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APPROVAL

As the Department of Defense Executive Agent for Joint Urban Operations and lead author, US Joint Forces Command wrote this Joint Integrating Concept (JIC) in accordance with the guidelines established within CJCSI 3010.02B. This concept development process included a series of concept workshops, joint operational lessons learned, a Limited Objective Experiment, Defense Adaptive Red Team and other formal reviews by the Joint Staff, Combatant Commands, and Services. Senior interagency subject matter experts, active and retired flag and senior field grade officers, and professional strategic thinkers provided insights and recommendations to further refine this document. Additionally, NATO and other multinational partners contributed to its development.

This JIC will help shape the future Joint Force by stimulating and framing professional discussion on the challenges of future joint urban operations and on possible operational methods and capabilities dealing with those challenges. It provides a common intellectual framework for all developmental efforts with respect to joint capabilities for urban operations. Most importantly, it will serve as the basis for a capability-based assessment, conducting rigorous analysis and experimentation to further define capability gaps and potential Service and COCOM solutions that are required for successful joint urban operations in the future. U.S. Joint Forces Command will continue to refine the ideas in this concept through experimentation and lessons learned.

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EXECUTIVE SUMMARY

This concept provides an operational-level description of how a joint force might conduct urban operations circa 2015-2027. Joint urban operations are all joint operations planned and conducted across the range of military operations on, or against objectives within, a topographical complex and its adjacent natural terrain where manmade construction or the density of noncombatants are the dominant features. This concept focuses on combat situations, in particular counterinsurgency and major combat operations against primarily irregular enemies embedded within urban areas. This concept focuses on the operations of the joint force and its components, although always with the recognition that the joint force may be operating in conjunction with other military, governmental, and nongovernmental partners.

This paper has three main objectives:

- To stimulate and shape professional discussion on the challenges of future joint urban operations and on possible operational methods and capabilities for dealing with those challenges.
- To provide a common intellectual framework for all developmental efforts with respect to joint capabilities for urban operations, including performing a capability-based assessment, conducting experimentation into future urban operational methods and capabilities, identifying required capabilities and institutional changes, and making programmatic, budgetary, organizational, and other force planning decisions.
- To inform operational decision making in current and future joint urban operations.

The essential problem this concept addresses is *how to operate in an urban environment to defeat adversaries embedded and diffused within populated urban areas without causing catastrophic damage to the functioning of the society there*. This is a hybrid problem combining the coexistence of challenging combat and societal crisis in the same urban area. Urban areas are conventionally viewed as a type of physical environment—as complex terrain. While the terrain implications of urban areas are significant, this concept argues that urban areas are not merely terrain that must be operated *in*, but also objects that must be operated *on*. Urban areas are complex living systems with a wide range of structures, processes, and functions that have evolved to sustain concentrated human societies in confined space. In this context, adversaries can be seen as malignant growths embedded within and diffused throughout the host urban system, intermixing with the urban

population and subsisting on host institutions and infrastructure. Each adversary is an element in the urban system, but can also be thought of as a system in its own right, with its own structures, processes, and functions. There might be multiple adversaries in any given urban system. A metaphor might be a malignant tumor or even a leukemia, which is not a contiguous growth but is diffused throughout the host system. Because the adversary is embedded in the urban system, any military action against the adversary will necessarily be traumatic for the host urban system as well—potentially to the point of creating the conditions for more and potentially worse conflict.

The controlling idea for how to deal with adversaries embedded and diffused within urban systems is *not merely to attack the embedded adversary with destructive force, but to treat the entire urban system comprehensively, applying power to disable hostile elements in the system and enable those elements that are essential to the system's functioning, through a combination of isolating, protective, improving, sustaining, persuasive, destructive, and disruptive actions or capabilities*. Discriminate and persistent isolating actions are intended to cut off support for the embedded adversary. Highly discriminate destructive or disruptive actions are intended to defeat or disable embedded enemy elements systemically while minimizing damage to the host urban system. Protective, improving and sustaining actions are intended to stimulate, maintain or reconstitute those subsystems deemed essential to ensure the necessary functioning of the urban system despite the damage inflicted by combat. Since an urban system is fundamentally a social system, persuasive capabilities are intended to influence favorably the attitudes and behaviors of the population, the government or other groups. Ideally, the intent is to induce the urban system to reject the embedded adversary—to participate actively in detecting, differentiating, and defeating hostile elements. Where this is not feasible, the intent is simply to facilitate the defeat of the adversary without causing catastrophic damage to the host—and potentially creating a worse problem than existed before.

The supporting ideas of this concept, which elaborate the controlling idea, are:

- *Conduct a systemic assessment*—as the basis for all planning and execution, understand the urban area as a dynamic, living system with various structures, processes, and functions, which will be disrupted by combat operations but which are essential to the continued viability of the system.

- *Integrate all actions within the context of an overarching campaign*—combine the various isolating, protective, improving, sustaining,

persuasive, destructive, and disruptive actions, military and nonmilitary, into a cohesive, mutually reinforcing whole.

- *Learn and adapt*—since an urban system will defy comprehensive understanding because of its complexity and since the system will adapt to actions taken against it, design operations to learn about the system and adapt those operations as a result.

- *Selectively isolate the urban system*—control the influx into the urban system of people, material, and information that could help support the adversary.

- *Apply highly discriminate destructive or disabling force to disrupt an adversary's ability to pursue its objectives*—actively locate and attack embedded enemy elements while minimizing impact on other elements of the urban system.

- *Establish and extend control and protection of urban sectors and subsystems*—create the secure environment that allows enabling actions to occur and may help gain the allegiance of the population, while at the same time denying the adversary access to segments of the population and other key resources in the urban system.

- *Persuade municipal governments, groups, and population segments to cooperate with joint force operations*—influence indigenous perceptions and attitudes through strategic communication efforts.

- *Provide sustaining aid to the urban system*—infuse essential support into the urban system to sustain it during the ordeal of combat operations to improve its ability to survive.

- *Make improvements to urban institutions and infrastructure*—restore, transform, or create essential subsystems as a means to making the urban system better able to sustain itself..

In conclusion, this concept proposes one possible joint solution to the problem of urban operations based on the conception of an urban area as a dynamic, living system vulnerable to the destructive effects of military action. This concept does not claim to provide the conclusive answer to this very probable and challenging problem; rather, it attempts to stimulate informed discussion and experimentation that will eventually lead to that answer in the form of a set of future joint capabilities.

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1. INTRODUCTION

Should the United States go to war in the coming decades, operations in urban areas will be increasingly likely, not least of all because the world is quickly becoming increasingly urbanized. Cities have always figured prominently in the conduct of war, as primary objectives of internal insurrectionists and external invaders alike. Cities are militarily important as logistical and communications hubs, often occupying key geography along the transportation corridors that also serve as military lines of communications. They are symbols and concentrations of political, economic, and cultural power. They are seats of government, centers of industry and trade, engines and repositories of wealth, oracles of religion and education, media hubs, homes of the societal elite, sources of culture, and symbols of national pride. Not only are cities important objectives in war, increasingly they are also hotbeds of conflict, especially in the developing world in which exploding populations and rampant urbanization can overwhelm existing infrastructure and services, leading to widespread suffering, friction, and discontent. Cities intensify all human social interactions. They are mixing bowls that place people from different social, cultural, economic, religious, and ethnic backgrounds into close interdependence. They are centers of poverty, squalor, unemployment, and crime, places where critical masses of the discontented and aggrieved can assemble. They are breeding grounds for various kinds of contagion—diseases, rumors, ideologies, and rebellions. They are places where the differences between haves and have-nots are on vivid display. They are places where radical ideas ferment and grievances fester. Cities are concentrations of people, and future conflicts will arise and play out where people are.

Although these dynamics are most obvious in major cities, they apply also to smaller cities, suburbs, towns, and villages, and even to the urban sprawl that now connects once-distinct urban areas into unbroken urban landscapes. These factors apply anyplace a "certain energized crowding of people takes place."[1] In the coming decades, this is the environment in which joint forces are likely to have to operate.

Combat in these conditions tends to be unavoidably brutal, bloody, resource-intensive, and time-consuming—to the point that U.S. doctrine during and after the Second World War advocated avoiding urban combat whenever possible.[2] Urban operations require very different

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[1] Spiro Kostof, *The City Shaped: Urban Patterns and Meanings Through History* (New York: Bullfinch Press, 1991), p. 38.

[2] The U.S. Army's doctrinal manual on urban operations from 1979 begins with this statement: "Tactical doctrine stresses that urban combat operations are conducted only when required and that built-up areas are isolated and bypassed rather than risking a costly, time-consuming operation in this difficult environment." Field Manual 90-10, *Military Operations on Urban Terrain* (Washington: Headquarters, Department of the Army, 1979), p. 1-1. Prior to FM 90-10, Army MOUT doctrine was contained in FM 31-50, first published in 1944 as *Combat in Fortified Areas*, and revised in 1952 and

capabilities than those required for fighting in natural terrain, for which U.S. forces are primarily designed.

This paper hypothesizes a military concept for conducting joint operations against adversaries embedded within these urban areas. It proposes that urban areas are not merely a form of terrain, but are dynamic, living systems dramatically affected by military action. It argues that adversaries can be thought of as hostile growths within these systems, subsisting off the urban system's own infrastructures. The operational concept it proposes is to treat the entire urban system comprehensively, disabling those adversaries while enabling the parts of the system that are deemed essential to system functioning, through a simultaneous combination of isolating, protective, improving, sustaining, persuasive, destructive, and disruptive capabilities.

2. PURPOSE

This paper has three main objectives:

- To stimulate and shape professional discussion on the challenges of future joint urban operations and on possible operational methods and capabilities for dealing with those challenges.
- To provide a common intellectual framework for all developmental efforts with respect to joint capabilities for urban operations, including performing a capability-based assessment, conducting experimentation into future urban operational methods and capabilities, identifying required capabilities and institutional changes, and making programmatic, budgetary, organizational, and other force planning decisions.
- To inform operational decision making in current and future joint urban operations. While the paper's primary aim is to influence force planning, it also provides concepts that could help operational commanders plan and conduct urban operations more effectively today. This paper is in no way meant to constrain joint force commanders, but simply to offer ideas for consideration.

1964. "FM 31-50, just like every other Army publication on MOUT doctrine, stresses bypassing built-up areas rather than fighting. Furthermore, the commander should only consider offensive operations as a last resort." Philip T. Nethery, MAJ, USA, *Current MOUT Doctrine and its Adequacy for Today's Army*, Master's thesis (Ft. Leavenworth, KS: U.S. Army Command and General Staff College, 1997), p. 12. Current U.S. Army doctrine recognizes the inevitability of urban combat. Field Manual 3-06, *Urban Operations* (Washington: Headquarters, Department of the Army, 2006), p. 1-1.

3. SCOPE

This concept provides an operational-level description of how a joint force might conduct urban operations circa 2015-2027.[3] It attempts to formulate the problem of urban operations in new terms, describing the urban area as not merely a physical environment, but as a complex living system affected dramatically by military action. In keeping with the *Capstone Concept for Joint Operations*, this systemic framework carries through to the proposed operational concept.

Joint urban operations are all joint operations planned and conducted across the range of military operations on, or against objectives within, a topographical complex and its adjacent natural terrain where manmade construction or the density of noncombatants are the dominant features.[4] This concept focuses on combat situations, in particular counterinsurgency and major combat operations, against primarily irregular enemies embedded within urban areas.

This concept applies the broad principles of the *Capstone Concept for Joint Operations* more specifically to the urban environment, in particular taking a systemic approach to understanding both the urban environment and the adversaries embedded in it. This concept has considerable overlap with three joint operating concepts: *Major Combat Operations*; *Military Support to Stabilization, Security, Transition, and Reconstruction Operations* (SSTRO); and *Irregular Warfare*. This overlap is shown in Figure 1. This concept overlaps with the *Irregular Warfare* concept, which defines irregular warfare as "a violent struggle among state and non-state actors for legitimacy and influence over the relevant populations."[5] It overlaps with the *Major Combat Operations* concept, including the "low end" of major combat operations, against primarily irregular enemies, but not the "high end" involving combat against a conventional adversary.[6] It overlaps with the *Military Support to SSTRO* concept, including those operations involving significant combat, such as

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[3] This paper uses the term *joint force* throughout, but *multinational force* or *interagency force* could be substituted as appropriate.

[4] Joint Chiefs of Staff, *Dictionary of Military Terms* (Joint Pub 1-02), online version, http://www.dtic.mil/doctrine/jel/doddict/data/j/02970.html [accessed 21 Nov 06].

[5] *Irregular Warfare Joint Operating Concept*, version 1.0 (Tampa, FL: U.S. Special Operations Command, December 06), pp. 1 and 4. The passage continues: "IW favors indirect and asymmetric approaches, though it may employ the full range of military and other capabilities, in order to erode an adversary's power, influence, and will."

[6] "**irregular forces**—(DOD) Armed individuals or groups who are not members of the regular armed forces, police, or other internal security forces." *DOD Dictionary of Military Terms*, online version, http://www.dtic.mil/doctrine/jel/doddict/data/i/02833.html [accessed 21 Nov 06].

The key distinction this concept makes is between conventional forces that merely occupy urban terrain and forces that can truly blend into an urban population and subsist on urban infrastructure. This concept would exclude, for example, two industrial powers with high-technology, platform-based militaries clashing on an urban battlefield that is foreign territory to both.

counterinsurgency, but excluding purely humanitarian missions in which there is no significant combat.[7] This integrating concept applies the broad principles of those operating concepts more specifically to the particular challenges of the urban environment.

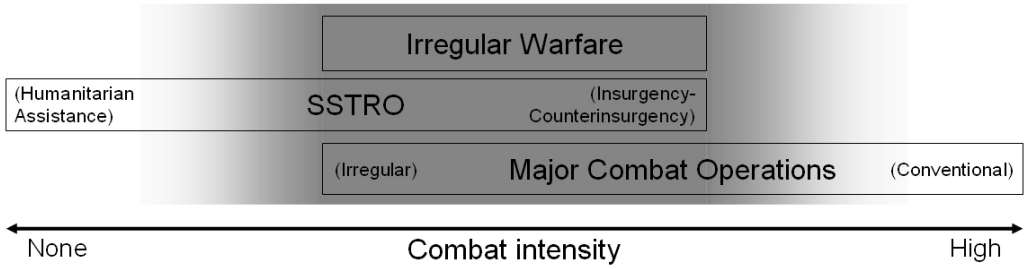

Figure 1.
The scope of this concept in relation to selected JOCs.

This concept applies to operations either in support of a host-nation government or against a foreign government or other political entity. It applies whether the United States operates as part of a multinational effort or unilaterally.

This concept focuses on the operations of the joint force and its components, although always with the recognition that the joint force may be operating in conjunction with other military, governmental, and/or nongovernmental partners. It does not focus on the tactical or technical details of execution, although, because of the particular importance of tactical considerations in urban operations, it will discuss some tactical capabilities. Nor does it address strategic planning and conduct, although it does address civil-military operations within the context of an existing theater strategy.

This concept is broadly hypothetical and propositional. It does not claim to provide universally accepted, comprehensive guidance on the conduct of joint urban operations. It is meant to be debated. It attempts to provide only enough detail to serve its stated purpose of stimulating discussion, providing a common intellectual framework for experimentation and other developmental efforts, and informing operational decision making.

[7] The scope of the *SSTRO* concept ranges from non-combat missions such as humanitarian assistance, limited security cooperation, and military assistance and training to assisting a "fragile national government that is faltering due to serious internal challenges, which include civil unrest, insurgency, terrorism and factional conflict." *Military Support to Stabilization, Security, Transition and Reconstruction Operations* Joint Operating Concept (JOC), v2.0, Aug 06, pp. 3-4.

4. THE OPERATIONAL PROBLEM: ADVERSARIES EMBEDDED WITHIN URBAN SYSTEMS

The essential problem this concept addresses is *how to operate in an urban environment to defeat adversaries embedded and diffused within populated urban areas without causing catastrophic damage to the functioning of the society there*.[8] This is a hybrid problem combining the coexistence of challenging combat and societal crisis in significant measure in the same urban area.

Urban areas are conventionally viewed as a type of physical environment—essentially as complex terrain—which obviously they are.[9] In this respect, urban areas are terrain complexes in which manmade construction and a density of civil population are the dominant features.[10] Like any other type of terrain, urban terrain influences what can and cannot be done militarily.[11] The tactical implications of urban terrain are so significant that they can assume operational or even strategic importance. From the U.S. perspective, urban terrain tends to restrict operations by counteracting most technological advantages in range, mobility, lethality, precision, sensing, and communications. This may not be true for many potential adversaries, for whom urban terrain can provide advantages, such as cover and concealment, which actually improve operational capabilities. The highly compartmented geography of urban terrain limits observation, communications, fires, and movement. Urban terrain tends to favor the defender over the attacker and the ambusher over the active patroller. It provides an attractive environment for guerrilla warfare. It tends to absorb higher densities of troops and other resources than other types of terrain.[12] It slows tactical

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[8] A key premise of this concept is that the United States is making war against a political entity and not against a people. If that condition does not apply in a given situation, if the United States has no interest in preserving an urban area or its population, then this concept does not apply. *Defeat* here means denying an adversary's objectives; it may or may not require battlefield destruction.

Keith Holcomb introduced the idea of "adversaries embedded within infrastructures" in an unpublished briefing, "Facing the Future: The Marine Corps and the RMA," presented at a Revolution in Military Affairs conference sponsored by the OSD Office of Net Assessment in Warrenton, VA, 13 Nov 96.

[9] The doctrinal term *military operations on urban terrain* (MOUT) epitomizes this view.

[10] Joint Pub 3-06, *Doctrine for Joint Urban Operations*, (Washington: Government Printing Office, 2002), p. I-1. JP 3-06 identifies three main characteristics, which it calls an "urban triad," that all urban areas have in common: complex manmade physical terrain; a population of significant size and density; and an infrastructure upon which the area depends [p. I-2].

[11] Urban terrain affects some aspects of joint urban operations more than others. For example, while urban terrain profoundly affects ground operations, air and cyber operations tend not to be fundamentally affected by urban geography.

[12] The various vertical levels, above and below ground, and the various interior and exterior locations in an urban area create a much greater number of distinct spaces that can be occupied than any other type of terrain of similar size. Limits on line of

ground movement and shortens the distance of individual ground maneuvers, which are often measured in meters rather than kilometers. Urban terrain is more alterable than any other type of terrain: military operations tend to rubble urban areas, often to significant tactical effect, making the terrain even more complex and compartmented.[13] As a result of these terrain implications, urban combat tends to devolve into brutal, small-unit engagements at close range, and tends to inflict significant casualties on both combatants and civilians. It is hard on equipment and consumes high levels of ammunition and other supplies—to the degree that it typically becomes impossible to sustain continuous activity. Urban combat operations thus tend to be bloody, episodic, and prolonged, with the costs of achieving a decision running unusually high. The essential quality that distinguishes urban terrain from other types of terrain is the presence of concentrations of people, which complicates every aspect of operations. But even then, in this view people are seen essentially as just another element of the operating environment that, from the U.S. perspective at least, restricts military action primarily by limiting the use of firepower for fear of inflicting civilian casualties.

While the terrain implications of urban areas are significant, this concept argues that urban areas are not merely terrain that must be operated *in*, but also objects that must be operated *on*. Urban areas are complex living systems with a wide range of structures, processes, and functions that have evolved to sustain concentrated human societies in confined space.[14] These structures are all the various familial, tribal, professional, commercial, governmental, social, religious, educational,

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sight and direct-fire range severely limit the amount of urban terrain that a unit can control.

[13] Ironically, the physical reduction of urban terrain by an attacker improves the defensive qualities of the terrain by creating more obstacles and potential defensive positions that the attacker must overcome. Williamson Murray, *War and Urban Terrain in the Twenty-First Century* (Alexandria, VA: Institute for Defense Analyses, 2001), p. 13.

[14] The argument here is not that urban areas *resemble* living things in some ways, but that urban areas are actual living systems according to *living systems theory*. See James G. Miller, *Living Systems* (Niwot, CO: University of Colorado Press, 1995). Miller defines living systems as "open systems, with significant inputs, throughputs, and outputs of various sorts of matter-energy and information. They maintain a steady state of negentropy even though entropic changes occur in them as they do everywhere else." [p. 18.] (Negentropy is the loss of total entropy, or the net gaining of structure, in a system by exporting entropy faster than it is imported.) They occupy physical space. They consist of biomass, although they may also include non-living components [p. 18]. Miller identifies seven hierarchical levels of living systems, from cells to supranational organizations [p. 1]. Cities are an example of the sixth level, *societies*. Living systems theory is the application of *general system theory* to living things. On general system theory, see Ludwig von Bertalanffy, *General System Theory: Foundations, Development, Applications* (New York: George Braziller, 1968).

media, etc., institutions that typify urban society.[15] The processes include all the various official and unofficial social, criminal, economic, governmental, informational, and cultural interactions that take place within the ebb and flow of urban life. The functions are the various roles the urban area plays, both for its own inhabitants and for the surrounding area: source of government, cultural center, manufacturing center, provider of services, source of jobs, marketplace for goods and services, etc. Some of these structures, processes and functions are fundamental to the functioning of the urban system, providing for basic human needs, while others satisfy higher-order desires rather than essential needs. These system dimensions may be generically common to all urban systems, but each urban system is unique in its specifics. Combat changes urban systems, often significantly and generally for the worse. The essential quality of urban areas by this view is not merely the presence of people, but the presence of intense societal interaction (although not necessarily interactions that are functioning smoothly).

Urban systems[16] comprise a variety of subsystems that continuously input, throughput, and output various forms of matter, energy, and information. See Figure 2. All human society is a continuous flow of people, goods, energy, and information; urban systems are merely particularly dense, intertwined concentrations of these flows, shaped by the forces of geography, culture, and history.[17] In urban areas these flows exhibit increased intensity, accelerated pace, and greater interdependence.[18]

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[15] *Structure* here does not refer only to physical constructions, such as buildings, but primarily to organizational forms.

[16] This paper will use the term *urban system* to refer to these dynamic, living systems and the terms *urban area* or *urban terrain* when referring more specifically to the physical, terrain aspects of those systems.

[17] Lewis Mumford defines a city as a "point of maximum concentration for the power and culture of a community. It is the place where the diffused rays of many separate beams of life fall into focus, with gains in both social effectiveness and significance. The city is the form and symbol of an integrated social relationship: it is the seat of the temple, the market, the hall of justice, the academy of learning. Here in the city the goods of civilization are multiplied and manifolded …" *The Culture of Cities* (New York: Harcourt Brace & Co., 1938), p. 3.

[18] In general, an urban area's tempo and interdependence correspond to its size and density: the larger and denser, the higher the tempo and the greater the interdependence. Roger J. Spiller, *Sharp Corners: Urban Operations at Century's End* (Ft. Leavenworth, KS: USACGSC Press, 2000), p. 26.

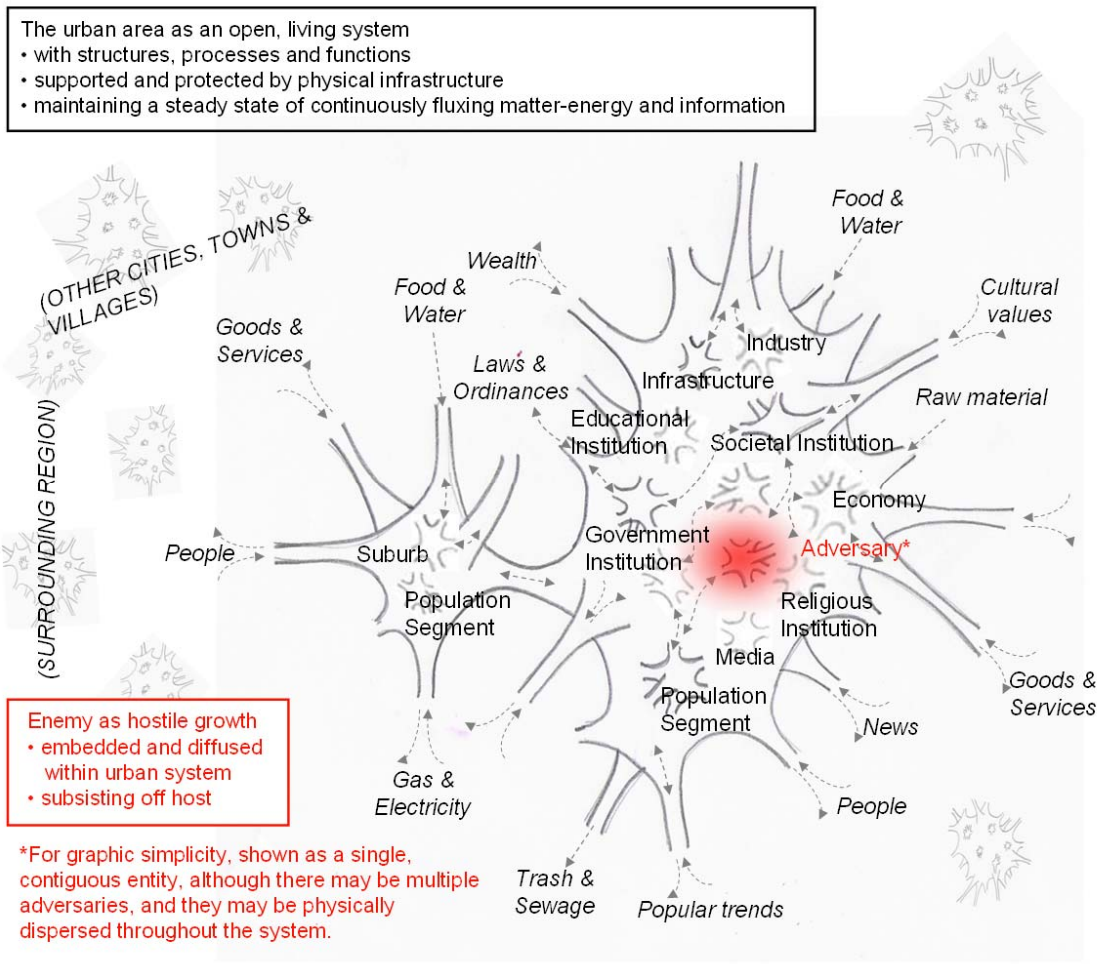

Figure. 2.
Notional schematic of an urban system.[19]

As examples: People commute to and from work. They move from the country in search of jobs or to a bigger city in search of a better job. Food stuffs and other essentials are shipped in, stored, and distributed. Sewage and other waste are expelled. Raw materials converge on the urban area from elsewhere to be transformed into manufactured goods, which are then distributed locally or exported. Criminals are processed through the legal system, students through the school system. Electricity and natural gas are carried in and then distributed.

Urban systems are suffused with flowing information as well. While matter and energy fuel an urban system, information organizes

[19] This schematic is a functional vice geographical map, although there can be rough geographical dimensions to many urban functions. Many flows into and out of the city tend to follow physical lines of communication such as roads, rail lines, and rivers. Many urban subsystems tend to have a geographical locus—the manufacturing and business districts, the government center, residential areas (often segregated by ethnicity). While functionally each adversary can be thought of as a single entity, physically, its elements might be dispersed throughout the urban area.

and controls it. Municipal government produces and administers local ordinances. Religious and educational institutions establish and promote acceptable beliefs, values, and behaviors. Media outlets, including the internet-based "new" media, propagate facts, opinions, misinformation, and even disinformation. Businesses large and small advertise their goods and services. The latest fads or social trends arrive from afar, introduced by travelers, magazines, or television. Rumors and gossip pass through neighborhoods and over communications networks like infections. World and regional news is broadcast in; local events are reported on locally and broadcast out.

Once formed, urban systems tend to persist. They are not easily destroyed, but if significantly damaged, manage to form a new equilibrium at some lower level of functionality. Even obviously and massively dysfunctional cities often continue to grow. Though persistent, urban systems are dramatically transformed, whether intentionally or not, through military and other action.

An urban system cannot be separated from its physical construction. All infrastructures exist to protect and support these system interactions and, once in place, serve to reinforce and formalize them. As a result, any damage to that infrastructure through military action will tend to have significant impact on the urban society.

While the physical infrastructure of an urban area changes relatively slowly, the urban system is more dynamic. Urban systems are highly complex, interdependent, and tightly-coupled—and potentially highly sensitive to disturbances. Because urban systems are tightly coupled, effects of events tend to be amplified. Tactical or local events can take on added importance, largely because of the amplifying effect of pervasive mass media.[20]

Urban system dynamics are rarely uniform across an urban area. An urban population is not a monolith, but a heterogeneous aggregation of individuals and groups all pursuing their various interests. Different physical sectors in an urban area may exhibit very different characteristics, which impose different operational requirements such that operations in adjoining sectors could take on very different qualities.[21]

Urban areas always exist in a regional context. An urban system subsists on its surrounding regions—which provide a continuous influx of the people, food stuffs, raw materials, products, fuel, and energy, etc., needed to sustain the urban system—but it also dominates the surrounding area culturally, governmentally, economically, and

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[20] A phenomenon sometimes known as "strategic compression." A contributing factor is the "CNN effect."

