

Office for Defence Planning - German Armed Forces

Munich

Leveraging Large Language Models for Enhanced Wargaming in Multi-Domain Operations

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14P - 2


The image displays a game interface with a map of Eastern Europe and three playing cards. The top bar shows 'Escalation' (9), 'Morale' (8), 'Communication Score:100%', and 'Political Will:100Points'. The map shows various locations: MAMOE, BANZIG, LASCHAU, WALLIN, LIGA, SAINT TOBURG, PANESKOW, NACHOLM, JELNI LUKI, SBESCH, ASCKAU, LURSK, and PORESCHBA. The three playing cards are:

- Military Playing Card:**
 - Troop movements in the allied nations BLUE**
 - Team BLUE deploys an armored infantry brigade with a tank battalion, two armored infantry battalions and an infantry battalion as well as companies of other combat support forces to ensure local superiority.
 - 90** (Resource Points)
 - 30** (Impact Points) and **+1.3** (Escalation Points)
- Cyber / Hybrid Playing Card:**
 - Expansion of satellite communication capability**
 - By stationing their own communication satellites in low-Earth orbits, the troops of Team BLUE can access additional communication channels.
 - 100** (Resource Points)
 - +30%** (Communication Score) and **+0.0** (Escalation Points)
- Political / Economic Playing Card:**
 - Diplomatic efforts**
 - To counter the political tensions in the conflict region, political consultations are held with Team ORANGE in the city of RODANA. The Escalation Score drops by -1.0 points.
 - +0** (Resource Points)
 - +10%** (Political Score) and **-1.0** (Escalation Points)

The bottom bar shows 'Resources this turn: 1000 Points' and a 'Next Move' button.

