Command considerations for UK Network Enabled Forces
A Speculative View

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1. Introduction

Following the terrorist attacks in the United States on 11 September 2001, and the potential they demonstrated for the use by such adversaries of asymmetric action to achieve strategic effect, the British Government under took a review of its Defence Policy entitled 'The Strategic Defence Review: A New Chapter[1] (SDR NC)'. SDR NC reinforced the growing importance of Network Enabled Capability (NEC) to the United Kingdom in providing the way chosen to fight these future battles[2]. NEC has the power to fundamentally change the way in which the United Kingdom military forces conduct their operations. This stems from the ability of Information Technology, carefully applied, to enable inter-working between individuals, teams and systems to an unprecedented degree. While this ability to share information, work collaboratively, come to a common understanding, and synchronise actions is a much sought after goal in the military doctrine of many countries, it cuts across well established and much cherished command structures and, thus, the way in which command is exercised.

In the United Kingdom, command at all levels is exercised in a 'commander-centric' manner. Much emphasis is given to the commander's personal leadership qualities, the quality of his decision making - especially his intuitive judgement, and his ability to co-ordinate an increasing complexity of tasks and forces. The role of the staff, large or small, is to support him in an essentially mechanistic way. He exercises his command guided by the doctrinal need to adopt a Manoeuvrist Approach to warfighting and the philosophy of Mission Command[3]. Mission Command is the 'command style' in which United Kingdom forces excel and which gives them a qualitative operational advantage.

The purpose of this paper is to offer a view of how the advantages offered by NEC may be exploited without damaging or diminishing the freedoms implicit in the exercise of Mission Command.

2. **Doctrinal Considerations**

Mission Command is a philosophy of decentralised command based on trust and initiative which, with the Manoeuvrist Approach to warfighting, has become a cornerstone of British Defence Policy[4,5]. This central position is endorsed for the future in the United Kingdom's Joint Vision 2015[6]. Joint Vision seeks to 'release the full potential of the Manoeuvrist Approach through an Effects Based philosophy emphasising Deep Operations which exploit Knowledge Superiority and Information Operations in order to shatter the enemy's will to fight and, if necessary, to destroy his combat power'[7]. In its discussion on the British Way of Warfighting, Joint Vision asserts that '(t)he human dimension of command will remain paramount, with **Mission Command** continuing to promote decentralised command, initiative, and freedom and speed of action, while remaining responsive to superior direction. There will be increased emphasis on the joint nature of command, with commanders needing the ability to integrate operations in all dimensions of the battlespace. The **Manoeuvrist Approach**[8] will remain central to future operations. It will continue to demand an attitude of mind in which originality and doing the unexpected are combined with a ruthless determination to succeed. The advantages of this approach will be better realised in the future through the exploitation of the digitised battlespace'.

Mission Command has, as its key elements, 'timely decision-making, the importance of understanding a superior commander's intention, and, by applying this to one's own actions, a clear responsibility to fulfil that intention. The underlying requirement is the fundamental responsibility to act (or, in certain circumstances, to decide not to act) within the framework of the commander's intentions. Together, this requires a style of command which promotes decentralized command, freedom and speed of action, and initiative'[9]. From this two issues emerge: the first is the issue of the commander's intent, which is prevalent in the orders he gives. These describe the outcomes or effects he seeks to achieve, how he wishes to do it, the tasks he needs done to achieve that end and the resources he has allocated to do so. In doing so, he is describing a set of rules to govern that operation and indicating to his subordinates they are to act as necessary within that rule set (command by exception), but that that he alone can change in the rules. The second issue is that of trust, which works in two ways: the trust by a commander in his subordinates that they will act within his intent; and the trust by a subordinate that his commander has given him the direction and resources he needs to do the task. Without this trust, that stems from a common understanding of the commander's intent, Mission Command cannot succeed.

In realising this in the future battlespace where Information Technology makes the sharing of information possible to a considerably greater degree than hitherto, there is the possibility that there will be over-control or 'micro-management' of commanders at the lower tactical level. There will undoubtedly be occasions when such direct control is warranted for a particular purpose to achieve a specific end, but this must be the exception rather than the norm if the operation is to develop as a synchronised whole. Such abnormality, however, comes at a cost: in its effect on the commanders who are bypassed but are ultimately responsible for managing the consequences in theatre, and in terms of the control of tempo since focussing higher command on a specific instance must necessarily detract from their ability to deal with other concerns across the battlespace. This is not to deny the influence of the so-called

'strategic corporal' where, due to the pervasiveness of the media, non-governmental organisations and other non-military groups present in the battlespace, not least of which are the civilians and refugees, an action taken at the lowest level can have repercussions at the very highest. However, even in this case, if the commander's intent has been properly passed to the corporal, and he is trusted and trusting, then there is no need to fear the consequences of his action. A driver for (and benefit of) NEC, however, is that should anything go wrong, as it may well do for reasons beyond his control, then higher command should know before the next CNN newscast. Nonetheless, the practice of Mission Command by British Forces gives them an advantage that is real and envied by many[10].

Mission Command is only successful if commanders at all levels are prepared to act decisively. This requires leadership which, particularly at the tactical level, is exercised directly and requires the commander to be on the battlefield with his troops. Such command cannot be exercised from a bunker and if the implementation of NEC is to be successful, it must not only better enable Mission Command but allow commanders to lead from their most appropriate position in the battlespace.

