

EURO-MAG

BATTLESPACE SIMULATIONS

Don't settle for only part of the battlespace

MACE 2025 to MACE 2026

- Based on user feedback
- Major improvements in performance
- Upgrade to latest .NET
- All forms moved to common Avalonia UI elements

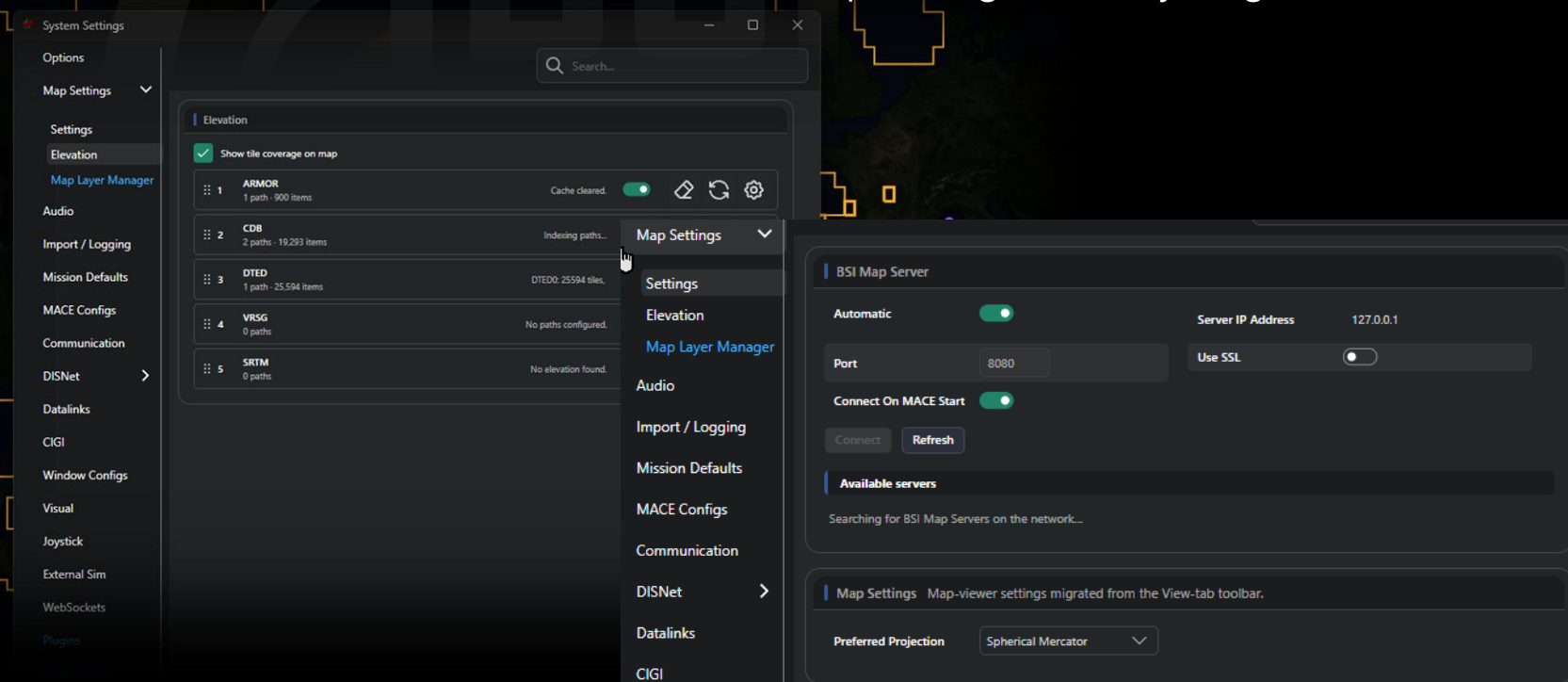
GIS Data Setup

2025

- System Settings>
 - Communication
 - Worldwide Map Server Connection
 - Worldwide Imagery Connect
 - Data Paths
 - Elevation
 - Imagery (of some type)
 - Maps (of some types)
- Connection Menu
 - Online Tiles
 - Imported Tiles
- Layer manager – Display or not

2026

- System Settings Map Settings –
 - Connect to BSI Worldwide Maps (Automatic)
 - Map Datum
 - Elevation Data – colon coded map coverage
- Map Manager – Everything Else – Next Slide



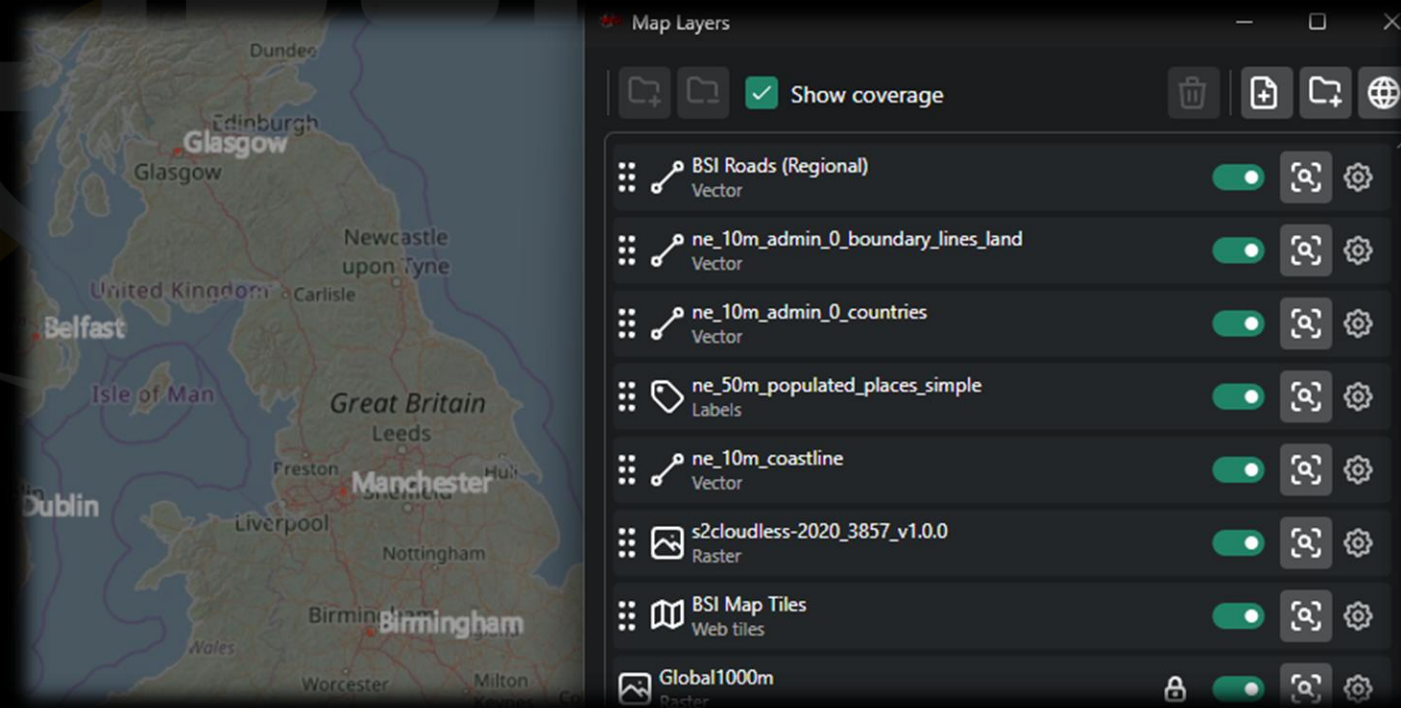
GIS – Map Manager

2025

- System Settings>
 - Communication
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2026

