



DELIVERING BREAKTHROUGH SOLUTIONS

CFD RESEARCH CORPORATION CAPABILITIES OVERVIEW



Who We Are



CFDR is established as an
Innovation Pioneer
and technology
Thought Leader
supporting industry and government



Staff comprised of leaders across
a multitude of technologies with
Education and Experience
required to lead advances



We have been awarded
65 Patents and have
Out-Licensed 35
with royalties or sold/assigned to
our partners



We have worked on
1400 Contracts
Currently over **80**



CFDR has transitioned
Technologies
into the market
and spun-out
20 Companies

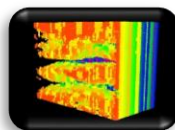
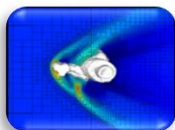


Committed to
Supporting our Community to improve
Quality of Life for all

Company Overview



BUSINESS UNITS



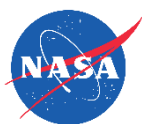
Research and Development

- Small Business Innovative Research (SBIR) and Small Business Technology Transfer (STTR) Programs
- Critical technologies
 - Aerospace and propulsion
 - Energy and materials
 - Life sciences



Expert Services

- EXPRESS Blanket Purchase Agreement for Technical Services for Team Redstone (541330)
 - Missile and aviation systems support
 - Protective technologies and energy systems
- Public Health
- Army and Air Force Medical



FOOTPRINT



EMPLOYEE-OWNED

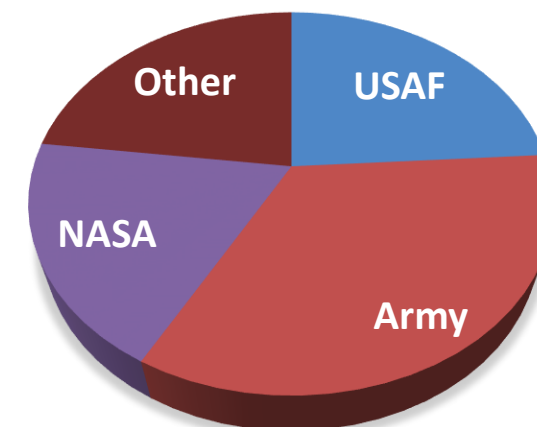
140 EMPLOYEES

Cleared 40%

PhD 35%

Advanced Degrees 70%

CUSTOMER BASE



MATURE INFRASTRUCTURE



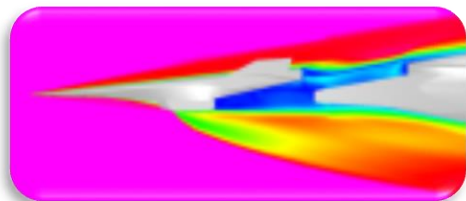
CMMISVC/2SM
Exp. 2020-12-01 / Appraisal #30964



Capabilities



AEROSPACE

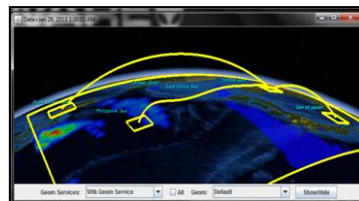
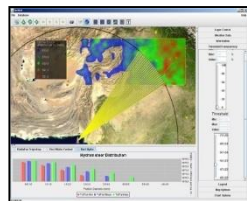


• Aeromechanics

- Aircraft, missile, launch vehicle aerothermodynamics
- Coupled Aero-servo-thermo-elastic analysis
- Flight dynamics, separation and abort dynamics analysis
- Plasma research and applications
- Model-Order Reduction for complex system simulations

• Environmental Effects

- Flight simulation aeroheating and particulate erosion
- Software subsystem built in SOA for C4I integration
- Climatology, now-forecasting, satellite and radar data
- Integration with fielded situational awareness software

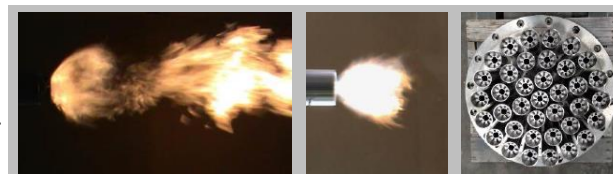


PROPULSION

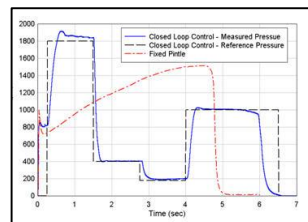


- **Scottsboro Test Facility** for prototype development
 - Air Turbine for Next Generation Jamming Pod
 - Helicopter inlet filter for sand ingestion protection
- **Combustion**, fuel injectors, fuel mixing

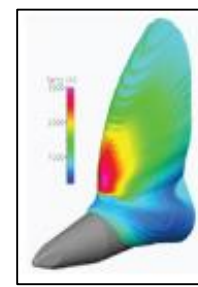
*APTU
Injector
Development*



- **Divert & Attitude Control Systems**
- **Gelled Propellant Systems**
- **Throttleable Propulsion**



Thrust Profile



Thruster Modeling

ENERGY



• Energy Storage

- Next-generation thermal batteries
- Solid-state batteries
- Alternative fuel sources
- Nanomaterial-based electrodes
- Battery test and evaluation



Bio-Battery

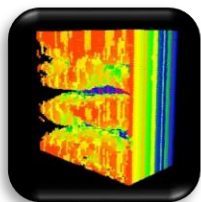
• Smart Energy

- Advanced energy management
- Battery modeling and simulation
- Grid modernization
- Power and energy analytics



