

- Headlines
- What's changed
- Growth & forecast
- Regional breakdown
- Industry structure

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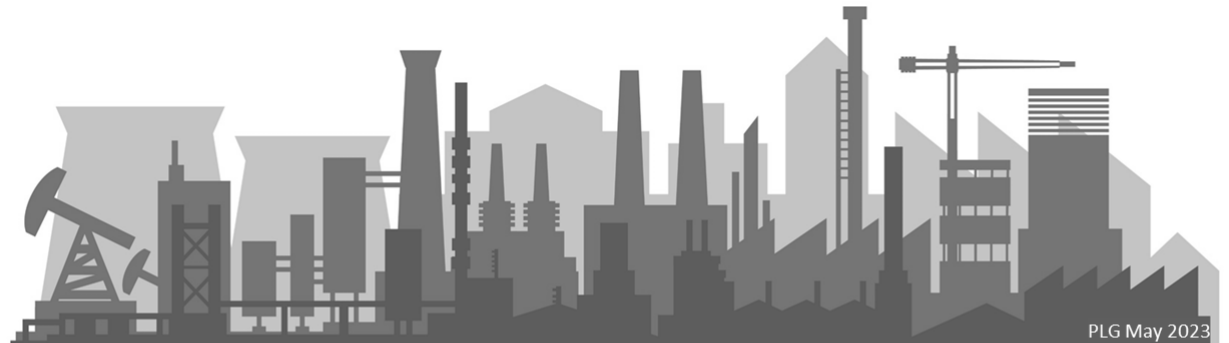


UK Photonics Landscape 2023 Update

Dr John Lincoln,
Chief Executive, PLG
Europe Strategy Director, SPIE



UK Photonics 2020



PLG May 2023

£15.2bn
UK Photonics
output

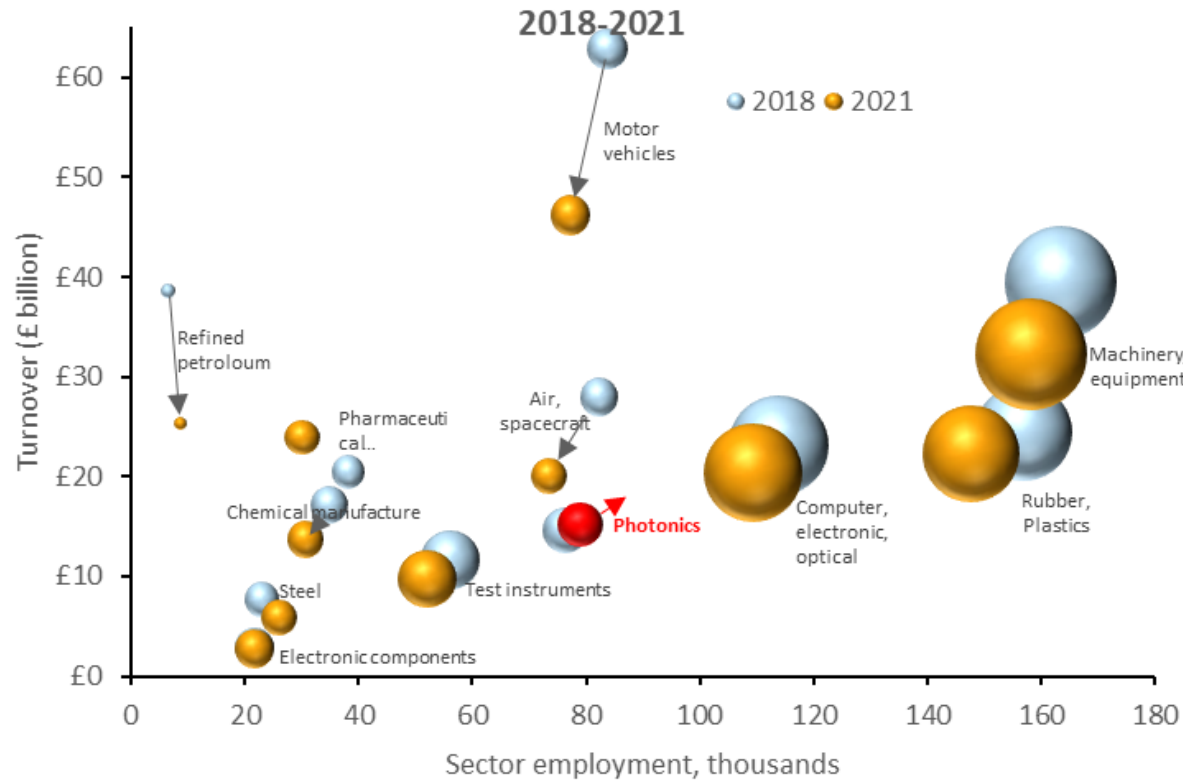
79,100
Photonics
employees in
>1200 firms

£7.1bn
Gross value added
£89,400
GVA per employee

7%
Growth 2 year
like-for-like
(3.4% CAGR)

- Fiscal years ending in 2022 vs 2020
 - Covers 'Covid' years
 - Pre inflation / energy
 - Companies listed @
www.photonicsuk.org/directory

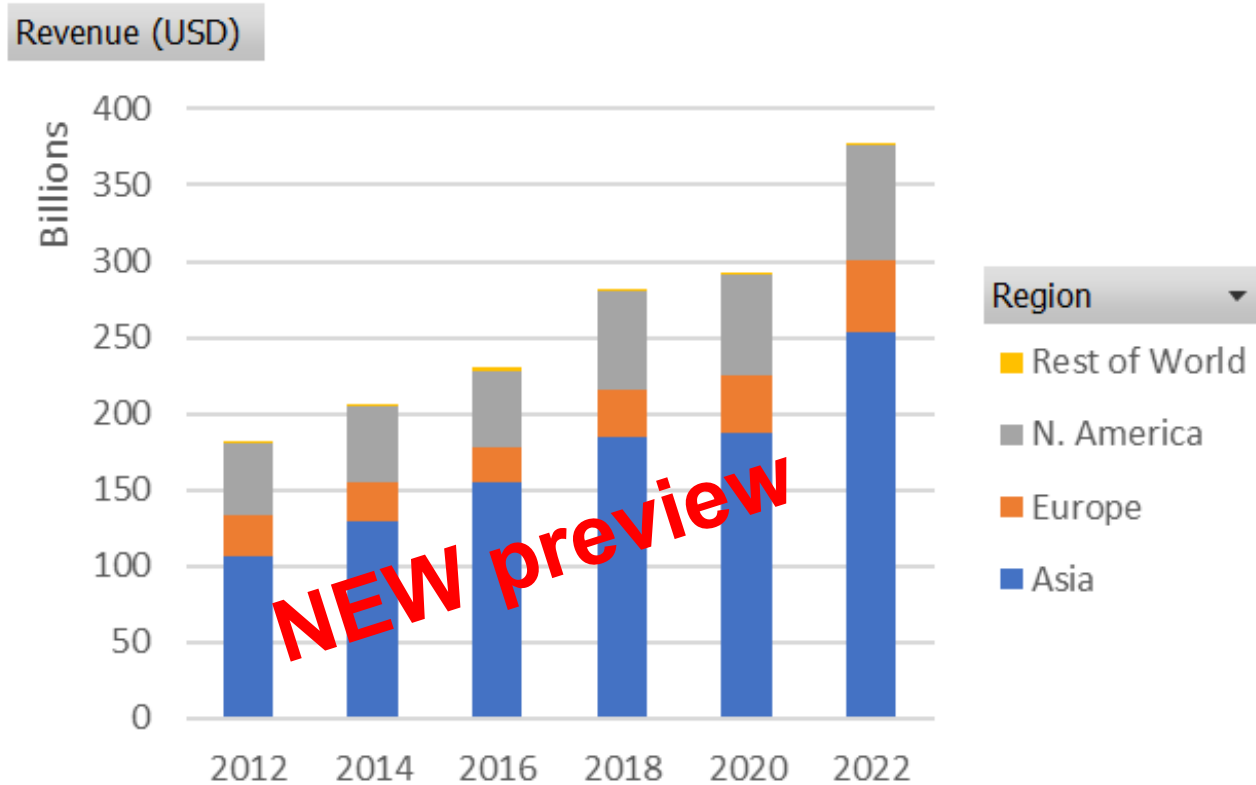
Employment & Turnover of UK manufacturing sectors



