OTHER	
BLUF TITLE	**BLUF STATEMENT**
Blockchain Router provides an Unblockable & Uncensorable access to decentralized internet.	Blockchain Router provides an Unblockable & Uncensorable access to decentralized internet with a Plug n play access to: [1] Regular and decentralized websites. Any device connected to the local network gains these unique capabilities without any additional modifications [2] An option to publish content on distributed network and communicate with peers anonymously [3] App store for decentralized apps, which can be launched on the router and use its hardware resources
Impact of Solar Weather on satellite objects	Blue Eye Soft is an Advanced data analytics company that focuses on privacy protection, fusion of data so that customers can get near real time insights without exposing data sources even to the developer thus ensures right Data Strategy, security & Management. We are a neutral data broker providing necessary data collected from across the globe to safeguard space objects
Elevan LLC dba Elevate Systems	Elevan LLC dba Elevate Systems is a cutting edge engineering design and technology company specializing in new design and reverse and re-engineering services. We specialize in creating technical data where it does not exist, modernizing legacy data, 2D to 3D conversion of data for simulation analysis and solid modeling and finite element analysis for engineering substantiation. We integrate additive manufacturing into our designs where practical. We have an extraordinary knowledge of blockchain technology (distributed ledger) and we provide services for software development, AI/ML/Computer Vision, Digital transformation, Cloud Automation/ Migration, Network Infrastructure, Security Automation, Android/iOS development, Cryptographic R&D and CI/CD Implementation.
Global Persistent Space Surveillance Using A Synthetic Aperture Radar Smallsat Constellation	A persistent Synthetic Aperture Radar (SAR) space capability has been long sought, but never achieved. Not having this capability has been costly to our Nation, as we have been unable to definitively determine the existence of threats (WMDs); been surprised by missile launches, uprisings, and invasions; and unable to locate seemingly hard to lose items, such as Malaysia Airline Flight 370. The U.S. has many satellites deployed, but they are large, non-persistent, and often warned against. Capella Space introduces a new service that rapidly delivers an affordable, persistent SAR service using small satellites, low cost launch services and advanced technology.
ISR-PED / CATE™ - Computer Assisted Threat Evaluation	The Computer Assisted Threat Evaluation system locates asymmetric threats in an obfuscated battlespace with a focus on the South China Sea. CATE™ delivers near real-time geospatial intelligence and automated threat assessment to the warfighter. The NovaSAR satellite and CATE™ analytics facilitate tactical decisions to be made with confidence.

An AI/ML comprehensive platform that address entire workflow of analyst for EO/SAR data analytics	EOfactory.AI is a global platform that allows rapid ATR and object detection from multi-source EO and SAR imagery, reducing the latencies in the kill chain. It removes the trade craft barriers of specialized training and HW/SW required for remote sensing, GIS and AI/ML. EOFactory.AI is a scalable platform that can be accessed through a public cloud or can be installed behind a firewall and shared with allies.
GeoEngine: A Geospatial AI Platform for GeoINT Innovation	Over the last decade we have seen an 8-fold increase in the availability of earth observation satellite imagery. This increase in geospatial data presents a unique opportunity for persistent wide-area ISR, but is restricted by the availability of GeoINT analysts to process this imagery. Artificial intelligence (GeoAI) systems offer an alternative by analyzing satellite imagery without the need for human intervention, allowing users to fully exploit new sources of satellite data. Granular's GeoEngine enables teams to build AI-powered GeoINT capabilities faster. This, in turn, allows for the development of tactical ISR over large swaths of land, enabling the identification of threats or abnormal patterns of behavior that may otherwise go overlooked.
Automated Change Detection System (AChaDS)	HyperVerge has built high-performance geospatial analytics solutions which process petabytes of satellite and aerial imagery to detect changes happening around the world and sub-classify the assets which are undergoing change with an extremely high accuracy. This ensures that tactical, actionable information can be generated from the data for the warfighter in near real-time.
Accessible and Automated AI/ML Data Pipelines Platform	InfoDao LLC has created a platform that allows operators to gather information about operations, and disseminate info and insights easily. Our platform serves as a connector between IoT and CotS devices, AI/ML algorithms, and the operators that employ them for insights into their environment. We also support cross-domain algorithms and data fusion, allowing users to easily create a common operating picture with an assortment of cameras, microphones, and radio receivers
MoonHacker Analytical Engine and Delivery Platform	Lunar Station developed a technology platform called the MoonHacker Analytical Engine and Delivery Platform (MoonHacker) that converts lunar sensory datasets into 3D renderings and visualizations of environmental conditions on the Moon. MoonHacker delivers value to warfighters through Moon Navigational Services that enable command and control of the lunar theater with rapid, actionable and mission-specific intelligence to plan, execute and review missions. Together, MoonHacker and Moon Navigational Services provide warfighters with cutting-edge Lunar Environmental Intelligence to manage the lunar high ground.

