

EyeCommand battlefront

Digitising the battlefield



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DIGITISING THE BATTLEFIELD

Advances in digital technologies have made information operations a vital part of military procedures. The importance of having timely, comprehensive and accurate information can mean the difference between successful and unsuccessful operations.

Soldiers do not gain an advantage on the battlefield by using automated equipment alone. Instead, success is achieved when information is optimised and presented in a clear way through advanced digital systems. Shared situational awareness, coupled with the ability to conduct continuous operations, allows military organisations to observe, decide and act more precisely in the heat of battle.

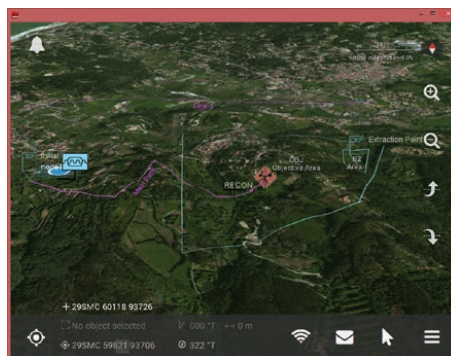
Critical Software's EyeCommand Battlefront supports the process of digitisation for battalion and below echelons by providing commanders with:

- *A common view of the battlefield*
- *Situational awareness*
- *Battlefield synchronisation*
- *C2 on the move*
- *Horizontal integration*
- *Combat identification / Blue Force tracking*

BATTLE PLANNING

Military operations are often uncertain and unpredictable. Leaders who understand the dynamic forces on the battlefield and the potential impacts of uncertainties, on both enemy and friendly forces, are better equipped to develop effective plans. Full-spectrum operations demand a flexible approach that builds in adaptive planning for every situation. At a tactical level, this planning process is a collaborative and iterative discipline between the different units.

There are many levels to effective battle planning. At a strategic level, commanders need comprehensive, accurate information to decide on the best way to achieve their operational or strategic objectives. At a platoon level, the plan also needs to be detailed to allow platoon commanders to ensure each macro-goal feeds into achieving the wider strategic goals and objectives. EyeCommand Battlefront ensures that integrated planning is intuitive across all levels of military command, supporting the entire hierarchical distribution process for plans and orders.



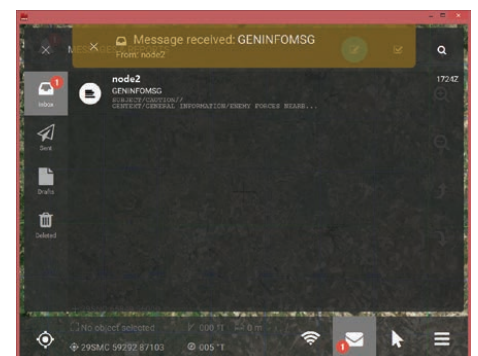
App-6 symbology

TASKING FORCES

The dynamics of military operations require a mechanism for effective, easy-to-use message exchanges. These messages focus only on the specific information that needs to be communicated at any one time, presenting it in a logical, well-specified and unambiguous way.

NATO's own catalogue of messages for all-purpose use is standardised and defined in STANAG 7149 - APPII.

Standard message catalogues are, generally, not bound by a transmission medium and, due to the highly-efficient information payload to overhead ratio, they can be transmitted as effectively over HF as they can over the latest NEC networks. EyeCommand Battlefront implements several message catalogues, enabling seamless, bi-directional message exchanges between all battlefield units and ensuring accurate situational awareness.



Tasking and reporting



BATTLEFIELD MONITORING

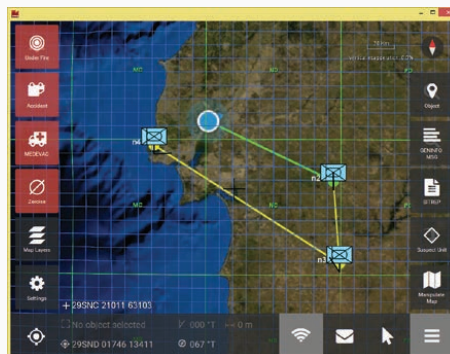
EyeCommand Battlefront delivers 'network-centric operations', enabling horizontal and vertical communication channels that allow users to share information easily, providing a common operational picture for all military organisational levels at any one time. The system maximises Combat Identification and Force Tracking (blue, red and white) by providing accurate characterisation of entities in a combatant's area of responsibility. This allows for the real-time application of tactical options and weapon resources in an extremely accurate way, maximising combat and mission effectiveness and reducing casualties.

