Laser Communications

Capabilities and CONOPS for the Warfighter

DEFENCE AND SPACE

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SATCOM Background

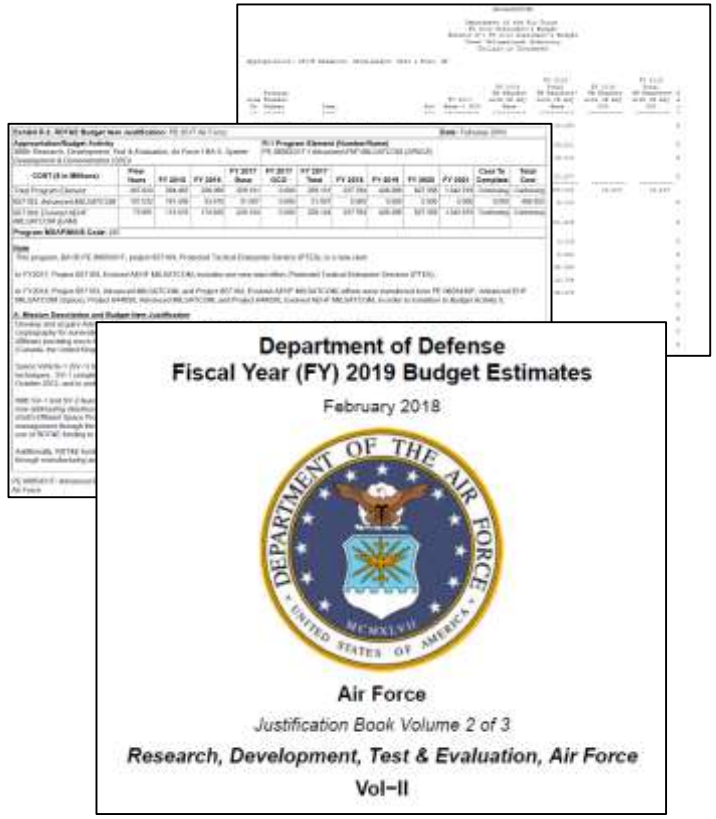
$1B

COMSATCOM Spend

Backbone for Warfighter BLOS Comms

Users Still Under Served

New Platforms, Increased User Demand



DOD Focused on Protected Communications

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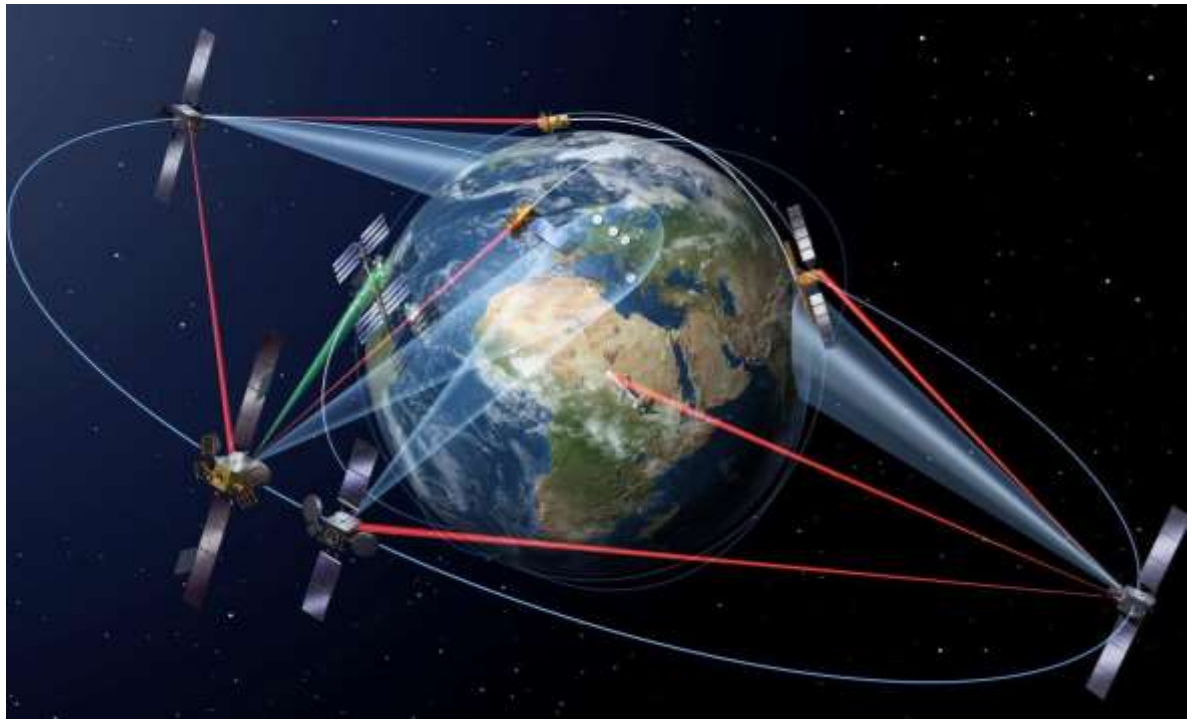
Satellite Laser Communications