- Photonics has grown in tough times
 - Other manufacturing sectors have shrunk
- Photonics employees:
 - Same as Aerospace or Motor manufacture
 - 2.5X more than Pharma, Steel or Chemical
- Photonics Revenue
 - 2/3 of Aerospace, Plastics, Pharma
 - Same as Chemical manuf.
 - Significant fraction of ICT hardware
- Number photonics firms
 - 50% > Aerospace, Chemical, Pharma, Petroleum or Steel

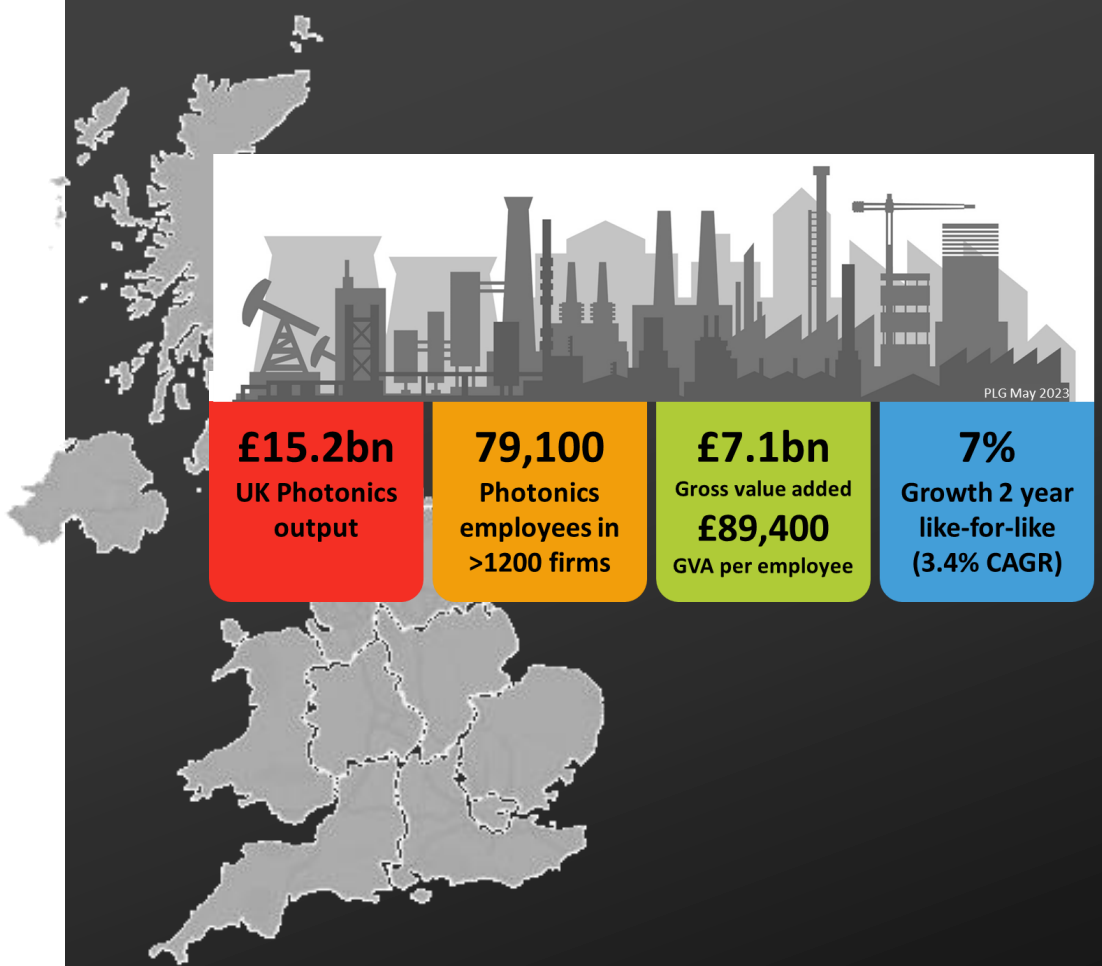
Photonics Compared

Global Photonics component revenue



- 2022 grew significantly
 - \$377 billion (2022) vs \$292 (2020)
 - Revenue growth slowed in pandemic returning in 2022, especially in Asia
 - 10-year CAGR exceeds 7.5% compared to >4% for global GDP
- UK
 - ~15% of Europe, second largest
 - ~5% of Global

Full data released at the SPIE Global Business Forum at Photonics West Jan 2024



UK Photonics Growth

2020-2022 GROWTH	Like-for-like 2 year	Like-for-like CAGR	Headline 2 year growth
Sales	7%	3.4%	4.5%
Profit	9%	4.5%	11.8%
Employment	3.2%	1.6%	2.8%
Benefits/ employee	1.7%	0.8%	
GVA	6.9%	3.4%	7.5%
GVA per employee	3.6%	1.8%	4.6%

