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Warfighting
Program

FY2003 End of Year Report

Karl H. Lowe, Program Director
Joint Advanced Warfighting Program

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Preface

This paper was prepared under the task order Joint Advanced Warfighting Program (JAWP) for the Director, Defense Research and Engineering, in the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics. It helps address the task order objective of assisting the Department of Defense in exploring breakthrough capabilities for the future joint force commander.

JAWP was established at the Institute for Defense Analyses (IDA) to serve as a catalyst for stimulating innovation and breakthrough change. It is co-sponsored by the Under Secretary of Defense for Acquisition, Technology, and Logistics; the Under Secretary of Defense for Policy; the Vice Chairman of the Joint Chiefs of Staff; and the Commander, United States Joint Forces Command (JFCOM). JAWP includes military personnel on joint assignments from each Service and civilian specialists from IDA. JAWP is located in Alexandria, Virginia, and includes an office in Norfolk, Virginia, to facilitate coordination with JFCOM.

This paper does not necessarily reflect the views of IDA or the sponsors of JAWP. Our intent is to stimulate ideas, discussion, and, ultimately, the discovery and innovation that must fuel successful transformation.

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FY2003
End of Year Report

I. Introduction

Fiscal Year 2003 (FY2003) saw a major refocusing of the Joint Advanced Warfighting Program (JAWP) from its primary emphasis on joint concept development and experimentation to an extended commitment to capture and analyze lessons learned from joint contingency operations in Afghanistan and Iraq. This End of Year Report summarizes the activities of JAWP from October 2002 through September 2003, highlighting Joint Lessons Learned and Joint Urban Operations. These two "main effort" activities consumed most of the JAWP resources available in FY2003, limiting what could be accomplished in other subtasks and causing some work intended for FY2003 to slip into FY2004.

Originally, the JAWP statement of work for FY2003 specified four subtasks:[1]

- **Subtask 1, Support to OSD [Office of the Secretary of Defense] and the Joint Staff.** This subtask assisted the Advanced Concept Technology Demonstration (ACTD) Office, the Foreign Comparative Testing Office, and the Office of Technology Transition in the development and transition of ACTDs. In addition, JAWP was to propose ACTDs and assist in their formulation based on the results of joint experimentation.
- **Subtask 2, Support to USJFCOM [United States Joint Forces Command] Joint Urban Operations.** This subtask was designated as the main effort. Deliverables included a concept white paper version 1.0; an experiment to explore the effectiveness of new operating concepts for joint urban operations; and an experiment employing human-in-the-loop (HITL) simulation to explore new concepts for joint urban operations.

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[1] Institute for Defense Analyses, Joint Advanced Warfighting Program, Amendment No. 8 to Task Order AI-8-1627, Joint Advanced Warfighting Program (JAWP), February 19, 2003.

- **Subtask 3, Support to Other Combatant Commanders.** This subtask consisted of helping Combatant Commanders with concept development and experimentation supporting their new responsibilities, focusing on Standing Joint Force Headquarters and the role of the new US Strategic Command as provider of global command and control services.
- **Subtask 4, Exploiting Discovery.** This subtask told JAWP to be prepared to stop what is was doing and respond to new opportunities and unforeseen requirements that might arise during the year. (This provision proved to be prophetic.)

In October 2002, the Chairman of the Joint Chiefs of Staff, General Richard B. Myers, expressed his concerns to Admiral E. P. Giambastiani, Commander, JFCOM, about the effectiveness of JFCOM's own Joint Center for Lessons Learned, particularly in capturing lessons from the Global War on Terrorism (see **Appendix A** for a copy of General Myers's memorandum). The Chairman's memorandum outlined the attributes of an effective lessons-learned effort and requested Admiral Giambastiani to provide an action plan to re-invigorate the Joint Center for Lessons Learned.

Admiral Giambastiani's response was that to meet the Chairman's expectations, the Joint Center would require an infusion of first-class talent, identifying JAWP as the best readily available pool (see **Appendix B** for a copy of Admiral Giambastiani's memorandum). General Myers concurred and, in consultation with the President of the Institute for Defense Analyses (IDA), General Larry D. Welch, USAF (ret.), and Admiral Giambastiani, he outlined a plan to use JAWP on a temporary basis to directly support JFCOM in generating Global War on Terrorism lessons learned (see **Appendix C** for two memoranda regarding the plan).

The result was a revised statement of work[2] that replaced the Joint Urban Operations subtask with Joint Lessons Learned as the "highest priority effort." JAWP was to support JFCOM in the collection of lessons learned, and to focus on a plan for collecting and disseminating to operational command-

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2 Institute for Defense Analyses, Joint Advanced Warfighting Program, Amendment No. 9 to Task Order AI-8-1627, Joint Advanced Warfighting Program (JAWP), April 10, 2003.

ers those lessons relating to joint employment and interoperability from the Global War on Terrorism and OPERATION IRAQI FREEDOM.

The revised statement of work specified that the new subtask was to be JAWP's main effort for a period of 120 days following its approval. But in July 2003, the effort was extended by the JAWP Board of Directors beyond the end of FY2003, and this task remains the designated main effort in FY2004.

II. Joint Lessons Learned

The Joint Lessons Learned subtask began in February 2003. Its immediate objective was to collect and analyze lessons from OPERATION IRAQI FREEDOM. JAWP's senior military officer, Brigadier General Bob Cone, US Army, headed the Joint Lessons Learned Team.[3] The team split into several elements to accomplish its mission, as shown in **Figure 1** on the next page.

The Joint Lessons Learned subtask comprised three major efforts:

- the Overseas Collection Effort,
- the Continental United States (CONUS) Collection Effort, and
- the Post Major Combat Operations Collection Effort.

Each effort is described in more detail in the following sections.

Overseas Collection Effort

Task Leader: Brigadier General Bob Cone, US Army

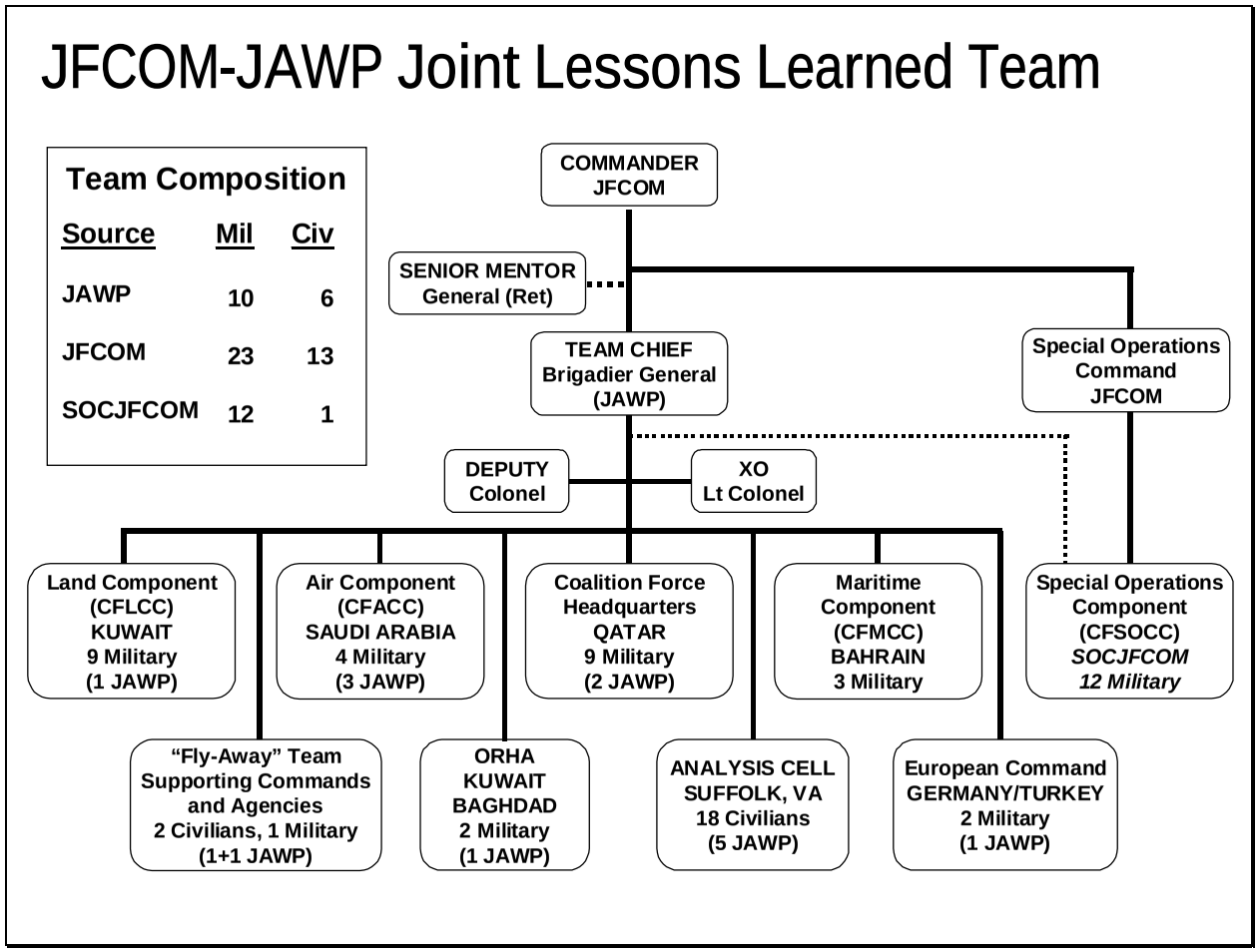
The Forward Collection Team observed operations and collected data at four operational-level headquarters in theater:

- Coalition Force Headquarters, Qatar;
- Combined Force Land Component Command, Kuwait;
- Combined Force Air Component Command, Saudi Arabia; and
- Combined Force Maritime Component Command, Bahrain.

Other elements of the Forward Collection Team observed supporting activities in US European Command and at the Office of Reconstruction and Humanitarian Assistance in Kuwait. The team also benefited from a parallel and supporting effort by Special Operations Command, JFCOM, which observed and reported on activities in the Combined Force Special Operations Component Command and its subordinate elements.

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[3] As the Team Chief, General Cone reported directly to Admiral Giambastiani, Commander, JFCOM.



CFACC	Combined Force Air Component Command
CFLCC	Combined Force Land Component Command
CFMCC	Combined Force Maritime Component Command
CFSOCC	Combined Force Special Operations Component Command
Civ	civilian
JAWP	Joint Advanced Warfighting Program
JFCOM	Joint Forces Command
Mil	military
ORHA	Office of Reconstruction and Humanitarian Assistance (now the Office of the Coalition Provisional Authority)
SOCJFCOM	Special Operations Command, Joint Forces Command
XO	Executive Officer

Figure 1. Elements of the JFCOM-JAWP Joint Lessons Learned Team

The Forward Collection Team focused on about a dozen topics identified over time as important by General Tommy Franks, Commander, US Central Command, and his Component Commanders. Team members at the various headquarters communicated with each other from site to site and traveled between sites as necessary. Their primary collection process included the following:

- Observing daily command briefings,
- Monitoring selected operational reporting,
- Interviewing (and at intervals re-interviewing) key participants, and
- Collecting recorded data wherever feasible.

CONUS Collection Effort

Task Leader: Mr. Karl H. Lowe

A smaller JAWP-led mixture of officers and civilians constituted a "Fly-Away" Collection Team that visited supporting commands and agencies in CONUS.

Deployment and sustainment. To identify issues associated with deployment and sustainment, the team visited the following organizations:

- Defense Logistics Agency
- JFCOM J3/4, Operations, Plans, Logistics and Engineering Directorate
- Joint Deployment Process Owner
- Joint Staff J-3, Operations
- Joint Staff J-4, Logistics
- Military Traffic Management Command
- Office of the Chief of the Army Reserve
- OSD Office of the General Counsel
- OSD Office of the Under Secretary for Policy
- US Transportation Command

Intelligence, information operations, and targeting support. To identify issues associated with CONUS-based intelligence, information operations, and targeting support, the team visited the following organizations:

- Defense Intelligence Agency
- Defense Threat Reduction Agency
- Joint Information Operations Center (San Antonio, Texas)
- Joint Staff Deputy Directorate of Information Operations (J-39)
- Joint Warfare Analysis Center
- National Ground Intelligence Center
- National Imagery and Mapping Agency
- National Security Agency
- United States Army Intelligence and Security Command

Collection consisted mainly of interviews with key officials most directly responsible for supporting the war effort, although the visit to US Transportation Command (one week during the war) included daily observation of the Commander's situation update briefing. These visits provided a sampling of perspectives that complemented or amplified information gathered by the Forward Collection Team.

Analytical Support

Task Leader: Mr. Thomas L. Travis

Issues identified by the Forward and "Fly-Away" Collection Teams were passed to the Analysis Cell at JFCOM's Joint Training, Analysis, and Simulation Center in Suffolk, Virginia. There, the analysts expanded the issues with relevant background information such as joint doctrine, after action reviews from joint exercises, and lessons-learned reports from prior contingency operations. JAWP supported this effort with analysts from both its Norfolk and Alexandria offices.

Briefings and Reports

Task Leader: Brigadier General Bob Cone, US Army

After the collapse of the Iraqi regime, General Cone and the Forward Collection Team sponsored a lessons-learned conference at Coalition Force Headquarters in Kuwait. Lessons-learned teams from US Special Operations Command and each of the Services presented the issues they had identified, as did the Joint Lessons Learned Team.

After the conference, the majority of the Forward Collection Team members returned to Suffolk, and, in collaboration with the analysts, prepared a "Quick Look" briefing that highlighted the "Big Issues"—the ones that caused General Franks, his staff, and the Component Commanders to "pound the table" during major combat operations. The briefing categorized these issues into the following sets of capabilities:

- Capabilities that reached new levels of performance and needed to be sustained,
- Capabilities that demonstrated considerable effectiveness but needed enhancement, and
- Capabilities that felt short of expectations and needed to be redressed through new initiatives.

Admiral Giambastiani and General Cone presented the Quick Look briefing to senior leadership of the Department of Defense (DoD) to gain top-down support for efforts to institutionalize aspects of the campaign that went well and to remedy those that did not. Among the recipients of the Quick Look briefing were the following:

- President George W. Bush, Vice President Richard B. Cheney
- Secretary of Defense Donald H. Rumsfeld, Deputy Secretary Paul Wolfowitz, senior OSD officials
- Combatant Commanders
- Joint Chiefs of Staff and their operations deputies
- Senior representatives from the Services and Military Departments

JAWP analysts developed the initial Quick Look briefing and additional issues identified by the collection teams into a detailed written report covering the major combat operations phase of OPERATION IRAQI FREEDOM. This classified report was approved by Admiral Giambastiani on 1 March 2004, and is accessible on the SIPRNET at the following URL:

http://www.jfcom.smil.mil/portal.nsf/0/0A6FF4F39C2BAF4E85256E5A0062B212/

An unclassified version of report awaits final approval.

Post Major Combat Operations Collection Effort

Task Leader: Brigadier General Bob Cone, US Army

Following the end of major combat operations, part of the Forward Collection Team moved to Baghdad to collect lessons emerging from the reconstruction effort. Additional JAWP military members and two JAWP civilian analysts took their turns in Iraq, with the last one coming home in mid-November 2003.

III. Joint Urban Operations

JAWP continued its efforts at improving the capabilities of joint force commanders in the conduct of urban operations.

DoD Executive Agent for Joint Urban Operations

Task Leader: Dr. William J. Hurley

In past years, JAWP supported the Joint Staff's Force Structure, Resources, and Assessment Directorate (J-8) in its role of chairing a flag-level Special Study Group for Joint Urban Operations. The Special Study Group was created by the Chairman of the Joint Chiefs of Staff, and given the following responsibilities:

- recommend a DoD Executive Agent for Joint Urban Operations,
- write a charter for the new office,
- identify resources to establish it, and
- set up an initial *DoD Master Plan for Joint Urban Operations*, which would be transitioned to the Executive Agent for execution.

The JFCOM Commander was designated the Executive Agent, and on 1 January 2003, the Joint Urban Operations Office was created at JFCOM, with a staff of two, to support this new responsibility. The Joint Urban Operations Office was initially placed directly under the JFCOM Chief of Staff, but subsequently was moved to JFCOM's Directorate for Joint Experimentation (J-9).

JAWP helped the new Joint Urban Operations Office structure its program, prepare briefings for senior decision-makers at JFCOM, and structure an initial Joint Urban Operations conference that was held in March 2003. The purpose of the conference was twofold: (1) reach out to other DoD (and non-DoD) components and (2) maintain momentum in specific focus areas.

JAWP also drafted a *Concept Development and Experimentation Campaign Plan*, which included the following:

- capture the experiences of OPERATION IRAQI FREEDOM regarding urban operations and applying the results to the development of new approaches to joint urban operations;
- conduct a HITL experiment in a virtual urban environment;
- partner with the Marine Corps Warfighting Laboratory in Quantico, Virginia, in a series of war games addressing joint urban operations; and
- develop focus groups composed of DoD and coalition representatives to recommend follow-up actions in areas such as (1) the mapping of urban environments, and (2) the design and employment of systems supporting urban intelligence, surveillance and reconnaissance (ISR).

The proposed Campaign Plan was presented to Major General James M. Dubik, JFCOM Director for Joint Experimentation (J9) in May 2003. Since then the Campaign Plan has provided the basis for work by the Joint Urban Operations Office. (**Appendix D** contains the briefing from May 2003.)

DoD Master Plan for Joint Urban Operations

Task Leader: Dr. William J. Hurley

Previously in support of the Joint Staff, JAWP had drafted a *DoD Master Plan for Joint Urban Operations*, based on another JAWP publication, *Department of Defense Roadmap for Improving Capabilities for Joint Urban Operations*.[4]

The *DoD Master Plan* was approved by the Joint Requirements Oversight Council in December 2002, and provided to the Joint Urban Operations Office at JFCOM for execution. JAWP subsequently updated the *Master Plan* for 2004. (**Appendix E** contains the draft version from that time.)

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[4] Published as IDA Paper P-3643, two volumes, William J. Hurley et al., Institute for Defense Analyses, Alexandria, Virginia, March 2002.

Seminar War Games

Task Leader: Dr. William J. Hurley

With support from the Defense Adaptive Red Team (DART), JAWP staff members designed a series of tabletop war games that were based on a Baghdad scenario. These war games explored several new operating concepts that were described in JAWP's *Department of Defense Roadmap for Improving Capabilities for Joint Urban Operations*. Three war games were held, two in January and one in March, to explore the benefits and limitations of the following concepts:[5]

- **Nodal Capture and Expansion**. The capture of certain critical nodes may substantially facilitate the destruction and/or capture of the Red Force.
- **Nodal Isolation.** Loss of the use of certain critical nodes might substantially weaken the Red Force and make its capture and/or destruction easier.
- **Precision Strike.** It may be possible to destroy most or all of the Red Force with standoff munitions.
- **Segment and Capture/Isolate.** A Red Force that has nowhere to retreat may be easier to capture or destroy.
- **Soft Point Capture and Expansion**. The capture of undefended sections of the city might provide advantage from which to later destroy or capture the Red Force.

The players consistently combined several of the concepts to fit a given situation. Even today, the concepts continue to provide a useful framework for planning an operation and identifying needed capabilities.

On 27 May 2003, a seminar war game organized by DART was held at IDA. Its purpose was to explore an operating concept based on Nodal Isolation, which is the ability to control elements of an urban infrastructure without actually capturing them with a conventional force. Participants from JAWP, DART, and the Marine Corps Warfighting Laboratory discussed the nature of infrastructure systems with members of the water, police and fire de-

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5 These descriptions are taken from Hurley et al., Volume II, Appendix D, p. D-6.

partments of Arlington, Virginia, a suburb of Washington, D.C. Alternatives for attacking the infrastructure were proposed, and potential countermeasures to such attacks were discussed.

Concept Development

Task Leader: Dr. William J. Hurley

Work on a concept paper for joint urban operations was interrupted when the Joint Lessons Learned subtask supplanted Joint Urban Operations as the main effort for JAWP. When work resumed on Joint Urban Operations, a one-day conference was held at IDA on 27 June 2003 to discuss a JAWP concept paper on future urban operations. After incorporating comments received, JAWP delivered a completed "draft for comment" to the Joint Urban Operations Office in October 2003. (**Appendix F** contains a copy of this draft version.)

Urban Environment Representation

Task Leader: Dr. William J. Hurley

Enriching the commander's understanding of the urban environment before and during operations is at the core of the new approaches to urban operations. The development of multi-dimensional maps of urban areas is critical for operational planning, mission rehearsal, training, and experimentation. Among the features included were the following:

- Representations of the three-dimensional physical environment, including interiors of structures and subterranean structures;
- Various infrastructures, e.g., power, communication, and water as a "system of systems";
- The cultural makeup of urban areas; and
- Traffic and other activities taking place.

Many activities inside and outside of DoD are relevant to this challenge. JAWP led an effort to bring the people involved in these activities together to assess the current status and recommend the next steps. Participants described programs being conducted by their organizations, and also discussed

common interests and the way ahead. Meetings included representatives from the following organizations:

- Defense Intelligence Agency
- JFCOM
- Joint Warfighting Analysis Center
- National Ground Intelligence Center
- National Imagery and Mapping Agency
- US Army's Topographical Engineering Center

Advanced Concept Technology Demonstration Proposal

Task Leader: Colonel Mark Bean, USMC

In collaboration with researchers from George Washington University in Washington, D.C., JAWP proposed the development of a prototype high-level tool called the "Knowledge Management System." This proposal was briefed to the "Breakfast Club" advisory group, an internal DoD group that reviews ACTD proposals. It is currently being considered for an Advanced Concept Technology Demonstration (ACTD), either as part of a larger effort (Theater Effects-Based Operations ACTD) or as a stand-alone effort.

The Knowledge Management System would represent a broad, three-dimensional urban area dynamically overlaid with information such as physical infrastructure; cultural aspects; and the positions and status of enemy forces and non-combatants. The system would include the following:

- a reach-back capability to diverse databases and centers of expertise;
- dynamical modeling of effects (such as the plumes of weapons of mass destruction); and
- a user-friendly interface that would enhance a joint force commander's ability to cope with the complexities of an urban operation.

Urban Intelligence, Surveillance, and Reconnaissance

Task Leader: General Larry D. Budge, US Army (ret.)

Improved urban ISR capabilities are critical to the emerging approaches to urban operations. JAWP hosted an urban ISR technology workshop on 7–8 August 2003. Its objective was to identify promising sensor systems to develop for urban operations. The results will guide the systems to be explored in the HITL urban experiment URBAN RESOLVE that JAWP is planning for FY2004. See the section on URBAN RESOLVE on page 16 of this document.

JAWP is also exploring the promise of networked sensors for urban ISR with Sandia National Laboratories and the Army Research Laboratory.

Urban Experiences in Operation Iraqi Freedom

Task Leader: Dr. William J. Hurley

A number of joint, Service and non-DoD open-source efforts are capturing the experiences of major combat operations in Iraq. JAWP led an effort to relate the results of these efforts to issues raised in urban operations, focusing on the implications of urban combat in Iraq for the directions identified in *DoD Master Plan for Joint Urban Operations*. JAWP proposed a list of urban case studies and initiated work based on unclassified sources.

Urban Resolve HITL Experiment

Task Leader: General Larry D. Budge, US Army (ret.)

In late 2002, JAWP began to develop a concept for a multi-phased HITL experiment, the purpose of which was twofold:

- to explore key elements of joint urban operations, and
- to provide insights supporting the development of the Joint Urban Operations concept.

The URBAN RESOLVE experiment was designed to explore whether in the 2015–2020 timeframe the US military can succeed in conducting combat operations in the urban environment using the same concepts of maneuver and fires that have been successful in open terrain. The experiment was approved

by Major General James M. Dubik, JFCOM Director for Joint Experimentation (J9), in May 2003. Currently, it is organized into three phases:

- **Phase 1, Situational Understanding**, is exploring how the joint force can achieve situational understanding in the urban battlespace. "Train-up" began in June 2003 and the trials will run through October 2004.
- **Phase 2, Shaping the Battlespace**, will explore shaping the urban battlespace using standoff precision weapons. This phase will run from April 2004 to September 2005.
- **Phase 3, Joint Urban Engagement**, will explore joint urban engagements, the maneuvering of ground forces to defeat the enemy without sustaining unacceptable casualties. This phase will run from April 2005 to September 2006.

An overview of the schedule for the experiment is depicted in **Figure 2** (below).

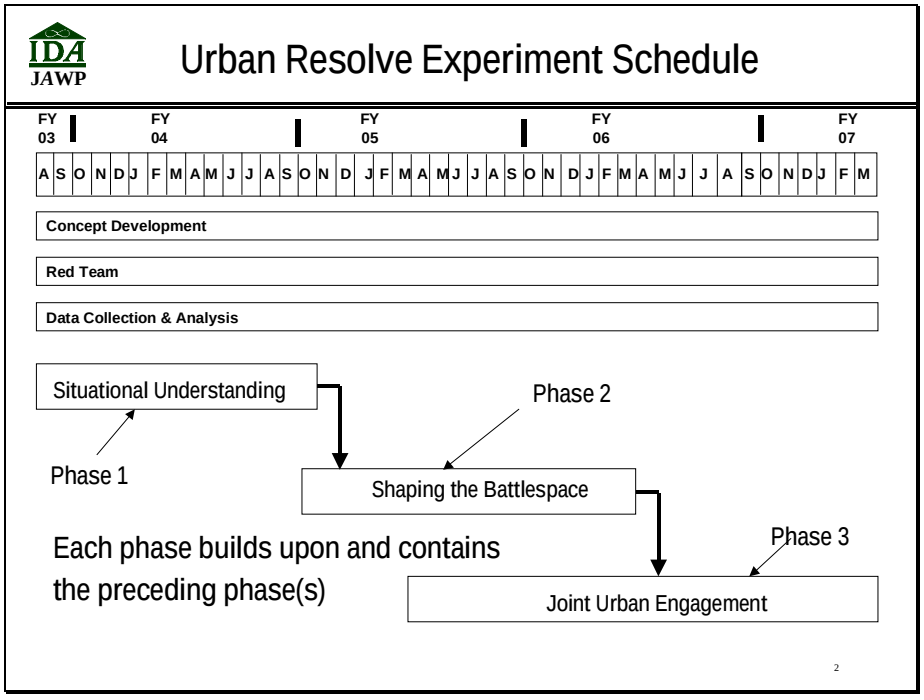


Figure 2. Schedule for the Urban Resolve Experiment

Each phase of the experiment will begin with a concept that is iterated through a series of workshops, war games, and constructive simulation runs.

The concept is modified following each step to reflect what has been learned. The process culminates in a series of HITL trials supported by the Joint Semi-Automated Forces (JSAF) simulation, which is a high-fidelity, virtual HITL simulation belong to JFCOM. Throughout each phase, an adaptive Red Team tries to defeat the concept, using the most capable technologies and concepts that might be available to an adversary in the 2015–2020 timeframe.

Deliverables from the experiment include the following:

- Insights supporting the continued development of the Joint Urban Operations concept,
- Actionable recommendations to JFCOM concerning joint urban operations concepts and capabilities, and
- A capability to support joint urban warfare experiments, including a large-scale, high-fidelity distributed HITL simulation capability.

Sensor workshops. When the Joint Lessons Learned subtask absorbed a majority of JAWP personnel, JAWP turned to other research divisions within IDA to fill out the experiment development team for Phase 1 of the URBAN RESOLVE experiment. Sensor workshops were conducted at IDA in early August 2003, followed by the development of the initial sensor architecture. An IDA publication, *Joint Urban Operations Sensors Workshop, August 7-8, 2003*, was sent to the sponsor in December 2003 for review and release.

Concept development conference. At the end of September 2003, the JAWP-IDA Development Team and the JFCOM JSAF Development Team conducted a Concept Development Conference to develop the requirements for JSAF to support realistic urban experimentation.

Other Urban-Related Activities

JAWP continued to collaborate with the following organizations working on improving urban capabilities:

- Army Staff (G-2)
- Army Topographical Engineering Center
- Center for Emerging Threats and Opportunities.

- Defense Advanced Research Projects Agency
- Defense Modeling and Simulation Office
- Joint Warfare Analysis Center
- National Ground Intelligence Center
- National Personnel Recovery Agency
- Sandia National Laboratories

JAWP also continued outreach activities that were aimed at developing interest in joint urban operations, among them:

- Participation in the UNIFIED QUEST 2003 joint war game and the PINNACLE IMPACT event at JFCOM;
- Presentations at two conferences addressing urban warfare issues;
- Briefing to Major General Leo V. Williams, Deputy Commanding General, Marine Corps Concept Development Command; and
- Presentation to Mr. John Stenbit, Assistant Secretary of Defense (Networks and Information Integration), regarding the proposed urban Knowledge Management System for the joint force commander. (see the section on the Knowledge Management System, page 15).

IV. Other JAWP Activities

ACTD Integration

The original statement of work for FY2003 directed JAWP to support the Office of the Deputy Under Secretary of Defense for Advanced Systems and Concepts (ODUSD (AS&C)) in "devising a strategy to focus efforts on the development and transition of ACTDs" and to "propose ACTDs and assist in their formulation based on the results of joint experimentation." [6] This analytical effort was designed to leverage ongoing JAWP work in support of DoD transformation, particularly in the conducting of joint experiments, but also its development of two important publications: *Department of Defense Roadmap for Improving Capabilities for Joint Urban Operations* and *DoD Master Plan for Joint Urban Operations*.

An initial exchange of briefings and discussion among AS&C personnel and JAWP personnel (military and civilian) was held at IDA in March 2003. The purpose was for JAWP personnel to learn more about the ongoing work and focus of each of the AS&C offices, and so be more aware of the potential contributions of ACTDs to future capabilities and DoD transformation.

However, this task was put on hold when the FY2003 statement of work was amended to make Joint Lessons Learned subtask the main effort for 2003. Joint Urban Operations, the previously designated main effort, became second in priority, and all others third. The ACTD task is being continued into FY2004.

Joint Command and Control and Interoperability

JAWP provided technical and strategic advice to the Joint Battle Center Commander in developing a process at JFCOM for spiral transformation of joint command and control capability and interoperability. This effort focused on developing a concept for the emerging Interoperability Technology

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[6] Institute for Defense Analyses, Joint Advanced Warfighting Program, Amendment 8 to Task Order AI-8-1627, Joint Advanced Warfighting Program (JAWP).

Demonstration Center to leverage work already underway in two other organizations:

- US Strategic Command efforts on the Combatant Commander's Integrated Command and Control System, and
- Office of Force Transformation efforts to institutionalize joint experimentation and rapid spiral transformation.

Commercial Off-The-Shelf Gaming

A JAWP team began investigating how DoD could exploit commercial games for transformation and joint experimentation. What is appealing about this type of game is the potential to engage many more people in experiments and related transformational activities; and increased participation would be largely driven by lower costs. These games run on personal computers and network via standard broadband Internet connections. They also require fewer support personnel and smaller centralized facilities.

JAWP staff gave presentations to and engaged in discussions with a number of interested parties, including the following defense organizations:

- JFCOM's Joint Experimentation Directorate (J9),
- Office of Force Transformation,
- Defense Modeling and Simulation Office, and
- The MOVES Institute[7] at the Naval Postgraduate School in Monterrey, California

Discussion with the MOVES Institute centered on the Institute's development of the America's Army game.[8] This game was of particular interest to the visiting JAWP researchers because it was developed within DoD but it has been competing successfully with private sector games. Products developed within DoD typically lack certain features to make them do well in the commercial market such as the visual appeal, ease of learning, user-friendly operation, trouble-free networking, and entertainment. But at the same time,

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7 "MOVES" stands for Modeling, Virtual Environments, and Simulation.

8 The game can now be found at http://www.americasarmy.com/.

commercial games usually lack what the DoD customer wants, such as accurate and detailed modeling, data feedback, and standard military symbology.

America's Army has succeeded in satisfying both sets of customers, becoming one of the most popular multi-player online games. Staff members at the MOVES Institute said that a hands-off attitude from their sponsor allowed them the freedom to produce a higher-quality product that could compete in the commercial market. The composition of the development team emphasized the artists[9] over the programmers. This balance of talent allowed them to improve both the visual realism of the game and the user-friendly nature of the interface.

Our investigations had to be suspended due to the demands of the Joint Lessons Learned subtask, but JAWP team members intend to continue investigating new commercial gaming products as they progress through development and enter the market. The intended JAWP product will discuss commercial game technology and the commercial game paradigm, and future options for incorporating both into DoD experimentation.

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[9] The term "artist" includes graphics designers and graphics user interface designers-programmers.

V. JAWP Formal Deliverables for FY2003

Budge, Larry D. et al. *Future Joint Force I Experiment: Final Report*. IDA Paper P-3738.

Cohen, Jeffrey, task leader; Christopher Arantz; John Fricas; Charlotte Hallengren; and Adrienne Janetti. *Advanced Mobility Concept Study: Joint Integration Work Group Findings*. IDA Paper P-3787.

Gold, Theodore S. et al. *FY2002 End of Year Report*. IDA Paper P-3778.

Hurley, William J., Alex Wahlman, Thomas Sward, Duane Schattle, Joel B. Resnick. *Department of Defense Roadmap for Improving Capabilities for Joint Urban Operations*. Two volumes. IDA Paper P-3643.

Lowe, Karl H., Adrienne Janetti, Drew Lewis, Charles Pasquale. *The Unified Command Structure: Issues for the Next Review*. IDA Paper P-3736.

Murray, Williamson. *Military History: A Selected Bibliography*. IDA Document D-2877.

Sinnerich, Richard and Williamson Murray. *Joint Warfighting in the Twenty-First Century*. IDA Paper P-3801.

Williamson Murray. *Two Lectures*. (1) Transformation and Innovation: The Lessons of the 1920s and 1930s. (2) Looking at Two Distinct Periods of Military Innovation: 1872-1914 and 1920-1939. IDA Paper P-3799.

VI. Informal Deliverables

Publication Type	Publication Title	Classification	Authors
Briefing	DoD Joint Urban Operations Master Plan: Fulfilling JFCOM's Responsibility as DoD Executive Agent	U	CAPT T. Johnston, USN, JFCOM, Duane Chattel, JFCOM, W. Hurley
Briefing	Joint Urban Operations Azimuth Check	U	W. Hurley, A Wahlman
Briefing	Joint Urban Operations Concept Development and Experimentation Activities	U	W. Hurley
Briefing	Joint Urban Operations Concept Development and Experimentation Campaign Plan (Proposed)	U	W. Hurley, L. Budge, G. Conover
Briefing	Joint Urban Operations	U	W. Hurley
Briefing	Joint Urban Operations: Concept Development and Experimentation Activities	U	W. Hurley
Paper	What are the top 5-10 things DoD could do in the next 60-90 days (COTS, GOTS, Training, Concepts, etc., strategic to tactical) to improve our urban warfare capabilities? Collection of suggestions submitted by 13 subject matter experts.	U	COL Mark Bean, USMC, Editor.

