OPTIMAL

Aut**o**mated Maskless Laser Lithography **P**latform for First **Ti**me Right **M**ixed Sc**al**e Patterning

Starting date of the project: 01/10/2022
Duration: 48 months

= Deliverable D7.1 =

Plan for Dissemination and Communication

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Project Manager	Elena Turco (JOR)	22/02/2023
Project Coordinator	Ladislav Kuna (JOR)	29/03/2023

Table of Contents

1. Executive Summary

The present document provides a detailed description of the dissemination and communication plan for the Horizon Europe project Aut**o**mated Maskless Laser Lithography **P**latform for First **Ti**me Right **M**ixed Sc**al**e Patterning (OPTIMAL). The project aims to integrate, for the first-time, different laser lithography technologies, quality monitoring systems and processes in a single platform to improve the manufacturing of original structures, known as masters, needed for key-enabling replication techniques in optical, industrial and medical device fabrication.

Deliverable D7.1 "Plan for Dissemination and Communication" serves as a guideline for the dissemination strategy that will be adopted during the project, as well as communication tools that will be continuously reviewed and updated during the project lifetime (months M1-M48). The document describes tasks that need to be accomplished, as well as a detailed description of activities that have already been carried out within the project. All consortium partners will engage in dissemination activities according to their relevant tools and channels in order to promote OPTIMAL as widely as possible.

This document is organized into the following sections:

- Section 2 introduces the main objectives of Deliverable D7.1, linked to Task 7.1.
- Section 3 presents the dissemination strategy including EC guidelines, publication policy, stakeholders and KPIs, as well as dissemination monitoring tools.
- Section 4 describes communication tools, target groups and strategies such as project branding, website, social media and press releases in detail.
- Section 5 reports an overview of the OPTIMAL plan for dissemination and communication.

2. Introduction

This document constitutes OPTIMAL's Deliverable D7.1 "Plan for Dissemination and Communication" pertaining to Task 7.1 within Work Package 7 (WP7). The objective of this task is to ensure that project results will be disseminated to the European research and industrial community while targeting all important stakeholders in the field of laser technologies for green manufacturing and potential applications.

The specific core objectives of the above-mentioned task are as follows:

- Creation of project branding (logo, presentations, flyers, posters, product brochures, etc.);
- Setup of the project website;
- Definition of a publication policy concerning publishable results;
- Periodic publication of project press releases and social media posts (LinkedIn, Twitter, etc.);
- Participation in conferences and exhibitions.

3. Dissemination strategy

3.1. EC guidelines

The European Commission (EC) guidelines on OPTIMAL partner dissemination activities are described in the following section.

3.1.1. Dissemination of results

According to the Grant Agreement, all beneficiaries forming the consortium must respect the following basic rules regarding dissemination activities:

- Beneficiaries must disseminate their results as soon as feasible, in a publicly available format, subject to any restrictions due to the protection of intellectual property, security rules or legitimate interests.
- A beneficiary that intends to disseminate its results must give at least 45 days advance notice to the other beneficiaries (unless agreed otherwise), together with sufficient information on the results it will disseminate.
- Any other beneficiary may object within 30 days of receiving notification (unless agreed otherwise) if it can show that its legitimate interests in relation to the results or background would be significantly harmed. In such cases, the results may not be disseminated unless appropriate steps are taken to safeguard those interests.

3.1.2. EU funding acknowledgment

As stated in the Grant Agreement, all dissemination materials generated by the OPTIMAL consortium must:

1. Display the OPTIMAL logo and the European Union (EU) emblem,
2. Include the following text: “The project OPTIMAL receives funding from the European Union’s Horizon Europe research and innovation programme under Grant Agreement No. 101057029.

An example of EU funding acknowledgment is shown below in **Figure 1**.

Figure 1. EU funding acknowledgment.