In addition to reasserting the primacy of the Manoeuvrist Approach to warfighting and Mission Command as the command philosophy, Joint Vision emphasises the need for:

- Joint and Integrated Operations that involve not only all three fighting Services (and Special Forces) but non-governmental organisations, other government departments, allies and other partners in the enterprise.

- Effects Based Approach that involves these elements in an integrated way to achieve the desired effect.

- Integrated Effects that require that these effects are seen in the context of the whole operation, not being done independently, and are synchronised in the battlespace.

3. **Implications of Network Enabling Capability**

NEC is a way of achieving the ends given in Joint Vision which espouses an information view of operations. It can be described by its principles in which:

- Information is shared.

- All users have an awareness of each other's perception of the battle space – and in the context of this paper, of the commander's intent.

- Decisions are made collaboratively.

- Effects in the battlespace are synchronised.

4. **Functional and Task Communities**

In developing the United Kingdom's concept for NEC, early analysis of current processes and equipments showed that each of the fighting services sought a balanced force for operating in their particular environment. Thus, in forming a Carrier Task Group (CTG), preparing a Division or deploying an Air Group, each sought force packages which, to a large extent, relate to the same generic capabilities and differ only in their implementation in a particular environment. Thus all require the ability to:

- Command and manage the forces under their command.
- Collect and process the information they need to conduct operations.
- Protect themselves from a wide range of hostile action and from the environment.
- Sustain themselves throughout the operation.
- Operate against the enemy by striking and manoeuvring against him.
- Project the force into the theatre of operations.
- Prepare for operations.

These seven components of capability together describe Defence Capability[11] and form the basis for further analysis.

This current stovepiped capability has evolved for a number of reasons, not least of which are the very distinct command organisations, and funding and acquisition processes, for each service. The current advocacy for conducting joint operations through the creation of a Permanent Joint Headquarters (PJHQ) and other joint units such as the Joint Harrier Force and the Joint NBC Defence Regiment are crucial steps to correcting this. The Royal Navy and the Royal Air Force have developed the ability to work together and share information to much greater degree than has the British Army, where some perception persists that 'jointness' exists only at the Component Commander /operational level. What NEC allows for is a much greater degree of jointness throughout the battlespace, integrating the three services into a single whole where capabilities, and the resources that provide them, can be shared as needed and as appropriate.

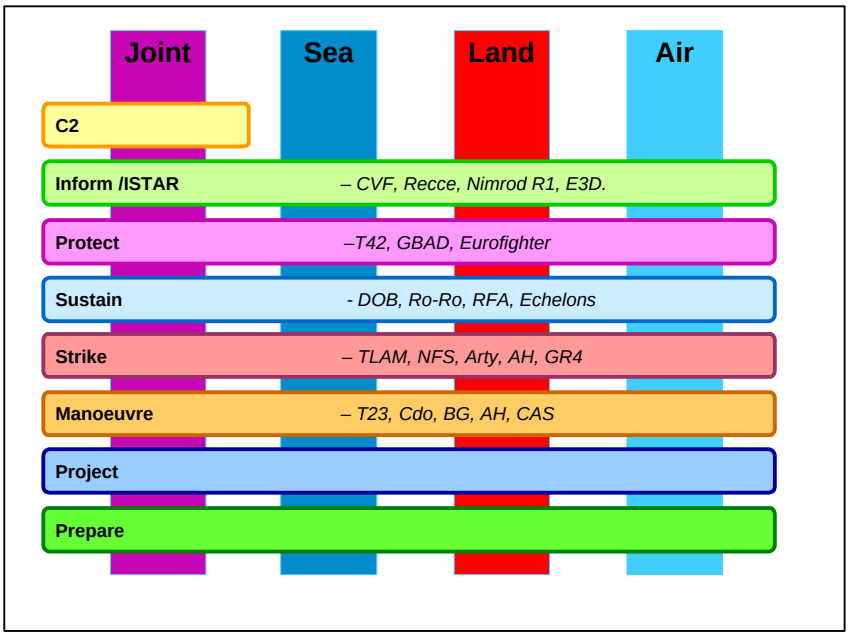
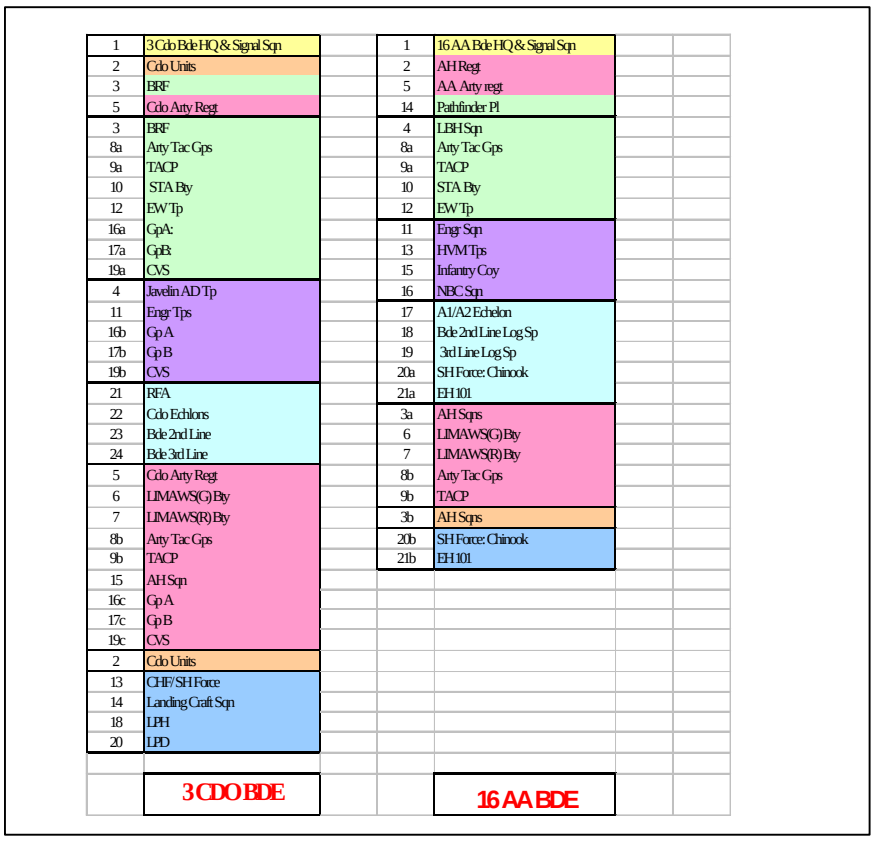


