# Future Combat Systems

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**Chief of Staff**

**Objective Force Task Force**

# Future Combat Systems Concept Teams

## The Boeing Team

***The Boeing Company, Seattle, WA***
*New Definitions, Inc., Tacoma, WA*
*Vector Research, Inc., Ann Arbor, MI*
*Whitney, Bradley & Brown, Inc., Vienna, VA*
*Signature Research, Inc., Calumet, MI*
*National Institute of Standards and Technology (NIST), Gaithersburg, MD*
*Rockwell Science Center, Thousand Oaks, CA*
*Krauss-Maffei Wegmann (KMW), Germany*

## Team Full Spectrum

***SAIC***
*United Defense, LP*
*ITT Industries*
*Northrop Grumman Corp*
*Logistics Management Institute (LMI)*
*SRI International*
*Strategic Perspectives Inc.*
*Omnitech Robotics International LLS*
*University of Texas Center for Electromechanics*
*VRI*

## Team Gladiator (Consortium)

***TRW***
*Lockheed Martin*
*CSC/Nichols Research*
*Battelle Institute*
*Carnegie Mellon*
*IITRI/AB Technologies*

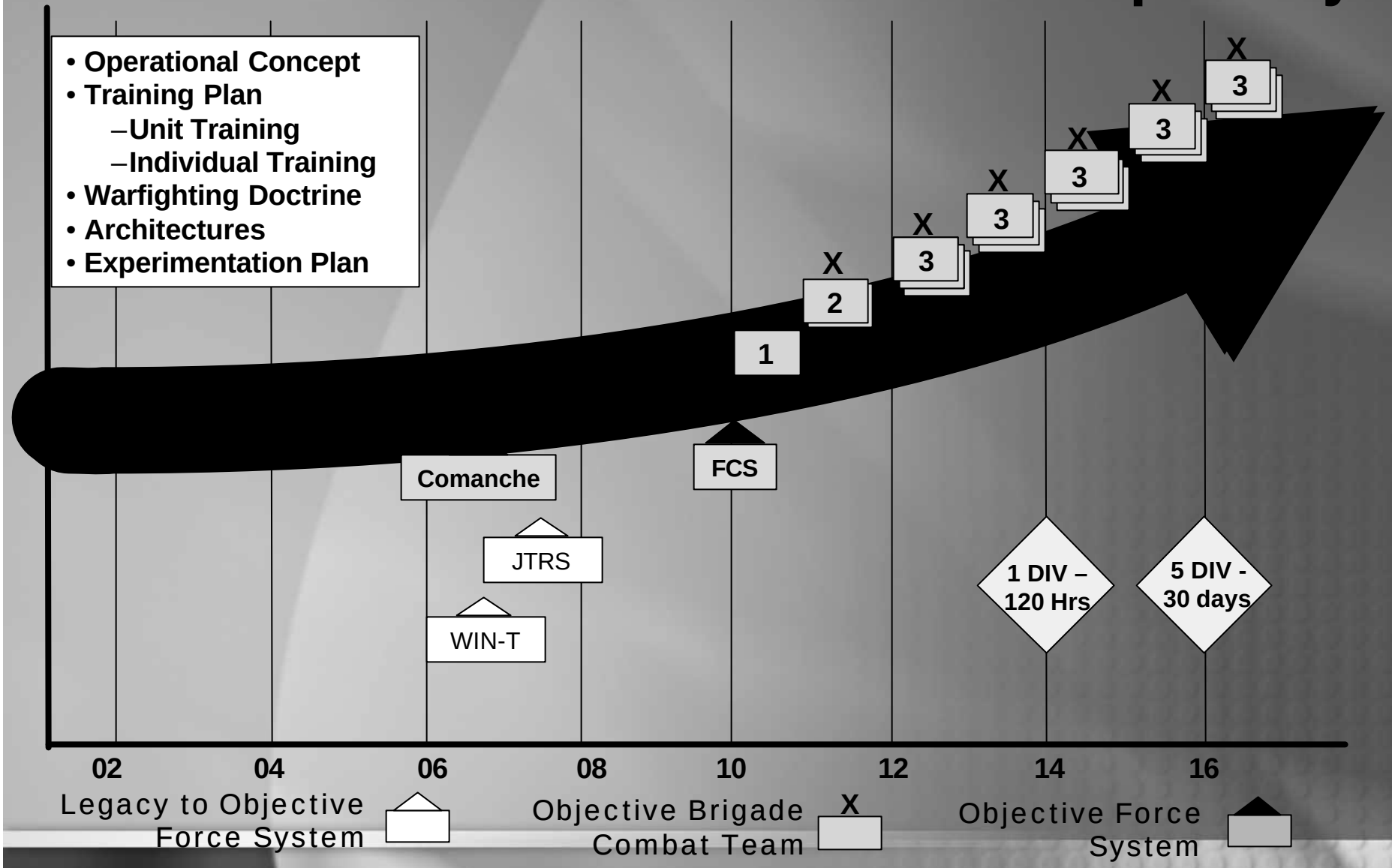
## Team FoCus Vision (Consortium)