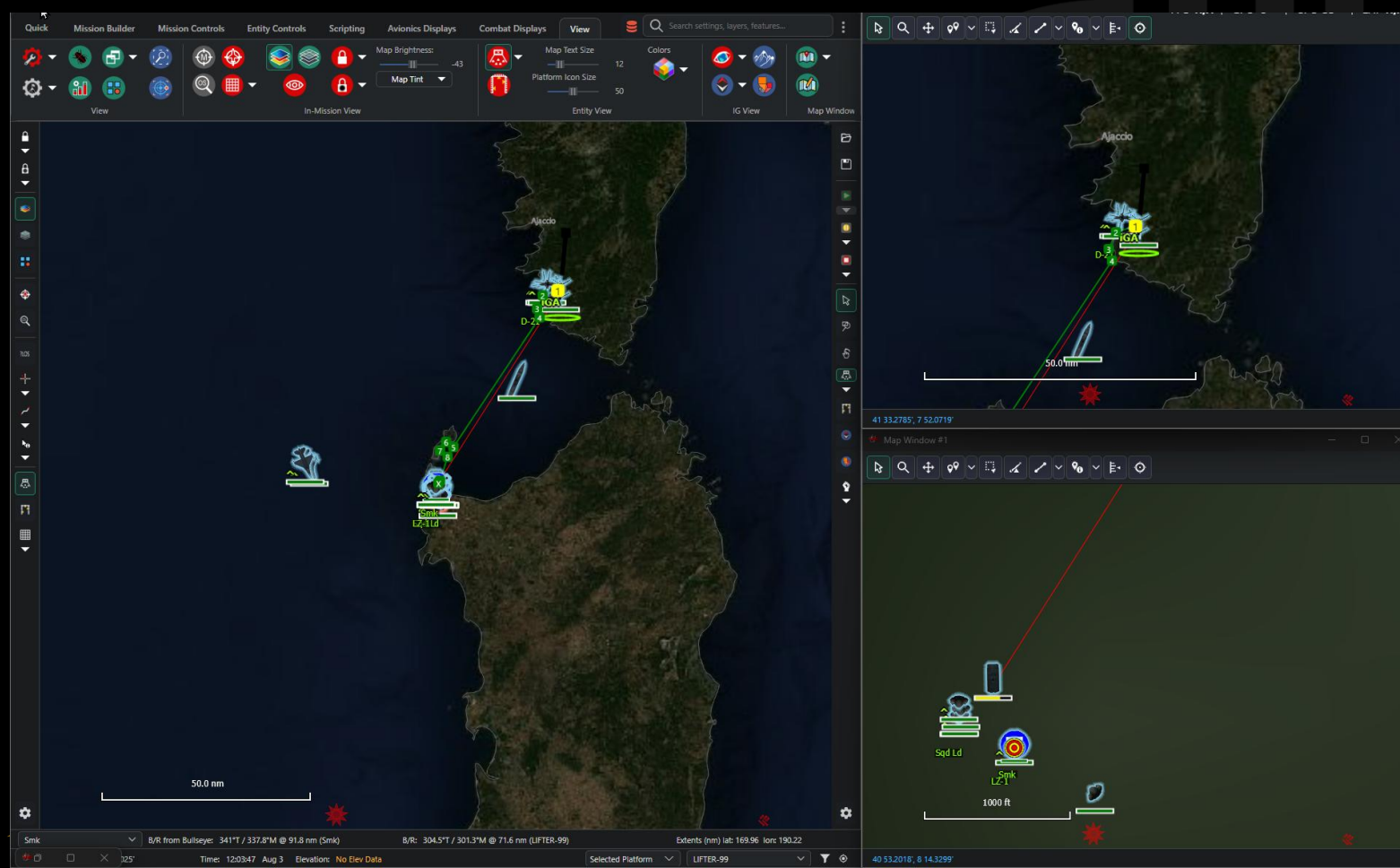
- All raster – maps – tiles – vectors – imagery
- Drag and Drop data into the manager
- Managed as movable layers
- Display or not – Auto display at scales



Multiple Map Windows

2025

- Just one map

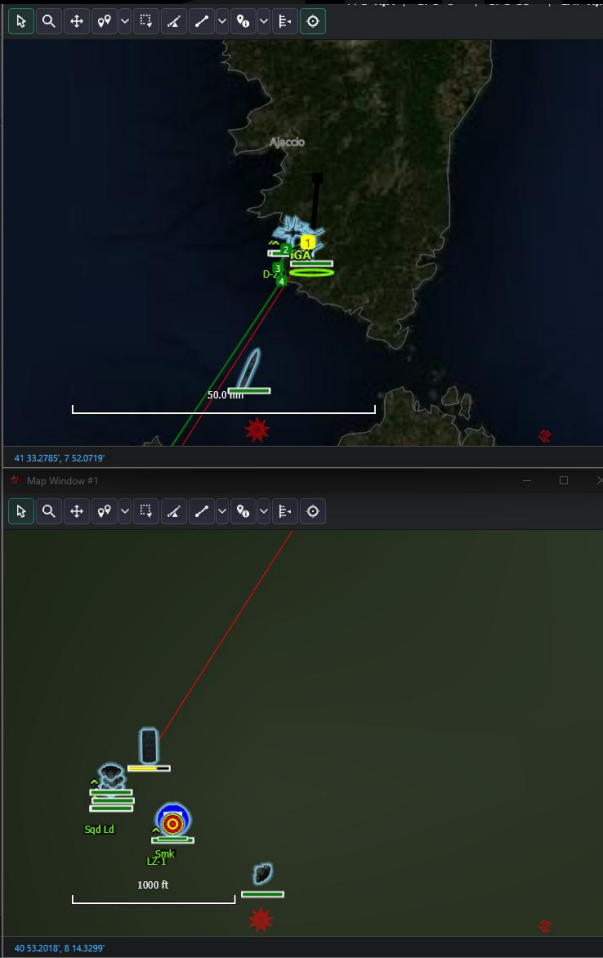


2026

- Up to 3 additional at different scales
- Independent platform follow (moving map)
- Independent grid display
- Independent mission toolbars (Next slide!)

Coming Later

- Independent Map type (e.g. Air chart on one, imagery on another)