Draft	Activity Report for Fiscal Year 2002	U	Theodore Gold, Joel Resnick, Karl Lowe, William Hurley, Adrienne Janetti
Paper	Advanced Mobility Concept Study: Joint Integration Work Group Findings	U	Jeffrey Cohen, John Fricas, Charlotte Hallengren, Chris Arantz, Adrienne Janetti
Paper	Advanced Mobility Concepts Study	TBD	JFCOM/J9
Paper	Classified	S	Jeff Jaworski, Adrienne Janetti
Briefing	Collaborative Joint Experimentation, System Integration and Joint Training Assessment	U	John T. Hanley, Jr.
Email Attachment	Comments on JUOO/J9 Brief - 31 Mar 03	U	W Hurley
Briefing	Comparison of Gulf War I and II	U	Alec Wahlman, Adrienne Janetti, Jeff Jaworski, Drew Lewis
Briefing	COTS Wargames for Joint Experimentation	TBD	Dr. Mike Zyda, Director of the MOVES Institute at the Naval Postgraduate School
Email Attachment	DOD Experimentation Criteria - recommendation for disposition of Joint Staff and JFCOM comments	U	John T. Hanley, Jr.
Paper	DoD Master Plan for Joint Urban Operations, Draft 3 Mar 03	U	W. Hurley
Paper	Effects-Based Operations: Contributions to Developing the Concept	U	Adrienne Janetti

Briefing	Enter Publication Title here...Interoperability Technology Demonstration Center Standup Resourcing	TBD	Colonel Judy, JBC Commander
spreadsheet	Enter Publication Title here..., Draft ITDC tasks	TBD	Colonel Judy, JBC Commander
Email Attachment	Enter Publication Title here..., Joint Spiral Development Transformation Tool Proposal	TBD	Colonel Judy, JBC Commander
Briefing	Experimental Design of the Future Joint Force Experiment	TBD	Dr. Mike Zyda, Director of the MOVES Institute at the Naval Postgraduate School
Email Attachment	FY 05 ACTD Data Call	U	J. Hanley
Briefing	IDA proposals on Urban Operations	U	W. Hurley
Briefing	Iraq Joint Lessons Learned Quick Look Report: Campaign Assessment Methodology	S/NF	James M. Brooks
Briefing	Iraq Joint Lessons Learned Quick Look Report: Dynamic Airspace Control	S/NF	James M. Brooks
Briefing	Iraq Joint Lessons Learned Quick Look Report: Effect-Based Operations	S/NF	James M. Brooks
Abbreviated Trip Report - 23 Jan	ISC2 Trip Report, 23 Jan Session	TBD	JFCOM/J9 (Standing JFHQ) and JFCOM Joint C4ISR Battle Center
Briefing	JAWP SUPPORT TO OSD ADVANCED SYSTEMS AND CONCEPTS	U	J. Hanley, T. Gold, K. Lowe

Computer Products	JLLCT Read-Ahead	U	Adrienne Janetti, Jeff Jaworski
Briefing	Joint Urban Operations	U	W. Hurley
Memorandum	Joint Urban Operations Concept Development and Experimentation Timeline Events	U	W. Hurley
Briefing	Joint Urban Operations HITL Experiment	U	Larry Budge
Briefing	Joint Urban Operations: Emerging Approaches and Implications for Technology Development	U	W. Hurley
Email Attachment	JUO Events Coordination and Management—Suggested Changes	U	W. Hurley
Computer Products	Lessons Learned Archive	U	Adrienne Janetti, Jeff Jaworski, Drew Lewis, Alec Wahlman
Paper	Open Source Lessons Learned from Operation Iraqi Freedom	U	Adrienne Janetti, Jeff Jaworski, Drew Lewis, Alec Wahlman
Briefing	Operation Iraqi Freedom Joint Lessons Learned	U	Joint Lessons Learned Team
Paper	Operation Iraqi Freedom: Assumptions	U	Adrienne Janetti
Memorandum	Questions Regarding Urban Operations in Operation Iraqi Freedom	U	A. Wahlman, J. Jaworski, J. Resnick, W. Hurley
Briefing	Selected Urban Battles in Iraq	U	Jeff Jaworski

Briefing	SJFHQ IPT Strategy Session Briefing Slides	TBD	JFCOM/J9 (Standing JFHQ)
Briefing	SJFHQ Process IPT Briefing Slides	TBD	JFCOM/J9 (Standing JFHQ)
Briefing	SJFHQ Process IPT Briefing Slides (Revised)	TBD	JFCOM/J9 (Standing JFHQ)
Meeting Minutes	SJFHQ Process IPT, 16 Jan Session	TBD	JFCOM/J9 (Standing JFHQ)
Meeting Minutes	SJFHQ Process IPT, 9 Jan Session Meeting Minutes	TBD	JFCOM/J9 (Standing JFHQ)
Briefing	Synthesized Approach to Interoperability - Leveraging the ITDC	U	Thomas Travis
Survey Template	Template for Planned Service Concept Development and Experimentation Activities—FY03 and FY04	U	W. Hurley
Paper	The Civilian and Military Components of Strategic Lift	U	Alec Wahlman
Briefing	Time in Service	U	Adrienne Janetti
Briefing	Update on COTS Experimentation	U	Alec Wahlman, Jeff Jaworski, Drew Lewis
Briefing	Use of the Commercial Game Paradigm for Joint Experimentation	TBD	Dr. Mike Zyda, Director of the MOVES Institute at the Naval Postgraduate School

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Hurley, William J., task leader; Alec C. Wahlman; COL Thomas Sward, USMC; Duane Schattle; and Joel B. Resnick. *Department of Defense Roadmap for Improving Capabilities for Joint Urban Operations*. Two volumes. IDA Paper P-3643. Alexandria, VA: Institute for Defense Analyses, March 2002. For Official Use Only.

Institute for Defense Analyses, Joint Advanced Warfighting Program. Amendment No. 8 to Task Order AI-8-1627, Joint Advanced Warfighting Program (JAWP). Alexandria, VA: Institute for Defense Analyses, February 19, 2003.

Institute for Defense Analyses, Joint Advanced Warfighting Program. Amendment No. 9 to Task Order AI-8-1627, Joint Advanced Warfighting Program (JAWP), Alexandria, VA: Institute for Defense Analyses, April 10, 2003.

Acronyms and Abbreviations

ACTD	Advanced Concept Technology Demonstration
CFACC	Combined Force Air Component Command
CFLCC	Combined Force Land Component Command
CFMCC	Combined Force Maritime Component Command
CFSOCC	Combined Force Special Operations Component Command
Civ	civilian
CONUS	continental United States
DART	Defense Adaptive Red Team
DoD	Department of Defense
FY	fiscal year
HITL	human-in-the-loop
IDA	Institute for Defense Analyses
ISR	intelligence, surveillance, and reconnaissance
JAWP	Joint Advanced Warfighting Program
JFCOM	Joint Forces Command
JSAF	Joint Semi-Automated Forces
Mil	military
MOVES	Modeling, Virtual Environments, and Simulation
ODUSD (AS&C)	Office of the Deputy Under Secretary of Defense for Advanced Systems and Concepts
ORHA	Office of Reconstruction and Humanitarian Assistance (now the Office of the Coalition Provisional Authority)
OSD	Office of the Secretary of Defense

SIPRNET	Secret Internet Protocol Router Network
SOCJFCOM	Special Operations Command, Joint Forces Command
URL	Uniform Resource Locator
USAF	United States Air Force
USJFCOM	United States Joint Forces Command
USMC	United States Marine Corps
XO	Executive Officer

Appendix A. Memorandum, Joint Center for Lessons Learned

CHAIRMAN OF THE JOINT CHIEFS OF STAFF

WASHINGTON, D.C. 20318-9999

CM-532-02
7 October 2002

MEMORANDUM FOR THE COMMANDER, US JOINT FORCES COMMAND

Subject: Joint Center for Lessons Learned (JCLL)

1. I am concerned that the JCLL is not as effective as it should be to best contribute to the transformation of our joint force. Specifically, it appears the JCLL does not support lessons learned active collection and analysis to identify voids and deficiencies in joint capabilities. Additionally, there is not a networked lessons learned information management system between the Joint Staff, combatant commands, Services, combat support agencies (CSAs) and DOD education institutions for real-world joint operations and joint exercises.

2. As we begin the second year of the Global War on Terrorism, it is imperative we take immediate action to correct JCLL deficiencies to make it fully functional and allow it to contribute to the fight. Toward this end, we need a robust JCLL comprised of dedicated analysts, information technology (IT) personnel and historians that:

a. Is led by a JCLL Director capable of sufficient leverage to engage at the key decision maker level.

b. Includes dedicated members and appropriate IT tools.

c. Performs active collection of lessons learned through robust traveling teams, and plans for such activities with exercises and operations.

d. Performs analysis of lessons learned resulting in warfighting deficiencies trends and paper products that are vetted with the originator and then pushed to the field.

e. Identifies strategic and operational trends and issues in joint warfighting deficiencies through active collections.

f. Disseminates joint lessons learned through a range of deliverables relevant to operations, training, exercises and education as "push" products.

g. Provides a networked lessons learned information management system having search capability between the Joint Staff, combatant commands,

Services, CSAs and DOD education institutions for real world joint operations and joint exercises.

h. Provides experimentation results to and from the Joint Community, and submits timely reports and summaries on real-world operations and significant activities for Congress, the Office of the Secretary of Defense, the Joint Staff, combatant commands, Services, and CSAs.

3. I would ask that you provide an implementation plan outlining the actions to be taken to re-invigorate the JCLL to me by 1 December 2002. I look forward to working with you in this matter.

RICHARD B. MYERS
Chairman
of the Joint Chiefs of Staff

Appendix B. Memorandum, Joint Center for Lessons Learned, Doctrine and the Way Ahead

DEPARTMENT OF DEFENSE
COMMANDER
U.S. JOINT FORCES COMMAND
1562 MITSCHER AVENUE SUITE 200
NORFOLK, VA 23551-2488

IN REPLY REFER TO:
4600
Ser J00/006
24 Jan 03

MEMORANDUM FOR THE CHAIRMAN, JOINT CHIEFS OF STAFF

Subject: Joint Center for Lessons Learned, Doctrine and the Way Ahead

1. On 7 October, you expressed concern over the ineffectiveness of the Joint Center for Lessons Learned (JCLL) and the need for immediate action to enhance its contribution to the transformation of our joint force. We fully concur with your assessment and support your way ahead on a Joint Center for Lessons Learned. Additionally, on 9 December in response to feedback I gave to Mark Hertling, you asked for my thoughts and proposals on taking doctrine to "the next level." Moreover, in my view the JCLL and doctrine issues demand a coherent solution that focuses on joint issues as opposed to service issues. To that end, we propose a Center for Joint Education, Doctrine and Lessons Learned that creates a coherent link between education, doctrine, and lessons learned to enhance transformation of the joint force.

2. I envision the Center for Joint Education, Doctrine and Lessons Learned under the leadership of a single full time O-7 Flag/General Officer. An O-7 will provide sufficient leverage to engage at the key decision maker level. Maintaining this Center at JFCOM allows us to gain insights from Joint Experimentation, integrate lessons learned from our worldwide Joint Training activities, and collect and rapidly integrate lessons from current wartime operations into doctrine, training, and transformation. This center requires first class talent on par with the World War II Strategic Bombing Survey, the Gulf War air power study, and more the recent Defense Science Board OEF lessons learned study. The best ready pool resides with the Institute for Defense Analysis' Joint Advanced Warfighting Program (IDA-JAWP). Transferring those resources to JFCOM provides an immediate and appropriate capability to collect and translate wartime lessons learned into action.

3. These changes will allow us to integrate the myriad Service, combatant command, defense agency, and multinational organizations. We can then rapidly share those insights and lessons directly to wartime commanders and integrate them into our training, experimentation, and joint doctrine efforts.

4. Our goal is to transform Lessons Learned from documenting past operations to guiding future joint force development. We will provide you with analysis on how to revise the joint doctrine process and a plan to implement these revisions in the near future. My POC for this action is COL George Bilafer, Chief of Joint Doctrine, DSN 668-6110.

Warm regards and very respectfully,

E. P. GIAMBASTIANI
Admiral, U.S. Navy

Appendix C.
(1) Info Memo, Lessons Learned
(2) Joint Center for Lessons Learned for Global War on Terrorism

CHAIRMAN OF THE JOINT CHIEFS OF STAFF

WASHINGTON, D.C. 20318-9999

INFO MEMO

CM-769-03
11 February 2003

FOR: SECRETARY OF DEFENSE

FROM: General Richard B. Myers, CJCS RBM 2/10

SUBJECT: Lessons Learned

- The Department of Defense learned during the beginning stages of Operation ENDURING FREEDOM that early generation and distribution of lessons learned for real world operations was a necessity.
- Commander, US Joint Forces Command (CDRUSJFCOM), is pressing ahead in establishing a viable Joint Center for Lessons Learned, and on his suggestion, we are providing a temporary fix to ensure we capture the important joint lessons from ongoing operations.
- Larry Welch has been asked to use the Joint Advanced Warfighting Program (JAWP) as a temporary manpower pool to directly support CDRUSJFCOM to generate Global War on Terrorism lessons learned. Intent is to observe strengths and deficiencies and quickly distribute lessons learned to other combatant commands for the continuing fight.
- I also asked CDRUSJFCOM to provide an initial lessons learned report on all on-going operations by 1 April 2003.

Mr Secretary,
Both Larry Welch and
Adm Giambastiani concur
with this. VR Dick

COORDINATION: None

Copy to:
USD(P)
USD(AT&L)

Prepared By: BG Mark P. Hertling, USA; Director, J-7; 697-9031

CHAIRMAN OF THE JOINT CHIEFS OF STAFF

WASHINGTON, D.C. 20318-9999

CM-770-03
11 February 2003

MEMORANDUM FOR THE COMMANDER, US JOINT FORCES COMMAND

Subject: Joint Center for Lessons Learned (JCLL) for the Global War on Terrorism

1. Thank you for the recent memorandum[1] on the JCLL and your vision for reorganization within USJFCOM. Understand current resource constraints, but agree that this is important enough to warrant re-prioritization of allocated assets. As mentioned in earlier correspondence, immediate action must be taken to correct the deficiencies of the JCLL as the War on Terrorism, Homeland Security missions and ongoing combat operations are executed.

2. To assist, I have asked the President, Institute for Defense Analyses (IDA), for his thoughts regarding the temporary transfer of IDA Joint Advanced Warfighting Program (JAWP) assets to USJFCOM for a 120-day period to assist in developing operational-level lessons learned. I believe this initial contact with IDA might be the basis for later transfer of IDA JAWP assets to provide direct support, and request you include thoughts on IDA's support in USJFCOM's analysis.

3. With the JAWP temporary assets, please begin an effort to capture joint operational and interoperable observations, issues and lessons learned from combatant commands and the Services. This effort will require interaction with existing lessons-learned activities (Army CALL, USAF ENDURING LOOK, Navy BLUE LOOK, and MCDCC) as well as collection of operational-level lessons learned from combatant commanders, their deployed JTFs and supporting agencies. Request you focus on operational-level observations, allowing the Services to conduct their own tactical lessons learned. As these observations must be analyzed and disseminated to the Joint and Service communities quickly, please provide an interim update on process and observations by 1 April 2003.

RICHARD B. MYERS
Chairman
of the Joint Chiefs of Staff

Reference:
1 CDR USJFCOM memorandum, 24 January 2003, "Joint Center for Lessons Learned, Doctrine and the Way Ahead"

Appendix D.
Joint Urban Operations Concept Development and Experimentation Activities

IDA
JAWP

Joint Urban Operations
Concept Development and Experimentation Activities

16 May 2003

Courses of Action for the JUO CD&E Plan

Guidance from Previous Meeting

- Plan should include:
  - Delivery of Concept Paper by Dec '03
  - Early emphasis on capturing insights emerging from OIF
  - Aggressive pursuit of opportunities to leverage and influence the urban CD&E-related activities of the Services (and other organizations)

Some Issues

- What are the Service plans?
- What should be the objectives, types and numbers of "small" activities (workshops, wargames, conferences, . . .)?
- Should a virtual-environment, human-in-the-loop (HITL) experiment be conducted?

What are the Service Plans? -- Status Report

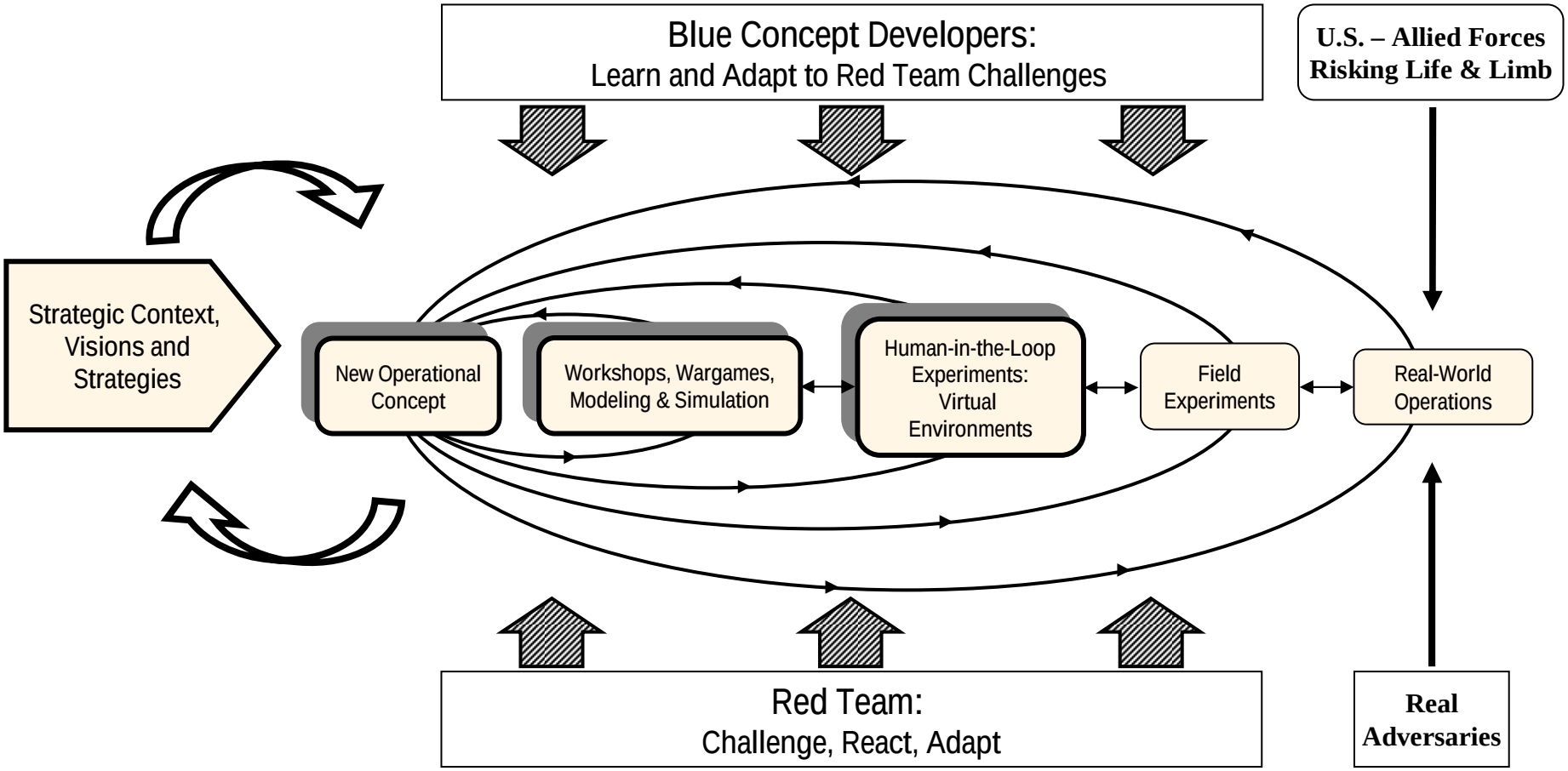
- Information requested from Service Senior Advisory Committee POCs regarding planned experimentation events potentially relevant to JUO CD&E
- Informal contacts also pursued
- Two types of events:
  - Those designed to explore joint urban issues
  - Those that could be modified to address urban issues
- Results to date:
  - Air Force:
    - No directly relevant CD&E events identified to date
  - Navy:
    - No directly relevant CD&E events identified to date
    - ONR "Future Naval Capabilities" initiatives have relevance to material development
  - Army:
    - **Joint Urban Fires and Effects** (Jul '03 - Dec '05)
    - **Unified Quest '04** (Apr '04)
    - **Unit of Action Experimentation** (have calendar through CY-03)

What are the Service Plans? (continued)

- Results to date (continued):
  - Marines:
    - Joint Urban Warrior
      - IPC (26 Jun)
      - Scenario development (Aug - Dec '03)
      - Pathway events Oct '03 - Feb '04
      - Main event: seminar wargame 22-26 Mar '04
      - Follow-on events (Mar/Apr '05, Mar/Apr '06)
    - Emerald Express program at MCWL to collect emerging insights from OIF
      - Summer '03

    - Expeditionary Warrior (Jun, Jul, Aug, Sep '03 workshops; wargame Oct '03; follow-on events in '04)
    - Sea Viking '04 - '08
    - Project Metropolis
      - On-going series of events focused on tactical issues

The Concept Development and Experimentation Process is Iterative



The Experiment Process Leads to Transformational DOTMLPF Changes

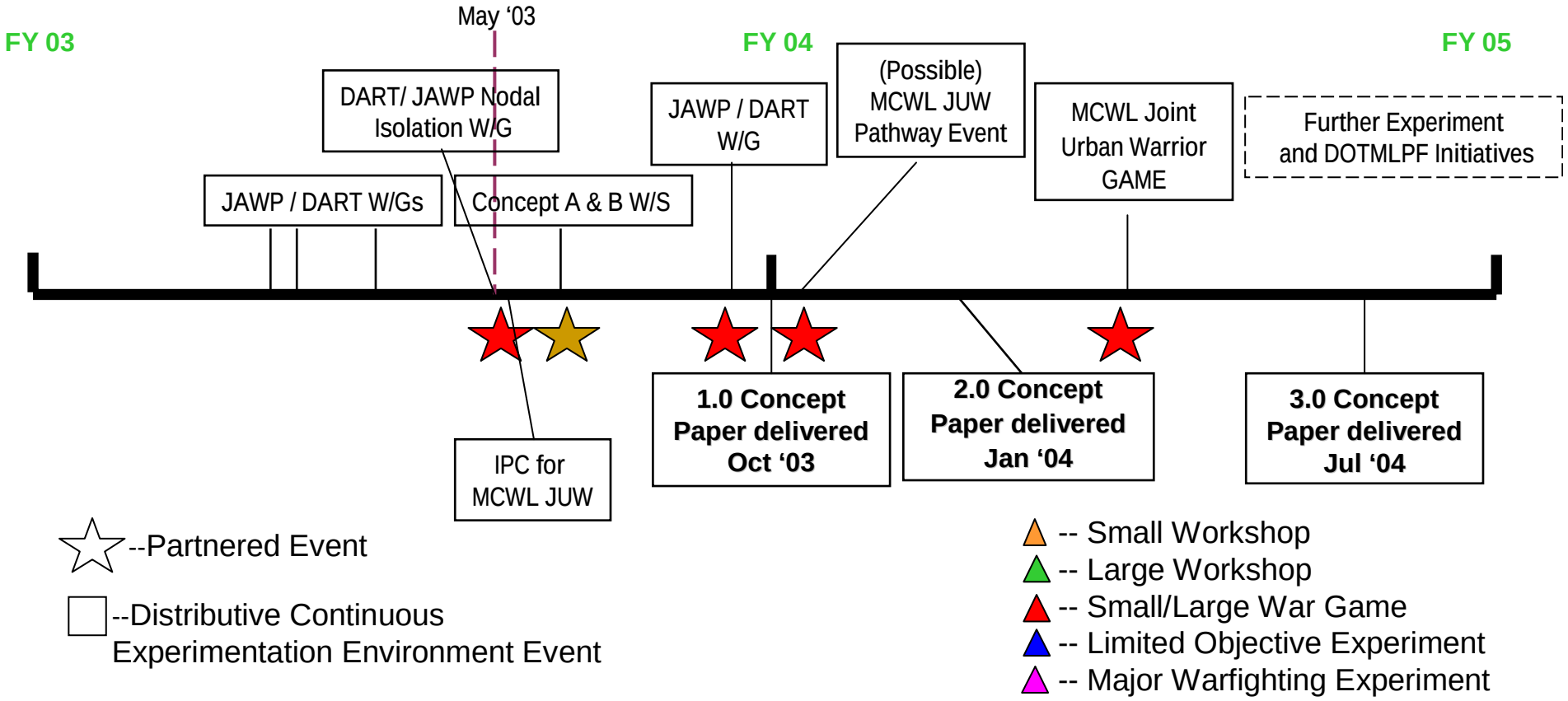
JUO CD&E Activities

1. Produce JUO concept paper (version 1.0+ by Dec '03)
2. Collect and apply experiences of real-world operations
3. Design and conduct workshops, wargames and studies
4. Design and conduct human-in-the-loop experiments
5. Participate in field exercises
6. Foster prototyping activities

Overarching theme: Support, influence & leverage activities of others:

Services, Combatant Commands, Interagency, Multinational

Joint Urban Operations Timeline: 1. Produce JUO Concept Paper



PERSONNEL: FY-03 (4 months): ~ 2 writers; ~ 2 events (design, run, report); (JAWP, DART) + participants

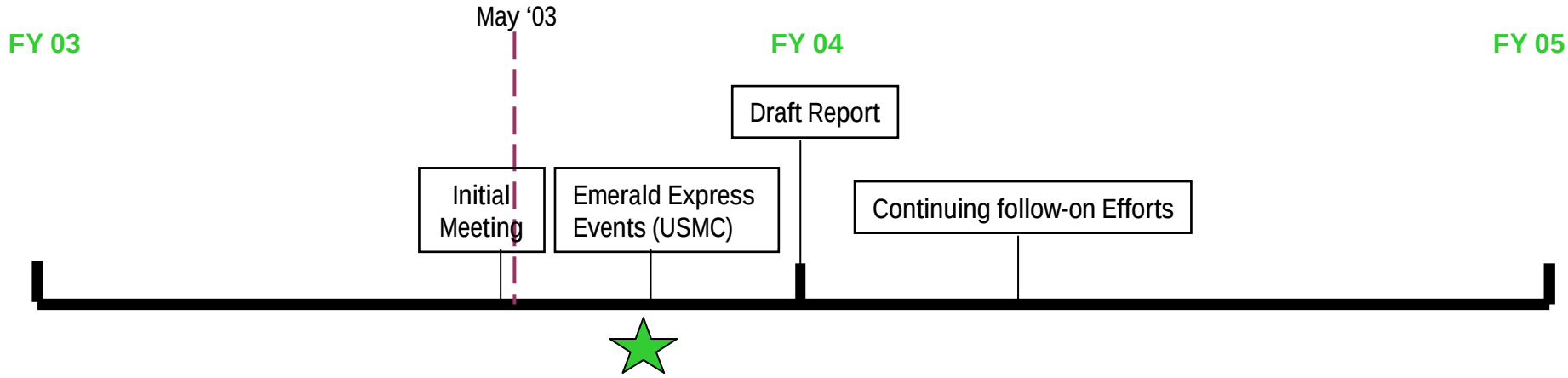
FY- 04: ~ 1 writer; partner in MCWL events

16May03

2. Collect and apply experiences of real-world operations

- Iraq experience relevant to all aspects of JUO program
  - USECT framework
  - Concepts
  - Capabilities
  - Implications for DOTMLPF initiatives
- Real-world operations most compelling of all "experimental" venues
- Activities:
  1. Using **open sources**, review each urban operation; assess applicability of current JUO concepts and implications for proposed initiatives
  2. Leverage classified **joint lessons-learned activity** to develop implications for JUO initiatives
  3. Outreach to **service and coalition** urban lessons-learned activities
- Products:
  - Insights captured in series of briefings and reports identifying implications for JUO concepts, capabilities and initiatives
  - Recommended revisions to JUO Concept and Master Plan

Joint Urban Operations Timeline:
2. Collect and apply experiences of real-world operations



--Partnered Event

--Distributive Continuous Experimentation Environment Event

-- Small Workshop
-- Large Workshop
-- Small/Large War Game
-- Limited Objective Experiment
-- Major Warfighting Experiment

PERSONNEL: FY-03: ~ 4 (JAWP) (4 months)

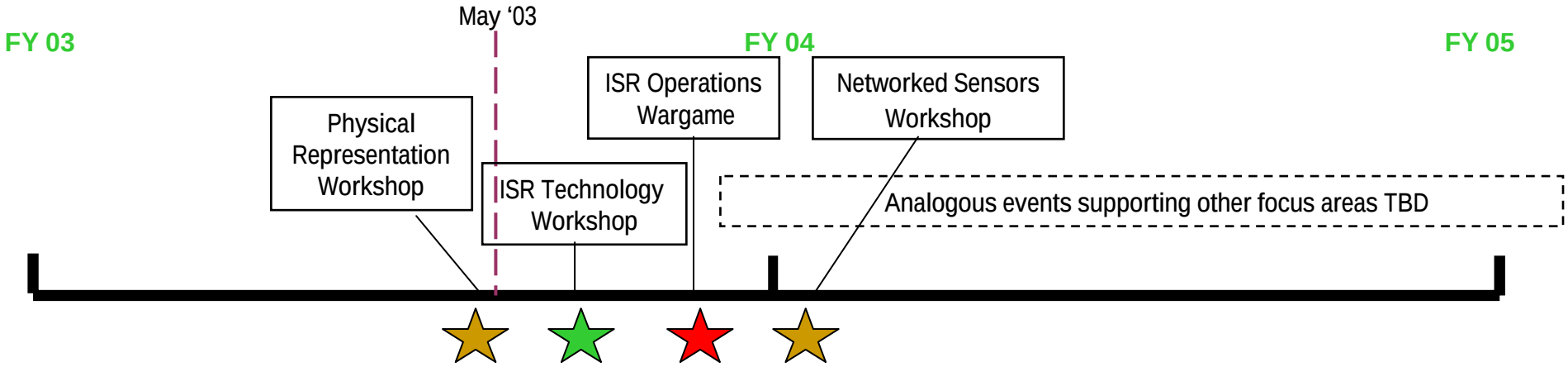
FY-04: ~ 4 (JAWP) (during 1st quarter, remaining TBD)

16May03

3. Design and conduct workshops, wargames and studies

- Workshops and wargames mentioned previously:
  - 27 May '03: Nodal Isolation wargame (DART, JAWP)
  - Jun '03: Concept assessment workshop (JAWP, DART)
  - Summer '03: Emerald Express workshops (MCWL)
  - Aug '03: Concept assessment wargame (DART, JAWP)
  - Fall, Spring '03: Joint Urban Warrior events (MCWL)
- Events supporting JUOO/J9 focus areas and DPG & TPG guidance:
  - Urban Physical Representation Workshop (May '03)
    - Assessing state of the art and recommending the way ahead
  - ISR Technology Workshop (Jun/Jul '03)
  - ISR Operations Wargame (Aug/Sep '03)
    - Explore operational effectiveness of ISR candidate systems
  - Applications of Networked Sensors Workshop (Oct '03)
    - Sandia National Lab co-sponsor, Proposal to OSD(NA)
  - Analogous events supporting other focus areas
    - C4; Weapons; Mobility; Force Protection; Support; Training; PME; S&T; M&S; Interagency; Multinational; . . .

Joint Urban Operations Timeline:
3. Design and conduct workshops, wargames & studies



--Partnered Event

--Distributive Continuous Experimentation Environment Event

-- Small Workshop
-- Large Workshop
-- Small/Large War Game
-- Limited Objective Experiment
-- Major Warfighting Experiment

PERSONNEL: FY-03 (4 months) : ~ 3 (JAWP)

FY-04: TBD

4. Design and conduct human-in-the-loop (HITL) experiments

- Building on a foundation of seminars, wargames and constructive simulation, HITL experiments provide the capability to:
  - Engage in adaptive warfighting between Blue and Red -stressing, exploring and improving concepts
  - Explore the interaction of new concepts and new technologies (which may not even exist) with sufficient clarity to draw conclusions
  - Explore C2 issues using real commanders and staffs functioning in a realistic warfighting environment
  - Prototype C2 tools and procedures
  - Explore human factors issues, e.g. cognitive reasoning, training, manipulation/fusion of large amounts of data, etc.

IDA JAWP

The JUO Experiment Question

- Can we succeed in conducting combat operations in the urban battlespace using the same concepts of maneuver and fires that have been successful in open terrain?
  - Can we achieve the necessary situational understanding?
  - Can we shape the urban battlespace prior to engaging with ground elements?
  - Can we maneuver ground elements to defeat the enemy decisively?

