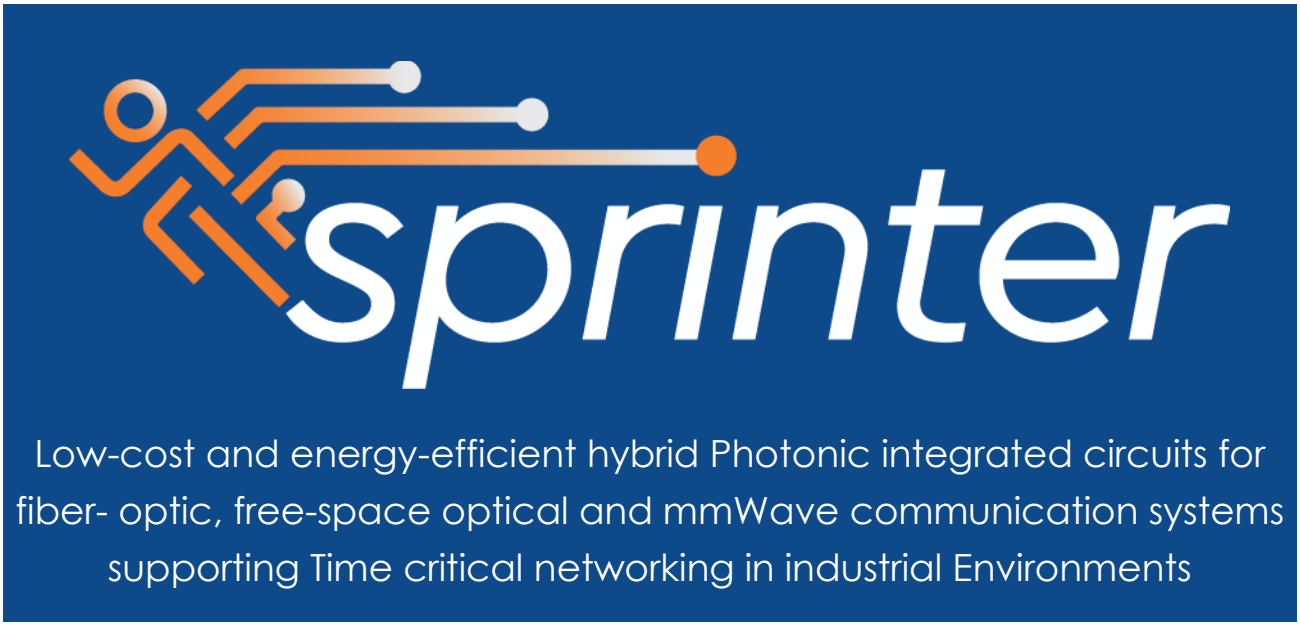

Deliverable D8.4

Exploitation Plans and Dissemination, Communication Activities

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List of abbreviations

AOC	Active Optical Cable
ASIC	Application Specific Integrated Circuits
CC	Category Code
CM	Communication Metrics
CMOS	Complementary Metal Oxide Semiconductor
CPU	Central Processing Unit
DM	Dissemination Metrics
ECOC	European Conference on Optical Communication
EM	Exploitation Metrics
FSO	Free Space Optical
GPU	Graphics Processing Unit
IEEE	Institute of Electrical and Electronics Engineers
IP(R)	Intellectual Property (Rights)
InMC	Innovation Management Committee
KPI	Key Performance Indicators
NIC	Network Interface Card
OFC	Optical Fibre Communication
PCB	Printed Circuit Board
PDK	Process Design Kit
PIC	Photonic Integrated Circuit
PPP	Public Private Partnership Futurium Europa
PtP	Point to Point
R&D	Research & Development
RAN	Radio Access Network
SDN	Software Defined Networking
SPIE	Society of Photographic Instrumentation Engineers
TSN	Time Sensitive Networking

Executive Summary

One of the SPRINTER project essential ambitions is to fast-track the transfer of knowledge between the consortium and its target stakeholder base, funnelling the inwards-outwards value streams of the project and capitalising on the results obtained all over Europe. The project consortium intends to be very extrovert about results and achievements, aiming at global impact on industrial network advancements in the most efficient and cost-effective way via an open access ***dissemination***, ***communication,*** and ***exploitation*** strategy. All partners will contribute to this effort according to their respective outcomes and through their established channels. The consortium takes the firm commitment to comply with existing laws concerning copyright, Intellectual Property Right (IPR), and related ones. Protection and related actions (patentable knowledge) of IPRs generated during the course of SPRINTER, regulated in more detail in the Consortium Agreement (CA), will be overseen by the ***Innovation Management Committee (InMC)*** which will convene on a regular basis. A specific focus is put on investigating the IP sensible results and its market potential that influence the SPRINTER exploitation strategy with the relevant background IP and possible future foreground IP protection.

The operation of a collaboration framework within the consortium will identify and build synergies with a range of target groups, including relevant Horizon Europe initiatives, networks, and bodies. Respective activities will have a cross-cutting influence over the working plans with dissemination strategies more oriented towards relevant stakeholders within the industrial community and communication plans directed to the general public. This approach will efficiently raise awareness about the project's outcomes, promoting the activities and results among a critical mass. Managing the project's innovation and advancement through monitoring key performance indicators (KPI) and intellectual property rights (IPR), while developing exploitation roadmaps, will provide the measures of the project impact.