3.2. Publication policy

During the Project and for a period of 1 year after the end of the Project, the dissemination of Results by one or several Parties, including but not restricted to publications and presentations, shall be governed by the procedure of Article 17.4 of the Grant Agreement and its Annex 5, Section Dissemination, subject to the following provisions. Prior notice of any planned publication shall be given to the other Parties at least 45 calendar days before the publication. Any objection to the planned publication shall be made in accordance with the Grant Agreement by

written notice to the Coordinator and to the Party or Parties proposing the dissemination within 30 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted.

A flow chart of the OPTIMAL publication policy is shown below in **Figure 2**.

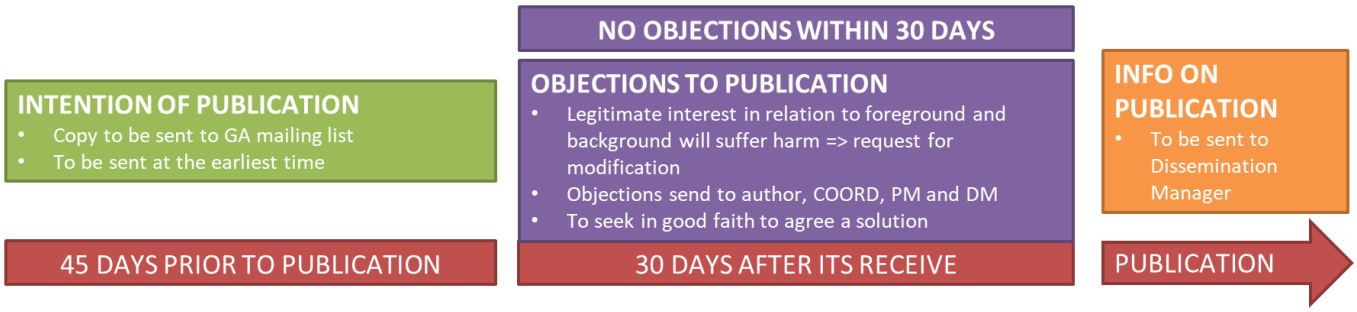


Figure 2. Publication policy.

An objection is justified if:

1. Protection of the objecting Party's Results or Background would be adversely affected;
2. The objecting Party's legitimate interests in relation to its Results or Background would be significantly harmed (e.g. know-how, trade secret, filing IP); or,
3. The proposed publication includes Confidential Information of the objecting Party.

The objection must include a precise request for necessary modifications.

If an objection has been raised, the involved Parties shall discuss how to overcome the justified grounds for the objection on a timely basis (for example by amendment to the planned publication and/or by protecting information before publication) and the objecting Party shall not unreasonably continue the opposition if appropriate measures are taken following the discussion.

The objecting Party can request a publication delay of not more than 90 calendar days from the time it raises such an objection. After 90 calendar days the publication is permitted, provided that the objections of the objecting Party have been addressed. If the objection has not been addressed to the satisfaction of the objecting Party, the publication is not permitted.

Dissemination of another Party's unpublished Results or Background:
A Party shall not include in any dissemination activity comprising another Party's Results or Background without obtaining the owning Party's prior written approval, unless the Results or Background are already published.

Cooperation obligations:
Parties will cooperate to allow the timely submission, examination, publication and defense of any dissertation or thesis for a degree that includes their Results or Background subject to the confidentiality and publication provisions agreed in the Consortium Agreement.

Use of names, logos or trademarks:
Nothing in the Consortium Agreement shall be construed as conferring rights to use in advertising, publicity or otherwise the name of the Parties or any of their logos or trademarks without their prior written approval.

3.2.1. Open access to scientific publications

In accordance with the open access policy implemented by Horizon Europe all beneficiaries must ensure open access to peer-reviewed scientific publications relating to their results. In particular, they must ensure that:

- At the latest at the time of publication, a machine-readable electronic copy of the published version, or the final peer-reviewed manuscript accepted for publication, is deposited in a trusted repository for scientific publications;
- Immediate open access is provided to the deposited publication via the repository, under the latest available version of the Creative Commons Attribution International Public Licence (CC BY) or a licence with equivalent rights; for monographs and other long-text formats, the licence may exclude commercial uses and derivative works (e.g. CC BY-NC, CC BY-ND); and,
- Information is given via the repository about any research output or any other tools and instruments needed to validate the conclusions of the scientific publication.

