



Grant Agreement Number: 723945		
Project Title: Development and Pilot Line Validation of a Modular re-configurable Laser Process Head		
Project Acronym: ModuLase	Funding Scheme: Collaborative Project	
Date: October 2016	Project Website Address: in preparation	
EC Project Officer: Christoph Helmrath	Email: Christoph.HELMRATH@ec.europa.eu	
Deliverable Number: D1.9	Deliverable Name: Final Communication Kit	
Work Package Number: WP1		
Date of Delivery: M57	Actual	M58
Status	Draft ☐	Final ☒
Nature	Prototype ☐ Report ☒ Specification ☐ Tool ☐ Other ☐	
Distribution Type	Public ☒ Restricted ☐ Consortium ☐	
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Abstract (for dissemination)	n/a	
Keywords	n/a	
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Document reference:	PDB.gdp.D268.21	

Contents

1	Introduction	2
2	Useful Aspects and Results of the Project	3
2.1	Societal and economical for the EU	6
3	Final Dissemination Material	6
3.1	ModuLase and partners' logos	6
3.2	ModuLase project website (https://www.modulase.eu/)	9
3.3	Kit of promotional material	10
3.4	ModuLase partners' websites backlinks	11
3.5	Initial and final project press releases	12
4	Overall Plan for Communication Activities across the Project	13
4.1	Summary of dissemination statistics	22
5	Acknowledgement	24

1 Introduction

The present deliverable report, D1.9 'Final Communication Kit', was produced as part of the activity carried out in Work Package 1 (WP1) 'Specification, Dissemination, Exploitation, Training and Communication' of the ModuLase project.

The objectives of WP1 were to:

- Promote the ModuLase results.
- Plan for project sustainability and demonstrate the real value of the ModuLase approach for high-variety and high-volume manufacturing operations; unlocking the potential of greater flexibility for fibre-delivered laser sources.
- Disseminate project results through various channels – advertising materials, publications, workshops.
- Present the project on both national and international forums.

This document groups together dissemination material produced in the course of the project, including project and partners' logos, flyers, brochures, posters, link and any relevant information on the ModuLase website. The documentation above can be used freely by the partners, as well as by the European Commission for its own dissemination of project results.

The information provided in this document has been grouped as follows:

1. Overview of useful aspects and results of the project.
2. The ModuLase project logo, which was used in all dissemination material and activities, as well as logos of all ModuLase partners.
3. A description of the ModuLase project website, which is one of the main tools for disseminating the ModuLase results among potential users and customers (e.g. in addition to other social media channels, such as LinkedIn, Twitter, Facebook).
4. Dissemination material, such as brochures, leaflets, flyers, posters, presentations, articles, press releases and other publications, used within the project for raising awareness about the ModuLase project among various target users and for attracting potential customers.

It should be highlighted that the ModuLase project was funded by one of the calls under the Photonics and Factories of the Future (FoF) Public Private Partnerships (PPP). Therefore, all communication activities related to the project have acknowledged the context of the PPPs, for example by stating that the project is an initiative of the Photonics and Factories of the Future Public Private Partnerships.

Specifically, for workshops, press releases, presentations etc, the EU emblem, the Photonics21 and FoF logos have been displayed prominently together with the text "Photonics and Factories of the Future Public Private Partnerships" (Figure 1).



PHOTONICS PUBLIC PRIVATE PARTNERSHIP

a)



b)

Figure 1 Logos of: a) The Photonics PPP; b) The Factories of the Future PPP.

2 Useful Aspects and Results of the Project

A wide range of laser-based production processes are now readily accepted as modern manufacturing technologies by a number of industry sectors. As a result, the global market for industrial laser systems amounted to approximately €12 billion in 2020, and is anticipated to grow to €15.1 billion by 2025. In the last decade, the industrial laser system market has been driven by fibre lasers, which have seen a compound annual growth rate (CAGR) of 4.7% for the period 2020-2025. The key driver behind this growth has been the inherent flexibility of fibre lasers, which are capable of performing a wide range of processes including: cutting, welding, surfacing (cladding, marking and additive manufacturing)

[<https://www.bccresearch.com/market-research/photronics/laser-systems-components-materials-global-markets-report.html>].

As illustrated in Figure 2, the majority of industrial laser systems are employed to perform low-variety and high-volume manufacturing operations; for example, the welding of a body-in-white (BIW) assembly on an automotive production line within a specified takt-time [Havrilla, D. Trumpf Inc. (2010): "Laser based manufacturing in the automotive industry"]. However, current manufacturing trends (such as increased automation, individualisation and next- shoring) are driving the need to develop manufacturing systems which are capable of performing a higher variety of manufacturing operations [Rotzer, I. *Fraunhofer Magazine* (2005): "Laser-beam welding makes aircraft lighter". Arnold K. et al. (2013), 'Tube and Pipe Production. Using fiber laser for stainless steel']. A small number of sub-contract SMEs (i.e. job-shops) also exist (illustrated in Figure 2), which have the capability to perform high-variety and low-volume manufacturing operations, on a 'project' or 'jobbing' basis; even though these enterprises typically specialise in one particular process (typically cutting, welding or cladding). Only small numbers of real industrial applications exist at batch level (medium volume and medium variety), because of limitations with the equipment. This is in spite of the inherent flexibility of fibre laser sources to perform multiple processes.

The following drawbacks limit greater uptake of fibre lasers by industry (e.g. as an attractive flexible tool for medium/high-volume and medium/high-variety applications):

- Laser welding, cladding and cutting processes need different laser beam energy distributions, provided by different sets of optics.
- Different power densities, stand-off distances and Rayleigh lengths are used depending upon the process being performed and the process requirements (for instance, penetration depth in welding). Laser process heads have fixed optical components, which produce a laser beam energy distribution suitable for only one process and a narrow-range of applications.
- Laser welding, cladding and cutting processes have different gas, wire/powder feed requirements.
- Process monitoring systems for Quality Assurance and Quality Control are process specific. Despite using similar technologies, existing process monitoring systems are typically supplied for one process.
- Process head changes are effort intensive and require skilled personnel.