BLUE PLAYER TURNS

Escalation



9

8

7

6

5

4

3

2

1


Morale

Communication Score:100%

Political Will:100Points

Announcements

Input



Escalation Score

Military

Cyber / Hybrid

Political / Economic

Next Move

Resources this turn: 1000 Points

Turn

1

2345678910

End Turn

BLUE PLAYER TURNS

Escalation

9

8

7

6

5

4

3

2

1

Morale

Communication Score:100%

Political Will:100Points

Announcements

Input

EASTERN SEA

EASTERN SEA

MAMOE

BANZIG

GRAD

ARDEN

LONIG

MAFE

LASCHAU

LIGA

ADONA

VALINUS

WALLIN

ESKENE

WJELNI LUKI

RODANA

SINSK

LIEV

SAINT TOBURG

PANESKOW

NACHOLM

SBESCH

LURSK

PORESCHBA

ASCKAU

Military

Cyber / Hybrid

Political / Economic

Next Move

Resources this turn: 1000 Points

Turn

1

2

3

4

5

6

7

8

9


10

End Turn

Morale Score

BLUE PLAYER TURNS

Escalation



9

8

7

6

5

4

3

2

1

Morale


Communication Score:100%

Political Will:100Points

Announcements

Input

Communication Score



Military

Cyber / Hybrid

Political / Economic

Next Move

Resources this turn: 1000 Points

Turn

1

2

3

4

5

6

7


8

9

10

End Turn

Escalation



9

8

7

6

5

4

3

2

1

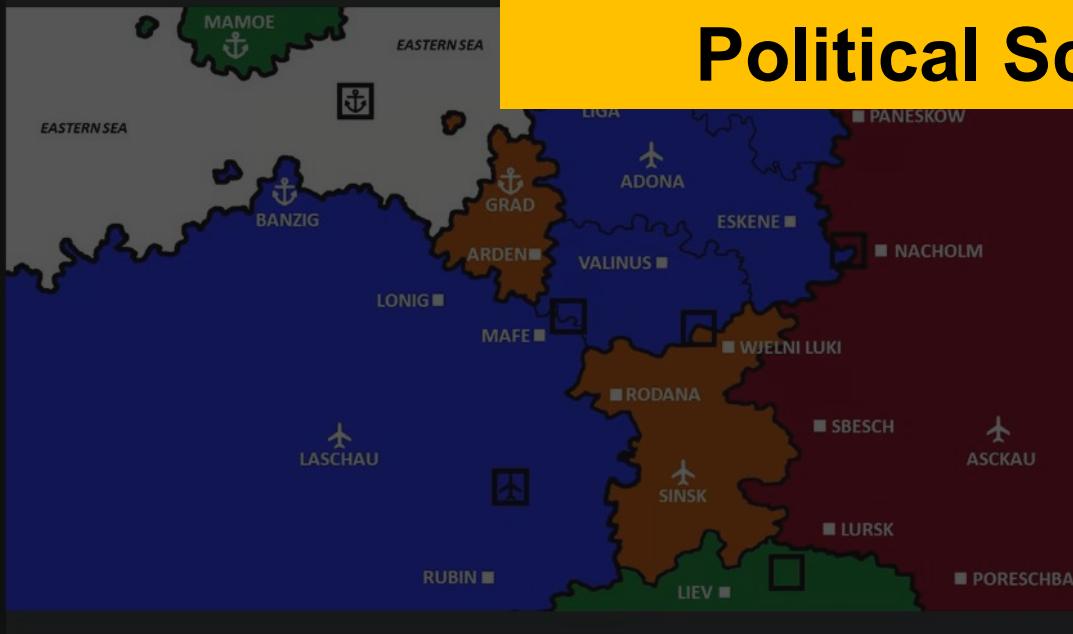
Morale

Communication Score:100%

Political Will:100Points

Announcements

Political Score



Input

Military

Cyber / Hybrid

Political / Economic

Next Move

Resources this turn: 1000 Points

Turn

1

2

3

4

5

6

7

8

9

10

End Turn

BLUE PLAYER TURNS

Escalation

9

8

7

6

5

4

3

2

1

Morale

Communication Score:100%

Political Will:100Points

Announcements

Input

Map of the Eastern Sea region showing various locations and icons. Locations include MAMOE, BANSIG, GRAD, ARDEN, LONIG, MAFE, VALINUS, ADONA, LIGA, WALLIN, SAINT TOBURG, PANESKOW, NACHOLM, ESKENE, WJELNI LUKI, RODANA, SBESCH, LASCHAU, SINSK, RUBIN, LIEV, LURSK, ASCKAU, and PORESCHBA. Icons include anchors, airplanes, and a nuclear symbol.

