

United Nations
Educational, Scientific and
Cultural Organization



International
Day of Light
16 May

**First Laser: pulsed Ruby
Laser, 694.3 nm**

achieved by

**Dr. Ted Maiman
Hughes Research Lab.,
Malibu, California**

16 May 1960

OPTICS & PHOTONICS IN INDUSTRY

Pierre-Yves Fonjallaz

SWISS  PHOTONICS

Key Enabling Technologies

Key Enabling Technologies selected by the EC in 2009	Current market size (~2006/08) USD	Expected size in 2015 (~2012/15) USD	Expected compound annual growth rate
Nanotechnology	12 bn	27 bn	16%
Micro and nanoelectronics	250 bn	300 bn	~ 3 %
Industrial biotechnology	90 bn	125 bn	6%
Photonics	230 bn	480 bn	8%
Advanced Materials	100 bn	150 bn	6%
Advanced Manufacturing systems	150 bn	200 bn	5%
TOTAL	832 bn	1282 bn	

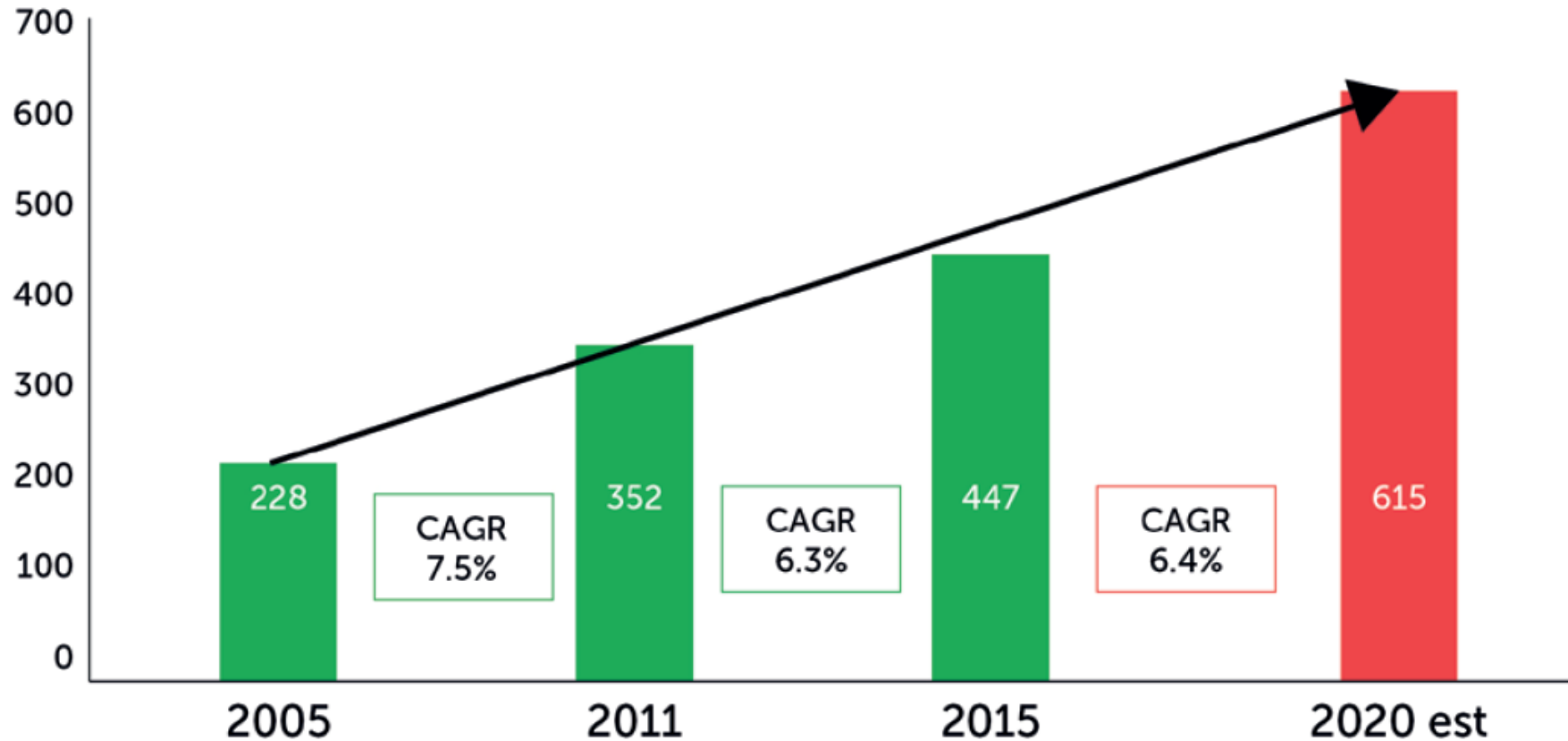
Table 1: Estimated global market potentials of Key Enabling Technologies