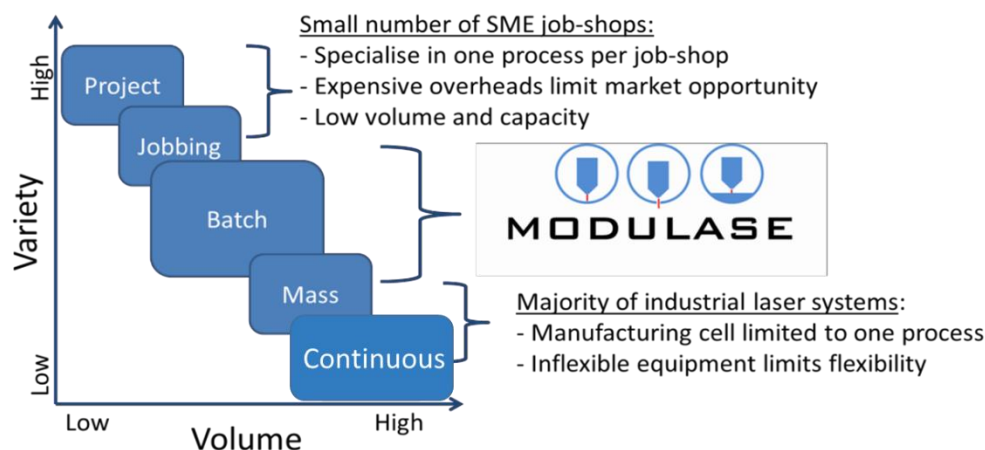
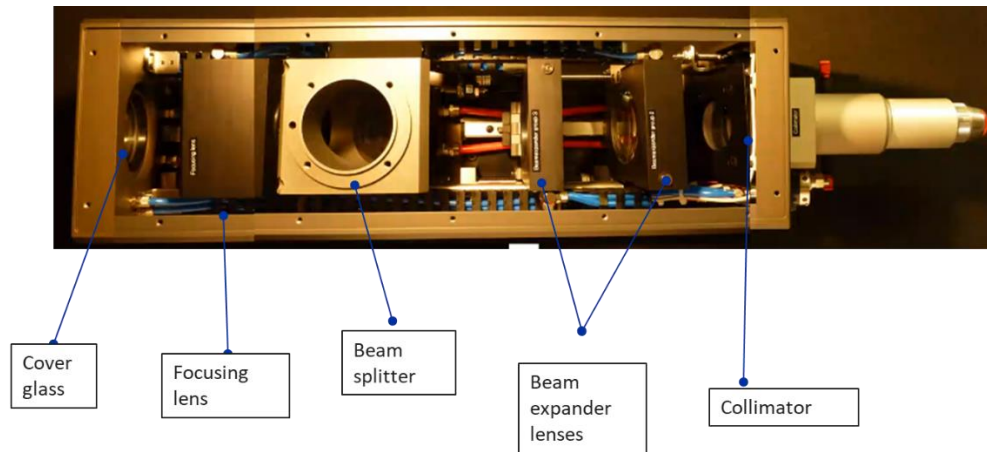


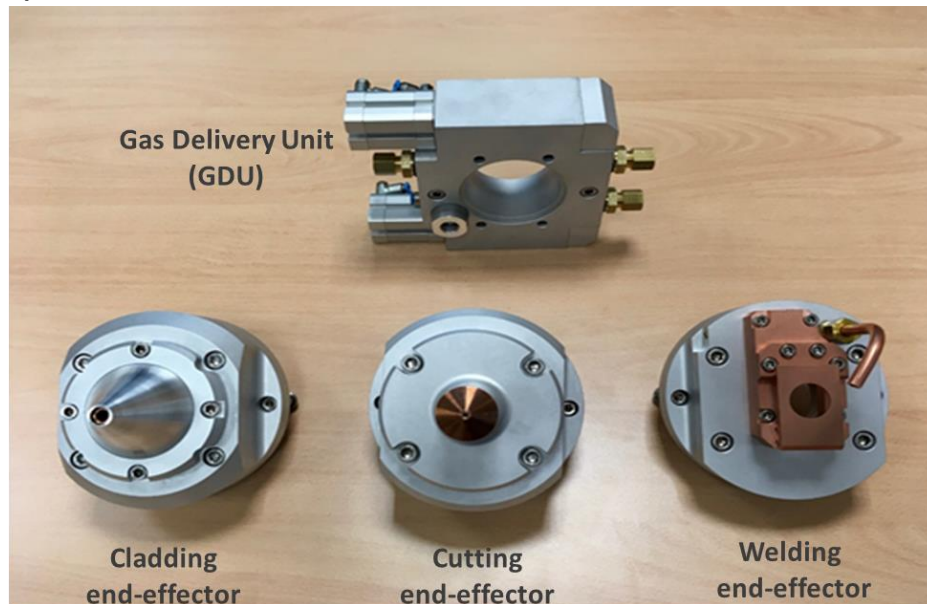
Figure 2 Schematic showing capability of industrial laser systems in terms of volume and variety, and the volume/variety mix the ModuLase system will enable.

In response to challenges above, the ModuLase has developed, validated and demonstrated a rapidly re-configurable laser process head that:

- Is capable of welding, cladding and cutting, through the use of re-configurable collimating and focusing optics, allowing tailored beam caustics to be produced (Figure 3a). Rapidly interchangeable end-effectors (Figure 3b) were designed and built to deliver 'plug and play' connection to the process head and provide the additional functionality for each process (for example, cutting assist-gas, wire/powder-feed and plume control).



a)



b)

Figure 3 Images of re-configurable collimating and focusing optics (a) and rapidly interchangeable end-effectors (b) developed in the ModuLase project.

- Includes intelligent sensor technologies for in-process monitoring (Figure 4), compatible for all three processes (welding, cladding and cutting applications).

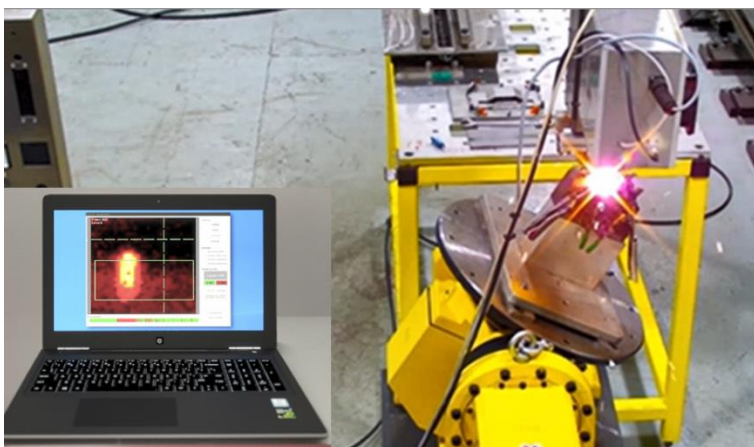


Figure 4 In-process monitoring developed in ModuLase.

