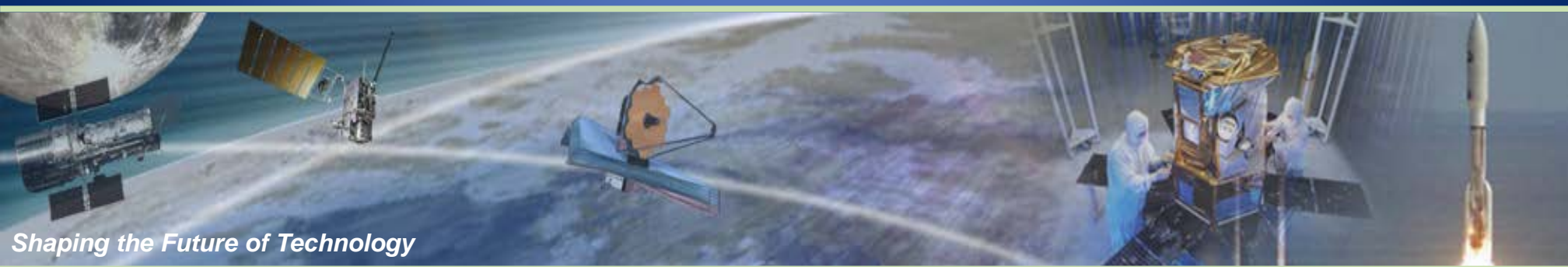




Millennium Engineering
and Integration Company



Shaping the Future of Technology

Millennium Engineering and Integration Company

Capabilities and Experience



ISO 9001:2008 and AS9100:2009 Registered



CMMIDEV/3SM

Exp. 20 19-04-20 / Appraisal #26040

Millennium Engineering & Integration Company

Corporate Headquarters

1400 Crystal Drive
Arlington, VA 22202

Mission Statement:
World-Class Systems Integration For End-to-End Mission Assurance

- Key Metrics:**

– Founded in 1995

– DCMA & DCAA-Approved

– ISO 9001, AS9100, CMMI Level 3

Quality Systems

– Employee-Owned, Veteran-Owned Small Business

– Steady 10+% Average Annual Revenue Growth Over Last 7 Years
- Systems Expertise:**

– Spacecraft and Payloads

– Missiles & Weapons Systems

– Launch Vehicles & UAS

– Guidance, Navigation, Control

– C4ISR / SSA

– High-Altitude Balloons

– Real-Time Mission Support

– Complex System of Systems Integration and Evolution

– TS/SCI, SAP/SAR, SCIFs

Roles:

