

MERLIN

AI TOOLS FOR MISSION PLANNING ANALYSIS AND REHEARSAL



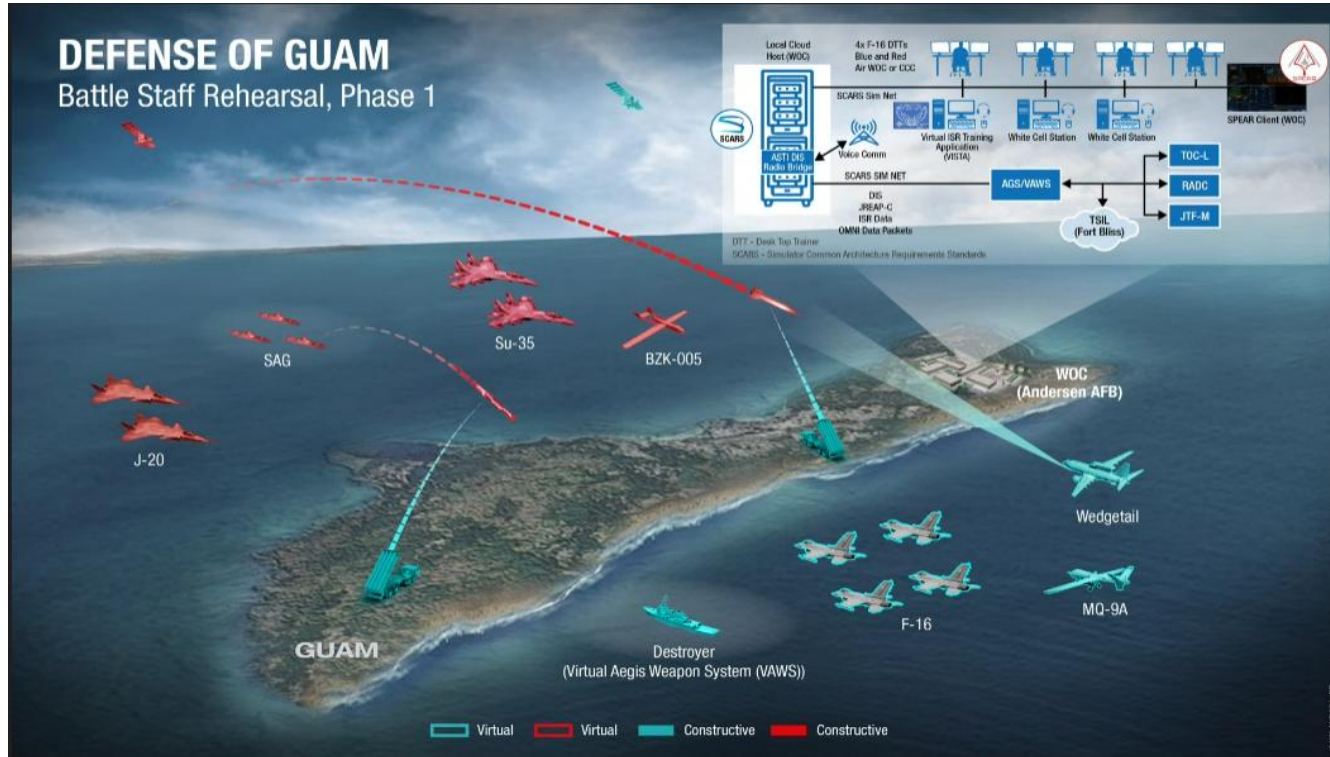
Gary DeYoung, Founder/President

AI Enabled MACE Plugin

- Leverages the power of LLMs
 - Ability to understand text prompts, image recognition, etc.
- The LLM is connected to MACE via MACE's API
 - Rapid acceleration of content and mission creation
 - LLMs can parse data without anyone having to write code – HUGE accelerator!
 - Ability to more quickly conduct mission analysis
- MERLIN enables the user to choose their preferred AI models
 - Customers need to provide their own API keys (for online models)
 - Also supports offline AI models
- Extendable to other systems using Model Context Protocol (MCP) and vector databases (RAG)