To answer these questions we need to explore new concepts in detail while being challenged by a capable Red force. We need more than opinions, we need data

A Second HITL Experiment Objective: Assess Contribution of HITL Itself

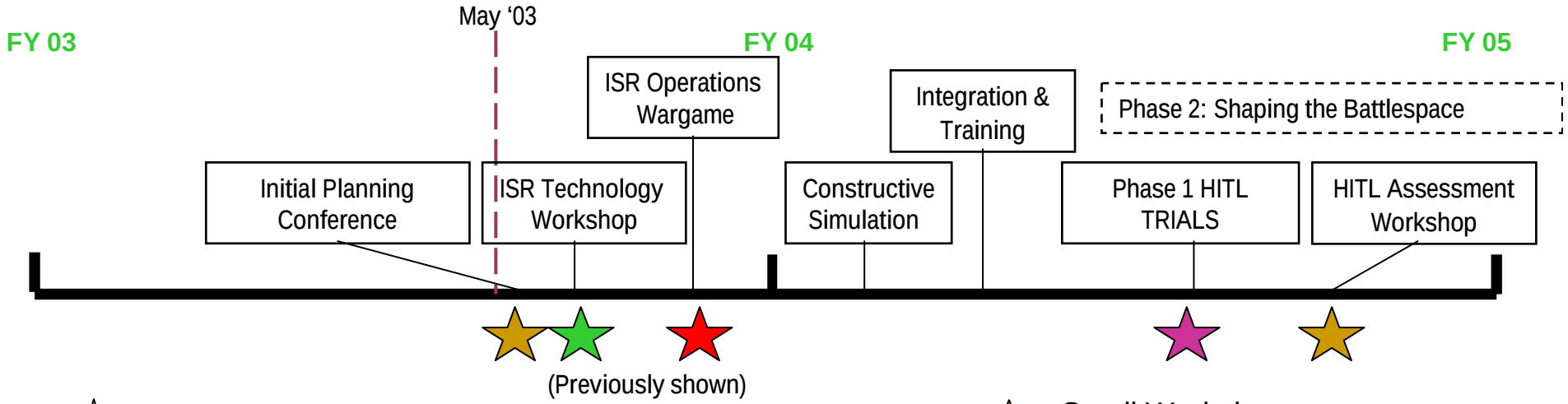
- Form an independent team to observe process (Phase 1) and assess pros and cons of HITL as a tool for developing JUO capabilities

- Will provide insights regarding future investments in HITL

HITL Experiment Concept

- HITL Experiment is three - phased experiment with each phase consisting of the following elements
  - Wargames and Workshops
  - Constructive Simulations
  - HITL Simulation Trials
- Focus is on exploring the fundamental capabilities which are key to success of a concept for future JUO:
  - The capability to achieve dominant situational understanding (Phase 1)
  - The capability to shape the urban battlespace (Phase 2)
  - The capability to maneuver within the urban battlespace to decisively defeat the enemy (Phase 3)
- Each phase of the experiment builds on the results of the preceding phases
- The experiment is continuous – each phase overlaps the preceding phase so there is not lost time between phases
- The experiment is distributed so that services can participate from their own locations
- The HITL simulation builds incrementally, allowing continuous improvements as the experiment progresses

Joint Urban Operations Timeline:
4. Design & conduct human-in-the-loop (HITL) experiments



--Partnered Event

--Distributive Continuous Experimentation Environment Event

-- Small Workshop
-- Large Workshop
-- Small/Large War Game
-- Limited Objective Experiment
-- Major Warfighting Experiment

PERSONNEL: FY-03 (4 months) : ~ 3 (JAWP)

FY-04: Trials require: M&S team: 13
Players: 16 (Services?)
Analysts: 8

FACILITIES: 1 medium test bay for players; additional site for hardware and M&S

FUNDING: $780K (Modeling, terrain data, intell tools, visualization tools)

5. Participate in Field Exercises

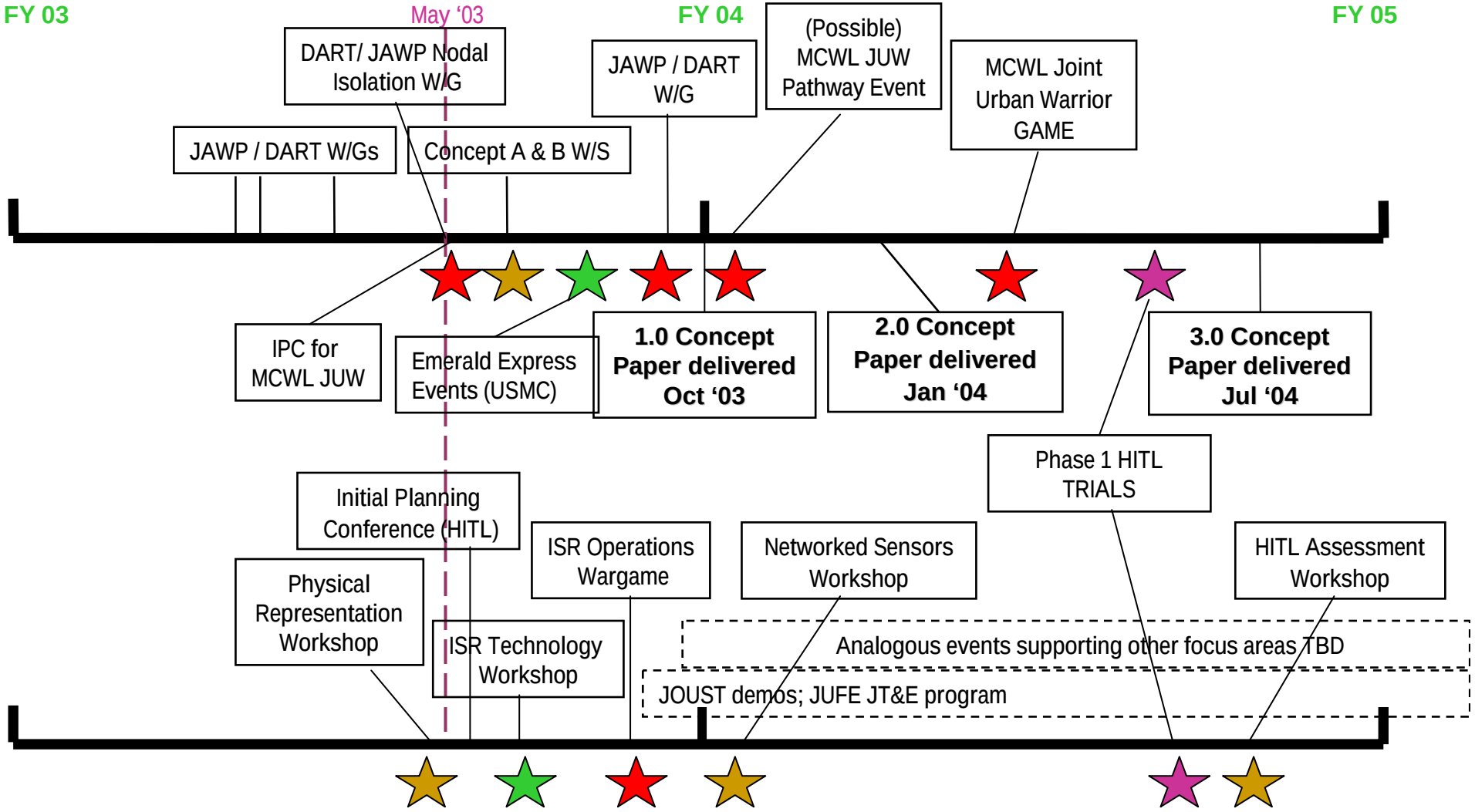
- FY-03 or FY-04 field exercise participation TBD

6. Foster prototyping activities

- Advance the development of new capabilities
  - "JTF-Urban C2 Environment" ACTD proposal ("Knowledge Management System")
  - Joint Urban Fires and Effects (JUFE) JT&E
  - Joint Operations on Urban Synthetic Terrain (JOUST)

- Products:
  - Identification and promotion of prototyping opportunities

JOINT URBAN OPERATIONS CD&E EVENT TIMELINE



--Partnered Event

--Distributive Continuous Experimentation Environment Event

-- Small Workshop
-- Large Workshop
-- Small/Large War Game
-- Limited Objective Experiment
-- Major Warfighting Experiment

FY-04 Outlook

FY-04 resource improvements:

- JUOO will hire additional staff
  - "17 by end of FY-04"
- HITL funding available via JUOO funds:
  - Jul '03: $4.2M O&M
  - FY-04: $7.0M O&M plus $4.1M RDT&E
- JAWP JCLL personnel may become available
- JUOO network will increase leveraging opportunities

Candidate Elements of JUO CD&E Plan

- Execute plan for **Concept Paper delivery** and associated workshops and wargames
  - JAWP/DART Dual-Track Approach (Workshop in Jun '03, Wargame in Aug '03)
  - Partner with MCWL in JUW pathway events (Fall '03)
  - Partner with MCWL in JUW main event (Mar '03)
  - Deliver Concept Paper (1.0+) by Dec '03, Revision by Jul ('04)
- Execute plan for **applying experience of OIF** to JUO concept development
  - JAWP report by Dec '03
  - Participation in MCWL Emerald Express events (Summer '03)
- Execute plan to **conduct workshops and wargames addressing urban ISR**
- Execute plan to **conduct urban, virtual, human-in-the-loop experimentation starting in FY04**
  - Complete trials of "Situational Understanding" phase in Jun '04
  - Conduct assessment of HITL for JUO experimentation Jul '04
- **Expand focus area activities** to include additional areas
  - C4; Weapons; Mobility; Force Protection; Support; Training; PME; S&T; M&S; Interagency; Multinational; . . .

Approved elements to be reflected in 4 Jun QBR

BACKUP CHARTS

IDA
JAWP

The Big Issues

Achieving Decision Superiority

1. ***Achieving info superiority (anticipatory understanding)***
2. ***Decision making in a Collaborative Information Environment***
3. Coalition and interagency info sharing
4. Global integration
5. ***Joint ISR***

Creating Coherent Effects

1. Info operations and info assurance
2. ***Joint maneuver and strike:***
   a. Global
   b. Operational
   c. Tactical
3. Interagency ops
4. Multinational ops
5. ***Precise effects***
6. ***Urban operations***
7. Deny sanctuary
8. Transition Ops

? 9. Coercive Ops

Conducting and Supporting Distributed Operations

1. Force projection: Deployment, Employment and Sustainability
2. ***Force protection*** and base protection
3. Counter anti-access and area-denial (includes Forcible Entry Ops)
4. Low density high demand assets
5. Proper decentralization

IDA
JAWP

The Three Scenarios

1. Achieving Dominant Situational Understanding

Description: - Red force occupying urban area (moving, supporting, communicating, . . .)

- Blue ISR (incl SOF) seeks to develop situational understanding (ID critical nodes, estimate strength, civilian locations, etc)

Big Issues: - Achieving info superiority (understanding)

- Joint ISR

- Urban Ops

2. Shaping the Urban Battlespace

Description: Based on situational understanding, attack critical Red targets (moving and stationary) within urban area using air delivered weapons

Big Issues: - Achieving info superiority (understanding)

- Joint ISR

- Joint maneuver and fires

- Urban Ops

Three Scenarios (cont)

3. Urban Maneuver (version 1)

Description: - Small, highly capable force inserted to neutralize key target(s)
- Supported by full range of JTF assets

Big Issues: - Achieving information superiority (understanding)
- Joint ISR
- Joint Maneuver and Strike
- Urban Ops

3. Urban Maneuver (version 2)

Description: Maneuver to defeat Red force in localized urban area as part of a larger operation.

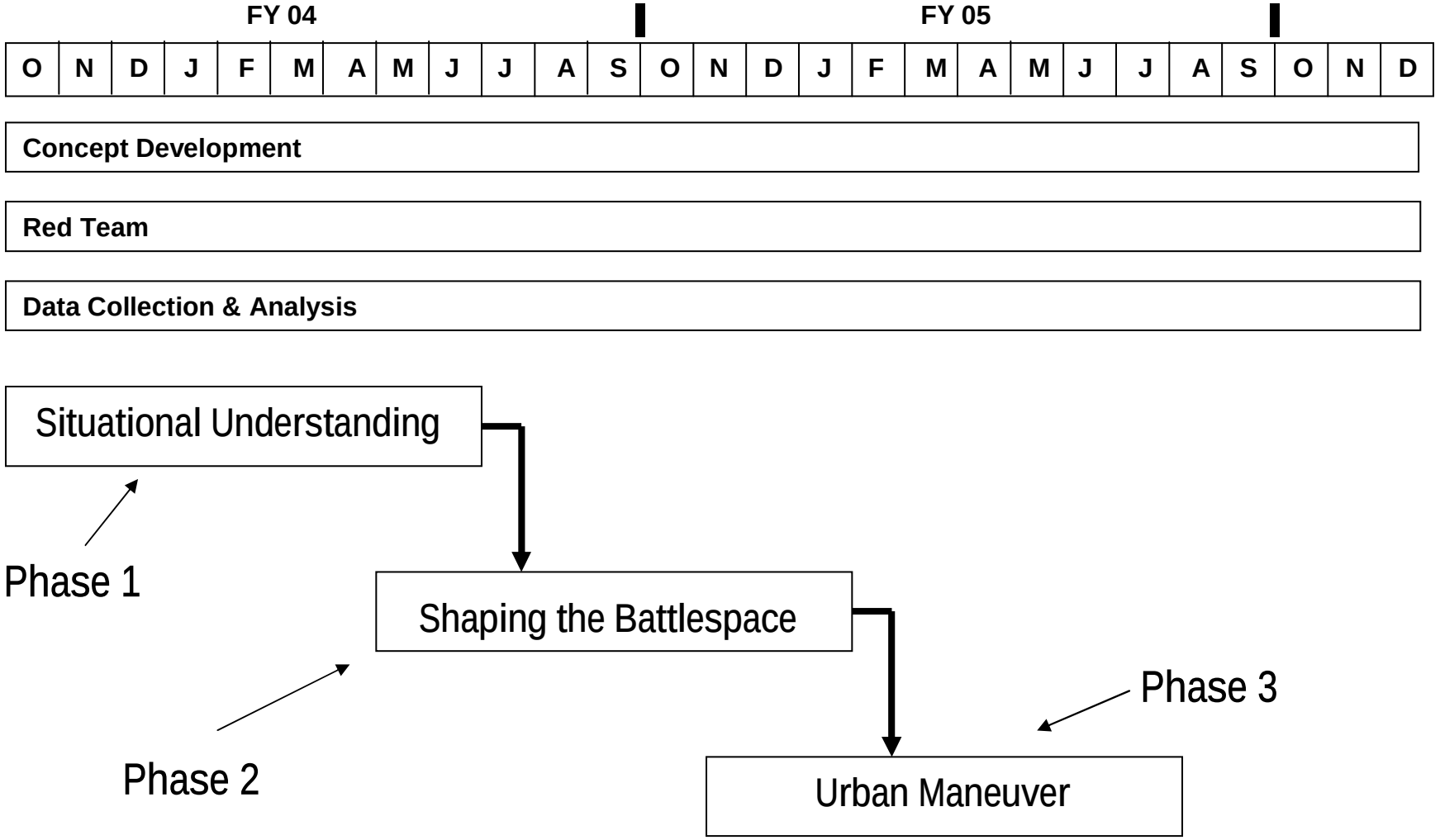
Big Issues: - Achieving information superiority (understanding)
- Joint ISR
- Joint maneuver and strike
- Urban Ops
- Force protection and area denial to some extent
- Decision making in collaborative environment

Analysis of Scenarios against the Big Issues

JUO Scenario	Big Issue Categories																			
	Achieving Decision Superiority					Creating Effects								Conducting and Supporting Distributed Operations						
	1	2	3	4	5	1	2	3	4	5	6	7	8	1	2	3	4	5		
Decision Superiority	P	S			P						P									
Shaping the Battlespace	P	P			P		P			P	P									
Urban Maneuver v.1	P	P			P		P			P	P				P					
Urban Maneuver v.2		P			P		P			P	P				P					

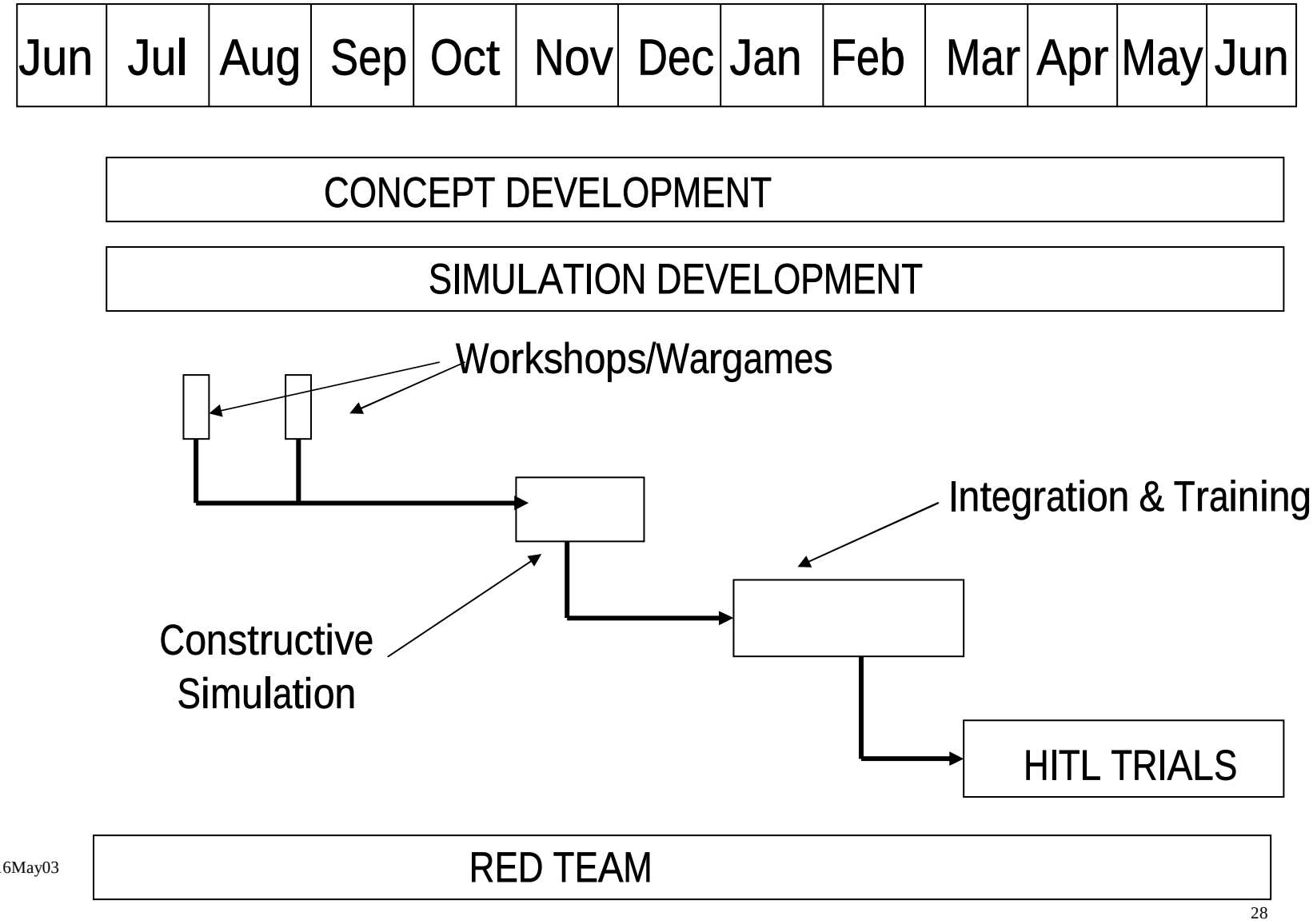
P	Major Focus of the Experiment
S	Secondary Focus of the Experiment
	Addressed only tangentially, if at all

JUO HITL Experiment Schedule, 1 Oct Start



16May03

Schedule for Phase 1 (FY03 - FY04)



Appendix E.
FY-04 Department of Defense Master Plan for Joint Urban Operations

FY-04
Department of Defense
Master Plan
for
Joint Urban Operations

1 October 2003

EXECUTIVE SUMMARY

The DOD is committed to improving capabilities for joint military operations in urban areas. In September 2002, accepting the recommendation of the Chairman and the JROC, the Deputy Secretary of Defense designated Combatant Commander, U.S. Joint Forces Command (CCJFCOM) as DOD Executive Agent for Joint Urban Operations starting in January 2003. As Executive Agent, CCJFCOM will be the DOD focal point for improving joint urban capabilities and will be responsible for leading the execution of the "DOD Master Plan for Joint Urban Operations."

This document represents the first update of the Department of Defense (DOD) Master Plan for Joint Urban Operations (JUO). The previous version of the Master Plan was developed by a Special Study Group (SSG) of ad hoc, flag-level Joint and Service representatives chartered by the Joint Requirements Oversight Council (JROC) for JUO. Since then and during Fiscal year 2003 (FY03) the DOD Executive Agent (EA) for Joint Urban Operations as well as the Joint Urban Operations Office (JUOO) were formed at U.S. Joint Forces Command (USJFCOM). The DOD Senior Advisory Committee (SAC) was formed and provided guidance for initial priority focus areas that is reflected in this document.

The Master Plan is based on a series of DOD efforts including a Joint Mission Area Analysis and Joint Mission Needs Analysis conducted by the Land and Littoral Warfare Joint Warfighting Capabilities Assessments (JWCA) Team; the recently published Joint Publication (JP) 3-06, *Doctrine for Joint Urban Operations*; and the *DOD Roadmap for Improving Capabilities for Joint Urban Operations* which was drafted by the Joint Advanced Warfighting Program.

The Master Plan is a DOD-wide strategy document from the SecDef to the DOD Components. It is intended to be a living document, integrating all activities related to joint urban operations, including: policy; interagency and multinational coordination; research, development and acquisition; identification of joint military requirements; joint concept development and experimentation; joint modeling and simulation capabilities; joint training and experimentation facilities; joint doctrine; joint tactics, techniques and procedures; and joint leadership development.

New Approaches to Urban Operations

The actions prescribed by the Master Plan seek to provide Joint Force Commanders (JFCs) with more effective options for conducting urban operations under 21st-Century conditions. These new options are based on new thinking about how to conduct such operations, and new technologies.

New Thinking

Past efforts to improve US urban capabilities have focused on single-Service capabilities at the tactical level. The Master Plan perspective is that of the future JFC: joint capabilities at the operational level. This perspective is described in Joint Publication 3-06, which introduces a framework for conducting an urban operation in terms of five elements: Understand, Shape, Engage, Consolidate and Transition (USECT).

Because of the difficulties associated with achieving situational awareness in an urban environment, traditional urban operations have emphasized "Engage": commanders have been forced to gain information by first drawing fire and then responding with overwhelming lethal force. The result is an "attrition-based" approach marked by high casualty rates and collateral damage.

The new approaches seek to better "Understand" and "Shape" the battle space and to "Engage" with precision effects (rather than overwhelming lethal force). This is a "maneuver-based" approach marked by operational-level situation awareness and shaping actions that can provide significant advantages in position, tempo, information, and support.

New Technologies

A key reason that maneuver-based approaches are becoming feasible is that joint capabilities for C4ISR and remote precision engagement are improving. These improvements are being enabled by technological advances in sensors, networks, communications, unmanned (ground and air) vehicles, and non-lethal effects.

Determining Needed Capabilities and Assessing Status

The goal of the Master Plan is to provide a toolkit of capabilities that will enable a JFC to tailor an approach for any specific urban scenario. These capabilities are described in detail in the Joint Staff studies and the DOD Roadmap cited above, and are summarized and broadly assessed in Chapter III using the USECT categories.

In brief, current capabilities are not adequate to support the new approaches. Examples of shortfalls in terms of the USECT categories are summarized here:

Understand: 3-D maps including subterranean structures, interiors and infrastructure; Sensors providing area coverage (despite the short lines of sight and high levels of clutter in urban environments); survivable platforms to carry or deliver the sensors; reliable communications and global position location (GPS); and cultural intelligence so the JFC can interact effectively with noncombatants.

Shape: Control of an adversary (and noncombatant) information, mobility and support; enhancement of the friendly force's survivability, mobility and support.

Engage: 3-D precision delivery against fixed, moving or underground targets; reduced collateral effects of kinetic weapons; non-lethal effects; information operations; and enhancement of the friendly force's survivability, mobility, and support.

Consolidate and Transition: Reconstitution of infrastructure; remediation of WMD effects; security systems; de-mining; explosives detection; translation devices.

Program of Actions and Milestones (POA&M) for Improving JUO Capabilities

FY-03 Focus

Key FY-03 actions and products have begun to address the above needs. These fall into three categories: organization, assessment, and concept development and experimentation.

Organizational actions included:

- Standing up and embedding the Joint Urban Operations Office in JFCOM/J9;
- Developing a network of links to key DOD organizations (CCs, Services, Joint Staff, OSD, Agencies . . . .) via the formation of the SAC, chaired by USJFCOM/J9 with members from each of the Services as well as JCS, OSD, and Allied Command Transformation (ACT);
- Establishing focus areas in each of the USECT and DOTMLPF areas, plus Lessons Learned, Policy & Legality, Multinational, Interagency, Concept Development & Experimentation, and Modeling and Simulation and designating ISR, Weapons, C4, Models & Simulations, Lessons Learned, Concept Development and Experimentation, Multinational, Training, People and Facilities, and Science and Technology as priority focus areas. See Chapter 4 for details;
- Funding contractor support for Service and Joint Non-Lethal Weapons Program (JNLWP) JUO developmental activities;
- Funding of the urban analysis program and establishing a DOD Urban Analysis Cell at DIA;
- Establishing the Urban Modeling and Simulation Working Group;
- Creating a web-based urban information site;

Assessment actions included:

- Interacting with current operational planners to assure that current issues and ideas are addressed and to identify possible near-term opportunities for force improvements;
- Identifying areas of mutual interest to the homeland security mission.
- Initiating lessons learned forums focused on JUO;
- Conducting Service forums focused on JUO;
- Conducting a JUO sensor technology workshop;

- Initiating a RAND JUO lessons-learned assessment;
- Initiating a JUO State-of-Technology Assessment in key areas including Information, Surveillance, Reconnaissance (ISR), C4, Weapons, Modeling and Simulation, and Training and Facilities;
- Delivering the Joint URBAN fires & Effects (JUFE) JT&E program test plan and consolidated resource estimate;
- Initiating planning for development of an R&D plan
- Participating in technology forums (e.g. the JNLWP/Infantry Weapons Division, Marine Corps Systems Command Mobility Denial Information Exchange);
- Releasing DARPA JUO R&D initiatives;
- Conducting a USJFCOM/J9 JUO M&S demonstration;
- Reviewing the needs, status and activities in each focus area and updating the Master Plan.

Joint concept development and experimentation activities included:

- Publishing the draft JUO concept paper and evaluating and refining it during a JAWP Concepts wargame;
- Initiating development of new modeling and simulation tools for addressing urban issues;
- Planning for a series of human-in-the-loop experiments addressing JUO;
- Initiating development of a continuous experimentation facility for exploring joint urban operations;
-Initiating a Joint Test and Evaluation feasibility study aimed at demonstrating techniques for linking Service facilities to support joint training and experimentation regarding urban operations.

A key product of FY 03 activities was the creation of a DOD-wide network of representatives who will set the future course in focus areas and begin to broker the means of getting there.

FY-03 milestones are presented in Appendix B.

<u>FY-04 Focus</u>

Key FY-04 actions and products will continue to address the above needs which fall into three categories: organization, assessment, and concept development and experimentation.

Organizational actions include:

- Continuing to build the Executive Agent organization, JUOO at JFCOM, including building to 17 personnel;
- Expanding and consolidating the network of links to key DOD organizations (CCs, Services, Joint Staff, OSD, Agencies, . . .) via the DOD Senior Advisory

Committee. SAC membership is to be expanded to include SOCOM, OSD (Intelligence), and Homeland Security;

- Expanding the network by identifying DOD-worldwide JUO experts;
- Initiating a multinational JUO network consisting of Allied Command Transformation (ACT) as well as JFCOM national partners;
- Forming forums and/or working groups with representatives from key DOD organizations in appropriate focus areas (e.g. each of the USECT and DOTMLPF areas, plus Lessons Learned, Policy & Legality, Multinational, Interagency, Concept Development & Experimentation, and Modeling & Simulation. See Chapter 4 for details;
- Funding contractor support for Service, DIA, JNLWP, ACT, and SOCOM JUO developmental activities;
- Enhancing (to include SIPRNET) the web-based urban information site to a fully collaborative web tool;

Assessment actions include:

- Exploiting the OIF and other lessons-learned activities (e.g. Emerald Express 03) to gain insights into the current issues and ideas, to identify possible near-term opportunities for force improvements, to integrate findings into joint concept development and experimentation and Master Plan updates, and to initiate the JUO "next fight" effort;
- Publishing a JUO urban lessons-learned quick look and subsequent report;
- Delivering working group reports which capture DOD efforts and assess the current status, identify JUO near term opportunities, and provide input to the Master Plan;
- Conducting the JUFE JT&E;
- Initiating a JUO training and facilities assessment;
- Delivering the JUO State-of-Technology Assessment;
- Initiating a JUO R&D plan;
- Identifying areas of mutual interest to the homeland security mission;
- Reviewing the needs, status and activities in priority focus areas and updating the Master Plan.

Joint concept development and experimentation activities include:

- Partnering with the Services in urban-oriented experimentation events;
- Continuing wargames and conducting limited objective experiments that explore new operational concepts and determine needed capabilities;
- Continuing development of modeling and simulation tools for addressing urban issues;
- Delivering the version 1.0 concept paper refined via experimentation in the JAWP Concepts wargame and Expeditionary Warrior 03 wargame;
- Refining the version 1.0 concept paper via experimentation in Joint Urban Warrior 04 and HITL trials;

- Conducting HITL Phase I on urban situational awareness and planning HITL Phase II on shaping the urban battlespace;
- Conducting a Defense Modeling and Simulation Office (DMSO) Joint Operations on Urban Synthetic Terrain (JOUST) demonstration, delivering a JOUST final report of FY03-04 activities, and producing a transition plan for JOUST JUO live, virtual, and constructive capability to the Joint National Training Capability (JNTC);

A key product of FY- 04 activities will be an initial review of priority focus areas and an updated Master Plan that will describe more specific goals.

FY-05 Focus

Projected FY-05 actions and products:

Organizational actions include:

- Expanding and consolidating the network of links to key DOD organizations (CCs, Services, Joint Staff, OSD, Agencies, . . .) via the DOD Senior Advisory Committee;
- Forming forums and/or working groups with representatives from key DOD organizations in appropriate focus areas (e.g. each of the USECT and DOTMLPF areas, plus Lessons Learned, Policy & Legality, Multinational, Interagency, Concept Development & Experimentation, and Modeling & Simulation. See Chapter 4 for details;

Assessment actions include:

- Exploiting OIF and other lessons-learned activities to gain insights into the current issues and ideas and to identify possible near-term opportunities for force improvements;
- Delivering working group reports which capture DOD efforts and assess the current status, identify JUO near term opportunities, and provide input to the Master Plan;
- Reviewing the needs, status and activities in priority focus areas and updating the Master Plan.

Joint concept development and experimentation activities include:

- Partnering with the Services in urban-oriented experimentation events;
- Continuing wargames and conducting limited objective experiments that explore new operational concepts and determine needed capabilities;
- Refining the version 1.0 concept paper via experimentation and delivering a version 2.0 concept paper;
- Continuing HITL trials.

FY-06 Focus

Projected FY-06 actions and products:

Organizational actions include:

- Expanding and consolidating the network of links to key DOD organizations (CCs, Services, Joint Staff, OSD, Agencies, . . .) via the DOD Senior Advisory Committee;
- Forming forums and/or working groups with representatives from key DOD organizations in appropriate focus areas (e.g. each of the USECT and DOTMLPF areas, plus Lessons Learned, Policy & Legality, Multinational, Interagency, Concept Development & Experimentation, and Modeling & Simulation. See Chapter 4 for details;

Assessment actions include:

- Exploiting OIF and other lessons-learned activities to gain insights into the current issues and ideas and to identify possible near-term opportunities for force improvements;
- Delivering working group reports which capture DOD efforts and assess the current status, identify JUO near term opportunities, and provide input to the Master Plan;
- Reviewing the needs, status and activities in priority focus areas and updating the Master Plan.

Joint concept development and experimentation activities include:

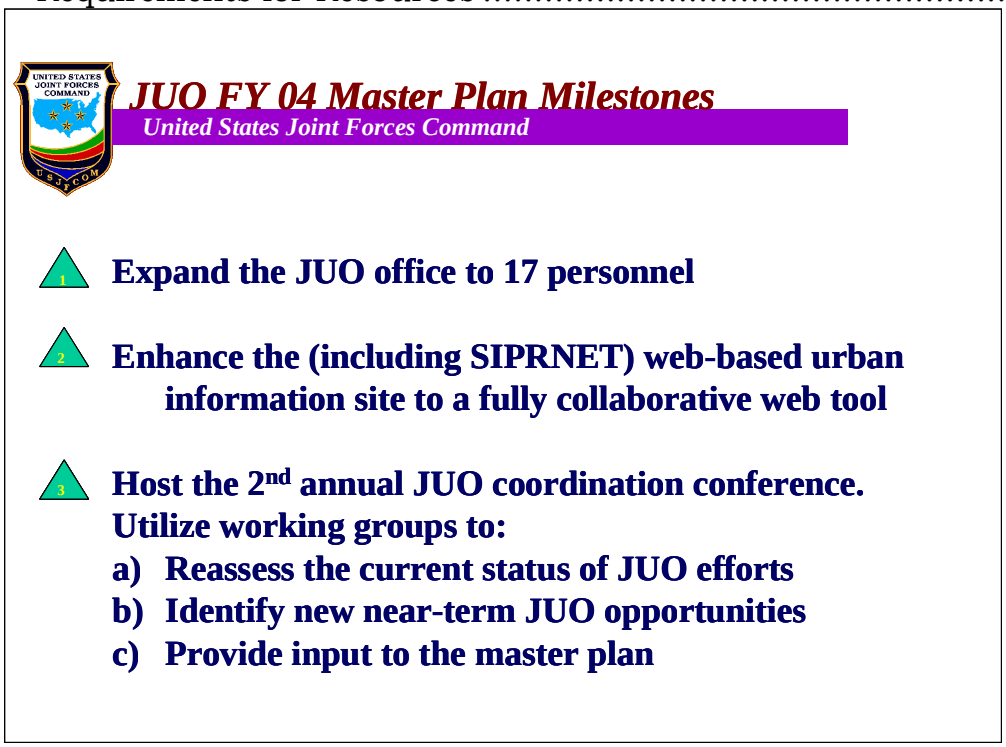
- Partnering with the Services in urban-oriented experimentation events;
- Continuing wargames and conducting limited objective experiments that explore new operational concepts and determine needed capabilities;
- Refining the version 2.0 concept paper via experimentation and delivering a version 3.0 concept paper;
- Continuing HITL trials.

FY-04 to FY-06 milestones are presented in Appendix A.

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1 INTRODUCTION

1.1 PURPOSE

The Department of Defense (DOD) is committed to improving capabilities to conduct joint military operations in urban areas, across the range of military operations, as a key component of the national defense strategy and the Department's transformation goals. Improvements in operational capabilities depend on the active participation and support of the Services, combatant commands, Joint Staff, Office of the Secretary of Defense (OSD), and Defense Agencies (hereafter referred to collectively as "the DOD Components").

