

**SPIE.**

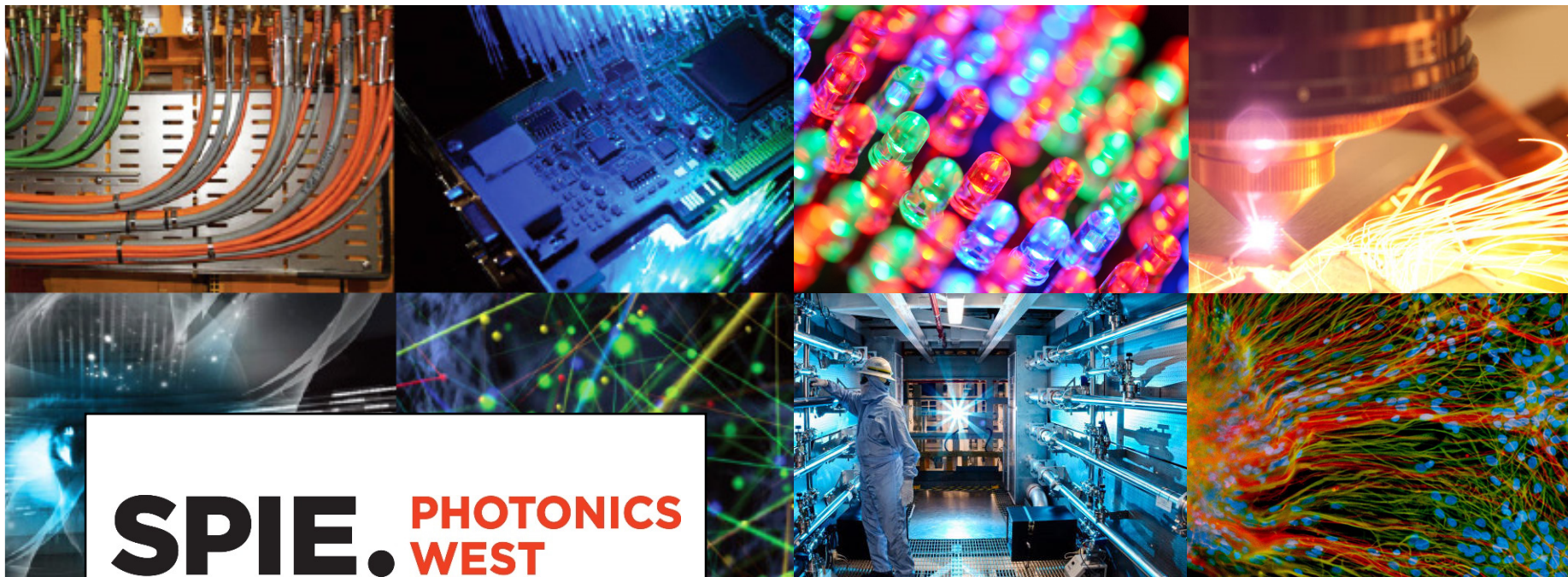
**The International Society for Optics and Photonics**

**SPIE  
INDUSTRY  
EVENTS.**



INTERNATIONAL  
YEAR OF LIGHT  
2015

# SPIE Industry Update



**SPIE.** PHOTONICS  
WEST

San Francisco, CA | February 9, 2015

Stephen G. Anderson  
SPIE



INTERNATIONAL  
YEAR OF LIGHT  
2015

*In this talk ...*



- **National Photonics Initiative**



- **SPIE Industry Analysis**

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# *National Photonics Initiative Update*

**SPIE.**



**SPIE.**

# NPI Goals



Raise awareness  
about photonics



Drive funding  
and investment  
in photonics

Increase  
collaboration  
among industry,  
government and  
academia



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# NPI Task Forces

- IT/Communications
- Healthcare
- Sensors for Energy and the Environment
- High Power Lasers
- Education and Workforce development





# Recent Accomplishments

Tom Kalil, OSTP “NPI put photonics on the map”

- Testimony before House Science, Space & Technology subcommittee
- OSTP Fast-Track Action Committee report on optics & photonics
- NSF dear colleague on optics and photonics
- Photonics language in three authorization bills
- Photonics manufacturing institute funding
- White House BRAIN Initiative collaboration



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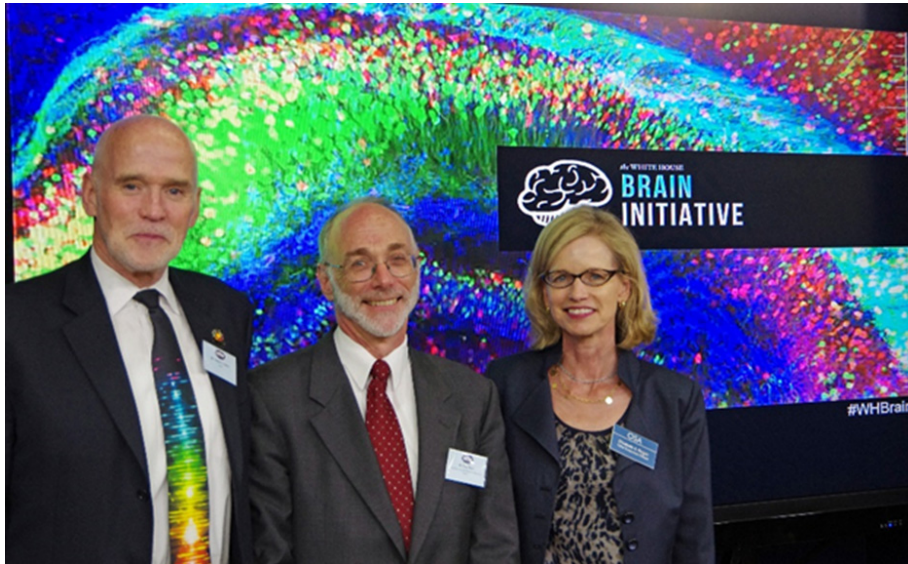
# Integrated-Photonics IMI

- Strong response from photonics community to funding announcement
- DOD matching funds of \$110 million
- Finalists announced 30 January. Team leads
  - USC
  - UCF
  - Research Foundation for SUNY (SUNY Polytechnic Institute)
- Final funding announcement in June
- SPIE and the NPI will support proposal development and new IP-IMI launch



President Obama  
announcing  
IP-IMI funding

# Photonics Industry Neuroscience Group



NPI leadership at the Administration's BRAIN Initiative Re-launch in Washington DC, November 2014

- PING on agenda at White House BRAIN event
- Strong industry coalition in place - \$30 million R&D commitment
- Invited to OSTP roundtable
- Presented at PCAST in November
- Invited to lead technology road mapping effort by OSTP

# Next Steps



- Finalize NPI Task Force white papers and look for 2016 budget opportunities
  - Healthcare
  - Sensors for energy and environment
  - High power lasers
  - Education and Workforce development
- Increase visibility of photonics in DC area
  - Policy maker engagement
  - PR campaign, op-ed pieces and advertisements
- Washington DC fly-in March 17 & 18
  - Sign up on the NPI website at [www.lightourfuture.org](http://www.lightourfuture.org)
- Engage state level government

