSEs website visits and remaining analytics according to Google Analytics 2/2

2.2 Social media

This section provides an overview of the achievements from all social media channels utilized by the Tec4MaaSEs project, along with a summary of the activities promoted through social media posts during the first year of the project's implementation. Tec4MaaSEs leverages multiple social media platforms (mainly focusing on LinkedIn and Facebook) to maximize the reach and impact of its dissemination efforts within the varied stakeholders' communities.

2.2.1 Linkedin

The presence of Tec4MaaSEs on the LinkedIn social network has been designed, developed, monitored and updated from the first month of the project and is accessible through the following link: https://www.linkedin.com/company/tec4maases. Its current view (member role) is presented in the following figure.

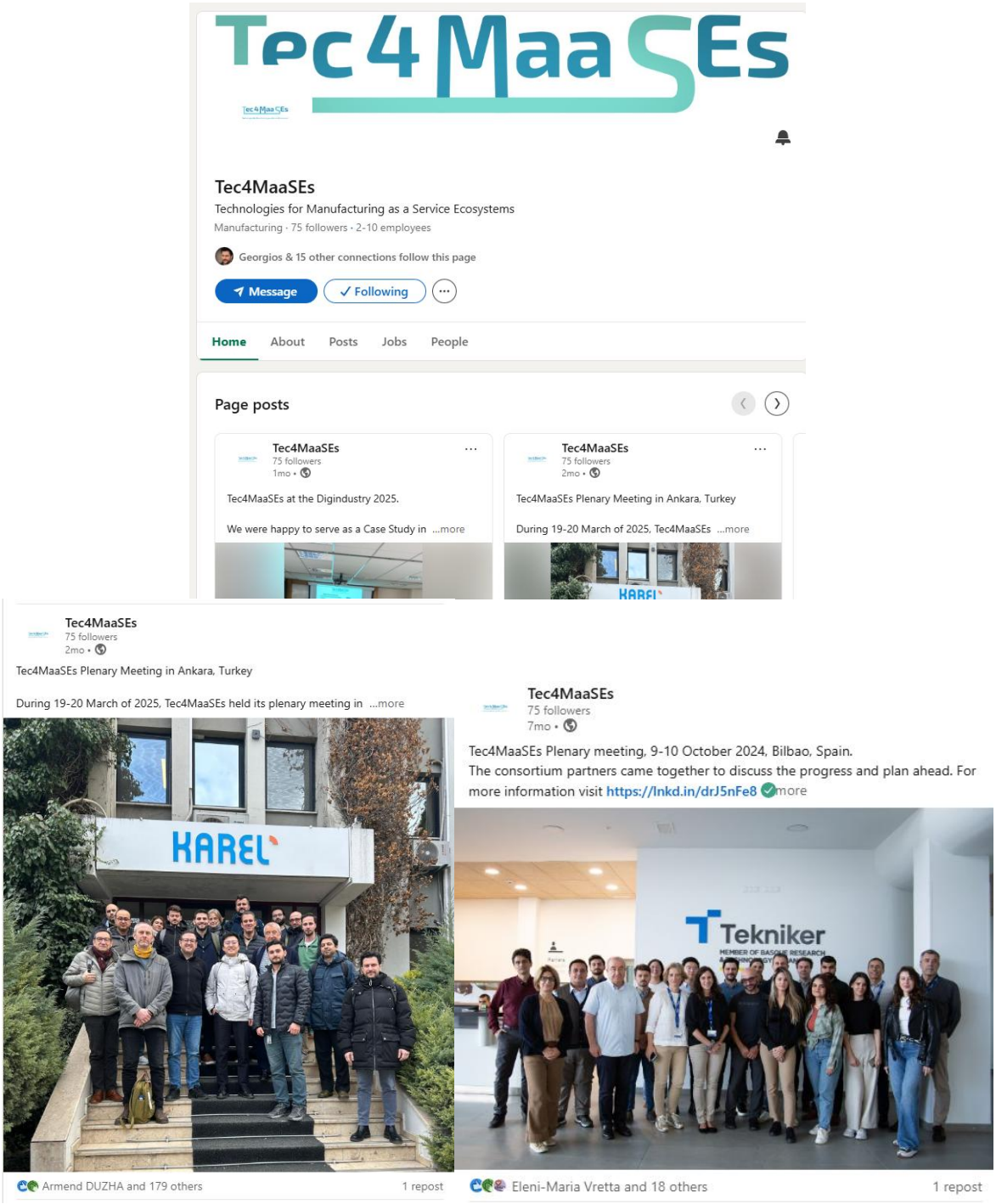


Figure 5: Tec4MaaSEs LinkedIn presence and indicative posts

The efforts directed towards the promotion and diffusion of the Tec4MaaSEs LinkedIn social media presence have so far led to 75 followers and over 18.000 impressions and over 300 reactions (view export is allowed for 1 year in LinkedIn) from industries as: Research services, Technology, Information and Internet, Software development, Manufacturing, Defence and Space Manufacturing, Business Condulting and Services and Telecommunications among others, as presented in the following figure.

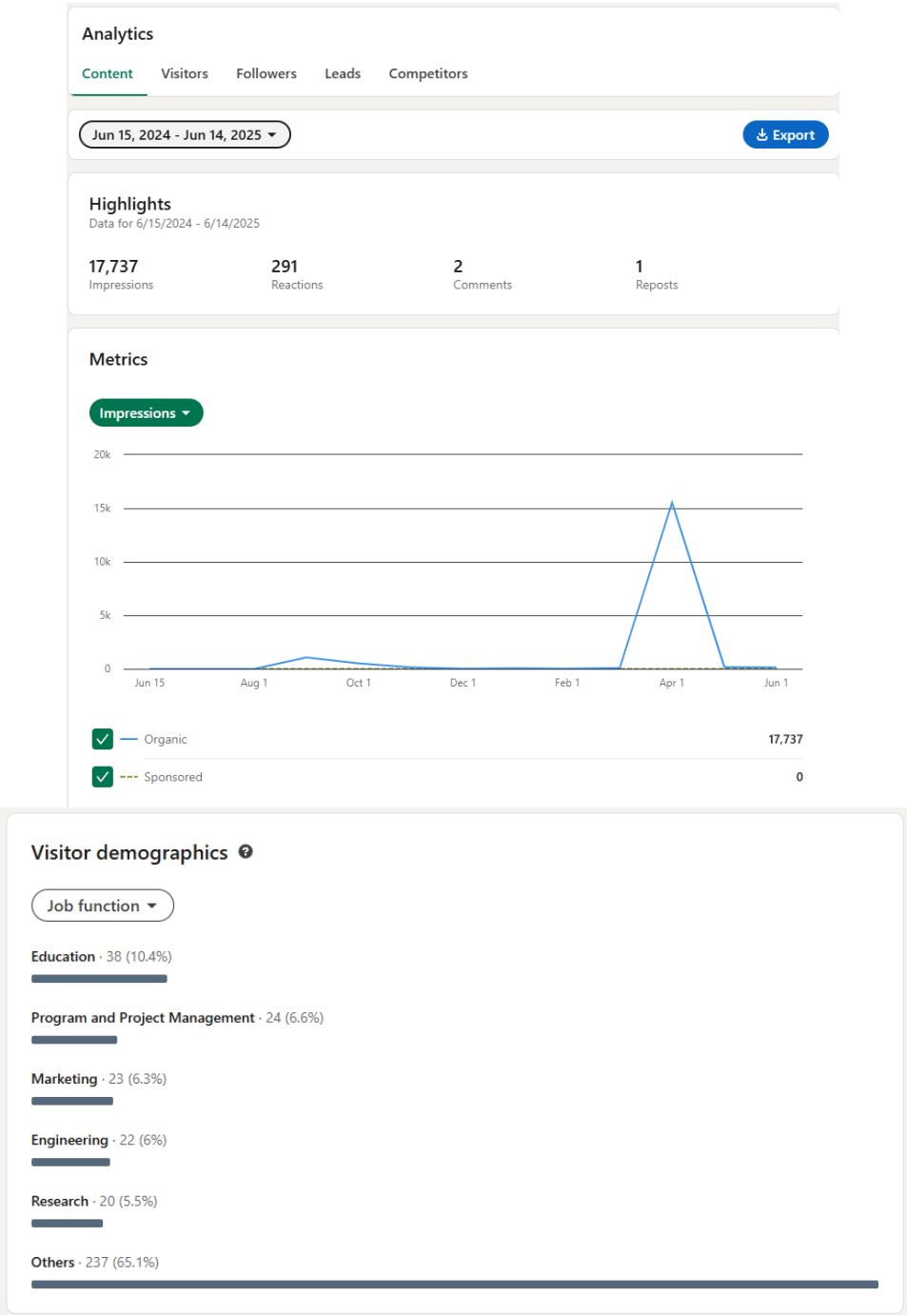


Figure 6: LinkedIn dashboard of Tec4MaaSEs analytics

In particular and regarding the posts that have taken place in the course of the first 18 months of the Tec4MaaSEs project these are presented in the following table with their respective performance metrics.

Table 1: LinkedIn Posts and their Performance

A/A	Post title	Impressions	Engagement (Likes, Comments, Reshares)
1	Tec4MaaSes at the DigIndustry 2025	215	7

2	Tec4MaaSEs Plenary meeting in Ankara, Turkey	15227	181
3	Tec4MaaSEs plenary meeting Bilbao	456	20
4	Collaboration in Action Tec4MaaSEs and MASTT2040	268	6
5	Oslo Plenary Meeting - 26.6-27.6	253	9
6	Deep dive into Value Network	278	14
7	A fruitful January and February	310	12
8	Tec4MaaSEs Technical Meeting:	451	19
9	Tec4MaaSEs Kick-off:	297	18

2.2.2 Facebook

Similarly to LinkedIn, the Facebook social medium has been developed, monitored and updated since the start of the project, presenting highlight moments of the project's achievements. The Tec4MaaSEs Facebook page is accessible in https://www.facebook.com/tec4maases/ . The current look of the Facebook page of Tec4MaaSEs is presented in the following figure.