The Chairman of the Joint Chiefs of Staff (CJCS) established the conceptual template for future joint warfighting with the publication of *Joint Vision 2020*. This document and future CJCS vision and concept documents will guide the requirements generation process, joint concept development and experimentation, and the associated changes in doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) necessary to achieve desired operational capabilities.

The purpose of the DOD Master Plan for Joint Urban Operations (JUO) is to provide a DOD-wide strategy, with milestones, for improving US capabilities to conduct joint urban operations through the year 2020. This master plan identifies both near-term and far-term operational level mission needs for joint urban operations and their potential solutions. It has been developed in coordination with all DOD Components and it will be reviewed annually and updated, as required.

1.2 BACKGROUND

In its 1994 Summer Study, the Defense Science Board (DSB) Task Force on Military Operations in Built-Up Areas (MOBA) concluded that several steps could be taken to improve U.S. capabilities to conduct urban operations. The DSB identified that "there is no single advocate or champion for MOBA within DOD" and recommended that responsibility be assigned to a combatant commander.[1] In 1996 and 1997, in conjunction with the Quadrennial Defense Review,[2] the Land and Littoral Warfare (LLW) (now Dominant Maneuver (DM)) Joint Warfighting Capabilities Assessment (JWCA) Team conducted a front-end assessment of joint urban operations. This assessment included the Close Support End-To-End Assessment (CSEEA) Military

[1] U.S. Department of Defense. Defense Science Board. *Report of the DSB Task Force on Military Operations in Built-Up Areas(MOBA)*. 1994.

[2] U.S. Department of Defense. Cohen, William S. *Report of the Quadrennial Defense Review,* U.S. Government Printing Office, Washington, DC, May 1997.

Operations in Urbanized Terrain (MOUT) Seminar Wargame;[3] a historical analysis of selected urban operations; the development of a white paper evaluating the need for joint doctrine for urban operations; and an examination of world urbanization trends and the implications for U.S. national military strategy in the 21st century.

In November 1997, the Joint Requirements Oversight Council (JROC) directed the LLW JWCA Team to conduct a joint mission area analysis (JMAA) and joint mission needs analysis (JMNA) for joint urban operations in accordance with CJCSI 3170.01 (*Requirements Generation System*). The results of the LLW JWCA Team JMAA/JMNA form the baseline for this master plan.

In February 2000, the US General Accounting Office (GAO) issued a report titled, "MILITARY CAPABILITIES: Focused Attention Needed to Prepare U.S. Forces for Combat in Urban Areas." The GAO recommended that "the Secretary of Defense designate a focal point to develop an overarching strategy for improving U.S. capabilities for urban operations; identify shortfalls in doctrine, training, and equipment; propose and prioritize needed investments; and coordinate the efforts among the Services and the Joint Staff."

In April 2000, the Defense Planning Guidance Update for Fiscal Years 2002 – 2007 directed that "CJCS, USD (AT&L), and ASD (S&TR), in conjunction with USD (P&R), ASD (SO/LIC), ASD (C3I), D (PA&E), JFCOM, SOCOM, and the Services, will develop a road map that integrates all Department activities related to MOUT (Military Operation on Urban Terrain), including policy; coordination with other U.S. government agencies and U.S. allies; research, development, and acquisition; concept development and experimentation; the development of modeling and simulation capabilities; MOUT training and experimentation facilities; and the development of joint doctrine. The road map will identify mission needs for combined arms and operational support functions in an urban environment, including C4ISR and lethal/nonlethal weapons requirements." The Assistant Secretary of Defense for Strategy and Threat Reduction directed the Joint Advanced Warfighting Program (JAWP) to coordinate the development of the MOUT road map. The JAWP completed a draft of the road map in November 2001.

The Chairman of the JROC, with the advice of the JROC, established the Joint Urban Operations Special Study Group (SSG) on 29 January 2001. The mission of the Joint Urban Operations SSG was to "support the JROC Chairman in the strategic management and integration of combatant command, Service, and Joint Staff efforts to identify joint requirements and develop appropriate materiel and non-materiel solutions to mission needs in order to improve US capabilities to conduct joint urban operations." The Joint Urban Operations SSG was established at the flag officer-level with support from an action officer-level working group. The JROC Chairman assigned the J-8 Deputy Director for Joint Warfighting Capabilities Assessments as the Joint Urban

[3] US Marine Corps. Marine Corps Combat Development Command, *Close Support End-To-End Assessment (CSEEA) Military Operations In Urban Terrain (MOUT) Seminar War Game Assessment*, Quantico, VA, 1997.

Operations SSG Chairman. The DM JWCA Team Leader served as the Joint Urban Operations SSG Secretary and Chairman of the Joint Urban Operations Working Group. The JROC Chairman approved the Joint Urban Operations SSG Charter on 20 March 2001.

As one of its tasks, the Joint Urban Operations SSG developed and recommended options to the JROC with respect to designating a DOD Executive Agent (EA) for Joint Urban Operations. On 30 April 2002, the JROC concurred in the following Joint Urban Operations SSG recommendations:

- The Secretary of Defense (SecDef) designates the Commander, US Joint Forces Command (USJFCOM) as the DOD EA for Joint Urban Operations, effective no earlier than (NET) 1 January 2003.

- SecDef tasks the Joint Urban Operations SSG to develop, in coordination with Commander, JFCOM, a "DOD Master Plan for Joint Urban Operations" and then transition the plan to Commander, JFCOM for execution.

- The JROC recharters the Joint Urban Operations SSG through 31 December 2002.

On 30 April 2002, the JROC extended the Joint Urban Operations SSG until 31 December 2002 and directed the SSG Chairman to develop a revised charter for JROC approval. The JROC recommended that CJCS request SecDef designate the Commander, JFCOM as the DOD EA for Joint Urban Operations and task the Joint Urban Operations SSG to develop, in coordination with USCINCJFCOM, a "DOD Master Plan for Joint Urban Operations" and then transition the plan to USCINCJFCOM for execution. The JROC approved a revised SSG charter on 14 June 2002.

On 18 June 2002, CJCS forwarded a memorandum requesting SecDef approval of the Joint Urban Operations SSG recommendations.

On 17 September 2002, Deputy Secretary of Defense designated Commander, Joint Forces Command as the DOD EA for Joint Urban Operations, with responsibility for leading the execution of the "DOD Master Plan for Joint Urban Operations."

1.3 APPLICABILITY

This master plan is a DOD-wide strategy document, from SecDef to the DOD Components, that integrates all activities related to joint urban operations, including:

- Policy
- Interagency and multinational coordination
- Research, development, and acquisition
- Identification of joint military requirements
- Joint concept development and experimentation
- Joint modeling and simulation capabilities
- Joint training and experimentation facilities
- Joint doctrine and joint tactics, techniques, and procedures (JTTP)
- Joint Leadership development

Definition of Joint Urban Operations

Per Joint Publication (JP) 3-06, *Doctrine for Joint Urban Operations,* joint urban operations are defined as "all joint operations planned and conducted across the range of military operations on, or against objectives on, a topographical complex and its adjacent natural terrain where manmade construction and the density of noncombatants are the dominant features."

Approach

The methodology used by the Joint Urban Operations SSG in developing this master plan is summarized in figure 1:

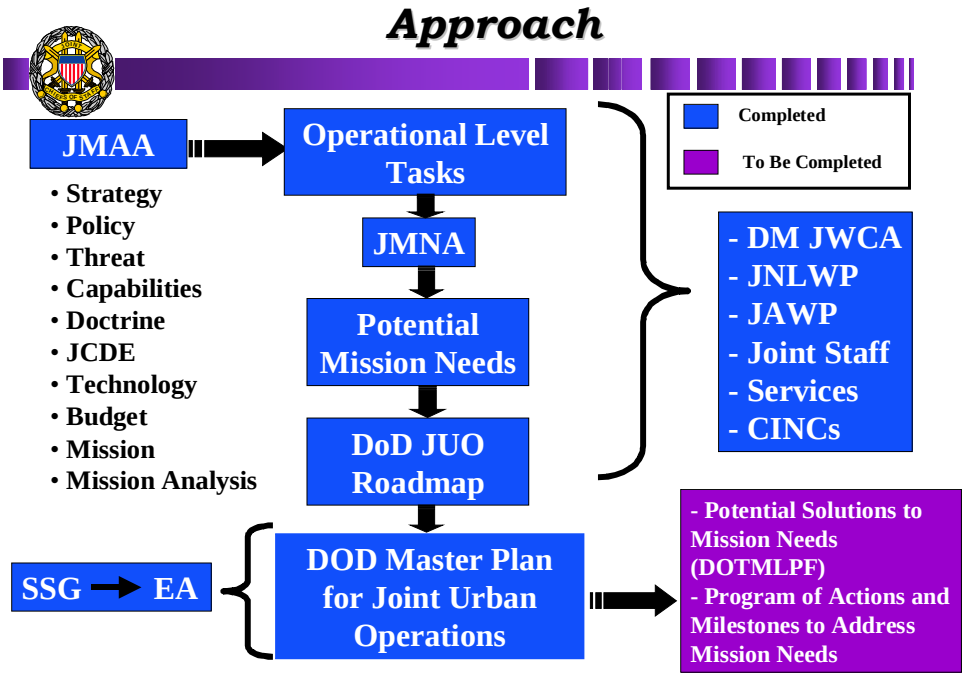


Figure 1

The Joint Urban Operations SSG began its development of the DOD Master Plan for Joint Urban Operations by assessing the results of the DM JWCA Team joint urban operations JMAA/JMNA, the Joint Non-Lethal Weapons Program (JNLWP) Non-Lethal Weapons JMNA/JMNA, and the draft "DOD Roadmap for Improving Capabilities for Urban Operations" developed by the JAWP. This assessment included an evaluation of potential mission needs for joint urban operations identified by the DM JWCA Team, the JNLWP, and the JAWP. The SSG also reviewed the February 2000 GAO report, the April 2000 Joint Staff reports to Congress on urban warfare training, and combatant command and Service urban operations studies in order to identify recent efforts by DOD Components to improve capabilities to conduct joint urban operations.

In coordination with the DOD Components the Joint Urban Operations SSG identified, and recommended the priority of, potential mission needs for joint urban operations. The SSG also prepared recommendations for materiel and non-materiel solutions to potential mission needs and identified sponsors for the appropriate requirements documents and coordination with the appropriate Joint DOTMLPF functional process owner per the *Joint Vision Implementation Master Plan* (CJCSI 3010.02A) and the *Requirements Generation System* (CJCSI 3170.01, superseded by CJCSI 3170.01C *Joint Capabilities Integration and Development System*). The identification of potential mission needs provided baseline information for the master plan, while recommendations for Joint DOTMLPF changes form the basis for the "way ahead" portion of the master plan.

The Joint Urban Operations SSG reviewed JROC-validated Mission Need Statements, Capstone Requirements Documents, and Operational Requirements Documents for applicability to joint urban operations. This review supported by the directions identified in the Roadmap supported the development of this master plan.

The next chapter will discuss current approaches to conducting joint urban operations and the potential that emerging concepts may have in improving operational capabilities.

2 NEW APPROACHES TO JOINT URBAN OPERATIONS

2.1 Operational-Level Perspective

Past efforts to improve US capabilities to conduct military operations in urban areas have focused on the tactical, single-Service level since the urban environment tends to reduce an operation to a collection of isolated, small-unit ground engagements. New approaches to urban operations are being explored by the Army, Marine Corps, Air Force, Joint Staff, OSD, NATO, and others. Taken together, these efforts share two general features: the first is a focus on the operational-level perspective of urban warfare and the use of joint capabilities, and the second is the application of the tenets of the *maneuver* approach to urban operations.

2.2 *Maneuver* Approach to Joint Urban Operations

This section describes a new approach to joint urban operations, based on the tenets of *maneuver*. This approach can be described in terms of five elements as defined in Joint Publication 3-06, *Doctrine for Joint Urban Operations*: **UNDERSTAND, SHAPE, ENGAGE, CONSOLIDATE, AND TRANSITION (USECT).** This approach can, in turn, guide the design and development of new operating concepts for specific missions. Key characteristics of the approach are:

- Based on the principles of the *maneuver* (or indirect[4]) approach to operations, in contrast to an attrition (or direct) approach.
- Focused on the operational level of war and the application of operational art by a joint force commander (JFC).
- Applicable across the range of military operations (war and military operations other than war, combat and non-combat).

"Operational art" as defined in this Master Plan is the employment of military forces to attain strategic and/or operational objectives through the design, organization, integration, and conduct of strategies, campaigns, major operations, and battles. Operational art translates the force commander's strategy into operational design, and, ultimately, tactical action, by integrating key activities at all levels of war.[5]

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[4] Note that operational "maneuver" does not necessarily equate to "indirect" warfare. Sherman's march to the sea and subsequent march through the Carolinas is an example of indirect warfare with little operational maneuver.

[5] US Department of Defense. Joint Staff, *Department of Defense Dictionary of Military and Associated Terms*, Joint Publication 1-02, August 2002, p. 325.

2.3 Background

Traditional approaches to joint urban operations (siege, rubble-ization, and frontal assault) have been characterized by firepower solutions, slow and sequential linear progress, significant casualties among friendly forces and noncombatants, and destruction of infrastructure. This has been necessary due to the difficulty in obtaining timely, accurate information in the urban environment. Our "default" solution to acquire information has been to engage with infantry, then adjust our operational objectives based on what we learn. This approach risks strategic failure in conflict short of major theater war when the level of destruction necessary to achieve success diminishes political support. The broad shift in approach has been from one that was characterized by "engaging with an adversary to gain specific information/intelligence" to one characterized by "gaining specific information/intelligence to engage with precision effects."

The vision for future joint urban operations is that emerging capabilities incorporating new technologies will enable the tenets of the *maneuver* approach to be more effectively applied in an urban environment. These new capabilities will enable the JFC to understand and shape the urban battlespace and precisely engage to achieve desired effects. Such an approach will enable well-equipped and well-trained forces to maintain an advantage over opponents who lack such qualities. Today, U.S. forces "own the night" in open environments by exploiting intelligence, surveillance, and reconnaissance capabilities. The vision here is that they will "own the city" by virtue of superior capabilities to understand, shape, and precisely engage with precision effects, and then effectively consolidate their gains in order to transition control to civilian authorities.

The *maneuver* approach is best understood by contrasting it with an opposite approach referred to by many as "attrition warfare." Attrition warfare seeks victory by destroying the enemy's personnel and material assets through superior firepower and technology. It pits strength against strength, and success is achieved by overpowering or wearing down the enemy. Attrition warfare is linear, firepower intensive, costly, and insensitive to issues such as collateral damage and displaced populations. The *maneuver* approach, on the other hand, seeks to engage the adversary from a position of advantage rather than pitting strength against strength. It seeks to apply this advantage against the adversary's vulnerabilities, decisive points, and centers of gravity.[6] While maneuver to gain positional advantage is the traditional understanding of the term, it means much more. The term *maneuver* does not equate to "movement." We should consider maneuver in time as well; that is, to *generate an advantage in tempo*. Tempo, particularly when operating in an urban environment, does not necessarily mean faster action or activity. Its essence is to *seize the initiative*. So, an advantage in tempo may be achieved by aggressive action in terms of movement and fires, or it may be achieved by "slowing" activity, just as a sports team slows the pace by maintaining possession of, and

[6] US Department of Defense. Joint Staff, *Doctrine for Joint Operations*, Joint Publication 3-0, September 2001, p. III-14.

controlling the ball in order to "run out the clock."[7] Tempo, then, should be thought of in *relative* terms. The objective is to *control* it. This approach is consistent with a recent Joint Staff effort to "operationalize" the *Joint Vision*. The following is a working definition of *Dominant Maneuver:*

> ***Dominant Maneuver is the rapid, precise, and continuous employment of military power to give Joint Forces advantage over an adversary in order to achieve operational objectives.***[8]

Ultimately, the *maneuver* approach targets an adversary's will to resist.[9] In doing so, the joint force commander may accomplish the mission sooner, with fewer casualties, and less damage to urban areas and the population that occupies them. Considering the increasing political constraints on operations in urban areas, this approach is promising. (Although much harder to evaluate its effectiveness, targeting an adversary's will introduces the notion of "defeating" an adversary as opposed to being forced to destroy him.)

Central to *maneuver* is the recognition that military leaders operate – now and in the future – in an environment fraught with friction, uncertainty, disorder, and violence. Joint forces should thrive in such chaos, and should train as they will be employed. To gain an advantage, the *maneuver* approach identifies the adversary's "centers of gravity" which are the adversary's source of strength and willpower[10] and "critical vulnerabilities[11]" which, if successfully exploited, will gain the advantage sought and provide the opportunity to diminish the adversary's ability to fight, and eventually, break his will to resist.[12] Identification of the enemy's centers of gravity (COG) and critical vulnerabilities provide the JTF commander a clearer *understanding* of where and how to apply power *shaping* the circumstances for definitive engagement.

Also central to *maneuver* is the use of "mission-type orders.[13]" Leaders assign subordinates a mission without specifying how it must be accomplished. The senior specifies the method of execution only to the degree essential for coordination. There are two important parts to this kind of order. First, when the commander assigns a mission, he gives a task and his "intent." The intent identifies his *vision*; his *reason*; his *desired*

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[7] Ibid. p. III-15.

[8] Working definition from the Joint Staff J-8 Dominant Maneuver Task Force. December 2001.

[9] Joint Publication 3-0, *Doctrine for Joint Operations*, p. III-11.

[10] Carl Von Clausewitz, *On War*, Edited by M. Howard and R. Paret, Harvard University Press, 1984, p 177.

[11] Joint Publication 3-0, *Doctrine for Joint Operations*, p. III-17. Also see discussion of "Decisive Point" in Allied Joint Publication 3, *Allied Joint Operations*, Final Study Draft, ratified by the Joint Staff 23 March, 2001, p 3-7.

[12] Joint Publication 3-0, *Doctrine for Joint Operations*, p. III-11.

[13] Ibid. p. III-1.

endstate.[14] Usually, it is expressed in terms of what he wants to do to the enemy. Recognizing that the chaos of war can change the situation, rendering some tasks obsolete, the commander's intent predominates and continues to guide the subordinate's actions.[15] The second aspect of the mission-type order of major importance is the identification of the "main effort."[16] This is the effort that is the most critical to mission success and all other efforts support it. So, by using mission orders that identify the commander's intent and the main effort, the commander provides his purpose in assigning the mission, the end result he expects, and the subordinate unit that is most critical for overall success. This fosters decentralized decision-making, initiative, cooperation, and the ability to exploit fleeting opportunities. *These are the fundamentals that create an advantage in tempo.*

2.4 A Conceptual Framework

With the *maneuver* approach as the foundation, a conceptual framework for planning and conducting urban operations can be constructed from the interrelated activities of USECT[17]. Although discussed sequentially in this section, these activities function together in an interdependent, continuous, and simultaneous manner. USECT activities may be sequential or concurrent. The point where one stops and another begins is often difficult to define. In some cases, all five may not be required. For example, in some circumstances, a JFC may conduct Understanding and Shaping activities so effectively, that he may be able to shift directly to Transition activities and hand off the operation to follow-on forces or other organizations.

The *maneuver* approach moves the focus from the traditionally predominant Engagement element – reflective of attrition warfare – to the Understand element (u s **E** c t to **U** s e c t). By developing a greater capability to "understand" the urban battlespace, we can effectively target the enemy's critical vulnerabilities and achieve our aim. The overarching precepts for each of these five elements are summarized in the following discussion.

2.4.1 Understand

The need to "Understand" is continuous throughout any operation. It is "key" to *creating and maintaining* an advantage in tempo. An adversary may choose to operate in an urban environment to diminish our operational capabilities; largely, our capacity for open-area detection and standoff strike.

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[14] US Department of Defense. Joint Staff, *Joint Warfare of the US Armed Forces,* Joint Publication 1, November 2000, p.47.

[15] Allied Joint Publication 3, *Allied Joint Operations*, p. 3-14.

[16] Ibid. p 3-15.

[17] Joint Publication 3-06, *Doctrine for Joint Urban Operations* (September 02) contains a full discussion of USECT, which is the basis for the remainder of this chapter.

Our capacity to understand an adversary-occupied urban environment will depend on the indigenous population's degree of support for the adversary and its willingness to support friendly forces.

- If an adversary is opposed by noncombatants, our capacity to Understand will be greatly enhanced due to relatively greater access to information through human intelligence (HUMINT).

- If the local population is sympathetic toward an adversary, human intelligence could provide much less information. In these cases, the adversary's center of gravity may be his "hold" on popular support, and the key to unhinging him may be a well-coordinated information campaign to turn indigenous popular opinion toward a more attractive alternative than that offered by the adversary.

- In all cases, diplomatic, economic, and informational efforts can be key. The military instrument is not the only national instrument of power, and may not be the supported instrument in a joint urban operation. Additionally, there will be secondary effects (possibly undesired) to every military action in urban settings. The consequences of those actions should be considered in the planning process, and the importance of coordinating those actions with our governmental agencies, and national and international organizations, (especially in operations short of major theater war) cannot be overstated.

The JFC needs to evaluate the urban battlespace, including the urban triad (manmade and physical terrain, population, and infrastructure), the threat, and Joint Force capabilities to determine the implications for military operations. There may be adversary forces, criminal gangs, vigilantes, and paramilitary factions operating among the noncombatant population. The situation may be complicated by the presence of international non-military governmental departments and agencies to include intelligence, law enforcement, and other specialized entities. Intelligence Preparation of the Battlespace (IPB) and mission analysis are far more complicated in an urban environment.

The complexities of joint urban operations require a thorough understanding of the friendly situation, to include units' proficiency in urban operations and the availability of specialized equipment. Throughout the campaign, the JFC and his staff should consider the following questions while keeping in mind the strategic objective.

- Does the force need to enter the urban area at all?

- If so, does the force need to control the entire area, or just a portion of it?

- What operational objectives must be achieved in urban areas to support the overall campaign plan in the attainment of strategic objectives?

- What sequencing of activities and events is needed to achieve the identified operational objectives?
- What resources are required to initiate and sustain these activities and events?
- Should we encourage noncombatants to leave the urban area (and plan to take care of them), or encourage them to remain in place?

The answers to these questions will be different for each scenario. To answer them, joint and multinational forces must have the technical capability and the operational acumen to use multi-source information and intelligence fusion, rapid analysis, and dissemination down to the lowest possible level in the command chain. Commanders must identify all relevant forces, clans, religious groups, etc., their strengths and critical vulnerabilities, and be able to identify the critical nodes of the urban area that may provide leverage if controlled. The IPB process must also take into account special considerations, such as cultural "mapping" and the location of sites that may pose hazardous material or weapons of mass destruction threats.

Air and space sensors will prove vital in the IPB, as will all the elements of human intelligence, imagery intelligence, signals intelligence, open-source intelligence, measurement and signature intelligence, and counterintelligence. The ability of these sensors to function in the complex terrain of an urban environment is key, as well as the ability to communicate non-line of sight in this same environment. Special operations forces can be used to obtain critical information to undermine an adversary's will or capacity to wage war, and to enhance the capabilities of multinational forces.

IPB must also consider the impact on, and of, noncombatants, whose presence in the urban area may be substantial and dynamic. Determining the ethnic and religious composition of the population and, if possible, their intent to flee or remain in the urban areas (to support or resist the enemy) may prove crucial. Early consideration should be given to the establishment of a Civil-Military Operations Task Force or Civil-Military Operations Center (CMOC) to plan and prepare to deal with noncombatants, and nongovernmental and international organizations. Human behavior is difficult to control on a mass scale; to do so with people of a different culture under the strains of conflict can be a great challenge. The availability of highly trained individuals who understand the culture and the language of the local population will prove indispensable to commanders at all levels in identifying combatants from noncombatants.

2.4.2 Shape

Shaping includes all actions taken to set favorable conditions for Engagement activities to begin.

One part of Shaping is conducting the strategic movement of forces into theater to position units for decisive operations. Depending on the situation and objectives to be achieved, forcible entry may be required initially, which may immediately present military forces with the challenges of mid-intensity combat urban operations. Establishing refugee camps or sanctuaries for noncombatants, providing safe passage for them, and arranging emergency services may be required.

Another aspect of Shaping is deploying military forces in the appropriate sequence given the situation. Rather than deploying combat forces initially, the JFC may need non-combat arms forces early, such as civil affairs, medical support, and psychological operations units.

Establishing and operating the intelligence, surveillance, and reconnaissance (ISR) architecture is critical to Shaping. This should include technological means as well as other capabilities such as HUMINT sources and special operations forces.

Physically isolating the urban area is generally an early element of Shaping. At the operational level, isolate means cutting the adversary off from the functions he depends on to be effective. Isolation has both an external aspect, (i.e., of cutting off outside support), and an internal aspect (i.e., of cutting off mutual support). Isolating the adversary may also mean precluding his retreat. The physical isolation of a large urban area clearly has air, space, land, information, and, likely, naval implications for the identification and control of the movement of personnel and equipment.

Isolation also has profound effects on the noncombatant population and undesired effects must be weighed by the JFC in light of overall strategic objectives.

Isolating the urban area in terms of information is a very desirable part of Shaping. The force commander should have the capability to achieve and sustain information superiority over adversaries. Information going into and out of the urban area should be managed, to include cutting off adversary communications, and establishing control of indigenous radio, television, and other media. Importantly, this Information Operations aspect of the campaign plan must be fully integrated with other aspects of operations such as public affairs, civil affairs, and psychological operations. Additionally, it must be coordinated with diplomatic entities (UN, NATO, etc) such that all actions remain consistent with the strategic aim. The presence of legitimate international media and charitable organizations will make this task difficult. But, if our efforts are properly coordinated, their involvement can multiply our advantage.

2.4.3 Engage

Engagement consists of those actions taken by the JFC against a hostile force, a political situation, or natural or humanitarian predicament to directly accomplish the mission. Engagement can range from large-scale combat operations in war to humanitarian assistance and disaster relief in military operations other than war. In all

cases where we face an adversary, recognition of his centers of gravity and identification of his critical vulnerabilities will be key.

Integration and synchronization of forces and knowledge of rules of engagement are critical when employing weapons in urban areas. Forces must have the flexibility to attack targets located within and under buildings or rubble, and to conduct engagements from air to surface, surface to sub-surface, and vice versa. Produced effects are required to deny the adversary the protection that may be gained from the urban environment. These precision engagements must provide reasonable certainty of achieving the desired effect on the adversary – but with reduced risk of injury to noncombatants, collateral damage, and fratricide. Special Operations Forces can provide rapid and precise small- and large-scale direct action. Such forces have a unique precision strike capability to operate in the urban environment with minimal collateral damage.[18]

At the operational level of war, successful engagements cause desired effects on critical structural (power grids, communication centers, etc.) and non-structural (social, cultural etc.) elements identified during the IPB process. This can involve controlling key terrain or infrastructure, unhinging the adversary's decision cycle, cutting or controlling inter-city and intra-city mobility and communications, triggering an adversary's response or positioning forces to accomplish another phase of the campaign. The goal is not just movement to positions inside a city, but to apply strength against the adversary's critical elements using tempo as a controlling mechanism to shatter his organizational command and cohesion.

2.4.4 Consolidate

The focus of consolidation is on protecting what has been gained and retaining the initiative to disorganize the adversary in depth. Consolidation therefore calls for an ongoing process of organizing and strengthening an advantage (spatial, temporal, psychological, informational) over the adversary. Consolidation also requires activities geared at neutralizing bypassed adversary forces and processing prisoners. Civil affairs, public affairs and psychological operations units will continue to be especially critical in this aspect, as will engineering efforts ranging from demolition, to repairs, to new construction.

Major challenges are associated with infrastructure collapse, humanitarian assistance, and disaster relief. Planners must consider tasks of handling refugees, displaced noncombatants, and integration of government and non-governmental organizations. The JFC must address the multiple tasks of consequence management such as mitigating the effects of a weapon of mass destruction, an accidental or collateral environmental disaster, or an outbreak of disease.

[18] Joint Publication 1, *Joint Warfare of the US Armed Forces*, p. 57.

2.4.5 Transition

The goal of joint military operations in urban areas is to achieve the strategic objective and to transfer routine control over the urban area from the military to local civilian authorities or international organizations. Military forces would be incrementally redeployed while the efforts of civil affairs, public affairs, security, medical, and engineer units continued.

An important aspect of "Transition" is the coordination and cooperation among the CMOC, non-government organizations, and international organizations in order to return the urban infrastructure and its inhabitants to local authority. The resettlement of displaced civilians and the reconstitution of national military forces are central to the transition process. Critical to this is maintaining the "rule of law." To insure safety and security, military forces may conduct training with indigenous or multinational law enforcement organizations. The rate of military redeployment can depend on how quickly those organizations establish an effective presence.

2.5 SUMMARY

The goal of the *maneuver* approach to joint urban operations, as described in this chapter, is to achieve objectives, minimize friendly casualties and collateral damage to urban infrastructure, and reduced harm to the noncombatant population. The interrelated activities of Understand, Shape, Engage, Consolidate, and Transition are the framework upon which the approach is constructed. This approach will enable US forces to function more effectively in the uncertain, chaotic, and dynamic urban operating environment.

3 JOINT REQUIREMENTS: DETERMINING NEEDED CAPABILITIES AND ASSESSING STATUS

3.1 BACKGROUND

In January 1999, the Joint Staff J8's Land and Littoral Warfare Assessment Division (LLWAD) published an urban operations study, which detailed the work accomplished by the J8 Urban Working Group (UWG) and provided recommendations for future efforts. Among other things, that study took 108 candidate urban mission needs and narrowed the focus to the 18 most important. These were:

Communications	Rapid and Responsive Firepower
Knowledge of Cities	Precision Effects
Threat Detection/Neutralization	Population Control
Mobility	JTF single common picture
Consequence Management	Medical
Information Control	Logistics
Precision Navigation	Training Facilities
CID[19]	Training Analysis
CSAR[20] in Urban Areas	Campaign Analysis

Among the future efforts recommended by the J8 LLW Urban Operations Study was a transition study effort to develop concept exploration and an urban roadmap. The following year, the 2001 Defense Planning Guidance (DPG) directed the CJCS and ASD (S&TR) to "*develop a road map that integrates all Department activities related to MOUT, including policy; coordination with other U.S. government agencies and U.S. allies; research, development, and acquisition; concept development and experimentation; the development of modeling and simulation capabilities; MOUT training and experimentation facilities; and the development of joint doctrine*."

The Joint Advanced Warfighting Program headed the urban roadmap effort and in November 2001 published the draft DOD Roadmap for Improving Capabilities for Urban Operations (Volumes I and II). Along with other input, the Roadmap is based on the 18 original urban mission needs areas identified by the 1999 UWG and later codified into Joint Mission Needs Assessments. Chapters III and IV of this Master Plan draw heavily on the long train of work captured by the DOD Roadmap and summarized in Volume I (ES 11).

3.2 JOINT CONCEPTS FOR JOINT URBAN OPERATIONS

A new concept employed by a JFC for a given urban mission will both reflect the overarching maneuver approach (discussed in the previous chapter) and determine the

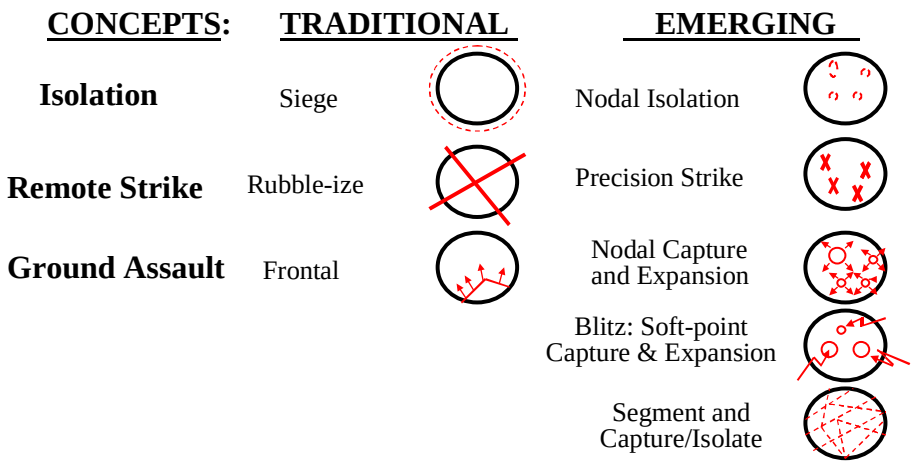
[19] Combat Identification

[20] Combat Search and Rescue

capabilities that are needed to realize that approach. Thus functional concept forms a bridge between the overarching approach and the identification of needed capabilities.

Consider, as an example, the mission of capturing an urban area. Figure 2 illustrates eight concepts that a JFC might use depending on the conditions.[21]

Figure 2: Types of Operational Concepts (Capture an Urban Area)



Three of the concepts correspond to traditional approaches to capturing a city: *Siege*, *Rubble-ize*, and *Frontal Assault*. Such approaches are driven by an inability to gain understanding in an urban environment. One either avoids entering the city (*Rubble-ize* or *Siege*) or enters the city with ground forces and gains understanding of enemy positions and capabilities by establishing close contact (and then responding with overwhelming lethal force). Under most conditions all three approaches will result in high levels of civilian casualties. *Rubble-ize* and *Frontal Assault* will also result in extensive collateral damage, and *Frontal Assault* generally results in high friendly casualties as well. The other five l concepts are more surgical and offer the prospect of significantly reducing both friendly and civilian casualties, as well as collateral damage. They may also be faster and require fewer Blue forces than the traditional alternatives. However, they also require greatly improved capabilities for achieving understanding before engaging. This identifies a capability that is critical to the success of the emerging operational concepts and to the overarching approach itself: the ability to conduct effective ISR in urban areas.

[21] Most likely some combination of these would be used, but we separate them here for the purposes of the discussion.

In this way the range of capabilities required for the emerging concepts may be identified. See the DOD Roadmap for further details.

3.3 CAPABILITIES NEEDED TO ENABLE NON-TRADITIONAL URBAN CONCEPTS

As illustrated above, advanced concepts require a much better understanding of the nature of the city and the enemy forces within it than the traditional approaches. All of the required capabilities may be placed in the general "USECT" scheme summarized below and described in Joint Publication 3-06 and the previous chapter.

3.3.1 Understand

Understand encompasses the gathering, processing, communicating, and displaying of information regarding all aspects of an urban operation including the strategic setting, physical structure, indigenous population, and the dispositions of friendly forces, adversary forces, and noncombatants.