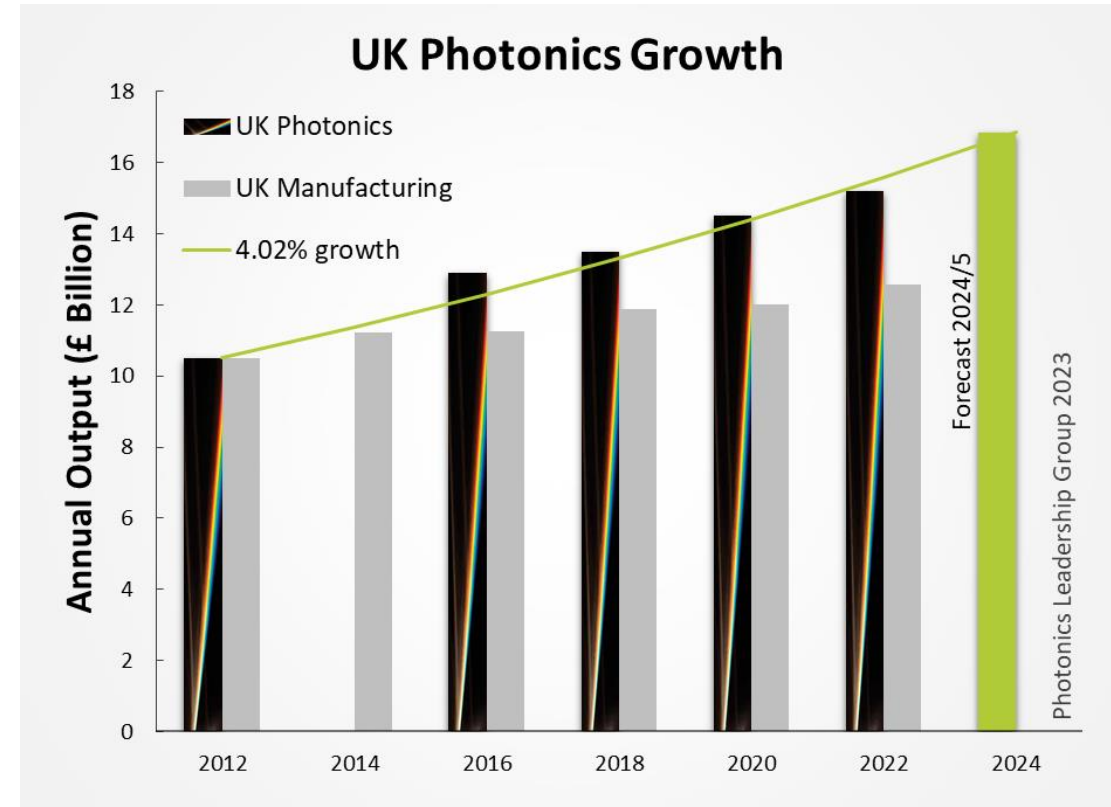
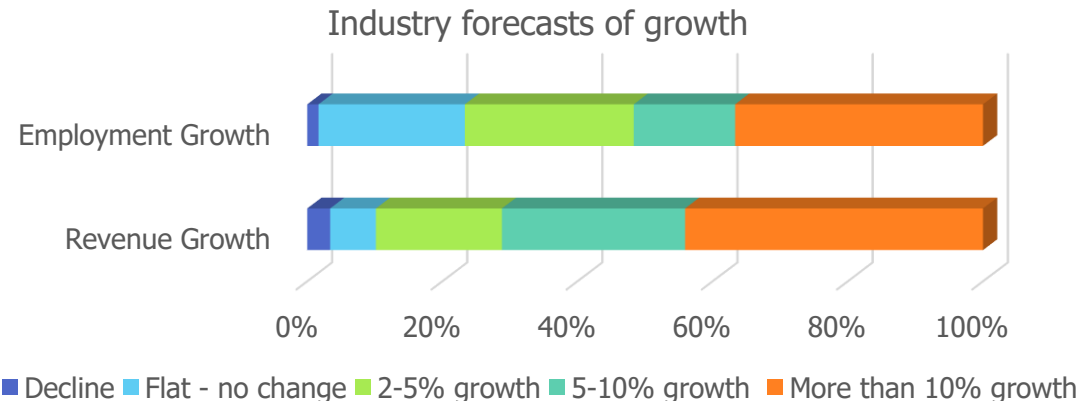
- Like-for-Like = Underlying growth
- Strong Revenue growth
 - Higher profit growth
 - Lower employee
 - Low wage/benefit growth

Trend: Long term growth 4%

- Reduction from 4.6%
- 4X general manufacturing
- ~£0.8 < forecast in 2021
- £17 billion forecast for 2024

