

FUTURE WARFARE CONCEPT PAPER

AN AUSTRALIAN LAND FORCE FOR CONFLICT IN A WORLD WITHOUT PRECEDENT

*This world is without precedent. It is as different from the Cold War as
it is from the Middle Ages.¹*

*For much of the last two decades, land force planning has been dominated by a
focus on preparations to meet lower level contingencies on Australian territory.
That focus will now be broadened to meet a wider range of possible contingencies,
both on Australian territory and beyond.²*

**MAJOR M.B. RYAN
AUSTRALIAN ARMY**

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EXECUTIVE SUMMARY

Title: “An Australian Land Force for Conflict in a World without Precedent”

Author: Major Michael B. Ryan, Australian Army

Thesis: The current pace of change in the global security environment and information technology demands that, like all military organizations, the Australian Army must re-examine the way it trains, deploys and fights. The challenges of the 2020 battlespace will demand that the Australian Army be able to rapidly deploy a highly flexible force capable of operating in a multiplicity of threat scenarios. To fulfil this role, the Australian Army should create the Expeditionary Task Force (ETF), a combined arms organisation able to operate and thrive in the chaos of future conflict.

Discussion: In order to gain the best effect from the greater lethality of its weapon systems, and ensure its own survivability, the Australian Army must evolve to become a true Information Age force. In doing so it must understand the likely central tenets of future land warfare. This paper emphasizes four: that future conflict will remain a chaotic activity that at its heart remains a clash between human wills; the pivotal nature of the sensor contest between opposing forces; its non-linear character; and, the need to maintain a small signature in the battlespace.

To successfully operate in this environment, this paper proposes the formation of a new warfighting organisation called the Expeditionary Task Force (ETF).

The ETF is structured to provide a rapidly deployable, highly agile and lethal option for the Australian Defence Force. The ETF espouses traditional, industrial age structures and comprises five functional components: the command element (ETF HQ); the Recon-Strike Group; the Close Combat Group; the Maneuver Support Group; and the Force Sustainment Group.

Assumptions: In the preparation of this paper, several assumptions have been made:

1. There will be no significant increase in manning or funding for the Australian Army over and above that forecast in Defence 2000.
2. The Australian Army is willing and able to break down legacy warfighting organizations and Corps / MOS affiliations in the greater interest of dramatically increasing its operational effectiveness.
3. Land operations will not be conducted in exclusion; they will always be part of a larger joint operation and in some cases, combined operations.

Conclusion: The Australian land force proposed in this paper seeks to address the impending disaster that all western military organizations face if their Industrial Age forces are used in future conflict. The threats that our land force will confront in 2020 will be more complex and demanding than any previously experienced. This demands the right type and mix of personnel, organizations, equipment, doctrine, training and support facilities. The future warfighting organization proposed in this paper seeks to address this challenge.

CONTENTS

Introduction	4
Conflict in a Mad Max World.....	5
<i>Enduring Features, 5</i>	
<i>Sensor Wars, 5</i>	
<i>Non-Linear Warfare, 6</i>	
<i>Small Footprints, 6</i>	
Land Operations in the 21 st Century.....	6
An Australian Land Force for 2020	8
<i>Limitations, 8</i>	
A New Warfighting Organization, 9	
<i>Organization of the Expeditionary Task Force, 9</i>	
<i>Figure 1. Organization of the Expeditionary Task Force, 9</i>	
<i>Recon-Strike Group, 10</i>	
<i>Close Combat Group, 12</i>	
<i>Maneuver Support Group, 13</i>	
<i>Force Sustainment Group, 15</i>	
<i>The ETF Headquarters, 16</i>	
Enabling the ETF.....	16
<i>Figure 2. Generation of ETF Combat Power, 17</i>	
Conclusion.....	18
Endnotes.....	19
Appendices:	
A. Organization of an Expeditionary Task Force	22
Bibliography.....	23

*Can...an unmanned aerial vehicle or a Joint Strike Fighter deal with Mad Max?*³

The operational reality of the near future may well be the ‘Mad Max world of failed and failing states’ described by LTGEN Peter Leahy in recent speeches.⁴ But there is little doubt that the type of conflict that will challenge the Australian Army in 2020 will be ‘without precedent’.⁵ Whether described as Fourth Generation Warfare or Information Age Warfare, conflict in 2020 will be a complex interfusion of confrontation and warfare of Heidi and Alvin Toffler’s oft-quoted First (agrarian), Second (industrial) and Third (information) Wave societies.⁶

The current pace of change in the global security environment and information technology demands that, like all military organizations, the Australian Army must re-examine the way it trains, deploys and fights. Improvements in computers and electronics are enabling significant advances in weapons and warfare; especially in information networks, robotics, advanced munitions, and communications.⁷ These advances have and will continue to greatly enhance the lethality of weapon systems; this will also change tactics and organizations as it has in the past. Potential adversaries, be they state or non-state actors, will also benefit from these advances.

In this highly lethal future battlescape, only those military forces that quickly adapt to the new reality will survive. Like all other Industrial Age forces, the Australian Army must adapt be able to compete in this future battlespace. It must evolve to become a true Information Age force. If it does not, its warfighting elements will not survive and the Army will be incapable of defending Australia and its interests.

Part of the Army’s evolution is the restructuring of its legacy warfighting organizations. This essay proposes one possible warfighting framework for the future operational environment, with a target period of 2020. Proposed in this paper is the creation of the Expeditionary Task Force (ETF), a combined arms land force designed to fight and thrive in the chaos of future conflict. Intended to

replace Industrial Age infantry brigades, the smaller ETF possesses greater combat weight. While possessing significant capability to physically destroy the enemy, its principle focus is the destruction of the enemy's **will** to fight. The proposed organization addresses the military disaster that the Australian Army faces if its Industrial Age force is retained for future conflict.

