



“The Big Five”

Warfighter Outcomes to Guide S&T Investment

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29 July 08

TRADOC: Victory Starts Here !



ARCIC Mission & Vision

Mission

The Army Capabilities Integration Center leads the development and integration of force capabilities across the DOTMLPF for the Army within a Joint and Multinational environment to support Joint Force Commanders.

Vision

World class professionals developing innovative, integrated, resource-informed, and outcome-based solutions for the current to future force.

Essential Tasks from Mission Analysis

Lead =

- **Develop**
- **Determine**
- **Integrate**
- **Design**
- **Validate**
- **Coordinate**

- *Support the Commanding General, TRADOC*
- *Lead determination and integration of force requirements and synchronize the development of DOTMLPF* solutions across the Army.*
- *Provide the management structure for identifying capability gaps and directing analytical support for DOTMLPF developments.*
- *Validate research and development priorities for key Army Science and Technology needs*
- *Develop and validate integrated operational architectures depicting warfighting capabilities*
- *As the lead Army agency, coordinate with Joint agencies and other Services for identification and integration of joint required capabilities*
- *Exercise integration coordination authority across the Army in matters pertaining to identification of required capabilities and DOTMLPF integration*

*DOTMLPF=Doctrine, Organizations, Training, Materiel, Leader development and education, Personnel. Facilities



ARCIC Priorities

Build the force: by 2024, field the modular force as envisioned by the Army Capstone Concept.

Connect

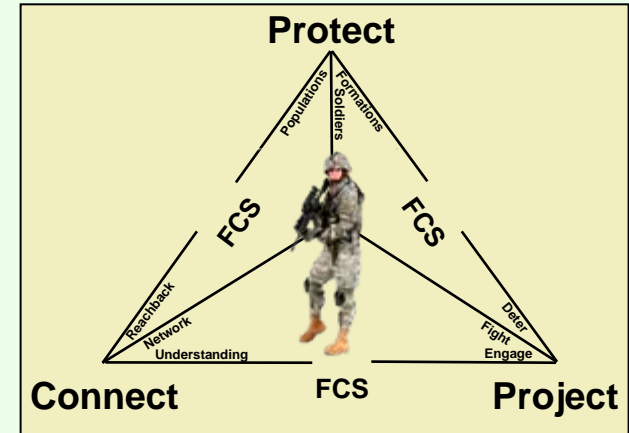
- Develop affordable and achievable LandWarNet and LWN Systems (WIN-T, JNN, JTRS, Rifleman's Radio)
- Enable Unified Battle Command
- Develop Network Vulnerability Strategy
- Develop bridge to Ground Soldier System (Land Warrior next...)
- Strategic Engagements
- FCS strategic communications

Protect

- Optimize current and future force readiness; minimize operational risk
- Develop organizationally based force protection capabilities

Project

- Deliver expeditionary full spectrum capabilities to the force.
- Joint Future Theater Lift
- Joint Future Tactical Lift
- Fill current force gaps with accelerated capabilities while modernizing the future operating force



Think and learn for the Army: provide conceptual framework beyond 2024.