For better visibility and measurability, activities will be assigned to different categories within the dissemination or communication field with specified objectives and nature/target of the audience:

- **Activity-Tool:** what kind of activity/action implemented in the framework
- **Category-Code-Number:** CC-Number for easy categorization of the activities, i.e. Exploitation, Dissemination, Communication activities.
- **KPI:** measures to quantify success of the activities
- **KPI-Target:** threshold to define the success of activities
- **Schedule:** Time of beginning of the respective activities/tools

Activities will be continuously monitored and synchronized with the respective tasks of the project, identifying, and leveraging the best opportunities for promoting the results. This also includes the active contribution to joint workshops/courses/seminars, as well as participating in events of reference to promote the project and its most remarkable outcomes.

1 INTRODUCTION

Industries of the future foresee a holistic integration of computation, communication, and physical processes in working routines. This highlights the requirement for high-capacity networks with supported data rates in the Gbit/s range. SPRINTER comes as pragmatic innovation action that will rely on reliable and well-proven technologies to develop complete solutions tailored to the diverse needs of industrial networks. In this context, the purpose of the dissemination, communication, and exploitation (D&C&E) activities is to enhance the uptake of SPRINTER technologies by the industry and long-term adoption on the market.

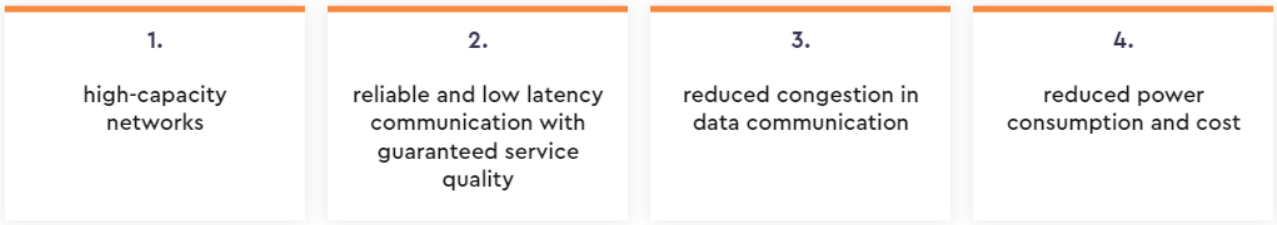

Figure 1: SPRINTERs plan and key facts

SPRINTER will contribute to the early adoption of technology by the European industry by establishing a pan-European Network with market and research monitoring on a global scale and brings together partners with complementary expertise. The theoretical background of SPRINTER will be incorporated in both the academic and the industrial field, creating a framework for strategic collaborations that can emerge and flourish. The foreseen D&C&E activities additionally aim is to find and validate sustainable and scalable business models that can be easily applied with the potential to benefit the entities behind SPRINTER development, but that at the same time serves the interests of the overall European industry.

2 PARTNER EXPLOITATION PLANS

2.1 ICCS (Institute of Communication and Computer Systems)

In the context of SPRINTER project, the exploitation plans of ICCS, as an academic partner, mainly involve ***the generation of significant know-how*** in pertinent research fields and the academic exploitation of SPRINTER foreground knowledge through the involvement of its scientific personnel with the education activities in the School of Electrical and Computer Engineering (SECE) of the National Technical University of Athens (NTUA).

More specifically, ICCS will extend its expertise and will gain ***significant know-how through the task of generating system models and conducting simulation studies*** regarding the system performance of SPRINTER prototypes. ICCS will transmit significant knowledge to be acquired during the conduct of the system characterization and evaluation activities of SPRINTER in the context of WP7 as well as the development of control electronics units. Novel characterization setups will be developed which can be employed for demonstration activities. ICCS will collaborate with the industrial partners (e.g Ericsson ,Fill, ICOM, CMC) and will have the ***opportunity to exchange knowledge on the applied industrial communication networks***.

ICCS will ***support at least one PhD thesis*** within SPRINTER and will include SPRINTER's concept and the relevant photonic and electronic technologies in lecture notes and presentation material for undergraduate and postgraduate students of the SECE.

ICCS as a research institute with a pronounced educational and training character, is an integral part of the National Technical University of Athens. As such, ICCS seeks to convey innovative research results to undergraduate and post-graduate students at the School of Electrical and Computer Engineering of NTUA. A dedicated lecture is given on the field of the microwave photonics and optical communications in the framework of the undergraduate course "Optical Fiber Transmission Systems" in the 8th semester of SECE, where the main concept of SPRINTER and its technological approach will be presented to more than 60 undergraduate students of ECE. During these activities ICCS aims at sustaining high interest in photonic communication technology and systems within the students of ECE to attract high quality PhD students, and as such, similar activities will follow after the contractual end of the project.

