

## **Recommendations for High-rate Free-Space Optical (FSO) Communications for Terrestrial Applications**

Next-generation directional FSO communication links provide an appealing solution to spectrum management challenges, bandwidth limitations, and physical security needs in terrestrial environments, especially on mobile platforms. The following areas require additional investments in order to transition the technology:

1. Reduction in the cost and size, weight, and power (SWaP) requirements for optical terminals and modems to accommodate smaller platforms
2. Advancements in adaptive optic technologies to meet the SWaP, distance, bandwidth, and sensitivity requirements that platform integration, speed, and aero-optic effects introduce
3. Development of new algorithms and approaches for both terminal and modem technologies to deal with operation under highly scintillated links
4. Maturing models of beam propagation and of adaptive optic systems under saturated turbulence
5. Advancements in instrumentation to characterize long distance, highly saturated links ideally with single ended implementations.