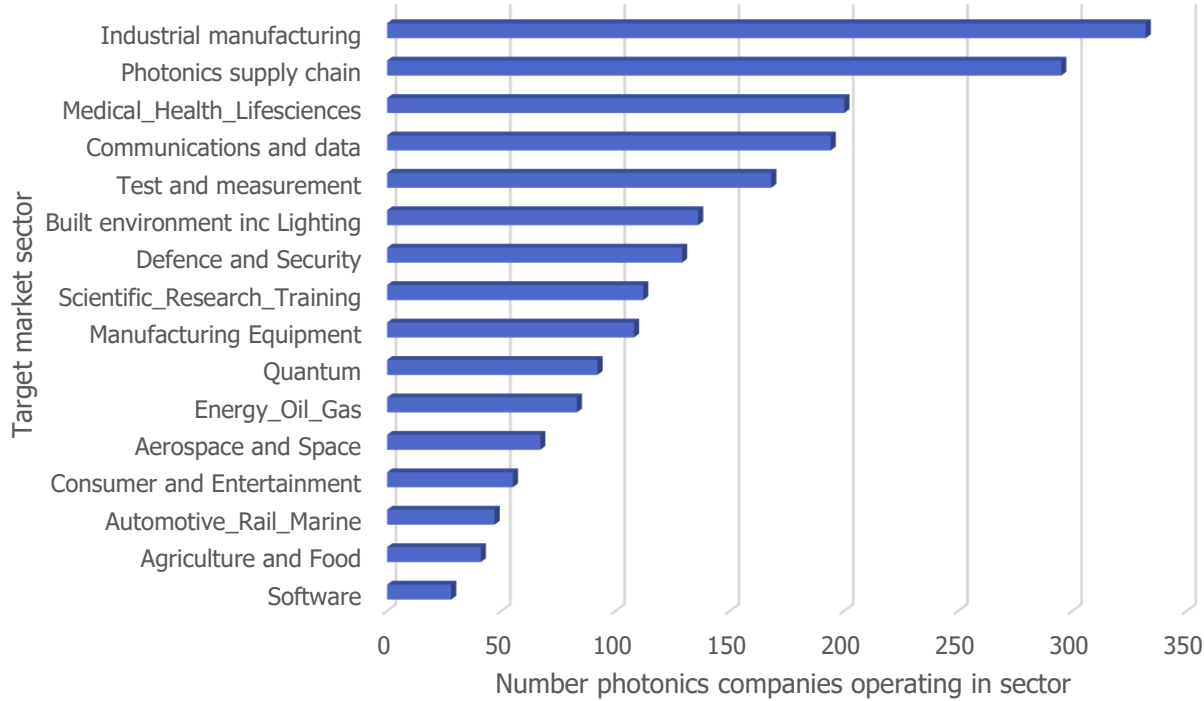
Industry more optimistic

- 70% forecast growth > 5%
- 40% growth > 10% per year

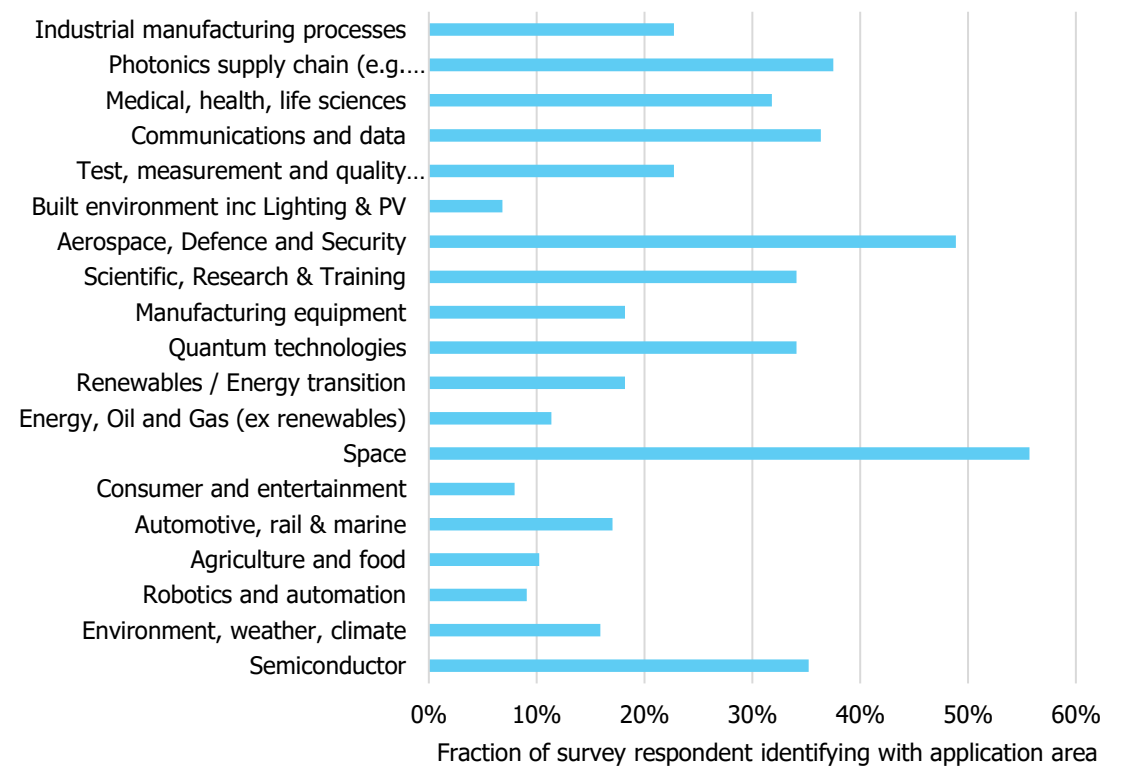


Long term growth

Active market sectors by analysis

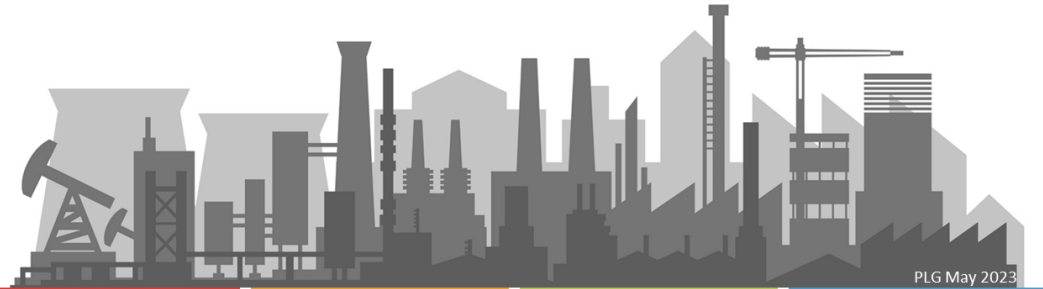


Application area by survey



- Diversity underpins broad enabling nature of photonics
- Survey average 5 market sectors, PLG desk analysis 2
 - Difference combo selection & trend bias

Markets



PLG May 2023



Output
Employment



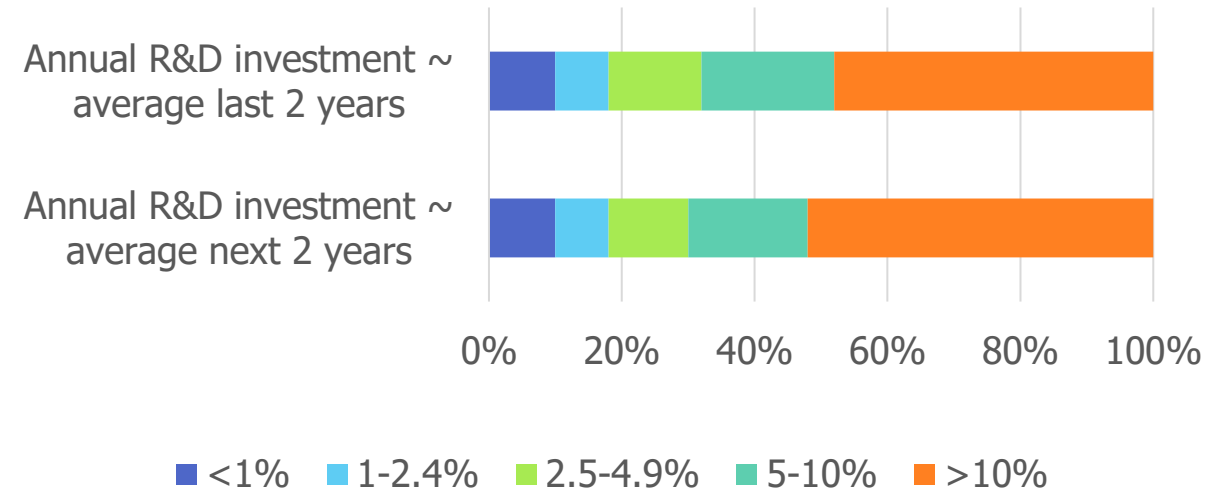
Minimal change in regional distribution

- 8 Regions ~£1bn+ output
- >4500 employees
- 1200 companies total

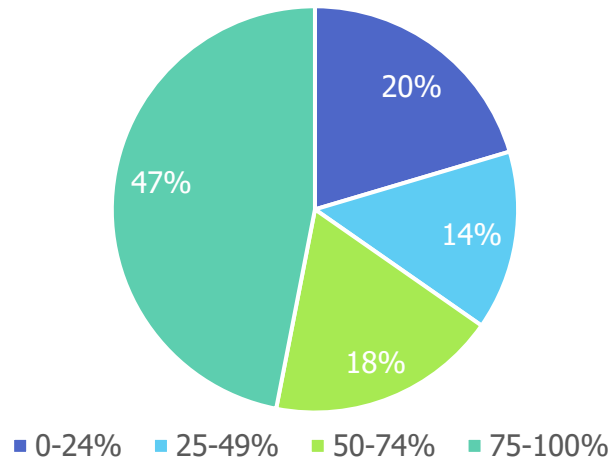
Regional Output

- **>50% of photonics companies invest >10% of turnover in R&D**
 - >80% invest more than 2.5%
 - Portion investing at highest level forecast to increase
- **Half indicate majority of investment into photonics**

