



Under the Radar Opportunities: Defense

Ben Craig
Alion Science & Technology

Alion is a mid-sized systems integrator that designs and delivers engineering solutions, with large company resources and small business responsiveness.



Alion was founded in 2002 upon IITRI'S 66 years of engineering science and technology solutions



Adm. Byrd's Snow Cruiser for Artic Exploration

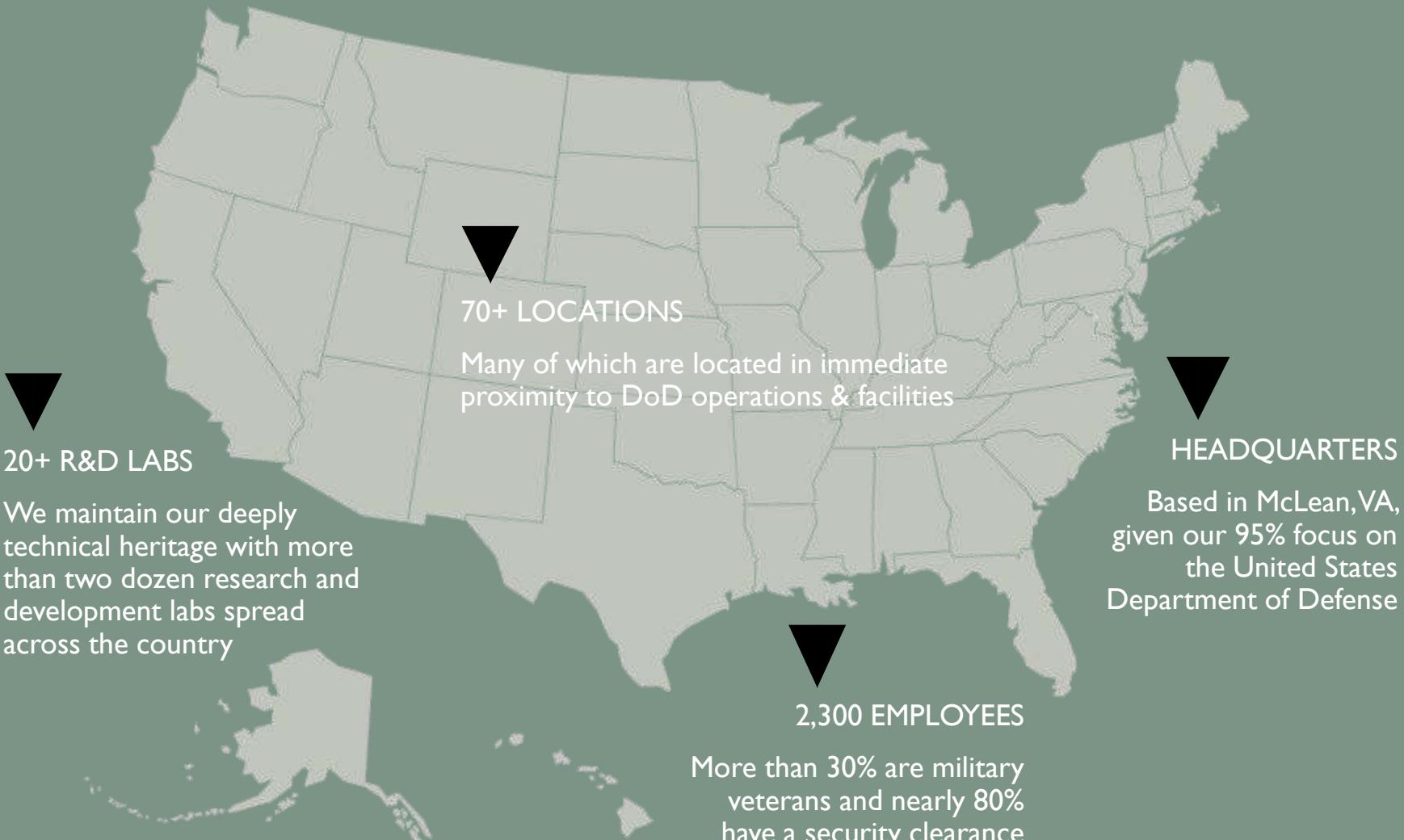


Titanium "Amour Alloy" (Ti-6Al-4V)



Mission-Critical Thermal Space Coatings

OUR FOOTPRINT



ALION'S CORE COMPETENCIES

We deliver agile engineering solutions — from the lab to the battle space — across six core capability areas.