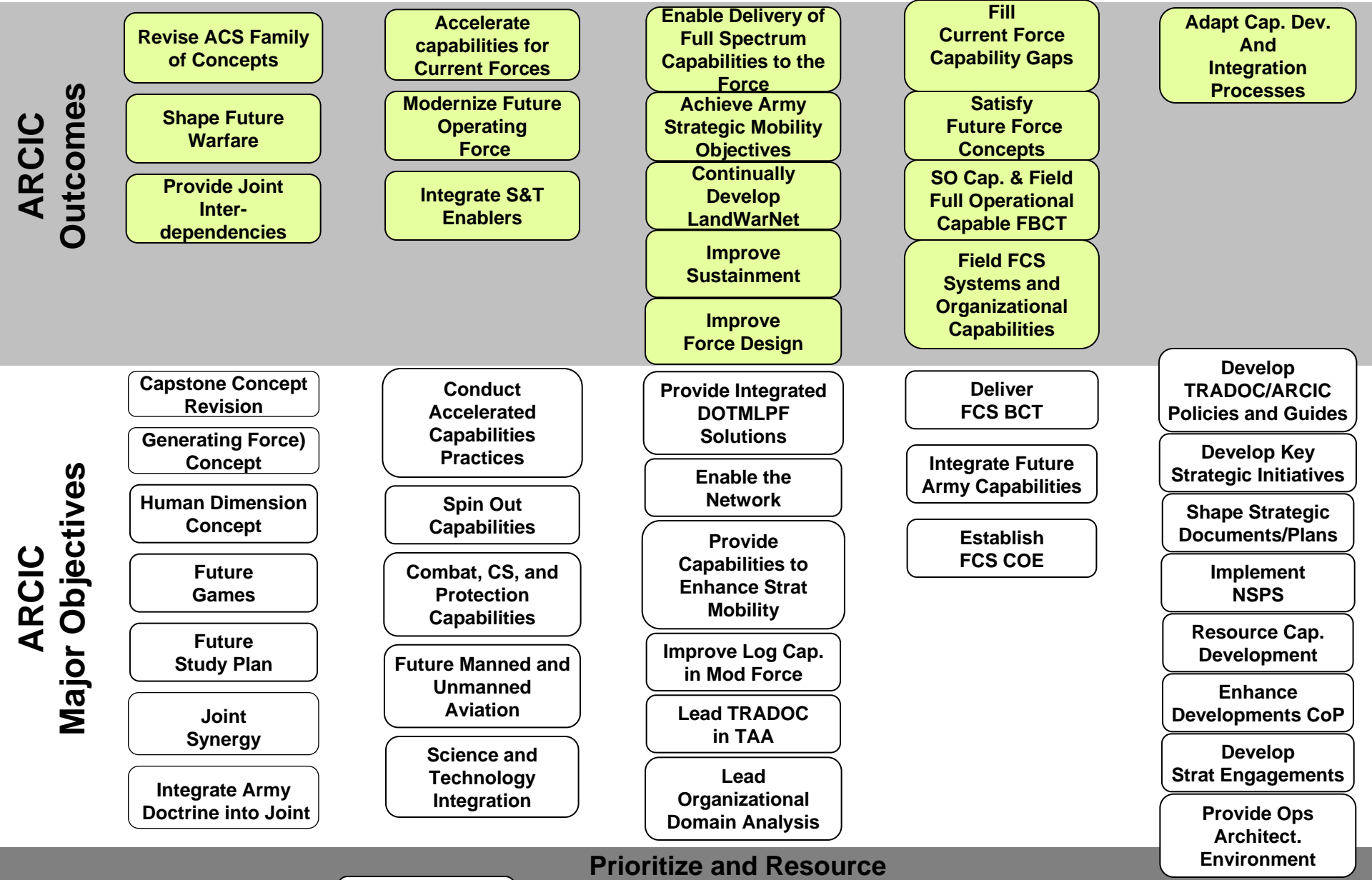
- QDR Roles and Missions Support to ARSTAF
- Collect and analyze operational data to better represent Irregular Warfare
- Develop Human Dimension, Generating Force and Capstone Concepts
- Execute CSA/CG TRADOC Future Warfare Study
- Campaign of Learning
 - Leading from the edge
 - Baseline and integrate analyses: Modular Force, FCS, and SBCT.
 - Conduct other key analyses reflecting force effectiveness;
 - OBA with proponent support and Strategic Choices
 - Tactical Vehicle Strategy
 - RSTA and ISR support to BCT
 - Capability Needs Analysis; timely influence decisions to meet warfighter needs

Adapt community of practice culture to deliver organizationally-based solutions.