Figure 1. Defence Capabilities across the Services.

This is illustrated in Figure 1 which suggests no more than each Service has assets in each capability area and, within this joint capability area, there is likely to be a relationship between these assets, regardless of their operating environment. There is also likely to be a relationship between capability areas. An example is Air Defence which can be seen as a subset of the Protect capability, in that the Maritime element is provided by a Type 42 Destroyer, the Land element by a Rapier battery and the Air element by Eurofighter (Typhoon). Other elements of this capability are provided by the early warning systems which may reside within the Inform capability.

Analysis of a use case takes this further. In this scenario, an amphibious raid is mounted in support of Land operations to restore the territorial integrity of a small nation attacked by a larger neighbour. The forces involved are the British 3 Commando Brigade afloat in the Amphibious Task Group, including a carrier and her support group of frigates and destroyers able to provide air defence and air strikes as well as naval fires support from the ship's 4.5 inch guns. Once ashore, the Commando Brigade would be supported by Attack Helicopters (AH-64 Apache) from the British 16 Air Assault Brigade. The purpose is for the Commando Brigade, using its artillery, to strike at an enemy force in the coastal capital city forcing it to withdraw into the desert where it would become vulnerable to AH attack, forcing it to withdraw further across the border.

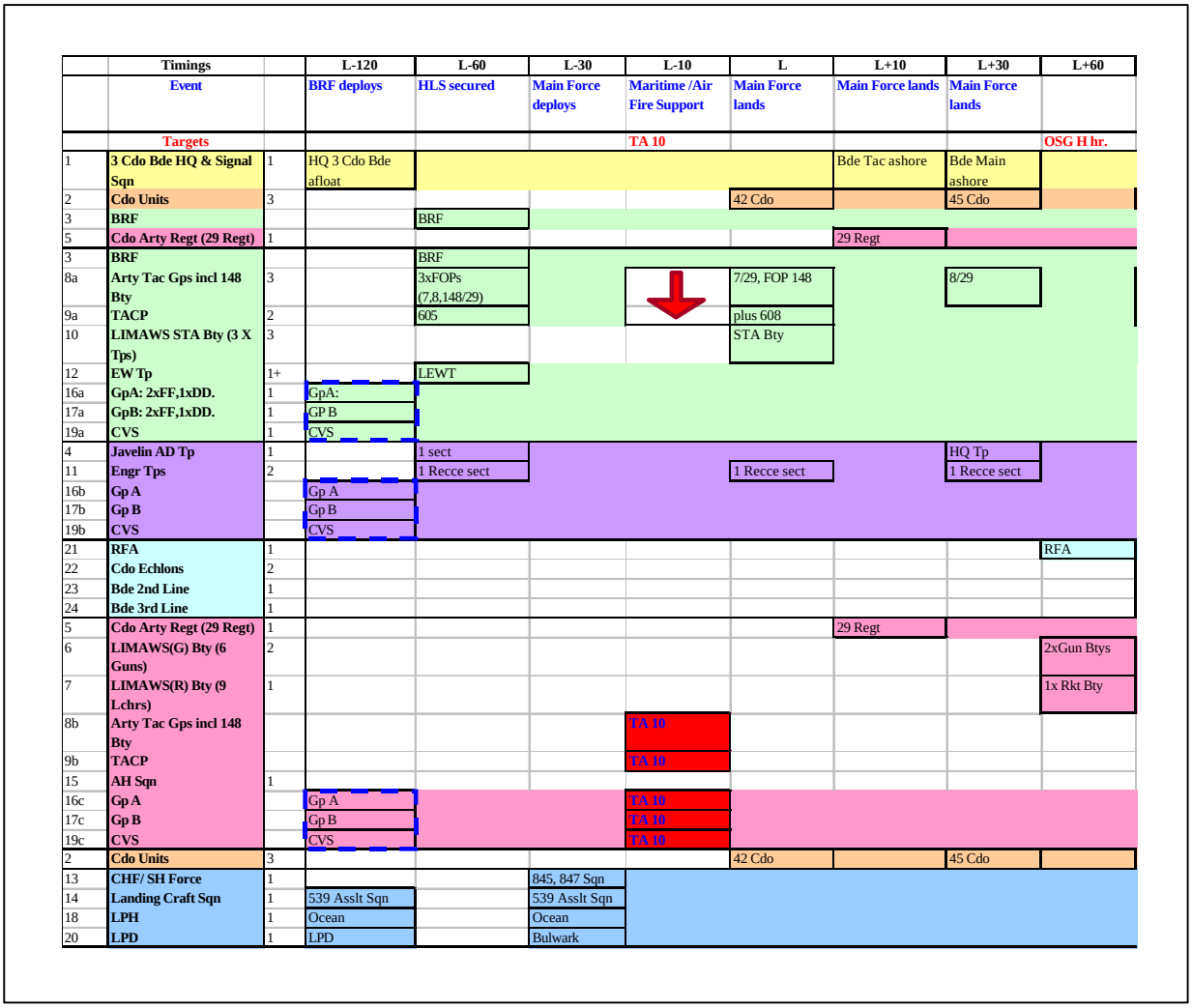
The order of battle is shown in Figure 2 categorised by the capabilities shown in Figure 1.