*A look at changes already underway gives us a startling picture of the nature of war...in the early twenty-first century. Unless soldiers and statesmen... understand what lies ahead, we may find ourselves fighting - or preventing - the wars of the past, rather than those of tomorrow.*⁸

Conflict in the Age of Mad Max

Enduring Features. Notwithstanding the unrelenting advance of technology, future conflict will remain a chaotic activity that at its heart is a clash between human wills. As von Clausewitz states, *war is thus an act of force to compel our enemy to do our will.*⁹ Friction, chance and danger will continue to be pervasive elements in the future battlespace.¹⁰ Whoever can gain decision superiority in this chaotic environment and impose their will on the adversary will triumph. These enduring features will continue to influence the conduct and outcome of land conflict, despite highly advanced reconnaissance and surveillance capabilities and the use of networked, effects-based warfighting concepts.

Sensor Wars. As Admiral Cebrowski has stated, “the real fight is over sensors”.¹¹ The majority of weapon systems in 2002 generally have a greater range than their supporting sensors. Consequently, if something can be located, it can almost certainly be attacked. This has led military organizations, as well as non-state actors, to adopt measures to deny or degrade an adversary's sensor capability.¹² In 2020, the battle to extend the reach of friendly sensors, see through enemy deception measures, and deny the adversary the use of their sensors will constitute a key enabling function in any conflict.¹³

Non-Linear Warfare. The future battlespace will comprise a variety of threats. It will include symmetric and asymmetric capabilities as well as state and non-state actors, operating in concert or individually to threaten friendly forces. Constructs such as the Forward Edge of the Battle Area (FEBA) will disappear. Utilizing better communications and more lethal weapon systems, land forces will operate more dispersed than in the past. The battlespace will have simultaneous physical, temporal and cyber characteristics.¹⁴ This chaotic amalgam will become the new ‘conventional warfare’.

Small Footprints. The increased lethality of the future battlespace will necessitate forces that are able to deploy with the smallest size to achieve a desired effect. Force protection (present a small target), logistics (deploy the smallest logistics liability possible) and the cost of maintaining large numbers of trained troops demands the provision of maximum combat power from the smallest possible number of troops. Small forces also gain a temporal advantage. The smaller the force, the more agile it becomes and the quicker it can be spurred into action.

The above précis of future war is only a brief insight into the likely themes of future conflict. Other features such as joint operations¹⁵, Information Based Conflict¹⁶, increased operational tempo¹⁷ and weapons of mass destruction¹⁸ are not examined here but will also play a part. Future land warfare will retain the Clausewitzian friction that has always dominated human conflict. However, it will also present a combination of threats that will challenge the traditional organization and training of land forces.

Land Operations in the 21st Century

If the common themes in future warfare are synthesized, it becomes apparent that land operations of the future will be guided by several key principles:

1. Regardless of technological innovation, war will remain a human activity; a clash of wills between opponents. The aim of future land conflict will remain the struggle to defeat an

adversary's **will** to fight.¹⁹ The Australian Army must achieve this through the physical, functional, temporal, and moral dislocation of that adversary.²⁰

2. The sensor contest is a central element of future conflict. The future land force must be able to find an adversary out to, and beyond, the range of its weapon systems. Through the integrated use of unmanned land and air platforms, manned platforms, human intelligence, and the exploitation of the electro-magnetic, psychological and cyber realms, the future land force must gain and maintain a 'knowledge edge'²¹ over its opponent. Sensor superiority is a key enabler in winning the 'clash of wills'.
3. The land force must be capable of 'multi-paradigm'²² operations: the ability to concurrently operate across the spectrum of military conflict. It will require a highly agile and adaptable organization, capable of rapid reorganization and adaptation to the surrounding environment and circumstances. The most agile land forces will be those that emphasize the quality of the force, not the size. Greater agility will be achieved through the precise application of smaller, highly trained, and well-equipped forces. The future land force must also be able to fight a 'super' three-block war: warfighting, peace enforcement / keeping and humanitarian operations as well as conflict with non-state actors, operations in a NBC threat environment and Information Based Conflict.²³
4. To retain tactical agility in a chaotic battlespace, the land force must possess excellent tactical mobility. This mobility must enable rapid dispersion or concentration in order to shape the battlespace and conduct precision strike. To ensure maximum force agility, the future structure of the Australian land force must also permit rapid strategic movement utilizing the ADF air and sea assets projected for the 2020 joint force.²⁴
5. The future land force must conduct dispersed, effects-based operations. It will not seek to dominate ground. It will focus on the disruption of adversary plans through lightning-fast

physical and non-physical strikes to deny the adversary the ability to influence the battlespace. This will require an exceptionally robust, secure communications network utilizing a range of C3 structures integrated with the C4ISR architecture of the force.²⁵

6. The future land force must be protected and sustained. Component parts of this protection will include force mobility, and the protection of the force from environmental, electronic, explosive, and NBC threats. The human and equipment components of the force must also be sustained. In keeping with the previously expressed desire to maintain a small footprint, the organization must minimize the sustainment component. This will be achieved by decreasing the force logistic liability through lower manning, greater use of precision munitions and alternative power technology for vehicles. Given the vulnerability to entry points such as ports and airfields to an adversary's denial operations, the sustainment element must be able to work (at least initially) decoupled from these facilities.

An Australian Land Force for 2020

The Australian Army of 2003 is essentially an Industrial Age army, with some Information Age inserts. Its structure, whilst having experienced some evolution in the past 50 years, would be recognizable to soldiers and officers of the World War Two era. The battalion, brigade and division structures are products of the second generation of warfare where massed firepower and maneuver dominated.²⁶ To compete in the chaos of the Information Age battlespace, where Agrarian, Industrial, and Information styles of conflict converge, a new warfighting organization is required.

