

Envitia Supports UAV Missions

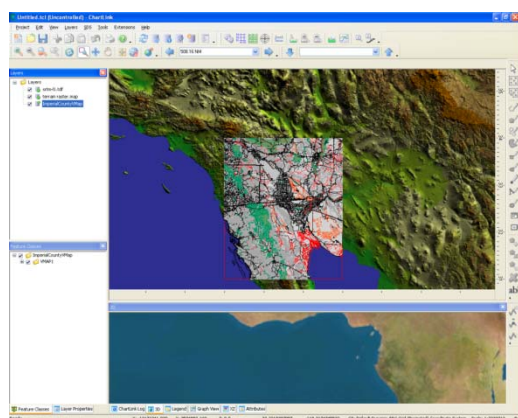
The production and development of Unmanned Autonomous Vehicles (UAV), or more accurately Unmanned Aerial Systems (UAS), in the defence domain has increased significantly since the beginning of the conflicts in Afghanistan, Kosovo and Iraq.

Whilst the number of UAS developments is increasing they are still a scarce asset and maximising the effectiveness and efficiency of UAS operations is critical from planning to review. Failure at any of these stages means overall failure.

Envitia currently has involvement in UAS development in the US, UK, Israel, Spain and Italy.

Mission Planning

Typically there is a large quantity of static data available of varying relevance and quality. MapLink provides the tools for access and storage of this information, including results from previous missions, and supports the rapid retrieval of relevant data with known quality through the use of open standards metadata structures (ISO 19115\ ISO 19139).



Envitia MapLink allows the planner to discover and evaluate the data through spatial, visual and textual queries to

identify the information that is most appropriate to the type of mission being planned.

MapLink is currently used within the UK MoD for the management, visualisation, dissemination and exploitation of geospatial information.

The MapLink Toolkit also allows for the manual creation or dynamic ingest of additional data to indicate threat, exclusion areas, environmental and meteorological information that are relevant to the mission.

Once all the relevant information has been discovered the mission needs to be analysed with respect to a number of factors to define the most efficient and effective plan. These factors include:

- Terrain
- Communications
- Sensor behaviour
- Sensor coverage
- Threats
- Exclusion Areas
- Environment
- Meteorological
- Recovery paths
- Fuel profiles

How each of these factors is weighted depends on the mission in question but they need to be taken into account at some level. The MapLink suite provides significant functionality to support the analysis stage.

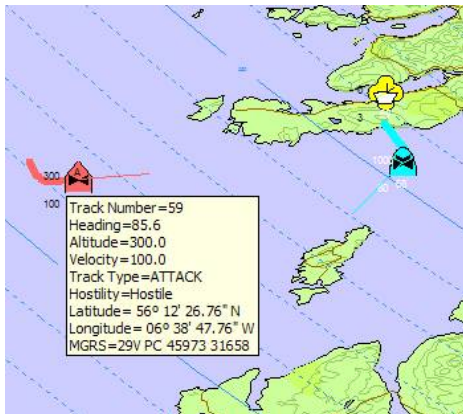
Geometrical analysis capabilities enable the calculation of any incursions into threat or exclusion areas including taking into account the vertical axis.

The Terrain model can be used to provide simple measurements such as terrain clearance/impact over the flight path as well as more complicated measures such as communications, line of sight and sensor coverage.

MapLink allows these specific behaviour models of various sensor types to be developed in an unconstrained, flexible manner making use of the rich functional set available.

Mission Execution

A significant number of UAVs have the capability for autonomous operation as well as manual control. In all cases, however, Ground Control Station (GCS) systems need to be incorporated within the mission for vehicle monitoring, data acquisition, and, for non-autonomous vehicles, manual control.



MapLink can assist with this task by providing the capabilities to manage the environmental picture (generated at the planning stage), dynamically updated information such as meteorological data and real time monitoring of the mission vehicle and other platforms in the area. Information can be displayed in the appropriate tactical symbology such as App6A or 2525B

As well as monitoring and controlling the UAV, the Ground Control Station can

also be involved in the monitoring and collection of the data acquired by the UAV. Imagery, video and other geographic based information can be overlaid onto the map control display.

In most UAS operations, and all reconnaissance missions, the management of the acquired data is key to the success of the overall mission; 12 hours of full motion video is not an intelligence product.

Immediate review of the data is clearly important, particularly in time critical situations and MapLink can supply support for the review process of such information by providing visualisation of the acquired data.

Equally important is the management of the acquired data in a form that can make new intelligence products, update existing intelligence and make these available at future dates by other departments.

The MapLink Automatic Data Importer removes much of the data processing and cataloguing overhead by automatically scanning and processing. It manages update and ingests procedures for many standard geospatial product formats and can be extended to support specialised formats.

MapLink completes the cycle by making the newly created or updated information available for discovery, integration, visualisation, analysis and exploitation.

The MapLink product suite provides extensive capabilities to support the UAS domain with a proven track record. It is currently being used in a number of prestigious projects including Thales, Watchkeeper; BAe Systems, Herti and Taranis ; Selex, Falco.