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PREPARED BY

Adaptive Launch Solutions
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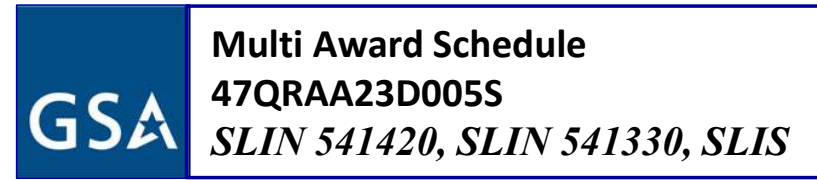
COMPANY INFORMATION

DUNS #: 06-313-0748
CAGE: 8CW69
Founded: 2010

POINTS OF CONTACT

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Business Status: Small
FAR § 124.1001 and Part 121. Small Disadvantaged Business
USSF/SSC SpEC non-traditional

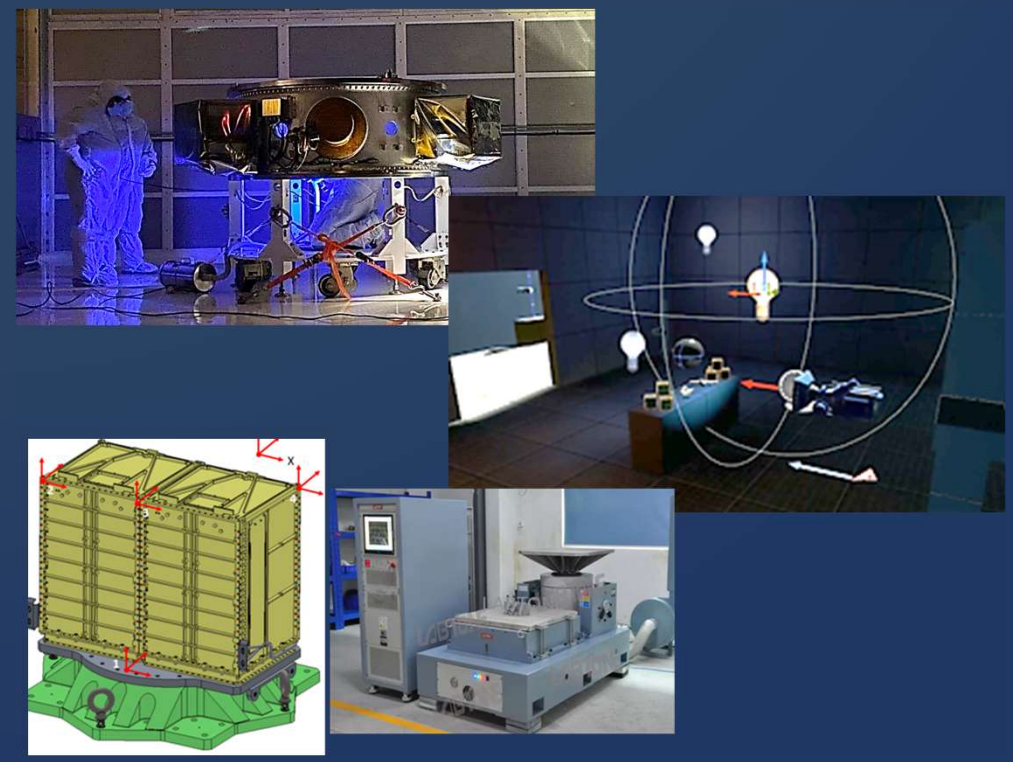


Approved for Public Release

Adaptive Launch Solutions

Core Capabilities and Initiatives

ALS-BD-23-004 Rev 05
31 March 2023



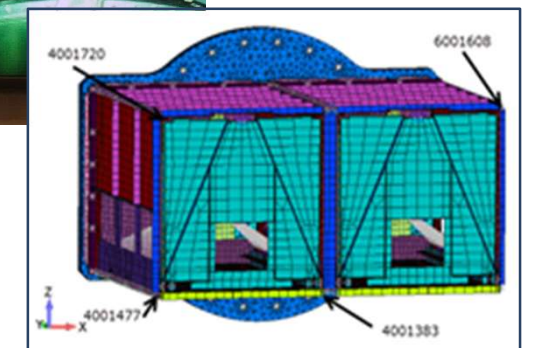
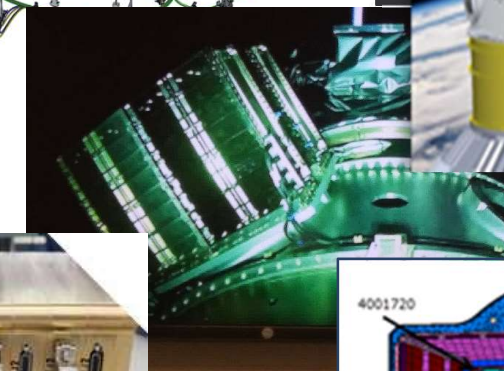
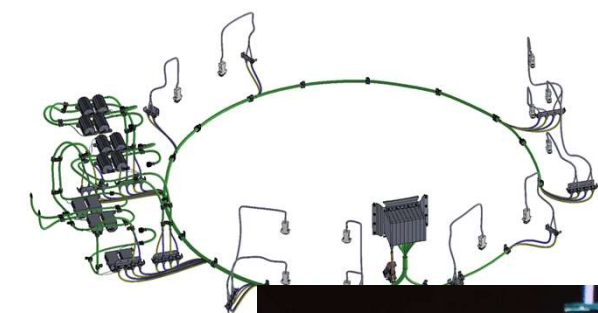
About Adaptive Launch Solutions (Employee owned, US Corporation)

What we do:

- Aerospace mechanical and avionics design and engineering
- Digital Twins, Immersive Simulations, Integrated Digital Environments
- Intelligent Models, Machine Learning, Artificial Intelligence
- Qualified flight hardware (mechanical and electrical)
- Analysis and test verification capabilities
- Systems Engineering meeting FAR, MilSTD and NASA STDs
- Launch integration and mission engineering
- Launch campaign integration, test, range, and safety support

How we do it:

- Working relationship with NRO, USSF, NASA and industry
- Strong supply chain and vendor relationships with material suppliers, machine shops and test facilities
- In-depth understanding of government/commercial contracts and finances along with small and large company experience