R&D investment



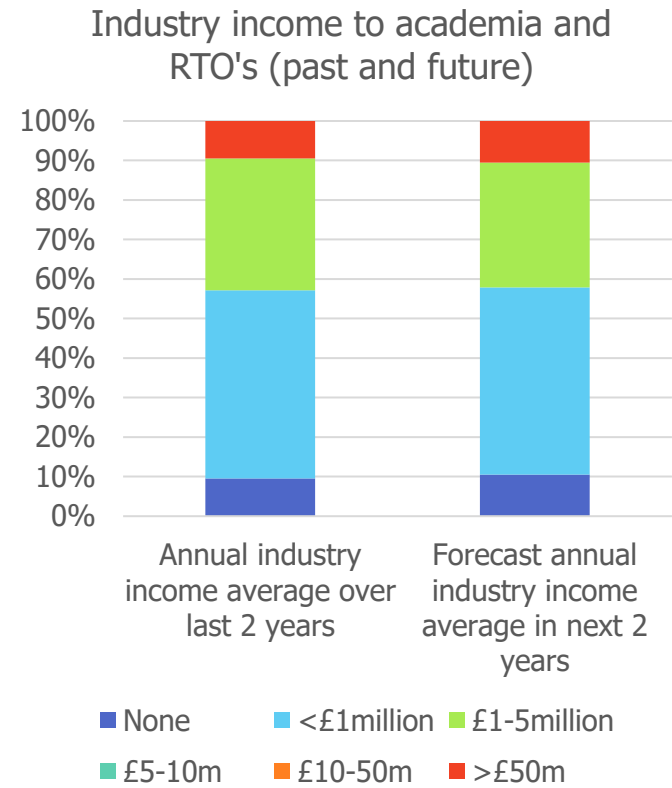
Fraction of R&D investment to Photonics



R&D intensity



- **>40 Universities & >18 RTO's lead in photonics research across the UK**
- Cover full range of photonics from advanced materials, semiconductors, optical fibre, lasers & LEDs, optics & more
- Well connect to industry
 - 10% indicate >£50m in industry funding in 2 years, 40% receive >£1m
 - <10% receive no industrial funding

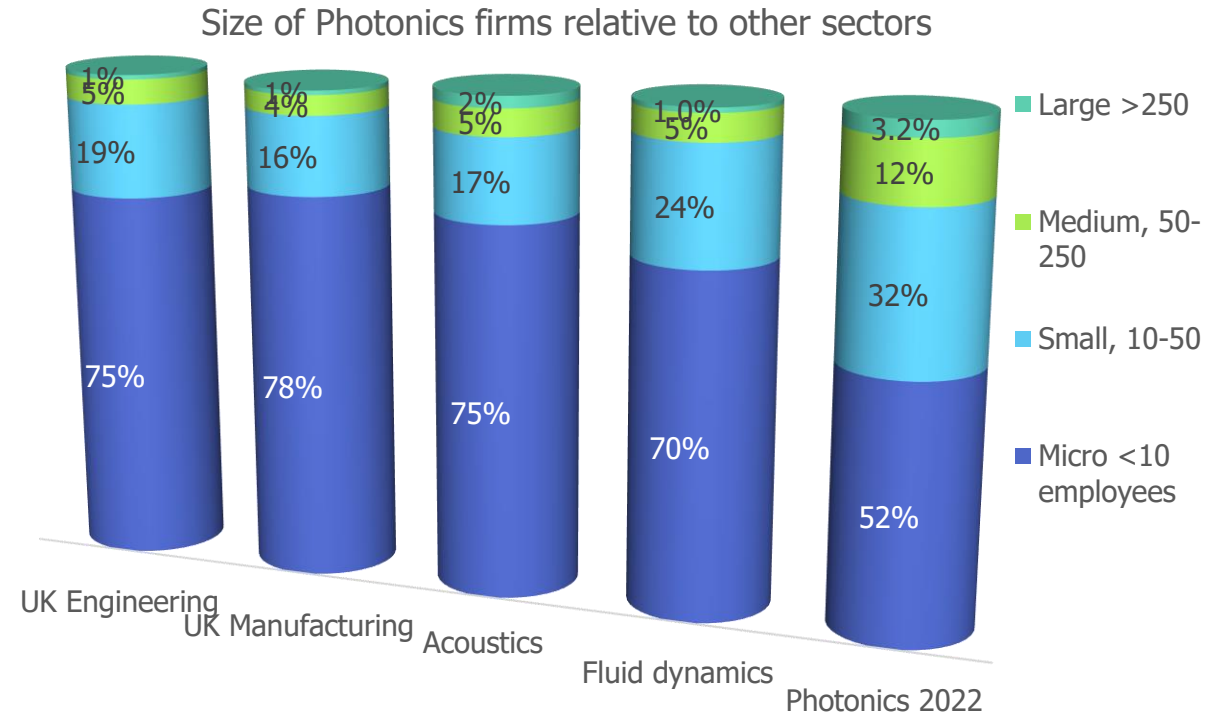
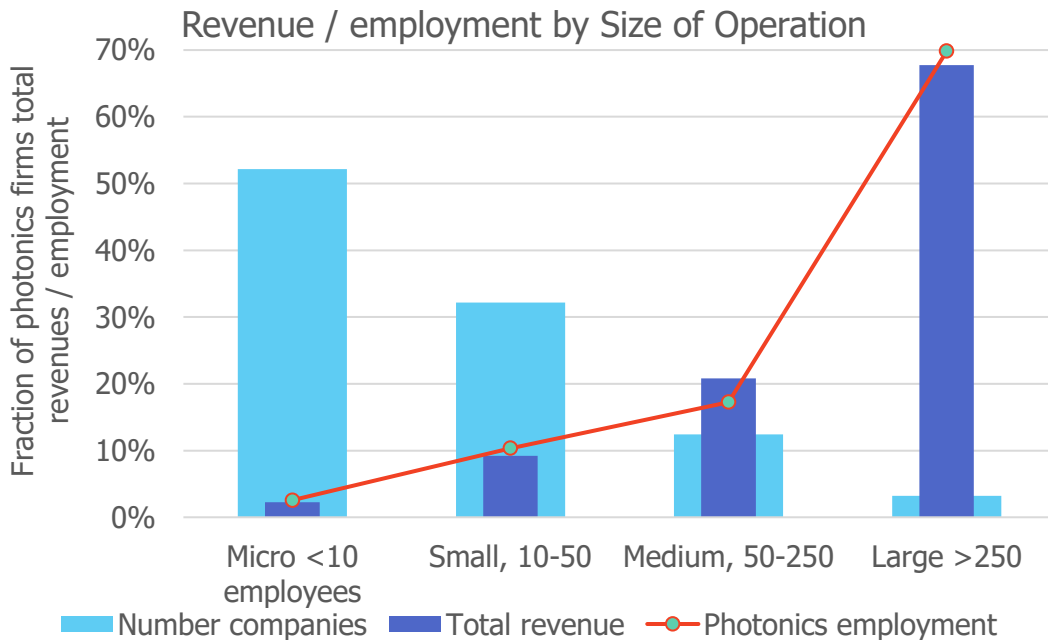