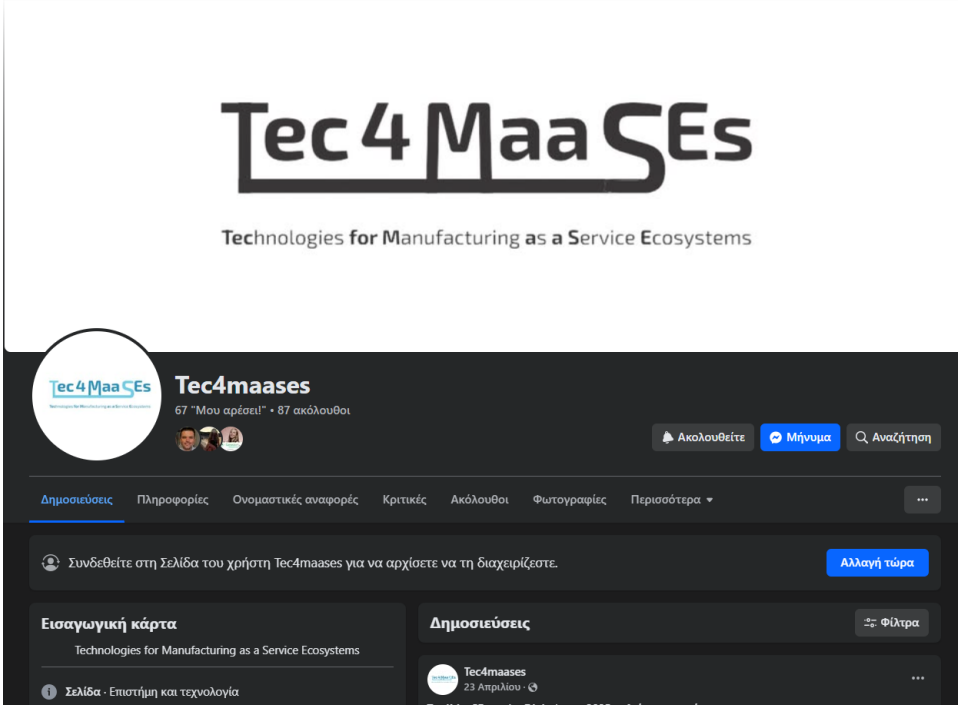


Figure 7: Tec4MaaSEs Facebook presence

As can be seen in the previous and following figures, the Facebook page of Tec4MaaSEs has achieved 87 followers and 67 page likes that have contributed to a reach of 4514 (column #2) and 5747 (column #4) views.

Προεπισκόπηση		Προβολές	Απήχηση	Αλληλεπιδράσεις	Εμφανίσεις	Σχόλια
Tec4MaaSEs at the Digindustry 2025... Δημοσιεύτηκε • 23 Απρ στις 1:06 μ.μ.	•••	31	17	5	20	0
Tec4MaaSEs Plenary Meeting in Ank... Δημοσιεύτηκε • 4 Απρ στις 6:26 μ.μ.	•••	42	19	3	21	0
Tec4MaaSEs Plenary meeting, 9-10 ... Δημοσιεύτηκε • 23 Οκτ 2024	•••	47	18	3	23	0
Collaboration in Action Tec4MaaSEs ... Δημοσιεύτηκε • 23 Οκτ 2024	•••	28	12	1	14	0
The plenary meeting of Tec4MaaSEs ... Δημοσιεύτηκε • 9 Οκτ 2024	•••	26	11	1	15	0
Oslo Plenary Meeting - 26.6-27.6. Ti... Δημοσιεύτηκε • 14 Σεπ 2024	•••	--	22	3	35	0
Deep dive into Value Networks: Duri... Δημοσιεύτηκε • 14 Σεπ 2024	•••	--	16	3	24	0
A fruitful January and February wher... Δημοσιεύτηκε • 14 Σεπ 2024	•••	--	13	3	21	0
Tec4MaaSEs Technical Meeting: On t... Δημοσιεύτηκε • 14 Σεπ 2024	•••	--	12	3	19	0
Tec4MaaSEs Kick-off: On the 18th an... Δημοσιεύτηκε • 14 Σεπ 2024	•••	--	4.374	11	5.555	1
Χωρίς περιεχόμενο κειμένου Δημοσιεύτηκε • 9 Φεβ 2024	•••	--	13	3	26	3

Figure 8: Tec4MaaSEs Facebook post KPIs

2.2.3 X

The X Tec4MaaSEs presence has been kicked off later in the project in order to have a constant and consistent flow of tweets through the materials that are being produced, although it was designed and developed from the start of the project. So far, it has 14 followers and is following 20 accounts and the first 21 (out of the planned 100) tweets are published. The X of Tec4MaaSEs can be found at https://x.com/tec4maases and its current view is presented in the following figure.

Figure 9: Tec4MaaSEs X presence

The overall engagement produced amounts to 397 views, comments and reshares from the current 21 posts and is presented in the following table per X post.

Table 2: Tec4MaaSEs X posts

A/A	Tweet	Engagement
1	VN2 emphasizes using idle AM capacity via MaaS sharing networks.	12
2	Providers input capability metadata to automate service matching	11
3	VN3 relies on the bilateral exchange of specs	2
4	Structured contracts (MS Orders) are the backbone of MaaS transactions	18
5	T4M's matchmaking algorithm ensures service fit across	21
6	Supplier onboarding includes BoM data	19
7	Reference KPIs include order accuracy, time-to-delivery,	19
8	Business models in T4M include 'Performance-Based Contracting'	22
9	Construction of hydrogen facilities	25
10	T4M enforces NDA protocols before sharing	9
11	VN3 suppliers share structured equipment	22
12	VN2 integrates machining, AM, and logistics	24
13	Performance feedback supports continuous	21
14	Users can revise service orders dynamically	13

A/A	Tweet	Engagement
15	Use Case UCs in Tec4MaaSEs	17
16	The MS Request Wizard guides users in placing manufacturing	19
17	Consumers can rank providers using multiple	20
18	Karel Electronics manages 60k+ units/month	23
19	Arctic Romania receives EBs via weekly logistics	24
20	VN1 highlights the lack of ERP-ERP synchronization	16
21	Tec4MaaSEs had its Plenary Meeting	40

As it was identified that the particular medium falls behind, the response in this direction was to create a new dedicated X approach. This overall includes the creation of a pool of posts from the different publicly available deliverables of Tec4MaaSEs that would in turn be promoted in X on a daily basis for the coming months following a publishing calendar (Figure 8). This is expected to lead to a higher dissemination of mainly the X outlet but additionally to the other owned outlets (Website, LinkedIn, Facebook). The developed monthly plan as well as the first 100 posts, are presented in the following figures.

X Month Plan [T4M]

1	2	3	4	5	6	7
Goal: Twitter **Post type:** Processed from Public Deliverable	**Goal:** Twitter **Post type:** Processed from Public Deliverable	**Goal:** Website Push **Post type:** MaaS General UGC and link to website	**Goal:** LinkedIn **Post type:** MaaS General UGC and link to LinkedIn	**Goal:** Twitter **Post type:** Processed from Public Deliverable	**Goal:** Twitter **Post type:** Processed from Public Deliverable	**Goal:** Website Push **Post type:** MaaS General UGC and link to website
8	**9**	**10**	**11**	**12**	**13**	**14**
Goal: LinkedIn **Post type:** MaaS General UGC and link to LinkedIn	**Goal:** Twitter **Post type:** Processed from Public Deliverable	**Goal:** Twitter **Post type:** Processed from Public Deliverable	**Goal:** Website Push **Post type:** MaaS General UGC and link to website	**Goal:** LinkedIn **Post type:** MaaS General UGC and link to LinkedIn	**Goal:** Twitter **Post type:** Processed from Public Deliverable	**Goal:** Website Push **Post type:** MaaS General UGC and link to website
15	**16**	**17**	**18**	**19**	**20**	**21**
Goal: Twitter **Post type:** Processed from Public Deliverable	**Goal:** Twitter **Post type:** Processed from Public Deliverable	**Goal:** Twitter **Post type:** Processed from Public Deliverable	**Goal:** Twitter **Post type:** Processed from Public Deliverable	**Goal:** Website Push **Post type:** MaaS General UGC and link to website	**Goal:** Facebook **Post type:** MaaS General UGC and link to Facebook	**Goal:** Twitter **Post type:** Processed from Public Deliverable
22	**23**	**24**	**25**	**26**	**27**	**28**
Goal: Website Push **Post type:** MaaS General UGC and link to website	**Goal:** Twitter **Post type:** Processed from Public Deliverable	**Goal:** Twitter **Post type:** Processed from Public Deliverable	**Goal:** Website Push **Post type:** MaaS General UGC and link to website	**Goal:** Facebook **Post type:** MaaS General UGC and link to Facebook	**Goal:** Twitter **Post type:** Processed from Public Deliverable	**Goal:** Twitter **Post type:** Processed from Public Deliverable
29	**30**	**31**				
Goal: Twitter **Post type:** Processed from Public Deliverable	**Goal:** Facebook **Post type:** MaaS General UGC and link to Facebook	**Goal:** Twitter **Post type:** Processed from Public Deliverable				

Figure 10: Publishing calendar for X

34. Procurement reps use T4M to evaluate offers & digitally approve contracts. #EProcurement
35. Service decomposition helps break down manufacturing tasks into shareable components. #ServiceDesign
36. T4M validates completeness of service requests before matchmaking begins. #ValidationStep
37. Every user story (US) in VN1 is mapped to real-world factory operations. #UserDrivenDev
38. From KPIs to Use Cases, T4M is grounded in pilot-backed, evidence-based design. #AgileInIndustry
39. Matching EB BoMs with supplier capacity ensures quality and feasibility. #SmartMatching
40. T4M auto-generates requests for quotation (RFQs) to all qualifying providers. #Efficiency
41. VN3 suppliers digitally sign off on shared documentation and IMs. #DigitalSignatures
42. Tec4MaaSEs serves as a knowledge base for digital transformation in European manufacturing. #Industry40
43. Supply chain dashboards in T4M are ranked and filterable by planning needs. #DecisionSupportTools
44. Every UC has clear post-conditions for validating expected system outcomes. #SystemValidation
45. Data governance ensures each organization shares only what they authorize. #DataOwnership
46. VN2 involves mould-making with 3D printing and subtractive finishing. #ToolingInnovation
47. Accuracy in part geometry is tracked as a key KPI in AM workflows. #PrecisionManufacturing
48. Consumers browse 130+ EB variants in a guided experience—fully searchable. #ProductCatalog
49. Providers must agree to IP protection clauses during onboarding. #TechTransfer
50. Delays in one provider's plan trigger automated replanning suggestions. #ContingencyPlanning
51. All manufacturing orders include validity period, delivery terms, and fallback clauses. #SmartContracts
52. T4M's role-based access enables IT, planning, and logistics teams to collaborate. #CollabTech
53. Every partner's ERP system contributes real-time snapshots into the planning model. #ERPData
54. T4M supports gradual migration from manual planning to smart automated orchestration. #DigitalMaturity
55. Modular T4M services allow plug-and-play features for various use cases. #APIArchitecture
56. EPC contractor in VN3 leads negotiation via structured information model exchanges. #SmartBIM
57. Dashboards visualize factory capacity, delivery reliability, and utilization metrics. #FactoryAnalytics
58. T4M supports both predictive and reactive planning cycles. #SmartScheduling
59. Each manufacturing step can be logged, tracked, and optimized in T4M. #Traceability
60. Legacy constraints are handled with flexible data exchange templates. #DigitalAdaptation
61. Continuous feedback helps refine demand forecasts and supply alignment. #LearningSystems
62. Notification engines alert planners of upcoming deadlines and incidents. #SmartAlerts
63. Supplier evaluation includes past performance, delivery accuracy, and feedback scores. #SupplierRating
64. Tec4MaaSEs turns factories into service providers—capacity becomes a product. #FactoryAsAService
65. Deep technical specs (e.g. BoM granularity) inform every matchmaking decision. #EngineeringData
66. Pilot validation ensures UCs reflect actual industrial challenges—not theory. #PilotDriven
67. Configurable workflows allow industries to adapt T4M to sector-specific needs. #DomainFlexibility

