What is Customization?

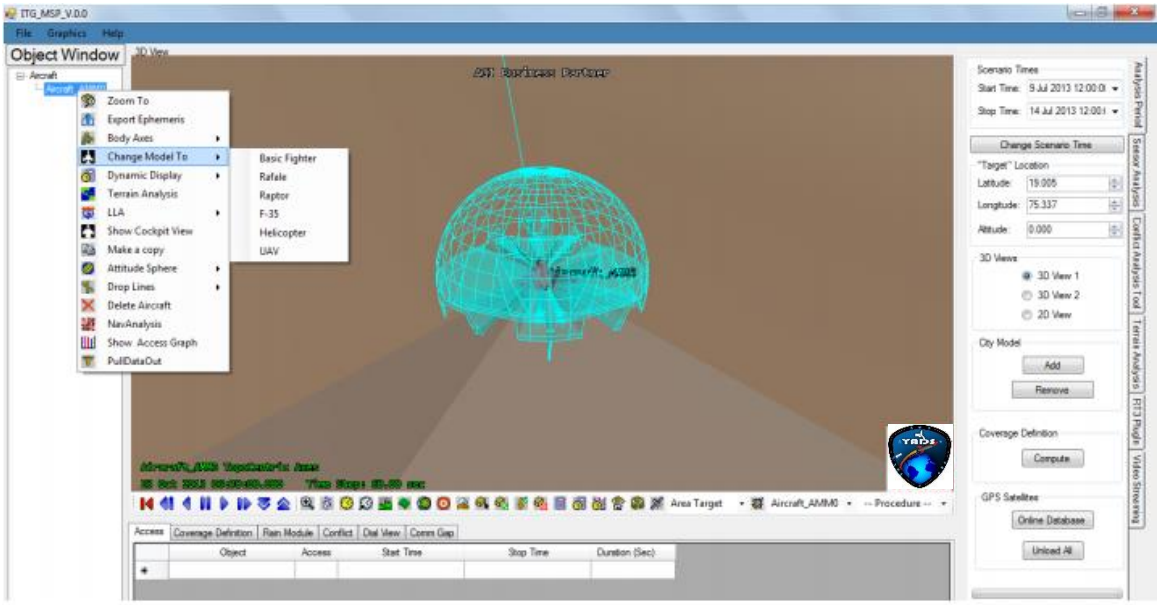
Customizing a software is to designing software application which will solely fulfil specific user requirements.

Customization with STK is to build and deploy custom software applications that embed test bed's geodynamic analysis and visualization engine. Few examples of such custom application are mentioned below:

1. Mission Planner Application (ITG_MSP_V.0.0)

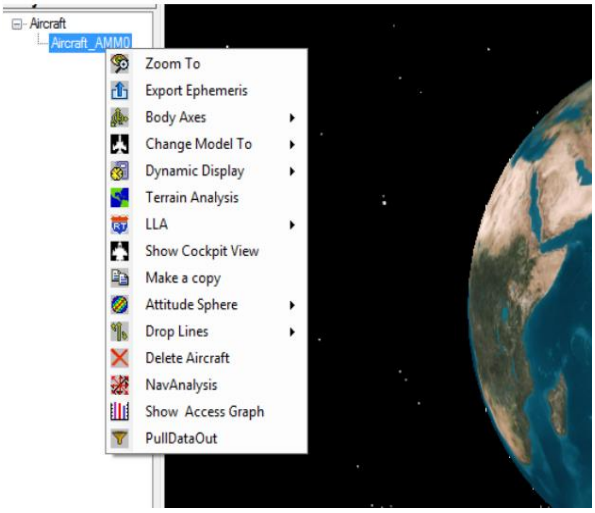
ITG_MSP_V0.0 is an advanced planning and scheduling application that provides automated route planning and sensor tasking for aircrafts. The Application allows operators, designers and engineers to model their aircraft systems and perform operational scheduling and analysis - right out of the box.

