



# L3MATRIX

## LARGE, LOW POWER AND LOW COST DATA CENTRES

Research and Innovation action  
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### D7.1 – Project Webpage Online

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**Abstract:** Project Webpage on-line at the following web address: [www.l3matrix.eu](http://www.l3matrix.eu)

**Keywords:** webpage

**Project Information****PROJECT**

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PU = Public ; PP = Restricted to other programme participants (including the Commission Services) ; RE = Restricted to a group specified by the consortium (including the Commission Services) ; CO = Confidential, only for members of the consortium (including the Commission Services)

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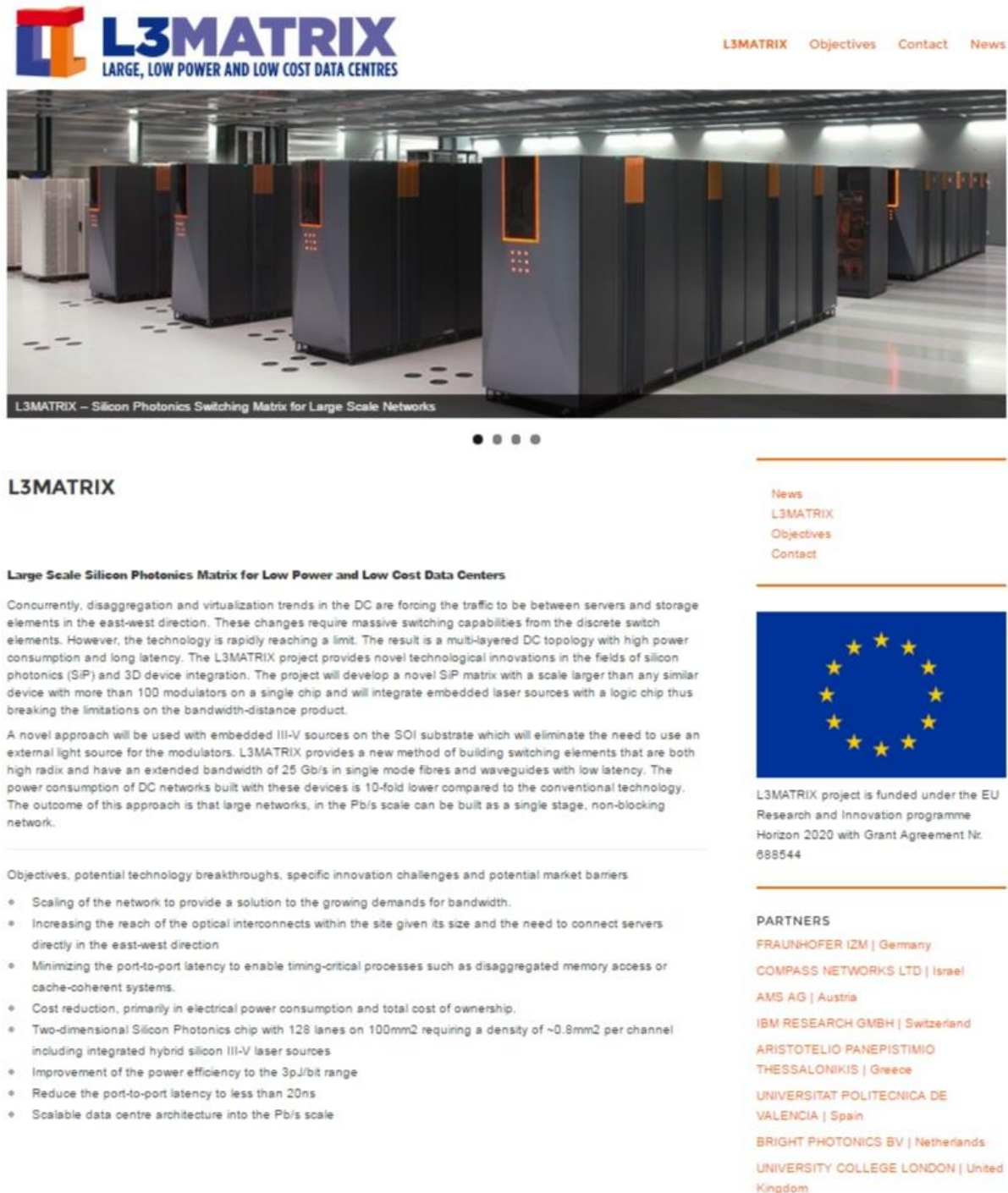
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# 1 Audience

This document is public.