# SPIE Photonics Industry Analysis

from components to consumers



Global supply side analysis using company information

# SPIE's Photonics Industry Analysis

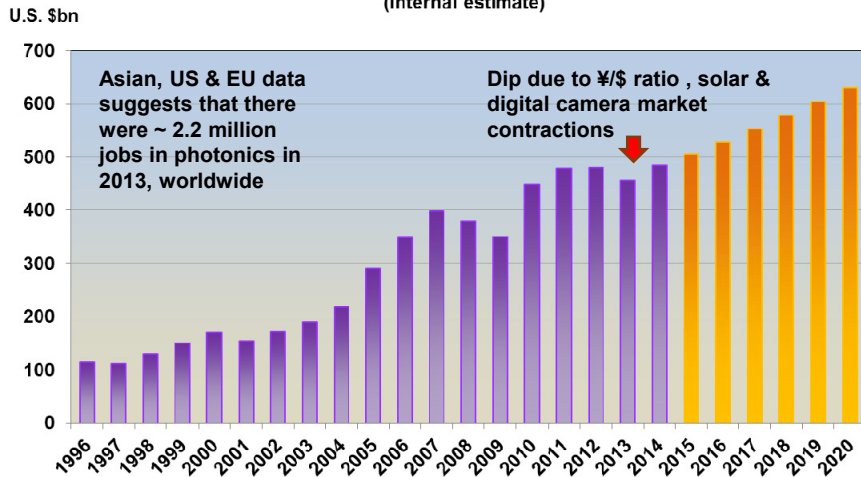
Building from Company Information

*Moving forward ...*



# Global Photonics Market (2012)

"Lower Bound" of Worldwide Photonics Market with Defense  
(internal estimate)

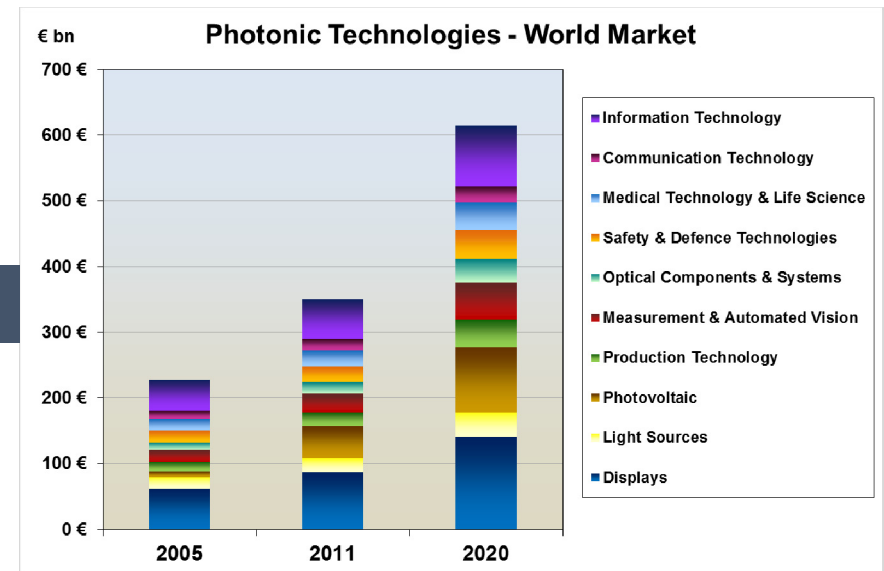


source: SPIE

**SPIE internal estimate ~\$480 bn**

*Projections use a combination of IMF global economy data, technology knowledge and market estimates. Projections are highly dependent on currency rates, and socially and politically influenced technology adoption rates.*

**EU est. (SPECTARIS) ~€380 bn (\$430 bn)**



# Core photonic components & materials

# Photonic products

# Photonic-enabled products



Materials, LEDs, lasers, detectors, image sensors, lenses, prisms, optical filters, gratings, solar cells, fiber

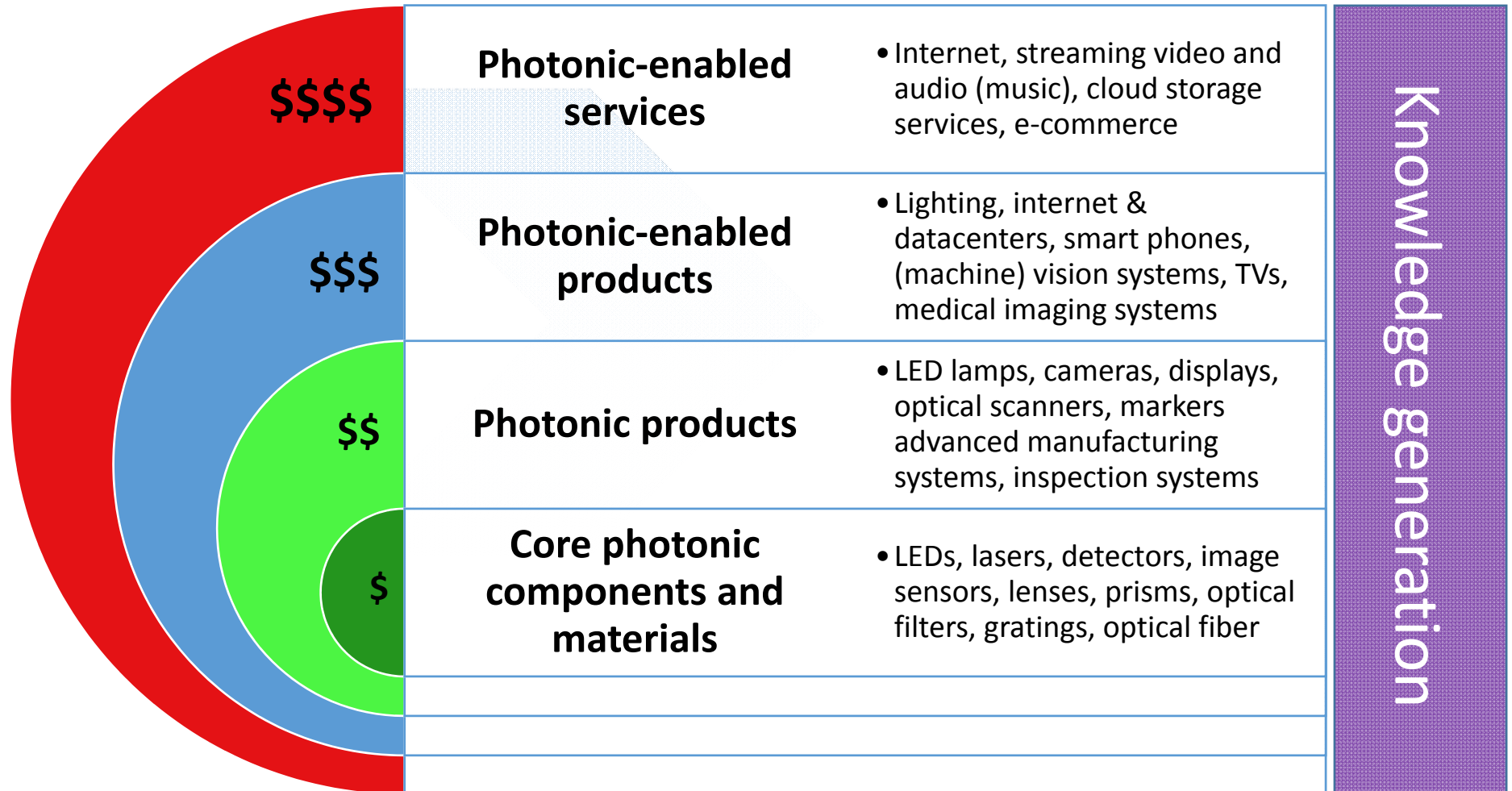
LED lamps, cameras, displays, optical scanners, markers advanced manufacturing systems, inspection systems

Lighting, internet & datacenters, smart phones, (machine) vision systems, TVs, medical imaging systems