This application interfaces with the STK and displays the colourful output on the window i.e., the 3D-globe, and 2D- globe, which is present in the application. Here we can use either UDP or TCP/IP broadcasting to receive the real-time data.



Aircraft Modelling:

An aircraft using aviator may be defined by the type of aircraft and by the mission it performs. This structure allows you to utilize an aircraft for much more than simple linear travel. You can select the aircraft from a number of pre-defined and user-defined aircraft types. Each aircraft type can be customized by changing the built-in performance model settings of the aircraft, the 3D model used to represent the aircraft, and by adding, changing, and removing custom performance models.

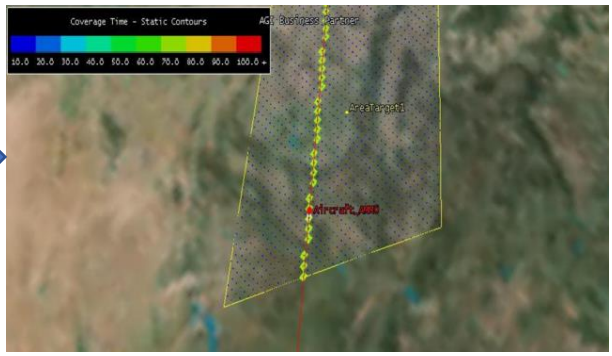


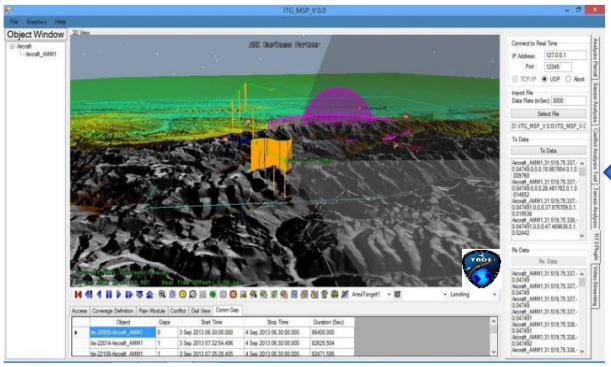
Customization with STK

Analysis & Results:

Coverage Computation

Coverage allows you to analyse the global or regional coverage provided by one or more assets while considering all access constraints. Specific results are generated based on detailed access computations performed to grid points within an area of coverage.



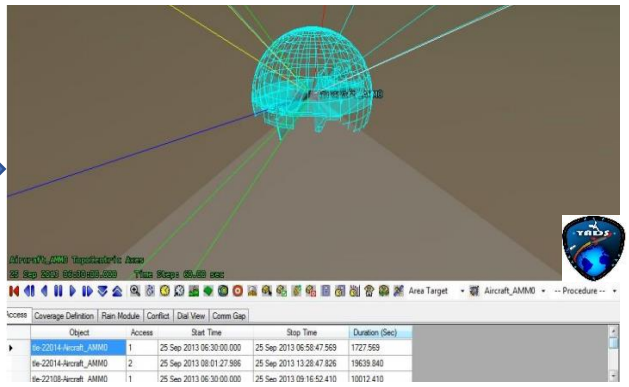


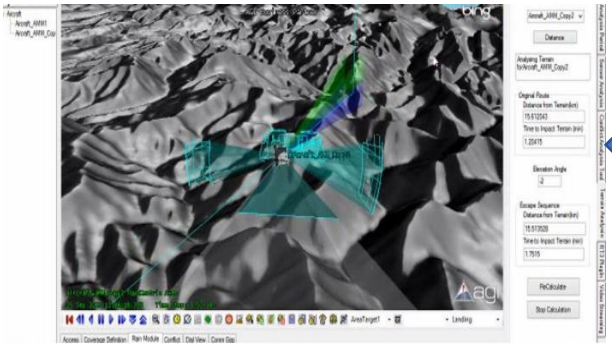
RT3 Plug-in

Real-Time Tracking Technology (RT3) integrates live or simulated data feeds with AGI products and custom or third-party applications. RT3 makes it possible to quickly implement data displays, effectively interpret and monitor data.