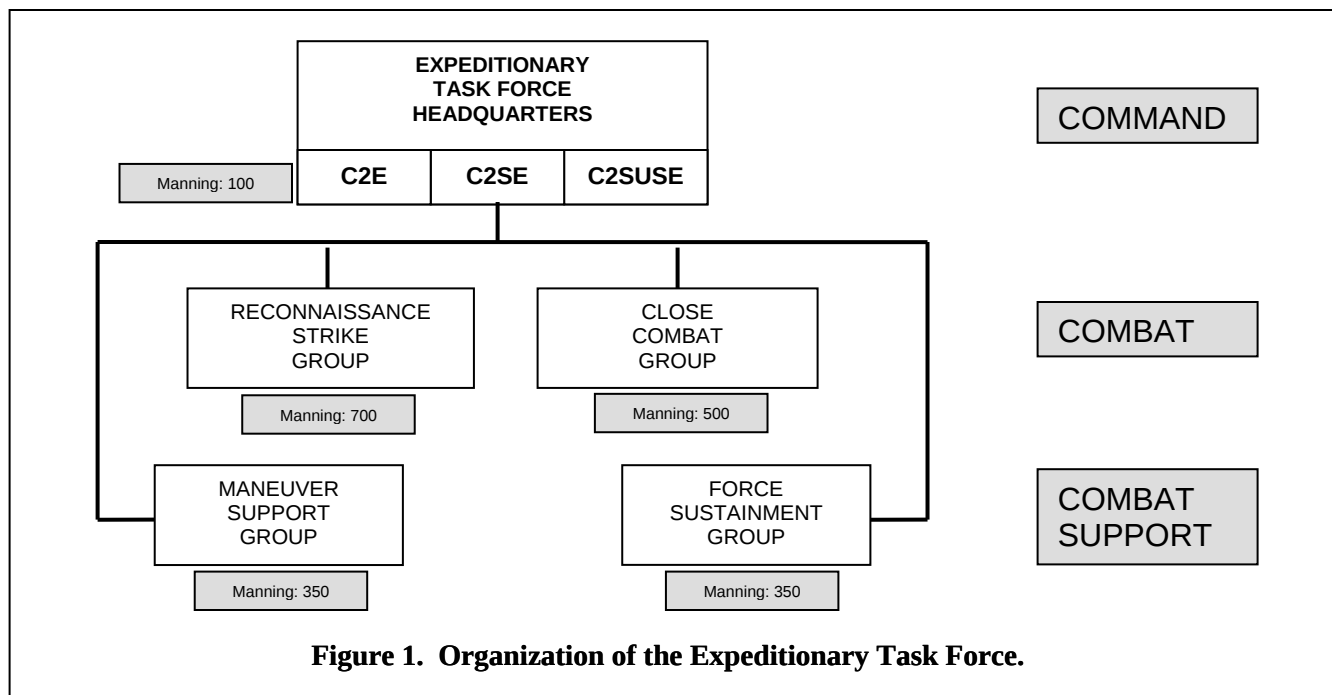
Limitations. In the Australian context, a small population base and limited resources will shape the size of the future Australian Defence Force. Given these limitations, the future Australian land force must achieve a combat effect disproportionate to its size. The central warfighting organization today, the brigade, will transform into a smaller but more lethal and precise instrument. This paper

therefore proposes a land force structure that will be able to successfully conduct operations in the future within the restraints placed upon it by force size and resources.²⁷

A New Warfighting Organization

The principle warfighting organization for the Australian Army in 2020 is to be the Expeditionary Task Force (ETF). It replaces the light infantry and light mechanized brigades around which the Army is currently organized. It is smaller than a brigade, with a manning of 2000, but is organized and equipped to achieve combat effects greatly superior to current organizations.

The ETF is designed to be employed in a range of scenarios from low- to mid-intensity conflict. It is structurally flexible, capable of being reorganized depending on the scale, intensity and duration of the conflict.²⁸ It can operate independently or as part of a larger joint of combined force. Shown below is the organization of the ETF, with additional detail in Appendix 1.



The ETF has five components: the Headquarters; the Recon-Strike Group; the Close Combat Group; the Maneuver Support Group; and, the Force Sustainment Group.

Recon-Strike Group. The fight for friendly situational awareness is a core task of the ETF. This battle to extend the reach of friendly sensors, see through enemy deception measures, and deny the adversary the use of their sensors is a key activity for the land force. The Recon-Strike Group will provide this capability. It is equipped and structured to find and destroy the adversary as part of an integrated ETF plan.

The essential task of the Recon-Strike Group is to develop an understanding of its operating environment that is superior to the enemy's, and then exploit this knowledge. It does this by exploiting two integral capabilities. First, it provides a robust, timely, and accurate reconnaissance system to orient the ETF commander to the adversary's dispositions. Secondly, it provides the means to support the ETF commander's plan through the coordination and provision of fires from integral elements.

Significant advances in reconnaissance and surveillance systems will allow the land force of 2020 to maintain better situational awareness of the battlespace than is possible today. It will fuse a wide variety of sensors to provide for timely collection, analysis, and dissemination of critical intelligence. The Recon-Strike Group will collect across the spectrum of sources; in the physical realm, as well as in the electromagnetic spectrum and cyber-space. Technological advances will allow some of the collection to be automated - particularly with unmanned ground and air vehicles and unattended ground sensors. However, manned reconnaissance platforms, in addition to the collection of information by humans (HUMINT), will remain a key feature of the land force's information collection capability.

The Recon-Strike Group would not only seek out the adversary, but would also capitalize on this knowledge. To cut the time between collection, analysis, dissemination, and target attack, the Recon-Strike Group will have an integral capability to undertake a range of precision strike and fire support

missions. These capabilities will support the ETF in the deep battle and its component Groups in the close battle.

This integral ability to ‘strike’ would comprise armed reconnaissance and surveillance platforms as well as dedicated lethal fires, cyber and electronic attack assets. Both air and ground reconnaissance systems would possess the ability to conduct immediate strike operations based on information collected by that platform and others. These armed reconnaissance platforms comprise both manned and unmanned systems. By integrating this range of strike capabilities in a single organization, the ETF’s Recon Strike Group would establish a clear knowledge edge over the adversary across all dimensions.

Enhancing the Recon Strike Group’s conduct of precision strike and fire support missions, a fire support element would be an integral part of the Group. Ensuring an efficient and rapid sensor-shooter link, this element provides for highly responsive indirect fires to support ETF shaping and close combat. Just as the ETF combines and synchronizes a range of capabilities from the various arms and services, firepower support will be achieved by a layered system of fire support.