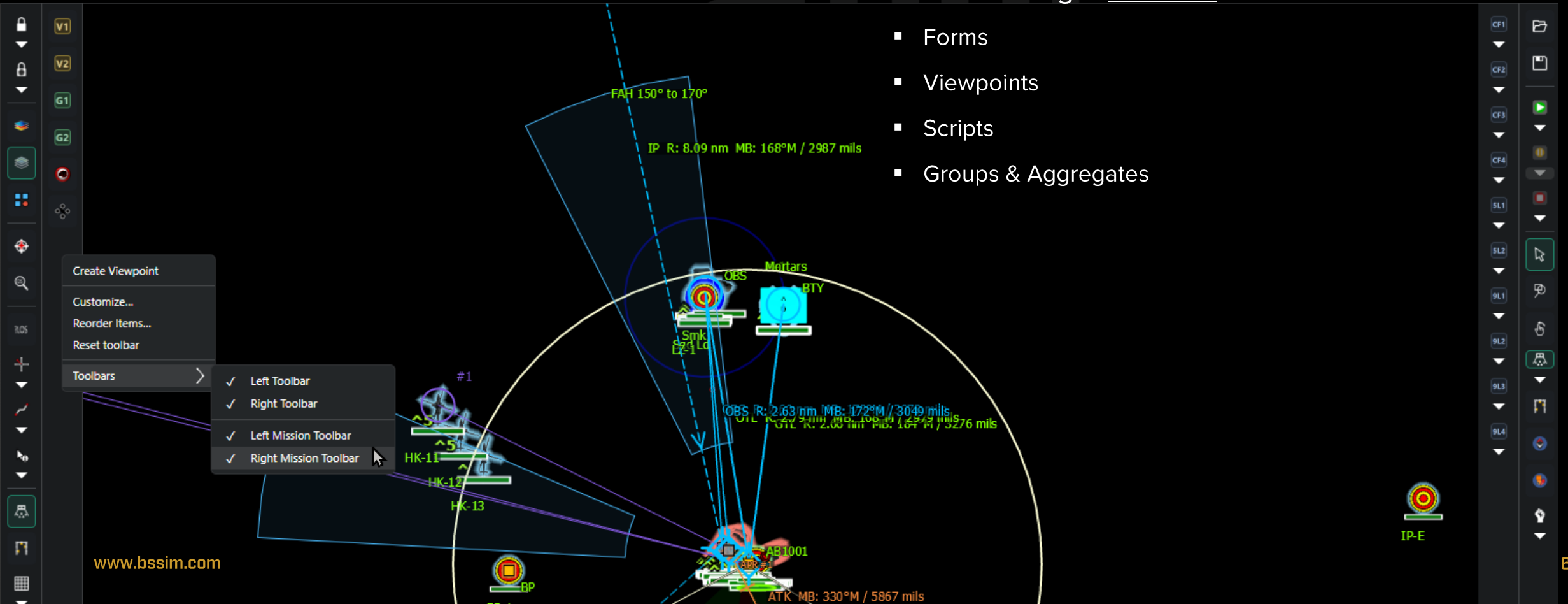
System and Mission Toolbars

2025

- Quick access toolbar only – buttons only

2026

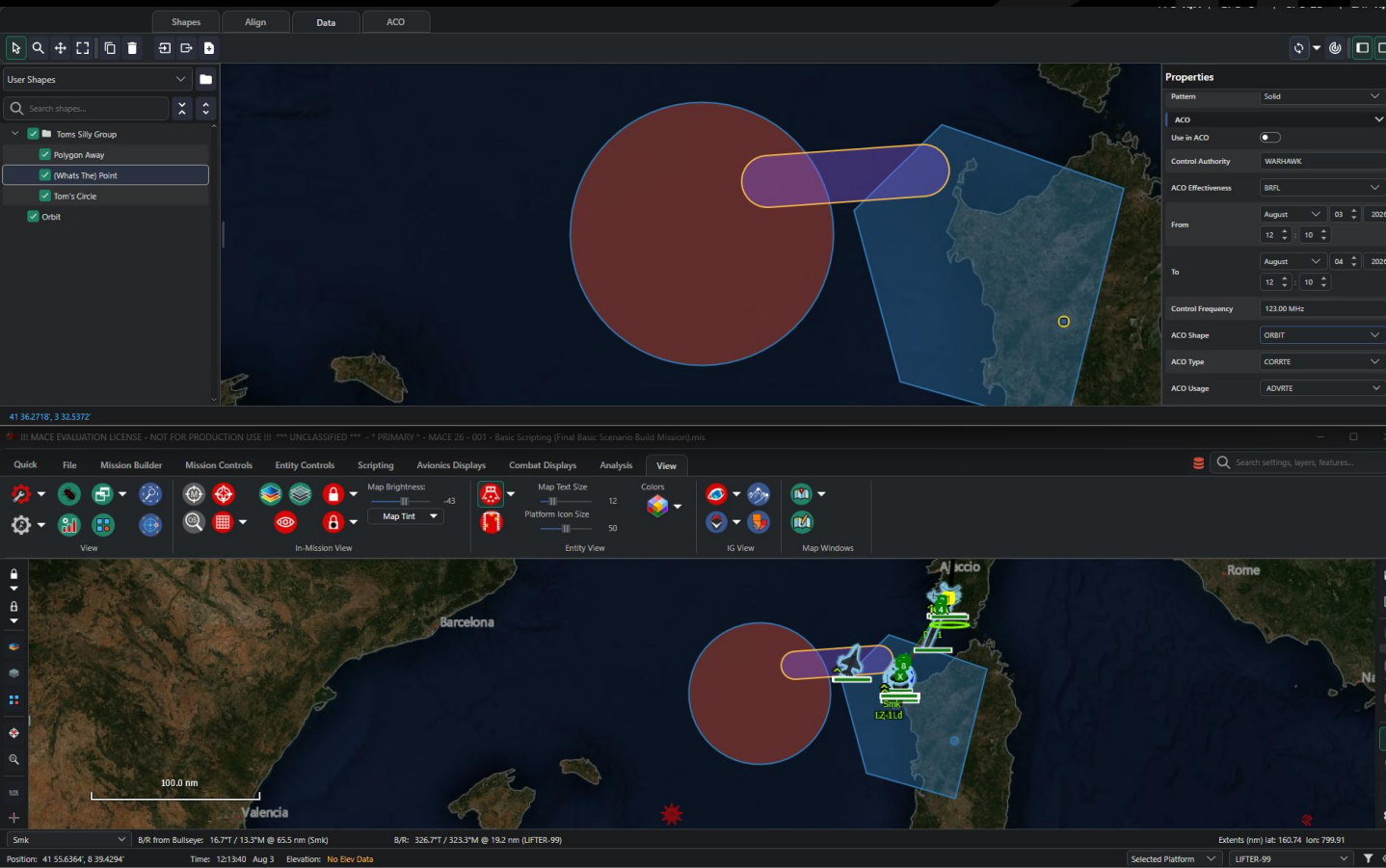
- Left and right system toolbars – for all missions
- Left and right mission toolbars – save with mission
- Forms
- Viewpoints
- Scripts
- Groups & Aggregates



Map/Shape Editor

2025

- Shape tool on main map
- ACO export from tool



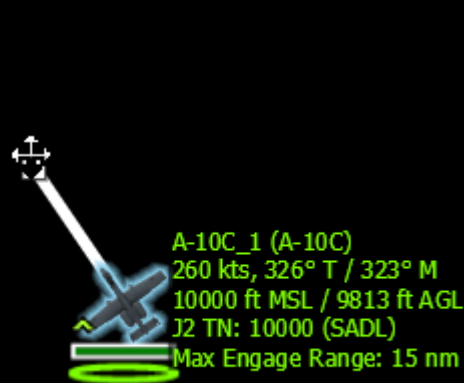
2026

- Separate window with Map – show entities or not
- All shapes consolidated and saveable with mission – including ACO
- Make groups and categories to organise
- Point edit and import from csv/text
- Copy shapes and groups
- Import/Export including ACO
- Live update in ARMOR

Platform Vector Controls

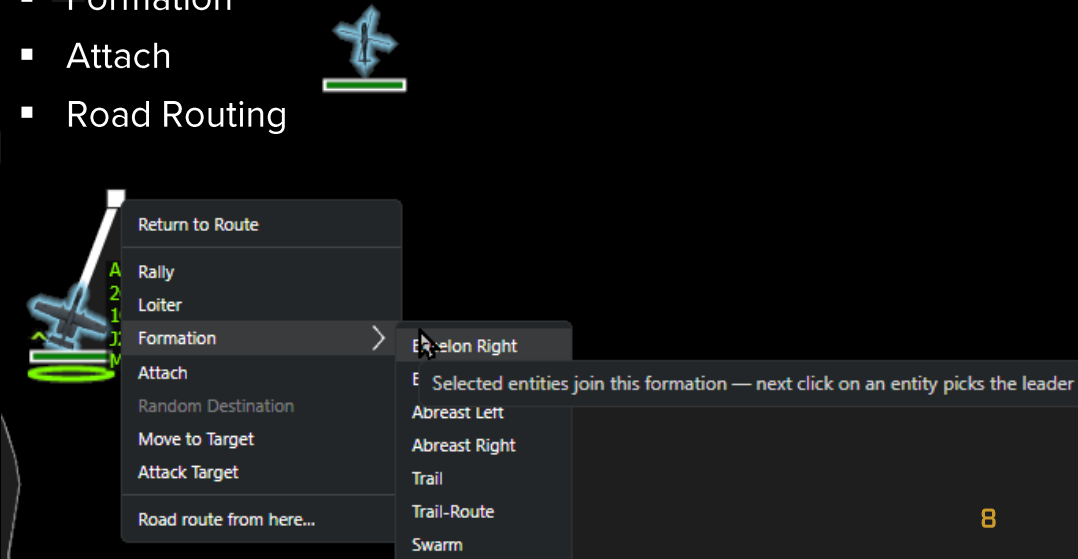
2025

- LMB Click on vector to start LMB to set vector direction
- RMB to Return to Route (intent)



2026

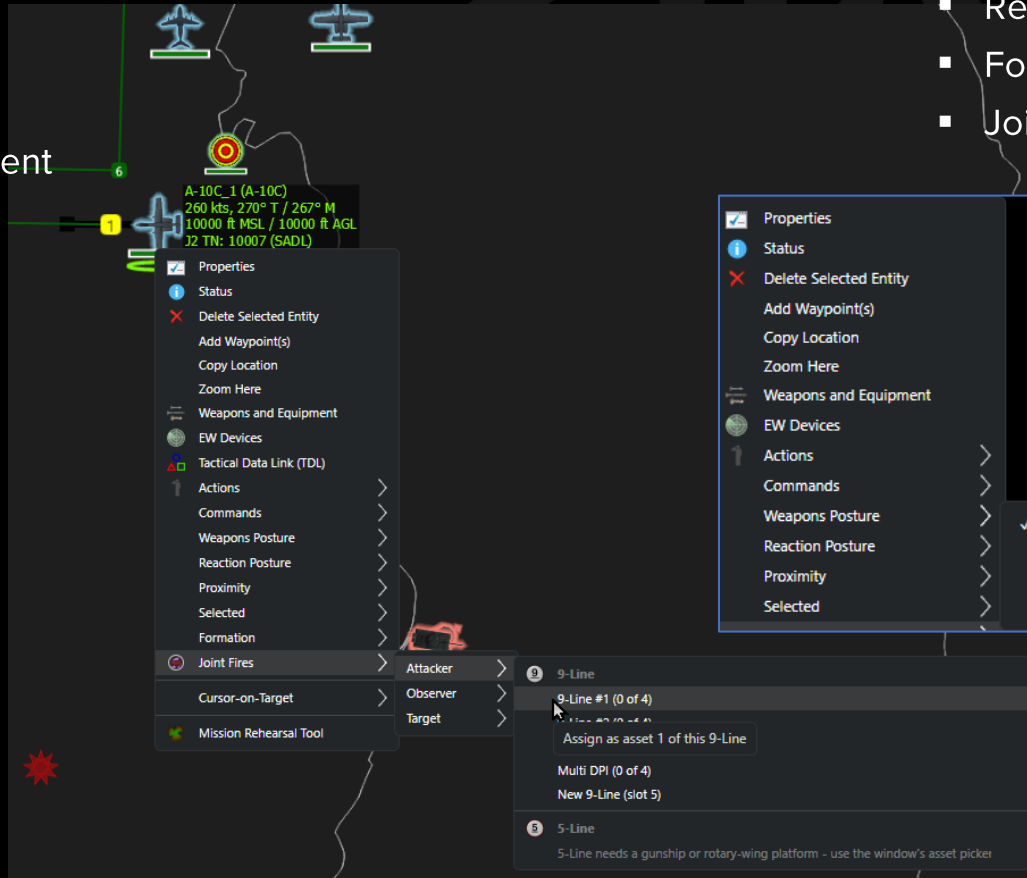
- CTRL LMB to move like platforms / waypoints etc
- RMB on End of Vector -■ to
 - Return to route
 - Attack
 - Move to target
 - Loiter
 - Rally
 - Formation
 - Attach
 - Road Routing



