Space Systems Panel Session

Lt Col Travis Blake, Ph.D. (Lead)
Mr. David Barnhart
Mr. Mitchell Burnside Clapp
Lt Col John Losinski
Mr. Jess Sponable

TTO Office Wide BAA Proposers' Day

April 23, 2013

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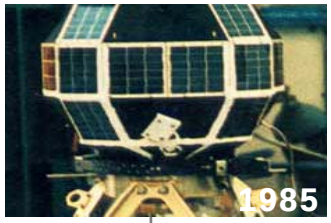
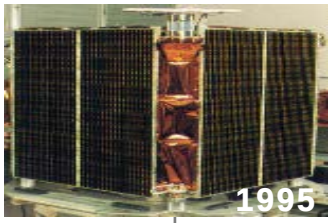
Space Systems legacy programs

Global Low Orbiting Message Relay (GLOMR)

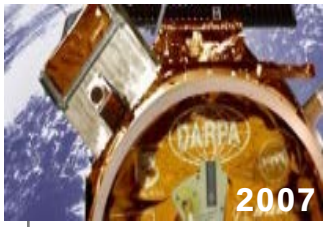


DARPASAT



Falcon Small Launch Vehicle

Orbital Express (OE)

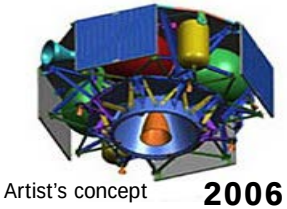


1980 1990 2000 2010 2020

Saturn V (F-1 engine)

Pegasus

Taurus



MiTEX

Space Surveillance Telescope (SST)

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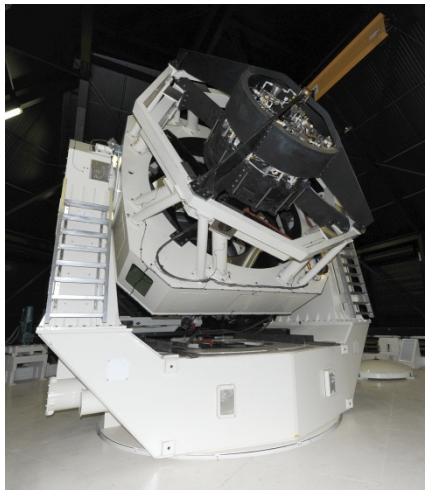
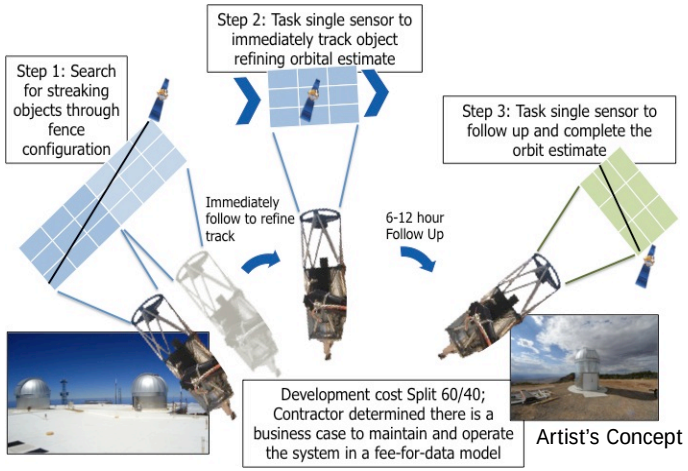
Space Systems current programs

Space Surveillance Telescope (SST)



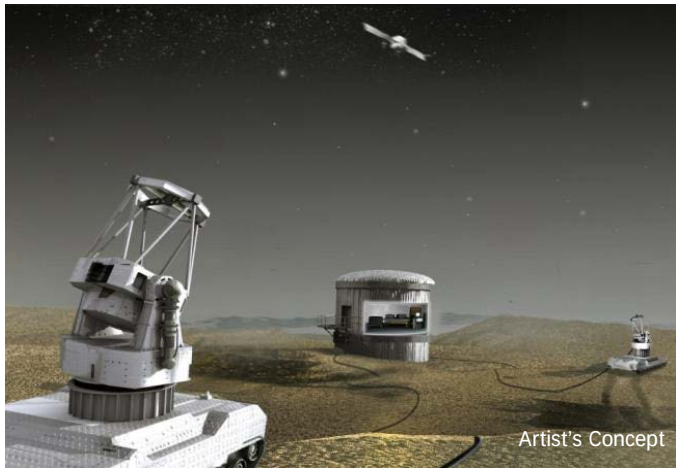
Develop an advanced ground-based optical system for rapid, wide-area, uncued detection and tracking of faint objects in deep space

