



Neuro-augmented 112Gbaud CMOS plasmonic transceiver platform for Intra- and Inter-DCI applications

D7.2 1st Project Press Release

Project Information

Project name:	Neuro-augmented 112Gbaud CMOS plasmonic transceiver platform for Intra- and Inter-DCI applications
Project acronym:	NEBULA
Project start date:	1/1/2020
Project duration:	36 months
Contract number:	871658
Project coordinator:	Konstantinos Vyrsoinos / AUTH
Instrument:	H2020-ICT-05-2019: Application driven Photonic components

Document Information

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TABLE OF CONTENTS

1 EXECUTIVE SUMMARY	4
2 INTRODUCTION.....	5
2.1 PURPOSE OF THIS DOCUMENT	5
2.2 DOCUMENT STRUCTURE	5
2.3 AUDIENCE	5
3 CONTENT OF THE PRESS RELEASE	6
4 TARGETED AUDIENCE AND MEANS FOR GAINING VISIBILITY	9

1 Executive Summary

This document presents information regarding the 1st NEBULA project press release. It shows its content, the link where it can be found, as well as the webpage screenshot.

2 Introduction

2.1 Purpose of this document

The objective of this deliverable is to present the content of the 1st NEBULA press release, the link to it, as well as the expected reach it will have. Press release targets research and education community, private sector and general public.

2.2 Document structure

The present deliverable is split into following major chapters:

- Content of the 1st project press release
- Targeted audience and means for increasing visibility

2.3 Audience

This content of this document is public.

3 Content of the press release

A press release was generated in order to communicate the beginning of the project. It was announced at Ligentec’s website on March 2020 and linked in the project official page. The link to the press release, the screenshot from Ligentec’s website and the content of the press release can be found below:

News: <https://www.ligentec.com/company-ligentec/news-ligentec/>

Articles: <https://www.ligentec.com/technology-ligentec/articles-ligentec/>

Pdf: <https://www.ligentec.com/wp-content/uploads/2020/03/20200305-LIGENTEC-Nebula.pdf>

Website



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News

March 2020

PRESS RELEASE

Plasmonic technology and neuromorphic processing to revolutionize the landscape of Data Center industry through EU project NEBULA

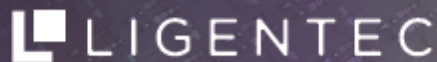
abstract

“NEBULA is a new ambitious EU-HORIZON2020 R&D project that was launched on 1st of January 2020, with the goal to provide the foundations for a common future-proof transceiver technology platform with ultra-high bandwidth capabilities offered by a CMOS compatible toolkit and tailored towards meeting performance, cost and energy metrics in both inter-DCI coherent and intra-DCI ASIC co-packaged optics. NEBULA is funded under the ICT-05-2019: Application driven Photonic components call and is coordinated by Aristotle University of Thessaloniki in Greece.”

[Click and read the full press release here](#)



Figure 1: Screenshot from Ligentec’s website showing the announcement of 1st NEBULA project press release



Press Information

Switzerland, March 2020

Plasmonic technology and neuromorphic processing to revolutionize the landscape of Data Center industry through EU project NEBULA

NEBULA is a new ambitious EU-HORIZON2020 R&D project that was launched on 1st of January 2020, with the goal to provide the foundations for a common future-proof transceiver technology platform with ultra-high bandwidth capabilities offered by a CMOS compatible toolkit and tailored towards meeting performance, cost and energy metrics in both inter-DCI coherent and intra-DCI ASIC co-packaged optics. NEBULA is funded under the ICT-05-2019: Application driven Photonic components call and is coordinated by Aristotle University of Thessaloniki in Greece.

Data Center (DC) industry is dominated by a new reality of growing inter-DC utilization factors with still rapidly jumping intra-DC interconnect specification metrics stemming from the emerging paradigm of hyperscale Data Centers infrastructures that expand along a distributed DC model. Sorting out the puzzle of inter- and intra-DCI transceiver technologies and needs via a single transceiver platform, solutions have to reside on a staggering synergy of bandwidth, cost, energy, digital processing and co-package credentials.

This is where NEBULA steps in to invest in the established bandwidth and energy saving credentials of plasmonic modulator solutions together with the functional digital processing portfolio of neuromorphic optical reservoir computing engines aiming to establish a low-cost and large volume manufacturing Plasmonic Photonic Integrated Chip (PPIC) platform in order to rapidly release products and solutions for the DCI market. NEBULA's disruptive technology envisions to provide higher than 93% power savings in coherent transmission and up to 37% energy savings compared to the estimated power requirements of respective Si-photonic-based co-packaged solutions.