- FAR § 124.1001 and Part 121. Small Disadvantaged Business



ALS is led by Subject Matter Experts with 30+ years experience mentoring bright highly educated engineers

ALS Digital Engineering Objectives

ALS IDE, ML, and AI Application Pathway

Adding machine learning will make the process more intelligent, increase accurate data and predictions, open up possibilities to discover previously unseen patterns, create a single learning-system that can manage complex data, create predictions for best outcomes in times of crisis, and reach optimal solution pathways

- Digital twins incorporating artificial intelligence (AI) create usable representations of complex systems
- Incorporating rich, diverse data from as many different scenarios as possible
- Test situation and plan systematically
- Provide clear outcomes helping designers understand the requirements faster, that are often hard to perceive beforehand.
- Develop rule sets to improve the digital model by including a human-in-the-loop supervised learning
- Build trust into the AI system by working with people, especially in cases where the data can contain a bias or cases that can't be easily learned from the data

How does AI learn	
Supervised (deep) learning	Learn from examples
Active learning	Ask for human feedback
Transfer learning	Ability to transfer knowledge from one task to another
Reinforcement learning	Automated feedback (rewards)
Unsupervised learning	Need no feedback
Genetic algorithm	Learns from generational evolutions
Fuzzy logic	Classify solutions into range certainties

