



# COMMAND

PROFESSIONAL EDITION

# WHAT IS COMMAND PROFESSIONAL EDITION?



01

## CMANO

SUPERSET of Command: Modern Air/Naval Operations (CMANO)



02

## Product

Physics-based Battlespace Environment Simulation tool.



03

## Contractors

Currently In use by US & NATO military contractors.



04

## Military

Logistics, training and analysis:  
Currently in use by US & NATO Air and Naval Forces

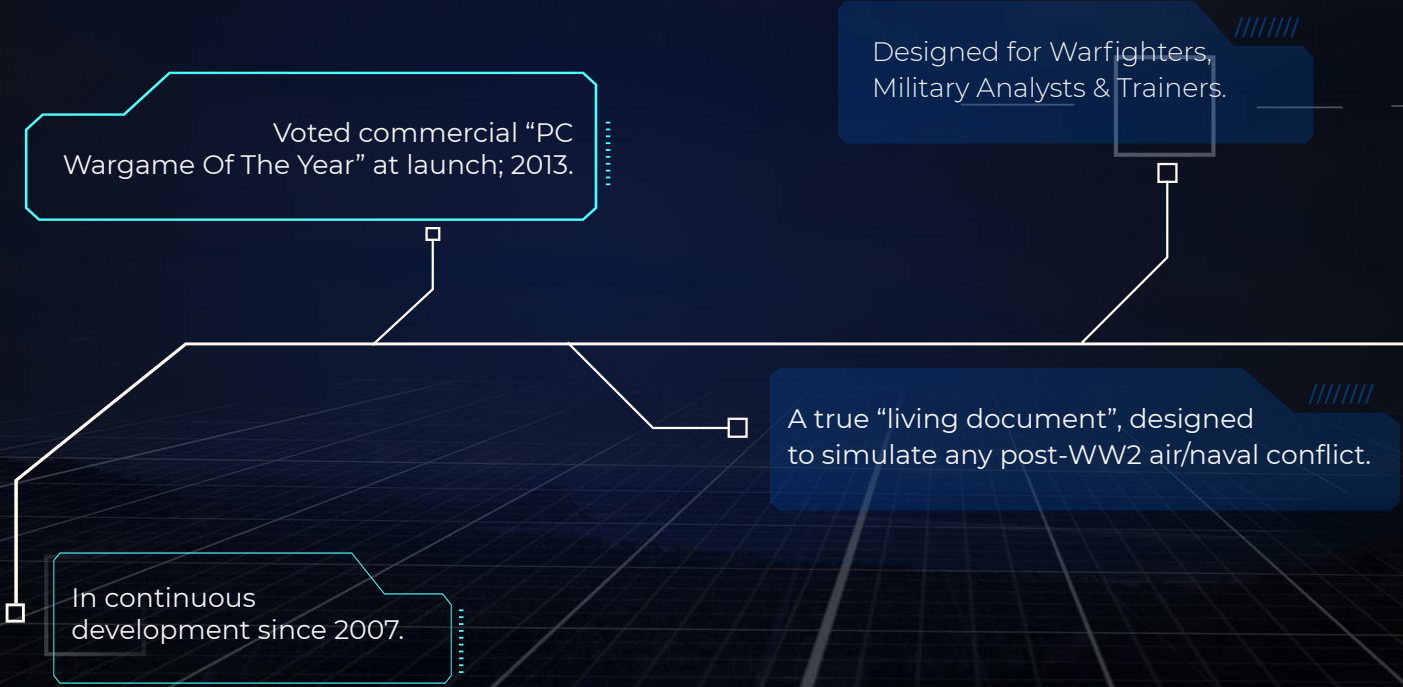
# BRIEF HISTORY OF CMANO

Voted commercial "PC  
Wargame Of The Year" at launch; 2013.

Designed for Warfighters,  
Military Analysts & Trainers.

A true "living document", designed  
to simulate any post-WW2 air/naval conflict.

In continuous  
development since 2007.



# BRIEF HISTORY OF CMANO

Hundreds of scenarios currently available, created by military personnel and the CMANO community.