3.3.2 Shape

Shape includes enhancing the friendly situation while, at the same time, degrading the adversary's. Armed with an understanding of the key factors listed above, the JFC is better able to influence the strategic environment; control the physical battlespace; influence, leverage, or support noncombatants; restrict options available to any adversary; and expand friendly options.

3.3.3 Engage

Engage involves the projection of desired effects both in location and intensity. Sophisticated urban engagement requires the ability to precisely strike targets masked by urban structures, those moving in complex terrain, and those hidden underground close to noncombatants. It also requires the ability to produce precise lethal or non-lethal effects against personnel, materiel, or systems. During non-combat operations *Engage* may include interactions with the population, for example, to render humanitarian assistance.

3.3.4 Consolidate

Consolidate involves securing captured areas against re-infiltration and restoring infrastructure, law and order, and services. These functions require the capability to restore security via surveillance, sentries and barriers; provide support to noncombatants; and restore infrastructure and services.

3.3.5 Transition

Transition defines the end-point of the operation for the military forces. It requires coordinating with allies, agencies and NGOs; and returning control to civilian authorities.

3.4 ASSESSING THE STATUS OF THE CAPABILITIES AND IDENTIFYING GAPS

Most of the capabilities associated with the more surgical urban operational concepts require capacities for understanding, shaping or engaging that are beyond current capabilities under most realistic conditions. The USECT scheme serves as a framework for focusing assessment and development activity on the specific areas. This section gives a general assessment of the status of the capabilities in each of the USECT categories. Of course, specific capabilities will vary according to the conditions that prevail in specific scenarios. See Volume II of the *DOD Roadmap* for more detailed discussions of specific capabilities, the rationales for the assessments, and the key parameters that will influence the capabilities.

The broad rating scheme of the *DOD Roadmap* is used. Three levels are distinguished: good, fair and poor.

Good: Today's level of capability can perform this task but with some room for improvement.

Fair: Today's level of capability can perform this task but with serious limitations.

Poor: Today's level of capability cannot satisfactorily perform the task.

3.4.1 Understand

New approaches to urban operations require the capabilities to obtain, process, and act upon information in a timely fashion. However, in general, current capabilities for achieving this level of understanding are inadequate. Resources that would enable a JFC to rapidly and systematically access expertise on local strategic, political and cultural factors remain inadequate. Likewise, interactions with coalition members and NGOs present unique challenges to the JFC that can erode timeliness and effectiveness. An understanding of the interests and motivations of these organizations is critical. Current capabilities in this area are rated "fair".

While current mapping capabilities allow precision strike against fixed targets in a number of urban environments, coverage is not as complete as required. Specifically, three-dimensional, subterranean and interior data are lacking, as are abilities to rapidly focus data gathering, processing, and distribution during rapidly developing situations. The support required to execute nodal strike and area segmentation is not available. Although advances in the analysis of urban "systems" covering both physical and cultural networks are impressive, continued progress in both coverage and turn-around time is needed to support the new approaches.

New approaches that seek to minimize non-combatant casualties and leverage friendly factions require dynamic ISR to not only track these actors but also predict their likely actions and reactions. These capabilities are currently very limited. Additionally, abilities to detect, track, and target the adversary in an urban environment are generally

inadequate to support the shaping and precision engagement envisioned by the new approaches. Finally, the ability to track the location and status of friendly forces is severely restricted by the degradation of current communications and navigation systems in urban terrain. Also, communications in an urban environment are poor due to lack of communications devices that function non-line of sight and within buildings.

In view of the above, the general assessment of capabilities in the "Understand" category is "poor."

3.4.2 Shape

Shaping activities depend on understanding force dispositions and the surrounding physical and human environment. As described, the current capabilities for achieving such a level of understanding are inadequate in the urban environment. However, as progress is made in this area, a parallel effort is required to develop the capabilities that will enable the JFC to shape the environment based on his understanding.

Our present ability to shape the coalition environment and deal effectively with neutral parties and NGOs is rated "fair".

While both destructive and non-destructive methods for controlling the infrastructure of an urban area (e.g. transportation, information networks, utilities) are becoming feasible, current capabilities are extremely limited. Similarly, our capability to influence and support noncombatants or leverage friendly factions in the local population is limited.

Our ability to control the operating environment is key. This includes being able to erect barriers, disable vehicles, and control mobility in order to isolate or segment opposing forces. Additionally, we must be able to control the adversary's access to information and influence his psychological dimension. All of these capabilities are currently inadequate to support the kind of shaping operations envisioned by the new approaches. In developing these capabilities, consideration must be given to the potential impact on noncombatants in the environment when these capabilities are applied.

The operating environment in urban areas available to the friendly force is inadequate to support the new approaches. Friendly forces suffer increased vulnerability and decreased mobility when they move into an urban environment. Sensors and communications are limited. Combat service support (including medical) is also inadequate.

In view of the above, the general assessment of capabilities in the "Shape" category, even if we had the required level of understanding, is "fair."

3.4.3 Engage

Engagement consists of those actions taken by the JFC against a hostile force, a political situation, or natural or humanitarian predicament to directly accomplish the mission.

Engagement can range from large-scale combat operations in war to humanitarian assistance and disaster relief in military operations other than war.

While the emerging concepts seek to engage with precision lethal and non-lethal effects, our abilities to attack mobile and underground targets, or those requiring a variable-trajectory weapon are limited. Likewise, current capabilities for projecting non-lethal kinetic (e.g., soft projectiles) and non-kinetic (e.g. forming sensor barriers, IO, etc) effects are extremely limited. Finally, the ability to influence the thinking of noncombatants in combat or peacekeeping operations is sharply limited by cultural and linguistic differences.

The general assessment of capabilities in the "Engage" category is "fair."

3.4.4 Consolidate

Consolidation, which takes place in areas that are under our control, stresses defense, security, and the restoration of infrastructure and services. A key challenge of this phase is the large number of forces required. Efforts to reduce the manpower required during consolidation through the use of improved surveillance, sentries, and barriers have been inadequate. Capabilities for maintaining limited secure barriers are good, but the requirement for large numbers of forces to carry out this phase in an urban area leads to a rating of "fair". Our ability to provide support to noncombatants and restore infrastructure and services during consolidation is no better especially if one postulates extensive destruction or the use of chemical or biological agents.

The general assessment of capabilities in the "Consolidation" category is "fair."

3.4.5 Transition

The transition phase involves the coalition, interagency and NGO linkages as well as local political, cultural and economic issues. Civil affairs and political/military affairs are significant. Overall capabilities are rated "fair."

4 IMPLEMENTING THE MASTER PLAN: PROGRAM OF ACTIONS AND MILESTONES FOR IMPROVING JOINT URBAN OPERATIONAL CAPABILITIES

4.1 BACKGROUND

This chapter lists the program of actions and milestones (POAM) by USECT and DOTMLPF category. Each POAM paragraph contains a description of the challenges, prescribed actions and key offices for coordination.

4.1.1 Organizations

JFCOM, as the DOD Executive Agent for joint urban operations , is the supported commander for these activities and will coordinate responsibilities and expectations with each participant. A Joint Urban Operations Office (JUOO) will be created at JFCOM to support the Commander in his role as EA. Additionally, JFCOM will facilitate designation of, and make recommendations to SecDef for Offices of Primary and Coordinating responsibility (OPRs and OCRs). JFCOM may designate an office of primary responsibility (OPR) to take the lead in a deliverable effort. Offices of coordinating responsibility (OCR) will support JFCOM and the OPR in the process.

There are natural ties between the functional categories of urban operations and the corresponding elements of the Joint Staff organization: Full Spectrum Dominance must include dominance in the urban environment and, as described in the previous chapter, the new overarching approach to urban operations is based on the achievement of Dominant Maneuver in the urban environment driven by Decision Superiority and supported by capabilities for Precision Engagement, Full Dimensional Protection, Joint Command and Control and Focused Logistics. Therefore the efforts to improve joint urban capabilities form a specific application of these principles, and coordination between the EA and the Joint Staff should serve the interests of both. Therefore, the efforts of working groups in specific areas, as described below, should be fully coordinated with the efforts of the corresponding JWCA organizations.

The establishment of effective working relationships with DOD components is essential for making progress. To this end a senior-level **DOD Advisory Committee** was created to advise the EA regarding program alternatives and to designate appropriate points of contact within their organizations regarding specific areas. These representatives represent their organizations in forums (including working groups as appropriate) that oversee current activities and recommend to the EA the way ahead for improving joint capabilities. These DOD component activities will include: Combatant Commands, Services, Joint Staff, and OSD.
In individual cases forums may also include representatives from non-DOD organizations such as interagency, coalition, national laboratories, etc. Also, it is expected that

informal interactions between the EA/JUOO and component organizations will be common.

The forums will provide the principle means by which the EA/JUOO will interact with the DOD components. Each will focus on a specific focus area as described in the following sections. A member of the JUOO will participate in each forum or group and will be responsible for integrating the efforts of each group with those of the others. The structure and membership of the forums and working groups will be flexible so that they may adapt to changing needs. Sub-groups, perhaps with outside members, may be formed to focus on specific issues. Overlapping membership will also provide a means of integrating the efforts of closely related forums or groups. Also, the results of the each forum or group will be made available to the others via a website and through written reports. Forum and working group schedules will vary depending upon the subject area. Some may meet infrequently (once or twice per year) whereas others may involve quarterly or even more frequent sessions.

Forums and working groups will not only recommend the way ahead but will also actively seek ways of making it happen by identifying funding sources and brokering relationships among affected parties.

The following sections describe the range of focus areas that are important to improving joint urban capabilities. The JUOO will not be able to pursue all of these areas with the same degree of intensity during the transition period while the JUOO organization stands up. Priorities will have to be set during this period. These will be discussed at the end of this chapter.

4.1.2 Adaptability

The focus area structure presented here spans the range of subject areas. It is a first cut at an appropriate structure, which is expected to change as information is gathered and understanding of the issues matures. The EA must retain the authority to change this structure to meet evolving needs.

4.1.3 FY-03 Focus

The Executive Agent for JUO stood up at JFCOM in the second quarter of FY-03, and its JUOO, had a staff of two on 1 January built up to eleven by 1 October. During FY-03 the JUOO focused on standing up its own organization and establishing a structured program. The primary output of these activities was developing and exercising the network of DOD (and non-DOD) relationships and points of contact, which will be essential to accomplishing the JUO mission.

The DOD Senior Advisory Committee (SAC), chaired by USJFCOM/J9 with members from each of the Services as well as JCS and OSD was established. SAC guidance to the JUO effort included expansion of its membership to include SOCOM, OSD

(Intelligence), and Homeland Security. Guidance also included designating the priority focus areas listed below.

4.1.4 FY-04 Focus

FY-04 activities will consolidate and expand progress made in FY-03. In accordance with guidance received from the Senior Advisory Committee, near-term efforts will be focused on the following priority focus areas:

ISR
Weapons
C4
Models & Simulations
Lessons Learned
Concept Development and Experimentation
Multinational
Training, People, and Facilities
Science & Technology

Actions and deliverables:

Organizational actions include:

- Continuing to build the Executive Agent organization, JUOO at JFCOM, including building to 17 personnel;
- Expanding and consolidating the network of links to key DOD organizations (CCs, Services, Joint Staff, OSD, Agencies, . . .) via the DOD Senior Advisory Committee. SAC membership is to be expanded to include SOCOM, OSD (Intelligence), and Homeland Security;
- Expanding the network by identifying DOD-worldwide JUO experts;
- Initiating a multinational JUO network consisting of Allied Command Transformation (ACT) as well as JFCOM national partners;
- Forming forums and/or working groups with representatives from key DOD organizations in appropriate focus areas (e.g. each of the USECT and DOTMLPF areas, plus Lessons Learned, Policy & Legality, Multinational, Interagency, Concept Development & Experimentation, and Modeling & Simulation. See Chapter 4 for details;
- Funding contractor support for Service, DIA, JNLWP, ACT, and SOCOM JUO developmental activities;
- Enhancing (to include SIPRNET) the web-based urban information site to a fully collaborative web tool;

Assessment actions include:

- Exploiting OIF and other lessons-learned activities (e.g. Emerald Express 03) to gain insights into the current issues and ideas, to identify possible near-term opportunities

for force improvements, to integrate findings into joint concept development and experimentation and Master Plan updates, and to initiate the JUO "next fight" effort;

- Publishing a JUO urban lessons-learned quick look and subsequent report;
- Delivering working group reports which capture DOD efforts and assess the current status, identify JUO near term opportunities, and provide input to the Master Plan;
- Conducting the JUFE JT&E;
- Initiating a JUO training and facilities assessment;
- Delivering the JUO State-of-Technology Assessment;
- Initiating a JUO R&D plan;
- Identifying areas of mutual interest to the homeland security mission;
- Reviewing the needs, status and activities in priority focus areas and updating the Master Plan.

Joint concept development and experimentation activities include:

- Partnering with the Services in urban-oriented experimentation events;
- Continuing wargames and conducting limited objective experiments that explore new operational concepts and determine needed capabilities;
- Continuing development of modeling and simulation tools for addressing urban issues;
- Delivering the version 1.0 concept paper refined via experimentation in the JAWP Concepts wargame and Expeditionary Warrior 03 wargame;
- Refining the version 1.0 concept paper via experimentation in Joint Urban Warrior 04 and HITL trials;
- Conducting HITL Phase I on urban situational awareness and planning HITL Phase II on shaping the urban battlespace;
- Conducting a Defense Modeling and Simulation Office (DMSO) Joint Operations on Urban Synthetic Terrain (JOUST) demonstration, delivering a JOUST final report of FY03-04 activities, and producing a transition plan for JOUST JUO live, virtual, and constructive capability to the Joint National Training Capability (JNTC);

A key product of FY- 04 activities will be an initial review of priority focus areas and an updated Master Plan that will describe more specific goals.

4.1.5 FY-05 Focus

Projected FY05 actions and products:

Organizational actions include:

- Expanding and consolidating the network of links to key DOD organizations (CCs, Services, Joint Staff, OSD, Agencies, . . .) via the DOD Senior Advisory Committee. SAC membership is to be expanded to include SOCOM, OSD (Intelligence), and Homeland Security;

- Forming forums and/or working groups with representatives from key DOD organizations in appropriate focus areas (e.g. each of the USECT and DOTMLPF areas, plus Lessons Learned, Policy & Legality, Multinational, Interagency, Concept Development & Experimentation, and Modeling & Simulation;

Assessment actions include:

- Exploiting OIF and other lessons-learned activities to gain insights into the current issues and ideas and to identify possible near-term opportunities for force improvements;
- Delivering working group reports which capture DOD efforts and assess the current status, identify JUO near term opportunities, and provide input to the Master Plan;
- Reviewing the needs, status and activities in priority focus areas and updating the Master Plan.

Joint concept development and experimentation activities include:

- Partnering with the Services in urban-oriented experimentation events;
- Continuing wargames and conducting limited objective experiments that explore new operational concepts and determine needed capabilities;
- Refining the version 1.0 concept paper via experimentation and delivering a version 2.0 concept paper;
- Continuing HITL trials.

4.1.6 FY-06 Focus

Organizational actions include:

- Expanding and consolidating the network of links to key DOD organizations (CCs, Services, Joint Staff, OSD, Agencies, . . .) via the DOD Senior Advisory Committee;
- Forming forums and/or working groups with representatives from key DOD organizations in appropriate focus areas (e.g. each of the USECT and DOTMLPF areas, plus Lessons Learned, Policy & Legality, Multinational, Interagency, Concept Development & Experimentation, and Modeling & Simulation.

Assessment actions include:

- Exploiting the OIF lessons-learned activities to gain insights into the current issues and ideas and to identify possible near-term opportunities for force improvements;
- Delivering working group reports which capture DOD efforts and assess the current status, identify JUO near term opportunities, and provide input to the Master Plan;
- Reviewing the needs, status and activities in priority focus areas and updating the Master Plan.

Joint concept development and experimentation activities include:

- Partnering with the Services in urban-oriented experimentation events;
- Continuing wargames and conducting limited objective experiments that explore new operational concepts and determine needed capabilities;
- Refining the version 2.0 concept paper via experimentation and delivering a version 3.0 concept paper;
- Continuing HITL trials.

4.1.7 Structure of the Master Plan

The organization of the Master Plan is based on the structure used in the DOD Roadmap, which is illustrated by the matrix in Figure 3.

Figure 3: Landscape of Initiatives for Improving Urban Capabilities

Operational Capabilities	Doctrine	Organization	Training	Materiel	Leadership	People	Facilities	Lessons Learned	Policy & Legality	Coalition & Interagency	Concept Dev. & Exp.	M&S
▶ Understand												
❑ Strategic Setting												
❑ Physical Environment												
❑ Population												
❑ Adversary Forces												
❑ Friendly Forces												
▶ Shape												
❑ Strategic Setting												
❑ Physical Environment												
❑ Population												
❑ Adversary Forces												
❑ Friendly Forces												
▶ Engage												
❑ Weapon Delivery												
❑ Weapon Effects												
❑ Information Ops, Psyops												
▶ Consolidate												
❑ Security												
❑ Support of Civilians												
❑ Infrastructure Repair												
▶ Transition												
❑ Civilian authority												

The first column lists the types of operational capabilities according to the USECT categories with sub-categories. The top row lists the types of initiatives that can contribute to achieving the desired capabilities. These follow the DOTMLPF categories plus additional categories in the areas of Lessons Learned, Policy & Legality, Multinational, Interagency, Concept Development & Experimentation, and Modeling & Simulation. For example, a new sensor aimed at enhancing the "Understand –

Adversary" capability would be placed on that row under the "Materiel" column. However, if it is to result in an operational capability, the materiel development must be accompanied by initiatives under other categories including Doctrine, Training, CD&E, etc. Improved capabilities will require packages of initiatives.

The structure illustrated in Figure 3 helps the planner to identify where a specific initiative fits in, understand the relationships among different initiatives, and identify gaps. A program may focus on a specific capability (row) that cuts across several DOTMLPF… categories, on a column (such as Doctrine) that cuts across several capabilities, or on specific elements in the matrix. The following description of the Master Plan identifies initiatives by their principal focus according to the USECT or DOTMLPF categories. As each part of the EA organization stands up, priorities will have to be set regarding the emphasis given to each of the following options. Possible priorities will be addressed at conclusion of this chapter. However, the EA must revisit the selection of priorities on a continuing basis and adjust resources to changing needs and opportunities.

4.2 PRIORITY ACTIVITIES BY TYPE OF OPERATIONAL CAPABILITY ("USECT" CATEGORIES)

4.2.1 UNDERSTAND

4.2.1.1 Understanding the Physical Environment

Address the challenges of producing 3-D maps of urban areas including subterranean structures, interiors of key buildings, infrastructure systems, and activity levels. Included in this effort will be accommodation for timely gathering, processing, tailoring, modifying, and distribution of results to all levels. Produce capabilities to rapidly mine existing data sources and apply focusable data-gathering systems and processes. Address sensors, platforms, processing, and distribution.

OCRs will include intelligence organizations, operational users and relevant R&D centers such as: ASD(C3I), DIA, NIMA, NGIC, CCs, Services, Joint Staff, TEC, and JWAC.

Actions and Deliverables: Establishment of a Focus Area and a formal **Joint Urban Intelligence Working Group** (JUIWG) and designation of a sub-focus area on **Physical Representation** with representatives from all relevant intelligence agencies and technical organizations. (See above OCR for examples.)

- Assessment of current state of the art in urban representation tools, data sources and data mining techniques.
  - Development of recommendations for the Master Plan POAM. Whenever possible, brokering of activities with affected parties.
  - Compilation of Generation I urban representation of top priority contingency locations.
  - Monitoring of current operations and identification of near-term opportunities for force improvements

- Identification of areas of mutual interest to the homeland defense mission.

4.2.1.2 Understanding the Adversary Forces

This category includes key elements of ISR capabilities.

Address the challenges of determining adversary force locations, critical points, movements and status; and distinguishing among adversary forces, friends, and neutrals. Identify system development initiatives that will support the needed capabilities such as the following.

Provide sensors that can function in an urban environment. Investigate the possibilities of networked short-range sensors, staring sensors, through-wall sensors, and sensors that employ tagging techniques. Identify potential platforms to position or carry sensors. Investigate data fusion techniques to create an integrated picture of adversary forces from independent, possibly disparate, sources of information. Identify systems for leveraging the noncombatant population, especially when the population is friendly, such as secure wireless communications to provide a wide area informant network.

OCRs will include: intelligence organizations, operational users, and relevant R&D centers such as above.

Actions and Deliverables: Establishment of a formal JUIWG as mentioned above.

- Assessment of current status of all-source urban ISR and development of recommendations for the Master Plan
- Establishment of a sub-focus area for **Urban ISR Systems** to review current sensors, platforms, and IT; and develop recommendations for the Master Plan. Whenever possible, brokering of activities with affected parties

FY03 actions and products in this area included:

- Conducting a sensor technology workshop
- Funding of the urban analysis program and establishing a DOD Urban Analysis Cell at DIA
- Initiating a State-of-Technology Assessment including ISR

FY-04 planned actions and products in this area include:

- Conducting urban sensor HITL experiments and workshops

Establishment of a **Cultural Intelligence** sub-focus area to assess current capabilities and resources and develop recommendations for the Master Plan. Whenever possible, brokering of activities with affected parties.

- Monitoring of current operations and identification of near-term opportunities for force introduction
- Identification of areas of mutual interest to the homeland defense mission.

Understanding Friendly Forces

This category includes key elements of friendly command, control, communications and computers (C4) capabilities.

Identify the capabilities that will satisfy the high demand for the detailed, timely information required for advanced urban operations in an environment where structures create "dead zones" in communications coverage. Provide reliable, secure, high-bandwidth C3 in the urban environment. Investigate the possibilities of local, wide-bandwidth, wireless, C3 networks linked to higher levels using land or air-based transceivers.

OCRs will include operational users, program offices and technical organizations such as: CCs, Services, ASD(C3I), Joint Staff, DISA, DARPA, and Service R&D organizations. In particular, establish connectivity with the Joint Force Command and Control (JFC2) Joint Warfighting Capability Assessment Team to integrate efforts.

Actions and Deliverables: Establishment of an **Urban C4** Focus Area.
Assessment of operational requirements for information flow, management and display, and decision aids. Determination of current status.

- Development of recommendations for the Master Plan. Whenever possible, brokering of activities with affected parties.
- Monitoring of current operations and identification of near-term opportunities in urban C3 for force introduction.
- Identification of areas of mutual interest to the homeland defense mission.

FY-03 actions and products in this area included initiating a State-of-Technology Assessment.
FY-04 planned actions and products in this area include:

- Conducting HITL experimentation

4.2.2 SHAPE

Restrict Adversary Options
Address the challenges of controlling or destroying adversary force critical assets. Lead in the development of promising counter-mobility capabilities and concepts to isolate or segment adversary forces by restricting the mobility of adversary vehicles and personnel while controlling the impact on noncombatants within the same area.

Address the challenges of coordinating understanding and engagement to produce effective shaping actions in the urban setting. Focus on concept development and experimentation addressing new approaches to shaping actions at the operational level. Identify and exploit emerging technical capabilities for understanding, C3, precisely engaging to achieve desired effects, information operations, and psychological operations.

OCR: See following paragraph. Establish connectivity with the Dominant Maneuver Joint Warfighting Capability Assessment Team to integrate efforts.

Actions and Deliverables:

Shaping actions that restrict adversary options are based on the coordination of capabilities to, first, understand and then engage with the appropriate effects. Those capabilities are addressed by other focus areas under Understanding and Engagement. The ability to combine these capabilities to produce effective shaping actions depends ultimately on the operational art of the commander and therefore on developments in the non-materiel aspects of DOTMLPF. These aspects will be addressed under those categories and under Concept Development and Experimentation.

4.2.3 ENGAGE

Engagement consists of those actions taken by the JFC against a hostile force, a political situation, or natural or humanitarian predicament to directly accomplish the mission. Engagement can range from large-scale combat operations in war to humanitarian assistance and disaster relief in military operations other than war.

Weapon Delivery and Effects

Weapon Delivery

Address the challenges of responding rapidly to time-critical targets; conducting precision attack where structures may interfere with trajectories or approaches; and identifying moving and underground targets. Provide for target tracking, and quick-response weapons with autonomous redetection capabilities; variable-trajectories for difficult-to-reach aim points, and penetrating warheads for underground targets.

OCRs will include operational users and relevant R&D centers from the Services and defense agencies. In particular, establish connectivity with Precision Engagement (PE) JWCA Team to integrate efforts.

Actions and Deliverables: Establishment of a **Joint Urban Weapons** Focus Area and designation of a sub-focus area on **Weapon Delivery**

- Assessment of current state of the art in urban weapon delivery
  - Development of recommendations for the Master Plan POAM. Whenever possible, brokering of activities with affected parties.
    - Monitoring of current operations and identification of near-term opportunities to improve force capabilities
  - Identification of areas of mutual interest to the homeland defense mission.

FY-03 actions and products in this area included:

- Initiating a State-of-Technology Assessment
- Planning weapons HITL experimentation
- Delivering the Joint Urban Fires & Effects (JUFE) JT&E program test plan and consolidated resource estimate

FY-04 planned actions and products in this area include:

- Conducting weapons HITL experimentation
- Conducting the JUFE JT&E

Weapon Effects

Establish measures of effectiveness. Address the challenges associated with achieving desired effects, reducing noncombatant casualties and collateral damage, and determining post-attack effectiveness. Explore the possibilities of lower kinetic energy warheads and thermo-baric weapons. Identify technology to produce non-lethal effects including: directed-energy weapons, chemical agents, soft projectiles, obstacles, sticky and slippery foams, and anti-vehicular traps.

OCRs will include the Joint Non-Lethal Weapons Program, operational users and relevant R&D centers from the Services and defense agencies.

Actions and Deliverables:

- Establishment of a **Weapon Effects** sub-focus area of the Joint Urban Weapons Focus Area
- Assessment of current state of the art in urban weapon effects
  - Development of recommendations for the Master Plan POAM. Whenever possible, brokering of activities with affected parties.
    - Monitoring of current operations and identification of near-term opportunities to improve force capabilities.
    - Identification of areas of mutual interest to the homeland defense mission (including both homeland security and support to civil authorities.)

FY-03 actions and products in this area included:

- Funding contractor support of JUO developmental efforts within the Joint Non-Lethal Weapons Program
- Delivering the Joint Urban Fires & Effects JT&E program test plan and consolidated resource estimate

FY-04 planned actions and products in this area include:

- Conducting weapons HITL experimentation
- Conducting the JUFE JT&E

Information Operations and Psychological Operations are discussed later in this chapter.

4.3 SUPPORTING ACTIVITIES (BY "DOTMLPF" CATEGORY)

4.3.1 Training, People, and Facilities

Address the challenges of ensuring that urban training encompasses service core, interoperability, and joint task force training. Institute joint urban interoperability and training requirements. Establish networked training facilities, with joint tasks,

conditions, and standards to accommodate large units, combined arms, joint and multinational forces, and operational-level exercises. In particular, develop the urban capabilities of the Joint National Training Capability and provide links to Service Training Centers. Ensure these facilities have modern, complex infrastructures, high-rise buildings, subterranean structures, realistic populations, and adequate instrumentation. Develop an integrated joint "live-virtual-constructive" urban training environment with a common database for cross-service training.

OCRs will include joint, Service and OSD training organizations:

Actions and Deliverables: Establishment of a **Joint Urban Training** Focus Area

- Assessment of current training programs and facilities and development of recommendations for the Master Plan POAM. Whenever possible, brokering of activities with affected parties.
- Including JUO Training in initial JNTC development phase.
- Monitoring of training-related activities such as the JOUST (Joint Operations on Urban Synthetic Terrain) and JUFE programs.
    - Monitoring of current operations and identification of near-term opportunities to improve joint urban training
    - Identification of areas of mutual interest to the homeland defense mission.

FY-03 actions and products in this area included initiating a State-of-Technology Assessment.

FY-04 planned actions and products in this area include:

- Initiating a JUO training and facilities assessment.

4.3.2 Materiel

Identify materiel developments that could lead to major improvements in urban capabilities. Developments aimed at specific functional capabilities (e.g., sensors) will be addressed under the appropriate USECT category. The focal points of this category are the underlying technologies that can enable developments in the functional categories such as information technologies, unmanned systems, non-lethal effects, miniaturization, materials, power sources, etc.

OCRs will include R&D planning organizations as well as Service laboratories, DARPA and other Defense agencies, National Laboratories, industry, academia, etc.

Actions and Deliverables: Establishment of a **Joint Urban S&T** Focus Area

- Develop DOD-wide JUO R&D Plan
- Assessment of current S&T support for urban requirements and development of recommendations for the Master Plan POAM. Whenever possible, brokering of activities with affected parties.
    - Monitoring of current operations and identification of near-term S&T opportunities to improve joint urban systems and capabilities.

    - Identification of S&T areas of mutual interest to the homeland defense mission

FY-03 actions and products in this area included:

- Initiating a State-of-Technology Assessment
- Initiating planning for development of an R&D plan
- Participating in technology forums (e.g. the JNLWD/Infantry Weapons Division, Marine Corps Systems Command Mobility Denial Information Exchange)
- Releasing DARPA JUO R&D initiatives

FY-04 planned actions and products in this area include:

- Delivering the JUO State-of-Technology Assessment
- Delivering a JUO R&D plan

Lessons Learned

Collect, compile, and catalog lessons learned during the conduct of joint or DOD Components' urban operations experimentation, military exercises, or contingency operations.

Actions and Deliverables: Establishment of a **Lessons Learned** Focus Area.

- Conduct outreach activities to operating forces to monitor operations and collect lessons learned
    - Identification of near-term opportunities to improve capabilities
    - Identification of areas of mutual interest to the homeland defense mission.

FY-03 actions and products in this area included:

- Initiating a RAND JUO lesson learned assessment (embedded in JCLL)

FY-04 planned actions and products in this area include:

- Conducting Emerald Express 03, a JUO OIF insights and observations seminar
- Publishing a JUO lessons learned quick look and subsequent report.

4.3.3 Multinational

Address the challenges of providing the organizations, procedures, and technologies that will enable a JFC to interact effectively with multinational organizations during urban operations. Establish lines of communication, organizational cross-representation, contingency planning, exercise participation and educational programs. Examine the organizational changes, means of communication, educational activities, and cooperative programs that would promote communication and coordination between future JFCs and multinational organizations.

OCRs will include RCCs, OSD(Policy), Joint Staff, DOS, representatives from NATO and other coalition partners.

Actions and Deliverables: Establishment of a **Multinational Urban** Focus Area

- Assessment of the status of the multinational operational environment that would prevail during an urban contingency and development of recommendations for the Master Plan. Whenever possible, brokering of activities with affected parties.
    - Monitoring of current operations and development of recommendations for near-term policy guidelines.
    - Identification of areas of mutual interest to the homeland defense mission.

FY-04 planned actions and products in this area include:

- Initiating a multinational JUO network consisting of ACT and current JFCOM national partners (Australia, Canada, France, Germany, Israel, and UK) with focus on expanding the network with other nations (envisioned future partners include Japan and South Korea).

4.3.4 Concept Development and Experimentation

Address the challenges of exploring new approaches to conducting joint operations in an urban environment. Develop operational concepts that detail how the joint force will conduct specific military operations within an urban environment. Define the new concepts in detail and explore them in realistic environments against determined and resourceful opponents. Link Service and joint concept efforts addressing each functional concept in relationship to the operational concepts. Assess the operational, technical and cost risks of alternative approaches, and prepare an experimentation plan to support these assessments. Identify the underlying DOTMLPF considerations to be explored.

Conduct parallel efforts in system development and demonstration, and concept development and experimentation. Employ studies, analyses, constructive simulations, seminars and wargames, human-in-the-loop experiments, virtual simulations, and field exercises. Employ small-scale initial efforts that emphasize the broad-brush tools at the beginning of this list, and limited-objective experiments on key conceptual elements. Identify portions of larger experimental events that can be dedicated to specific urban issues and build to extensive human-in-the-loop simulations and field experiments as appropriate.

Experimentation focus will be on the near & far term. Senior level leader play in exercises is key to experimentation. Utilize Urban insights from recent events for initial Phase I experimentation and Urban Lessons Learned results for follow-on experimentation in Phases II and III.

OCRs will include JFCOM, operational planners, Service force planners and battle laboratories, M&S organizations, R&D organizations.

Actions and Deliverables: Establishment of an **Urban Concept Development and Experimentation (CD&E)** Focus Area with a sub-focus area focusing on Concept Development and another on Experimentation.

- Assessment of emerging operational concepts for joint urban operations, identification of key issues and alternative CD&E approaches to address the key issues.

- Identify and select an Army experimentation venue to compliment experimentation being conducted with the Marines.
- Identify experimentation venues in the 05/06 time frame.
- Pursue opportunities with the National Defense University (NDU) to experiment with POLMIL conceptual aspects.
- Development of a CD&E plan for the Master Plan. Whenever possible, brokering of activities with affected parties.
- Monitoring of current operations and development of recommendations for near-term improvements in operational procedures.
- Identification of CD&E activities of mutual interest to the homeland defense mission.
- Conduct of a limited objective experiment (LOE) exploring new operational concepts for joint urban operations.
- Initiation of a program to develop a robust human-in-the-loop simulation capability for urban operations.

FY-03 actions and products in this area included:

- Publishing the draft Concept Paper which was expanded and tested in the JAWP Concepts wargame
- Conducting the Situational Understanding HITL conference
- Conducting the Air Force Urban Operations Future Forum and Urban Operations Workshop.

FY-04 planned actions and products in this area include:

- Delivering the version 1.0 concept paper refined via experimentation in the JAWP Concepts Wargame and Expeditionary Warrior 03.
- Refining the version 1.0 concept paper via experimentation (e.g. Joint Urban Warrior 04, Unified Quest 04, and HITL trials).

FY-05 planned actions and products in this area include:

- Continuing HITL trials.
- Refining the version 1.0 concept paper via experimentation and delivering a version 2.0 concept paper.

4.3.5 Modeling and Simulation

Address the challenges associated with providing the modeling and simulation essential to urban training, system and concept development, experimentation, and support of operational capabilities. Develop models with urban representational capability, particularly at the operational level. Facilitate planning and funding of improved urban models. Enhance existing models and incorporate urban capabilities in future models. Define and adapt more realistic approaches to the verification, validation and accreditation of these models. Develop digitized databases for urban terrain, interiors, and infrastructure and represent the dynamic linkages between military operations and the urban environment. Provide for instrumented urban training and experimentation facilities to collect data and develop models for individual human response and small-unit behavior. Familiarize managers, trainers, and analysts with the development requirements, proper use, and limitations of models and simulations.