Extended Platform Context Menu

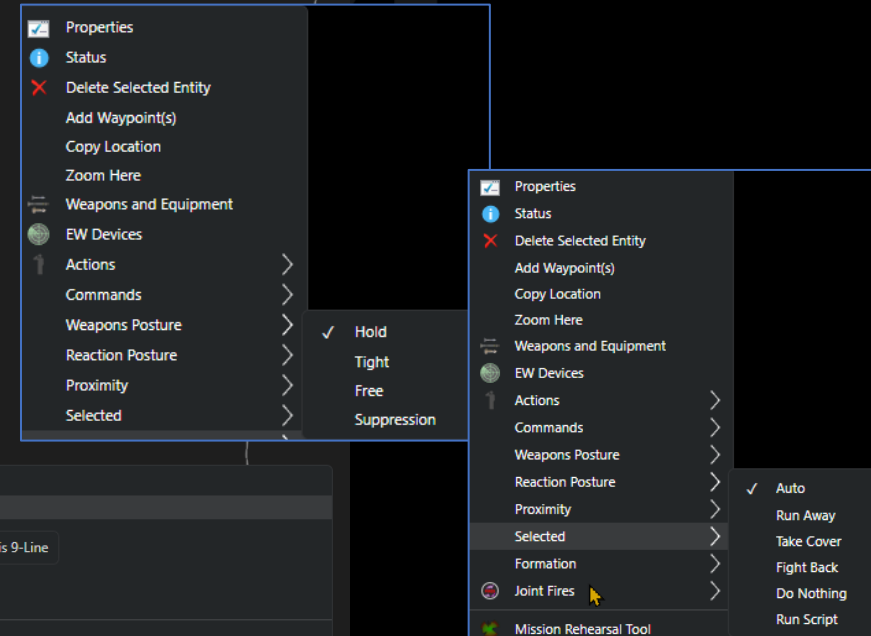
2025

- Context Menu (not many entity control actions available)
 - Script Templates
 - Commands
 - Create Aggregate
 - Weapons & Equipment
 - EW Devices etc



2026

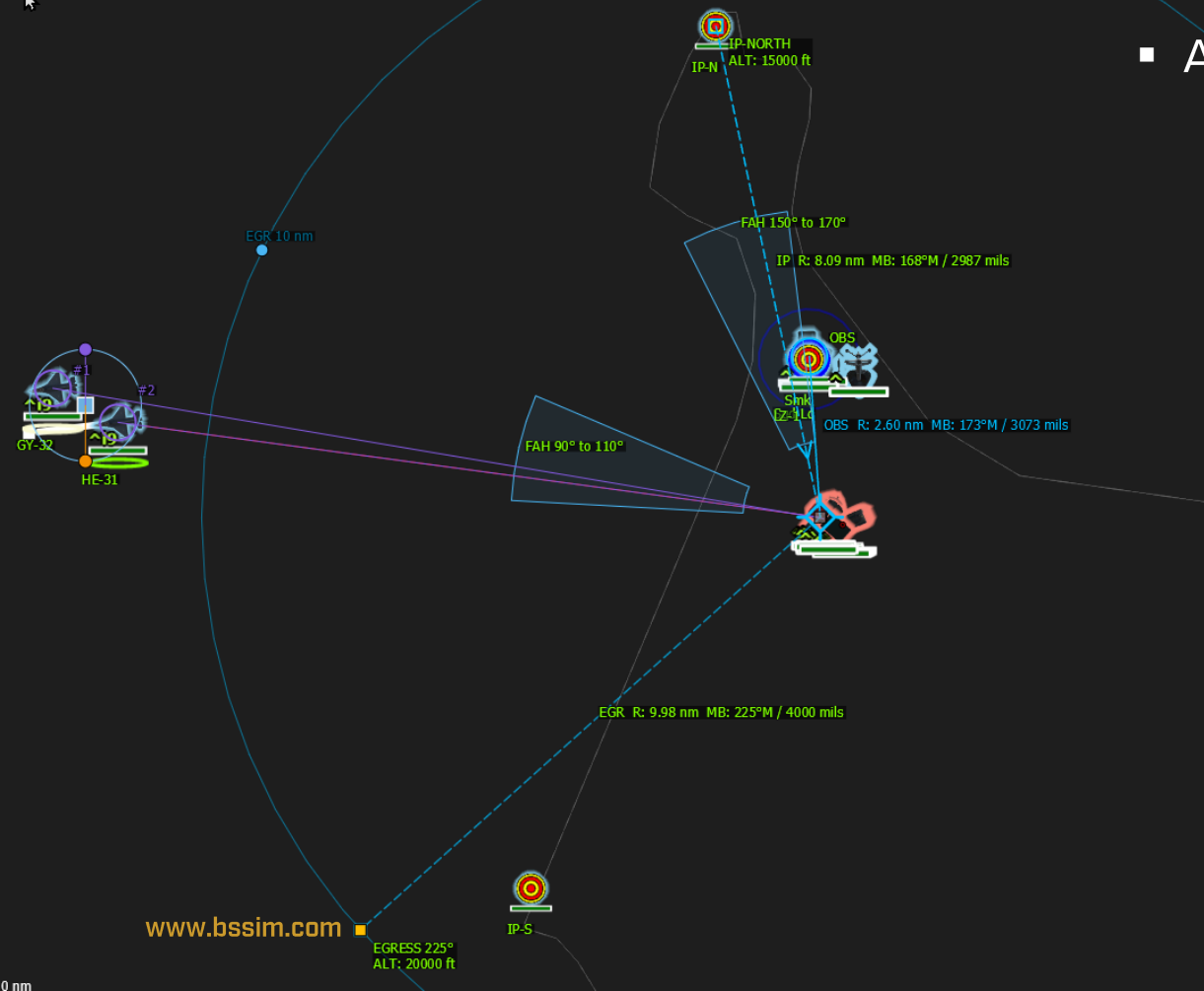
- Entity controls available from context menu
 - Weapon Posture – as per entity controls
 - Reaction Posture – as per entity controls
 - Formation – open formation manager
 - Joint Fires – assign target / observer / attacker to any form



Graphical Attack Plan/Preview (GAP)

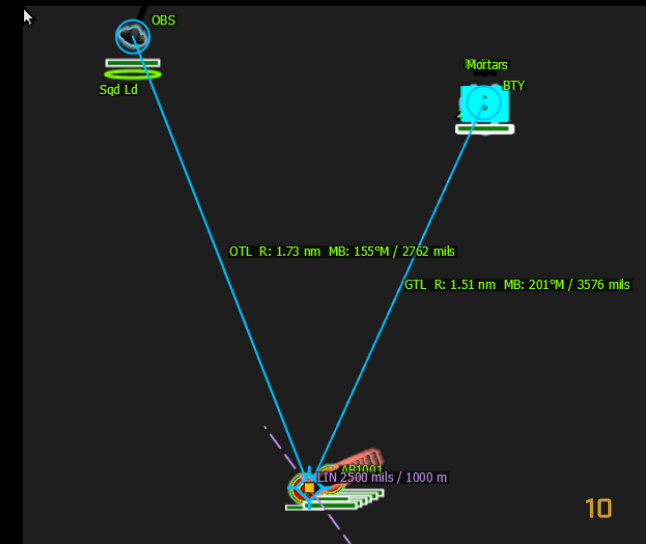
2025

- Nothing until executing form-based attack



2026 – Mind the Gap!

