Joint Service Small Arms Capabilities Update

Capability Gaps into Context

and

Solicitation of Good Ideas from Industry

May 2005
Atlantic NJ
Stage Setting

- JCIDS Process—Where Industry contributes
- The JCS Family of Joint Concepts—Influence on Small Arms
- JCIDS: Tasks, Conditions, Standards—A Brief Summary
Industry’s Influence is found in the Functional Solution Analysis

Ideas for Materiel Approaches

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Document Analysis
- NSS
- JPG
- JOpsC
  - JOCs
  - Joint Functional Concepts
    - Force Application
    - Protection
    - Battlespace Awareness
- UJTLS
- Service Task Lists
- Lessons learned

FAA

Tasks, Conditions, & Standards

INPUTS

OUTPUTS

Functional Area Analysis

J C I D S

Integrated DOTMLPF Approach

Prioritized Material Solutions

Post Independent Analysis

DOTMLPF Change Recommendation

Initial Capabilities Document
- ICD
- DCR

FSA

Functional Solution Analysis

INPUTS

OUTPUTS

FSA Process
Stage Setting
The JCS Family of Joint Concepts—Influence on Small Arms

- Principal Joint Operating Concept: **Major Combat**
- Predominant Joint Functional Concept: **Force Application**

**Shaping Influence**
- **Protection**
- **Battlespace Awareness**

**Of Lesser Influence**
- Joint C2
- Focused Logistics
- Net-Centric Environment

- Prevalent Joint Integrating Concept: **Joint Urban Operations**
Stage Setting
The JCS Family of Joint Concepts—Influence on Small Arms

Principal Joint Operating Concept: Major Combat

- Use a joint, interdependent force that swiftly applies overmatching power
- Employ joint power at all points of action necessary
- Achieve strategic aims: Win at the tactical level to set the conditions for winning at the operational level
- Disintegrate, disorient, dislocate, or destroy the enemy fighting capabilities
- Overwhelm the enemy through … rapid maneuver and precision engagement
### Stage Setting

**The JCS Family of Joint Concepts**—Influence on Small Arms

Predominant Joint Functional Concepts  
**Force Application**

<table>
<thead>
<tr>
<th>Attributes</th>
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<tbody>
<tr>
<td>Lethal</td>
</tr>
<tr>
<td>Non-lethal</td>
</tr>
<tr>
<td>Synchronized</td>
</tr>
<tr>
<td>Discriminating</td>
</tr>
<tr>
<td>Predictive</td>
</tr>
<tr>
<td>Streamlined</td>
</tr>
<tr>
<td>Networked</td>
</tr>
<tr>
<td>Tailored</td>
</tr>
<tr>
<td>Agile</td>
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<tr>
<td>Tactically Dominant</td>
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<tr>
<td>Persistent</td>
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</tbody>
</table>
Stage Setting
The JCS Family of Joint Concepts—Influence on Small Arms
Prevalent Joint Integrating Concept *Joint Urban Operations*

- Decision-Making: Lowest Tactical Level
- Synchronized collaboration and information sharing *horizontally & vertically*
- Precise Effects @ point of action
- Kinetic / Non-kinetic means; lethal and non-lethal effects
- Small independent teams…speed, stealth, protective systems
- Detect, identify, track w/ precision friendly, enemy, and neutrals
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### Stage Setting

#### JCIDS: Tasks — *A Brief Summary*

<table>
<thead>
<tr>
<th>Task #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Receive and Transmit</strong> Target Acquisition data and integrated operational picture</td>
</tr>
<tr>
<td>2</td>
<td>Achieve Tactical Dominance with Force Application Through Engagement—Neutralize (Lethal &amp; Non-lethal)</td>
</tr>
<tr>
<td>3</td>
<td>Achieve Tactical Dominance with Force Application Through Engagement—Suppress (Lethal &amp; Non-lethal)</td>
</tr>
<tr>
<td>4</td>
<td>Breach</td>
</tr>
<tr>
<td>5</td>
<td>Provide <strong>Personal Defense</strong> Capability</td>
</tr>
<tr>
<td>6</td>
<td>Avoid Detection</td>
</tr>
<tr>
<td>7</td>
<td>Tag and Mark</td>
</tr>
</tbody>
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Stage Setting