2.2 FhG-HHI (Fraunhofer Gesellschaft zur Forderung der Angewandten Forscshung EV)

With the co-integration of HHI's PolyBoard polymer-based hybrid photonic integration technology and HHI's InP-based foundry, HHI will be able to ***provide to external customers highly-functional photonic integrated circuits (PICs)*** combining the best of both photonic integration technologies, both in the form of dedicated wafer runs or as part of a multi-project wafer runs. From one side, HHI's PolyBoard technology provides the possibility of integrating highly efficient thermo-optically tunable functions such as tunable lasers, attenuators and switches, on-chip free-space sections to implement wavelength monitors and optical isolators, and U-grooves for adjustment-free fiber-to-chip attachment. From the other side, HHI's InP foundry makes ***use of the advanced electro-optical characteristics of InP*** to provide on the same chip photonic functionalities such as gain sections,

semiconductor optical amplifiers, laser diodes, externally-modulated lasers, electro-absorption modulators, and phase modulators.

The unique combination of HHI's THz technology and the PolyBoard and InP photonic integration platforms will ***enable merging for the first time photonics and mmW/THz technologies on a chip level***, which will position HHI as a strong technology provider for high-speed optical interconnects.

2.3 LIONIX INTERNATIONAL

Communication

LioniX International ensures that accessible reports of our work are widely available for the public and citizenry. LioniX International hosts a publicly accessible website where publicly funded research and development projects are listed and described in detail. LioniX has a page on its website for project SPRINTER, with a complete description of its context, its goals, and LioniX' role in it. The following are excerpts of the online text.

LioniX International also maintains ***active presence on relevant social media channels***, namely LinkedIn and Twitter. Followers are directed towards the project's web page at the start of the project duration. The page in turn directs them to the project's main site.

LioniX International ***sponsors multiple student associations*** within its local community of young engineers. Presentations and talks are often given to these students as ways of introducing them to the industry, and relevant EU-funded projects are often discussed, as they are publicly-accessible.

As an internationally-recognized brand, LioniX International regularly ***addresses the academic and industrial stakeholders*** as part of its modus operandi. LioniX International exhibits multiple times a year at high-visibility expos with international reach, such as Photonics West and OFC in the USA and PIC International, Laser World of Photonics, and ECOC in Europe. Informative flyers about the project will be prepared for and displayed in exhibition booths. It will also be communicated in talks in the conference sessions of these exhibitions wherever relevant.

Dissemination

The experienced and highly-educated personnel of LioniX International are regularly invited to give ***trainings and tutorials at various schools, courses, and meetings***. Where relevant, the project will be presented at such events. Flyers will also be made available in smaller conferences and expos wherever the subject of SPRINTER research may be interesting to attendants. The project will be ***presented and discussed at academic and industrial workshops***.

Dissemination of data sets and ***publication of academic papers*** is planned for the second part of the project, once the hardware is fabricated, validated and characterized. Academic journals which we target for publication include: Journal of Lightwave Technology, IEEE Photonics Journal, Optica, and others. Results of the project will be disseminated in relevant online channels, printed media, and press releases through our channels such as PIC Magazine, PhotonDelta, and Optik & Photonik.

Exploitation

As a global photonic integrated circuits and micro electromechanical systems provider with decades of experience in both fields, all technical developments achieved in this project will be used in our work for our clients. Our participation in national projects, such as NXTGEN HIGHTEC

Growth fund which addresses novel developments in laser satcom applications, as well as new ***Horizon Europe projects, such as TERA6G, FLEXSCALE, PARALIA, POLYNICES*** are closely related to our hybrid integration development, PZT actuation and optimalisation and activities of wireless mm wave & THz communications, free space optical communications, and broadband scalability of the core network to >21 Tb/s capacity.

The ***results of SPRINTER's work will be shared and exploited in these projects*** where applicable. SPRINTER will also be listed as a running project in relevant applications to open calls.

2.4 IMEC (Interuniversitair Micro-Electronica Centrum)

Exploitation and valorization of imec's research results can be realized by a ***direct technology transfer to industrial partners***, through a license agreement, through a bilateral contract to develop a close-to-market product line, or finally by spinning out a start-up company. Start-ups can receive support and investments from different imec funds, such as imec.start (https://www.imec-int.com/en/istart), imec.scale-ups and imec.xpand (https://www.imec-int.com/en/xpand), tailored to the needs of the different phases that technology start-ups go through. Moreover, the imec-IDLab research group can also ***receive support and investments from the Ghent University industrial research fund (IOF)***. Within imec, high-speed driver and TIA electronic integrated circuits for optical transceivers are part of the high-speed transceiver track of its Connectivity Program. This track and the Coherent Transceiver Program are managed by Peter Ossieur of the imec-IDLab team involved in SPRINTER.

The integrated circuits that will be developed under the scope of the SPRINTER project will be designed and fabricated using SiGe BiCMOS or CMOS processes in semiconductor foundries that have the capabilities to scale production to industrial volumes, significantly shortening time-to-market. During the design process, care is taken to ensure high yields and compliance with relevant temperature, ESD, supply voltage ratings. ***Licenses to the transmitter and receiver electronics foreground IP can be provided to the industrial partners***, who can then organize the further development of the SPRINTER blocks and concepts to be compatible with their devices or subsystems, and scale up production at the selected foundry, eventually involving imec or a third-party subcontractor. As an intermediate step, imec can ***supply samples of the SPRINTER ICs*** and provide measurement services for R&D purposes.

The extended IC and system design know-how will also contribute to the academic activities of IDLab at Ghent University via several courses and Master thesis proposals on high-speed electronics and high-frequency design, and ***reach more than 25 Master students in electronics engineering yearly***. The project cooperation will help us to attract new PhD students and to perform high-level PhD research.