- Is linked to an intelligent system, in order to achieve, quality assurance, and semi-automated process parameter configuration.

Furthermore, the ModuLase system addresses the following requirements:

- Power handling capability up to 10kW, and compatible with 1µm wavelength laser sources.
- Capable of providing focus spot sizes varied by a factor of 3 (fibre diameter is benchmark).
- Reduce optical configuration changeover from current 1-2 hours to <1 minute, minimising down-time.
- Positional accuracy of 0.05mm of optical component drives, to ensure accurate beam caustics.
- Optical compatibility with co-axial process monitoring technology.

2.1 Societal and economical for the EU

Societal

By encouraging the uptake of laser processing by contract fabricators and Tier 1 and 2 manufacturers, we expect safe-guarding of existing jobs and the creation of highly skilled employment opportunities in the manufacturing sector within the EU. We estimate that ModuLase has the potential to increase employment opportunities by 8-12% within the consortium's end-users and supply chain (manufacturing the ModuLase system) by five years post-project. The majority of new jobs will be highly skilled engineers and researchers and will contribute to the development of a knowledge-based society. Furthermore, as laser welding does not require heavy manual labour, this social benefit should apply to workers regardless of their gender or age.

Environmental

While this project is environmentally neutral, laser processing is an energy efficient process compared with traditional materials processing techniques (~10% that of arc welding and cutting for example), and generates significantly less (~80%) fume. These will have localised environmental benefits for companies engaged in fabrication activities.

3 Final Dissemination Material

3.1 ModuLase and partners' logos

The ModuLase logo (Figure 5) has been used in all dissemination material for project events and dissemination activities (e.g. presentations, publications, leaflets, brochures, project website) and in the project website.

Logos of the ModuLase partners are also shown from Figure 6 to Figure 13.

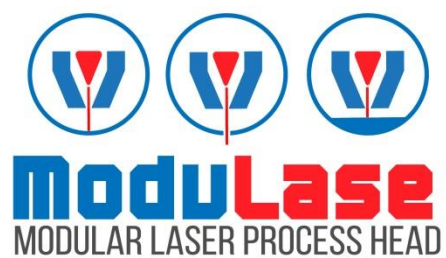


Figure 5 ModuLase Logo.



Figure 6 Logo of the partner TWI Ltd (TWI).



Figure 7 Logo of the partner Q-SYS BV (Q-Sys).



Figure 8 Logo of the partner ULO OPTICS LIMITED (ULO).



Figure 9 Logo of the partner ASOCIACION DE INVESTIGACION METALURGICA DEL NOROESTE (AIMEN).



Figure 10 Logo of the partner EUROPEAN FEDERATION FOR WELDING JOINING AND CUTTING (EWF).



Figure 11 Logo of the partner CENTRO RICERCHE FIAT SCPA (CRF).



Figure 12 Logo of the partner DUHLMAYER KONSTRUKTION WERKZEUG- UND FORMENBAU (SODECIA).



Figure 13 Logo of the partner GRAHAM ENGINEERING LIMITED (GEL).

3.2 ModuLase project website (<https://www.modulase.eu/>)

The link of the ModuLase project website is <https://www.modulase.eu/>.

One of the main dissemination tools is the ModuLase project website. The aim of the website is to raise awareness about the project goals and results among public. The content has been periodically updated, while dissemination material on the project has been generated.

The ModuLase website is used as one of the main information repositories of the project and serves as a fast and effective communication tool for the purposes of the project consortium. It contains information about:

- Scope and objectives of the project.
- Description of the consortium.
- Expected results and their envisaged impact.
- Project news and information on project meetings.
- Public deliverables and presentations.
- Newsletter for the project achievements and participation in events.
- Available dissemination material to download.
- Impact of the project.

Figure 14 and Figure 15 show screenshots of the ModuLase website.

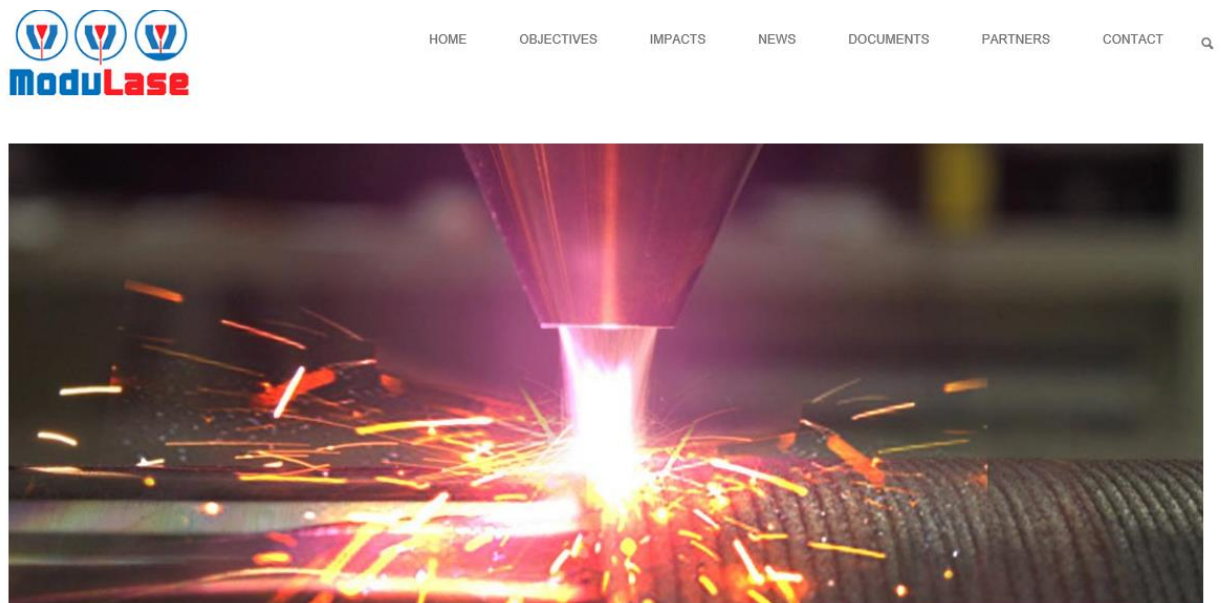


Figure 14 Image of ModuLase website home screen.

