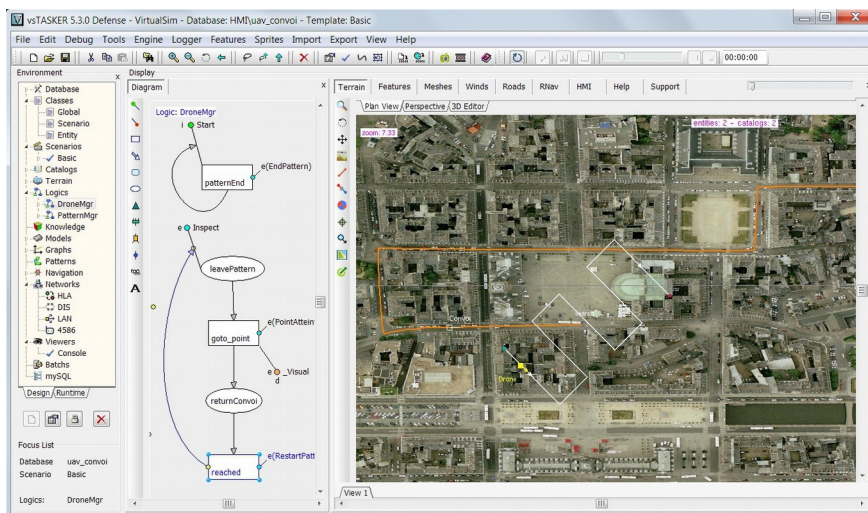


# vsTASKER 6

## REAL-TIME SIMULATION TOOLKIT

### A COMPLETE MULTI-PURPOSE SOFTWARE TO SPEED UP YOUR SIMULATION PROJECT, FROM DESIGN TIME TO DEPLOYMENT

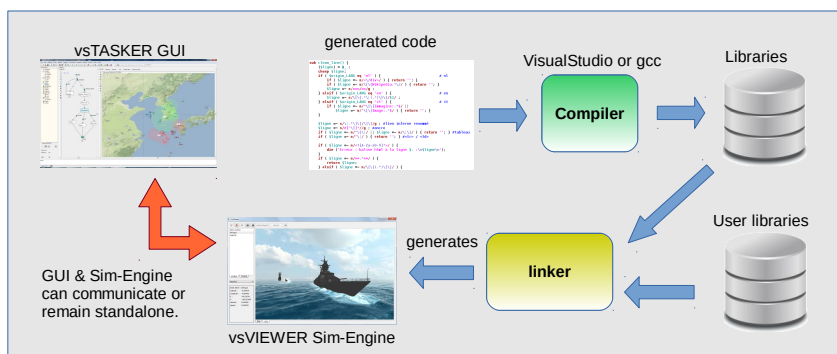


vsTASKER is a development environment for real-time simulation. It allows design, study, animation and visualization of complex logic and models with unmatched simplicity.

Based on a modular architecture, it tremendously helps simulation engineers to address from simple studies up to high-end systems.

### Code generation tool

As a workbench, vsTASKER allows you to gather user-code, libraries, components, DLL, third-party software, Matlab functions complex logic and all kind of materials into a unique and intuitive graphical user interface.



In this figure, we see the development cycle around vsTASKER, from the design phase in the GUI editor down to the Simulation Engine in vsVIEWER. Once defined, the cycle is automatically repeated on a mouse click.

### FEATURES

#### Diagram based

Draw your logic using sequential function charts and let the tool translates all graphical diagrams into high performance C++ code. Specific runtime mechanisms are automatically code generated and reduce drastically development time and errors.

#### Engineer friendly

You can directly pinpoint your code inside the simulation, removing the burden of working with numerous files and folders. You press a button and your code is part of the system. Moreover, you can follow all behaviors during runtime and interact with all components.

#### White Box

With a documented API and source code of all components and DLL, you can expand or customize the product to exactly fit your needs.

#### User Parameters

When building your logic and models, you can specify which variables are dynamics and vsTASKER will automatically generate the user-interface and update mechanisms. You can also define graphical curves for accurate input responses.