Military

Cyber / Hybrid

Political / Economic

Next Move

Ressource Score

Resources this turn: 1000 Points

Turn

1

2

3

4

5

6

7

8


9

10

End Turn

BLUE PLAYER TURNS

Escalation



9

8

7

6

5

4

3

2

1

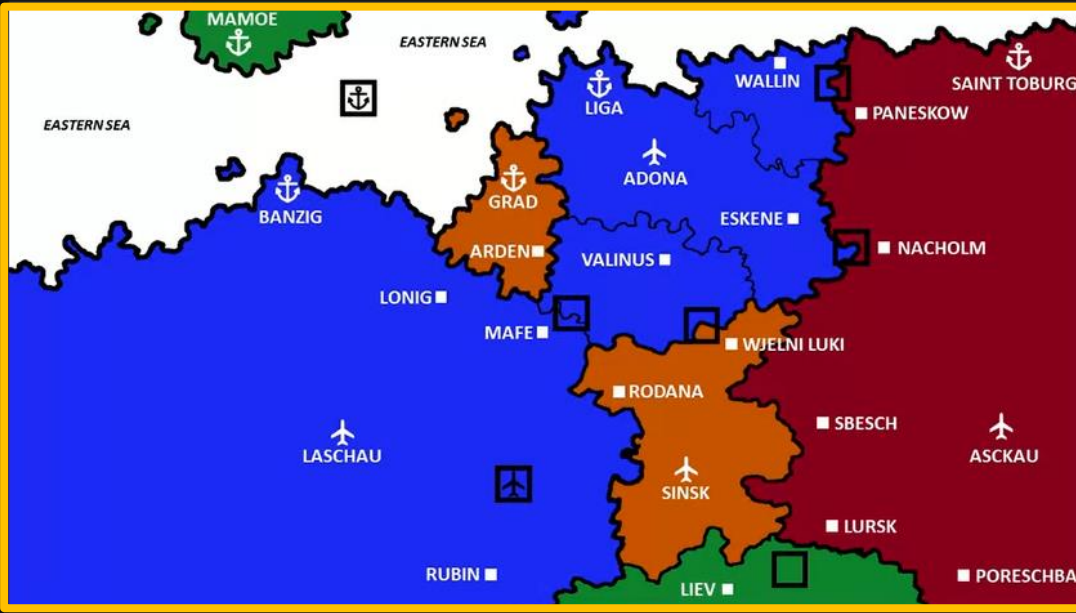
Morale

Communication Score:100%

Political Will:100Points

Announcements

Input



Map showing strategic locations in the Eastern Sea region. Locations include: MAMOE, BANSIG, GRAD, ARDEN, LONIG, MAFE, LASCHAU, RUBIN, LIGA, ADONA, VALINUS, WJELNI LUKI, RODANA, SINSK, LIEV, WALLIN, SAINT TOBURG, PANESKOW, NACHOLM, SBESCH, LURSK, ASCKAU, and PORESCHBA. The map is divided into three color-coded zones: Blue (Western), Orange (Central), and Red (Eastern).

