

# Benét Laboratories/Watervliet Arsenal

## Overview

*“Products That Radically Redefine Warfare, Enabling the American Warfighter to Dominate the Battlefield”*

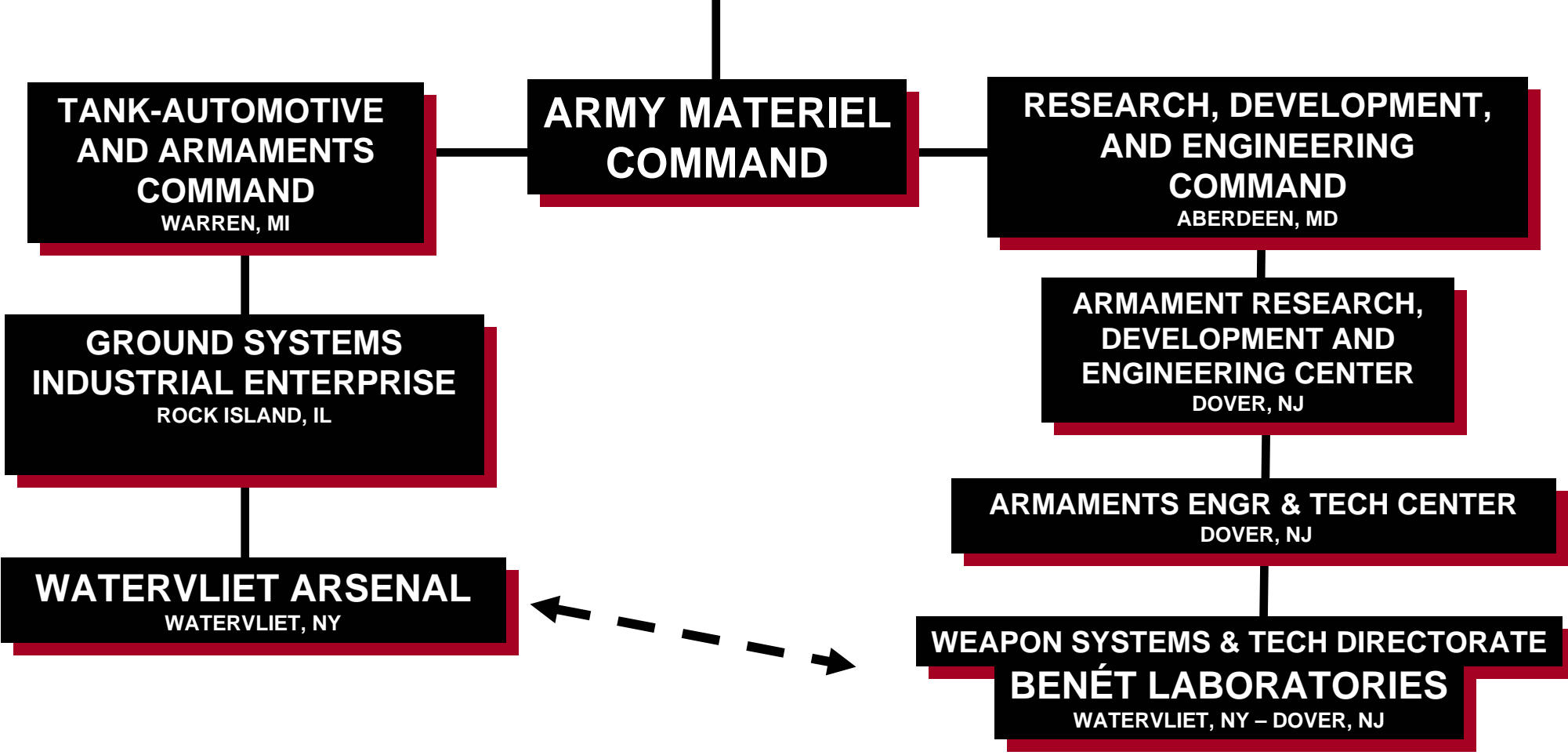


**Russ Fiscella**  
**Director**

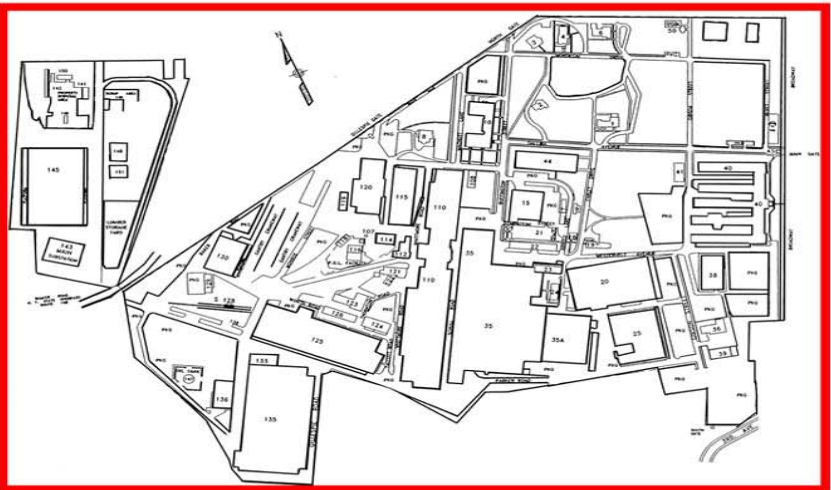
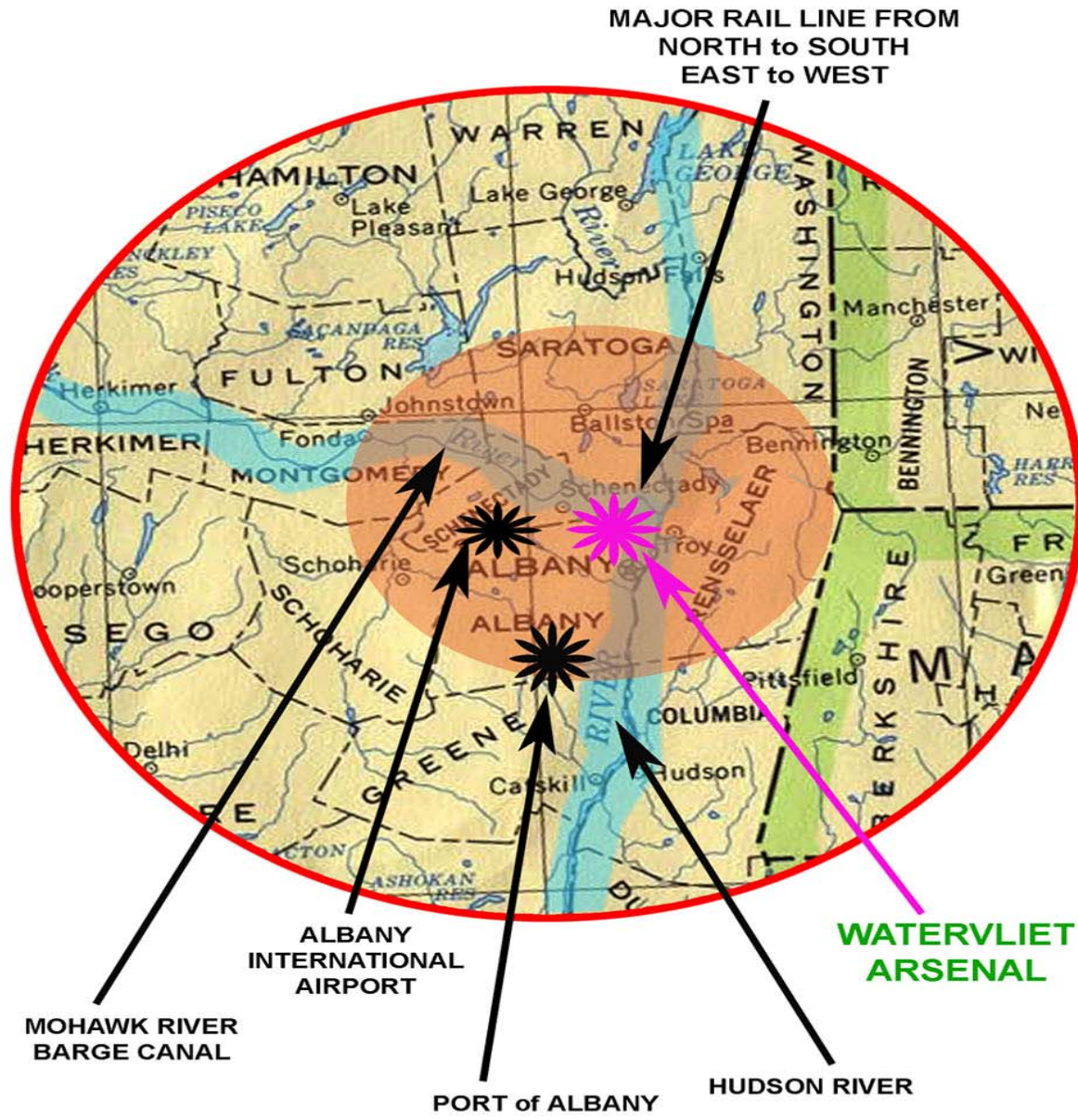
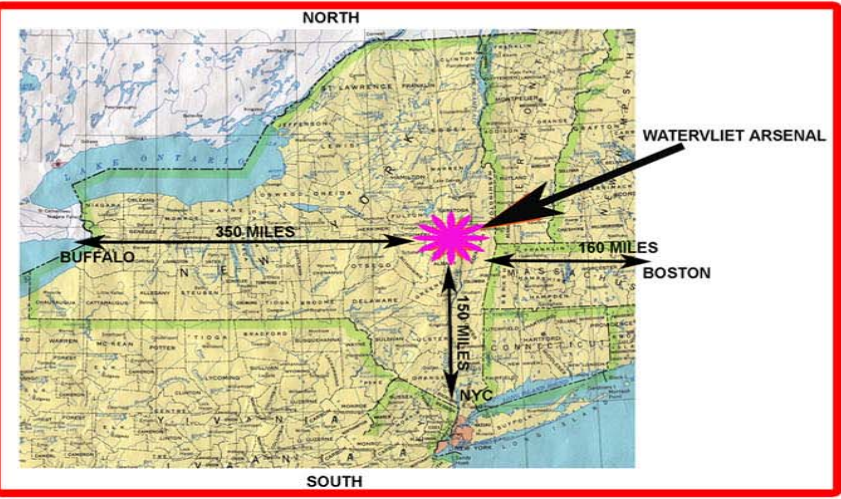


