

Innovation & Uncrewed Systems (UXS)

NC Department of Public Safety – EM
Advanced Air Mobility (AAM)
Bringing Drone Wisdom to Others

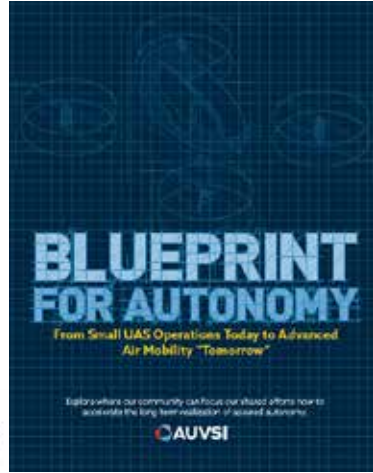
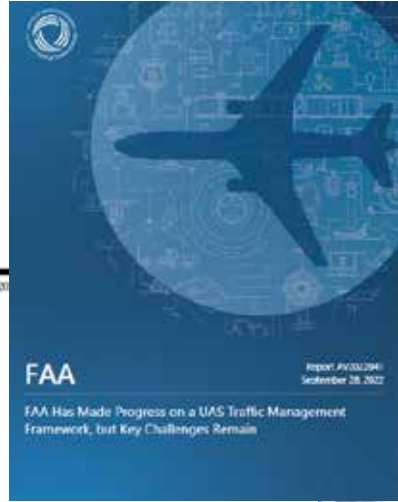
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UAM Airspace Research Roadmap Rev 2.0

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Recommendations for Realizing the Benefits of Advanced Air Mobility in the Commonwealth of Virginia



Report from the Regional Air Mobility/Urban Air Mobility Committee of the
Virginia Advanced Air Mobility Alliance (VAAMA) for the
Virginia Innovation Partnership, Cooperation and Virginia Department of Aviation

April 5, 2023



A Strategic Roadmap
for the Development
of Advanced Air Mobility

June 2022

Building. Solving. Serving.

Advanced Air Mobility (AAM) Roadmaps, Flight Plans, Blueprints Real-World Implementation

Inter-Agency and Inter-State engagement includes:

- Through DOD, DOT, DHS and other government agencies
- Through Regional, State, Local, Tribal working groups
- Provide Infrastructure replace, repair and evolve for the FAA
- Advanced sensors and data transfer for the FAA and NOAA
- Concept of including C-UAS in all ASOA /AWOS systems
- Numerous standards working groups

Real-World Implementation includes:

- FAA Infrastructure & Facilities – Vertiports, ASOS, AWOS and others
- Interagency UXS Integration
- Interagency C-UAS Integration
- Existing Engineering, Manufacturing, Integration and Test Examples



NASA / FAA AAM Ecosystem Community Integration Working Group

*Aircraft
Airspace
Operator
Infrastructure
Acceptance*

NASA / FAA AAM Vertiport Construction Standards



Inter-Agency and Inter-State engagement includes:

- DOD, DOT, DHS and other government agencies within the NCR
- Supporting operations in the DC Flight Restricted Zone
- Global Support including UAS Hangars and Facilities overseas
- Numerous standards working groups

Real-World Implementation includes:

- Emergency Landing Zone at St. Elizabeth's
- UXS Capabilities at the Pentagon Helicopter
- Emergency Landing Zone for the US Embassy residence facility in Juba South Sudan
- UXS Capabilities in, on and around airfields at Tinker AFB, Andrews AFB, Pentagon, St. Elizabeth's and Alliance Airfield
- International UAS and Vertiport facilities

FAA AAM Vertiport Construction Standards Integration of Counter-UAS Sensors ASOS-to-AWOS-C Implementation



Inter-Agency and Inter-State engagement includes:

- Through DOD, DOT, DHS and other government agencies
- Provide Infrastructure replace, repair and evolve for the FAA
- Advanced sensors and data transfer for the FAA and NOAA
- Concept of including C-UAS in all ASOA /AWOS systems
- Numerous standards working groups

Real-World Implementation includes:

- FAA Facilities Depot – Vertiports, ASOS, AWOS and others
- Interagency UXS Expertise
- Interagency C-UAS Expertise
- Engineering, Manufacturing, Integration and Test Expertise