[21] Popularly called the "Three-Block War." See Gen. Charles C. Krulak, "The Strategic Corporal: Leadership in the Three-Block War," *Marines Magazine*, Jan 1999, http://www.au.af.mil/au/awc/awcgate/usmc/strategic_corporal.htm [accessed 7 Nov 06].

informationally.[22] Urban areas also exist in a hierarchical urban network consisting of major cities that function at the national or even global level, lesser regional hubs, surrounding towns and villages, and so on. Each urban area performs a function in this network and has relationships with other urban areas.[23] To understand the functioning of any urban system, it is necessary to understand it in these regional and hierarchical contexts. Any significant damage to an urban system will impact the broader systems of which it is a part, a factor that should figure into the design and conduct of an urban operation.

Many urban systems are dysfunctional to a greater or lesser extent. This is especially true in the developing world, which is characterized by exploding population growth that overwhelms institutions and infrastructures and fuels rapid, haphazard urbanization. To the extent that urban systems are dysfunctional they give rise to human suffering and become breeding grounds for conflict. The conflict further overwhelms the system, creating a vicious cycle that fosters even more conflict. It is in these situations that U.S. forces will often be required to intervene.

In this context, adversaries can be seen as malignant growths embedded within and diffused throughout the host urban system, intermixing with the urban population and subsisting at least in part on host institutions and infrastructure.[24] Each adversary is an element in the urban system, but can also be thought of as a system in its own right, with its own structures, processes, and functions. Each adversary will be unique, but will tend to comprise some combination of different elements. These could include: enemy combatants and combatant leadership, whether regular or irregular; terrorist cells; criminal elements who see the joint force as a threat to their interests; political, religious, and ideological leaders; financial and material supporters, both internal and external; sympathetic media; and segments of the population who actively or passively support the adversary cause, whether from true belief or coercion. There might be multiple adversaries in any given urban system. Enemies might embed themselves within urban systems as a purely operational decision to neutralize U.S. technological advantages, but more likely they already exist there because the urban environment is where their primary

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[22] Spiro Kostof: "Cities are places that are intimately engaged with their countryside, that have a territory that feeds them and which they protect and provide services for." *The City Shaped: Urban Patterns and Meanings Through History* (New York: Bullfinch Press, 1991), p. 38.

[23] "Cities come in clusters. A town never exists unaccompanied by other towns. It is therefore inevitably locked in an urban system, an urban hierarchy." Kostof, p. 38.

[24] Malignant in the medical sense of "characterized by progressive and uncontrolled growth (especially of a tumor)," and not implying malevolence or maliciousness. *OneLook Dictionary Search*, http://www.onelook.com/?w=malignant&ls=a [accessed 7 Nov 06].

struggle originates. A metaphor might be a malignant tumor or even a leukemia, which is not a contiguous growth but is diffused throughout the host system.

This implies a largely irregular or guerrilla enemy vice a conventional enemy with its own dedicated and distinguishable military infrastructure that cannot easily conceal and shelter itself within the civil system. These enemies will rely heavily on guerrilla warfare, terror tactics, sabotage, and intimidation of the population. Under these conditions, detecting the adversary within the urban system and differentiating it from other system elements becomes problematic. In practice, fighting forces are not necessarily either irregular or conventional, but often exist on a continuum. To the degree that fighting forces employ distinctly military platforms and support them with dedicated and distinct military infrastructures, this lessens the problem of detection and differentiation.

Because the adversary is embedded in the urban system, any military action against the adversary will necessarily be traumatic for the host urban system as well—potentially to the point of creating the conditions for more and potentially worse conflict. Combat often takes place in the midst of dense human population that attempts to continue to function during the fighting, but which functioning is severely disrupted.[25] Because of the lack of security, nonmilitary agencies may have only a limited role. Even when participating, they will almost certainly require significant support and security provided by the joint force.

Two primary cases apply. First is the case of an invasion or some other major combat operation against a defending adversary that goes to ground in one or more urban areas. This could occur several ways: a purely operational decision to draw the United States into an environment that negates its technological advantages, a conventional enemy defeated in the field withdrawing into urban terrain to reconstitute as a guerrilla force, or a popular resistance movement originating in the city—or any combination thereof. In any event, this requires the adversary to shed or forego at least some of the qualities of a conventional military to better disappear into the urban system. The

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[25] To the extent that the population evacuates the area and ceases to be a primary concern, the urban system reverts to being merely complex terrain. This said, large numbers of civilians have tended to remain in wartime cities, even when forced evacuations have attempted to remove them. Approximately 5,000-10,000 civilians remained in Aachen in 1944 despite Allied orders to leave and repeated roundups by authorities. See Charles Whiting, *Bloody Aachen* (New York: Stein and Day, 1976), pp. 48 and 70. In Manila in 1945, large numbers of civilians were forced to stay by the Japanese, but many others stayed voluntarily to protect their homes and property despite the urging of city officials to evacuate. An estimated 100,000 were killed in the fighting. See Richard Connaughton, John Pimlot and Duncan Anderson, *The Battle for Manila* (Novato, CA: Presidio Press, 2002), pp. 15 and 70.

primary struggle in this case is a direct conflict to defeat enemy fighting forces in battle without destroying the urban system within which they have taken root. Second is the case of operations against an urban insurgency that has risen up against the controlling establishment.[26] Here the insurgent likewise resorts to guerrilla warfare, terror tactics and subversion, in this case largely because he lacks the means to field a conventional fighting force. The primary struggle here is not a direct conflict to defeat enemy fighting forces in battle, but essentially a tug-of-war to win the allegiance of the population, whether by gaining willing support or by intimidation. In the context of this paper, both major combat operations and counterinsurgency means defeating an adversary that has not merely moved into and occupied urban terrain, but that has roots in the urban system.

[26] As a practical matter, the former case may naturally evolve into the latter as a victorious invader becomes an occupier, especially if the manner of conducting the invasion fosters widespread resentment and animosity among the population.

5. THE OPERATIONAL SOLUTION: COMPREHENSIVE TREATMENT OF THE URBAN SYSTEM

The controlling idea for how to deal with adversaries embedded and diffused within urban systems is *not merely to attack the embedded adversary with destructive force, but to treat the entire urban system comprehensively, applying power to disable hostile elements and enable those elements that are essential to the system's functioning, through a combination of isolating, protective, improving, sustaining, persuasive, destructive and disruptive actions or capabilities.*[27] See Figure 3.

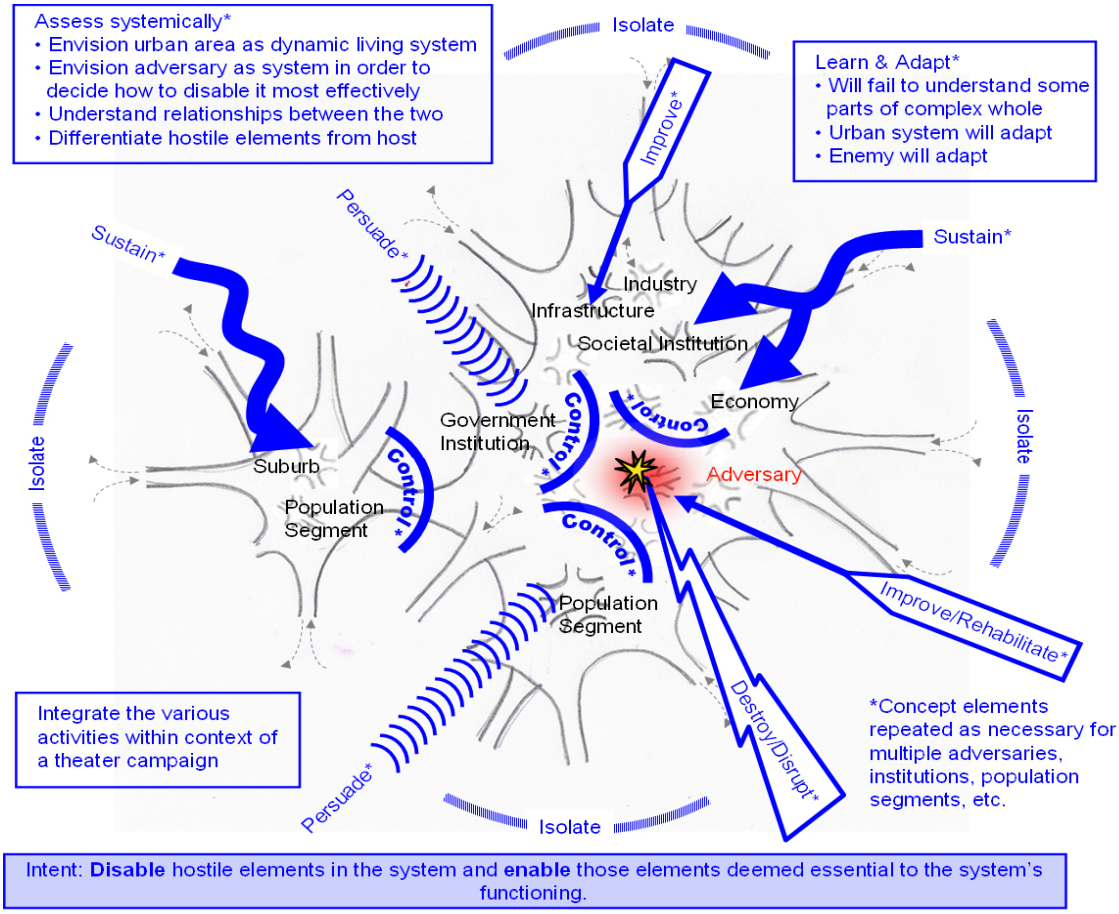

Figure 3.
Comprehensive treatment of the urban system.

[27] This can be thought of as injecting both disruptive and structuring energy into the urban system. In systems terms *disruptive* equates to *entropic* (i.e., dissipative, disorder-producing) and *structuring* to *negentropic* (i.e., constructive, order-producing). While this concept envisions a significant element of combat, the underlying logic could apply to other situations, in particular other types of stability operations in which the combat element is not significant. The conduct of humanitarian assistance/disaster relief (HADR) operations could thus be described as the application of this concept with a minimal or non-existent disabling element.

Discriminate and persistent isolating actions are intended to cut off support to the embedded adversary. Highly discriminate destructive or disruptive actions are intended to defeat or disable embedded enemy elements systemically while minimizing damage to the host urban system. Protective, improving and sustaining actions are intended to stimulate, maintain or reconstitute those subsystems deemed essential to ensure the necessary functioning of the urban system despite the damage inflicted by combat. Since an urban system is fundamentally a social system, persuasive capabilities are intended to influence favorably the attitudes and behaviors of the population, the government or other groups.

Ideally, the intent is to induce the urban system to reject the embedded adversary—to participate actively in detecting, differentiating and defeating hostile elements. The urban system thus becomes an active partner in ridding itself of the embedded adversary. This is an essential condition in most successful counterinsurgency operations, which are fundamentally a struggle to win the allegiance of the

population. This intent is not feasible in all cases, however. Unavoidably, the urban system will sometimes be actively hostile to the joint force and its partners, or at least passively uncooperative.[28] In the event that it is infeasible to induce the urban system to reject the adversary, the intent is simply to facilitate the defeat of the adversary without causing catastrophic damage to the host—and potentially creating a worse problem than existed before.

This concept applies whether the ultimate objective is defeating an enemy unconditionally or isolating or reducing the threat to the point that it becomes a tolerable nuisance that can be managed by civil authorities.

The nature of urban systems calls for setting realistic objectives. Urban systems are more easily degraded through combat than improved through constructive efforts. As complex social systems, urban systems will exhibit unexpected and intractable behaviors. The objective is not to create a model city, but to achieve some basic level of functional equilibrium that is maintainable by civil authorities. After a successful urban operation concludes, the urban system will still likely require a lengthy period of physical and social rebuilding.

The joint force will not necessarily conduct urban operations unilaterally. Because of the emphasis on enabling actions, this concept envisions significant cooperation with nonmilitary agencies and organizations to achieve full effectiveness. Some aspects of joint operations may consist of building partner capabilities and supporting those partners rather than acting directly upon the urban system.

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[28] Even a people suffering under an oppressive regime may likely choose to resist a foreign invasion.

Importantly, this concept envisions maximizing the role of indigenous forces, agencies or groups where feasible, especially for those elements of the operation that involve close and continuous contact with the local population. In addition to indigenous participation, or as an alternative where it is not feasible, participation of accepted international organizations is an option. Despite the emphasis on cooperation, the ability or willingness of other agencies and organizations to participate will vary with circumstances, especially with respect to the security situation. As a result, the joint force should be able to conduct the operations envisioned in this concept both as part of a larger effort and unilaterally, at least temporarily at some baseline level of capability.

Some of the elements of this concept are strictly military actions and some are civil-military, performed by other agencies or organizations or by the military alone as needed. Although some of these actions may naturally tend to precede or follow others, there is no strict sequence. This concept envisions that enabling actions can occur prior to the conclusion of disabling actions and the establishment of security. Various actions will overlap significantly in time and space. The specific combination and phasing of actions will vary with each situation. It is the task of operational design to combine these elements to create a particular concept of operations. Figure 4 lists the supporting ideas of this concept and identifies possible agents for each.

The supporting ideas of this concept are:

- *Conduct a systemic assessment*

A systemic assessment of the situation becomes the basis for all planning and action, military and nonmilitary. While much can be done beforehand, the systemic assessment is a continuous process. The idea of conducting a systemic assessment does not mean to suggest that operations will be based on anything approaching exquisite knowledge about the urban system. As complex and dynamic social creations, urban systems are fundamentally unknowable. The systemic assessment is less a matter of reaching comprehensive truth about the urban system and more a matter of making assertions and hypotheses which are then revised through experience. A key element of the assessment is the idea of prognosis, determining reasonable expectations given the complex and unpredictable nature of the situation. Conducting the systemic assessment is largely a function of intelligence activities.

The systemic assessment involves interpreting the overall urban complex as a living system, of which any adversary is a component. Since combat operations will inevitably disturb the urban system, it is wise to understand the likely effects of those actions—both for the urban system itself and for the broader systems of which it is a part. This requires a doctrinal understanding of urban-system dynamics in general,

i.e., the common structures, processes and functions of all urban systems, as well as specific situational knowledge of the particular urban system under consideration.

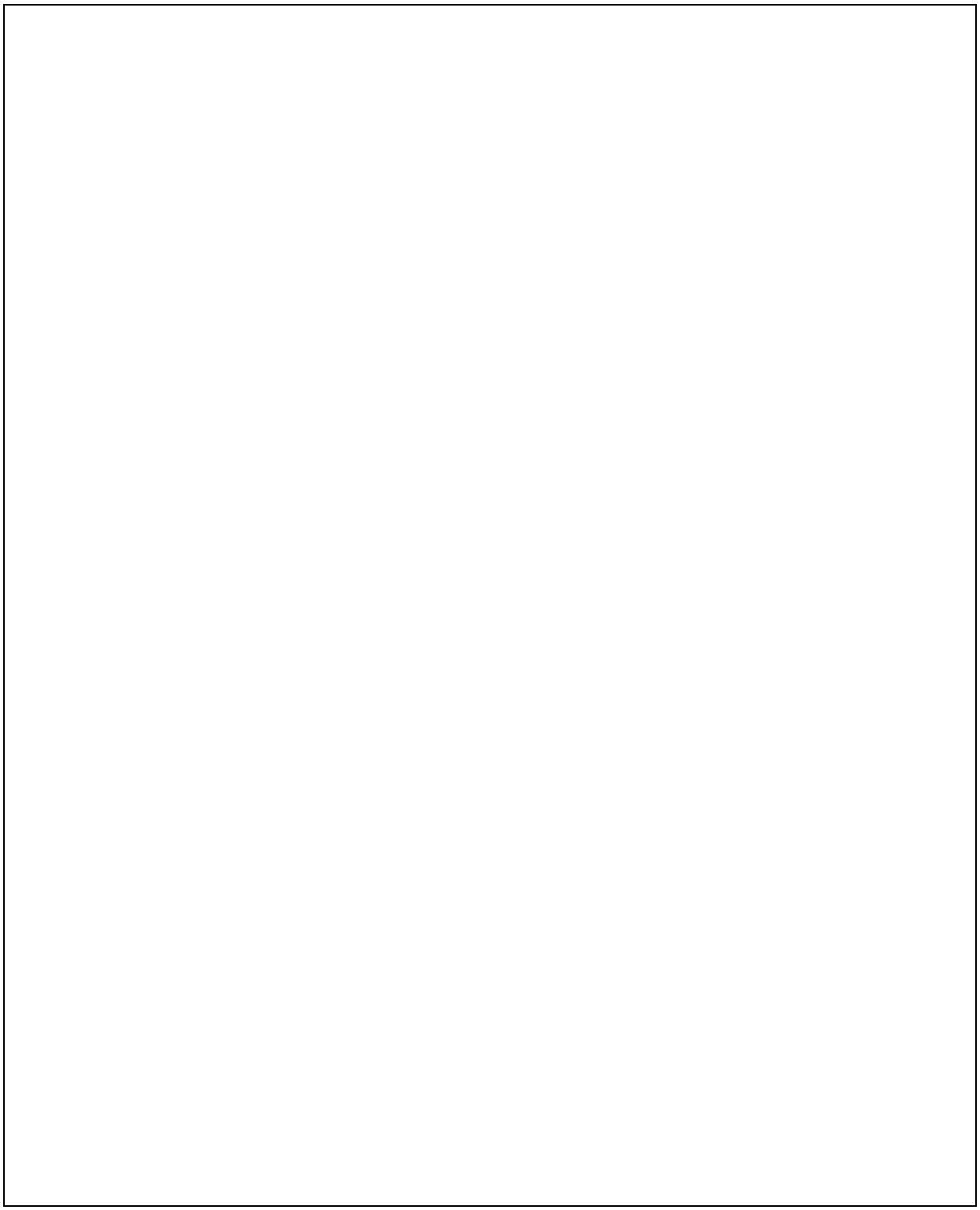

Figure 4.
Synopsis of the concept.

The systemic assessment also involves appreciating each key element of the urban system—adversaries, population segments, government, and social institutions, etc.—as a system in its own right. Critically, this means appreciating each adversary as a dynamic system as to the basis for defeating it as effectively and efficiently as possible, per the *Capstone Concept for Joint Operations*. Different adversaries will require different approaches, as will different elements within the same adversary system. Some could be co-opted, others marginalized or effectively isolated, while some must be physically destroyed. Finally, the assessment involves analyzing how the urban and adversary systems interact; in particular, how each embedded adversary subsists off the host urban system, as a means to understanding how to disassociate the two.

The systemic assessment will routinely need to be a collaborative effort involving key stakeholders and subject-matter experts from various fields because the type of complex operational problem posed in this paper will routinely exceed any one organization's ability to solve, or even comprehend. Urban operations require these stakeholders to form a cohesive entity around the resolution of the problem. Assessing the operational situation will typically require people to interact across organizations, institutions, jurisdictions, languages, and cultures to recognize the systemic dynamics of the situation. It will require the extensive sharing of information, including tacit knowledge that is a function of expertise and cannot be captured in any database. The requirement for functional knowledge about any given urban system will place a premium on foreign-area expertise and could involve maintaining databases of "systemic" intelligence on select urban areas.

- *Integrate all actions within the context of an overarching campaign*

The various actions envisioned by this concept need to be integrated into a cohesive whole within the context of the broader campaign of which the urban operation is a part. Effectively integrated, the various elements of this concept together constitute an interdependent system of mutual reinforcement. As examples: The systemic assessment provides the basis for all other actions, while those other actions, by causing the urban system to react, in turn improve the systemic assessment. Discriminately attacking enemy elements improves security. Improved security facilitates providing sustaining aid and improving institutions and infrastructure. A cooperative population facilitates discriminate attacks, improved security, sustaining aid, and institutional and infrastructural improvements, while all these actions in turn help persuade the population to cooperate.

Integration is a function of command and control, and much of it is achieved through planning. Importantly, this element involves integrating the strictly military elements of the concept with the civil-

military elements and maintaining the appropriate balance between the two. This applies whether the joint force acts unilaterally or in conjunction with other agencies or organizations. In its fullest form, therefore, this concept requires effective communications and coordination among the joint force and other cooperating agencies and organizations.

The complexity of urban systems and the severely compartmentalizing nature of urban terrain necessitate a command and control system that provides latitude for independent action down to small-unit levels. These same factors necessitate robust communications down to the lowest echelons, which can be a challenge given the degrading effect that urban terrain tends to have on radio signals.

- *Learn and adapt*

It is imperative that leaders recognize the need to learn from experience and continuously adapt actions as a result. This is a critical function of command and control. Because of the complexity of urban systems, any initial assessment of the situation will invariably get some aspects wrong. The dynamics of the urban system and the embedded adversary will reveal themselves only over time as the result of actions taken against the system. Moreover, the adversary and the urban systems will adapt to any actions the joint force may take, and so the situation will change continuously over time. Importantly, this will require establishing information requirements specifically designed to corroborate or invalidate assertions about the functioning of the adversary and the urban system.

Learning about the urban system is not merely a matter of collecting information, but also of acting upon the system and watching how it responds. This means designing operations specifically to learn about the system.

Learning and adapting is the natural continuation of the systemic assessment. The systemic assessment establishes hypotheses about the functioning of the urban system and the adversary embedded in it. Learning and adapting assesses those hypotheses and modifies operations as a result. In this way, the entire urban operation becomes a learning process.

- *Selectively isolate the urban system*

Selectively isolating the urban system militarily, materially, financially, energetically, informationally, etc. is a critical shaping action.[29] This

[29] Current Army doctrine recognizes the importance of isolation: "Isolation of an urban environment is often the most critical component of shaping operations. … Isolation is usually the key shaping action that affects UO [urban operations]. It applies across the range of … operations. Most successful UO have effectively isolated the urban area.

does not mean complete and indiscriminate isolation, because urban systems require matter, energy and information to function. Nor is this simply a matter of geographically surrounding an urban area with blocking positions or checkpoints (although it certainly may include that), because information flows especially are independent of geography. Instead, this element involves selective filtering to prevent the influx of personnel, materiel, and information that could strengthen the adversary's cause. In effect, isolation attempts to turn the open urban system into a closed system with respect to support for the adversary—to choke off adversary growth from the outside so that joint operations are dealing with a fixed problem rather than one that continues to develop without disrupting other essential flows. Physical isolation involves interdicting the movement of units, persons, weapons, supplies, funds, contraband, and other shipments into the urban area. Informational isolation involves interrupting hostile military, political, ideological, and financial or media communications.

Given the openness and potential size of modern urban areas—and the fact that many modern cities do not have a distinct perimeter but merge into other urban areas through urban sprawl—total interdiction of matter, energy, and information will not be feasible. Instead, isolation becomes a matter of identifying and controlling the most important ingress points into the urban system (and adapting as the adversary finds different routes).

The level of granularity required in isolating an urban system will depend on the nature of the threat. In the case of a conventional adversary it may require detecting and intercepting combat formations, while with an irregular adversary it may require intercepting individual persons, civilian vehicles, or shipments. Isolation could involve the use of a wide variety of detection technologies and techniques, especially those that can detect hostile persons, materiel, or information attempting to blend in with the general ebb and flow of the urban system.

- *Apply highly discriminate destructive or disabling[30] force to disrupt an adversary's ability to pursue its objectives*

This is the one supporting idea that involves actively locating and attacking embedded enemy elements. It involves the use of both kinetic

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Failure to do so often contributed to a difficult or failed UO. In fact, the relationship between successful isolation and successful UO is so great that the threat often opposes isolation actions more strongly than operations executed in the urban area." FM 3-06, *Urban Operations* (Washington: Headquarters, Department of the Army, 2006) para. 6-11, pp. 6-3 and 6-4.

[30] In the broader context of the controlling idea *disabling* applies to any actions designed to degrade an adversary's ability to operate effectively, in contrast to *enabling* actions, which improve the functioning of the urban system. In the context of this particular concept element, *disabling* refers specifically to nonlethal actions to interrupt adversary actions without causing physical destruction or permanent injury.

and non-kinetic means aimed at achieving both lethal and nonlethal effects. It applies whether the ultimate objective is defeating the enemy unconditionally on the battlefield or reducing the threat to a chronically manageable level. The basic aim here is to excise hostile elements from the urban system while causing as little damage as possible to that broader system.

Discrimination here does not necessarily imply only pinpoint attacks. Discrimination means discretely striking intended targets but not impacting other elements. The joint force could thus launch highly discriminate broad-area attacks as the situation requires.

This idea can apply if the intent is to physically destroy the enemy through cumulative attrition, but consistent with the *Capstone Concept for Joint Operations*, this concept envisions defeating the enemy through *systemic disruption*—disrupting the enemy's ability to function as a cohesive and purposeful whole, even if some significant enemy elements may remain undamaged. A key way to do this could be interrupting the mechanisms by which the adversary draws support from the urban system. The purpose in taking this approach is not merely to defeat the enemy as efficiently and effectively as possible, but also to minimize collateral damage to the host urban system.

While this idea promotes economy, this does not mean to imply that defeating the enemy will be a painless or clinical process with little physical or societal damage. In fact, because the enemy will almost certainly seek cover in the physical infrastructure of the urban area, this concept will inevitably require selective destruction of parts of the urban system. The level of destruction, which could be significant, will depend on how deeply embedded the adversary is and how successful the joint force is in differentiating adversary elements from the broader population.

The joint force can apply destructive or disabling force by establishing a ground presence within the urban system and applying force through close combat or by injecting combat power into the system from without, using long-range capabilities—or likely a combination of both. Either way, this idea will require detection and differentiation capabilities specifically suited to the highly compartmented infrastructure and ambiguous, cluttered signatures of the urban environment. It will also require precision weapons and munitions suited to defeating urban fortifications.

A key aspect of this element is detecting hostile elements and differentiating them from other elements of the population. This detection and differentiation will have to occur at a level of granularity appropriate to the situation, which in the case of an irregular adversary could very well be the individual person or platform. In this regard, this concept envisions extensive use of law enforcement techniques and technologies, including the full range of forensic science.

- *Establish and extend control and protection of urban sectors and subsystems*

This idea involves gradually extending dominance over parts of an urban system both to protect them against the adversary and to deny them as resources to the adversary. In this way, control and protection do not only serve an enabling function, but also contribute to defeating the adversary. Control is not an either/or condition and is not achieved instantly. The idea is to establish some level of control, and then to extend both the degree of control and the dimensions of the controlled area over time—realizing that total control is not possible in most cases. Where necessary, this element involves physically seizing urban areas through direct combat. In effect, this element involves choking off the adversary within the urban system and so complements the external isolation of the urban system.

A key aspect of this element is providing security for the local populace to gain its cooperation and support. Another is protecting improvements and support to the urban system, both of which are likely to become targets of enemy action. Maintaining control and providing protection implies a significant physical presence within the urban system—although this could certainly be augmented by stand-off capabilities such as detection, characterization, and targeting. Like the others, this supporting idea is based on the systemic assessment, which seeks to understand the adversary's relationships and interactions with the host system as the basis for interrupting them. The level of granularity of this element will once again depend on the nature of the threat, ranging from conventional defensive measures against regular forces to law-enforcement activities designed to protect against actions by individuals. This element involves close and extensive contact with the civil population and may be best performed using indigenous forces if possible.

- *Persuade municipal governments, groups, and population segments to cooperate with joint force operations*

Because urban systems are social systems, the attitudes and behaviors of the population are important to the collective behavior of the urban system. This concept envisions significant actions to influence those attitudes and behaviors, with the ultimate intent being to persuade the government and the population to cooperate with the joint force—ideally by actively helping to identify and defeat hostile elements and by supporting enabling actions, but at least passively by disassociating themselves from the adversary. This element could include coercion (e.g., threats to withdraw support) or inducements (e.g., promises of support) to influence behaviors, but perhaps more importantly it would include persuasive efforts to influence perceptions and attitudes. While coercion and inducements will tend to work only as long as they continue

to be applied, successful efforts to change perceptions and attitudes will tend to be more enduring.

Efforts to change indigenous perceptions and attitudes will involve use of various capabilities that support strategic communication, including psychological operations, public affairs, military diplomacy, and defense support to public diplomacy. These efforts will occur before, during, and after combat. A key part of this effort will be performing expectation management—keeping targeted audiences informed about U.S. objectives, intentions, and actions as well what to expect in terms of hardships.[31] Since every action sends a message, another key element of this effort will be ensuring that actions are consistent with the information being distributed. If actions and information are not consistent, credibility will suffer. Finally, because it will be impossible to completely isolate the urban system informationally, this idea involves actions to limit adversary efforts to influence the local populace and decision-making groups.

- *Provide sustaining aid to the urban system*

This idea involves infusing aid into the system to sustain it during the ordeal of combat operations to improve the system's ability to survive. Most often this will mean delivering essentials such as food, shelter, clothing, and emergency medical treatment to the urban population. It can also mean injecting economic support to sustain the urban economy. This is a civil-military action, whether performed in cooperation with nonmilitary agencies or organizations or by the military alone. Importantly, this element not only supports the urban system, but also serves to undermine an insurgency (or potential insurgency) and so can make an important contribution to ultimately defeating an adversary.