1	3 Cdo Bde HQ & Signal Sqn
2	Cdo Units
3	BRF
5	Cdo Arty Regt
3	BRF
8a	Arty Tac Gps
9a	TACP
10	STA Bty
12	EW Tp
16a	GpA:
17a	GpB:
19a	CVS
4	Javelin AD Tp
11	Engr Tps
16b	Gp A
17b	Gp B
19b	CVS
21	RFA
22	Cdo Echlons
23	Bde 2nd Line
24	Bde 3rd Line
5	Cdo Arty Regt
6	LIMAWS(G) Bty
7	LIMAWS(R) Bty
8b	Arty Tac Gps
9b	TACP
15	AH Sqn
16c	Gp A
17c	Gp B
19c	CVS
2	Cdo Units
13	CHF/SH Force
14	Landing Craft Sqn
18	LPH
20	LPD
	3 CDO BDE

1	16 AA Bde HQ & Signal Sqn
2	AH Regt
5	AA Arty regt
14	Pathfinder Pl
4	LBH Sqn
8a	Arty Tac Gps
9a	TACP
10	STA Bty
12	EW Tp
11	Engr Sqn
13	HVM Tps
15	Infantry Coy
16	NBC Sqn
17	A1/A2 Echelon
18	Bde 2nd Line Log Sp
19	3rd Line Log Sp
20a	SH Force: Chinook
21a	EH 101
3a	AH Sqns
6	LIMAWS(G) Bty
7	LIMAWS(R) Bty
8b	Arty Tac Gps
9b	TACP
3b	AH Sqns
20b	SH Force: Chinook
21b	EH 101
	16 AA BDE

Figure 2. Defence Capabilities across 3 Command and 16 Air Assault Brigades



	Timings		L-120	L-60	L-30	L-10	L	L+10	L+30	L+60
	Event		BRF deploys	HLS secured	Main Force deploys	Maritime /Air Fire Support	Main Force lands	Main Force lands	Main Force lands	
	Targets					TA 10				OSG H hr.
1	3 Cdo Bde HQ & Signal Sqn	1	HQ 3 Cdo Bde afloat					Bde Tac ashore	Bde Main ashore	
2	Cdo Units	3					42 Cdo		45 Cdo	
3	BRF			BRF						
5	Cdo Arty Regt (29 Regt)	1						29 Regt		
3	BRF			BRF						
8a	Arty Tac Gps incl 148 Bty	3		3xFOPs (7,8,148/29)			7/29, FOP 148		8/29	
9a	TACP	2		605			plus 608			
10	LIMAWS STA Bty (3 X Tps)	3					STA Bty			
12	EW Tp	1+		LEWT						
16a	GpA: 2xFF,1xDD.	1	GpA:							
17a	GpB: 2xFF,1xDD.	1	GP B							
19a	CVS	1	CVS							
4	Javelin AD Tp	1		1 sect					HQ Tp	
11	Engr Tps	2		1 Recce sect			1 Recce sect		1 Recce sect	
16b	Gp A		Gp A							
17b	Gp B		Gp B							
19b	CVS		CVS							
21	RFA	1								RFA
22	Cdo Echlons	2								
23	Bde 2nd Line	1								
24	Bde 3rd Line	1								
5	Cdo Arty Regt (29 Regt)	1						29 Regt		
6	LIMAWS(G) Bty (6 Guns)	2								2xGun Btys
7	LIMAWS(R) Bty (9 Lchrs)	1								1x Rkt Bty
8b	Arty Tac Gps incl 148 Bty					TA 10				
9b	TACP					TA 10				
15	AH Sqn	1								
16c	Gp A		Gp A			TA 10				
17c	Gp B		Gp B			TA 10				
19c	CVS		CVS			TA 10				
2	Cdo Units	3					42 Cdo		45 Cdo	
13	CHF/ SH Force	1			845, 847 Sqn					
14	Landing Craft Sqn	1	539 Asslt Sqn		539 Asslt Sqn					
18	LPH	1	Ocean		Ocean					
20	LPD	1	LPD		Bulwark					

Figure 3. Part of the functional synchronisation matrix for 3 Commando Brigade.