The layering of ETF fires would be achieved through the employment of three systems. The first tier of fires would be a medium range, mobile system capable of firing a range of ammunition for precision and area targets. The focus of this organization would be the support of the close battle, and therefore the Close Support Group. The second tier would be a long-range system to achieve long-range precision and area effects. This could incorporate mobile rocket-propelled systems or long-endurance UAV with precision weaponry. The focus of this organization would be to support the deep battle. The final tier would be a Directed Energy Weapon system that is able to achieve highly controlled, line of sight accuracy in the destruction of high-speed targets such as aircraft, artillery shells, and missiles.²⁹ These three systems would also be fed by an integral target acquisition capability.

The proposed Recon-Strike Group would therefore be composed of four key elements. These would be: a ground-based, manned reconnaissance element (augmented with unmanned ground vehicles and sensors); an aerial reconnaissance element (augmented with unmanned aerial vehicles); an Information Operations element; and, a Fire Support element.

Close Combat Group. Until now, the forms of conflict experienced, and the available technology have dictated that the largest single element of the Australian land combat force is the infantry. In the Australian Army, the infantry is the premier close combat element and has acted as a force that can *seek out* as well as close with the enemy³⁰. But, if the infantry are no longer required to focus on seeking out the enemy,³¹ it could be argued that the traditional concentration of infantry battalions within a legacy brigade (2-4 battalions) is no longer valid.

The Recon-Strike Group provides a robust information collection and hard / soft kill capability. Manned and unmanned ground and air vehicles covering large swaths of terrain, with greater inputs from Information Operations will remove the requirement for infantry to seek out the enemy on a large scale. The infantry battalion can become a precision strike capability, responding to the targeting information provided by the Recon-Strike Group, and from other elements within and outside the ETF.

The Close Combat Group provides the ETF with its ability to close with and destroy an adversary. Supported by other elements of the ETF, it would be able to operate in a variety of terrain, as well as in urban areas. To ensure it is cued onto a target quickly using Recon-Strike Group information, the Close Combat Group must be capable of highly dispersed operations. To aid in rapid response it must be very mobile. Because it must operate in a dispersed manner, it should be comprised of similar sub-units, each possessing the same capability to close with a target and complete its mission. For the above reasons, it is proposed that the elements of an existing Infantry Battalion which are held in its Support Company be embedded within the Rifle Companies. In order to ensure the capability to respond in at least two dispersed locations concurrently, whilst maintaining a reserve

and the capability to rotate troops through rest periods, the Close Combat Group would possess four Close Combat Companies. Each Close Combat Company would possess light infantry as well as integral short-range direct and indirect fire support, close reconnaissance and communications support.

In addition to the Close Combat Companies, the Close Combat Group would possess a light mechanized sub-unit that is capable of mounting at least two of the close combat sub-units in addition to providing direct fire support. This component of the Close Combat Group would be equipped with vehicles which could be transported by air (C130 and heavy rotary wing aircraft) and capable of traversing the various types of terrain found in Australia and South East Asia during the dry and wet seasons. Thus, the ETF will be capable of conducting air-mechanized operations.³²

Maneuver Support Group. The ETF must be able to acquire knowledge of, and shape, its physical environment.³³ Maneuver support provided to the ETF would enhance its physical mobility, deny physical mobility to the adversary, provide for force survivability, and facilitate battlespace circulation. In the past, this required the provision of combat and support engineering capabilities, NBC response, topographic support, and military police. The future battlespace will demand enhancements to these capabilities, in addition to more advanced forms of battlespace shaping such as the deception of individual combatants and combatant groups. The ETF Maneuver Support Group would provide this range of capabilities.

It will be a far more capable organization than a traditional engineer battalion however. During World War Two, US Army's Engineer Special Brigades incorporated a broad range of combat support and combat service support functions to enable combat operations.³⁴ The Maneuver Support Group will employ this organizational philosophy to synchronize a range of capabilities that will support the mobility and survivability of the ETF.

A key role for the Maneuver Support Group will be Organic Real-time Battlefield Shaping (ORBS). Proposed as an advanced tactical deception system and an alternative to anti-personnel

landmines, ORBS aims to have several effects on the adversary. It aims to deny maneuver; introduce doubt; cause confusion, delay, or diversion; cause the enemy to make a rational but wrong decision; and, prevent a direct firefight.³⁵ Through the employment of in-situ sensors and remote response, mobile robots as well as obstacles and diversions, the Maneuver Support Group would employ ORBS to produce a superior effect to that traditionally generated by minefields and other obstacles.

Support to the ETF would be divided into two components; direct support to the combat elements (the Recon-Strike Group and the Close Combat Group) and general support to ETF operations. The direct support element of the Maneuver Support Group would primarily be comprised of Combat Engineers. It is proposed that Combat Engineer elements would be allocated to provide direct support each of the two combat elements of the ETF. They would be tasked with the myriad of engineer support tasks that would directly enhance the mobility and survivability of the combat elements of the ETF, as well as ORBS.

The general support to the ETF would be provided by two different elements. The first, an Operations Support Element, would provide those capabilities that support overall ETF operations, especially in the field of survivability. This would include Military Police, CBRR and ORBS. The CBRR element would be responsible for NBC reconnaissance and decontamination operations, as well as Explosive Ordnance Disposal (EOD). Finally, the Military Police would retain their tradition role in the supervision of efficient battlespace circulation.

The other general support element would be an Engineer Support Element. This would be responsible for the provision of general engineering support to ETF operations. It would include horizontal and vertical construction as well as topographic engineering. The topographic element would be responsible for gaining data for, and maintaining the ETF's Geographic Information System (GIS) as well as the provision of GIS products for the whole ETF.

Force Sustainment Group. There remains the need for the timely provision of combat service support to the future land force. This would include the provision of all classes of supply, health services, transport, and repair services. Within the ETF, both unit (First Line) and ETF level (Second Lines) combat service support will be required. The nature of expeditionary operations, and the likely short warning times for deployment, emphasizes the requirement for self-sufficiency until a support system is established.

The FSG will be light-scaled but structured to enable rapid capability and capacity expansion if operations are prolonged. First and Second Line support elements will employ a stocking policy that assumes a long Line of Communications between the Area of Operations and the Australian mainland.

