

## 3D Co-ordination and operations

**T**o cease fire or shift artillery fires in co-ordination with an attack or counter-attack being launched are processes well known by combined-arms units committed into an operation. Exchanging liaison detachment between adjacent land units or between a supported unit and a supporting unit comes from the **same concern pertaining to a space-time co-ordination** of actions required to carry out the major effect.

Quite logically, the third dimension is no exception to this co-ordination requirement, a requirement for a wider freedom of action and efficiency. 3D co-ordination, a self-explanatory term, is **a set of procedures alongside specific technical assets** enabling to take into account the diversity and the speed of any flying asset transiting within this area. Its only aim consists in **supporting their use without hampering them or constraining them**. Lessons learned from past or current operations show it.

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### 3D co-ordination aims: securing and optimizing the use of assets

The very **first aim of 3D co-ordination** consists in **securing friendly actors in the third dimension**. As a quite transverse function, it should make sure that air assets used by units at the various levels of command of the force do not collide with one another. For this reason, when operation FINUL II was launched in Lebanon, the Intelligence Operating Center<sup>2</sup> was set up in the vicinity of the HQ in Naqura. UAV's (Unmanned Air Vehicles) flights should not endanger ITALAIR<sup>3</sup> helicopters; and thus, exchanges of information should be easily carried out among the structures responsible for implementing both these kinds of air assets, all the more as no device dedicated to air control had been set up (surveillance radars, coordination centers...).

Even if the **various assets** flying within the third dimension have completely different features, they **sometimes fly within the same areas**. Thus, the more we move close to the FEBA (Forward Edge of the Battle Area), and the more air support fighters are being committed at altitudes normally assigned to helicopters and to some drones. An overall use of UAVs will still increase 3D co-ordination needs because one is likely to find any kind of aircraft, with any capability at any altitude. Moreover, they will be implemented by all the tactical echelons of the various Services' components.

In the vicinity of the FEBA, the likelihood of an air asset colliding with an artillery shell falling dead on target increases too. Because, if we have dealt with the hazard of collisions among friendly aircraft, there is also the hazard of fratricide fires. As regards ground-to-air units, this likelihood is increasing, as decision time is all the shorter from all

the more succinct intelligence pertaining to threat analysis that they are not or no longer linked to the direct chain of control. Lessons learned from operation FINUL II are typical once again. The lack of a coordination chain with specialized assets led to set up an artillery operating center in Naqura. The ADA<sup>4</sup> unit should absolutely have had information available from the AOCC<sup>5</sup> cell from UNIFIL HQ about ITALAIR flights; it also applied to helicopters on board the ships that had taken part in operation BALISTE off the coasts. Setting up the artillery operating center and the intelligence operating center in the same place falls under the same principle. The ADA unit should have had information about UAV flights.

Commitment frameworks do not systematically include a no-fly zone. Thus, **accidents could occur between a force's air asset and a civilian aircraft**, whereas specialized assets to control

### 3D co-ordination pillars: pre-established control and direct control

Let us start with a **prerequisite**. The 3D co-ordination chain is drafted as early as the **planning phase of an operation**. Depending on the conditions for a commitment - High Intensity Conflict or Low Intensity Conflict - the extent of the AOO, the kind and strength of committed forces, air threat, required assets devoted to the coordination chain vary. They could change, from the setting up of detection assets and transmission systems (AWACS, radars, L16...) enabling to permanently control the whole of the AOO in real time conditions, to a mere map on which strengths and airspace corridors allotted to the various missions and their activation time blocks are being displayed. Straightforwardness and common sense should remain the key words as they are a guarantee for a true efficiency.

The first **3D co-ordination** principle consists in **selecting an authority who will be responsible for it**. Its main objective will be to authorize, to deny or to amend requests for airspace sub-areas that will be forwarded to it, not according to a responsibility pertaining to the use of units, but because it will have carried out third dimension's deconfliction. In other words, the authority responsible for 3D co-ordination should trigger a decision by the commander that will enable to allot, depending on commander's priorities, the various airspace sub-areas dedicated to missions divided in time or space.

In order to have an overall vision and thus all possible decision-making criteria, this authority should be at the highest level of the force. Indeed, assets transiting in the third dimension are from the various joint components inside AOOs that could be in common, in particular in the contact zone. We could consider each tactical echelon to be responsible for its own AOO at ground level. Except for temporary exemptions, this is not true for airspace over it, as far as 3D co-ordination is concerned, as long as this airspace is likely to be used by other tactical levels of other Services' components.

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civilian and military airspaces do not always enable to observe the whole of the AOO (Area of Operation). To this should be added the fact that in Africa, handing in a flight plan is not systematically done. However, such a kind of tragedy, with important diplomatic consequences, could seriously prevent the force to be accepted and hence the mission to be completed. Therefore, the force should make every effort to have all information available that control towers could grant them by setting up liaison detachments.

**3D co-ordination** - often hidden by the security aspect - **is also a very important tool to optimize the use of "aérocombat"\* assets, in particular in an important commitment area**. First of all - and it has already been dealt with the example of the setting up of the artillery operating center and the intelligence operating center within the *UNIFIL HQ* - it eases the work of the ground-to-air defense that has thus a maximum of analysis data enabling it to carry out its mission in the best conditions. More globally, the direct chain of control enables to allot targets among the various ground-to-air systems while avoiding placing several fires onto a single target whereas other targets could happen not to be engaged. It also enables to allot each target to the weapon system that is the most fitted to carry out the interception timely, whatever it is: a ground-to-air unit or a fighter patrol.