Figure 3 shows part of the synchronisation matrix for 3 Commando Brigade organised by capability or function. From this it is seen that some elements in the force, such as the complex platforms, the carrier (CVS) and its supporting groups (Groups A and B), appear in more than one capability area, and some single function elements, such as the Tactical Air Control Party (TACP), can move from one capability area to another. This suggests a notion of military functional communities based on the Defence Capabilities, elements of which work together to achieve a common purpose or task and which can join or leave dynamically. It further suggests that to carry out that task requires the co-operation of elements from other capability areas. For example, if the TACP needs to call in an air strike, he seeks the agreement of the CVS (Command) which agrees or not to commit aircraft to the target. If agreed, the TACP then provides the target information to the aircraft and controls their attack. Initially therefore, the TACP may be operating as part of the Inform community, passing the information to the Command community for agreement and allocation to the Strike community and then itself acting as an extension of the Strike community to control the attack. It is, therefore, possible to identify two types of military community, the functional community which is relatively enduring and the more transient task community which may include elements from several communities. The true importance of these communities, however, lies not in their physical manifestation but

in what they imply as a model for NEC, in terms of generating shared understanding, collaborative decision making and command intent and how that translates into synchronised effect.

5. **Functional Command**

If NEC does allow capabilities and the resources to be shared to a much greater degree throughout the battlespace as a result of better understanding, then 'joint' means 'joint at all levels', not just the operational. Further analysis of the use case shows that it is possible to conduct the operation along functional lines of command, for example having a commander Strike and a commander Inform, where the forces commanded by the current 3 Commando and 16 Air Assault Brigades are task communities organised for that particular operation. What NEC should allow, therefore, is a move away from permanently configured task forces to the creation of task forces according to need as required by the higher commander's intent, and in a way that is highly dynamic and event driven, such that they exist only for as long as is necessary to complete the task. In this view, the Services become resource providers to the functional commanders. Current practice has similarities in that the Commander's in Chief Fleet, Land and Strike provide forces to the Chief of Joint Operations (CJO) at PJHQ for a given operation (force packaging). What is proposed here is that this initial package is only the start state for what in-theatre will be a highly dynamic organisation in a battlespace that reaches back to the home base and elsewhere to gain the resources it needs.

The Manoeuvrist Approach places emphasis on the ability to control the tempo of operations, gaining an ascendancy such that it is possible to dictate the pace of operations, so overloading the enemy by constantly placing him at a disadvantage that his will and cohesion to continue is destroyed. This provides the context for Effects Based Operations in that this ascendancy is gained only by applying the totality of effects against him, of which the military may only be a part[12]. Effects Based Operations are not the prerogative of the strategic levels of command, but pertain at the operational and tactical levels as well. The current doctrinal emphasis on the inclusion of non-governmental organisations and other government agencies in planning and execution at the operational and tactical levels is a pragmatic acknowledgement of this need. It is the ability to plan military operations in the context of an Effects Based campaign at the operational level that generates the command intent necessary at tactical levels to enable mission command. To secure any fears about the actions of the 'strategic corporal'[13], NEC must enable all this to happen in a highly dynamic battlespace.

Figure 4 attempts to pull these ideas together. The JTFC and the functional commanders develop the Command Intent in a dynamic and collaborative way from which the campaign plan is similarly developed in what remains a command-led process. Command Intent is used to describe a much richer concept of operations than the current 'commander's intent', resulting, as it does, from the integrated efforts of commanders and their staffs at different levels and from the incorporation of each functional commander's perspective into the whole. What emerges must become the Intent of the whole command. Importantly, this Intent will change over time as the campaign evolves. Parts may remain extant throughout while other parts may change very rapidly as new situations occur. These latter will need to be driven down to the