WEAPONS PLATFORMS



SYSTEMS ENGINEERING & INTEGRATION



MODERNIZATION & SUSTAINMENT



NETWORK & SOFTWARE ENGINEERING



INTEL, SURVEILLANCE & RECON (ISR)



LIVE, VIRTUAL, CONSTRUCTIVE TRAINING

TOW-2 MISSILE GUIDANCE BATTERY

Our integrated battery system offers the Army a more effective and efficient solution, saving troops both time and energy.

KEY FACTS

- Introduces Lithium-Ion commercial battery (replaces Nickel Cadmium)
- Replaces 3 large units with embedded battery system
- Obviates need for obsolete battery charger
- Environmentally acceptable
- 66% more efficient



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Military Battery Needs, Connections, and Opportunities



Battery Needs in the Defense Sector

Legacy Batteries

- Primary
 - Alkaline
 - Lithium metal (manganese dioxide, carbon monofluoride, sulfur dioxide, thionyl chloride)
 - Carbon-Zinc
- Secondary
 - Lithium-ion
 - Lead acid
 - Nickel (Cadmium and Metal Hydride)
 - Silver Zinc
- Thermal Batteries

New Battery Technology

- Innovative cell and battery technology
- Supply chain security
- Manufacturing technology

Traditional Technical Areas

Safety
Standardization
Operating and storage temperature
High energy density
High power capability
Shelf life
Improved logistics

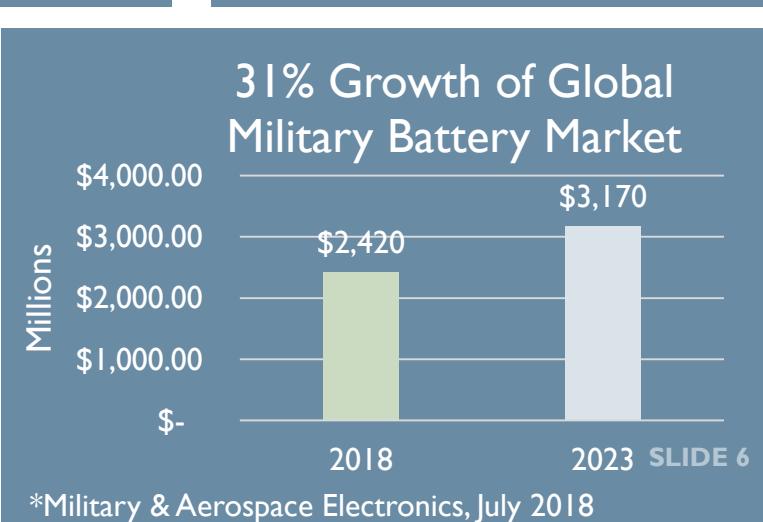
Emerging Areas

Solid-state
Flexibility
High voltage
Zero-volt
Bipolar
Domestic sources
Advanced production
Recycling, recovery, reuse

Military Battery Applications

Undersea
Surface Ships
Aircraft
Soldier Equipment
Ground Vehicles
Ground Support Equipment
Robotics and Unmanned Systems
Spacecraft
Facilities

31% Growth of Global
Military Battery Market



*Military & Aerospace Electronics, July 2018

Military Battery Connections

Industry Associations, Consortia, and Events

- NDIA Military Power Sources Committee
- Power Sources Conference
- Joint Service Power Expo (Being resurrected?)
- Center for Research in Extreme Batteries (CREB)
<https://creb.umd.edu/>
- Consortium for Energy, Environment and Demilitarization (CEED)
<https://cmgcorp.org/ceed/>
- Sensor, Communication and Electronics Consortium (SCEC)
<https://www.sossecinc.com/scec/scec-home/>
- Aviation and Missile Technology Consortium (AMTC)
<https://www.amtcenterprise.org/>
- Undersea Technology Innovation Consortium (UTIC)
<https://www.underseatech.org/>

Defense and Service Organizations

- Research Labs
 - Army Research Lab
 - Air Force Research Lab
 - Navy Research Lab
- Engineering R&D Centers
 - AMRDEC, ARDEC, TARDEC, NSERDEC, ERDC, CERDEC
 - NAVAIR, NSWC, NUWC, SPAWAR
 - Air Force Material Command
- OSD ManTech