Figure 11: Indivate Posts developed for X

2.2.4 YouTube

The channel on YouTube will function in the next part of the project's evolution as the platform for sharing the project's video content. The plan includes developing interviews with the project partners and platform presentation videos. The Tec4MaaSEs YouTube channel can be found at https://www.youtube.com/@Tec4MaaSEs and currently it does not have content. Once the partners' interviews are finalized, they will be shared through there and promoted through blog posts and respective social media shares. The view of the YouTube channel of Tec4MaaSEs is presented in the following figure

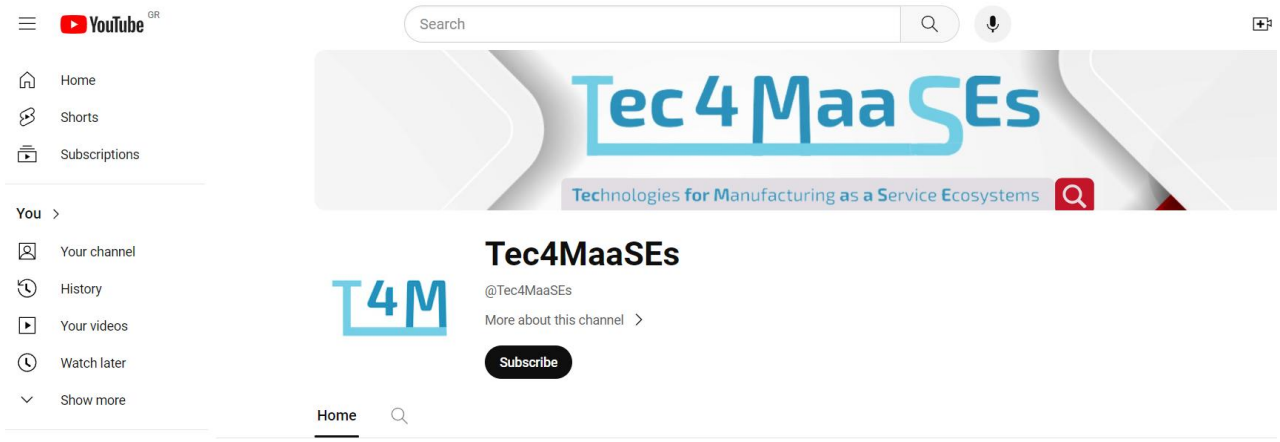


Figure 12: Tec4MaaSEs YouTube channel

2.3 Newsletter

In the course of the project lifespan, the newsletters of Tec4MaaSEs have been sent to over 590 subscribers with the first being an informative newsletter about the overall project (found at this link) and the second focused on the academic publications of the project (found at this link) as means to promote the research rigor as it evolves in the project. Both newsletters are presented in the following figure.

Figure 13: Tec4MaaSEs Newsletters

2.4 Partners' Efforts in Communication

In parallel to all the communication activities held through the official Tec4MaaSEs media outlets (Website, Social Media, Newsletter) the partners of Tec4MaaSEs also utilized their own channels (Website and Social Media) to communicate and disseminate the project scope and ongoing progress as well as participated in different exhibitions with a communication prospect. The following table highlights activities that took place in the course of the first 18 months of the Tec4MaaSEs project by each partners' own outlets.

Table 3: Partners' Communication and Dissemination actions through own Outlets

A/A	Partner	Description of communication activity	Target Audience	HOW: Communication channel	KPI Achieved
1	ERREKA	General Details Post for Tec4MaaSEs	Industry business partners	Linkedin (LINK)	935 Views
2	AUEB	BlogPost about Madeira Digital Transformation Week	Industry business partners	Website (Link)	100 Views
3	AUEB	Social Meeting post on Plenary meeting Bilbao	Industry partners	Facebook (Link)	3 Likes
4	AUEB	Blog post about Plenary Meeting in Blibao	Industry business partners	Website (Link)	
5	IOSB	Booth at HMI 2025	Industry business partners	Exhibition[1]	
6	IOSB	FhG IOSB project website	Industry business partners, Research Communities	Website	
7	IOSB	Video on FA³ST CreAItor	Industry business partners, Research Communities	Video[2]	
8	SmartOpt	Post about Plenary Meeting in Ankara	Industry business partners	LinkedIn(Link)	1274 Views
9	SmartOpt	Post about Technical Meeting in Istanbul	Industry business partners	LinkedIn(Link)	1604 Views
10	SmartOpt	Post about Plenary Meeting in Blibao	Industry business partners	LinkedIn(Link)	1508 Views
11	SmartOpt	Post about Plenary Meeting in Oslo	Industry business partners	LinkedIn(Link)	2495 View
12	Moldes Ura	Share post on Lindekin of Tec4MaaSEs	Industry business partners	Linkedin (Link)	19 views (1 shared)
13	Moldes Ura	Share post on Lindekin of Tec4MaaSEs	Industry business partners	Linkedin (link)	13 views (1 shared)
14	Moldes Ura	Post recommended on Lindekin of Tec4MaaSEs	Industry business partners	Linkedin (link) Linkedin (link) Linkedin (link) Linkedin (link)	

[1] Fraunhofer IOSB at the Hannover Messe 2025 - Fraunhofer IOSB
[2] https://www.linkedin.com/posts/fraunhofer-iosb_how-to-effortlessly-create-an-aas-with-fa%C2%B3st-activity-7275138054514782210-N80S?utm_source=share&utm_medium=member_desktop&rcm=ACoAAFUDU34BGSasbqie86hOWy0vi8qM1LLxCeQ

A/A	Partner	Description of communication activity	Target Audience	HOW: Communication channel	KPI Achieved
15	Moldes Ura	Tec4Maas Mention	Spanish Plastic Cluster	Article nº420 – pag 9	
16	TEKNIKER	New about participation and projecti scope i available in ES, EN and EU.	Industry business partners	Website Link	
17	TEKNIKER	New about participation and projecti scope in	Industry business partners	LinkedIn, Link	
18	TEKNIKER	New about participation and the project	Industry business partners	X Link	
19	KAREL	Post about Plenary Meeting in Ankara	Industry business partners	LinkedIn(Link)	3847 Views
20	KAREL	Post about Plenary Meeting in Blibao	Industry business partners	LinkedIn(Link)	2444 Views
21	KAREL	Post about Plenary Meeting in Oslo	Industry business partners	LinkedIn(Link)	3139 Views
22	KAREL	Post about Technical Meeting in Athens	Industry business partners	LinkedIn(Link)	3399 Views
23	KAREL	Post about Kickoff Meeting in Bologna	Industry business partners	LinkedIn(Link)	4629 Views
24	KAREL	Presentation at TESİD Event 2024	Industry business partners	Website (Link)	400 Attendees
25	KAREL	Newsletter about Tech4MaasEs	Industry business partners	Mail Newsletter	3000 Views
26	ARCELIK	Post about the Pleanry Meeting in Oslo	Industry business partners	Linkedin (Link)	3466 Views

2.5 Available Offline Communication Materials

As part of its dissemination and communication activities, the Tec4MaaSEs project has developed a range of offline promotional and informational materials to support outreach efforts. These materials include official project documents, presentations for conferences and stakeholder events, a brochure providing an overview of the project's objectives and activities, a roll-up banner for visibility at physical events, and a poster designed to effectively communicate key aspects of the project to diverse audiences. Collectively, these resources contribute to enhancing the visibility of Tec4MaaSEs and facilitating engagement with relevant stakeholders in line with the project's dissemination strategy. All developed materials are presented in detail in Deliverable D6.1 Dissemination and Communication Plan V1 and are briefly presented in the following figure, whilst undergoing a remake towards their second version.

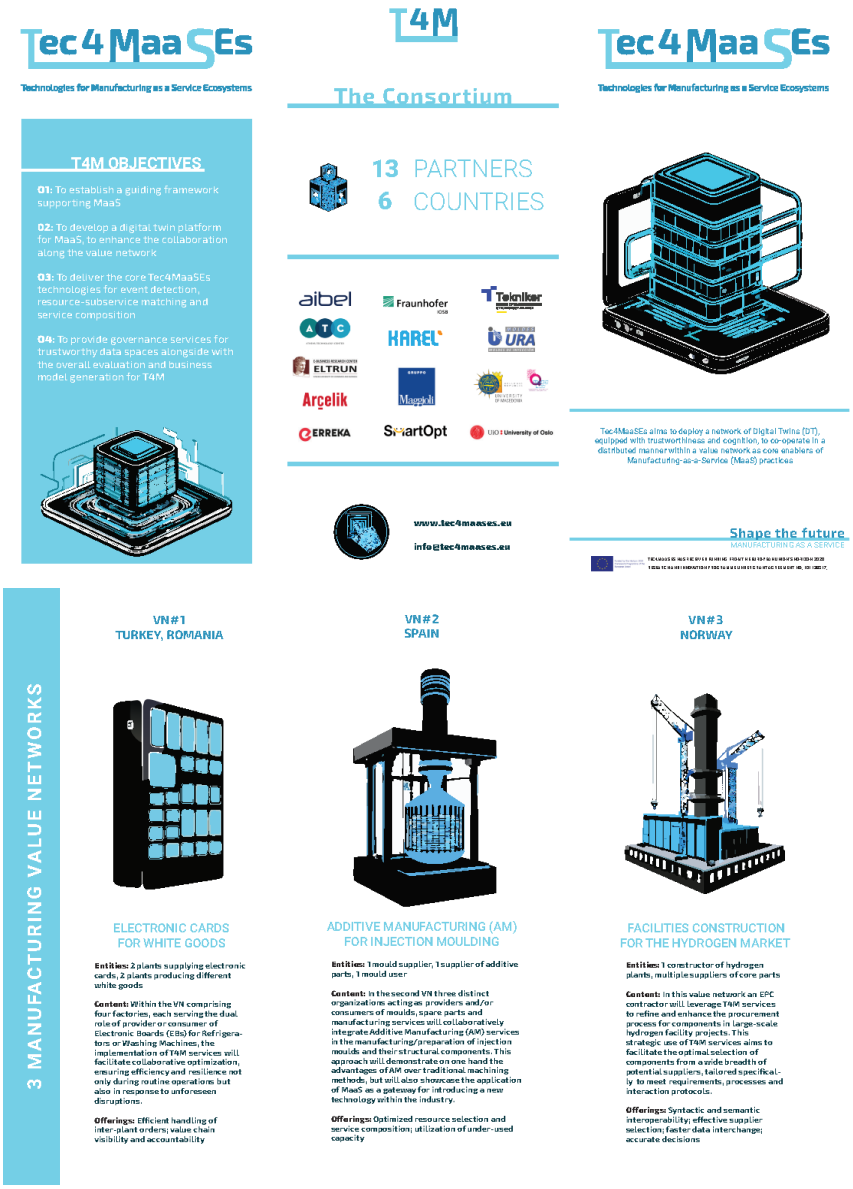


Figure 14: Offline communication material Leaflet

Figure 15: Offline communication material RollUp

3 Dissemination activities up to M18

The following sections present the Tec4MaaSEs achieved dissemination activities starting from the achieved academic publications that the partners have successfully submitted and have been accepted and/or presented as well as the different events and activities conducted in relation to conferences/workshops and clustering activities.