Following a concrete design approach, NEBULA targets the following individual objectives that will be tailored in two System-in-Package prototype assemblies:

Objectives:

i) 112Gbaud plasmonic modulators on SiN with plasmonic thermal stabilizer systems.

ii) a new class of neuro-augmented, all-optical receivers by exploiting Reservoir Computing (RC), relieving coherent optics from cost- and energy-hungry electronic DSP.

iii) ultra-fast electronics at 112Gbaud fabricated on low-cost 55nm BiCMOS platform.

iv) Uni-Travelling Carrier Photodiodes (UTC-PDs) supporting operation beyond 100GHz bandwidth and x80 sensitivity improvement by the co-integration of semiconductor optical amplifiers (SOAs).

System-in-Package prototype assemblies:

- a C-band, 16QAM transceiver operating at 112Gbaud while offering an aggregate capacity of 3.2Tbps for inter-DCI applications

- a sub-V O-band, PAM4 driverless transmitter co-packaged with a data generating ASIC for next Generation 50Tb/s switches, offering a 1.6Tbps aggregate capacity targeting intra-DCI applications

The project is scheduled to run for three years bringing together 12 partners from 7 countries, strategically compiled from strong industrial and academic organizations in PIC and Photonic Systems value chain. NEBULA team includes: four distinguished universities, Aristotle University of Thessaloniki - AUTH (GR), Swiss Federal Institute of Technology in Zurich - ETHZ (CH), Politecnico di Milano - POLIMI (I), and Ghent University - UGent (BE), four top-ranked academic and research institutes, French National Center for Scientific Research - CNRS (FR), Interuniversity Microelectronics Centre - IMEC (BE), III-V Lab (FR), and Institute of Communication and Computer Systems - ICCS (GR), the European research branch of one of the world's largest computing technology developer and supplier, IBM Research GmbH - IBM (CH), a B2B company manufacturing PICs offering a groundbreaking all-nitride core technology, Ligentec - LGC (CH), one of the world's largest capital equipment supplier and vendor in the area of DataCom components and systems, Mellanox Technologies Ltd - MLNX (IL), and a global manufacturer of telecommunications equipment, ADVA Optical Networking SE - ADVA (DE).



About NEBULA

NEBULA: Neuro-augmented 112Gbaud CMOS plasmonic transceiver platform for Intra- and Inter-DCI applications (Grant Agreement:871658)

Programme: Horizon 2020 – ICT-05-2019:
Application driven Photonic components
Duration: 01/01/2020 – 31/12/2022
Total budget: € 5,999,191.25
Coordinator: Aristotle University of Thessaloniki, GR

<https://www.facebook.com/nebula.h2020>
<https://twitter.com/H2020Nebula>
<https://www.linkedin.com/groups/8893721/>
<http://nebula-h2020.eu/>

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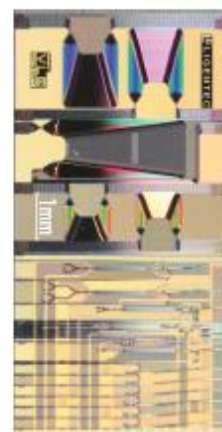
About LIGENTEC SA

LIGENTEC is your manufacturing partner for low loss Photonic Integrated Circuits for customers in high-tech areas such as integrated quantum optics, LiDAR, sensors and microwave photonics. LIGENTEC commercializes all-nitride-core technology awarded with the PIC award at PIC International 2018. The technology uses thick film optical grade LPCVD deposited silicon nitride and optimized cladding to provide guaranteed performance in propagation loss. With the all-nitride (AN) technology LIGENTEC enables the customers to develop their products in the industrial revolution 4.0. The customers benefit from a clear path to volume production while obtaining the small quantities of wafers with the performance, short turn around of 2 month and high yield required at the early stage of proof of concept.

www.ligentec.com

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4 Targeted audience and means for gaining visibility

Press release targets the following audience:

- Policy makers
- MPW service providers
- Research & education community
- Private Sector
- Related projects & initiatives
- General public

