EFPF: European Connected Factory Platform for Agile Manufacturing

European Factory Platform

WP11: Dissemination, Collaboration and Standardisation

D11.3: Dissemination, Communication and Ecosystem Creation – Final Report (Update)

Vs: 2.0

Deliverable Lead and Editor: Ingo Martens, HAW

Contributing Partners: All

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Short Abstract

The deliverable describes the dissemination and communication activities carried out in the EFPF project after month 18. The deliverable presents the overview of the dissemination KPIs and the marketing material developed in the project. It also reports on the different types of dissemination activities carried out by all project partners to promote the project among target audience.

Grant Agreement: 825075

Document Status

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Internal Reviewer 2	Amparo Roca de Togores
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History
See Annexe A.

Status
This deliverable is subject to final acceptance by the European Commission.

Further Information

www.efpf.org

Disclaimer

Project Partners:

Executive Summary

This deliverable D11.3 shows the dissemination and communication activities undertaken and the effectiveness of the defined dissemination and communication strategy of the EFPF project as defined in D11.1 in M18. All activities carried out up to M18 are not listed again here. They were described in detail in D11.1.

At the beginning of the project, it was planned to organise mainly physical meetings with potential users of the EFPF platform, e.g. at congresses, international fairs and local workshops. In the wake of the COVID-19 pandemic, most of these meetings were either cancelled or held as virtual events. EFPF partners were keen to facilitate their participation in these virtual conferences and workshops. An important fact in this context was EFPF's involvement in the Digital Manufacturing Projects (DMP) cluster at the EU level. Here, attention was generated not only in the partner projects but also beyond, by using their dissemination activities. EFFRA could be won as an important dissemination partner and facilitated the extraordinarily successful final event in Brussels in November 2022.

The marketing material developed after M18 is briefly described in this document, as well as the events where the EFPF partners presented the project and its results.

The published White Paper “Applying MQTT Sparkplug in the EFPF Platform” shows the latest state-of-the-art developments, and the CEN/CEELEC Workshop Agreement (CWA) “European Connected Factory Platform for Agile Manufacturing Interoperability” was developed and published within the project run time. That gives a big impact on the standardisation of development activities to ensure interoperability.

The EFPF partners again provided excellent support to the dissemination activities - particularly by developing videos of the implemented solutions. All these activities resulted in 20 Open Call experiments being won. The Open Call partners each created a video that focused on the work with the EFPF platform and was again successfully used as a dissemination activity in the social media channels and on the website. In this way, a broad public could be informed about the project results.

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0 Introduction

0.1 EFPF Project Overview

EFPF – European Connected Factory Platform for Agile Manufacturing – is a project funded by the H2020 Framework Programme of the European Commission under Grant Agreement 825075 and conducted from January 2019 until December 2022. It engages 30 partners (Users, Technology Providers, Consultants and Research Institutes) from 11 countries with a total budget of circa 16M€. Further information can be found at www.efpf.org.

To foster the growth of a pan-European platform ecosystem that enables the transition from "analogue-first" mass production to "digital twins" and lot-size-one manufacturing, the EFPF project will design, build and operate a federated digital manufacturing platform. The platform will be bootstrapped by interlinking four base platforms from FoF-11-2016 cluster funded by the European Commission, early on. This will inform the design of the EFPF Data Spine and the associated toolsets to fully connect the existing user communities of the four base platforms. The federated EFPF platform will also be offered to new users through a unified Portal with value-added features such as single sign-on (SSO), user access management functionalities to hide the complexity of dealing with different platform and solution providers.

0.2 Deliverable Purpose and Scope

The purpose of this deliverable "D11.3 Dissemination, Communication and Ecosystem Creation – Final Report" is to document the activities in the project with a particular focus on dissemination and trade fairs.

0.3 Target Audience

The deliverable is declared public, and therefore its content can be used for raising the awareness of the project among a wider audience.

0.4 Deliverable Context

This document is one of the cornerstones for achieving the project aims. Its relationship to other documents is as follows:

- **Description of Action (DOA):** Provides the foundation for the actual research and technological content of EFPF. Notably, the Description of Action includes a description of the overall project work plan.
- **Project Handbook (D1.1)**: Provides the foundation for the practical work in the project throughout its duration and helps to ensure that the project partners follow the same well-defined procedures and practices also in terms of information sharing.
- **Deliverable ”D11.1 Dissemination, Communication and Ecosystem Creation – I”**: Provides the dissemination plan and the activities to fulfil the dissemination KPIs.

0.5 Document Structure

This deliverable is broken down into the following sections:

- **Section 0** Introduction: An introduction to this deliverable, including a general overview of the project, an outline of the purpose, scope, context, status, and target audience of the deliverable at hand.
- **Section 1 Results of the Dissemination and Communication Strategy:** Describes the target groups and dissemination phases as well as the objectives and some KPIs for dissemination and communication activities
- **Section 2 Results of** the Dissemination and Communication Strategy

The dissemination and communication strategy of the EFPF project was based on the need to organise and promote events, interaction opportunities, publications and media campaigns that maximised interaction with the different EFPF stakeholders and target groups. The dissemination and communication strategy defined for the EFPF project was largely static, focusing primarily on the identification of target groups, the definition of the purpose of the dissemination and communication activities and the timetable for the implementation of the relevant activities. In this respect, dissemination and communication activities could be tailored to different stakeholders/target groups and implemented at different stages of the project's life. The impact strategy and plan were defined accordingly.

0.6 Purpose

The purpose of EFPF dissemination and communication was strongly rooted in the overall objectives of the project. Dissemination and communication activities should ensure that project outputs (concepts, scientific results, tools, methodologies, results of validation work, standardisation activities and the business model) are disseminated to appropriate audiences at appropriate times and through appropriate methods, and that external stakeholders who can add value to the development, evaluation, uptake and use of EFPF outputs can be identified and encouraged to participate. In addition, high visibility of the project and encouraging active interaction with key stakeholders were necessary elements to raise awareness of the project. Dissemination was an integral part of many project activities, from the definition of requirements to the final evaluation, to involve users and stakeholders of the project developments in all phases of project implementation. Awareness raising and social engagement activities for (end) users as well as research laboratories, manufacturing facilities, SMEs and technology/solution providers across the EU (with a focus on the consortium countries) were a fundamental element of these activities.

0.7 Target Groups (TG) for Dissemination Activities

The dissemination and communication strategy of the EFPF project focused not only on the promotion of the project results in the countries represented by the EFPF partners (Austria, Spain, Greece, Germany, Italy, Portugal, UK, Sweden, Romania, Netherlands, Turkey), but also on the countries where EFPF relevant developments, deployments and pilot activities can be carried out and adapted to the local industrial ecosystems and needs. The main target groups of the project's dissemination and communication strategy were identified through a stakeholder analysis carried out in WP10 of the EFPF project, details of which can be found in D10.1 "EFPF Exploitation, Sustainability and IPR Report I". The following target groups were identified.

Target Group	Value Proposition	Approach/Activities
TG1: Industrial Customers (Manufacturing/ Logistic/Supplier Companies etc)	• Cost reduction through easy access to digital technologies and innovative solutions • Ability to setup and manage collaborative networks • Ability to expand the business reach and market size • Single point of interaction with multiple solutions and solution providers • Ability to connect different systems and/or make them interoperable	• Participation in the industrial exhibitions and trade fairs • Workshops, webinars and training sessions on applicable project results • Promotion of project through Chamber Commerce • Use of the project website and social media channels to promote benefits of the relevant EFPF solutions • Development of brochures and marketing material
TG2: ICT Companies (Tool/Service Providers)	• Ability to connect different systems and/or make them interoperable • Access to SDK for the development of smart factory solutions • Extension of the target audience • Access to open source solutions for reuse or further development • Access to users and understanding of industrial needs	• Use of the project website and social media channels solutions • Promotion of project in open source community and promotion of open source solutions such as the SDK • Development of brochures and marketing material • Participation in events and exhibitions
TG3: Associations and Clusters	• Establishment of customer community • Technical consultancy to member companies • Visibility of market trends and member activities • Better understanding of latest business activities • Reduction of cost and effort for the management of members	• Use of the project website and social media channels • Development of brochures and marketing material • Participation in industrial exhibitions and tradeshows
TG4: Platform/Market place Providers	• Efficient platform set-up and operation	• Development of brochures and marketing material • Use of the project website and social media channels

	• Revenue generation based on consulting, platform set-up, customisation, and operation	• Participation in workshops and technology exhibitions
Target Group	**Value Proposition**	**Approach/Activities**
TG5: Research Community	• Ability to use and experiment with EFPF solution • Ability to use EFPF as testbed for latest research and innovation • Networking and collaboration with EFPF researchers • Ability to expand and enrich EFPF solutions with latest findings • Access to users and relevant infrastructure (e.g. machines, IoT devices, sensors, data)	• Participation and presentations in the workshops and conference • Publishing of articles and blogs • Promotion of project through webinars • Use of the project website and social media channels to promote EFPF • Posters and marketing material
TG6: Research and Innovation Projects	• Access to open-source federated solutions • Ability to utilise and build upon existing solutions • Access to users and relevant infrastructure (e.g. machines, IoT devices, sensors, data) • Networking and collaborations with EFPF partners • Clustering for joint research, piloting, dissemination and impact activities	• Use of the project website and social media channels solutions • Promotion of project in local and EU level networking and clustering events • Development of brochures and marketing material • Participation in workshops and conferences • Participation in industrial events and exhibitions
TG7: Policy Makers and Standardisation Organisations	• Contribution to ongoing standardisation activities • Promotion of standards by different stakeholders in the digital manufacturing domain	• Use of the project website and social media channels • Networking with standardisation bodies • Contribution towards the development of standards • Participation in workshops and conferences

The dissemination and communication activities defined for the above stakeholders are expected to contribute towards an enhanced impact of the project. The aims of the dissemination and communication activities for each target group were described in D11.1.

