



U.S. Army Research, Development and Engineering Command



TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

Dr. Joseph Lannon
Director, ARDEC
22 Oct 2008

15th JOCG Continuous Mixer & Extruder
Users Group Meeting



Research



Development



Production



Field Support



Demilitarization



Vision:

Innovative Armaments Solutions for Today and Tomorrow

Mission:

To develop and maintain a world-class workforce to execute and manage integrated life-cycle engineering processes required for the research, development, production, field support and demilitarization of munitions, weapons, fire control and associated items

Advanced Weapons – line of sight/beyond line of sight fire; non line of sight fire; scalable effects; non-lethal; directed energy; autonomous weapons

Ammunition – small, medium, large caliber; propellants; explosives; pyrotechnics; warheads; insensitive munitions; logistics; packaging; fuzes; environmental technologies and explosive ordnance disposal

Fire Control – battlefield digitization; embedded system software; aero ballistics and telemetry



ARDEC Provides the Technology for Over 90% of the Army's Lethality; Significant support to other Services Lethality



- Established “Center of Mass” for Armament Systems and Munitions for Joint Services
- ARDEC is the largest tenant at Picatinny Arsenal
 - Over 800 Buildings/64 Laboratories
- Proven track-record supporting transition of technologies to the field;
 - 18 Materiel Releases in FY 07, 8 Materiel Releases in FY 08
 - 16 Urgent Materiel Releases FY 07, 12 Urgent Materiel Releases in FY08
- ARDEC Gov’t Personnel ~ 3188; [1145 new hires since FY99](#)
 - Picatinny Site = 2761
 - Benet (Watervliet Arsenal) = 228
 - Rock Island Arsenal = 137
 - Adelphi & APG = 62
- >\$100M invested in “World Class” experimental R&D facilities since mid-90’s; Additional \$75M planned
- Strong partnerships with Industry, Academia, and other Government agencies - Growth and Success through Cooperative Research and Development Agreements (CRADAs) = 162
- Intellectual Property (as of 2Q08):
 - Invention Disclosures – 12
 - Patent Applications – 16
 - Patents Issued – 8
 Patent License Agreements = 14 (as of 2Q08)
- In-house rapid prototyping initiatives demonstrating new desired capabilities, supporting production prove-out and initial fielding demands