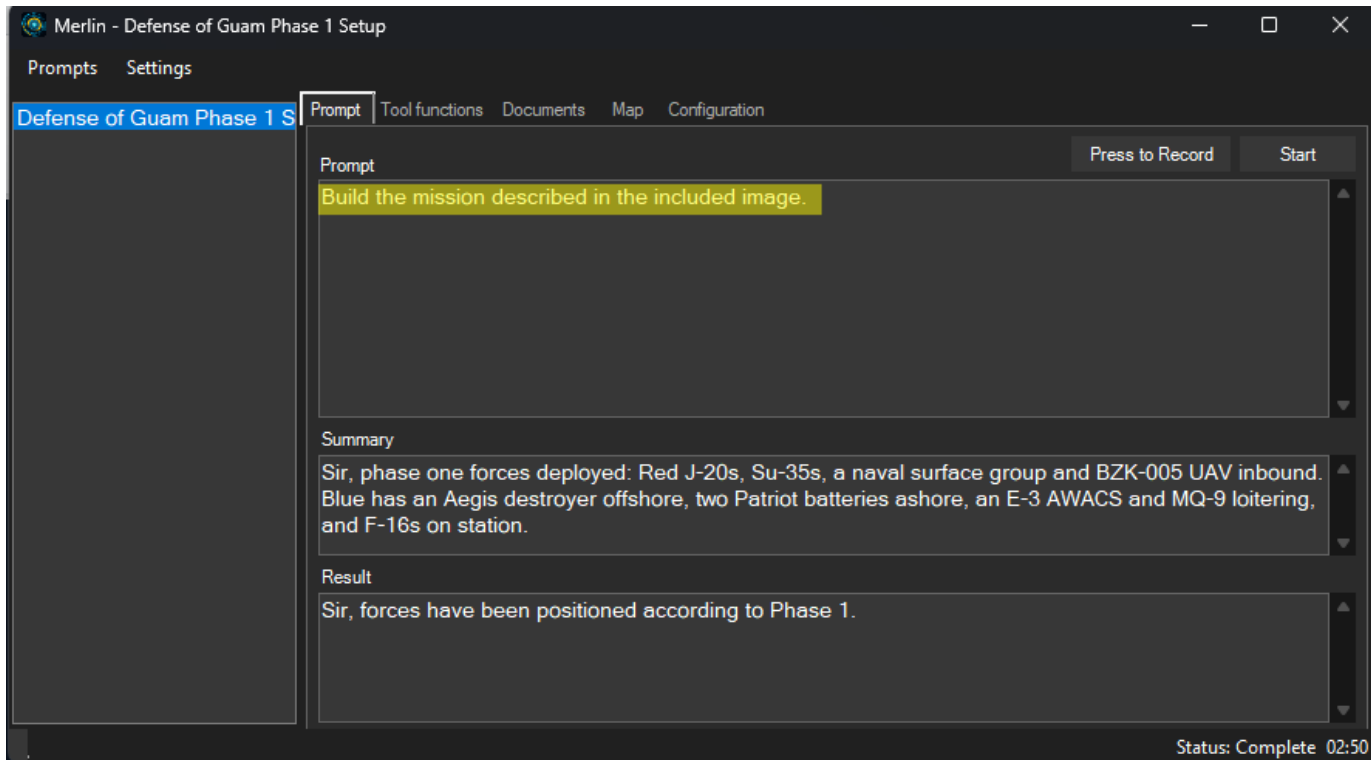
CUSTOMER IMAGE

Presented on a Teams call



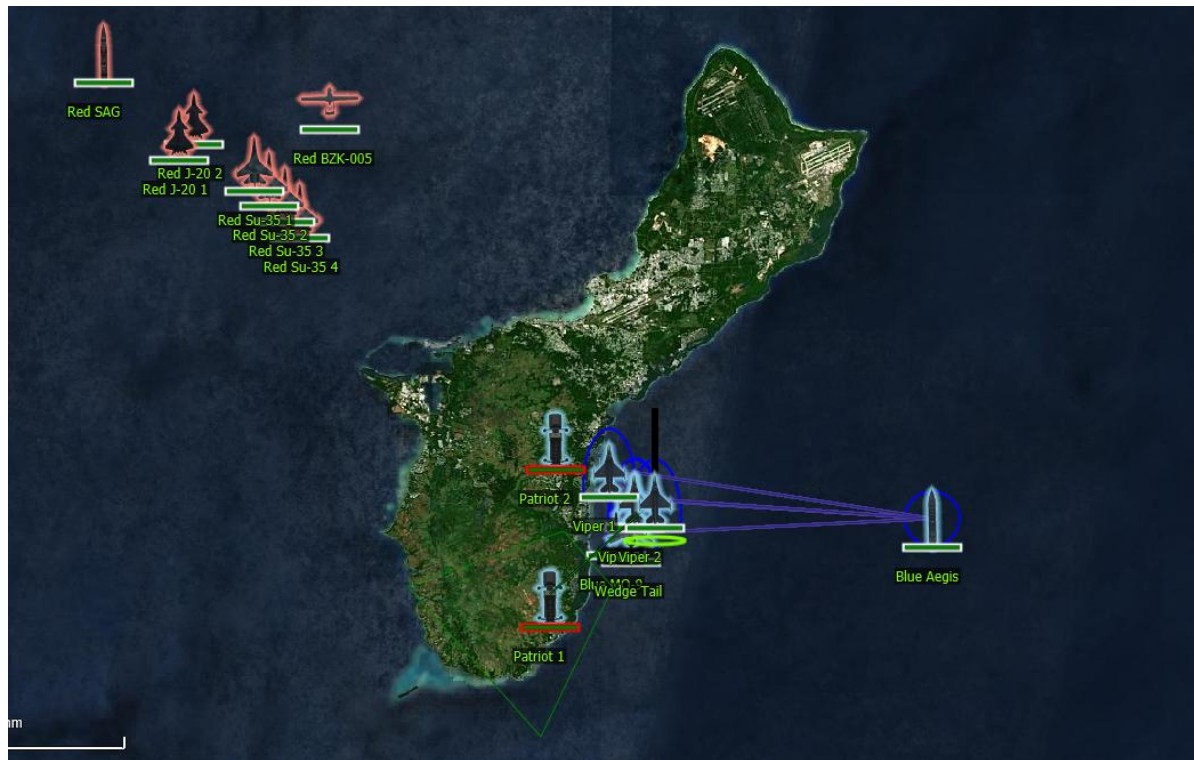
SCREENSHOT FED INTO MERLIN

MACE AI plugin



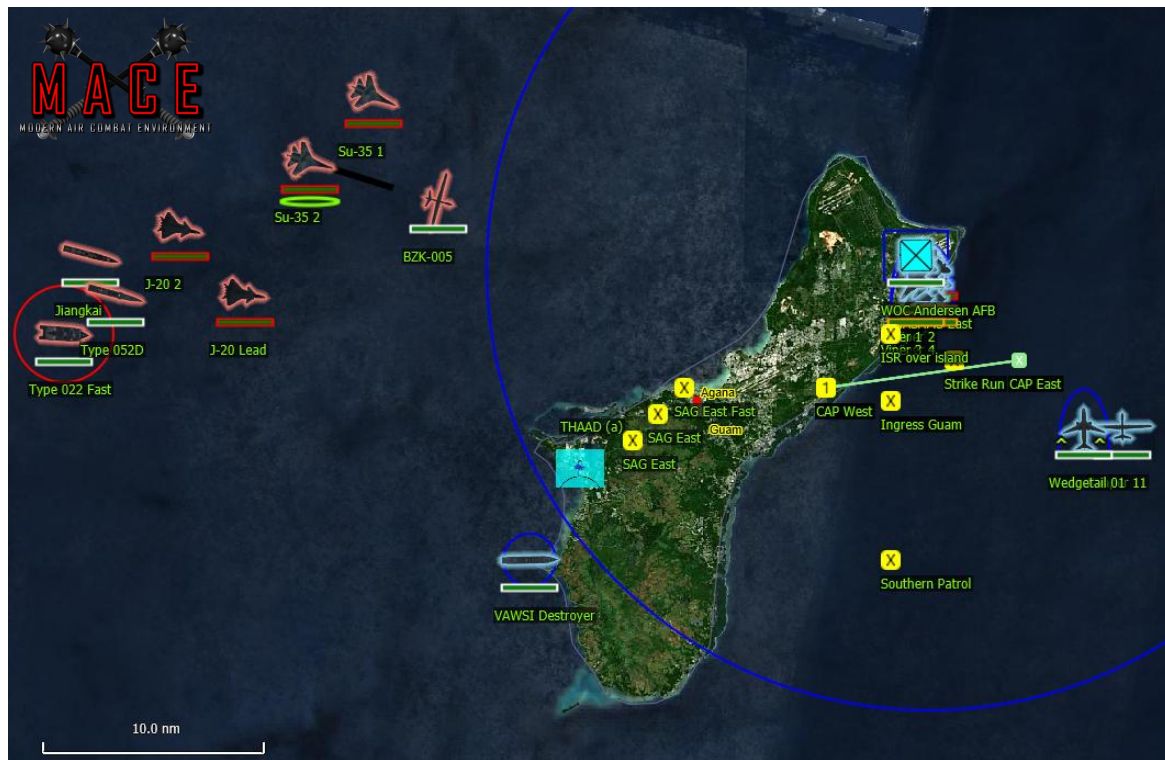
MERLIN MAKES THE MISSION IN MACE

Using the MACE API - GPT4



MERLIN MAKES THE MISSION IN MACE

Using the MACE API - GPT5



GPT4 → GPT5

- Better team affiliation and callsign allocation
- Routing and loiters in mission area
- Radios on common frequencies

SIMPLIFIED MISSION CREATION

From searching the internet

Merlin - Iranian Air Defenses and U.S. Carrier Group Placement