#### Free simulation engine

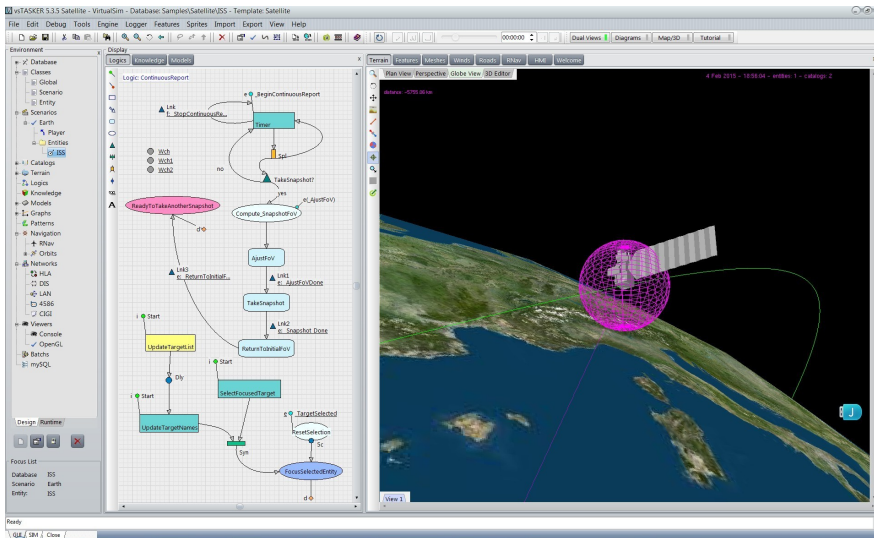
vsTASKER generates a free simulation engine ready for deployment. You do not need to pay for runtime license. Your team can address several projects with the same SDK for the same price.

#### Batch mechanism

The RTC has been designed for maximum performances. 30Hz simulation can be accelerated to maximum speed without loss of accuracy. You can run thousands of times a scenario and change values according to your laws to analyze results with built-in charts.

# vsTASKER 6

## Orbital Spacecraft

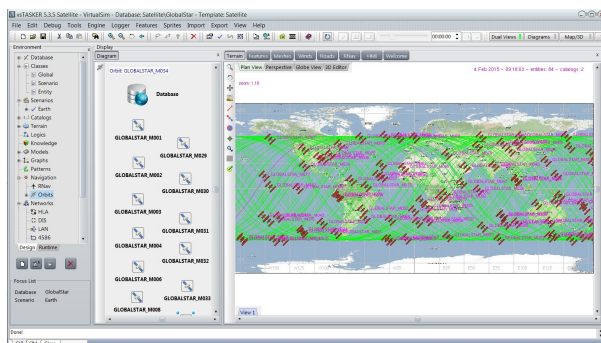


By embedding a powerful and accurate propagator based on TLE orbital data, vsTASKER can include spacecrafts into its ground, maritime and air tactical simulations. Defining or importing a satellite and simulating its dynamic is now point and click.

Using Julian date, real or simulated time can be used to track one or several satellites in any configuration (past, now or future). User can also search for specific situations to happen before starting a scenario (clear view of a satellite, conjunction of conditions, sensor footprint capabilities, etc.)

User will also be able to add their own satellites and orbits using Kepler laws and a J2 propagator. Satellite to Satellite or Site to Satellite functions and components are available for communication purposes out of the box. Solar information can also be used.

Combining speed vectors and efficient accesses to propagator functions, thousands of satellites can be simulated in real-time and fast time, without any loss of accuracy.



Loading public satellite databases from NORAD is point & click

## FEATURES

### Propagator

Includes SGP4/SDP4 models based on NORAD algorithms to implement accurate tracking for near-earth and deep-space objects.

### User defined Orbits

Kepler laws and J2 propagator will allow user to add its own satellites with the 6 orbital elements.

### Faster than real-time

The simulation engine kernel allows increasing the time advance mechanism without loss of accuracy.

### Globe Viewer

3D textured earth is provided, including source code for user customization in OpenGL.

### Sensing Capabilities

Predictions, acquisition time, ground tracks, footprints and visibility queries provide realistic information for tactical scenarios.

### Communications

Site to Satellite and Satellite to Satellite (including atmospheric and earth obscuration) provide clear view predictions for realistic communication feature.

### Solar Features

Compute satellite illumination, draw terminator line for day/night boundaries.

### CIGI

Mechanism to connect to any graphic engine supporting CIGI, using the built-in default messages. User can easily extend the list of supported messages.

### What-if

Ability to change the scenario at design and runtime.