- *Make improvements to urban institutions and infrastructure*

This idea relates to restoring degraded urban subsystems to previous levels of functioning, transforming or improving subsystems that were previously dysfunctional, or creating subsystems that previously did not exist. The goal here is not to try to create a model urban system, but merely to achieve a basic level of stable functioning. Where the previous idea involves flowing support into the urban system to sustain its functioning, this element involves making actual improvements to the system's internal structures and processes to make it better able to sustain itself. As examples, this could mean restoring degraded public services, performing physical construction and reconstruction projects, creating conditions that foster economic growth, training municipal law enforcement, or guiding a host-nation government in instituting political reforms.

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[31] Balanced against the requirements for operations security.

Improving institutions and infrastructures will require identifying those urban subsystems that are critical to system survival. In extreme cases this element could involve creating alternative institutions or infrastructure, such as creating refugee camps to house a displaced urban population (or one that is about to be displaced by combat).

This concept envisions actions to rehabilitate critical institutions and reconstruct critical infrastructure as soon after combat as possible. These actions would be ready for execution even before combat has finished. In addition to rehabilitation and reconstruction, this concept envisions making improvements to the urban system *in advance of significant combat* when possible in order to improve the system's ability to withstand the damage combat will inflict—realizing that it often may not be possible to gain access to those institutions or infrastructures *without* combat. All these actions will become the basis for transition to longer-term reconstruction operations that succeed the urban operation. These actions should be performed in such a way that does not make the urban system permanently dependent on outside support, but should be aimed at encouraging self-sufficiency as expeditiously as feasible.

Like providing sustaining aid, these are civil-military activities, usually performed by a wide variety of nonmilitary and military agencies and organizations. However, the joint force should possess some capability to improve an urban system in the absence of other agencies and organizations. As with sustaining aid, these actions can also serve the important function of undermining an insurgency or potential insurgency.

6. KEY REQUIRED CAPABILITIES

These are the key capabilities that would be required to implement this concept.[32] These capabilities apply to the overall conduct of urban operations, as a national or even multinational effort. The joint force may be required to apply these capabilities unilaterally, if other agencies or partners cannot participate, or it may cooperate with or support other agencies or partners in applying these capabilities.

JUO-001. The ability to collect, disseminate, and access situational information on an urban system.

JUO-002. The ability to assess an urban operational situation systemically.

JUO-003. The ability to integrate all the various elements of urban operations within the context of a theater campaign.

JUO-004. The ability to adapt urban operations to the changing situation.

JUO-005. The ability to maneuver to, into, and through an urban area.

JUO-006. The ability to apply highly discriminate destructive or disabling force to attack hostile elements while minimizing damage to an urban system.

JUO-007. The ability to persuade municipal governments, organizations, and the general populace to cooperate with joint force operations.

JUO-008. The ability to secure, control, and protect urban areas to limit hostile presence, activity, and influence.

JUO-009. The ability to protect the joint force and other agencies and organizations within an urban area.

JUO-010. The ability to selectively isolate all or relevant portions of an urban system to limit unwanted external influence.

JUO-011. The ability before, during, and after combat operations to effect institutional and infrastructural improvements to

[32] This is not meant to be a comprehensive list, but to identify only those capabilities that are peculiar to urban operations or have a unique application in the urban environment.

strengthen selected urban subsystems identified as essential to the continued functioning of the urban system.

JUO-012. The ability to facilitate humanitarian aid to suffering urban populations under both combat and noncombat conditions.

Appendix C decomposes these capabilities into constituent tasks and provides potential measures for evaluating the performance of those tasks.

7. POTENTIAL RISKS OF ADOPTING THIS CONCEPT

Adopting this concept for joint urban operations, as opposed to another, carries with it certain potential risks. These include:

- The concept's conclusion that the military requires a significant capacity to apply enabling, in addition to disabling, force in some situations could lead to the misconception that the military can routinely succeed unilaterally or that the military is trying to usurp the rightful roles and authorities of other governmental agencies.
- Conversely, the emphasis on civil-military cooperation could lead to the expectation by military forces that other agencies and organizations will always be present to perform enabling activities and that the military can therefore concentrate on security and combat activities.
- The significant levels of cultural awareness and functional information on urban systems implied by this concept could be unattainable in time to be of operational use.
- The significant flow of support to the urban system envisioned by this concept could be diverted by enemy action or subverted indigenous institutions to actually strengthen the adversary.
- The emphasis on support provided by the joint force to the urban system could lead to the neutering of local authorities and institutions.
- The potentially significant requirement for ground troops suggested by this concept could be counterproductive in some situations by creating frictions with the indigenous population.
- The concept's emphasis on the use of enabling power could lead to the misconception that joint urban operations can be conducted successfully with limited casualties and little physical destruction.

- The systems outlook described in this concept could lead to a systems-engineering approach to urban operations based on the misconception that urban ecologies can be treated as if they are engineered systems (i.e., structurally complicated but interactively simple).

- Building within the military the enabling capacity that is suggested in this concept could occur at the expense of warfighting capacity.

- The concept's emphasis on applying enabling force on behalf of a given urban population could lead to the creation of a dependent society not willing to work for self-sufficiency.

- The adversary succeeds in creating the dilemma that defeating the adversary and preserving the urban system become mutually exclusive objectives.[33]

There are no simple mitigations to these risks, which are generally the result of an unbalanced interpretation or application of this concept. The general mitigation is the application of judgment based on an understanding of each situation.

8. POTENTIAL IMPLICATIONS OF ADOPTING THIS CONCEPT

Developing the capabilities to implement this concept carries a variety of institutional implications, the full range of which will only be learned through experience and experimentation. The following is an initial list of possibilities:

Policy. With respect to policy matters:

- The joint force must be prepared to support and participate in civil-military teams as prescribed by the U.S. Government Interagency Management System (IMS).

- Military forces will sometimes be used to perform predominantly nonmilitary missions, if only temporarily and at a baseline level until other agencies can participate.

- The Department of Defense will develop the capabilities and capacities to perform extensive civil-military operations.

[33] Strictly speaking, this risk is not unique to this concept, but is a general operational risk of dealing with embedded urban adversaries. Any urban enemy is likely as a primary goal to try to create this dilemma for the joint force, so the risk warrants mention.

- The Department of Defense and other agencies and organizations will commit to extensive information sharing with respect to urban systems, both internally and between agencies.
- Joint forces will conduct extensive peacetime shaping operations, including building partnership capacities, which may set the conditions for success in future urban combat or preclude the need for urban combat altogether.
- A robust Commander's Emergency Response Program could provide a useful tool in sustaining and improving parts of an urban system during operations.

Doctrine.[34] With respect to military doctrine:

- Because of the complexity of urban systems and urban operations, command and control will be a fundamentally collaborative process involving nonmilitary stakeholders and subject-matter experts.
- Doctrinal knowledge about the nature of urban areas as living systems, the functioning of those urban systems, and best practices for influencing that functioning must be developed.
- Doctrinal concepts, terminology, and symbology for operating within, discussing, and representing urban areas as dynamic systems must be developed.

Organization. With respect to force structure:

- The joint force will require potentially significant numbers of ground combat forces to perform the isolation, security, and combat elements of this concept, potentially in numerous urban areas simultaneously.
- The joint force will require significant capacities in military police, civil affairs, psychological operations, public affairs, special operations, and engineering (including civil engineering) units.
- The joint force will require the logistical and medical capacities to aid the civil population and enemy prisoners of war as well as support the force.

[34] Doctrine here refers not only to "fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives" [JP 1-02, http://www.dtic.mil/doctrine/jel/doddict/data/d/01753.html, accessed 22 Dec 06], but also to authoritative tactics, techniques and procedures.

- The significant reliance on nonmilitary assets, especially for cultural expertise, civil governance, law enforcement, and detention, and construction operations, may necessitate an increased reliance on outsourcing.

- The requirement for a significant civil affairs capacity suggests reconsidering the current active-reserve mix of civil affairs units.

- Given the location of many cities on rivers or coastlines, the joint force may require significant coastal/riverine forces.

- Because of the increasing threat of weapons of mass destruction in urban areas, there is a role for specialized teams to locate and render those weapons safe and secure and to respond to the effects of their employment.

Training. With respect to training:

- U.S. forces will develop competence in performing the essential public-service functions required of municipal governments.

- U.S. forces will likewise develop competence in training indigenous personnel in the essential public-service functions of municipal governments.

- U.S. forces will increase training in foreign language and cultural skills.[35]

- The probable lack of front lines in urban operations suggests a need for significant combat training for all support personnel.

- Due to the high stress of urban combat on ground forces, there is a potential need for battle stress awareness training.

- Because of the highly compartmented nature of urban terrain, ground forces should be trained to operate in a distributed manner at the small-unit level.

- Because of the likely role of nonmilitary agencies and organizations—including private security forces—in urban operations, joint forces may require training in integrating with those elements.

Materiel. With respect to technology development and materiel acquisition:

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[35] Also mandated in the *Quadrennial Defense Review Report* (Washington: Department of Defense, 6 Feb 06), pp. 5, 78-79, 89.

- First and foremost, the nature of urban operations as described in this paper suggests that there are no technological "silver bullets"—no technological advances that will fundamentally alter the challenges of urban operations or will obviate the need for significant force levels.
- For forces operating for extended periods within urban terrain, the rugged, compartmented nature of that terrain places a premium on simple, durable, and disposable technologies available in great numbers as opposed to advanced, low-density technologies.[36]
- Technologies that facilitate detecting and differentiating hostile elements from others, down to the level of individual persons or platforms, are a priority.
- Surface, air, and maritime conveyances that provide for the rapid, protected, and precise movement of forces in urban terrain are a priority for urban operations.
- Technologies that facilitate information collection within the particular conditions of urban terrain, such as detection through walls or other surfaces, are a priority.
- Technologies that facilitate the tagging of persons, vehicles, weapons materials, or other potential targets for continuous and automatic tracking within a cluttered urban environment could be beneficial.
- Urban operations require stand-off and point technologies to detect the presence of various types of weapons of mass destruction against the backdrop of a cluttered urban environment.
- Because of the requirement for combat in the close vicinity of noncombatants, nonlethal technologies could prove especially useful in urban operations.
- Technologies, including nonlethal technologies that facilitate destroying or disabling hostile forces while minimizing collateral damage to the urban system are a priority.
- Effective command and control of urban operations could benefit from technologies that facilitate the modeling and dynamic representation of urban systems.

[36] Ralph Peters, "Our Soldiers, Their Cities," *Parameters* (Spring96), p. 45.

- Because of the need for collaboration in urban operations, technologies that facilitate collaboration among people from different organizations and cultures, especially when not collocated, could prove especially useful.
- Technologies that provide lightweight personnel protection and protect materiel and facilities from threats characteristic of urban environments—such as snipers, improvised explosive devices, or chemical, biological, and radiological weapons—are a priority.
- Urban operations require, down to the small-unit or even individual level, communications technologies that overcome the debilitating effects of urban terrain on tactical communications.
- Urban operations require weapons that facilitate precision engagement, are effective against the hardened nature of urban terrain, and provide discriminate and even tailorable effects.
- Automated language-translation capabilities, for both speech and writing, could significantly improve interactions with a local populace.
- Because of their social dimension, urban operations require technologies to rapidly communicate with intended audiences to inform, persuade, counter adversary propaganda, and assess communication efforts.
- This concept implies the development of modeling and simulation of urban systems beyond current capabilities and software that facilitates better analysis of the issues associated with urban operations across the warfighting functions.

Leader development. With respect to leader development:

- This concept implies the development of leaders with an understanding of urban areas as living systems to be treated comprehensively vice merely as an operating environment.
- This concept implies the development of leaders with an understanding of, and even working experience in, urban system dynamics—e.g., through tours with municipal governments.
- This concept implies the development of leaders with a strong understanding of the employment of civil affairs units.
- This concept implies the development of leaders with an understanding of the influence of culture on urban systems, both in general and in specific instances.

- The emphasis on civil-military operations implies the development of leaders with a strong understanding of the roles and capabilities of the nonmilitary agencies and organizations that will be likely partners in urban operations.
- This concept implies the development of leaders with strong proficiency in consequence management because of the potentially dramatic effects of destructive action on urban systems.
- The compartmentalizing effect of urban terrain implies the requirement for developing strong small-unit leaders with a penchant for acting independently and with initiative.
- The phenomenon of "strategic compression" that is common to urban operations implies the need for junior leaders with a strong appreciation for the potential operational and strategic implications of local actions.

Personnel. With respect to personnel policy:

- This concept implies the requirement for ready access to and standing relationships with various subject-matter experts in urban and related issues.
- This concept implies potentially significant use of nonmilitary personnel in the form of advisors, contractors, etc., in order to gain the necessary expertise in some areas.
- This concept implies appropriate numbers of foreign-area officers and increased continuity in foreign-area assignments to increase expertise on the urban systems within a theater.
- The exhausting nature of urban combat suggests the potential need for frequent troop rotations and implies significant demands on the personnel replacement system.

Facilities. With respect to the development of facilities:

- This concept implies a requirement for urban training centers that capture the rich dynamics and social qualities of urban systems rather than merely the terrain aspects.

The military functional areas are common to all operations, but urban operations in general and this concept in particular carry specific implications for the performance of some of those functions. Some of the functional implications that have not been treated yet include:

Intelligence. With respect to intelligence capabilities:

- This concept implies the need for "systemic" intelligence—intelligence methods and technologies that facilitate understanding urban system dynamics, potentially including techniques for "mapping" urban systems.
- This concept implies the need for highly discriminate methods and technologies for detecting, identifying, characterizing, tracking, and potentially targeting the various supporting, neutral, potentially hostile, and hostile elements embedded within an urban environment characterized by clutter and ambiguous signatures.
- This concept implies an increased requirement for human intelligence (HUMINT), counterintelligence (CI), and interrogator capabilities.
- This concept implies a heavy reliance on open-source intelligence (OSINT), including subject-matter experts, about the functioning of specific cities.
- This concept suggests the need for building "systemic" databases on selected urban areas linked to visualization tools.
- Since information flow is a key element of urban systems, this concept implies improved capabilities to collect against various communication systems characteristic of urban environments.

Command and Control. With respect to command and control:

- This concept suggests that command and control of urban operations will become increasingly collaborative across organizational, functional, and cultural lines—to include collaboration throughout the interagency community and with coalition partners.
- This concept potentially implies the integration of military and nonmilitary capabilities at increasingly lower levels of application.
- The extremely compartmented nature of urban terrain implies a particular need for robust, decentralized command and control of ground forces based on junior leaders exercising initiative within the context of higher-level intents.

Sustainment. With respect to the sustainment function:

- The demands of urban operations will require a shift in traditional supply ratios—e.g., likely less expenditures in fuel, greater expenditures in ammunition and medical supplies, increased requirements for replacement weapons, uniforms, protective, and personal equipment.[37]

9. CONCLUSION

This concept proposes one possible joint solution to the problem of urban operations based on the conception of an urban area as a dynamic, living system particularly vulnerable to the destructive effects of military action. This concept does not claim to provide the conclusive answer to this very probable and challenging problem; rather, it attempts to stimulate informed discussion and experimentation which will eventually lead to that answer in the form of a set of future joint capabilities. If this concept serves to catalyze the process that generates those capabilities, it will have served its purpose.

[37] Peters, "Our Soldiers, Their Cities," p. 48-49.

APPENDIX A. ILLUSTRATIVE VIGNETTE A

COUNTERINSURGENCY IN PORT LEWIS, 2015-2021[38]

The summer of 2015 sees simultaneous outbreaks of bacterial meningitis and influenza A in the Democratic Republic of Bafonga, a major global supplier of crude oil. The federal government in Doma is completely unprepared for the outbreaks. The congested squalor of Doma and Port Lewis provide ideal conditions for widespread infection. The World Health Organization fears a flu pandemic. Triggered by the ineffective government response to the outbreaks—but owing as much to pent-up unrest over a national economy in ruins after a decade of government mismanagement, drought conditions in the interior and widespread religious and tribal frictions—Bafonga erupts in a wave of anti-government and sectarian violence that washes over the country. A heavy-handed response by the Bafongan Army in Doma, Port Lewis and other cities only causes the violence to escalate. Oxfam International estimates that by September, when the initial spasm of violence has ended, 200,000 are dead from disease or killing. Most Western oil companies and relief organizations have already withdrawn most of their workers by now; U.S. forces evacuate those remaining from Port Lewis to ships offshore or to nearby countries.

The Bafongan government requests international assistance and the United Nations passes an emergency resolution authorizing foreign relief efforts. Fifteen nations, including the other East African Community (EAC) nations, eventually respond with assistance. The spasm of violence plays itself out, and a lull settles over the country. British troops return to Doma for the first time since Bafonga gained independence in 1960. Spain, Germany, Kazakhstan, Pakistan, Lithuania, and China send relief contingents. The United States assumes responsibility for the oil-producing northeastern quadrant of the country, including Port Lewis, deploying a national integrated task force (NITF) of contingents from various federal departments and agencies under overall coordinating authority of the U.S. Ambassador in Doma supported by a planning team from the State Department's Office of the Coordinator for Reconstruction and Stabilization (S/CRS). The NITF includes task forces from State, Defense, Commerce, Treasury, Justice, Health and Human Services, Homeland Security, the Central

[38] This is a work of fiction. Any resemblance to actual places, events or operations is entirely coincidental.

Intelligence Agency, and various subordinate agencies such as USAID, FEMA, FBI, and others. U.S. Africa Command establishes Joint Task Force East Africa (JTF-EA) as the military component to the U.S. national effort. JTF-EA will have primary responsibility for security within the national effort, but will also contribute "constructive" capabilities in support of other leading federal agencies. It will be commanded from an afloat joint operations center by the commander of the U.S. Fifth Fleet. The joint task force commander is designated as the deputy commander of the NITF.

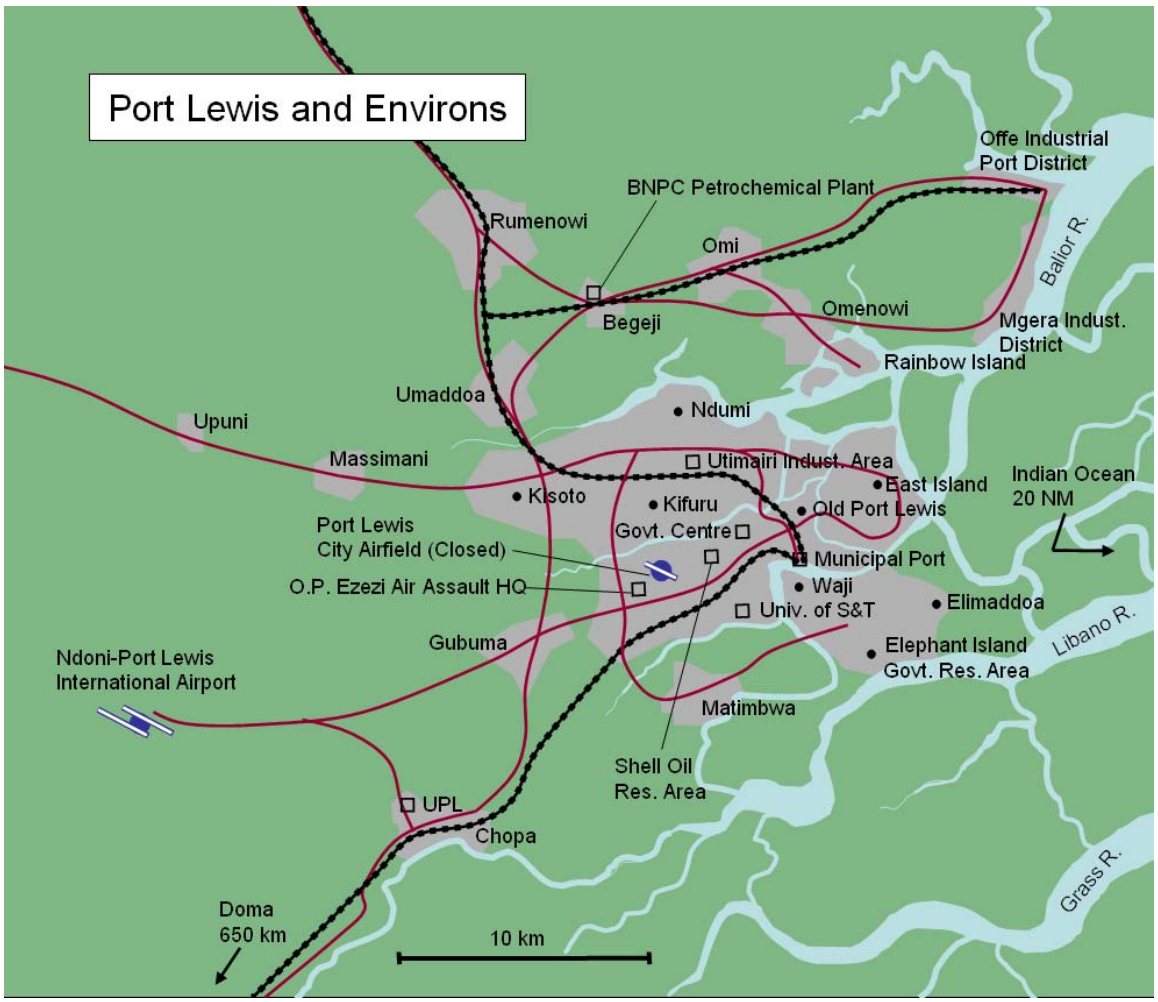

Figure A-1.
Port Lewis and environs.

Elements of 22nd Marine Expeditionary Unit arrive in the municipal port at Old Port Lewis on 23 September, deploying up the Nassawara delta by air-cushion landing craft and tilt rotor. A day later, 1st Brigade of the 82nd Airborne Division begins deplaning at Ndoni-Port Lewis International. Maritime Prepositioning Ships Squadron 2 (MPSRON-Two) deploys from Diego Garcia and links up en route via

high-speed connector ships with elements of II Marine Expeditionary Force deploying by air to Mombassa, Tanga, and Dar es Salaam. Other II MEF elements deploy from North Carolina by amphibious shipping. Humanitarian agencies and organizations begin returning to the country to begin the recovery process. U.S. Transportation Command begins flowing relief supplies into the port and international airport. Air Expeditionary Wing 461 establishes an aerial port of debarkation and begins delivering supplies into Ndoni-Port Lewis International Airport. Expeditionary Strike Force 6 deploys to the area and will be reinforced by significant riverine and maritime expeditionary security capabilities from the continental United States. U.S. and coalition naval forces begin assembling a sea base near the mouth of the Nassawara River, which will serve as the primary support base for the operation. Maritime Expeditionary Security Squadron 3 deploys to provide security for the sea base.

While a tenuous truce holds over the rest of the country in October and November, and relief work proceeds, the violence in northeastern Bafonga quickly transforms from the initial irrational spasm of bloodletting into an organized insurgency with Port Lewis at its epicenter.

Port Lewis is a commercial and industrial port located in the network of rivers that form the Nassawara River delta. It is the center of the Bafongan oil industry and the second-largest city in Bafonga, with a heterogeneous population of 2.4 million people in the city proper and some 5 million in its greater metropolitan area. The indigenous population does not identify itself primarily as Bafongan, but by tribal affiliation—Hano, Addoa, Enow, Ugoni, Atsekiri, and others. The population is predominantly Christian, although an important Muslim minority exists. Within the Christian majority there are significant tribal frictions. Port Lewis is also home to a large foreign population including Western aid workers and oil company employees. Port Lewis has also become the center of a burgeoning Pentecostal movement.

With a sustained population growth of five percent, the metropolitan area has doubled its population in the last 15 years, overwhelming local infrastructure and services. Because of poor zoning much of this growth has been uncontrolled and haphazard, sprawling outward in all directions from the old British port, carving industrial facilities and squalid, government-built tribal settlements out of the mangrove swamps of the river delta. Despite fundamentally dysfunctional municipal government, Port Lewis has continued to attract people from the impoverished countryside. Most physical infrastructure is in a state of decay. Old Port Lewis and the City Centre have underground sewage, but the outlying growth does not. The Bandu Power Station about 50 kilometers upriver produces 60 megawatts (out of a maximum capacity of 160), but most of that electricity goes to Doma and elsewhere; as a result, electricity in Port Lewis is intermittent, and most of the oil facilities generate their own electricity. The miles of paved

roads are crumbling and the intermittent electricity to the traffic signals causes continuous traffic jams and frequent interruption of the inefficient commuter rail system. The local economy is severely depressed, although a Black Market thrives in medicines, produce, electronics, illegal drugs, manufactured goods, and now arms.

Despite its economic state, Port Lewis is a "connected" city, with significant information-technology infrastructure and countless internet cafes used by foreign nationals and the indigenous population alike. There are nearly five million cell phone users in the greater Port Lewis area.

The insurgents use terror and guerrilla tactics—because they are too weak to confront government forces conventionally, but also because these tactics are a natural extension of their historical methods of warfare. These initially include assassination and intimidation, bomb and rocket-propelled grenade (RPG) attacks against government offices, sabotage against oil-company facilities and pipelines, car and suicide bombs in crowded public places, and hostage-taking. By December the insurgents have begun attacking U.S. forces with improvised explosive devices (IEDs, including chemical IEDs made from industrial chlorine), snipers, and ambushes with automatic weapons, RPGs and even mortars.

In February 2016 the insurgents begin launching suicide attacks by small craft disguised as fishing boats against shipping in the narrow waters of the river. On 16 May 2016, a Shell Oil maintenance ship is sunk by a mine in the Balior River just east of Rainbow Island.

Assessing the Urban System

As initial steps are being taken on the ground to stabilize the situation, the NITF commander convenes what he calls the "System Framing Working Group," a collaborative design group consisting of senior leaders and other key stakeholders, whose aim is to come to grips with the driving logic of the problem and to reconcile all key stakeholder perspectives in the decision-making process. Although membership changes over time as requirements change, the core group includes the JTF commander, the heads of the other agency task forces, an expert on the oil industry, a professor from Northwestern University renowned in East African culture and politics, senior members of the S/CRS team, an expert in Developing World urbanization, Bafongan military commanders, and several local municipal leaders.

The JTF commander forms a similar enduring collaborative design group to focus on the military aspects of the situation. The working group includes all functional component and subordinate task force commanders, as well as Bafongan military leaders and various subject-matter experts. The design process is facilitated by the existence of networks of indigenous sources and advisors that have been established in Bafonga for years as part of steady-state shaping operations. The

outputs of this Operational Logic Working Group (OLWG) feed upward into the SFWG. The working group holds virtual meetings on a monthly basis, which the JTF commander requires that all principals attend.

One of the most important early assessments the OLWG makes is that the humanitarian disaster has mutated into an insurgency. The ambassador agrees, and, as a result, all operations throughout the theater will now be governed by the unique logic of insurgency and counterinsurgency. JTF-EA will now have lead responsibility not only for providing security, but also for offensive actions directly aimed at disrupting insurgent activities.

The working group collaborates to build and adapt a logical causal model meant to hypothesize the dynamics driving the situation in and around Port Lewis. The members envision Port Lewis as a dynamic urban system in which economic weakness and municipal dysfunction generate popular suffering and grievances which foster disruption, subversion and violence, which in turn feed economic weakness and dysfunction in a vicious cycle of accelerating decay. They hypothesize that heavy-handed government crackdowns, inherent ethno-religious frictions, overpopulation due mostly to migration from impoverished rural areas, oil company actions, and external subversion are additional factors feeding the destructive cycle. They begin to posit ways to intervene in the system to halt and reverse the destabilization dynamic. See Figure A-2.

The resulting "integrated design" becomes the guiding logic for all JTF operations and is disseminated throughout the force. The OLWG identifies possible metrics to test its hypotheses, and those metrics become information requirements feeding the integrated collection plan. Based on feedback, which corroborates or contradicts the hypotheses, the working group revises its causal model over time. This design process continues for the entire duration of the counterinsurgency campaign.

The systemic assessment reveals that "the insurgency" is actually an alphabet soup of insurgent movements with overlapping—and sometimes competing—goals. Some advocate secession and the creation of an independent state. Some advocate overthrow of the Bafongan government. Among these are groups that differ over methods and others that battle among themselves over primacy in the liberation movement. Some merely pursue reparations, political concessions or a redistribution of revenues from oil profits. Most groups list environmental destruction by the oil industry among their grievances. Some actually mean it; for others it is a public relations ploy.