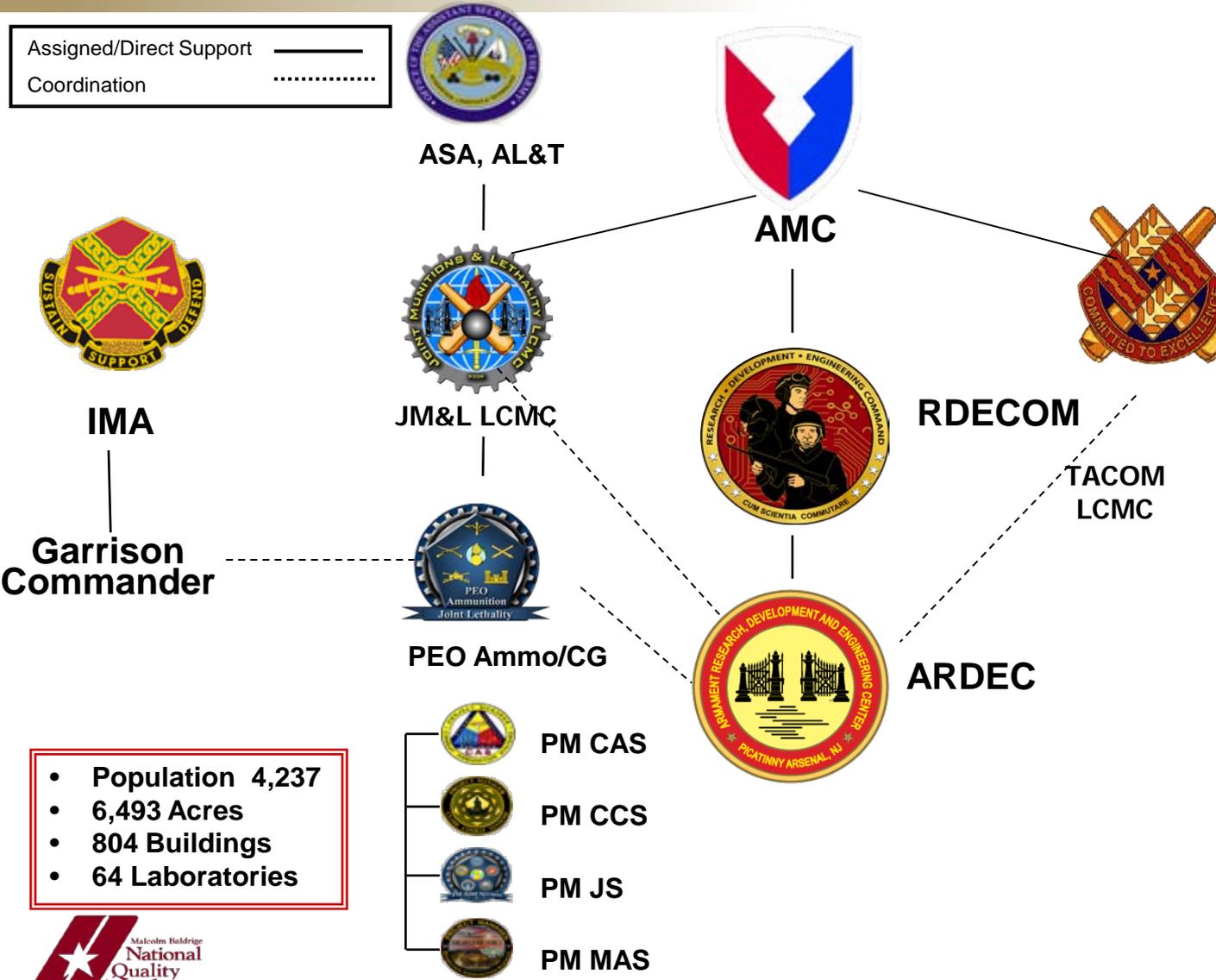


\$100M Tech Base portfolio addressing Joint needs (Core Tech Base/ManTech only; does not include SBIR or Congressional Plus-ups)