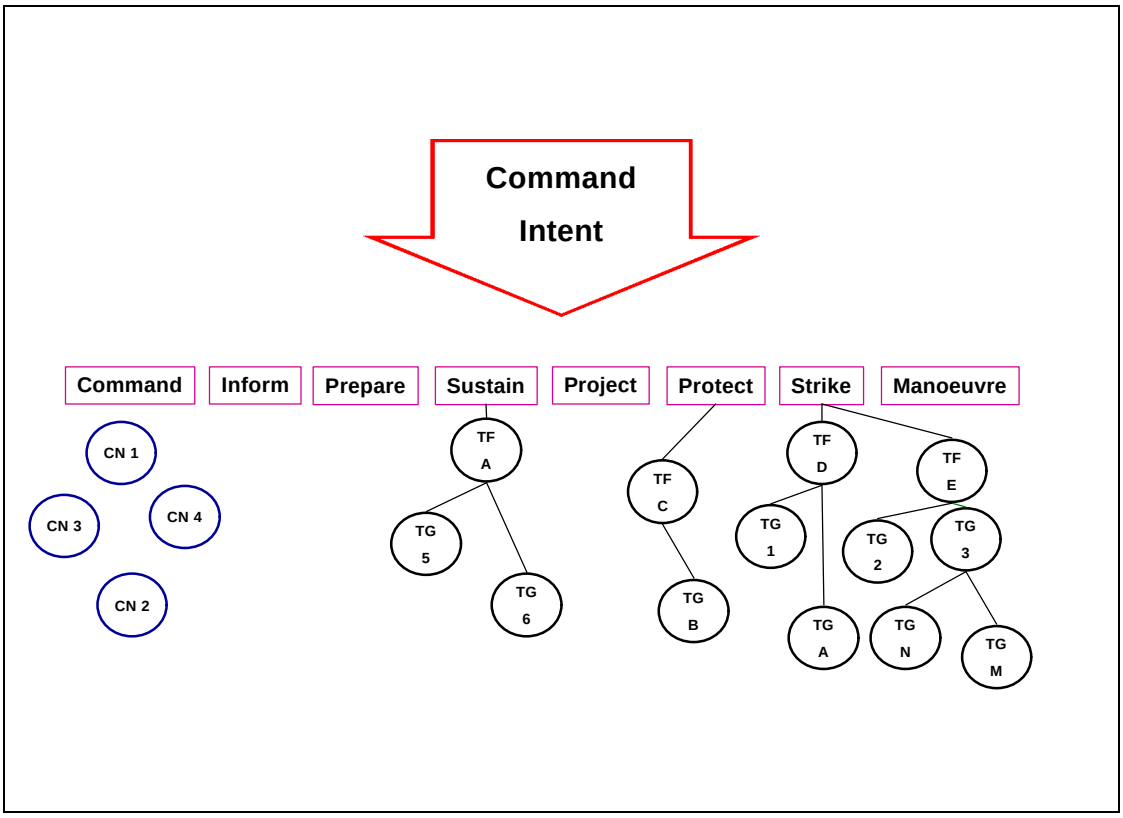


Figure 4. Command Intent, functional command and task communities

fighting level as quickly as possible so that the 'strategic corporal' is always 'in the know'. Likewise, it is important that events unfolding at the fighting level are able to influence the Command Intent as befits their criticality to the campaign plan. Command Intent, the plan and its execution, are inextricably linked: they are event driven and must be capable of responding in a precise and timely, if not an anticipatory, way if they are not to diverge at the fighting level. The plan identifies missions and tasks for the functional commanders which then become the basis for resource allocation. These missions and tasks are related to the effects that are to be achieved in the battlespace and the manner of their synchronisation – by time or by event ('when or if…, then…') or a combination of both. This is shown in Figure 5 below.

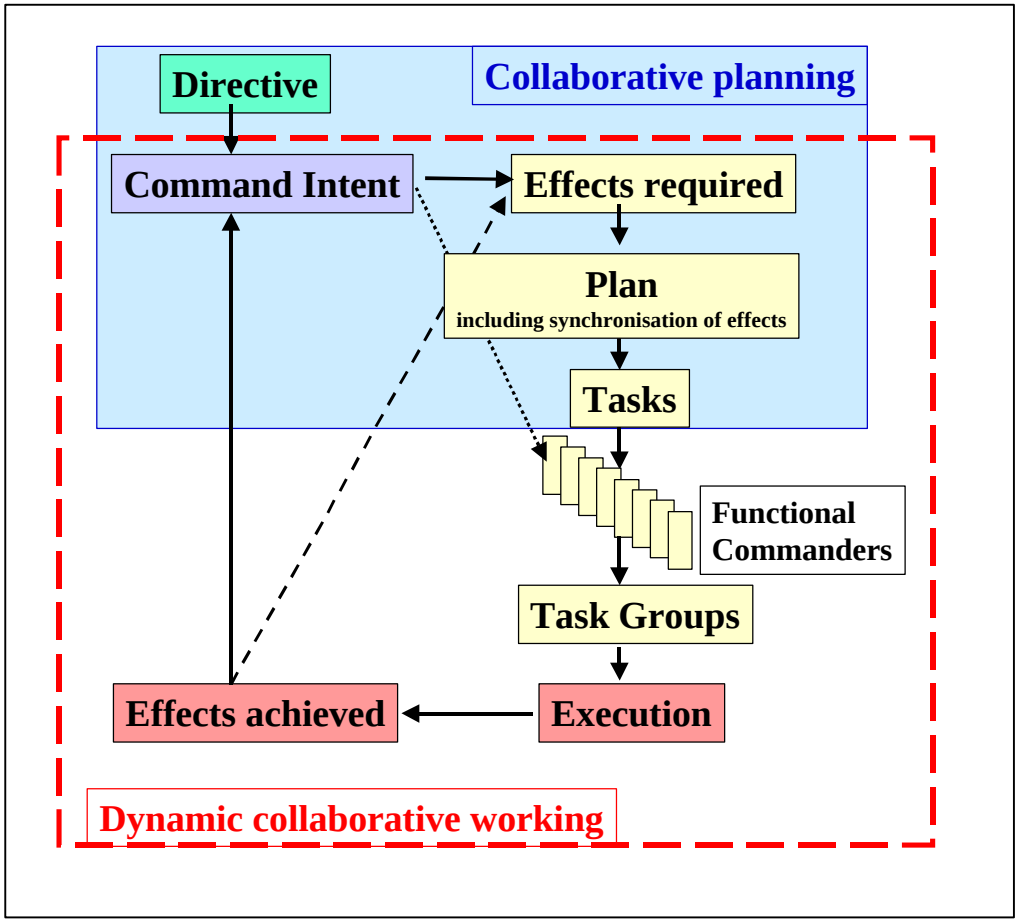


Figure 5. Command Intent relationships.