PROJECT AIMS

ModuLase aims to develop, validate & demonstrate a rapidly re-configurable laser process head that:

- Is capable of welding, cladding and cutting, through the use of three modular end-effectors
- Includes intelligent sensor technologies for in-process monitoring
- Is linked to an intelligent system, in order to achieve adaptive process control, quality assurance, and semi-automated process parameter configuration.

The ModuLase project aims to develop, validate and demonstrate an adaptable laser process head, capable of welding, cladding and cutting, to increase the flexibility of laser systems. This will be achieved through the use of a Beam Forming Unit (BFU) and modular end-effectors (akin to changing a computer numerical control (CNC) machining tool). The project will focus on materials and geometries for high value manufacturing applications in the power, automotive and aerospace sectors. The ModuLase system will also include intelligent sensor technologies to support adaptive process control and quality assurance.

PROJECT OBJECTIVES

- Finalise the Detailed Specification (within Work Package 1)
- Develop a Beam Forming Unit (BFU) for Tailoring Laser Beam Energy Distribution (within Work Package 3)
- Develop End-Effectors for Welding, Cladding and Cutting Applications (within Work Package 2)
- Develop a Co-Axial In-Process Quality Assurance System (within Work Package 4)
- Develop Software Package and Integrate with Process Head (within Work Packages 5/6)
- Validate the Flexibility of the ModuLase system for Welding, Cladding and Cutting at a Pilot Facility (within Work Packages 5 and 7)

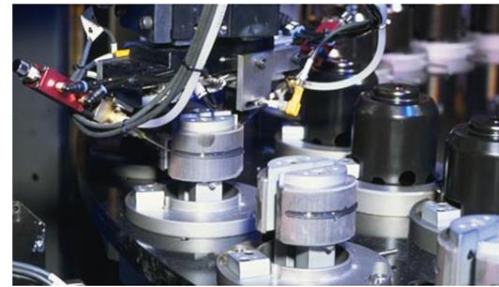


Figure 15 Screen shots of ModuLase project technology aims and objectives, from the ModuLase website.

3.3 Kit of promotional material

A kit of promotional material was developed and was a good pillar to support the dissemination & communication activities performed during the entire duration of the project. A screenshot of ModuLase Promotional Materials is shown in Figure 16. All promotional material is available in the project website at www.modulase.eu/documents.html and includes:

- ModuLase brochures and leaflets.
- ModuLase posters.
- ModuLase presentations in exhibitions and fairs.
- Photo-gallery of project results and used tools.



Figure 16 Snapshot of ModuLase kit of promotional materials.

Videos showcasing the ModuLase system and its technologies were also produced in the course of the project. All video material has been made available in the project website at www.modulase.eu/documents.html and includes:

- A Computer-Generated Imagery (CGI) video, showing technology and functionality of the ModuLase system.
- Demo videos showing the ModuLase system in action, including final demo videos on the ModuLase system performing welding, cutting and cladding. Technologies developed in the project were showcased as whole system and using end users case study components.

3.4 ModuLase partners' websites backlinks

Part of the project's dissemination strategy included the creation of specific news articles and/or dedicated webpages featuring ModuLase information within the project partners' website. Specifically, backlinks to the ModuLase website from partners' websites are listed below (examples snapshot are reported in Figure 17):

- <https://www.twi-global.com/what-we-do/our-processes/modulase-1>
- <https://www.twi-global.com/media-and-events/press-releases/2017-10-modulase-combining-laser-processes-for-the-future-of-manufacturing>
- <https://www.twi-global.com/media-and-events/insights/modulase-re-configurable-laser-processing-head>
- <https://www.ulooptics.com/modulase-bringing-laser-based-additive-manufacturing-to-the-mainstream/>
- <https://www.graham-eng.co.uk/project-modulase/>

- <https://www.aimen.es/proyectos/development-and-pilot-line-validation-of-a-modular-re-configurable-laser-process-head>

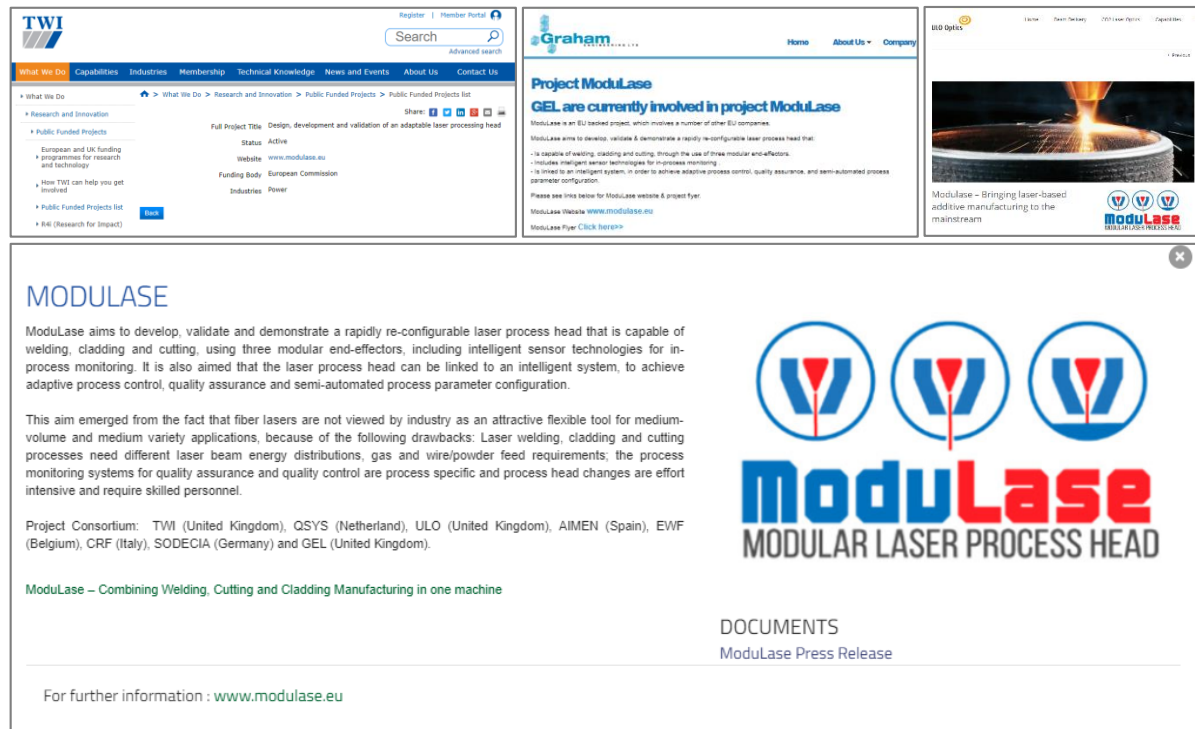


Figure 17 Backlinks to the ModuLase website (from partners' websites).