Prompts Settings

Prompt Tool functions Documents Map Configuration

Iranian Air Defenses and U.S. Carrier Group Placement
Set Map Extent to Persian Gulf

Press to Record Submit

Prompt

search the internet for the locations of Iranian air defenses and add those entities to my MACE mission, then add a carrier battle group in the strait of hormuz

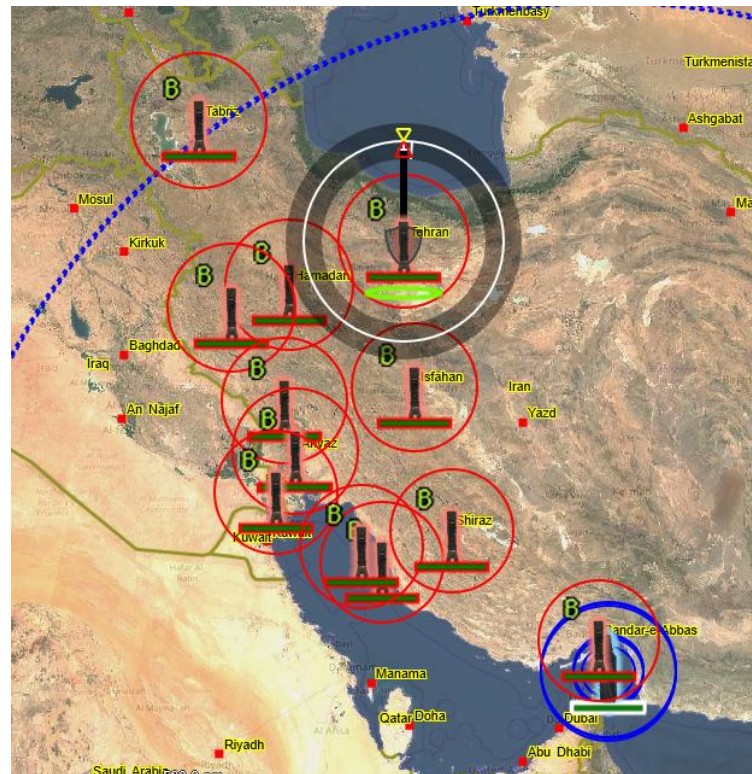
Summary

Sir, Iranian Bavar-373 SAM sites and a U.S. carrier battle group have been positioned across key strategic locations and the Strait of Hormuz. The MACE map has been zoomed to the relevant area.