- People
 - Training, Education, and Certification
 - NSPS and Evaluation links to Objectives
- Develop and execute ARCIC Campaign Plan; execute FY08 AC2DP
- Implement COEs; develop FCS COE

ARCIC Campaign Plan (ArCP)

As of 20 Jun 08



ARCIC Initiatives

Resource-informed

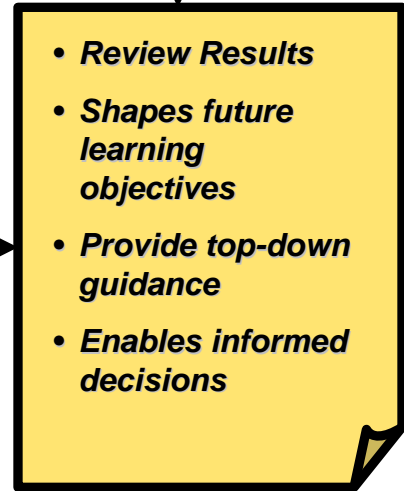
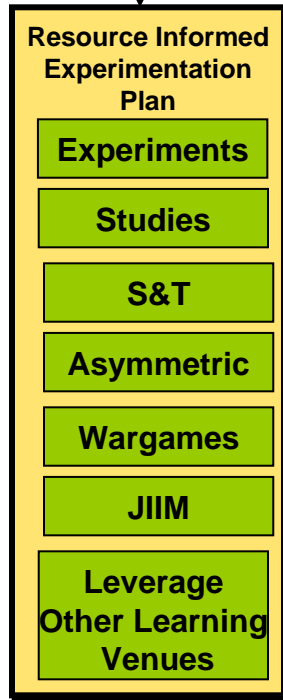
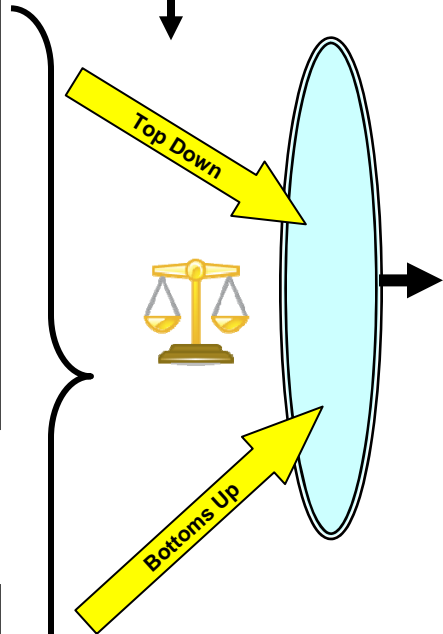
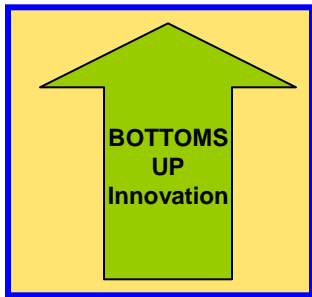
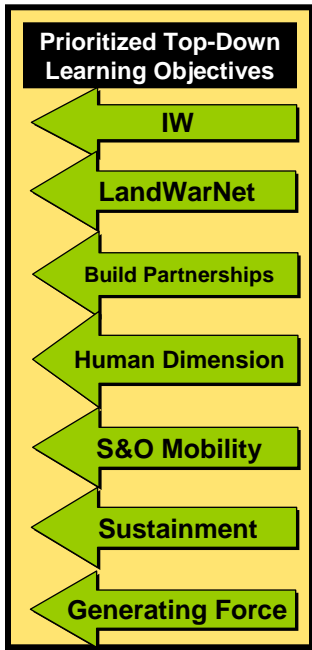
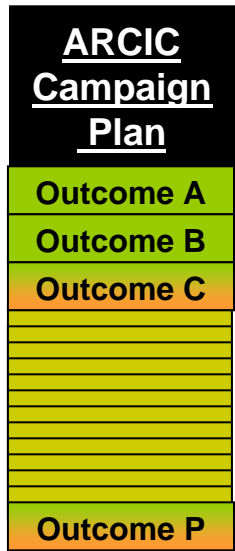
Integrated