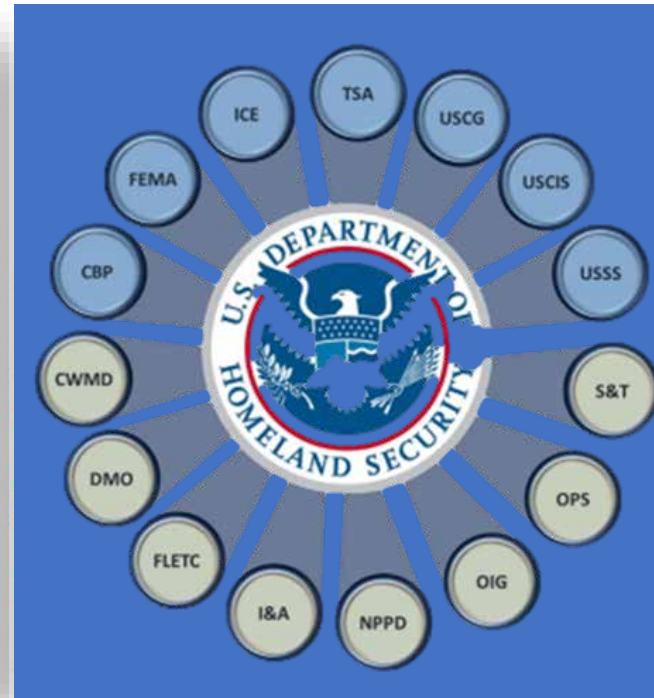
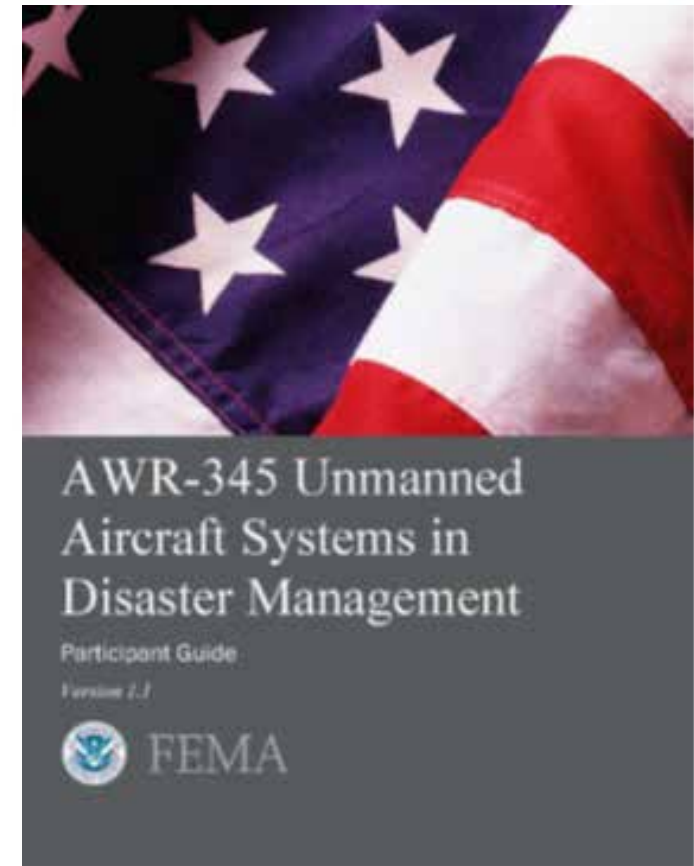
CSG (Combined Sensors Group) -
DCP (Data Collection Package) and Sensors
There are 571 FAA-owned ASOS in the.

- 207 of these ASOS will be replaced by
AWOS-C equipment.

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Uncrewed (UXS) Solutions

- “Whole of Government” Approach
- All-Domain – Requirements understanding
- First Responder – Including First Net Integration
- Data management, ML and AI
- Package & PPE delivery – FAA UAS IPP & Beyond
- Infrastructure Build-Up – Vertiports, EI Sensors, C3, Cellular Towers, etc.
- ARC’s – BVLOS, Counter Unmanned Systems, etc.