MemCPU™ XPC SaaS	MemComputing's disruptive MemCPU™ Coprocessor technology is accelerating the time to find feasible solutions to the most complex optimization problems in all industries. Invented by two Ph.D. physicists, this novel architecture liberates users from current computational bottlenecks, enabling companies to accurately analyze vast amounts of data in minutes or seconds, empowering them to make optimal business decisions today. Currently focused on ISR and C4I related applications within the DoD, MemComputing delivers optimal solutions in a fraction of the time while requiring far fewer resources, thus providing a competitive advantage to the warfighter in the field.
Critical Spacecraft Components for Deployable Structures	We maximize the availability of U.S. space assets to specifically support national defense and contingency operations of allies. Our highly compactible, lightweight deployable structures reduce the size and weight of heritage spacecraft systems to enable smaller spacecraft to host large, high performance instruments previously impossible with heritage spacecraft technologies.
integrated Standard Imager for Microsatellites (iSIM)	iSIM-170 is the only space camera in the market weighing less than 15 kg and offering submeter resolution in RGB and PAN bands and less than 3m resolution in SWIR (4 bands) at 500 km with a swath of 7.5km. iSIM innovative features are: - Super-Resolution algorithms which improves the optical resolution by a factor of 2-3. - Multispectal (VIS+SWIR), with spatial resolution being independent on the number of bands. - Agility feature, meaning an extremely accurate pointing during observations of thousands of kilometers of non-linear ground features such as oil pipelines, borders, or coastlines.
C5ISR as a Service	Long endurance, low-cost software defined radios that can be tasked and queued remotely akin to IOT devices for military use.
Distributed Satellite Operations through Cloud AI CNTIENT® SPACE™	CNTIENT® SPACE™ can respond in minutes to task the appropriate satellite against a request for critical satellite imagery through intelligent cloud-based mission planning. Our machine learning solution will reduce the cognitive burden on operators and provide a dynamically optimized solution to leverage satellites to their fullest extend. Our modern web interface provides a rich space-domain operational awareness platform. Easily integrated through flexible API
Quantum Communication Systems	Space-based quantum communication systems can be used for Quantum Clock Synchronization (QCS), Quantum Key Distribution (QKD) and quantum networking. SQT is the only group outside of China with a space-qualified entanglement source and patents on QCS technology. QCS allows accurate (sub picosecond) and unspoofable time transfer for PNT applications in a GPS-denied environment.

STACKS – Satellite Tracking And Capturing Knowledge System	InfraLytiks' solution, Satellite Tracking and Capturing Knowledge System (STACKS) seeks to begin eliminating (labeling as low priority) the noise of explainable deviations through applying a series of machine learning/AI steps. We can now help our analysts & operators pay more attention to only the deviations that are possible threats, bringing more assets into place for a closer look at suspect satellites and enhancing their job to defend.
Just Approach Networked intelligent infrastructure Together (JANiiT)	Maplewell is making a world of decentralized energy possible. We transform military, government, and industrial infrastructure with AI and Digital Twins to maximize operational resiliency, reliability, and efficiency in a decarbonized energy future. Our tech modernizes energy demand to maximize mission readiness.
Dispersions for Printed Electronics and Additive Manufacturing	We are focused on dispersions and formulations (inks and pastes) of nanoparticles for printed electronics and additive manufacturing. These can be used for printing circuits, antennas and sensors and can be applied to various substrates, including flexible and conformal applications, to lower SWaP-C, improve manufacturability and customization. Existing products include copper, nickel, copper-nickel-alloys, aluminum, and silver materials for various printing platforms. Prototypes of molybdinum, niobium, zirchonium and indium are available, and we are open to innovation with other materials. Indium ink, in particular, is needed for next-generation high-definition electronics packaging of mixed components and hermetic sealing of electro-optic components and is of interest for quantum computing.
Aerospace Manufacturing	Arrow provides precision manufacturing of large (up to 90") aerospace structural elements. We can provide turnkey, fabrication, assembly, and test - not just parts. We are well versed in MIL and NASA standards associated with manufacturing.
High performance wear and ATOX resistant optical coatings	Blue Wave Semiconductors has innovative optical coatings that can be applied to high technology optical components and devices for improvement of their optical performance. Blue Wave Semiconductors has established know-how and knowledge based on radiation hard coating material library created in SBIR Phase I and II that will allow scale-up the technology for prototyping for DOD's applications. The optical multilayer coatings can be applied to UV to IR optical spectrum with enhance optical transmission and have extreme radiation hardness and chemical resistant to ATOX. Coating process can be scaled to large areas and curved surfaces. Coatings can be ready to validate end use applications. Technology applicable to functional surfaces such as windows for missile domes, X-rays windows, Solar Blind UV, Visible Blind UV detectors, UV filters, and detectors, Night vision goggles, Missile guidance systems, Infrared sensors, Security cameras, Thermal imaging system, MWIR and LWIR imaging system.

Portable Power/Air Air Conditioner	The Power/Air Air conditioner is a portable unit designed to cool the air in a work area to allow more productive results from labor. This unit displaces a constant column of air at the rate of 23,000 ft per minute which pushes back the natural environment of humidity and temperature and then cools an area of 16'x 12' with lower humidity/temperature air. The most productive use of the Portable Power/Air Air Conditioning is in a work area, but it can also be utilized at refreshing centers, tents or athletic functions. Outside heat is a detriment to physical performance, but with the Portable Power/Air Air Conditioner, the daily environment can be altered to facilitate a more productive area by lowering the humidity and temperature.
Insect based food products	Bugeater foods develops insect based food products to increase nutrition and sustainability.
Questable: An Interactive App to aid in Recruitment and Retention	A mobile virtual reality (VR) & augmented reality (AR) application, think Pokémon Go & Instagram filters, that aids universities and the military in the recruitment & retention of prospective recruits on college campuses *Virtual & augmented tours with tour guide info: Helps prospective and current students feel more connected to the military, school, surrounding community, understanding of the programs available, and possible careers within the military Builds bonds with others through the use of quests, competitions, and social interactions throughout campus and community.
ECO-BENIGN MARINE ANTIFOULANT COATING	SeaShell® is an environmentally benign, highly durable, long-lasting marine antifoulant coating with a proven very low Coefficient of Friction. Its resistance to shear and impact have been documented, as has its tremendous strength of adhesion, its flexibility, its lack of electrical conductivity and its resistance to prolonged salt fog exposure. SeaShell® has a proven half-life of 12.5 years and is meant to replace obsolete anti-biofouling paint on vessels. SeaShell® also can be applied to all types of submerged structures to prolong their lifespan. SeaShell addresses the need for a cost-effective antifoulant coating with a long enough lifespan to pay for itself in reduced fuel consumption and maintenance costs.