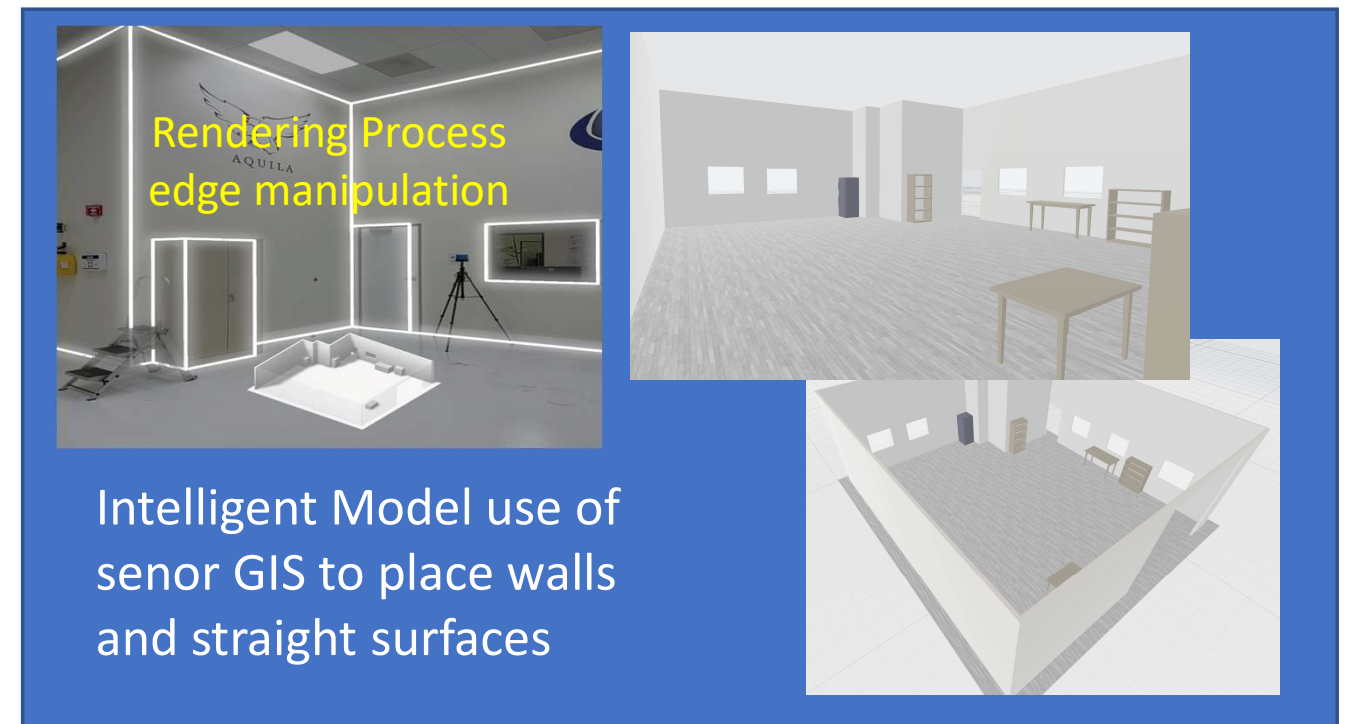
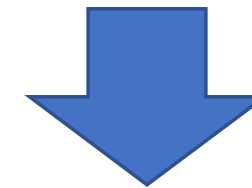
Digital Rendering and Immersive Digital Environments



Picture of Field Object



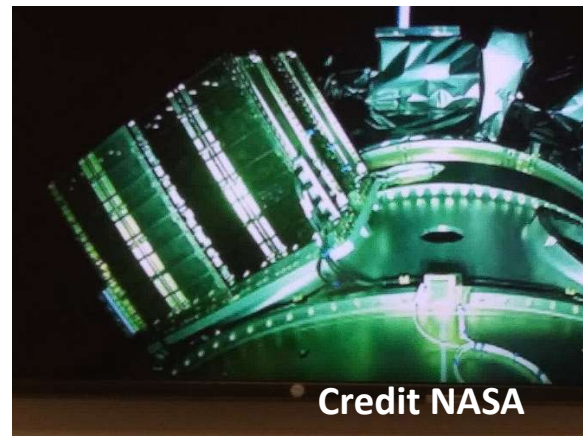
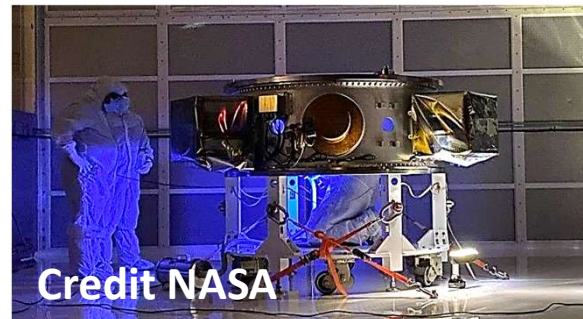
Picture of Field Object