The system's COP is provided in a 3D GIS engine, which implements several monitoring features, such as elevation data handling (DTED), terrain analysis, calculations (e.g. progression speed, distances, slopes thresholds), LOS, geo-fencing and more. The system adopts custom symbols to represent contacts graphically.

EyeCommand Battlefront can be configured with the NATO standard format STANAG 2019 (APP-6C) or US standard MIL-STD-2525C.

COMMUNICATION INFRASTRUCTURE

In order to enhance operational capabilities, digitising the battlefield does not require a complex communication infrastructure. Any infrastructure will ideally employ equipment already in use by armed forces. Seamless communication means robust, resilient and secure multi-level communication systems that provide users with access to mission-essential information across the entire operational spectrum - without the need for interventions in order to achieve connectivity across heterogeneous networks. For this purpose, EyeCommand Battlefront builds ad-hoc tactical communication networks over existing Combat Net Radios and interfaces with larger bandwidth radios to access military backbone networks. The system is resilient to natural communication obstacles and shadows and efficiently adapts to operational scenarios, enabling dynamic manoeuvring of units.



Network diagram with relays

DEBRIEFING

Post-mission analysis is of the utmost importance, providing valuable lessons learned from operational experiences that can contribute to improvements in the future. Effective post-mission analysis provides information for the preparation of mission reports and future training materials. EyeCommand Battlefront provides an integrated report-generation mechanism based on data logged during operations - data that can also be replayed for review within the system. This provides an improved understanding of mission outcomes, detailed performance analysis and learnings for the future.

VEHICLE INTEGRATION

When any error is reported by a battlefield vehicle's system, EyeCommand Battlefront allows users to request assistance and access important real-time vehicle data.

Additionally, logistics reports facilitate on-demand ordering of spare parts in real-time and minimise supply chain issues. The system includes interfaces to vehicle networks and is able to retrieve information directly from vehicle sensors, providing faster and more accurate maintenance and logistics capabilities.



VERTICAL AND HORIZONTAL INTEROPERABILITY

Interoperability is “the ability of two or more systems to exchange data and to mutually understand the information which has been exchanged”.

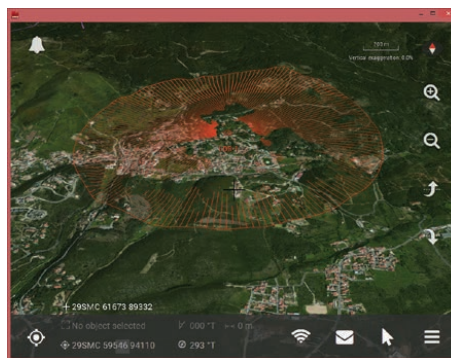
Interoperability goes far beyond simple integration tasks and EyeCommand Battlefront is more than capable of coping with the two main interoperability challenges typically faced in battlefield situations:

- The vertical challenge - which includes communications between different echelons.
- The horizontal challenge - which involves communications between different organisations involved in the governance of the battlefield.

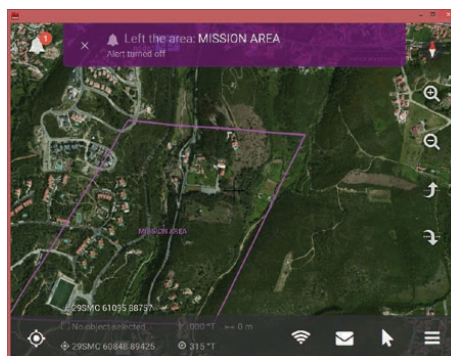
EyeCommand Battlefront makes interoperability with other external systems easy through the implementation of gateways based on NATO standards (including STANAG 5527 - Friendly Forces Tracking and MIP ADEM - Alternate Development and Exchange Method based on NATO STANAG 5525 - JC3IEDM). Dedicated gateways can also be supported for further interactions with proprietary protocols.



Terrain analysis



Line of sight calculation



Geo-fencing

BENEFITS AND ADVANTAGES

WHY EYECOMMAND BATTLEFRONT?

- Easily integrates with different types of transmission equipment (e.g. HF, VHF/UHF, TCP/IP, GSM).
- Easy configurable, based on adaptable user requirements and lessons learned.
- Intuitive HMI makes it easy for new users to quickly become proficient.
- Facilitates change management processes and the adoption of new technologies.
- A wide range of NATO standards are supported, maximising interoperability.

ABOUT CRITICAL SOFTWARE

Critical Software provides systems and software services for safety, mission and business-critical applications. We work closely with our clients, helping them to meet the most demanding standards for performance and reliability.

We were founded in 1998, with NASA our very first client. Today, we work across many international industries and have offices across the globe.