Cruise Fuel Efficiency Improvement for C-130 Aircraft with NP2000 Propellers	A C-130 with NP2000 propellers use more fuel in cruise than aircraft with the 54H60 propellers, The NP200 has many advantages over the 54H60, such as maintenance cost and improved take-off performance. NP2000 propellers feed less air (less volume flow rate) to the engine inlet, causing the engine to work harder limiting the overall system efficiency. This penalty can be reversed and turned into an enhancement with a redesign (reshaping and/or repositioning) of the inlet. This project will evaluate the inlet and propeller geometry, perform a CFD analysis, redesign the inlet and evaluate the results in flight test.
Machine Gun Barrel Cooling System	Tech Transfer: Machine Guns have limited capacity by the barrels overheating. Our Barrel Chiller technology will significantly reduce barrel temperatures with sustained fire from the weapon. This will enable machine gun operators to greatly increase their sustained rate of fire from a single barrel. No carrying of a secondary barrel either as they can simply operate the single barrel until it finishes its long term lifespan. A multitude of side benefits from more consistent accuracy, reduction of operator requirements or stress, user safety benefits, and a noise level reduction. Help Eck Fabrication develop this gun technology with field testing and financial support. Matchmaking: Eck Fabrication is a manufacturing company with a passion for research & development. We are a small scale manufacturer in the metalworking industry who excels at low volume detailed jobs. Our niche is Stainless Steel machining and welding. We are not your normal operation that can just make parts. EckFab can create and finish complex solutions from just starting with the problem. Have a unique challenge that needs a true craftsman like solution? We are excellent at thinking outside the box and can complete an impressive array of work with our natural “toolmaker” abilities. When you think of that “Ole Maintenance Guy” that could make anything in the entire plant, well we are those kind of metalworking guys but in our 30s.

Mechanically Locking Fasteners and Self-Aligning Nut Plates That Improve Maintenance Times and Reduce Cost	Fasteners are often overlooked as commodity items, but their reliability and attributes are essential not only to the warfighter but essential also in the reduction in the time and cost of maintenance for the Command. Enduralock® offers numerous fastener designs, all intended for use in high vibration harsh environments. All Enduralock® fasteners are mechanically locking, highly vibration-resistant permanent fasteners, but for maintenance they are fully reversible and reusable with a standard hex socket. They remain locked even with total loss of preload (clamping force). In vibration testing, Enduralock® fasteners withstood 10x the aerospace requirement. Enduralock®'s self-aligning nut plate will engage an off-axis bolt and then self-align during tightening. It also provides for a fixed position panel bolt retaining ring, which reduces the chance of FOD (foreign object debris). Enduralock® fasteners and nut plate provide for a dramatic reduction in the time and cost of installation and maintenance.
EZ Bollard & Anchoring System	EZ Bollard was developed as a revolutionary protection bollard and anchor company whose products allow for new install, repair, replacement, or removal of product within minutes with minimal disruption of the surrounding surface area. Our innovative; rapid installation process allows for superior asset protection, such as, physical barriers, aircraft/cargo hold-downs, eminent threat situations and much more. Thanks to the remarkable technological advances in cordless power tools, all of our products can be installed using tools found at your local lumber yard (no industrial tools needed). EZ Bollard's design also allows for installation in a wide range of areas, including smaller spaces where traditional; dangerous core drill machines won't fit. With our less intrusive installation and service times, the overall customer disruption time is also significantly reduced. All our products are extremely heavy-duty and fabricated with American made steel. Our standard bollard is schedule 40 wall with a 1" base puck inserts at the pipe bottom, both sides welded for extreme durability and a powder-coated finish in a multitude of colors making our bollards virtually indestructible.
IIOT > World	The Internet of things are sensors that collect endless types of measurements. With enough measurements (data) anything can be predicted. Connecting, collecting, and analyzing the data and making it available everywhere in real time will change everything. Architecting the network, the correct way, and utilizing the correct technology will allow networks (that collect data) to scale much more quickly if they utilize the correct architecture and software. Deploying sensors and using that information in a digital ecosystem helps leverage modern technology allowing data to become information and that to be displayed in a way that it can be acted upon in real time.

