



U.S. ARMY
RDECOM

SPECIAL REPORT RDMR-WD-16-07

MULTI-GIGABIT FREE-SPACE OPTICAL DATA COMMUNICATION AND NETWORK SYSTEM

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Aviation and Missile Research, Development,
and Engineering Center

April 2016

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Presented to:

**SPIE Defense + Security
Symposium**

*Multi-Gigabit Free-Space
Optical Data
Communication and
Network System*

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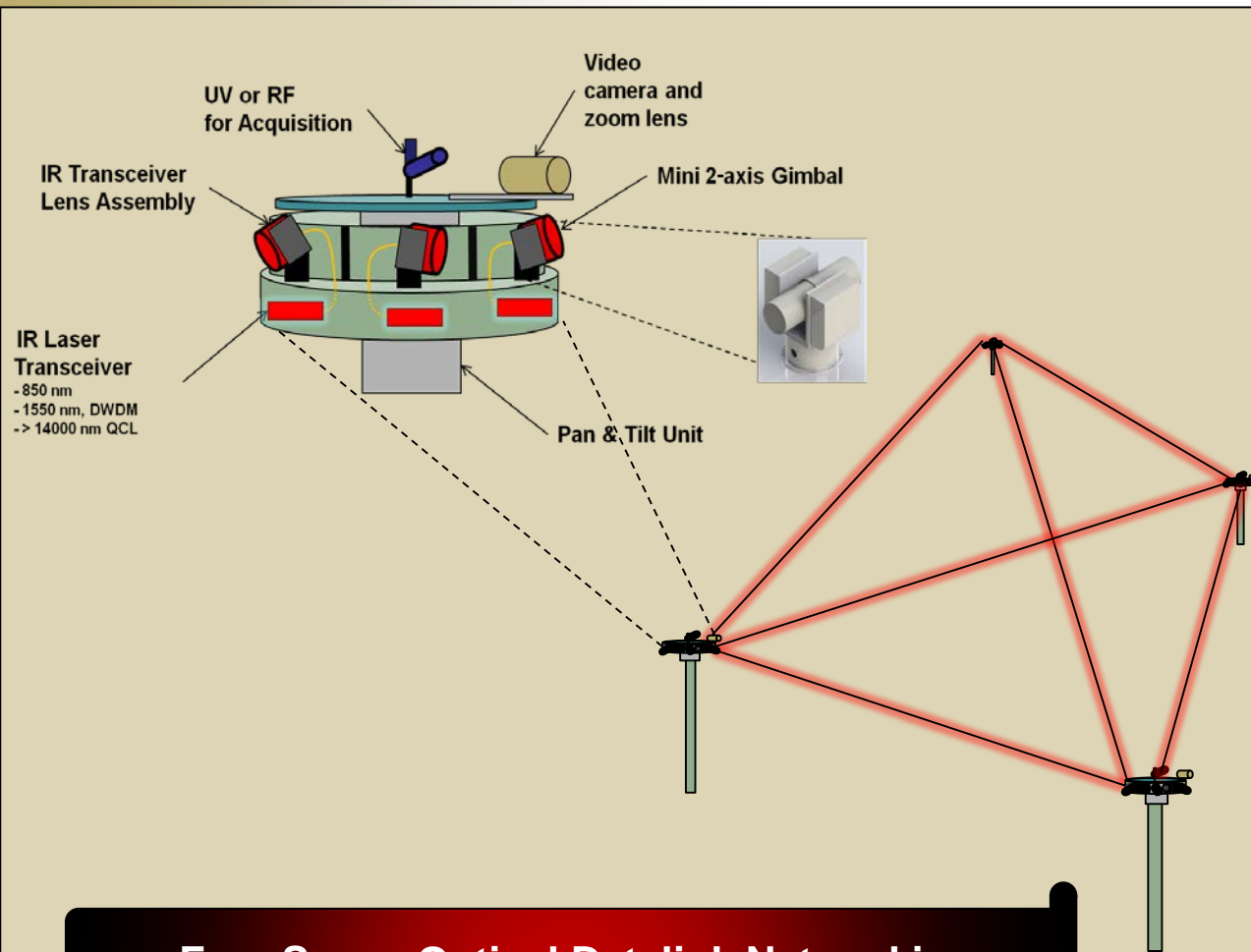
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**U.S. Army Aviation and Missile Research,
Development, and Engineering Center**

17-21 April 2016



Free-Space Optical Datalink Networking Concept

- ### Concept Capabilities
- High Bandwidth – Multi-Gigabits per second
 - 360° sectored coverage
 - Multipoint-to-multipoint simultaneous communication
 - Mobile communication:
 - on the move tracking
 - adaptive beam
 - Networking
 - High covertness with no frequency approval requirement
 - No spectral congestion or vulnerability to EA/Cyber attacks.



Free Space Optical Datalink Timeline



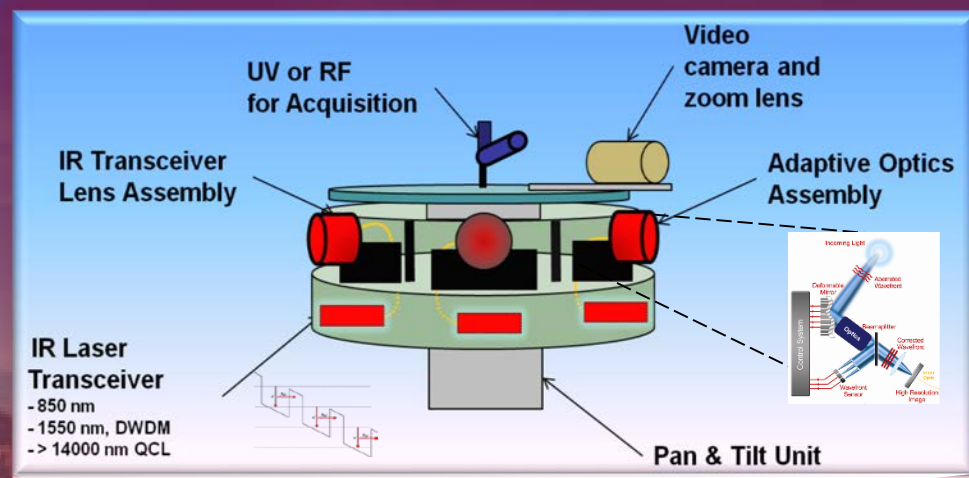
Phase 1

Point-to-point
demonstration
2012



Future

Adaptive optic & Quantum Cascade Laser Technologies
2017-2022



Phase 2

Point-to-point
Enhanced fine Acq. -
Adaptive Beam
Tracking
2015-2016



Phase 3
Multipoint-to-
multipoint network
2017





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