2.5 UC3M (Universidad Carlos III de Madrid)

UC3M's participation in SPRINTER is through the Grupo de Optoelectronica y Tecnologia Laser (GOTL), a leading group in the field of integrated microwave photonics, pioneering the development of photonic integrated circuits for mmWave wireless communications. UC3M-GOTL's most important contribution in SPRINTER are the design of phased arrays antennas and the printed circuit boards with high frequency access to the mmWave modules. Moreover, UC3M will also assist in the assembly

and packaging of the modules, given its experience in this area through previous projects. This work will ***strengthen GOTL's position as a key research group*** with expertise in handling the front-end part of the photonics-enabled mmWave transceiver devices.

In addition, UC3M-GOTL is advancing the demonstration of hybrid integrated systems for mmWave signal generation for wireless communications. SPRINTER project is an enabler for UC3M-GOTL to ***produce key advances in the field in collaboration with its partners***, stimulating ***publication activity*** on high impact journals on this topic, and the start ***of one post-doctoral position*** within the topics of the project.

2.6 PHIX

Within this project, PHIX is leading the component integration and assembly activities for the SPRINTER technologies. PHIX will be developing the process for the packaging and assembly of multi-chip modules, where SPRINTER brings multiple photonic platforms as the basis for the development of high data rate transceiver modules. As a result, ***PHIX will develop new co-package design concepts*** and hybrid photonic integration techniques that are in proximity with high-speed electronics components. Furthermore, ***efforts will be made to keep these processes simple, cost-effective, and compatible*** with industrial standards for volume production.

The main objective of SPRINTER is to develop a set of high-capacity optical transceivers, a high-performance optical switch, a set of ultra-fast tuneable optical transceivers, as well as novel photonics-enabled transceivers supporting point-to-point (PtP) wireless communication via a free-space optical (FSO) or a millimeter wave (mmWave) channel, where a high bandwidth, low power consumption and adequate thermal management system is required.

As a packaging foundry, ***PHIX foresees business opportunities with industrial and academic partners*** of SPRINTER to scale up their technologies and productions from prototype to large volume hybrid photonics modules. Moreover, being a part of this project, it will allow us for more dissemination activities and create an opportunity to reach new customers which will enable us to become the leading photonics assembly company in Europe.

A set of photonics chips in three major photonic platforms such as Indium Phosphide (InP), polymer (PolyBoard), and Silicon Nitride (SiN) will be integrated into different SPRINTER modules, in addition to the integration of photonic chips to electronic chips via RF flex-line and DC wire bonding interconnections. With the new technology of integrating different platforms, we believe we can ***address market niches within the datacom/telecom market*** and realize a revenue of €2M in 2025 growing to €10M in 2030. Gross margins are expected to be 40% and profit 8%.

2.7 ICOM (Intracom Telecom Solutions)

ICOM, as a telecom vendor with a leading position in the global market of wireless transport equipment up to the E-band, is significantly investing in R&D to develop cutting-edge products, competitive at global level. Within SPRINTER, ICOM will bring all the sophistication of their products focusing on the development of baseband and IF/RF units for the mmWave transmission using Module-4 transceivers. ICOM will combine its long experience in wireless systems with the knowledge gained from its participation in all phases of 5G PPP research programs. State-of-the-art algorithms

and techniques, employed in products operating up to the E-band, will be adapted and optimized for transmission/reception through the photonic-enabled FSO/mmWave transceivers.

Through the know-how acquired on transmission up to 90 GHz as well as the familiarization with state-of-the-art integrated photonic technology in the context of SPRINTER in which novel photonics-enabled transceivers for both FSO and mmWave systems will be developed, it is anticipated that the planned ***research work will assist in the evolution of ICOM's technology roadmap for the next decade***, towards exploitation of frequencies first in W-band and later moving on to D-band.

2.8 NVDIA

NVIDIA has been at the forefront of accelerating computing, making it possible to tackle challenges that were previously beyond the reach of conventional CPU-based systems. The company is not just a GPU manufacturer, but a full-stack company that develops its own ICs, firmware, and software development kits for both compute and networking. With NVIDIA's powerful tools and technologies, developers can innovate across a wide range of applications, including AI supercomputers, computer graphics, healthcare, finance, and automotive. NVIDIA is a major player in the semiconductor industry, with a leading position in the GPU market, particularly in gaming and professional markets. The company has expanded its reach with solutions like Drive PX2 for self-driving cars and DGX Station, an AI computing platform for data centres.

NVIDIA offers a comprehensive networking product line that includes powerful and efficient solutions for data centres, cloud providers, and enterprises. NVIDIA offers a full portfolio for interconnect solutions for enabling high-speed data transfer and communication between different components in a data centre. NVIDIA's optical interconnect solutions are designed to deliver high bandwidth, low latency, and energy efficiency, making them ideal for data centres that require high performance and scalability. NVIDIA's optical interconnects are available in a variety of form factors, including cables, transceivers, switches, and adapters, providing customers with flexible options for integrating them into their existing networks.