- First inter-satellite link 2008
  - US MDA NFIRE and German TerraSAR-X
- Proven technology
  - 8,000 error free links

- SpaceDataHighway: Commercial Laser Service
- Satellite data transfer service using optical communications
  - User laser to SDH GEO – GEO downlink to earth station
- High speed 1.8 Gbps “bent-pipe” GEO relay

- Laser Comms: Many advantages, requires planning

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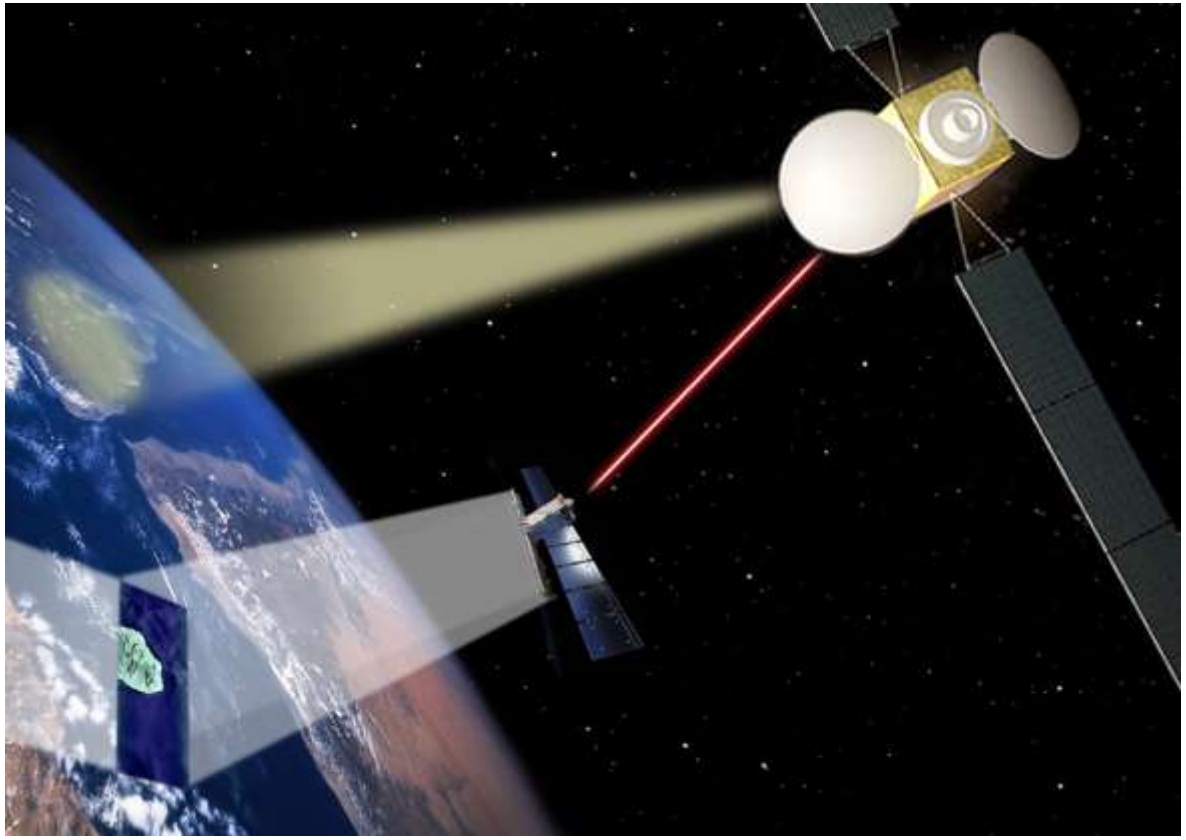
Laser Communications: Capabilities and Value