Outcome-based

Prioritize and Resource



FY09/10 Army Enterprise Level Learning Plan Overview





FY09 Experimentation Guidance

- **More smaller, iterative experiments, that demonstrate flexibility**
 - Link experiments back to initiator
- **Strengthen linkages to:**
 - Science and Technology
 - Joint, Multinational, and SOCOM
 - Map Warfighting Challenges (WFCs) to experiments
 - More lash up of SOCOM and Army Experiments (GPS – SOF Integration)
 - Joint linkages such as Seabasing, Lift, Sustainment, and UAV
 - Future Force Integration Directorate (FFID) and Army Evaluation Task Force (AETF)
 - Programs and spin-outs
 - FORSCOM Centers of Excellence
 - “Leading from the Edge,” such as Experimentation in Theater
- **Broaden EXFOR capability at Maneuver Center**
- **Focus across range of military operations**
- **Respond to top-down guidance:**
 - Based on priorities and outcomes
 - *Not* based on things, platforms, and technologies
- **Encourage bottom-up creativity and innovation**

Learning Objectives

1. Irregular Warfare
2. LandWarNet
3. Building Partnerships
4. Human Dimension
5. Strategic & Operational Mobility
6. Sustainment
7. Generating Force

And...Get Soldiers involved with promising concepts and technologies earlier and more often



Focus on the Big Five

TIER I

- 1 - Battle Command Network
- 2 - Counter IED and Mine
- 3 - Power & Energy
- 4 - Human Dimension
- 5 - Training

TIER II

- Battle Command Network *
- Counter IED and Mine *
- Power & Energy *
- Human Dimension *
- Training *

- Communicate in the Combined/Joint Environment
- Future Force JIM Interoperability
- Austere A/SPOD Physical Assessment
- Austere A/SPOD Protection and Security
- Austere A/SPOD Enhancement
- Analysis and Reporting of Intelligence Information
- Observe and Collect Information Worldwide
- Collect and Manage Biometric Data
- Standoff Sense Through Walls
- UGV Autonomous Movement
- UGV Autonomous Tactical Behaviors
- Responsive and Sustainable Aviation Support
- Effective Aviation Operations in the Combined/Joint Environment

- Army Airspace Command and Control
- Multi-level Security
- Data Initialization (DI)
- Future Force Predictive Analysis Tools
- Future Force COP Visualization Capabilities
- Future Force Decision Making Models
- Automated Two-way Language Translation
- Future Force Communications Modeling Tools
- Alternative to GPS for location and navigation in complex environments
- Effects based information operations
- Improved Delivery of Supplies in Non-Contiguous Operations
- Improved Inter-modal Platforms, Technologies, and Techniques
- Manage Knowledge
- C2 of Battlespace Awareness Assets
- Model, Simulate, and Forecast
- Alternative Power for Dismounted Soldiers
- Alternative Power for Platforms
- Assured and Timely Connectivity with the Supported Force
- Mounted Vertical Maneuver
- NLOS Scaleable, Focused Effects, for Variable Targets
- Dismounted Target Acquisition Optical Capability
- Automatic Target Recognition
- NLOS-Cannon Target Discriminating Munitions
- Passive Marking and Designating
- Near Real Time BDA
- NLOS-Cannon Reduced Weight Munition