Increasing value

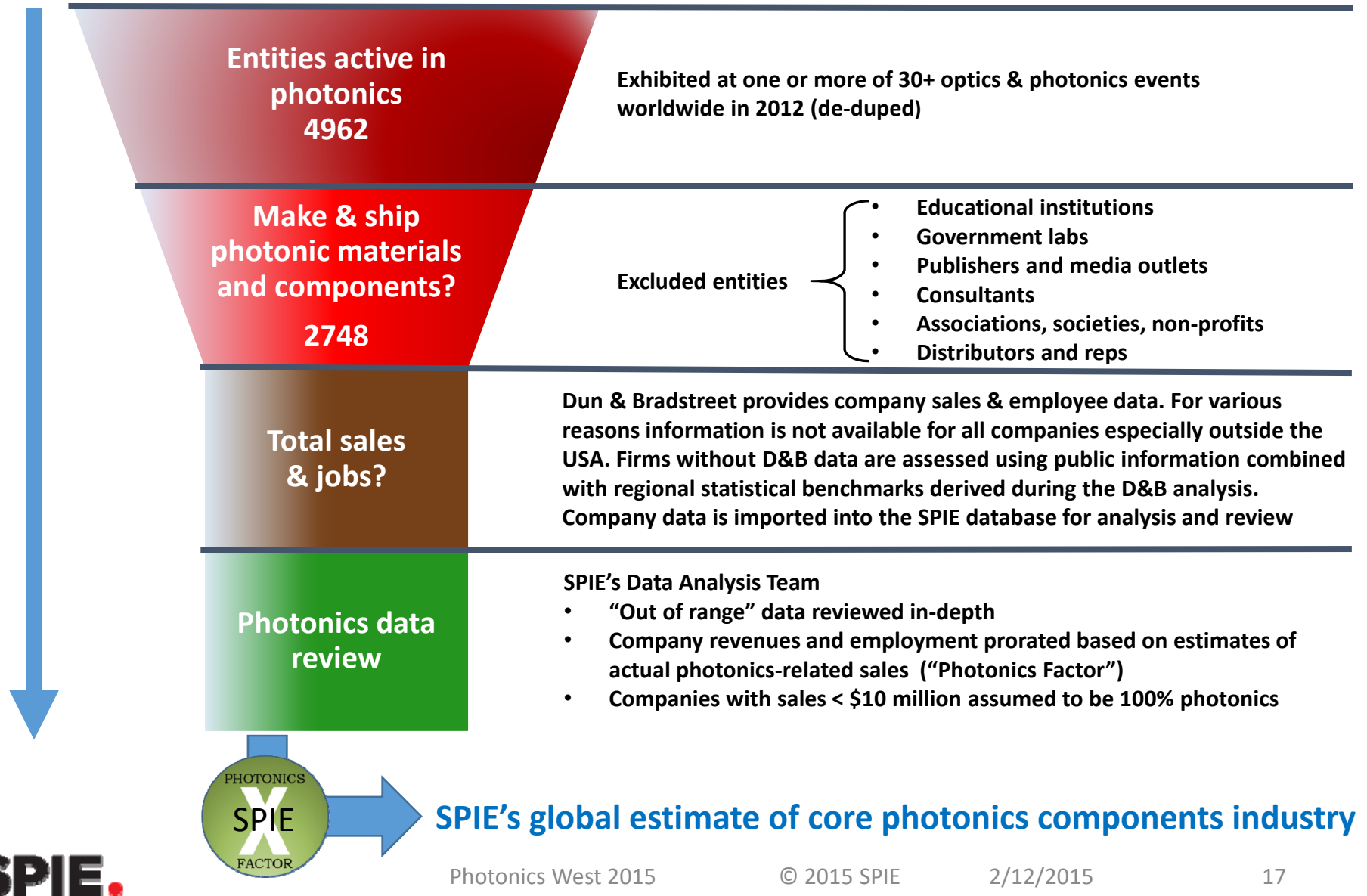
# The Photonics Marketplace

## From core components to enabled services

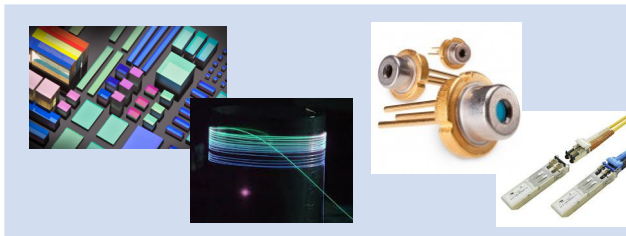




# Building from Company Information



# Core photonic components & materials



Materials, LEDs, lasers, detectors, image sensors, lenses, prisms, optical filters, gratings, solar cells, fiber