# 2 Webpage Layout

The webpage has 5 sections as can be seen in the snapshot (*Download* is not visible since no documents are available at the moment). Each section will be summarize in the following sub-sections.



**L3MATRIX**  
LARGE, LOW POWER AND LOW COST DATA CENTRES

L3MATRIX – Silicon Photonics Switching Matrix for Large Scale Networks

## L3MATRIX

### Large Scale Silicon Photonics Matrix for Low Power and Low Cost Data Centers


Concurrently, disaggregation and virtualization trends in the DC are forcing the traffic to be between servers and storage elements in the east-west direction. These changes require massive switching capabilities from the discrete switch elements. However, the technology is rapidly reaching a limit. The result is a multi-layered DC topology with high power consumption and long latency. The L3MATRIX project provides novel technological innovations in the fields of silicon photonics (SiP) and 3D device integration. The project will develop a novel SiP matrix with a scale larger than any similar device with more than 100 modulators on a single chip and will integrate embedded laser sources with a logic chip thus breaking the limitations on the bandwidth-distance product.

A novel approach will be used with embedded III-V sources on the SOI substrate which will eliminate the need to use an external light source for the modulators. L3MATRIX provides a new method of building switching elements that are both high radix and have an extended bandwidth of 25 Gb/s in single mode fibres and waveguides with low latency. The power consumption of DC networks built with these devices is 10-fold lower compared to the conventional technology. The outcome of this approach is that large networks, in the Pb/s scale can be built as a single stage, non-blocking network.

Objectives, potential technology breakthroughs, specific innovation challenges and potential market barriers

- Scaling of the network to provide a solution to the growing demands for bandwidth.
- Increasing the reach of the optical interconnects within the site given its size and the need to connect servers directly in the east-west direction
- Minimizing the port-to-port latency to enable timing-critical processes such as disaggregated memory access or cache-coherent systems.
- Cost reduction, primarily in electrical power consumption and total cost of ownership.
- Two-dimensional Silicon Photonics chip with 128 lanes on 100mm<sup>2</sup> requiring a density of ~0.8mm<sup>2</sup> per channel including integrated hybrid silicon III-V laser sources
- Improvement of the power efficiency to the 3pJ/bit range
- Reduce the port-to-port latency to less than 20ns
- Scalable data centre architecture into the Pb/s scale

News  
L3MATRIX  
Objectives  
Contact



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**PARTNERS**

FRAUNHOFER IZM | Germany  
COMPASS NETWORKS LTD | Israel  
AMS AG | Austria  
IBM RESEARCH GMBH | Switzerland  
ARISTOTELIO PANEPISTIMIO THESSALONIKIS | Greece  
UNIVERSITAT POLITECNICA DE VALENCIA | Spain  
BRIGHT PHOTONICS BV | Netherlands  
UNIVERSITY COLLEGE LONDON | United Kingdom

Figure 1 Snapshot of the landing page of www.l3matrix.eu

## 2.1 L3MATRIX

This main page includes:

- A 4 picture slide show including L3MATRIX's three main objectives. This slide show is present on all pages.
- A short summary of the project
- A list of all partners. This list is present on all pages.

## 2.2 Objectives

This section includes, apart from the slideshow and the list of partners:

- A list of the 8 main objectives that we target in the project

## 2.3 Contact

This section includes the contact details of the Project Leader, Dr. Andreas Håkansson.

## 2.4 Downloads

Here will the open publications and other public documents be accessible for download. At present there are no documents, hence the section is not visible. Once we've uploaded a document it will be visible.

## 2.5 News

Here is a list of L3MATRIX related news. At present two news are visible; The PhoxTroT 2<sup>nd</sup> Summer School on Optical Interconnects that is supported by L3MATRIX and the L3MATRIX Kick-Off meeting.