Assigned/Direct Support ———
 Coordination ·········

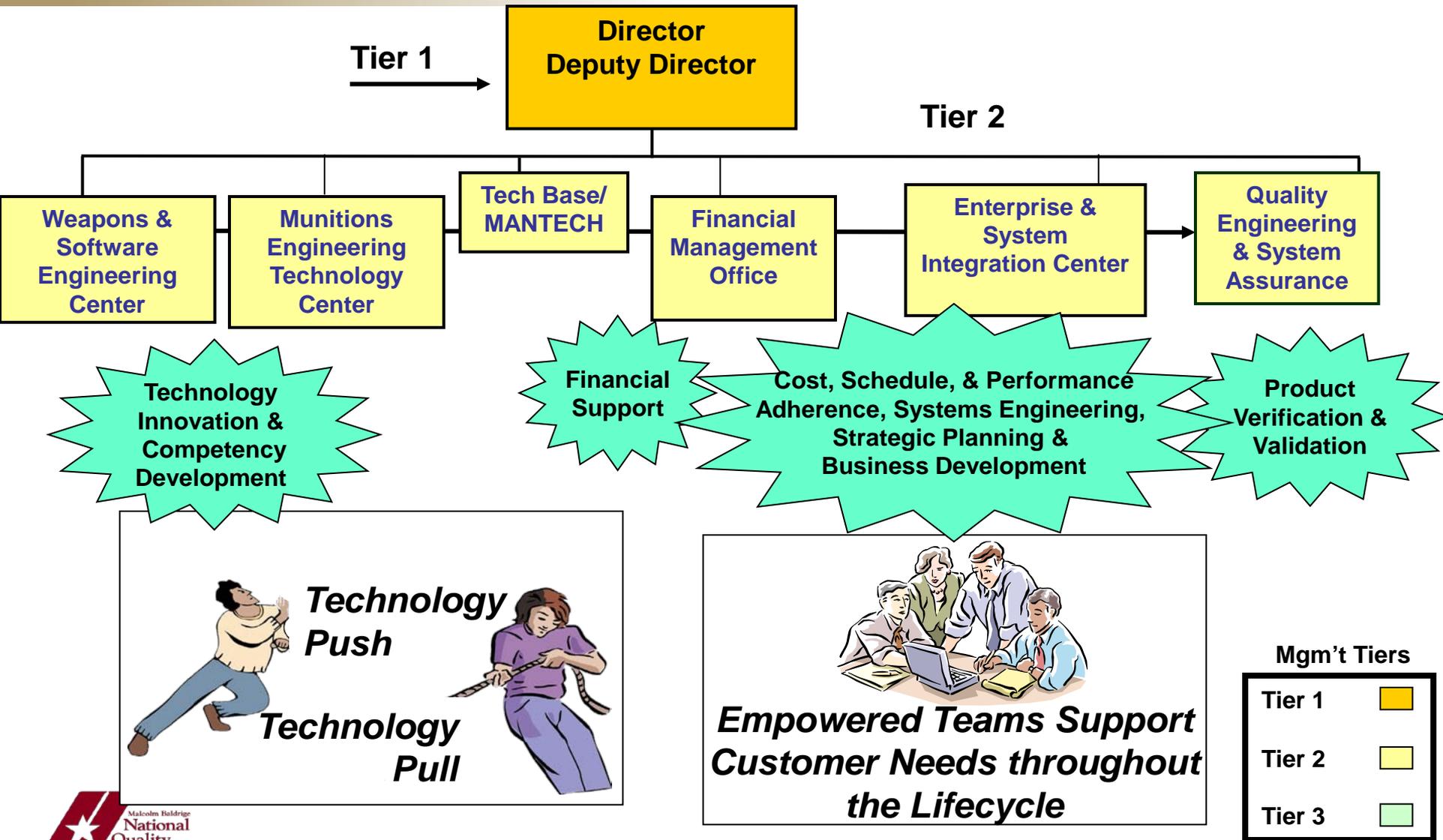


- Population 4,237
- 6,493 Acres
- 804 Buildings
- 64 Laboratories



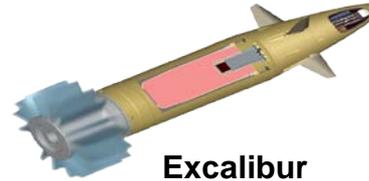
Other Tenants

- PEO Soldier**
- PM Soldier Weapons
- PM FCS BCT
- PM Lethality
- PEO GCS**
- PM JLW155
- DCMA**
- DCMA NE
- CPAC
- Navy**