The personnel and equipment establishments of the component groups of the ETF fix the level of first line support. However, each Group will require an integral sustainment element that provides supply, health services, repair support, and the provision of services such as the collection and delivery of mail, welfare support, and catering.³⁶ Supplementation may be provided if Groups are required to deploy or operate independently for extended periods. The attachment of elements from the ETF second line FSG may be used to increase first line capacity.

At the ETF level, a Force Sustainment Group provides task force logistic support. The functions of this organisation would include: the collection of stores and equipment, their temporary storage and delivery to ETF units; the recovery and repair of equipment; the provision of level one health support; and the provision of other services such as the collection and delivery of mail, welfare support and catering.³⁷ Given the expeditionary focus of the proposed land force, the FSG will require additional capabilities not held in current brigade logistic organisations. Extra personnel and equipment will be required to conduct port terminal operations and/or logistics over the shore (LOTS) operations.

In order to provide the necessary support to the ETF, it is proposed that the FSG be composed of four elements. These are: a Transportation Support Element;³⁸ a Health Services Support Element;³⁹ a Supply Support Element;⁴⁰ and a Field Repair Element.⁴¹ The principles which currently guide the planning of logistics - simplicity, cooperation, economy of effort, foresight, flexibility, and security⁴² - will remain as applicable to the ETF in 2020 as they are now.⁴³

ETF Headquarters. The command and control of the ETF will be the task of the ETF headquarters. In order to effectively command and control the deployment, operations and redeployment of the ETF, it is proposed that the headquarters be composed of four elements; the Commander, the C2 Element (C2E), the C2 Support Element (C2SE), and the C2 Sustainment Element (C2SUSE).

The structure of the C2E is intended to achieve maximum integration of staff functions. To avoid the stove-piped approach of existing staff systems (which date back to the Napoleonic era), the C2E would comprise three branches: Operations, Plans, and Intelligence. All other staff functions would be integrated into these branches (for example each branch would have a logistic element). The C2E would also include RAAF, RAN, and coalition liaison elements.

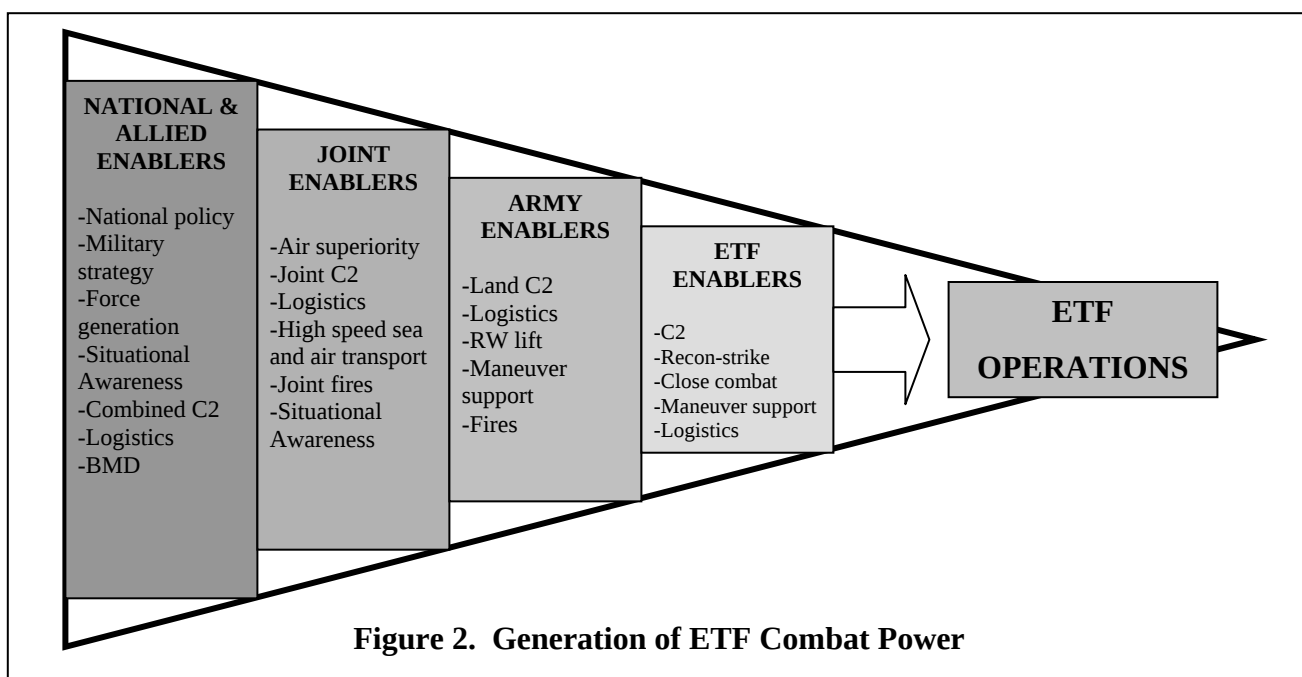
The C2SE would be responsible for the provision of operational support to the headquarters. This would include secure communications support and headquarters defense. The C2SUSE would be responsible for the provision of functions such as transport of the headquarters, and miscellaneous administrative, medical, and logistical support.

Enabling the ETF

The ETF would not operate by itself, in exclusion to other elements of the Australian Defence Force. It would form part of a joint (or combined) force. Key to mission success would be the enabling capabilities provided by other elements of the ADF. These would provide the necessary support at the operational and strategic levels to ensure the tactical success of the ETF.

The principle enabling capabilities for the ETF, from within and outside the ADF, would be:

1. Situational awareness inputs from national and allied assets.
2. Joint C2 support infrastructure.
3. Joint fires.
4. Air superiority over the AO and LOCs.
5. High sea and air closure rates to AO.
6. Tactical rotary wing troop lift and mechanized vehicle lift.
7. Logistic support.



While not an exhaustive list of the components of the Australian Army and other elements of the ADF required to support the ETF, these would form the core capabilities to deploy and support it. Given the major changes in the conduct of land operations which this paper proposes, it is likely that these enabling capabilities must also evolve and adapt to the conduct of operations in the future battlespace. Like the ETF, this will demand changes in structures and equipment of these organizations.