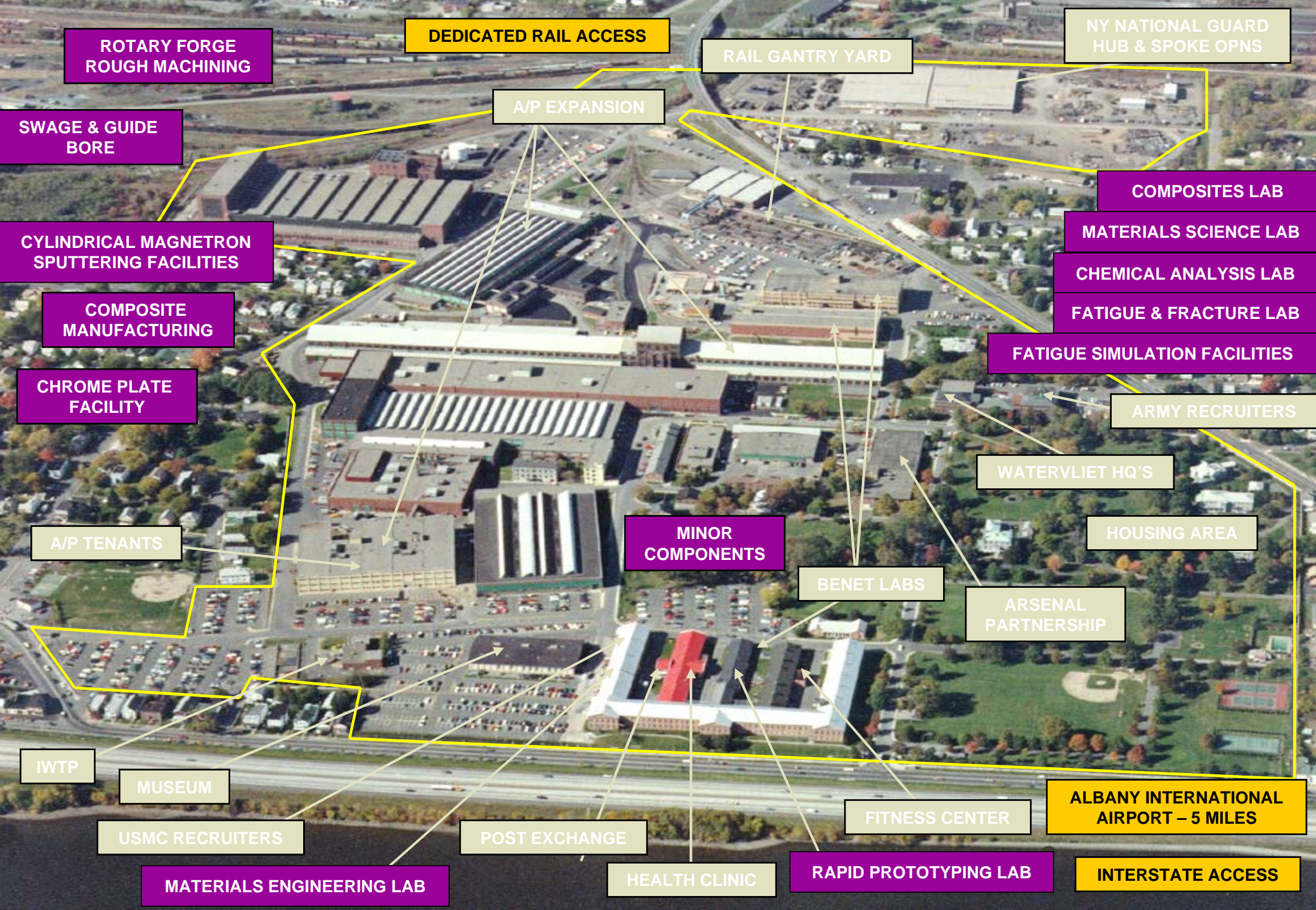
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# DEPARTMENT OF ARMY