Capabilities

MATERIALS

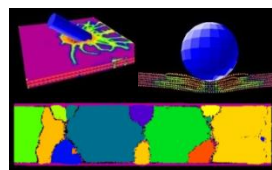


• High Performance Materials

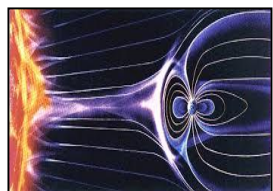
- Material property prediction
- High-performance energetics
- High-temp material & coatings

• Radiation Effects

- Electronics and materials
- Radiation environments
- Application integration



Fracture Dynamics



Multi scale tools with links to macro scale platforms like CFD

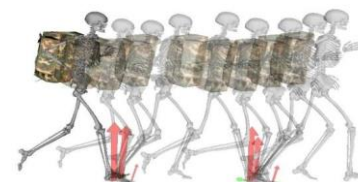
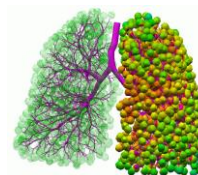
• Additive Manufacturing

- Process optimization
- Models linking build process to finished part properties
- Applications related to certification & qualification

LIFE SCIENCES



- **Warfighter Protection:** Traumatic Brain Injury, Improved Helmets/Pads/PPE, Vehicle Crew Injury
- **Warfighter Performance:** Lightening the Load, Spinal/Shoulder/Neck injury, Pain & Fatigue
- **Personalized Health Apps & Portal:** Asthma, Burn Injury, Opioids, Warrior Health, Vestibular Rehabilitation
- **Drug Delivery, PK/PD, Toxicity Modeling**



- **Microfluidic biochips** for sample preparation and environmental, biological and clinical diagnostics
- **SynVivo** for Drug Discovery



CYBER SECURITY

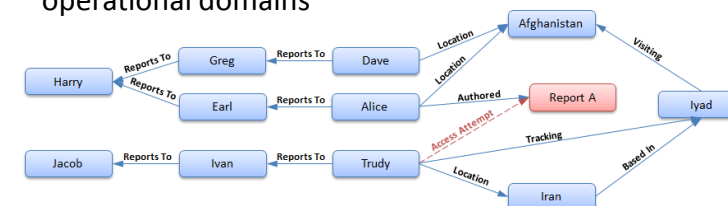


• Protective Technologies

- Verification, validation, and accreditation of critical information
- Electronic component evaluation for weapons systems
- Security of FPGAs, ASICs, and components
- Modeling of mitigation approaches

• Trust and Access

- Efficient methods of establishing trust in information from Service-Oriented Architectures & Big Data
- Access control and awareness via logical proximity
- True assessment of “need-to-know”
- Beyond spatial, temporal, organizational, and operational domains

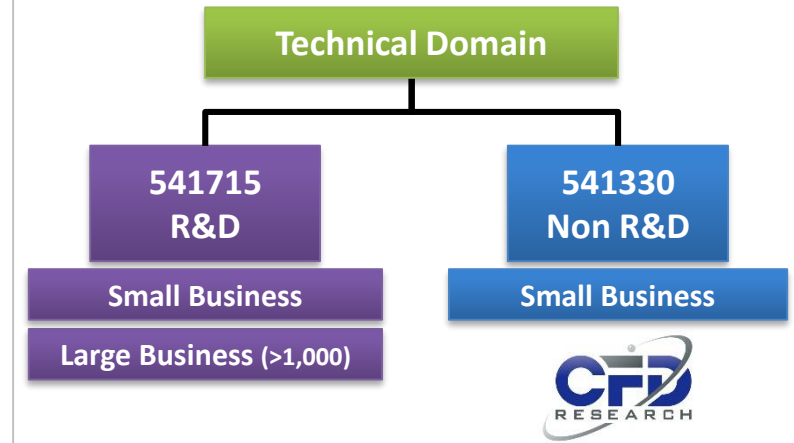


EXPRESS BPA Award



CFD Research Awarded Blanket Purchase Agreement (BPA) for Expedited Professional and Engineering Support Services (EXPRESS)

NEW NAICS CODE



LARGEST CUSTOMERS



REQUIREMENTS

PWS Area	Subparagraphs																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
3.01 Artificial Intelligence																				
3.02 Aeromechanics Technology																				
3.03 Airworthiness Qualification/Release																				
3.04 Cyber Security and Information Assurance																				
3.05 Electronics/Avionics/Visionics/Survivability Equipment																				
3.06 Environmental/Safety Initiatives																				
3.07 Guidance Technology - Guidance Analyses																				
3.08 Guidance Technology - Electronics & Computer Technology Support																				
3.09 Guidance Technology - Weapon System Guidance																				
3.10 Industrial Operations																				
3.11 Infrared																				
3.12 Image and Seismic, Acoustic, Magnetic (SAM) Electromagnetic (EM) Signature																				
3.13 Manpower & Personnel Technical Support																				
3.14 Manufacturing Science and Technology																				
3.15 Navigation and Control																				
3.16 Optics and Laser																				
3.17 Obsolescence Management																				
3.18 Product Assurance																				
3.19 Production Engineering																				
3.20 Propulsion Systems/Technology																				
3.21 Radio Frequency Technology																				
3.22 Systems Engineering																				
3.23 Structures and Materials																				
3.24 Space Related Technical Functional Specialty Area																				
3.25 Systems Simulation and Modeling																				
3.26 Software Engineering																				
3.27 Technical Data Management																				
3.28 Test and Evaluation																				
3.29 Test, Measurement, and Diagnostic Equipment/Nondestructive Test Equipment																				
3.30 Warheads																				

- 30 Technical Areas
- Over 200 Requirements

TEAM