Conclusion

Peering into the future of warfare, the only certainty is that human conflict will be a more complex endeavor than in the past. Napoleon once said that ‘an army ought only to have one line of operation. This should be preserved with care.’⁴⁴ Unfortunately, the future of land conflict is rarely going to afford armies that luxury. Land forces in the year 2020 must be able to undertake a wide variety of concurrent operations in austere, potentially hostile environments.

An Army must ‘agonize over future war visions’ to discern how they may be organized and fight in future conflicts’ according to Williamson Murray.⁴⁵ This paper has utilized some existing visions of future war to propose a design for the Australian Army’s 2020 land force. In moving towards this new organization, the Army will shift on from its late 20th century structure to face the threats of tomorrow.

The ETF is also an acknowledgement that, despite the high technology of Information Age conflict, the focus of warfare remains the clash of human wills. It is an adaptable force that contains the assets, such as the Recon-Strike Group, to ensure that the ETF commander wins battle of minds that occurs before and during conflict. The mobility, firepower, and networked communications of the ETF ensures the ability to generate a superior decision cycle. This will help to ensure dislocation and disruption of the adversary’s plan and induce paralysis in his decision-making ability.

The Australian land force proposed in this paper seeks to address the impending disaster that all western military organizations face if their Industrial Age structures are applied to future conflict. As Australian society transitions from a Second Wave to a Third Wave society, the Australian Army must also transform. The threats that our land force will confront in 2020 will be more complex and demanding than any previously experienced. This demands the right type and mix of personnel, organizations, equipment, doctrine, training and support facilities. The future warfighting organization proposed in this paper seeks to address this challenge.

Extinction is the fate of those species (including the military) who fail to adapt. ⁴⁶

End Notes

¹ Phillippe Delmas, *The Rosy Future of War* (Paris, 1995) quoted in Michael Evans, *The Future of War: A Trend-Analysis*, an undated presentation to the 2002 Defence Industry Watch seminar, Australia. Hereafter cited as *The Rosy Future of War*.

² The Parliament of the Commonwealth of Australia, *Defence 2000: Our Future Defence Force* (Canberra: Defence Publishing Service, 2000), p. 79. Hereafter cited as *Defence 2000*.

³ Question posed by the Chief of the Australian Army, LTGEN Peter Leahy at the 2002 Land Warfare Conference. Reported in Barker, Geoffrey, "as Australia divides over defence", *Australian Financial Review*, 26 Oct 2002, p. 25.

⁴ LTGEN Peter Leahy at the 2002 Land Warfare Conference. Reported in Barker, Geoffrey, "as Australia divides over defence", *Australian Financial Review*, 26 Oct 2002, p. 25.

⁵ *The Rosy Future of War*, p. 213.

⁶ Alvin and Heidi Toffler describe a 'trisected world' which is 'sharply divided into three contrasting and competing civilizations - the first still symbolized by the hoe; the second by the assembly line; and the third by the computer.' Toffler, Alvin and Heidi, *War and Anti-War: Survival at the Dawn of the 21st Century*, (Boston: Little, Brown and Company, 1993), p. 21. Hereafter cited as *War and Anti-War*.

⁷ Rosen, S.P. *Winning the Next War*, (Washington DC, The Brookings Institution, 2000), 2.

⁸ *War and Anti-War*, p. 85.

⁹ Carl von Clausewitz, *On War*, Book One, Chapter One: "What Is War?", Everyman's Library, London, 1993, p. 83.

¹⁰ See Carl von Clausewitz, *On War*, Book One, Chapter Seven: "Friction in War", Everyman's Library, London, 1993, p. 138-140.

¹¹ Speech given by ADM Cebrowski at the Center for Naval Analyses, 20th November 2002.

¹² As the US Army's National Training Centre has found, low-technology active and passive counter measures are often used to defeat or deceive highly advanced sensors and their operators. For a comprehensive description of low technology, sensor counter-measures, see John Rosenberger, *The Inherent Vulnerabilities of Technology: Insights from the National Training Center's Opposing Force*, undated paper.

¹³ One method proposed to win the sensor battle is through the establishment of what Martin Libicki has called the 'sensor mesh'. Libicki, Martin, *The Mesh and the Net: Speculations on Armed Conflict in a Time of Free Silicon*, McNair Paper No. 28, (Washington DC: National Defense University); Libicki, Martin, *Illuminating Tomorrow's War*, McNair Paper No. 61 (Washington DC: National Defense University, 1999).

¹⁴ For review of some possible forms of future threats, see McKenzie, Kenneth, *The Revenge of the Melians: Asymmetric Threats and the QDR*, McNair Paper 62, (National Defense University, 2000), p. 65-80.

¹⁵ There is little doubt that future military operations will be inherently joint. Especially for smaller military organisations like Australia's, it is imperative to ensure seamless interoperation of the Army, Navy and Air Force in the future battlespace. In the case of the future land force, it will rely on naval and air assets for deployment and sustainment, as well as airspace control. For a full description of the future capability of the Royal Australian Navy in particular, see Plan Blue at the RAN official website (www.defence.gov.au/navy).

¹⁶ At the dawn of the Information Age, the reliance of military organisations on their information systems has dramatically increased. This reliance is a key element that an adversary may seek to exploit through the denial of use of friendly information systems or deception operations. In *The Future is not what it used to be* (1997), Chris Westwood suggests that this will lead to the rise of Information Based Conflict, in which nations will seek to 'rule the cyber-waves' just as the British Royal Navy ruled the seas in the 17th, 18th and 19th centuries. Westwood, Chris, *The Future is not what it used to be*, (Canberra: Air Power Studies Centre, 1997), p. 9-12. Hereafter cited as *The Future is not what it used to be*.

¹⁷ Vastly improved sensor networks will be a key enabler in providing improvement in what MAJGEN Robert Scales, Jr. calls 'the velocity of maneuver'. This increase will take place in the realms of physical, temporal and cyber maneuver. Just as has often been the case, whoever is able to gain the edge over their adversary in operational tempo will prevail in the 21st century battlespace. Scales, Robert, "The Army After Next: Intertwining Military Art, Science, and Technology out to the year 2025", *Future Warfare Anthology*, p 197

¹⁸ The conclusion of the Cold War did not end the race to acquire weapons capable of causing mass destruction and casualties. Both state and non-state actors have sought to enhance their ability to deter attacks on themselves while retaining the ability to inflict massive damage and casualties on an adversary. Although it is not within the scope of this paper to list the countries and organisations involved in this new arms race, or to provide exhaustive detail on the weapons they produce, it is highly probable that the future battlespace will incorporate the threat of nuclear, biological, chemical and radiological weapons as well as other unforeseen weapons capable of producing massive loss of life - civilian and military.