# WHERE WE ARE





ROTARY FORGE  
ROUGH MACHINING

DEDICATED RAIL ACCESS

RAIL GANTRY YARD

NY NATIONAL GUARD  
HUB & SPOKE OPNS

SWAGE & GUIDE  
BORE

A/P EXPANSION

COMPOSITES LAB

CYLINDRICAL MAGNETRON  
SPUTTERING FACILITIES

MATERIALS SCIENCE LAB

COMPOSITE  
MANUFACTURING

CHEMICAL ANALYSIS LAB

CHROME PLATE  
FACILITY

FATIGUE & FRACTURE LAB

FATIGUE SIMULATION FACILITIES

ARMY RECRUITERS

A/P TENANTS

MINOR  
COMPONENTS

WATERVLIEET HQ'S

HOUSING AREA

BENET LABS

ARSENAL  
PARTNERSHIP

IWTP

MUSEUM

USMC RECRUITERS

POST EXCHANGE

FITNESS CENTER

ALBANY INTERNATIONAL  
AIRPORT - 5 MILES

MATERIALS ENGINEERING LAB

HEALTH CLINIC

RAPID PROTOTYPING LAB

INTERSTATE ACCESS

# CORE CAPABILITIES

## Maintain a Combat Ready, Deployable Force

- Abrams, Stryker, M198 Howitzer, M119 Howitzer, M777 Howitz M109 Howitzer, 60mm, 81mm, 120mm Mortar

### Supporting Core Capabilities

- Ø Cannon, Gun Tube and Mortar Manufacturing
- Ø Component Fabrication
- Ø Subsystem Assembly
- Ø Machining

### Key Processes and Skills on Site

#### Processes

- Ø Rotary Forge
- Ø Chrome Plate
- Ø Continuous Heat Treat
- Ø Swage
- Ø Composite Manufacturing
- Ø Stress Relieve/Shrinkage

