## Monolithic integration of light sources, detectors, memory, and electronics At least five planes of passive photonic waveguides

**Both Platforms** 

Wafer-scale processing Inter-wafer optical links

Memory meeting requirements in Sec. 4.1

Semiconductor Platform Femtojoule optical receivers with low static power

One million III-V light-sources per wafer integrated with CMOS electronics

Synapses and local plasticity circuits in area 10µm x 10µm

Superconductor Platform One million III-V or group-IV light sources per wafer

operating at cryogenic temperature

Interface superconducting electronics with semiconductor light sources

Serial biasing or current recycling for synapses and neurons Eight planes of Josephson junctions and transformers per wafer with near-zero cross talk