3.1 Publications

In the course of the first year of the Tec4MaaSEs project, partners contributed a number of academic publications to the academy as well as society in general. In particular, the research output that has been successfully published includes 5 Publications in Conference Proceedings (two are accepted to be presented) and 1 Article in Journal leading to 6 different academic publications. The following table presents the academic publications conducted during the first 18 months of the Tec4MaaSEs project.

Table 4: List of Academic Publications of Tec4MaaSEs

A/A	T	PID / URI	Title of Publication	Authors	Academic Outlet	Month/ Year of publication	T4M Partners
1	J	Link	The Reasonable Ontology Templates Framework	Martin Georg Skjæveland, Leif Harald Karlsen	Transactions on Graph Data and Knowledge (TGDK)	12.2024	AIBEL
2	C	Link	Enabling Distributed Value Networks in Manufacturing as a Service Ecosystems through Cognitive Digital Twins	Andreas Georgiou, Konstantinos Kaparis, Ioannis Mourtos, Georgios Zois, Stavros Lounis & Patricia Casla	15th Annual International Conference on Industrial Engineering and Operations Management, Singapore, Singapore	18-20.2.2025	UoM, AUEB, TEKNIKER
3	C	Link	Do LLMs understand shapes? Exploring STL files for automatic CAD feature recognition	Oihana Garciaa , Kerman Lopez de Calle ´ a , Jon Ander Sarasuaa	20th CIRP Conference on Modeling of Machining Operations	21-22.5.2025	TEKNIKER
4	C	Link	Towards a Manufacturing as a Service Framework: Decentralized Value Chains with Embedded Volume and Variety Dynamics	Angelo Sifaleras	21st International Conference on Intelligent Tutoring Systems (ITS 2025), Alexandroupolis, Greece	June 3-6, 2025	UoM
5	C		Towards User-Friendly Digital Twins - How can AI Support Users	M. L. Haller, I. Steinmetz, L. Stojanovic	Automation 2025	01-02.07.25	IOSB

			Beyond AAS Generation?			*Accepted to be presented*	
6	C		Optimising a Manufacturing-as-a-Service platform through mathematical modelling	I. Avgerinos, A. Lagos, I. Mourtos, P. Kasla, G. Zois	APMS 2025	31.8 – 4.9.2025 *Accepted to be presented*	AUEB, TEKNIKER

In addition to the already accepted publications (presented and to appear) the consortium partners have ongoing research streams that are scheduled for submission and/ or revision as presented in the following publication plan.

Table 5: Publication Plan

A/A	Partner	Type	Details	2025	
				Q3	Q4
1	UoM, TEKNIKER, SmartOpt	Journal (Under Revision)	**Outlet:** Internation Journal of Systems Science **Title:** Designing a Manufacturing as a Service Ecosystem through Distributed Value Networks and Structured Volume-Variety Dynamics	X	
2	IOSB	Journal	**Outlet:** To be selected **Working title:** Enhancing Large Language Models with Structured Domain Knowledge – Introducing an Ontology-Based Framework for Automated AAS Creation		X
3	IOSB	Conference	**Outlet:** ADRA Forum 2025 (ADRF25) **Working title:** „Leveraging Generative AI for User-Centered Industrial Digital Twin Generation“	X	

3.1.1 The Reasonable Ontology Templates Framework

Abstract: Reasonable Ontology Templates (OTTR) is a templating language for representing and instantiating patterns. It is based on simple and generic, but powerful, mechanisms such as recursive macro expansion, term substitution and type systems, and is designed particularly for building and maintaining RDF knowledge graphs and OWL ontologies. In this resource paper, we present the formal specifications that define the OTTR framework. This includes the fundamentals of the OTTR language and the adaptations to make it fit with standard semantic web languages, and two serialization formats developed for semantic web practitioners. We also present the OTTR framework's support for documenting, publishing and managing template libraries, and for tools for practical bulk instantiation of templates from tabular data and queryable data sources. The functionality of the OTTR framework is available for use through Lutra, an open-source reference implementation, and other independent implementations. We report on the use and impact of

OTTR by presenting selected industrial use cases. Finally, we reflect on some design considerations of the language and framework and present ideas for future work.

3.1.2 Distributed Value Networks in Manufacturing as a Service Ecosystems through Cognitive Digital Twins

Abstract: (MaaS) ecosystems using advanced enabling technologies within the Industry 4.0 context. Central to the project is the development of a network of Digital Twins (DTs) that are both trustworthy and cognitive, enabling seamless collaboration within distributed value networks. The project examines three distinct value networks (VNs), each with specific needs and objectives: Value network 1 focuses on the production and distribution of electronic boards for white goods manufacturing. The aim is to optimize production and distribution processes by introducing an innovative ordering and production system that leverages the capabilities of multiple providers. Value network 2 involves stakeholders in the additive manufacturing sector, and focuses on mould production for plastic components. It seeks to promote the adoption of additive manufacturing by offering comprehensive services that include finishing processes like machining and coating. Additionally, the network addresses reducing idle periods in aggregate planning. Finally, Value network 3 is built around an EPC (Engineering, Procurement, and Construction) contractor responsible for constructing large-scale energy facilities. The focus is on streamlining and digitizing the negotiation process with suppliers at the strategic planning level. The project introduces standardized Information Models to improve communication and collaboration between the contractor and suppliers. The work concludes by emphasizing T4M's holistic approach to meeting diverse manufacturing challenges, serving as key facilitator in addressing these needs.

3.1.3 Do LLMs understand shapes? Exploring STL files for automatic CAD feature recognition

Abstract: The manufacture of industrial components requires a process planning stage where features such as slots, holes, and steps need to be identified in the Computer-Aided Design (CAD) models. Precise detection of these machining features is essential to generate accurate manufacturing instructions. Over the past four decades, automating this manual process has been an area of research known as Automatic Feature Recognition (AFR). To date, Convolutional Neural Networks (CNNs) are the state-of-the-art approach for this task. Nevertheless, given the increasing ability of Large Language Models (LLMs) to understand complex information, this work proposes employing LLMs for the AFR problem. In this study, ASCII-formatted STL files are treated as language-based data for a feature classification task. For doing so, Qwen, a pre-trained LLM with robust performance across diverse tasks, is compared to a CNN model that processes voxelised input. The results are validated to understand the capabilities and computational effort required by LLMs in the context of AFR, and to evaluate their understanding of new text-based formats such as STL. For this purpose, a dataset of 24 feature classes is used for a classification task. According to the results, LLM-based methods demonstrate an understanding of STL data, revealing potential for feature classification in this field.

3.1.4 Towards a Manufacturing as a Service Framework: Decentralized Value Chains with Embedded Volume and Variety Dynamics

Abstract: This presentation explores the Manufacturing as a Service (MaaS) model through the Tec4MaaSEs (T4M) initiative. It introduces a framework where manufacturing and production procedures are offered as on-demand services by leveraging advanced Industry 4.0 and Industry 5.0 technologies to establish a sustainable and flexible network of distributed value chains. Central to this approach is a highly adaptable Digital Twin (DT) architecture that adjusts to changes in supply and demand, fostering collaboration and optimization across varied manufacturing situations and among different stakeholders. The effectiveness of the proposed approach is tested in three distinct real-world value networks, each exhibiting unique volume

and variety characteristics. The T4M MaaS Platform supports adaptability and boosts performance under different supply and demand circumstances. This initiative underscores the significant impact of the volume-variety principle in designing MaaS ecosystems and offers practical insights to enhance collaboration, resilience, and sustainable industry methods

3.1.5 Towards User-Friendly Digital Twins: How can AI Support Users Beyond AAS Generation?

Abstract: Digital twins are a core element of Industry 4.0. The Asset Administration Shell (AAS) defines specific guidelines for their implementation. However, many companies face challenges in adopting the AAS, primarily due to a lack of expertise and limited resources. This study examines the challenges encountered throughout the AAS lifecycle and explores how Artificial Intelligence (AI) can assist in overcoming them. A literature review indicates that existing research predominantly focuses on describing AI models and their parameters, as well as the datasets required for training and forecasting within the AAS framework. Other potential applications during the AAS lifecycle, such as AI-based creation, validation, and interaction with the AAS, remain largely unexplored. To address this gap, the study demonstrates, using AI-supported components of the FA³ST ecosystem, the potential of these applications to support companies throughout the AAS lifecycle.

3.1.6 Optimising a Manufacturing-as-a-Service platform through mathematical modelling

Abstract: This paper explores the integration of exact optimisation approaches into a Manufacturing-as-a-Service (MaaS) platform. Specifically, it addresses the scheduling of production requests within a flexible and distributed real-world manufacturing network in the plastic injection molding domain. While traditional Mixed-Integer Linear Programming (MILP) formulations struggle with scalability in realistic-sized instances, a Constraint Programming (CP) model demonstrates higher efficiency, providing near-optimal solutions within short computational times. Formally, we examine the flowshop scheduling problem under multiple objectives that reflect the diverse interests of MaaS stakeholders, i.e., the minimisation of makespan and total so-called 'locality' weights. To balance these conflicting objectives, Pareto frontiers are constructed to provide insights for managerial decision-making. Experimental results show that the CP model outperforms the MILP formulation in both so- solution quality and scalability. Moreover, the findings suggest that greater emphasis on makespan ensures better objective balance without significantly impacting locality weights. Overall, our work contributes to the ongoing discourse on MaaS operations, showcasing how exact optimization methods can enhance scheduling efficiency in distributed manufacturing ecosystems.

3.2 Events (Conferences, Workshops etc.)

In addition to the presentation of the Tec4MaaSEs project in the academic conferences as presented in the previous chapters, Tec4MaaSEs project partners also participated in 15 events and workshops.

3.2.1 NEMO Summer School

In the course of the NEMO Summer School the Tec4MaaSEs project and related material were presented in a lecture at the NEMO Summer School 2024 at the University of Vienna, by UiO Team members.