UAV Docking and Charging Station	Multiple Drone Docking and Charging Station This would be steel or aluminum structure (vertical or horizontal) made to withstand harsh weather conditions; a unique system that integrates a variety of commercial components. The technology minimizes the charging/re-charging time for deployment or re-deployment of drones for gathering needed information, such as photos and data. It is a portable, self-contained, self-operated, a stand-alone multiple charging unit for drones in remote locations. Transportable and weather resistant to locations near the drone activity region to support operations. It produces its own energy through Green Energy power; solar panels and salt-water batteries which carry a longer life. For this reason the back-up power storage is needed on cloudy days or nights.
Advanced Collaboration Enterprise Services (ACES)	ACES is made up of two technologies: Photon and Carthage. Photon is a collaborative system designed to integrate Air Operations Center with each other and their Aerial Platforms. Carthage is our DevOps environment that serves as a Cyber Training Environment for the Air Force and Army in Component II and III. Advanced Collaboration and Integration between workspaces. Share anything, anywhere and anytime.
Rocket Stop: Patented Compressed Gas Cylinder Explosion Prevention Device	This technology prevents gas cylinders from shooting off like a rocket if a cylinder is knocked over and the regulator is broken off. It can also help reduce the chance of gas cylinders exploding if there is a fire, and the regulator fails or melts. A full-sized gas cylinder weighs approximately 100 pounds and can be lethal to humans and destructive to property if it is laying on its side and being propelled like a torpedo by escaping gasses due to a catastrophic failure of the cylinder's regulator. The Rocket Stop is ideal for any industrial or high-risk environment, expeditionary force, or the Navy.
Multi-Tool-Gate	What if you could put a want and a need together? what if the product did more than even that? It added safety, storage, and convenience. Every pickup owner is going to take one look at this product idea and say " I'm going to buy that" Would you call that a perfect product?
Unitensil: A 3 in 1 flat & foldable cutlery tool	The Unitensil is a patented 3 in 1 food service eating utensil that weighs less than 5 grams. This lightweight and reusable cutlery tool is a better alternative for our military and other government agencies because of it's lightweight, portable, durable and reusable features. Additionally, the multi-functional eating tool improves logistical savings (lower costs on transportation and storage) creating significant advantages for government rescue teams such as FEMA.

Semiconductor Assembly Manufacturing, Testing ,and Qualification for DOD & DOE process	Integra Technologies LLC, a DMEA Trusted and an employee owned company with locations in Wichita, KS, Silicon Valley, CA, and Albuquerque, NM, is one of the largest semiconductor die prep, assembly, test & qualification facilities in the United States. Integra's operations have been satisfying customers for over 35+ years by providing a wide variety of semiconductor services including: Die Prep, Assembly (plastic and ceramic), Test Development, Final Test, Characterization, Wafer Probe, Volume Production Test, Qualification Services (HTOL, HAST, Temp Cycle), DPA, CSAM, Failure Analysis, PEM Qualifications, Up-screening, Counterfeit Detection, Obsolescence Management, and Trusted Processing. Integra has one of the largest and most experienced test engineering organizations offering support for every device technology including FPGA, Microprocessor, ASIC, RF, Mixed Signal, Digital, Linear, Analog, SiP and MCMs. Integra provides 24x7 high or low volume US based manufacturing capacity and has demonstrated industry leading quality and on time delivery performance.
Intrinsic Dashboard: Measuring and Building Mental Skills for Performance	The Intrinsic Dashboard is a software platform that permits military leaders to utilize predictive analytics to understand and unlock the mental potential of members of the armed forces. The platform utilizes an online, scientifically-validated psychometric assessment called the Intrinsic Profile, which measures members' self-motivation, grit, resilience, adaptability, integrity, and other non-cognitive predictors of performance. Individual and aggregate results on the Intrinsic Profile are then displayed within a customized dashboard which includes personalized strategies on how to build these skills in each person. This allows military leaders to analyze, explore, and filter data to identify and build exceptional military performers at every level.
Ringorang	Human performance technology on mobile devices that turns training into habits. All within the flow of daily duties. The software is clinically tested by the U.S. Federal Government and national laboratories in effectively shifting human behavior. Helps individuals change their habitual responses to changes in environment. Used for peak performance, compliance and mental health. Takes less than five minutes a day to deliver results. Software is currently in market, scaled globally.
Sewer Systems Data Management and Analytics Software as a Service	This technology is an AI-enabled data quality assurance and comprehensive data management and analysis tool for the sewer inspection data that helps municipalities to save money by 10-20 cents per linear feet for quality assurance of condition assessment data which facilitates proactive asset management for sewer systems to save at least 20% of rehabilitation costs – equating to millions of dollars per year.

Dynamic Optical Energy Network (DynOEN)	DynOEN is OptoRelay's on demand power transfer solution to allow for devices to benefit from more permanent power sources without requiring direct connections. This allows for easy grid connection where it may otherwise be infeasible for physical connections through infrastructure. Our free-space optics solution involves a mesh network of directed-energy relay nodes for an adaptable, expansive energy web, delivering power at the right time and at the right place.
Surtr, LLC Fire Starting System	Surtr is the hand-held fire starter that when operated ejects a lit pellet. The pellet stays lit in all weather conditions for several minutes. Surtr has four petroleum-pellets in a magazine to offer users an ability to start multiple fires. Surtr combines the operational process of creating sparks using a striker and magnesium-rod with the process of ejecting a petroleum-pellet to dispense lit tinder with one motion.
Threshold Intensity Gradient Glasses	Current lenses for sunglasses and windshields darken the entire field of view and in large applications the amount of darkening is the same for all viewers. The proposed technology allows users to set a threshold of intensity (brightness) and the lens will actively decrease bright spots down to this threshold. The darkening for bright spots will only darken those spots rather than the entire lens, which will remain completely transparent allowing the user clear vision with full contrast and color.
Propellable Impermeable Plasma Barrier	The experiment is an Impermeable Plasma Barrier that can potentially propel itself using Tubular Linear Induction Motors. If the experiment succeeds - it is functionally a design for an unconventional flying machine with a protective plasma barrier enclosure. It potentially can also be used for other peaceful purposes - such as growing environments for plants & animals, healing environments for people, quantum 3D memory (Onion-shaped Q-bits), water electrolysis, autonomous hoverboard technology, and low-power plasma audio speakers. This is a civilian attempt at improving the experimental work by Boeing and the U.S. Military in 2015 - in regards to "Plasma Force-fields".
THREAT PROTECTION FROM: BALLISTICS, BLAST, FORCED ENTRY. CUSTOM MODULAR SOLUTIONS.	CoverSix provides a wide variety of structures for protection and security around the world. The product line features hardened structures equipped with customized threat mitigation like blast resistance, ballistic resistance and/or resistance to forced entry, as well as modular training range facilities, custom outfitted ISO containers for use as portable storage facilities and mobile office locations. The buildings are scalable in size, and no matter where duty calls, CoverSix Shelters has a solution to keep personnel, as well as equipment and electronics, safe and secure.