0.8 Project Phases

To address the defined target groups in a targeted manner and provide them with tailored information, the time phases of the project must be considered. These phases were:

- Phase 1: Awareness Phase
- Phase 2: Participation Phase
- Phase 3: Exploitation Phase

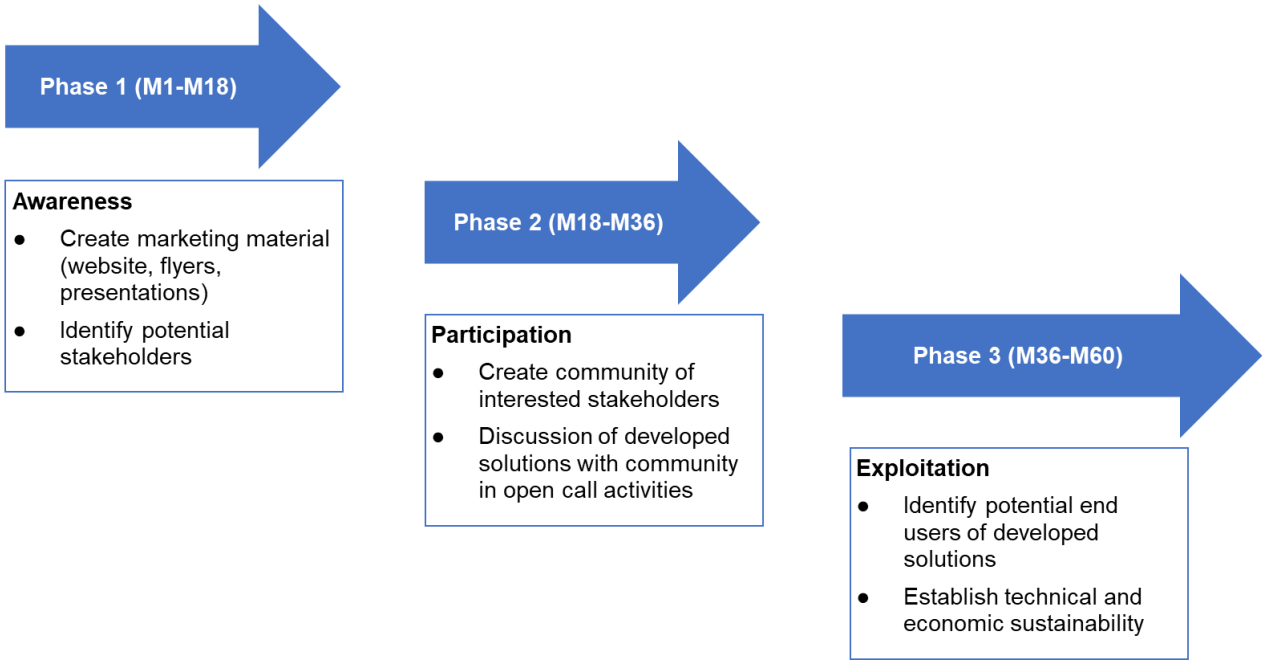

Figure 1: Temporal Project Phases for Dissemination Activities

The phases mentioned in Figure 1 are described in more detail as follows.

0.8.1 Awareness Phase

At the beginning of the project, the aim was to raise awareness of the project and the problems it intends to tackle among the public, industry and the research community. During this phase, the main tasks were to produce marketing material and raise awareness through presentations at various events and trade fairs. Activities relevant for the awareness phase were:

- Identification of value proposition of the project's activities/outcomes for different stakeholders
- Preparation of marketing materials for the value propositions e.g. design and development of brochures, flyers and posters; also design of templates for public presentation of documents and presentations
- Creation of a website presenting the objectives of the project, the actors involved and current news from the project
- Creation of social media channels and using it to create a brand image
- Organisation of participation in exhibition stands and conferences with presentation opportunities for the project team

All these activities have been carried out up to M18 and are described in D11.1. Only the last point – the organisation of trade fair stands – had to be postponed to later project phases due to the pandemic.

0.8.2 Participation Phase

This phase aimed to make the project results known to the defined target groups. The following tasks were dealt with in this phase:

- Updating the project website with publicly available results and news to show the progress and progress of the project and keep interested parties informed
- Opening the project's technical achievements (such as Portal, digital manufacturing solutions etc) for 3rd party access and promoting the participatory development, utilisation and/or experimentation of different solutions by relevant stakeholders
- Presentations at international conferences and forums to present the scientific and technical results of the project
- Demonstration of early published prototypes at key events, to demonstrate the benefits of the solutions developed and to interact with interested parties to find prototype users and obtain their feedback

Participation in conferences and the organisation of trade fair stands also had to be postponed in this project phase due to the pandemic. Virtual trade fair stands were booked in some cases. However, it was found that this was not effective because only a limited number of visitors were interested in the contents of the EFPF project. This was mainly due to the fact that almost only sales managers had registered for these virtual fairs and wanted to sell us their products. They were, therefore, less interested in the EFPF project and its results.

0.8.3 Exploitation Phase

The exploitation-oriented phase serves to improve awareness of the project results and to reflect the feedback from the results-oriented phase back to the market. This phase is specifically aimed at potential new users of the developed and mature applications. The tasks of this phase are:

- Promotion of the business model(s) and sustainability plans for enhanced awareness and impact
- Organisation of events such as workshops for the dissemination of project results
- Promotion of developed solutions and best practices to raise awareness among target stakeholders
- Participation in key conferences and workshops where the results of the project can be presented to stakeholders in a way that is appropriate for the target groups. Use of demos to establish contacts for future use

The last and most important phase for dissemination activities started about a year before the end of the project and finally allowed participation in trade fairs again from mid-2022. The project results achieved by then were already quite mature and could be shown very well at the trade fair stands. As can be seen from the dissemination planning, this phase will continue beyond the end of the project, as the European Factory Foundation (EFF) will then ensure the continued operation of the developed eco-system and attract further interested parties to the EFPF platform.

0.9 Dissemination and Communication KPIs

The consortium has defined a set of KPIs regarding the number of events and dissemination activities which will be reached until the end of the project. In the following Table 1 the activities until the end of the project (M48) are defined.

Dissemination and Communication Activity	Number of Events until End of Project (planned)	Number of Events until End of Project (as-is)
Participation in Conferences	10	15
Press release / Newsletters	6	7
Non-scientific and non-peer-reviewed publication (popularised publication)	10	10
Participation in Exhibition	6	11
Flyer	10	20
Training/Workshop/Webinar	3	6
Social Media	2 posts per month	7 posts per month (avg)
Website Updates	2 per month	2 per month
Communication Campaign (e.g. Radio, TV)	0	0
Participation to a Workshop	8	8
Participation to an Event other than a Conference or a Workshop	8	7
Video/Film	30+	50
Brokerage Event	4	4
Pitch Event	2	1
Trade Fair	5	9
Participation in activities organised jointly with other EU project(s)	6	8