3.5 Initial and final project press releases

A general press release was prepared to describe the general objectives, features and achievements of the project and has been made available to each partner for dissemination to third parties, placement on partner websites and in relevant publications. Figure 16 shows images of the publication of the ModuLase press release at Welding and Cutting magazine, Issue 06 from 2016 (Figure 18a); a new press release was issued at the end of the project to disseminate its completion and availability of results (Figure 18b). Original documents can be found in the ModuLase website (<https://www.modulase.eu/documents/Press%20Release.pdf> and <https://www.modulase.eu/documents/ModuLase%20-%20Final%20PR.pdf>).



4 Overall Plan for Communication Activities across the Project

Communication and dissemination activities represent a very important part of the ModuLase project. The communication strategy has been designed to ensure that the commercial impact of the project is not endangered. Therefore the project results to be communicated have been split into:

- Publicly available information, to be widely communicated.
- Confidential information, which is not to be communicated outside of the consortium.

All public dissemination activities carried out are reported in Table 1, with the respective relevant links. The activities are organised by type and cover the following categories:

- Website & Social Media (Facebook, LinkedIn, Twitter).
- Magazines & Press Releases.
- Conferences & Fairs.
- Joint Events with other H2020 projects.
- Organisation of Workshops.

- Participation to events (other than conferences/workshops).
- Journal.
- Other.

Table 2 reports social media publications.

Table 1 Communication and dissemination activities in ModuLase

Type	Title / Link	Audience	Date and Place	Partner Responsible	Audience Size
Website					
Website	Graham Engineering website	General Public	20.03.2017	Graham-Eng	1 925
Website	TWI Website – ModuLase Reference	General Public	Since 2016	TWI	1 200
Website	EWF Website – ModuLase reference	General Public	Since 2016	EWF	2 000
Website	Dissemination of MODULASE at ULO's Website	General Public	Since 2016	ULO	2 000
Website	Dissemination of MODULASE at CRF's Website https://www.crf.it	General Public	Since 2016	CRF	2 000
Website	KOM News on EWF Website	General Public	30.11.2016	EWF	113
Website	6th Month Meeting News on EWF Website	General Public	17.03.2017	EWF	142
Website	6th Month Meeting News on MODULASE Website	General Public	28.02.2017	EWF	1 200
Website	12th Month Meeting News at MODULASE website	General Public	18.09.2017	EWF	-
Website	ModuLase at the EFFRA Portal	Scientific Community	20.11.2017	EWF/TWI	2 000
Website	News on TWI own website on the project	General Public	24.10.2017	TWI	-
Website	Reference to the project website on TWI's website	General Public	-	TWI	-
Website	18th Month Meeting News at MODULASE website	General Public	28.02.2018	EWF	1 200
Magazines					
Magazine	AILU Magazine	Scientific Community	May 2017	ULO Optics TWI	-
Magazine	Mention of ModuLase at FoF-AM Magazine	Scientific Community	2017	EWF	-
Press Release					
Press Release	Press Release at TWI Website	Media	-	TWI	1 200
Press release	ModuLase Press Release in Issue 06-2016 of "Welding and Cutting"	Media	11/12.2016	EWF	8 000
Press Release	Press Release at PR Log	Media	04/10/2017	EWF	8 000
Press Release	Press Release at EWF Website	Media	-	EWF	2 000
Press Release	Press Release at ULO's Website	Media	-	ULO	2 000
Press Release	Press Release at AIMEN Website	Media	-	AIMEN	1 925
Conferences					

Type	Title / Link	Audience	Date and Place	Partner Responsible	Audience Size
Organisation of a Conference	Joining Sub-platform to MANUFUTURE: 7 th General Assembly Stakeholder Meeting	Industry and Scientific Community	16.11.2017 Portugal	EWf/TWI	-
Participation to a Conference	70 th IIW Annual Assembly & International Conference 2017	Industry and Scientific Community	25-30.06.2017 Shanghai	EWf	-
Participation to a Conference	Laser World of Photonics	Scientific Community	Munich, DE 24-27.06.2017	ULO	32 000
Participation to a Conference	Dissemination of ModuLase at the Annual Photonics PPP Annual Meeting 2018	Industry Community	8-9.03.2018 Brussels	EWf/TWI	-
Participation to a Conference	71 st IIW Annual Assembly and International Conference Paper presentation: <i>"Development and Pilot Line Validation of a Modular re-configurable Laser Process Head"</i>	Scientific Community	Bali, 13-19.07.2018	EWf	60
Participation to a Conference	Project Presentation at ILAS2019: "A re-configurable laser processing system for welding, cutting and cladding"	Scientific Community	Crewe, UK 20-21.03.2019	TWI	-
Participation to a Conference	IAB-BOA-235-19 IAB Board Meeting Bratislava	Scientific Community	Bratislava, SK 09.07.2019	EWf	60
Participation to a Conference	38 th ANNUAL ICALEO 2019: Abstract submission: <i>"On-line quality monitoring system for multi-functional laser-based processing based on embedded VIS and MWIR computer vision"</i>	Scientific Community	Orlando, USA 7-10.10.2019	AIMEN	-
Joint events with other H2020 projects					
Participation in activities organized jointly with other H2020 projects	FoF EU Community Day 2017	Scientific Community / Industry	Brussels 16.05.2017	EWf	150
Participation in activities organized jointly with other H2020 projects	ModuLase at EFFRA Portal	Scientific Community	On-line 20.11.2017	EWf/TWI	200
Participation in activities organized jointly with	Project Presentation at FoF Community Days 2019	Scientific Community	Brussels 22.05.2019	EWf	30

