xTechSearch 3.0 Innovators' Corner Day 1

Business and Technology Descriptions

Business Name & Logo	Business Description	Technology Description
Brayton Energy, LLC **POC:** James Kesseli kesseli@braytonenergy.com	Brayton Energy is an R&D firm dedicated to making meaningful contributions to the field of gas turbines and high-efficiency power generation. Founded in 2004, Brayton has grown to staff over 40 engineers, designers, and technicians on a diverse mix of private and government programs. Brayton specializes in managing the entire designbuildtest process for challenging emergent technologies.	New gas turbine developed specifically for UAVs and other mobile platforms to address challenges from UAS Roadmap endurance/reliability, range/payload, heavy fuels. Also supports FVL/UGV objectives with all-electric variants. The design yields substantial improvement over competitors with units presently in lab qualification. Achievable SFC more than 40% lower than current state-of-the-art
LiquidPiston **POC:** Alexander Shkolnik ashkolnik@liquidpiston.com	LiquidPiston develops advanced power solutions based on innovations in thermodynamics, optimized mechanical systems, and controls. The company has a team of 20 highly engaged engineers in Bloomfield CT, and is initially focusing on commercializing its X Rotary Engine technology in the Aerospace and Defense sectors.	LiquidPiston's rotary X-engine technology is 1/10th the size and weight of traditional Diesel engines, and 30% more efficient. The company proposes to apply this engine for FTUAS and FVL, as an efficient primary / supplementary power unit for aircraft. As a first step, LiquidPiston will demonstrate the 3kW X-Mini engine as a hybrid electric power supply for Group 2 UAS on heavy fuel.
Response Technologies, Inc. **POC:** Ed Bard ebard@responsetechs.com	Response Technologies is bringing additive manufacturing and advanced materials to develop and ultimately produce 21st century fuel bladders fuel cells for military aircraft. Lighter weight, longer lasting and improved survivability.	A dynamic self-sealing polymer combined with Response Technologies' additively manufactured aircraft fuel bladders reduces weight and improves survivability by moving the material to the wound and healing the wound.

TECHSEARCH

Business Name & Logo	Business Description	Technology Description
Summit Technology Laboratory **POC:** Aditi Majumder aditi@summittechlab.com	STL is a woman minority owned small business that provide solutions for next generation projected AR based applications used in different domains like defense, retail, trade shows and conferences.	Summit Technology Laboratory STL presents the decision pod, a pack-and-go collaborative interactive large high resolution display infrastructure for hybrid visualization in next generation defense visual analytics. The decision pod can be deployment anywhere -- base camps, offices, laboratories, conferences, workshops, training centers. It is a gently curved rear multi-projector based seamless interactive display with the following capabilities.
ISAGE, Inc. **POC:** Viktor Prasanna info@isageinc.com	ISAGE Inc. is a company co-founded by researchers at the University of Southern California to develop real time data analytics, ML and AI based solutions to address real-world problems relevant to the society and the nation.	SWAPT-optimal lightweight phase transformed Deep Neural Network implementation on FPGA to enable low latency all around situational awareness in complex, cluttered adversarial environments urban/suburban using ultra low form factor ML at the edge.
SIGINT Systems, LLC **POC:** Ash Law ash.law@sigintsystemsllc.com	SIGINT Systems, LLC is an engineering company that designs and develops solutions for SIGINT problems. Our cross-discipline experience allows us to develop innovative solutions combining techniques and methodologies from various fields such as acoustics, radar, mechanical testing etc. to the solution of SIGINT challenges. We leverage our expertise in both hardware and software development to arrive at system designs that allow the user the maximum flexibility, while solving tricky problems. All of our systems are designed to be scalable and configurable in order to fit a user's mission requirements, and we pride ourselves on being able to work with our customers at the level they desire.	The SIGINT Systems Jaguar-X is a compact HF and low VHF sensor 1 MHz - 88 MHz that allows signal collection commensurate with tactical ISR sensitivity levels for all propagation modes - ground waves, sky waves including NVIS and mixed mode. The system also performs DF on all propagation modes from an extremely small footprint 6-inches x 6-inches.