Table 1: List of KPIs for Dissemination Activities

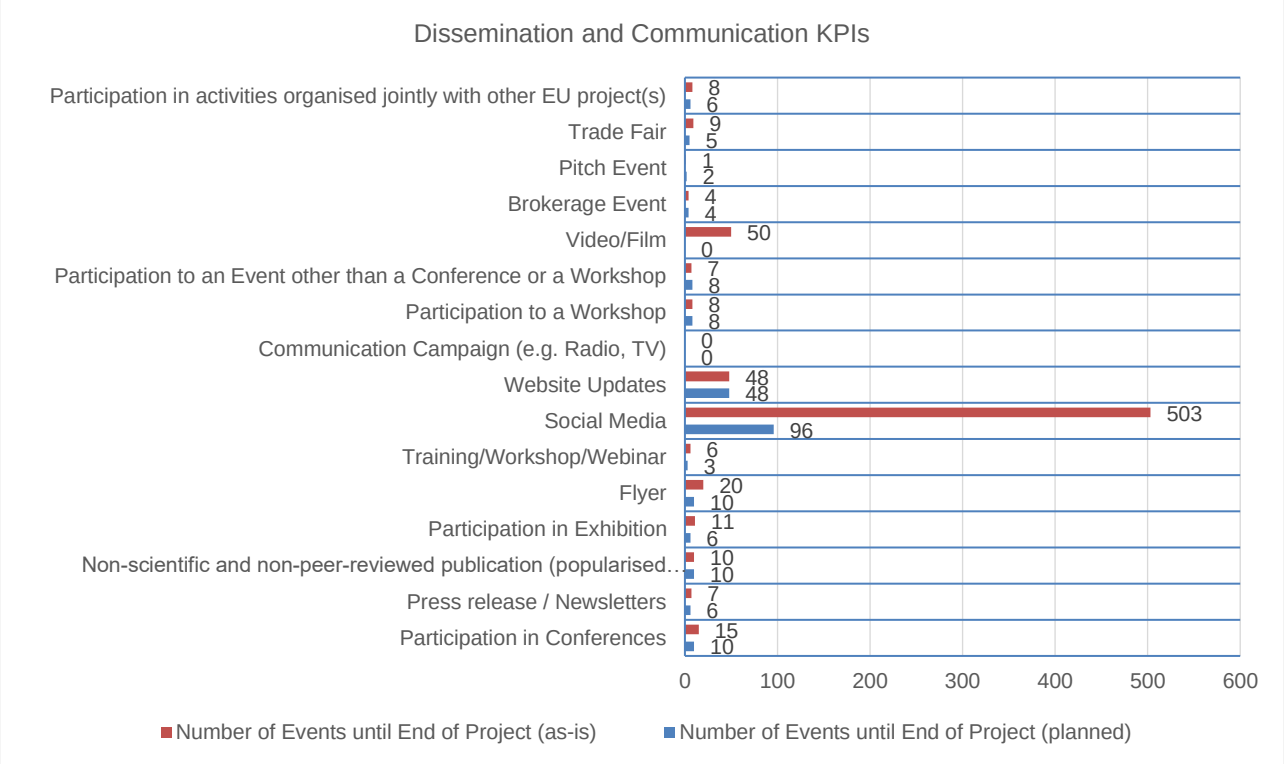

Figure 2: Comparison of planned and achieved dissemination and communication KPIs

To allow planning and fine monitoring of dissemination and communication activities, a detailed plan of activities, providing nature and number of communications per month until the end of the project was developed. The figures were updated monthly. The following diagram shows the fulfilment of the planned activities from the start until the project end.

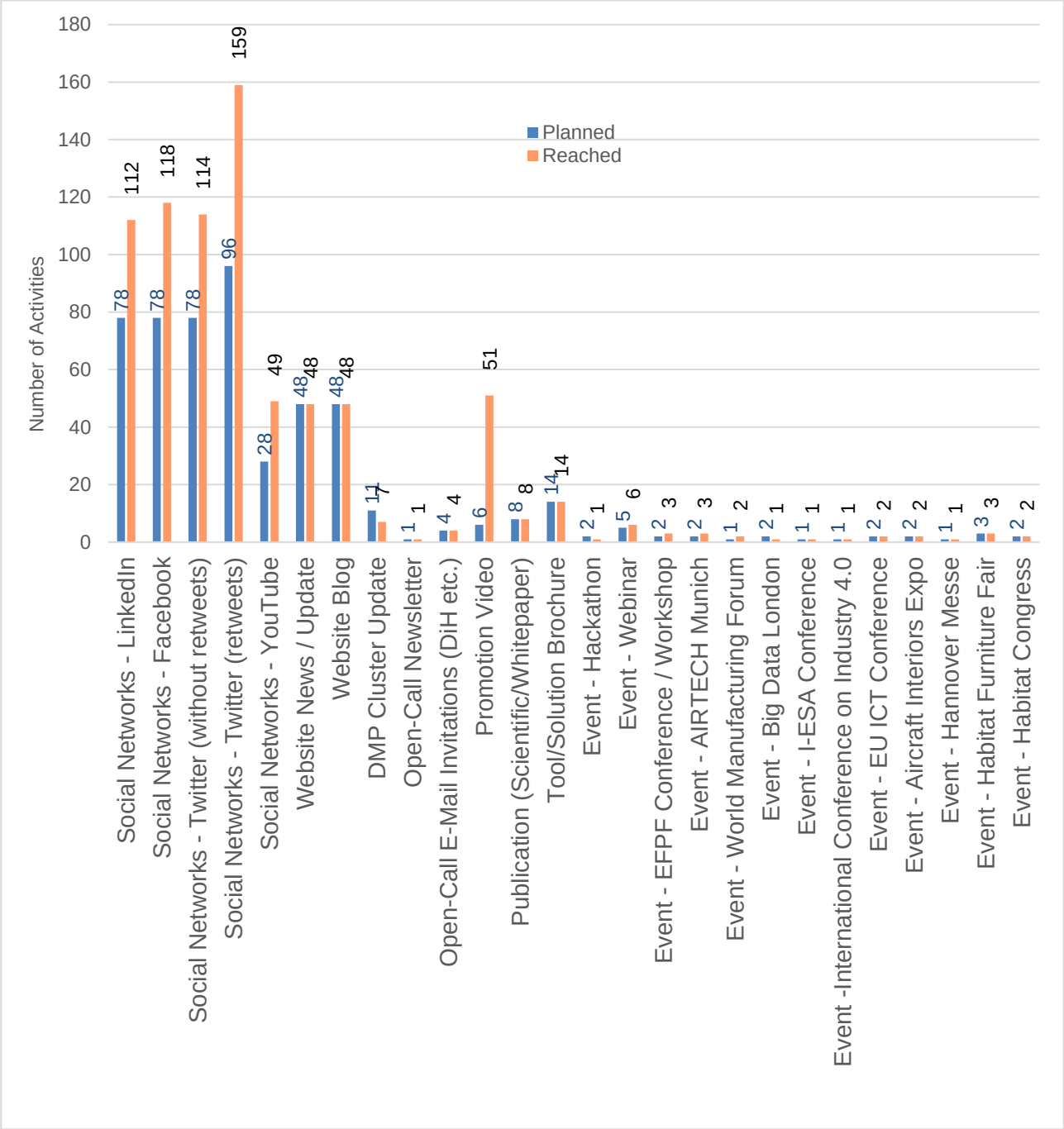

Figure 3: Detailed Key Figures of the Dissemination Activities (Planned and Realised)

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- Promotion Material**:** Describes the marketing material for the project the developed tools and the material for information of a broader audience
- **Section 3 Dissemination Events:** Describes the participation in events
- **Section 4 Publications:** Describes the published papers and documents
- Annexes:
  - **Annex A**: Document History

0.10 Document Status

This document is listed in the Description of Action as "public".

0.11 Document Dependencies

This document has one preceding document – the D 11.1 – and no further iterations.

0.12 Glossary and Abbreviations

A definition of standard terms related to EFPF, as well as a list of abbreviations, is available at https://www.efpf.org/glossary

0.13 External Annexes and Supporting Documents

Annexes and Supporting Documents:

- None

0.14 Reading Notes

- None

1 Results of the Dissemination and Communication Strategy

The dissemination and communication strategy of the EFPF project was based on the need to organise and promote events, interaction opportunities, publications and media campaigns that maximised interaction with the different EFPF stakeholders and target groups. The dissemination and communication strategy defined for the EFPF project was largely static, focusing primarily on the identification of target groups, the definition of the purpose of the dissemination and communication activities and the timetable for the implementation of the relevant activities. In this respect, dissemination and communication activities could be tailored to different stakeholders/target groups and implemented at different stages of the project's life. The impact strategy and plan were defined accordingly.

1.1 Purpose

The purpose of EFPF dissemination and communication was strongly rooted in the overall objectives of the project. Dissemination and communication activities should ensure that project outputs (concepts, scientific results, tools, methodologies, results of validation work, standardisation activities and the business model) are disseminated to appropriate audiences at appropriate times and through appropriate methods, and that external stakeholders who can add value to the development, evaluation, uptake and use of EFPF outputs can be identified and encouraged to participate. In addition, high visibility of the project and encouraging active interaction with key stakeholders were necessary elements to raise awareness of the project. Dissemination was an integral part of many project activities, from the definition of requirements to the final evaluation, to involve users and stakeholders of the project developments in all phases of project implementation. Awareness raising and social engagement activities for (end) users as well as research laboratories, manufacturing facilities, SMEs and technology/solution providers across the EU (with a focus on the consortium countries) were a fundamental element of these activities.