# vsTASKER 6

## Open Wide Environment

With its open architecture, vsTASKER is not bound to a dedicated industry or domain. The time and money invested in the product are quickly made profitable. Moreover, as a code generator, vsTASKER easily adapts itself to new standards and requirements. See below amongst some of our main expertise

## Tactical Simulation

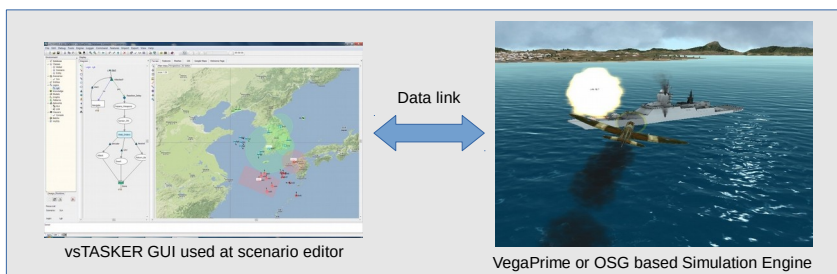


With vsTASKER mapping and behaviors capabilities, you can create missions by drag & dropping entities on the terrain, assigning tasks, plans, trajectories, fine tuning dynamic models, attaching weapons, connecting logic and behaviors, embedding your own components and designing complete scenarios from the ground up.

You can load standard federations or create your own from scratch and distribute your scenario using HLA. vsTASKER FOM editor will help you hugely adapting your data structures to RTI constraints.

Use of external stealth 3D is facilitated through built-in viewers. You can chose to automatically embed your simulation engine into an Image Generator of your choice, on a mouse click.

In a nutshell, vsTASKER offers out-of-the-box everything you need to do ground, airborne and maritime tactical simulation.



Here, vsTASKER is used to design the scenario and generate the simulation engine inside a 3D image generator. At runtime, the Sim-Engine updates the GUI and will accept any manual commands from the GUI operator.

## FEATURES

### vsVIEWER player

A Qt free application runs any simulation engine produced by vsTASKER. The free application, totally customizable, provides 2D map view, 3D OSG view and HMI panel with multiple views. Use vsVIEWER to build your own command staff trainer.

### GIS

Multi-layered terrain formats are available out-of-the-box (raster, tiled maps, vectors, elevation data, S57...) for scenario design.

### OpenScenGraph based

A 3D editor based on popular OSG is provided with source-code. This enables you to setup scenarios with high fidelity, check line-of-sight against walls or mountains or fine tune plans and special zone areas.

### HMI Builder

Most of simulations are user-panel related (radar or weapon system, maritime, ATC, UAS...) With vsTASKER, you can build your real-time HMI (OpenGL based) that will be part of the full system, alleviating the interface burden.

### ARINC 424

Air-Nav databases can be loaded and displayed. Flight-Planning can be defined. Your ATC simulation will be simplified.

### HLA

vsTASKER can generate HLA code for 1.3, 1516 or Evolved RTI. It dramatically simplifies the labor of publish/subscribe hand-coding. Load or create your own FOM and you are ready to go.

### UAS Enabled

Search-Pattern features associated with STANAG 4586 standard and HMI give you all your need to create a dedicated UAS system in a short time. Either for testing or training, vsTASKER will drastically reduce your development time.

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## Unmanned Vehicles



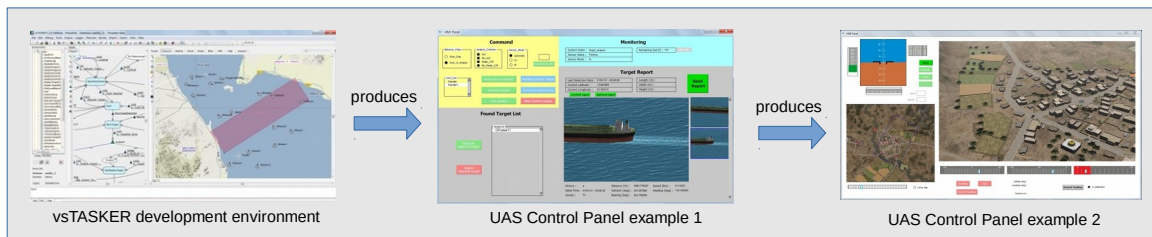
Simulation exercises including UAV suppose to have equipments all linked together using numerous protocols.

vsTASKER supports STANAG 4586 standard to help you testing or building your own UAS or trainer. The dedicated search-pattern feature will help you plan complex missions and exercises

Moreover, the HMI builder included into the SDK drastically reduces the time to develop your custom-made UAV control panel.