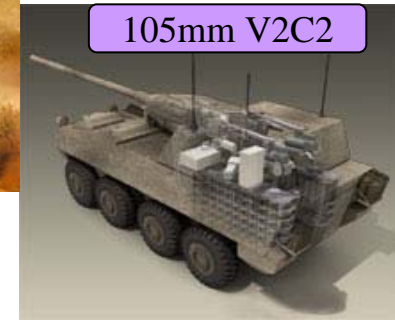
#### Skills

- Ø Machining
- Ø Engineering
- Ø Metallurgist
- Ø Tool & Die Making
- Ø Quality

Abrams



105mm V2C2



Mortars



Stryker



Paladin



Lt Wt 155



HMMWV ASK



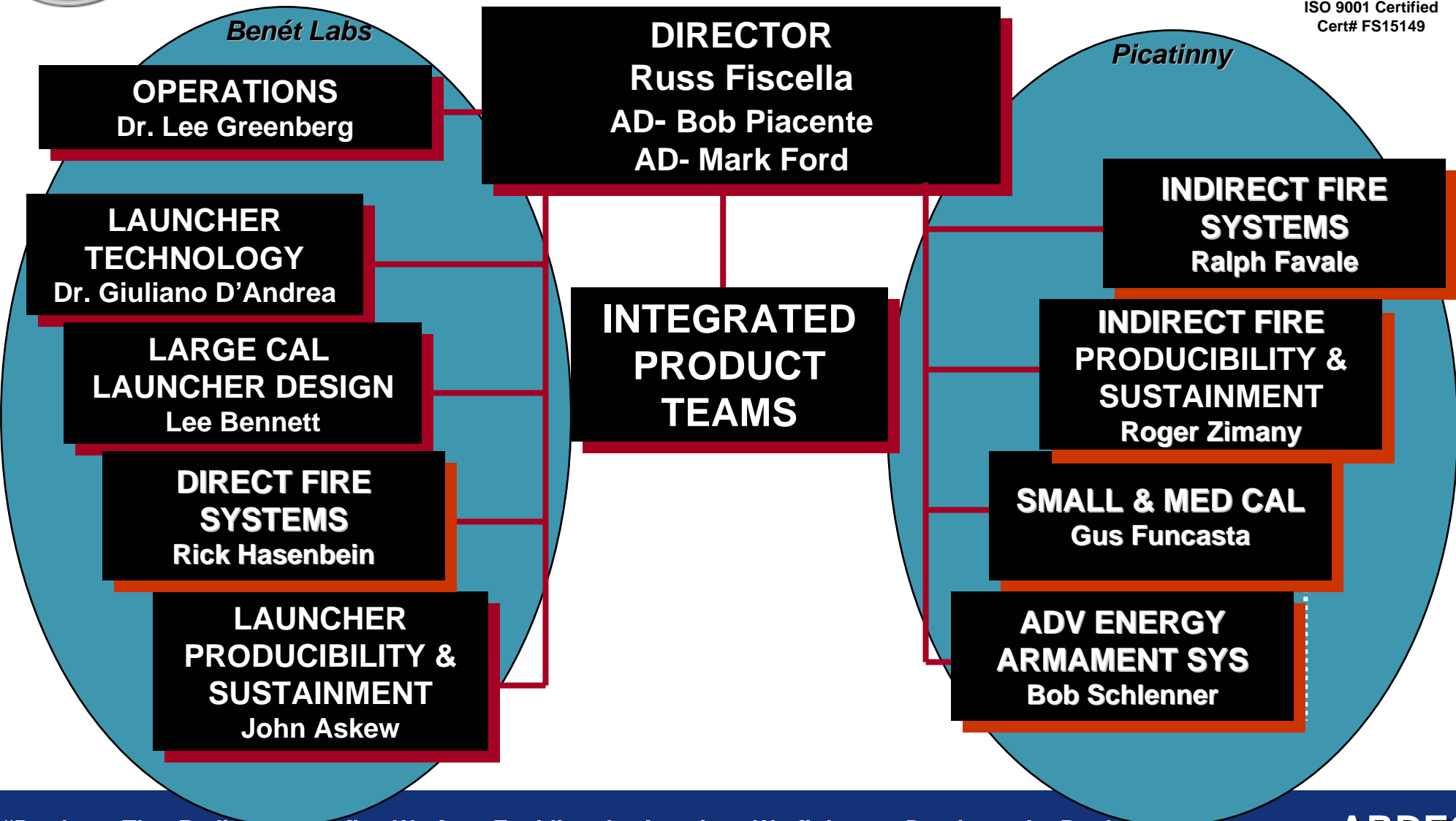
**Avg Annual Revenue (FY03/04) \$135M**



# WEAPONS SYSTEMS & TECHNOLOGY



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*"Products That Radically Redefine Warfare, Enabling the American Warfighter to Dominate the Battlefield"*