Largest market

A growth well over average

Long-term global photonics industry production

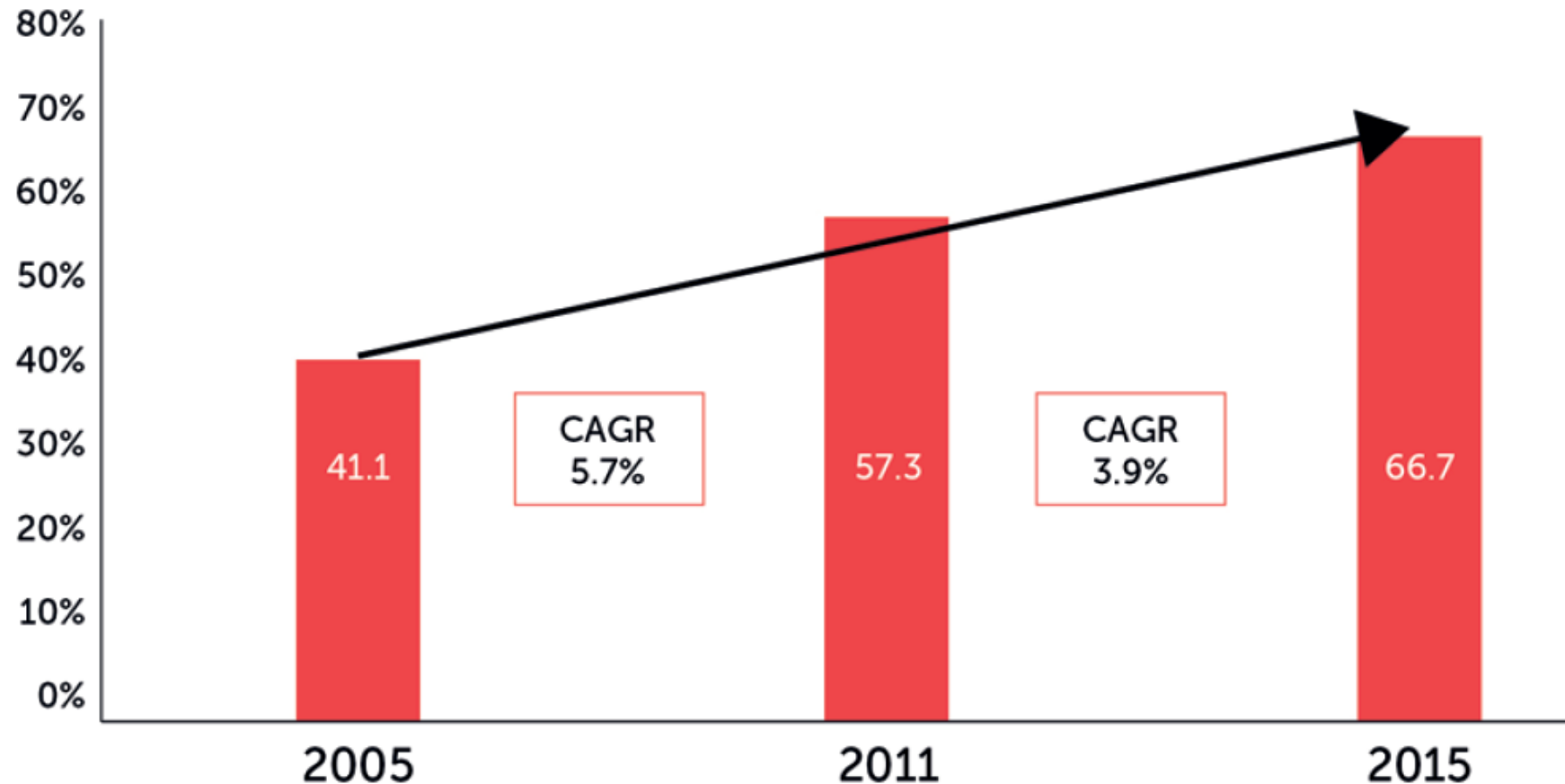
Production Volume in Euro*



A growth well over average

European photonics industry production