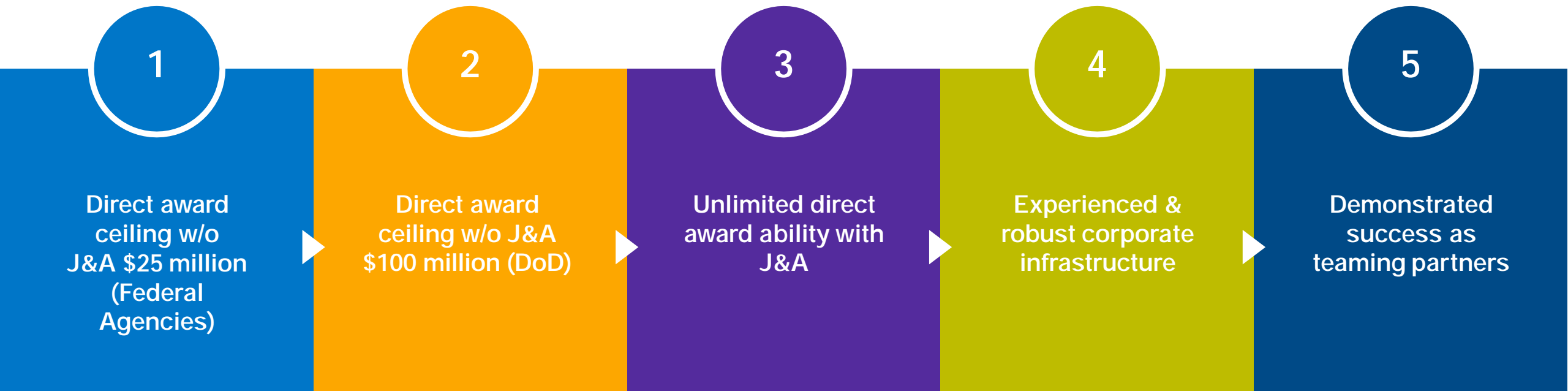
Missions	ISR	Inspection	Security	Mapping / GIS	SAR	Delivery / Retrieval	Comm Networks
Capabilities							
Navigation	U.S. BORDER PATROL		BIOHAZARD	CISA	U.S. BORDER PATROL	BIOHAZARD	U.S. BORDER PATROL
Mobility	CISA		U.S. BORDER PATROL			U.S. BORDER PATROL	CISA
Comms	FEMA	U.S. DEPARTMENT OF HOMELAND SECURITY	CISA	FEMA	FEMA	FEMA	FEMA
Decision Making	FLETC		FLETC		FLETC	FLETC	FLETC
Sensing			ICE			ICE	
Manipulation	X			X			X
Agencies	CWMD	CBP	CISA	FEMA	FLETC	ICE	USCG

Path forward...

- What?
- Who?

CFED Rapid Acquisition Contracting

The 8(a) program includes a sole-source procurement method that permits the selection of a qualified contractor of choice. Unlike traditional 8(a)s, there is no dollar threshold limitation on sole source contracts awarded to a tribally owned 8(a) (regulation: 13 CFR 124.506) and *direct awards to tribal 8(a)s cannot be protested*. Additionally, under the 2020 NDAA Section 823, 8(a) tribally owned direct awards can be authorized by DoD Agencies up to \$100M without a justification and approval.



DHS MARITIME UNMANNED SYSTEMS TECHNOLOGY (MUST)

Oct 2019

Apr 2021

Oct 2021

Nov 2023

Production / Development

Integration

Field Testing

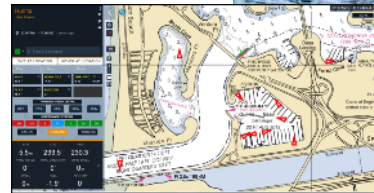
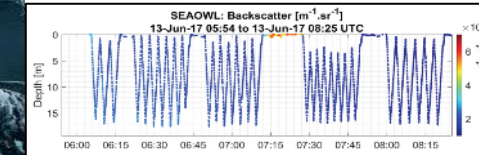
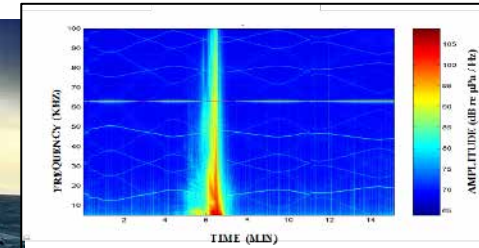
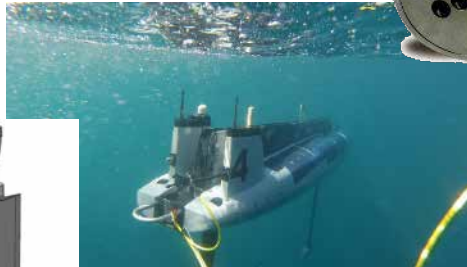
Start

