



What is Automation?

In a layman language, automation is creation and application of technologies to produce and deliver goods and services with minimal human intervention. Automation within a software to be able to have control over the capabilities and replace repeatable process to reduce manual intervention.

Automation with STK involves development of new application using the software capabilities which would provide solutions with few buttons clicks further making it accurate and user friendly at the same time. Few of such examples are listed below:

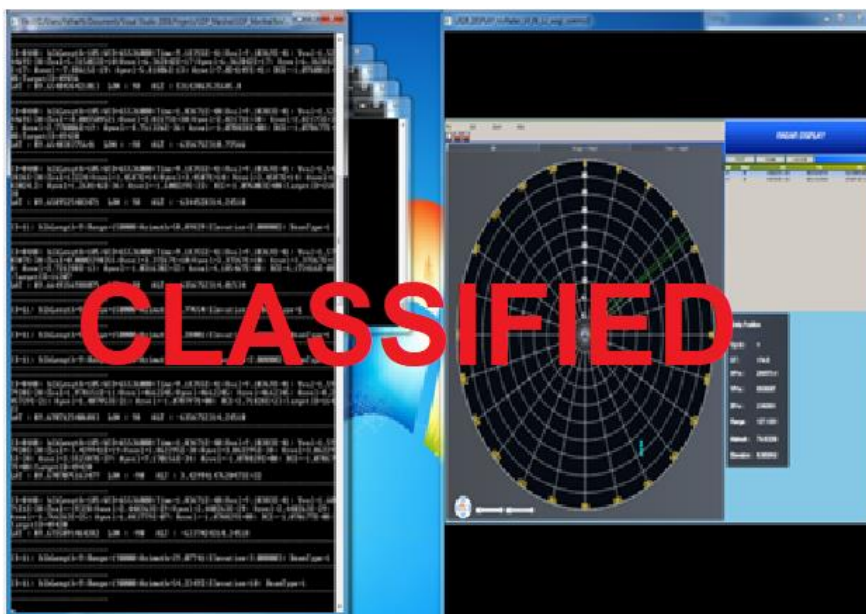
1. Real – Time RADAR Adapter Interface

If there are two systems. System1=sys1_sim; System2= sys2_radcomp

System 1: Simulates the motion of the target by taking in an input file. Let us call it motn_pnts. Motn_pnts is a text file with continuous stream of points which the target will trace with time. This file will generate the path in the simulator installed on system1. System1 also has a radar simulator. This radar simulator only simulates the action and reaction of the radar. Hence it simulates only the detection, scanning and other features of the radar beams, Azimuth, elevation and range of the radar.

The ephemeris file of the trajectory, namely, Motn_pnts are fed into the simulator. This text file is processed for target simulation. Simulator contains Radar beam patterns (graphics), (Azimuth, Elevation, range) information.

System 2: simulates the Radar processing and they call it the radar computer. They say it computes the information which actual radar computes. It sends the information back to the system 1. What it computes is the sine space of the beam, the azimuth range of oscillations of the beam. They kind of create a probabilistic area where they suspect the target could be and sweep around that area to track it. I don't know how they calculate it. Perhaps the ephemeris data of the target being fed from Simulator_sys1 could aid in projection of the path. The information from sys2_radcomp combined with sys1_sim is simulated in a 2d window.