Comprehensive platform database, including almost every platform and weapon system currently in use worldwide.

Complex physics/environment, sensors, weapons & AI models.

Continuously updated with new data, techniques, routines, hardware models etc.

# BRIEF HISTORY OF CMANO

COMMAND Professional Edition,  
used by military contractors, analysts, academic  
organizations & armed forces.

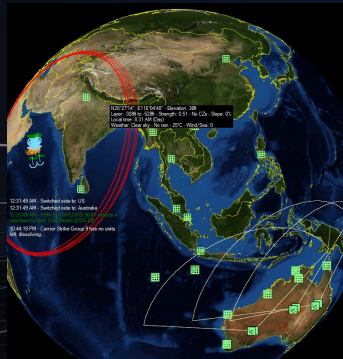
Detailed modelling, simulation,  
and analysis tool.

Flexibility, allows adaptation  
to suit your specific needs and  
classified data.

Run and test simulations as  
often as necessary; results instantly available.

# COMMAND PE BUILDS ON TOP OF COMMERCIAL CMANO

1



Added-value features for the academic/mil/gov professional

2

Praised by the pros



# USED & TRUSTED WORLDWIDE

Armed forces & defence contractors throughout US & NATO  
use CPE for analysis, planning & procurement



### US to buy two Iron Dome batteries as first part of \$1.7b missile defense project

Systems to be deployed next year; \$373m. purchase could lead to far bigger deal if Israeli system proves able to defeat more complex threats than it was originally designed for

[in](#) [m](#) [720 views](#)

### Air Force Cancels HCSW Hypersonic Missile in Favor of ARRW

Feb. 10, 2020 | By John A. Tirpak

The Air Force has notified Lockheed Martin it has cancelled the Hypersonic Conventional Strike Weapon as of Feb. 10, in favor of the AGM-183 Air-Launched Rapid Response Weapon. The cancellation is not because of poor performance but because of other "budget priorities," the service said.

ARRW is the only hypersonic prototyping effort USAF is funding this year, service spokeswoman Ann Stefanek told reporters. Lockheed Martin Space in Huntsville, Alabama, is the prime contractor for HCSW, while Lockheed Missiles and Fire Control in Orlando, Florida, is the prime for ARRW.



# NEW UPDATE RELEASE: COMMAND PE 1.15

## WEGO-STYLE MULTIPLAYER

Up To 16 Players - Vs & Coop - Umpire  
& Observer

## COMMAND-LINE VERSION

Automating massive-scale analysis



```
D:\Command\ [redacted] \CommandCLI.exe
Command PE Command Line Interface - Build 1009.34
=====
Scenario file: D:\Command\ [redacted] \Scenarios\Desert Storm 1991 - Strategic ai
r campaign - Instant Thunder.scen
Output folder: D:\Command\ [redacted] \Analysis
Iterations: 3
No recording.

License check completed.
Initializing simulation and setting up exporters... Done.
Iteration #1 - Scenario Time: 1/16/1991 11:00:44 PM
Event Queue Length: Tacview2x:0
```



# PRAISED BY THE PROS:

*"Far surpasses anything I have ever seen"  
"This should be issued immediately to the field"  
"In my 34 years of service, I've never seen anything like this"  
"The 505th Command and Control Wing needs this"*

*"Command will find a following not only among civilian gamers but might have value among military, government, and policy circles as a simulator of modern warfare"*