Defense Agency Communities

- Power Sources Technical Working Group
- Defense Operational Energy
- National Manufacturing Institutes (i.e., NextFlex)
(<https://www.manufacturingusa.com/>)

Acquisition & Logistics

Science and Technology

Research and Development

Manufacturing Technology

■ DLA BY THE NUMBERS ■

- \$35.3B in Revenue
- Over \$10B in Small Business
- \$4.2B supporting over 40 Federal Agencies
- \$1.4B in Foreign Military Sales
- ~100% Military Services' Consumables
- Over 12K Suppliers
- 9K Awards per day
- Manage 5.2M line items
- \$272B Active Contracts Managed
- 27K Workforce, 2K Forward Positioned
- Located in 46 States and 28 Countries
- 766 Locations co-located with customer

■ SIX MAJOR BUSINESS UNITS/MAJOR SUBORDINATE COMMANDS ■

TROOP SUPPORT

PHILADELPHIA, PA



Global Supply Chains: Subsistence, Clothing & Textiles, Construction & Equipment, Medical, and Industrial Hardware

- \$15.6B Revenue
- 51K+ Customers
- 3 Locations

LAND AND MARITIME

COLUMBUS, OH



Repair parts for ground-based and maritime systems

- \$3.5B Revenue
- 13K+ Customers
- 2K weapon systems
- 8 Locations

AVIATION

RICHMOND, VA



Repair parts for aviation systems, nuclear systems, maps and Industrial Plant Equipment

- \$4.6B Revenue
- 13K+ Customers
- 2K weapon systems
- 19 Locations

ENERGY

FORT BELVOIR, VA



Global fuel and comprehensive energy solutions

- \$9.8B Revenue
- 4K+ Customers
- 602 Fuel Locations
- 43 Locations

DISTRIBUTION

NEW CUMBERLAND, PA



Global storage and distribution solutions

- \$745M in Revenue
- 243K+ Customers
- \$105B in Inventory
- 43 Locations

DISPOSITION SERVICES

BATTLE CREEK, MI



Global solutions for disposal of excess property

- \$323M Revenue
- 31K+ Customers
- Reutilization: \$2.5B
- 89 Locations

BUY

DISTRIBUTE

DISPOSE

Defense Logistics Agency R&D Battery Network



BATTNET is a designated Defense Operational Energy Program and is managed under the Defense ManTech Program

Focus

Improve the operational energy environment for the warfighter

- Availability
- Reliability
- Logistics footprint
- Soldier burden

Performance Improvements

Develop batteries with:

- Better shelf life
- Reduced premature disposals in the field
- Increased safety
- Increased availability



Improve DoD battery logistics by developing and leveraging advanced manufacturing technologies through key industry partners

Goal

Develop logistics solutions that deliver batteries to the warfighter in a ready to use state

Program Accomplishments and Technologies

- New manufacturing for high energy Li-CF_x BA-5790 batteries
- Li-ion power sources for US military
- Low cost battery production
- Laser cutting
- 6T manufacturing scale up

WARFIGHTER FIRST

Steps to Qualification

(An overly simplistic view)

Opportunities

Embryonic S&T concept

- SBIR
- Research Labs

Prove the concept

- SBIR Phase II
- Research Labs

Merge to application and mature technology

- Engineering R&D Center
- OTAs

Scale up and transition

- ManTech with Program Office Support

Qualification

- Program Office, support from Engineering Centers

Contract Mechanisms

- BAAs
- OTAs
- RFPs
- SBIRs
- Supply contracts
- OEM subcontracts

SBIRs – Pre-Release 19 April

DLA BAAs

BATTNET Solicitation Number: BAA0004-16
<https://www.fbo.gov/spg/DLA/J3/DSCP-PB/BAA0004-16/listing.html>

\$15 million during Fiscal Years 2016-2021

Emergent R&D Solicitation Number: BAA-0001-17
Development of Solid State Battery Technology
<https://www.fbo.gov/spg/DLA/J3/DSCP-PB/BAA0001-17/listing.html>

\$10M Congressional Add for DLA BATTNET R&D in 2019



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Big ideas. Real solutions.

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