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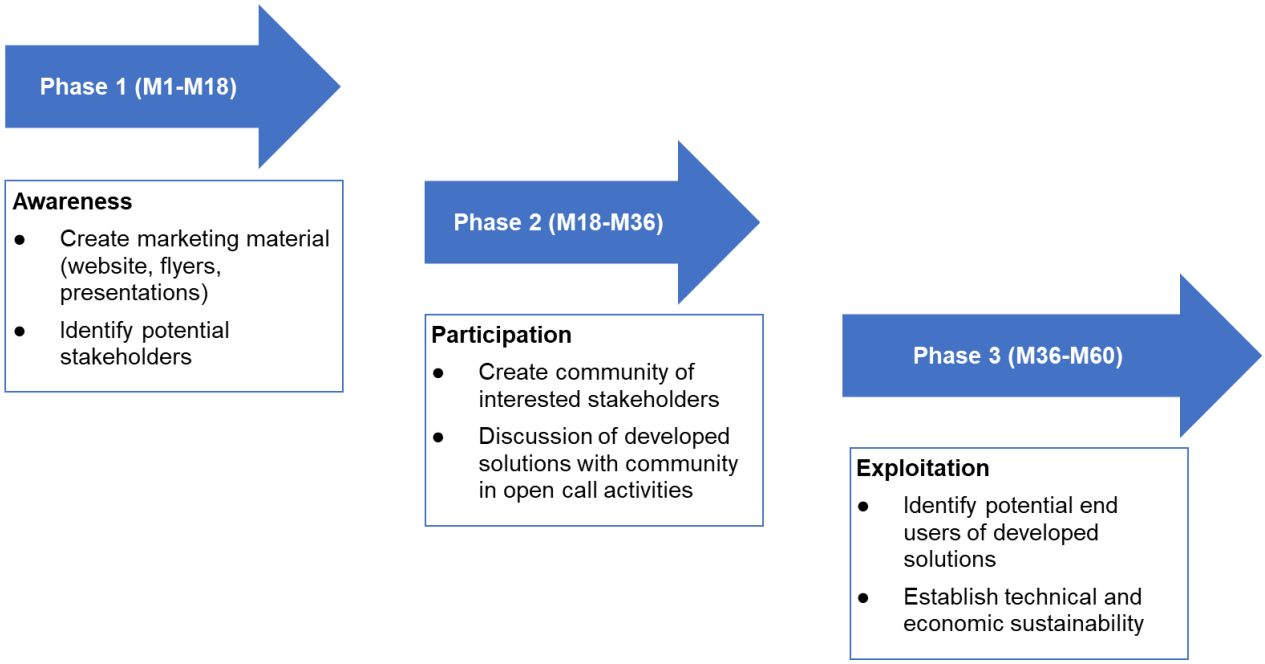

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Non-scientific and non-peer-reviewed publication (popularised publication)	10	10
Participation in Exhibition	6	11
Flyer	10	20
Training/Workshop/Webinar	3	6
Social Media	2 posts per month	7 posts per month (avg)
Website Updates	2 per month	2 per month
Communication Campaign (e.g. Radio, TV)	0	0
Participation to a Workshop	8	8
Participation to an Event other than a Conference or a Workshop	8	7
Video/Film	30+	50
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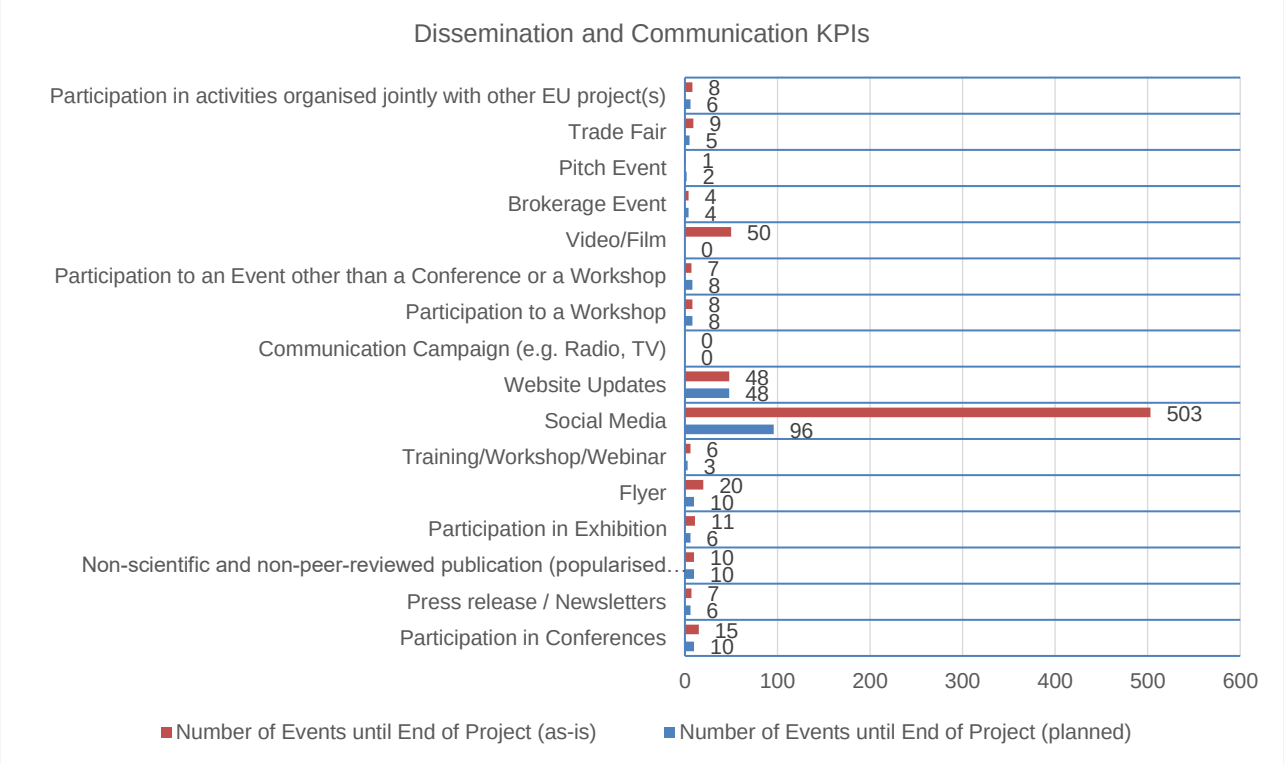

Figure 2: Comparison of planned and achieved dissemination and communication KPIs

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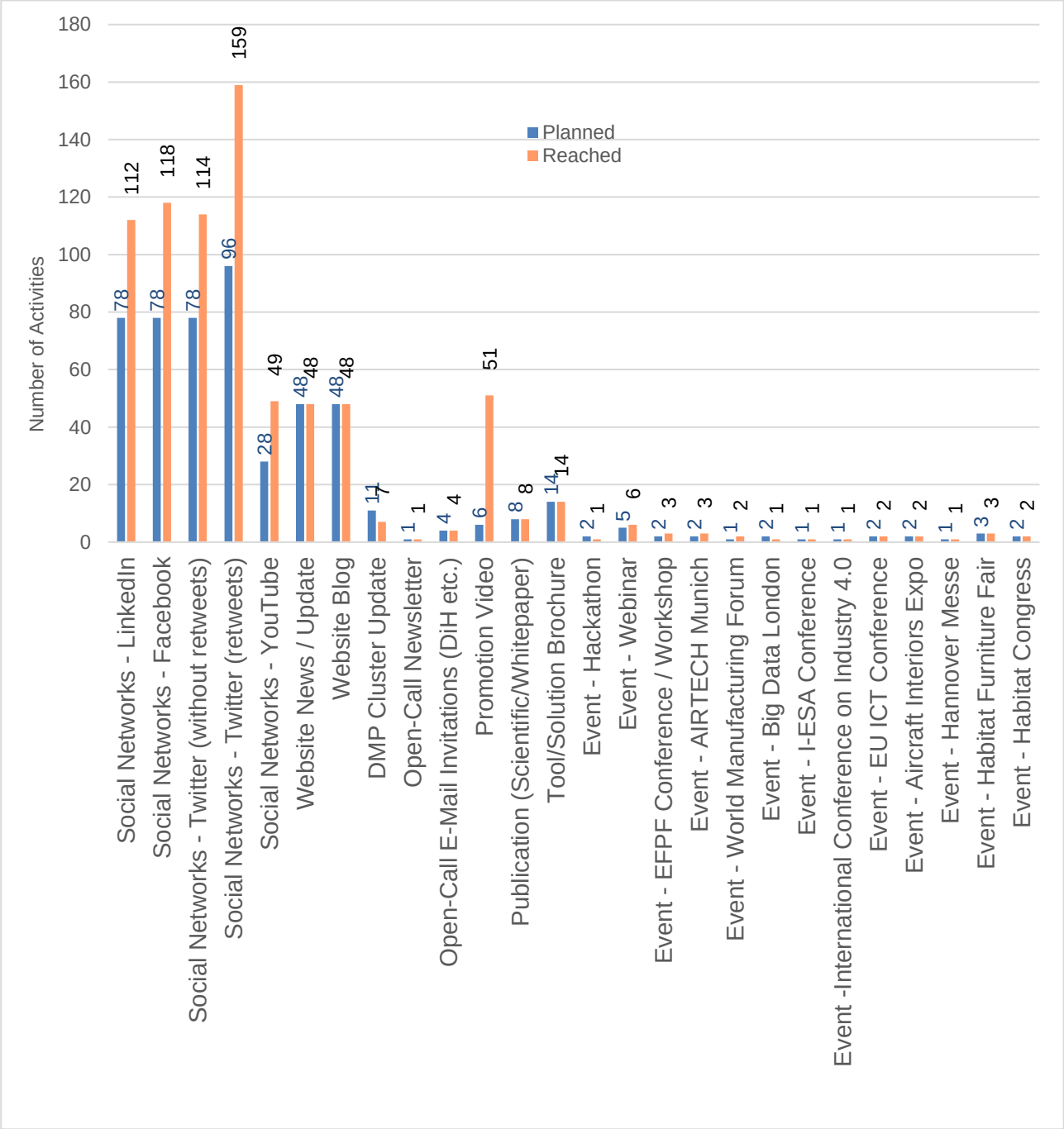

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2 Promotion Material

2.1 Website

Since the early stage of the project, all project partners have contributed towards branding and creating a distinctive identity of the project. A key tool for this purpose is the project website. It was regularly updated monthly.