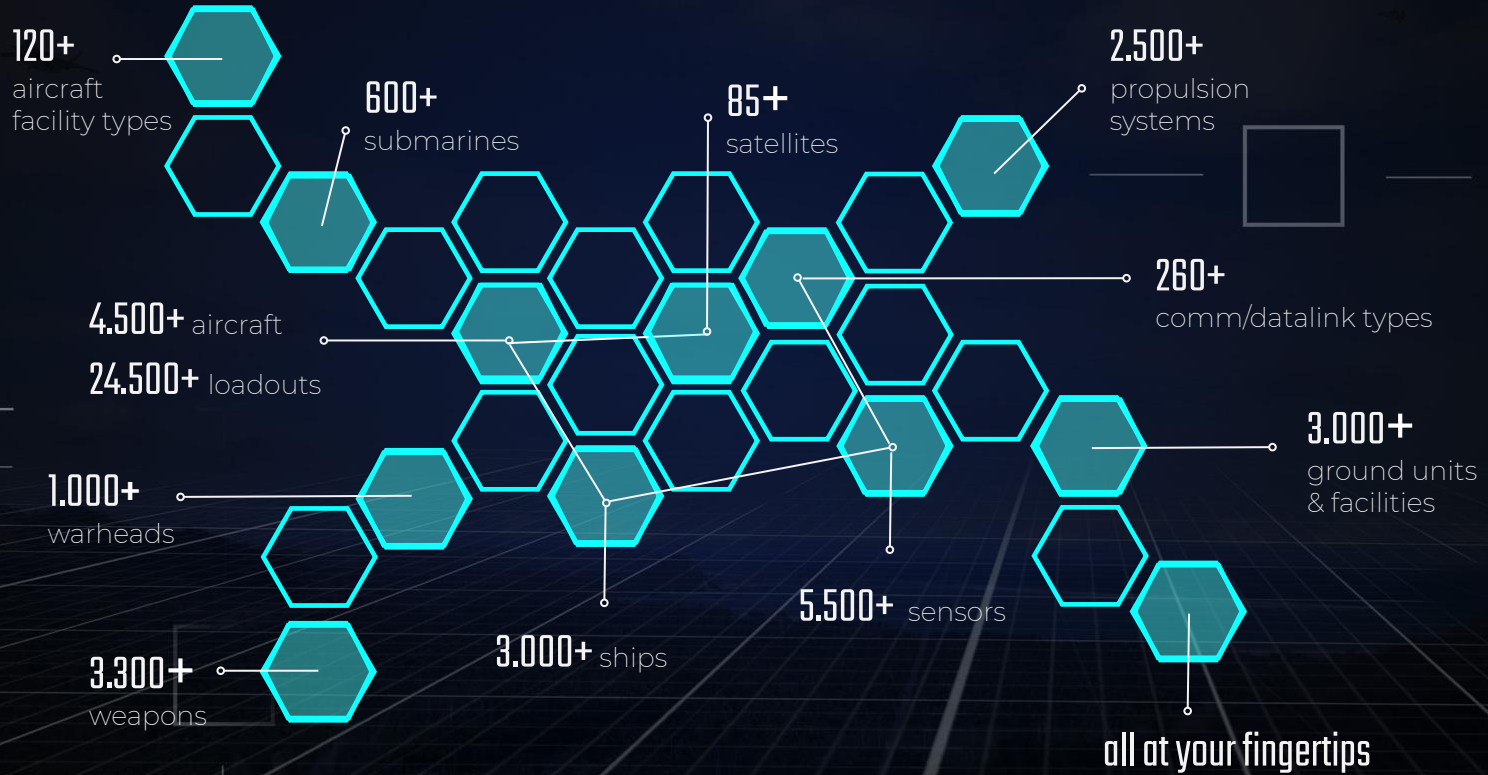
*"I would list the names of people who have been talking to me about this game for the last year, but I feel like I would be name dropping. Needless to say the range of people involved in beta testing range from an Admiral in the US Navy to professors at the US Naval War College to some distinguished Fellows of several think tanks"*