- Battle Command Network*
- CBRN/Chemical/Ampl personnel/ Anti-materiel Capability
- NLOS Capability
- NLOS Capability/ Forcible Entry
- Manned-Unmanned Aviation Lethality
- Capability to counter against advanced air and land targets
- Body Armor Lethality Overmatch
- Embedded Meteorological (MET) Capability
- Terrain Data Generation
- Sensor/effects packages, to deny access
- Geospatial Data Management
- Specialized Urban Breaching
- Computer-aided Analysis and Reasoning
- Area route clearance at high speeds
- Rapid cross wall and gaps
- Detection and Identification of TIC/TIM
- Detection and Identification of TIC/TIM agents/personal air traffic
- Rapid construction and repair of combat routes and trails
- JWARN, JEM, and JOEF Models improvement
- CBRN/TIM Hazard Markers
- Standard Decontaminant for Thorough Decontamination Operations
- CBRN Filters and Subcomponent Filtration Systems
- Stationary Hemispherical Area Protection
- Mobile Hemispherical Area Protection
- Air Defense

- RSTA and Attack Operations
- Networked Precision Fires and Effects
- Scalable Effect Versus Platforms
- Scalable Effect Versus Personnel
- Precision Neutralization of CBRN - explosive hazards
- Manual and virtual obstacle marking system
- Improved Soldier Protection
- Lightweight Soldier Ballistic Protection
- Lightweight Soldier Ballistic Protection Reliability
- Prognostics & Diagnostics
- Alternative Energy Sources
- Force Health Protection Initiative
- Increase control of unmanned systems
- Enhanced Tactical Human Computer Interface
- Increase Future Soldier Cognitive Functions While Under Stress
- Language and cultural awareness
- Dismounted soldier virtual training environment

- Battle Command Network
- Avenge Kill
- Soldier Signature Reduction
- Air/Ground Platform Signature Reduction
- Soldier Hearing Protection
- Provide Water
- Contaminated Remains
- Sustainment Modeling and Simulation (M&S) Training Systems
- Anticipatory sustainment & Improved Distribution
- Maintainability - tool free maintenance
- Increased Fuel Efficiency
- Provide Mortuary Affairs Support
- Improve the ability of the FFS to Multi-Task
- Enhanced Soldier Physical Performance
- Ability of the FFS to simultaneously process multiple sensory inputs
- Conduct Operations Worldwide
- Screen for Disqualifying Psychological Conditions in the FFS
- Screen for disqualifying Orthopedic Conditions of the FFS
- Screen for a Disqualifying Condition of Asthma in the FFS
- Determine the Aptitude, Motivation, and Attrition Risk of the FFS
- Determine the Market Availability of FFS
- Model and Simulate the Entire Accessions Process
- Adaptive training system
- Embedded Training
- Live Environment Training
- Embedded Tactical Engagement Simulation System
- Contemporary Leader Skills



"Big Five" Warfighter Outcomes to Guide S&T Investment (1 of 2)



- **Battle Command Network** - The Future Force must possess **worldwide, beyond-line-of-sight network** capabilities that are effective, layered, persistent, and protected. This network must **integrate Command and Control** for Joint Interagency Intergovernmental Multinational operations with a single, integrated universal tactical network accessible to the global information grid. It must be **optimized for mobile operations** and increase **access and available** throughput **to all echelons and the individual Soldier** through: dynamic, extended range, self-organizing and multilayered communications with collaborative decision and planning support capabilities.
- **Counter IED and Mine** - The Future Force must have the ability to **detect, identify and neutralize** CBRNE obstacles and/or their components (Improvised Explosive Devices/Home Made Explosives - IED/HME) from a **safe standoff distance**. They need the capability to determine the type of **threat**, select the best method of neutralization, and ascertain the potential effects on the environment. Capability will allow the commander to **maintain** maneuver force **momentum** while **protecting Soldiers** and platforms from the effects of these obstacles.
- **Power & Energy** - Provide enhanced agility to operate worldwide by the weight and volume of fuel associated with powering the force. Combat platforms require **sufficient pulsed power to enable advanced lethality options** and **increased continuous power** to enable superior tactical mobility, speed and an excess capacity for on/off board electrical power use while **significantly increasing fuel economy**. Emerging electrical components and systems require dismounted Soldiers to possess a **radical increase** of available power, at **half the tactical weight**.