Since its setup from the start of the project, the project website has been instrumental in promoting the project and broadcasting the latest developments in the project. The website has been constantly updated to include latest news, publications, events information and a monthly blog post.

Figure 4: Website www.efpf.org

The following blog posts were published monthly during the last project year in order to present individual topics in more detail.

01-2022 EFPF Federation - Building Blocks for a Digital Manufacturing Ecosystem (ICE)

02-2022 The Hunt for Universal Interoperability in B2B platform economy (ASI-Team)

03-2022 Artificial Intelligence beyond Efficiency - Report of EFPF Workshop at I-ESA2022 (UoS, AIDIMME)

04-2022 EFPF Open Experimentation and Hackathon (ICE)

06-2022 End-User-Experiences with the European Factory Platform (HAW)

07-2022 Towards an Ecosystem of Digital Manufacturing Platforms (FIT)

08-2022 Semi-automated Interconnection of IoT Devices and Services via the EFPF TSMatch Component (FOR)

09-2022 Platform Exploitation and Sustainability through EFF (BRM)

10-2022 Connected Factories and EFPF Final Event 23 & 24 November 2022 (ICE)

11-2022 EFPF's CEN/CENELC Workshop Agreement is published (ASI-Team)

12-2022 Summary of Outcomes from EFPF Large Scale Experimentation (CERTH)

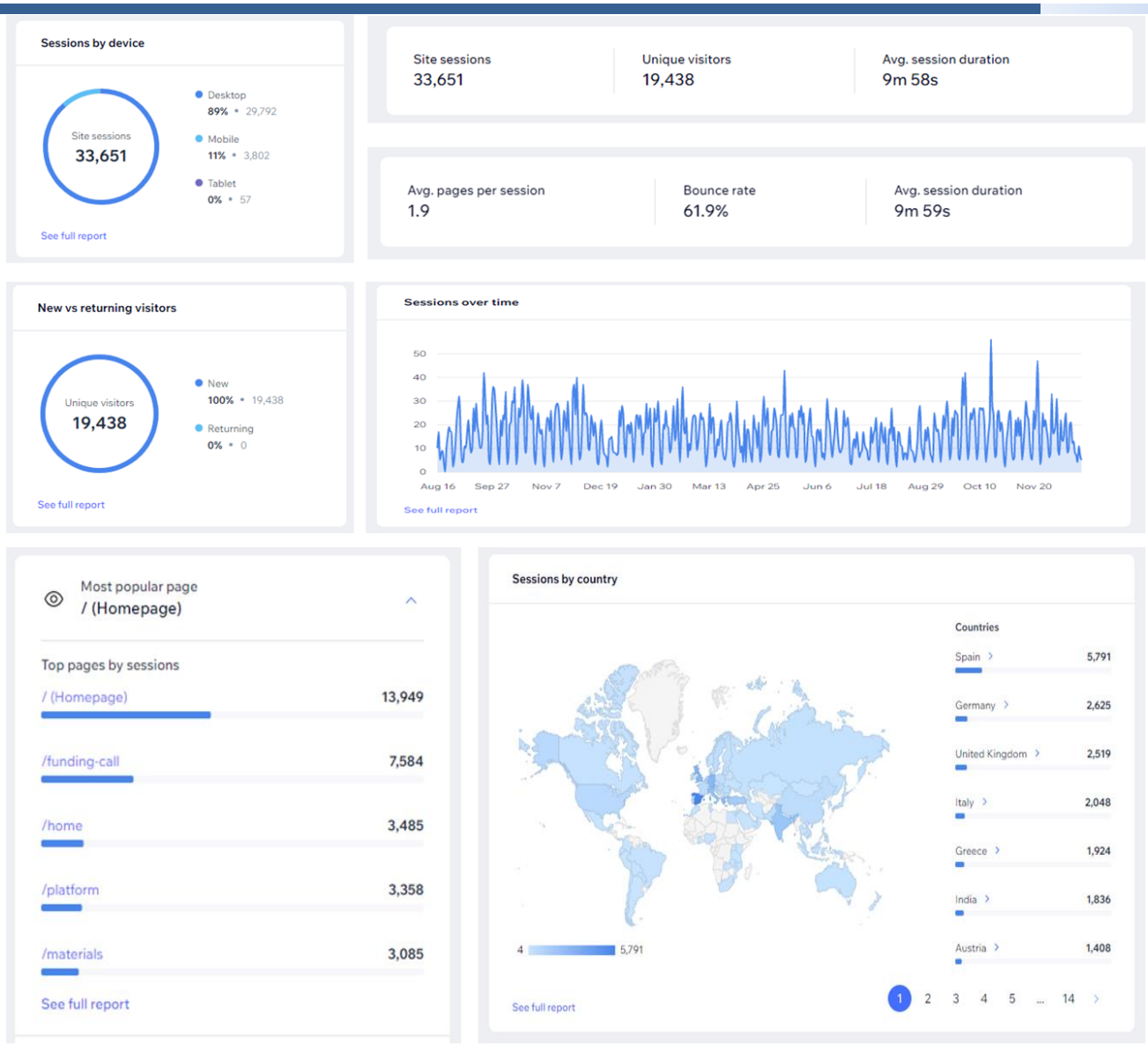

Figure 5: Website traffic analysis

In Figure 5 – the returning visitors displays as 0 – as it is the visitors who have returned from previous 4-year period (2015-2018). The website was online from January 2019.

The blog feature has been used to provide an insight into the project activities. Although not directly describing a specific project activity, the blog posts have been designed to be of lighter nature and of general interest for audience in the digital manufacturing domain. Over the months, several project partners have contributed towards proving a steady stream of interesting blog posts that are also broadcasted on projects' social media channels – resulting in more traffic to the project website.

As shown in Figure 5, the project website has received nearly 19,000 unique visitors that have been engaged in nearly 33,600 sessions, where each session lasted in average of over 10 mins. This shows that the EFPF dissemination activities are generating interest in the audience and different target groups. An interesting analysis shows that the project website has been accessed from all over the world e.g. India stands at 7th in the number of website users.

The new webpage on Funding Call provided details of the call scope and timing. This page also provided a contact form that could be used to register interest in the project open-call. Moreover, the updated Platform Offerings webpage highlights the different value propositions in the EFPF federation. This page serves as a dashboard from where the user can navigate to dedicated pages for the different value propositions e.g. Matchmaking Service, Data Analytics etc. Each value proposition page provides an overview of the offered functionality, how this functionality is being used by the project pilot partners and what relevant tools/applications/services are on offer in the EFPF federation.

As the project progressed, the project website was being constantly updated and adapted to the cater the project needs and highlighted the key achievements of the project. This website was also being used as a vital dissemination tool for project outcomes e.g. a dedicated Publications page provides access to the project deliverables, marketing material and scientific publications. The website also hosts the videos that describe different aspects of the project and EFPF Platform. A private section in the website was also be being developed to provide access to the EFPF Portal that is the entry point to the EFPF Platform.

2.2 Promotion Material for the Project and the EFF

In addition to the project website, project promotion activities are enhanced by the development of different types of marketing material. In total 20 Flyers were developed.

- 8 Project flyers:
  - EFPF Overview 1 & 2
  - Pilot 1
  - Pilot 2
  - Pilot 3
  - Open call 1 & 2
  - EFF Overview
- 12 Tool flyers:
  - Business Network & Intelligence Service Tool (B&NI)
  - Factory Connector Gateway Management Tool (FCGMT)
  - IndustreWeb Tool
  - Marketplace
  - Risk, Opportunity, Analysis and Monitoring Tool (ROAM)
  - Work Flow and Service Automation Platform (WASP)
  - Anomaly Detection Service
  - Symphony Data Storage
  - Symphony Event Reactor
  - Symphony Factory Connector
  - TSMatch
  - SIEMENS Tool for Analytics

Figure 6: EFF flyer as an example for 20 flyers in total

To promote the general information about the project, a banner was developed in the early stages of the project. The banner is available in two languages – English and Spanish.

The banners and the flyers have been used in various events, conferences, and project meetings where the project partners had a chance to promote the project and its offerings for different stakeholders in the digital manufacturing ecosystem.