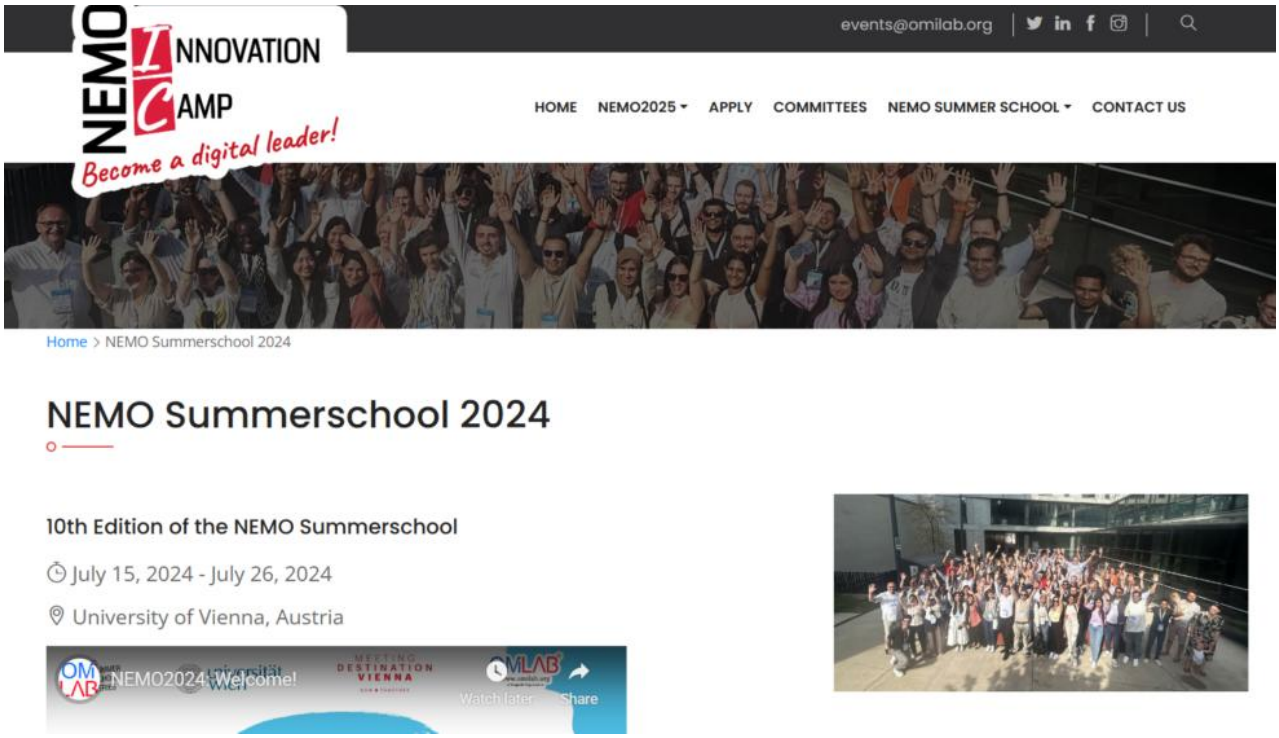


Figure 16: Tec4MaaSEs at the NEMO Summer School

3.2.2 HUAWEI Future Trustworthiness Technology Summit

In the course of the HUAWEI Future Trustworthiness Technology Summit, UiO promoted the technologies of the Tec4MaaSEs project as well as presenting the Information Modelling Framework in the respective Industrial Workshop.

3.2.3 Data Week 2024, Luxembourg

In the course of the Data Week 2024, an event organised by BDVA https://data-week.eu/, Fraunhofer presented the AI-based IDTA DPP4.0 realization: challenges and lessons learned.

At the DATAWEEK in Luxembourg, the BDVA Smart Manufacturing Industries (SMI) organized a session titled “Manufacturing Data Spaces: The Data Infrastructure for Advanced AI Applications.” The session aimed to bridge the three SMI Group pillars—Data Spaces, Digital Twins, and AI—by exploring and discussing new challenges and opportunities arising from the convergence of these technologies in manufacturing-driven business scenarios. Fraunhofer IOSB delivered a presentation on utilizing generative AI for digital twin generation.

Figure 17: Tec4MaaSEs at the DATAWEEK

3.2.4 Madeira Digital Transformation Week 2024

On June 25th, 2024, during the Madeira Digital Transformation Summit, Farmakis Timoleon, researcher at ELTRUN – The E-Business Research Center of the Athens University of Economics and Business (AUEB), participated in a panel discussion titled “Digital Approaches to Achieve Circular, Resilient, and Sustainable Supply Chains.”, presenting the Tec4MaaSEs project. This event was a key part of the prestigious Madeira Digital Transformation Week, which featured five major events: the 30th ICE/IEEE ITMC Conference, the 2nd edition of the Madeira Digital Transformation Summit, the EIT Health Transformation Talks, the CyberSecPro Summer School, and the NITIM Graduate School.

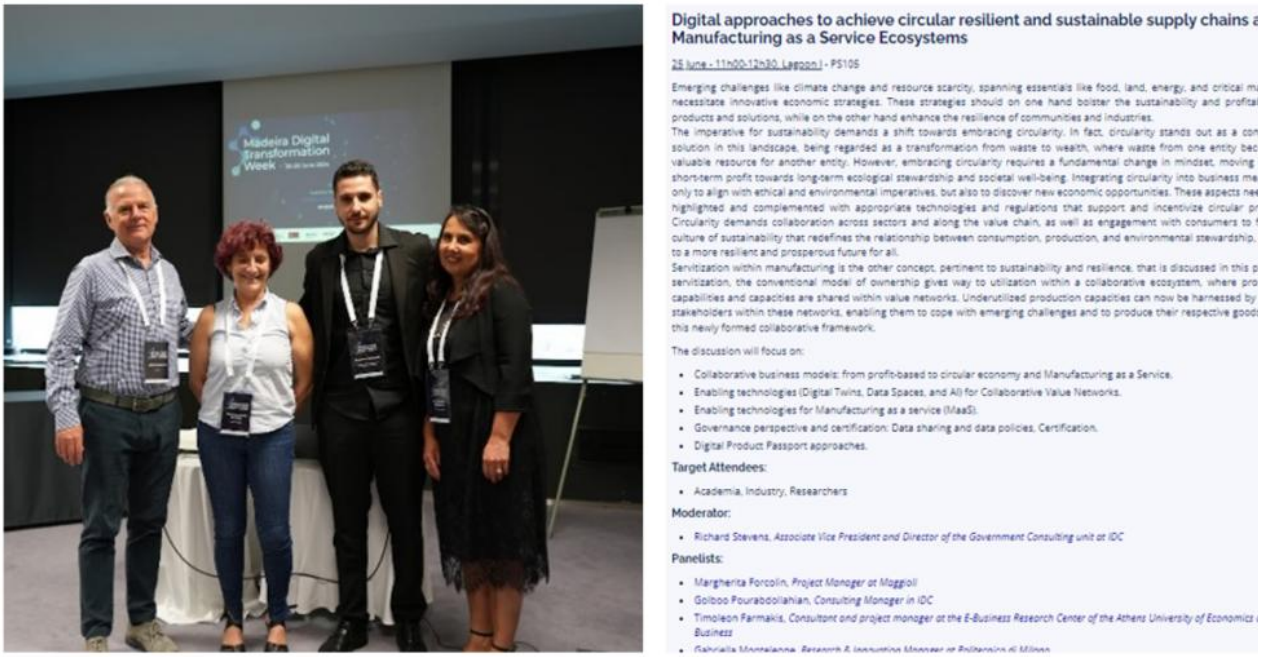


Figure 18: Tec4MaaSEs at the Madeira Digital Transformation Week 2024

3.2.5 Sustainable Manufacturing Event, Athens - Greece

In the course of the Sustainable Manufacturing Conference organized by BoussiasEvents (https://sustainablemanufacturing.boussiasevents.gr), a presentation relevant to the Information Modeling Framework and Tec4MaaSEs and their application in industrial use cases was given by Professor Dimitris Kyritsis of UiO. In the conference, Industrial business partners and academics had the opportunity to learn about the IMF and Tec4MaaSEs.

3.2.6 Core Innovation Days Event, Athens - Greece

In the course of the CORE Innovation days, in Athens, in January 2025 (https://www.core-innovation.com/blog-posts/cid-2025) , Professor Dimitris Kiritsis disseminated information about the IMF and its application in industrial use-cases through the Tec4MaaSEs project.

Figure 19: Prof. Dimitris Kiritsis at the CORE Innovation Days

3.2.7 Workshop - DIGINDUSTRY - BDT Student Conference

In the course of the DIGINDUSTRY (http://texconf.unipi.gr/conference-2025/) BDT Student Conference Student Conference of the Department of Industrial Management and Technology, University of Piraeus the Tec4MaaSEs project was used as a case study in the workshop hosted by the MODAPTO Project and entitled “Digital & AI Transformation in the Era of Industry 4.0 and 5.0” . In the course of the workshop, 70 participants inspired by the Tec4MaaSEs projects (among others) developed solutions and identified challenges pertinent to Industry 4.0 and Industry 5.0 respectively.

Figure 20: Tec4MaaSEs at the DIGINDUSTRY conference

3.2.8 Workshop - FSDET Conference

In the course of the FSDET Conference (https://fsdet.dmst.aueb.gr/) of the Department of Management Science and Technology of the Athens University of Economics and Business, held in Athens, Greece, the Tec4MaaSEs project was presented and used as a case study in the workshop hosted by the MODAPTO Project and entitled “Advancements of Manufacturing: The cases of modular manufacturing, manufacturing as a service and circular manufacturing». In the course of the workshop, 45 students had the opportunity to access an in-depth look at innovative forms of production and transformative trends in the industry through a modern, sustainable and technologically mature lens.

Figure 21:Tec4MaaSEs at the FSDET conference

3.2.9 Workshop - Maggioli Internal Workshop

An internal workshop was held at MAGGIOLI in November 2024, where the MAG partner presented their tool, MIRA. During the session, the team showcased the platform's key functionalities and highlighted the new features developed to support the goals of the Tec4MaaSEs project. The workshop served as an opportunity to align the internal team on technical progress and ensure continued integration of MIRA within the project's broader framework.

3.2.10 Data Spaces Symposium 2025

In the course of the Data Spaces Symposium 2025 (https://www.data-spaces-symposium.eu/program), participation in Track 3, titled "Capabilities you need to make a data space a success," included a contribution from Tekniker, represented by Dr. Gonzalo Gil. This track focused on the presentation of practical tools and frameworks essential for the effective implementation of data spaces (https://www.data-spaces-symposium.eu/wp-content/uploads/2025/03/DSS25-Day-2-Track-3-Capabilities-needed-to-make-data-spaces-a-success.pdf). Within the session "Pitches | Data space tools in action," Tekniker's advancements in data space technologies were showcased, with an emphasis on enabling interoperable and sovereign data sharing across multiple sectors. Additionally, the Tec4MaaSEs initiative was presented as part of the same track. The presentation outlined the initiative's role in enhancing data space capabilities, particularly through the integration of these technologies to support manufacturing-as-a-service ecosystems.