**\$156 B Revenues**



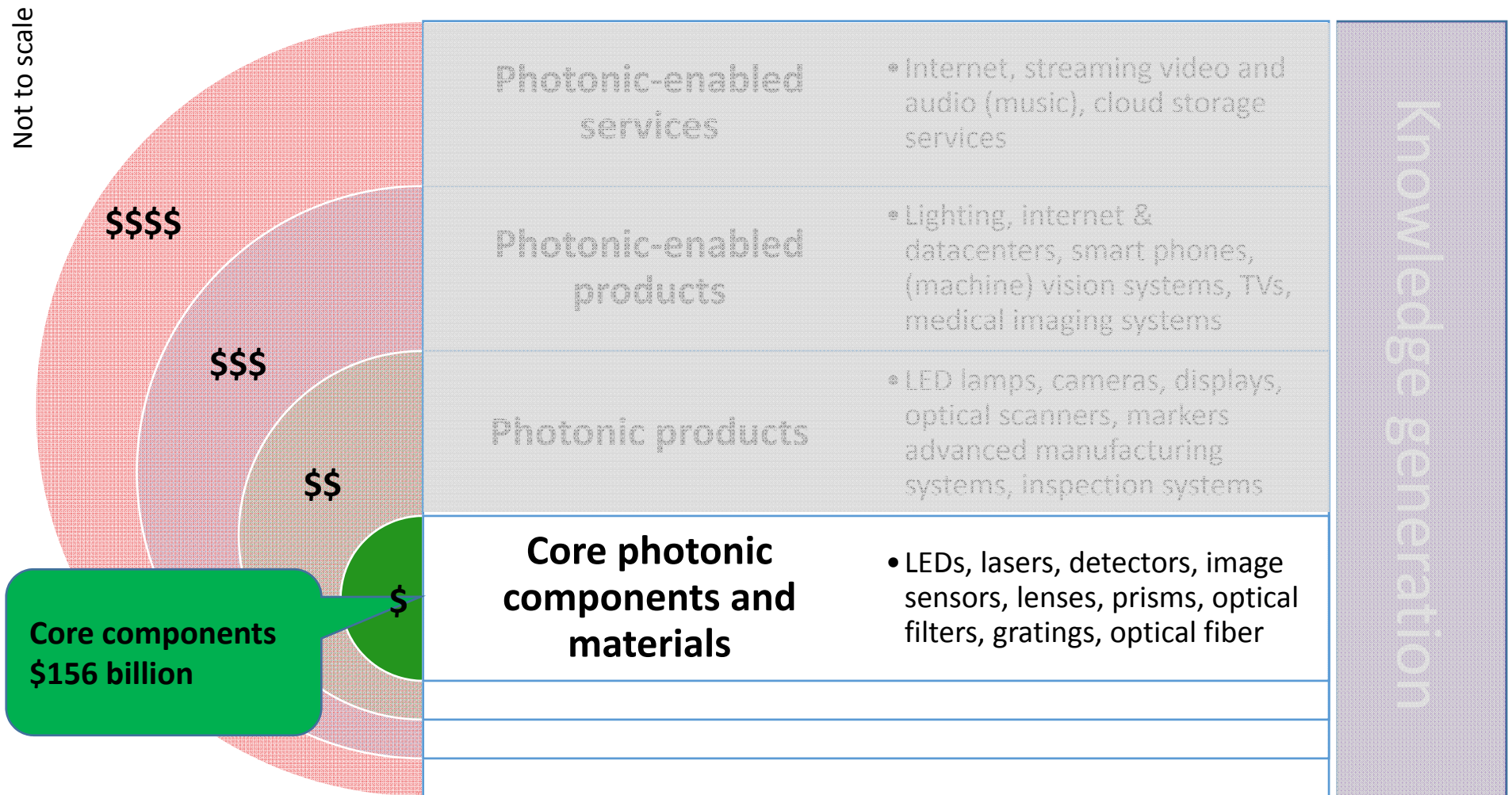
**2750 Companies**



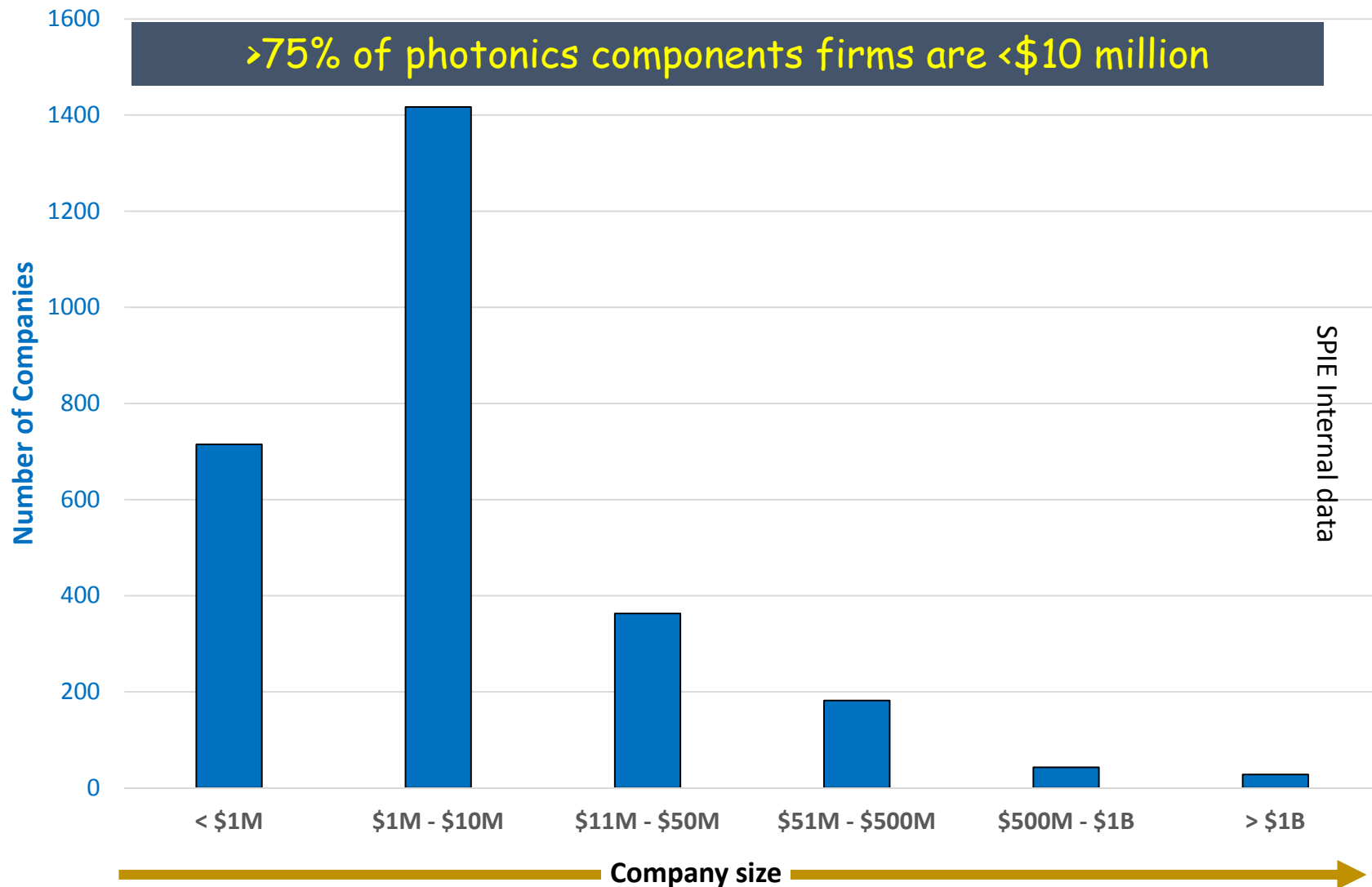
**700,000 Jobs**

# The Photonics Marketplace