At the end of the project, a new give-away was purchased. A wireless charging station for mobile phones with the logo and website address of the European Factory Foundation (EFF) is a good opportunity to keep the EFF present on the desk of every user. Especially at the habitat congress in Valencia in October 2022 and at the final event in Brussels in November 2022, all 400 purchased charging stations could be distributed to the interested parties. Thus, the EFF remains present in the market as the successor of the EFPF project.

Figure 7: Give-away for the Promotion of the EFF (Wireless Charging Station for Mobile Phones)

2.3 Videos

In total the project team recorded and published more than 50 videos:

- 30 partner videos
- 20 open Call Videos
- help videos for developers to show them hints for tool development in the EFPF ecosystem
- recorded live streams from presentations

Most of the videos were published on the EFPF website and the development platform website. The YouTube channel and social media channels were also used for publication.

2.4 Newsletters

The EFPF project has played a key role in the establishment of a network called the European Digital Innovation Network (ENGINE). ENGINE is a collaborative network of 25 EC funded project. The network aims at strengthening connections among digital initiatives at the European level, working on strategic topics addressing the constitution, population or regulation of the European Digital Single Market. ENGINE projects share a common perspective of fostering the sharing, dissemination and exploitation of up-to-date information about projects' results and initiatives, to mutually extend dissemination channels, find connection points among the participating projects, and promoting networking and cross-fertilisation in the EU based digital innovation domain.

The key outcome of the ENGINE initiative is an electronic newsletter that is distributed on the projects' mailing lists, among others. Seven instances of the newsletter have been published so far, and the latest news from EFPF have featured in all instances.

In this respect, participation in the ENGINE initiative and the publishing the newsletter has contributed not only towards the dissemination and promotion of the EFPF project but also towards the establishment of an ecosystem of collaborative projects in the digital manufacturing space. (https://mailchi.mp/engineinitiative/engine-newsletter-7?e=39834d1269)

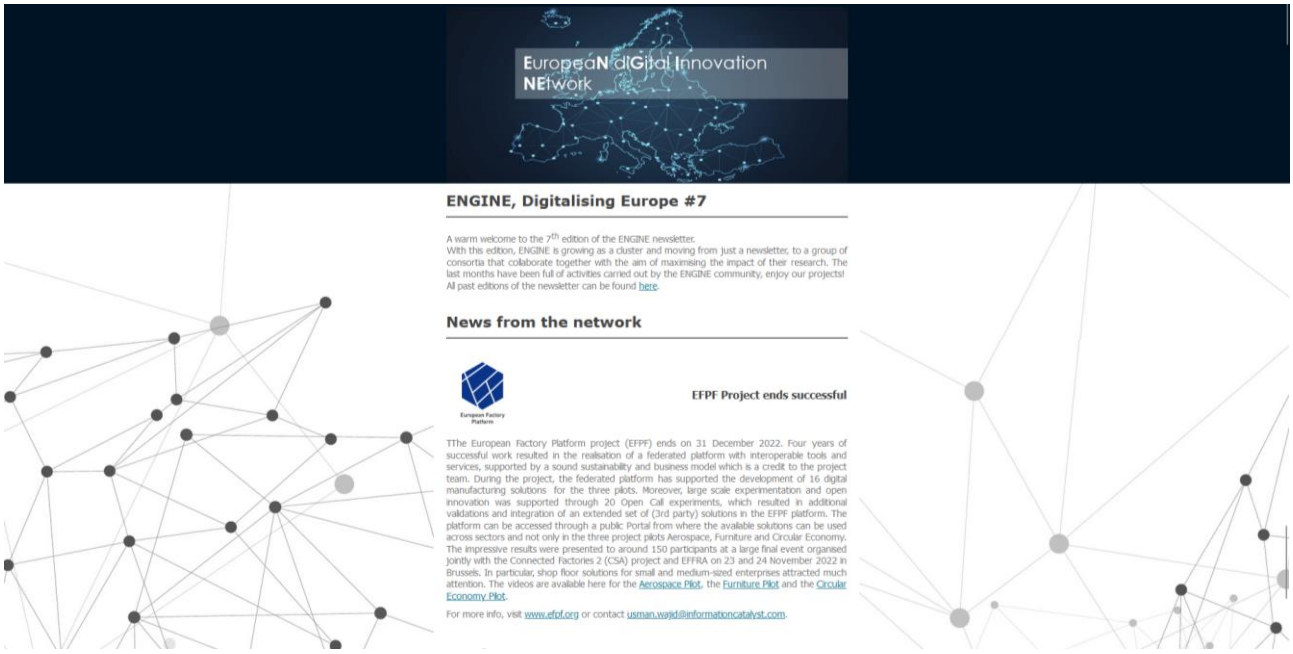

Figure 8: Screenshot of the seventh ENGINE Newsletter

News about the EFPF project were also spread about the EFFRA Innovation Portal. Each publication in the Twitter channel was also published automatically in the Weekly Digest Newsletter from the EFFRA Innovation Portal.

3 Dissemination Events

This section provides an overview of some of the key events where partners presented the project after M18. All events before M18 are documented in D11.1.

3.1 Trade Fairs and Conferences in the EFPF Pilot Domains

A significant number of trade fairs in 2020 and 2021 – especially in the aerospace sector but also in the furniture industry – were cancelled or postponed due to the unexpected COVID-19 situation. Many of them took place in the following years. A register of all (pilot-sector) relevant industrial events is being maintained by the project and based on that, the EFPF team aimed to present the project outcomes in the events listed in Table 2.

Year	Exhibition / Conference Name	Date	Location	Interested persons/ participants (estimated)
2020	EFFRA Event Digitalisation and Digital Platform	11.03. – 12.03.2020	Online Event	50
2020	ICE/IEEE ITCM Conference	15.06. – 17.06.2020	Online Event	50
2020	Austria Online Technology Session	04.08.2022	Online Event	100
2020	HABITAT CONGRESS	22.10.2020	Online Event	150
2020	AIRTEC Munich	12.10. – 14.10.2020	Munich (Germany)	20
2020	World Manufacturing Forum	11.11. – 12.11.2020	Cernobbio (Italy)	150
2020	I-ESA 10th International Conference On Interoperability for Enterprise Systems and Applications	17.11. – 20.11.2020	Online Event	100
2020	ISM 2020 - International Conference on Industry 4.0 and Smart Manufacturing	23.11. – 25.11.2020	Linz (Austria)	100
2021	Hannover Messe	12.04. – 16.04.2021	Online Event	10
2021	Beyond 4.0	14.10. – 16.10.2021	Thessaloniki (Greece)	200
2021	HABITAT CONGRESS	21.10.2021	Valencia (Spain)	244
2021	AIRTEC Munich	26.10. – 28.10.2021	Munich (Germany)	20
2021	Productronica	16.11. – 19.11.2021	Munich (Germany)	20
2022	EFFRA Event Use cases and demonstrators of digitalisation of manufacturing	18.02.2022	Online Event	50
2022	I-ESA 11th International Conference On Interoperability for Enterprise Systems and Applications	23.03. – 25.03.2022	Valencia (Spain)	20
2022	FIMMA-MADERALIA	29.03. – 01.04.2022	Valencia (Spain)	20
2022	Event Transferable Research & Laboratory Outcome	28.04. – 29.04.2022	Caparica (Portugal)	40
2022	Hannover Messe	30.05. – 02.06.2022	Online Event	20
2022	Aircraft Interiors Expo	14.06. – 16.06.2022	Hamburg (Germany)	12
2022	ILA Berlin	21.06. – 24.06.2022	Berlin (Germany)	15
2022	Research Insights (Platform Industry 4.0 Austria)	14.09.2022	Online Event	14
2022	HABITAT Fair	20.09. – 23.09.2022	Valencia (Spain)	20
2022	HABITAT CONGRESS	25.10.2022	Valencia (Spain)	238
2022	AIRTEC Munich	26.10. – 28.10.2022	Munich (Germany)	10
2022	Advancing Engineering Expo	02.11. – 03.11.2022	Birmingham (GB)	30
2022	ProjMAN Conference	09.11. – 11.11.2022	Lisbon (Portugal)	20
				1723

Table 2: List of all events with the participation of EFPF partners and estimated number of participants / interested persons

The last column in Table 4 shows the estimated number of conference participants and the number of conversations with interested parties at trade fairs and exhibitions. Around 1,700 people were informed about the project developments and results during the trade fairs and conferences. Together with the events in 2019, mentioned in the D11.1, the EFPF project was present in 51 trade fairs, conferences and other events.

Additionally, the number of people reached by publications after the events must be considered. It is estimated that the dissemination activities reached more than 5,000 people during or shortly after the events. It shows the big importance of physical but also virtual events for EU projects.