**ARDEC**



# **BENÉT SNAPSHOT**



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## **▶ 250 Personnel**

- 85% Technical
- Regenerated 33% of workforce in past 5 years
- Personnel with the skills necessary for Tomorrow
- Partnered for immediate access to specialized skills

## **▶ \$40 million customer financed business**

## **▶ Array of unique and specialized facilities**

- World class scientific and engineering capabilities



# ***PARTNERING ESSENTIAL FOR TOMORROW***



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- ▶ **Invest in Academe**
- ▶ **PEO's/PM's increasingly engaging systems contractors**
- ▶ **The Benét Model**
  - **Partner with the best to quickly infuse new capabilities for all services**



# **OBJECTIVE FORCE**

## ***Future Combat System***



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**System Requirements Now Defined by Users**

**Lead System Integrator Selected (BOEING/SAIC)**

**Workshare Announced for Vehicle Developers**

**General Dynamics: Line-Of-Sight (LOS)**

**United Defense: Non-LOS (Cannon & Mortar)**

**Vehicle Developers Teaming with Benét Labs for Main Armament Development**



# Future Combat Systems Advanced Gun Technology



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- **REQUIREMENT:**

Mature armament technologies to enable large caliber lethality from C130 transportable FCS



- **APPROACH:**

LOS/BLOS 120 mm ATD  
NLOS-C/NLOS-M  
Rarefaction Wave Gun (RAVEN)  
Benign muzzle brakes

- **ENABLING TECHNOLOGIES:**

Lightweight composite components  
Recoil mitigation/management  
Thermal management  
Multi-role launcher capability





# ***XM776 CANNON For LW155 TOWED HOWITZER***



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**Joint USMC - US Army Program**

**Replaces the 155mm M198**

**Cannon is compatible with JBMOU**

**System wgt 9000 lbs or less**

**Cannon weighs 25% less than M198**

**Range 30 to 40 km**

**Rate of fire 5 to 8 rds/min**





# **Stryker LAV MGS 105mm M68A1E4 Launcher**



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- **Brigade Combat team**
- **CRADA with GDLS\***
- **Modified 105mm M68 cannon**

*\*(Interim Armored Vehicle Joint Venture contractor along w/GM Canada)*



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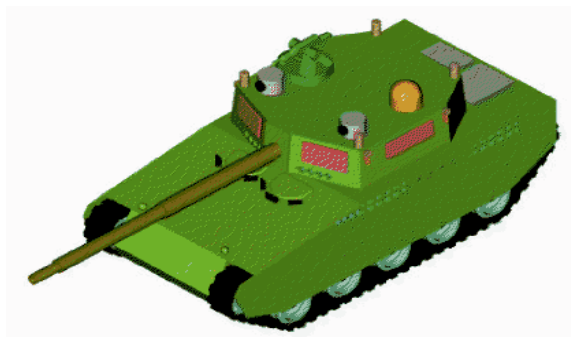


# CANNON WEAR and EROSION PROGRAM

## Advanced Bore Protection



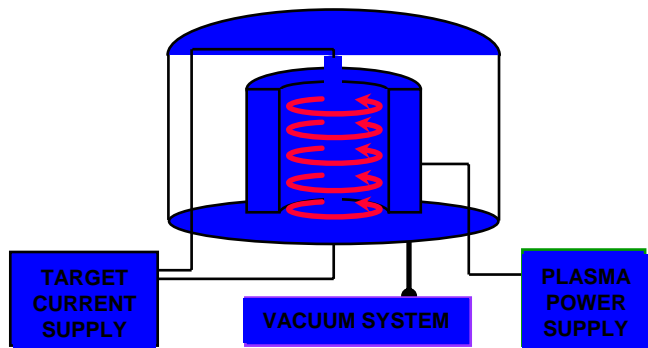
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Future weapons require increased lethality  
Increased muzzle energy & velocity  
Reduces barrel life

Chrome plating inadequate

*New bore coating material needed*



Cylindrical Magnetron Sputtering

Develop improved bore protective material  
Higher melting pt  
Maintains/increases current barrel life  
Develop deposition process which:  
Is environmentally benign  
Reduces manufacturing time/costs



# **TECHNOLOGY TRANSFER ACTIVITIES, CRADA's, & TEST AGREEMENTS**



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- ▶ **Partnering with the Defense Industry using Cooperative R&D Agreements**
  - Over 100 in last decade; over 30 currently active
  - UDLP, GD, BAE, Raytheon, Cadillac Gage, etc.
  