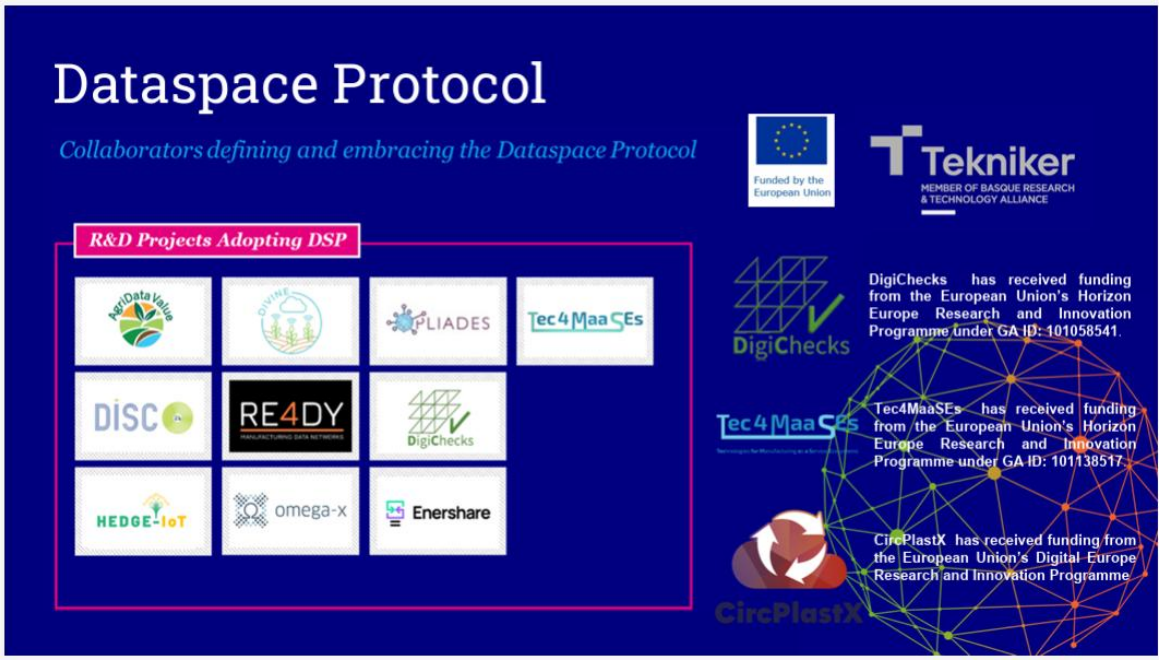


Figure 22:Tec4MaaSEs at Data Spaces Symposium.[3]

3.2.11 VDMA Event "Workshop on data spaces, asset administration shell and digital twins"

One of the goals of Manufacturing-X is to scale data in order to bring digital business models to life. An event titled "Manufacturing-X — Use Cases and the Easy Entry for SMEs into the Shared Data Space" was organized to support SMEs in this endeavor. This event[4] is a collaboration between the VDMA Baden-Württemberg and the Alliance Industry 4.0 Baden-Württemberg, targeting small and medium-sized enterprises (SMEs) in Baden-Württemberg.

Fraunhofer IOSB organized two parallel sessions: one focused on Asset Administration Shells (AAS) and FA³ST tools, and the other on data spaces and the EDC-AAS extension.

Figure 23: Tec4MaaSEs at the VDMI Event

[3] Source: Slides from Capabilities you need to make a data space a success session
[4] Veranstaltungen & Messen - vdma.org - VDMA

3.2.12 "Build-Your-Own-AAS" Workshop

The AI REDGIO 5.0 Didactic Factory (DF) organized a workshop titled "Build-Your-Own-AAS" on Tuesday, May 13, 2025, from 9:00 to 17:00.

During the workshop, participants—both with and without prior knowledge of Asset Administration Shells (AAS)—had the opportunity to create their own AAS without any coding. Various tools from the FA³ST Ecosystem were utilized to complete the tasks. At the end of each session, participants were asked to complete questionnaires prepared specifically for this training.

Table 6: Agenda of "Build-Your-Own-AAS" Workshop

Duration	Time	Activity	Presentator
15'	09.45-10.00	Arrival and welcome coffee	
75'	10.00-11.15	May Didactic Factory monthly meeting. (In presence only for the project DF network members)	BPI
15'	11.15-11.30	Workshop Introduction and exploitation of AAS for didactics & DFs	Polimi & FhG IOSB
90'	11.30-13.00	1st block Workshop: Use of FA³ST CreAItor to automatically create an AAS model	FhG IOSB
60'	13.00-14.00	Lunch break	
90'	14.00-15.30	2nd block Workshop: Use of FA³ST ValAIdator to ensure an AAS model compliant with the AAS standard	FhG IOSB
15'	15.30-15.45	Coffee break	
90'	15.45-17.15	3rd block Workshop: Use of FA³ST Mapper to connect to a physical asset without coding	FhG IOSB
15'	17.15-17.30	Upload built AASs into the Repository	Polimi
15'	17.30-17.45	Closing remarks	All
30'	17.45-18.15	MADE cc Tour - **optional**	MADEcc colleague

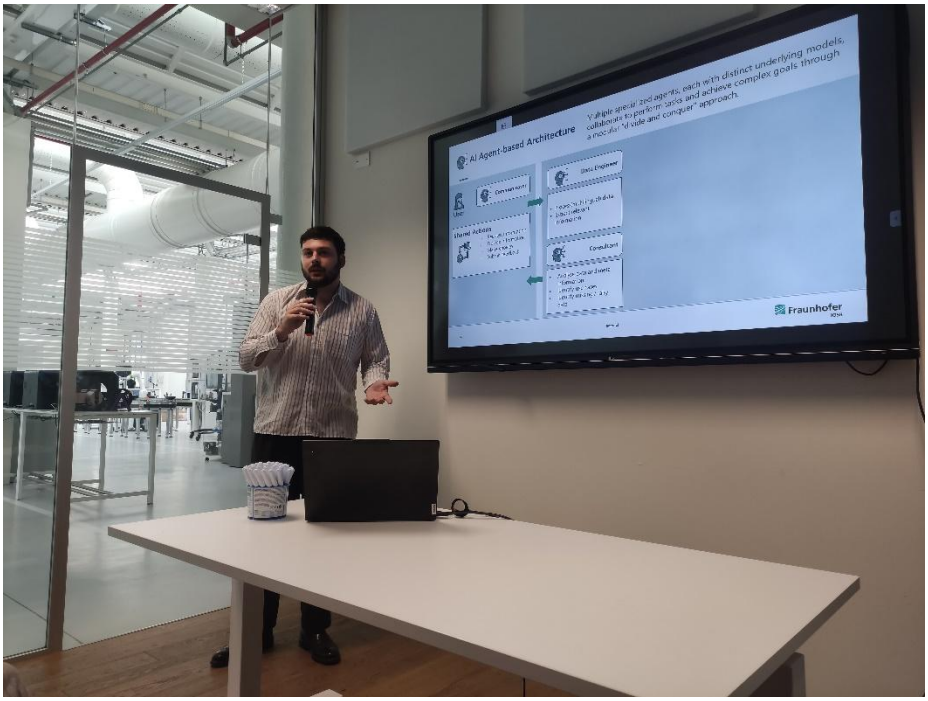


Figure 24:Tec4MaaSEs at the "Build-Your-Own-AAS" Workshop

3.2.13 AAS-related meetings

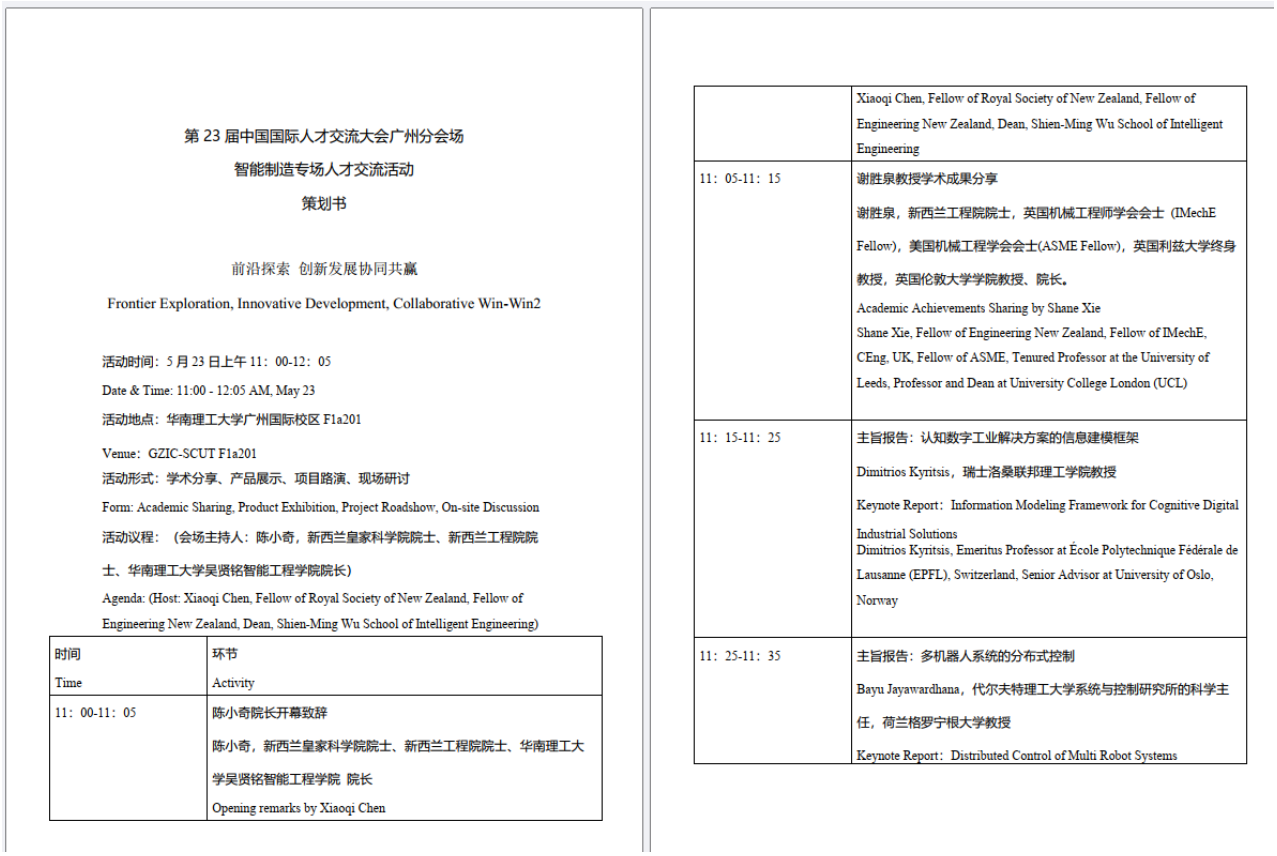
The key outcome of Fraunhofer IOSB is the FA³ST CreAItor tool, which automatically generates AAS models from data sources such as PDFs, Excel files, or text documents. The tool was presented at the following AAS-related events:

- IDTA Working Group Open Technology Meeting on January 16, 2025
- Platform I4.0 AG-1 Web Meeting on February 27, 2025

The pitch on FA³ST CreAItor will be delivered at the IDTA Solutions Summit 2025 on June 4, 2025. Additionally, content related to the pitch topic will be showcased at the Marketplace session of the same event, in the form of a demonstrator and a poster.