Access Computation

Access or Line of Sight (LOS) between any two objects in the built scenario can be analysed. The results can be viewed in the form of graphs and reports.





Terrain Analysis

It computes the distance and time to impact with the terrain and the angle with which the aircraft should pitch up and pitch down accordingly.

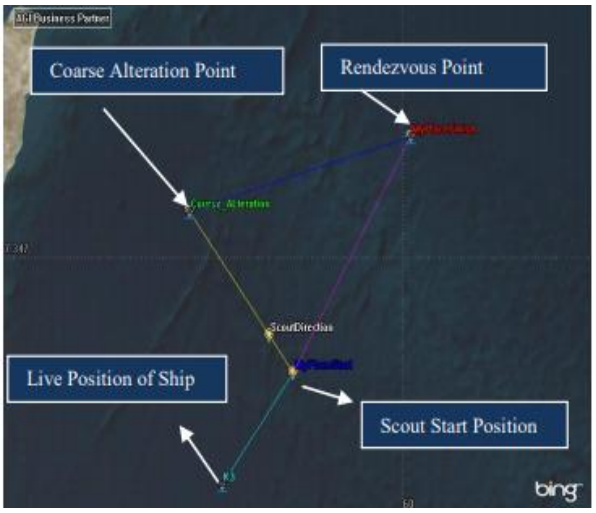
2. Combat Management System

Naval Combat Management Systems contains many modules such as Network Centric warfare module, Communications Module, Navigational Module, Sensor Grids, weapons grid, Engagement Grid etc. One of the important problems of naval combat management systems as widely recognized is the Navigation Module where in the ships which are in formation have to conduct strategic manoeuvres to scout, identify and track pirate/Unidentified ships in the sea/ocean. With defence industry moving towards reusing core libraries which are generic in functionality, the trend is to use commercially off the shelf (COTS) solution as a base level computational module.

Two problems pertaining to Naval Combat Management Systems are addressed

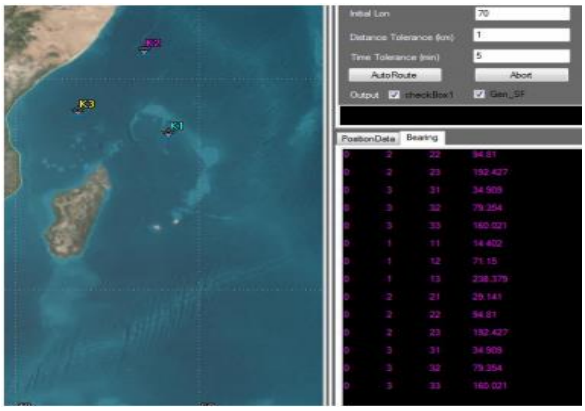
1. **General Scouting**

   General Scouting is a problem of finding optimal solution for scouting wherein the scouting ships has to maximize its search time while maintaining the time of rendezvous with its fleet. This problem is solved by solving the scalene triangle. With two sides, sum of the sides, and an angle known, the other side is calculated using the scalene triangle equation. The curvature of the earth is considered while measuring the distance. The maximum resolution assumed here is 0.5 nm. We have Live Position of Scouting Ship, Scout Start position, Rendezvous Point of the fleet and the coarse alteration point.



2. **Tracking Using Bearing Angles**

   With the advent of passive receivers, the fleets are at the receiving end of multiple bearings originating from many unregistered ships in the sea. These ships could be Pirate ships or smuggling ships with anti-national objectives. It is important for the fleets to know the exact location of these ships since these ships do not register themselves with the naval organization governing the national sea borders. To track such ships just with the bearing received in real-time is a complicated task. “Bearing" is a term used in navigation, although it can also be used to refer to simply our direction of motion or Line of Sight.



Bearings can be measured in mils or degrees. In navigational terms, "bearing" is perhaps more usually the angle between our forward direction, and the direction from us to another object.