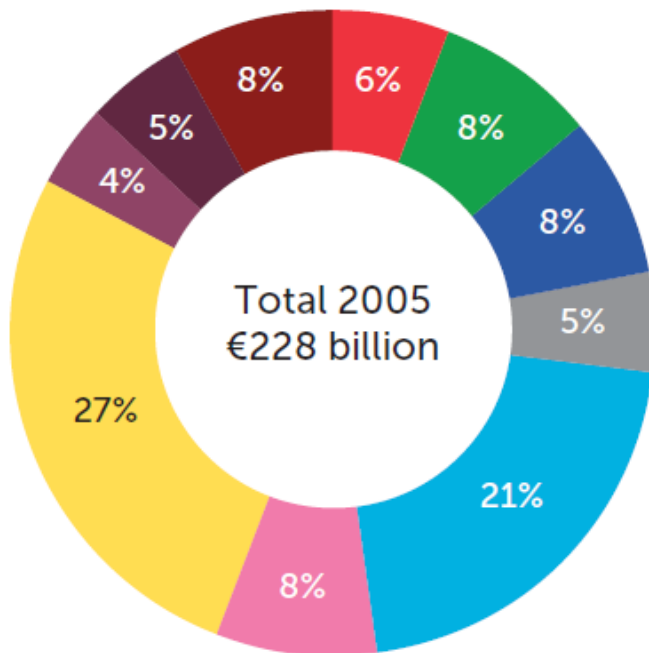
Production Volume in Euro*



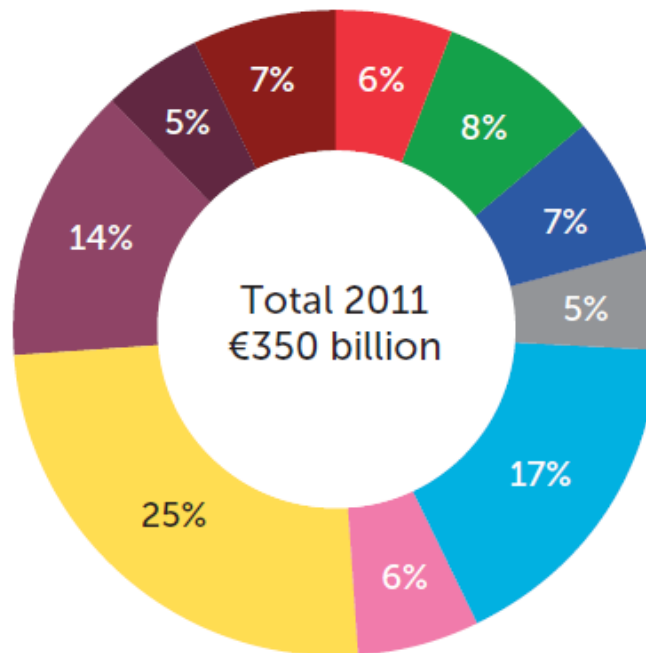
A growth well over average

Production Volume on Euro Basis*

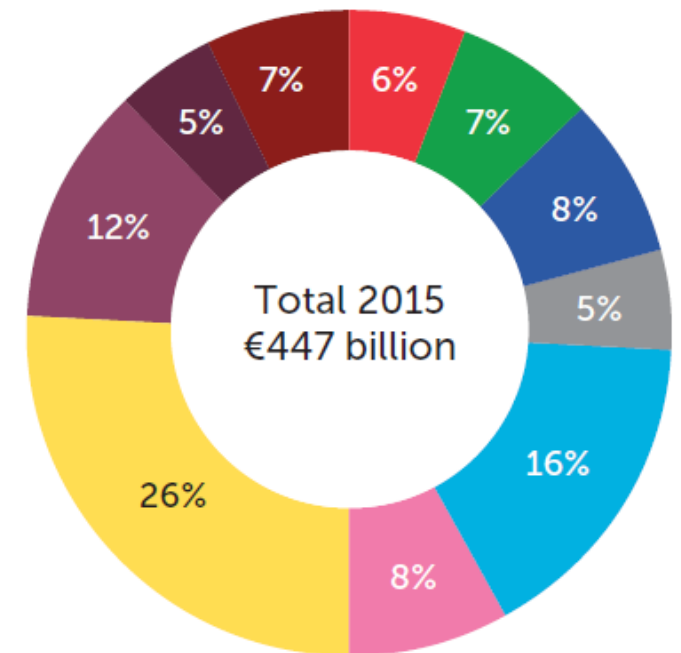
Production 2005



Production 2011