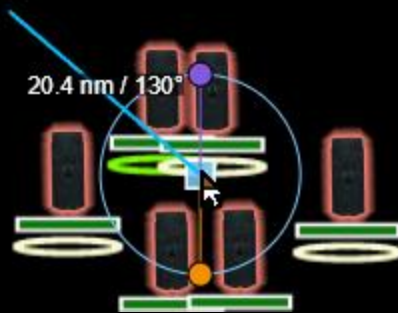
- Graphical representation of key elements of attack on map
- All can be dragged-and-dropped to change parameters
 - Observer position
 - Target position
 - IP / BP / Egress point
 - Attacking assets
 - Attack direction FAH arcs – GTL – OTL
 - Laser Arcs



Groups on The Map

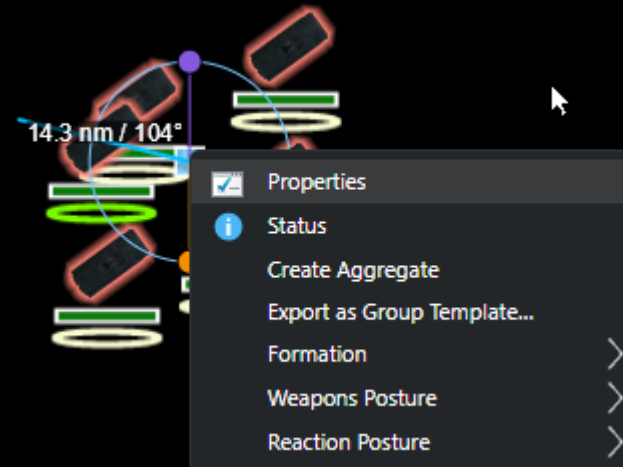
2025

- Move Group
 - CTRL LMB anywhere on map that was empty to drag and move
- Rotate Group
 - Through mission builder tab
- Formation – individually through each platform's properties



2026

- Move and Rotate via **Group Anchor** ■
- Assign as Group in Group manager
- Assign as Aggregate
- Assign formations
- Assign weapons & reaction postures



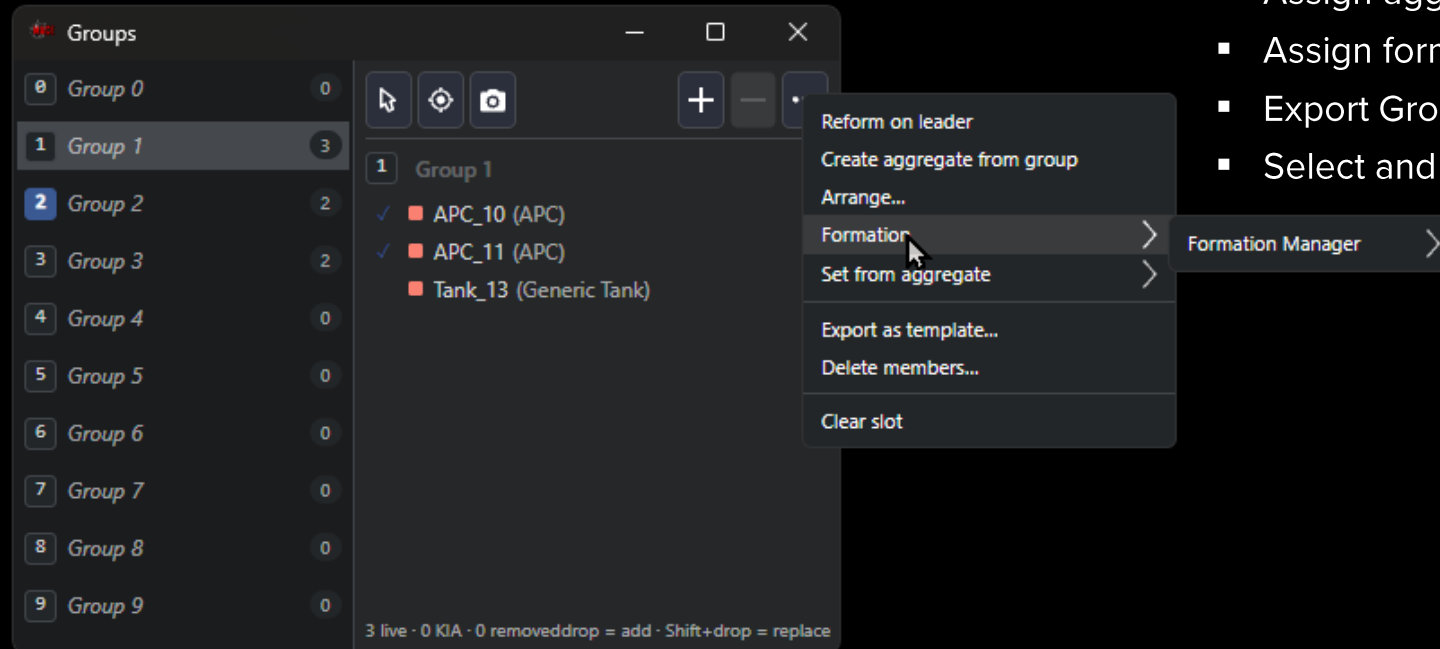
Groups Manager

2025

- Assign with CTRL + 0 to 9
- Recall with ALT + 0 to 9
- No edits or visibility of what was in each group

2026

- Group manager
 - CTRL+ 0 to 9 still works AND opens group manager
 - ALT + 0 to 9 still recalls these Quick Groups
 - 'n' number of additional (non-quick) groups
 - Drag and drop in and out from map / between groups
 - Assign group from selected platforms on map
 - Assign aggregate from group
 - Assign formation to group
 - Export Group Template
 - Select and zoom to group



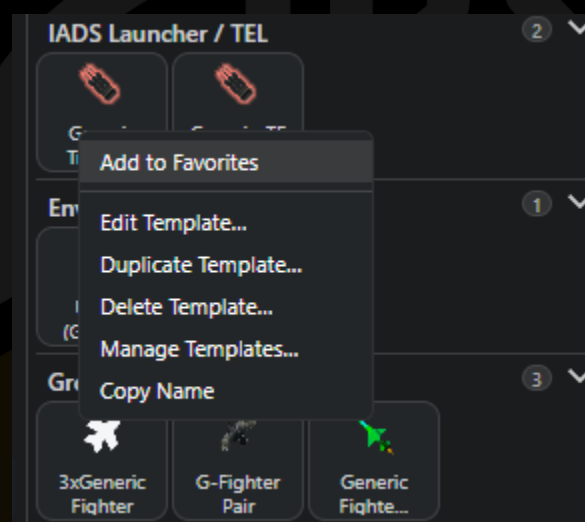
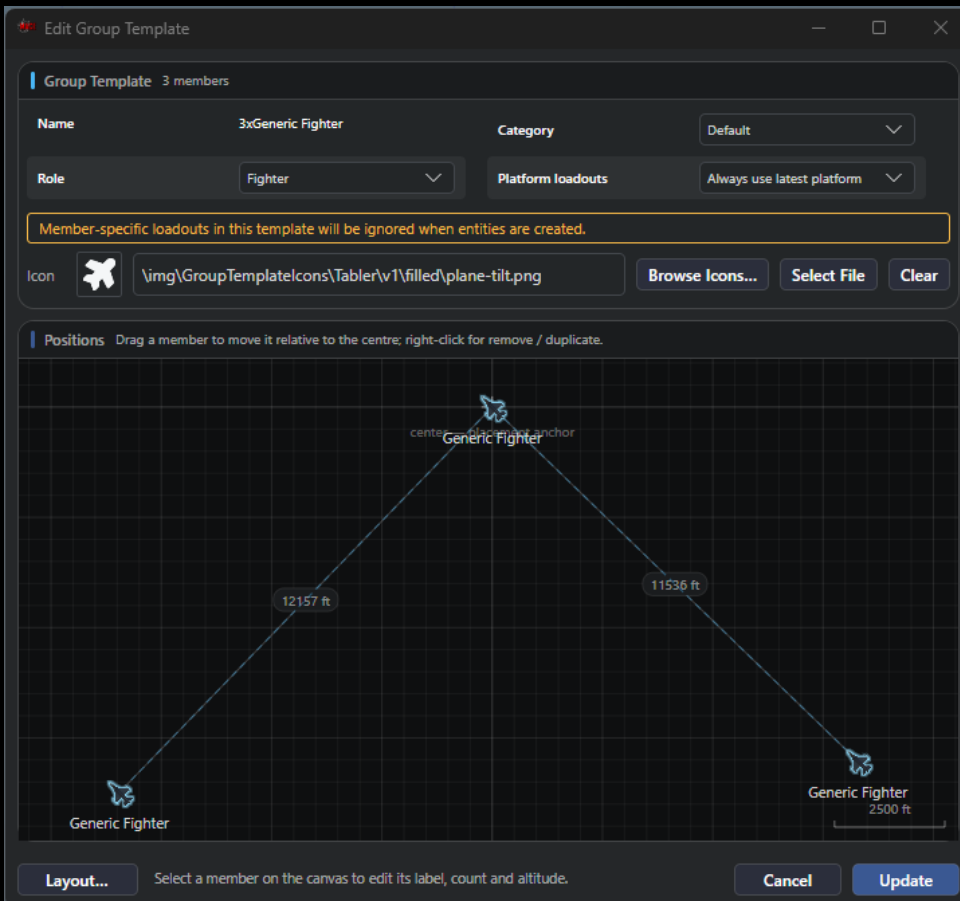
Group Template Edit