TECHSEARCH

Business Name & Logo	Business Description	Technology Description
Syncopated Engineering  **POC:** Jim Costabile jcostabile@syncopatedengr.com	Syncopated Engineering is a creative solution provider of software and embedded systems for wireless communications, signal processing and machine learning. Our CIELO cognitive radio products enable intelligent wireless applications capable of exploiting multiple "radio personalities" with the same radio platform. Our ALEGRE fog analytic acceleration products enable real-time analytic results at the edge of the network as the data is collected.	Our large RF footprint is easy to target by our adversaries, which puts our troops at significant risk especially in forward-deployed positions that require both communications connectivity and stealth. Our Mockingbird RF decoy emulates multiple "radio personalities" to deceive and confuse the adversary at a fraction of the cost of the high-value assets i.e. people and equipment it has been designed to protect.
TRX Systems  **POC:** Carol Politi cpoliti@trxsystems.com	TRX Systems is the developer of NEON® GPS-denied location solutions, delivering location and mapping where GPS is not available or is unreliable including indoors, underground, in dense urban areas, and where GPS is jammed or erroneous. NEON delivers ubiquitous, low-cost, GPS-denied location through the use of advanced sensor fusion, ranging, and patented dynamic mapping algorithms.	TRX Systems will deliver NEON, a low SWaP, easy to use assured PNT device that provides position/navigation when satellite technology is unavailable or unreliable. NEON detects spoofing and jamming events and delivers continuous location during such incidents and delivers 3D personnel location indoors and underground.
Flash Steelwork, Inc.  **POC:** Gary Cola gary.cola@flashsteelworks.com	Flash Steelworks, Inc is an independent steel research concern located 30 miles north of Detroit. The company was founded almost 20 years ago with a sole mission to improve the performance of steel. With roots in the Defense Industry as armor plate, Flash has expanded its vision to include many facets of industry including automotive, Oil & Gas, architecture, and consumer products.	"Stronger than titanium, lighter than aluminum, able to stop speeding bullets" at record velocity in US Army Labs, Flash Processing makes best-in-class armor and advanced high strength steel. Heat treating in seconds, Flash tested in Army Labs to highest results against 0.30-cal M2AP and 20mm blast fragments. Flash Armor is "truly" weldable at room temp to provide non-brittle welded assemblies.

TECHSEARCH

Business Name & Logo	Business Description	Technology Description
Knight Technical Solutions  **POC:** Tony Davila tdavila@kts-hsv.com	Knight Technical Solution KTS is an advanced concepts engineering company comprised of veterans with passion for applied engineering and science to solve challenging problems. A Service-Disabled Veteran Owned Small Business SDVOSB in DoD Silicon Valley, Huntsville, Alabama, KTS provides research and development, technical support, program management and product development. Our management team have wide variety of military and civil experiences in technology development and integration in support of combat and domestic situations. In 4 short years, KTS have patent on FDT and additional patents pending on recoil reduction buffer system, bio-mimicking UAS, and Counter-UAS technologies.	The Fixed Displacement Turbine FDT engine is a constant rotation, fixed displacement, high compression, power dense, and energy efficient engine. In its most simplistic form, the basic FDT has only 2 moving parts. Principally it is a twin-screw compressor joined to a twin-screw expander. Both twin screw expanders and compressors are proven technologies over decades of integrated uses in the HVAC, power generation, super chargers, and air compressor markets. The key technical innovation in the FDT is the arrangement of engine components and the addition of precision engineered rotary valving. The FDT's simple design lends itself to burn multiple fuel like turbine engine, unlike the piston engines, and it is highly scalable, reliable, sustainable and effective.
Merciless Motors  **POC:** Nadar Ahmed nna243@nyu.edu	We are a small company that came out of the research lab in NYU. After 4+ years of research on the new electric motor design, we participated in many local and nation competitions, grants and accelerators, to turn this research in to a successful business.	Merciless Motors is developing a new improved electric motor that is 50% lighter, 33% smaller and ~5-10% more efficient than current electric motors with the same power output. This can provide longer range and better performance to vehicles all at a lower cost.
Scientific Systems Company, Inc.  **POC:** Jansen Smith Jansen.Smith@ssci.com	At Scientific Systems, we develop advanced technologies for navigation, mission planning and AI-enabled autonomy systems for the Aerospace and Defense industries. Our solutions enable unmanned systems across air, ground, maritime and space domains to implement Commander's Intent, ensure mission effectiveness, and dramatically shorten operational timelines.	This effort will develop a sUAS agnostic software module which will enable autonomous landing of a sUAS on a moving ground vehicle. This will be accomplished using advanced visual perception and robust tracking path planning and control algorithms. Realizing autonomous deployment/recovery of sUAS from/to moving ground vehicles opens the door to fluid deployment of ISR and ATR capabilities.