– Trusted Advisor to Government

• A&AS / SETA

• Integrated SE&I Solutions

• SME / Technological Know-How

• Mission / Ops Support Partner

– Mission Management

• Mission Critical System

• SMART™/SharePoint Solutions

• Rapid Prototyping & Product Development
- Technical Expertise:**

– System Engineering

– Integration, Test & Evaluation

– Sensor Technologies and Power Systems

– Software Design, Modeling & Simulation

– Technology Maturation & Integration

– Acquisition Support

– Command, Control & Communications

– Safety, Reliability & Mission Assurance

– FMS / International Programs

– Logistics and Delivery Assurance

– SATCOM Upgrade and Integration

– Threat and Lethality Analysis

– Public Risk Management

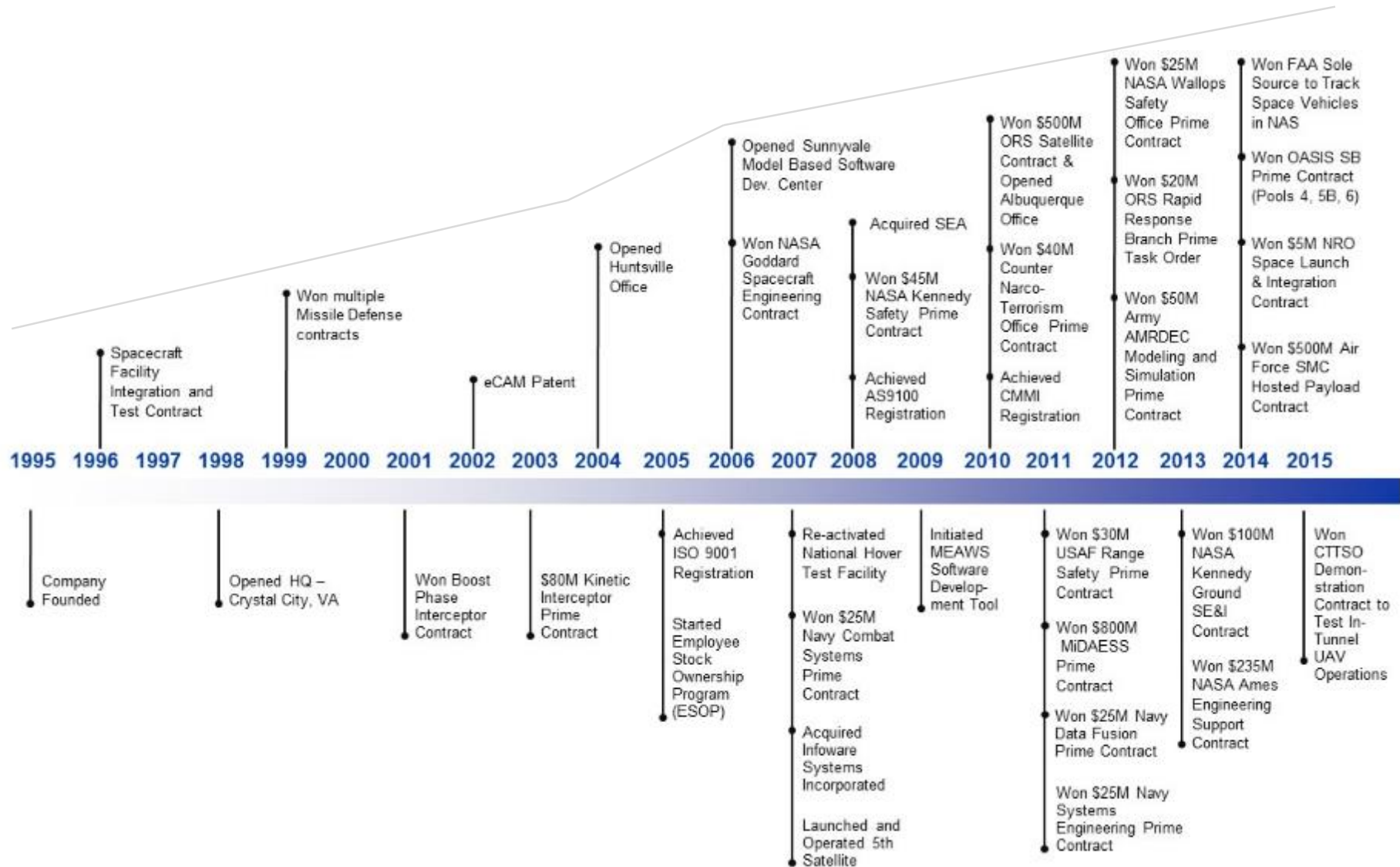
– Data and Sensor Fusion

– Program Integration & Management





Steady Corporate Growth and Diversification



Steady growth in capability and customer diversification into an agile Prime contractor

Millennium has multiple large knowledge-based programs across defense and space that ***provide and prove relevant capability***.

Customer	Program	Role	FTE	Subs	Ceiling
NASA ARC Engineering Services	PESS	Prime	145	30	\$235M
NASA KSC Ground System Eng.*	KLXS-II	Prime	140	6	\$100M
Missile Defense Agency	MiDAESS	Prime	60	24	\$861M
NASA/USAF Operationally Responsive Space*	RRSW	Prime	65 + HW	25	\$500M
JPL Lab-Wide Engineering	MEDALS	Prime	10 + HW	6	\$100M
MDA Kinetic Energy Intercept	KEI	Prime	75	15	\$77M
Army AMRDEC BAA	AMRDEC	Prime	50	6	\$52M
Missile Defense Agency	TEAMS TEW	Prime	180	4	\$243M
Air Force Consolidated Safety/Pad Safety	CSSC-II	Prime	50	5	\$35M
USAF Space and Missile Systems Center	STS-2	Prime	35	2	\$35M
Navy/MDA AEGIS BMD	SE&I	Prime	30	0	\$30M

