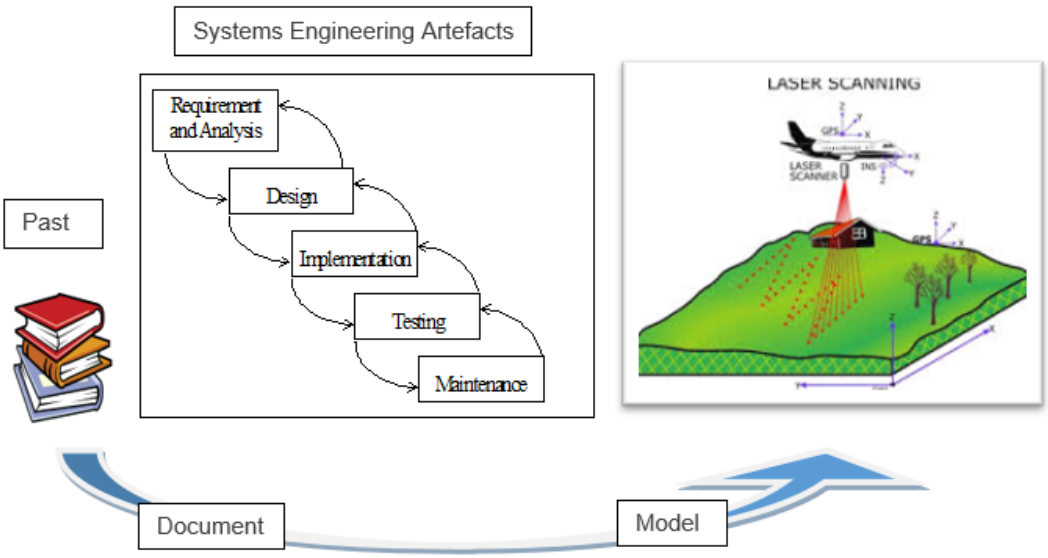
LASER WEAPON MODULE as STK Plug-in

This paper demonstrates the MBSE approach which plays a crucial role in the Software Development Life Cycle (SDLC) towards early verification and validation of the design resulting in reduced ambiguity and delays due to design iterations along with back-to-back testing. The benefits accrued with this approach are: reduction in software development time, effort taken and cost.

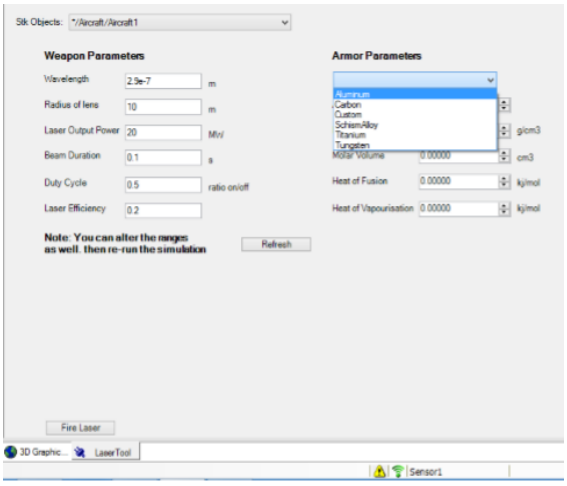


MBSE Transition to LASER Modules

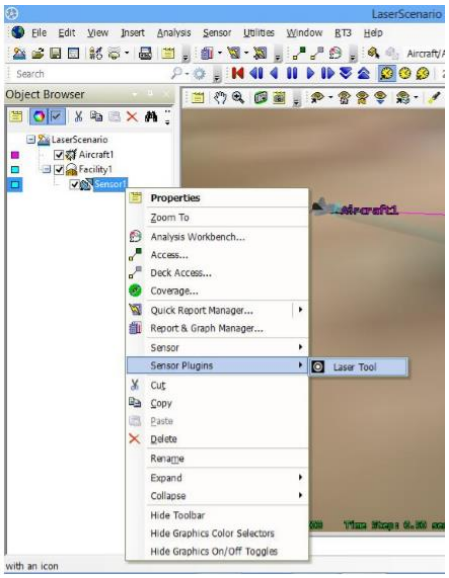
Model Based System Engineering (MBSE) is a paradigm shift in the software development methodology from traditional document-based specifications, design and manual coding with more towards the executable specifications in the form of models from which HIL and test cases can be generated in single development environment.

What it does?

- Models and visualizes the effect of various types of lasers on user selected armor samples
- STK Add-on Plugin with a flexible, fully documented API, Built indigenously
- User friendly GUI
- Default armor parameters for common armor material
- Export results into different formats



Parameters involved



Input parameters:	Output parameters:
1. Aperture Diameter	1. Divergence
2. Second Diameter	2. Range
3. Focal Length	3. Spot Size
4. Wavelength	4. Spot Area
5. M Square	5. Depth of Field (DOF)
6. Beam Power	6. Power density

Functional Requirements:

System must capable of modelling various types Laser sensors. These laser sensors will be mounted as payloads on stationary/non-stationary assets such as Tanks, Ground Vehicles, Facility, Aircraft, etc. Having Primary objects (Tanks, Aircraft, etc.) as Geo-located, once lasers are modelled then will be fire to target objects. List of systems functional requirement are as follows:

1. Inputs that initiate the systems function:

   System should provide easy monitoring interface, 2D-3D display, system must have capability of modelling, visualization and analysis. Depending on various types lasers inputs e.g. for LRF – Aperture diameter, wavelength and Beam power desired output must be obtained as tabular or excel or ASCII format. System must be capable of loading Terrain, Atmospheric constraints, different geodetic targets points for stationary/non-stationary objects such as tanks, ground vehicles, aircrafts, etc. system must cater various scenario generation for user defined trade/optimization study.

2. System Interactions:

   System should provide an easy GUI/API way to feed user defined input parameters. System must capable of performing and producing results in no time. System output parameters must be displayed in form of reports, graphs, excel, etc. and must be flexible to save at user defined location. Output parameter data should be time dynamic and can be seen on display.

3. Expected outputs generated by system:

   System output should provide 2D-3D display. System must capable of performing in real-time environment mode. System should have liability to load previously modelled data or scenario. There should be flexibility of replay, model new lasers, add and reduce targets. Analysis of various types of lasers parameters e.g. For LRF- divergence, spot-size, Beam-density with atmospheric attenuation can be obtain in form of tabular reports, graphs, excel formats.