Result

Based on the available information, Iranian air defense systems are strategically positioned across the country to protect key locations. Notable systems include the Russian-made S-300 and domestically developed Bavar-373 and Khordad-15. These systems are deployed near critical sites such as Tehran, Esfahan, Shiraz, Bandar Abbas, Kharg Island, Bushehr, Bandar Khomeini, Ahwaz, Dezful, Kermanshah, Hamadan, and Tabriz. ([globalsecurity.org](https://www.globalsecurity.org/military/world/iran/air-defense-sites.htm?utm_source=openai)) In the Strait of Hormuz, a U.S. carrier battle group typically comprises an aircraft carrier accompanied by guided-missile cruisers, destroyers, and support vessels. This formation provides a robust naval presence in the region. Please note that the exact locations and compositions of military assets are subject to change and may not be publicly disclosed in real-time. Sir, Iranian Bavar-373 SAM systems have been positioned at critical locations, and a U.S. carrier battle group has been established in the Strait of Hormuz. The map is set for operations.

Status: Complete 01:27



SIMPLIFIED MISSION CREATION

From data parsing

33600|-|-ISA-6_Straight_Flush_RADAR|36.5290471902676|-114.807059529703|-IMACE|U/FOUO|-IADS_TT|TRUE|0

PromptTool functionsMap

Selected AI Modelgpt-4.1 (OpenAI)Press to RecordSubmit

Prompt

Create an IADS from the attached file. The first value of each row is an ELNOT. Use only that to identify the entity type, and place it based on the latitude and longitude specified. Ignore all other fields of each row.

Attachments

File: C:\Users\Public\Docu

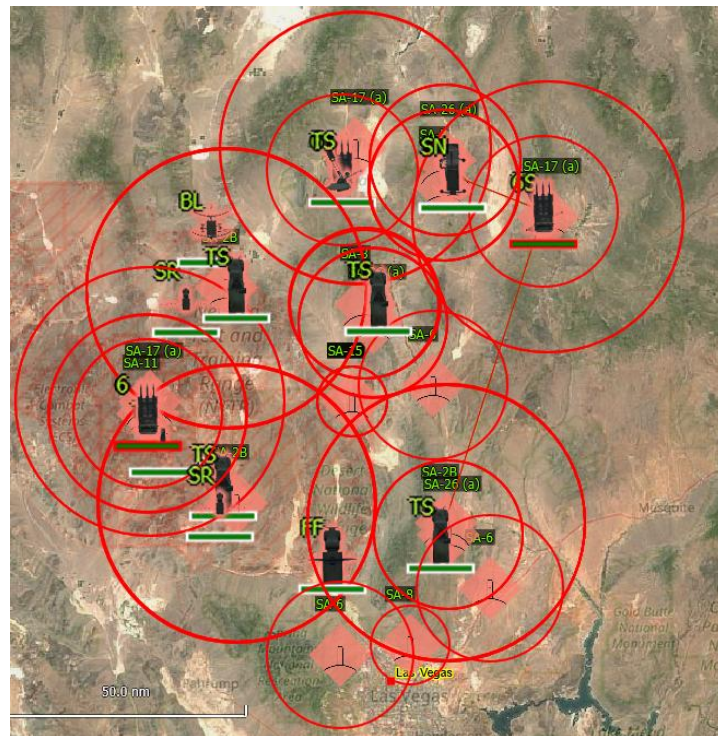
Summary

Deployed IADS elements using ELNOT and coordinates from user file. Multiple SAM, radar, and acquisition units placed across AO.

Result

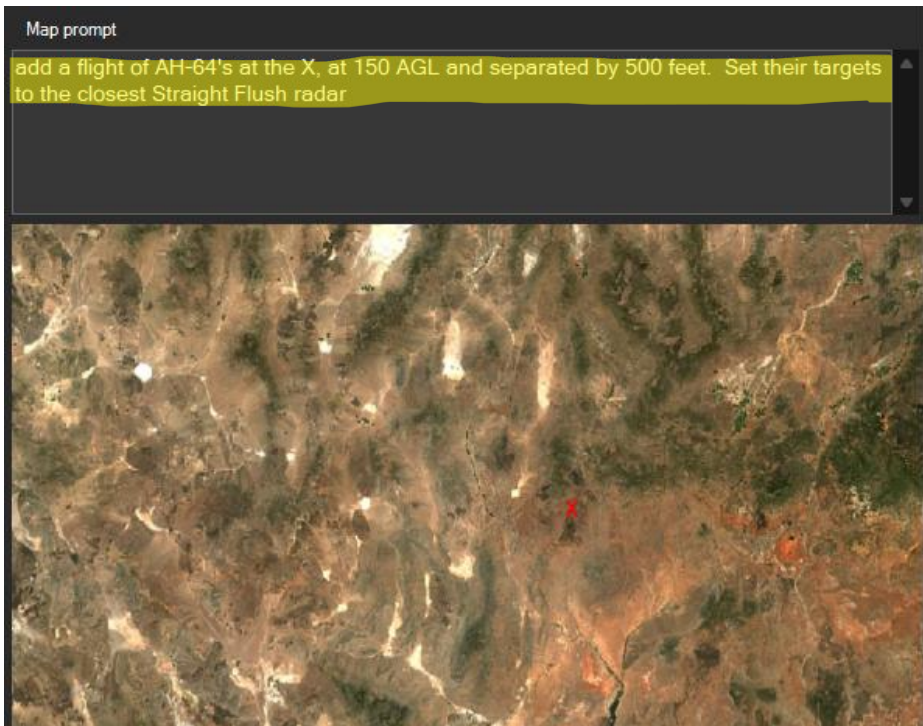
All IADS elements in your file have been created using their ELNOTs and specified coordinates. Multiple SAMs, radars, and acquisition units were placed across the area of operations. Prompt Name: IADS Creation from ELNOT File Summary: Deployed IADS elements using ELNOT and coordinates from user file. Multiple SAM, radar, and acquisition units placed across AO.