Type	Title / Link	Audience	Date and Place	Partner Responsible	Audience Size
other H2020 projects					
Participation in activities organized jointly with other H2020 projects	Project Presentation to PHOTONHUB to promote ModuLase Training within the referenced project	Scientific Community / Industry	On-line 18.12.2020	EWF	4
Fairs					
Fair	ILAS 2017: The 5th Industrial Laser Applications Symposium	Scientific Community	Grantham, UK 22-23.03.2017	ULO	-
Fair	Dissemination of MODULASE at Schweissen & Schneiden Fair	Industry Community	Dusseldorf 25-29.09.2017	EWF	50 000
Fair	Dissemination at ModuLase at FORMNEXT2018	Industry Community	Frankfurt, November 2018	EWF	26 000 + attendees
Fair	Project disseminated 72 nd IIW Annual Assembly and International Conference	Scientific Community	Bratislava, SK 7-12 July 2019	EWF	100
Organisation of a Workshop					
Organisation of a Workshop	ModuLase Training Workshop at ISQ VET Centre	Industry	Oeiras, PT 28.09.2018	EWF	24
Organisation of a Workshop	ModuLase Training Workshop at Lisbon University (IST)	Scientific Community	Lisbon PT 03.12.2018	EWF	34
Organisation of a Workshop	ModuLase Training Workshop for Eng. Automotive Industry	Industry	Ovar, PT 19.12.2018	EWF	16
Organisation of a Workshop	ModuLase Training Workshop for Eng. Automotive Industry	Industry	Ovar, PT 04 – 08.02.2019	EWF	9
Organisation of a Workshop	ModuLase Training Workshop for operators in Automotive Industry	Industry	Ovar, PT 27 – 29.02.2019	EWF	5
Organisation of a Workshop	ModuLase Training Workshop at ISQ VET Centre	Industry	Grijó, PT 28.09.2019	EWF	18
Organisation of a Workshop	ModuLase Training Workshop at ISQ VET Centre	Industry	On-line 11.07.2020	EWF	15
Organisation of a Workshop	ModuLase Training Workshop at Lisbon University (IST)	Scientific Community	On-line 23.03.2021	EWF	20
Organisation of a Workshop	ModuLase Internal Training Activity	Industry & Scientific Community	On-line 16.04.2021	All	15
Organisation of a Workshop	ModuLase Final Event	Industry	On-line 21.05.2021	All	36
Participation to an Event other than a Conference or a Workshop					
Participation to an Event other than a	50 th EWF General Assembly 2017	Industry	09.05.2017 Greece	EWF	50

Type	Title / Link	Audience	Date and Place	Partner Responsible	Audience Size
Conference or a Workshop					
Participation to an Event other than a Conference or a Workshop	Dissemination of MODULASE at IAB/IIW meetings	Scientific Community	15-18. January 2018 Paris, France	EWf	70
Participation to an Event other than a Conference or a Workshop	Dissemination at EWf GA 2019	Industry	Gliwice, Poland 13-15 May 2019	EWf	50
Participation to an Event other than a Conference or a Workshop	Presentation of ModuLase final results at IAB Meetings	Industry	On-line 15.01.2021	EWf	50
Participation to an Event other than a Conference or a Workshop	Presentation of ModuLase final results at EWf GA	Industry	On-line 25.05.2021	EWf	50
Participation to an Event other than a Conference or a Workshop	Submission of Application to EC Event: ICT 2020 Leading the Digital Age (<i>cancelled due to COVID</i>)	Industry & Scientific Community	On-line 08.05.2021	EWf/TWI	NA
Journal					
Paper Publication in a Journal	Journal of Intelligent Manufacturing, Springer US p1-7 "A convolutional approach to quality monitoring for laser manufacturing" Available here	Scientific Community	9 October 2019	AIMEN	-
Other					
Other	GEL presentation to Pendle Vision board Meeting	Industry	09.2019	GEL	-

Table 2 Social media publications

Type	Title / Link	Audience	Date and Place	Partner Responsible	Audience Size
Facebook					
Social Media	News on EWF Facebook regarding the project start	General Public	12.12. 2016	EWF	689
Social Media	News on EWF Facebook on ModuLase	General Public	02.03. 2017	EWF	184
Social Media	News on EWF Facebook on ModuLase	General Public	04.04. 2017	EWF	4229
Social Media	Twitter /Facebook	General Public	16.05. 2017	AIMEN	1 445
Social Media	News on EWF Facebook on ModuLase participation on the FoF community Day	General Public	16.05. 2017	EWF	210
Social Media	12th Month Meeting News on EWF Facebook Page	General Public	19.09. 2017	EWF	471
Social Media	News on EWF Facebook regarding the 18th Month Meeting	General Public	09.04. 2018	EWF	301
Social Media	Facebook Post: #ModuLaseProject has the potential to create at least 135 jobs by year 5 post-project within the consortium companies. Highly skilled #employment #opportunities in the #manufacturing sector within the EU.#H2020 #ResearchImpactEU #FoF_EU #Photonics https://t.co/x6DA3JTI3o	General Public	06.08. 2018	EWF	324
Social Media	Facebook post: 135 highly skilled employment opportunities in the manufacturing sector within the EU due to the #ModulaseProject. Watch the video and find out more. #H2020 #ResearchImpactEU #FoF_EU #Photonics *** The ModuLase project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. H2020-FoF-2016-723945-ModuLase. The project is an initiative of the Photonics and Factories of the Future Public Private Partnerships.	General Public	08.08. 2018	EWF	252
Social Media	Facebook Post: #ModulaseProject at #formnext - Modular Laser Head -	General Public	15.11. 2018	EWF	384

Type	Title / Link	Audience	Date and Place	Partner Responsible	Audience Size
	www.modulase.eu - #H2020 #ImpactResearchEU				
Social Media	Facebook post: 135 highly skilled employment opportunities in the manufacturing sector within the EU due to the #ModulaseProject. Watch the video and find out more. #H2020 #ResearchImpactEU #FoF_EU #Photonics The ModuLase project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. H2020-FoF-2016-723945-ModuLase. The project is an initiative of the Photonics and Factories of the Future Public Private Partnerships	General Public	23.08. 2019	EWF	362
Social Media	Facebook post: Project Modulase is on its final months! To celebrate the great success of the project, the final event will be happening on the 23rd of July in Orbassano You can register NOW on the link below: https://www.eventbrite.co.uk/e/modulase-final-event-tickets... We will be waiting to see you there!! More info about #Modulase: http://www.modulase.eu/	General Public	06.03 2020	EWF	343
Social Media	Facebook post: Take a look at the most recent animation video about our project #ModuLase and its system. https://www.twi-global.com/what-we.../our-processes/modulase-1	General Public	05.08. 2020	EWF	188
Social Media	Facebook post: Take a look!! #ModuLase	General Public	09.10. 2020	EWF	130
Social Media	Facebook post: ModuLase internal training Session was hosted today, on-line, by EWF (but the preparation for this session was supported by all!).All partners participated and it was a good opportunity	General Public	16.04. 2021	EWF	140
Social Media	Facebook post: ModuLase will open its "virtual" doors and invites all stakeholders and general public to see the latest developments on	General Public	19.04. 2021	EWF	125