Results of the activities from conferences, trade fairs and other events:

- Four new membership applications for the EFF and two new member registrations.
- More than 400 registered applications for the open call on the F6S portal
- More than 200 applications for open-call funding
- More than 200 new user registrations on the EFPF portal,
- More than 110 SMEs have already registered
- Integration of the ASI marketplace with more than 70,000 products
- More than 14,000 downloads of the EFPF paper on CE
- Expression of interest from the Shop4CF project to join the EFF as a vehicle for the sustainability of its project outcomes

Examples for Dissemination Events

Figure 9: HABITAT CONGRESS, 21.10.2021, Valencia (Spain)

Figure 10: Joint Booth with the EU project FACTLOG at AIRTEC 2021, Munich (Germany)

Figure 11: Joint Booth with other EU projects at the Hanover Trade Fair 2022 (Germany)

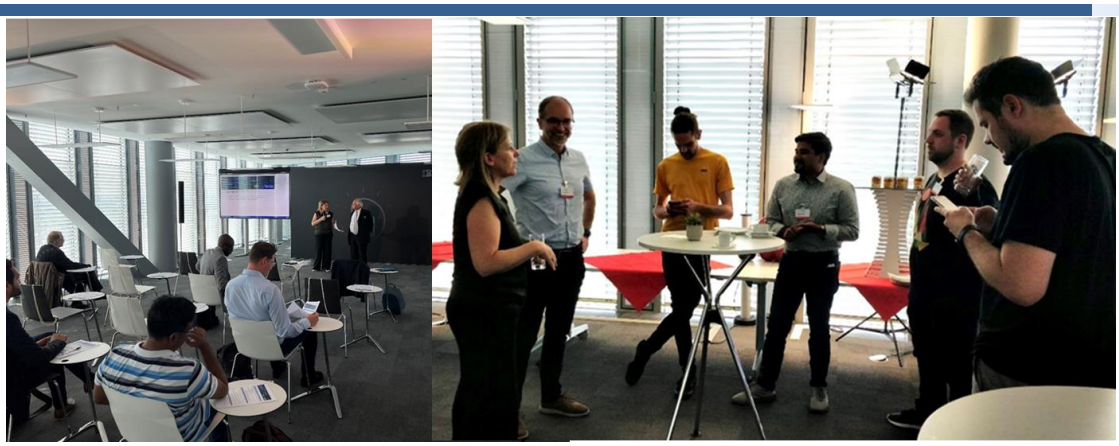

Figure 12: Hackathon & CONASENSE Conference, 27.-28.06.2022, Munich (Germany)

Figure 13: Final Event together with Connected Factories 2, 24.11.2022, Brussels (Belgium)

3.2 Collaboration and Joint Events with Other Projects

As part of the ecosystem development goal, the EFPF project has actively contributed towards the establishment of a Digital Manufacturing Platforms (DMP) cluster that initially involves other DT-ICT-07-2018 projects, ZDMP and QU4LITY. Since then, the DMP cluster has been extended to involve the DT-ICT-07-2019 projects and other relevant projects and initiatives, such as EFFRA (European Factories of the Future Research Association). The DMP cluster has developed a plan for collaboration activities that involve different teams from participating projects to work together on topics of joint interest such as joint dissemination, platform interoperability, and standardisation, among others. The following workgroups in the DMP cluster were established.

- WG1 Standardisation
- WG2 Dissemination
- WG3 Research
- WG4 Performance
- WG5 Market Analysis
- WG6 Open Calls
- WG7 Platforms
- WG8 Pilots

These working groups were composed of experts from all DMP projects and the DMP cluster has organised several virtual and physical events to exchange ideas and report progress on the collaborative activities. For example, Cluster Meetings and pan-European workshops were organised from EFFRA on 12.03.2020, 13.05.2020, 20.05.2020, 04.06.2020, 25.09.2020 and on 24.11.2022 the Final Event in Brussels.

These events have provided demonstrations of developed tools in the EFPF project. All EFPF partners have contributed with presentations of practical results and scientific developments.

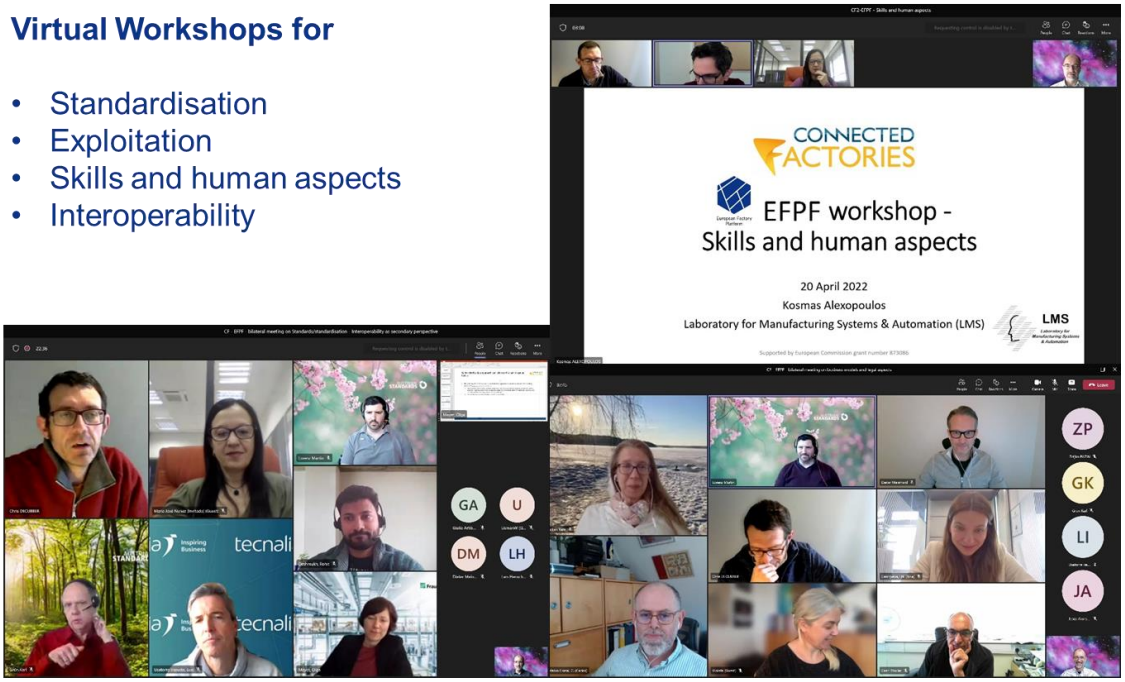

Figure 14: Knowledge Exchange with EFFRA and the Connected Factories 2 Project

3.3 Work in Social Media Channels

For the work in social media channels the project team defined a List of Hashtags that was used for EFPF. The defined hashtags are:

- #EFPF
- #H2020
- #HorizonEU
- #DigitiseEU
- #FoF_EU
- #EFFRA
- #DSMeu
- #Manufacturing
- #SmartManufacturing
- #ConnectedFactory
- #digital
- #DigitalPlatforms
- #SmartFactory
- #industry40
- #IoT
- @FoF_EU
- @EFFRA_Live (this is the official account of EFFRA)
- @DSMeu (this is the official account of the Digital Single Market)
- #IIoT
- #Cybersecurity
- #Standards

In addition, the project is making active use of the following social media channels:

- Twitter: @EFPFproject (350 followers)
- LinkedIn: EFPF Project (325 followers)
- Facebook: EFPF Project (67 followers)

News from the project were continuously posted on the above channels. In total were published:

- Twitter: 114 posts (without retweets)
- 159 posts (retweets)
- Linkedin: 112 posts
- Facebook: 118 posts