Beneficiaries (or authors) must retain sufficient intellectual property rights to comply with the open access requirements.

Metadata of deposited publications must be open under a Creative Common Public Domain Dedication (CC 0) or equivalent, in line with the FAIR principles (in particular machine-actionable) and provide information at least about the following: publication (author(s), title, date of publication, publication venue); Horizon Europe or Euratom funding; grant project name, acronym and number; licensing terms; and persistent identifiers for the publication, the authors involved in the action and, if possible, their organisations and the grant. Where applicable, the metadata must include persistent identifiers for any research output or any other tools and instruments needed to validate the conclusions of the publication.

Only publication fees in full open access venues for peer-reviewed scientific publications are eligible for reimbursement.

3.2.2. List of journals

The results obtained in the project will be shared with the European and worldwide scientific community through publications in open access international journals. The following scientific journals have been identified, amongst others, for partners to publish their outcomes during the OPTIMAL project:

- Optical Materials Express (OMEx)
- Optics Express (Opt Express)
- Journal of Lightwave Technology (JLT)
- Journal of the International Measurement Confederation (IMEKO)
- Sensors and Actuators A: Physical (Sens. Actuator A Phys.)
- Measurement Science and Technology (Meas Sci Technol)
- Microelectronic Engineering (Microelectron. Eng.)
- Journal of Micro/Nanopatterning, Materials, and Metrology (JM^3)

3.3. Stakeholders and KPIs

The main strategy for dissemination of results to different target groups, including the scientific community, end users (industries), financial actors, broader public and media is reported in **Table 1**. In addition, key performance indicators (KPIs) have been defined to measure the impact of each dissemination activity.

Table 1. Dissemination measures and key performance indicators (KPIs).

Target groups	Measure for dissemination	Target KPI	Justification
Scientific community	Publications in OPEN ACCESS international journals	8	Disseminate results. Set up collaborations for joint research activities. Implement Open Science practices. Training and education of researchers.
	Presentations at international conferences	12	
	Development of training materials for researchers and integration of modules with project results in regular courses	4	
End users (industries)	Project workshops and open days for industries	2	Discuss exploitation of results, licensing, business opportunities and technology replicability. Direct contacts with customers. Training for workers.
	Exhibitions and trade fairs	4	
	Cluster with EU projects offering access to services	4	
	Development of training materials for workers	4	
Broad public and media	Number of project website visits	800	Create awareness about the project, its objectives and impact. Interaction with local communities. Communicate with media to attract stakeholders.
	Number of public deliverable downloads	120	
	Non-scientific publications (newspaper articles, press releases, interviews) and posts in social media (e.g. Twitter)	48	
	Flyers/Poster distributed at public events	3000	
	Interaction with media during project dissemination event	16	
	Participation in events organized by the EC (e.g. Info Days)	10	

Financial actors	Cluster with EU projects offering access to services	8	Update funding tools and establish contacts with investors.
	Meetings with investors	12	

3.3.1. List of potential conferences

The publishable results of the project will be shared with the European and worldwide scientific community through presentations at international conferences. The following conferences are of relevance to the OPTIMAL project:

- CLEO/EUROPE
- Micro & Nano Engineering Conference (MNE)
- Microoptics Conference (MOC)
- OSA Optical Design and Fabrication Congress
- Multi-National Congress on Microscopy (MCM)
- International Conference on Nanoimprint and Nanoprint Technology (NNT)
- SPIE Photonics West

3.3.2. Cluster with EU projects and interaction with the EC

Co-operation activities will be established with other projects with the aim of offering services to external parties (i.e., Open Innovation Test Beds, Digital Innovation Hubs, etc.), thus supporting the concept of Open Access to the OPTIMAL platform. Moreover, participation in events organized by the EC (i.e., Info Days, Photonics21) is planned. The project is already registered on the European Factories of the Future Association (EFFRA) Innovation Portal. The key objective of the EFFRA is to promote pre-competitive research on production technologies within the European Research Area by engaging in a public-private partnership with the European Union called “Factories of the Future”. EFFRA is a non-for-profit, industry-driven association promoting the development of new and innovative production technologies. Moreover, it is the official representative of the private side in the “Made in Europe” partnership.

