

ALION



# 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

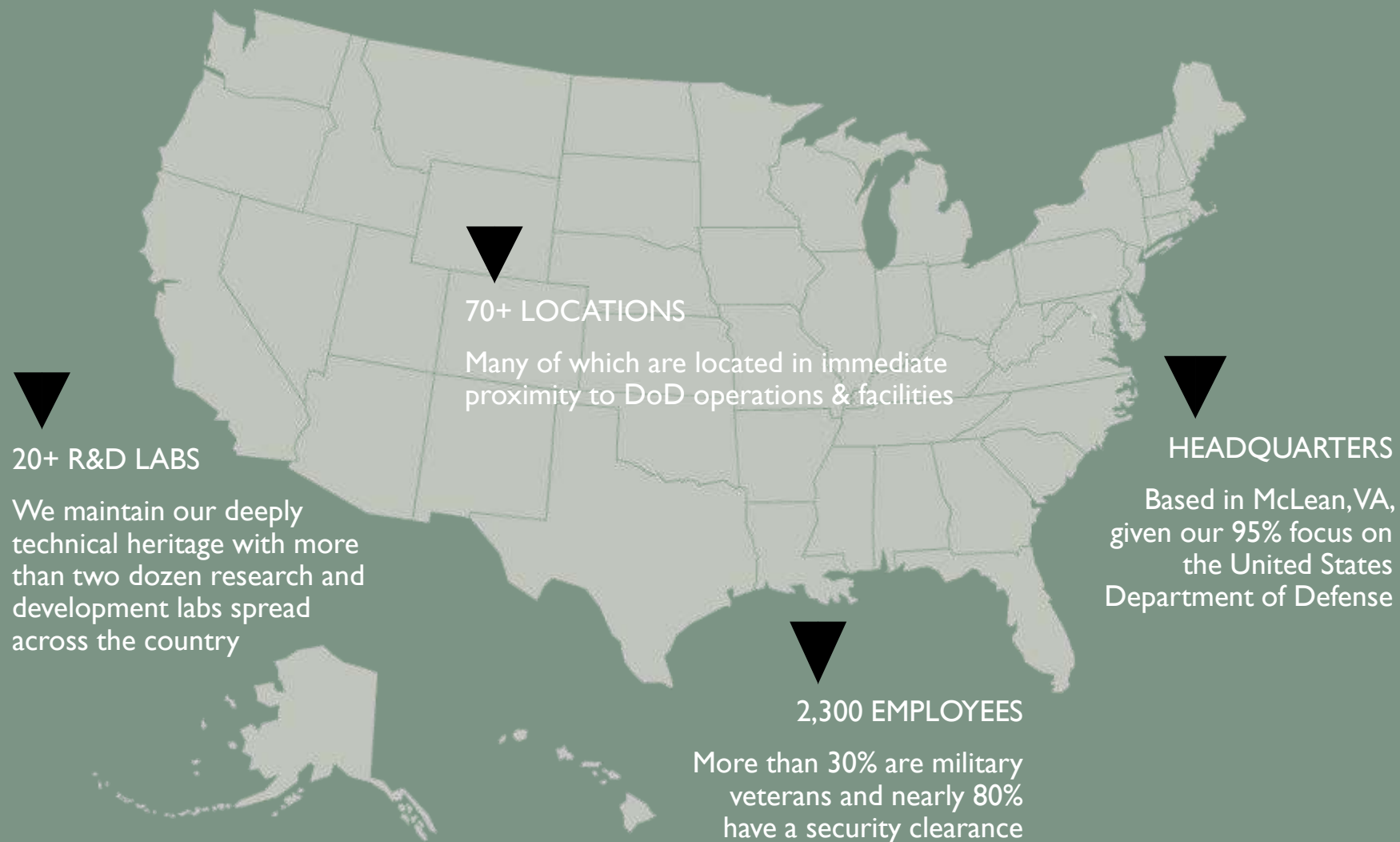


Titanium "Amour Alloy" (Ti-6Al-4V)



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

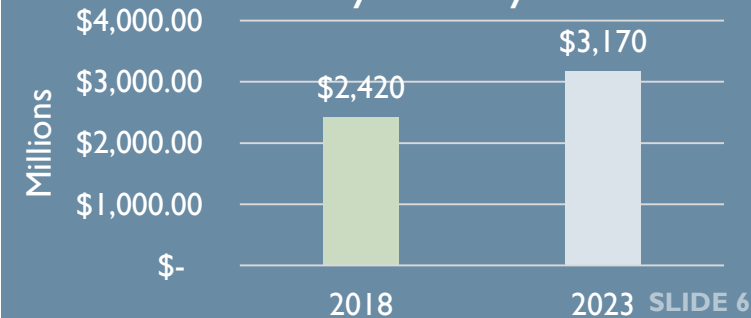
### Emerging Areas

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

SLIDE 6

# 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, NSWG, 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/>)



# Defense Logistics Agency

## 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	LAND AND MARITIME	AVIATION	ENERGY	DISTRIBUTION	DISPOSITION SERVICES
PHILADELPHIA, PA	COLUMBUS, OH	RICHMOND, VA	FORT BELVOIR, VA	NEW CUMBERLAND, PA	BATTLE CREEK, MI
					
Global Supply Chains: Subsistence, Clothing & Textiles, Construction & Equipment, Medical, and Industrial Hardware	Repair parts for ground-based and maritime systems	Repair parts for aviation systems, nuclear systems, maps and Industrial Plant Equipment	Global fuel and comprehensive energy solutions	Global storage and distribution solutions	Global solutions for disposal of excess property
<ul style="list-style-type: none"><li>• <b>\$15.6B Revenue</b></li><li>• 51K+ Customers</li><li>• 3 Locations</li></ul>	<ul style="list-style-type: none"><li>• <b>\$3.5B Revenue</b></li><li>• 13K+ Customers</li><li>• 2K weapon systems</li><li>• 8 Locations</li></ul>	<ul style="list-style-type: none"><li>• <b>\$4.6B Revenue</b></li><li>• 13K+ Customers</li><li>• 2K weapon systems</li><li>• 19 Locations</li></ul>	<ul style="list-style-type: none"><li>• <b>\$9.8B Revenue</b></li><li>• 4K+ Customers</li><li>• 602 Fuel Locations</li></ul>	<ul style="list-style-type: none"><li>• <b>\$745M in Revenue</b></li><li>• 243K+ Customers</li><li>• \$105B in Inventory</li><li>• 43 Locations</li></ul>	<ul style="list-style-type: none"><li>• <b>\$323M Revenue</b></li><li>• 31K+ Customers</li><li>• Reutilization: \$2.5B</li><li>• 89 Locations</li></ul>
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

## 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<sub>x</sub> BA-5790 batteries
- Li-ion power sources for US military
- Low cost battery production
- Laser cutting
- 6T manufacturing scale up

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

WARFIGHTER FIRST



# Steps to Qualification

(An overly simplistic view)

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

## Opportunities

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



# ALION

*Big ideas. Real solutions.*

To learn more, visit [www.alionscience.com](http://www.alionscience.com)