***Team FoCuS vision led by General Dynamics Land Systems Inc., Sterling Heights, Michigan and Raytheon Company, Plano, Texas.***

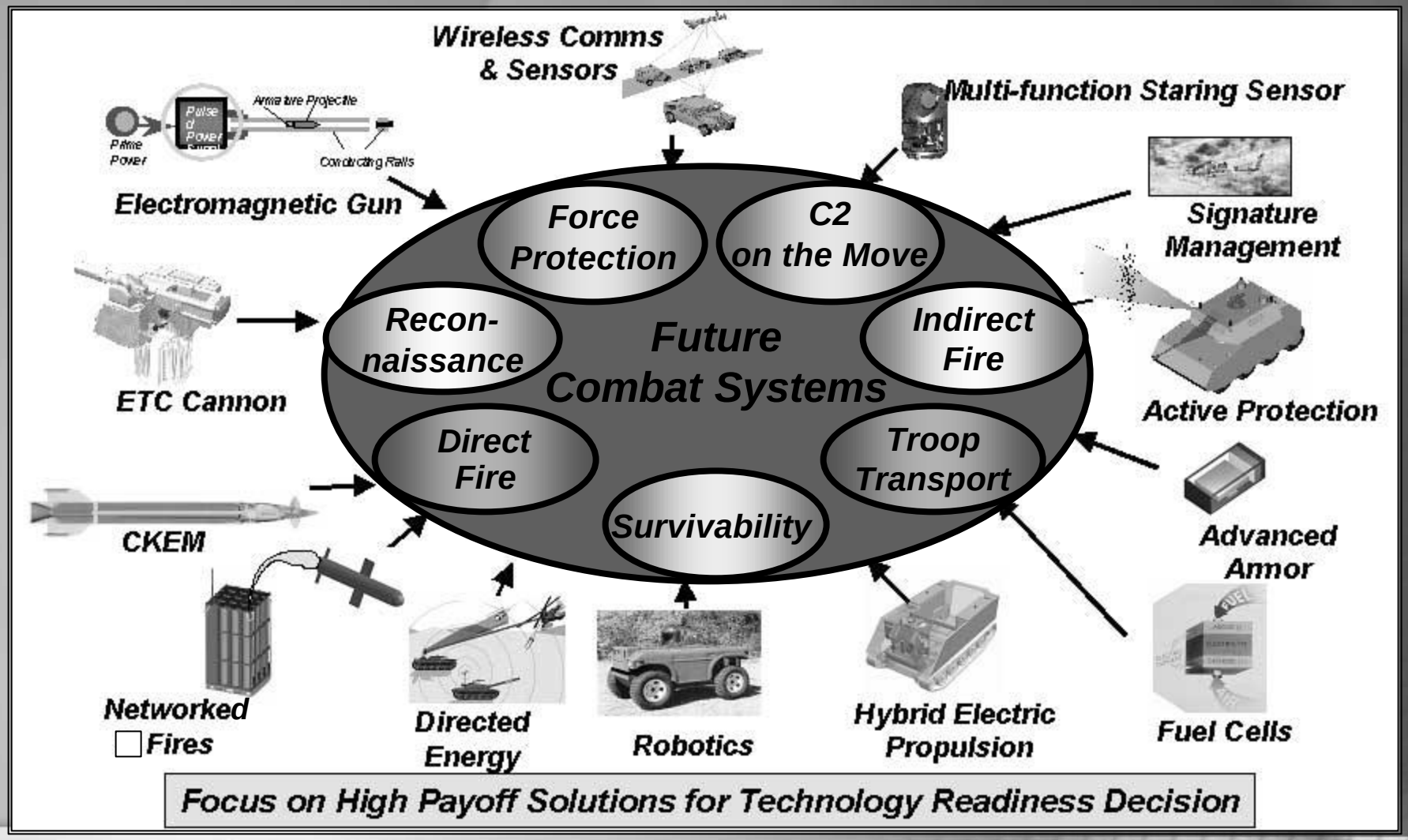
***Other participants with GDLS and Raytheon include:***