Principle source of funding for research



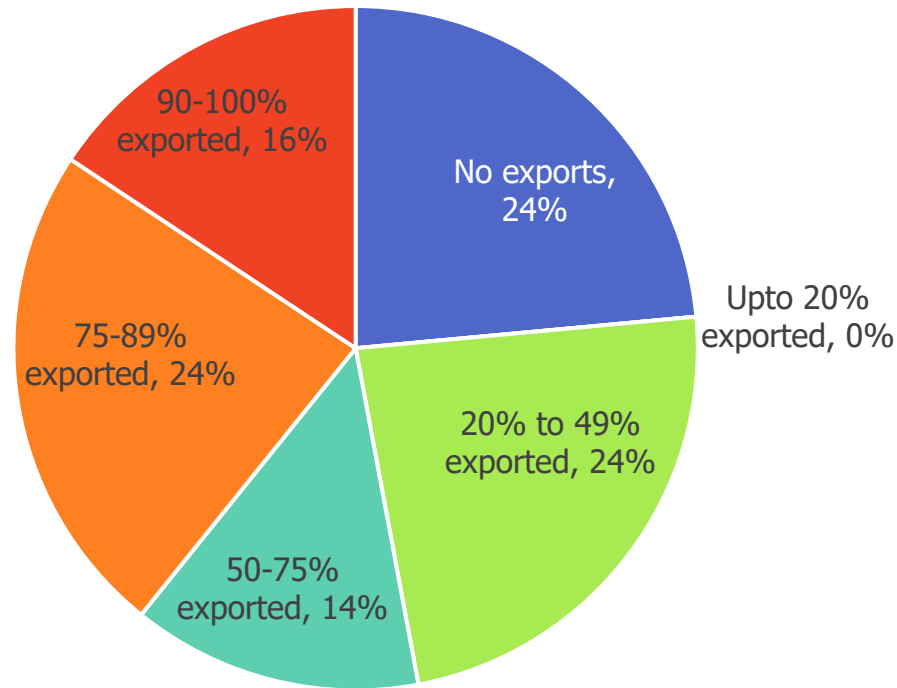
Knowledge Base

- **Revenue & employment dominated by large orgs**
- **Size distribution unchanged**
 - Photonics firms larger than average