3.4. Dissemination monitoring tool

All dissemination and communication activities implemented by OPTIMAL partners will be continuously monitored over the entire duration of the project. Monitoring will be performed internally by inviting all partners to report their undertaken activities (e.g., publications, conference participation, training, media contact, etc.) every 6 months. This will be an efficient way of periodically reporting each partner’s achievements to EC. The WP7 leader will be responsible for collecting the content of such reports. An Excel file, designed and produced by the Project Manager, will be used as a monitoring tool, and shared with the Consortium Partners in a shared repository. The above-mentioned file is composed of multiple worksheets including publications, datasets, dissemination activities and communications (see Appendix 1). All project partners will receive a reminder email to upload their activities prior to the end of each 6-month period.

4. Communication tools, target groups and strategy

This section gives an overview of the project's communication activities and strategies that will be employed to reach out to all identified target groups.

4.1. Project branding (logo, presentations, flyers, poster, product brochures)

Project branding material will be prepared for use and distribution at public events, including conferences, exhibitions and trade fairs, to disseminate the results of the OPTIMAL project to the European research and industrial community.

4.1.1. Project logo

The project logo, a critical first step in branding, is crucial to the project's visual identity. The designed logo, displayed in **Figure 3**, combines the name of the project with the concept of Airy disc, showing the diffraction limited focus of a laser beam. Moreover, the RGB colors used in the logo embody the multiwavelength nature of the employed laser setup. The red line passing through the letters of an acronym and ending with light focus represents the laser beam propagation.

Figure 3. The project logo.

4.1.2. Factsheet

A factsheet has been designed and produced by the Project Manager to provide effective guidance to the target audience (see Appendix 2). The factsheet contains essential information about the project including objectives, partners, four potential use cases and funding. The OPTIMAL factsheet will be disseminated by consortium partners through their respective channels to ensure broad awareness of the project.

4.2. Website

The OPTIMAL website (https://www.optimal-project.eu/), a key platform for dissemination and communication activities, was published in M4. The website contains primary webpages with general information about the project, partners and contacts. It employs a user-friendly design to make branding material and all publishable project features and outputs available not only to the European research and industrial community, but also to broader public and private citizens.

The website map structure includes the following pages:

- HOME
- PARTNERS
- NEWS
- THE PROJECT
- CONTACTS

All partners will be strongly recommended to link the project to their individual webpages in order to increase the visibility of OPTIMAL. The website will be used as an open access repository and maintained for 5 years after the end of the project.

4.3. Media and social media

Media will be invited to participate in the main project dissemination events, including the final open workshop of the project. Project results will also be disseminated in non-scientific publications (newspaper articles, periodic press releases, interviews, etc.) and posted on the main social media platforms including LinkedIn and Twitter.

OPTIMAL's LinkedIn account will play a key role to promote project outcomes and will be accessible to all potential visitors, including relevant stakeholders and industry professionals, from M6 of the project. All consortium partners will be invited to join the OPTIMAL page and post content relating to the project, including news, results and events, through their own channels in order to gain attention from their respective groups and audiences. During the initial

phase of the project, at least four posts per month will be released to maintain a dynamic dissemination process. LinkedIn is easily accessible through the project website by clicking on the respective icon, positioned at the bottom of all webpages.

4.4. Press releases

During the project duration, several press releases will be produced in English to ensure that all potential audiences will be aware of the project. These press releases will highlight project news and will be published through partners' networks and channels at local, national, European and international levels.

At the beginning of the project, the first press release (see Appendix 3) was prepared by the WP7 leader and shared with the partners for distribution. It included announcement of the project launch, as well as information relating to the OPTIMAL kick-off meeting (KOM). The first press release will soon be available on the OPTIMAL website in the NEWS section.