Definition of P&E...

Power (symbol: P) is the rate at which *work* is performed or *energy* is transmitted.

Energy (symbol: E) is the capacity to do *work*.

Work is force times distance (dot product) moved in the direction of the force.



"Big Five" Warfighter Outcomes to Guide S&T Investment (2 of 2)



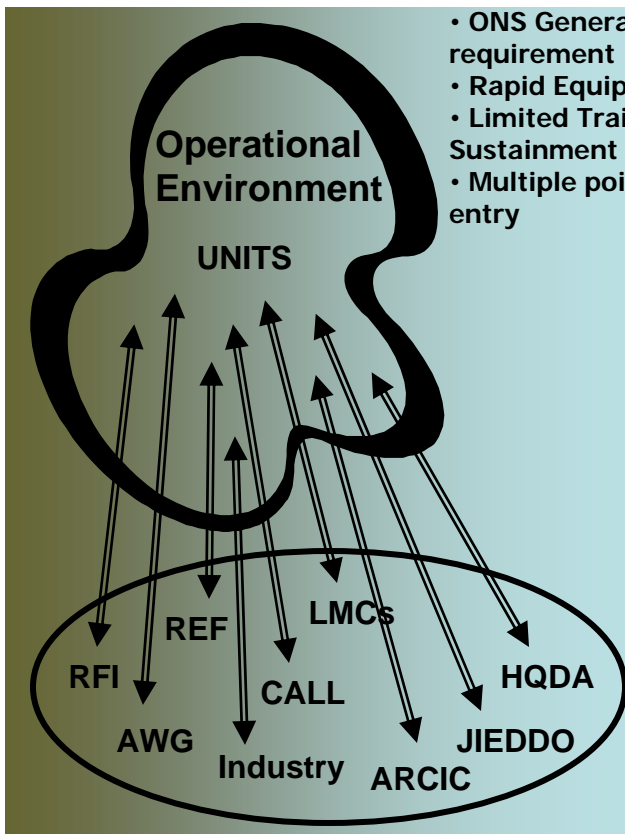
- **Human Dimension** - Provide Soldiers and leaders the ability to excel in a challenging and increasingly complex future operating environment by developing tools and technologies that **enhance & restore** Soldier **cognitive and physical performance** to **function efficiently** as an **integral component of a network and** society. Future accessions must focus on finding, enlisting, commissioning and retaining Soldiers based on their innate cognitive potential for ethical and moral decision-making. Soldiers must be able to interface with multiple unmanned systems, conduct multi-modal human computer interface, and multi-task across a wide spectrum of information input while **mitigating** the proportional increase in physiological and psychological **stress and improving mental, moral and physical capacity and performance**.
- **Training** - Provide Soldiers and leaders the ability to excel in a challenging and increasingly complex future operating environment by developing tools and technologies that enable **more efficient and effective training** through live, virtual, **constructive** and **mixed** venues. Future training must enable the Future Force to impart **more skills, faster**, at **lower cost** and with **greater retention** than currently achievable. Soldiers and units must be able to be trained using non-traditional home station training techniques and technology and train prior to employment. Future training must enhance and **account for individual proficiencies and learning rates** - i.e. outcome based training. Future training **and leader development** must be completely **adaptable and scalable** to cover the **full spectrum** of operational challenges facing the Soldier.