**CSAF ACP Senior  
Leader assessments**

**US Naval Institute**

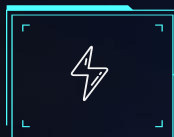
**Information  
Dissemination**

# FULL DATABASE EDITOR



all at your fingertips

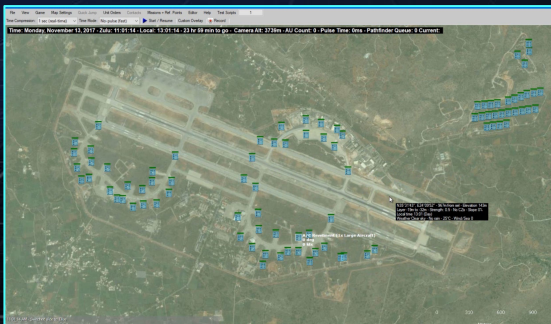
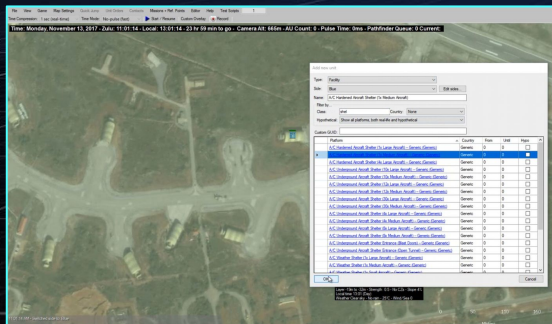
# RAPID SCENARIO DEVELOPMENT



Powerful, GUI-driven integrated scenario editor allows creating elaborate scenarios in minutes

Save & re-use sprawling facility installations or nationwide defence complexes - or batch-import from your own data

Turbocharge creation speed with parallel development & scenario merging

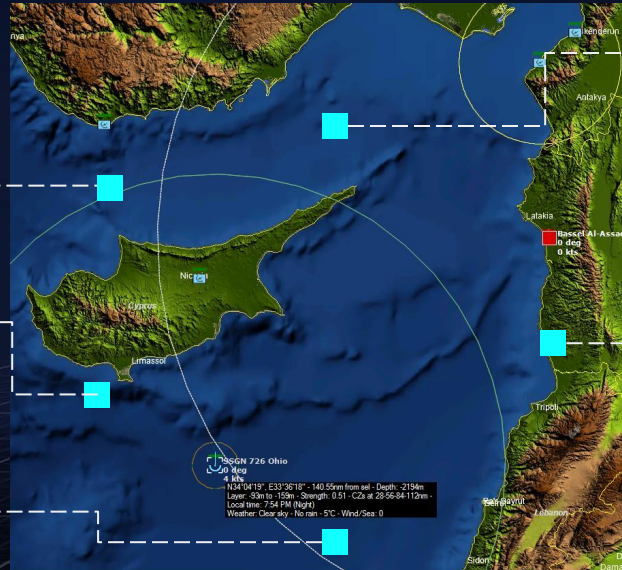


# ON-DEMAND FREE & COMMERCIAL IMAGERY

Bring your virtual battlespace to life with real-world imagery

Use publicly available, or commercial imagery sources, or utilise your own private datasets

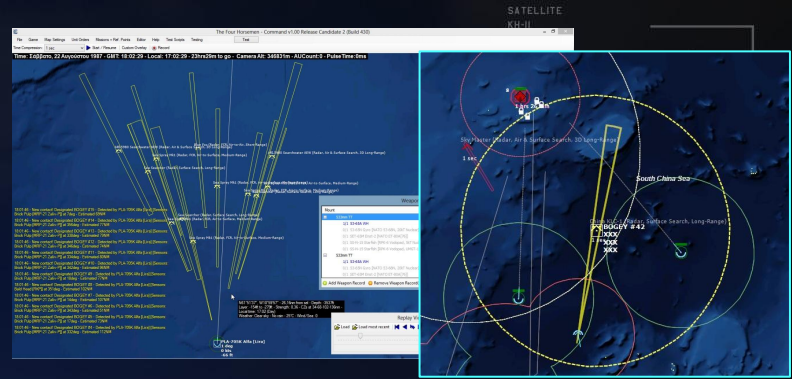
Place facilities at their real-life coordinates with pinpoint accuracy



Available Sources:  
MS Bing Maps, or any  
OpenStreetMap-  
compliant map source

Interfaces to additional sources  
can be implemented (e.g. Google  
Maps)