Military

Cyber

Next Move

Resources this turn: 1000 Points

Turn

1

2

3

4

5

6

7

8

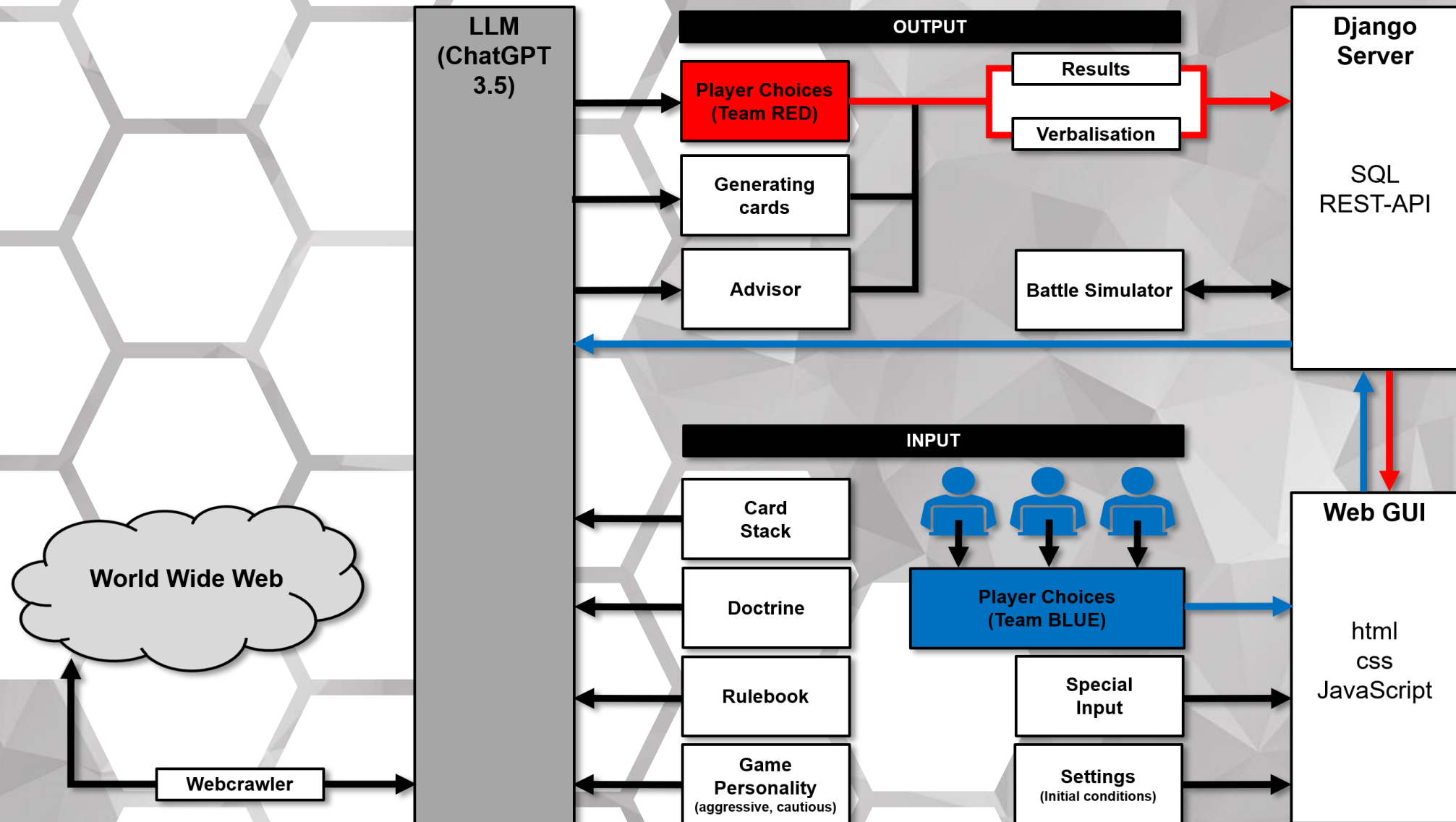
9

10

End Turn





Key Strategic Locations





ARCHITECTURE OF THE DEMONSTRATOR







PLAYING CARDS CREATED BY LLM

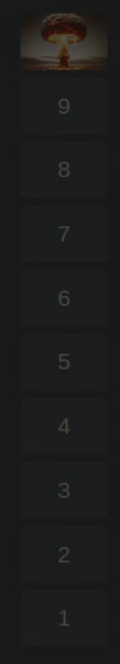
GENERATING CONTENT

	Cyber / Hybrid Playing Card		
	Critical Infrastructure Breach		
	RED executes a coordinated cyber assault aimed at disrupting the water supply system in BLUE's city of LONIG, resulting in contamination of the city's water sources and endangering public health.		
	0		
	Ressource Points		
	-6%	+0.8	
	Communication Score	Escalation Points	
	Cyber / Hybrid Playing Card		

	Cyber / Hybrid Playing Card		
	Stealthy Data Exfiltration		
	RED conducts a covert cyber operation targeting sensitive government databases in BLUE's city of MAMOE, stealthily exfiltrating classified information and compromising national security.		
	0		
	Ressource Points		
	-11%	+0.9	
	Communication Score	Escalation Points	
	Cyber / Hybrid Playing Card		

	Cyber / Hybrid Playing Card		
	Substation Network Breach		
	RED orchestrates a sophisticated cyber intrusion into the substation network of BLUE's city of RUBIN, triggering a series of malfunctions that disrupt power distribution and compromise industrial operations.		
	0		
	Ressource Points		
	-13%	+0.5	
	Communication Score	Escalation Points	
	Cyber / Hybrid Playing Card		

Escalation



Baltic Tensions Escalate: Military Buildup and Trade Curbs Spark Concerns

The Baltic region is on edge as significant military movements in the East and strict trade restrictions fuel rising tensions. Communication breakdowns suggest increasing instability, with fears of a broader conflict looming. Observers warn the situation could rapidly deteriorate.

+++++ News Update +++++

Tensions escalate as Red deploys troops and imposes agricultural import restrictions on Blue countries, impacting both economies negatively. Meanwhile, communication disruptions have been reported across the region due to unidentified electromagnetic interference, causing concerns over potential cyber-hybrid activities. The political will of both factions remains high, with Red's escalation score increasing and Blue maintaining a steady stance despite recent challenges.

News Update:
Tensions escalate as Red deploys troops and imposes agricultural import restrictions on Blue countries, impacting both economies negatively. Meanwhile, communication disruptions have been reported across the region due to unidentified electromagnetic interference,

Input

Chat GPT 3.5 Turbo

MISTRAL 7B

Resources this turn: 800 Points

Turn

1

2

3

4

5

6

7

8

9

10

End Turn

PLAYING CARDS SELECTED BY LLM

RED PLAYER TURNS

Military Playing Card	
Troop movements in the East Team RED is deploying a mechanized brigade with three mechanized battalions with BMP-2Ms and a tank battalion with T-80 tanks, including an anti-tank, artillery and anti-aircraft squadron each. Location: Liev	
0	
Ressource Points	
30	+1.3
Impact Points	Escalation Points
Militärisch Playing Card	