Type	Title / Link	Audience	Date and Place	Partner Responsible	Audience Size
	its system! You can for more information at https://www.eventbrite.co.uk/e/modulase-final-event-tickets				
Social Media	Facebook post: ModuLase will open its "virtual" doors and invites all stakeholders and general public to see the latest developments on its system! https://www.eventbrite.co.uk/e/modulase-final-event-tickets	General Public	28.04. 2021	EWf	104
Social Media	Facebook post: ModuLase will open its "virtual" doors and invites all stakeholders and general public to see the latest developments on its system! https://www.eventbrite.co.uk/e/modulase-final-event-tickets	General Public	12.05. 2021	EWf	126
Social Media	Facebook post: Don't forget ModuLase will open its "virtual" doors and invites all stakeholders and general public to see the latest developments on its system! JOIN US at https://lnkd.in/dKT5meu	General Public	19.05. 2021	EWf	188
Social Media	Facebook post: ModuLase Final Event was held today May 21 st . We had the morning full of interesting information shared by the project partners, speakers of the event. ModuLase consortium developed a processing head covering welding, cladding and cutting. The system comprises of a monitoring unit, on board intelligent algorithms for setting the optical configuration and to help the user in the selection of process parameters. Adaptable optical elements capable of delivering a wide range of laser beam energy distributions, suitable for welding, cutting and cladding applications. All the presentations of the event will be made available soon at the project website: www.modulase.eu	General Public	21.05. 2021	EWf	124
Social Media	Facebook Post: Check out the final Press Release of Modulase. ModuLase Consortium Develop a processing head covering welding, cladding and cutting.	General Public	31.05. 2021	EWf	80

Type	Title / Link	Audience	Date and Place	Partner Responsible	Audience Size
LinkedIn					
Social Media	LinkedIn Post: 135 highly skilled employment opportunities in the manufacturing sector within the EU due to the #ModulaseProject. Watch the video and find out more. #H2020 #ResearchImpactEU #FoF_EU #Photonics. The ModuLase project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. H2020-FoF-2016-723945-ModuLase. The project is an initiative of the Photonics and Factories of the Future Public Private Partnerships.	Industry and Scientific Community	06.08. 2018	EWF	1962
Social Media	LinkedIn Post: ModuLase Final Event was held today May 21st. We had the morning full of interesting information shared by the project partners, speakers of the event. ModuLase consortium developed a processing head covering welding, cladding and cutting. The system comprises of a monitoring unit, on board intelligent algorithms for setting the optical configuration and to help the user in the selection of process parameters. Adaptable optical elements capable of delivering a wide range of laser beam energy distributions, suitable for welding, cutting and cladding applications. All the presentations of the event will be made available soon at the project website: www.modulase.eu	Industry and Scientific Community	28.04. 2021	EWF	530
Social Media	LinkedIn Post: Don't forget ModuLase will open its "virtual" doors and invites all stakeholders and general public to see the latest developments on its system! JOIN US at https://lnkd.in/dKT5meu	Industry and Scientific Community	12.05. 2021	EWF	1092
Social Media	LinkedIn Post: ModuLase will open its "virtual" doors and invites all stakeholders and general public to see the latest developments on its system! https://lnkd.in/dKT5meu	Industry and Scientific Community	19.05. 2021	EWF	371

Type	Title / Link	Audience	Date and Place	Partner Responsible	Audience Size
Social Media	LinkedIn Post: ModuLase will open its "virtual" doors and invites all stakeholders and general public to see the latest developments on its system! https://lnkd.in/dKT5meu	Industry and Scientific Community	21.05. 2021	EWF	363
Social Media	LinkedIn Post: Check out the final Press Release of ModuLase. ModuLase Consortium Develop a processing head covering welding, cladding and cutting.	Industry and Scientific Community	31.05 2021	EWF	365
Twitter					
Social Media	Twitter Post	General Public	02.03.2017	ULO	777
Social Media	Twitter Post on EWF Account regarding the project second meeting hosted by ULO	General Public	02.03. 2017	EWF	448
Social Media	Twitter Post Regarding the FoF Community day where ModuLase was present	General Public	16.05. 2017	EWF	513
Social Media	Dissemination on Tweeter by ULO	General Public	06.03. 2018	ULO	777
Social Media	Dissemination on Tweeter by ULO (news on the final BFU)	General Public	14.03. 2018	ULO	777
Social Media	Twitter Post to disseminate ModuLase	General Public	09.04. 2018	EWF	485
Social Media	Twitter Post: _#ModuLaseProject has the potential to create at least 135 jobs by year 5 post-project within the consortium companies. Highly skilled #employment #opportunities in the #manufacturing sector within the EU. #H2020 #ResearchImpactEU #FoF_EU #Photonics https://www.youtube.com/watch?v=HJ1A7JEC3Ps ...	General Public	06.08. 2018	EWF	292
Social Media	Twitter Post: The #ModuLase consortium meeting is taking place at TWI, in Cambridge. ModuLase project is progressing well! . Monitoring system – installed . Validation on demonstrators – scheduled . Decommissioning of ModuLase system at CRF – planned	General Public	06.03. 2019	EWF	550

4.1 Summary of dissemination statistics

Google Analytics was used to evaluate impact of the ModuLase website. Figure 19 shows information that was tracked along the project duration. It was possible to monitor number of sessions per month. The number of users engaging was higher toward the end of the project, and this is believed to be associated with the release of

final achievements and results, as well as the organisation of final workshop to industry.