Robust and Reliable Pressure Sensing Technology for Aeropropulsion Applications	Robust and accurate measurement of unsteady surface pressure is vital for the characterization, modeling, prediction, and control of hypersonic and airbreathing propulsion systems. However, time-resolved unsteady pressure measurements at many locations with high accuracy and reliability during propulsion, wind tunnel, and flight testing have been challenging for instrumentation engineers. Resono is developing an innovative approach to provide a robust and cost-effective system enabling routine unsteady pressure measurements in hypersonic and aero-propulsion research, development, test, and evaluation applications. We believe our technology will contribute to solving a mission need for NASA, Air Force (USAF) and other Department of Defense (DoD) organizations.
The WarCATS: the Warfighters Communications, Assets, and Tracking System	RoGO's WarCATS provides real-time communication, situational awareness, and resource tracking in a lightweight, portable tablet, and coordinates the tactical efforts of thousands of soldiers operating in extreme remote, austere areas.
BioMiner – Bioinformatics Platform for Seed Microbial Discovery.	BioMiner is a complete digital platform designed to explore microbial genetic information from commercial and wild seeds. Our computational engine analyzes the seed microbiome of commercial crops and wild plant species to learn about the correlation between their microbiome and the plants organisms to environmental and agronomic conditions. BioMiner will become very useful by enhancing the traceability and usage of microbial data leveraged by Artificial Intelligence. Our proprietary platform shortens time and costs of agricultural and biotechnological innovations ensuring food security and safety to the growing population.
Orifice unclogging tool for oxy-acetylene torch cutting applications	slagRebel®, designed and manufactured in the USA is the only heavy duty stainless steel tool available that can be used quickly and on site to unclog copper oxy-acetylene cutting tips used by welders and other torch users. It saves oxy-acetylene torch users from lost productivity caused by clogged cutting tips from broken tip cleaners and slag blowback. slagRebel® also eliminates the need for drilling out slag blowback that causes injuries from broken tip drills. slagRebel® can save acetylene torch users up to 70% in tip replacement cost which in turn save mining, smelter and manufacturing energy cost.
Improved Orbit Determination and Visualization for Increased Situational Awareness (IODA VISA)	Strategic Mission Elements designs, develops, implements and provides in-room support for a wide variety of operationally proven tools and solutions that significantly increase the Warfighter's ability to maintain situational awareness. The Dual Use products we currently provide the Intelligence Community are easily modifiable to meet the needs of any DoD or Industry customer where real time situational awareness is a must. Products are Dual Use for DoD or Industry, stand-alone or Cloud based, using classified or unclassified data.

Autonomous UAV Launch and Recovery From Any Moving Vehicle, Ship or Aircraft	Target Arm has a device, called Tular, that enables the launch and recovery both rotary wing and fixed wing drones (also called unmanned aerial vehicles, UAVs) from any moving vehicle, autonomously, already at speeds over 65mph. This is a dual use technology for both commercial (package delivery, oil&gas, first responders, etc.) and the military (Army, Air Force, Navy, Marine Corps and the Space Force). Current R&D is developing Tular for nuclear convoy protection at highway speeds, with both rotary wing and fixed wing drones.
Airborne sUAS Collision Avoidance Radar	UAVradars has developed a miniature radar technology with low cost, size, weight and power (C-SWAP). This technology is at TRL 6 and is funded by NASA SBIR Phase II (May 2016 – May 2018). The radar is designed to be mounted onboard a Group 1 or 2 small unmanned aircraft systems (sUAS) providing the sUAS airborne radar sensing capability. This is currently targeted at the problem of sUAS collision-avoidance against general aviation. Airborne testing of a rev4 prototype radar onboard a manned aircraft has successfully detected an intruder Cessna-172 as well as cellphone towers and ground based beacons. The radar measures 4”x4”x3”, weighs 2 lbs, consumes 20 W, and has an abundance of further miniaturization possibilities. At production, each unit is estimated to cost $500. Testing has shown that the radar also functions as a ground based sensor and has successfully detected moving vehicles. UAVradars believe this platform technology will unlock a new set of radar applications benefiting the success rate and safety of the combatant commands.
Fluor-Mop, a Smart PFAS Adsorbent Material Designed from First Principals	This technology selectively adsorbs perfluoroalkyl substances (PFAS), nicknamed “forever chemicals,” from the environment. PFAS are prevalent in the environment and in many public drinking water and groundwater systems across the world, including most DoD bases. Aqueous Film Forming Foams (AFFF) containing PFAS were used beginning in the 1970’s at military installations throughout the U.S, leading to environmental exposure. PFAS bioaccumulates and multiple studies have linked PFAS to serious diseases such as cancer, thyroid disease, changes in liver enzymes, increases in cholesterol levels, and many other diseases. Regulatory agencies are implementing increasingly stringent measures to reduce PFAS exposure. This technology can be a drop-in, additive, or stand-alone component used in remediation and is regenerable providing significant savings to environmental remediation customers.
The XWorks Robotic Docking and Interchange Station (RDISt)	The XWorks team has developed a reactive docking station for sUAS/drones which automates the drone on the ground removing the human element and providing for continuous automated drone use. Additionally, our team has developed a robust image recognition system that automates our drones to detect unauthorized personnel, perform automated inspections, raise alarms, or just perform continuous patrols.