* Full & Open Award

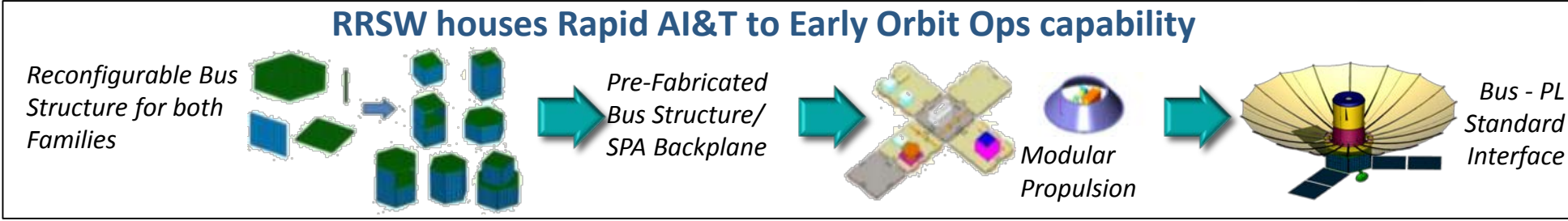
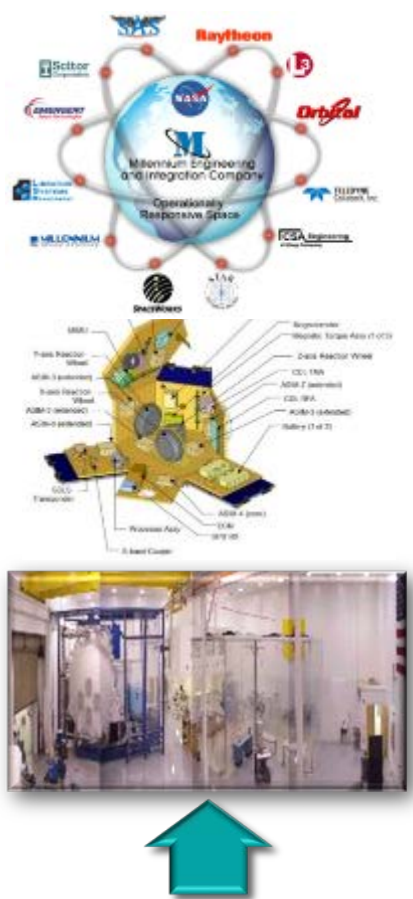
\$2B in contract value

NASA KSC Ground Systems Development and Operations Program (LX) Support Services Contract (KLXS)

- Developing and modernizing ground systems infrastructure and architecture to support test flight and commercial programs, as well as our nation's next generation human-rated spacecraft
 - Using industry-tested systems engineering & technical integration techniques, along with innovative tools, to move design through critical Program reviews
 - Transforming Launch Complex 39 into flexible 21st Century Space Launch Complex capable of launching wide range of US and commercial vehicles
 - Focus on developing required architecture for Space Launch System (SLS) & Orion, including ground processing, mobile transporter, horizontal and vertical integration, launch, range communications, landing and recovery
- Providing general program management, business, administrative, logistics and information technology support services
 - Managing Program-wide cost, risk and schedule integration and analysis
 - Raising NASA GSDO awareness through community outreach programs



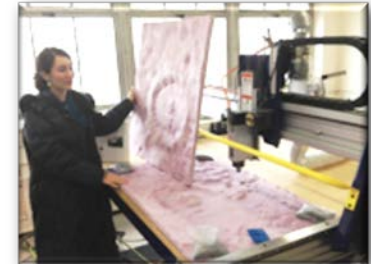
- ORS End State calls for strategic capability to rapidly deploy space assets
 - RRSW is key agent for affordable and responsive space with rapid AI&T processes
 - Update range safety processes for smaller, non-primary missions, taking into consideration smaller scope and lower risk level of typical auxiliary missions
 - Develop an automated database sorting system to speed up adoption and integration of such updated packages
- Acts as Prime Integrator for Modular Space Vehicle (MSV) Bus and Payload
 - Lead SE&I function (Bus, Payload, Ground, Launch and Range)
 - Mass Props, SV configuration, Multi-Mission Analysis, Bus/PL Modes and Operations, Power Analysis, Data Collect, SV-LV Integration, Thermal, Space-Ground Link
 - Novel 3rd Party Integrator approach: RRSW develops and houses MSV architecture, AI&T processes; builds and maintains AI&T Facility; and designs/enables rapid launch/range capability