Leading from the Edge

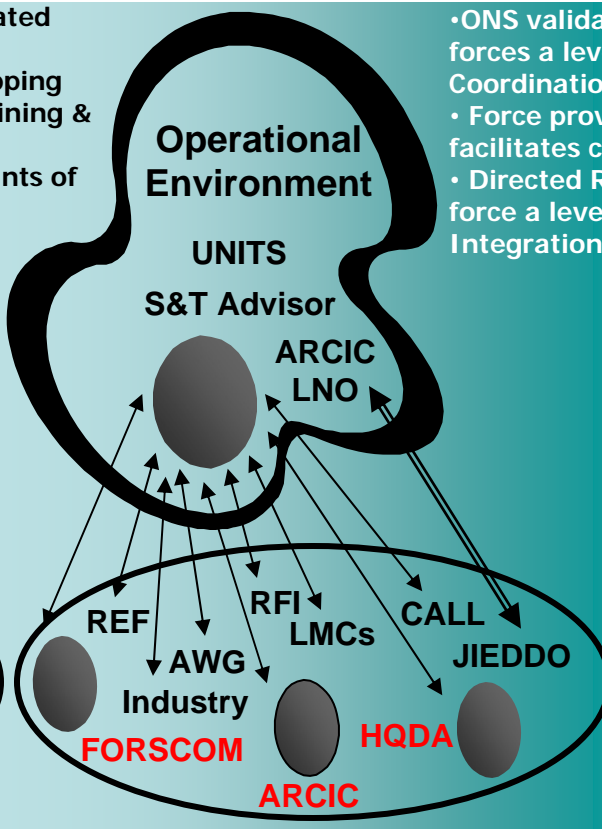
- Accelerated Developments Environment

Previous



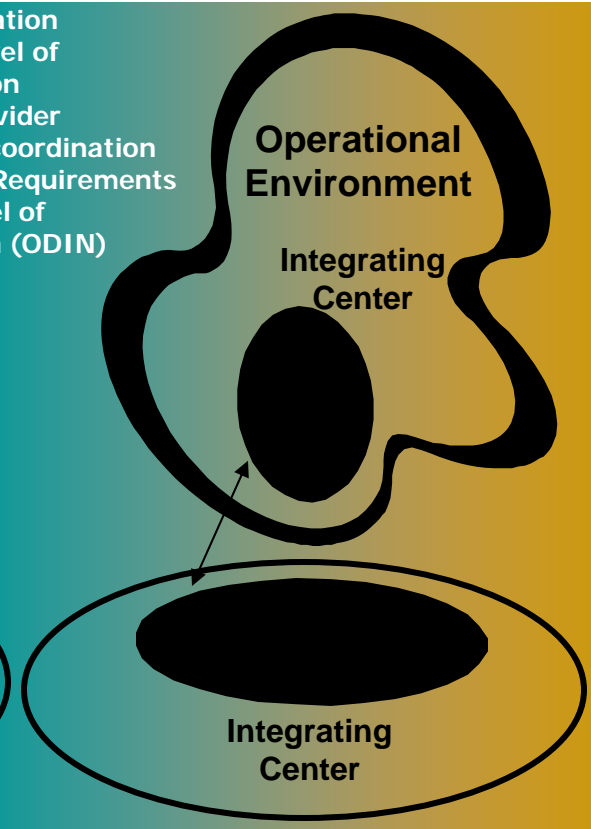
- ONS Generated requirement
- Rapid Equipping
- Limited Training & Sustainment
- Multiple points of entry

Today



- ONS validation forces a level of Coordination
- Force provider facilitates coordination
- Directed Requirements force a level of Integration (ODIN)

Tomorrow



Decentralized Activities
(Stove Pipes)

A Level of Centralization
(Coordination)

Integrated Approach



MANSCEN in the Fight

- ***Support to hundreds of Operational Needs Statements***
- ***CBRNE Consequence Management Response Force (CCMRF)***
- ***Maneuver Enhancement Brigade (MEB)***
 - ***Conduct Maneuver Support operations***
 - ***Conduct Support Area Operations***
 - ***Conduct Consequence Management Operations***
 - ***Conduct Stability Operations***
- ***20th Support Command (CBRNE): Counter CBRNE and WMD***
- ***Route Clearance and Route Improvement***
- ***Force Protection***
- ***Law Enforcement Program***
- ***Army Non-Lethal Scalable Effects Center***
 - ***Launched Electrode Stun Device***
 - ***Non-lethal Capability Sets***



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