NVIDIA is following the fabless model for its photonic and electronic ICs and collaborates with select suppliers under this framework. Through its participation in SPRINTER NVIDIA aims to engage in a collaboration towards developing more competitive and energy efficient single-mode transceiver products for the 200G generation. Within the project NVIDIA will provide the core optoelectronic components (GaAs VCSEL and InP Photodiode) for a 1060 nm single-mode optical interconnect link that will enable a 4x50 Gb/s operation and for distances up to 500m. The operation at 50 Gb/s with NRZ signaling will eliminate the use of power-hungry DSP ASICs commonly used in current state-of the art pluggable modules. The SPRINTER prototypes which will be assembled based on those 1060-nm optoelectronics will serve to showcase the technology and serve as a solid basis for subsequent product development after the end of the project. Through SPRINTER NVIDIA aims to gain access to state-of-the-art technology enabling a competitive advantage against its competitors in the

challenging phase of energy efficient and low-latency optical interconnects. As such, NVIDIA's exploitation potential brings a twofold benefit in the SPRINTER consortium:

- NVIDIA has already established commercial connections, which can be leveraged to penetrate the market with the low-power and low-cost SPRINTER technology
- The NVIDIA 25GbE, 100GbE and 200GbE (with 400GbE optics introduced recently) optical transceiver platforms are already available and qualified, allowing the significant time-to-market reduction for any successful SPRINTER demonstrator.

The overall business opportunity is the creation of a value chain capable of bringing SPRINTER technology to the market, delivering extremely low-cost optical modules for transceivers. NVIDIA has one of the broadest ranges of optical interconnect products based on various technologies (EMLs, silicon photonics, VCSELs) to address the needs of different segments in the datacenter and HPC market. The company's optical interconnect portfolio is marketed under the LinkX product name which includes copper cables, active optical cables (AOCs) and optical transceivers . NVIDIA is a leader in high-speed short-reach interconnects and recently surpassed the milestone of one million 100Gb/s ports shipped to customers. NVIDIA is therefore set to sustain and reinforce its position with cutting-edge interconnect products.

NVIDIA designs and assembles its transceiver and AOCs in-house and maintains an internal department designing its own electronic ICs (drivers, TIAs and CDR chipsets), alongside with commercial collaborations with major electronic IC suppliers. As such the company offers a complete technological ecosystem for bringing the SPRINTER technology into its optical interconnects' portfolio.

Apart from the optical interconnects, NVIDIA pioneers in the implementation of high-precision time synchronization schemes in commodity hardware with its ConnectX-6Dx network adapter, its derivatives and future iterations. Precise time synchronization in commodity hardware in both datacenter and edge deployments is one of key enablers for modern applications (such as 5G equipment communication). Regarding the ***SDN-enabled Time Sensitive Networking platform which is will be co-developed with CMC within SPRINTER NVIDIA*** aims to optimize the timing accuracy of its NICs and fully integrate time-sensitive networking capabilities within the project's demonstrators. ***In that manner the company will gain access in key links of the 5G value chain in order to apply its NICs in 5G related applications and fine tune its offering to better serve this market.***

2.9 CMC (Cumucore OY)

The following functionalities are developed together with NVIDIA:

- Cumucore will deliver a Software defined networking (SDN) controller which would be integrated in the optical switches (developed during the project) managed as Time Sensitive Networking (TSN) devices. ***SDN controller would manage the available resources and assign policies for traffic management.***

- In addition to this, Cumucore will design the TSN translator functionality which is required to interoperate both the wired and wireless devices (TSN translator include multitude of functionalities, which are not limited to connectivity, discovery, scheduling and reporting). ***TSN translator functionality would be developed following 3GPP specifications in order to integrate fixed and wireless networks.***

In summary, an ultra-reliable infrastructure which consists of time synchronized devices would be available which would extend to both radio technologies and Free Space Optical (FSO) type of connections. In relation to the social media, activities carried out in reference to the project will be published in platforms such as Twitter and LinkedIn (Blog Posts). These posts will be in accordance to the guidelines specified by the project with required approvals.

2.10 TEI (Ericsson Telecomunicazioni)

Ericsson Italy represented by R&D Italy, is present in Italy since 1918 and Italy has always had a strategic role for Ericsson both for its market position and for a strong R&D presence in the country. Ericsson's leading role in the evolution of telecommunication is well recognized by Italian institutions.

R&D Italy participating in SPRINTER is the Genoa based development unit Optical Solutions & Fronthaul, TEI OS&FH that is part of Transport Product Engineering Unit in Business Area Networks of Ericsson. It is responsible for Ericsson optical connectivity solutions and products. TEI OS&FH due to its long story of competence and expertise in the optical domain is also in charge of specifying and validating optical components, in close cooperation with selected suppliers, for all Ericsson product offerings especially in RAN but also in access and metro networks. As such, the organization has a deep knowledge of the optical market evolution and trends and is in continuous contact with the relevant players in optical market.

TEI OS&FH has at its premises in Genoa a complete RAN E2E lab designed to validate optical transport solutions with KPIs close to SPRINTER's ones, targeting high throughput, low-latency and time deterministic communication. TEI lab can support measurements of optical subassemblies in a time sensitive environment; thus, this environment and TEI system design and system validation expertise in the RAN domain and in optical transport solutions will ***allow the validation of the SPRINTER prototypes in a TSN-enabled environment***. SPRINTER project will benefit of evaluation of its system architecture and components, inside a 5G state of-the-art infrastructure.