NASA Ames Research Center Project and Engineering Support Services (PESS) Contract

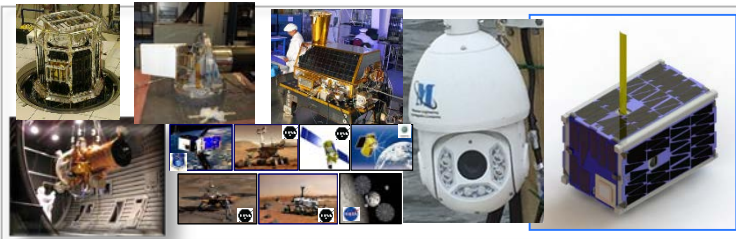
- Single-Award contract with NASA Ames providing engineering support services across all Center Programs and Projects:
 - Discipline engineering (electrical, mechanical, systems, thermal, structural, materials, specialty engineering)
 - Subsystem support (GN&C, propulsion, command and control, thermal control, aircraft/spacecraft structures)
 - Ames Facility and Lab management (Engineering Evaluation Lab), Flight Processing Center, Multi-Mission Operations Center (MMOC)
- Management of Ames rapid prototyping facility: the Space Shop
 - Advanced manufacturing, design, and rapid prototyping lab
 - Technologies include all tools and processes necessary to develop space-qualified HW
- Support for all Ames current and recent Programs and Projects:

<ul style="list-style-type: none"> – <i>SOFIA</i> – <i>LADEE</i> – <i>PhoneSat</i> – <i>IRIS</i> – <i>EDSN</i> 	<ul style="list-style-type: none"> – <i>SporeSat</i> – <i>CYGNSS</i> – <i>LCROSS</i> – <i>KEPLER</i> – <i>Ames Wind Tunnels</i> 	<ul style="list-style-type: none"> – <i>Bion M1</i> – <i>System F6</i> – <i>RPM</i> – <i>EcAMSat</i> – <i>Air Traffic Control</i>
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NASA/Classified Customers JPL MEDALS

Team Millennium provides a broad and deep multi-disciplined capability from design through manufacturing of space-relevant systems and subsystems.



Team Members









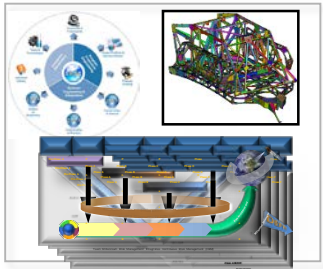
CAPABILITY

- Discipline-Specific Engineering Knowledge
- Discipline-Specific Engineering Test Capabilities
- Lifecycle Analysis
- Hardware/Software Development and Integration
- Modeling and Simulation
- Requirements Development and Analysis
- Multi-Disciplined Decision Analysis

APPLICATIONS

- Spacecraft Integration
- Aircraft Integration
- Cradle to Grave Oversight
- Software Integration
- Information Assurance
- Technical Trade Studies
- Prototype Development
- Systems Assurance and Governance Engineering

Current JPL MEDALS SWOs



SWOT High Voltage Power Supply Electronics	MMT (Special Projects) WCA for Laser Driver Board
DSOC ECS Implementation	OCO-3 TVAC-0 Thermal Test Support
Cassini Thermal Mission Operation Support	MARS 2020-Motor Control Assembly
MER Thermal Operations Support	ISLAND Mechanical Engineering Support
SMAP Spacecraft Thermal Mission Op. Support	Structural/Dynamics Lead/Analyst
SMAP Instrument Thermal Mission Op. Support	ISLAND Stress Analyst Task Support-1
SWOT IRA CB and WEC EM Fabrication	ISLAND Stress Analyst Task Support-3
Europa Penetrator Thermal Modeling Support	ISLAND Mechanical Engineering Design Task 1B
Phase 2a Preliminary Mechanical and Thermal Design Task	ISOS Mechanical Engineering Design Tasks
MMSIR TRM Fabrication and Assembly	ISLAND Mechanical Engineering Design Task 1A
SWOT IRA	ISLAND Mechanical Engineering Design Task 1D
MMT (Special Projects) WCA for Laser Driver Board	Brown MGSE Design Task
OCO-3 TVAC-0 Thermal Test Support	Blue Thermal Analysis Task