4.5. Training activities

Two specific training packages will be developed within the project, the first targeting students and researchers, the second targeting use case partners and other potential industries. The former will include a description of OPTIMAL innovation, technologies, features and performance offered by the platform, while the latter will include a description of project innovation, safety aspects, process requirements, and protocols for use and data interpretation.

4.6. Online course for students

An online seminar dedicated to younger scientists and technicians within the consortium will be organized to share information and best practices and to gain knowledge from each other's experience.

4.7. Project workshop with industrial participation

A technical workshop targeted at industrial stakeholders will be organized at JOR facilities (i.e., lab tour and demonstration) to make potential users aware of OPTIMAL technologies and features offered by the platform and to receive broader input relating to industrial requirements.

4.8. Organization of one seminar focused on maskless laser lithography and related projects

One final open workshop will be organized in the framework of an international event (i.e., NIL Industrial Day or Symposium on Direct Write, Optical, Ion and Electron Beam Lithography), with the participation of media, in order to initiate knowledge transfer to industry and subsequent exploitation activities together with industrial partners.

4.9. Exhibitions and trade fairs

Publishable results of the project will be disseminated to European industries through participations in international exhibitions and trade fairs (i.e., Laser World of Photonics, Semicon Europe SPIE events on Advanced Lithography, Photonics and digital Optical technologies, Control, MicroScience, etc.).

5. Conclusion

The purpose of this report is to present the project dissemination and communication plan that will be implemented throughout the duration of the OPTIMAL project, comprising a consortium strategy for dissemination activities including European Commission guidelines, publication policy, relevant stakeholders, key performance indicators and guidelines for monitoring of dissemination. In addition, it describes the OPTIMAL communication strategy and relevant tools in detail to promote the project's outcomes to target audiences efficiently. The above-mentioned strategies are crucial to measure the achieved progress and the impact of the proposed plan throughout the project lifespan. All consortium partners will be involved in dissemination and communication activities to spread project results to identified relevant stakeholders and commercial target groups as widely as possible.

A graphic representation of concrete actions that will be implemented during the OPTIMAL project is reported in **Figure 4**. It is expected that scientific publications related to project results (i.e., innovative photoresists and their characterization, new performance at master, processes, and product levels, etc.) will continue beyond the end of the project. Considering the business plan, together with participation at exhibitions, trade fairs, demos and workshops, industrial participation will be ramped up after the end of the project to support market introduction of the developed OPTIMAL solutions. Clustering activities during the project will contribute to establish collaborations for follow-up projects. Participation at events and collaborations with other funded projects are therefore expected to continue well beyond the project end.

In the first 4 months of the project, the logo, factsheet and website have been designed, created and launched to maximize the visibility and impact of the OPTIMAL project from its outset. The present document will be updated in M24 of the project to monitor progress and ensure achievement of the expected performance.