Production 2015



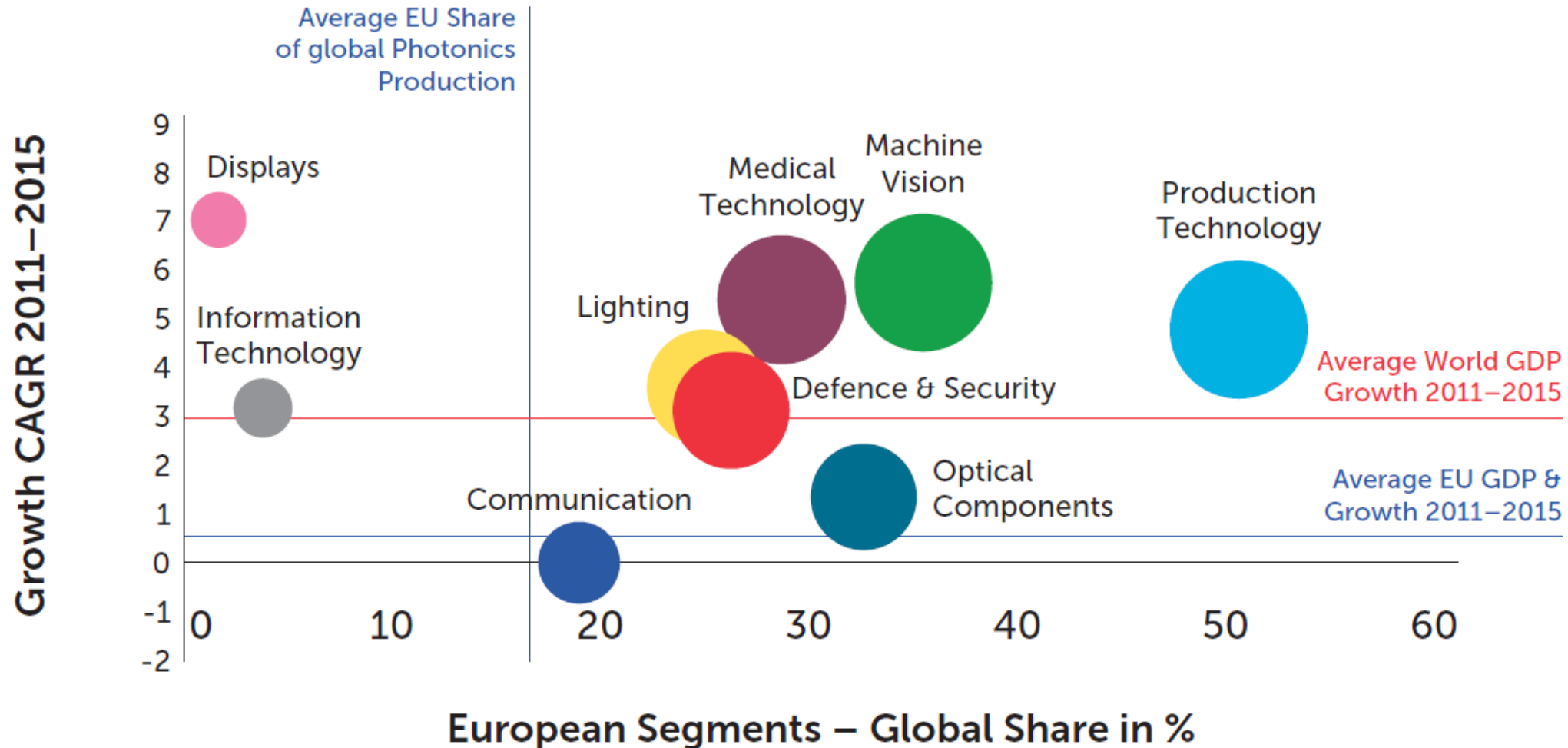
- Production Technology
- Measure and Machine Vision
- Medical Technology
- Communication
- Information
- Lighting
- Displays
- Photovoltaics
- Optical Component
- Defence and Security