# ANALYSIS: INTERACTIVE & MONTE-CARLO



Run any scenario 10 times or 100,000 times depending on need

High-performance simulation engine generates speedy results

Put your multicore supercomputer to good use with parallel execution

NEW IN v1.15: Command-line interface for superfast automated analysis

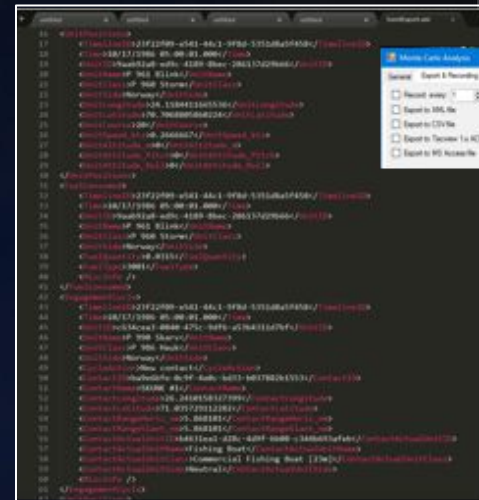
Use "butchers bill" to assess losses and weapon expenditures, or drill-down deeper to examine events and their causes

# EVENT EXPORT



Export various sim events for external analysis; unit positions & movements, fuel consumption, weapons fired, units hit/destroyed, fuel transfer and much more

Export to XML, CSV, MS-Access, Tacview



More destinations available on request e.g. SQL Server, Oracle etc.

# EDIT & CUSTOMIZE THE SIMULATION

Multiple ways of customizing data & models:

DB editor

Mechanics  
overrides

Lua plugin API

Direct editing  
of raw scenario  
state (via XML)

The screenshot shows the 'Mission Editor' window with several panels:

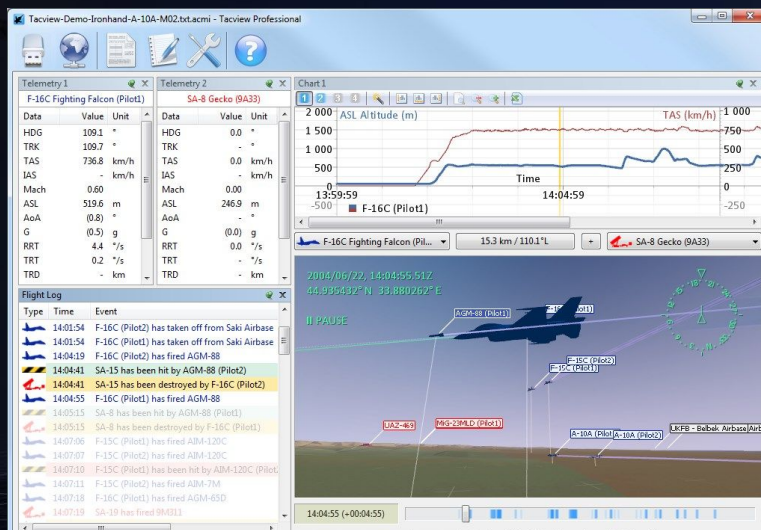
- Missions:** A list of missions including 'Benevol-a1', 'Gorka1', and 'Kaska1'.
- Units assigned to mission:** A list of units, with '4x Su-35S Flanker E' selected.
- Unassigned units:** A list of various aircraft models such as '1x B-30M May', '4x Su-35S Flanker E', '1x Tu-214R', etc.
- Mission Name:** 'Kaska1'.
- Mission Summary:** 'AAW Patrol'.
- Strike / Air Interception options:** Includes 'Patrol options' and 'Procession Area' settings.
- Patrol Area:** Settings for 'To keep', 'Investigate contacts outside the patrol area', and 'Active emitters only inside patrol/prosecution area'.
- Aircraft Specific Settings:** Includes 'Flight size', 'Descent formation', 'Attack altitude', 'Weather', and 'Minimum number of A/T required to trigger mission'.
- Submarine Speed and Depth:** Settings for 'Transit throttle', 'Attack depth', and 'Station depth'.

The screenshot shows the game interface with a map of the Middle East and several windows:

- Operation Lightning Strike - Command v1.00 Release Candidate 1 (Build 425):** Shows the current time as 'Wednesday, July 02, 2014 - GMT: 12:00:00 - Local: 17:00:00 - 2d to go'.
- Air Ops - Kandahar Airfield:** A table showing aircraft status and loadouts.
 