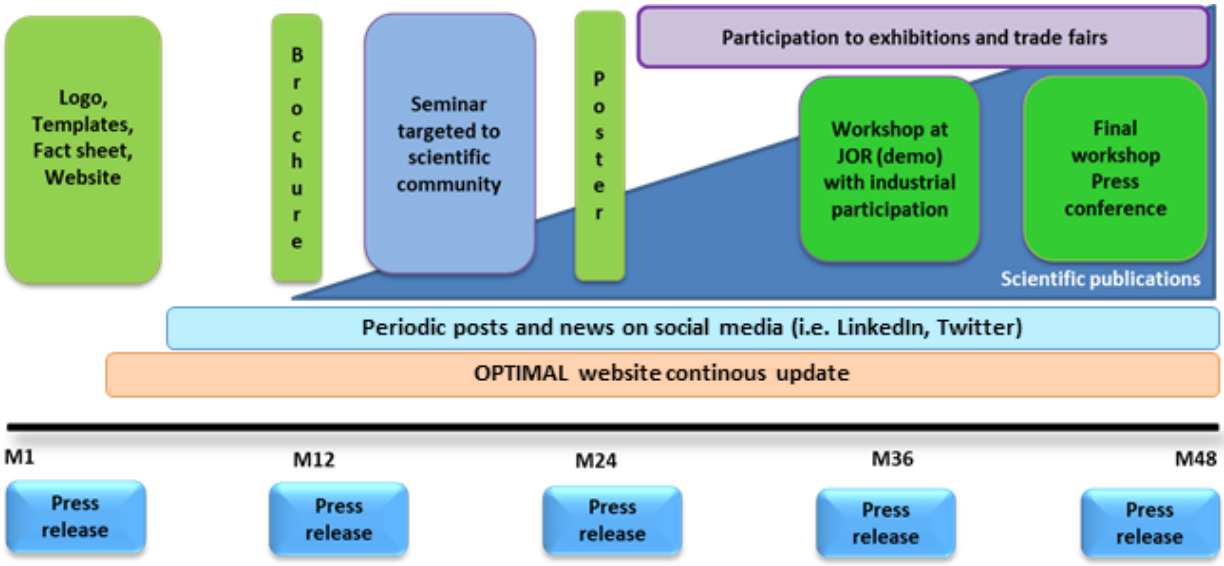


Figure 4. OPTIMAL plan for dissemination.

6. Degree of progress

This document describes the project dissemination and communication plan that will be implemented during the lifespan of the project. In line with the objectives described in Deliverable D7.1, including the creation of project branding, setup of the project website, etc., the degree of progress is 100%.

7. Dissemination level

This Deliverable will be made available to the broader public, published on the project website and Cordis's platform after its approval by the EC.

8. Appendix 1 OPTIMAL Monitoring Tool

OPTIMAL publications (papers, proceedings, books, thesis, etc.)															
Type of publication	Title	Partner	Authors	Title of the Journal or equivalent	Publisher	Number / ISSN or eISSN	Month and Year of publication	Is it peer reviewed?	Was the publication available in Open access through the repository at the time of publication?	Did you charge Open Access publishing fee to the project?	Open Access costs charged to the project	Type of publishing venue	Type of PID	PID (Publisher version of record)	*PID of deposited publication*

Publications | Datasets | Dissemination | Communication

OPTIMAL datasets (metadata related to scientific publications)									
Type of PID	PID	Description of dataset	Partner	Does the data underpin a publication?	If yes, Publication PID	URL to repository	Is this dataset available in Open access?	If no, explain why	Is the metadata of deposited data accessible through open access?

Publications | Datasets | Dissemination | Communication

OPTIMAL dissemination activities (conferences, training, clustering)									
Dissemination activity name	Contribution	Type	Partner	URL	Date	Place	Target audience	Motivation and main outputs	Status

Publications | Datasets | Dissemination | Communication

OPTIMAL communication activities (exhibition, press and media)								
Communication channel	Name of the activity and short description	URL	Partner	Date	Place	Target audience	Outcome	Status

Publications | Datasets | Dissemination | Communication

9. Appendix 2 OPTIMAL Factsheet

Automated Maskless Laser Lithography Platform for First Time Right Mixed Scale Patterning

OPTIMAL

Introduction:

Laser-based technologies for creating structures in the range from nanometer up to millimeter size find many applications such as free form optics, photonics, multifunctional surfaces, lab-on-chip, etc. with a global market volume of > 200 billion euros. The original structures, known as masters, are the first step in the making of tools for key-enabling technologies like injection molding or nanoimprinting.

Some of the current limitations in the laser lithography processes are the limited depth of the structures, small area and low speed at process level, high-power consumption in the laser interference lithography, and multiple and expensive processes required for the development of hierarchical multifunctional structures at industrial level.

Project description:

The OPTIMAL project will integrate for the first-time different laser lithography technologies, quality monitoring systems and processes in one platform for the development of structures with high depth, dimensions in the range from 100 nm to sub-mm, 2D&3D shape on flat surface, combining parallel & serial patterning, no need for external treatments on samples, increased speed and large area. The OPTIMAL project uses self-learning algorithms to optimize the virtual photomask as well as integrates methods for an inline control of the laser patterning.