A given functional commander is unlikely to command all the assets he needs to carry out his task or tasks, and resource sharing between functional commanders will be essential. The resource-sharing mechanism employed is described here as 'bargaining', as it implies the setting of priorities for asset sharing and an undertaking to provide and receive an asset under given circumstances of time or event (when /if…, then…) or both. What is also implicit is that when those circumstances do not pertain, the asset can be used elsewhere. Asset ownership, in order guarantee responsiveness, ceases to be an issue and the current 'fixed' structures are no longer required.

Task groups themselves may divide into groups to conduct specific parts of the overall task as indicated in Figure 4. Again assets will have to be shared and this mechanism of sharing which guarantees the availability of an asset for a given time or task, particularly within task groups, is described as 'contracting'. Contracting may also take place between task groups of the same functional commander and between those of different functional commanders provided the requisite 'bargain' is in place. If the force is to gain or maintain tempo, it follows that these mechanisms need to be highly reactive and dynamic and must not impose a drag on operations, an important characteristic of NEC. For the whole operation to be highly dynamic and proactively driven by events, requires the task groups be able to form and reform as required to complete successive tasks, each of which may need different capabilities in different proportions. They are transient structures whose definition prior to the start of a given

operation is problematic other than in the most general terms, such as ‘protection from air attack’.

Command of task groups will be done by small and highly agile command nodes that are ‘staffed to task’ and modular in nature. This means that to aid rapid decision making, the command node has only the capabilities it needs to ensure the task is successfully completed. Some of these capabilities may be provided by reachback within theatre to a more static secure command support node, or out of theatre should the circumstances warrant it. If the node is required to command a task of greater complexity, then additional resources can be applied by adding the necessary modules to augment the node or, again, by reachback. Command nodes do not have permanently allocated force elements but are ‘contracted’ by the functional commanders who assign force elements to them, once ‘bargaining’ is complete and the task priorities and resource allocations have been made. It is emphasised that this is a continuous process as illustrated in Figure 5 where there is full integration between collaborative planning and dynamic collorative working and the traditional notions of planning and execution phases of an operation are lost. It is possible to consider circumstances allowed by NEC where the commander of a task group never physically makes contact with the assets under his command and command is exercised virtually. The British command-centric style militates against this and at the lower fighting levels, it is extremely unlikely that virtual command is an option. At JTFC and functional commander level it may be the only way of conducting the operation.

If commanders are to successfully carry out their tasks, their ability to synchronise effects and co-ordinate assets in the battlespace must be timely and synchronised with those working around them and at different complexities of command. To do this requires active and dynamic management of the battlespace as a single entity, and the development of processes to do this becomes a priority task in the development of NEC.

To manage this requires a new discipline described here as Command Management through which these command arrangements are established and maintained as a managed service by the Command Management organisation. Command Management will be a joint organisation responsible for ensuring that the appropriate facilities and information services are available for a commander and his staff to enable the smooth and timely flow of information throughout the battlespace. Command Management will implement NEC in the battlespace.

In the circumstances described above, traditional command structures are difficult to maintain, though the doctrinal principles described earlier remain extant. If what has been described so far is enabled by the ‘synchronised command and control’ capability theme for NEC, then Mission Command becomes essential if the full benefit is to be realised. This in turn places a premium on the other NEC capability themes and especially the requirements for shared awareness, complete information access and team-based information management to better enable Mission Command.

6. **Conclusions**

Work has begun to test these ideas in a number of use cases. The first has been completed and the outcomes have informed much of what is described above. Some conclusions that have been reached are:

- While much of what can be achieved depends on the quality of the network, results show that the network need not be homogeneous and is a logical construct rather than a physical one. It is more likely to be a tier of discontinuous layers or a patchwork, since not all users need the same range of services, for example, JTFC and a tank commander. Figure 6 is an attempt to illustrate this outcome from the use case. The different colours represent nets of different levels of service, for example, JTIDS and SATCOM, and the squares denote headquarters and platforms.