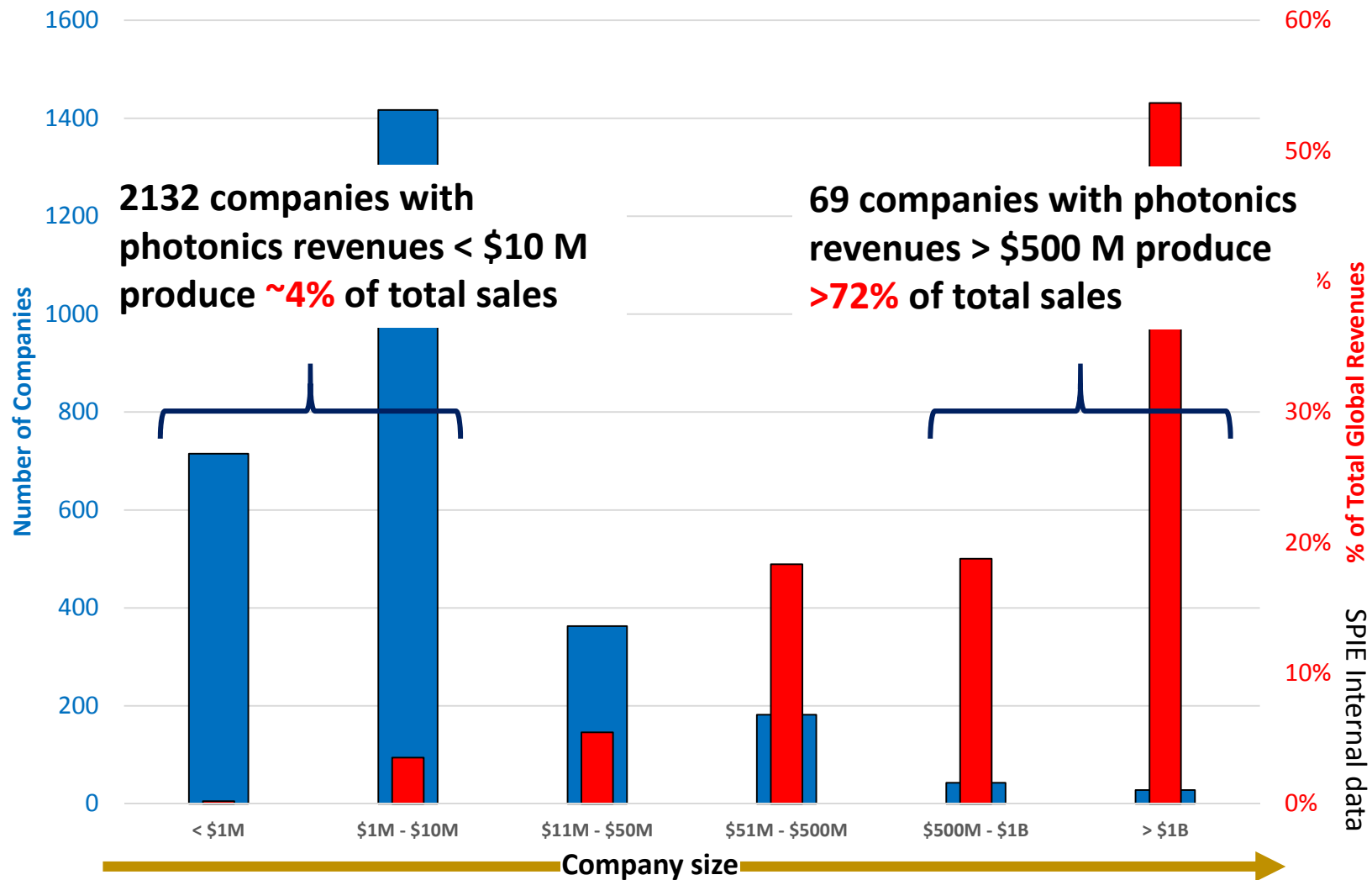
## From components to enabled services



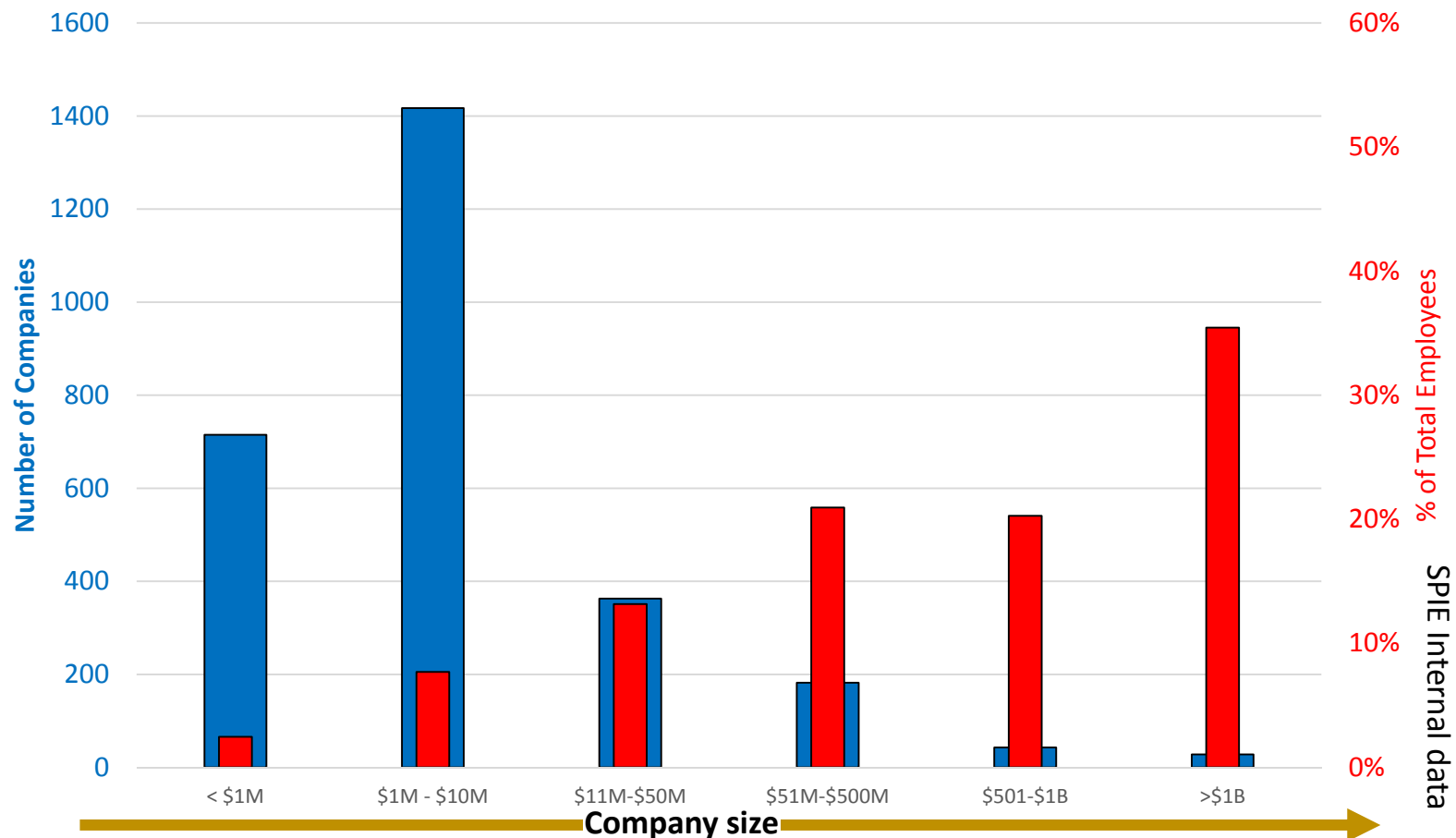
# Global Core Photonics Components Suppliers Grouped by Size