Status: Complete 01:36



SIMPLIFIED MISSION CREATION

From map prompt



Partial success – it did add two AH-64's, but they did not have any separation, and were not the specified altitude

SIMPLIFIED MISSION CREATION

From text description

Prompt

Tool functions

Map

Selected AI Model gpt-4.1 (OpenAI)

Prompt

add a flight of 4 AH-64s at 36.093, -115.693. set their altitudes to 150ft AGL and separate them by 500 ft horizontally. Give them cool callsigns.

Summary

Four AH-64s added, set to 150ft AGL, each with unique callsigns and 500ft separation.

Result

Four AH-64 helicopters have been added in a flight with 500 ft separation, all set to 150 ft AGL and given unique callsigns: Viper 1, Venom 2, Reaper 3, and Phantom 4. Summary: Four AH-64s added, set to 150ft AGL, each with unique callsigns and 500ft separation.

Reaper 3
Altitude: 4544 ft MSL
150 ft AGL

Viper 1
Altitude: 4479 ft MSL
150 ft AGL

Venom 2
Altitude: 4457 ft MSL
150 ft AGL

Phantom 4
Altitude: 4346 ft MSL
150 ft AGL

500 ft

Viper 1
Viper 1: 1 x AH-64
Health: 100%
DIS Type: 1, 2, 225, 20, 1, 4, 0
DIS ID: Site: 1, App: 105, Entity: 1314
CIGI Type: 12389
CIGI ID: 1205
Location: 36.09300, -115.69300

DEEP STATE MAP IMPORT

Import OSINT for UKR in 4 mins to a MACE mission laydown

The screenshot displays the MACE mission planning software interface. The main map shows a geographical area covering parts of Belarus, Ukraine, and Russia, with various military units and locations marked. The sidebar on the right contains a 'Prompts' section with a text prompt for unit placement and a 'Result' section showing the summary of the operation. The status bar at the bottom indicates the current mission parameters.

Prompts

OPFOR Units Placement

Prompt: Attached is a csv file with a list of opfor (red) units; place the best representation of these units on the MACE map. Do this for each entry in the table. If you do not have a matching MACE entity, use a russian soldier.

Selected AI Model: gpt-4.1 (OpenAI)

Press to Record Submit

Attachments

File: C:\Users\cardc\Down

Summary

Placed primary OPFOR units and Russian military entities at specified locations from the provided CSV data on the MACE map.

Result

Primary OPFOR and Russian military units listed in your CSV have been placed at their specified locations on the MACE map. Best-fit models (such as "Guided Missile Cruiser (Slave)" for Moskva, "N Korean Soldier (SA-18)" for Pyongyang, and "RUS Soldier" for other units) were used for each entry. The map extent was set to include all new units.

Status: Complete 00:23

Cursor: 51 57 7366 39 7.1017 Elev: 97 m (CDB (Down Sampled)) Clock: 17:00:00 Jul 27 Selected Platform: Moskva

DEEP STATE MAP IMPORT

Import OSINT for UKR in 4 mins to a MACE mission laydown



NOW

- 4-500 Units processed in batches of 50
- Parsing Ukrainian and English
- Create correct units at parsed positions
- Vector data import

FUTURE

- Analysis of name vs search for composition → MACE aggregate and group templates
- Attack direction - waypoint creation



MISSION LOWEST RISK ROUTE PLANNING

Using MACE API

Prompt Tool functions Map

Selected AI Model o4-mini (OpenAI)

Prompt

run the MARC tool for Viper 1. The target is SA-6 Rad_45 and we should not proceed further than needed to shoot our AGM-114 hellfire.

Summary

Safest route plotted to Hellfire range and target assigned.

Result

Route calculated for Viper 1 to stop at Hellfire range of the SA-6 radar. Nine waypoints added along the safest path. Target locked on SA-6 Rad_45.