JCIDS: Tasks, Conditions, Standards—A Brief Summary

<table>
<thead>
<tr>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Universal… e.g., all-weather</td>
</tr>
<tr>
<td>• Shooter / Target Posture… from defilade</td>
</tr>
<tr>
<td>• Lethal and Non-Lethal options</td>
</tr>
<tr>
<td>• Battlespace Depth: <em>CQB 0-50m; Close 0-100m; Mid 50-600m; Far 300-3000m</em></td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Standards</th>
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<tbody>
<tr>
<td>• Respects 3 time periods—<em>near-, mid-, and far-term</em></td>
</tr>
<tr>
<td>• Graduated probabilities— e.g., Probability of 50%, 70% and 100% <em>One shot-One kill</em></td>
</tr>
</tbody>
</table>
Battlespace Depth

- Close Quarter Battle
- Close Fight
- Mid Fight
- Far Fight

1000m
2000m
3000m
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The Gaps in Context
Battlespace Depth

80% of Combat Engagement
The Gaps in Context
Battlespace Depth

- Close Quarter Battle
- Close Fight
- Mid Fight
The Gaps in Context
Battlespace Depth-- Overlap

- CQB
- CLOSE
- MID FIGHT
- FAR FIGHT
The Gaps in Context
Battlespace Depth – Weapon Category Mapping

50m 100m 300m 600m 3000m

CQB
CLOSE
MID FIGHT
FAR FIGHT

Personal Defense / Mission-Specific / Direct Action
The Gaps in Context
Battlespace Depth – Weapon Category Mapping

- 50m
- 100m
- 300m
- 600m
- 3000m

CQB
CLOSE
MID FIGHT
FAR FIGHT

Personal Defense / Individual
The Gaps in Context
Battlespace Depth – Weapon Category Mapping

50m 100m 300m 600m 3000m

CQB
CLOSE
MID FIGHT
FAR FIGHT

Individual / Crew-Served / Mission-Specific
Battlespace Depth – Weapon Category Mapping

CQB

CLOSE

MID FIGHT

FAR FIGHT

Crew-Served / Mission-Specific
Stage Setting

JCIDS: Functional Needs Analysis—A Brief Summary

- Initial assessment: 74 gap metrics $\rightarrow$ 18 major gap areas
- Gaps described in terms of time: mid-, near-, and far term
- Shortfalls: Increased Lethality; Non-lethal capabilities; breaching, tag and marking; receive and transmit to include combat identification
- User concerns (lessons-learned): justifiably focused on functional characteristics, e.g., weight, length, ergonomics, portability, reliability, in addition to operational tasks
Gaps Synopsis

RECEIVE & TRANSMIT (5 areas)

- Cannot Recognize / Identify Personnel Targets @ Extended Ranges
- Cannot Recognize / Identify Vehicle Targets @ Extended Ranges
- Cannot Obtain data on, nor Acquire + Recognize /Identify Targets in defilade
- Cannot Sufficiently Distinguish Friend, Foe or Non-Combatant
- Sight Picture is not enhanced w/ Real-time Picture of the Battlespace
Gaps Synopsis

NEUTRALIZE & SUPPRESS (7 areas)

- Cannot Hit Targets from Defilade Positions to Standard
- Desire Greater Probabilities for hit and incapacitation
- Cannot Deliver Lethal Effects against Enemy Targets in Defilade
- Non-lethal Effects Against Personnel are Limited in Range & Effect
- Cannot Deliver Non-Lethal Effects Against Vehicles throughout Battlespace
- Cannot Suppress at the far reaches of the battlespace
- Cannot Suppress with non-lethal options

BREACH (1 area)

- Cannot Breach (6’ x 4’) from Distances beyond 40 meters
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Gaps Synopsis

PERSONAL DEFENSE (3 areas)

• Cannot Deliver Lethal Effects to Desired Range to Standard
• Cannot Deliver Non-Lethal Effects to Range and to Standard
• The Time from Threat to Engagement is not Near-Instantaneous

AVOID DETECTION (1 area)

• Weapons’ Signatures Not Reduced throughout Battlespace Depth

TAG & MARK (1 area)

• Cannot Overtly / Covertly Tag and Mark at Range
Finally: NSATC—Looking for Ideas

The US Army National Small Arms Center and the National Small Arms Technology Consortium—Forward Progress

- Develop Small Arms Weapons technologies that advance state-of-the-art
- Improve US industry, government and academia capabilities to sustain US military supremacy in RD&E and production of small arms technologies
- Insert these technologies into legacy and developmental platforms and ammunition as quickly and effectively as possible
QUESTIONS