Edge Sensor Data Rendered in Real Time to Create Un-manipulated (raw) 3D Digital Object

Digital Twins, Kinematic Models, Machine Learning and Immersive Gaming

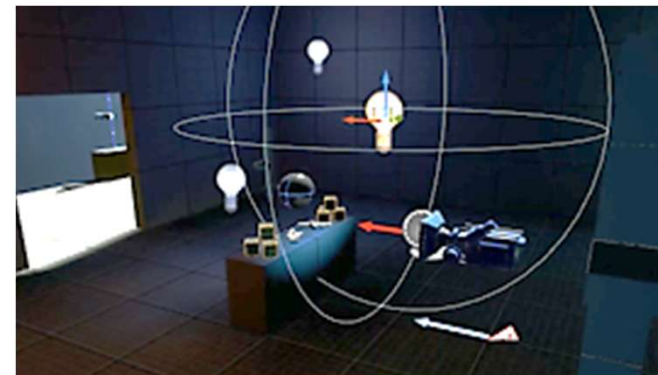
Physical World



Lidar and Photogrammetry
Applied stressors (Tests)
Edge sensors and data
Environment and conditions

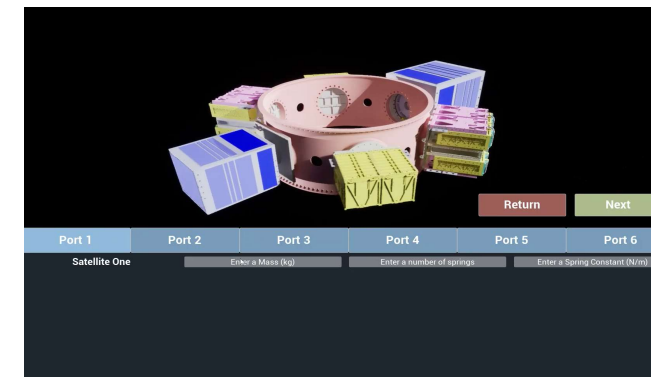
Integrated Digital Environment

Model Ops



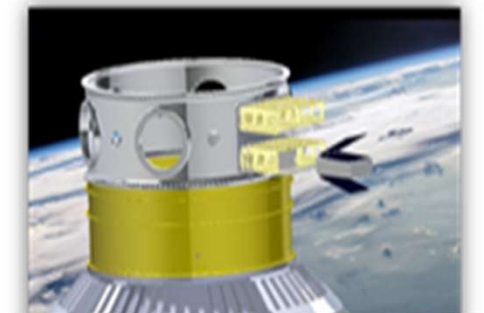
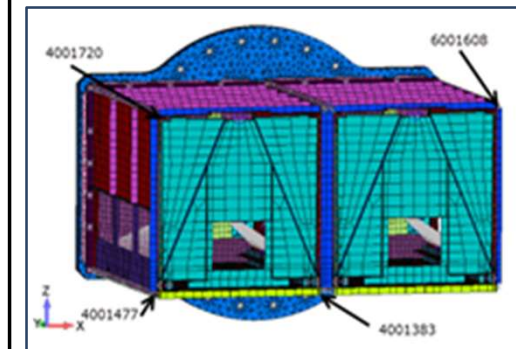
Secure, assured data
Intelligent trained models
Kinematic models (twins)
Test validation