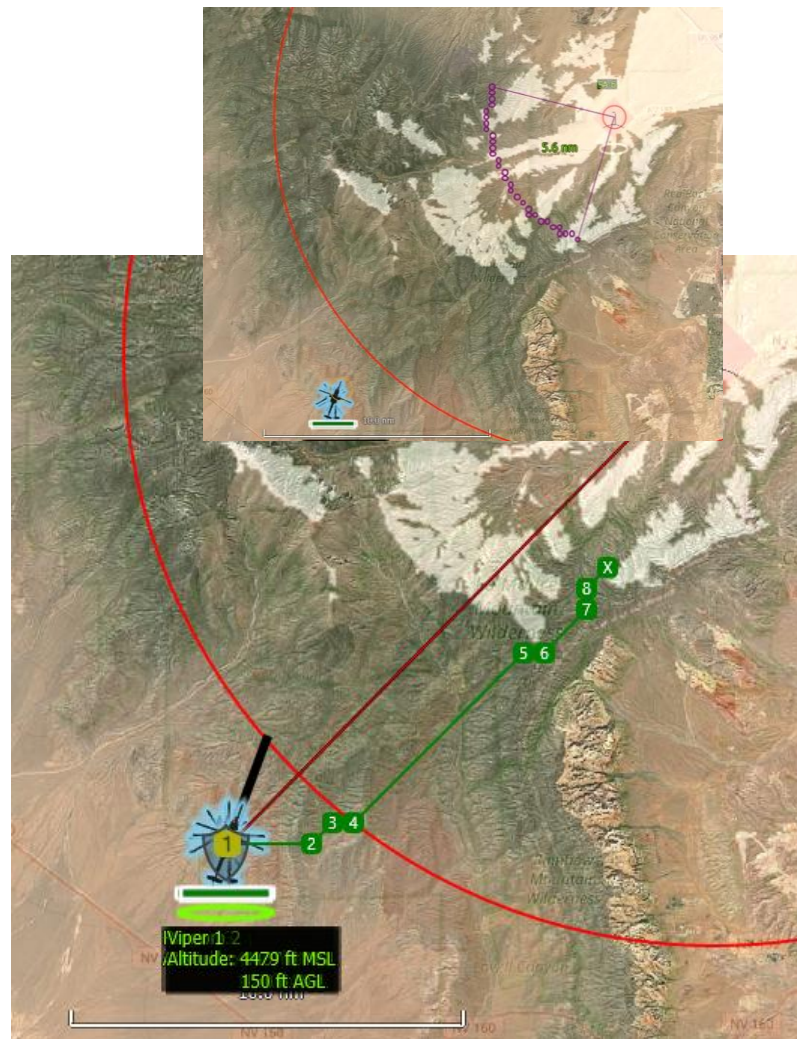
BEHIND THE SCENES

... AI invoking MACE API

CalculateEffectiveWeaponRange	Input parameters
CalculateEntityRoute	EntityID : 281926034391040 (Viper 1 - Viper 1) TargetEntityID : 281926020431872 (SA-6 Rad_45 - SA-6 Rad_45) WeaponName : AGM-114 HELLFIRE/L HEAT
SetEntityTarget	
SetPromptInfo	
	Result
	rMax1: 9900.52876488139 rMax2: 11000.5875165349 rNoEscape_m: 11000.5875165349 rMin: 926

CalculateEffectiveWeaponRange	Input parameters
CalculateEntityRoute	EntityID : 281926034391040 (Viper 1 - Viper 1) OriginLatitude : 36.091889 OriginLongitude : -115.693 TargetLatitude : 36.302736 TargetLongitude : -115.436322 Altitude : 100 DistanceToTarget : 11000
SetEntityTarget	
SetPromptInfo	
	Result
	Safest route calculated for entity 281926034391040: Number of waypoints: 9 Waypoints added to entity Waypoints: #1 : Latitude: 36° 5' 41.52" N Longitude: 115° 41' 31.68" W Altitude: 1391.47204589844 #2 : Latitude: 36° 5' 41.67" N Longitude: 115° 38' 51.84" W Altitude: 1631.99499511719

CalculateEffectiveWeaponRange	Input parameters
CalculateEntityRoute	EntityID : 281926034391040 (Viper 1 - Viper 1) TargetEntityID : 281926020431872 (SA-6 Rad_45 - SA-6 Rad_45)
SetEntityTarget	
SetPromptInfo	



CREATING CONTENT

Making and Configuring Emitters ... by prompt

Prompt Mode Emitter Selected AI Model gpt-4.1 (OpenAI)

Create and add the snowdrift radar to the RadarSite1. Snowdrift's mode should be set to acquisition with a frequency of 5.4 ghz, pw of 1.3 microseconds, and pri of 777 microseconds.

Summary

Snowdrift radar with acquisition mode at 5.4 GHz created and added to RadarSite1.

Result

The Snowdrift radar was created and added to RadarSite1 with an acquisition mode. The mode is set to a center frequency of 5.4 GHz, pulse width of 1.3 microseconds, and PRI of 777 microseconds. Summary: Snowdrift radar with acquisition mode at 5.4 GHz created and added to RadarSite1.



Prompt Tool functions Map Mode Emitter Selected AI Model gpt-4.1 (OpenAI)

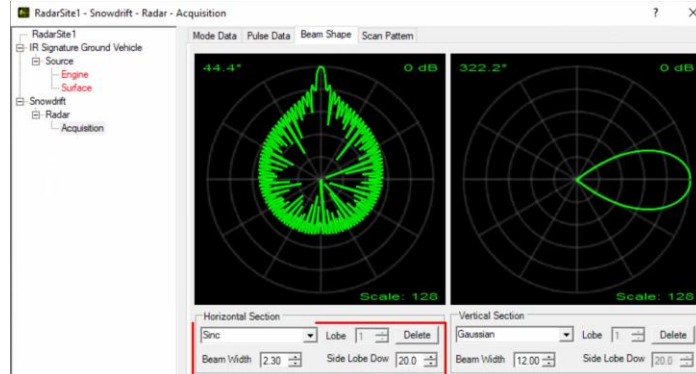
Modify the acquisition mode in snowdrift to have a 2.3 degree sinc beam in azimuth, 12 degrees vertical and a 20 db down first sidelobe.

Summary

Set acquisition mode on Snowdrift to 2.3° azimuth sinc beam, 12° vertical, and 20 dB down sidelobe.