*Aurora Flight Sciences*
*Carnegie-Mellon University*
*Honeywell*
*Maxwell Physics International*
*Stanford Research Institute International*
*Sensis*
*Sensor.com Wireless Integrated Network Sensors*
*Whitney Bradley & Brown Inc.*
Los Alamos National Laboratory

# Achieving Objective Force Capability

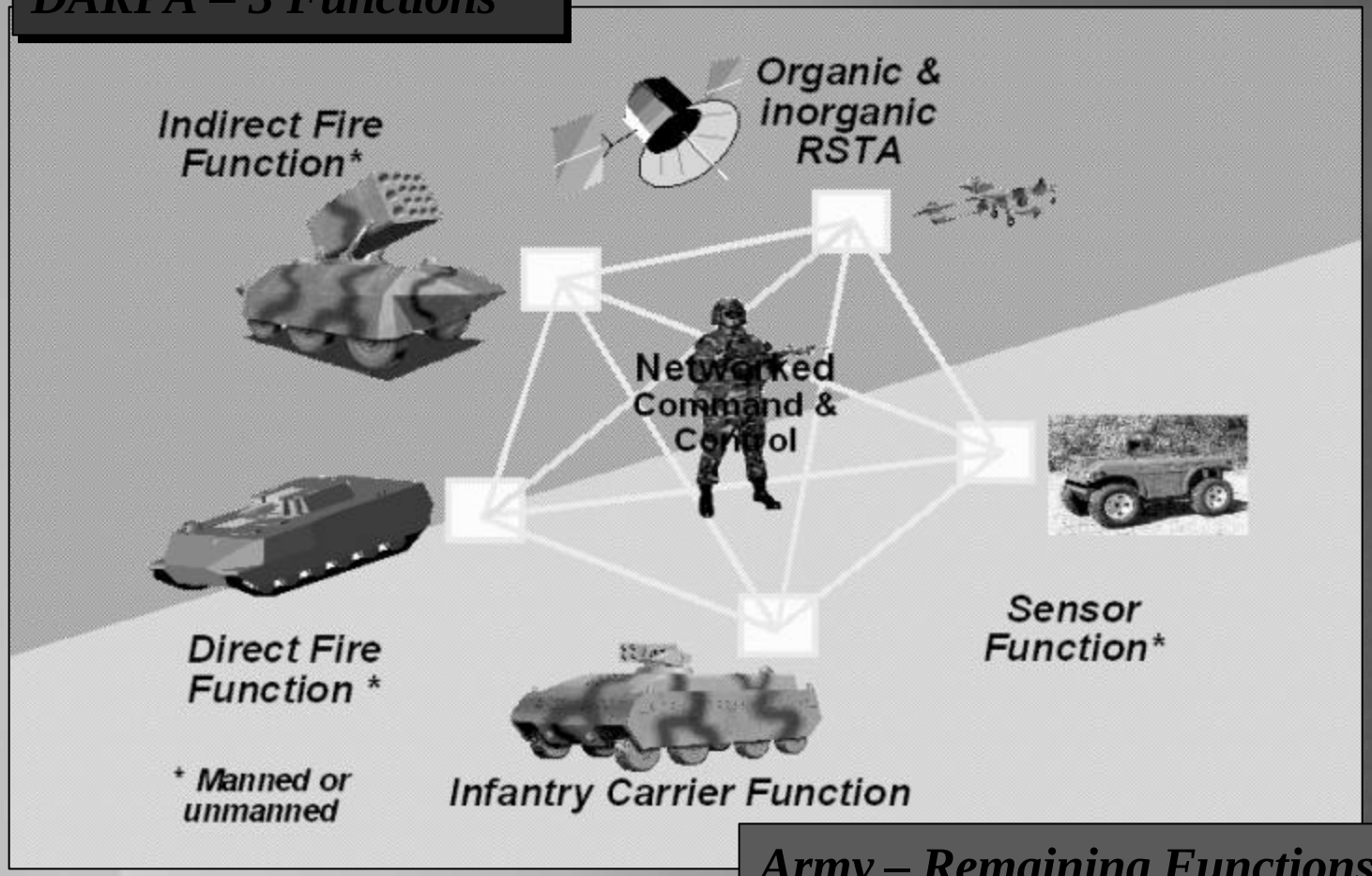


# Develop Fullest Range of Technology Options for FCS



# *How Do We Get There*
# *A Partnership with DARPA*

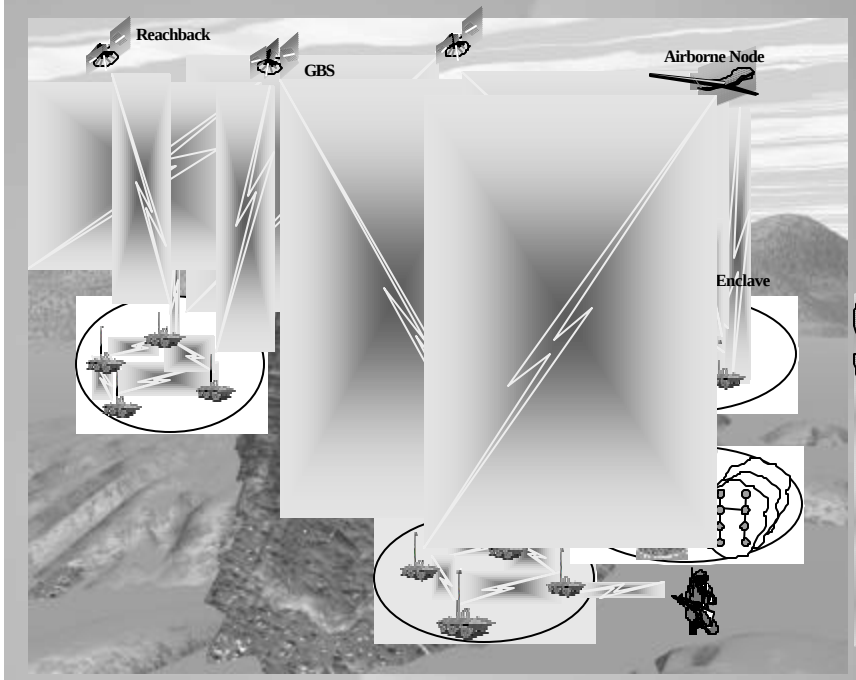
***DARPA – 3 Functions***




***Army – Remaining Functions***

# *C4ISR Overview – Role in the Force*

**C4ISR**




**Means to achieve**

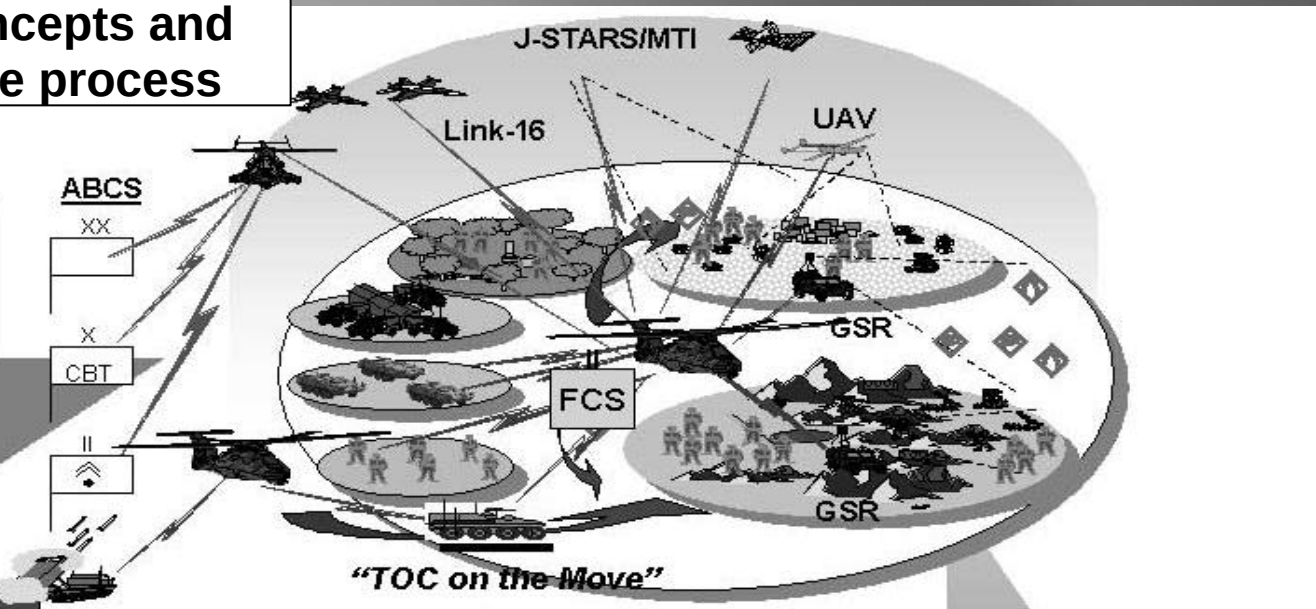
INFORMATION SUPERIORITY

**Enablin key ope char**

DEPLOYABLE
VERSATILE
LETHAL
AGILE
SUSTAIN
SURVIVE
RESPONSIVE

# Objective Force Linkage

**Comanche initiates the process of enabling these concepts and FCS will round out the process**




***See First***

**Situational Awareness:**
- Onboard Sensors
