



# OSD(P) DTIP Future Innovations Forum

**7 September**

**Time: 13:00-14:30 ET**

## **PRESENTERS:**

**Mr. Adam Robertson**  
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## **MODERATORS:**

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The overall classification of this briefing is: **UNCLASSIFIED**



# OSD(P) DTIP DTIP Future Innovations Forum *DIAL-IN INSTRUCTIONS*

**ATTENDANCE IS VIRTUAL VIA TELECONFERENCE**

**AUDIO-ONLY (NO VIDEO PRESENTATION)**

Participants are advised to follow with the PDF Presentations for each of the presenters being featured in the call.

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# OSD(P) DTIP DTIP Future Innovations Forum *PRESENTATION GOALS*

## OSD(P) GOALS

OSD(P) is working with the Defense Technology Innovation Program LLC (DTIP). The OSD(P) DTIP Future Innovations Forum goals are to present breakthrough technologies that have direct application to the challenges of today's warfighter and, for OSD(P) itself, to find technologies that enhance and streamline business processes, bring records management into the 21st century, facilitate collaboration and coordination, enhance knowledge management, facilitate senior-level decision-making, and support Action Officers in DoD with better tools for research and planning connected with their missions.

This Forum introduces cross-level revolutionary technologies that impact present and future operational concepts and capabilities for the Joint Commanders and Interagency leaders across the spectrum of conflict. DTIP scouts, identifies, evaluates, and delivers technologies from around the globe that can create both direct and indirect military applications to enhance the security and capabilities of the warfighter for the benefit of the United States of America.

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# OSD(P) DTIP DTIP Future Innovations Forum *PRESENTATION BRIEF 1*

## Fortem Technologies, Inc.

Fortem Technologies is the leader in airspace awareness, security, and defense for detecting and defeating dangerous drones. With over 4,500 drone captures, to its credit so far, the DroneHunter® F700 is a counter-UAS weapon with real field success. Fully autonomous, radar-guided, and purpose-built for superior speed and agility, it stops rogue drones day and night without resulting in costly collateral damage.

DroneHunter® UAVs can act alone or in cooperation with multiple units to protect large restricted areas. The latest model, F700, is a highly versatile platform that can be outfitted with various payloads and countermeasures. It capably mitigates both Group-1 and large Group-2 drones. The F700 is effective at stopping drones of almost any size, including the large Group-2 drones frequently used by rogue militants and terrorist groups. This is made possible by NetGuns™, modular attachments that fire rapidly expanding nets to ensnare targets and bring them safely down, flying to specified safe areas where EOD personnel can disarm the threat. Unlike destructive counter-drone technologies, this enables forensic evaluation and eliminates potential risk from collateral damage.

Three types of NetGun™ are available. Small, store-bought drones — otherwise known as Group-1 drones — are best handled by the small or medium tether net. These NetGun™ variants trap the offending drone in a net connected to the F700 by a tether, which is then used to carry the drone to a safe location. The other option, called the Drogue Net, is used to tackle larger, heavier drones. It deploys as a large net that is connected to a drogue or parachute. This brings the target down to a slow and predictable landing, allowing ample time to evacuate the zone below.

The system can safely intercept and capture quadcopters and fast, fixed-wing drones, which are equally susceptible to the NetGun™. Once the F700 is within range of the target, escape is highly improbable. Statistically, only 15% of target drones manage to evade the first shot. Even if they do, a second shot is ready to follow, giving a safe take down percentage that is approximately 98%.

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# OSD(P) DTIP DTIP Future Innovations Forum *PRESENTATION BRIEF 2*

## MorphOptic, Inc.

MorphOptic presents a non-abrasive, thin glass optical quality lens manufacturing system that applies curvature to ultra-thin 3D printed optical surfaces of glass. With this technology, thick glass plates are unnecessary. In addition, abrasive polishing of glass mirrors is no longer needed, thus providing a superior lens and greater resolution as a result.

Lens shape is applied by controlled application of CO2 lasers and voltage-controlled electroactive polymers (EAP), which are applied to dynamically shape lenses with extreme precision. The optical surface of the glass is never contacted. As a result, lenses can be manufactured to as little as 1mm thick, which provides profound weight reduction for satellite systems of all types, including military ISR and communications systems. The lens are shaped to optical tolerances without degrading the highly specular smooth reflective surface of “fire-polished float” glass, thus ensuring superior light-scattering properties by an order of magnitude compared to conventional abrasive polishing.

Ultimately, the resulting lenses are stronger, more resistant to temperature variations, and capable of withstanding greater vibrational stresses. There are no micro-surface cracks from any abrasive processes. The optics enable ultra-sensitive scalable space detection sensors at a fraction of the cost and weight of conventional mirrors. This new mirror and lens opens the door to cubesat-sized, space-based swarm ISR and a host of interesting military applications that include early warning satellites and particle/debris detection and tracking.

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# OSD(P) DTIP DTIP Future Innovations Forum *PRESENTATION BRIEF 2*

## MorphOptic, Inc.

For the first time, millimeter thick glass lens are possible to rapidly and precisely manufacture to any optical specification. Due to their extremely precision optical characteristics, light weight, and affordability (over 90% lighter, cheaper, and better than conventional satellite mirror systems), MorphOptic's lens manufacturing processes open the door to a wide range of potential military applications, such as: 1) a new generation of early warning missile detection systems (optically capable of resolving even the smallest, stealthy ballistic missiles at ranges of over 1,000 kilometers); 2) lightweight, low cost, higher resolution space-based ISR; 3) swarm ISR with micro-satellites that naturally enable 3-dimensional viewing in real time; and 4) deep space telescope applications; among other applications.

The process is scalable to large mirrors, limited only by glass sheet fabrication and 3D printer gantry size. Surfaces can be optically shaped subject to gravitational and mirror support deformation. MorphOptics enables the creation of a new generation of satellite reconnaissance with much lighter and smaller spacecraft – rather than one big “eye in the sky”, this innovation opens the door to launching hundreds of affordable, micro-satellites that are harder to detect and more difficult to shoot down – 6U cubesat-scale satellite formation optics for coronagraphic mm-scale space object detection – thus providing equal or better resolution, and enabling greater global coverage for space-based military ISR.

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# OSD(P) DTIP DTIP Future Innovations Forum *PRESENTATION AGENDA*

## THE AGENDA FOR THE TELECONFERENCE

<b>Introduction and Attendee Check-In</b>	2 Minutes
Opening Remarks – OSD(Policy)	3 Minutes
Opening Remarks – DTIP	2 Minutes
<b>Presentation 1: Fortem Technologies, Inc. (Mr. Robertson)</b>	30 Minutes
Questions & Discussion	10 Minutes
<b>Presentation 2: MorphOptic, Inc. (Dr. Kuhn)</b>	30 Minutes
Questions & Discussion	10 Minutes
<b>Closing Remarks</b>	3 Minutes

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# OSD(P) DTIP DTIP Future Innovations Forum *Coming Up Next Forum Sep. 21st*

**Looking Ahead to Oct. 12th, 1300 to 1400 ET**

**Presentation: Verticon Defense** presents modular shipbuilding concepts and futuristic corvettes for the future fleet.