OCRs will include users and providers of M&S tools such as joint and Service force planners, operational planners, joint and Service training organizations, studies and analysis organizations, and R&D centers.

Actions and Deliverables:

- Establishment of a Focus Area and a formal **Urban Modeling & Simulation (M&S) Working Group**
- Assessment of current M&S tools and development of recommendations for the Master Plan. Whenever possible, brokering of partnerships among affected parties.
- Monitoring of current operations and development of recommendations for applications of current tools to current issues.
- Identification of M&S tools of mutual interest to the homeland defense mission.

FY-03 actions and products in this area included:

- Initiating a State-of-Technology Assessment
- Conducting a USJFCOM/J9 JUO M&S demonstration
- Establishing the Urban Modeling & Simulation Working Group

FY-04 planned actions and products in this area include:

- Conducting HITL Phase I on urban situational awareness and planning HITL Phase II on shaping the urban battle space.
- Conduct a Defense Modeling and Simulation Office (DMSO)Joint Operations on Urban Synthetic Terrain (JOUST) Capstone Demonstration.
- Deliver a JOUST final report for FY03-04 activities culminating with the Capstone Demonstration. The report will contain:
    - Connectivity and training accomplished with projection for extending capability
    - Discussion of the JUO distributed range architecture and its fit within the Distributed Continuous Experimentation Environment (DCEE)-Joint National Training Capability (JNTC) concepts and structures
    - Documentation of critical issues that will have to be addressed with each new facility (site, simulator, simulation) as it is considered for participation in future JUO training exercises
    - Documentation of the solutions and methods that produced capability and where additional tests are needed to generalize these capabilities to other facilities.
- Produce a transition plan for JOUST to JUO live, virtual, and constructive (L-V-C) capability to JNTC to include
    - Coordinated FY-04 tests and surveys of additional sites (prioritized by JUO)
    - Estimates of continuing costs for maintenance
    - Estimates of costs for bringing in new sites.

4.4 PRIORITIZATION

The wide range of capabilities and supporting activities described above reflect the fact that urban warfare encompasses all aspects of warfare as they apply in the most complex

operating environment. Coordinated improvements must be made in all of these dimensions if significant and lasting progress is to be made. However, at the beginning of this endeavor resources will not be sufficient to pursue all aspects with the same intensity. Therefore, priority focus areas have been chosen for initial emphasis. Selection was based on a number of characteristics including the criticality of the issues, the likelihood of making progress, and the availability of on-going related activities.

In accordance with guidance received from the Senior Advisory Committee, near-term efforts will be focused on the following priority Focus Areas:

ISR
Weapons
C4
Models & Simulations
Lessons Learned
Concept Development and Experimentation
Multinational
Training, People, and Facilities
Science & Technology

The remaining focus areas can be addressed as progress is made on the priority focus areas noted above. The remaining focus areas are:

- **Force Protection, Mobility, and Support**

  Address the challenges of providing force protection, mobility and support for friendly forces operating within the sensor and engagement ranges of adversary forces attacking from protected positions. Develop the concept for employing air and ground vehicles, and personnel in an urban setting that combines structures, obstacles, and close-up threats. Specifically, address the problem of providing the force protection and mobility our combat service support organizations will require dealing with the high consumption and casualty rates typical of urban operations.

- **Information Operations**

  Address the challenges associated with conducting effective information operations and determining post-attack effectiveness. Explore promising technologies to enable information operations and specifically to achieve knowledge of the adversary force information-based systems. In particular, focus on the unique challenges and opportunities for conducting information operations in an urban environment.

- **Psychological Operations**

  Address the challenges associated with conducting effective psychological operations in an urban environment and determining resultant effectiveness. Identify the technical capabilities and cultural understanding required for effective psychological operations in the urban setting.

- **Consolidation & Transition**

  Address challenges of establishing measures of effectiveness. Determine the number and type of forces required to maintain security, restore basic services, re-establish the rule of law, and transition to stable government. In addition to the non-lethal security and crowd control systems already mentioned, explore programs that provide for the rapid restoration of lost or degraded urban infrastructure and see to the basic needs of the population. Evaluate and develop concepts in which combat forces hand over consolidation and transition to specialized units. Consider whether these same specialized units may also be employed for peacekeeping and humanitarian assistance missions in lesser contingencies.

- **Doctrine**

  Build upon Joint Publication 3-06, *Joint Doctrine for Urban Operations*. Evaluate service, joint, multi-national, and interagency doctrine for urban operations. Revise joint urban doctrine and tactics, techniques, and procedures (TTP) based on exercises and real-world experience. Lead the effort to establish multinational doctrine for urban operations. Lead the effort to establish interagency doctrine for urban operations. Identify shortfalls in the efforts to develop and maintain joint, multi-national, and interagency urban doctrine.

- **Organization**

  Address the challenges of designing effective forces for joint urban operations. Focus on promising alternative organizational structures for distributed, joint, urban combat operations. Evaluate the concept of establishing one type of force that focuses on urban combat and another type that focuses on the consolidation and transition phases. Consider whether the second type of force could also be effective in urban humanitarian assistance and peacekeeping missions. When considering force structure, identify the most appropriate blend of active and reserve forces to achieve the desired capabilities.

- **Leadership**

  Address the challenges of preparing future JFCs, component commanders and staffs for the physical complexity; human dimensions; and interagency, multi-national and NGO involvement they will likely encounter during urban

operations. Identify leader development programs that will produce commanders who understand the heightened tensions among strategic objectives, operational constraints and coalition-building encountered in urban operations. Identify education and training programs that will produce highly adaptive JFCs who are capable of creating tailored, operational-level concepts for urban combat. Facilitate the establishment of formal urban-specific programs of instruction at the joint, service, and interagency senior schools. Create centers of expertise in urban operations to assist JFCs and their forces.

- **Policy and Legality**

  Address the challenges of establishing consistency with, or changing, current law, policies or agreements in order to facilitate new approaches to urban conflict. For example, address existing policies and agreements that constrain or prohibit the use of non-lethal chemical agents, armed unmanned systems, or certain information operations. Identify educational programs and operational guidelines that could facilitate the acceptance of such programs.

- **Interagency and Homeland Security**

  Address the challenges of providing the organizations, procedures, and technologies that will enable a JFC to interact effectively with interagency and non-governmental organizations during urban operations. Establish lines of communication, organizational cross-representation, contingency planning, exercise participation and educational programs. Examine the organizational changes, means of communication, educational activities and cooperative programs that would promote communication and coordination between future JFCs and interagency and non-governmental organizations.

4.5 MILESTONES

The progress made in the above areas will depend upon the resources available to the JUO Office as it continues to stand up and the degree of support provided by other organizations. A tentative list of milestones is presented in Appendix A.

5 Resource Requirements.

Requirements for Resources
(FY-03/FY-04/FY-05/FY-06)

In May 2002, the JROC approved a USJFCOM plan to establish a Joint Urban Operations Office to carry out the duties of Commander JFCOM as the Executive Agent (EA) for Joint Urban Operations.

Program Budget Decision (PBD) 708. The JROC approved O&M funding at $7.0M in FY-04, $8.0M in FY-05, and $8.2M in FY-06. This O&M funding as well as RDT&E funding at $4.1M in FY-04, $4.2M in FY-05, and $4.4M in FY-06 was provided by PBD 708 approved on 9 December 2002.

Personnel. PBD 708 included additional/new personnel, beginning with a staff of 14 in FY-03 and growing to a staff of 30 by FY-05.

Appendix A: MILESTONE CHARTS

JUO FY 04 Master Plan Milestones

United States Joint Forces Command

1. **Expand the JUO office to 17 personnel**
2. **Enhance the (including SIPRNET) web-based urban information site to a fully collaborative web tool**
3. **Host the 2nd annual JUO coordination conference. Utilize working groups to:**
   a) **Reassess the current status of JUO efforts**
   b) **Identify new near-term JUO opportunities**
   c) **Provide input to the master plan**

JUO FY 04 Master Plan Milestones (Cont)

United States Joint Forces Command

4. **Expand the coordination & conduct of JUO concept development experimentation**
5. **Initiate a JUO R&D plan**
6. **Form working groups & deliver initial assessment reports**
7. **Conduct the DMSO JOUST Capstone demonstration, deliver the final report, & transition the L-V-C architecture to JNTC**
8. **Deliver the State-of-Technology assessment**

JUO FY 04 Master Plan Milestones (Cont)

United States Joint Forces Command

9. **Deliver lesson-learned quick-look & final reports**
10. **Initiate a JUO training & facilities assessment**
11. **Conduct the JUFE JT&E**
12. **Conduct HITL experimentation & JUW-04**
13. **Deliver the version 1.0 concept paper**
14. **Update/modify the Master Plan**

JUO FY 05 Master Plan Milestones

United States Joint Forces Command

1. **Expand the JUO Office to 30 personnel**
2. **Host the 3rd annual JUO coordination conference. Utilize working groups to:**
   a) **Reassess the current status of JUO efforts**
   b) **Identify new near-term JUO opportunities**
   c) **Provide input to the master plan**
3. **Expand the coordination & conduct of JUO concept development experimentation**

JUO FY 05 Master Plan Milestones (Cont)

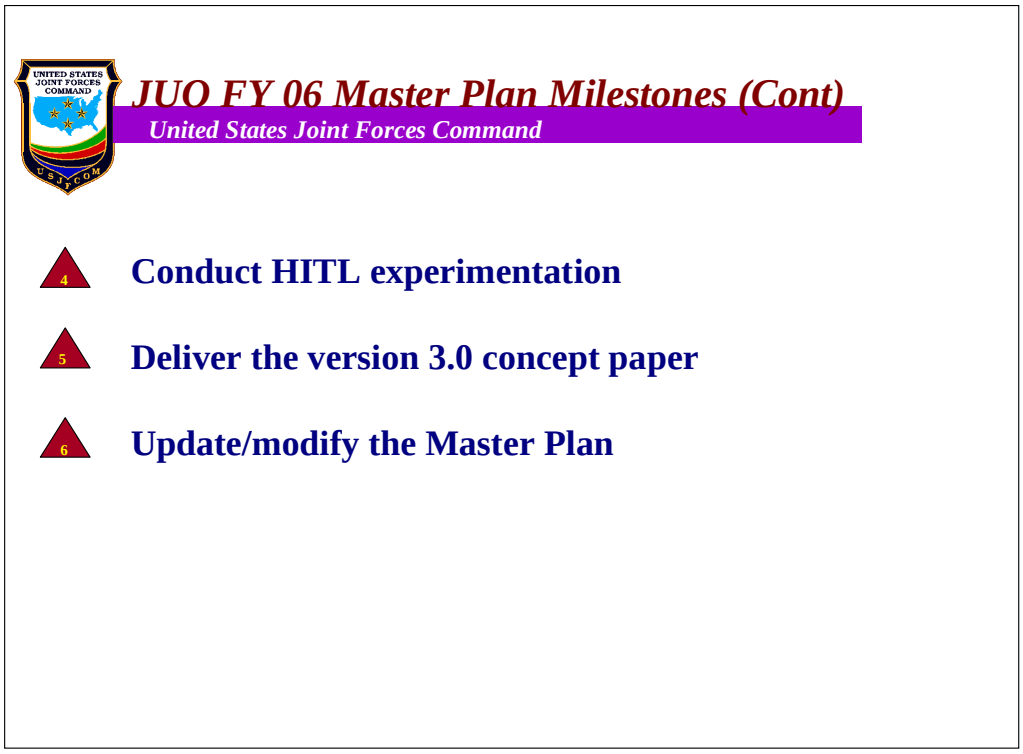
United States Joint Forces Command

4. **Influence & leverage findings of on-going R&D initiatives**
5. **Form working groups & deliver initial assessment reports**
6. **Conduct HITL experimentation**
7. **Deliver the version 2.0 concept paper**
8. **Update/modify the Master Plan**

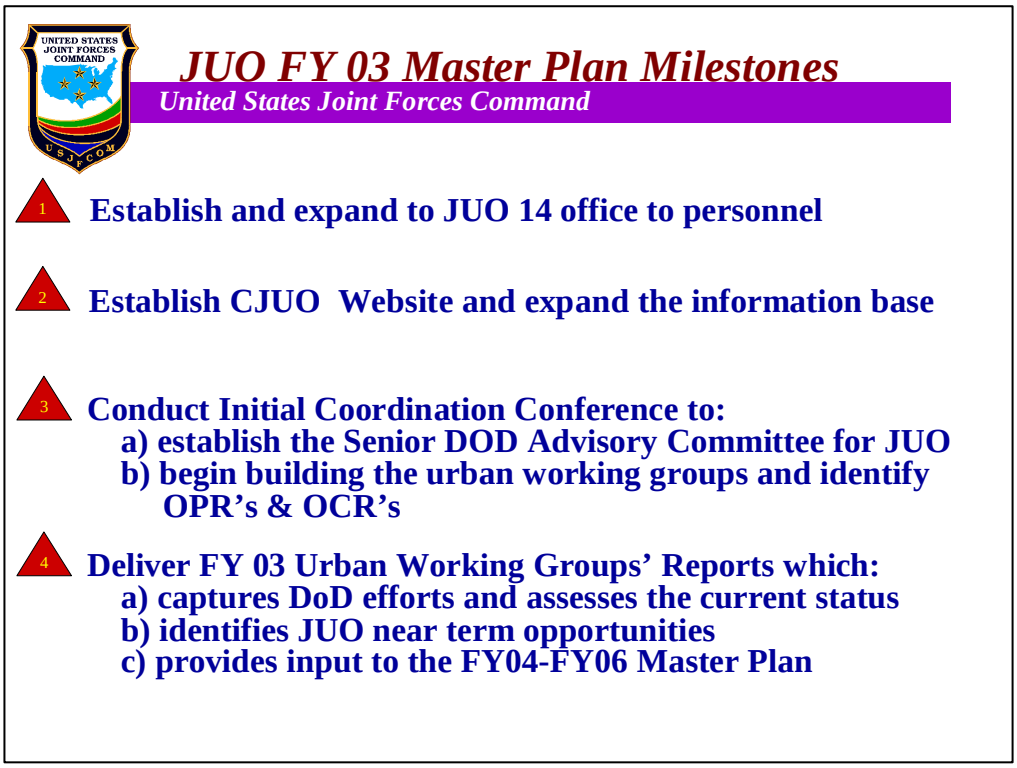
JUO FY 06 Master Plan Milestones

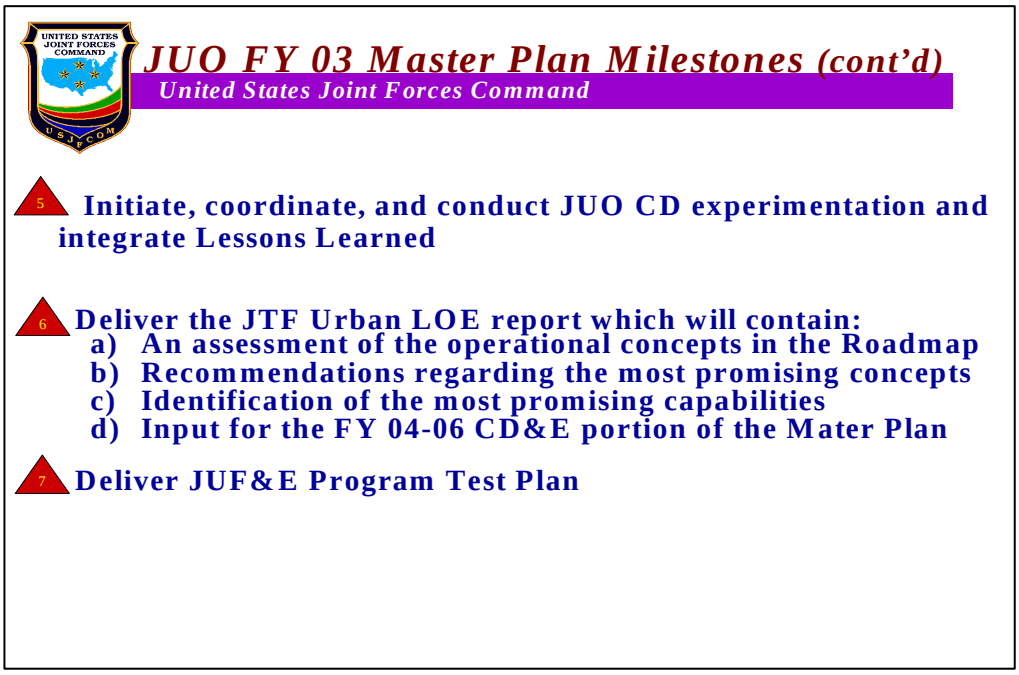
United States Joint Forces Command

1. **Host the 4th annual JUO coordination conference. Utilize working groups to:**
   a) **Reassess the current status of JUO efforts**
   b) **Identify new near-term JUO opportunities**
   c) **Provide input to the master plan**
2. **Influence & leverage findings of on-going R&D initiatives**
3. **Form working groups & deliver initial assessment reports**


JUO FY 06 Master Plan Milestones (Cont)
United States Joint Forces Command
4
Conduct HITL experimentation
5
Deliver the version 3.0 concept paper
6
Update/modify the Master Plan

APPENDIX B: FY-03 MILESTONES





JUO FY 03 Master Plan Milestones (cont'd)

United States Joint Forces Command

8 **Conduct a DMSO Capstone Demonstration (scheduled for 17-20 Nov 03)**

9 **Deliver the DARPA JUO R&D Plan**

10 **Update/modify the FY04-FY06 JUO Master Plan.**

APPENDIX C: GLOSSARY

A	
ACOM (also USACOM)	Atlantic Command
ACT	Allied Command Transformation
ACTD	Advanced Concepts Technology Demonstration
ALSA	Air, Land, and Sea Activity
ASD(C3I)	Assistant Secretary of Defense (Command, Control, Communications and Intelligence)
ASD(S&TR)	Assistant Secretary of Defense (Strategy & Threat Reduction)
B	
BRAC	Base Realignment and Closure Commission
C	
C3	Command, Control and Communications
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance
CAS	Close Air Support
CC	Combatant Commander
CCJFCOM	Combatant Commander, Joint Forces Command
CD&E	Concept Development and Experimentation
CID	Combat Identification
CJCS	Chairman of the Joint Chiefs of Staff
CJCSI	CJCS Instruction
CMOC	Civil-Military Operations Center
COG	Center of Gravity
CSAR	Combat Search and Rescue
CSEEA	Close Support End-to-End Assessment
D	
DARPA	Defense Advanced Research Projects Agency
DBBL	Dismounted Battlespace/ Battle Lab
DCEE	Distributed Continuous Experimentation Environment
DIA	Defense Intelligence Agency
D(PA&E)	Director, Program Analysis and Evaluation
DIS	Distributed Information System Distributed Interactive Simulation
DISA	Defense Information Systems Agency
DM	Dominant Maneuver
DMSO	Defense Modeling and Simulation Office
DOD	Department of Defense
DHS	Department of Homeland Security
DOJ	Department of Justice

DOS	Department of State
DOT	Department of Transportation
DOTMLPF	Doctrine, Organization, Training, Materiel, Leadership, People and Facilities
DPG	Defense Planning Guidance
DSB	Defense Science Board
DSC	Joint C4ISR Decision Support Center

E

EA	Executive Agent
EEA	Essential Elements of Analysis
ERGM	Extended Range Guided Munition

F

G

GAO	General Accounting Office
GPS	Global Positioning System

H

HITL	Human-in-the-Loop
HUMINT	Human Intelligence

I

IDA	Institute for Defense Analysis
IPB	Intelligence Preparation of the Battlespace
ISR	Intelligence, Surveillance, Reconnaissance

J

JAWP	Joint Advanced Warfighting Program
JCLL	Joint Center for Lessons Learned
JFC	Joint Force Commander
JFC2	Joint Force Command and Control
JFCOM(also USJFCOM)	Joint Forces Command (Previously ACOM)
JMAA	Joint Mission Area Analysis
JMNA	Joint Mission Needs Assessment
JNLWP	Joint Non-Lethal Weapons Program
JNTC	Joint National Training Capability
JOUST	Joint Operations on Urban Synthetic Terrain
JP	Joint Publication
JPO	Joint Program Office
JROC	Joint Requirements Oversight Council
JRTC	Joint Readiness Training Center
JTF	Joint Task Force
JTTP	Joint Tactics, Techniques and Procedures

JUFE	Joint Urban Fires and Effects
JUIWG	Joint Urban Intelligence Working Group
JUO	Joint Urban Operations
JUOO	Joint Urban Operations Office
JWAC	Joint Warfare Analysis Center
JWC	Joint Warfare Center
JWCA	Joint Warfighting Capabilities Assessment
JWFC	Joint Warfighting Center
JV2010	Joint Vision 2010

K

L

LLW	Land and Littoral Warfare
LLWAD	Land and Littoral Warfare Assessment Division
LOE	Limited Objective Experiment
L-V-C	Live, Virtual, and Constructive

M

M&S	Modeling and Simulation
MNS	Mission Need Statement
MOBA	Military Operations in Built-up Areas
MOOTW	Military Operations Other Than War
MOUT	Military Operations on Urbanized Terrain
MTW	Major Theater War

N

NATO	North Atlantic Treaty Organization
NDU	National Defense University
NET	No Earlier Than
NGIC	National Ground Intelligence Center
NGO	Non-Governmental Organization
NIMA	National Imagery and Mapping Agency

O

O&M	Operations and Maintenance
OCR	Office of Coordinating Responsibility
OPR	Office of Primary Responsibility
ORD	Operational Requirement Document
OSD	Office of the Secretary of Defense

P

PAD	Persistent Area Dominance
PE	Precision Engagement
PIC	Program Initiative Council
POA&M	Program of Actions and Milestones

POLMIL	Political-Military
POM	Program Objectives Memorandum
PSYOPS	Psychological Warfare Operations

Q

R

RCC	Regional Combatant Commander
R&D	Research and Development

S

S&T	Science and Technology
SecDef	Secretary of Defense
SOCOM	Special Operations Command
SSC	Small Scale Contingency
SSG	Special Study Group

T

TEC	U.S. Army Topographic Engineering Center
TEWT	Tactical Exercise Without Troops
TTP	Tactics, Techniques and Procedures

U

UN	United Nations
UKMC	Urban Knowledge Management Center
USD(AT&L)	Undersecretary of Defense (Acquisition, Technology and Logistics)
USD(P&R)	Undersecretary of Defense (Personnel & Readiness)
USECT	Understand, Shape, Engage, Consolidate, Transition
UWG	Urban Working Group

V

W

WMD	Weapons of Mass Destruction

X,Y,Z

APPENDIX D: BIBLIOGRAPHY

A list of selected documents is presented below. More extensive bibliographies are presented in the "DoD Roadmap for Improving Capabilities for Joint Urban Operations" and references cited therein. Extensive bibliographies are also presented on the following web sites: http://www.orbanoperations.com and http://call.army.mil/homepage/mout.htm.

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Appendix F.
A Concept for Joint Urban Operations (Draft)



INSTITUTE FOR DEFENSE ANALYSES

DRAFT FOR COMMENT

A Concept for Joint Urban Operations

October 7, 2003 1600

This JAWP draft working paper is intended to transmit preliminary results of JAWP research. It has not been formally reviewed or edited, and has not been cleared for public release. Views or conclusions expressed in the drafts are tentative. A draft should not be cited or quoted without permission of the authors, Dr. Ted Gold, Director, JAWP, and the sponsor.

Preface to the October 7, 2003 Draft

This draft of the concept paper for Joint Urban Operations is based on the draft of July 28, 2003 and incorporates changes suggested during the JUO Concept Wargame sponsored by U.S. Joint Forces Command (J9), organized by the Defense Adaptive Red Team (DART), and held at IDA on August 4-6, 2003. The authors express their appreciation to Gary Anderson of the DART and to the participants in that event for their thoughtful input.

The paper has also benefited from the Emerald Express '03 event co-sponsored by the USMC and USJFCOM, and organized by the Wargaming Division of the Marine Corps Warfighting Laboratory. This event was held at Quantico, VA on September 23-25, 2003. It reviewed the urban warfare experiences of Operation Iraqi Freedom and had participants from all the services plus coalition members.

The JUO Concept will be further assessed during the Expeditionary Warfare '04 event to be held on 27-31 October, 2003. A final draft of the Concept Paper (version 1.0) will be delivered to the Joint Urban Operations Office at USJFCOM (J9) in December 2003.

Comments are welcome at any time during this process. Please send them to Bill Hurley (whurley@ida.org).

Preface

This paper was prepared under the task order Joint Advanced Warfighting Program (JAWP) for the Director, Defense Research and Engineering in the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics. It addresses the task order objective of producing breakthrough joint operational concepts

JAWP was established at the Institute for Defense Analyses (IDA) by the Office of the Secretary of Defense and the Joint Staff to serve as a catalyst for stimulating innovation and breakthrough change. The JAWP Team is composed of military personnel on joint assignments from each Service and civilian research analysts from IDA. JAWP is located in Alexandria, Virginia, but includes an office in Norfolk, Virginia, that facilitates coordination with the United States Joint Forces Command.

This paper does not necessarily reflect the views of IDA or the sponsors of the JAWP. Our intent is to stimulate ideas, discussion, and, ultimately, the discovery and innovation that must fuel successful transformation.

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SUMMARY

This paper presents the conceptual foundation for initiatives to improve capabilities for Joint Urban Operations (JUO)[1]. It is a "Concept Paper" prepared for the Joint Urban Operations Office at US Joint Forces Command/J9.

The paper describes a high-level concept for all joint military operations that involve the urban environment: "*USECT for JUO*". USECT stands for the components Understand, Shape, Engage, Consolidate, and Transition. The word "concept" is broadly defined by DoD, and is applied in many disparate contexts. Three levels of concepts regarding JUO are described in this paper: high-level, mission-level and scenario-level.

High-Level Concept

The first level of concept, the **high-level concept**, describes an approach to military operations that transcends any particular mission. It may describe general warfighting principles, guidelines, or philosophies.

A Summary of the "*USECT for JUO*" High-Level Concept

In the past, urban operations had to focus on the "Engage" component of USECT due to the difficulty in obtaining situational awareness in an urban environment. In general, this approach results in high levels of friendly and noncombatant casualties and extensive collateral damage.

The new thinking is that it is becoming possible to (1) improve capabilities for "Understand" and "Shape" in an urban environment in order to gain significant advantages over an adversary before engaging, (2) engage from less vulnerable positions with precision effects thereby reducing (friendly and noncombatant) casualties and

---

[1] In this paper "urban" environments are taken to be those where man-made structures, noncombatants and infrastructure are significant characteristics. This differs slightly from the definition given in *Approved Terminology,* Joint Publication 1-02, DoD Dictionary, by explicitly including infrastructure which is becoming increasingly important in modern urban operations.

The initiatives referred to are described in the *FY-04 DoD Master Plan for Joint Urban Operations (Draft),* US Joint Forces Command (J9), Joint Urban Operations Office, 15 September 2003 and are summarized later in this paper.

collateral damage, and (3) plan the operation in anticipation of the consolidation of what is gained and the transition to the desired end-state.

The new thinking emphasizes: actions that can be taken at the operational level to better shape the conditions of the tactical fight; the use of joint capabilities to significantly enhance single-service capabilities; maneuver rather than attrition; and thinking holistically about an urban operation, i.e., taking into account not only the physical complexity of the environment but also the human and cultural complexity and the effects of all actions on the desired end state.

In short, the basic idea is to use new thinking regarding the application of joint capabilities to urban operations, and new technologies to bring to urban environments the same levels of advantages we currently enjoy in open environments.

The high-level concept described in this paper -- *USECT for JUO* -- applies to all joint military operations that involve an urban environment. The USECT components taken alone are not a concept, but rather a labeling of the elements of any military operation. It is the context and emphasis that enables them to denote a new concept for urban operations.

It is important to emphasize that the USECT components do not form a linear, sequential chain. They occur continuously, simultaneously and dynamically. Understanding is critically intertwined with all of the other components, Shaping will be achieved by Engaging, Engaging will contribute to Understanding, Consolidation and Transition may be occurring in one sector while combat continues in another (the "three-block war").

Each component of USECT applies to several dimensions of the operation.

Understand

The need to "understand" is continuous throughout any operation. It would begin before any use of military force and would continue into and through the campaign. Initially it would focus on developing the Intelligence Preparation of the Battlespace for the urban area, namely understanding the strategic setting, the physical environment, the population, Red forces, and Blue forces. Later in the campaign, the Understand component would involve predicting and assessing the effects from the actions to Shape, Engage, and Consolidate—all of which contributes to situation understanding.

Shape

Shaping would have begun before any combat use of military force, and would continue into and through the campaign, to set favorable conditions for Engagement and Consolidation. The JFC would use the shaping actions discussed above to influence the strategic setting, control the physical environment, influence the civilian population, restrict Red options, and expand Blue options.

Engage

Engagement consists of those actions taken by the JFC against a hostile force, a political situation, or natural or humanitarian predicament that will most directly accomplish the mission. Combat forces must have the flexibility to attack targets located within and under buildings or rubble, and to conduct engagements from air to surface, surface to sub-surface, and vice versa. Precision effects are required to deny the enemy the protection that may be gained from the urban environment. These engagements must provide reasonable certainty of achieving the desired effect on the enemy—but with reduced risk of injury to noncombatants, collateral damage, or fratricide.

Consolidate

Consolidation would be planned in parallel with the other components. The focus of consolidation is on protecting what has been gained and retaining the initiative to disorganize the enemy in depth. Consolidation would take place in areas that are occupied by US or allied forces. Key concerns are restoring security (threatened by remaining Red forces, hostile factions, and criminals), restoring infrastructure, supporting civilians (including handling the outbreak of diseases and environmental disasters), and mitigating the effects of WMD use.

Transition

Transition involves the return of control to civilian authorities. Military forces would be incrementally redeployed while the efforts of civil affairs, public affairs, security, medical, and engineer units continued. The challenge is to replace the JFC's military force with a stable and legitimate local government that is capable of providing for basic needs. Transition would be planned for in parallel with the other components and updated throughout the campaign. This effort would involve the JFC in planning with US government agencies, coalition partners, the UN and other international organizations, and NGOs.

DRAFT

Mission-level Concepts

The second level of concept, **mission-level concepts,** apply the general principles described in the high-level concept to a specific mission. A range of urban missions is presented in Table ES-1.

Table ES–1. Types of Urban Missions [2]

Objective is the urban area itself:

- Capture
- Defend
- Isolate/neutralize

Objective is within an urban area:

- Neutralize an enemy force
- Conduct focused offense (e.g. against a facility; includes generation of "effects" against utilities, information or mobility)
- Conduct focused defense (e.g. create sanctuary, do a rescue operation)

Objective is to protect or assist people in an urban area:

- Neutralize combatants (e.g., peace operation)
- Provide humanitarian assistance
- Provide civil support in the United States

There can be many mission-level concepts which apply to the same mission and are consistent with the high-level concept. For example, for the "Capture an Urban Area" mission, several mission-level concepts are listed in Table ES-2. In that table traditional mission-level concepts, which do not require detailed information concerning the nature of the city and the adversary's disposition within it, are contrasted with the newer approaches which depend upon such information. Such information may include, for example, where natural or cultural boundaries are (Segment and Capture), where the lightly defended areas are (Soft Point Capture and Expansion), or where the adversary's critical points are (Critical Point Capture and Expansion).

[2] "*DoD Roadmap for Improving Capabilities for Joint Urban Operations, Volumes I and II,* IDA Paper 3643, March 2002.

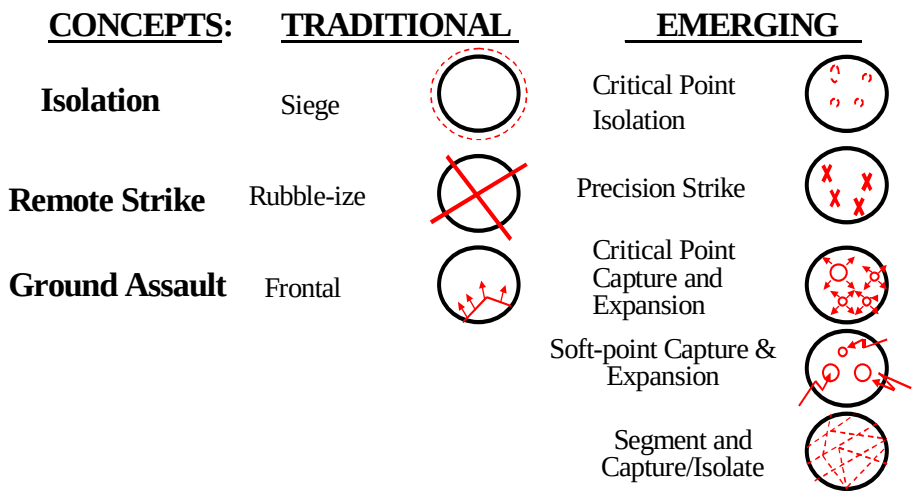


Table ES-2. Types of Mission-Level Concepts (Capture an Urban Area)

The number of mission-level concepts for any mission is open-ended and, as discussed further below, mixtures of mission-level concepts will generally be employed by a JFC to fit a given situation[3]. Others mission-level concepts mentioned in the main text are: "Thrusts," "Subversion" and "Infiltration".

The primary mission addressed in this paper is "Capture an Urban Area." It is the most stressing warfighting mission, and the capabilities it requires also support the range of other missions, even including the non-combat missions, listed in Table ES-1, because "Capture an Urban Area" includes the consolidation and transition components.

Thus, the mission-level concepts for "Capture an Urban Area" provide a reasonably complete set of required capabilities to focus developmental activities, but it does not explicitly explore how best to employ such capabilities for the other missions.

[3] For example, this was observed in a series of Limited Objective Experiments conducted at IDA in early 2003 addressing the Baghdad scenario.

DRAFT

Much concept development work remains to be done to identify mission-level concepts for the other missions listed in Table ES-1, particularly the "post-combat" missions of peacekeeping and humanitarian assistance that currently challenge us in Iraq.