Immersive Environment



Computer graphics engines
Analysis visualization
Training
Collaboration

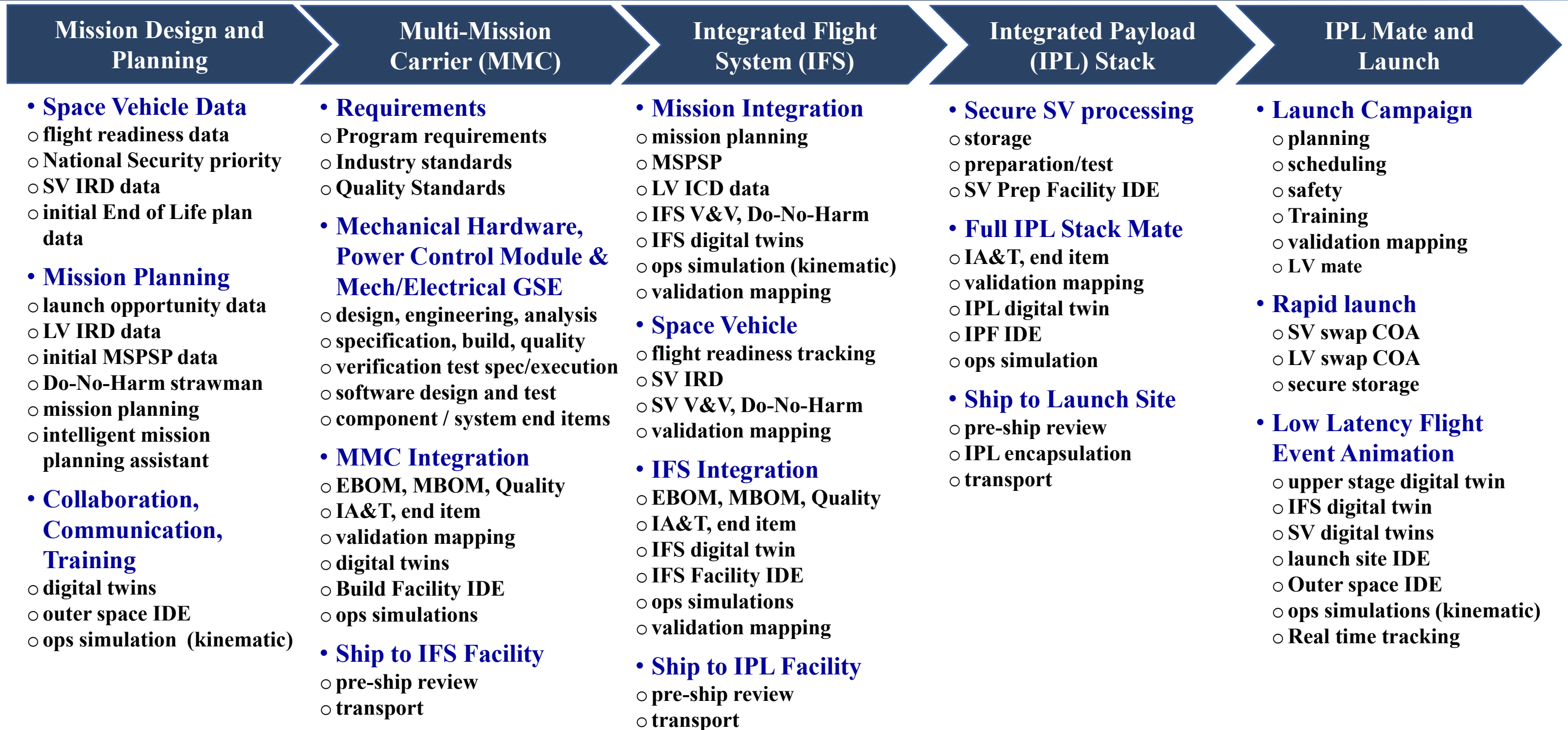
Design and Analysis



Computer Aided Design
Test verified FEM, TDM, CAM
Intelligent Models
Machine Learning