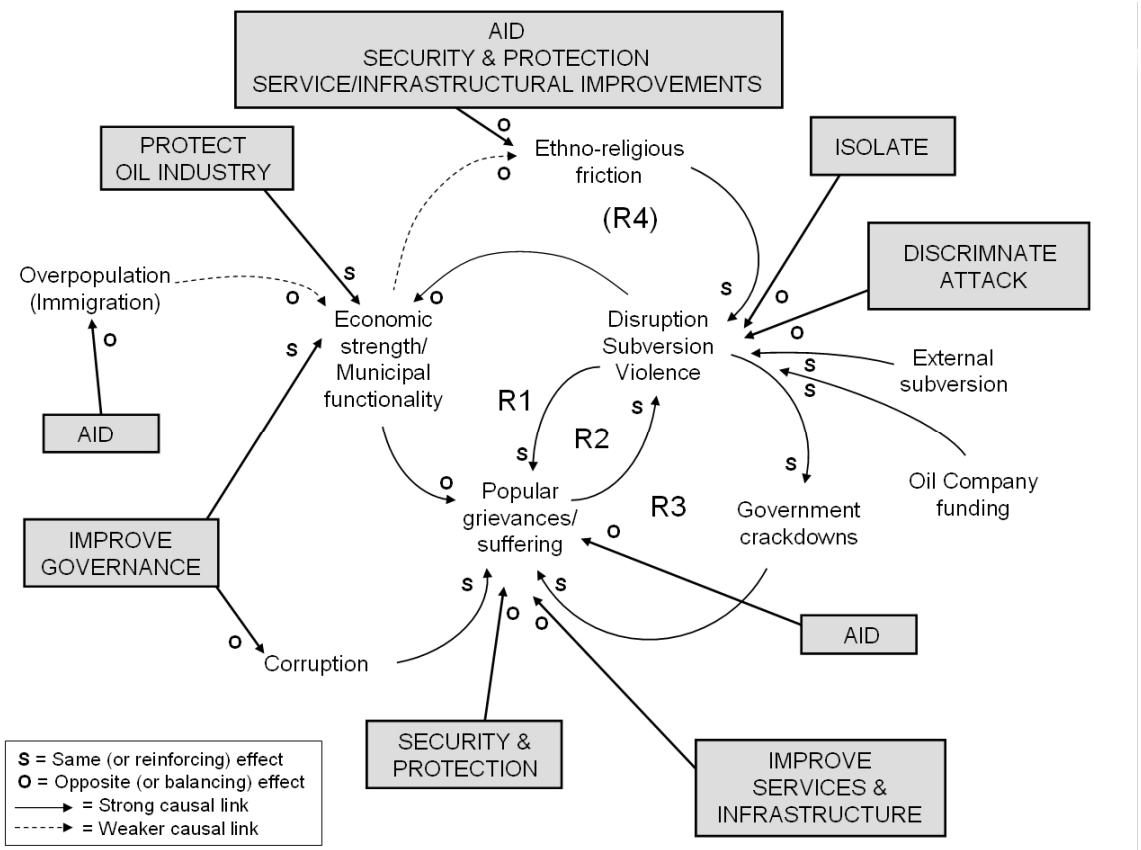

Fig. A-2.
Port Lewis envisioned as a dynamic system, with potential interventions.

Planners exploit advancements in social network analysis to map the various insurgent movements and the leadership structure within the movements as the basis for taking those movements apart effectively.

In addition to the primary insurgent currents are other violent dynamics. There is Atsekiri violence against Hano and Enowi as part of an effort to maintain Atsekiri dominance, and there are Hano and Enowi reprisals against the Atsekiri for decades of abuses. There is violence between Christian and Muslim elements. There is increasing Muslim violence designed to draw attention to the plight of Muslim populations in the interior of the country, which attracts much less attention from the Bafongan government and the world media.

The insurgencies receive external support from some unexpected sources. Contributions in the millions of dollars to the large and growing Pentecostal community in Port Lewis often find their way to insurgent organizations. Likewise, because the insurgencies have tied their movements to environmental causes, they receive enthusiastic and significant support from various environmental groups—ranging from moderate groups that provide only money to openly militant groups that also provide arms, training, and even a small number of die-hard eco-guerrillas. The oil companies themselves unwittingly finance the

insurgency by hiring various militia groups to protect their facilities against sabotage (often in response to veiled threats by the same militia groups).

The insurgents also support themselves through kidnapping of Westerners, mostly oil company employees (who tend to net larger ransoms) but also aid workers. Kidnapping has been a fact of life in Port Lewis for decades and has grown into a multimillion-dollar business. The oil companies accept it as a necessary cost of doing business. Oil companies routinely provide protection for their employees, although many local security providers are now connected to insurgent groups. Most kidnap victims have eventually been released unharmed, but in the last two years, as the movements have become increasingly radicalized, kidnappings have increasingly become a tool of terror rather than a business enterprise.

Finally, the insurgent groups support themselves by stealing crude oil through a variety of means, including tapping into the hundreds of miles of oil pipeline in the area. Oil theft is a multibillion dollar annual industry around Port Lewis.

Isolating the Urban System

The JTF commander recognizes that isolating the insurgents in Port Lewis will be an essential shaping action—and a very challenging task given Port Lewis's fundamentally open nature as a commercial port city. Physical isolation in Port Lewis will not mean blocking the movements of conventional military units, but instead screening and selectively intercepting the movements of individual persons, vehicles, and containers. Isolating the adversary in Port Lewis will remain a major effort for the JTF throughout the duration of the counterinsurgency campaign.

In some ways the local geography actually simplifies physical isolation because numerous districts—Rainbow Island, Waji, Elimaddoa, Mgera, Elephant Island—are semi-isolated enclaves that have been reclaimed from the marshy delta and have limited access by road. This allows the force, in some cases, to isolate specific districts known to support the insurgency. The city center, with its expressway and countless surface roads radiating in most directions, is more challenging—and the JTF commander knows that the isolation effort will only reduce the flow of support to the insurgents, but not cut it off altogether. In any event, physical isolation involves significant ground forces running countless checkpoints, which are moved regularly and supported by directed-energy vehicle-stopping capabilities, to screen the movement of people and vehicles.

The geography of Port Lewis also demands a significant riverine capability to isolate insurgent movements in the dense network of rivers and creeks in the river delta east of the city. Riverine Squadron 3 deploys from the United States as part of the maritime component to

handle this mission. The squadron is equipped with directed-energy capabilities that can stop boat engines from stand-off distances.

Airborne and unattended ground sensors that alert quick-reaction forces fill in the gaps between ground and riverine checkpoints. Ground and riverine forces are both equipped with facial-recognition capabilities linked to a universal database, which allow them to identify and detain persons of interest. They use digital photographic and fingerprinting technology to grow the database and provide intelligence analysts information for understanding legal and illegal movement patterns. They screen vehicles and containers with sensors designed to detect armaments, explosives and other dangerous materials. They use biometric technology originally developed for airport screening to detect persons with possible hostile intent. Intelligence sections analyze and predict insurgent patterns at the urban system level, including emplacement of roadside bombs, using profiling algorithms first developed by law enforcement to anticipate the activities of serial arsonists and rapists.

Informational isolation is impossible given Port Lewis's "connected" nature, although one capability still in its infancy pays dividends. An airborne sensor "maps" all radio emissions in the city—including microwaves and cell phones. This "radio-geographic map" is compared to generic templates of "normal" urban electromagnetic patterns as well as limited historical data on emission patterns in Port Lewis. Based on this, analysts identify significant recent changes in the "radio-geography" of Port Lewis that coincide with the emergence of various insurgent groups, providing the basis for electronic attack operations to jam insurgent communications.

An important aspect of isolation is restricting funding to the insurgent groups—much of which is internet-based and originates outside the country. A significant source of support is Pentecostal and environmental groups in Europe and the United States, many of which have a naïve view of insurgent objectives and methods. An important part of the counterinsurgency, conducted by a combination of governmental agencies and nongovernmental groups (including respected academics and public relations agencies under contract), thus includes locating financial supporters and educating them as to the true nature of the insurgencies to discourage contributions.

Improving and Rehabilitating Institutions and Infrastructure

To coordinate the critical task of improving and rebuilding local institutions and infrastructure, the NITF commander establishes a Government and Infrastructure Task Force (GITF), an interagency organization under USAID coordinating authority and directly subordinate to the NITF. The GITF includes elements from Defense, State, Commerce, Health and Human Services, and subordinate agencies such as the Centers for Disease Control. The military contribution to the

GITF includes civil affairs, public affairs, psychological operations, engineer, military police, signals, preventive medicine, and special operations units. A key element is the U.S. Army's 2nd Civil Affairs Brigade, which consists of a combination of active-duty, reserve, and civilian personnel, including a battalion specializing in urban systems. U.S. Air Force contracting organizations manage most of the construction and jobs contracts administered by the JTF.

A State Department contingent from the GITF works with the national government in Doma to enact policy reforms, including reworking the formulas by which oil revenues are distributed to different sectors of the population. The Bafongan government is by no means excited about the reforms, but the U.S. government makes clear that its support is contingent on them.

Military combat service support elements concentrate their efforts in areas in which the security situation remains too dangerous for civilian organizations. First Naval Construction Regiment, which eventually reaches a strength of six Naval Mobile Construction Battalions, rebuilds port facilities, oil refineries, and miles of damaged pipeline in the delta. An effort led by the Army Corps of Engineers, and including five other private corporations, makes repairs and improvements to the Bandu Power Station and ensures that sufficient power is distributed to Port Lewis. Army and Marine engineer units rebuild civil infrastructure directly in trace of combat units as they secure sectors of the city—or even while those sectors are being secured. Nonmilitary agencies focus on more secure areas.

Because of the importance of training Bafongan military and law enforcement units, the NITF commander forms a separate Training Task Force (TTF) not under the GITF. The TTF consists primarily of U.S. military, Coast Guard, Department of Justice, and state and local law enforcement personnel. U.S. military police and U.S. Coast Guard patrol units work alongside civil law enforcement personnel to improve local law enforcement, most of whom are Atsekiri with strong tribal loyalties. Another Justice Department contingent, with British representation, works to rebuild the local judiciary, which is based on the British legal model. At the same time, construction work builds new prisons in anticipation of the burgeoning need that the increased violence of the insurgency will generate.

Even when the deployment is being viewed primarily as a relief operation, before the insurgency gains momentum, U.S. Special Operations Forces begin working to rebuild the Bafongan 18th Airborne Division, which is stationed at the Maj. Gen. O.P. Ezezi Air Assault Headquarters near the old Port Lewis Airfield and several other garrisons on the outskirts of the city. The "Screaming Warhawks" are plagued by tribal divisions. As the insurgency gains strength, the army forces increasingly stay in their garrisons, venturing out only occasionally to run large, motorized, daytime sweep operations through insurgent

sectors. These tend to exacerbate rather than lower tensions and generally turn people away from the government cause. By the beginning of 2016, the 18th has ceded entire districts of the city to the insurgents. The U.S. plan is to incorporate Bafongan units into security operations as quickly as possible, but it becomes clear that bringing them to the necessary state of readiness will be a significant task, and additional U.S. trainers are brought in.

Discriminately Destroying or Disabling Hostile Elements

Offensive operations are a relatively inconspicuous part of the campaign, by design. A key method is raids by U.S. Special Operations Forces or other military units to destroy adversary equipment, supplies and facilities or to kill or capture personnel within the city. These forces employ vehicle-mounted high-energy lasers or are supported by airborne lasers for ultra-precise engagement. Before entering buildings or spaces that are suspected of containing noncombatants in addition to enemies, they sometimes incapacitate all occupants and sort them out later. When conditions favor the use of air strikes, attack aircraft, and unmanned aerial vehicles (UAVs) attack insurgent positions or materiel using precision-guided, reduced-diameter munitions to minimize collateral damage.

On the occasions when the enemy resorts to more conventional tactics, such as occupying a fortified complex in platoon strength or more (often because the pressure of the counterinsurgency campaign is working), joint operations become correspondingly more conventional and destructive. Ground forces employ armored vehicles firing reduced-caliber main-gun ammunition that again allows them to limit the amount of collateral damage inflicted in an urban firefight. They employ nonlethal building-clearing devices that sometimes allow them to avoid costly room-to-room clearing operations and minimize injury to the occupants or damage to the structure.

Another key element of the effort to defeat or disrupt insurgent groups is extensive offensive information operations, including electronic attack, computer network attack, psychological operations, and deception operations to disrupt insurgent command and control, cause divisions among insurgent factions, and weaken insurgent morale and resolve. Because the insurgency is not a monolith, but a collection of insurgent movements, the information operations program requires an understanding of the different interests, objectives, and animating narratives of the various insurgent factions.

Integrating the Various Efforts

The JTF headquarters is distributed, with a forward echelon at Government Centre in downtown Port Lewis and an afloat joint operations center on the sea base supported by significant reachback to the States. A key element of the JTF commander's logic is to maintain a

Bafongan face on the counterinsurgency by minimizing the visible presence of U.S. military authority.

The JTF integrates operations with other agencies and organizations through the NITF's Interagency Coordinating Group, which employs distributed collaboration capabilities to coordinate execution. The JTF will eventually coordinate with 74 different American and international nongovernmental relief organizations. Although the situation demands that these groups coordinate their efforts with the official governmental effort, many of these organizations find it necessary to maintain independence from government agencies for their own security and credibility. The primary vehicle for facilitating integration with these organizations is a mechanism officially called the Bafongan Relief Optional Online Tasking Integration Service (BROOTIS) but popularly known as the "Jobs Bazaar." The Jobs Bazaar is an online coordination service that allows registered organizations to access situational information, register for tasks, negotiate funding and deliverables, coordinate activities, submit invoicing, and procure transportation, security, logistical support, and other services. Through the Jobs Bazaar, the JTF provides current threat and security information while the NITF lists open reconstruction and aid taskings, prioritized and linked to contract mechanisms and funding sources. Organizations can sign up for tasks based on their own capabilities and priorities. Organizations can use the service only to gain situational awareness if they choose—which many of them do initially—but by registering their activities they also gain potential privileges, such as protection and lift support from the JTF. The Jobs Bazaar allows private organizations to gain support and integrate their actions within the larger effort without openly cooperating with the government. In this way the overall effort becomes an adaptive market process rather than a centralized bureaucratic one. Over time the process serves to lessen some of the distrust between private and government organizations.

Persuading the Local Population to Support the Government

Getting the populace to cooperate with the counterinsurgency effort is another critical element of the campaign. In fact, the ambassador identifies it as *the* essential element of success—and all other elements of the campaign, starting with maintaining a secure environment, ultimately are meant to support it. He forms an integrated Public Communication Coordination Cell to organize the effort at the NITF level. The JTF commander likewise forms a Joint Strategic Communication Cell (JSCC) to integrate the effort within the JTF. Joint public affairs, psychological operations and civil affairs play major roles in this effort.

As a first priority the JSCC works to ensure that public communication activities keep the local populace informed as to JTF goals and actions, and especially their implications for the populace—for example, what hardships can be expected, and for how long. The JSCC

provides warnings and alerts to the population, even sometimes to the point of sacrificing tactical surprise—warning people to stay away from a specific location prior to a military strike, for example.

A key step in the effort is to ensure that all actions within the JTF, down to the lowest level, are consistent with stated objectives and values. All personnel are trained to understand that "every action sends a message," whether intended or not, and to be sensitive to the messages that are being received by the population. Required after-action reviews at all levels evaluate the impact that actions and information activities are having on local audiences. The JTF commander disseminates frequent e-mails providing guidance and expectations to all personnel. Violations of stated policies are handled harshly.

The JTF has hired several public relations and advertising firms to supplement organic capabilities. Initial "market research" suggests that there are two dominant narratives that motivate the insurgency, and which must be successfully counteracted if the counterinsurgency campaign is to succeed. The first is that the national government in Doma has waged a deliberate campaign of persecution and oppression against the Enow, Addoa, Hano—fill in the tribe—in the Nassawara delta for over 50 years. The second is that the oil companies have knowingly exploited the Enow, Addoa, Hano—again, fill in the tribe—for obscene profits at the cost of irreparable societal and ecological destruction. The firms conduct a series of focus groups to determine what countermessages resonate with different sectors of the population—since, like the insurgency, the population is not a monolith but a highly complex system of overlapping religious, tribal, and economic groups. Based on this research, the public relations firms develop information products and pay for their placement in various media. Public affairs and psychological operations units also use the data to modify their actions accordingly.

Combat camera units from the different services provide still and video imagery in support of this effort. The JTF also exploits the fact that digital video cameras are distributed throughout the force—carried by troops as personal items or mounted on vehicles, aircraft, helmets, weapons, and sensors. Troops post video footage and still photographs to a common web-based JTF video library for possible posting on public video-sharing websites and dissemination to other external media sources in support of the JTF public communication plan.

Sustaining the Urban Population

The task of providing support directly to the population is a combined effort among the military, other governmental agencies and nongovernmental relief organizations. It is a straightforward task, but one requiring massive capacity. Military combat service support units concentrate on areas in which the security situation prevents other organizations from operating. They move into sectors of the city directly

in trace of security forces, delivering food, clothing, bedding, and other supplies, providing emergency medical treatment, and improving living conditions. In some cases, military engineering units build housing encampments in the more congested areas of the city, such as Waji and Umedi. Relief supplies are flown into Ndoni-Port Lewis, shipped in through the municipal port, and even trucked in from neighboring Tanzania and Kenya. Cash funds are distributed to energize the local economy. U.S. hospital ships *Mercy*, *Comfort*, and *Samaritan* and the Spanish *Esperanza Del Mar* serve as afloat disease-treatment centers off the Bafongan coast and treat over 10,000 severe cases of meningitis during the months of the epidemic.

Controlling and Protecting Elements of the Urban System

The ambassador sees controlling and protecting key elements of the urban system as another important element of the counterinsurgency campaign: there will be no chance of winning the allegiance of the population without first providing and maintaining security. This mission falls to the JTF. In the end, this will come down primarily to providing a significant and enduring ground presence within the urban system. Elements from 2nd Marine Division and Task Force 82[39] move into selected areas, starting in areas most easily secured. The ground forces move into neighborhoods in platoon- and even squad-sized detachments, which cooperate with the local population to provide security. They immediately begin to compile a census of their areas, including digitally fingerprinting residents. Other detachments provide permanent security at key locations, such as the Bandu Power Station, government offices, municipal port, petroleum refining, and other industrial facilities, and key nodes in the city's electrical grid. These ground forces gradually expand the secured areas, but do not abandon areas previously occupied, although the density of troops in those areas may decrease. The process moves slowly. The Marines move initially into Kifuru and Waji, the Army into Kisoto, Gubuma, and Chopa, where the University of Port Lewis, a key institution, is located. By midyear the Marines have expanded into East Island, Elimaddoa, and Ndumi, and the Army into Matimbwa. In 2017, the Marines move into Rumenowi while the Army moves into the critical Enowi neighborhoods of Omi and Omenowi. In 2017, a Canadian brigade and two National Guard brigade combat teams join in the security efforts to increase troop density. Bafongan Army units and police forces are transitioned into the effort as they become available.

Meanwhile, Maritime Expeditionary Security Squadron 1, augmented by U.S. Coast Guard port security units, provides security at

[39] Consisting of U.S. 82nd Airborne Division headquarters, two infantry brigade combat teams (IBCTs), two Stryker brigade combat teams (SBCTs), a combat aviation brigade (CAB) and a combat support brigade (CSB).

municipal and oil-company port facilities, while Riverine Squadron 3 patrols the miles of built-up waterfront in the Nassawara delta. Because the insurgents have begun employing mines in the river, Mine Countermeasure Squadron 3 deploys from Texas and employs aerial, surface, and subsurface capabilities to detect and clear mines in shipping channels.

The process of securing Port Lewis resembles police work as much as military operations, and security forces make significant use of the latest forensic techniques and technologies to take disruptive elements off the streets, at which point the improved judicial and prison systems deal with them. The prison population grows to over two percent of the total population, as over 100,000 insurgents and criminals are removed in this way from the population of Port Lewis.

Regular patrolling, networks of "watchers" recruited from the local population, UAVs from JTF to platoon level, tethered aerostats, and unattended ground sensors, with a variety of detection capabilities, all provide persistent surveillance of secured areas. These are all linked together in an integrated sensor network. Hyperspectral sensors on UAVs search for signs of disturbed earth or changes in vegetation or potholes, indications of possible IEDs; anomalies are immediately reported to patrols and bomb-disposal units. Security forces use facial-recognition and digital fingerprinting technologies to build up a database of the local population and gain an understanding of local urban patterns. Unit positions and motorized patrols are protected by weapons that use directional millimeter-wave energy that can repel or incapacitate approaching persons without causing permanent injury. Checkpoints are also equipped with directed-energy weapons that can disable a suspicious approaching vehicle without harming the inhabitants. Motorized patrols are equipped with counter-sniper systems, such as acoustic shot-detection or ocular incapacitation technology that uses retro-reflection to detect eyes or optics and engages with an eye-safe laser dazzler that prevents a shooter from acquiring the target.

Every effort is made to involve the local population in the security effort. For example, the JTF sets up a mechanism that allows any person with a cell phone to anonymously report an IED or other insurgent activity. For security reasons, the reporting software is easily deleted from the cell phone and just as easily downloaded again.

Learning and Adapting

The design process that the NITF, JTF and some other contingents use is explicitly a process of learning and adapting. Each collaborative design group makes hypotheses about the underlying logic of the problem it faces, identifies information requirements specifically designed to corroborate or falsify those hypotheses, tests the hypotheses through action, and changes the hypotheses and actions accordingly based on feedback. As working causal models change, the NITF and JTF

commanders both develop the habit of issuing regular "Guidance Memos," e-mail messages outlining goals and objectives, the rationale for all actions, practical "dos" and "don'ts," and any other pertinent instructions designed to guide individual actions.

Three examples:

Operations by Riverine Squadron 3 to shut down support for the insurgency in the delta are immediately effective, resulting in a significant decrease in insurgent use of inland waterways. When this does not have the expected impact on insurgent strength, the JTF intelligence staff surmises that the insurgents have switched to primarily ground movement and reorients the collection effort. Based on intelligence affirming this judgment, the JTF increases its effort on screening of overland avenues of approach into the city. This effort does seem to have the desired effect on insurgent strength. The insurgents respond with a surge in attacks against U.S. forces and oil facilities, which JTF analysts eventually reason is an attempt to draw U.S. forces away from the isolation missions. Despite a spike in casualties in the short term, the JTF commander takes this development as a counterintuitive indicator that the isolation effort is working and refuses to be goaded into changing his concept of operations, reasoning that the insurgents cannot sustain the increased level of violence on a restricted flow of support. He establishes this explicitly as a hypothesis and tasks his staff to identify indicators that will refute or corroborate it. In the event, a drop-off in enemy operational tempo within a few months suggests that the hypothesis is correct, and that the enemy is shifting to a different tack.

The initial military deployment employs two divisions on the ground—2nd Marine Division and Task Force 82—to establish a strong presence to get a handle on the security situation. After eight months, most of Task Force 82 redeploys. But over the next year the operation fails to gain the expected support from the population. The JTF commander convenes several special sessions of the Operational Logic Working Group, which eventually concludes that the population is unwilling to take a stand against the insurgents because the JTF has not provided an adequately secure environment. At the same time, training of Bafongan military forces is taking longer than expected, and the premature deployment of some Bafongan units has actually exacerbated the problem. The U.S. Army deploys another division task force—designated as Task Force 3—which is reinforced by two more U.S. brigade combat teams and one Canadian brigade to control the expanding area now under government control. These units begin redeploying again in less than a year as trained Bafongan forces begin assuming a greater role.

Despite a significant effort by the NITF to provide support to the local population, indicators suggest that living conditions in Port Lewis have not improved after a year. Consensus grows among commanders

and staff at various echelons that overpopulation is simply overwhelming the relief effort. In fact, there are indicators that the significant relief effort is drawing *more* people from the outlying region to the city. The NITF begins shifting some aid—provided by military forces and other agencies and organizations—to outlying regions to halt the flow of refugees to the city.

The force adapts quickly at the tactical level as well, employing an "open-source" vice a proprietary approach to developing and disseminating new methods—for example, disseminating new insurgent bomb-making techniques or sharing a new counter-sniper technique via online bulletin boards and communities of interest.

In these ways, the counterinsurgency campaign changes continuously, both from the top down and from the bottom up. Although the basic elements of the campaign generally remain unchanged throughout the U.S. deployment, the relative weight and the tactical application of each element change dramatically. Within the national effort, the military role fluctuates over time. By 2019, the U.S. ground combat strength in Port Lewis is a division, and by 2020 a reinforced brigade. By 2021, the U.S. military presence in the city consists essentially of a cadre of trainers and advisors. There are still grievances among some elements of the population, and these flare up every once in a while, but the violent eruption that in 2015 threatened to tear apart the country has been reduced by 2021 to a level that is generally manageable by civil authorities.

APPENDIX B. ILLUSTRATIVE VIGNETTE B

THE ATTACK ON QABUS, 2027[40]

Throughout the early 2020s, the Republic of Kirmenia proves to be a major destabilizing factor in the greater Middle East and is the subject of several United Nations sanctions. In late 2026, the Chicago and San Francisco attacks, which that summer killed over two thousand, are traced back to Kirmenian involvement. In early 2027, the United States leads an international coalition in a military campaign to topple the hostile regime.

The Kirmenian Army has nine active armored or mechanized divisions, although these are of variable quality. The best of these are the 1st and 3rd Armored. The army can mobilize another five or six reserve divisions, which are considered to be poorly trained and equipped. The army's best fighting forces are the 14th Special Forces Division, the 12th Parachute Division, the Kirmenian Guards Division, which is essentially an armored division, and the Saif al-Ameen ("Sword of the Faithful"), a corps of about 5,000 fighters of fanatical loyalty whose mission is to protect the regime at all costs. The Kirmenian Air Force flies obsolescent aircraft. Kirmenia has no navy.

It is clear that the decisive action of the campaign will be the battle for Qabus, the Kirmenian capital city. With a population over eight million, Qabus is overwhelmingly the largest and most important city in Kirmenia. It is one of the oldest continuously inhabited settlements in the world. Symbolically, Qabus *is* Kirmenia. It is the national military headquarters, the economic engine, and the cultural and ethnic heart of the country. Due in part to international sanctions, Kirmenia is a relatively closed society, and Qabus is ethnically and religiously homogeneous—over 90 percent Sunni, with very small Druze and Coptic Christian populations. By contemporary standards, Qabus is a relatively "disconnected" city: all media are state-controlled and internet and cell telephone usage are below the global average.

Qabus is located in the interior of Kirmenia, 175 miles from the nearest international border, at the hub of an extensive road network built by the Soviets in the 1960s. Qabus consists of three distinct "rings." First is the ancient city known as Old Qabus, a dense warren of residential areas, *souks,* and religious sites surrounded by a four-mile

[40] This is a work of fiction. Any resemblance to actual places, events or operations is entirely coincidental.

stone wall with 18 gates. At the center is the Qabus Citadel atop its prominent mound. Surrounding Old Qabus is the modern city, with typical urban infrastructure—vertical architecture, paved streets, electricity, underground sewage—although this infrastructure is not always highly functional. Modern Qabus has grown in spurts, resulting in numerous distinct districts. Last is "post-modern" Qabus, a haphazard sprawl of squalid squatter settlements radiating mostly northward out of the modern city along the main thoroughfares. These are characterized by a lack of modern infrastructure. These sprawling ghettos now enclose what once were distinct suburbs—At Tarub, Nashabiyah, Durraya, Marj as Samah—in a single, unbroken megalopolis. See Figure B-1.

Qabus is dominated to the south by mountains. It is immediately surrounded west, east, and north by agricultural lands, which feed the city. Qabus International Airport is located 20 kilometers north of the city center. Qabus is built on an oasis, which is known to be shrinking due to population and industrial growth, and is becoming increasingly polluted due to industry and sewage. The circumstances of geography dictate that coalition ground forces will be forced to attack on a single main axis from the west, along the M1 highway corridor.

Qabus is a militarized city. It is the national military headquarters and headquarters for I Corps, which includes the 1st, 3rd, 6th, and 7th Divisions. Military command and control centers are located in hardened facilities and communicate by buried landlines. The city is protected by a dense integrated air-defense system. Fortified emplacements exist throughout the city. Approximately 250 immobilized older-model tanks defend the city in depth. Many military positions and facilities are sited in close proximity to residential areas, *souks*, shrines, and hospitals.

The Kirmenian high command also clearly recognizes that Qabus will be the decisive battle and begins flowing forces into the city even as coalition forces begin building up in the region. Intelligence analysts estimate that the Kirmenians will attempt to inflict as much attrition as possible on coalition forces during the advance to Qabus and then will attempt to turn Qabus itself into a quagmire by defending every city block—all with the intention of driving coalition losses above what the member nations are willing to bear.