ZenCrack™ - Software to predict crack growth & residual life	ZenCrack™ assists in modelling and analysis of cracks to predict crack growth and remaining useful life of engineered components. ZenCrack™'s advanced engineering analysis uses 3D Finite Element Modelling with adaptive meshing techniques and non-linear time domain analysis capabilities for accurate prediction of crack advancement under complex loading conditions. ZenCrack™ simulations are reliable and meaningful for modeling growth of cracks in a complex time dependent loading conditions and under fatigue stress. ZenCrack™ is at Technology Readiness Level 6 and addresses DoD requirements of sustainment support.
Composite Patch Repair Method	Composite repairs are often complex, time-consuming, and mechanic dependent. The current repair process is susceptible to user error and variability, calling into question the structural integrity of the repair patch. The presented technology includes a system that enables repair patches to be made with greater precision and speed. Through this technology, a damaged composite area can be scanned via an electronic handheld device with the data then being wirelessly transmitted to a manufacturing facility capable of immediately preparing the repair patch. This on-site scanning process significantly reduces the amount of time needed for preparing a repair patch.
ZAIMS™ - Software for Asset Integrity Management of Marine & Offshore Assets	ZAIMS™ is a software solution which assists in managing structural integrity of offshore and marine assets. ZAIMS ™ allows for analyzing, organizing and, recording results of multiple inspections, corrosion, damages, to structures / assets during their lifecycle. ZAIMS™ is extensively marketed and used in offshore and marine industry for structural integrity management of offshore platforms, drilling rigs and ships. ZAIMS™'s advanced engineering analysis are useful in predicting remaining useful life of structural sections and optimizing steel replacement required. ZAIMS™ is at a Technological Readiness Level 6 and addresses DoD requirements of sustainment support.
Tenendus NextGen AI Predictive Employment Platform	Tenendus is your next generation real-time analytics and predictive insights employment platform that uses our proprietary artificial intelligence and machine learning engine. Tenendus produces the most intelligent matches with utmost real-time, transparency, cognitive interactivity, driving highest efficiency for hiring leaders and job seekers. Furthermore, this empowers the economy and provides rewards to current service men and women and veterans for their referrals.

Handy-Rench	The Handy-Rench is an improved Crescent Wrench. This next generation product has a special bi-directional ratcheting action which allows one to loosen a nut or bolt without removing the wrench. The sizing feature and unique design allows one to perform jobs that are in restrictive space environments while eliminating slippage which often occur in other wrenches. This patent-pending single tool has significant operating advantages, eliminating the need to carry extra tools while reducing the time and effort necessary to complete the task.
Free Piston Engine Using Exhaust Gas For Providing Increased Thrust To An Aircraft Turbine Engine	This is a new pressure augmentation device that replaces the combustor section in a turbine engine, doubling the operating pressure to the turbine section, increasing engine efficiency. With minimum additional weight to the engine, it is capable of operating with various fuels. This device eliminates the possibility of a flame out, or reverse air flow in a turbine engine thus increasing aircraft safety.
Applied Blockchain Technologies Supporting Operational Secure Supply Chains for IoT	BlockFrame® products provide operational logistics capabilities using cryptological devices and blockchains/distributed ledgers to secure IoT devices and military supply chains.
Artificial Intelligence Applications for Space Operations	SpaceOps.AI provides Artificial Intelligence software to help space operators gain operational insight into day-to-day data. Artificial intelligence is a technology of prediction and discovery. As mission complexity grows automation will be critical. SpaceOps.ai provides this building block technology.
Impulse Launch for Orbital Insertion, Hypersonic and Atmospheric Research	Ground based launch system using hydrogen gas to accelerate payloads to Mach 6-12 with the objective of putting small payloads into any orbit rapidly and inexpensively.
Modular Turbomachinery System for Satellite Launch Industry	Affordable, responsive, and reliable access to space allows the DoD to maintain military superiority and provide societal impacts such as global communication, positioning, earth imaging, and environmental study. Upshot Ventures is creating a low-cost, innovative propulsion system, OPTIMUS, to improve existing capabilities, eliminate the biggest bottleneck in launch system development, and increase the number of capable launch systems the modern warfighter can rely on. OPTIMUS 1 will result in 3x Satellite Launch Capacity at 1x the Cost. Enabling the DoD to Launch More Payload, More Often.

AI for Weather Nowcasting (AWN)	The Artificial Intelligence (AI) for Weather Nowcasting (AWN) system uses existing AI and machine learning techniques from Overhead Persistent Infrared surveillance to assess weather systems and predict near-future weather activity. AWN will supply key information to warfighters in all military branches (Army, Air Force, Navy, Marine Corps, USSOCOM, Space Force) and Intelligence Community agencies (CIA, FBI, NSA, NRO NSA, DHS, CID, DEA). This will provide better weather predictions for critical operations, save lives, reduce costs, and increase probability of mission success.
3D Near Real Time Global Weather through Passive Microwave Radiometry	Passive microwave sounding and imaging data provide the highest impact on weather forecast accuracy of any sensor type. Historically, high sensor and mission costs have severely limited the timely global availability of this type of data. To solve this problem, OMS is developing and deploying a commercial fleet of CubeSat-based passive microwave radiometers called the Global Environmental Monitoring System (GEMS). The OMS GEMS constellation is pushing the state of art in small satellite technology by providing weather observation capabilities comparable to or unachievable from large comprehensive platforms such as the Joint Polar Satellite System (JPSS) but at a fraction of the cost.
Gradient Treated UHMWPE for Weight Reduction and Armor Applications	Our team gradient treatments UHMWPE to increase its performance and properties. UHMWPE is a plastic that is known for its light weight and high strength. Gradient treatment crystalizes the plastic, resulting in a material that is 14 times stronger and 8 times lighter than carbon steel. Our material will be able to be 3D printed as well in the near future. The material can be used for light weight armor and structural applications. We are currently pending ballistics testing.
Optimized Space Object Detection	Deep neural network training is a necessary but resource consuming step in space object pattern of life behavior analysis that can take several hours, days, weeks and even months for high accuracy. O Analytics' Deep Learning Training Accelerator (DeLTA™) answers this military and industry recognized challenge with the reduction of the amount of data and time required to train detection models. DeLTA™'s direct benefit is significant improvement in machine learning development timelines, cycles, and related processes. DeLTA™'s broader strategic benefit is more timely artificial intelligence triggered counterthreat action, using the most current information from multiple sensors, varying models and space datasets.