¹⁹ The application of physical and non-physical means to defeat the adversary's will to fight is the essence of the maneuverist approach. See *The Fundamentals of Land Warfare* (2002), p. 63-4.

²⁰ *The Fundamentals of Land Warfare* (2002), p. 67.

²¹ For more on the concept of 'Knowledge Edge', see *The Fundamentals of Land Warfare* (2002), p. 73.

²² *The Future is not what it used to be*, p. 139.

²³ For a description of the three-block war concept, see Tulley, Steve, "Winning the Three Block War", *Australian Army Journal*, 1999, p. 11-19.

²⁴ By 2020, the ADF assets which are likely to be available for strategic lift include Government approved plans for three 30 000-40 000 ton LPD-type ships, and 24 C-130 aircraft. This lift may be augmented by the purchase of high-speed transport ships similar to the Austal *Westpac Express* or Incat *HSV-1*, and the possible purchase of some A-400M airlifter. Royal Australian Navy, *Plan Blue*, downloaded from www.defence.gov.au/navy; La Franchi, Peter, "High Level Interoperability: Future Development of the RAN", *Asia Pacific Defence Reporter*, Dec 02-Jan 03, p. 16-17; Ricketts, Peter, "Development Role Offered On RAAF A400M Order", *Asia Pacific Defence Reporter*, Dec 02-Jan 03, p. 11-12.

²⁵ Australian Army, *The Australian Army Science and Technology Master Plan 2001-2002*, p. 125. Hereafter cited as *Science and Technology Plan 2001-2002*.

²⁶ For a fuller description of these generations of warfare, see the 1989 article in the *United States Marine Corps Gazette*. William Lind, "The Changing Face of War: Into the Fourth Generation", *United States Marine Corps Gazette*, November, 2001, 65-66. It should be noted that one possible shortfall of this model is the apparent lack of consideration given to pre-gunpowder warfare.

²⁷ Although the Australian Defence Force has seen increases in its allocation of resources in Federal Budgets over the past several years it is unlikely that any future increase will provide for a significant expansion in the funded manpower of the Australian Army. The 2000 Defence White Paper stated that it expected defense spending to be increased by 23.5 billion dollars, in real terms, 'over the coming decade'. *Defence 2000*, p. 117; Indeed, the government has stated that it will continue to look for further opportunities to increase labour productivity in defence. *Defence 2000*, p. 120; In historical terms, the Army normally comprises 30% of the Australian Defence Budget, with personnel costs consuming approximately 48% of this. The Parliament of the Commonwealth of Australia, Joint Standing Committee on Foreign Affairs, Defence and Trade Report, *From Phantom to Force: Towards a More Efficient and Effective Army* (Canberra: Australian Government Publishing Service, September 2000), p. 96. Hereafter cited as *From Phantom to Force*. This study also found that just to keep up with personnel costs, defense spending would have to rise to 2.5% of Australia's GDP, with the Army's allocation of funds to personnel remaining static. Clearly, by 2020, personnel costs will absorb a much greater proportion of the Army's budget than the figure of 48% quoted in the *From Phantom to Force* report. Either Defence spending will have to continue to rise significantly over the coming decades, or cuts will have to be made in manpower.

²⁸ For a detailed explanation of the categorization of conflict in the Australian context, see *The Fundamentals of Land Warfare* (2002), p. 34.

²⁹ See *Science and Technology Plan 2001-2002*, p. 37, for a more detailed description of the potential of Directed Energy Weapons.

³⁰ Australian Army doctrine holds that the role of the infantry is to 'seek out and close with the enemy, to kill or capture him, to seize and hold ground and repel attack by day and night, regardless of season, weather or terrain.' Manual of Land Warfare 2.1.1, *The Infantry Battalion*, (Australian Army, 1983), p. 1-1.

³¹ This means that infantry battalions would not be required to conduct extensive, battalion patrolling plans reminiscent of the Vietnam era. It does not mean that infantry battalions would no longer require some form of integral recon capability.

³² The Air Mechanization force relies on deploying into theatre a mix of light, medium and heavy rotary wing aircraft to transport light armored vehicles over tactical and even operational distances. For a review of the concept of Air Mechanization, see Grange, David, Liebert Richard and Jarnot, Chuck, "Air Mechanization", *Military Review*, July-August 2001.

³³ *Science and Technology Plan 2001-2002*, p. 135.

³⁴ Three Engineer Special Brigades (1st, 5th and 6th ESBs) were formed to support the landings and subsequent operations at Normandy planned for 1944. These ESBs, with manning of about 15000 men each, were comprised of Combat and Support Engineer Battalions, Medical Battalions, MP companies, Ordnance Battalions, Quartermaster Support Battalions, Amphibious Transport Battalions, Signals Companies, Bomb Disposal Companies, Naval Beach Battalions, Graves Registration units, Port Battalions and Chemical Decon Companies. The ESB's were key enablers in the landing and build up of allied forces in Normandy for subsequent operations. US Army in World War Two, *The Technical Services: The Corps of Engineers-The War Against Germany*, Center of Military History, Washington DC, 1988, p. 308-316. See also Heavey, W.F., *Down Ramp: The Story of the Army Amphibious Engineers*, Infantry Journal Press, Washington.

³⁵ See *Antipersonnel Landmine Alternatives: Organic Real-time Battlefield Shaping*, Potomac Institute for Policy Studies, Washington DC, 1999, p. 1.

³⁶ Manual of Land Warfare 1.1.6, *Logistics in Support of Operations*, 1996, chap 9, p. 10.

³⁷ Manual of Land Warfare 1.1.6, *Logistics in Support of Operations*, 1996, chap 9, p. 10.