6 Tritons

Systems Ready

Finish

MAINTENANCE LOG (EXAMPLE)								
Maintenance Type	System	Item	Maintenance Required	Operator	Date	Completed	Send Out	Notes
(weekly)	DMS-1	Balloon Bags	Verify if any rips, tears or holes in bags. Fix if necessary.	S.White	18-Nov-2020	Y	N/A	No discrepancies to report
(monthly)								
(quarterly)								
(annually)								



Acceptance Testing

- The vehicle meets quality standards and can be accepted by the client

Performance Testing

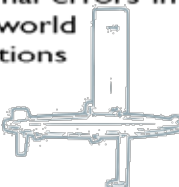
- The vehicle is capable of performing basic commands and is able to run autonomously with only some interference

Field Testing

- The vehicle can operate with minimal errors while conducting small mission and sensor capabilities

Operational Capability

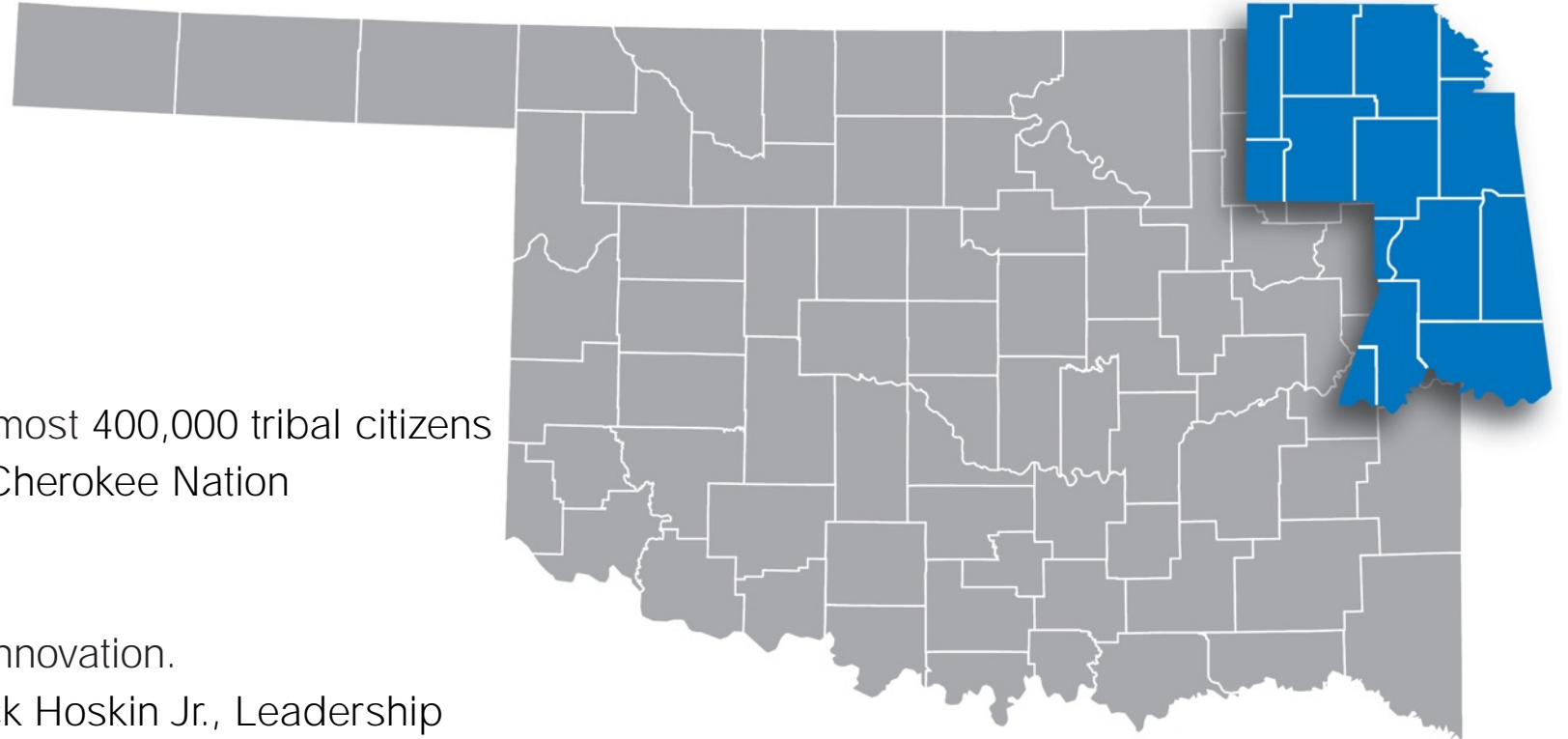
- The vehicle can perform on command with minimal errors in real world situations