*including Photovoltaics



Source: Optech Consulting, Market Research Study 24.1.2017

A growth well over average

European Photonics Segments



Public Research Financing

Countries	Governmental Research Funds Breakdown (bn EUR)			
	Photonics Funding 2014	Photonics Funding 2020	CAGR 2014 -2020	
China	0.14 bn EUR	1.09 bn EUR	+40.9%	
Japan	0.26 bn EUR	0.29 bn EUR	+1.7%	
South Korea	1.65 bn EUR	2.84 bn EUR	+9.4%	
Total SE Asia	2.06 bn EUR	4.22 bn EUR	+12.7%	

Source: EAC – Euro Asia Consulting PartG by VDMA, SPECTARIS, BMBF

Korea's public financing is about 3,5 times larger than EC's financing ...or 35 x larger per capita!

Europe	~0,6 - 1 bn EUR	~0,6 - 1 bn EUR	Consolidated figures for the EU not available
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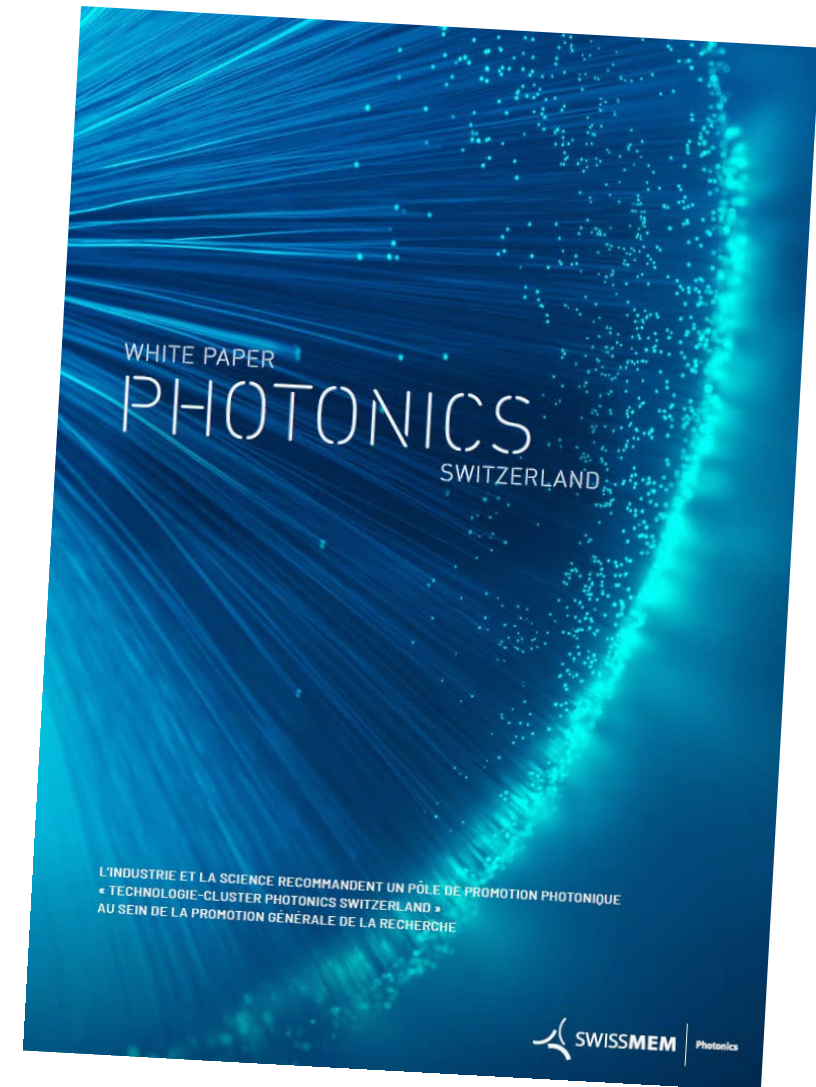
Photonics21 Estimate for the EU (Horizon 2020 program) + Member States 2014-2020

Numbers for Switzerland

From the White Paper on Photonics of SWISSMEM delivered to the previous minister of economy last year (Schneider-Amman):*

- Production volume: 4 billion €
- Export ratio: 80%
- Annual growth: 6-8%
- R&D/turnover ratio: 9%
- Products with photonics functionality (in the SWISSMEM companies): 40% in 2017 expected to increase to 70% in 2025