LUNINT Dashboard	We define lunaspatial intelligence (LUNINT) as the collection of intelligence to monitor human activity in orbits around the Earth and the Moon as well as on the lunar surface. The ability to track, tag, and locate objects in strategically valuable orbits and locations in space is essential to ensure U.S. dominance and to protect commercial and governmental assets. Rhea Space Activity is developing the LUNINT Dashboard, a 3D graphics situational awareness software that calculates precision coordinates of objects in space and on the lunar surface.
SCOUT-Vision: Rapid, Accurate Positioning and Heading Determination of Space Objects	SCOUT-Vision is an in-space domain awareness sensor package which completely passively images space objects at a nominal 20-km distance, rapidly deriving their position, heading, and operational behaviors and diagnostics. SCOUT-Vision (SV) can determine the relative location of targets with 10-cm precision using stereoscopic imaging, multiple sensor modalities, and machine learning algorithms. SV-equipped systems conducting 3rd-person Oversight Visuals and External References could significantly de-risk proximity operations such as docking, repair, and re-fueling, as well as mechanical deployments. SV's non-invasive, passive sensing, in a SWaP-C-optimized package, enables low-visibility space domain awareness and strategic stability capabilities. SCOUT-Vision can help secure the increasingly-contested space domain with on-site data, which complements existing ground-based infrastructure with resolutions >500x better than existing ground sensors' capabilities.
Laser Identification Beacon for Small Satellites and Intentional Debris in Low Earth Orbit	The vision of Earth that is so familiar to us, of a small blue marble alone in the darkness of space is misleading. Since the world first heard the "ping" of Sputnik in 1957, the space above us become a congested battlespace with more than 20,000 human-made objects each larger than a softball. In the next decade another 20,000 objects will enter Low Earth Orbit in the form of small satellites and intentional debris. Up to 40% of these small satellites will fail and threaten military capabilities that rely on access to space. Government space traffic management systems are already overwhelmed. We are a mission driven team working to make space a safer place for small satellites by affixing a low-cost self-powered laser beacon to identify any object in Low Earth Orbit. The beacon will be miniturized and brought to market through a Cooperative Research and Development Agreement (CRADA) with the Los Alamos National Laboratory Space. Space Domain Awareness Inc. is a member of the Space Safety Coalition and the New Space New Mexico Space Alliance.

Lunar Surface Network and Ballistic Delivery System	Space Initiatives Inc proposes a system to hard land a set of nodes onto the lunar surface either with or, in advance of a new landing, either crewed or robotic. The network provides the following services: terminal navigation and landing positioning; local PNT for astronauts and robots and communications relay. This system is self-organizing after being dropped into place (e.g. from orbit). Each node of the network is encapsulated in a small (300 mm long x 40 mm dia) kinetic penetrator projectile designed to survive and operate following an un-braked fall after dispensing from a host lander during its descent.
"Layer8" Intelligent Workspace	The Vigilant patented technology is a highly adaptable decision support tool and customizable workspace, leveraging AI and Machine Learning to greatly reduce the amount of time that the warfighter needs to perform data-dependent tasks. Our workspace allows warfighters to work as a team - and dynamically define their collaborative environment - in real time with little or no IT administration. The integrated hybrid AI accelerates the warfighter experience by analyzing the data relationships from various sources, fusing that data, then suggesting relevant information, solutions and workflows to users, allowing warfighters to concentrate on action rather than research.
UltraNav™	UltraNav™ is a compact, visual space navigation system that Provides strategic and theater superiority to the warfighter with a low SWAP, COTS, GPS-denied visual navigation and space domain awareness system, supporting faster rendezvous, proximity operations, inspections, and surveillance.
Orbital Test Range	The Orbital Test Range (OTR) is an integrated system of intelligent ground control, terrestrial flat-sats, and on-orbit assets that provides wargaming, training, and advanced concepts for satellite operators in a test range environment. The benefits of the OTR lead to new Standard Operating Procedures (SOPs) and Techniques, Tactics, and Procedures (TTPs) for operations in a contested domain. This also leads to further enhancement with warfighters and COCOMs through space utilization and integration into AORs.
Rapid Response Satellite Collision Avoidance System	This technology enhances the deterrence posture of the U.S. within the space domain by significantly reducing the detection and response time to potential adversarial intents, increasing the resiliency of the U.S. space systems, and enhancing the ability of warfighters to defend vital national interests within the space domain. Our technology delivers timely and actionable threat detection and assessment alerts directly to warfighters, reducing the response time by more than 95%. In doing so, we help warfighters by increasing their ability to rapidly detect and avoid potential threats ensuring the mission safety, resiliency, and success.