Aircraft	Status	Mission	Loadout	Time to
6x AV 88 Harrier IIx (Night Attack)	Ready	--	68x 32002B 30AM (M&S) Warning II Pod (L&R) 68x 32002B 30AM (M&S) Warning II Pod (L&R)	0.0
Spode #1	Ready	--	68x 32002B 30AM (M&S) Warning II Pod (L&R)	0.0
Spode #2	Ready	--	68x 32002B 30AM (M&S) Warning II Pod (L&R)	0.0
Spode #3	Ready	--	68x 32002B 30AM (M&S) Warning II Pod (L&R)	0.0
Spode #4	Ready	--	68x 32002B 30AM (M&S) Warning II Pod (L&R)	0.0
Spode #5	Ready	--	68x 32002B 30AM (M&S) Warning II Pod (L&R)	0.0
Spode #6	Ready	--	68x 32002B 30AM (M&S) Warning II Pod (L&R)	0.0
1x KQ-170A Sentinel UAV	Ready	--	Recon (Internal EO/IR/SAR)	0.0
chess #1	Ready	--	Recon (Internal EO/IR/SAR)	0.0
- Doctrine & ROE for unit Kandahar Airfield:** A settings window for 'EMCON Settings' with options like 'Use nuclear weapons', 'Engage non-hostile targets', 'RTB when Winchester', 'Engaging ambiguous targets', 'Automatic evasion', 'Maintain standoff', and 'Use Refuel/UNREP'.

# PLUG-IN YOUR OWN MODEL: MECHANICS OVERRIDES



```
10/22/2016 9:19:01 PM: Weapon: AIM-120C-7 AMRAAM P3I.3 #22 is
attacking MiG-29SMT Fulcrum C with a base PH of 95%.
***AMRAAM PK OVERRIDE ACTIVE***
Weapon is AIM-120A/B/C and target is MiG-29; using override.
Inputs for high-fidelity model: Weapon speed: 2500 kts. Target
speed: 724.8661 kts. Impact angle: 91.65361 deg. Calling
external DLL.... Result: 82% probability.
Final PH: 82%. Result: 92 - MISS
```

Create and edit  
your own models &  
mechanics using  
Mechanics overrides,  
in-code, or remote  
connection to Lua API.

Overrides  
configurable per  
session - Additional  
methods can be  
added on request.



# RICH 3d VISUALIZATION - EXPANDED OPTIONS

Export simulations to Tacview, SIMDIS or ANY DIS-compatible viewer for comprehensive, all-aspect 3D view of the battlefield

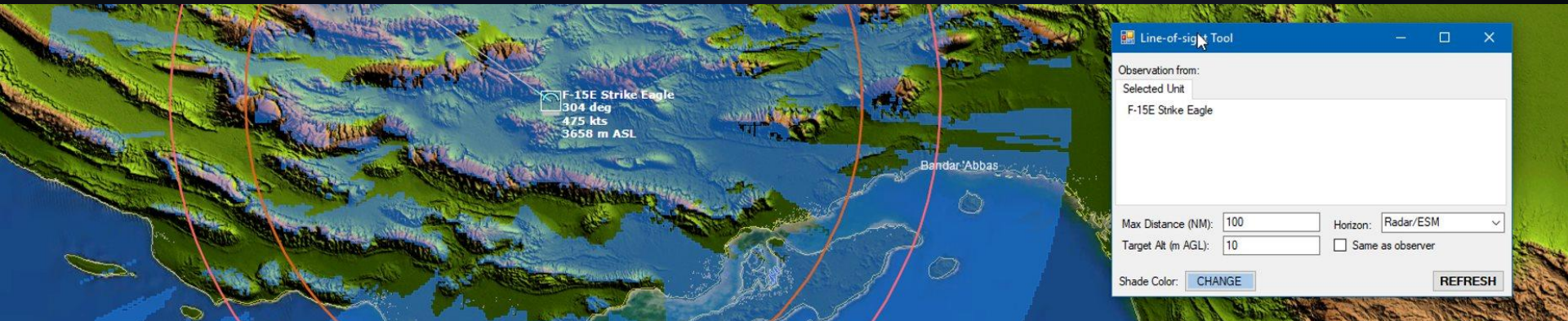
Go forwards or backwards in time and observe trends and subtle factors