Lightweight Dismounted Mortar



Excalibur



Lightweight Handheld Mortar
Ballistic Computer, XM32



Plasma Arc Furnace

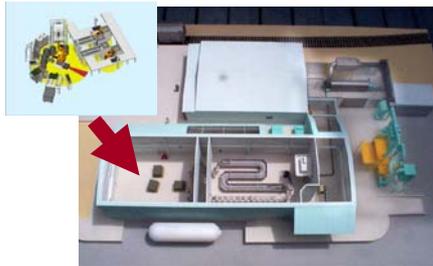
DEMIL

R&D

PROD

SUPPORT
TOTAL
LIFE
CYCLE

FIELD SUPPORT



Cryofracture



M240B 7.62MM Machine Gun



40mm Multi-Shot Launcher



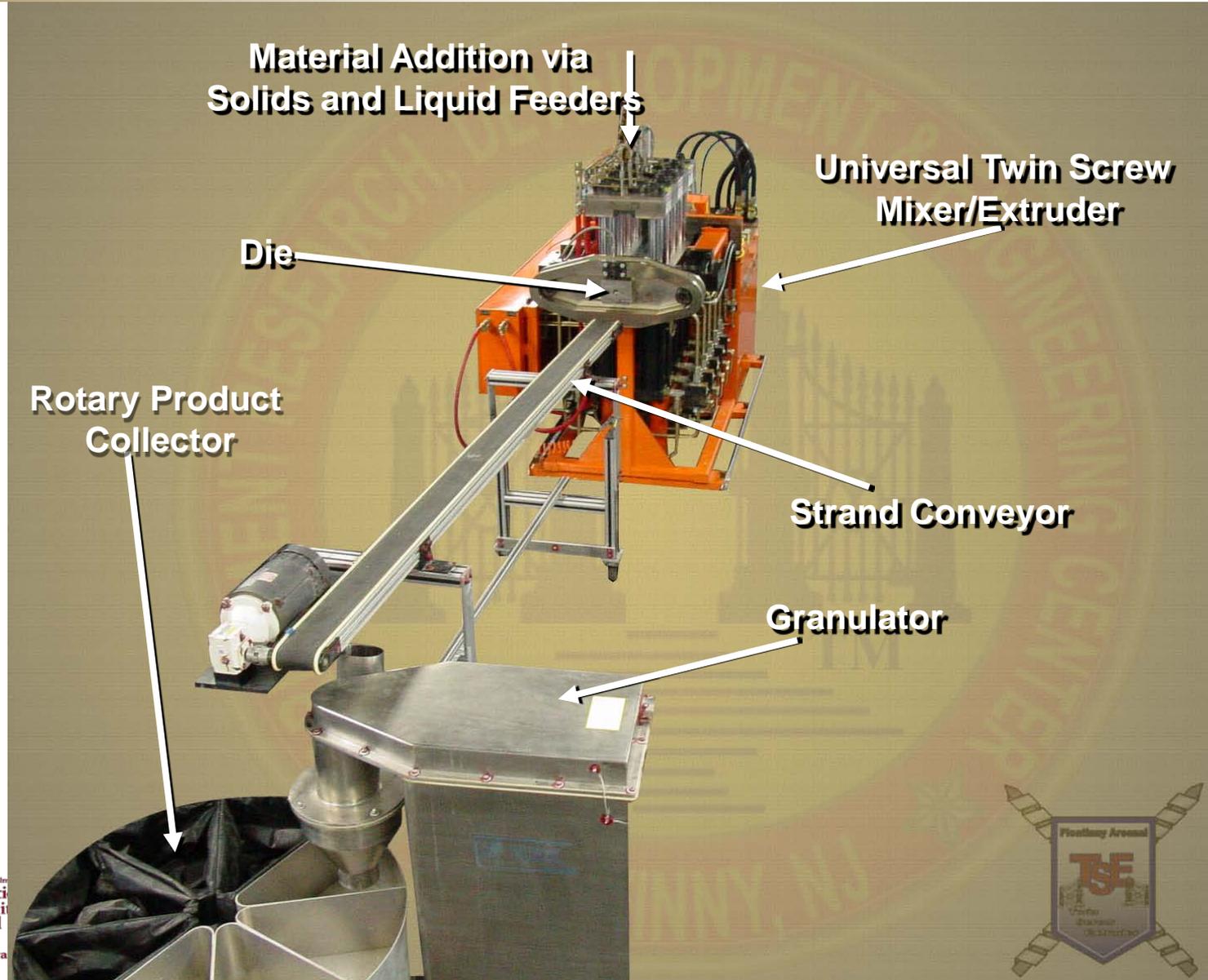
Lake City Army Ammunition Plant
5.56/7.62