# Global Core Photonics Components Suppliers Grouped by Size with Sales

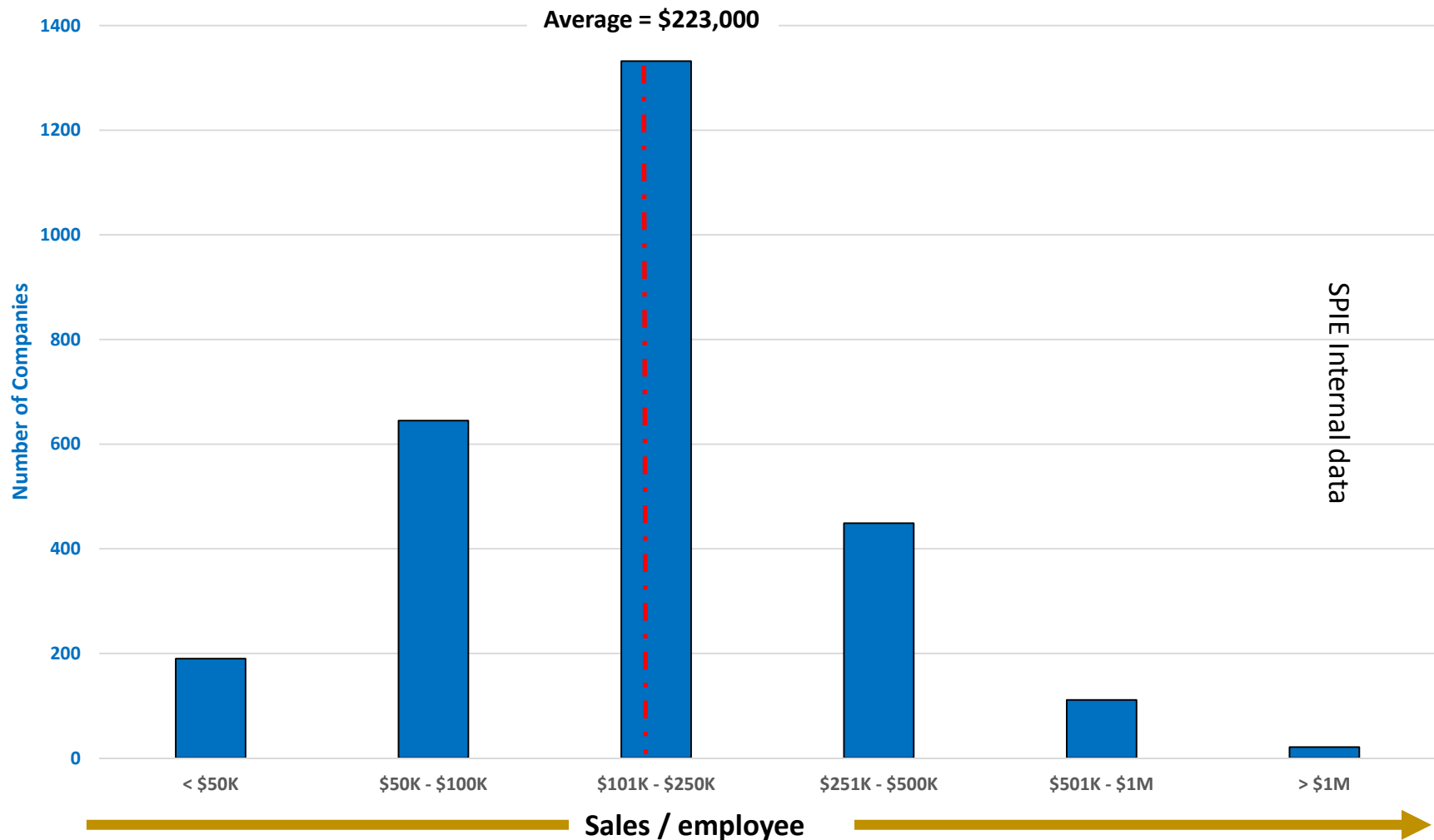


# Global Core Photonics Components Suppliers Grouped by Size with Jobs

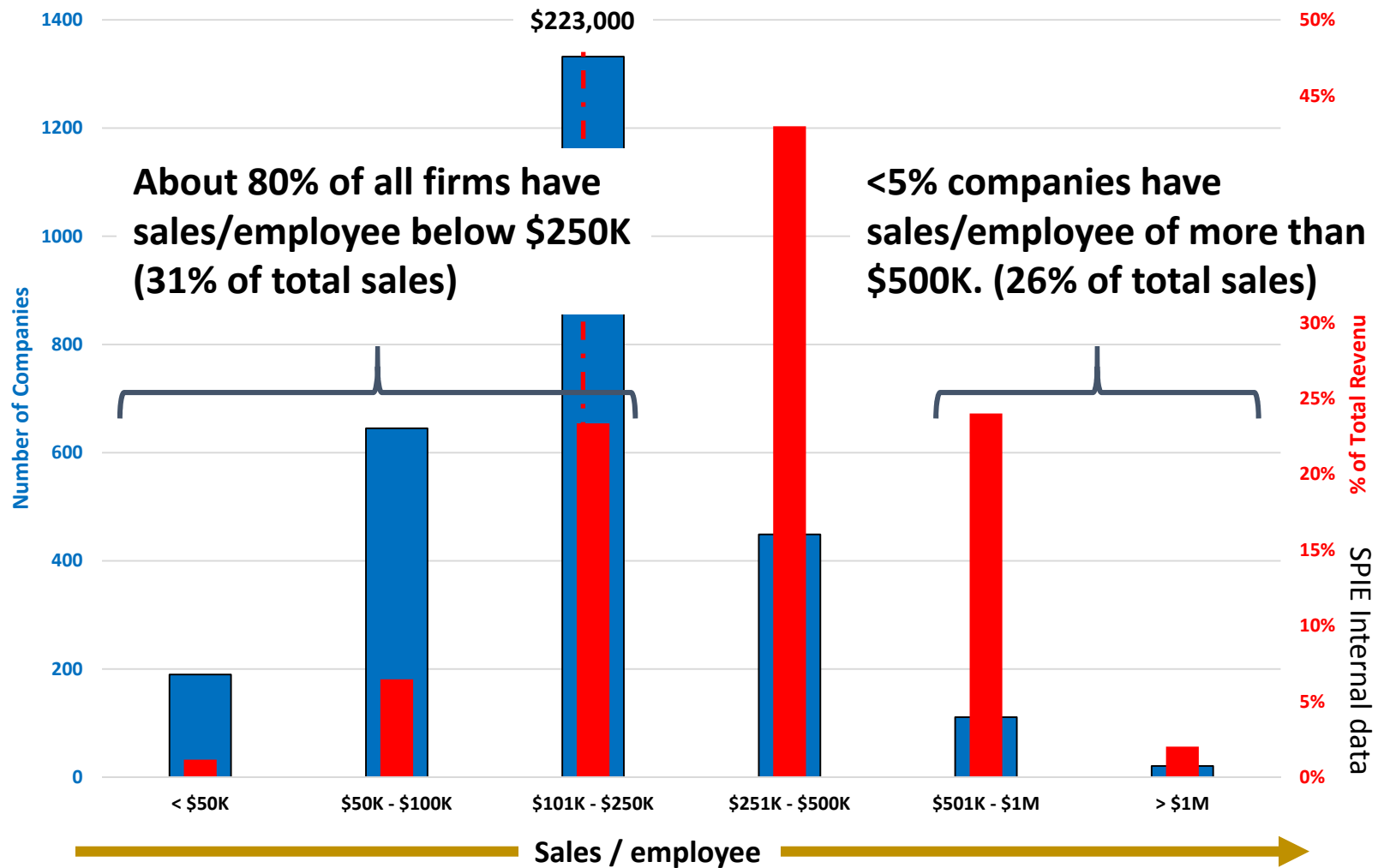


**<10% of companies employ ~77% of the workforce**

# Global Core Photonics Components Suppliers Grouped by Sales/ Employee



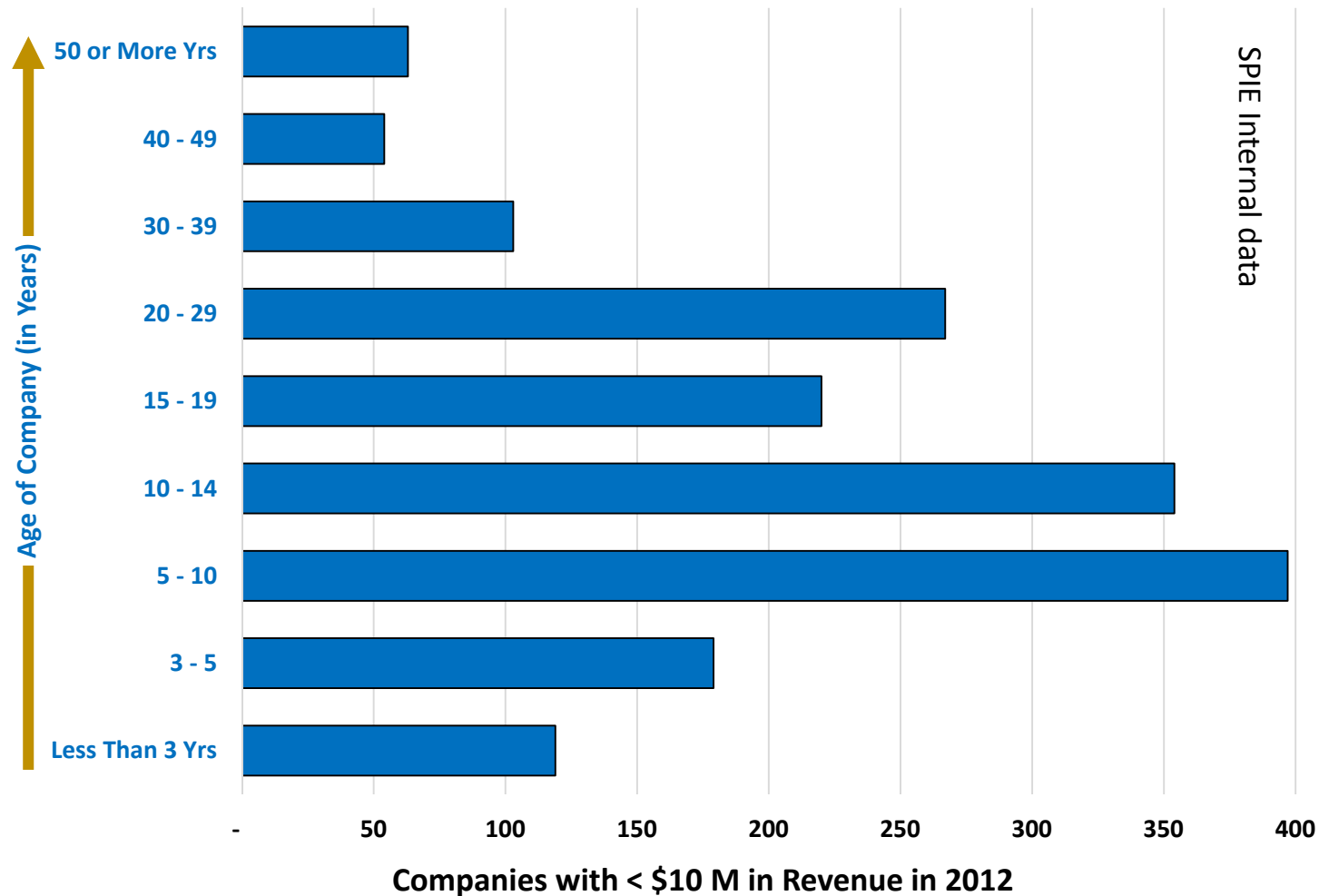
# Global Core Photonics Components Suppliers Grouped by Sales/Employee with Rev. Distribution