Bandwidth
- Speed of 1.8Gbps
  - Real-time uncompressed ISR
  - Senor suite dissemination
- Capacity
  - Ability to move 19+ TB per day
  - Ideal for data backhaul
    - Imagery, senor, biometric, medical etc.

Protection
- Eliminates RF radiation from platforms
- Low beam divergence
  - LPD/LPI
- Native anti-jam characteristics

Additional Benefits
- Spectrum
  - Unregulated, uncontested
- Efficiency
  - More bits per watt
- Size
  - 1.8Gbps with 5.5in effective aperture
  - Fits more platforms

CONOPS: Space



LEO Optical/IR and SAR EO Data

- Replace or augment ground stations
  - Pole-to-pole coverage
  - Drastically longer connection windows
- Near real time delivery for critical information
- Immediate tasking to maximize utility of the asset
- Allows larger volume of information to be collected

Geo-to-Geo Cross Links

- Provide control of where information is landed
- Satellite to satellite routing of information
- Removes sole reliance on vulnerable ground stations

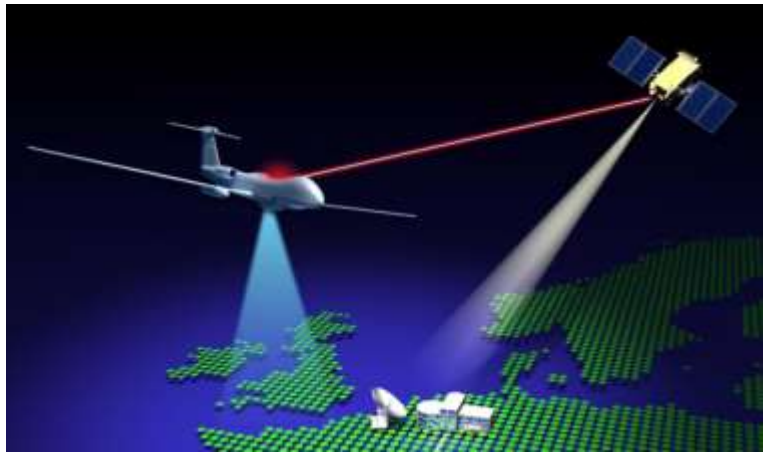
CONOPS: Airborne

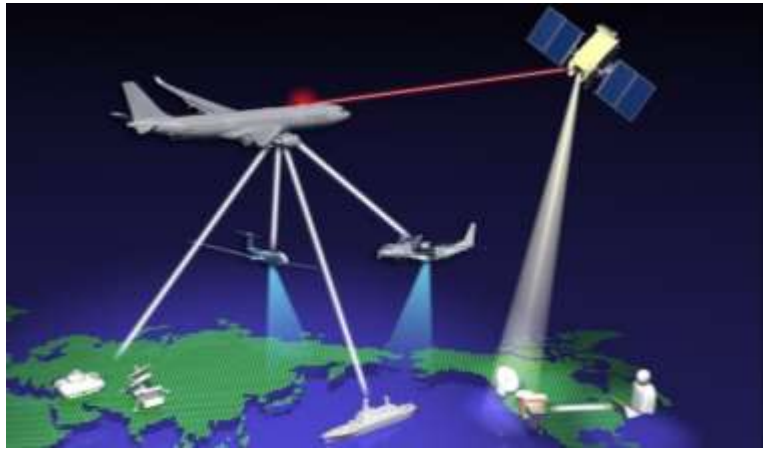
ISR Aircraft

- Only method of BLOS delivery of full ISR information
  - Uncompressed video, sensor, etc.
- Small terminal form factor facilitates platform integration
- Protected communications for contested areas
  - Allowing for data delivery and tasking

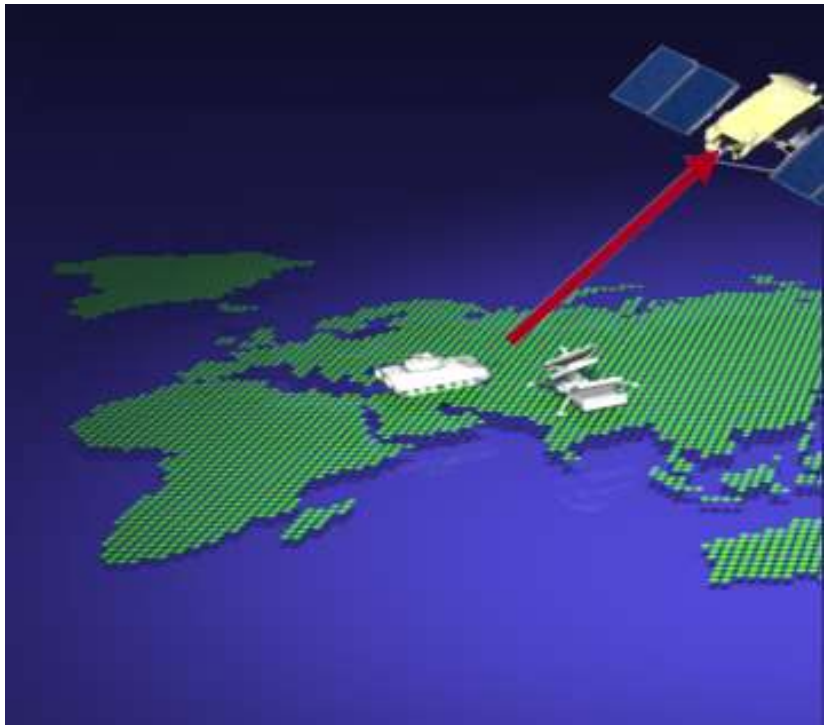
“Combat Cloud” Aggregation and Backhaul

- Laser equipped airborne C2 platform
- Providing BLOS services to other assets in region
  - Manned aircraft, UAVs, ground forces, maritime via LOS
  - Equivalent of 36 x 50Mbps user links





CONOPS: Ground and Maritime



- Redundant path to SATCOM
  - Protected capabilities for contested environments
- Ideal for transfer of large volume of information
  - Biometric, sensor, medical, etc.
- Deployable capability for austere locations
- Increased availability with multiple ground stations or transfer windows

The Laser Advantage

Protected, resilient, high-speed communications in a small form factor to meet the needs of the most demanding users.

From Information to Actionable Intelligence

Operational Responsiveness to Maximize the Value of Combat Assets

Laser communications provides the pathway to maximize the use of combat assets. The high data rate link allows for real time collection of uncompressed information for immediate evaluation and analysis. The secure nature of laser communications provides for an unprecedented level protection from jamming or interception while providing forward deployed users a low probability of detection communications capability that won't compromise their positon.

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Thank you

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