Stand back and observe the big picture, or zoom-in for more detail or pan from a different angle to view a new perspective

After-action and real-time modes supported - CIGI support in future



# LINE-OF-SIGHT ANALYSIS



Line-of-sight Tool

Observation from:  
Selected Unit  
F-15E Strike Eagle

Max Distance (NM):  Horizon:

Target Alt (m AGL):   Same as observer

Shade Color:

Real-time los  
visualization

Analyze  
sensor/comms  
coverage  
& effects of  
terrain/geometry

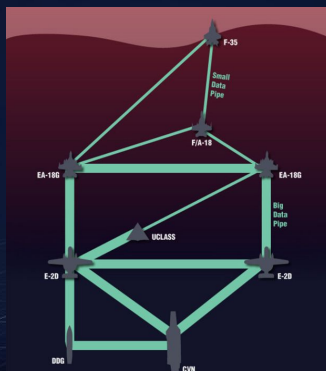
Future growth:  
multiple-units los  
coverage

# COMMUNICATIONS JAMMING & DISRUPTION

How well can your forces operate in the dark?

Communication jamming & disruption and out-of-contact units explicitly modelled

Execute in different ways: either broadly via comms jamming, or more specifically through Lua scripting e.g. cyber/network attack!



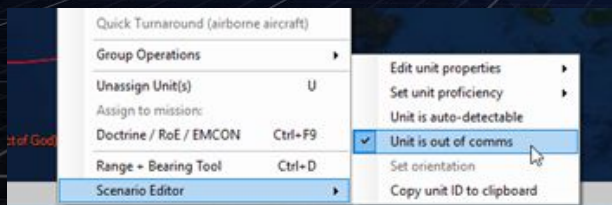
Units are not entirely blind, they can still fight alone, but the advantages of teaming, fire coordination etc. are lost; ops efficiency is severely degraded

Allows analysis of disrupted comms networks

Future options: Isolated local-area networks, variable comm quality/data rates

Name	Status
AN/VPS-2 Search/Track (M-16 CWIS)	Operational
Comms & DataLinks	
Link 16 (Secure)	Damaged
VHF Radio (Secure)	Damaged
AN/WSC-3 FLTSATCOM SHF Shipboard Transceiver	Damaged
Link 14	Damaged
VHF Radio (Secure)	Damaged
Docking Facilities	
Dave G's Very Small Dock/Davit (D-11k Long)	Operational
Air Facilities	
Pad with Hot-Drop (M Medium Aircraft (12.1-18k Long))	Operational
Hanger (M Medium Aircraft (12.1-18k Long))	Operational
Engineering / Population	

Status: Operational Overall Damage:



# TACTICAL / OPERATIONAL LOGISTICS & CARGO

## Getting your forces to the theater - and sustaining them

Units have finite weapons, fuel & stores - consider your staging ports & bases carefully

Rich cargo model places realistic volume/weight/personnel restrictions on your supply chain capacity

Amphibious landings and airdrops: Perform multi-dimensional, multi-domain manoeuvring to secure your objectives



# DETAILED DAMAGE AND TURN-AROUND

Live to fight another day

All platforms are complex systems made of discrete components - each individually damaged/destroyed

Discrete armour levels for hull/superstructure/fuselage etc. and per-component

Surviving units may return to ports/airbases/carriers to repair, refuel & re-arm - But this costs time!