ALS is using responsible AI to create visualization, training, collaboration, and communication tools rooted in Model Based Systems Engineering, Intelligent Systems, and Immersive Digital Environments

Design, Engineering, Analysis, Prototype, Build and Field Launch Integration Services



Overcoming roadblocks and filling gaps in the enterprise resource planning roadmap

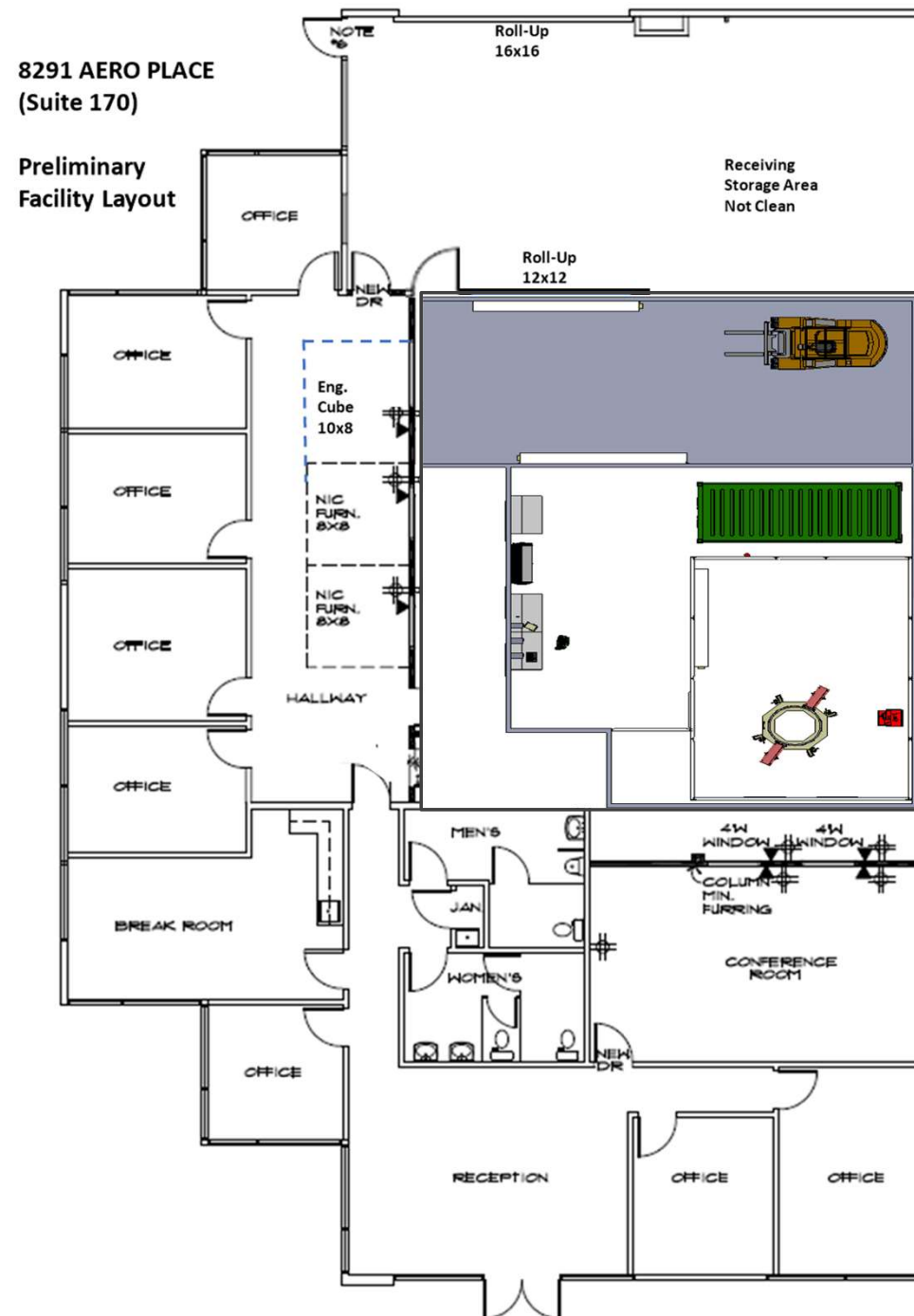
Leadership Team

	Lisa Jacobs (TS/SCI) <i>Chief Operating Officer</i> B.S. Special Education, Certificates in Cost Estimating and Contracts & Acquisition Management 35 yrs' in aerospace contracts, subcontracts, intellectual property, and business operations
	Jack Rubidoux (S) <i>Director, Security</i> B.A. Social Sciences, Certificates in Cost/Price Analysis and Government Contract Law 30 yrs' in aerospace business/proposal/estimate development, contracts/subcontracts, and security
	Philip Smith P.E. <i>CEO and Director Business Development</i> B.S. Civil Engineering, M.S. Structural Mechanics, CA Registered Engineer, AIAA Associate Fellow 30 yrs' in aerospace business and program management, SmallSat multi-manifest systems engineering
	Ronald Stoneburner <i>Business Management / Contracts / Strategic Planning</i> B.S. Production Management, M.B.A. Business Administration, Certificates in Government Contracts 40 yrs' in aerospace contracts, joint ventures, mergers, acquisitions, and intellectual property rights
	Claudia von Wilpert <i>Chief Financial Officer</i> B.A. Business Administration, M.B.A. Finance 40 yrs' in cost accounting, government reporting, personnel administration and tax planning
	Lt. Col. Robert Atkins (Retired) <i>ALS Advisor</i> Experience includes C2 Systems, SATCOM Systems, Minuteman III ICBM Systems, NRO Satellites, OSC/DSC Systems, Space Launch Vehicles, Major Range and Test Facility Base Capabilities, Remote Sensing Satellites, and Space Domain Awareness assets