- External Sensors
- Data Collection
- Reporting
- See parts / aggregate / environment

***Understand First***

**Situational Understanding:**
- Sensor Fusion
- Aggregate Display
- Analysis
- Interaction
- Connectivity
- Highlight Vulnerabilities
- See the pattern / anticipate

***Act First***

**Situational Knowledge:**
- Qualitative rapid decisions
- Develop situation out / in contact
- Employ forces on favorable terms
- Seamless transition :

***Finish Decisively***

Synchronize organic & external fires & maneuver

# Challenge to the Team

- **Provide C4ISR Systems that give the commander a truly shared and fused Common Operating Picture.**
  - To achieve that we require sensor and data fusion on a near real time basis.
  - Integrated sensor suites
- **BLOS Fires**
- **Historically SU was an Art. We must turn it into science**

# Backup

# Changes in the Art of War Follow Technology Driven Cycles

2nd Wave
Industrial Age

Third Wave
Information Age

| 1865 | 1917 | 1961 | 1991 | 2010 |
|---|---|---|---|---|
| **Defense** | **Offense** | **Defense** | **Offense** | |
| Speed / Killing Zone | Speed / Killing Zone | Speed / Killing Zone | Speed / Killing Zone | Speed / Killing Zone |
| 2.5 km/hr / 1.0 km | 20 km/hr / 15 km | 30 km/hr / 250 km | 40 km/hr / ? | 200 km/hr / ? |
| American Civil War | | | Gulf War | War in 2020 |
| • Firepower Dominance<br>• Forces tied to Railhead<br>• Exhaustion through Attrition<br>• Symmetric Forces | • Maneuver Dominance<br>• Motorization, Wireless, Airpower<br>• Strike Center of Gravity<br>• Asymmetric Forces | • Precision Firepower Dominance<br>• Early Warning, Tracking<br>• Attack to Operational Depth<br>• Symmetric Forces | • Information Enables Precision Maneuver<br>• Platforms Accelerate Speed<br>• Global Maneuver<br>• Asymmetric Forces | |

Reference: Future Warfare, MG Robert H. Scales, Jr., Strategic Studies Institute, 1999