³⁸ The Transportation Support Element would provide second line transport support to the ETF and to supplement Group transport as required. The Transportation Support Element would also possess a capability to undertake port and terminal operations, Logistics Over The Shore (LOTS) and postal support.

³⁹ The Health Services Support Element would provide for the rapid collection, evacuation and treatment of casualties as well as the provision of advice on measures designed to promote health and prevent disease. It would also prevent the unnecessary evacuation of those in need of dental attention, to provide first aid and early dental treatment prior to evacuation.

⁴⁰ The Supply Support Element would provide second line supply support and supplementary services to the ETF. It would supply of a range of fast-moving stores in classes 1-9 of supply.

⁴¹ The Field Repair Element would provide second line maintenance and recovery support, including field grade repair, for the common equipment of the ETF. It also provides for the first line maintenance and recovery support for the equipment of the FSG. Its essential task is to ensure maximum availability of ETF equipment for the conduct of operations.

⁴² Manual of Land Warfare 1.1.6, *Logistics in Support of Operations*, 1996, chap 1, p. 7.

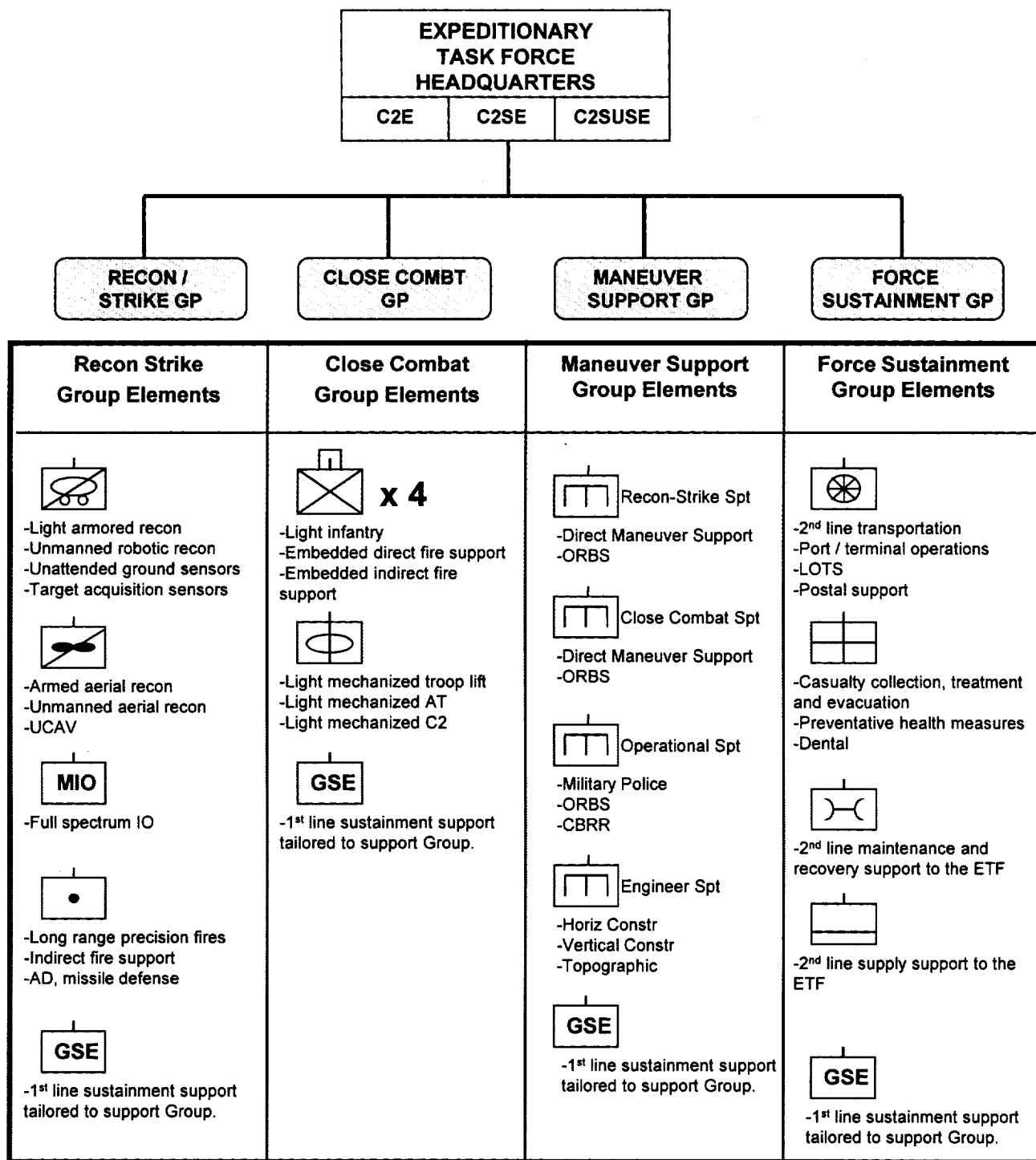
⁴³ The Australian doctrinal publication Training Information Bulletin, Number 70, *Brigade Administrative Support Battalion*, 1995, has been consulted extensively in the preparation of this section of the paper.

⁴⁴ Chandler, David, *The Military Maxims of Napoleon*, (Da Capo Press, 1995), p. 59.

⁴⁵ As noted by Murray and Millet in *Innovation in the Interwar Period*, 'Military institutions not only need to make the initial intellectual investments to develop visions of future war, but they must continue agonizing over such visions to discern how those wars might differ from previous conflicts.' Millet, Allan and Murray, Williamson (Eds.), *Innovation in the Interwar Period*, Cambridge University Press, 1996, p. 406.

⁴⁶ LTGEN F.J. Hickling, former Chief of the Australian Army (1998-2001), email to author, dated 21 Jan 2003.

EXPEDITIONARY TASK FORCE ORGANIZATION



Notes:

1. ARH: Armed Reconnaissance Helicopter.
2. DEW: Directed Energy Weapon.
3. MIO: Military Information Operations.
4. CBRR: Chemical, Biological, Radiological Response.
5. GSE: Group Sustainment Element.
6. ORBS: Organic Real-time Battlefield Shaping.

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