*the numbers are for 2017



Photonics companies in Romandy

SWISS PHOTONICS

★ Members of Swissphotonics

★ Not yet members

Some good examples:

ALPES
LASERS

QCLs for IR sensing

SUSS
MicroTec

Micro-optics on wafers

serecalo
microtechnology ltd

Microtechnologies (MEMS)

cpa

Automation

insolight

Photovoltaics

omnisens
Securing asset integrity

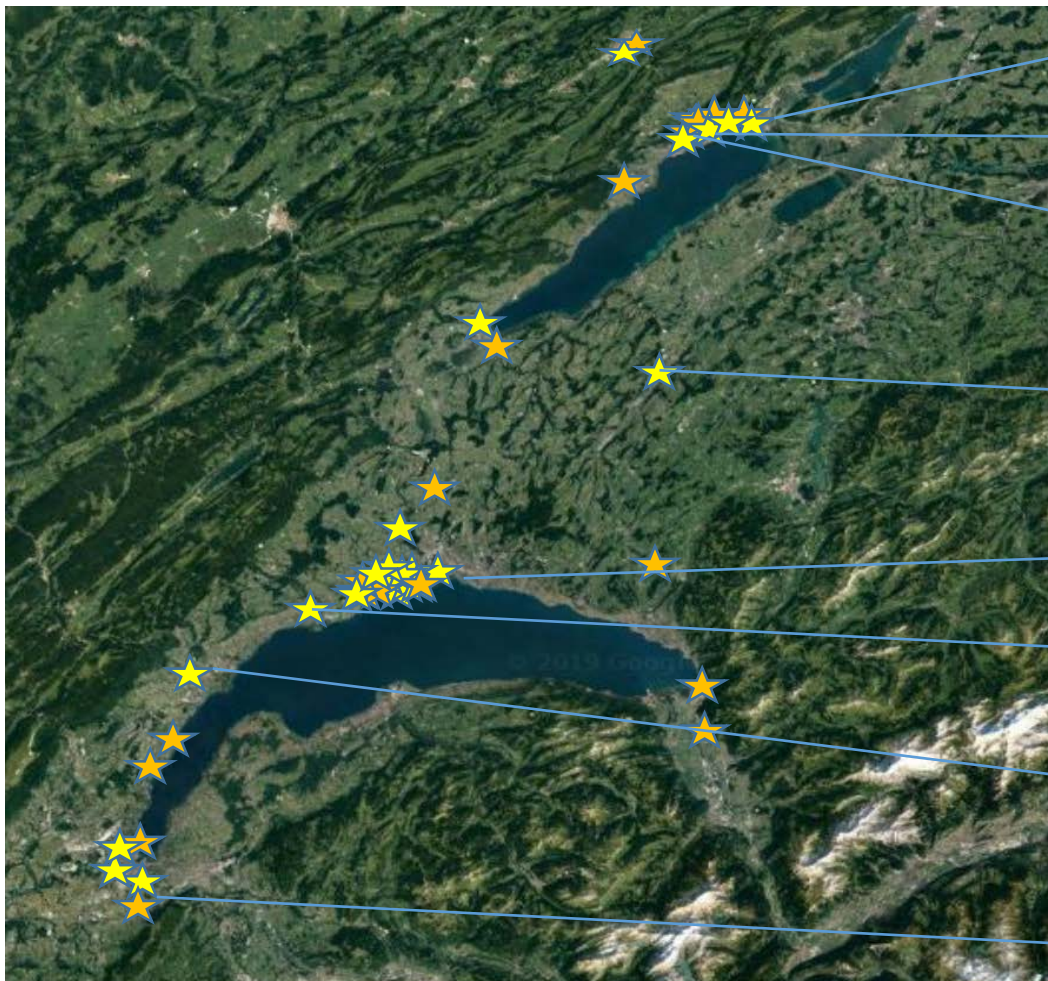
Fibre sensing

SYNOVA

Material processing

IDQ

Quantum Communication



Photonics companies in Europe

- The estimated number of photonics companies in Europe is ~ 5000 (60% in Germany, France and UK).
- Photonics platforms and clusters have good knowledge of their photonics companies and are interrelated thanks to the EC, Photonics21 and EU projects.
- Swissphotonics is part of the EU project NextPho21 with Photonics21 and 12 other national platforms.
- Some projects make mapping of companies, e.g. EPRISE in the field of Life Science:
<https://eprise.eu/photonic-companies/>





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THANKS!