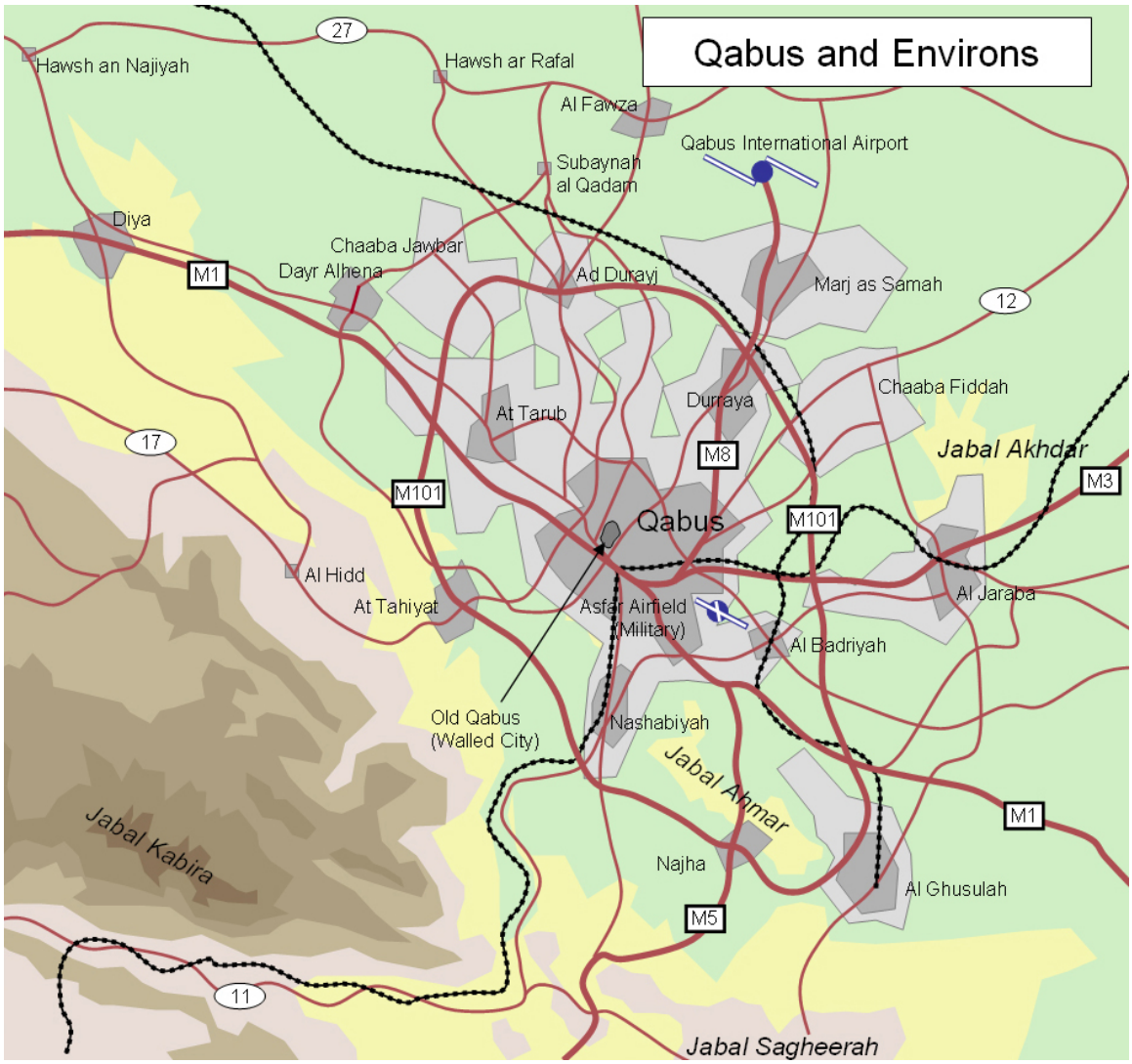

Figure B-1.
Qabus and Environs.

Organization

Commander, U.S. Central Command, will command the coalition campaign. The coalition commander activates Coalition Joint Task Force 17 (CJTF-17), a coalition-joint task force headquarters specially organized and equipped for civil-military operations. CJTF-17 will include engineer, signals, civil affairs, military police, medical, airlift, military intelligence, psychological operations, ground combat, special operations forces, and other units. It will include liaison teams from a variety of other U.S. governmental departments and agencies and some nongovernmental organizations. Some of these will be under the operational control of CJTF-17; others will have a coordinating relationship. Importantly, CJTF-17 will include the U.S. Army's 3rd Civil Affairs Brigade. The brigade includes a reserve civil affairs battalion

based in Charlotte, North Carolina, home of the world's largest Kirmenian population outside of Kirmenia.

The land component will consist of two corps, U.S. V Corps and I Marine Expeditionary Force. V Corps will launch the ground offensive against Qabus while I MEF secures the remainder of the country. V Corps will consist of five divisions: three U.S. Army divisions, 2nd Marine Division, and the European Union 1st Composite Division. The three U.S. Army divisions are modular division task forces: Task Force 1 includes two heavy brigade combat teams (HBCTs), a Stryker brigade combat team (SBCT), a fires brigade, a combat aviation brigade, a combat support brigade, and a sustainment brigade under 1st Infantry Division headquarters; Task Force 10 includes two infantry brigade combat teams (IBCTs), an HBCT, an SBCT, a fires brigade, a combat aviation brigade, a combat support brigade, and a sustainment brigade under 10th Mountain Division headquarters; and Task Force 101 consists of three IBCTs, an SBCT, a reinforced combat aviation brigade, a combat support brigade, and a sustainment brigade under 101st Airborne Division (Air Assault) headquarters.

The air component, headquartered in Qatar, will conduct air operations with forces stationed worldwide. The maritime component will provide primarily logistical support, naval aviation support, and cruise-missile fires from positions in the Mediterranean Sea, Arabian Sea, and Indian Ocean. The special operations component will form Coalition Joint Special Operations Task Force-Kirmenia (CJSOTF-K) to conduct special operations in theater.

U.S. forces make extensive use of first- and second-generation ethnic Kirmenians as advisors and translators in return for an expedited path to U.S. citizenship.

Systemic Assessment and Planning

Operational design and planning for the campaign commence once the Lake Mead investigation begins to indicate probable Kirmenian complicity. Since the attack of the capital will manifestly be the focal point of the campaign, CJTF-17, once activated, begins an assessment of the situation around Qabus, viewing the city as an organic system in terms of its structures, processes, and the functions it performs. An existing baseline assessment of the Qabus system serves as a starting point. (This was prepared primarily by a pair of foreign area officers with 18 years of experience with Kirmenia between them. They were designated as Kirmenian specialists with the full realization that they might never use their expertise in a conflict in their entire careers. They are now key members of the systemic assessment.) Using mostly open sources, planners seek to identify various individual officials or experts—city managers, police, judges, politicians, public works supervisors, utilities managers, bureaucrats—who could be used to restore the urban system to some level of functionality after the fighting. In addition to

military staff, the assessment involves urbanologists, sociologists, cultural anthropologists, political scientists, civil engineers, experts in Kirmenian culture, law enforcement officials, relief experts—some organic to the combatant command and some accessed as consultants; some collocated with the staff and some accessed through "reachback" technologies. Analysts begin to get a sense for the critical elements and processes within the urban system and which of those are relatively stable and which are not. They begin to get a sense for the level of damage that the system is likely to sustain and the level of effort that will be required to sustain the population and repair damaged institutions and infrastructure.

CJTF-17 operational designers assess Qabus as a relatively functional and stable, if oppressive, urban system. They conclude that the city's institutions will be able to withstand a significant amount of damage to physical infrastructure, which is good since intelligence estimates suggest that enemy forces will be deeply rooted in the physical and social terrain and will be well supported by the local population, at least at first. The crime rate is low, thanks mainly to a large and powerful national police force that is concentrated in Qabus. While it appears that institutions may hold up, it is clear that the population will suffer. The economy is stagnant and has suffered under U.N. sanctions. Fuel, food, and other essentials are routinely rationed. Poverty is rampant in the large slum areas like Chaaba Jawbar and Chaaba Fiddah, which together are home to about three million people. A significant Black Market exists in medicines, electronics, clothes, and food. There are few reserve stores, so popular suffering as a result of coalition attacks will be dramatic and almost immediate. Military command and control, both within the city and throughout the country, is likewise centralized and vulnerable to systemic attack.

Influencing the Local Population

The combatant commander does not establish a coalition psychological operations task force (CPOTF), but instead assigns psychological operations units to CJTF-17 to ensure that psychological operations are well aligned with the civil-military effort, which he sees as critical to eventual success.

Coalition and CJTF-17 planners have no delusions about winning the willing support of the general population, in Qabus or across the country. (Intelligence has identified some subversive elements in Kirmenia that may be willing to cooperate with the coalition. These tend to be marginalized groups, however, with little potential for assuming a leadership role after the fighting.) The Kirmenian people may live under an oppressive regime, but they will support that regime over foreign invaders. Planners estimate that the best the invasion force will be able to achieve is general non-interference based on consistent and humane treatment of the population over time. The coalition commander decides

it is critical that all personnel are perfectly clear on what constitutes acceptable treatment of the local population, and he issues guidance to all personnel explaining his expectations.

All personnel receive cultural training. This is meant to augment the more in-depth cultural and language training that select members of most units receive. Thanks to incentive programs that provide bonuses for foreign language skills, Arabic speakers are distributed throughout U.S. forces. Contract interpreters are also used extensively. To facilitate communications with the indigenous population when translators are not available, forces down to the squad level are also equipped with automated translation technology that recognizes Kirmenian Arabic and several other local dialects.

Planners recognize that there will be inevitable unintended civilian casualties and damage, sometimes significant, as a consequence of combat operations. Funds are distributed down to the company level for disbursement of reparations as justified.

The coalition hires a world-renowned Madison Avenue public relations firm to supplement the public affairs and psychological operations capabilities resident in the force in improving the public image of coalition forces—among Kirmenians, with the various domestic publics, and internationally—using techniques long-ago honed to a science in American election campaigns. A key objective is to counter the narrative that this Western invasion is merely the latest in a long string of infidel Crusades aimed at destroying the Muslim world. The PR firm consults with aid organizations, former diplomats, relief workers, Kirmenian émigrés now living in the United States, and cultural anthropologists. It conducts focus-group polling with Kirmenian audiences to determine what messages resonate most. All personnel are provided with talking points and behavioral expectations.

CJTF-17 conducts extensive public information and psychological operations to inform the populace as to the reasons for the invasion, provide safety warnings and instructions for cooperation, and explain coalition objectives and expectations—both what the people can expect from coalition forces and what coalition forces expect from the people. This program eventually makes use of a wide variety of media including radio and television broadcasts, printed fliers and handbills, web posts, blogs, email, and cell telephone voice and text messages.

Opening Moves

During the early months of 2027, coalition forces begin to stage in the region—both the combat resources that will defeat the Kirmenian military and the civil-military resources that will support and rehabilitate Kirmenian society. At staging bases around the world, ammunition stores stack up next to relief supplies and construction equipment. Combat formations share strategic and operational lift with units earmarked for reconstruction missions.

In March, special operations forces develop contacts with Kirmenian subversive groups that may support the invasion, gather targeting information for upcoming operations, and collect intelligence in support of the ongoing assessment of the urban system. Coalition forces and materials continue to stage in the theater.

On 26 April, coalition aviation and cruise missiles, often directed by special operations forces, begin striking key government and military targets with the objective of destroying as much of Kirmenia's conventional military capability as possible, both in the approaches to Qabus and within the city itself. The strikes attack key headquarters, operational reserves, logistics facilities, artillery and rocket batteries, and air defenses. Attacks against operational formations concentrate on 1st Armored Division, 12th Parachute Division, 14th Special Forces Division and the Kirmenian Islamic Guards Division. Strikes also target some dual-use infrastructure, including sectors of the electrical grid. Here the intent is to disable these systems with reversible effects so that services can be restored quickly when needed.

The ground offensive commences on 10 May, with V Corps rolling across the border and driving directly for Qabus with Task Force 1 in the lead. The Kirmenian forces that remain after the systematic two-week bombardment are no match for coalition air-ground combined arms. Kirmenian 1st Armored Division, considered one of the best formations in the regular Kirmenian Army, is quickly destroyed. V Corps covers some 200 miles in five days, closing on Qabus by 15 May. By the time V Corps moves into final attack positions west of Qabus, most of Kirmenia's regular forces have been destroyed. Intelligence estimates that some 30,000 enemy fighters now occupy the capital. These include remnants of the 3rd and 6th Divisions that have withdrawn into the city to fight as irregulars after being defeated on the road to Qabus, elements of the 14th Special Forces Division, 12-15 Saif al-Ameen companies, local militia, and a small number of Kirmenian and foreign fighters who have managed to infiltrate into the city. These forces occupy positions in depth throughout the city, digging in among the rubble left from the coalition bombardment. Intelligence also estimates that there remain as many as 100 immobilized tanks in defensive positions around the city, some 15-25 surface-to-air missile batteries, and as many artillery or rocket batteries.

Isolation of the City

On 15 May, as other V Corps forces approach Qabus from the west, Task Force 101 moves by air into battalion-sized blocking positions south and east of Qabus, where they link up with special operations forces that have been operating in the area for weeks. The division will be supported entirely by air until link-up with advancing ground forces. The division's mission is to isolate Qabus, preventing the influx of forces, individual fighters, and any materials that could support the enemy in the city.

Unattended ground sensors and aviation, including operational and tactical UAVs with a variety of sensor packages, augment the blocking positions in detecting hostile movements. On 15, 17, and 18 May, Task Force 101 units call in repeated air strikes to destroy Kirmenian mechanized forces, believed to be Guards units, trying to reinforce the city. After that date, they see no more large conventional formations, but are instead dealing almost exclusively with individuals and small groups of irregulars trying to infiltrate into the city and large numbers of apparent civilians trying to evacuate. Blocking positions rely on facial-recognition and digital fingerprinting technology to identify suspicious persons. Checkpoints detain or turn away all suspicious persons and any materials or items not on a predetermined list of approved goods. (Based on feedback from the 101st checkpoints, CJTF-17 civil affairs personnel continuously review and revise the approved list.) Large scanner arrays with combinations of sensor capabilities span the major roads; all vehicles and persons must pass through them. Some scanners are designed to detect armaments, explosives and toxic chemicals that could be used for chemical warfare. Some detect persons with possible hostile intent. Based on feedback from the data collection from Task Force 101's checkpoints, intelligence analysts reach a better understanding of adversary movement patterns and routine urban flows, which leads to tactical and operational adjustments on the ground.

The Ground Attack

V Corps briefly occupies attack positions on the outskirts of Qabus and begins to advance on 20 May. Elements of 2nd Marine Division make the first contact, overrunning dug-in Kirmenian forces at the small settlement of Hawsh an Najiyah northwest of Diya in a short but intense fight. The Marines push on to secure Hawsh ar Rafal on 22 May and continue east to capture Al Fawza on 26 May after two days of fighting. Second Marine Regiment bypasses Al Fawza and captures Qabus International Airport on 27 May; on 28 May, 460th Air Expeditionary Wing begins delivering supplies in support of both the ground forces and CJTF-17 operations to sustain the local population. QIAP will be a critical airhead for flowing support into Qabus to keep the urban system functioning throughout the fighting, so a Marine infantry battalion is detached to provide security for the airport until relieved by security forces assigned to CJTF-17. Another reinforced Marine infantry battalion continues clockwise around the northeastern part of the city to make contact with Task Force 101 on 30 May.

On 20 May, advancing east on the M1 axis, Task Force 1 meets resistance at Diya, a suburb of 20,000 on the western slope of Jabal Abu al Awar about 15 kilometers west of the city. It is the first real indication of the ferocity of fighting to come. Kirmenian forces fight from fortified positions in populated areas, shrines and hospitals. They conduct ambushes and employ emplaced and robotic mines, improvised explosive

devices (IEDs), snipers, human shields, and suicide bombers. It will take one HBCT three days of house-to-house fighting to secure the town. On 22 May, the Saif al-Ameen begins forcing refugees by the tens of thousands west out of the city to disrupt the advance of Task Force 1. Irregular forces ranging from individual suicide bombers to platoons equipped with automatic weapons and rocket-propelled grenades (RPGs) are interspersed among the refugees to attack U.S. forces at close range and complicate target discrimination for the superior U.S. forces. Advancing American units employ a combination of airborne and vehicle-mounted millimeter-wave emitters to clear the refugees off the route of advance and portable barriers and anti-traction material to canalize refugee movements. Kirmenian artillery batteries in Qabus, controlled by forward observers moving among the refugees, begin shelling the refugee column to create confusion and inflict massive casualties for the Americans to deal with. Since the Kirmenian artillery fire originates from a known residential area, the American counterbattery response is to engage the artillery with high-energy lasers, which destroy the guns with no collateral damage, and to repel the gun crews with an airborne millimeter-wave directed-energy weapon. Later, observed fires controlled by an Air Force aerial observer will destroy the dug-in firing position. Forty-first IBCT, which has been assigned to CJTF-17 in a security role, moves forward to deal with the refugees. Elements from 2nd Marine Logistics Group, moving directly behind Task Force 1, quickly assemble "pop-up" prefabricated encampments to create temporary refugee camps off the main axis of advance. Task Force 1 pushes on to Dayr Alhena, which it secures on 26 May. There the division halts, reverting to corps reserve while continuing to deal with the forced refugee flow. Meanwhile, one SBCT moves northeast to secure the ghetto-slum of Chaaba Jawbar, which turns out to be defended in strength by dug-in irregular forces employing automatic weapons, RPGs, mortars, and improvised explosive devices. Intelligence later identifies elements from the 12th and 14th Divisions and the Saif al-Ameen. It is here that the enemy's first instance of hostage-taking occurs, as four U.S. soldiers are taken. The American response is immediate and aggressive, but remains discriminate. In the makeshift construction of the ghetto, the brigade employs reduced-caliber munitions in its tank main guns to minimize collateral damage. Technology designed to locate people inside buildings proves effective, as do nonlethal building-clearing devices that cause the occupants to vacate the shanty structures.

Meanwhile, the European 1st Division advances on the southern axis, meeting little resistance until it reaches At Tahiyat overlooking the city from the southwest. Kirmenian infantry forces fight tenaciously for this dominant terrain, but European Union forces secure the town by 25 May, thanks in large part to precision-guided bombing from U.S. naval and Air Force aviation. The Baltic Brigade continues counterclockwise around the south side of the city, making contact with elements of Task

Force 101 on 28 May and holding a solid lodgment in Nashabiyah by 3 June after a four-day fight. The Franco-German Brigade continues on and captures Najha on 10 June.

Throughout the advance of V Corps, CJSOTF-K units have continued to operate within the city, calling in precision air strikes against key military and governmental targets and laying the groundwork for follow-on CJTF-17 operations. On the morning of 25 May, human intelligence sources inside the city report that several high-ranking regime officials are trying to escape. Air Force UAVs track the three-vehicle convoy as it passes through Chaaba Fiddah. Meanwhile, a raid package is put together in under 90 minutes using real-time distributed collaboration capabilities. A U.S. Air Force airborne high-energy laser disables the vehicles as they speed northeast on an open stretch of Highway 12. CJSOTF-K units move in by helicopter on the disabled vehicles, capturing nine first- and second-tier regime officials.

V Corps now has footholds on the western and southern limits of the city; the main ground attack will now come from the north. From now on the Americans will be attacking through contiguous urban terrain. The advance will occur in fits and starts as forces build up necessary combat power, push through a fortified defensive belt, and then recover. Second Marine Division attacks from the north and northeast on the M8 and Highway 12 corridors, striking Marj as Samah and Chaaba Fiddah on 28 May. The attacks bog down in the face of determined resistance by elements of the 3rd Armored Division reconstituted as irregular infantry. Kirmenian irregular forces employ chlorine-based chemical IEDs for the first time, inflicting some casualties on Marine forces until warnings are broadcast to all forces to adopt protective postures. The Marines make use of extensive psychological operations and public information activities aimed at encouraging the civilian population to evacuate the city. Sometimes even at the expense of tactical surprise, they provide warning before attacking, giving the population a deadline by which to evacuate. Navy shore patrol units manage the flow of people. Engineer elements from 2nd Marine Logistics Group and 460th Combat Engineer Squadron have begun constructing a major refugee camp outside the International Airport to handle the possible refugee flow. In the end the Marines have little choice but to level whole sections of Marj as Samah, making heavy use of attack helicopters and fixed-wing attack aircraft employing reduced-diameter, precision-guided bombs. Sixth Marines secure Marj as Samah on 6 June. CJTF-17 elements move in directly behind them to begin reconstruction of the heavily-damaged district. Second Marines pass through and begin the assault into Durraya, which is expected to be an enemy stronghold defended by elements of the 14th Special Forces Division. This phase sees the first significant examples of high-rise and subterranean fighting. The Marines use severe malodorants and acoustic weapons designed for cave-clearing to flush enemy forces out of

the underground sewer system.[41] Meanwhile, 8th Marines are slowly advancing through Chaaba Fiddah, which poses completely different kinds of challenges. The lighter, makeshift construction does not offer the enemy the same defensive advantages that the block and stone construction of Marj as Samah does, but the dense population and the tightly packed, random layout of the built-up area places a greater premium on discrimination. The division finally captures Chaaba Fiddah and Durraya by 16 June, and halts for an operational pause, now concentrating on maintaining tight control of the potentially volatile sectors it has just captured.

Meanwhile Task Force 10 has followed in trace of 2nd Marine Division as it pushes east on Highway 27. West of Al Fawza, Task Force 10 turns south to conduct the main attack into the heart of Qabus. Because of this mission, Task Force 10's combat support brigade has been assigned additional psychological operations, civil affairs, public affairs, military police, and combat engineer units. Task Force 10's brigades have all recently completed rotations at the Joint Urban Training Center-South (commonly known as "Jutland" by the troops) in New Orleans, where they billeted in abandoned buildings, patrolled the streets and lived off the local economy continuously for three months.

Like the other U.S. ground formations, Task Force 10 is well equipped for urban operations. Capabilities include reduced-caliber main-gun rounds to minimize collateral damage, high-energy lasers for ultra-precise engagement, nonlethal weapons that use millimeter-wave energy for crowd control and force protection, close-in active protection against incoming RPGs and similar low-velocity projectiles, nonlethal high-decibel acoustic weapons (which can also be used as long-range hailing and warning devices), UAV ground-control, high-power white light and laser dazzlers for temporary ocular incapacitation, automated anti-sniper shot-detection, and multi-spectral sensors with optical, radar, infrared, acoustic, and chemical-biological detection. The division's maneuver units are equipped with mini-UAVs down to platoon level.

Task Force 10 strikes Ad Durayj on 24 May. Its attached psychological operations, civil affairs and military police elements are integrated into its line units down to the company level. The division reaches the northern edge of the modern city by 14 June, providing food, clothing, and emergency medical treatment for the civil population as it advances. Public affairs personnel work with the media to publicize these efforts and maximize their impact among the population. Spent

[41] The Office of the Secretary of Defense's Chemical Weapons Convention (CWC) Compliance Review Group (CRG) is assessing whether malodorants are considered riot control agents (RCAs). If considered RCAs, then use as a method of warfare is prohibited under the CWC (Art. I, Para. 5). If malodorants are not assessed as an RCA, use would be subject to CR approval.

after three weeks of continuous operations, the division digs in and concentrates on controlling the areas it has captured.

Task Force 1, which has been holding at Dayr Alhena and Chaaba Jawbar since 30 May, begins pushing east again on 7 June and has secured At Tarub by 15 June. It now drives into the heart of modern Qabus, which means clearing some buildings as tall as 10 stories. With enemy forces oriented north to face Task Force 10, it makes slow but steady progress against fierce resistance, systematically clearing areas as it advances. By 5 July, Task Force 1 has pushed east of Old Qabus, which it surrounds but does not enter. Second Marine Logistics Group continues to follow in trace, providing immediate support for the population and stopgap repairs to critical urban infrastructure. Old Qabus becomes the target of an intense propaganda campaign designed to encourage the population to evacuate the walled city. Intelligence indicates that Old Qabus is defended by significant numbers of Saif al-Ameen that are executing civilians who attempt to leave.

The Baltic Brigade strikes north out of Nashabiyah and overruns Asfar Military Airfield on 4 July. The attack is initially intended as a raid, but based on the weakening resistance it meets, the brigade digs in. Task Force 1 also senses the weakening resistance, and an SBCT pushes into the heart of downtown Qabus, linking up with advance elements of 2nd Marine Regiment at the public fountain at Ibn al Qutayha Square on 16 July.

The British Brigade moves into Al Ghusulah, an industrial suburb southeast of the city, on 14 July. Elements of 12th Parachute Division continue to resist from fortified positions in the industrial construction. Most of the civilian population has evacuated, however, and the British are able to mass artillery and airpower to rubble the area. Task Force 101 moves into Al Jaraba and meets only token resistance.

Old Qabus is now the one sector of the city not under coalition control. The task will fall to Task Force 10 to capture the ancient walled city. Because of the large number of culturally significant sites and the considerable civilian population still inside the old city, the decision is made to move slowly and escalate gradually as necessary. Speed of advance is not considered a critical factor at this stage. Airborne high-energy lasers strike precisely at key point targets as they are acquired and confirmed inside Old Qabus. These targets include loudspeakers on the mosques, which are being used to broadcast tactical instructions. Coalition snipers pick off enemy fighters who expose themselves inside the ancient city from upper stories of surrounding buildings.

On the night of 22 July, elements of two IBCTs break into the ancient city through the Bab al-Salam, Bab Sharqi and Bab al-Souq gates. They move systematically from building to building. Although they make extensive use of nonlethal and reduced-caliber weapons because of the density and proximity of the population, it is a slow and bloody process, with engagements often taking place at ranges less than

50 meters. When the situation requires and conditions permit, soldiers use shoulder-launched thermobaric weapons to implode buildings in which enemy forces are dug in. In other cases they use nonlethal devices to empty buildings, sometimes deploying the devices into the buildings with ground robots. The ability to clear buildings without having to enter them—even though not always possible—saves the lives of countless noncombatants and American soldiers. They use persistent malodorants to render key buildings uninhabitable to prevent enemy forces from reoccupying them after they leave.

Immediately behind the advancing combat forces are civil affairs and military police units, which quickly screen civilians and evacuate them from the area, at which point they are immediately provided any needed emergency medical treatment. This assistance is covered by public affairs personnel for distribution to the media. The assault takes on some of the characteristics of an ongoing hostage-rescue operation, as U.S. forces process hundreds of civilians as they advance.

By 4 August, the last defenders are holed up near the Taba'een Great Mosque, for which the V Corps commander has established very restrictive rules of engagement. Task Force 10 makes extensive use of its various nonlethal technologies, coupled with unrelenting psychological operations by various means, to try to drive the defenders from the buildings. Assault elements from 1st Brigade, 25th Infantry Division (an SBCT assigned to Task Force 10) gradually tighten the noose around the defenders, employing their attached combat engineers to disable the numerous booby traps and IEDs that the enemy has rigged. On 11 August, assault elements kill or capture the last die-hard defenders, making maximum use of weapons that minimize structural damage, and the city is declared secured.

Control and Rehabilitation

During July and August, even as intense fighting continues, the main effort shifts from defeating the enemy to controlling and rehabilitating the city—that is, the emphasis shifts from major combat to stability, security, transition, and reconstruction. Even before Qabus is secured, CJTF-17 establishes an Occupation Municipal Government. The coalition commander wants to "put a Kirmenian face on the rehabilitation. Find a local official for every service or institution from the start, and then give him a stake in stability," he instructs. Municipal officials and others with knowledge of the working of the city who were identified during planning are now being recruited to support the rehabilitation. Special operations forces and intelligence operatives have for several weeks similarly been developing contacts with officials and others who might be willing to cooperate with the coalition in restoring the city to normalcy.

CJTF-17 personnel have made arrangements to reopen markets. They have previously made arrangements to restart the shipment of

goods into the city from other countries in the region. They disburse funds to encourage the opening of local businesses. They hire local companies to do initial clean-up and reconstruction work. CJTF-17 institutes a weapons and munitions buy-back program, including rewards for reporting weapons and munitions caches. Public affairs personnel promote these actions to the media and encourage news coverage of the ongoing efforts.

Engineer units—the Marines' 8th Engineer Support Battalion, the Army's 130th Engineer Brigade, Naval Construction Regiment 1, U.S. Air Force 460th Combat Engineer Squadron, Army Corps of Engineer detachments, and even several civilian engineering and construction companies under contract to the Department of Defense—work side-by-side with local companies in rebuilding damaged and destroyed infrastructure according to established priorities.

A key element of rehabilitation is addressing public health issues in Qabus. CTF-17 includes personnel from medical treatment and preventive medicine units, which quickly move into the community to provide medical care and perform a public health assessment of the city. A pre-invasion assessment by the Central Command medical staff has depicted a backwards public health system in disrepair. Wargaming has estimated the additional damage that combat operations would inflict. Now Army preventive medicine detachments, Navy forward-deployed preventive medicine units, and Air Force preventive and aerospace medicine teams move in to assess actual conditions on the ground, analyzing potable water and wastewater systems, infectious disease vectors and rates, environmental hazards, immunization programs, nutrition, maternity and infant health care, and other factors. Based on this assessment, CTF-17 personnel work to rebuild Qabus' public health system, restoring some health services to pre-war levels and actually improving others. They institute upgrades at local hospitals, reopen clinics, and restaff both with Kirmenian and foreign medical personnel.

None of this rehabilitation is possible without a secure environment, and this becomes V Corps' primary mission after Old Qabus falls. The corps commander is very sensitive to the possibility of an emergent insurgency, and his immediate goal is to keep a very tight lid on the situation to prevent the creation of the chaotic conditions that might give rise to public unrest. Toward that end, the coalition establishes a strict curfew (one of the tasks of the propaganda effort is to explain the need for and temporary nature of such measures).