Image of the current maskless laser lithography setup at Joanneum Research MATERIALS

Project facts:

Start date: 01/10/2022

End date: 30/09/2026

Duration in months: 48

Project EU funding: 5.6M€

Grant Agreement: 101057029

HORIZON-CL4-2021-TWIN-TRANSITION-01-03 Laser-based technologies for green manufacturing

Keywords:
1 and 2 photon laser lithography, laser interference lithography, thick photoresists, depth structures, electro plating, in-line monitoring, virtual masks, tooling, optics, and photonics application

Contacts:

optimal@joanneum.at

Automated Maskless Laser Lithography Platform for First Time Right Mixed Scale Patterning– OPTIMAL

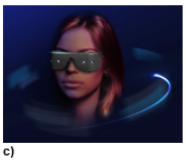
Impact:

By accelerating and upscaling the structuring process, the OPTIMAL project will increase the process efficiency and yield, which will allow for **"first time right" fabrication of the required structures, lower consumption of resources, waste reduction, lower CO_2 emissions, increase of productivity, and cost reduction.**

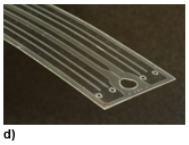
The OPTIMAL platform will be validated through the manufacturing of master tools for four different use cases: a) full-polymer micro lenses for industrial optics, b) hierarchical multifunctional drag reduction riblet structures for aviation, c) free-form lens arrays for high-end virtual reality displays and d) microfluidic hierarchical structures for lab on chip medical devices.

a)

b)



c)



d)

Multidisciplinary expertise:

The OPTIMAL approach involves various disciplines, which interact with each other in order to achieve the project objectives. Material research and photochemistry is needed to develop the suitable photoresists (MRT). Laser technology knowledge (JOR, ISE) is required for developing novel laser lithography methods, machines, and processes. The electronics finds its application in the optical based sensors for in-line monitoring, controlling the laser sources and patterning (ILC, DPX). The software engineering expertise (UPR) completes the required skills for the development of self-learning algorithms for generating the virtual photomasks. Mechanical and environmental engineering deal with the equipment and manufacturing processes and their life cycle assessment (JOR). Experts in training and communication science (ILC, UPR) will design workshops and training materials to explain and promote the developed technologies to broad public and stakeholders.

The OPTIMAL consortium consists of three research institutes (JOR, ISE, ILC), one university (UPR), member of the Italian Photonics Association, three Small Medium Enterprises (MRT, DPX, HYP), two big industries, leaders in their corresponding market (SDA and BCD).

Consortium:

JOANNEUM RESEARCH	JOR
	ILC
Fraunhofer ISE	ISE
Sony DADC	SDA
micro resist technology	MRT
DeltaPix	DPX
BASF We create chemistry	BCD
UNIVERSITÀ DI PARMA	UPR
hypervision	HYP

Website:

www.optimal-project.eu

Funded by the European Union

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10. Appendix 3 First Press Release

Press Release

Weiz, 20 of October, 2022

OPTIMAL EU Project officially starts | Kick-off Meeting

The consortium of OPTIMAL (Automated Maskless Laser Lithography Platform for First Time Right Mixed Scale Patterning) is pleased to announce the launch of its EU funded project. The Kick-Off Meeting was held on October 20th-21th. Partners from six different EU countries and one associated country met together and discussed the work packages, project objectives and upcoming steps and actions. JOANNEUM RESEARCH Forschungsgesellschaft mbH (project coordinator) hosted the Meeting successfully, facilitating the procedures.

About the project

The **OPTIMAL** project will integrate for the first-time different laser lithography technologies, quality monitoring systems and processes in one platform to improve the manufacturing of original structures, known as masters, needed for key-enabling replication techniques in optical, industrial, medical device fabrication.

Grant agreement ID: 101057029

Starting date of the project: 01/10/2022

Duration: 48 months

Project Coordinator: JOANNEUM RESEARCH Forschungsgesellschaft mbH

For additional information please contact

optimal@joanneum.at

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