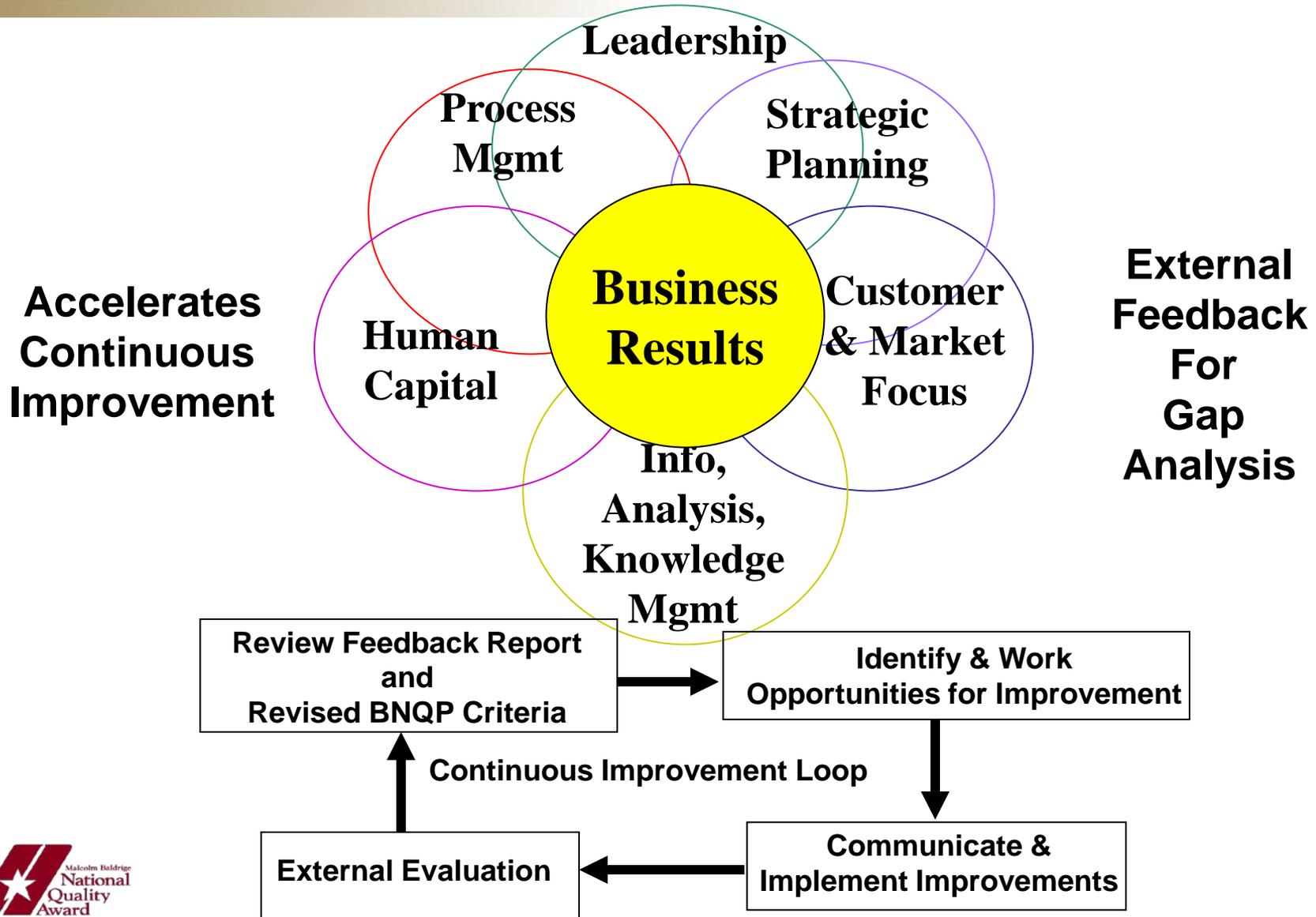
- The facility is available to support a broad spectrum of mission-related **Research and Development** including **new propellant**, **explosive**, and **pyrotechnic formulation** development, as well as material development for use in **insensitive munitions**
- The pilot scale Extruder capable of continuously producing up to 50 lb/hr of energetic material.