The coalition commander sees this period of time as a critical transitional phase—"the Golden Hour," he calls it—in which the coalition must move the situation toward stability before it can tip toward grievance, unrest, and rebellion. Key to the coalition's success will be adapting the force quickly to the fundamentally new situation. "The Qabus system has undergone a phase change," he writes in one of his guidance e-mails. "New environment, new dynamics, new challenges.

This is no longer an invasive surgical procedure to get rid of a cancer; it is an effort to stabilize the patient." Planners develop a new operational design with a new guiding logic, which is disseminated to all echelons. They develop time-based metrics to judge whether their new hypotheses are valid or not, and these metrics drive the collection plan. As units are periodically rotated for rest they receive training in the dynamics of the new situation—"reprogramming," as the troops like to call it.

Task Force 1 has been transferred to I MEF operational control for operations elsewhere in theater, so V Corps now has four divisions to secure a city of eight million people. In the end, controlling the city comes down to continuous and pervasive patrolling and surveillance. This includes use of vehicle-mounted multi-spectral sensors, manned aircraft and UAVs of various types, tethered aerostats carrying a variety of sensor suites, and a variety of disposable and recoverable unattended ground sensors. It also involves continuous monitoring of radio communications, including cell phone and microwave.

Security forces continue to screen movement of people, vehicles and shipments into, out of and through the city through a system of checkpoints. These checkpoints employ facial-recognition and digital fingerprint technologies to build a database of local residents and to identify and detain persons of interest. From this growing database intelligence analysts gain a better understanding of Qabus' normal flow patterns, and from this forces can adapt their actions on the ground.

Improving security means restoring law and order at least to the level that existed before the invasion. This means returning local police officers to the streets. Military police assigned to CJTF-17 train and patrol with municipal police forces, progressively turning responsibility over to the local forces. They employ the latest forensic techniques and technologies to fight crime and subversive activity.

Conclusion

As the security situation holds steady, and then begins to improve over time, other agencies, governments, and nongovernmental organizations increase their participation. Military forces increasingly concentrate on security and leave other activities—reconstruction, governance support, institutional reform—to other agencies. Kirmenian society, and in particular Qabus, shows signs of recovering. The United Nations arrives to oversee the creation of a new Kirmenian government and takes an increasing role in stabilization and reconstruction. The coalition gradually reduces its military presence. In May 2028, 13 months after the start of the coalition campaign, the coalition transfers overall authority to the United Nations, although the United States and other coalition partners will maintain a military presence in Kirmenia for years to come.

APPENDIX C. TABLE OF CAPABILITIES, TASKS & MEASURES

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
JUO-001 (Battlespace Awareness): The ability to collect, disseminate and access situational information on an urban system.	**JUO-001.1:** Collect, process, post and access intelligence information on the location, status and activities of hostile, potentially hostile or subverted elements in a cluttered urban environment.	**M1:** Hours since most current intelligence information was last collected. **M2:** Hours since all available collection assets were integrated into a comprehensive collection plan. **M3:** Percent of PIRs collected in time to meet current operational needs. **M4:** Percent of PIRs with at least one source yielding intelligence information. **M5:** Percent of PIRs with more than one source yielding intelligence information. **M6:** Percent of total targets accurately identified prior to attack. **M7:** Percent of targets accurately located.	**MCO 2.0 - 006C:** Establish a secure, broadly accessible, tailorable, and user-friendly common relevant operational picture (CROP). **MCO 2.0-009C:** Link and visually display all strategic-level information and influence objectives to the overall campaign plan. **MCO 2.0-011C:** Achieve anticipatory and shared understanding among joint, interagency, and multinational partners in order to know the full dimensions of the operational environment, our adversaries, others, and ourselves. **MCO 2.0-012C:** Deploy, employ and sustain a persistent, long-endurance, appropriately stealthy, and dynamically tailored ISR system. **MCO 2.0-043C:** Extend the strategic-to-tactical collaborative environment, including interagency and multinational partners, to enable persistent situational awareness and shared understanding. **SSTR 2.0 Capability:** The ability to
	JUO-001.2: Maintain, provide, post and access information on the location, status, activities and plans of friendly forces, down to the small-unit or even individual level.	**M1:** Percent of friendly forces accurately reporting location, status and activities. **M2:** Frequency in minutes of friendly location, status and activity reporting. **M3:** Percent of friendly units, individuals, platforms, end items and materials providing automated position-location information.	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
	JUO-001.3: Collect, maintain, post and access information on the location, status and activities of neutral elements in a cluttered urban environment, including the populace and governmental and nongovernmental agencies and organizations.	**M1:** Hours since most current intelligence information was last collected. **M2:** Hours of instances all available collection assets were integrated into a comprehensive collection plan. **M3:** Percent of PIRs collected in time to meet current operational needs. **M4:** Percent of PIRs with at least one source yielding intelligence information. **M5:** Percent of PIRs with more than one source yielding intelligence information.	conduct seamless knowledge sharing among DOD elements, U.S. Government agencies, and multinational partners prior to, during, and after the completion of SSTR operations. **SSTR 2.0 Capability:** The ability to develop intelligence requirements, coordinate, and position the appropriate collection assets, from the national to the tactical level. **SSTR 2.0 Capability:** The ability to understand the cultural context in which operations take place, including the culture of coalition partners, civilian organizations and agencies. **IW 0.7-014C:** The ability to collect and exploit information on the situation. Obtain significant Information on enemy and friendly forces and the nature and characteristics of the area of interest and its resident populations.
	JUO-001.4: Collect, maintain, process, post and access information on the functioning of urban institutions and processes.	**M1:** Number of critical urban organizational structures, processes and functions for which information has been collected. **M2:** Number of key municipal leaders or officials identified. **M3:** Weeks to assess threats to installation and community critical infrastructure through joint military and civilian partnership vulnerability assessments. **M4:** Minutes to assess damage to infrastructure at locations of operational interest (key military bases, critical infrastructure nodes; etc). **M5:** Minutes to assess potential impacts to critical infrastructure/assets.	
	JUO-001.5: Provide three-dimensional mapping data on urban terrain, to include data on the composition of urban construction,	**M1:** Percent of urban areas for which three-dimensional mapping data is available. **M2:** Percent of underground and interior spaces mapped in any given urban area. **M3:** Percent of any given urban area for which data on exterior apertures, building composition, and multiple	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
	presence of multiple stories, locations of apertures (i.e., doors and windows) in building exteriors, mapping of interior and underground spaces, and changes in terrain due to combat or other causes.	stories is available. **M4:** Days since mapping data has been updated for any given urban area.	
JUO-002 (Battlespace Awareness): The ability to assess an urban operational situation systemically.	**JUO-002.1:** Assess and model an urban complex as a dynamic, living system.	**M1:** Time to provide comprehensive analysis of physical, climatic, economic, political, and military characteristics in commander's area of interest. **M2:** Minutes to access current situation and formulate plan of action. **M3:** Percent of a given urban complex represented by a model. **M4:** Weeks to assess HN government, including economic conditions and attitudes of civilians. **M5:** Percent of available operational sources integrated with intelligence sources for combat assessment. **M6:** Yes/No Threat, friendly and neutral capabilities were identified in the IPB process and accounted for in the military decision-making process. **M7:** Time required to incorporate new intelligence data and products into ongoing threat evaluations. **M8:** Time to update or create threat, friendly and neutral models or templates.	**MCO 2.0-011C:** Achieve anticipatory and shared understanding among joint, interagency, and multinational partners in order to know the full dimensions of the operational environment, our adversaries, others, and ourselves. **MCO 2.0-013C:** Perform effects-assessment in the physical, information, and cognitive domains to include second and higher order effects. **MCO 2.0-014C:** Gain and maintain a holistic understanding and visualization of all parties with equity or influence in the conflict. **MCO 2.0-030C:** Maintain persistent force projection, employment, and sustainment situational awareness, and achieve shared understanding at multiple echelons. **MCO 2.0-043C:** Extend the strategic to tactical collaborative environment, including interagency and multinational partners, to enable persistent
	JUO-002.2: Assess and model an urban adversary as a dynamic, living system embedded	**M1:** Percent of any given of urban complex visually represented. **M2:** Seconds to access and display shared local data	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
	within the urban system, as the basis for defeating it effectively and efficiently.	bases. **M3:** Seconds to access and display shared remote data bases. **M4:** Seconds to update current information. **M5:** Minutes lag between joint force common operational picture and real world situation. **M6:** Percent accuracy of mission-essential information maintained on situation displays. **M7:** Percent accuracy of data used by operations staff. **M8:** Yes/No The threat's capabilities were stated in the IPB process and accounted for in the military decision process. **M9:** Time required incorporating new intelligence data and products into ongoing threat evaluations. **M10:** Time To update or create threat models or templates.	situational awareness and shared understanding. **MCO 2.0-051C:** Develop and test tools, processes, and knowledge federations to holistically understand and visualize all parties with equity or influence in the conflict (adversaries, neutrals, and multinational). **IW 0.7-002C:** The ability to assess operational situation. **IW 0.7-028C:** The ability to develop appropriate analytical models to support the analysis of IW campaigns and operations.
	JUO-002.3: Provide a dynamic, visual representation of an urban system, to include the urban adversary system.	**M1:** Time to provide comprehensive analysis of physical, climatic, economic, political, and military characteristics in commander's area of interest. **M2:** Minutes to access current situation and formulate plan of action. **M3:** Percent of available operational sources integrated with intelligence sources for combat assessment. **M4:** Number of critical enemy operational variables identified in a timely manner. **M5:** Instances of enemy operational plans or actions correctly anticipated. **M6:** Time to direct, establish, and control the means by which the various staffs and forces send and receive operationally significant data/information.	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		M7: Time to display shared local databases. **M8:** Time for decision maker to understand display in decision making. **M9:** Percent accuracy of mission-essential information maintained on situation displays. **M10:** Percent of operational displays that are current.	
	JUO-002.4: Identify critical functions, processes, organizations, locations and relationships within an urban system and an urban adversary.	**M1:** Estimated percent of friendly, neutral, hostile, potentially hostile or subverted elements with current status known. **M2:** Seconds to access and display shared local data bases. **M3:** Seconds to access and display shared remote data bases. **M4:** Seconds to update current information. **M5:** Minutes lag between joint force common operational picture and real world situation. **M6:** Percent accuracy of mission-essential information maintained on situation displays. **M7:** Percent accuracy of data used by operations staff.	
	JUO-002.5: Estimate the intentions and plans of neutral, hostile or potentially hostile elements in a cluttered urban environment, including governmental and nongovernmental agencies and organizations.	**M1:** Number of potential neutral, hostile or potentially hostile elements' operational branches and sequels identified during planning. **M2:** Time to provide comprehensive analysis of physical, climatic, economic, political, social, cultural and military characteristics in commander's area of interest. **M3:** Minutes to access current situation and formulate plan of action. **M4:** Percent of available operational sources integrated	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		with intelligence sources for combat assessment.	
JUO-003 (Command and Control): The ability to integrate all the various elements of urban operations within the context of a theater campaign.	**JUO-003.1:** Command and control the joint force.	**M1:** Minutes to process and disseminate status information (to subordinate units). **M2:** Percent of available information examined and considered in latest status reporting. **M3:** Percent of organizations or units receiving latest information.	**MCO 2.0-002C:** Define desired effects to focus planning, communicate desired end states and effects to the lowest required level. **MCO 2.0-004C:** Facilitate centralized and decentralized decision-making. **MCO 2.0-005C:** Provide effective leadership in a combined, adaptive, collaborative environment. **MCO 2.0-007C:** Field and employ coherently joint, trained, and practiced headquarters elements. **MCO 2.0-019C:** Fully integrate joint, interagency, and multinational capabilities. **MCO 2.0-020C:** Conduct rehearsed flexible and responsive operations at every useful level, to include IO and maneuver and precision engagement operations that are supported by enhanced integrated combined fires and compressed sensor-to-shooter-to-impact engagement capabilities. **MCO 2.0-022C:** Integrate force projection, employment and sustainment in order to eliminate unnecessary redundancies, reduce friction, stimulate synergy, and enhance the effectiveness, efficiency, and economy of operations.
	JUO-003.2: Coordinate operations with foreign military partners.	**M1:** Percent of appropriate foreign military partners' resources and capabilities factored into operational plans. **M2:** Percent of components, involved foreign governments, and NGOs (suitably) represented on designated joint force staff. **M3:** Hours to establish liaison with appropriate foreign nation military officials (after mission assignment).	
	JUO-003.3: Coordinate actions with nonmilitary agencies and organizations.	**M1:** Estimated percent of appropriate nonmilitary agencies and organizations' resources and capabilities factored into operational plans. **M2:** Percent of components, involved foreign governments, and NGOs appropriately represented on or cooperating with designated joint force staff. **M3:** Hours to establish liaison with appropriate nonmilitary agencies and organizations (after mission assignment). **M4:** Days to establish CMOC to conduct liaison with and to coordinate activities with NGOs in the JOA.	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
			MCO 2.0-042C: Maintain a robust, joint network that (1) avoids single points of failure, (2) enables graceful degradation, (3) is based on uniform standards at the data and information level to allow warfighters throughout the force to use applications without compromising interoperability, and (4) promotes the ability of all commanders to decide and act with greater assurance and speed. **SSTR 2.0 Capability:** The ability to conduct integrated, parallel, and distributed planning within DOD, across the U.S. interagency community, with coalition partners, and with other multinational organizations. **SSTR 2.0 Capability:** The ability to conduct integrated, parallel, and distributed planning within DOD, across the U.S. interagency community, with coalition partners, and with other multinational organizations. **IW 0.7-004C:** The ability to synchronize joint IW campaign plans and subordinate IW operations. **IW 0.7-007C:** The ability to coordinate and integrate interagency support. **IW 0.7-008C:** The ability to coordinate and integrate Joint/Multinational support.
JUO-004	**JUO-004.1:** Make	**M1:** Minutes to access current situation and formulate	**MCO 2.0-045C:** Develop a process that

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
(Command and Control): The ability to adapt operations to the changing situation.	assertions about the functioning of the urban system and embedded adversaries based on the systemic assessment.	plan of action. **M2:** Hours to develop and provide operational options. **M3:** Percent of time mission-essential intelligence and threat assessments passed within established time criteria. **M4:** Minutes to assess potential impacts to critical infrastructure/assets. **M5:** Hours to generate a comprehensive analysis of characteristics of commander's area of interest. **M6:** Percent of questions on enemy military forces answered by data in joint force intelligence databases.	facilitates identification of requisite military, government and civilian skills and occupations and integrate, mobilize and deploy government, nongovernmental and civilian capabilities in support military and civil operations. **MCO 2.0-050C:** Educate current and future commanders in complex and rapidly changing environments to hone their decision making skills and improve their knowledge of: friendly and potential adversary capabilities, interdependence, setting conditions for enduring peace, and the effects-based approach to operations. **SSTR 2.0 Capability:** The ability to package personnel and equipment into optimal units to meet the demands of a JFC for SSTR operations. **IW 0.7-026C:** The capability to assess IW operations/campaigns. **IW 0.7-029C:** The ability to develop joint concepts for IW, capture lessons learned in combat and institutionalize them into Joint Force so that it can adapt the dynamics of the strategic and operational environments.
	JUO-004.2: Establish and promulgate measures for evaluating those assertions.	**M1:** Instances of time commander/senior staff made aware of emerging political, economic, or military event (which could impact theater) from outside source. **M2:** Percent of enemy actions or operations forecast. **M3:** Days to determine FP enhancement processes/procedures/facility modifications, etc and provide "answer" to the combatant commander. **M4:** Hours to construct an adaptive plan against one target **M5:** Hours to provide intelligence support for adaptive planning.	
	JUO-004.3: Collect information on measures of operational effectiveness.	**M1:** Percent of limitations (constraints and restraints) identified that significantly affect the operation. **M2:** Percent of requests for collection or production validated. **M3:** Hours to prepare report on available collection assets. **M4:** Instances of incoming information (which could affect outcome of operation) not getting to person	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		responsible for action. **M5:** Minutes to enter most current information on force status. **M6:** Time to complete organizational assessment. **M7:** Time to provide full assessment to force commander. **M8:** Time to provide initial assessment of operations to force commander.	
	JUO-004.4: Assess collected information to evaluate assertions about the functioning of the urban system and embedded adversaries.	**M1:** Subjective evaluation of collected information. **M2:** Yes/No Relevant information that meets the quality criteria serves the commander's needs. **M3:** Time to conduct assessment of collected relevant data. **M4:** Percent of available information examined and considered in latest status reporting. **M5:** Percent accuracy of data transmitted/disseminated. **M6:** Percent of time information passed within established time criteria. **M7:** Percent of time information on CCIR passed within established time criteria. **M8:** Percent of time mission-essential intelligence and threat assessments passed within established time criteria.	
	JUO-004.5: Prior to executing operations, plan branches, sequels and COA development to address possible changes to the urban system or adversary	**M1:** Days into future planning branches have been developed. **M2:** Percent of decision points that have branches. **M3:** Percent of forecast branches that appeared at execution. **M4:** Days into future that planning is completed and	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
	situation.	available. **M5:** Percent of decision points that have sequels. **M6:** Percent of enemy actions or operations forecast. **M7:** Percent of identified sequels with COAs developed. **M8:** Percent of possible follow-on operations that have preplanned sequels.	
	JUO-004.6: Modify the organization design and subsequent plans and actions based on feedback about effectiveness.	**M1:** Hours to adjust original plan for decisive operations. **M2:** Percent of forces identified as required to accomplish the essential tasks. **M3:** Percent of essential tasks derived in operational mission analysis and carried into planning. **M4:** Percent of organization and unit plans current with respect to operations. **M5:** Months to change unit or organization design. **M6:** Weeks to transition a given unit to new or modified weapons systems or equipment. **M7:** Months from concept to unit or organization design approval.	
JUO-005 (Force Application): The ability to maneuver to, into and through an urban area.	**JUO-005.1:** Maneuver forces through air, land and maritime domains to positions of advantage to bring disabling and enabling power to bear against an urban system.	**M1:** Hours for joint force to transition to or from operational battle formation. **M2:** Hours from planned execution time force transitions to or from operational battle formation. **M3:** Hours to move operational joint forces into locations to facilitate tactical commanders' plans for implementing subordinate campaign plan. **M4:** Percent of operational force moved into position to facilitate tactical commander's plans. **M5:** Hours to mass joint force forces at decisive points,	**MCO 2.0-016C:** Provide offensive capability to penetrate and counter enemy anti-access systems. **MCO 2.0-017C:** Rapidly project force directly to the objective in a position of advantage from intratheater and intertheater distances, within acceptable risk levels. **MCO 2.0-018C:** Rapidly employ and sustain adaptive, modular, mission capability forces and packages

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		intact and combat effective (after transition to battle formation). **M6:** Percent of maneuver force concentrated at decisive point prior to detection.	throughout the battlespace, without creating predictable patterns. **MCO 2.0-021C:** Conduct scalable simultaneous and distributed, multidimensional combat operations (including unconventional and forcible-entry operations) regardless of existing target area infrastructure and environmental conditions; isolate the battlespace from unwanted influences; engage with great discrimination; move with great speed; and identify and eliminate or neutralize an opponent's asymmetric advantages, while securing and strengthening friendly asymmetric advantages. **MCO 2.0-024C:** Disrupt and attack irregular forces and their networks through conventional, unconventional, military and nonmilitary, and kinetic and nonkinetic methods. **MCO 2.0-026C:** Streamline deployment processes to satisfy Combatant Command needs, positioning friendly forces within operational reach of critical targets, while denying adversary forces access to key friendly targets. **MCO 2.0-029C:** Establish a joint sustainment force that is rapidly deployable, immediately employable, flexible, highly mobile, modular, tailored, networked, survivable, and
	JUO-005.2: Penetrate an urban area by direct assault, infiltration or other means as necessary.	**M1:** Hours between planned and actual entry. **M2:** Hours for multinational and interagency linkages to be established (after initial entry). **M3:** Percent of operations for which appropriate force employed. **M4:** Percent of operations for which full coordination and deconfliction accomplished. **M5:** Percent of forcible entry force arrives at objective as planned. **M6:** Hours to reach critical check points and blocking positions.	
	JUO-005.3: Suppress enemy air defenses in and around an urban area.	**M1:** Percent of enemy air defense capabilities neutralized by nonlethal means. **M2:** Percent of enemy air defense targets successfully engaged. **M3:** Percent of enemy air defenses destroyed. **M4:** Percent of fixed wing sorties unable to complete mission because of lack of clearance. **M5:** Days to achieve air superiority. **M6:** Percent of joint tactical air requests filled. **M7:** Percent of operations degraded, delayed, or modified due to delays in moving or evacuating personnel, supplies, and equipment by air. **M8:** Percent of personnel, supplies, and equipment in AO that arrive by air at their destination on schedule.	
	JUO-005.4: Suppress	**M1:** Percent of enemy targets successfully attacked by	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
	enemy direct and indirect surface fires.	friendly forces. **M2:** Percent of targets attacked IAW requests for fires. **M3:** Mean number of minutes to attack immediate targets after most recent information on target provided. **M4:** Percent of immediate targets successfully coordinated and attacked. **M5:** Minutes to develop attack plan after identification of HPT. **M6:** Percent of attacks using nonlethal means without lethal results. **M7:** Percent of targets attacked with desired effects. **M8:** Percent coverage of AO by counter battery assets. **M9:** Estimated percent of enemy indirect-fire weapons capabilities neutralized by nonlethal means. **M10:** Estimated percent of enemy indirect-fire weapons targets successfully engaged. **M11:** Estimated percent of enemy indirect-fire weapons destroyed.	responsive to supported forces. **MCO 2.0-030C:** Maintain persistent force projection, employment, and sustainment situational awareness, and achieve shared understanding at multiple echelons. **IW 0.7-006C:** The ability to conduct operational maneuver and positioning of forces conducting IW. **IW 0.7-031C:** The ability to coordinate forward presence of joint force in theaters in support of shaping operations and protracted IW campaigns.
	JUO-005.5: Provide freedom of movement. .	**M1:** Percent of operations delayed until key strategic areas controlled by friendly ground forces. **M2:** Percent of deploying forces delayed by enemy strategic counter-mobility efforts. **M3:** Hours that joint force operational airlift/sealift delayed due to obstacles. **M4:** Days to clear minefield to allow amphibious landing. **M5:** Days to clear port and restore to full capacity. **M6:** Days to clear port to allow discharge of cargo. **M7:** Hours to restore ground LOC after closure due to	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		heavy rain and flooding. **M8:** Percent of mine countermeasure operations that provide needed freedom of movement. **M9:** Hours enemy-emplaced obstacles delay movement of friendly forces. **M10:** Hours joint force operations delayed for insufficient engineer support. **M11:** NM between two most distant airfields or LZs in combat zone. **M12:** NM between two most distant airfields, LZs, or EZs in combat zone.	
	JUO-005.6: Move and operate freely in both subterranean and multi-storied structures in urban areas.	**M1:** Yes/No Mobility enhancing activity was completed within the period specified in the order. **M2:** Time to respond to an event (natural disaster or combat activity) that impacts the unit's movement and maneuver. **M3:** Time that the preparation and execution of unit operations are delayed due to a natural disaster or combat activity that impacts the unit's movement and maneuver. **M4:** Time to conduct a route/area reconnaissance of location where mobility enhancing activity is required. **M5:** Time for staff to disseminate event data to subordinate units, higher headquarters, and laterally after discovery. **M6:** Time to plan for the mobility enhancement effort. **M7:** Time to move mobility enhancing systems to work site. **M8:** Time to establish conditions necessary for the	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		success of the mobility enhancement effort, such as establishing security, gaining permission from local authorities for construction, and obtaining supplies—gravel, sand, airfield mats, soil stabilization systems, etc.—necessary for construction. **M9:** Time to complete mobility enhancing activity.	
JUO-006 (Force Application): The ability to apply highly discriminate destructive or disabling force to attack hostile elements while minimizing damage to an urban system.	**JUO-006.1:** Discriminate between hostile and non-hostile elements in a cluttered urban system in which potential target signatures are ambiguous.	**M1:** Hours since most current intelligence information was last collected. **M2:** Percent of enemy targets accurately located. **M3:** Percent of enemy targets correctly identified. **M4:** Percent of friendly units/organizations and personnel with current status known. **M5:** Percent of time, accurate common operational picture maintained within sector/region. **M6:** Hours to update and confirm data reported to operational commander (after daily briefing). **M7:** Minutes to confirm identity of unidentified friendly target. **M8:** Percent of coalition forces accurately reporting force locations. **M9:** Percent of force employing passive identification-interrogation capability. **M10:** Percent of friendly forces with procedures or equipment to allow positive identification that employ such procedures or equipment.	**MCO 2.0-015C:** Develop processes, procedures, and automated support systems to fully integrate fires and maneuver, using enhanced kinetic and nonkinetic weapons, to generate lethal and nonlethal effects while limiting collateral damage or consequences. **MCO 2.0-020C:** Conduct rehearsed flexible and responsive operations at every useful level, to include IO and maneuver and precision engagement operations that are supported by enhanced integrated combined fires and compressed sensor-to-shooter-to-impact engagement capabilities. **MCO 2.0-021C:** Conduct scalable simultaneous and distributed, multidimensional combat operations (including unconventional and forcible-entry operations) regardless of existing target area infrastructure and

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
	JUO-006.2: Conduct offensive operations in an urban environment while minimizing collateral damage.	**M1:** Instances of collateral damage/effects. **M2:** Minutes to identify, validate, conduct collateral damage/effects mitigation analysis/recommendations, prioritize, and nominate immediate targets for attack, deception, disruption, exploitation, and re-attack based on the commander's guidance and objectives for preplanned and near-real-time (NRT) precision engagement. **M3:** Percent of attacks assessed to have greater collateral damage/effects than planned/expected. **M4:** Percent of attacks have collateral damage within limits defined by Secretary of Defense or geographic combatant commander. **M5:** Percent of potential targets not reviewed for collateral damage/effects potential, political ramifications/sensitivity, LOAC consequences, etc. by appropriate personnel. **M6:** Estimated percent that enemy LOC capacity is degraded by friendly force offensive operations. **M7:** Percent of anticipated collateral damage/effects that exceeds guidance and legal limitations. **M8:** Instances synchronized multiple attacks on targets using appropriate time over- target or launch windows minimizing collateral damage, civilian casualties, and fratricide. **M9:** Percent of targets reviewed for collateral damage/effects, damage expectancy, casualties, and political ramifications or sensitivities. **M10:** Number of collateral damage/effects incidents as a result of friendly weapon employment. **M11:** Minutes to identify, validate, conduct collateral	environmental conditions; isolate the battlespace from unwanted influences; engage with great discrimination; move with great speed; and identify and eliminate or neutralize an opponent's asymmetric advantages, while securing and strengthening friendly asymmetric advantages. **MCO 2.0-023C:** Provide multidimensional kinetic and nonkinetic precision engagement. **MCO 2.0-024C:** Disrupt and attack irregular forces and their networks through conventional, unconventional, military and nonmilitary, and kinetic and nonkinetic methods. **MCO 2.0-025C:** Conduct proactive communication activities and information operations to counter adversary propaganda, disrupt or destroy their information networks, and influence, degrade, or control adversary decision making. **SSTR 2.0 Capability:** The ability of the Joint Force to conduct focused yet measured offensive and defensive operations against the leaders and military forces of hostile groups. **IW 0.7-010C:** The ability to conduct psychological operations in support of IW campaign objectives. **IW 0.7-025C:** The ability of forces