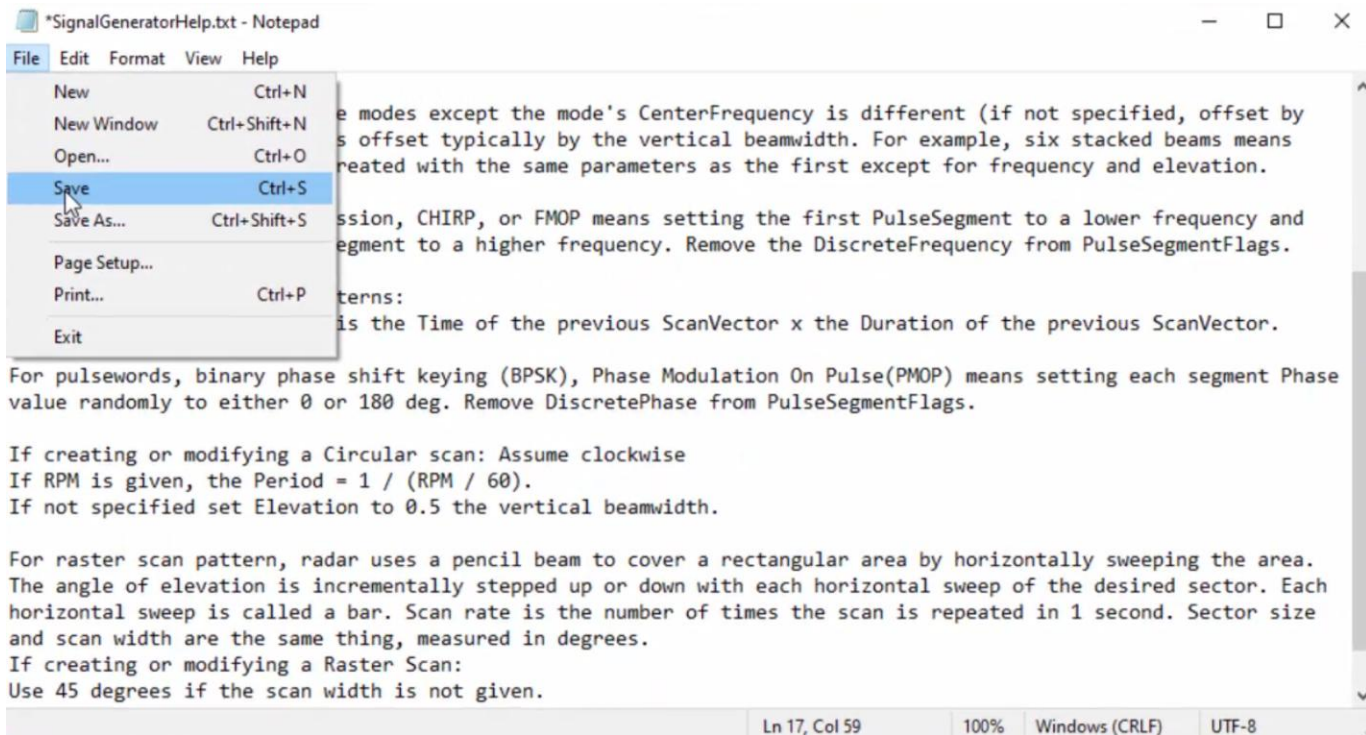
Result

The acquisition mode on the Snowdrift radar has been updated to use a 2.3° sinc beam in azimuth, a 12° vertical beam, and a 20 dB down first sidelobe. Summary: Set acquisition mode on Snowdrift to 2.3° azimuth sinc beam, 12° vertical, and 20 dB down sidelobe.



CREATING CONTENT

Editing a help file to guide the AI enables more complexity



CREATING CONTENT

Creating a complex pulse tables and new track modes from single prompts

Prompts Settings Import

Snowdrift Radar Pulse Table

Prompt Tool functions Map

Mode Emitter Selected AI Model gpt-4.1 (OpenAI)

Prompt

Modify the snowdrift radar to have 12 pulsewords that start at 5300 mhz and increase by 10mhz. Each pulseword should repeat 300 times.

Summary

Set up 12 pulsewords for Snowdrift radar, each starting at 5300 MHz and increasing by 10 MHz, each repeating 300 times. There were issues updating due to PulseSegmentFlags errors to be reviewed.

Result

The Snowdrift radar was modified to include 12 pulsewords starting at 5300 MHz, each increasing by 10 MHz per pulseword, and each set to repeat 300 times. However, there were issues updating the pulsewords due to PulseSegmentFlags errors, which need further review. Prompt name: Snowdrift Radar Pulse Table UpdateSummary: Set up 12 pulsewords for Snowdrift radar, each starting at 5300 MHz and increasing by 10 MHz, each repeating 300 times. There were issues updating due to PulseSegmentFlags errors

	Time (μs)	Frequency (MHz)	Pulse Width (μs)	PRI (μs)	PRF (Hz)	Amplitude	Count
▶	0	5300	1.3	777	1287.001287...	1	300
	233100	5310	1.3	777	1287.001287...	1	300
	466200	5320	1.3	777	1287.001287...	1	300
	699300	5330	1.3	777	1287.001287...	1	300
	932400	5340	1.3	777	1287.001287...	1	300
	1165500	5350	1.3	777	1287.001287...	1	300
	1398600	5360	1.3	777	1287.001287...	1	300
	1631700	5370	1.3	777	1287.001287...	1	300
	1864800	5380	1.3	777	1287.001287...	1	300
	2097900	5390	1.3	777	1287.001287...	1	300
	2331000	5400	1.3	777	1287.001287...	1	300

Prompt Tool functions Map

Mode Emitter Selected AI Model gpt-4.1 (OpenAI)

Prompt

Add a new Target track mode with a pencil beam.
doppler notch: 50 knots.
frequency: 8500 mhz
scan: 4 bar raster, 60 deg wide, 2 hz scan rate.

Summary

Added a new radar Target Track mode with a pencil beam, 8.5 GHz frequency, 50-knot doppler notch, and 4-bar raster scan.

Result

A new radar mode "Target Track" has been added to the Snowdrift radar on RadarSite1. The mode uses a pencil beam, 8.5 GHz frequency, 50-knot doppler notch, and a 4-bar 60-degree raster scan at 2 Hz.