3.2.14 23rd Conference on International Exchange of Professionals

Prof. Dimitris Kiritsis of UiO presented the IMF and elements of Tec4MaaSEs at the 23rd Conference on International Exchange of Professionals at SCUT Guangzhou International Campus on May 23-25, 2025



第 23 届中国国际人才交流大会广州分会场

智能制造专场人才交流活动

策划书

前沿探索 创新发展协同共赢

Frontier Exploration, Innovative Development, Collaborative Win-Win2

活动时间：5 月 23 日上午 11：00-12：05

Date & Time: 11:00 - 12:05 AM, May 23

活动地点：华南理工大学广州国际校区 F1a201

Venue：GZIC-SCUT F1a201

活动形式：学术分享、产品展示、项目路演、现场研讨

Form: Academic Sharing, Product Exhibition, Project Roadshow, On-site Discussion

活动议程：（会场主持人：陈小奇，新西兰皇家科学院院士、新西兰工程院院士、华南理工大学吴贤铭智能工程学院院长）

Agenda: (Host: Xiaoqi Chen, Fellow of Royal Society of New Zealand, Fellow of Engineering New Zealand, Dean, Shien-Ming Wu School of Intelligent Engineering)

时间 Time	环节 Activity
11：00-11：05	陈小奇院长开幕致辞 陈小奇，新西兰皇家科学院院士、新西兰工程院院士、华南理工大学吴贤铭智能工程学院 院长 Opening remarks by Xiaoqi Chen
	Xiaoqi Chen, Fellow of Royal Society of New Zealand, Fellow of Engineering New Zealand, Dean, Shien-Ming Wu School of Intelligent Engineering
11：05-11：15	谢胜泉教授学术成果分享 谢胜泉，新西兰工程院院士，英国机械工程师学会会士（IMechE Fellow），美国机械工程学会会士(ASME Fellow)，英国利兹大学终身教授，英国伦敦大学学院教授、院长。 Academic Achievements Sharing by Shane Xie Shane Xie, Fellow of Engineering New Zealand, Fellow of IMechE, CEng, UK, Fellow of ASME, Tenured Professor at the University of Leeds, Professor and Dean at University College London (UCL)
11：15-11：25	主旨报告：认知数字工业解决方案的信息建模框架 Dimitrios Kyritsis，瑞士洛桑联邦理工学院教授 Keynote Report：Information Modeling Framework for Cognitive Digital Industrial Solutions Dimitrios Kyritsis, Emeritus Professor at École Polytechnique Fédérale de Lausanne (EPFL), Switzerland, Senior Advisor at University of Oslo, Norway
11：25-11：35	主旨报告：多机器人系统的分布式控制 Bayu Jayawardhana，代尔夫特理工大学系统与控制研究所的科学主任，荷兰格罗宁根大学教授 Keynote Report：Distributed Control of Multi Robot Systems

Figure 25: Tec4MaaSEs IMF - 23rd Conference on International Exchange of Professionals

3.2.15 Data Space Symposium 2024

Fraunhofer IOSB was invited to participate in the panel of the session “Data Spaces for Manufacturing, Supply Chain, and Logistics” at the Data Spaces Symposium held on March 13, 2024, in Darmstadt, Germany. We discussed research and technical challenges related to the manufacturing data space concept. Fraunhofer IOSB provided insights on the IDS-Industrial community, which aims to bridge the gap between digital twins and data spaces.

Figure 26:Tec4MaaSEs at the Data Space Symposium

4 Clustering activities up to M18

In the course of the first 18 months of the Tec4MaaSEs project a number of activities to promote the project and cross-pollinate the results took place. In the following paragraphs the efforts of Tec4MaaSEs dissemination and link/partnership formation are presented.

4.1.1 MASTT2040

Since the start of the Tec4MaaSEs project, the project partners have been in close contact with MASTT2040. In particular, Tec4MaaSEs participated in the MASTT2040 Community Call, held on October 22 2024, where we were given the opportunity to share insights alongside M4ESTRO, ALICIA, Plooto , REEsilience, RENÉE , DMaaST , NARRATE , Factory-X, Circularise and RAASCEMAN.

Figure 27: Tec4MaaSEs in MASTT2040 Community Call

Furthermore, Tec4MaaSEs contributed to the Delphi study on October 2024 where based on the knowledge developed among the project partners, potential disruptions to the trends in manufacturing were assessed

Additionally, ATC represented the Tec4MaaSEs project in the MASTT2040 project webinar: Transforming European Manufacturing: From Future Scenarios to Actionable Roadmaps held on March 20, 2025 and received insights related to Manufacturing as a Services, later diluted to the Tec4MaaSEs project partners.

Lastly UoM participated in the MASTT2040 roadmapping workshop held on April 28, 2025 where based on the knowledge produced in the Tec4MaaSEs project, they contributed in the discussions held.

4.1.2 Tec4MaaSEs at the MAASIVR Roadmapping Workshop

On September 4th, 2025 Tec4MaaSEs project was invited by MAASIVE project (for Manufacturing as a Service) to present its vision, approach and expected results.

Tec4MaaSEs project coordinator Kostas Kalaboukas (Maggioli) presented the overall project the holistic approach through the three different phases in the MaaS lifecycle and an interesting discussion was done on similarities and potential synergies with MAASIVE project.

The output was that although both projects are developing different MaaS platforms a cooperative scenario will be working them in a federated way. This means that in a common search for a manufacturing as a service each platform could not be restricted to its context but also to search within other similar platforms in a way to maximize the results and benefits from all involved stakeholders.

Both projects agreed on the need to continue the collaboration and make another meeting when concrete results/demos are available.

4.1.3 Tec4MaaSEs at the MASTT2040 Roadmapping Workshop

In the context of the MASTT2040 Roadmapping Workshop held in Brussels on February 26, 2025, MAGGIOLI participated in the event where the Tec4MaaSEs project was presented. The workshop focused on developing a resilient and green European manufacturing industry by 2040, with emphasis on Manufacturing-as-a-Service (MaaS). During the event, the Tec4MaaSEs project and its approach across the MaaS lifecycle were introduced. Through group discussions and interactive sessions, participants brainstormed on the future trends of MaaS, exploring key challenges and opportunities. It was a great opportunity for T4M to position itself in this roadmap and validate the business models that are being worked through the requirements analysis process. Last, synergies with other ongoing projects were identified.

Figure 28: Tec4MaaSEs at the MASTT2040 Roadmapping Workshop

4.1.4 Factory-X

Fraunhofer IOSB is collaborating with the Factory-X project, specifically on the use cases “Manufacturing as a Service,” “Collaborative Condition Monitoring,” and “Circular Manufacturing.” We have organized several meetings with industrial partners from these use cases (e.g., Trumpf, Wittenstein, Siemens, etc.) to demonstrate how the FA³ST Ecosystem in general—and the FA³ST CreAItor in particular—can assist them in creating AAS models and using AAS services without prior knowledge of the AAS standard. Our digital twin component, namely the FA³ST Service, has already been used by Factory-X partners. Additionally, we are leveraging the capability vocabulary (e.g., one extracted from Wikipedia) from the “Manufacturing as a Service” use case to enhance the accuracy of our results.

4.1.5 Sister Project Activities

Since the start of the project, Tec4MaaSEs has participated in activities pertinent to joint project collaboration and dissemination and communication motivated by M4estro open call to all projects. In particular with MaaSive Twin, MaaSive, NARRATE and M4estro, Tec4MaaSEs had discussions and project presentations in the joint meeting organized by M4estro.

Two partners from the M4ESTRO project participated in the 'Build-Your-Own-AAS' workshop in Milan (see section 3.2.12), as they plan to utilize the FA³ST Ecosystem to develop their own digital twins.

5 Dissemination and Communication Aggregate KPIs

Table 7: Dissemination and Communication aggregate KPIs

Channel	Purpose / Description	Target Group	KPIs	Status
Website	Dissemination of project results	All / Public	No of visitors: ≥ 1.000 / Year	1100 Users with 2500 pageviews
Social Media (LinkedIn, Facebook, Twitter, YouTube, Slideshare)	Presence for Tec4MaaSEs in Twitter, LinkedIn, Facebook, YouTube, SlideShare, and increased outreach via the partners' own social accounts	All/ Public	≥100 Posts/year ≥500 Followers	T4M 41 posts 162 Followers 28.261 Reach Partners 28.400 Reach from own outlets
Industrial community intranet	Industrial community members will have access to project documentation and demos. This portal will be improved and at the end of the project will be embedded into the Tec4MaaSEs open-core toolkit	Tec4MaaSEs Industrial Community	≥500 downloads of project docs and	0
Industrial partners' networks	Creating awareness about the commercial opportunities/offers of Tec4MaaSEs utilizing existing market networks	Manufacturing Companies, SMEs	≥ 6 events and presentations	- NEMO Summer School , - HUAWEI Future Trustworthiness Technology Summit - Data Week 2024, Luxembourg - Sustainable Manufacturing Event, Athens - Greece - Core Innovation Days Event, Athens - Greece - Workshop - DIGINDUSTRY - BDT Student Conference - Workshop - FSDET Conference - Workshop - Maggioli Internal Workshop - Data Space Symposium 2024

Channel	Purpose / Description	Target Group	KPIs	Status
				– Data Spaces Symposium 2025 – VDMA Event "Workshop on data spaces, asset administration shell and digital twins" – 23rd Conference on International Exchange of Professionals
Flyers and Newsletters	Promote Tec4MaaSEs technology, describe on-going work & results: newsletter for all stakeholders; flyers focusing on different backgrounds	ICT, Manufacturing companies	≥5 newsletters ≥ 2 flyers	2 Newsletters 1 Flyer
International Conferences and Stands	Promote scientific output to peer reviewed academic conferences	Researchers, Industry Experts	≥ 20 Conferences and Stands	4
Scientific Journals (open access)	Promote scientific output to peer reviewed academic journals	Academic Research	≥ 7 Papers in top Scientific Journals	1
Standardization	Contributions to standards	All	≥ 1 Contribution	8 contributions Plattform Industrie 4.0 (1), Industrial Digital Twin Association (5), International Data Spaces Association (1) and Open Applications Group, Inc. (1)
Training demos	Training materials and specific demos (coming also from the 'lessons learnt') will be available	All	≥ 10 Training material and targeted demos	

Channel	Purpose / Description	Target Group	KPIs	Status
	online to all interested parties.			
Workshops and demonstrations	Tec4MaaSEs will organize workshops at EU and national level to value, the overall technology & business offerings, particularly in industry-driven International Organizations, such as BDVA-DAIRO, IDSA, DFA, GAIA-X and FIWARE	ICT, Manufacturing companies, Research	≥ 3 Workshops	– Madeira Digital Transformation Week 2024 – "Build-Your-Own-AAS" Workshop

6 Marketing Activities and Ecosystem enrichment up to M18

During the first 18 Months of the project life, ATC was engaged in Marketing Activities and Ecosystem enrichment according to the relevant task (T6.3), with the scope to achieve marketing and community building.

ATC allocated potential MaaS stakeholders and defined the field for collaboration with them, including webinars, and other relevant events in the field of industrial evolutions and especially focused in the area of Manufacturing as a Service. Having allocated such events and the option for potential collaboration, responsible persons attended the physical and/or online events to follow the discussions, actively advertise the project tools and enrich the Tec4MaaSEs Ecosystem.

In the context of such events, ATC's representatives made explicit marketing of the project activities and made consistent efforts to widen the audience familiar with Tec4MaaSEs and increase the recognizability of the tools that will be developed.

24/09/2024: Disruptive Futures in Manufacturing

On September 24th, 2024, in the framework of MASTT2040, Katerina Kaplani and George Triantafyllou (ATC) participated in an online session "Disruptive Futures in Manufacturing." During the initial roundtable of participants, Katerina Kalani (ATC) took the opportunity for a short introduction on Tec4MaaSEs, its scope and approach on Manufacturing as a Service together with the tools foreseen for implementation, spreading the knowledge for the project and setting the ground for future updates to the whole community as to our future progress.