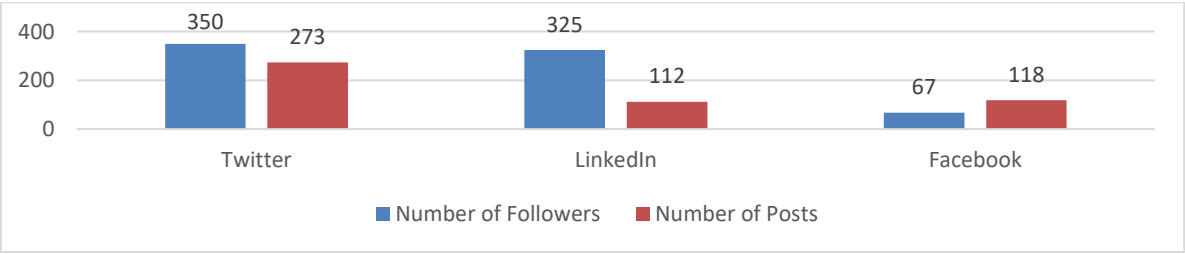

Figure 15: Number of followers and posts in social media channels

4 Publications

4.1 Research Publications

No.	Title	Author(s)	Proceedings, Book, Journal
1	Federated Identity Management and Interoperability for Heterogeneous Cloud Platform Ecosystems	N. Selvanathan, D. Jayakody V. Damjanovic-Behrendt	In Proceedings of the 14th International Conference on Availability, Reliability and Security (ARES'19), Workshop on Industrial Security and IoT (WISI 2019), August 26-29, 2019, Canterbury, United Kingdom. https://doi.org/10.1145/3339252.3341492
2	Transforming the supply-chain management and industry logistics with blockchain smart contracts	S. Terzi, A. Zacharaki, A. Nizamis, K. Votis, D. Ioannidis, D. Tzovaras, I. Stamelos	In Proceedings of the 23rd Pan-Hellenic Conference on Informatics (PCI '19), November 2019 https://doi.org/10.1145/3368640.3368655
2	Governance Mechanisms for Federated Digital Platform Ecosystems	V. Damjanovic-Behrendt W. Behrendt	In Proceedings of the 10th International Conference on Interoperability for Enterprise Systems and Applications (I-ESA 2020) "Interoperability in the Era of AI", November 17, 2020, Tarbes, France (virtual event)
4	Federated Search and Recommendation	D. Jayakody, N. Selvanathan V. Damjanovic-Behrendt	In Proceedings of the Workshop on Digital Platform Ecosystems: From Interoperability to Federation (IFED 2020), in conjunction with the I-ESA 2020 conference, November 18, 2020, Tarbes, France (virtual event)
5	Use Case on Environmental Impact Assessment in the Fish Canning Industry	A. V. Contreras, A. R. Sabater, F. G. Valencia	European Journal of Sustainable Development (EJSD) Volume 11 N3, October 2022
6	Utilizing an adaptive window rolling median methodology for time series anomaly detection	D. Dimoudis, T. Vafeiadis, A. Nizamis, D. Ioannidis, D. Tzovaras	In Proceedings of 4th International Conference on Industry 4.0 and Smart Manufacturing (ISM 2022) https://www.sciencedirect.com/journal/procedia-computer-science
7	Introducing an application of an industry 4.0 solution for circular supply chain management	T. Mastos, A. Nizamis, S. Terzi, D. Gkortzis, A. Papadopoulos, N. Tsagkalidis, D. Ioannidis, K. Votis, D. Tzovaras	Journal of Cleaner Production, '', Volume 300, 2021, 126886. https://www.sciencedirect.com/science/article/pii/S0959652621011057
8	Vision System Experimentation in Furniture Industrial Environment	G. Bhullar, S. Osborne, M. J. Núñez Ariño, J. Del Agua Navarro, F. Gigante Valencia	Experimentation in Furniture Industrial Environment. *Future Internet* 2021, *13*, 189. https://doi.org/10.3390/fi13080189

9	Data Spine: A Federated Interoperability Enabler for Heterogeneous IoT Platform Ecosystems	R. Deshmukh, D. Jayakody, A. Schneider V. Damjanovic-Behrendt	Sensors 21, no. 12: 4010. https://doi.org/10.3390/s21124010
10	Fault Detection on Bearings and Rotating Machines based on Vibration Sensors Data	T. Kotsiopoulos, T. Vafeiadis, A. Apostolidis, A. Nizamis, N. Alexopoulos, D. Ioannidis, D. Tzovaras, P. Sarigiannidis	In 2021 IEEE International Conference on Progress in Informatics and Computing (PIC), pp. 474-483 https://ieeexplore.ieee.org/abstract/document/9686999
11	Effective project management of 3rd party funding in European Union Horizon Industry4.0 projects: sharing experiences from two use cases.	N. Fair, A. Nizamis S. Modafferi, U. Wajid	Procedia Computer Science - CENTERIS – International Conference on ENTERprise Information Systems / ProjMAN – International Conference on Project MANagement / HCist – International Conference on Health and Social Care Information Systems and Technologies 2022. Elsevier. www.sciencedirect.com
12	Application of a Visual and Data Analytics Platform for Industry 4.0 enabled by the Interoperable Data Spine: A Real-world Paradigm for Anomaly Detection in the Furniture Domain	F. Gigante Valencia	Paper Presentation at I-ESA 2022, 11th International Conference, Valencia 2022
13	Introducing Building Blocks for Industry 4.0, an analytics application for the federated EFPF platform	J.M. Gonzalez Castro	Paper Presentation at I-ESA 2022, 11th International Conference, Valencia 2022
14	Towards Industry 5.0 – A Trustworthy AI Framework for Digital Manufacturing with Humans in Control	U. Wajid	Paper Presentation at I-ESA 2022, 11th International Conference, Valencia 2022
15	An Evaluation of a Semantic Thing To Service Matching Approach in Industrial IoT Environments	N. Bnouhanna, E. Karabulut, R. C. Sofia, E. E. Seder, G. Scivoletto, G. Insolvibile	InProc. IEEE Percom 2022 IoT-Prod workshop. June 2022, Pisa, Italy http://dx.doi.org/10.1109/PerComWorkshops53856.2022.9767519
16	ML-based data classification and data aggregation on the edge	E. Karabulut, N. Bnouhanna, R. C. Sofia	In Proc. ACM CoNext2021, December 2021, Munich, Germany. Student poster. https://doi.org/10.1145/3488658.3493786
17	IoT Thing To Service Semantic Matching	N. Bnouhanna, R. C. Sofia, A. Pretschner	vol 1, pp 418-419, 2021 IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom Workshops). https://doi.org/10.1109/PerComWorkshops51409.2021.9431128

18	The EFPF Approach to Manufacturing Applications across Edge-Cloud	R. C. Sofia, C. Coutinho, G. Scivolleto, F. Gigante	Shaping the Future of IoT with Edge Intelligence. River Publishers, USA. to appear, Jan 2023.

4.2 Other Publications

	Title	Author(s)	further information
1	European Connected Factory Platform for Agile Manufacturing	I. Martens	Hanse-Aerospace Bulletin. Issue 1/2019, p. 23-24, https://hanse-aerospace.net/de/presse/bulletin/details/hanse-aerospace-bulletin-01-2019?file=files/usr/module/downloads/bulletin/2019-01-bulletin.pdf
2	Participation in the COMPOSITION and EFPF projects	Kleemann Lifts	11.07.2019 Journal "Build" #067, p. 2 Athens, https://build-constructive-news.s3.eu-west-2.amazonaws.com/Build_11_07_2019.pdf
3	KLEEMANN and Innovation	Kleemann Lifts	05.07.2019 Kleemann Newsletter https://kleemannlifts.com/newsletter/kleemann-and-innovation
4	Digitisation for SMEs: Get going or wait?	I. Martens	Hanse-Aerospace Bulletin. Issue 2/2019, p. 44-46, https://hanse-aerospace.net/de/presse/bulletin/details/hanse-aerospace-bulletin-02-2019?file=files/usr/module/downloads/bulletin/2019-02-bulletin.pdf
5	European Factory Platform: Digitisation for SMEs in Practice	I. Martens	Hanse-Aerospace Bulletin. Issue 1/2021, p. 50-55, https://hanse-aerospace.net/de/presse/bulletin/details/hanse-aerospace-bulletin-01-2021?file=files/usr/module/downloads/bulletin/Bulletin_01%202021.pdf
6	EFPF Project	I. Martens	Hanse-Aerospace Bulletin. Issue 2/2021, p. 14, p. 48, https://hanse-aerospace.net/de/presse/bulletin/details/hanse-aerospace-bulletin-zum-25-jubilaeum?file=files/usr/module/downloads/bulletin/Jubil%C3%A4ums-Bulletin.pdf
7	Resilience analysis of production systems and supply chains in aircraft construction	A. Schirrmann, I. Martens	Hanse-Aerospace Bulletin. Issue 1/2022, p. 56-65, https://hanse-aerospace.net/de/presse/bulletin/details/hanse-aerospace-bulletin-01-2022-527?file=files/usr/module/downloads/bulletin/Bulletin%201_2022_Teil%202.pdf
8	System Security Modeller – What it does. How it works.	S. Phillips, S. Taylor, J. B. Pickering S. Modafferi, M. Boniface, M. Surridge	20.06.2022 https://doi.org/10.5281/zenodo.6656063

9	Digitale Tools smart verbunden im EFPF-Projekt (Digital Tools smart connected in the EFPF project)	M. Fälbl, I. Martens	14.09.2022 https://plattformindustrie40.at/blog/2022/10/02/digitale-tools-smart-verbunden-im-efpf-projekt/
10	Secure, Interoperable, End-to-End Industry 4.0 Service Platform for Lot-Size-One Manufacturing	S. K. Datta	23.09.2022 https://doi.org/10.5281/zenodo.7108220
11	White Paper: Applying MQTT Sparkplug in the EFPF Platform	N. Bnouhanna, R. C. Sofia, E. Pristeri	02.02.2022 https://www.researchgate.net/publication/358618553_White_Paper_Applying_MQTT_Sparkplug_in_the_EFPF_Platform
12	Industry 4.0: a new CEN and CENELEC Workshop Agreement on European federated smart factory ecosystems was published	EFPF partners et al.	15.12.2022 https://www.cencenelec.eu/news-and-events/news/2022/eninthespotlight/2022-12-15-smart-factory-ecosystems/

Annex A: History

Document History	
Versions	V0.1: • Document set-up and draft Table of Contents V0.2: • First draft version with description of events and publications V0.3: • Final draft version with condensed overviews for all dissemination activities V1.0: (submission) • Updates in various sections • Updates in KPIs and publications V2.0: (submission) • Updates in various sections to fulfil the requirements of the EC
Contributions	all partners

European Factory Platform

www.efpf.org