xTechSearch 3.0 Innovators' Corner Day 2

Business and Technology Descriptions

Business Name & Logo	Business Description	Technology Description
Anti-Rotational Technologies (ARTs), Inc. SALUS Stabilizing Aerial Loads Utility System **POC:** Mahdi Al-Husseini mah9@gatech.edu	Anti-Rotational Technologies ARTs supports helicopter hoist operations through the development of operationally unobtrusive and technically sound stabilization devices that reduce the burdensome cognitive load on military aircrews. ARTs was founded by Soldiers for Soldiers, and is comprised of three Army pilots two on active duty, two mechanical engineering doctoral students, and a physician.	Medical evacuation missions require that helicopter hoist operations be performed in the face of disadvantageous environmental conditions. Helicopter hoisted objects tend to spin due to rotor downwash. Spinning is a potentially catastrophic event that can be life-threatening for evacuees. SALUS is an operationally unobtrusive reaction-wheel stabilization assembly suited for harsh environments.
Battery Streak BATTERY STREAK CHARGE LIGHTNING FAST **POC:** David Grant dgrant@batterystreak.com	Battery Streak is a California based start-up commercializing revolutionary battery technology, capable of charge to 80% state-of-charge in under 10 minutes, based on UCLA patented technology. Our batteries charge like a capacitor 8C typically and discharge like a battery C/10 to 8C. Applications include portable medical devices, mobile electronics, warehouse robots and electric vehicles.	Exhibit shows a demonstration of 1 Ah prototype cells charging in under 10 minutes and discharging in 15 minutes. A 2 Ah demo cell is also shown along with a 12 Volt module. The cells demonstrate energy densities of ~100 Wh/L and 45 Wh/kg with an expected ceiling of 400 Wh/L and 200 Wh/kg.
Corvid Technologies CORVID **POC:** Sean Treadway sean.treadway@corvidtec.com	Corvid offers design and analysis support to military applications using HFCP based approaches. With our extensive array of in-house technologies and capabilities, including our indigenous supercomputing and digital manufacturing facilities, as well as a combination of state-of-the-art proprietary, governmental, and off-the-shelf tools, we provide customers with quick-turnaround computing.	Selectable Precision Effects Articulating warhead provides new capability to ground forces via integration-ready focused lethality fragmenting warhead. SPEAR provides the ability to choose a warhead's yield direction based on the target for first-pass lethality while minimizing collateral damage. No other warhead in the arsenal allows for dual mode select-ability for effect.

TECHSEARCH

Business Name & Logo	Business Description	Technology Description
GhostWave, Inc. **POC:** Dean Zody z@ghostwaveinc.com	GhostWave is a radar company with four patents exclusively licensed to them from The Ohio State University. The team consists of the patent inventor and retired professor, an antenna expert, an engineer with a Master's degree along with the founder who has an engineering degree, an MBA, and international telecom experience.	The technology is radars that are stealthy, low probability of detection, low probability of intercept and anti-jamming. This is done by using a random noise generator to produce and transmit the RF signals. The transmitted signals are stored in a high-speed memory. At different range gates, the signal is compared to what is detected by the receivers. The data is processed on board.
Hyssos Tech, LLC **POC:** Sean Johnson sean.johnson@hyssos.com	Hyssos Tech is a leading provider of cutting-edge technologies and services, targeting domestic and international defense, public safety and intel customers, offering multimodal solutions for C2, C5ISR and GIS Systems. Founded to continue the work and bring to market a 10-year DARPA funded software solution that bypasses complex user interfaces by using speech and sketch to input plans.	STP fuses the warfighters doctrinal sketch and speech, bypassing complex user interfaces of individual army systems, allowing the planner to focus on the task, not the tool, resulting in faster and more efficient planning. STP data drives tight adjudication loops, automated analysis and wargaming, leading to more optimal COAs which in turn saves soldiers' lives and increase soldier lethality.
SOAL Technologies **POC:** Rasdip Singh rsingh4@soal-tech.com	SOAL Technologies has successfully developed and commercialized R&D technology (including technology developed through the SBIR program) into products, leading to sales revenue. We have a team that has been carefully selected to include business development, marketing, chemical and mechanical engineers, and scientists. We have a vertically integrated company with many manufacturing capabilities.	Our innovation is called the Micro Power Generator (MPG). Our MPG can output 6-10 W of power continuously for 24 hours and only weigh 1-2 kg (approx. 2-5 lbs) with fuel. For a 72 hour mission, our MPG will only weigh between 3-5 lbs (with fuel). Our MPG is designed to be autonomous (i.e. it will not require any user intervention), be silent and have a small heat signature.