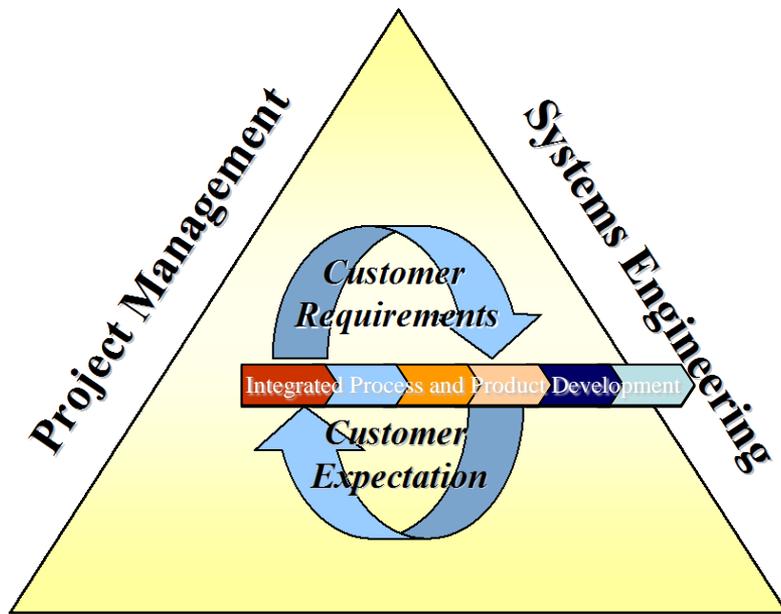


- New Explosive
 - PAX-2A high explosive
 - PAX-3 aluminized high explosive
- Black Powder – Alternate
 - Carboxyl Methyl Cellulose (CMC)
 - Nitrocellulose (NC)
- M-206 infrared (IR) decoy flare pyrotechnic composition
- M39 low vulnerability (LOVA) propellant.





Develop and Utilize a Disciplined ARDEC Process that Integrates Project Management, Systems Engineering and Lean Six Sigma Tools as a Framework for Technology & Product Development



Design for Lean Six Sigma

- **Design for Lean Six Sigma (DFLSS)**
 - Innovative, Quality Products Meeting Customer Requirements
 - TRIZ
- **Probabilistic Technology**
 - Systematic Processes for Smarter Decisions in Situations of Insufficient Data
 - Modeling and Simulation
- **Process Integration & Improvement**
 - Manage and Improve Processes across Enterprise Using Enterprise Excellence (LSS, VoC and QMS)

Deliver Innovative Technology & Products to the Warfighter



- **Malcolm Baldrige National Quality Award:** ARDEC is the first U.S. Federal Organization to win the nation's highest Presidential honor for organizational performance excellence.
- **Total of 17 Army's Greatest Inventions** (4 for FY 07) – selected by soldiers
 - M110 7.62mm Semi-Automatic Sniper System (SASS)
 - XM982 Excalibur Precision Guided Extended Range Artillery Projectile
 - Objective Gunner Protection Kit
 - Picatinny Blast Shield for Light Armor Vehicle
- **5 Army R&D Achievement Team Awards** with 18 individual recipients in FY07; 8 Teams with 33 individual awards in FY08
- **Top 5 DoD Environmental Award:** On 21 April 2008, Secretary of the Army awarded ARDEC 2007 Environmental Award for Environmentally friendly pyrotechnic work
- **Zernow Best Paper Award:** This prestigious award is presented to the authors of the paper judged to have made the most significant contribution to the advancement of "fundamental understanding" in the fields of ballistic science. The winning paper entitled "Combined Effects Aluminized Explosives" by Dr. E. L. Baker, Ms. W. Balas, Dr. C. Capellos, Mr. J. Pincay (ARDEC's Energetics and Warhead Division) and Dr. L. Stiel (Brooklyn Polytechnic University), provides new understanding of the physics of combined effects explosives, and demonstrates the extraordinary technical abilities of the authors.



- **Army Large Research and Development Lab of the Year:** ARDEC is recipient for 2008.



- **Global leader in armaments technology solutions**
- **Adapt to changing defense needs**
- **Provide exceptional customer satisfaction**
 - **We work with soldiers to develop new armaments systems, improve fielded systems, and to quickly solve field problems**
- **Recruit and nurture top talent**
- **Effectively identify, acquire and allocate resources**