Political / Economic Playing Card	
Import restrictions on agricultural products In order to emphasize its political demands, Team RED imposes import restrictions on agricultural products from Team BLUE countries.	
-100	
Ressource Points	
0%	+0.3
Political Score	Escalation Points
Political / Economic Playing Card	

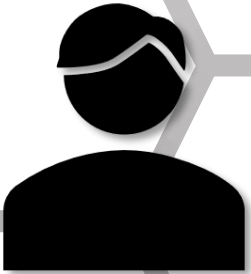
Cyber / Hybrid Playing Card	
Interference in the electromagnetic spectrum Team RED is increasingly carrying out jamming attacks in the electromagnetic spectrum with its cyber units, as a result of which Team BLUE's communication with its own troops is restricted.	
0	
Ressource Points	
-10%	+0.2
Communication Score	Escalation Points
Cyber / Hybrid Playing Card	

Explanation

I chose card '14' (Massive troop movements in the east) as it is a military action that increases my own strength on the battlefield. Card '20' (Import restrictions on agricultural products) is chosen to put economic pressure on Blue, reducing their resource score and potentially weakening them politically. Lastly, card '17' (Interference in the electromagnetic spectrum) is selected as it disrupts Blue's communication capabilities, further escalating tensions and potentially causing confusion within their ranks. I decided not to attack any location at this time.

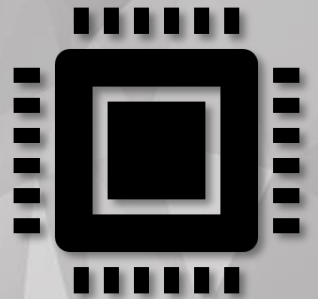
RULE EXPLANATION

ADVISOR FUNCTIONS




How many more cards can I play?

You can still play one more card in this round as you've already played two cards. Remember, you can only play a maximum of three cards per round from any combination of Military, Cyber/Hybrid, or Political/Economic categories.



ADVISOR FUNCTIONS

Escalation



9

8

7

6

5

4

3


2

1

Morale

Communication Score:115%

Political Will:85Points



News Update:
Tensions escalate as Red deploys troops and imposes agricultural import restrictions on Blue countries, impacting both economies negatively. Meanwhile, communication disruptions have been reported across the region due to unidentified electromagnetic interference,

Input

Military

Cyber / Hybrid

Political / Economic

Next Move

Resources this turn: 800 Points

Turn

1

2

3

4

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9

10

End Turn

ACTION RECOMMENDATION

ADVISOR FUNCTIONS

1. Deploy an armored infantry brigade with a tank battalion, two armored infantry battalions and an infantry battalion as well as companies of other combat support forces to ensure local superiority
(Impact Points: 30, Escalation Points: 1.3, Communication Points: 0, Political Points: 0, Resource Points: -90).
2. Increase communication skills by acquiring modern radio communication equipment for Team BLUE's armed forces
(Impact Points: 0, Escalation Points: 0.0, Communication Points: 20, Political Points: 0, Resource Points: -60).
3. Expand satellite communication capability by stationing own communication satellites in low-Earth orbits to access additional communication channels
(Impact Points: 30, Escalation Points: 0.0, Communication Points: 0, Political Points: 0, Resource Points: -30).

1. Deploy an armored infantry brigade with a tank battalion, two armored infantry battalions and an infantry battalion as well as companies of other combat support forces to ensure local superiority (Impact Points: 30, Escalation Points: 1.3, Communication Points: 0, Political Points: 0, Resource Points: -90)

Military

Cyber / Hybrid

Political / Economic

Next Move

Resources this turn: 800 Points

Turn

1
2
3
4
5
6
7
8
9
10

End Turn

ACTION RECOMMENDATION



SETTINGS



RED PLAYER TURNS



BLUE PLAYER TURNS



GENERATING CONTENT



ADVISOR FUNCTIONS



ACTION MASKING

RESULTS



SCALABILITY



IMMERSION



ADVISOR FUNCTIONS



SCARCITY OF SMEs



OPFORCE REPRESENTATION

**Thank you for your
attention and
interest.**