Figure 2: TEI lab

People assigned on the project have been selected by their professional preparation, experience of working in an international environment and also considering people diversity and inclusion; in-fact, Ericsson, as well as the European Commission, is fully committed to gender equal opportunity which is part of our company values and considered paramount for performance and innovation

excellence, creating greater business value. TEI OS&FH participation and contribution in SPRINTER project provides a great opportunity to elaborate on application scenarios involving the ***adoption of SPRINTER developments inside the industrial networks and possible exploitation routes for SPRINTER developments in adjacent application fields***. The useful insights and experiences gained from SPRINTER will be shared within global Ericsson to explore interest and opportunities for Ericsson product and service portfolios evolution. TEI OS&FH is fully committed to contribute to and support agreed dissemination/communication activities as per TEI involvement in SPRINTER and will ***leverage on Ericsson events and networks*** to spread information and results from SPRINTER. In particular, TEI OS&FH will lead the delivery related to "Applicability and techno-economic analysis of SPRINTER technology" within WP8.

2.11 FILL

FILL is an Austrian worldwide leading mechanical engineering and plant construction company with a comprehensive portfolio including woodworking machines, production systems for industrial composite production and machine tools. A high standard in manufacturing system technology is paired with intelligent storage and processing of crucial machine parameters. FILL operates an integrated management system covering all aspects of quality, health and safety and environmental protection with ISO 9001 certification since 1997. Smart manufacturing with software applications and data management solutions for industrial production facilities are the basis for cyber-physical systems and the visions of Industry 4.0. In terms of the SPRINTERs defined commercialization roadmap of the project technology FILL together with NVIDIA and TEI will elaborate on application scenarios involving the ***adoption of SPRINTER developments inside the industrial networks***. Hence, during the SPRINTER project phase, different business models can be explored and evaluated. In the FILL FUTURE ZONE, the center for digitalization, research and development, experts and data scientists work on the further development of digital products. There, FILL will provide the core facility NC ROBOT LAB to ***conduct internal SPRINTER WORKSHOPS performing live demos of project prototypes*** but also for interested groups from the broader industry.

Figure 3: FILL FUTURE DOME + FUTURE ZONE (© Raumpixel)

The recently established FUTURE DOME will be utilized for ***inhouse EXHIBITIONS with the purpose to enhance the uptake of SPRINTER technologies by the industry*** and utilize the above-mentioned exploitation activities to present suitable business models that can easily applied. With the focus on leveraging knowledge transfer, the ***organization of WEBINARS will represent a tool to push the SPRINTER results and applications***. This strategy already proved to be an effective way of advocating

products and software solutions in previous projects (with live demos and dedicated Q&A sessions for participants).

2.12 CSEM (Centre Suisse d' Electronique et de Microtechnique)

CSEM is an internationally recognized Swiss innovation leader that develops and transfers disruptive technologies with a high societal impact and multiple industry applications. In this project, ***CSEM plans to exploit the LNOI foundry service through multiple channels*** to maximize its impact. First, ***CSEM will establish a spin-off*** to commercialize the foundry service utilizing its state-of-the-art cleanroom infrastructure. Additionally, ***CSEM will engage in collaborative R&D projects*** with end users across various industries, including telecom, space, quantum applications, RF signal processing, sensing, and more. The ***PDK will be customized for telecommunication applications*** at 1550nm and will be made compatible with polymer and SiN platforms through butt-coupling integration.

Furthermore, ***CSEM plans to seek additional national and EU funding*** to address important challenges. These include further steps in packaging (e.g. high-frequency hermetic packaging), hybrid integration (e.g. CMOS electronics and other PIC platforms such as SiN, Si, InP and other III–V platforms, polymer photonics and plasmonics), and full system development - including data processing, control electronics (ASIC or FPGA) and RF PCB design. Collaboration with other major photonic design tools such as Synopsys and Luceda, would make LNOI PDKs available on more design platforms and software commonly used in industry. In addition, CSEM will create a PDK Library for PIC design and simulation to improve its product offerings and reinforce its design services towards PIC markets. This will involve releasing new products and services from the design library. Overall, CSEM's goal is to become a leader in the photonics industry by providing innovative solutions and collaborating with various stakeholders to maximize its impact.

2.13 Metrics and quantifiable targets for Exploitation activities

The consortium is well positioned for the successful exploitation of its Research&Innovation (R&I). Results will, to a large-extent, be open-source and/or publicly available, validated and supported bypartners with the necessary expertise. The projects key exploitable results will form the basis for the detailed exploitation plan established later in the project and for the development of appropriate plans for commercial sustainability.

The KPIs set for the Exploitation plan execution and that will be monitored throughout the project duration, are summarised in the table below:

Table 1: SPRINTERs Exploitation Metrics and targets (EM)

	Activity - Tool	EM-Nr	KPI	KPI-Target	Schedule
Academic	Lectures / courses	EM-01	Held	+5	10/2023
	Diploma Thesis	EM-02	Conducted	+10	10/2023
	PhD students	EM-03	Trained	+9	10/2023

Industry	Partnerships	EM-04	Established	+ 9	04/2023
	Opportunities and markets	EM-05	Identified	+6	04/2023
	Potential investors	EM-06	Meetings	+6	04/2023

3 DISSEMINATION AND COMMUNICATION PLANS

The SPRINTER project consortium intends to be very extrovert about their results and achievements. With the outline of the relevant strategies on dissemination and communication in a first agreed upon version its implementation will start at the beginning of the project and overseen by the innovation management committee (InMC). A regular and revised update of the plan serves as a guarantee for reliable progress and feedback control that could potentially affect the exploitation strategy of the overall project.