As mentioned, identifying mission-level concepts that are based on the high-level concept helps identify the types of capabilities needed to realize the high-level concept. Once a set of capabilities is determined, the status of those capabilities may be assessed, gaps identified, and remedial actions in terms of DOTMLPF initiatives proposed.[4]

Mission-level concepts, though more specific than the high-level concept, are still quite general and independent of any specific scenario. They are useful for stimulating the planning process for operations and identifying needed capabilities, but the design of a concept for any specific scenario will, in general, involve a mixture of mission-level concepts which changes at different times and different locations and is tailored to the evolving specific situation.

Scenario-level Concepts

The third level of concept, **scenario-level concepts**, describe how one or more mission-level concepts may be applied under a specific set of conditions. This enables the effectiveness of mission-level concepts to be explored in a specific case and provides more detailed insight into the nature of the concept, potential adversary counters to the concept, and the types of capabilities and systems needed to realize it in real-world situations.

Scenario-level concepts are where the "rubber hits the road." They connect higher level concepts to a specific reality. At the scenario level, insights can be gained from real-world lessons learned, historical analyses, field exercises, or more controlled "experimentation" in its various forms (table-top war-games, constructive analyses,

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[4] This is the process used by the *DoD Roadmap for Improving Capabilities for JUO* which, in turn, provides a basis for the recommendations of the *FY-04 DoD Master Plan for JUO,* op. cit.

simulations). In short, scenario-level concepts are what we experiment with, and what we apply to real-world operations.[5]

As an example, consider the capture of Baghdad. The strategic objective (regime change) necessitated that the city be captured and occupied, and that collateral damage and noncombatant casualties be kept at a minimum. Therefore a long siege or wide-area rubble-ization, which are well within US capabilities, were inappropriate for this scenario. Rather, a combination of other mission-level concepts were employed: "Precision Strike" against the regime's critical points; capture of the airport and key routes in and out of the city (Critical Point Capture); "Segmentation" exploiting the broad avenues of the city; "Thrusts" into the city with armored units to gain information regarding enemy defenses and demoralize the enemy; and "Soft Point Capture and Expansion" when little resistance was found in the central city. Finally, there are the Consolidation and Transition components which continue today -- with various, relatively underdeveloped, "concepts" being employed.

The high-level concept, *USECT for JUO*, moves the focus of experiments with scenario-level concepts from the Engage component — reflective of attrition-based warfare — to the Understand, Shape, and Consolidation components – reflective of knowledge-based warfare.

Capabilities

One objective of the concept paper is to provide a rationale for the development of capabilities that will significantly improve a JFC's ability to conduct joint urban operations. The types of capabilities required to realize the new mission-level concepts can be categorized according to the USECT scheme as illustrated in Table ES-3. These are the labels on the tools in the JFC's toolkit of capabilities.

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[5] In drawing conclusions from experience regarding the effectiveness of a concept, it is important to keep the scenario-specific conditions in mind. As an example, Appendix A discusses the impact that improved adversary weapons and plans could have had on the results of urban operations in Operation Iraqi Freedom (OIF).

Table ES-3: General Types of Urban Capabilities

UNDERSTAND	**ENGAGE**
• **Strategic Setting**	• **Weapon Delivery**
• **Physical Environment**	• **Weapon Effects**
• **Population**	• **Information Ops / Psyops**
• **Red Forces**	
• **Blue Forces**	**CONSOLIDATE**
SHAPE	• **Security**
• **Strategic Setting**	• **Support of Civilians**
• **Physical Environment**	• **Infrastructure Repair**
• **Population**	
• **Red Forces**	**TRANSITION**
• **Blue Forces**	• **Civilian Authority**

In order to identify needed capabilities within the above categories, the *DoD Roadmap* process starts with the set of urban missions listed above in Table ES-1. It then selects the "Capture an Urban Area" mission for detailed examination because it is the most challenging mission and requires a full complement of USECT capabilities that, in general, suffice for the remaining missions[6]. The eight mission-level concepts listed above in Table ES-2 are then selected for detailed analysis. The capabilities required for each mission-level concept are identified using the USECT categories. Many of the capabilities apply to several of the mission-level concepts and this commonality is used as an indicator of the developmental priority to be associated with each capability. (For example, all of the new mission-level concepts require improved ISR capabilities.) This process results in the identification of 31 capabilities which are listed in section IV of the main text.

[6] See Volume II of the *DoD Roadmap* for a detailed discussion of this point.

Program Initiatives

The "Roadmap" and "Master Plan" focus on capabilities, not concepts. They seek to realize the high-level concept *USECT for JUO* but they are not focused on any particular mission-level concept. Rather, they describe several illustrative mission-level concepts in order to identify needed capabilities. The more mission-level concepts that need a specific capability, then the more important is that capability.

The "Master Plan" is a "living" document intended to capture programmatic progress, changing needs, and new ideas. If a new mission-level concept were introduced and found through experimentation to be promising, then its required capabilities would be identified, and those not currently in the "toolkit" would be slated for inclusion in the Master Plan.

The programmatic implications of "*USECT for JUO*" have been described in detail in the "Roadmap" and "Master Plan." Here we list the "priority" areas identified by the current (FY-04) draft "Master Plan" [7]. These priorities were set by the Joint Urban Operations Office based on the criticality of the issues, the likelihood of making progress, the availability of on-going related activities, and the guidance of its Senior Advisory Committee.

Table ES-4: Priority Program Initiatives

- **Intelligence, Surveillance and Reconnaissance (ISR)**
- **Command, Control, Communications and Computers (C4)**
- **Weapons**
- **Concept Development and Experimentation**
- **Modeling and Simulation**
- **Doctrine and Lessons Learned**
- **Training and Facilities**
- **Multinational**
- **Science and Technology**

[7] FY-04 *DoD Master Plan for Joint Urban Operations,* draft of 15 September 2003, pp. 44-45.

Key Issues for Experimentation

The correctness and utility of the high-level concept and mission-level concepts can be debated on the basis of a broad body of evidence (including historical analyses, lessons learned, exercises, experiments, . . .) but the subject of an experiment is generally at the scenario level or below (functional capability, system performance, tactics, . . .). Insights gained through experimentation are passed up the line to be included in the body of knowledge pertaining to the high-level and mission-level concepts, but a single experiment is unlikely to make or break a high-level or mission-level concept.

Experimentation adds to the evidence about a high-level or mission-level concept by pointing out needed capabilities, critical issues, and pros and cons under specific conditions. In this section we offer examples of critical issues for the "*USECT for JUO"* concept, in terms of a number of key assertions regarding JUO that are subject to challenge.

Understand:

- It is possible to significantly improve a JFC's abilities to know the locations, status and movements of adversary forces in an urban environment without first engaging those forces.

- It is possible to significantly improve a JFC's capabilities to know the locations, status and movements of his own forces in an urban environment.

Engage:

- It is possible to effectively engage adversary forces in an urban environment from less vulnerable positions and with controlled effects thereby significantly reducing friendly and noncombatant casualties and collateral damage.

Shape:

- It is possible to leverage improved understanding and engagement capabilities to effectively shape the conditions of an urban operation (e.g., by controlling information, mobility, support, . . .) to the disadvantage of adversary forces and the advantage of friendly forces.

Consolidate:

- It is possible to significantly enhance a JFC's abilities to consolidate military gains in an urban area through improved capabilities for establishing security,

restoring the physical environment, and providing humanitarian assistance to the population.

Additional examples which address experimentation issues for lower-level urban-related concepts are given in the main text.

Relationship of "*USECT for JUO*" to other Concepts

Section IX discusses the relationship of the "*USECT for JUO*" concepts to the Joint Operations Concept (JOpsC) and its subordinate concepts. Joint urban operations provide a good case study for this conceptual framework and a "test bed" for the ideas expressed by related concepts such as Operational Net Assessment, Effects-based Operations, etc.

Conclusion

In conclusion, this concept paper is intended to be a fluid, living document, one that will always be incomplete. It will evolve as more is learned about the concepts and capabilities described herein, as insights are gained through real-world experience and experimentation, and as its focus is broadened into other urban mission areas. It is to be viewed as a starting point for subsequent discussion and activities aimed at providing future Joint Force Commanders with effective tools for conducting urban operations.

I. Purpose of the Paper

This paper presents the conceptual foundation for initiatives to improve capabilities for Joint Urban Operations (JUO)[8]. It is a "Concept Paper" prepared for the Joint Urban Operations Office at US Joint Forces Command/J9 -- the Concept Development and Experimentation Directorate.

The paper describes a high-level concept for all joint military operations that involve the urban environment: "*USECT for JUO*". USECT stands for the components Understand, Shape, Engage, Consolidate, and Transition. These components were introduced in Joint Publication 3-06, *Joint Doctrine for Urban Operations*, and are expanded upon in this paper. Lower level concepts that apply the high-level concept to specific missions and scenarios are also addressed.

The paper is intended for four main audiences: (1) concept developers and experimenters who are exploring new concepts and capabilities for JUO; (2) those addressing changes in DOTMLPF[9] that would lead to improved JUO capabilities; (3) contingency planners in joint force headquarters who are planning for JUO; and (4) schools providing professional military education on new ways of conducting military operations.

II. Concepts and Their Roles in JUO Initiatives

"*Concept: A notion or statement of an idea, expressing how something might be done or accomplished, that may lead to an accepted procedure.*"

-- Approved Terminology, Joint Publication 1-02, DoD Dictionary

The word "concept" is broadly defined by DoD, and is applied in many disparate contexts. Because of such multiple connotations, three levels of concepts are de-

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8 In this paper "urban" environments are taken to be those where man-made structures, noncombatants and infrastructure are significant characteristics. This differs slightly from the definition given in *Approved Terminology,* Joint Publication 1-02, DoD Dictionary*,* by explicitly including infrastructure which is becoming increasingly important in modern urban operations.

The initiatives referred to are described in the *FY-04 DoD Master Plan for Joint Urban Operations (Draft),* US Joint Forces Command (J9), Joint Urban Operations Office, 15 September 2003 and are summarized later in this paper.

9 Doctrine, Organization, Training, Materiel, Leadership, People, Facilities. Other areas addressed include Policy, Interagency, Multinational, Concept Development & Experimentation, and Modeling & Simulation.

scribed in this paper: high-level, mission-level and scenario-level. These are defined next.[10]

A. High-level Concept: *USECT for JUO*

The first level of concept, a **high-level concept**, describes an approach to military operations that transcends any particular mission. It may describe general war-fighting principles, guidelines, or philosophies. Examples include: *Cooperative Pressure*, *Effects-based Operations*, *Rapid Decisive Operations,* and *Maneuver Warfare.*

In the past, urban operations had to focus on the "Engage" component of USECT due to the difficulty in obtaining situational awareness in an urban environment. In general, this approach results in high levels of friendly and noncombatant casualties and extensive collateral damage.

The new thinking is that it is becoming possible to (1) improve capabilities for "Understand" and "Shape" in an urban environment in order to gain significant advantages over an adversary before engaging, (2) engage from less vulnerable positions with precision effects thereby reducing (friendly and noncombatant) casualties and collateral damage, and (3) plan the operation with an eye towards the consolidation of what is gained and the transition to the desired end-state.

The new thinking emphasizes: actions that can be taken on the operational level to better shape the conditions of the tactical fight; the use of joint capabilities to significantly enhance single-service capabilities; maneuver warfare rather than attrition warfare; and thinking holistically about an urban operation, i.e., taking into account not only the physical complexity of the environment but also the human and cultural complexity and the effects of all actions on the desired end state.

In short, the basic idea is to use new thinking regarding the application of joint capabilities to urban operations, and new technologies to bring to urban environments the same levels of advantages we currently enjoy in open environments.

The high-level concept described in this paper -- *USECT for JUO* -- applies to all joint military operations that involve an urban environment. The USECT components taken alone are not a concept, but rather a labeling of the elements of any

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[10] John Schmitt has written a careful exposition of the various types of concepts and this paper tries to be consistent with his recommendations. See Schmitt, John F., *A Practical Guide for Developing and Writing Military Concepts,* Hicks & Associates Inc., Defense Adaptive Red Team, Working Paper #02-4, Dec 2002. See Section IX for a discussion of how these concepts fit in to the general "Joint Operations Concept" framework.

military operation. It is the context and emphasis that enables them to denote a new concept for urban operations.

As a high-level concept, "*USECT for JUO*" is intended to apply to the full range of urban missions. These are listed in Table II-1.

Table II–1. Types of Urban Missions [11]

Objective is the urban area itself:
- Capture
- Defend
- Isolate/neutralize

Objective is within an urban area:
- Neutralize an enemy force
- Conduct focused offense (e.g. against a facility; includes generation of "effects" against utilities, information or mobility)
- Conduct focused defense (e.g. create sanctuary, do a rescue operation)

Objective is to protect or assist people in an urban area:
- Neutralize combatants (e.g., peace operation)
- Provide humanitarian assistance
- Provide civil support in the United States

B. Mission-level Concepts

The second level of concept, the **mission-level concept,** applies the general principles described in the high-level concept to a specific mission. There can be many mission-level concepts which apply to the same mission and are consistent with the high-level concept. For example, for the "Capture a City" mission, several mission-level concepts are described in Section IV of this paper. These include "Segment and Capture," "Soft Point Capture and Expansion," and "Critical Point Capture and Expansion." All of these exploit components of the high-level concept such as improved capabilities to understand the nature of the city and the adversary's dispositions within it: where natural or cultural boundaries are (Segment and Capture), where the lightly defended areas are (Soft Point Capture and Expansion), or where the adversary's critical points are (Critical Point Capture and Expansion).

Identifying mission-level concepts that are consistent with the high-level concept helps identify the types of capabilities needed to realize the high-level concept. Once a set of capabilities is determined, the status of those capabilities may be as-

[11] "*DoD Roadmap for Improving Capabilities for Joint Urban Operations, Volumes I and II,* IDA Paper 3643, March 2002.

sessed, gaps identified, and remedial actions in terms of DOTMLPF initiatives proposed.[12]

Mission-level concepts, though more specific than the high-level concept, are still quite general and independent of any specific scenario. They are useful for stimulating the planning process and identifying needed capabilities, but the design of a concept for any specific scenario will, in general, involve a mixture of mission-level concepts which changes at different times and different locations and is tailored to the evolving specific situation. Such "scenario-level" concepts are discussed in the next section.

C. Scenario-level Concepts

The third level of concept, the **scenario-level concept**, describes how one or more mission-level concepts may be applied under a specific set of conditions. This enables the effectiveness of mission-level concepts to be explored in a specific case and provides more detailed insight into the nature of the concept, potential adversary counters to the concept, and the types of capabilities and systems needed to realize it in real-world situations.

Scenario-level concepts are where the "rubber hits the road." They connect higher level concepts to a specific reality. At the scenario level, insights can be gained from real-world lessons learned, historical analyses, field exercises, or more controlled "experimentation" in its various forms (table-top war-games, constructive analyses, simulations). In short, scenario-level concepts are what we experiment with, and what we apply to real-world operations.[13]

The relative complexity of scenarios is illustrated in Figure II-1 for operations in Mogadishu in 1992 and 1993. The conditions under which a mission can be achieved is a measure of a JFC's capabilities. The distance out from the origin on each of the 12 axes shows, qualitatively in some cases, the difficulty associated with a

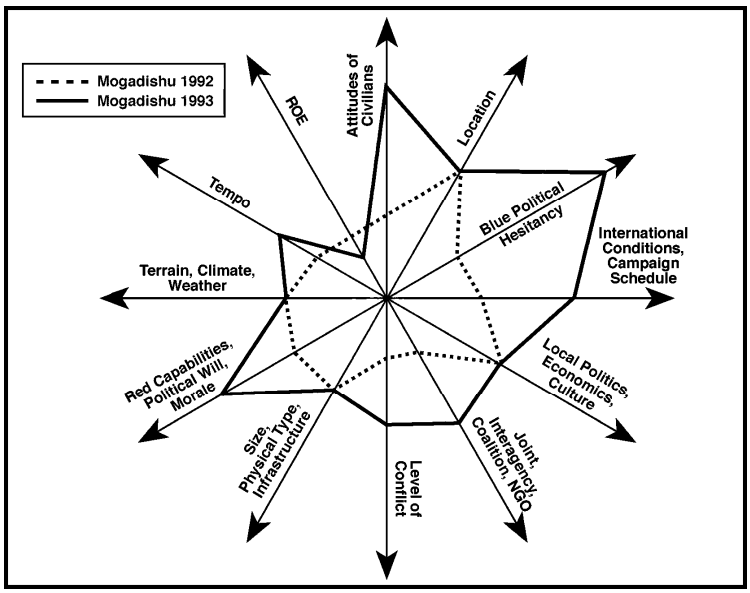
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[12] This is the process used by the *DoD Roadmap for Improving Capabilities for JUO* which, in turn, provides a basis for the recommendations of the *FY-04 DoD Master Plan for JUO*, *op. cit.*

[13] In drawing conclusions from experience regarding the effectiveness of a concept, it is important to keep the scenario-specific conditions in mind. As an example, Appendix A discusses the impact that improved adversary weapons and plans could have had on the results of urban operations in Operation Iraqi Freedom (OIF).

given condition. A specific scenario is represented by a polygon that intersects each axis, as shown.

Figure II-1. Conditions Affecting Urban Operations in Mogadishu



The high-level concept, *USECT for JUO*, moves the focus of experiments with scenario-level concepts from the Engage component — reflective of attrition-based warfare — to the Understand, Shape, and Consolidation components – reflective of knowledge-based warfare. The overarching precepts for each USECT component are described in the next section.

III. High-Level Concept:

I. *USECT for JUO*

The proposed framework for planning and conducting urban operations under the *USECT for JUO* concept is constructed from the interrelated activities of USECT.[14]

Although discussed sequentially in this section, these activities function together in an interdependent, continuous, and simultaneous manner. USECT activities may be sequential or concurrent; they may overlap. The point where one stops and another

[14] Joint Publication 3-06, *Joint Urban Operations* (second draft), contains a full discussion of USECT, which is the basis for the remainder of this chapter.

begins is often difficult to define. In some cases, all five may not be required. For example, in some circumstances, a JFC may conduct Understanding and Shaping activities so effectively, he may be able to shift directly to Transition activities and hand off the operation to follow-on forces or other organizations.

A. Understand

The JFC needs to understand the urban battlespace, including the urban triad (man-made and physical terrain, population, and infrastructure), the threat, and his own capabilities to determine the implications for military operations. There may be enemy military troops, criminal gangs, vigilantes, and paramilitary factions operating among the noncombatant population. The situation may be complicated by the presence of international non-military governmental departments and agencies such as intelligence, law enforcement, and other specialized entities. Intelligence Preparation of the Battlespace (IPB) and mission analysis—important elements in planning any operation—are far more complicated in urban operations.

Air and space sensors will prove vital in the IPB, as will all the elements of intelligence—human, imagery, signals, open-source, measurement, signature, and counter-intelligence. Special operations forces can be used to obtain critical information to undermine an enemy's will or capacity to wage war, and to enhance the capabilities of multinational forces.

The need to "understand" is continuous throughout any operation. It would begin before any use of military force and would continue into and through the campaign. Initially it would focus on developing the Intelligence Preparation of the Battlespace for the urban area, namely understanding the strategic setting, the physical environment, the population, Red forces, and Blue forces. Later in the campaign, the Understand component would involve assessing the effects from the actions to Shape, Engage, and Consolidate—all of which can contribute to situation understanding.

Strategic Setting

Understanding the strategic setting involves knowing about the enemy as a complex system, namely the Red leadership (political and military) and the relationships they have to intra-governmental entities, businesses, and the armed forces. It involves understanding the political and economic context in which they must operate, including relationships to non-state actors and leaders of other countries. And it involves knowing the role that the urban operation plays in the larger US campaign.

Some of the information needed would be available to the JFC in peacetime. Early in a contingency the JFC would have engaged on these issues with sources within DoD, the Intelligence Community, and academe.

Physical Environment

Understanding the physical environment requires an appreciation of its sheer complexity. It contains many different three-dimensional structures with interior and sub-surface spaces. It can have hills and valleys, rivers and lakes, areas with trees and open terrain.

The JFC would have turned to mapping programs ongoing at NIMA, NGIC, the Marine Corps Intelligence Activity, and the Joint Warfare Analysis Center. Some of the information needed is relatively static and would be collected from unclassified databases on the internet or from experts knowledgeable about the city. The IPB process must take into account special considerations, such as cultural "mapping" and the location of sites that may pose hazardous material or weapons of mass destruction threats.

Population

Understanding the population requires insight into the culture, factions, locations, and capabilities of the local people. Determining the intent of each element of the population to flee or remain in the urban areas, and to support or resist the enemy, could prove crucial. Human behavior is difficult to understand on a mass scale and even more difficult to control. To do so with people of a different culture under the strains of conflict can be a great challenge. The availability of highly trained individuals who understand the culture and the language of the local population will prove indispensable to commanders at all levels.

The indigenous population's degree of support for the enemy is a key factor in our capacity to achieve understanding in an enemy-infested urban setting. For example:

- If the enemy is not supported by the noncombatants, our capacity to understand is greatly enhanced due to relatively greater access to information through human intelligence.
- If the population is sympathetic toward the enemy, human intelligence could provide much less information. In these cases, the enemy's center of gravity may be his "hold" on popular support.

- In all cases, diplomatic, economic, and informational efforts can be key. The military instrument is not the only instrument, and may not be the prime one. A well-coordinated information campaign could turn indigenous popular opinion away from the enemy.

The JFC would turn early to the programs proposed by the FY-04 DoD Master Plan for the Intelligence Community that focus on urban population – including cultures, politics, key industry figures and non-political leaders, religious leaders, and criminal organizations. Other sources of information include reaching back to US agencies and academe, as well as turning to regional organizations (like OAS and ASEAN) and coalition partners.

Red Forces

Understanding Red forces means knowing more than just current Red order of battle. It requires understanding Red patterns of movement; Red capabilities and constraints; Red goals, determination, and tactical intent; and the cultural background and morale of each of the major units. In a contingency, much of this information is dynamic, changing quickly over time. The means the JFC must use to collect it are quite diverse, e.g. overhead electronic sensors (satellite and airborne), SOF (US or allied) deployed into the city, civilians providing intelligence from within the city or answering questions when they temporarily leave the city for humanitarian aid. This diversity of means can help counter Red's attempts at deception and disinformation.

The information collected on Red forces and what's happening in the city, when properly integrated and presented, would provide the JFC with a near-real time "activities map", with patterns of vehicle traffic, phone and electric power usage, pedestrian movement, etc, shown on the relevant background map. This "activities map" would be similar to those shown on the Weather Channel. This would give the JFC an operational-level perspective on what's happening throughout the city -- day and night. Precision Strike could be used to aid in the location of Red forces. Selectively targeting some of the infrastructure (e.g., electric power, a bridge) would permit observing the change in the pattern of activities (e.g., where back-up generators are being used, where vehicle traffic appears to converge).

Blue Forces

The complexities of urban operations require a thorough understanding of the friendly situation, to include such factors as the units' proficiency in urban operations and the availability of specialized equipment. Throughout the campaign, the JFC will be considering the following questions while keeping in mind the strategic objectives:

- Does the force need to enter the urban area at all?
- If so, does the force need to control the entire area, or just a portion?
- What operational objectives must be achieved in urban areas to support the overall campaign plan in the attainment of strategic objectives?
- What sequencing of activities and events are needed to achieve the identified operational objectives?
- What military resources are required to initiate and sustain these activities and events?

To answer these questions, joint and multinational forces must have the technical capability and the operational acumen to use multi-source information and intelligence fusion, rapid analysis, and dissemination down to the lowest possible level in the command chain

B. Shape

Shaping includes all actions taken to set favorable conditions for Engagement activities to begin. Some actions involve the use of military forces.

- Conducting the strategic movement of military forces into theater. Depending on the situation and objectives to be achieved, forcible entry may be required initially, which may immediately present military forces with the challenges of mid-intensity combat urban operations.
- Deploying military forces in the appropriate sequence. Rather than deploying combat forces initially, the force commander may need non-combat arms forces early, such as civil affairs, medical support, and psychological operations units.
- Establishing and operating the ISR architecture. This should include technological means as well as other capabilities such as human intelligence sources and special operations forces.
- Physically isolating the urban area: externally (i.e. cutting off outside support) and internally (i.e. cutting off mutual support). Isolating the enemy can mean precluding his retreat. Physical isolation of a large urban area has air, space, and naval implications for the identification and control of the movement of personnel and equipment.

Some shaping actions involve control of information. The JFC should have the capability to achieve and sustain information superiority. Information going into and out of the urban area should be managed, to include cutting off enemy communications and establishing control of indigenous radio, television, and other media. Information Operations must be fully integrated with other aspects of operations such as public affairs, civil affairs, and diplomacy (United Nations, NATO, etc.) so that all actions remain consistent with the strategic aim. The presence of media and NGOs will make this task difficult.

Shaping would have begun before any combat use of military force, and would continue into and through the campaign, to set favorable conditions for Engagement and consolidation. The JFC would use the shaping actions discussed above to influence the strategic setting, control the physical environment, influence the civilian population, restrict Red options, and expand Blue options.

Influencing the strategic setting for the urban operation would involve diplomatic efforts at the national level to isolate Red national leaders from outside political support; information operations at the strategic level to isolate Red political and military leaders from internal sources of support and cause dissension among these leaders; and military actions at the operational level (e.g., Precision Strike and Nodal Isolation of C2 nodes) to cause Red military leaders in the city to give up or flee.

Controlling the physical environment would involve a form of "Siege", intended to isolate the city and the Red forces from outside support, but without preventing civilians (or unarmed Red soldiers) from leaving the city, e.g. to get the humanitarian aid they needed. Precision Strikes would be used against Red forces moving towards the city intending to strengthen its defense.

Influencing the civilian population involves influencing their loyalties and their actions, particularly their movement. The JFC wants the population to support his objectives and, in this illustrative situation, not to flee their homes in the city. Information operations that inform and empower friendly civilians, including the use of television and radio, would advance these objectives. The needs of civilians can be a burden on the JFC's resources, but meeting their needs must be one of his objectives. The JFC would turn to and work with other US government agencies, other nations, the UN and other international organizations, and NGOs to provide the humanitarian assistance needed by local civilians.

Restricting Red options involves reducing Red situation awareness, mobility, support, and ability to effectively engage Blue forces. Information Operations would be directed at persuading Red soldiers to desert. Strikes against security forces would

attempt to restrict their freedom of movement and undermine their control over the civilian population inside the city. These ways of operating could also be used to attack and immobilize any suspected WMD capabilities. And they could be used to convince any regular Army units that they could not safely move or fire or communicate or even stay with their equipment without being attacked and destroyed.

Expanding Blue options includes providing a more advantageous environment for friendly combat forces. Examples of capabilities that support shaping include improved personal protection for infantry; capabilities for detecting and neutralizing mines and booby traps; counter-sniper capabilities; survivable ground and air vehicles; logistics systems appropriate for urban terrain; and medical support systems.

C. Engage

Engagement consists of those actions taken by the JFC against a hostile force, a political situation, or natural or humanitarian predicament that will most directly accomplish the mission. To engage, the commander brings all available capabilities to bear in order to accomplish the operational objectives. Engagement can range from large-scale combat operations in war to humanitarian assistance and disaster relief in military operations other than war. In all cases where we face an enemy, recognition of his centers of gravity and identification of his critical vulnerabilities will be key.

At the operational level, engagement often requires the seizure, disruption, control or destruction of critical nodes (power grids, communication centers, etc.) identified during the IPB process. This can involve controlling key terrain or infrastructure, unhinging the enemy's decision cycle, cutting or controlling inter-city and intra-city mobility and communications, triggering an enemy's response, or positioning forces to accomplish another part of the campaign. The goal is not just movement to positions inside a city but to apply strength against the enemy's weakness, using tempo as a controlling mechanism to shatter his organizational command and cohesion.

Integration and synchronization of forces and knowledge of rules of engagement are critical when employing weapons in urban areas. Forces must have the flexibility to attack targets located within and under buildings or rubble, and to conduct engagements from air to surface, surface to sub-surface, and vice versa. Precision effects are required to deny the enemy the protection that may be gained from the urban environment. These engagements must provide reasonable certainty of achieving the desired effect on the enemy—but with reduced risk of injury to noncombatants, collateral damage, or fratricide. Special Operations Forces can provide rapid and

precise small and large-scale direct action forces that have a unique precision strike capability to operate in the urban environment with minimal collateral damage.[15]

D. Consolidate

Consolidation would be planned in parallel with the other components. The focus of consolidation is on protecting what has been gained and retaining the initiative to disorganize the enemy in depth. It is an ongoing process of organizing and strengthening an advantage in tempo (spatial, psychological, informational) over the enemy. Consolidation also requires activities geared at neutralizing bypassed enemy forces and processing prisoners. Civil affairs, public affairs and psychological operations units will continue to be especially critical in this aspect, as will engineering efforts ranging from demolition to repairs to new construction.

Consolidation would take place in areas that are occupied by US or allied forces. Key concerns discussed next are restoring security (threatened by remaining Red forces, hostile factions, and criminals), restoring infrastructure, supporting civilians (including handling the outbreak of diseases and environmental disasters), and preparing for an extremely difficult kind of support—mitigating the effects of WMD use.

Restoring security (to non-combatants and US military personnel) has multiple components. One is protection from Red forces—either hiding within the areas under US control or making incursions into it—and calls for military forces that have mobility and are trained in infantry operations. A second is protection from hostile factions (gangs) and criminals, and calls for people trained to act as police. Assuming at least ~3 police officers per thousand population (the average in US cities), at a minimum a city of one million population would require a police force of ~3,000 people. Army National Guard Enhanced Readiness Brigades could provide to the JFC both of these capabilities (e.g., an armored cavalry regiment and infantry brigades). These units are trained for domestic emergencies (like urban riots) and would be fully ready about 90 days after mobilization.

Restoring infrastructure would involve assessing what damage could be done and how the restoration should be done. The damage depends on two factors: 1) how successfully the US avoided damage, and 2) how much infrastructure Red destroyed

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15 Joint Publication 1, Joint Warfare of the US Armed Forces, p. 57.

(e.g., a scorched earth defense). The JFC would turn to outside expertise to supply most of the restoration, for example, the Army Corps of Engineers. The Corps could provide a plug-and-play package to jump-start restoration of the physical infrastructure as soon as part of the urban area had been occupied. In OIF, it was not until two months after Baghdad fell that the Corps was hired by USAID to oversee its $680M construction contract with Bechtel to rebuild and restore roads, airports, sewerage, irrigation systems, schools, and power plants.

Supporting civilians means providing the local standards for civil services –water, food, electricity, and public health—and a fair criminal justice system. The JFC would not want to face the same situation as in Bosnia, where the local judicial system was dysfunctional and needed substantial support from the United Nations Interim Forces. Instead, the JFC would turn—from the beginning—to outside expertise to provide support to civilians. This would involve the JFC in planning throughout the campaign with US government agencies (e.g., State, AID), coalition partners, the UN and other international organizations, and NGOs.

Preparing to mitigate WMD involves recognizing the sheer scale of effort that could be involved. Some key variables cannot be controlled—like the weather. But some the JFC can control: 1) the extent and quality of planning with other US government agencies, coalition partners, the UN and other international agencies, and NGOs, and 2) the deployment into theater, if WMD were used, of the joint plug-and-play packages for WMD mitigation being prepared by the Army and Air National Guard.

E. Transition

Transition involves the return of control to civilian authorities. Military forces would be incrementally redeployed while the efforts of civil affairs, public affairs, security, medical, and engineer units continued. The challenge is to replace the JFC's military force with a stable and legitimate local government that is capable of providing for basic needs. Transition would be planned for in parallel with the other components and updated throughout the campaign. This effort would involve the JFC in planning with US government agencies, coalition partners, the UN and other international organizations, and NGOs.

An important aspect of Transition is the coordination and cooperation among the CMOC, NGOs, and international organizations in order to return the urban infrastructure and its inhabitants to local authority. The resettlement of displaced civilians and the reconstitution of national military forces are central to the transition process. Critical to this is maintaining the "rule of law." To ensure safety and security, military forces may conduct training with indigenous or multinational law enforcement or-

ganizations. The rate of military redeployment can depend on how quickly those organizations establish an effective presence.

The JFC would begin the Transition component at the same time and in the same places that the Consolidation component began. In this way the JFC could phase-in control to local civilian authorities who have local legitimacy, to other US agencies (e.g., State, AID) for reconstruction of public institutions and infrastructure, to the UN and other international organizations for political and economic support, and to NGOs for humanitarian assistance and private institution building. The military operation for the urban area is over when the JFC completes transition to civilian authorities.

F. Summary

The goal of the emerging concept of *USECT for JUO*, as described in this section, is to achieve objectives with fewer friendly casualties, less collateral damage to urban infrastructure, and reduced harm to the noncombatant population. The interrelated activities of Understand, Shape, Engage, Consolidate, and Transition are the framework on which the approach is constructed. This approach will enable US forces to function more effectively in the uncertain, chaotic, and fluid urban environment.

IV. Illustrative Mission-Level Concepts

A football team's playbook will describe different kinds of plays—running, passing, kicking—and how each can be used for different purposes. For example, a running play can be used to win the game by scoring a last-second touchdown; to shape the positioning of the ball on the field for a field goal attempt; or consolidate the win by simply running out the clock late in the game.

In a similar way, this paper discusses how mission-level concepts, e.g., Critical Point Isolation or Precision Strike, can be used to do a specific mission (e.g., a focused offensive attack against a key WMD facility); or shape the battle-space towards accomplishing the mission (e.g., the capture of the city); or block the enemy from accomplishing his mission (e.g., a focused defensive action to protect a temporary sanctuary). Thus mission-level concepts should be looked at for how they can be used to accomplish the mission, or shape the environment towards accomplishing the mission, or block the enemy in preparation to accomplishing the mission.

What's important here is that, given the enabling capabilities, each new mission-level concept could be helpful in accomplishing the mission. Each could be a tool that a future JFC would want.

Important considerations for the JFC, in assessing how different mission-level concepts could contribute to a joint urban operation, are the extent and duration of conventional ground actions that would be needed and the availability of land lines of communications (LOCs). The different ways discussed next are ordered to reflect this concern: going from those requiring no presence of regular ground forces; to those requiring temporary presence or modest levels of ground-forces but with land LOCs available; to those requiring sustained presence of extensive ground-forces with no land LOCs available.