2025

- Export Group Templates
- No Template Post Export Edit – just overwrite

2026

- Editable - Right mouse click on group in mission builder
 - Update: Reposition / Reclassify / Different Icons



Popout Entity Control Form Improved

2025

- Basic platform control Hdg/Alt/Spd
- Coordinate actions – attack, slew camera, centre, loiter
- Release weapons, Next WP
- PRF
- Manoeuvres

2026

- All that +
 - Maneuver State
 - Weapon Posture
 - Reaction Posture
 - Open sensor control
 - Assign Target
 - Open Weapons & Equipment
 - Change Energy State
 - (Optional) Basic instruments with Hdg/Alt/Speed control



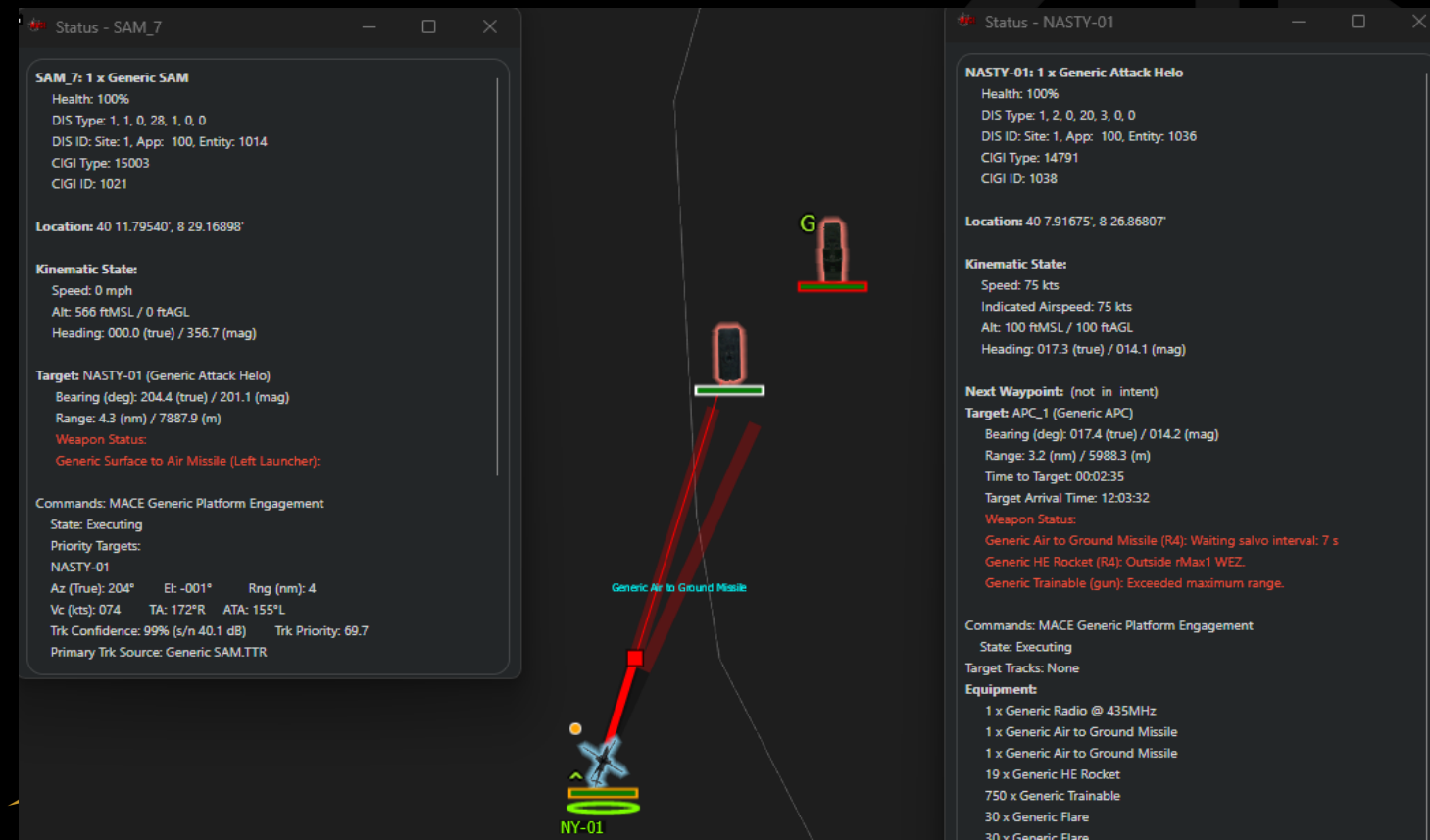
Multiple Status Windows

2025

- Just status from active platform in platform properties

2026

- Multiple status windows – enables better monitoring of scenario
- E.g. threat system engagement vs aircraft targeting ground target – who is in WEZ / being jammed etc



Data Entry – Drag and Drop

2025

- No Drag and Drop – copy paste only and/or select from map

2026

- Most data entry fields – LMB on map object/location drag into data field
 - OR Drag and drop to bin

The screenshot displays a mission planning interface. On the left is a map showing a coastline and a tank icon labeled 'Tank_13 (Generic Tank)' with details: '0 mph, 100° T / 97° M', '0 ft MSL / 0 ft AGL', and 'Max Engage Range: 7.5 nm'. A scale bar indicates '50.0 nm'. In the center is a '9-Line (Close Air Support)' configuration panel. It includes a 'Line Instances' list with '9-Line #1' (Configured), '9-Line #2' (Idle), 'Off Pit Las' (Idle), and 'Multi DPI' (Idle). The '9-Line Brief' section contains fields for '1 - IP / BP' (360), 'Keyhole distance (nm)' (10), '2 - Heading', '3 - Distance', 'Calc elevation' (with a 'Calc elevation' button), '6 - Target location' (with a 'Call sign MGR' button), '7 - Mark' (Preset or mission-sp), 'Ingress altitude (ft)' (10000), 'Keyhole' (Keyhole), 'Offset' (Left), '4 - Target elevation (ft)' (0), '5 - Target description', 'Populate to assets' (Populate to assets), and 'Laser code' (1111). At the bottom of the panel are buttons for 'Copy code to designator', '9 - Egress', 'Egress keyhole distance', 'Approach & Delivery', 'Final leg (Level/Loft)', 'Guns strafe distance (m)', '# Bombs / rockets', 'Release interval (s)', 'Asset spacing (MMSS)', and 'Asset spacing (s)'. On the right is an 'Entities (4 total)' list with items: 'SA11CP_11 (1 100 1009)', 'SA11LL_10 (1 100 1008)', 'SA11TEL_9 (1 100 1007)' (marked as primary), and 'TbArmACQ_8 (1 100 1006)'. Below the list are buttons: 'Add From Map', 'Remove Selected', and 'Remove All'. A 'Drop here to delete' button is also visible. A blue arrow points from the 'Call sign MGR' button in the configuration panel to the 'Drop here to delete' button. Another blue arrow points from the 'Remove from aggregate' button at the bottom of the configuration panel to the 'Remove from aggregate' button at the bottom of the entities list.