**~21% of firms operate above avge profitability & produce 70% of all sales**



# Global Core Photonics Components Suppliers Age Distribution of Small Firms



60% of 1756 smaller companies are older than 10 years

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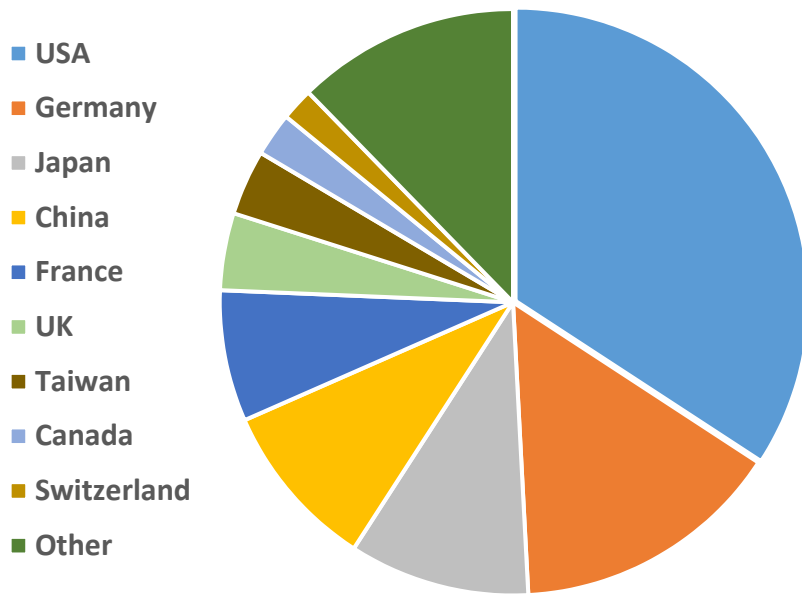
# The Geography of Photonics Components Production