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		damage/effects mitigation analysis/recommendations, prioritize, and nominate immediate targets for attack, deception, disruption, exploitation, and re-attack based on the commander's guidance and objectives for preplanned and near-real-time (NRT) precision engagement.	conducting IW to conduct lethal strike operations. **IW 0.7-026C:** The ability of forces conducting IW to strike targets using non-lethal means.
	JUO-006.3: Conduct direct action in an urban environment while minimizing collateral damage.	**M1:** Hours between desired and actual time in position. **M2:** Hours between planned and actual infiltration. **M3:** Percent of DA missions that achieve their aim. **M4:** Percent of DA missions that are deliberately planned. **M5:** Percent of time-sensitive DA missions that achieve their aim. **M6:** Instances of collateral damage/effects. **M7:** Percent of attacks assessed to have greater collateral damage/effects than planned/expected. **M8:** Percent of attacks that have collateral damage within limits defined by Secretary of Defense or geographic combatant commander. **M9:** Percent of potential targets not reviewed for collateral damage/effects potential, political ramifications/sensitivity, LOAC consequences, etc. by appropriate personnel.	
	JUO-006.4: Conduct precision engagement in an urban environment.	**M1:** Minutes to identify, validate, conduct collateral damage/effects mitigation analysis/recommendations, prioritize, and nominate immediate targets for attack, deception, disruption, exploitation, and re-attack based on the commander's guidance and objectives for preplanned and near-real-time (NRT) precision engagement.	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		M2: Number or percent of known or suspected missile, rocket, and other CBRN or long-range attack systems successfully engaged targets. **M3:** Percent of immediate targets successfully coordinated and attacked. **M4:** Percent of operational targets attacked by lethal and nonlethal means together. **M5:** Percent of friendly or neutral forces or noncombatants influenced by collateral effects from friendly attacks on CBRN or other targets. **M6:** Yes/No Availability of a weapon system designed to destroy, disrupt, or deny access to CBRN capabilities while minimizing negative collateral damage. **M7:** Yes/No Ability to model and predict collateral effects prior to a strike on CBRN targets.	
	JUO-006.5: Conduct offensive information operations (IO) against targets in the urban environment	**M1:** Hours to identify required operational IO information necessary for IO planning after onset of planning. **M2:** Hours to task intelligence community and other operational support organizations and agencies to fill information requirements for IO planning. **M3:** Hours to get JFC approval for proposed operational IO plans and actions. **M4:** Hours to modify operational IO plans and actions due to operational contingencies. **M5:** Percent of operational IO-cell-nominated targets struck with lethal or nonlethal means during the timeframe planned for in the IO appendix or other planning document. **M6:** Days to conduct battle damage assessment of	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		operational IO "targets" struck with lethal and nonlethal means after receipt of information. **M7:** Percent of operational IO-cell-nominated targets restruck when recommended by battle damage assessment reporting from initial strike. **M8:** Hours to respond to subordinate command requests for IO support or coordination.	
JUO-007 (Force Application): The ability to persuade municipal governments, organizations and the general populace to cooperate with joint force operations.	**JUO-007.1:** Provide incentives for municipal governments, organizations, groups, or persons to cooperate with joint force operations in an urban area.	**M1:** Percent of theater support in concert with published theater strategy and combatant commander's intent. **M2:** Percent difference between promised aid during planning and support to NGOs in execution. **M3:** Percent of requests by allies for civil military support, met within required timeframe. **M4:** Percent of requests by allies for communications support met within required timeframe. **M5:** Percent of requests by allies for logistics support met within required time frame. **M6:** Percent of requests by allies for security assistance support met within required timeframe.	**MCO 2.0-025C:** Conduct proactive communication activities and information operations to counter adversary propaganda, disrupt or destroy their information networks, and influence, degrade, or control adversary decision making. **SSTR 2.0 Capability:** The ability to design and disseminate information in various forms to influence the views of adversary, neutral, and supportive audiences. **IW 0.7-010C:** The ability to conduct psychological operations in support of IW campaign objectives. **IW 0.7-011C:** The ability to conduct counter-psychological operations.
	JUO-007.2: Within established restraints, pressure municipal governments, organizations, groups or persons to cooperate with joint force operations in an urban area.	**M1:** Percent of theater support in concert with published theater strategy and combatant commander's intent. **M2:** Percent of municipal governments, organizations, groups, or persons that require pressure in order to corporate with the JTF. **M3:** Evaluate the perceptions, knowledge, and factors that influence particular targets. **M4:** Instances of operational plans or objectives being delayed, defeated, or disrupted due to uncooperative	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		municipal governments, organizations, groups, or persons offensive IO actions.	
	JUO-007.3: Conduct operations to influence the emotions, motives, objective reasoning, attitudes and ultimately the behavior of municipal governments, organizations, groups, and individuals in an urban area.	**M1:** Estimated percent of target audience that exhibits behavior in accordance with joint force commander's desires. **M2:** Estimated percent of target audience reached by more than one media in PSYOP campaign. **M3:** Hours to initiate PSYOP activities (after warning order). **M4:** Minutes to complete attack on target (after initiation) using nonlethal means. **M5:** Percent of joint force targets attacked with lethal means also attacked with PSYOP. **M6:** Percent of preplanned targets successfully attacked. **M7:** Percent of PSYOP objectives accomplished.	
	JUO-007.4: Conduct operations to negate the effectiveness of adversary psychological operations against an urban population, group or government.	**M1:** Time to identify adversary psychological warfare operations. **M2:** Percent of adversarial psychological operation attempts detected and countered. **M3:** Time to expose adversary attempts to influence friendly population and military forces. **M4:** Percent of potential multi-crisis situations in which counterpropaganda operations were war gamed. **M5:** Time to disseminate accurate information to friendly forces as to counter adversarial psychological attempts. **M6:** Hours to respond to misinformation and disinformation.	
	JUO-007.5: Conduct public information	**M1:** Hours to release factual public information to the media.	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
	activities to educate and inform populations of joint force objectives and to counter misinformation and disinformation.	**M2:** Hours to respond to misinformation and disinformation deemed worthy of response. **M3:** Hours to acquire and distribute multimedia products (still and video) to support communication objectives. **M4:** Hours to deliver public information via a command-sponsored public website. **M5:** Minutes to advise a commander on public impact of emerging events. **M6:** Percent of public information activities that support strategic and theater communication objectives.	
JUO-008 (Force Application): The ability to secure, control and protect urban areas to limit hostile presence, activity and influence.	**JUO-008.1:** Seize and secure sectors of an urban area.	**M1:** Percent of objectives seized within planned times. **M2:** Days to seize objectives. **M3:** Percent of operational objectives achieved by friendly offensive action. **M4:** Percent of objectives secured. **M5:** Percent of maneuver forces that secure assigned objectives. **M6:** Percent of sectors secure. **M7:** Percent of critical terrain features under control of friendly forces. **M8:** Percent of operationally significant areas currently contested by opposing forces.	**MCO 2.0-021C**: Conduct scalable simultaneous and distributed, multidimensional combat operations (including unconventional and forcible-entry operations) regardless of existing target area infrastructure and environmental conditions; isolate the battlespace from unwanted influences; engage with great discrimination; move with great speed; and identify and eliminate or neutralize an opponent's asymmetric advantages, while securing and strengthening friendly asymmetric advantages. **MCO 2.0-039C:** Protect noncombatants, valuable sources of information, and critical infrastructure and services in the operational area. **SSTR 2.0 Capability**: The ability of the Joint Force to conduct focused yet measured offensive and defensive operations against the leaders and
	JUO-008.2: Maintain persistent surveillance of urban systems.	**M1:** Hours required identifying enemy operational and tactical center of gravity. **M2:** Percent of identified critical elements, decisive points, and high payoff targets monitored by combatant command's JIC. **M3:** Percent of identified decisive points within AO under friendly observation. **M4:** Percent of critical terrain features under	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		observation of friendly forces. **M5:** Percent of identified enemy decisive points translated into HPTs. **M6:** Percent of identified enemy decisive points developed as strategic targets.	military forces of hostile groups. **IW 0.7-023C:** The ability of forces conducting IW to control significant land areas. **IW 0.7-024C:** The ability of forces conducting IW to control significant littoral areas.
	JUO-008.3: Conduct patrolling within an urban area under combat conditions.	**M1:** Percent of assigned area covered during the patrol. **M2**: Time to conduct the patrol within time allocated by higher headquarters. **M3:** Time from receiving task until placing unit patrol assets to start the mission. **M4:** Time to provide collected route data to tasking agency analysts. **M5:** Percent of patrol collection requirements satisfied by piggybacking on other existing ongoing activities on a noninterference basis. **M6:** Percent of accuracy of data provided. **M7:** Percent of friendly casualties received during the combat patrol. **M8:** Percent of information requirements achieved. **M9:** Time to conduct rehearsals. **M10:** Time to prepare patrol plan. **M11:** Average time between patrols passing through a given location.	
	JUO-008.4: Provide law enforcement in an urban area.	**M1:** Percent of security forces committed to law enforcement operations versus combat operations. **M2:** Percent of security force requirement available to meet operational needs. **M3:** Instances of law and order incidents not covered by existing/established policy/SOP.	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		M4: Time to conduct law enforcement patrols designed to obtain police information. **M5:** Yes/No Suppress criminal behavior within the unit AO. **M6:** Percent of time military police subordinate elements conduct law and order missions. **M7:** Percent decline in criminal behavior in an AO. **M8:** Percent of military police assets distributed to conduct law and order operations in accordance with the plan.	
	JUO-008.5: Provide populace and resource control in an urban area before, during or after combat operations.	**M1:** Estimated percent of HN population under control of civil government. **M2**: Days between occurrences of civil unrest. **M3:** Percent of normal public services (sewer, water, electricity, trash removal, as appropriate) maintained during operation. **M4:** Percent of joint force personnel assigned to perform basic public services in HN. **M5:** Percent of joint force personnel assigned to perform police functions in HN. **M6:** Percent of friendly force engaged in refugee care and handling.	
	JUO-008.6: Perform crowd and riot control.	**M1:** Number incidents of hostile crowd or mob behavior the joint force is able to influence without crowd or mob fatalities or serious casualties. **M2:** Percent of joint force personnel assigned to perform crowd and riot control functions in HN. **M3:** Percent of friendly force, engaged in crowd and riot control functions. **M4:** Time to coordinate with host-nation agencies for	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		implementation of population and resource control measures. **M5:** Time to develop plans for imposing crowd and riot control by the enforcement of curfews, movement restrictions, travel permits and registration cards, and assisting in the evacuation of noncombatants. **M6:** Time to develop plans for crowd and riot control, such as establishing roadblocks and checkpoints, inspecting facilities, enforcing local regulations and guidelines, controlling rations, and assisting with amnesty program. **M7:** Time to inform local population of new/revised crowd and riot control measures imposed on them.	
	JUO-008.7: Protect the populace.	**M1:** Percent of friendly or neutral forces and noncombatants influenced by collateral effects from friendly attacks on CBRNE weapon targets. **M2:** Hours to evacuate noncombatants (after combatant commander notified). **M3:** Incidents of noncombatants inadvertently attacked by friendly fire. **M4:** Yes/No Fully implemented and coordinated security plan in place and operational. **M5:** Percent monthly decline or increase in HN central government popularity in the civil populace. **M6:** Days between occurrences of civil unrest. **M7:** Percent of joint force personnel assigned to perform police functions in HN. **M8:** Percent of friendly force engaged in refugee care and handling. **M9:** Percent change in per capita access to normal	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		markets activities since before hostile action or disaster. **M10:** Percent of civil populace without public utilities compared to before hostile action or disaster.	
	JUO-008.8: Control basic urban services within the urban area.	**M1**: Hours to respond to non-duty hours request for support. **M2:** Minutes to analyze potential consequences of global event. **M3:** Minutes to assess potential impacts to critical infrastructure/assets. **M4:** Minutes to assess damage to infrastructure at strategic interest locations.	
JUO-009 (Force Protection): The ability to protect the joint force and other agencies and organizations within an urban area.	**JUO-009.1:** Provide responsive medical support for trauma, concussion and other combat and non-combat injuries.	**M1:** Percent accountability of personnel entering the Joint Health Service Support system. **M2:** Percent of patients returned to duty (RTD) versus transported to definitive care facilities outside of the theater. **M3:** Per/day provided medical treatment. **M4:** Minutes from wounding or injury to receipt of stabilizing care. **M5:** Hours turnaround time for medical lab serology and other technical lab testing results. **M6:** Hours to assess all medical protective actions and make recommendations upon notification of specific bioagent. **M7:** Percent of DPs assisted by joint force medical units. **M8:** Percent of EPWs assisted by joint force medical units. **M9:** Percent of injured or incapacitated personnel returned to duty.	**MCO 2.0-033C:** Minimize friendly forces exposure to danger while conducting sustainment operations. **MCO 2.0-035C:** Protect the force against regular and irregular anti-access and area denial capabilities. **MCO 2.0-036C:** Provide security for our forces, systems and processes (to include critical infrastructure, information and space capabilities) from origin to positions within the Joint Operations Area. **MCO 2.0-037C:** Rapidly sense, detect, identify from standoff range, defend against, and recover the force from chemical, biological, radiological, nuclear, and high yield explosives attack. **MCO 2.0-038C:** Optimize organic,

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		M10: Percent of personnel incapacitated by noncombat injuries and illness. **M11:** Percent of required patient bed spaces actually available. **M12:** Percent of U.S. national private citizens needing emergency medical assistance who receive it.	automated survivability features for vessels, aircraft, combat vehicles and support vehicles. **MCO 2.0-040C:** Provide collective and individual protection in irregular warfare situations involving reduced engagement geometry, compressed response times, and varying angles of attack. **SSTR 2.0 Capability:** The ability of the Joint Force to conduct focused yet measured offensive and defensive operations against the leaders and military forces of hostile groups.
	JUO-009.2: Detect and defeat improvised explosive devices and similar threats to personnel, materiel and facilities.	**M1:** Percentage of friendly operations supported by successful collection and dissemination of actionable intelligence. **M2:** Number of patterns of insurgent behavior identified. **M3:** Percent increase in checkpoint detection of IED materials. **M4:** Number of IEDs rendered safe at a stand-off distance or with manual deployed equipment and then exploit IED at the time/place chosen by U.S. forces. **M5:** Number of enemy bomb-making personnel, explosive devices, component parts, and bomb-making equipment and facilities detected. **M6:** Number of known devices found, marked, destroyed, neutralized or removed from a known area so as to facilitate needed operations. **M7:** Percent of friendly operations degraded, disrupted, or delayed due to enemy IED warfare. **M8:** Percent of detected and monitored IED enemy cell operations successfully interdicted or source areas eradicated.	
	JUO-009.3: Detect and defeat snipers.	**M1:** Percent of snipers detected/located prior to contact. **M2:** Percent of snipers defeated before contact or avoided. **M3:** Percent of snipers located and defeated during contact.	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		M4: Percent of snipers located and defeated after contact. **M5:** Number of snipers killed/captured.	
	JUO-009.4: Detect and protect against diseases common to densely populated urban areas.	**M1:** Hours to conduct Medical Surveillance to identify use of hazardous materials and/or endemic disease outbreaks. **M2:** Hours to complete food, water, and vector vulnerability assessments. **M3:** Number of immunizations and medical countermeasures on-hand. **M4:** Percent difference in disease incidence in affected civil populace compared to before hostile action or disaster. **M5:** Percent of disease nonbattle injury (DNBI) (from unanticipated medical threats). **M6:** Percent of friendly forces incapacitated by disease for which there was no advance warning. **M7:** Days to issue disease counter measures such as vaccines, prophylaxis and post-exposure countermeasures. **M8:** Hours conduct medical surveillance to identify endemic disease outbreaks. **M9:** Hours to establish disease detection, warning, and analysis reporting system. **M10:** Percent of patients treated for disease and nonbattle injuries (DNBI) versus wounded in action (WIA). **M11:** Percent of U.S. personnel who receive vaccines, antidotes, and protective equipment. **M12:** Percent U.S. personnel who receive individual	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		chemical/biological warfare protective training. **M13:** Yes/No In-place theater-wide system for tracking status of U.S. personnel vaccines, antidotes, chemical/biological protective training.	
	JUO-009.5: Detect and protect against chemical, biological, radiological, nuclear and high-explosive weapons.	**M1:** Estimated percent of CBRNE weapon capabilities that are detected and identified. **M2:** Percent of intelligence on enemy CBRNE weapon systems that prove to be accurate. **M3:** Minutes to provide unambiguous attack warning. **M4:** Minutes to provide accurate attack assessment. **M5:** Estimated percent of detected CBRNE weapons intercepted. **M6:** Hours to acquire, positively identify, select, and prioritize CBRNE weapon targets. **M7:** Number of nations in the JOA, or with influence, that have CBRNE attack capabilities **M8:** Estimated percent change in number of CBRNE weapon capable JOA actors in the past year. **M9:** Number of nonstate actors with assessed CBRNE weapon capabilities in the JOA. **M10:** Number of operational plans without CBRNE considerations when, in fact, a valid CBRNE threat existed. **M11:** Hours to conduct Medical Surveillance to identify use of CBRNE agents and/or endemic disease outbreaks. **M12:** Instances of false positive and/or false negative alarms.	
	JUO-009.6: Protect and secure operationally critical installations,	**M1:** Incidents of critical friendly facilities (e.g., command posts), damaged or destroyed in previous week. **M2:** Percent of critical assets and facilities hardened.	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
	facilities, and systems.	**M3:** Percent of planned facility hardening completed at execution. **M4:** Percent of unhardened theater assets damaged or destroyed. **M5:** Months to assess threats to installations and community critical infrastructure through joint military and civilian partnership vulnerability assessments. **M6:** Incidents of U.S. POE facilities and installations being damaged or destroyed by enemy terrorist action. **M7:** Percent of critical friendly facilities (e.g., PODs, command posts) destroyed, damaged, or rendered inoperable by sabotage. **M8:** Percent of critical friendly facilities hardened or protected against hostile acts. **M9:** Incidents of damage to APOD and APOE facilities. **M10:** Percent of critical friendly facilities (e.g., PODs, command posts) destroyed, damaged, or rendered inoperable by sabotage. **M11:** Percent of identified terrorist attacks that penetrate security in operational area.	
	JUO-009.7: Protect against rocket, artillery, and mortar (RAM) fires.	**M1:** Percent of identified threat precision-guided weapons, associated delivery platforms, and target acquisition systems for which effective countermeasures are available. **M2:** Number of incidents where enemy forces affect the security of friendly units and facilities, such as terrorist attacks, snipping, and isolated mortar/rocket attacks. **M3**: Percent of friendly casualties inflicted by RAM fires. **M4**: Number of friendly and noncombatant casualties. **M5:** Percent reduction in enemy targeting effectiveness	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		due to the implementation of force protection measures. **M6:** Percent reduction in the effectiveness of enemy action due to friendly measures to harden units and facilities from enemy attack. **M7:** Percent enhancement in personnel, equipment, and facility survivability because of measures taken to harden against enemy attack.	
	JUO-009.8: Provide personal protection against kinetic, non-kinetic, lethal and non-lethal effects to the joint force.	**M1:** Percent increase in the time it takes the unit to conduct operations because of the need to protect itself from the effects of identified enemy weapons systems. **M2:** Percent of unit personnel trained to use available detection equipment. **M3:** Percent of friendly casualties due to failure of protective equipment. **M4:** Percent of personnel, systems, and facilities hardened by protective equipment and systems. **M5:** Percent of personnel trained to use protective equipment. **M6:** Percent of friendly casualties due to improperly used protective equipment. **M7:** Percent of casualties or equipment and supplies lost due to the nonavailability of protective equipment. **M8:** Percent of unit force protection activities integrated with those of other services and nations. **M9:** Percent reduction in enemy targeting effectiveness due to the implementation of force protection measures. **M10:** Percent reduction in the effectiveness of enemy action due to friendly measures to harden units and facilities from enemy attack.	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		M11: Percent enhancement in personnel, equipment, and facility survivability because of measures taken to harden them from enemy attack. **M12:** Number of friendly and noncombatant casualties due to terrorist attack.	
	JUO-009.9: Provide protected movement of the joint force and other agencies/organizations through urban terrain.	**M1:** Percent of JOA in which friendly freedom of movement allowed. **M2:** Number of assets prioritized and allocated to protect required movements, and were assets saved for contingencies. **M3:** Number of potential scenarios evaluated for enemy courses of action relating to friendly movements along the movement routes. **M4:** Number of friendly assets determined to be available to protect movements along the movement routes. **M5:** Percent of movements that might be likely targets identified, based the enemy's CONOPS. **M6:** Percent of unit movements tracked by in-transit visibility or total-asset visibility. **M7:** Percent of movements provided convoy protection during movement.	
	JUO-009.10: Protect access to and release of joint force and critical external information for the Joint force.	**M1:** Yes/No Do commands responsible for operation and maintenance of information systems perform risk assessments of potential threats and take appropriate action to respond to those risks which meet the appropriate criteria? **M2:** Percent of operational information systems not protected by firewalls, virus detection software and other	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		appropriate defensive IO measures. **M3:** Percent of operational information system hardware and software components that have backup components to replace them if they fail or are corrupted. **M4:** Number of redundant communications paths available to connect operational information systems. **M5:** Instances of operational information systems being disabled, corrupted or compromised through identified adversary IO actions or criminal mischief. **M6:** Percent of allies with whom joint information security agreements exist. **M7:** Percent of information systems located within high-security areas. **M8:** Percent of system administrators with full OPSEC training. **M9:** Percent of system administrators with full information system security training. **M10:** Percent of adversary-trusted sources (systems and personnel) under friendly control. **M11:** Number of adversary penetrations of friendly information systems identified and targeted.	
	JUO-009.11: Protect against hazardous material and remove militarily significant hazards.	**M1:** Casualties caused by militarily significant hazards (per week). **M2:** Hours in delay in executing scheme of maneuver. **M3:** Percent of casualties attributed to militarily significant hazards. **M4:** Percent of identified militarily significant hazards successfully removed or neutralized. **M5:** Percent of joint force exposed to or affected by militarily significant hazard.	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		M6: Number of militarily significant hazards identified in advance by joint force staff. **M7:** Hours to conduct Medical Surveillance to identify use of hazardous materials and/or endemic disease outbreaks. **M8:** Casualties to U.S. military personnel attributed to the hazardous materials incident. **M9:** Casualties to U.S. noncombatants attributed to hazardous materials incident.	
JUO-010 (Force Protection): The ability to selectively isolate all or relevant portions of an urban system to limit unwanted external influence.	**JUO-010.1:** Prevent movement of enemy forces and materiel by surface, air or subsurface into, out of, or within an urban area.	**M1:** Percent of identified critical routes controlled or blocked. **M2:** Percent of force required to isolate key sector. **M3:** Estimated percent reduction in movement of adversary supplies into theater of operations/JOA. **M4:** Days to isolate key sector of theater of operations/JOA. **M5:** Estimated percent enemy avenues of approach closed as maneuver possibilities by friendly barriers, obstacles, or mines. **M6:** Estimated percent of enemy military force prevented from entering or leaving secured area. **M7:** Percent of known scheduled and unscheduled transport prevented from entering or leaving secured area. **M8:** Number/estimated percent of available enemy LOCs and PODs interdicted by friendly obstacles. **M9:** Estimated percent of hostile external surface communication absorbed by other LOCs after barrier emplacement. **M10:** Estimated percent of hostile internal surface	**MCO 2.0-015C:** Develop processes, procedures, and automated support systems to fully integrate fires and maneuver, using enhanced kinetic and nonkinetic weapons, to generate lethal and nonlethal effects while limiting collateral damage or consequences. **MCO 2.0-021C:** Conduct scalable simultaneous and distributed, multidimensional combat operations (including unconventional and forcible-entry operations) regardless of existing target area infrastructure and environmental conditions; isolate the battlespace from unwanted influences; engage with great discrimination; move with great speed; and identify and eliminate or neutralize an opponent's asymmetric advantages, while securing and strengthening friendly asymmetric advantages. **MCO 2.0-024C:** Disrupt and attack irregular forces and their networks

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		communication absorbed by other LOCs after barrier emplacement. **M11:** Estimated percent reduction in hostile military surface communications after barrier emplacement. **M12:** Estimated percent reduction in hostile overall surface communications after barrier emplacement.	through conventional, unconventional, military and nonmilitary, and kinetic and nonkinetic methods. **MCO 2.0-025C:** Conduct proactive communication activities and information operations to counter adversary propaganda, disrupt or destroy their information networks, and influence, degrade, or control adversary decision making. **IW 0.7-023C:** The ability of forces conducting IW to control significant land areas. **IW 0.7-024C:** The ability of forces conducting IW to control significant littoral areas.
	JUO-010.2: Screen and interrupt the transmission of military and other potentially hostile information into, out of, and within an urban area characterized by the free flow of information.	**M1:** Hours to identify required theater level IO information necessary for IO planning after onset of planning. **M2:** Hours to task intelligence community and other theater level support organizations and agencies (including those of allies where appropriate) to fill information requirements for IO planning. **M3:** Percent of identified theater-level IO information requirements unfilled at time-critical points in planning process. **M4:** Percent of theater IO-cell-nominated targets restruck when recommended by battle damage assessment reporting from initial strike. **M5:** Percent of theater level IO objectives verifiably achieved. **M6:** Hours to identify IO targets that support the commander's plan. **M7:** Estimated percent of enemy operations disrupted, cancelled, or modified, attributable to IO plan. **M8:** Percent of theater IO-cell-nominated targets restruck when recommended by battle damage assessment reporting from initial strike.	
	JUO-010.3: Control potentially hostile financial transactions	**M1:** Time to evaluate the public financial system within the AO **M2:** Time to conduct legal review of proposed public	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
	into, out of, and within the urban area.	finance actions. **M3:** Estimated percent of economy conducted on the black market. **M4:** Number and types of public institutions within the AO over which the United States must impost public fund controls. **M5:** Amount in dollars/local currency of public funds controlled by military agencies within the AO. **M6:** Number/instances of adversary organizations unable to receive financial support because of joint force actions.	
JUO-011 (Focused Logistics) : The ability before, during and after combat operations to effect institutional and infrastructural improvements to strengthen selected urban subsystems identified as essential to the continued functioning of the urban system.	**JUO-011.1:** Perform civil engineering to improve institutions and infrastructure in an urban system before, during or after combat operations.	**M1:** Hours to restore essential utilities. **M2:** Hours to reestablish damaged LOCs. **M3:** Days to restore POD/APOD to handle required shipping. **M4:** Percent of main supply routes, pipelines, airfields, and maintenance facilities in JOA that have accurate condition assessments. **M5:** Hours to respond to a request for real estate coordination by JTF or other subordinate command. **M6:** Hours to respond to a request for assistance by JTF or other subordinate command for facilities contracting requirements external to the JOA. **M7:** Percent of civil engineering tasks correctly assigned (right engineers/location/time). **M8:** Percent of engineering requests satisfied by contractor assets from outside theater. **M9:** Percent of engineering requests satisfied by theater assets. **M10:** Percent of total procurement costs in contract	**MCO 2.0-045C:** Develop a process that facilitates identification of requisite military, government and civilian skills and occupations and integrate, mobilize and deploy government, nongovernmental and civilian capabilities in support military and civil operations. **SSTR 2.0 Capability:** The ability to train DOD and non-DOD personnel to enhance their ability to perform specific SSTR-functions and tasks. **SSTR 2.0 Capability:** The ability to conduct immediate reconstruction of critical infrastructure and essential services. **IW 0.7-016C:** The ability to execute civil-military operations. **IW 0.7-017C:** The ability to provide nation assistance to foreign states, organizations, or groups.

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		administrative costs. **M11:** Percent of construction material acquired or produced locally.	**IW 0.7-018C:** The ability to provide combat and non-combat military training and advisory assistance to the armed forces and other security forces of a foreign state, organization, or group. **IW 0.7-020C:** The ability to train selected partners to conduct foreign internal defense.
	JUO-011.2: Perform civil administration within an urban area before, during or after combat operations.	**M1:** Percent of CA planning (e.g. Annex G, CA area study, CA estimate) completed by execution of CA mission. **M2:** Percent of essential services/facilities damaged/destroyed during hostilities returned to operation prior to transition from U.S. military administration. **M3:** Percent of U.S. forces CA personnel required to remain in country to coordinate post transition activities with local government/UN administration. **M4:** Percent of U.S. forces redeployed prior to transition to local government/UN administration. **M5:** Percent of U.S. forces, other than CA assets, retained in theater to support civil administration after transition from military administration. **M6:** Days to coordinate transition between U.S. forces and local government/UN administration. **M7:** Days to determine U.S. post conflict policy objectives. **M8:** Days to properly account for funds and equipment expended during military administration and to close outstanding claims against military administration. **M9:** Hours to receive direction or approval from Secretary of Defense to become directly involved in executive, judiciary, or legislative functions of HN government.	
	JUO-011.3: Provide advisory support to	**M1:** Weeks to respond to request for assistance. **M2:** Percent of coalition and peacekeeping forces with	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
	municipal governments and civic organizations before, during or after combat operations.	theater military participation have major weapons systems common with U.S. systems. **M3:** Percent of Country Teams' annual security assistance proposals (FMFP/IMET) funded. **M4:** Percent of Country Teams' requests for military goods/services supported. **M5:** Percent of designated foreign military personnel trained. **M6:** Percent of designated foreign military students trained. **M7:** Percent of military goods/services/training purchased from the United States. **M8:** Percent of weapons common with U.S. systems. **M9:** Weeks to respond to request for assistance with equipment in country during security assistance surge.	
	JUO-011.4: Improve or provide basic services—security, water, food supply, shelter, electricity, sanitation, and basic health services—within an urban environment before, during or after combat operations.	**M1:** Hours for U.S. Country Team and combatant command to coordinate response to natural disaster. **M2:** Hours to establish liaison with Country Team, HN, and other U.S.G agencies, NGO/IO and coalition forces, as appropriate. **M3:** Instances of insufficient logistical support provided to nations, groups, or agencies. **M4:** Instances of insufficient personnel support provided to nations, groups, or agencies. **M5:** Instances of personnel provided to support other nations, groups, or agencies. **M6:** Instances of NGOs in OA maintaining liaison with commander. **M7:** Instances of NGOs in OA receiving U.S. military support.	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		M8: Estimated percent of local population with access to HN healthcare services compared to pre-hostilities.	
	JUO-011.5: Train indigenous personnel and organizations to perform critical civic functions before, during or after combat operations.	**M1:** Days to establishment of military government (after occupation of area). **M2:** Hours to develop request for SecDef guidance. **M3:** Hours before required, SecDef guidance or direction requested. **M4:** Months to prepare plan for local government. **M5:** Months to prepare populace for local government. **M6:** Percent nutrition improvement in civil populace in hostile territory, after establishment of military government. **M7:** Percent of children attending school. **M8:** Percent of day under curfew. **M9:** Percent of indigenous forces trained to conduct civil administration within contested areas. **M10:** Percent of joint force dedicated to civil administration activities. **M11:** Percent of population under curfew.	
	JUO-011.6: Set conditions for and support economic development of the urban system.	**M1:** Days to assess HN government organization, degree of effectiveness, and economic conditions of civilians. **M2:** Instances of time commander/senior staff made aware of emerging economic event (which could impact theater) from outside source. **M3:** Time to provide comprehensive analysis of economic characteristics in commander's area of interest. **M4:** Percent of HN and U.S. military civic action assistance mission objectives accomplished. **M5:** Percent of military civic action projects performed	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		by units without primary training mission. **M6:** Percent of projects deemed long-term investments (e.g., continue to pay off five years after completion). **M7:** Percent of projects or deployments with materials supplied by HN.	
`JUO-012 (Focused Logistics): The ability to facilitate humanitarian aid to suffering urban populations under both combat and noncombat conditions.	**JUO-012.1:** Provide foreign humanitarian assistance to an urban population during combat operations.	**M1:** Days to deploy civil-military engineering units and begin engineering tasks. **M2:** Days to organize relief effort in country. **M3:** Days to reestablish communications in country, including information-sharing links between joint force, coalition, interagency and NGO partners. **M4:** Hours to assess situation and define assistance needed. **M5:** Hours to begin delivering disaster relief supplies into host country. **M6:** Hours to deliver critical material/supplies in crisis. **M7:** Hours to distribute supplies and services where needed. **M8:** Hours to insert disaster survey liaison team. **M9:** Days to reestablish lines of communication in country. **M10:** Percent of funds provided for HCA, SA and MCA operations accounted for. **M11:** Tons/day of supplies and materiel provided in assistance. **M12:** Personnel provided to support other nations, groups, or agencies. **M13:** Days to provide healthcare to an urban population. **M14:** Days to integrate requested or needed joint force	**MCO 2.0-045C:** Develop a process that facilitates identification of requisite military, government and civilian skills and occupations and integrate, mobilize and deploy government, nongovernmental and civilian capabilities in support military and civil operations. **IW 0.7-016C:** The ability to execute civil-military operations.