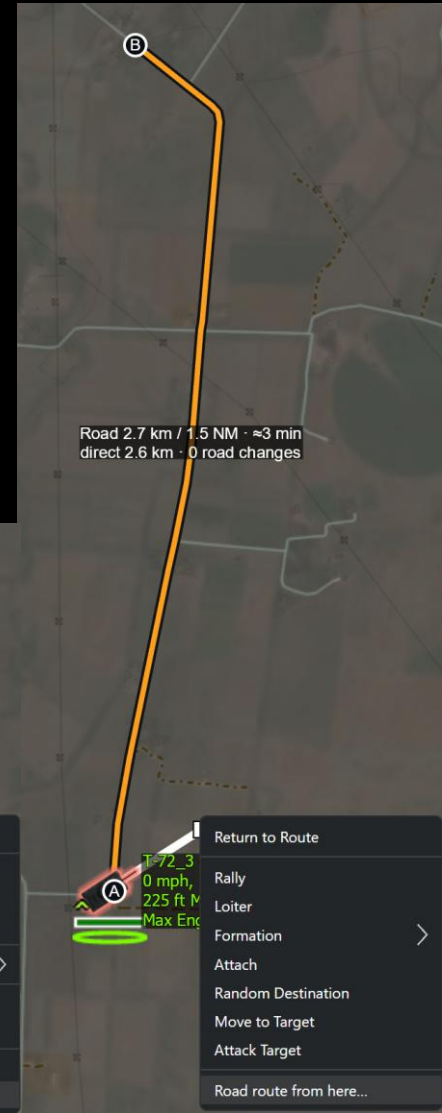
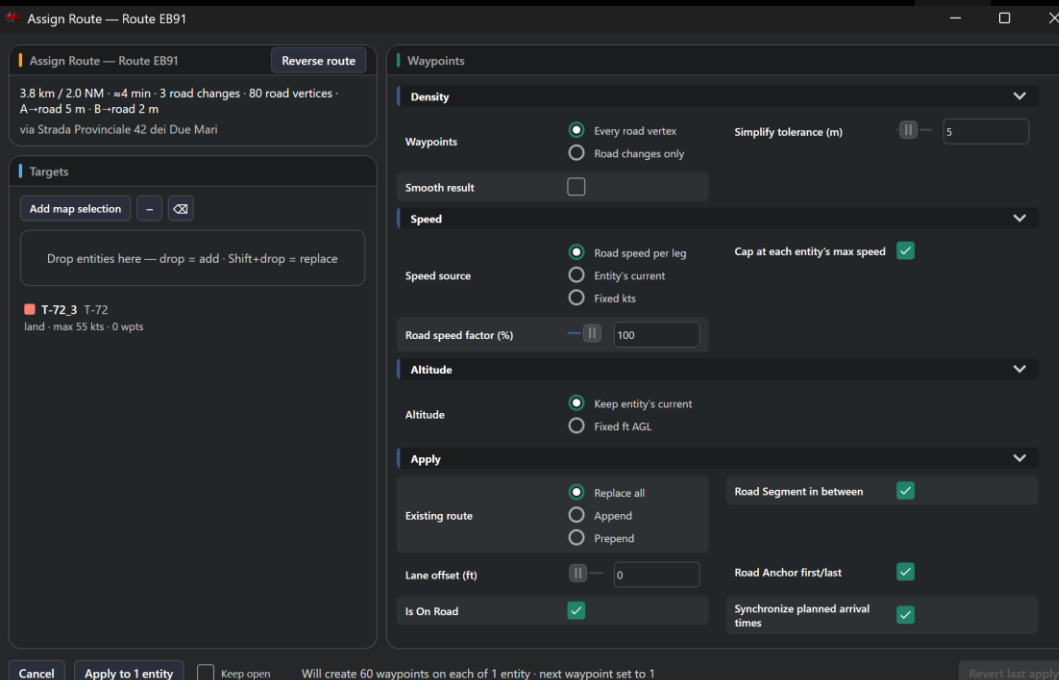
Road Routing

2025

- Attach to road – by Segment
- Pathfinding & CTRL+RMB

2026

- New regional & local road routing algorithms
- Create routes and allocate to multiple platforms or groups
- Available from platform vector context menu inc. quick routing
- Pathfinding & CTRL+RMB still available
- Make routes to be applied later with map routing tool



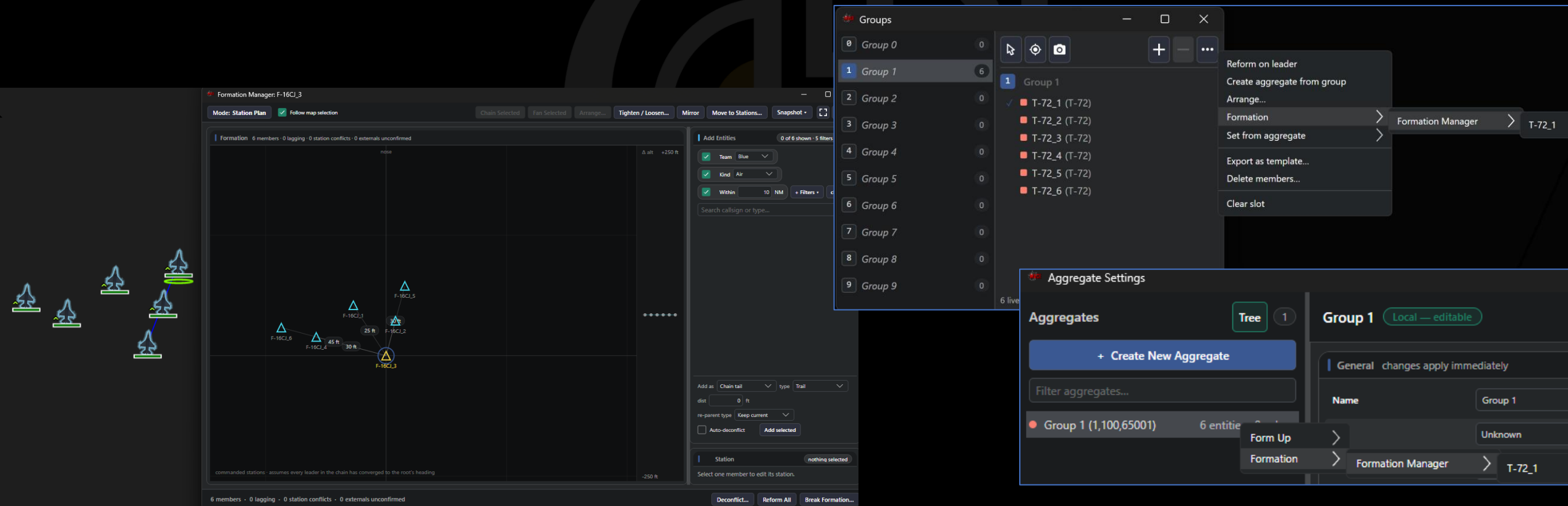
Complex Formations

2025

- Formation from platform properties
- Advanced formation edit form

2026

- Still available in properties – also **Vector Context Menu**
- Formation editor + force platforms to snap to position
- Apply to groups/selections/aggregates



Scripting UI

2025

- Top down
- Not searchable

2026

- Left to right
- Searchable for all functions
- Drag and drop platforms into scripts
- Drag and drop scripts onto tool bars

The image displays two overlapping windows from a game engine's configuration interface. The top window, titled 'Add Trigger', features a search bar and four filter tabs: 'All', 'Scripting', 'Time', and 'Entity' (which is selected). Below the tabs, the 'Entity' category is expanded, showing two options: 'Waypoint Arrival' and 'Enroute To Waypoint'. The 'Waypoint Arrival' option is highlighted, and its configuration panel on the right shows settings for 'Platform' (with a 'Filter...' dropdown), 'Last Waypoint' (a toggle switch), 'Match By' (set to 'Waypoint Index'), and 'Waypoint Index' (set to '1'). The bottom window, titled 'Add Action', also has a search bar and four filter tabs: 'All', 'Scripting', 'Mission' (which is selected), and 'Behavior'. Below these, the 'Mission' category is expanded, showing three options: 'Appearance', 'Equipment', and 'Radio / TDL' (which is selected). The 'Radio / TDL' option is highlighted, and its configuration panel on the right shows settings for 'Assign To' (a large empty text area), 'Munition' (a dropdown menu), and 'Target' (a text field with a 'Call sign, coordinate, or pick on map' hint and a '+' icon).

Imaging Coverage Tool

- Composite line of sight plot for sensors – for ISTAR planning:
 - What will I see on this route?
 - Fixed FOV – Azimuth & Elevation
 - Based on sensor
 - Or Synthetic 360 sweep

The screenshot displays the 'Imaging Coverage Tool' interface. At the top, a map shows a flight path (green line with waypoints 1-5) over the Mediterranean. Two large red circles represent sensor coverage areas. The left circle is labeled 'Generic IADS' and the right circle is labeled 'Wolverine'. The interface includes a 'Mission Rehearsal Toolbox - SKINBA' sidebar with options: LOS, Radar, ESM / Radio, Route Eval, Flyout Eval, Range Plot, MARC Auto Route, and Imaging Coverage. The main panel shows settings for 'SKINBAG-01 Generic UAV' under 'DRAWING - EO CAMERA'. The 'Pointing' section has 'Fixed Sensor Pointing' selected, with 'Fixed azimuth (deg)' at 90, 'Elevation (deg)' at -30, 'Horizontal FOV (deg)' at 60.0, and 'Vertical FOV (deg)' at 60.0. The 'Max Range (nm)' is set to 20. The 'Coverage' section shows 'Render' as 'Dwell Heat Map', 'Route Increments (m)' as 500, 'Start waypoint' as 2, 'End waypoint' as 6, 'LOS Precision* (m)' as 500, 'LOS provider' as 'MACE Terrain', 'Coverage Detail' as 'Standard (250 m)', and 'Show surface bounds' as unchecked. A progress bar indicates 'Completed in 31.5 sec | ~4,895,559 checks'. The bottom status bar shows 'Imaging coverage ready: 160 footprints, 31.471 s elapsed.' and 'SKINBAG-01'.