OrbitOutlook



Demonstrate a cost-effective way to increase the amount and quality of Space Situational Awareness (SSA) information critical to warfighters: purchase data rather than build and operate sensors

Galileo



Develop technology to image a GEO satellite from the ground by utilizing fixed mobile telescopes, each with adaptive optics and a guide star, to create multiple baselines that can be used to reconstruct the image through an inverse Fourier transform

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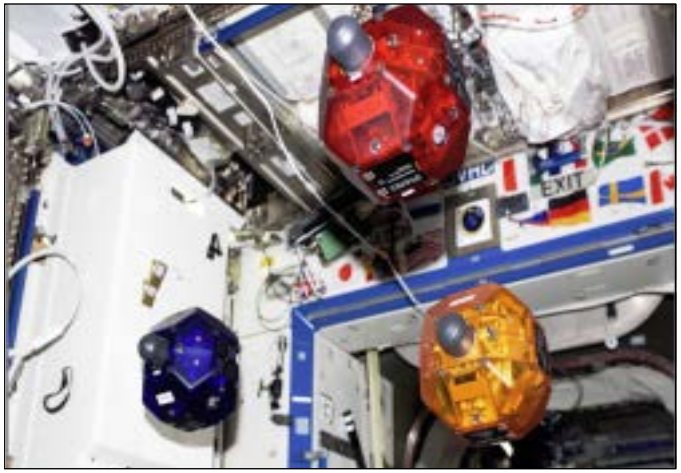
Space Systems current programs (cont.)

International Space Station SPHERES Integrated Research Experiments (InSPIRE)



Upgrade Synchronized Position, Hold, Engage, and Reorient Experimental Satellites (SPHERES) with manipulator arms to support and upgrade the docking ports to reduce fuel consumption

Airborne Launch Assist Space Access (ALASA)

Artist's concepts

Deploy small satellites to orbit from an airborne platform, allowing performance improvement, reducing range costs, and flying more frequently, which drives cost per pound down

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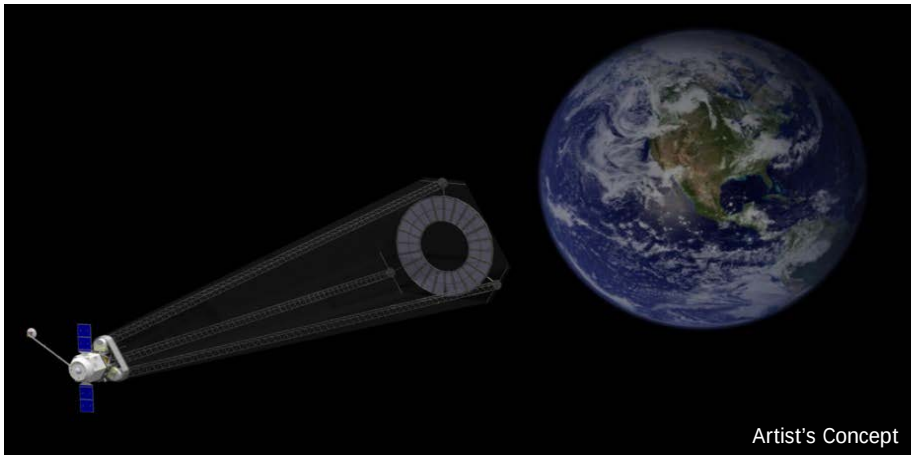
Space Systems current programs (cont.)

Membrane Optic Imager Real-Time Exploitation (MOIRE)



Provide persistent tactical video coverage to the warfighter

Phoenix

Develop technologies to harvest and re-use components from retired, nonworking satellites in GEO and demonstrate the ability to create new space systems at a greatly reduced cost

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Space Systems description

Objective: Normalize and simplify space

Today's Environment

- Congested
- Contested
- Complex
- Costly

Technical Goals

- Affordable routine access
- Reduce escalating systems cost
- New capability
- Survivability/resilience/ reconstitution/autonomy
- Disaggregation/simplification
- Indications- and warning-enabled Space Domain Awareness (SDA)

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Space Systems summary

- Affordable and routine access *through* space:
  - Runway-compatible, infrastructure-free point-to-point transport
- Extreme space mobility – Solar-electric and other revolutionary concepts
- Tactical missions and enabling technologies – Persistent LEO (500-10,000km)
- Modular satellite concepts for disaggregation or enhanced capability
- Sparse aperture communications to enable fiber-like bandwidth
- Novel low-size, -weight, and -payload (SWaP) for small satellite missions
- Awareness by utilization of current sensor systems in a data-for-fee model:
  - Algorithms to support indications and warning of space events
  - High phase-angle small object custody for continuous GEO tracking

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