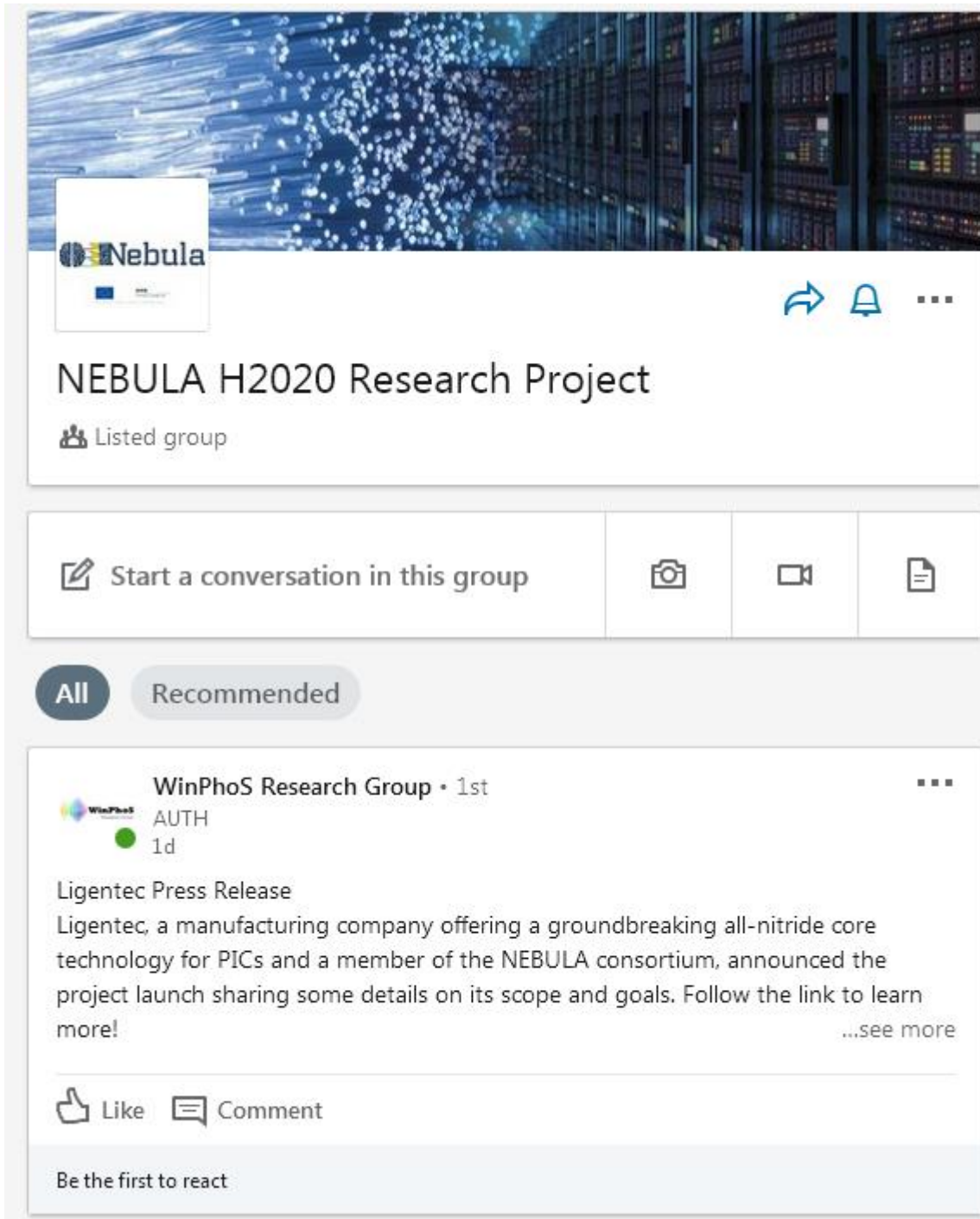
In order to increase the visibility of the NEBULA project, the press release from the website of Ligentec has been linked to the project's official page:



Figure 2: Screenshot from the project's official website where the announcement of the 1st project press release by Ligentec is communicating

It has been also disseminated through the NEBULA social media accounts:

LinkedIn:



The screenshot shows a LinkedIn group page for "NEBULA H2020 Research Project". The group is listed and has a cover image of fiber optic cables and server racks. The group name is "NEBULA H2020 Research Project" and it is a "Listed group". Below the group name are icons for starting a conversation, adding photos, videos, and documents. There are two tabs: "All" (selected) and "Recommended". A post from "WinPhoS Research Group" is visible, dated "1d" (1 day ago). The post text reads: "Ligentec Press Release. Ligentec, a manufacturing company offering a groundbreaking all-nitride core technology for PICs and a member of the NEBULA consortium, announced the project launch sharing some details on its scope and goals. Follow the link to learn more! ...see more". Below the post are "Like" and "Comment" buttons, and a prompt "Be the first to react".

Twitter:

The image shows a Twitter profile card for the NEBULA H2020 Research Project. The profile picture is a circular logo with the Nebula name and logos for the European Union and Horizon Europe. The header image is a server room with fiber optic cables. The bio states: "NEBULA is a 3-year H2020 project on the development of a neuro-augmented 112Gbaud CMOS plasmonic transceiver platform for Intra- and Inter- DCI applications." It shows the account was joined in February 2020, has 0 following and 7 followers. A tweet from March 9 is visible, titled "Ligentec Press Release" with a link to [ligentec.com/wp-content/upl...](https://www.ligentec.com/wp-content/upl...). The tweet has 1 retweet and 2 likes.

Facebook:

The image shows a Facebook post from the page "Nebula". The post is dated "Yesterday at 2:33 AM" and is titled "Ligentec Press Release". The text of the post reads: "Ligentec, a manufacturing company offering a groundbreaking all-nitride core technology for PICs and a member of the NEBULA consortium, announced the project launch sharing some details on its scope and goals. Follow the link to learn more!" followed by the link <https://www.ligentec.com/.../03/20200305-LIGENTEC-Nebula.pdf>. Below the text is a link preview for "LIGENTEC.COM" with the URL www.ligentec.com. At the bottom of the post are three interaction buttons: "Like", "Comment", and "Share".