- Prominent MDA Small Business Prime Contractor, providing systems engineering, test and risk management expertise across all Directorates
 - Within the Engineering domain, executing majority of SB task orders : Risk and Lethality, International Engineering, Ground Test Provisioning, Test Infrastructure Support, Threat Engineering & C3BM CTTO
 - Key partner in executing other high-visibility engineering task orders: Weapons and Missile Engineering, Systems Engineering
 - Expertise in full suite of layered BMDS elements and international ally weapon systems, including Aegis, GMD, THAAD, Patriot, C3BM, Iron Dome and Arrow
- Over 15 years legacy experience helping shape Nation's layered Ballistic Missile Defense System and advanced technologies
 - Chief Engineers for critical elements, such as C3BM, Adv. Technologies & Targets and Countermeasures
 - Collaborative development of weapons systems and Foreign Military Sales programs
 - Maintain robust threat simulation lab for both detailed & quick-reaction technical assessments
 - Evaluating and developing next-generation advanced technologies for transfer & insertion into BMDS

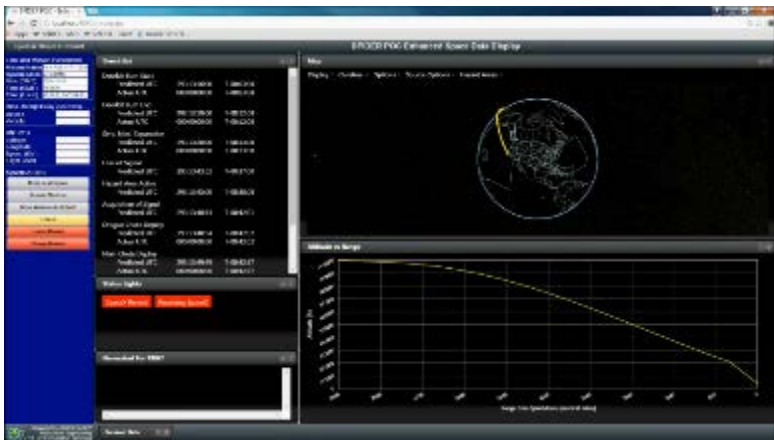
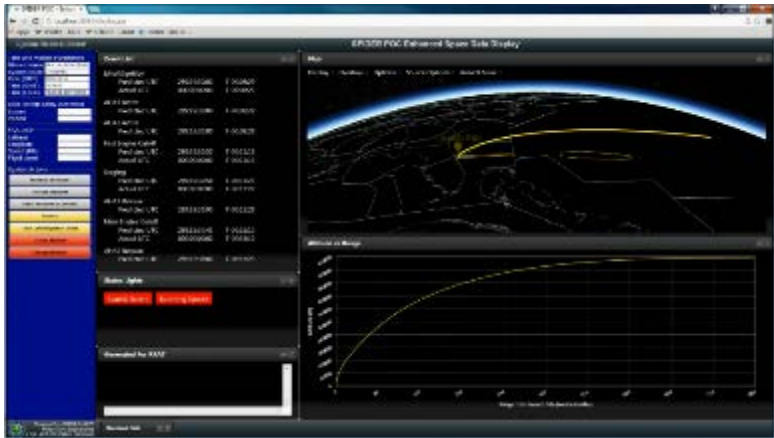


- Numerous Prestigious Awards:
 - 2016 MDA Test Functional Area Technical Contractor of the Year
 - 2015 MDA Technology Team Award
 - 2013 MDA Targets & Countermeasures Directorate Contractor of the Quarter
 - 2012 MDA Test Directorate Contractor of the Year
 - 2011 MDA Contractor of the Year