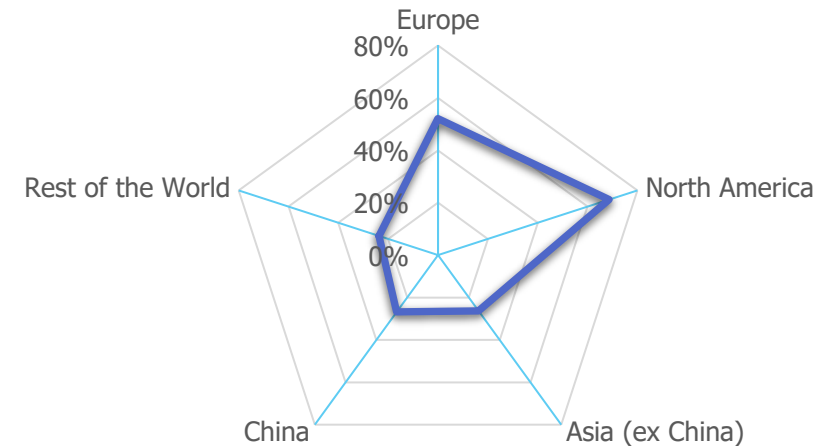
Size distribution

Export fraction

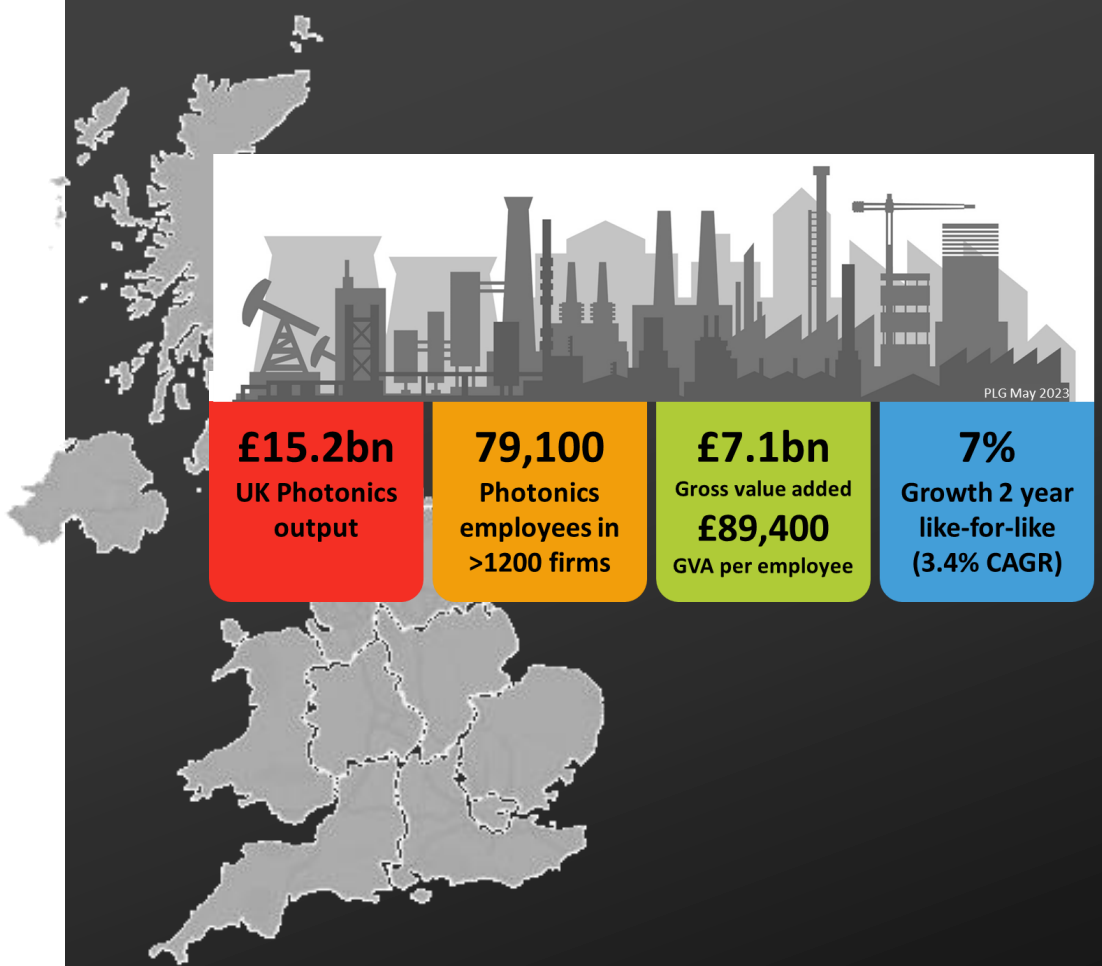


- **50% photonics firms export over half output**
- 40% export more than $\frac{3}{4}$ output
- 16% export almost all output
- Main markets North America and Europe
 - Wide range in geographic focus

Main Export markets (>25% of exports)



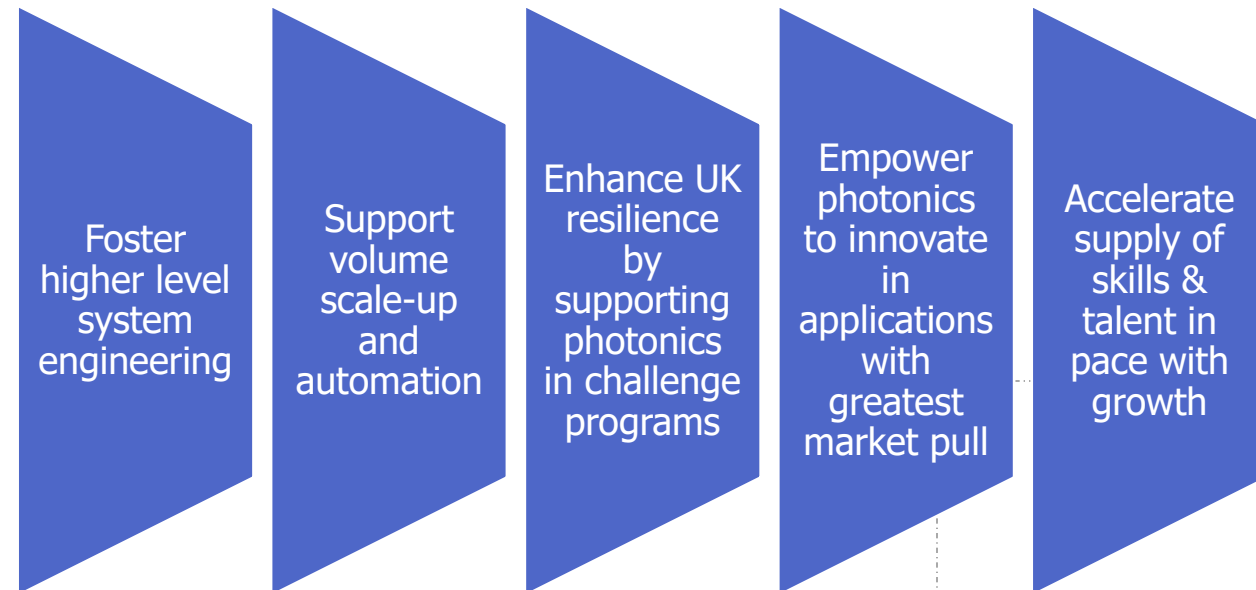
Exports



Summary

- Photonics present in all markets @ all tiers
- Highly innovation focused
- Growing strongly & profitably
- Highly productive

Five-point action plan to build on UK photonics strengths



PHOTONICS

LEADERSHIP GROUP

Nudging industry, academia, support agencies & government together
Making Photonics bigger, faster, stronger

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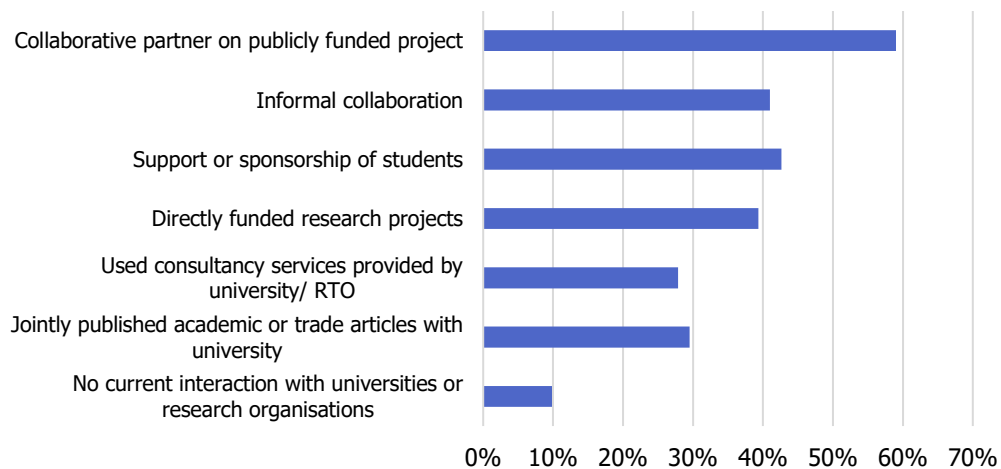
Special thanks to Innovate UK for
2023 UK Photonics Landscape



