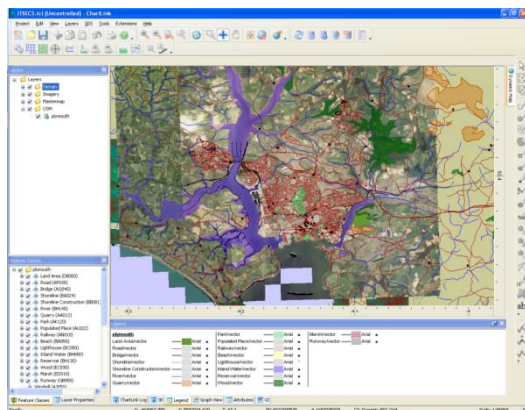


Geospatial Intelligence in Mission Planning

As the availability of accurate and timely geospatial data continues to increase through improved source material via satellite, UAV reconnaissance and high performance computer systems, so too is the need for military command to fully exploit it at the planning stage of missions. Failure to provide a comprehensive understanding of the environment in which a mission is to take place, is nowadays not an option.

Yet sometimes the sheer quality of information available can itself be an obstacle to the efficient mission planning as vast disorganised information repositories seem to get in their own way, making the discovery and retrieval of the required information a lengthy task.



Once the relevant geospatial information has been gathered, it has still to be converted into visualised data layers which can then be manipulated as necessary for integration and analysis to derive the best understanding of the particular situation. When this has been achieved mission planners can utilise the intelligence in ways most appropriate for those forces charged with executing the mission.

Mission Planning

In this scenario an attacking force needs to execute a beach landing in order to

destroy a fuel depot supplying a nearby naval dockyard.

Discovery

Stage one in the process is to discover what data is available that can contribute to the mission. MapLink allows the data owners to construct the storage architecture in the manner most appropriate to their domain, i.e. land, air and sea specific data, or by data types such as imagery, terrain, bathymetry, raster, vector etc.

The Envitia MapLink toolkit provides support for open standards metadata structures (ISO 19115\ISO 19139) to store and retrieve information on revision, extent, currency, scale, etc.. This enables the planner to determine the provenance and relevance of each item of data to the mission.

The availability of metadata provides significant additional value to the raw source data. MapLink makes use of the metadata by providing powerful query capabilities based on the Open Geospatial Consortium (OGC) Filter Encoding standards, such as “find all unclassified data with a scale of less than 1:250,000 which overlaps with the area of interest”. MapLink will return all such data items within a few seconds.

Multiple queries can be built up to discover all relevant data and store it in persistent mission workspaces for rapid retrieval and modification as new information becomes available.

Integration

Having discovered the appropriate data the planner needs to integrate and visualise the information.

Envitia MapLink provides facilities to query, recover and visualise the data in a

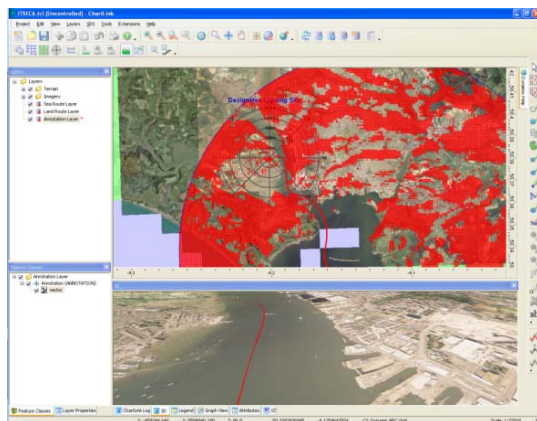
layered form. Layers may be de-cluttered, re-ordered, shown or hidden interactively to present the best possible representation.

MapLink has powerful direct import facilities for the majority of standard military data formats (CADRG, ASRP, DAFIF, DTEDx etc.), which allows the planner to react immediately to the availability of relevant new data.

Analysis

Often more detailed information is required to support the mission and the data can act in symbiosis to supply the derived information.

In the case of the beach landing using different data types in combination such as imagery and terrain can throw up vital clues as to the most suitable landing spot.



MapLink allows the planners to develop their own specialist analysis capabilities without imposing restrictions on how this is done. Data analysis need not be restricted to just static information. Tidal behaviour could have a significant impact on the forces crossing the beach, so inclusion of a temporal based tidal model can help to identify the time period where tidal behaviour will assist rather than restrict the mission.

Having selected the beach landing site potential attack routes need to be generated. These need to take in

account both raw and derived geospatial information such as communications line-of-sight and enemy radar coverage. MapLink can assist with the use of annotation layers.

Finally, the mission information needs to be disseminated in the appropriate form. Envitia MapLink provides a number of facilities for export.

The mission planning data can be exported in static formats to contribute to the missing briefing notes, as well as in a MapLink derived "pack 'n' go" format which allows the information to be interactively reviewed using MapLink viewers.

It can be exported in its raw format or in a number of standard data formats such as CADRG, JPEG2000, GML, KML, etc. that can be ingested into other systems. The exported data can also be used with MapLink or third party applications, such as Google Earth, to produce mission rehearsal applications to pre-view the mission and elicit additional input.

Envitia MapLink has been contributing to Mission Planning systems for more than 10 years and has deployments in a number of critical areas such as UAV Mission Planning and Helicopter Mission Planning Systems.

MapLink allows system developers and integrators to provide added value to their systems directly off the shelf without imposing restrictions on the development framework or methodology. Developers can extend the capabilities by building on the foundations supplied by MapLink.