CHEROKEE NATION



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CHEROKEE NATION®



- Largest Native American tribe, with almost 400,000 tribal citizens
- Tahlequah, Oklahoma, capital city of Cherokee Nation
- 14-county jurisdictional service area
- Sovereign, tripartite government
- We are technology tribe that leads in innovation.
- Cherokee Nation Principal Chief Chuck Hoskin Jr., Leadership Award for Public Service from the International Economic Development Council (2021)
- Just as Cherokee, Will Rogers, took to the sky nearly 100 years ago, we are looking to emerging technologies to keep us moving forward.



Serving a Higher Purpose

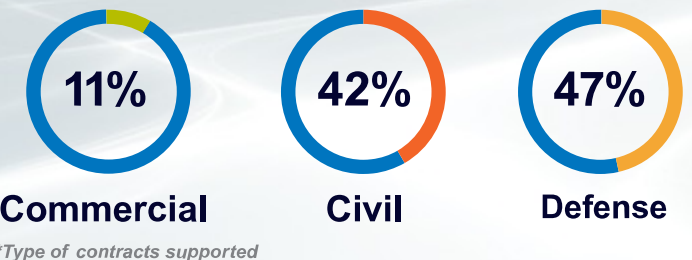
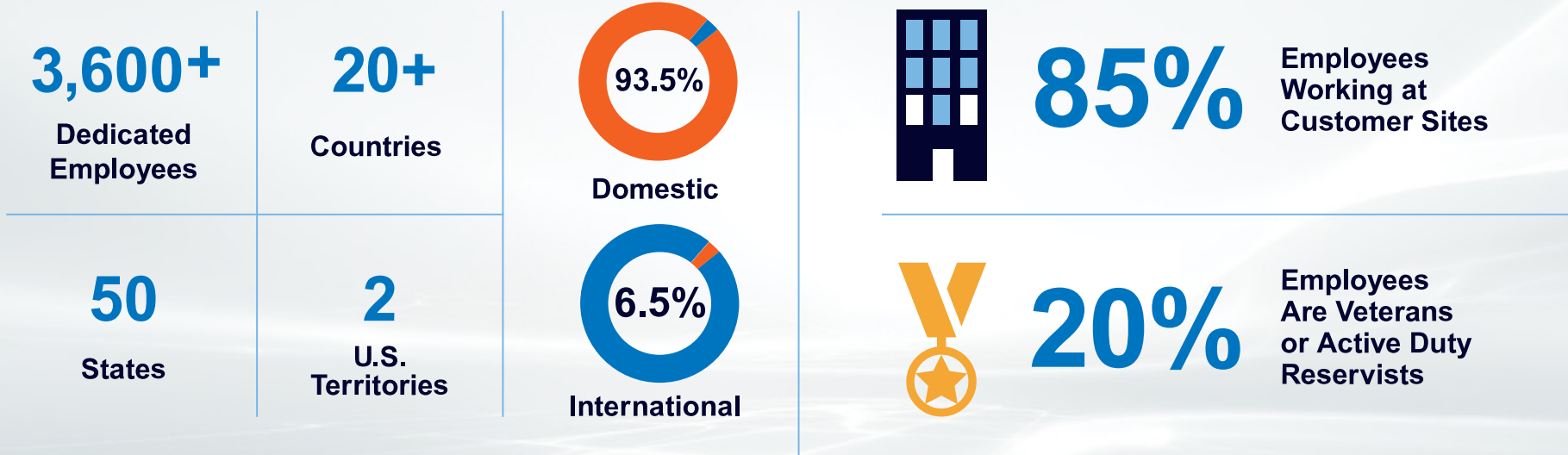
Cherokee Nation Business

- The Cherokee Nation, the largest Native American tribe in the U.S. with almost 400,000 tribal citizens
- Cherokee Nation Businesses – the economic engine of the Cherokee Nation
- Cherokee Nation & its businesses employ more than 11,600 people & has an annual economic impact of \$2.16B on northeast Oklahoma
- 63% of profits reinvested in businesses:
 - Promote self-sufficiency of Cherokee Nation citizens through job opportunities
 - Create jobs in a variety of industries
 - Build capacity from within the tribe by training & educating Cherokee people
 - Partner with industry leaders to learn from the best & train Cherokee Nation citizens to do the same
- 37% of profits support programs & services
 - Education
 - Health Care
 - Housing Programs

Building. Solving. Serving.