3.1 Objectives

One strategic goal is to maximize SPRINTERs impact. Therefore, the core objectives are:

(1) Raise awareness and ensure visibility of the project key facts and its concept
(2) Promote SPRINTER events and dissemination material for knowledge transfer
(3) Achieve societal endorsement linked to new and key technologies
(4) Enable interaction with stakeholders and potential users in order to get feedback to enhance exploitation opportunities
(5) Foster the broad applicability of project results and acceptance of technology solutions
(6) Leverage project results and capitalizing the project's team effort

3.2 Target Audience

SPRINTER consortium will actively pursue publication of project results to the following groups:

(1) Project partners and stakeholders
(2) Scientific & Education community
(3) Industrial partners and technology associations
(4) Policy makers and standardization bodies
(5) Private sector and professional investors
(6) European research area and commission
(7) General public

3.3 Communication kit

The communication kit is defined as ***universal toolbox*** with versatile, extendible and application-dependent instruments ***enabling communication on different levels***. This includes different types of dissemination material and publication channels, aiming to raise awareness of the project's ambitious objectives and research outcomes and facilitate dissemination towards various audiences (fact sheets, presentations) and the public (website, social media). The already established communication material of the SPRINTER project includes:

3.3.1 SPRINTER website

The SPRINTER website (horizon-de-sprinter.eu)), the main visibility and dissemination vehicle of the project, has been set up and maintained from the first months of the project. It contains information material, all relevant to the project stakeholders, and hosts all the basic information regarding the project objectives and its partners as well as public documents, participation in events, publications, etc. The website was designed by the coordination team of ICCS and is hosted, with all the relevant files, at the network operations center of the National Technical University of Athens (NTUA). The appearance of the website reflects the corporate image of the project through a clean and functional design.

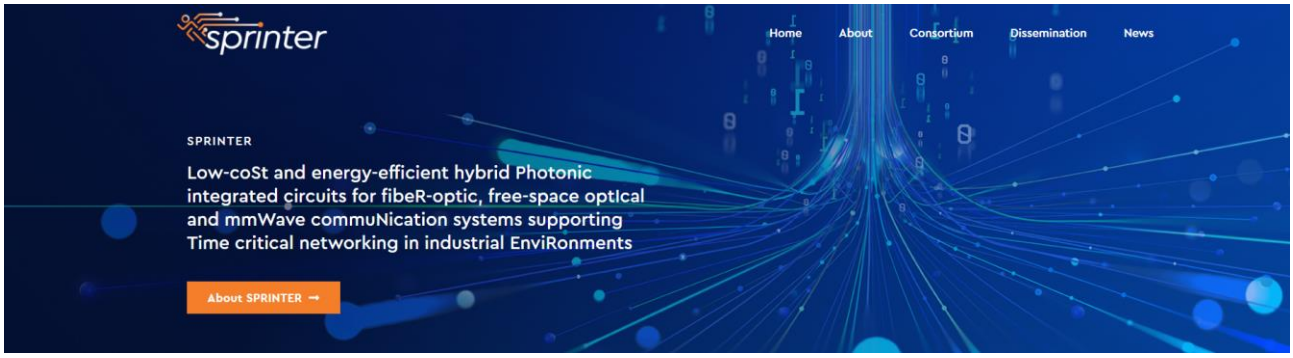

Figure 4: Header of the SPRINTER website

With an open access dissemination strategy project results and activities will also be publicized through channels other than the main SPRINTER website; in particular, project partners will post information on their websites and in industry forums. The SPRINTER site also provides links to the established SPRINTER social media accounts (LinkedIn, Twitter, Facebook, and YouTube channel). The traffic on the SPRINTER website will be acquired regularly, using Google Analytics.

3.3.2 Social media

SPRINTER established social accounts in popular media platforms aiming to reach a wider audience and allow bi-directional communication with the target audience of SPRINTER.

	sprinter		
			YouTube
SPRINTER Project: Übersicht | LinkedIn			SPRINTER Project - YouTube

Figure 5: Social media platforms of SPRINTER appearance

Twitter and LinkedIn platforms have been selected since they are more business-oriented social media platforms, widely followed by the project's stakeholders. The social media accounts are maintained by the coordination team of ICCS with contributions from all partners, and their statistics are regularly evaluated. Both Twitter and LinkedIn are considered to be extremely useful

dissemination tools to inform, engage and stay connected with our target audiences and their respective communities. In the coming time SPRINTER aims to intensify the usage of Twitter and LinkedIn as dissemination channels and to connect to 'high influencers' in the research and industrial community to extend further the high-value dissemination network of the project.

3.3.3 Factsheet – Project presentation – Newsletter – Videos

The depicted Factsheet (SPRINTER-factsheet (horizon-de-sprinter.eu)), a SPRINTERs project standard presentation (Microsoft PowerPoint - SPRINTER_Presentation_efand.pptx (horizon-de-sprinter.eu)) as well as *newsletters* (to be created every 6 months) with information will be regularly updated to the current project status and disseminated through the intended channels.