Snowdrift

Radar

Acquisition

Target Track

Mode Group 0

Mode ID 2

Mode Name Target Track

Descriptors

RequireTrackToAuto: False

ScanData ScanWrapperRaster.Scan1

Power

Average Power 1.0000 kW

Pulse

Pulse Segment 1 of 1

Frequency 8500.000 MHz

Phase 0°

Amplitude (0 to 1) 1.00

Add < > Delete

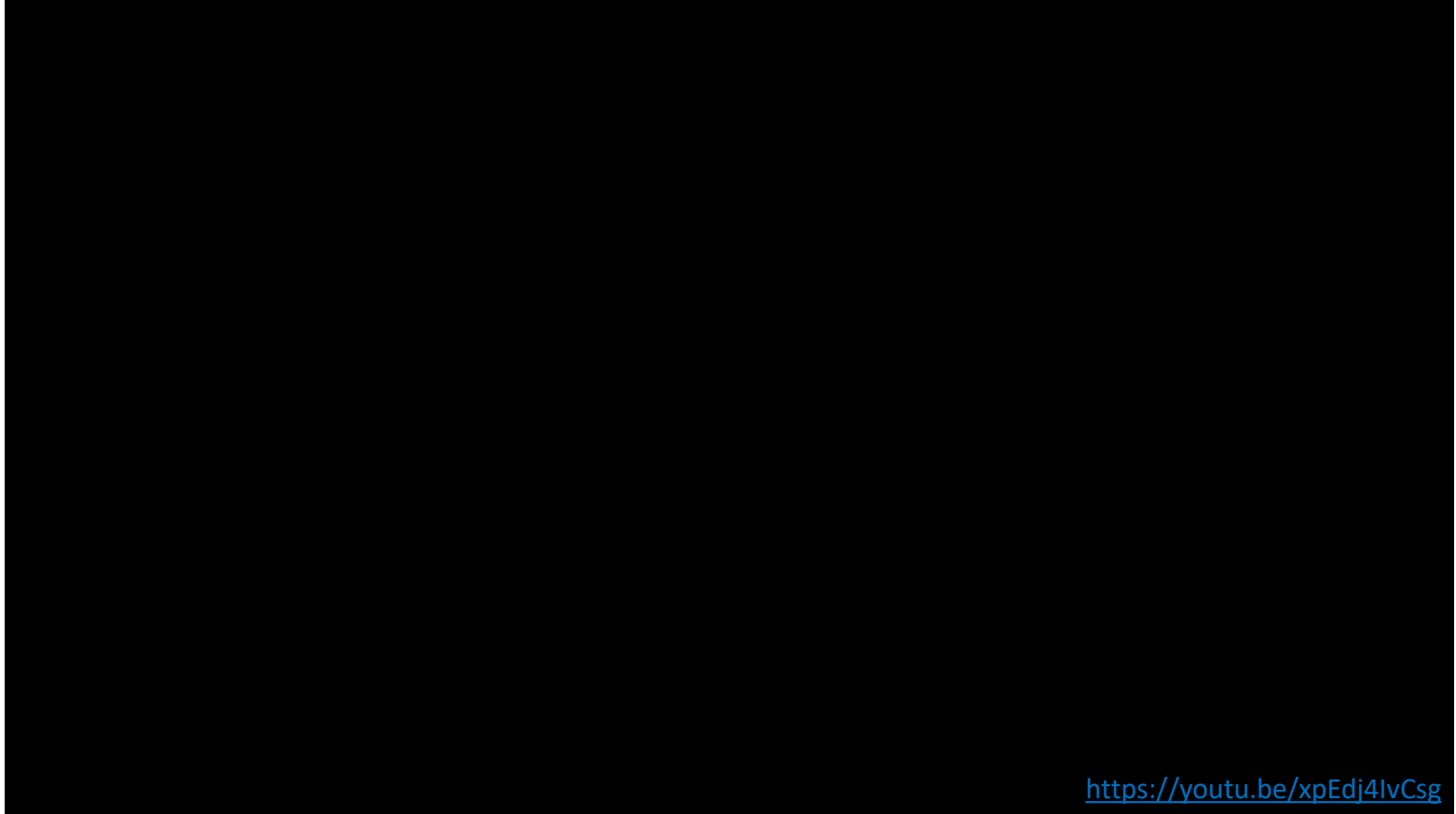
Interpolate: ☒ Freq ☒ Phase ☒ Amp.

☐ CW ☐ Quantum Illuminator

Coherency: 100.0% Calculated PCG: 0.0 dB

CREATING CONTENT

See for yourself!



NEXT STEPS

Agentic Workflow vs Single Prompt

- An **agentic workflow** is a type of AI-driven process where autonomous agents can **make decisions, take actions, and adapt dynamically** with minimal human input. Agentic workflows are **goal-oriented, context-aware, and iterative**.

Step	What happens	Why it's better
1. Prompt → Task Decomposition	Master agent breaks the user's intent into clear, bite-sized mission tasks.	Removes ambiguity & saves re-prompts
2. Tool-Aware Task Planning	Each task is auto-paired with only the simulation APIs it needs.	Faster, safer, resource-efficient
3. Autonomous Execution & Sub-tasking	Tasks run (often in parallel) and can spawn their own subtasks as needed.	Scales effortlessly to complex ops
4. Result Aggregation	Outputs are merged into a single, mission-ready answer.	Richer, multi-perspective insight
5. Verification → Auto-Correction Loop	A final check catches gaps; if anything's off, the agent patches and re-verifies.	Higher reliability, lower operator load

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MISSION PLANNING ANALYSIS AND REHEARSAL

QUESTIONS?



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