- ▶ **Partnering with local industry – including those located on site**
  - Oak Mitsui – Advanced thin films material analysis
  - Elmhurst Research – Ultra high pressure vessels for food industry
  - HartChrom – Chemical and physical testing
  - Plug Power – Fuel cells material analysis
  - General Electric Corporate R&D Center – Materials Analysis
  - Starfire – Advanced ceramics
  
- ▶ **Established relationships with Academia (CRADA's and Educational Partnerships)**
  - State University at Albany, Rensselaer Polytechnic Institute, University of Delaware, Stevens Institute, etc.)

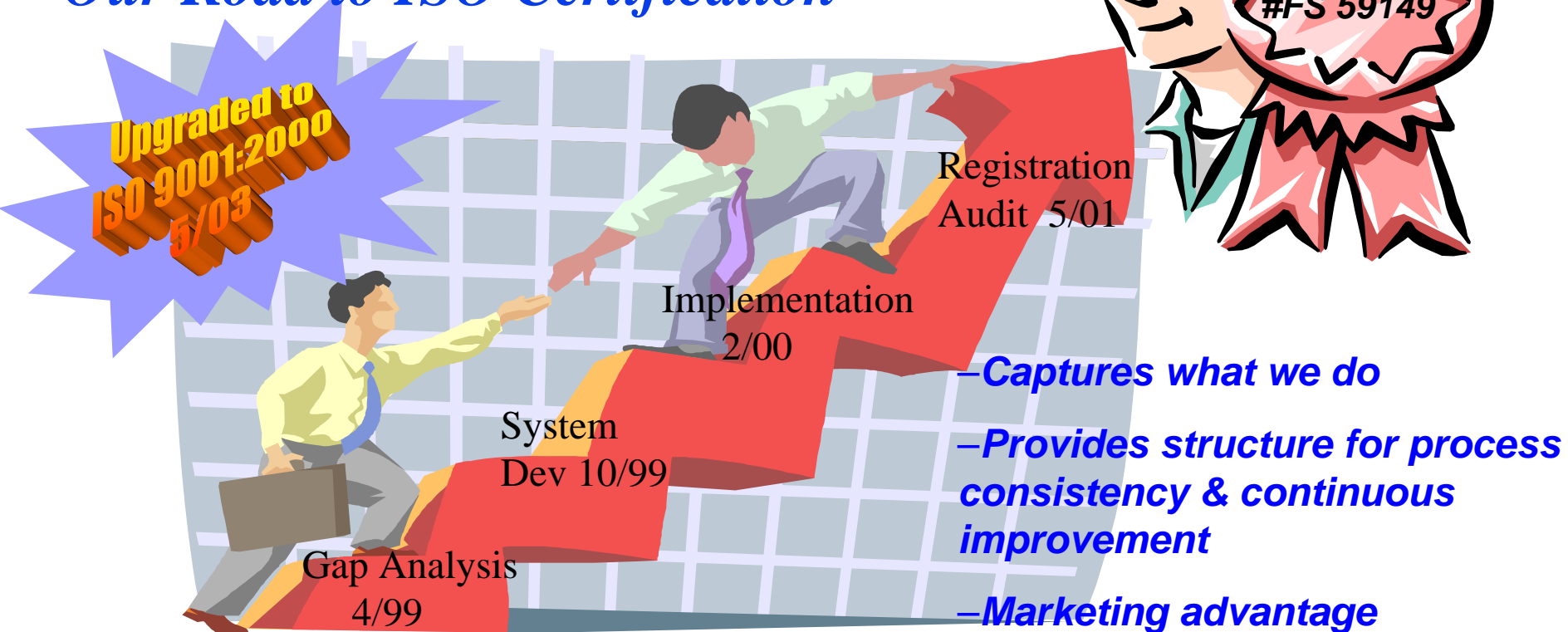


# QUALITY JOURNEY



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## Our Road to ISO Certification



# BENÉT LABORATORIES

Stephen Vincent Benét - circa 1903