Our Workforce & NAICS



#42

\$8+ Billion
In Contract Wins Since 2012

Building. Solving. Serving.

- 541715 - Research and Development in the Physical, Engineering, and Life Sciences
- 541690 - Other Scientific and Technical Consulting Services
- 541714 - Research and Development in Biotechnology
- 541990 - All Other Professional, Scientific and Technical Services
- 541713 - Research and Development in Nanotechnology





Cherokee Federal Capabilities

INTELLIGENCE	INFORMATION TECHNOLOGY	PROFESSIONAL SERVICES	NATURAL ENVIRONMENT	MEDICAL RESEARCH	BUILT INFRASTRUCTURE	ENGINEERING & MANUFACTURING
Geospatial Intelligence	Helpdesk	Training and Education	Restoration	Viral Disease	Construction Management	Rapid Prototyping
Law Enforcement	Enterprise Systems	Logistics Support	Environmental Quality	Surgical Research	Design Engineering	Engineering Services
Human Intelligence	Network Support	Facilities Support / Custodial / Janitorial Services	Environmental & Geologic Research	Vaccine Development	Asset Management	Low Rate Production
Business Intelligence	Cloud / Web Design	Program Management	Resource Management	Clinical Trials	Data Management	Full Scale Production
Financial Forensics	Network Security	Information Technology	Environmental Liabilities	Financial Management	Cost Estimating	Kitting
Strategic Planning Communications	Data Management	Quality Assurance / Quality Control	Data Management	Program Management	Cost & Schedule Management	Warehouse Operations
Information Operations	Uncrewed Systems	Human Resources	Cost Estimating	Epidemiology	Planning & Programming	Depot Level Maintenance
Intelligence, Surveillance, and Reconnaissance	Risk Management Framework	Administrative	Cost & Schedule Management	Bio Surveillance	Sustainability	Systems Integration
Psychological Operations	Programming	Policy & Planning	Planning, Programming, Budget & Execution	Lab Support	Facility Management	Supply Chain/Distribution
Battlespace Awareness	Mobile App Development	Supply Chain Management	Root Cause Analysis	Psychological / Trauma	Physical Security	Field Team/Modifications
Identity Intelligence	Cybersecurity	Financial Management	Base Realignment and Closure Activities	Military Medical Health Readiness	Technical Reachback	Life Cycle Management

Cherokee Federal Programs Core Capabilities Evolving with UXS

Engineering, Scientific, Research & Development & Technical Support

- Design and Construction Support
- Facilities Engineering and Asset Management
- Planning, Programming, Budgeting and Execution
- Environmental Remediation and Compliance
- **Scientific and Technical Subject Matter Expertise**
- **Research and Development (R&D) Support and Staffing**
- Systems Engineering
- Weapon System RDT&E
- Global Health Threat Surveillance
- Patient Safety Policy Implementation
- **Weather Analysis and Modeling**
- **Oceanography & Mapping**
- **Geospatial Data Acquisition & GIS Services**
- **Geospatial Modeling and Application Development**
- **Autonomy**
- **Interoperability**

Intelligence & Analysis Support

- **Intelligence, Surveillance, and Reconnaissance (ISR)**
- **Information Operations**
- **Analysis and Reporting**
- **Battlespace Awareness**
- **Identity Intelligence**
- TENCAP Technical Assistance
- Counter Narcotics and Global Threats

Uncrewed Systems (UXS) Support

- Program Development, Strategies & Roadmaps
- Proof of Concept Coordination
- System engineering – analysis of alternatives
- Test & Evaluation
- Data Management & Analysis (Cloud, ML/AI)
- Facilitating FAA Air & Battle Space Approvals
- Field-Based Operations & Maintenance
- Transitioning to “Fully Operational Capability”
- Policy, Regulations and Compliance
- Cyber, Security and Counter-UXS