Whether it is to test new navigation systems or familiarize with the camera payload, vsTASKER unique development environment allows you to design your system graphically down to the source code.

Specify the behavior using logic and knowledge, import your Matlab/Simulink or any other dynamic flight model of the drone, load the terrain map, design your control panel graphically on the HMI editor, put some targets on the ground and run the simulation. Building UAS trainer has never been easier.



Use vsTASKER as a development environment and deploy the standalone simulation panel at no extra cost.

## Transport Simulation



Road networking and automatic route planner, harbor maneuver trainers, maritime training solutions or train simulators can be addressed with vsTASKER using its built-in flexible capabilities. You can create a cost effective desktop trainer with intelligent behaviors, replicated system logic, simulated high-fidelity navigation panels linked using standard interfaces and much more.

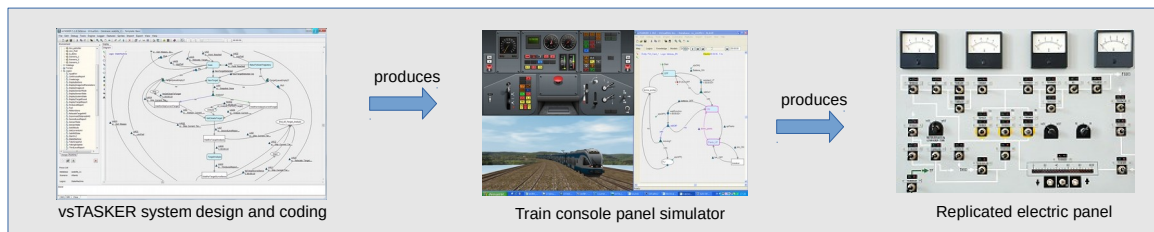


S57 Charts

Simulation engine will run highly detailed 3D scenes. Real-time scenario manager will allow trainees and instructors to cooperate in various exercises. Engineers can quickly monitor and debug any logical part of the system using the unique runtime features of vsTASKER (log, trace, variable watch, etc.)

# vsTASKER 6

No hurdle with the delivery, the generated simulation engine is free to use. You can develop your project in-house and deploy the solution without licensing restrictions.



*Design you console panel and system logic from vsTASKER and produce on a mouse click a license-free application.*

## Air-Traffic Systems



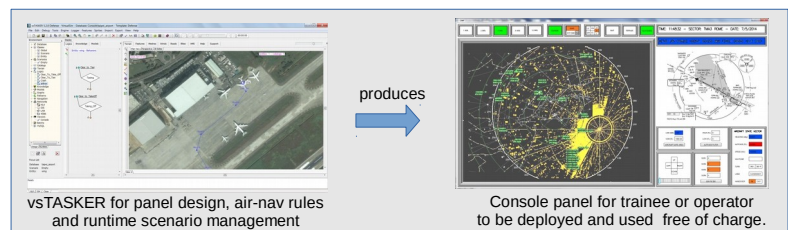
ARINC 424 database can be imported and displayed on raster or vectorized maps. Using logic and components, you can easily define flight-plans, air rules, constraints, separations and even your own airspace.

You can define and modify exercises, evaluate traffic, instruct simulated aircraft, inject real ADS-B data and customize the 2D view at its utmost to comply with standards.

With vsTASKER HMI builder, designing a functional ATC console is just point & click.

Connecting the visual widgets with the simulation is straightforward. Moreover, using vsRAD (another VirtualSim product), you can simulate radar scanning and appearance to replicate the real ATC equipment. Plugged into a high-end 3D engine, you can build your own tower control trainer at reduced cost.

With vsTASKER, you can test new routes or regulations, immerse a UAV into simulated traffic, prepare batch process for analysis or build a multi-user system with pilot in the loop, ATC controller, several control panels, all connected using HLA or any other protocol, from a single application.



*Example of ATC control system built with vsTASKER from the ground up.*

## Support to Customers

VirtualSim will assist you with online support and emails.

We do provide on-site training and consultation at affordable price.

Numerous customers in several countries have already used vsTASKER for their projects with success.

For more information on the product, the licensing, the price and the services we provide, visit our product web-site or contact our worldwide distributors.