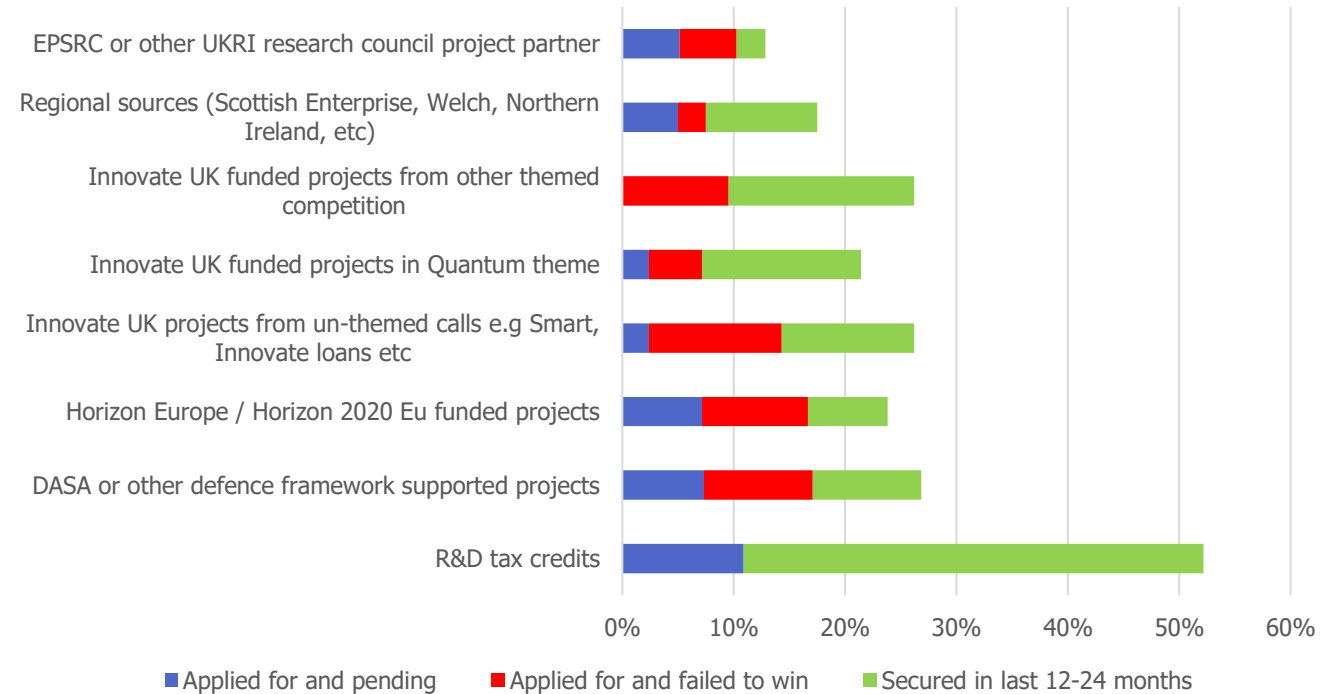
AILU, Bay Photonics, Chromacity, Compound Semiconductor Ctr, Fibercore, British Glass, Grounded Innovation, Heriot-Watt University, National Healthcare Photonics Ctr, OpTIC, Optica OSA, STFC, UCL, University of Aston, University of Sheffield.

- Photonics firms use full cross section innovation support
 - 55% collaborative partner in public funded project
 - 40% direct fund Uni or RTO
 - N.B. waste resource with Innovate fails

University and publically funded innovation engagement

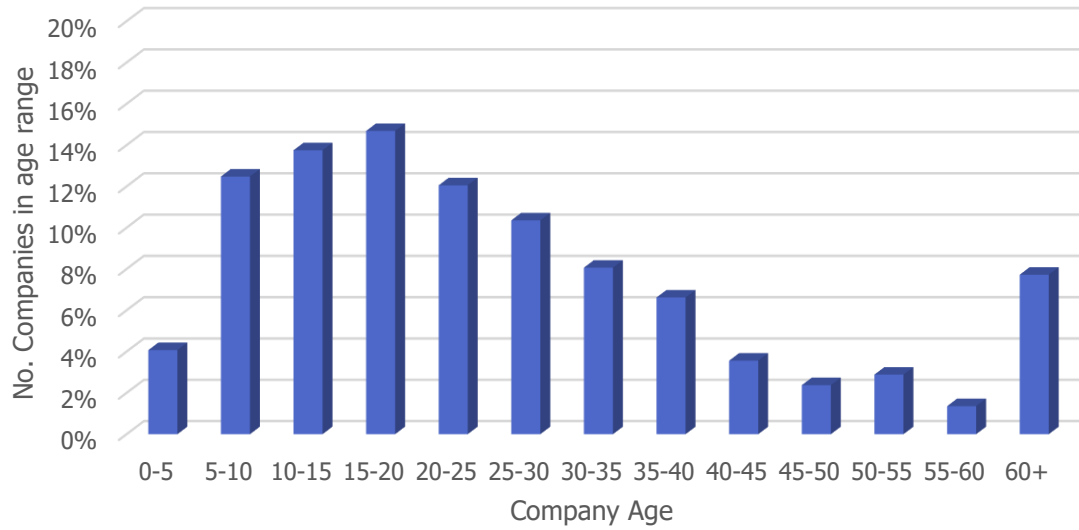


Engagement with Innovation support

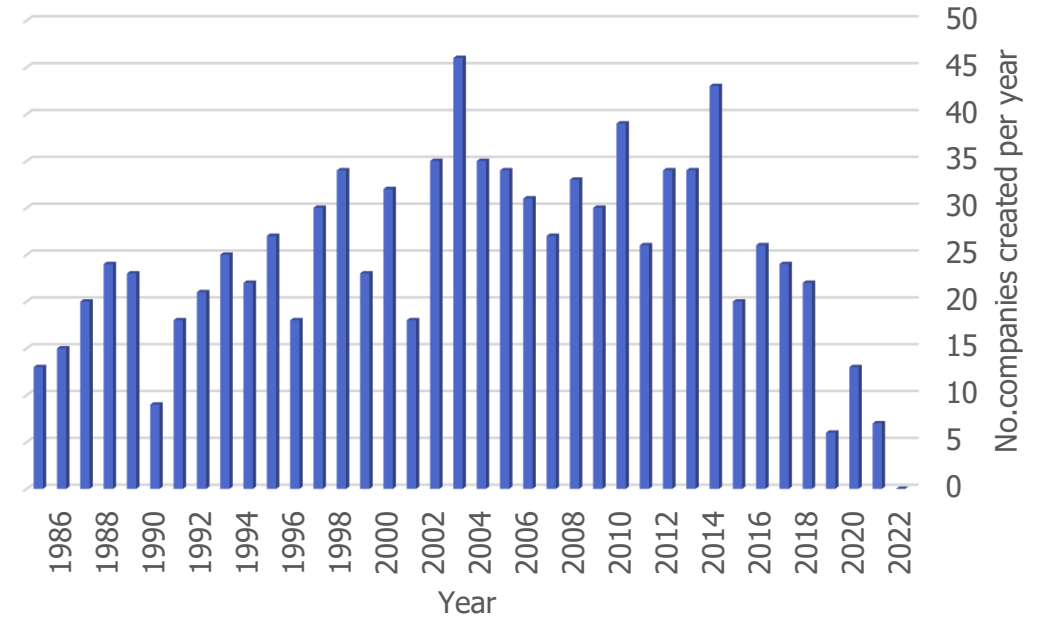


**Eco-system
engagement**

Company Age profile



Net company Creation rate



Company age and creation rate

- 20% founded in last 10 years
 - 10% > 50 years old
- Drop off in company creation
 - Last years << long term average

Innovate Funding to Companies engaged in Photonics



- 480 photonics orgs in one or more Innovate projects
- Average 6 projects, excluding Universities
- Total 3,100 projects,
 - £2.9bn value, with £1.4bn industrial investment of £1.4bn
- Not all funding to photonics, covers >900 programs
 - Innovation engagement irrespective of topic
- Increase through Quantum program
 - Significant drop since 2020

Innovation engagement