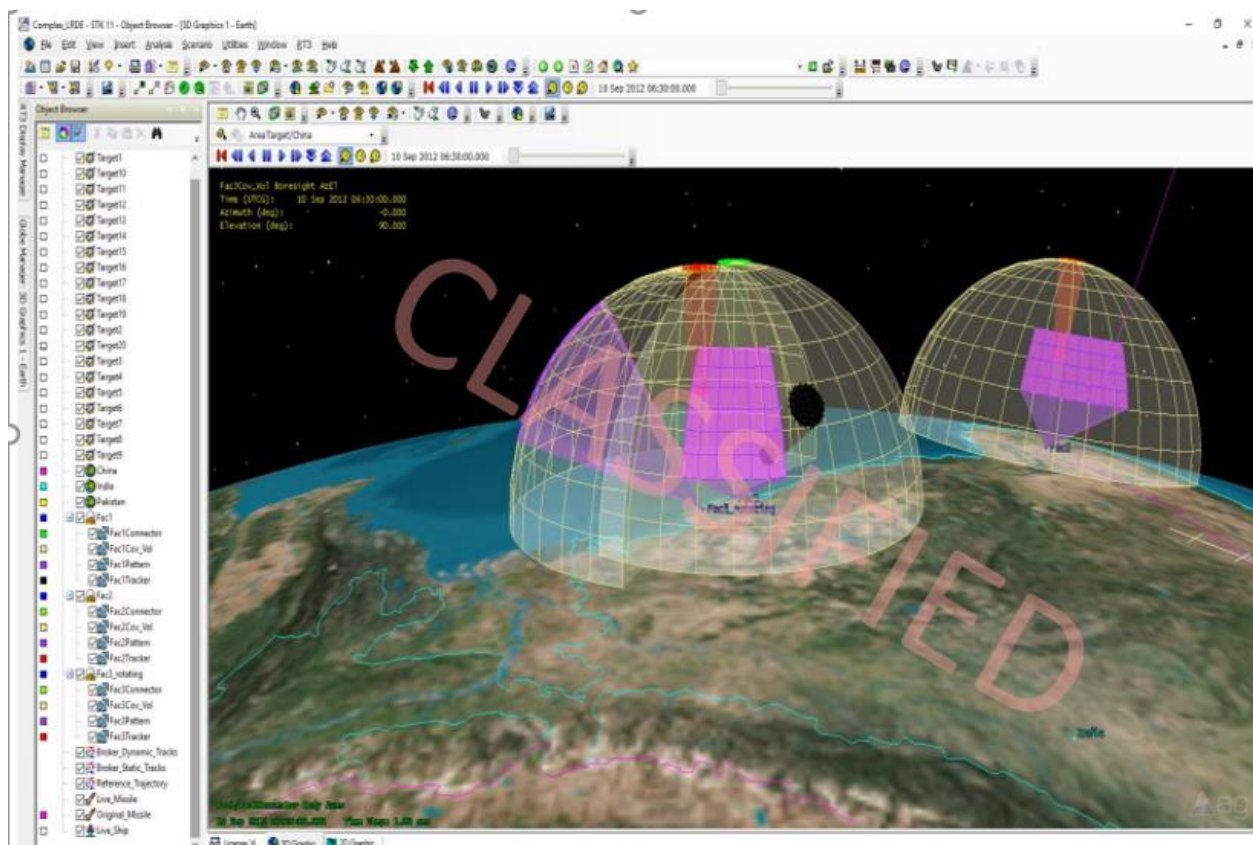


LRDE – RADAR Simulator/Emulator was built along with core Engine or Adapter which can talk to RADAR Simulator.



2. Design Custom GUI for RADAR sim-STK

Real-time display of the motion of vehicles in air, sea and land for complete understanding of the parameters that affect communication with those vehicles: What is required here is the analysis of radar's coverage when the antenna is on a moving vehicle. Since the antenna is in motion, we can need to simulate its motion appropriately so that they know where the vehicle is, with the terrain information, Height above the sea level, change in the direction of the vehicle while manoeuvring and the related access-delay caused by the motion.



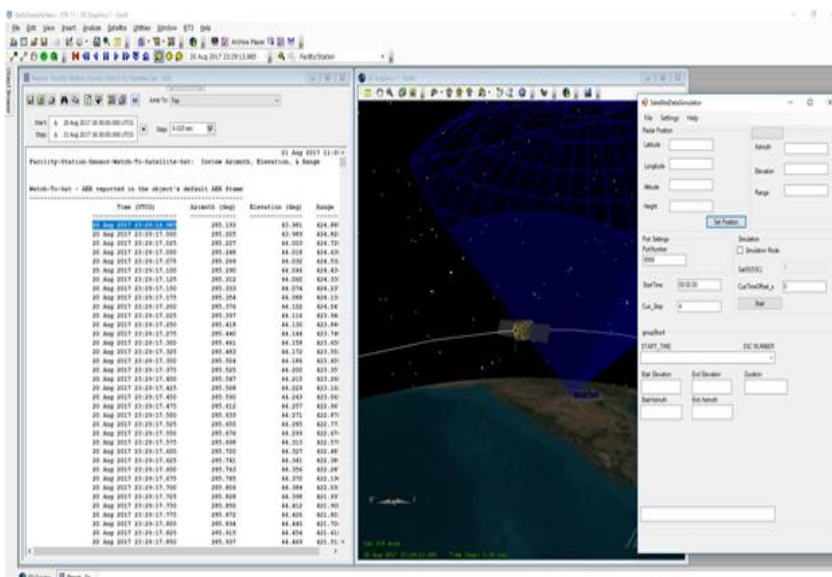
The STK Automation Object Model is a COM Library containing types, interfaces, events, and classes representing various aspects of the STK application structure.

The sensor orientation-properties which are Altitude, Azimuth and Elevation are given initially by the client. Model a satellite which according to their specification. Ephemeris file was created for the motion of both satellite and the radar. Read the file with a plugin which will check for matching co-ordinates.



3. Satellite Scheduler

Considering there are three RADARS which has its own coverage which can be defined by its altitude, azimuth and range. A system which could tell RADARS to look into a particular direction to track any particular satellites was developed



SatelliteDataSimulator: is Customized GUI that was best suited to does the job. The core engine inside it has ability to store Data and bind events for next 24-Hours which is must needed requirement for Satellite Scheduler. Now, is the time to queue Data in forms of packets and transmit across the network.