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		medical specialties into a host-nation medical infrastructure.	
	JUO-012.2: Provide emergency services in an urban environment during combat operations.	**M1:** Percent difference in disease incidence in affected civil populace compared to before hostile action or disaster. **M2:** Percent difference in mortality rates in affected civil populace, compared to before hostile action or disaster. **M3:** Percent difference in water availability to individuals in affected civil populace compared to before hostile action or disaster. **M4:** Percent of affected civil populace displaced, as consequence of hostile action or disaster. **M5:** Percent of affected civil populace without access to normal markets, to buy or sell, compared to before hostile action or disaster. **M6:** Percent of affected civil populace without public utilities, compared to before hostile action or disaster. **M7:** Percent of casualties to civil populace joint force is prepared to treat (without impacting operational tempo).	
	JUO-012.3: Provide emergency health service support to noncombatants in an urban environment during combat operations.	**M1:** Percent of injured or ill noncombatants moved through the medical system. **M2:** Percent of noncombatants using health support system, including veterinary support. **M3:** Percent of valid requests for health service assistance met. **M4:** Hours to deliver critical material/supplies in crisis. **M5:** Hours to distribute supplies and services where needed. **M6:** Percent of forces available trained and properly equipped to perform emergency health service support.	

JIC Capability	Task	Measures	Associated JOC Effect or JOC/JFC Capability
		M7: Days to assess conditions of local HN hospitals and clinics available to provide emergency health care. **M8:** Percent of local HN hospitals' and clinics' total capacity required to provide needed emergency health care for local population.	

APPENDIX D. ASSESSMENT PLAN

1. Activities in Support of Initial Concept Development

a. The following recent urban experiments have informed the development of this concept:

- Joint Urban Warrior 04 (Apr 04)
- Joint Urban Warrior 05 (Apr 05)
- Joint Urban Warrior 06 (May 06)
- Urban Resolve Phase 1 (Aug 03-Oct 05)
- Urban Resolve 2015 (Apr 05-Oct 06)
- Unified Quest 05 (Apr 05)
- Unified Quest 06 (Apr 06)
- Joint Urban Medical Tech Wargame (Oct 05)
- Emerald Express Seminars (2-3/year since 03)
- Israeli Defense Force Conference (Jun 06)
- Joint Urban Operations Training Workshops/Conferences (3-4/year)

b. The following joint and Service stakeholder reviews have informed the development of the concept:

- Detailed outline (Nov 06)
- Draft version 0.1 (Dec 06)
- Draft version 0.2 (Jan 07)
- Draft version 0.5 (Mar 07)

c. In February 2007, U.S. Joint Forces Command conducted a limited objective experiment (LOE) to stimulate critical discussion of the concept's operational solution. The experiment was designed around a small panel of subject matter experts with recent urban and interagency experience. A senior concept developer and a facilitator moderated the experiment based upon a series of questions designed to focus the discussion. The experiment affirmed the concept's problem description and controlling and supporting ideas. The panel's change recommendations were then incorporated into the concept. The panel emphasized the importance of a whole-of-government, vice merely military, approach to urban operations.

d. Also in February 2007, the concept was reviewed by the Joint Staff J7-funded Defense Adaptive Red Team (DART), an independent team that reviews all official joint concepts. The DART consists of subject matter

experts with senior military or government experience. A key aspect of DART's charter is to find "failure modes" in concepts, i.e., situations under which the concept could fail, if applied. The DART review strongly affirmed the operational problem, controlling idea, supporting ideas, and illustrative vignettes.

2. Plans for Future Capabilities Assessment and Experimentation

a. In parallel with concept development, U.S. Joint Forces Command J9 planned a capabilities based assessment (CBA). This concept, in conjunction with joint functional concepts, forms the foundation for measuring and evaluating joint initiatives and conducting analysis and future joint experiments with respect to joint urban operations. Pending Joint Requirements Oversight Council (JROC) approval, the CBA will examine the capabilities in Appendix C and, through a detailed series of analyses and experiments, will identify doctrinal, organizational, training, materiel, leader development, personnel, facilities (DOTMLPF) and policy changes required to improve joint capabilities for conducting urban operations in the 2015-2027 timeframe. Based on these efforts, the CBA will make necessary adjustments to the capabilities outlined in version 1.0 of this concept.

b. The CBA will:

- Identify critical capabilities and associated attributes required for future joint urban operations
- Prioritize capability gaps
- Identify potential DOTMLPF alternatives to mitigate or eliminate these gaps
- Make recommendations for future concepts and related experiments

c. The CBA is a three-phased effort. During Phases I and II, U.S. Joint Forces Command will lead the effort to identify and prioritize capability needs and gaps. During these phases, U.S. Joint Forces Command will solicit Service support and potential sponsorship for Phase III solution efforts. During Phase III, U.S. Joint Forces Command will assist appropriate sponsors in identifying and recommending solution sets. U.S. Joint Forces Command J9 will coordinate detailed plans for each step with participants. During all phases, the study will integrate appropriate modeling and simulation, experimentation, expert analysis, wargaming, and senior leader examination to provide

comprehensive analysis of joint urban operation capability requirements, shortfalls, and recommendations in the selected joint capability areas.

d. Deliverables:

- *Joint Capabilities Documents.* Functional Area Analysis (FAA) and Functional Needs Analysis (FNA) efforts will yield one or more joint urban operations Joint Capacities Documents (JCDs). Estimated completion is the second quarter of FY 08. JCDs will provide the JROC with a framework for evaluating ongoing and future alternatives for improving joint urban operations capabilities. Completed joint urban operations JCDs and supporting FAA and FNA inputs will:
    - Identify critical performance measures associated with required capabilities
    - Prioritize capability gaps based on operational considerations
    - Report results of joint urban operations FAA and FNA studies, identifying required capabilities, gaps, and redundancies.
- *DOTMLPF and Policy Change Recommendations.* The Functional Solutions Analysis (FSA) will yield DOTMLPF and policy change recommendations to support budgeting process recommendations. Estimated completion date is the fourth quarter of FY 08.
- *Initial Capabilities Documents.* The FSA will also yield Initial Capabilities Documents (ICDs) for materiel solutions. Estimated completion date is the fourth quarter of FY 08.

e. The Joint Urban Operations Office (JUOO), the DOD Executive Agent for urban operations, recommends the following CBA capabilities sequence:

- JUO-001. The ability to collect, disseminate, and access situational information on an urban system.
- JUO-002. The ability to assess an urban operational situation systemically.
- JUO-003. The ability to integrate all the disabling and enabling elements of urban operations within the context of a theater strategy.

- JUO-010. The ability to selectively isolate all or portions of an urban system to limit unwanted external influence.
- JUO-007. The ability to persuade municipal governments, organizations, and the general populace to cooperate with joint force operations.
- JUO-004. The ability to adapt urban operations to the changing situation.
- JUO-008. The ability to secure and control urban areas to limit hostile presence, activity, and influence.
- JUO-009. The ability to protect the joint force and other agencies and organizations within an urban area.
- JUO-011. The ability before, during, and after combat operations to effect institutional and infrastructural improvements to strengthen selected urban subsystems identified as essential to the continued functioning of the urban system.
- JUO-006. The ability to apply highly discriminate destructive or disabling force to attack hostile elements while minimizing damage to an urban system.
- JUO-005. The ability to maneuver to, into, and through an urban area.
- JUO-012. The ability to provide humanitarian aid to suffering urban populations under both combat and noncombat conditions.

f. Initial CBA analysis will focus on the first three of these prioritized capabilities, establishing attributes, conditions, and standards, and modifying tasks as necessary. Later CBA analysis will do the same for the remaining capabilities over time based on available resources. This effort will be done in partnership with the Joint Staff, other combatant commands, Services, and agencies.

g. All CBA activities will be linked to the ongoing efforts of the Joint Urban Operations Office as laid out in the JUOO Master Plan.

h. The implications and application of this concept will be rigorously explored during the Urban Resolve series, an ongoing experiment sponsored by the Joint Urban Operations Office and the Joint Innovation and Experimentation Directorate (J9), U.S. Joint Forces Command, with technical assistance from the Joint Warfighting Program of the Institute for Defense Analyses. Urban Resolve uses a distributed simulation capability with a future scenario in which a U.S.-led coalition must

confront a skilled adversary equipped with modern capabilities and operating in an urban environment. The multi-phase experiment will explore all the concept elements and capabilities discussed in this concept, but will concentrate on the priority capabilities listed above.

i. U.S. Joint Forces Command recommends the following broad areas be the focus of further joint urban operations experimentation:

- The early involvement and integration of military, nonmilitary, multinational, and host-nation mission partners in operating in the urban environment
- The synergy gained by integrating enabling and disabling actions in an urban environment.

U.S. Joint Forces Command further recommends that these areas be explored in the following events:

- Joint Urban Warrior
- Unified Quest
- Expeditionary Warrior
- Multinational Experiment 5
- Unified Action

APPENDIX E. GLOSSARY OF TERMS

Unless otherwise stated, all definitions are taken from the *Dictionary of Military Terms*, Joint Pub 1-02 online version, http://www.dtic.mil/doctrine/jel/doddict/, as amended through 8 August 2006.

adversary—A party acknowledged as potentially hostile to a friendly party and against which the use of force may be envisaged.

capability—The ability to execute a specified course of action. (A capability may or may not be accompanied by an intention.)

civil administration—An administration established by a foreign government in (1) friendly territory, under an agreement with the government of the area concerned, to exercise certain authority normally the function of the local government; or (2) hostile territory, occupied by United States forces, where a foreign government exercises executive, legislative, and judicial authority until an indigenous civil government can be established. Also called CA.

civil affairs—Designated Active and Reserve component forces and units organized, trained, and equipped specifically to conduct civil affairs activities and to support civil-military operations. Also called CA. See also civil affairs activities; civil-military operations.

civil affairs activities—Activities performed or supported by civil affairs that (1) enhance the relationship between military forces and civil authorities in areas where military forces are present; and (2) involve application of civil affairs functional specialty skills, in areas normally the responsibility of civil government, to enhance conduct of civil-military operations. See also civil affairs; civil-military operations.

civil engineering—Those combat support and combat service support activities that identify, design, construct, lease, or provide facilities, and which operate, maintain, and perform war damage repair and other engineering functions in support of military operations. See also civil engineering support plan; combat service support; combat support.

civil-military operations—The activities of a commander that establish, maintain, influence, or exploit relations between military forces, governmental, and nongovernmental civilian organizations and authorities, and the civilian populace in a friendly, neutral, or hostile operational area in order to facilitate military operations, to consolidate and achieve operational U.S. objectives. Civil-military operations may include performance by military forces of activities and functions

normally the responsibility of the local, regional, or national government. These activities may occur prior to, during, or subsequent to other military actions. They may also occur, if directed, in the absence of other military operations. Civil-military operations may be performed by designated civil affairs, by other military forces, or by a combination of civil affairs and other forces. Also called CMO. See also civil affairs; operation.

coalition—An ad hoc arrangement between two or more nations for common action. See also alliance; multinational.

collateral damage—Unintentional or incidental injury or damage to persons or objects that would not be lawful military targets in the circumstances ruling at the time. Such damage is not unlawful so long as it is not excessive in light of the overall military advantage anticipated from the attack.

conflict—An armed struggle or clash between organized groups within a nation or between nations in order to achieve limited political or military objectives. Although regular forces are often involved, irregular forces frequently predominate. Conflict often is protracted, confined to a restricted geographic area, and constrained in weaponry and level of violence. Within this state, military power in response to threats may be exercised in an indirect manner while supportive of other instruments of national power. Limited objectives may be achieved by the short, focused, and direct application of force.

consequence management—Actions taken to maintain or restore essential services and manage and mitigate problems resulting from disasters and catastrophes, including natural, manmade, or terrorist incidents. Also called CM.

control—Physical or psychological pressures exerted with the intent to assure that an agent or group will respond as directed.

conventional forces—1. Those forces capable of conducting operations using nonnuclear weapons. 2. Those forces other than designated special operations forces.

coordinating authority—A commander or individual assigned responsibility for coordinating specific functions or activities involving forces of two or more Military Departments, two or more joint force components, or two or more forces of the same Service. The commander or individual has the authority to require consultation between the agencies involved, but does not have the authority to compel agreement. In the event that essential agreement cannot be obtained, the matter

shall be referred to the appointing authority. Coordinating authority is a consultation relationship, not an authority through which command may be exercised. Coordinating authority is more applicable to planning and similar activities than to operations.

counterinsurgency—Those military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat insurgency. Also called COIN.

counterintelligence—Information gathered and activities conducted to protect against espionage, other intelligence activities, sabotage, or assassinations conducted by or on behalf of foreign governments or elements thereof, foreign organizations, or foreign persons, or international terrorist activities. Also called CI. See also counterespionage; countersabotage; countersubversion; security; security intelligence.

counterpropaganda operations—Those psychological operations activities that identify adversary propaganda, contribute to situational awareness, and serve to expose adversary attempts to influence friendly populations and military forces.

defense support to public diplomacy—Those activities and measures taken by the Department of Defense components to support and facilitate public diplomacy efforts of the United States Government. Also called DSPD.

disabling—Making incapable or ineffective. [*Merriam-Webster's Online Dictionary*, http://www.m-w.com, accessed 22 Dec 06.]

disinformation—Misinformation that is deliberately disseminated in order to influence or confuse rivals. [*OneLook Dictionary Search*, **www.onelook.com**, accessed 12 Apr 07.]

doctrine—Fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application. See also multinational doctrine; joint doctrine; multi-Service doctrine.

enabling—1. Providing with the means or opportunity. 2. Making possible, practical, or easy. 3. Causing to operate. [*Merriam-Webster's Online Dictionary*, http://www.m-w.com, accessed 22 Dec 06.]

enemy combatant—Any person in an armed conflict who could be properly detained under the laws and customs of war. Also called EC.

facility—A real property entity consisting of one or more of the following: a building, a structure, a utility system, pavement, and underlying land.

guerrilla warfare—Military and paramilitary operations conducted in enemy-held or hostile territory by irregular, predominantly indigenous forces. Also called GW.

hostile force—Any civilian, paramilitary, or military force or terrorist(s), with or without national designation, that have committed a hostile act, exhibited hostile intent, or have been declared hostile by appropriate U.S. authority.

information—1. Facts, data, or instructions in any medium or form. 2. The meaning that a human assigns to data by means of the known conventions used in their representation.

information operations—The integrated employment of the core capabilities of electronic warfare, computer network operations, psychological operations, military deception, and operations security, in concert with specified supporting and related capabilities, to influence, disrupt, corrupt, or usurp adversarial human and automated decision making while protecting our own. Also called IO. See also computer network operations; electronic warfare; military deception; operations security; psychological operations.

infrastructure—The stock of basic facilities and capital equipment needed for the functioning of an area. [*OneLook Dictionary Search*, http://www.onelook.com, accessed 31 Jan 76.]

insurgency—An organized movement aimed at the overthrow of a constituted government through use of subversion and armed conflict.

intelligence—1. The product resulting from the collection, processing, integration, analysis, evaluation, and interpretation of available information concerning foreign countries or areas. 2. Information and knowledge about an adversary obtained through observation, investigation, analysis, or understanding.

irregular forces—Armed individuals or groups who are not members of the regular armed forces, police, or other internal security forces.

joint force—A general term applied to a force composed of significant elements, assigned or attached, of two or more Military Departments operating under a single joint force commander. See also joint force commander.

joint operations—A general term to describe military actions conducted by joint forces, or by Service forces in relationships (e.g., support, coordinating authority), which, of themselves, do not establish joint forces.

joint urban operations—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 or the density of noncombatants are the dominant features. Also called JUOs. See also joint operations.

line of operation—1. A logical line that connects actions on nodes and/or decisive points related in time and purpose with an objective(s). 2. A physical line that defines the interior or exterior orientation of the force in relation to the enemy or that connects actions on nodes and/or decisive points related in time and space to an objective(s). Also called LOO.

logistics—The science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, those aspects of military operations that deal with: a. design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel; b. movement, evacuation, and hospitalization of personnel; c. acquisition or construction, maintenance, operation, and disposition of facilities; and d. acquisition or furnishing of services.

maneuver—1. A movement to place ships, aircraft, or land forces in a position of advantage over the enemy. 2. A tactical exercise carried out at sea, in the air, on the ground, or on a map in imitation of war. 3. The operation of a ship, aircraft, or vehicle, to cause it to perform desired movements. 4. Employment of forces in the operational area through movement in combination with fires to achieve a position of advantage in respect to the enemy in order to accomplish the mission.

materiel—All items (including ships, tanks, self-propelled weapons, aircraft, etc., and related spares, repair parts, and support equipment, but excluding real property, installations, and utilities) necessary to equip, operate, maintain, and support military activities without distinction as to its application for administrative or combat purposes. See also equipment; personal property.

misinformation—Information that is incorrect. [*OneLook Dictionary Search*, **www.onelook.com**, accessed 12 Apr 07.]

mobility—A quality or capability of military forces which permits them to move from place to place while retaining the ability to fulfill their primary mission.

objective—1. The clearly defined, decisive, and attainable goal toward which every operation is directed. 2. The specific target of the action taken (for example, a definite terrain feature, the seizure or holding of which is essential to the commander's plan, or an enemy force or capability without regard to terrain features). See also target.

operation—1. A military action or the carrying out of a strategic, operational, tactical, service, training, or administrative military mission. 2. The process of carrying on combat, including movement, supply, attack, defense, and maneuvers needed to gain the objectives of any battle or campaign.

operational design—The conception and construction of the framework that underpins a campaign or major operation plan and its subsequent execution. See also campaign; major operation.

operational level of war—The level of war at which campaigns and major operations are planned, conducted, and sustained to achieve strategic objectives within theaters or other operational areas. Activities at this level link tactics and strategy by establishing operational objectives needed to achieve the strategic objectives, sequencing events to achieve the operational objectives, initiating actions, and applying resources to bring about and sustain these events. See also strategic level of war; tactical level of war.

personnel—Those individuals required in either a military or civilian capacity to accomplish the assigned mission.

propaganda—Any form of communication in support of national objectives designed to influence the opinions, emotions, attitudes, or behavior of any group in order to benefit the sponsor, either directly or indirectly. See also black propaganda; grey propaganda; white propaganda.

psychological operations—Planned operations to convey selected information and indicators to foreign audiences to influence their emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups, and individuals. The purpose of psychological operations is to induce or reinforce foreign attitudes and behavior favorable to the originator's objectives. Also called PSYOP. See also overt peacetime psychological operations programs; perception management.

public affairs—Those public information, command information, and community relations activities directed toward both the external and internal publics with interest in the Department of Defense. Also called PA.

public information— Information of a military nature, the dissemination of which through public news media is not inconsistent with security, and the release of which is considered desirable or nonobjectionable to the responsible releasing agency.

range—1. The distance between any given point and an object or target. 2. Extent or distance limiting the operation or action of something, such as the range of an aircraft, ship, or gun. 3. The distance that can be covered over a hard surface by a ground vehicle, with its rated payload, using the fuel in its tank and its cans normally carried as part of the ground vehicle equipment. 4. Area equipped for practice in shooting at targets. In this meaning, also called target range.

sabotage—An act or acts with intent to injure, interfere with, or obstruct the national defense of a country by willfully injuring or destroying, or attempting to injure or destroy, any national defense or war materiel, premises, or utilities, to include human and natural resources.

special operations forces—Those Active and Reserve Component forces of the Military Services designated by the Secretary of Defense and specifically organized, trained, and equipped to conduct and support special operations. Also called SOF. See also Air Force special operations forces; Army special operations forces; naval special warfare forces.

systemic—Of or relating to a system. [*Merriam-Webster's Online Dictionary,* http://www.m-w.com, accessed 22 Dec 06. Compared to: **systematic**—Characterized by order and planning.]

terrorism—The calculated use of unlawful violence or threat of unlawful violence to inculcate fear; intended to coerce or to intimidate governments or societies in the pursuit of goals that are generally political, religious, or ideological. See also antiterrorism; combating terrorism; counterterrorism; force protection condition; terrorist; terrorist groups.

theater strategy—Concepts and courses of action directed toward securing the objectives of national and multinational policies and strategies through the synchronized and integrated employment of military forces and other instruments of national power. See also national military strategy; national security strategy; strategy.

urban system—A dynamic, living system occupying an urban area and characterized by various structures, processes and functions, including physical infrastructure, that have evolved to sustain concentrated human interaction in a confined space. [From the concept, p. 9.]

weapons of mass destruction—Weapons that are capable of a high order of destruction and/or of being used in such a manner as to destroy large numbers of people. Weapons of mass destruction can be high explosives or nuclear, biological, chemical, and radiological weapons, but exclude the means of transporting or propelling the weapon where such means is a separable and divisible part of the weapon. Also called WMD. See also destruction; special operations.

APPENDIX F. GLOSSARY OF ABBREVIATIONS

AO	Area of operations
APOD	Aerial port of debarkation
CA	Civil affairs
CAB	Combat aviation brigade
CBRN	Chemical, biological, radiological, nuclear
CBRNE	Chemical, biological, radiological, nuclear, or high-yield explosives
CJTF-17	Coalition Joint Task Force 17
CJSOTF-K	Coalition Joint Special Operations Task Force-Kirmenia
CMOC	Civil-military operations center
COA	Course of action
CONOPS	Concept of operations
CSB	Combat support brigade
CSS	Combat service support
DA	Direct action
DART	Defense Adaptive Red Team
DNBI	Disease and nonbattle injury
DOD	Department of Defense
DOS	Department of State
DOTMLPF	Doctrine, organization, training, materiel, leader development, personnel, facilities
DP	Displaced person
EAC	East African Community
EEFI	Essential elements of friendly information
EPW	Enemy prisoner of war
EW	Electronic warfare
EZ	Extraction zone
FAA	Functional Area Analysis
FMFP	Foreign military financing program
FNA	Functional Needs Analysis
FP	Force protection
GITF	Government and Infrastructure Task Force
HADR	Humanitarian-assistance, disaster-relief
HBCT	Heavy brigade combat team
HN	Host nation
HPT	High-priority target
IBCT	Infantry brigade combat team
IED	Improvised explosive device

IMET	International military education and training
IO	Information operations
IW	Irregular Warfare
JOA	Joint operations area
JOC	Joint operating concept
JTF	Joint Task Force
LOAC	Law of armed conflict
LOC	Line of communication
LOE	Limited-objective experiment
LZ	Landing zone
MCO	Major combat operations
MOUT	Military operations on urban terrain
NBI	Nonbattle injury
NGO	Nongovernmental organization
NITF	National integrated task force
NM	Nautical miles
NRT	Near-real-time
OLWG	Operational Logic Working Group
OSINT	Open-source intelligence
PA	Public affairs
PIR	Priority information requirement
POD	Port of debarkation
POE	Port of embarkation
PSYOP	Psychological operations
RAM	Rocket, artillery and mortar
RCA	Riot control agent
RPG	Rocket-propelled grenade
SBCT	Stryker brigade combat team
S/CRS	Department of State Coordinator of Reconstruction and Stabilization
SecDef	Secretary of Defense
SFWG	System Framing Working Group
SME	Subject-matter expert
SOP	Standing operating procedure
SSTRO	Stabilization, security, transition and reconstruction operations
TTF	Training Task Force

UAV Unmanned aerial vehicle
USG United States government

WIA Wounded in action

APPENDIX G. REFERENCES

Beevor, Anthony. *Stalingrad: The Fateful Siege: 1942-1943*. Viking Press. New York, 1998.

Bertalanffy, Ludwig von. *General System Theory: Foundations, Development, Applications.* George Braziller. New York, 1968.

Connaughton, Richard, John Pimlott & Duncan Anderson. *The Battle for Manila*. Presidio Press. Novato, CA, 2002.

De Landa, Manuel. *A Thousand Years of Nonlinear History*. Zone Books. New York, 1997.

Doxiadis, Constantinos A. *Ekistics: An Introduction to the Science of Human Settlements*. Oxford University Press. Oxford, England, 1968

Harrigan, James & Philippe Martin. "Terrorism and the Resilience of Cities," *FRBNY Policy Review*, Nov02, http://www.ny.frb.org/research/epr/02v08n2/0211harr.pdf [accessed 24Nov06].

Holcomb, Keith. "Facing the Future: The Marine Corps and the RMA." Unpublished briefing presented at a Revolution in Military Affairs conference sponsored by the OSD Office of Net Assessment in Warrenton, VA, 13 Nov 96.

Joint Chiefs of Staff. *Dictionary of Military Terms*. Online version as amended through 8Aug06, http://www.dtic.mil/doctrine/jel/doddict/.

----------. *Information Operations*, Joint Pub 3-13. Government Printing Office. Washington, DC, 2006.

----------. *Doctrine for Joint Urban Operations*, Joint Pub 3-06. Government Printing Office. Washington, DC, 2002.

----------. *Joint Doctrine for Civil-Military Operations*, Joint Pub 3-57. Government Printing Office. Washington, DC, 2001.

----------. *Joint Operations*, Joint Pub 3-0. Government Printing Office. Washington, DC, 2006.

Kostof, Spiro. *The City Shaped: Urban Patterns and Meaning Through History*. Bullfinch Press. New York, 1991.

----------. *The City Assembled: The Elements of Urban Form Through History*. Thames & Hudson. London, 1992.

Krulak, Charles C. "The Strategic Corporal: Leadership in the Three-Block War," *Marines Magazine*, Jan 1999.

Miller, James Grier. *Living Systems*. University of Colorado Press. Niwot, CO, 1995.

Mumford, Lewis. *The Culture of Cities*. Harcourt Brace & Co. New York, 1938.

Murray, Williamson. *War and Urban Terrain in the Twenty-First Century*. IDA Paper P-3568. Institute for Defense Analyses. Alexandria, VA, 2001.

Nethery, Philip T., MAJ, USA. "Current MOUT Doctrine and its Adequacy for Today's Army." Master's thesis. U.S. Army Command and General Staff College, Ft. Leavenworth, KS, 1997.
Peters, Ralph. "Our Soldiers, Their Cities," *Parameters* (Spring96), pp. 43-50.
Robb, John. "Urban Takedowns," *Global Guerrillas* weblog, 28Dec04, http://globalguerrillas.typepad.com/globalguerrillas/2004/12/state_failure_c.html [accessed 24Nov06].
Spiller, Roger J. *Sharp Corners: Urban Operations at the Century's End*
U.S. Army. *Combat in Fortified Areas*, Field Manual 31-50. Headquarters, U.S. Army. Washington, 1944.
----------. *Combined Arms Operations in Urban Terrain*, Field Manual 3-06.11. Headquarters, Department of the Army. Washington, 2002.
----------. *Military Operations on Urban Terrain.* Field Manual 90-10. Headquarters, Department of the Army. Washington, 1979.
----------. *Urban Operations*, Field Manual 3-06. Headquarters, Department of the Army. Washington, 2006.
Whiting, Charles. *Bloody Aachen*. Stein and Day. New York, 1976.

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