A. Precision Strike

Precision Strike involves highly accurate attacks—kinetic and non-kinetic—against the enemy's capabilities. It could be used to destroy a unique capability like WMD production, munitions, and delivery systems. It could be used to cut off enemy forces from outside sources of supply and reinforcement. Or it could be used to aid in understanding the situation, by suppressing a key infrastructure (e.g., phones, electricity) and permitting observation of the resulting changes in activities. Some urban-unique challenges in using Precision Strike are conducting attacks where structures can interfere with delivery, doing three-dimensional targeting, and attacking underground targets in populated areas.

Operating this way would put a large demand on understanding of the situation, e.g. developing 3D maps of the city; identifying key nodes and how they interact; locating Red forces and their movement; developing "bomb damage assessment" of the effects of the strikes.

A JFC would have many tools for conducting Precision Strike: information operations, air strike operations, special operations direct action, and ground force attack by fire.

B. Critical Point Isolation

Critical Point Isolation involves sealing off points that are important to the urban infrastructure or supporting enemy forces. The intent is to deny those critical points any sources of support, access to information, contact with other critical points, and/or freedom of movement. Critical Point Isolation would exploit the effects on the isolated critical point itself and the effect on the rest of the network from the loss of the critical point — the debilitating effect produced when people and forces are separated from their accustomed support.

Operating this way would demand more capabilities than are needed for Precision Strike. One is the ability to understand the local population and communicate with

it. Another involves restricting (preferably paralyzing) Red's fires or movement, e.g. by restricting the physical ability to move or fire; by restricting the ability to command and control movement or fires; and/or by restricting the flow of information Red needs to make decisions on movement or fires.

The JFC would plan to achieve critical point isolation using a combination of tools, e.g., information operations; barriers to Red physical movement (like sticky or slippery foam and anti-vehicle traps) that can be quickly and remotely deployed, resist tampering, and have a reasonable logistics footprint; and a plan to remotely sense Red movement then responsively fire.

C. Soft Point Capture & Expansion

Soft Point Capture & Expansion seeks to apply US strength against enemy weakness—to capture undefended areas in a city and use them as bridgeheads for attacks on the rest of the city. The intent is to establish secure forward operating bases that threaten the enemy forces from multiple and unexpected directions.

Operating this way would demand many more capabilities than needed for Critical Point Isolation, due to the insertion of ground forces into the city to occupy an area. One key capability is urban C2. Another is intra-city mobility in the face of mines, booby traps, and hazardous materials. Another is the capability for close combat and medical support, even with the expectation of only light Red resistance. Finally, in any occupied area, US forces would have to be able to begin restoring security, restoring infrastructure, and supporting civilians (including preparing for WMD mitigation).

The JFC would use air or ground movement over or through relatively undefended areas to insert ground forces into relatively undefended areas. These forces would be supported by air and information operations to provide protection (e.g., countering the mobility of nearby enemy forces) and time-urgent logistics support. Then additional ground forces would be inserted, to enable expansion from the area into adjacent areas.

D. Segment & Capture

Segment & Capture seeks to use counter-mobility to fix selected enemy forces or capabilities in place to permit capture of a key location or area. This way of operating seeks to exploit or create enemy weaknesses. It could be used to segment selected enemy forces, so they can be defeated piecemeal. It could be used to section-off and take over sections of a city at a time when the enemy has few forces de-

ployed in them. Or it could be used to capture central caches of arms and supplies, to prevent their use in support of units throughout a city.

Operating this way would demand the same wide range of capabilities called for in Soft Point Capture & Expansion.

In seeking to isolate an area, the JFC would use a combination of means to create barriers to enemy movement—those described in Critical Point Isolation, natural barriers like rivers, as well as forces on the ground. Ground forces, supported by air forces, would be used to attack and occupy the segmented section.

E. Critical Point Capture

Critical Point Capture seeks to leverage control of critical points (infrastructure or enemy forces) to deny the enemy sources of support, or contact with other critical points, or freedom of movement. This exploits the disruption to the rest of the network from both the loss of the critical point and the presence of US forces in the interior of the city.

Operating this way would demand a wider range of capabilities than for Soft Point Capture & Expansion and Segment & Capture. These are related to the greater level of combat forces committed, since Red strong points would be attacked, and the need for air-delivered logistics since no land LOC is likely to be available.

In conducting Critical Point Capture, the JFC would rapidly insert into the city, by air or rapid ground movement, ground forces supported by air forces, and would then sustain them in their defense of the critical point after it had been captured.

F. Critical Point Capture & Expansion

Critical Point Capture & Expansion seeks to leverage rapid capture of critical points in a city to help in the occupation of the rest of the city.

Operating this way would demand the same wide range of capabilities as for Critical-Point Capture, but would demand a much larger force to expand from the captured critical points.

In using this mission-level concept, the JFC would insert into the urban area, by air or rapid ground movement, sizable ground forces supported by air forces. The intent is to capture key defended points, to rapidly build up forces in them, and to expand out from them.

G. Other Mission-Level Concepts

The six mission-level concepts discussed above were drawn from the Road Map[16]. They are intended to be illustrative not complete. Three other examples are "Thrusts," "Subversion" and "Infiltration."

Rapid, transient, offensive "Thrusts" could be used once a position outside the urban area has been established. These could probe enemy defenses and weaken the enemy's confidence in his ability to effectively defend. This approach was used in OIF, for example, in the Baghdad and Basra operations.

"Infiltration" could be used to covertly establish a presence in an urban area (perhaps with the assistance of friendly elements of the population). The infiltrated force could be used to conduct strikes against enemy critical points, perhaps in coordination with offensive actions from outside the urban area.

"Subversion" could be used to convince the local population to resist the enemy's control. Psychological operations, equipping friendly elements of the population, and enabling them to coordinate with remote fires could be key elements of a subversive approach.

H. Illustrative Use of the Mission-Level Concepts

How these mission-level concepts would be used depends on the specifics of the scenario, including the urgency of capturing the city (in Basra the UK forces felt that they had time), the local population loyalties (in Basra they were potentially friendly but scared), what was learned from the Understand component about Red's capabilities and constraints, and how effective were the Shaping actions.

If Red had shown effective capabilities and few constraints (see Appendix A for specifics), then the JFC could turn to Soft Point Capture & Expansion and Segment & Capture, supported by Precision Strike and Critical Isolation. This would permit a land LOC to friendly forces in the city (through previously undefended and now occupied areas), so supplying the forces and evacuating casualties could be sustained more easily. Air and ground forces—outside and inside the city—could press on Red forces. SOF in the city could act as sensors to locate enemy leaders and forces, and call in precision attacks. Ultimately, this could lead to capture of the city.

If it did not lead to capture of the city, then other mission-level concepts could be used once Red forces had been confined to smaller areas in the city, and civilians had slipped away from these areas.

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16 *DoD Roadmap for Improving Capabilities for Joint Urban Operations*, op. cit.

- The JFC could choose to lay siege to these remaining areas and simply wait out the defenders, while continuing to consolidate in the other parts of the city.
- He could choose to rubble-ize them in order to capture the entire city more quickly and reduce friendly casualties.

If Red's capabilities and constraints did not permit Red to conduct as effective a defense (e.g., Red troops had modern equipment but not the training to use it), then a mission-level concept like Critical Point Capture & Expansion could be used. The intent would be to produce a multi-directional higher tempo attack on Red's forces to speed up the capture of the city.

The JFC plug-and-play joint packages for counter-sniper capabilities and for WMD decontamination would be important to support the tactical operations in any of these cases.

The mission-level concepts described in this section are only illustrative of the sorts of approaches that improved USECT capabilities can enable. The focus of the Roadmap and Master Plan is to develop an expanded toolkit of such capabilities that will enable a JFC to invent his own approach for any specific mission and conditions that confront him.

V. Scenario-Level Concepts

A scenario-level concept applies mission-level concepts to a given scenario. It is where the "operational art" of the JFC and the tools made available to him come together to address a specific case.

As an example, consider the capture of Baghdad. The strategic objective (regime change) necessitated that the city be captured and occupied, and that collateral damage and noncombatant casualties be kept at a minimum. Therefore a long siege or wide-area rubble-ization, which are well within US capabilities, were inappropriate for this scenario. Rather, a combination of other mission-level concepts were employed: "Precision Strike" against the regime's critical points; capture of the airport and key routes in and out of the city (Critical Point Capture); "Thrusts" into the city with armored units to gain information regarding enemy defenses and demoralize the enemy; and "Soft Point Capture and Expansion" when little resistance was found in the central city. Finally, there are the Consolidation and Transition components which continue today -- with various, relatively underdeveloped, "concepts" being employed.

This example provides a good illustration of the flexibility that a JFC must have to bring together the capabilities and ideas suitable for a given scenario.

If US forces already employed "new ideas" in the attack on Baghdad, why is a development program needed to provide the capabilities that enable the new ideas? One response is that the capture of Baghdad actually illustrated the need for improved urban capabilities which would be necessary under different circumstances. For example, the "Thunder Runs" were bold approaches to gain an understanding of the enemy situation, and the broad streets and inferior Iraqi anti-armor weapons were conducive to such use of armored forces. Under a different scenario, with narrower streets, more effective anti-armor weapons, and a more determined adversary, such an approach would require greatly improved capabilities for ISR, mobility and force protection. Another example where improved capabilities would be needed against a more capable adversary is the employment of rotary wing aircraft in urban areas.

VI. Enablers of the Concepts -- Capabilities

One objective of this concept paper is to provide a rationale for the development of capabilities that will significantly improve a JFC's ability to conduct joint urban operations. In this section we summarize work described in the *DoD Roadmap for Improving Capabilities for JUO* to identify these capabilities. This provides a jumping-off point for discussions leading to revised versions of this list.

The capabilities required to realize the new approaches can be categorized according to the USECT scheme as illustrated in Table VI-1. The first column lists the various dimensions of each USECT component. These are the labels on the tools in the JFC's toolkit of capabilities.

The top row in Table VI-1 identifies areas in which programmatic initiatives are needed to achieve the capabilities. In general a given capability will require a package of initiatives that, taken together, will produce the capability. These are categorized according to the standard DOTMLPF categories plus others that emerged from the Roadmap process: Policy, Legality, Coalition, Interagency, Concept Development & Experimentation, and Modeling & Simulation.

Table VI-1. Landscape of Initiatives for Improving Urban Capabilities

Operational Capabilities	Doctrine	Organization	Training	Materiel	Leadership	People	Facilities	Policy & Legality	Coalition & Interagency	Concept Dev. & Exp.	M&S
▶ Understand											
❑ Strategic Setting											
❑ Physical Environment											
❑ Population											
❑ Red Forces											
❑ Blue Forces											
▶ Shape											
❑ Strategic Setting											
❑ Physical Environment											
❑ Population											
❑ Red Forces											
❑ Blue Forces											
▶ Engage											
❑ Weapon Delivery											
❑ Weapon Effects											
❑ Information Ops, Psyops											
▶ Consolidate											
❑ Security											
❑ Support of Civilians											
❑ Infrastructure Repair											
▶ Transition											
❑ Civilian authority											

A proposed program that addresses these needs is presented in the *FY-04 DoD Master Plan for JUO* and is summarized in the following chapter.

In order to identify needed capabilities, the *DoD Roadmap* process starts with the set of urban missions listed above in Table II-1. It then selects the "Capture a City" mission for detailed examination because it is the most challenging mission and requires a full complement of USECT capabilities that also suffice for the remaining mis-

sions[17]. Eight mission-level concepts are then selected for detailed analysis including those described in Section IV above as well as three "traditional" mission-level concepts ("Siege", "Rubble-ize", and "Frontal Assault"). (See Table II-2.) The capabilities required for each mission-level concept are identified using the USECT categories. Many of the capabilities apply to several of the mission-level concepts and this commonality is used as an indicator of the developmental priority to be associated with each capability. (For example, all of the new mission-level concepts require improved ISR capabilities.) This process results in the identification of the 31 capabilities which are listed here using the USECT categories. See the *DoD Roadmap* for details.

In this list, the focus is kept on those capabilities that are *urban specific*. Urban specific is defined as:

> a capability that is only performed in the urban environment or one that is substantially different when performed in the urban environment.

For example, air superiority and general logistics capabilities are examples that are not considered urban specific. An exception is made in the case of wide-area target destruction because it is a central element in one of the mission-level concepts (*Rubble-ize*) and because of recent historical precedent (for example, the fighting in Grozny, Chechnya).[18]

The capabilities are separated and labeled according to the USECT scheme. Each capability was given a letter and number tag.

- The letter refers to the portion(s) of USECT the capability addresses.[19]
- The number functions to simply differentiate between capabilities within each USECT component and has no relation to relative value

UNDERSTAND

U1 The ISR capability to **discern what is a critical point** (not necessarily a structure) along with which ones the enemy controls. This involves a comprehensive and in-

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[17] See Volume II of the *DoD Roadmap* for a detailed discussion of this point.

[18] Greater detail as to what each of these capabilities entails can be found in Appendix B of Volume II of the *DoD Roadmap*.

[19] Two of the capabilities (US4 and UST5) played strong roles in several areas. These capabilities have multiple letters in there designation that reflect the appropriate portions of USECT (i.e., US4 is used in place of a separate U4 and S4).

depth understanding of all levels of the battlespace: physical, cultural, political, religious, historical, demographic, economic, military, and geographic.

U2 The ISR ability to **locate and identify enemy forces**, including when they are in close proximity to friendly forces or intermixed with civilians.

U3 The ISR capability to **discern Red movement patterns, logistical methods, and intentions** for both.

US4 The ability to **command, control, and communicate** with units operating in the urban environment where radio and GPS (Global Positioning System) systems work poorly.

UST5 The ability to **coordinate capabilities** across Service, agency, coalition partner, and NGO (non-governmental organization) boundaries.

U6 The ISR capability to **generate an in-depth understanding of the city's population** and its likely future actions and/or reactions.

U7 The ability to do **urban BDA** (Battle Damage Assessment).

U8 The ISR ability to rapidly generate 3D, small-scale, up-to-date **digital maps of the urban battlespace** that include subterranean features and possibly building interiors.

U9 Software and hardware **tools that allow for rehearsal and the assessment of courses of action**. These tools would use digital map information and updated intelligence information on Red, Blue, and White.

U10 The ability to **detect and/or neutralize mines, booby traps, and toxic chemicals**.

SHAPE

S1 The ability to **create barriers on the perimeter of the city** to prevent outside reinforcement and resupply of enemy forces.

S2 The ability to **maintain a secure front line** within the city to prevent enemy movement into cleared areas.

S3 **Restrict Red's ability to react** via fire or movement. This would include restricting the physical ability to move and fire, restricting the ability to command and control movement and fires, and restricting the inflow of information Red needs to make decisions on movement and fires.

U**S4** The ability to **command, control, and communicate** with units operating in the urban environment where radio and GPS (Global Positioning System) systems work poorly.

U**ST5** The ability to **coordinate capabilities** across Service, agency, coalition partner, and NGO (non-governmental organization) boundaries.

S6 **Intra-urban transport capability** (land and air) for moving forces, supplies, and wounded to isolated locations within a city.

S7 Conduct **resupply and casualty evacuations** on the "front line" for units operating in a contiguous fashion.

S8 Capabilities to communicate with, coordinate with, and **influence the local populace**.

S9 The ability to **mislead Red as to the movement and location of Blue** forces in the city.

S10 Conduct **small-unit combined arms operations**.

S11 **Medical capabilities to protect Blue personnel** from disease, psychological stress, and hazardous materials.

S12 **Improved protection for dismounted personnel** from small arms, fragmentation, blast, and heat.

S13 The ability to selectively **disable utility, transportation, and communication systems** in a city for the short or long term.

S14 **Improve infantry's mobility** over urban obstacles.

ENGAGE

E1 The ability to **destroy wide area targets**.

E2 The ability to **destroy point targets with minimal collateral damage**.

E3 The ability to rapidly **clear buildings** with low friendly casualties and a minimum of friendly personnel.

E4 Non-lethal capabilities for **dealing with crowds and Red**, both inside and outside of buildings**.**

E5 **Sniper/counter-sniper capabilities**.

E6 **Urban fire support**.

CONSOLIDATE

C1 **Infrastructure management and repair** capabilities.

C2 Capabilities to **reestablish the rule of law** in portions of the city under Blue control.

C3 The capabilities to **mitigate the effects of WMD (weapons of mass destruction) use** on urban civilian populations and infrastructure.

TRANSITION

US**T5** The ability to **coordinate capabilities** across Service, agency, coalition partner, and NGO

VII. Program Initiatives

The purpose of the *DoD Roadmap for Improving Capabilities for JUO* and the *DoD Master Plan for JUO* is to identify programmatic initiatives needed to realize the enablers for *USECT for JUO*. As summarized above, these documents use the USECT components to categorize the types of capabilities required for more effective urban operations. They focus on developing a "toolkit" of capabilities that would let a JFC tailor a scenario-level concept that he deems most appropriate for a particular mission and prevailing conditions.

In order to identify the needed capabilities, these documents examined illustrative missions (particularly the "Capture a City" mission) and the illustrative mission-level concepts described above. The resulting set of capabilities and programmatic initiatives is described in detail in those documents.

The "Roadmap" and "Master Plan" focus on capabilities, not concepts. They seek to realize the high-level concept *USECT for JUO* but they are not focused on any particular mission-level concept. Rather, they describe several illustrative mission-

level concepts in order to identify needed capabilities. The more mission-level concepts that need a specific capability, then the more important is that capability.

The "Master Plan" is a "living" document intended to capture programmatic progress, changing needs, and new ideas. If a new mission-level concept were introduced and found through experimentation to be promising, then its required capabilities would be identified, and those not currently in the "toolkit" would be slated for inclusion in the Master Plan.

The programmatic implications of "*USECT for JUO*" have been described in detail in the "Roadmap" and "Master Plan." Here we list the "priority" areas identified by the current (FY-04) draft "Master Plan" [20]. These priorities were set by the Joint Urban Operations Office based on the criticality of the issues, the likelihood of making progress, the availability of on-going related activities, and the guidance of its Senior Advisory Committee.

- Intelligence, Surveillance and Reconnaissance (ISR)

  The central element of the new approaches to urban operations is achieving an improved understanding of both the physical and human aspects of an urban environment, and the positions, status and movements of adversary and friendly forces in that environment. This leads directly to the needs for: improved urban mapping (3D, infrastructure, subterranean); improved cultural intelligence; improved sensors; and the means of carrying or delivering them, and processing their output.

- C4

  To effectively transmit and act upon the information collected in an urban environment will require improved communications networks and improved command, control and decision support systems. Technology developments addressing these areas are of high immediate interest.

- Weapons

  The urban environment places special demands on the delivery of precision weapons (e.g., 3D targeting, structures blocking trajectories, subterranean) and on the types of effects desired (e.g., low collateral damage, non-lethal). These capabilities are key to the engage and shape functions and, therefore, to overall mission effectiveness.

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[20] FY-04 *DoD Master Plan for Joint Urban Operations,* draft of 15 September 2003, pp. 44-45.

- Concept Development and Experimentation

  The new approaches are unproven and the systems that could enable them are not ready for acquisition. Therefore concept development and experimentation is the critical next step.

- Modeling and Simulation

  M&S tools appropriate for addressing urban operations have not received sufficient developmental attention. Although the complexity of the urban environment creates special challenges for M&S, advances in processing techniques hold the promise of significant improvement. Since a robust modeling and simulation capability is critical to effective experimentation and training programs, the development of such tools should be given early priority.

- Doctrine and Lessons Learned

  The current interest in urban capabilities within the Joint Commands and Services has focused the energy of operational planners and after-action assessments on urban issues. It is important that the Executive Agent for JUO tap into this thinking and reflect it in the JUO Office's initiatives. Also the collection of lessons-learned from real-world operations offer the best opportunities for immediate operational improvements.

- Training and Facilities

  There are a number of current Service training initiatives that can be leveraged to develop joint training capabilities. It is important to join these efforts as soon as possible. Also, in general, existing training facilities cannot effectively handle large units (battalion and above), combined arms, joint forces, multinational forces, or operational considerations. They are generally not networked to other facilities; they lack likely modern features such as infrastructure; they are not populated; they do not include diverse features such as high-rises or subterranean structures; and they are not adequately instrumented. All of these shortcomings need immediate attention.

- Multinational

  Most foreseeable urban scenarios involve multinational coalitions. This must be reflected from the outset in all aspects of urban operations.

- Science and Technology

  Technologies that hold special promise for improving urban capabilities include: information technologies to address the sensor, communications, networking, and position location challenges of urban terrain; unmanned systems, both air and ground, to provide surveillance and attack capabilities while reducing friendly casualties; and non-lethal effects to reduce noncombatant casualties and collateral damage.

The remaining focus areas will be addressed as progress is made on the priority focus areas noted above. The remaining focus areas are:

- Force Protection, Mobility, and Support

  Address the challenges of providing force protection, mobility and support for friendly forces operating within the sensor and engagement ranges of adversary forces attacking from protected positions. Develop the concept for employing air and ground vehicles, and personnel in an urban setting that combines structures, obstacles, and close-up threats. Specifically, address the problem of providing the force protection and mobility our combat service support organizations will require dealing with the high consumption and casualty rates typical of urban operations.

- Information Operations and Psychological Operations

  Address the challenges associated with conducting effective information operations and determining post-attack effectiveness. Explore promising technologies to enable information operations and specifically to achieve knowledge of the adversary force information-based systems. In particular, focus on the unique challenges and opportunities for conducting information operations in an urban environment.

  Address the challenges associated with conducting effective psychological operations in an urban environment and determining resultant effectiveness. Identify the technical capabilities and cultural understanding required for effective psychological operations in the urban setting.

- Consolidation & Transition

  Address challenges of establishing measures of effectiveness. Determine the number and type of forces required to maintain security, restore basic services, re-establish the rule of law, and transition to stable government.

In addition to the non-lethal security and crowd control systems already mentioned, explore programs that provide for the rapid restoration of lost or degraded urban infrastructure and see to the basic needs of the population. Evaluate and develop concepts in which combat forces hand over consolidation and transition to specialized units. Consider whether these same specialized units may also be employed for peacekeeping and humanitarian assistance missions in lesser contingencies.

- Organization

  Address the challenges of designing effective forces for joint urban operations. Focus on promising alternative organizational structures for distributed, joint, urban combat operations. Evaluate the concept of establishing one type of force that focuses on urban combat and another type that focuses on the consolidation and transition phases. Consider whether the second type of force could also be effective in urban humanitarian assistance and peacekeeping missions. When considering force structure, identify the most appropriate blend of active and reserve forces to achieve the desired capabilities.

- Leadership

  Address the challenges of preparing future JFCs, component commanders and staffs for the physical complexity; human dimensions; and interagency, multi-national and NGO involvement they will likely encounter during urban operations. Identify leader development programs that will produce commanders who understand the heightened tensions among strategic objectives, operational constraints and coalition-building encountered in urban operations. Identify education and training programs that will produce highly adaptive JFCs who are capable of creating tailored, operational-level concepts for urban combat. Facilitate the establishment of formal urban-specific programs of instruction at the joint, service, and interagency senior schools. Create centers of expertise in urban operations to assist JFCs and their forces.

- Policy and Legality

  Address the challenges of establishing consistency with, or changing, current law, policies or agreements in order to facilitate new approaches to urban conflict. For example, address existing policies and agreements that constrain or prohibit the use of non-lethal chemical agents, armed unmanned systems, or certain information operations. Identify educational programs and operational guidelines that could facilitate the acceptance of such programs.

- Interagency and Homeland Security

  Address the challenges of providing the organizations, procedures, and technologies that will enable a JFC to interact effectively with interagency and non-governmental organizations during urban operations. Establish lines of communication, organizational cross-representation, contingency planning, exercise participation and educational programs. Examine the organizational changes, means of communication, educational activities and cooperative programs that would promote communication and coordination between future JFCs and interagency and non-governmental organizations.

  Also, there is considerable commonality of issues between DOD's effort to improve urban capabilities and other agencies' efforts to assure homeland security. The timely identification and addressing of such issues is of critical national importance.

VIII. Key Questions for JUO Experimentation

Experimentation adds to the evidence about a high-level or mission-level concept by pointing out needed capabilities, critical issues, and pros and cons under specific conditions. (Since a high-level concept, and even a mission-level concept, is necessarily broad, a single experimentation event is unlikely to "prove" or "disprove" its value.) Experimentation events must be carefully planned to provide insight into questions that are central to the high-level and mission-level concepts.

In this section we offer examples of such questions for the "*USECT for JUO"* concept, beginning with a number of key assertions regarding JUO that are subject to challenge.

Understand:

- It is possible to significantly improve a JFC's abilities to know the locations, status and movements of adversary forces in an urban environment without first engaging those forces.

- It is possible to significantly improve a JFC's capabilities to know the locations, status and movements of his own forces in an urban environment.

Engage:

- It is possible to effectively engage adversary forces in an urban environment from less vulnerable positions and with controlled effects thereby significantly reducing friendly and noncombatant casualties and collateral damage.

Shape:

- It is possible to leverage improved understanding and engagement capabilities to effectively shape the conditions of an urban operation (e.g., by controlling information, mobility, support, . . .) to the disadvantage of adversary forces and the advantage of friendly forces.

Consolidate:

- It is possible to significantly enhance a JFC's abilities to consolidate military gains in an urban area through improved capabilities for establishing security, restoring the physical environment, and providing humanitarian assistance to the population.

Each of these assertions needs to be explored through experimentation. The correctness and utility of the high-level concept and mission-level concepts can be debated on the basis of a broad body of evidence (including historical analyses, lessons learned, exercises, experiments, . . .) but the subject of an experiment is generally at the scenario level or below (functional capability, system performance, tactics, . . .). Insights gained through experimentation are passed up the line to be included in the body of knowledge pertaining to the high-level and mission-level concepts, but a single experiment is unlikely to make or break a high-level or mission-level concept.

The following are examples of the types of questions regarding JUO that can be addressed in an experiment:

Mission-level concept (e.g., Critical-Point Capture & Expansion for "Capture a City"):

- Under what conditions will proposed mission-level concepts for JUO (critical point isolation, precision strike, critical point capture and expansion, segment and capture,. . .) be effective? What is their potential vulnerability to adversary countermeasures?

- What are the key elements of an effective post-combat transition to civil authority, and how can the JFC conduct an operation that best supports such a transition?

Functional capabilities (e.g., find adversary forces):

- What capabilities must be provided to the JFC to support the new operational concepts? What conditions do the capabilities require? What are potential vulnerabilities to adversary countermeasures?

- How can a JFC best utilize the contributions of friendly elements of an urban population?

DOTMLPF solutions

- What DOTMLPF changes will enable the desired capabilities?

- What are the characteristics of systems that effectively support the functional capabilities, in particular,

    - What are the roles for unmanned systems for JUO?
    - What are the roles for non-lethal weapons for JUO?
    - What are the roles for information operations for JUO?

There are many DoD customers for the results of experimentation. The operational planner would want to know if a particular mission-level concept does not seem to work under certain conditions. An acquisition planner would want to know if a particular system appears to be easily countered by the adversary when certain conditions prevail. The experimenter would want to know if a particular performance factor appeared critical to mission success.

IX. Relationship of "*USECT for JUO*" to Other Joint Concepts

Since "*USECT for JUO*" addresses essentially all aspects of conflict in its most complex environment it cuts across all levels of the joint concepts framework by focusing on the urban-specific features of those concepts.

The current version of the joint concepts framework is described in "*Joint Operations Concepts,*" JCS Version 1.0 for 2003. This document defines a set of interrelated concepts: the Joint Operations Concept (JOpsC), joint operating concepts, joint functional concepts, and enabling concepts.

The JOpsC is a broad characterization of the goals, attributes and operating principles of the joint force. Several subordinate concepts bring more specificity to the JOpsC: Joint Operating Concepts (JOCs), Joint Functional Concepts, and Enabling Concepts.

The "*USECT for JUO*" concept is informed by, and fully consistent with the broad principles of the JOpsC.

The Joint Operating Concepts have a more specific focus than the JOpsC and further develop key areas of the JOpsC. The Joint Chiefs and the Transformation Planning Guidance have identified four broad initial JOC categories: Major Combat Operations, Stability Operations, Homeland Security, and Strategic Deterrence. Urban operations represent a key dimension in each of these areas as evidenced by the missions list of Table II-1, so the JOCs set the operational contexts for urban considerations and for the application of the "*USECT for JUO*" concept.

Joint Functional Concepts amplify a particular military function and apply broadly across the range of military operations. The Joint Chiefs of Staff identified five initial functional concept categories: Joint Command and Control (C2), Battlespace Awareness, Force Application, Focused Logistics, and Protection. The Joint Functional Concepts relate most closely to the "USECT" components of the "*USECT for JUO*" concept. For example, the "Understand" component encompasses Battlespace Awareness and C2, "Engage" corresponds to Force Application, and Focused Logistics and Protection correspond to "Shaping" as it affects the Blue Force.

This correspondence suggests that other elements of the USECT capabilities, as listed in Tables ES-3 or VI-1, might be considered for future focal points of Joint Functional Concepts. For example, the "Consolidation" and "Transition" components are proving most challenging in current operations.

Finally, Enabling Concepts describe "how particular tasks or procedures are performed within the context of broader functional areas."[21] Under this definition the "mission-level concepts" described in this paper could be interpreted as "Enabling Concepts"[22] with the "scenario-level" concepts as the application of mission-level concepts under specified conditions.

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21 *Joint Operations Concepts*, JCS Version 1.0 for 2003, p.23.

22 Alternatively, the Joint Operations Concept, JCS Version 1.0 for 2003 document states that " Any area that may need focused development can be developed as an enabling concept." Using this definition of an Enabling Concept, the "USECT for JUO" concept itself may be considered an "Enabling Concept" that is consistent with the principles of the JOpsC, covers the full range of operational contexts identified by the Joint Operating Concepts, is focused on developing the (USECT) capabilities identified by the Joint Functional Concepts, and developing a focus area dedicated to improving urban capabilities.

In any case, JUO is a case study for exploring the nature of these various concepts and the process of converting the concepts to real capabilities in the hands of the JFC.

X. CONCLUSION

In conclusion, this concept paper is intended to be a fluid, living document, one that will always be incomplete. It will evolve as more is learned about the concepts and capabilities described herein, as insights are gained through real-world experience and experimentation, and as its focus is broadened into other urban mission areas. It is to be viewed as a starting point for subsequent discussion and activities aimed at providing future Joint Force Commanders with effective tools for conducting urban operations.

Appendix A

Adversary's Key Capabilities and Constraints

A football coach will prepare for each game by studying the opponent's strengths and weaknesses in earlier games. The quarterback will call his plays based on the specifics of the opponent's play during the game and their present defensive deployment (as well as the score, time remaining, position on the field, etc). Like them, the JFC will prepare his plan for his joint operation based on the strengths and weaknesses the enemy has shown in earlier urban operations, and on the specifics of the enemy's force deployment.

This appendix reflects on the kinds of Red strengths and weaknesses that will matter the most to the JFC — beyond Red's BW and CW munitions -- in developing his urban operations plan. It assumes that other commanders would be responsible for other parts of the campaign, including countering Red operations in friendly urban areas (like Red attacks harassing US deployments through in-theater sea/air ports) or countering Red attacks that expand the battle-space into the US. Judgments on these kinds of capabilities are essential when exploring scenario-level concepts.

Red Counters to US Armor Forces

The JFC can plan to use tanks and APCs in relatively open urban areas, if Red has little or no counters to modern armor—as was the case in the urban battles in Iraq.[23] Key Red capabilities that the JFC must know about, because they threaten armor in urban areas, are the following:

- Coordinated teams equipped with modern shoulder-fired anti-tank/APC weapons (e.g., RPG-29), trained to volley-fire them.
- Teams equipped with modern anti-tank/APC mines (e.g., European ARGES mine), trained to deploy them as a barrier.
- Teams trained as high-performance snipers, to attack infantry with tanks/APCs and to destroy Humvees and Marine LAVs/AAVs.
- Teams equipped with guided mortar rounds and trained to get first-round hits on the top of armor vehicles at ranges to 5,000 meters.

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[23] Except for one US tank badly damaged by an Iraqi TOW.

Red Counters to Precision Weapons

The JFC can plan to take advantage of precision weapons, if Red doesn't have the ability to counter that use. Red capabilities that the JFC must know about, because they make it more difficult to use precision weapons, are the following:

- Teams equipped with low power GPS jammers and trained to deploy them on rooftops throughout the urban area.
- Red commanders willing to use civilians to shield important urban nodes.

Red Counters to US Helicopters and UAVs

The JFC can plan to use helicopters and UAVs to support inserting ground forces in relatively open urban areas, if Red doesn't have modern counters to them. Key Red capabilities that the JFC must know about, because of their threat to US helicopters and UAVs, are the following:

- Teams equipped and trained with modern shoulder-fired short-range SAMs.
- Teams equipped and trained to string cable barriers among trees, buildings, and other structures, to deny access to helicopters.
- Teams equipped with anti-helicopter mines and trained to deploy them to disrupt insertion by air of ground forces.

Red Cruise Missiles and UAVs

The JFC can plan to operate air defenses "locked down," if Red has no threatening aerodynamic systems. This was the case in the Gulf War, where permission had to be given (and was requested dozens of times but never was given) for a US SAM to be fired against an air-breathing threat. Red aerodynamic systems that the JFC must know about, because they could effect RoEs for US air defense systems, include the following:

- Cruise missiles that could deliver BW or CW munitions or could damage headquarters and rear facilities used by coalition personnel.
- UAVs that could provide Red situation awareness in the region around the urban area.

Self-Induced Constraints on Red Deployments

The JFC can plan to exploit constraints on Red deployments that result from a Red leader's unwillingness to do certain things, e.g.:

- Unwillingness to move regular military units into the capital city (for fear they would conduct a coup).
- Unwillingness to deploy small isolated teams to defend to-the-death individual buildings (for fear they would desert).
- Unwillingness to fight, unless attacked.
- Unwillingness to delegate authority.

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The Joint Advanced Warfighting Program

Awaiting Publication

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14. ABSTRACT

This paper summarizes the activities and products of the Joint Advanced Warfighting Program (JAWP) for Fiscal Year 2003. It describes the two main efforts, Joint Urban Operations and Joint Lessons Learned, and three other smaller efforts. Joint Urban Operations continued its support in improving the capabilities of joint force commanders in the conduct of urban operations. Joint Lessons Learned began in February 2003, with the objective of collecting and analyzing lessons from OPERATION IRAQI FREEDOM and elsewhere. The three other efforts discussed in the paper are (1) Advanced Concept Technology Demonstration (ACTD) Integration, (2) Joint Command and Control and Interoperability; and (3) Commercial Off-The-Shelf-Gaming.

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