Business Name & Logo	Business Description	Technology Description
Squishy Robotics **POC:** Douglas Hutchings doug@squishy-robotics.com	Squishy Robotics is a majority women-owned small business with extensive industry and research experience. The team is comprised of experts in robotics, customer development, user experience, and sensor fusion. Squishy Robotics is the commercialization of joint UC Berkeley / NASA research, applied to real-world problems affecting first responders and warfighters.	Squishy Robotics' sensor robots, which are dropped by drones or other aerial vehicles, carry mission-swappable sensors in order to provide situational awareness in dangerous situations. These robots use unique tensegrity tension-integrity structures to protect sensor payloads, mesh network radios to enable communication, and analytics to provide advanced sensor fusion.
TexPower, Inc. **POC:** Evan Erickson Evan.m.erickson@TexPower.US	TexPower was founded to commercialize lithium ion battery technology out of the University of Texas at Austin. TexPower offers high-performance lithium-ion-battery cathode materials with 10 % higher energy density and at least 75 % less cobalt usage a costly metal subject to volatile supply than state-of-the-art cathode materials LiNi0.6Mn0.2Co0.2O2, NMC-622.	Mobile applications such as next generation combat vehicles, unmanned aircraft systems and medical robotics all rely on lithium-ion-battery LIB technology that is constrained in range. TexPower offers a high-performance cathode material with 10 % higher energy density than state-of-the-art cathode material. Additionally, LIB cathode materials utilize significant amounts of cobalt, a limited global resource with a supply chain dominated by China, who have threatened cobalt export restrictions. TexPower's cathodes utilize significantly lower cobalt by cutting at least 75 % compared to state-of-the-art LiNi0.6Mn0.2Co0.2O2 NMC-622 cathode material, mitigating cobalt supply chain risks to US economic and military security
The Orion Group, LLC **POC:** Seth Spiller sspiller@orion--group.com	The Orion Group, LLC represents and integrates leading products, solutions and services in six industrial sectors: Process, Oil & Gas, Energy, Water, Agriculture & Defense. Our focus on Industry 4.0 and artificial intelligence enables us to deliver innovative complex solutions to a diverse client base - Process to Defense – supported by a global team of engineering professionals.	TOSS is an AI enabled Lethal Integrated Operator-Network LIO-N that meets the extreme SWaP 1 lb. system and cost requirements to be deployed to every dismounted Warfighter. Comprised of three stand-alone systems: the Orion NET MIMO Mesh SDR battlefield video & data network, the Orion APP ATAK AI software platform and the AIR Blade 145g, 245g, 680g small unmanned aerial system sUAS.

TECHSEARCH

Business Name & Logo	Business Description	Technology Description
Cayuga Biotech, Inc. CAYUGA BIOTECH **POC:** Damien Kudela damienk@cayugabiotech.com	DOD-funded, Cayuga is developing IV therapy for uncontrollable hemorrhage for the battlefield. Founded by two PhDs, Cayuga's team utilizes decades of scientific, regulatory, and clinical expertise in drug development to support the warfighter by enabling treatment immediately after injury. Combat casualties are an unfortunately reality – with Cayuga, the warfighter will live to tell the story.	Cayuga's technology is an injectable drug that accelerates clotting to reduce blood loss following injury. The drug is stable for battlefield use and can be delivered in the same packaging that combat medics currently use to treat injured soldiers. 90 % of combat fatalities occur prior to hospital arrival. Cayuga's proprietary technology will reduce deaths by improving treatment on the battlefield.
ElectroNucleics, Inc. ElectroNucleics Inc **POC:** Harold Monobouquette halmonbo@gmail.com	The pathogen detection technology of ElectroNucleics consists of a unique, electrochemical nucleic acid-based assay that is rapid, inexpensive, amplification-free, optics-free and highly sensitive.	The pathogen detection technology of ElectroNucleics consists of a unique, electrochemical nucleic acid-based assay that is rapid, inexpensive, amplification-free, optics-free and highly sensitive.
Tribo Labs TRIBOLABS **POC:** Carlos Camara carlos@tribolabs.com	Tribo Labs is a startup company with the purpose of building disruptive solutions based on a revolutionary X-ray source technology originally developed with a DARPA funded effort. The company owns all the intellectual property rights. The team includes the inventors of the technology, the key individuals responsible for its development, advisors and partners who share our vision.	Our X-ray sources, based on contact electrification, do not require heavy and bulky high voltage supplies. This has allowed us to build the world's smallest turn-key X-ray sources. Our prototype sources for X-ray imaging are the size of a soda can and produce X-rays with more than 140kV from a 12V battery. We will be exhibiting an ultraportable X-ray imaging solution enabled by our technology.
XO-NANO XO·NANO **POC:** Samuel Wilding sam.wilding@xonano.com	NCP transforms regular foam products into "Smart" products that can measure impact and pressure. By adding conductive particles to liquid foam, we created the world's first foam sensor. This technology measures the magnitude, location, and frequency of impact with lab-quality accuracy.	XO-NANO takes lab-quality gait analysis out of the lab and into the real world with a field-ready ground reaction force measurement system. XO-NANO's technology creates the potential for an unprecedented study of the forces experienced by the lower extremities. This data provides and essential first step in the diagnosis and prevention of injuries to the lower extremities.