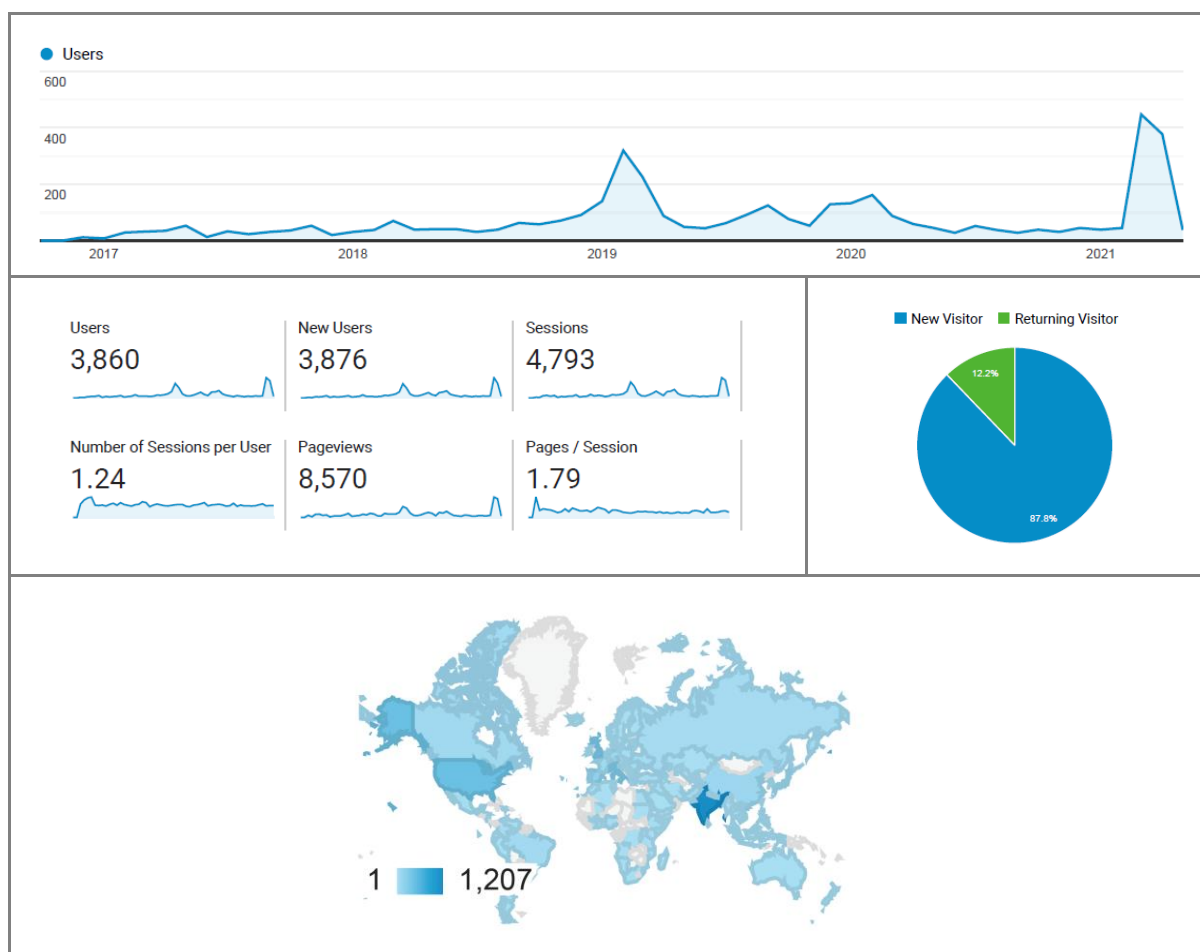


Figure 19 ModuLase website analytics report (May 2021).

Below, an overview of dissemination and communication activities carried out during the project. In total partners carried out a total of 90 activities. The distribution per type of activity is illustrated in Figure 20.

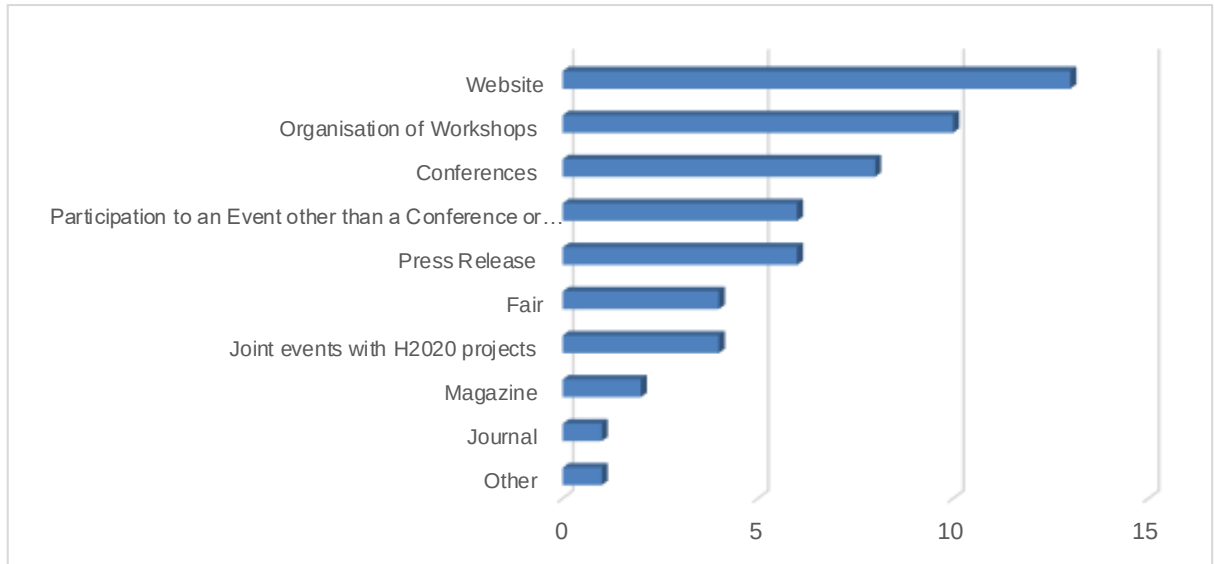


Figure 20 ModuLase dissemination activities overview.

5 Acknowledgement

The ModuLase project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. H2020-FoF-2016-723945-ModuLase. The project is an initiative of the Photonics and Factories of the Future Public Private Partnerships.



PHOTONICS PUBLIC PRIVATE PARTNERSHIP



Factories of the Future
Public Private Partnership