	This technology is at TRL 6 and addresses the DoD requirement for enhancing the U.S. ability to uncover and deter potential adversarial intent against the U.S. national security interests in the space domain.
Small satellite optical communication system designed for manufacturability	Blue Cubed is enabling high speed optical interconnections for small Satellites using a modular, robust, self-aligning and low SWaP system.
OverKeyTM – Low-Cost, High-Assurance OverKeyTM – Mesh Network Security	OverKey secures classified networks at 1/100th the cost and 1/10th the size, weight, and power (SWAP) of existing NSA "Type 1" devices. Today's communications security (COMSEC) technology places an artificial limit on just how cheap, how small, how light, and how powerefficient classified communications and weapons systems can be. OverKey removes that limit. Our technology unleashes the possibility of bringing low-cost, low-SWAP devices to a classified, networked battlespace – imagine a tablet in the hand of every dismounted Solider and Marine; imagine massive swarms of miniaturized network-enable weapons; or image a constellation of small satellites or stratospheric platforms launched on demand at the outset of hostilities. OverKey is a key enabling technology for these capabilities and much, much more.
High frequency hypersonic test launches using a circular mass accelerator	SpinLaunch, a space launch company, is developing a low-cost system that is capable of launching projectiles at hypersonic speeds multiple times a day.
Low Latency LEO Space-Ground Communications Via Data Relay Satellites	Stara is developing a constellation of relay satellites to provide continuous connectivity for any spacecraft in Low Earth Orbit (LEO). Instead of relying solely on ground stations for connectivity, the Stara network will allow operators to receive real-time data from space assets 100% of the time via data relay. This communications infrastructure will dramatically increase the amount of data generated in space and decrease average data latency.
Autonomous Proximity Operations Software For A Small Space Tug	Starfish Space is developing low-thrust rendezvous and proximity operations (RPO) GNC software. Safe RPO under efficient low-thrust electric propulsion enables highly capable and low-cost in-space operations that help the warfighter maintain a responsive and superior space presence. Starfish Space is developing this RPO software for a small space tug which delivers an on-demand in-space transportation service that enables the evolving space mission. The software is modular and general however, which means it can be transferred to other platforms. Starfish is searching for potential partners in applying the software to a broad set of missions and vehicles.

Airborne Mobile Telemetry System (AMTS)	AMTS is a highly flexible, portable system carried by standard unmodified corporate aircraft to support the expected growth in telemetry and other data requirements for space and related operations. With ranges of several thousand miles, and low costs, such aircraft equipped with an advanced telemetry / data collection suite could provide coverage over the most remote areas of the world. The cost savings of using such aircraft will also allow for the use of multiple systems for critical missions. This is crucial to assure the complete coverage of critical data, and for multiple aircraft to support extended coverage intervals. AMTS is at Technology Readiness Level 4 and is undergoing subsystem bench testing. Equipment is being integrated for a prototype field test.
In-Space Propulsion for Multi-Layered Space	Accion's Tiled Ionic Liquid Electrospray (TILE) propulsion system provides safe, reliable, precise, modular and imperceptible propulsion with ultra-low SWaP-C. It combines the use of a safe, inert liquid propellant with a simple mechanical design to create a propulsion system that is low-cost, compact, easy to manufacture and has less than 50% of the power draw of other propulsion technologies. The compact design and low power draw will allow the USAF to increase capacity for critical mission payloads. The system is also multi-mode compatible, allowing its high efficiency propulsion to be combined with high thrust propulsion to increase space asset resiliency. The high efficiency of the TILE propulsion results in very low signature thrust which is beneficial for stealth and proximity operations
F3R CYBER ASSURANCE	F3R is cyber dominance for the warfighter. A proven, demonstrated, and repeatable systematic solution that results in a competitive edge for the warfighter. F3R is Cyber Assurance of a warfighter's mission's objectives, as well as the information (intelligence) and the technology our warfighters and nation depend on. F3R protects an asset's intended capabilities regardless of the Threatscape or lifecycle phase. A proven security-first solution that provides End-to-End 'REAL' security, true Holistic Risk Management, enabling quick decision-making. F3R creates effective, resilient, prioritized, and cost sensitive secure solutions, of the whole integrated solution. F3R's Predictive and/or near real time provides protections tuned to each objective and mission assets environment. F3R provides true holistic security resulting in effective and dependable resiliency creating cyber dominance for the warfighter. F3R assures and ensures the information and systems the warfighter depends on can be trusted, secured, relied upon, and are the competitive edge required.

Proactive Defense-In-Depth Application Security	Arms Cyber Defense provides a proactive defense-in-depth cyber security solution by utilizing cutting edge micropatching and code diversifying technologies. We do this by diversifying the code structure (think radio frequency hop or whack-a-mole) so each application has a different structure yet still operates with no latency or noticeable lag to the user. Hackers can no longer find one vulnerability in one application and exploit all instances of that application globally. This proactive approach hardens the application, making the application more resilient to attacks and protect vital DoD information better than any current solution does. Zero-day attacks will be greatly reduced if users have deployed our solution by diversifying the code structure.
Electric propulsion for small satellites	Orbion is bringing to market an Electric Propulsion solution for small satellites to enable the most efficient on-orbit maneuvers required for mission operations. Orbion's first product called Aurora is a Hall-effect thruster (HET) system providing very high efficiency, Isp, and reliability. Orbion has developed the process for manufacturing the systems in quantities of 100s of units per year using robotic assembly-line techniques, and patented special test equipment necessary for mass production.