From now on, the new technological break-through that mingles network interconnection, unit positioning systems, and data transmission - through battlespace digitization - increasingly extending the concept of real time, enables to consider the use of a **3D direct control chain by all actors in the third dimension**: air support aircraft, ALAT<sup>6</sup> units, UAVs, artillery. It will facilitate operation control by increasing response capability towards hazards in the contact zone. In other terms, we have to decrease to a minimum, the necessary time spans - linked to necessary requests for airspace allotments enabling to complete the tactical mission. In this new framework, a concept has come out from now on: **the co-ordination of land actors in the third dimension**. Regarding the Army, what 3D co-ordination brought forward to complete a mission - until now limited to ADA - will, from now on, be made available to the whole of the tactical chain; and MARTHA<sup>7</sup> - through higher level centers (CNHM<sup>8</sup>) - is clearly the climax of **an increasing freedom of action for a combined-arms commander**: selecting best fitted firing assets or intelligence assets (CAS<sup>9</sup>, "ALAT", artillery... patrols, helicopters, UAVs...) available within shortest notice, when facing an unexpected tactical event requiring to be tackled immediately, and the whole of that in the best safety conditions.

# Lessons learned

ADA, with specific features from this point of view, is a good example enabling to show that **the coordination chain is absolutely not responsible for the employment of units**. An ADA unit integrated into the coordination chain is likely to be ordered or forbidden to fire by the direct control chain. Indeed, this last one has all assets available enabling to point out the hostile or unknown character of a track, and hazards likely to be encountered by air units flying at that very moment in the area; it can intervene on the allotment of targets between the various ground-to-air systems or fighter patrols. For all that, the authority responsible for 3D co-ordination has no authority to define the location and the mission tasked to this ground-to-air unit. This is the full responsibility of the operational commander responsible for this unit.

**The 3D co-ordination chain operates at two different levels. “Procedural control”** is to be set in parallel with planning. It operates under the principle of ACM request<sup>10</sup> to use airspace and through the validation of these requests after a possible third dimension’s deconfliction. Even if it leads to time spans that cannot be shortened, as much for its definition as for possible changes, procedural control is a reference for any unit that is no longer in liaison.

**“Direct control”** is the almost real time implementation of changes that have to be taken into account within what had been defined with procedural control, owing to specific circumstances at that moment. Direct control relies on a specific network, which is based on “quasi real time”

communication systems and on the knowledge of the instantaneous location of 3D actors: radar data, positioning system, IFF<sup>11</sup>...

Direct control provides all the required flexibility enabling to meet contingency situations. However, it is only possible with performing communication systems. In Afghanistan, during Operation SERPENTIAIRE, an Army MIDS<sup>12</sup> station integrated in the L16 network, set up by the Americans on this territory, transmitted the whole of L16 actors’ situation over the AOO in real time up to the Charles de Gaulle<sup>13</sup> through satellite communication links. Then, pilots were accurately aware of the situation over the Afghan territory, even before having taken off from the aircraft-carrier.

Obviously, **what is true for overseas operations is also true for homeland commitments**. Thus, the same rules apply when ground-to-air units are committed within the framework of the protection of major Navy facilities in the Finistère county, to protect a G8 summit or to complement the assets on FAS<sup>14</sup> bases.

\* **“Aérocombat”** is the co-ordinated and integrated maneuver of tactical level units operating on the ground and in an air-space close to the ground, under the direct responsibility of the Force’s Land Component Commander. In addition to ground units, **“Aérocombat”** addresses all the aircraft and delivery vehicles that transition across this dedicated air-space, especially helicopters, drones and artillery ammunitions; it is conducted in close coordination with the Air Component Command.

- 1 *Land forces Command/Planning Division*<sup>1</sup>.
- 2 *Operating Center (dedicated to information collection by specialized sensors, set up by the Intelligence Brigade)*
- 3 *ITALAIR = Italian helicopter detachment within the UNIFIL.*
- 4 *Air Defense Artillery.*
- 5 *AOCC: Air Operation Co-ordination Center.*
- 6 *ALAT = French (“Light”) Army Aviation.*
- 7 *Tactical Radar Network against Rotary-Wing and Fixed-Wing Aircraft.*
- 8 *MARTHA higher level center.*
- 9 *CAS = Close Air Support.*
- 10 *ACM REQUEST principle (Airspace Control Means).*
- 11 *IFF: Identification Friend or Foe.*
- 12 *MIDS: Multifunctional Information Distribution System.*
- 13 *Nuclear aircraft carrier.*
- 14 *Strategic Air Forces.*

Technical improvements - through tools such as MARTHA - and battle space digitization enable **now** to consider **integrating third dimension actors to the direct control chain**. Taking “ALAT”, UAVs, ADA into account - a field so far reserved to airmen and integrated ground-to-air units - is a **guarantee for a combined-arms commander to have an improved freedom of action to conduct operations**. Of course, it does not question the required planning, which is achieved through procedural control; it will bring **more flexibility, which is required to meet unexpected situations in the contact zone, while granting our forces with an optimized security**. Definitely, 3D co-ordination has become a fully transverse, allied, joint and combined-arms requirement, down to the lowest tactical echelons.