Figure 6: Factsheet of SPRINTER project

Additional *promotional material* (brochures/flyers/posters/roll-up banners) providing information about the technical and scientific achievements but also non-technical brochures-factsheets describing the project results will be created and provided for dissemination. The partners in general but especially those that will implement modules and system prototypes intend to produce short *video clips and teasers* (to be created) to clearly demonstrate the benefits of SPRINTER adaption. These video clips and material will be made publicly available through the SPRINTERs website and social communication channels.

3.4 Metrics and quantifiable targets for dissemination & communication

The SPRINTER consortium intends to be very extrovert about the project achievements, its concepts and objectives (Concept – SPRINTER Project (horizon-de-sprinter.eu)) and will actively interact with the target audience to leverage the project effort and result, get feedback on its progress, and adjust accordingly its activities. Dissemination and communication of project concepts and objectives will be accomplished through various channels.

Table 2: SPRINTERs communication metrics (CM)

	Activity - Tool	CM-Nr	KPI	KPI-Target	Schedule
Social media	LinkedIn	CM-01	Followers	+ 350	10/2022
			Posts	+ 180	
	Twitter	CM-02	Followers	+ 450	10/2022
			Re-Tweets	+400	
	Facebook	CM-03	Followers	+ 350	10/2022
	Youtube	CM-04	Subscribers	+ 300	10/2022
Promotional material	Factsheet /Brochures / Roll-ups	CM-05	Versions	+ 6	10/2022
	Newsletters/Press releases	CM-06	Releases	6 (2/year)	10/2023
			Media outlets	+3	
	Teaser video	CM-07	Production	6 (2/year)	10/2023
	Promotion video	CM-08	Production	1	10/2024
			Views	+ 700	

SPRINTER partners include industry-leading companies, innovative SMEs and top-tier research organizations, with extensive experience in EU and national projects. The activity of focusing on the coordination of writing and circulating press releases for various media contents with the aim to inform the public about the benefits of the developed new technologies with associated job creations is of high priority. European-oriented public relations agencies and policy makers will receive a consortium agreed standard presentation that includes the benefits and concrete action suggestions to support and promote the uptake of SPRINTERs intelligent communication solutions.

Training activities will be conducted to ensure knowledge transfer and applicability of the SPRINTER initiative and aims at providing trainings and workshops for university students, trainees, and other

participants. Respective programs are intended to be provided and organized either online or as a (hybrid) in-house solutions. Activities targeting the *academic community* and researchers will be carried out by the academic partners of the consortium, possibly as part of summer school programs. Further, more *industrial oriented workshops*, could be incorporated within the companies training program and will be based on live demonstrations with on-hand experience. Project results and developments will be also communicated through external websites and industry's forums or panels. The consortium will actively pursue *publication of scientific papers* and articles with project-related results in prestigious top-journal, high-standing conferences, and workshops.

Table 3: SPRINTERs dissemination metrics (DM)

	Activity – Tool	DM-Nr	KPI	KPI-Target	Schedule
Passive	Website	DM-01	Visits	+12.000	10/2022
			Posts	+ 100	
			Documents	+ 40	
	Publications	DM-02	Journals	16 (4/year)	10/2023
			Conferences	16 (4/year)	
Active	Exhibitions / Events	DM-03	Booths	+ 5	04/2023
	Trainings	DM-04	Conducted	+ 6	10/2023
	Workshops / Webinars	DM-05	Conducted	+6	10/2023
			Participants per	+30	
	Public authorities	DM-06	Conversations	+ 2	10/2024

The consortium as a whole and the project partners individually actively promote the SPRINTER project and its results through participating in future *national, European, and international events*. Results, exhibit modules and system prototypes will therefore be introduced at various international exhibitions and high-profile conferences, mainly in the fields of photonics, and optical networking and communications (**O**ptical **F**iber **C**ommunication Conference (**OFC**), **E**uropean **C**onference on **O**ptical **C**ommunications (**ECOC**), **P**hotonic **I**ntegrated **C**ircuits International (**PIC**), SPIE Photonic West). Dissemination activities aim at addressing scientific, technical, and business audiences on a

global scale. Although these activities are planned to start taking place in the second year of the project, at least two public events will be scheduled – one in the middle of the project period and one towards its end. Focus will also be on events and networking activities with potential different nature of stakeholders and audience such as standardization committees to reach out on a global scale. The standard material provided within the communication kit will be used at these events and conferences and adapted as necessary.

4 CONCLUSION - CALENDAR OF EXLOITATION, COMMUNICATION & DISSEMINATION ACTIVITIES

The table below concludes this deliverable by consolidating the Exploitation, Communication and Dissemination activities planned for the project lifecycle, in one calendar.

Table 4: Timetable for SPRINTERs EM & CM & DM

Oct 2022	Apr 2023	Oct2023	Apr 2024	Oct 2024	Apr 2025	Oct 2025	Apr 2026
		EM-01					
		EM-02					
		EM-03					
	EM-04						
	EM-05						
	EM-06						
CM-01							
CM-02							
CM-03							
CM-04							
CM-05							
		CM-06					
		CM-07					
				CM-08			
DM-01							
		DM-02					
	DM-03						
		DM-04					
		DM-05					
				DM-06			

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