Strategic Operations and Data Management

- Program and Project Management
- Configuration and Change Management
- Logistics and Maintenance Management
- Business Reengineering
- Business and Transaction Support
- Warehouse and Logistics Support
- Software Modernization and Maintenance
- Data Life Cycle Management
- IT Infrastructure Upgrades
- Physical Security Systems
- **Systems Administration**
- **Network Management**
- **Data Center Services**
- **Enterprise Architecture**
- **Information Systems Security and Cybersecurity**
- **Artificial Intelligence & Machine Learning**
- **Clouding & Clouding on the Edge**
- **Advanced Data Analytics**

FORWARD-FOCUSED MARKET CAPABILITIES

Uncrewed Systems (UXS) Support

Comprehensive UXS Support

- Inter-Agency UXS Support
- Multi-Domain Support
- Multi-Mission Sets
- Research to Operations
- Operational Test & Assessments



DOD / DHS / DOC Global UXS Support

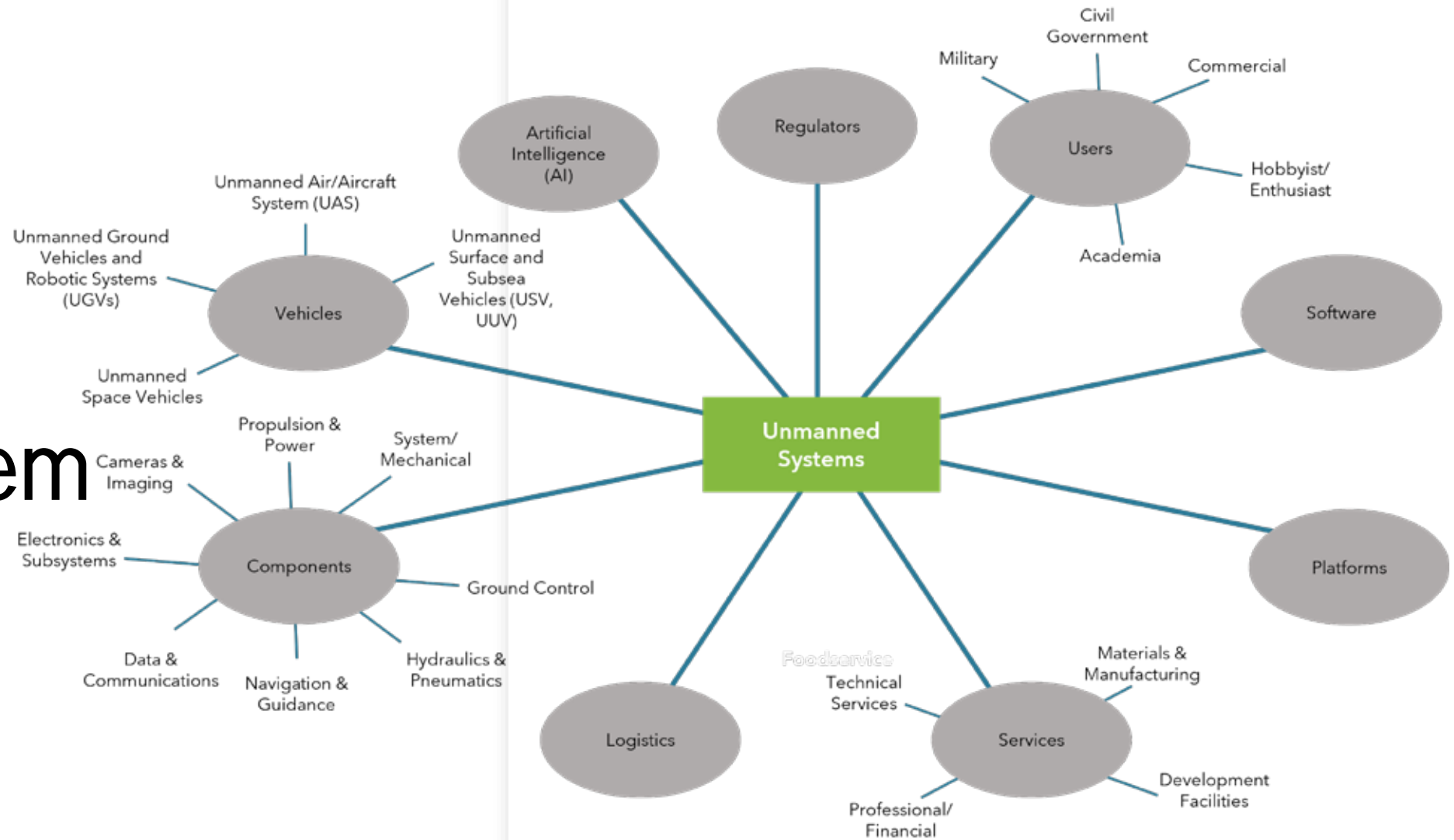
- Pole to Pole Operations
- ISR & Environmental Intelligence
- Big Data Analysis & Storage
- Operational Transitions
- Manned – Unmanned Teaming



