

From Single Photon Technology to the Quantum Industry

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Global investment in quantum technology has reached an inflection point, with public and private capital converging at unprecedented scale. Government funding worldwide has surpassed \$55 billion (€50 B) in cumulative commitments. On the private side, venture capital investment in quantum startups reached \$9.9 billion in 2025—a 380% increase over 2024—with hardware-focused photonic approaches capturing a large share of late-stage deals. Japan committed \$7.4 billion, Spain \$0.9B, South Korea \$2.3B, and this spring the UK an additional \$2.6B, reflecting a geopolitical race in which quantum and single-photon-based quantum technologies occupy a central strategic role. After providing an overview of the nascent quantum economy including both national and private funding, the presentation will provide a few examples of some of the major break throughs by commercial entities focused on exploiting or advancing single-photon technology. Included among these will be highlights from PsiQuantum on the "Omega" chipset in *Nature* (*Nature* **641**, pp. 876–883 (2025)) that integrated high-performance single-photon sources, superconducting nanowire single-photon detectors (SNSPDs), and barium titanate optical switches on a GlobalFoundries silicon photonics wafer, achieving 99.72% chip-to-chip qubit interconnect fidelity. Such accomplishments would not have been possible without the dedicated R&D efforts of the numerous individuals who have contributed to this and the previous 11 SPW workshops.