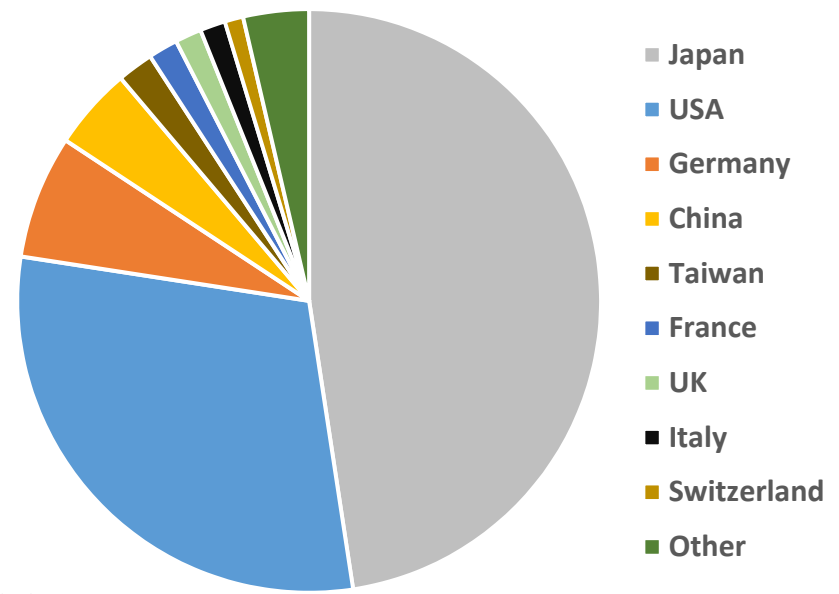
2750 firms span more than 46 countries

# The Geography of Photonics Components Production ... 2

Company count by country  
2750 Firms

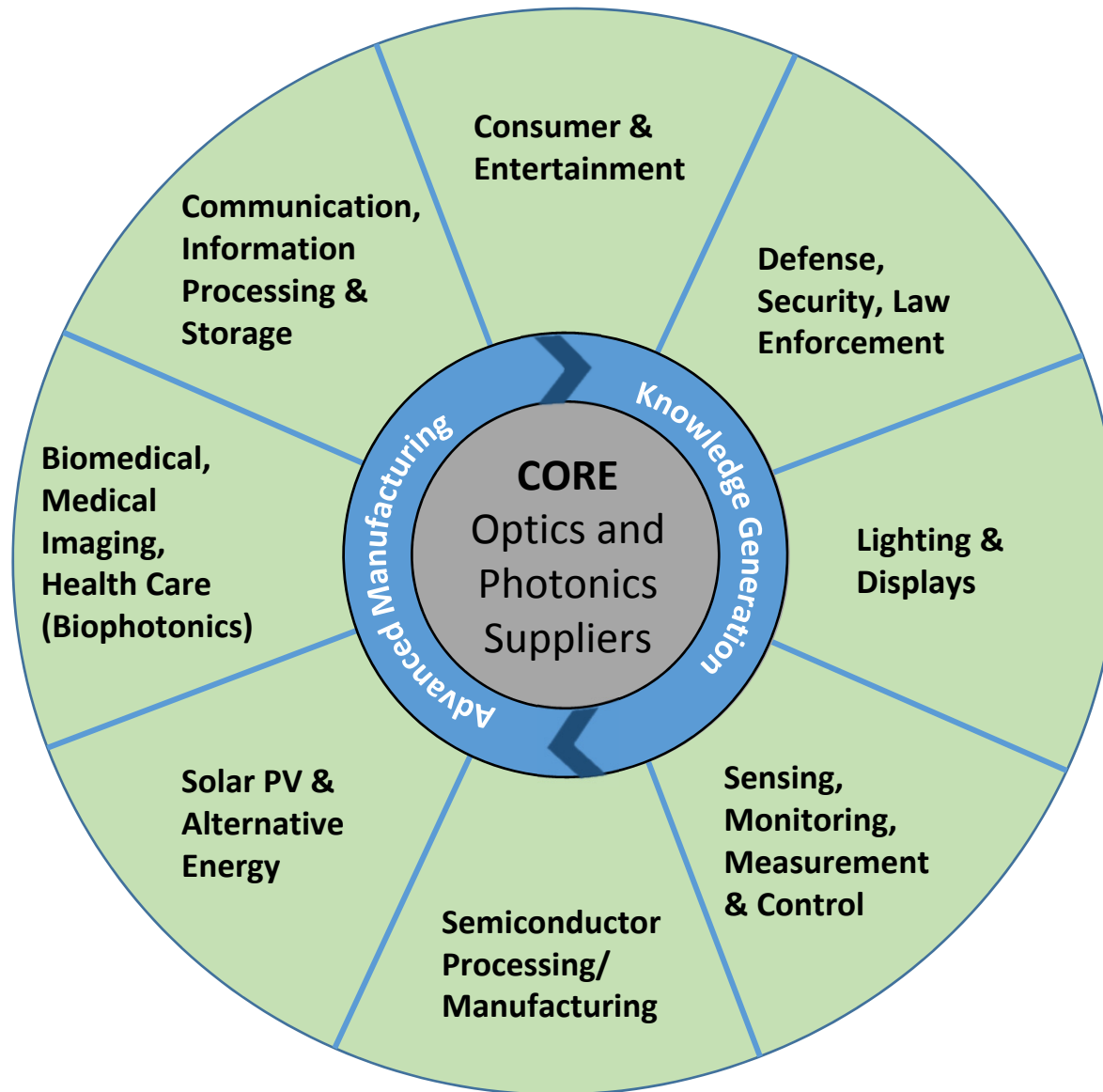


Revenues by country  
\$156 B



SPIE Internal data

# Enabled Market Segments



Not to scale

# Biophotonics-Enabled Marketplace

Sources: Multiple including UC Davis, GIA, and SPIE Internal



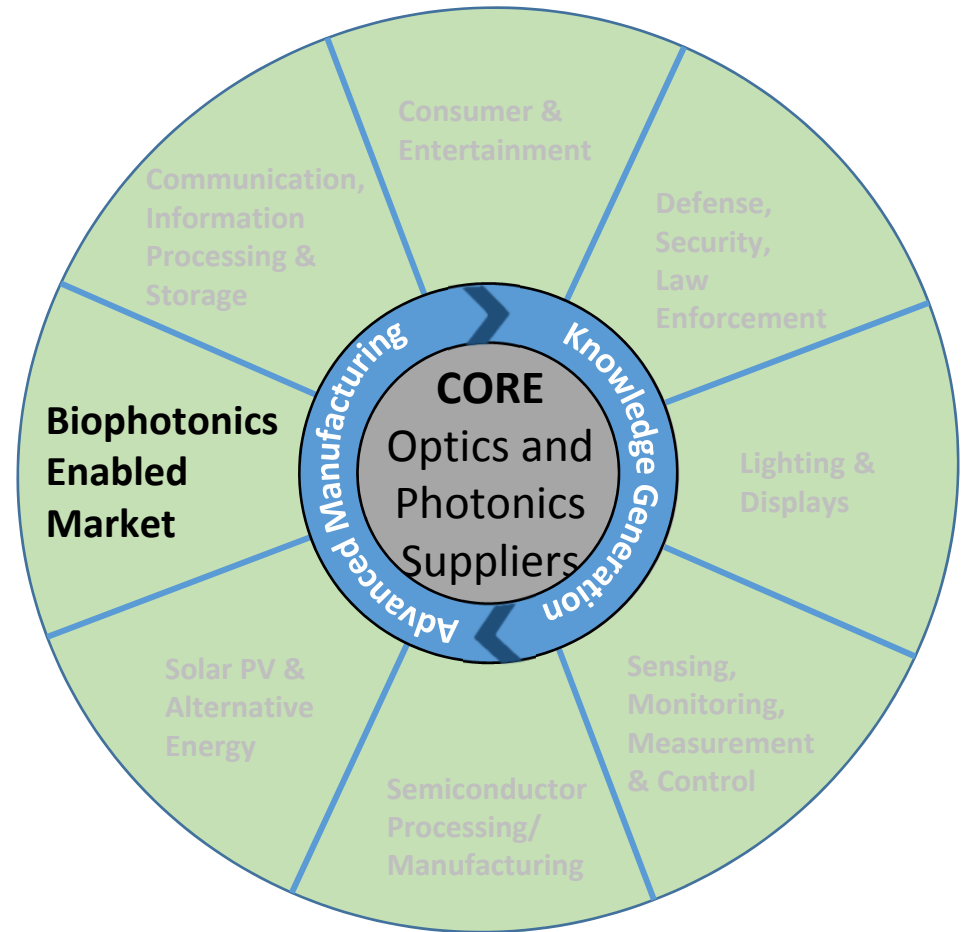
**\$91 B Revenues**



**269 Companies**



**281,000 Jobs**



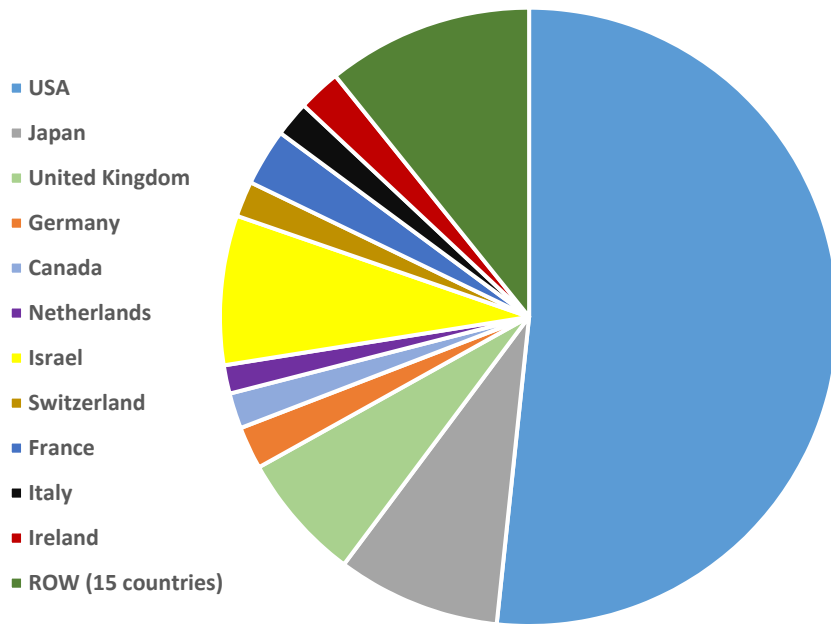
# Global Biophotonics Enabled Market Suppliers Grouped by Size

Sources: Multiple including UC Davis, GIA, and SPIE Internal

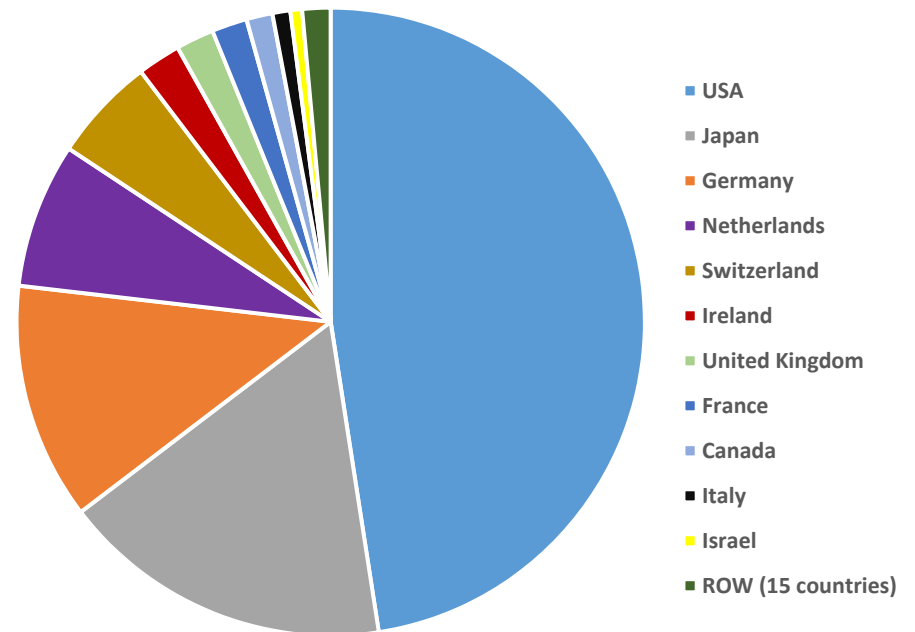


# The Geography of Biophotonics

Company count by country  
269 Firms



Revenues by country  
\$91 B



SPIE  
**SIXTY**  
YEARS

**SPIE.** |

SPIE CELEBRATES 60 YEARS



INTERNATIONAL  
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2015