UXS Community



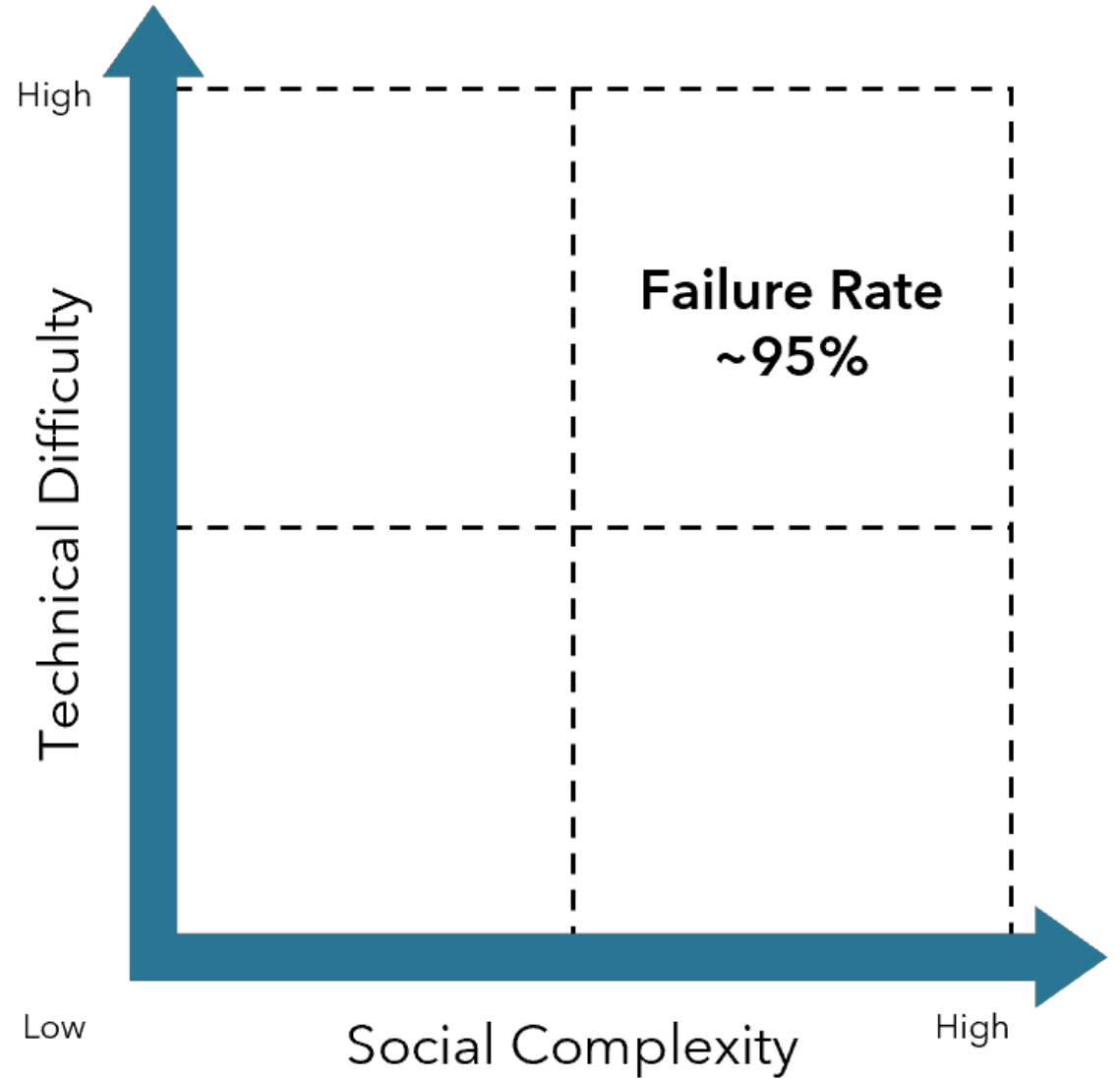
UXS Ecosystem





Quad 4

High Risk & Impact





Moral Courage

**Moral
Courage**