Mission Planning Analysis and Rehearsal (MPAR)

RAPID FIRES INTEGRATION IN CONGESTED AIRSPACE



BATTLESPACE SIMULATIONS

Don't settle for only part of the battlespace

Engineering Preview
Engineering Preview

Airspace
confliction

Mission Planning Analysis and Rehearsal (MPAR)

UAS PLANNING – MAINTAIN LINK – MINIMISE EXPOSURE – AUTONOMY HANDOVER – ISTAR COVERAGE



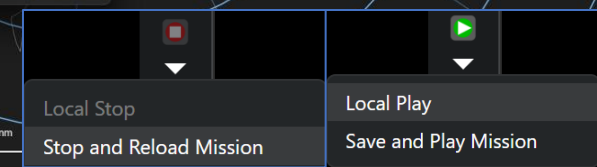
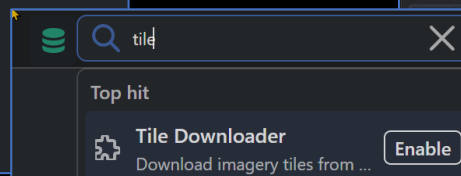
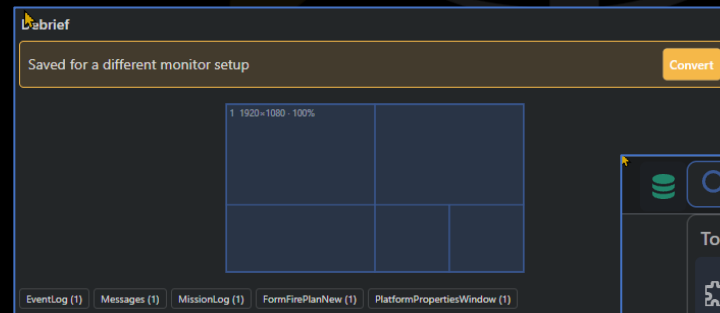
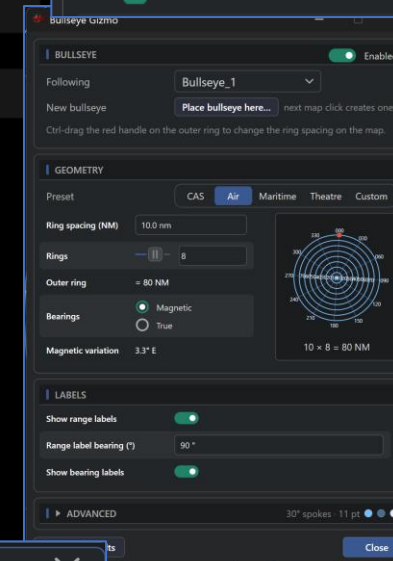
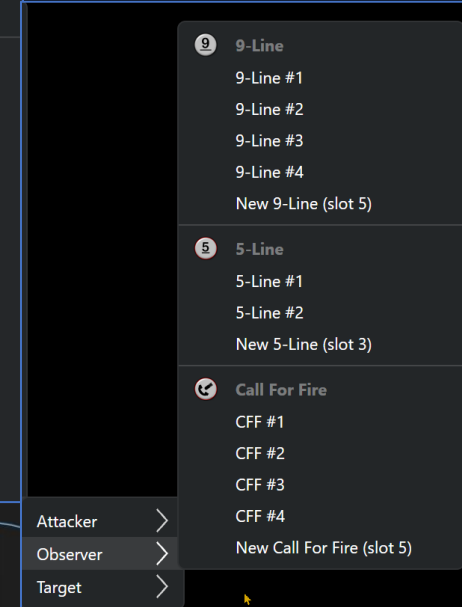
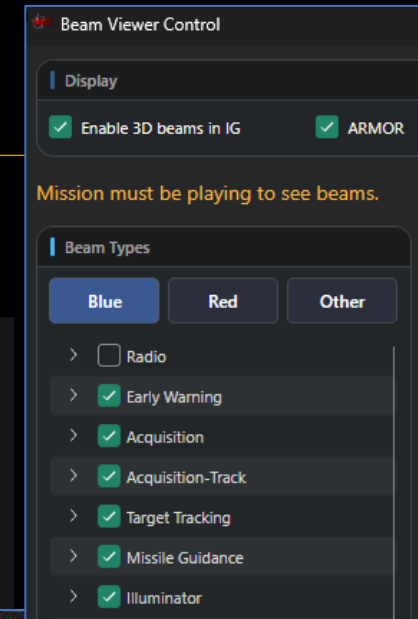
BATTLESPACE SIMULATIONS

Don't settle for only part of the battlespace

Mission-Enabling Solution
**Survivable UAS
Mission Planning
in
Contested
Environments**

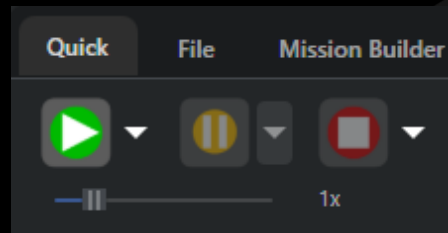
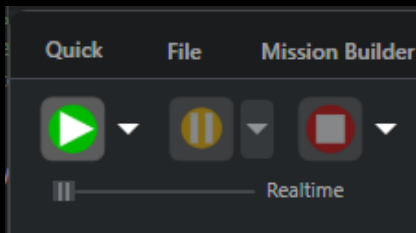
And Much More

- Improved filtering on beam view and emission overlays
- Joint Fires – From context menu (Observer, Attacker, Target)
- Form Based Attacks – Auto TOT/TTT Next minute
- Bullseye Overlay
- Save-Play, Stop-Reload
- Window Layout Manager
- MACE-EW: 4 to 16 9-Lines / 5 Lines / Call for Fire and form naming
- Aggregate: Auto Classification
- Context Based Search – UI, Settings, Properties, Scripts



Under The Hood: Improved faster than Realtime processing

- Different execution sequences for Realtime and Faster-than-Realtime (1x clock multiplier and faster)
- Each phase completes before the next phase starts. Parallel work can remain inside a phase



Concern	MACE 2025	MACE 2026
Motion domains	Independent lanes could overlap.	Domains run in a defined sequence.
Entity work	Each lane used parallel work.	Applicable phases can use parallel work.
Completion	Flags and polling formed a coarse barrier.	Each phase completes before the next.
Mission clock	Separate wall-time path.	Advances after processing and cleanup.
Time step	Load could increase the wall-derived step.	Each completed update uses a fixed step.
Overload	Larger steps could preserve apparent speed.	Fixed steps remain and achieved speed falls.

Under The Hood: Improved faster than Realtime processing

- A selected playback rate is a request. The complete workload determines achieved speed

$$\text{Clock Multiplier} = \frac{\text{simulated time elapsed}}{\text{wall time elapsed}}$$

A result of 8 means eight simulated seconds per wall second

Workload limits

- Large mission entity counts
- Equipment and signal processing
- Collision processing
- Long synchronous plug-in callbacks
- Network or device waits
- External systems that cannot accelerate
- If you want to run faster, refer to performance optimization section of the MACE User's Manual

Under The Hood: Improved faster than Realtime processing

Determinism is a measured property of repeated results. It is not a selectable operating mode.

The new runtime improves repeatability

- Stable phase order
- Fixed simulation-time step

Repeatability still depends on inputs

- Controlled external input
- Fixed random seeds
- Stable plug-in processing order

Use the phrase “more deterministic scheduling.” Qualify every replay claim with test evidence.

Roadmap

- BLADE: Release
- MRT: Survivable UAS Planning Tab
- SGE: Over the horizon radar modelling
- SGE: Over the horizon GOLD – C2 protocol
- MRT: Speedup
- Native HLA: RPR2, NETN
- Merlin: Content creation (Platforms & Equipment)
- ATO Export: Improvements



BATTLESPACE SIMULATIONS

Don't settle for only part of the battlespace

For help contact: support@bssim.com

 www.linkedin.com/company/battlespace-simulations-inc/

 www.youtube.com/BattlespaceSims