Leadership Team Continued

	Anthony Kyriakidis <i>Director Mission Integration and Analysis</i> B.S. Mechanical Engineering 30 yrs' in LV design, analysis, manufacturing and design of propellant feedlines, light weight fabrication and high energy upper stage tanks
	James Parra <i>Director Design and Manufacturing</i> B.S. Engineering Technology 40 yrs' in space Launch Vehicle component design, manufacturing, tooling and test production operations and manufacturing
	Jay Stoneburner (S) <i>Chief Technical Officer</i> B.S. Systems Engineering, MBA Business Administration 35 yrs' in aerospace program management, systems engineering, flight operations, safety, and production operations
	Gerald Szatkowski Ph.D. <i>Avionics and Space Vehicle Specialist</i> B.S. Mech Engineering, M.E. Electrical Engineering, M.S. Systems Engineering, M.S. Industrial Mgmt, Ph.D. Engineering Science 40 yrs' in aerospace SmallSat multi-manifest and Systems, Launch Vehicle Integration; and Mission Operations & Telemetry
	Larry Mercer <i>Machine Learning – ALS Advisor</i> B.S. Physics/Mathematics, M.S. Computer Science 40 years smart real-time mfg systems, C2 systems, first genetic learning, fuzzy logic reasoning/associative memory, and geo-spatial tools

San Diego Avionics Design and Assembly Facility



- 6,000 sqft with 20ft ceiling height
 - 1,500 sqft Receiving and Storage
 - 2,000 sqft Clean Room facility
 - 2,500 sqft Offices and meeting rooms
 - Video conferencing
- ISO-8 Clean Room (transition to ISO-7)
 - Mechanical assembly, fit-checks, system assembly, and operation verifications
 - Avionics assembly and checkout
- Cybersecurity CMMC (Jan 20) requirement Level 3; NIST.SP.800-171r2 (CUI) (Ready)
- JCP DD2345 certification (Complete)
- Secure peer to peer WAN (can be expanded in CONUS)