Use Command's built-in ETIC & turn-around estimators, or override with your own data/models



Damage Status for MiG-29 Fulcrum A	
Name	Status
Damage: 6%	
<b>Mounts</b>	
30mm Gsh-30-1 [150 mds]	Operational
BVP-30-20M x 2 [50 Cartridges]	Destroyed
<b>Sensors</b>	
Slot Back [N-019 Rubin]	Damaged
OLS-K [RIS-T]	Destroyed
SPO-15 Beyoza [L-006]	Operational
OLS-K [Laser Rangefinder]	Operational
M:1 Eyeball	Operational
<b>Comms &amp; Datalinks</b>	
[JRP-WFF Radio] [Unsecure]	Destroyed
[HF Radio] [Secure]	Damaged
<b>Engineering / Propulsion</b>	
[No Data]	Damaged
RD-33 #2	Operational



# WEAPONS OF THE PRESENT & THE FUTURE

## New Weapon Types



1

High energy lasers - multiple subtypes, each with its own peculiarities



2

Tactical EMP weapons, both omni-directional "grenade" warheads and directional systems like CHAMP



3

Hypersonic Glide Vehicles



4

Railguns and HVPs

# LUA SCRIPTING & PLUGIN API

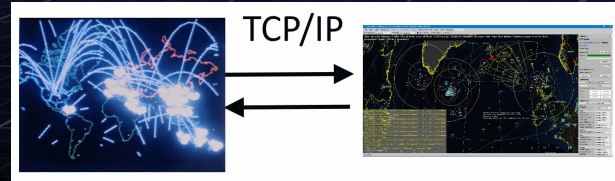
Go beyond the graphical interface

Built-in Lua console provides direct access to the internals of the running simulation

```
scenedit_attackcontact("AttackerName0123", "ContactName0123", "C016")
6
7 M_CornerLon = -60000000000000 --Longitude= -60.6355298083
8 M_CornerLat = -49999999999999 --Longitude= -49.9888314131817
9
10 TargetSide = "Natura" --Change string value to match biological side name
11 TargetMission = "Whale Patrol" --Change string value to match desired mission
12
13 set --counter initialised at zero
14 TargetNumber=math.random(1,10) --change parameters to increase min and max number of whales
15
16 repeat
17     count=1 --counter step up increment (if here)
18     a=1 --resets counter to new value
19     SegName="Whale " .. count --Sequentially numbered name for created whale
20
21     Scenedit_AddWhale({
22         type = "Submarine",
23         side = TargetSide,
24         name = SegName,
25         dbid = "0", --dbid for 'whale' in DB000
26         latitude = (math.random(M_CornerLat, M_CornerLat) / 1e13), --produces a random number between the SE corner latitude and the NE corner
27         longitude = (math.random(M_CornerLon, M_CornerLon) / 1e13), --produces a random number between the SE corner longitude and the NE corner
28     })
29
30     Scenedit_AssignUnitToMission(SegName, TargetMission)
31
32     until count == TargetNumber --Finishes loop when 'count' reaches 'TargetNumber'
33
34 TargetSide = "Natura" --Change string value to match biological side name
35 TargetMission = "Whale Patrol" --Change string value to match desired mission
36
37 set --counter initialised at zero
38 TargetNumber=math.random(1,10) --change parameters to increase min and max number of whales
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40 repeat
41     count=1 --counter step up increment (if here)
42     a=1 --resets counter to new value
43     SegName="Whale " .. count --Sequentially numbered name for created whale
```

TCP/IP socket access to Lua API – remote-control Command from any external console or application

Script commands can be either human- or machine-driven (HAL or WOPR/Joshua as adversary!)



Lua I/O (optional) – use any of Lua's built-in input/output abilities to facilitate information import & export

# INTER-SIMULATION CONNECTIVITY & INTEGRATION

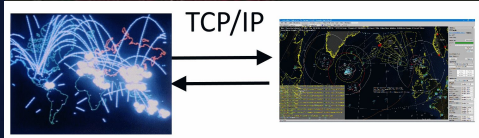
## Talks to what you already use

Join existing distributed simulations through DIS (v6 & v7 support)

Complete import/export of scenario state via XML: allows changes to everything

Rich event-export framework to output data to other existing systems

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Final PH: 82%. Result: 92 - MISS

TCP/IP socket access to Lua API – remote-control Command from any external console or application

Mechanics Overrides: Use your siloed data & models directly inside Command

Future Growth: HLA, CIGI, other





# CONTACTS

For further information please contact:

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