During this session, participants received instructions on how to use the 4CF PnyX online tool and guidance on the tasks involved. All participants had access to the PnyX platform from September 24th to October 3rd, where they could assess which disruptive events are related to each of the 19 identified trends, as well as comment on and evaluate others' contributions. The session focused on exploring different scenarios of future manufacturing and manufacturing-as-a-service through collaborative argument trees.

4/10/2024: PnyX/Sprawlr summary webinar

On Friday, October 4th 2024, Katerina Kaplani and George Triantafyllou (ATC) participated in an online workshop, where all the participants reviewed and discussed the results of the collaborative work on the 19 trends.

Through the 4CF Sprawlr platform and the interactive workshop discussions, all participants of online workshop contributed by sharing views and ideas on key challenges, priorities, and possible actions for the future development of Manufacturing-as-a-Service (MaaS). In the course of this discussion, George Triantafyllou discussed which of the 19 trends also became evident in the discussions within our project and how the Value Networks of Tec4MaaSEs are expected to be affected by disruptive events as foreseen at the moment. This offered an opportunity to advertise how the project tools aim to help stakeholders in the manufacturing domain to resolve such issues, thus are expected to be included in the market offering of tools in the area of Manufacturing as a Service.

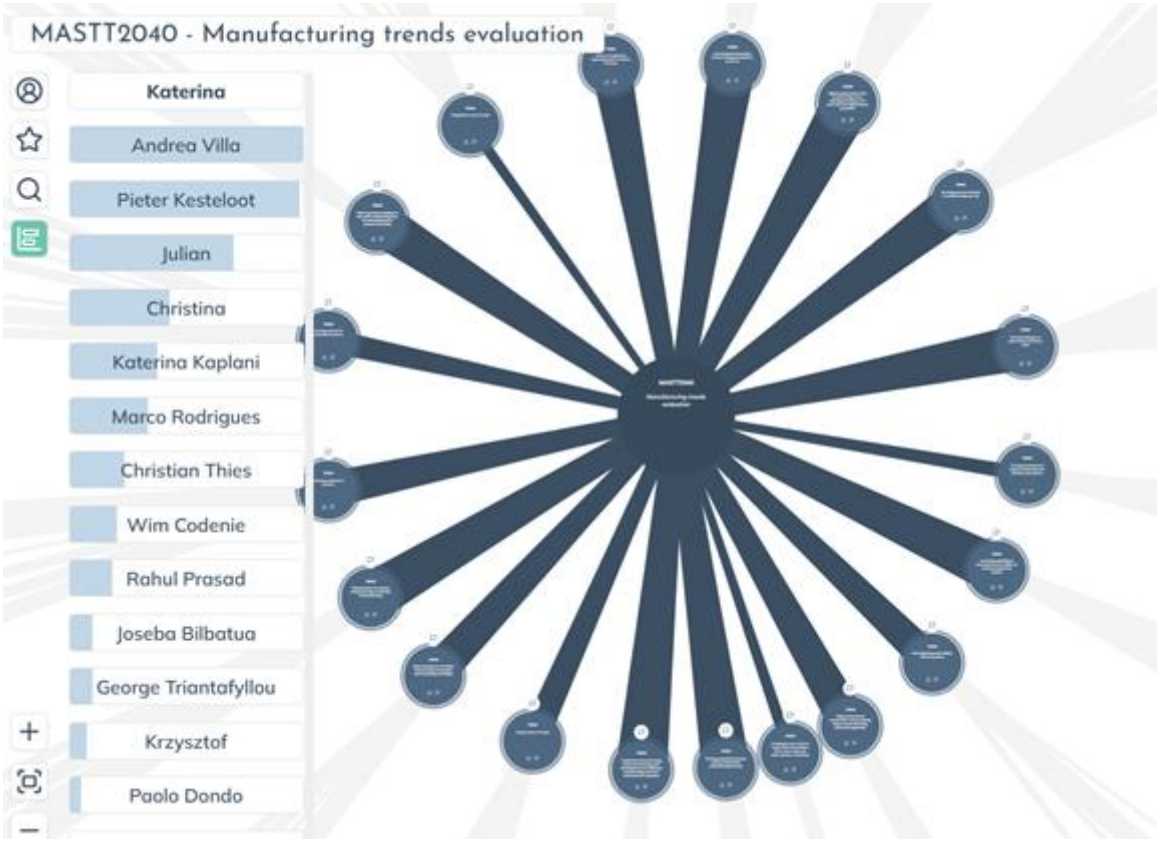


Figure 29: 19 Manufacturing trends evaluation

20/03/2025: Online webinar- Transforming European Manufacturing: from future scenarios to actionable roadmaps

Additionally, on March 20th 2025, Katerina Kaplani (ATC) participated in an online webinar: "*Transforming European Manufacturing: from future scenarios to actionable roadmaps*". In this workshop, all participants selected (according to the organization they belong) a different stakeholder role from these: university researcher, climate activist, European city president, Head of US- EU advanced technology transfer, SME owner or SME employee, DG GROW or DG Research Policy Executive, Chief production engineer, large company, Chief of EU Manufacturing standards & harmonization, EU- China relations diplomat (Chinese or European), production line employee large company, unemployed person; and they explored the "4 futures of European Manufacturing" within a 2040 timeframe. For each role, all respondents answered three questions: who we are and what we are working on, our most recent success or something we are proud of, and our recent challenge or failure. The workshop concluded with identifying risks, opportunities, and the possible role of manufacturing-as-a-service in future scenarios.

Figure 30: Role-playing "Sense-Making Activity"

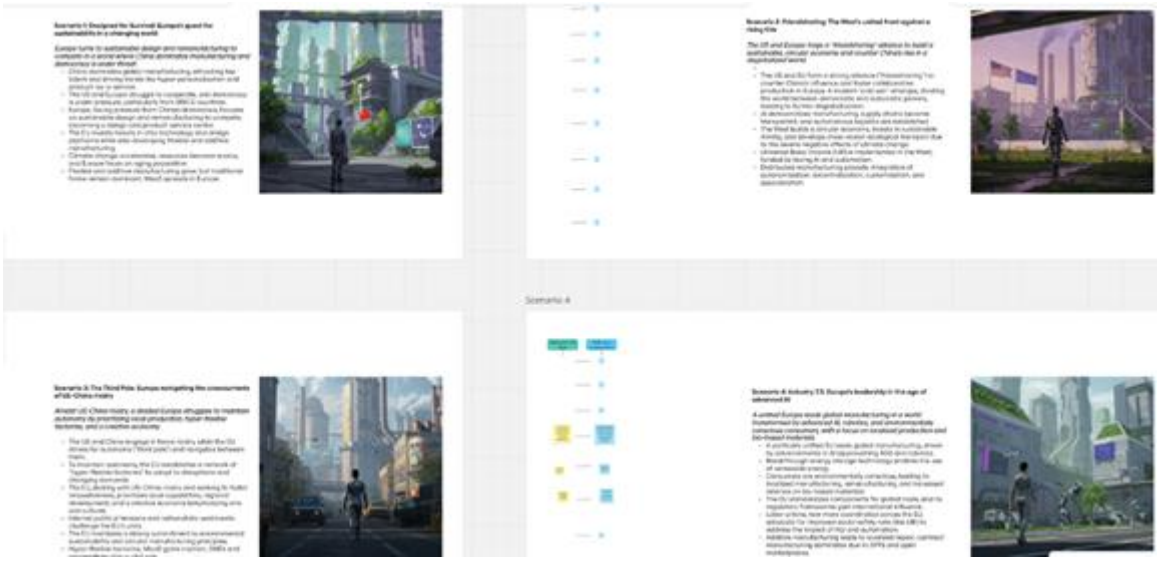


Figure 31: The "4 futures" of European Manufacturing

This discussion served as a starting point to Katerina Kaplani to introduce to all participants an overview of the specific services and software modules developed in Tec4MaaSEs, then invited them to keep a close connection with our project so as to be informed of such developments as they evolve in future phases. This action directly aimed to enlarge Tec4MaaSEs community with stakeholders engaged in the same domain, thus have a wider and active Ecosystem of people interested in our activities.

28/04/2025: MASTT2040 Second Roadmapping Workshop

Also, ATC (Katerina Kaplani & George Triantafyllou) participated in the MASTT2040 2nd Roadmapping Online Workshop, on 28th April 2025. The main topic of the workshop was "Sustainability, Circularity and Decarbonisation". The participants were divided into small groups for parallel sessions. Together with all participants, the workshop explored topics such as data standardisation, cybersecurity, circular economy, sustainable development, and decarbonization, manufacturing models, issues related to green and digital transformation, and potential social implications of the Twin Transition goals. The 1st task included the identification of actions to be implemented in order to realise the MASTT2040 vision. Participants were asked

to define existing challenges (such as research gaps, standardisation needs, regulation/ legislation gaps, skills and data gaps, etc.), determine the time frame, identify the target category (e.g. research etc) and specify the required resources (funding, infrastructure, personnel, etc.). The 2nd task included the development of recommendations. Based on the previous work, participants provided recommendations, identifying the target stakeholders (policy makers, industry, RTD, etc.) and the relevant timeframe.

Figure 32: 1st Task identification of actions

Figure 33: 2nd Task Development of recommendations

Whilst identifying research and data gaps, determining the timeframe of future actions and the required resources, George Triantafyllou highlighted the requirements on infrastructure, personnel skills and digital tools of future systems, the scope being to develop easy to use and efficient MaaS systems. In parallel, he

analyzed the aim of Tec4MaaSEs to generate software tools facilitating Providers and Consumers of MaaS in operations like i) matching requirements with capabilities, ii) forecasting and matching production capacities, and iii) handling supply chain needs of factory operators and decision makers, thus place outgoing and regulate incoming orders.

Within the context of the discussion about software functionalities of the tools, Katerina Kaplani and George Triantafyllou actively pursued the enrichment of the Tec4MaaSEs Ecosystem so that other attendants of the event became aware of the project goals and interested to follow the developments of the results. As a result, attendants of this event and stakeholders became familiar with project aspirations and are expected to keep following Tec4MaaSEs evolution and be informed about upcoming activities and future results. This is foreseen to be one of the project's audiences for forthcoming marketing activities

7 Next Steps and Conclusions

The next steps of the dissemination and communication efforts of the Tec4MaaSEs project will focus on the following actions :

- Academic dissemination: As work is ongoing and new results are developed, several partners are working on papers that are to be submitted in peer-reviewed academic conferences and journals
- Participation in events: Although the project partners have already utilized their networks and participated in several events, in the next period, this effort will intensify.
- Online presence: The focal point in the online presense of Tec4MaaSEs will follow a two-fold approach : (a) redesign of the online website and (b) utilization of the public deliverables as content generation – e.g. X posts being developed from the respective deliverable and cross-polination within all outlets and with the sister-projects' outlets through the new publishing calendar.

In conclusion, the first 18 months of the Tec4MaaSEs project's efforts in dissemination and communication were fruitful and are expected to intensify as the project matures and more results become available.