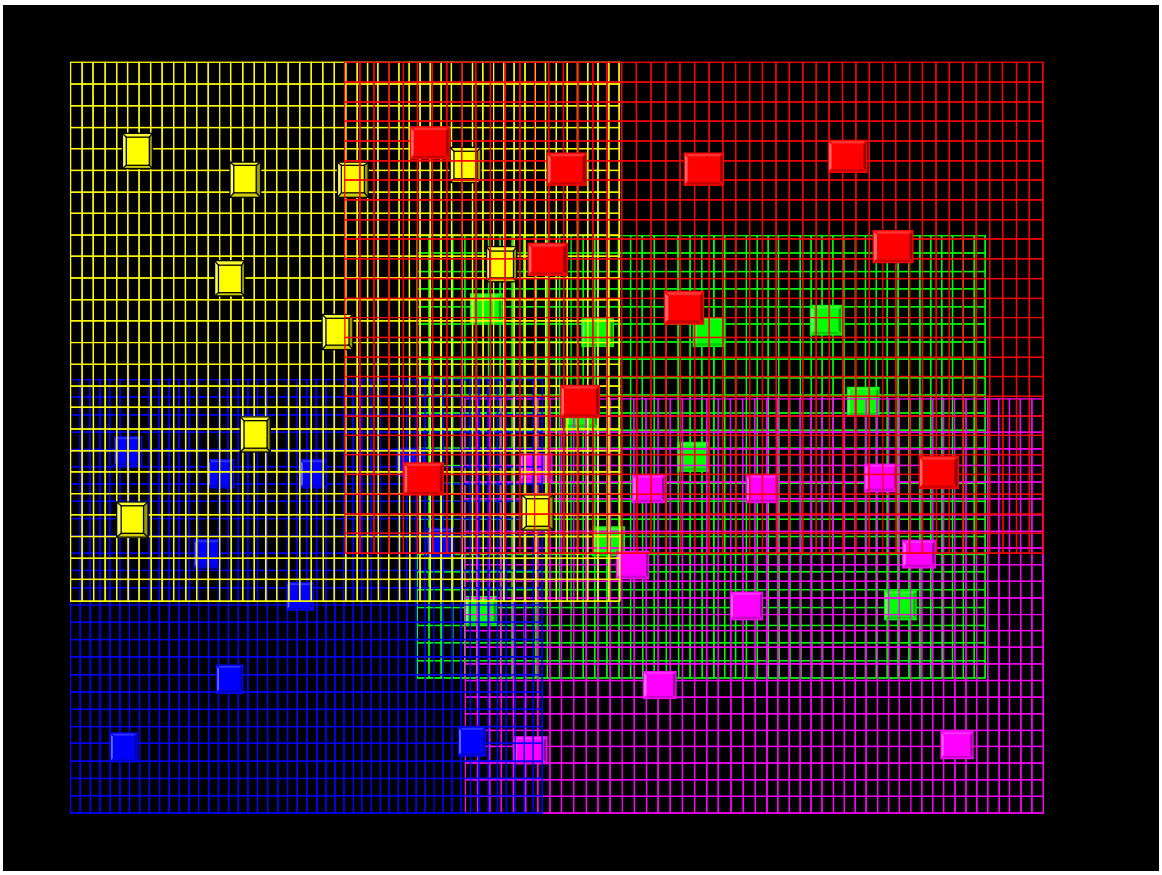


Figure 6. A representation of battlespace networks.

- The work to date also indicates that the use of functional commanders facilitates the sharing of assets but that the 'bargaining' and 'contracting' processes described above are immature and need further work. In particular, it appears possible by dynamic sharing to reduce the long logistic tail inherent in some organisations.

Finally, the results show that to make best use of NEC in achieving the military ends requires a change in our business processes and considerable empowerment of junior

commanders who are trained and trusted to work within the Command Intent. There will be an even greater call on Mission Command.

7. **References**

[1] Command 5566 Volume 1 and 2. Presented to Parliament on 18 July 2002.

[2] Ibid Vol 1 page 14 et seq.

[3] The Big Issue; Command and Combat in the Information Age' Ed David Potts. Combat Studies Institute Occasional No 45, March 2002. The journal captures much of this and the Army's future thinking especially articles by David Potts and Jim Storr.

[4] Design for Military Operations - British Military Doctrine Army Code 71451 1989, pages 41 and 49.

[5] British Defence Doctrine (Second Edition) (BDD2), Joint Warfare Publication 0-01, Ratification Draft 2001, page 3-7.

[6] Joint Vision 2015 (JV2015). D/JDCC/7/11/1 dated 15 June 2002.

[7] Ibid. Page 4

[8] The manoeuvrist approach to operations is one in which shattering the enemy's overall cohesion and will to fight, rather than his materiel, is paramount. Manoeuvre warfare is the application of manoeuvrist thinking to warfighting. It aims to apply strength against identified vulnerabilities. Significant features are momentum and tempo, which in combination lead to shock action and surprise. Emphasis is on defeat and disruption of the enemy by taking the initiative and applying constant and unacceptable pressure at the times and places the enemy least suspects, rather than attempting to seize and hold ground for its own sake. It calls for an attitude of mind in which doing the unexpected and seeking originality is combined with a ruthless determination to succeed. BDD2, page 3-5.

[9] Army Doctrine publication (ADP) Volume 2 *Command* Army Code 71564, April 1995. Paragraph 0210.

[10] *"In the British System, a field commander is supported. Period. That is the rule. A field commander is given mission-type orders, not detailed and continuing guidance. It is a wonderful, traditional approach, one that embodies trust in the commander and confidence in his judgment as the man on the scene"*. General Wesley K Clark: Waging Modern War. PublicAffairs Ltd, October 2001.

[11] Defence Capability. The potential to achieve defence missions in support of government policy. UK Defence Capability is the potential of the Ministry of Defence and the Armed Forces to achieve the Defence Missions in support of Government policy. Joint Operational Concepts Committee (JOCC) working definition.

[12]Effects Based Operations include all three instruments of national policy - diplomacy, economic power and military power JV2015 page 6.

[13] The United Kingdom has a model for this from its operations in the Malayan Emergency (1948 –1960) when the country was subject to sustained attack by Chinese communists. The posts of High Commissioner and Director of Operations were combined giving the High Commissioner control over all the instruments of national policy allowing him to direct all aspects of the campaign as an integrated whole, acknowledging as he did, the need for a total effort on all fronts – political, economic, cultural, social as well as military. Vide Richard Stubbs: Hearts and Minds in Guerrilla Warfare. OUP 1989. Page 1.