- **Extensive history of providing range safety solutions for NASA, AF and DARPA**
 - Legacy Joint Advanced Range Safety System (JARSS) used for flight plan approval and real-time range safety for all 45th Space Wing launches from CCAFS & WFF
 - High-performance vehicle re-entry analysis and landing support to 30th Space Wing at Vandenberg AFB
- **Sentry™ – Millennium's Autonomous Flight Safety System (AFSS)**
 - Advancement of our high-end safety system tools
 - Range safety mission planning and mission simulation
 - Flight mission data generation
 - Real-time onboard mission monitoring
- **Unparalleled benefits for assured access to space**
 - Cost-effective, vehicle-agnostic solution
 - Reduced requirements on range assets for on-site launch support optimizes concurrent operations
 - Modular and flexible flight hardware yields reduced range costs and increased geographic flexibility
 - Decreased range turnaround time and schedule per mission leads to increased ops tempo

- **Space Program Integrated Display and Estimated Risk (SPIDER) built legacy JARSS platform**
 - Initial step towards integration of commercial space launch and re-entry into the National Airspace System
 - Provides situational awareness and increased response in non-nominal and catastrophic events
 - Displays similar to current systems utilized at major federal and commercial ranges
 - Prototype testing in the FAA Command Center
- **Unparalleled benefits for launch and space vehicle situational awareness and risk mitigation**
 - Customizable integration with existing or future systems
 - Situational awareness of nominal and off-nominal conditions
 - Drag-corrected real-time calculated impact point generation
 - Easily incorporate new vehicles and data formats
 - Single integrated display of airspace with launch, reentry, suborbital, UAV and other aerial vehicles

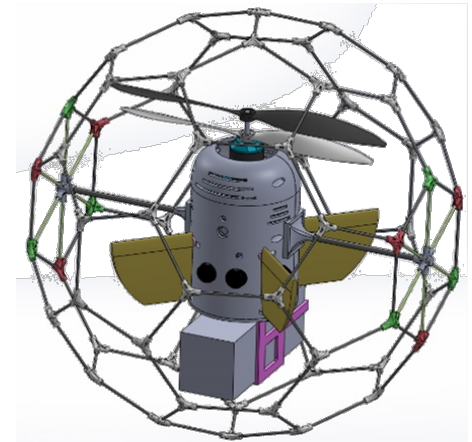


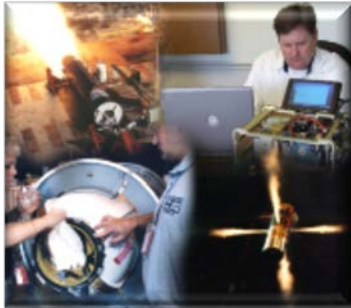
- **Integrating systems to deliver adaptable surveillance and tracking solutions, combined with on-board autonomous flight safety and sense and avoid capabilities**

- Unmanned aerial vehicles (UAVs) capable of safely surveying discovered illicit tunnels and hard-to-reach structures
- Designed UAVs will be able to autonomously navigate predetermined paths through GPS-deprived environments, as well as self-direct by sensing their environment and avoiding collisions
- Wide spread disaster recovery, environmental sensing, and other defense-related surveillance applications

- **Maintain industry and Government consortium partnerships to promote safe UAV development and testing**

- FAA Test Site – Mid-Atlantic Aviation Partnership (MAAP): Access to geographically diverse test sites to safety test new UAV technologies
- FAA CoE – Alliance for System Safety of UAS through Research Excellence (ASSURE): Expertise across broad spectrum of UAS research areas in partnership with over 22 universities and colleges





- *Over 20 years corporate experience with ISO 9001, AS9100 and CMMI assessed processes*
- *Industry-recognized reputation for high-quality engineering expertise across the systems engineering and integration lifecycle from concept development through operational testing and sustainment*
- *Highly-accomplished Prime contractor with numerous large (>\$200M) contracts*
- *Recognized as a preeminent engineering company for United States Air Force, Navy, Army, Missile Defense Agency, OSD, DHS, Other DoD Organizations, NASA, FAA, DARPA and Commercial Sector*
- *Multi-decade heritage rooted in trusted partnerships on programs of national significance*
- *Cross-cutting expertise and domain knowledge in test and evaluation, spacecraft operations, program management, safety, quality, program control, launch ranges, and acquisition support*



Millennium Engineering and Integration Company



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