

Competing Theater Strategies of Additive Complexity in the Iran War

Supplementary Materials

1 The Evolution of JADO Theater Strategies

In the Gulf War of 1991 the United States deployed a new doctrine for warfighting in large scale combat operations (LSCO) known as parallel effects based operations[1]. Figure 1 (TOP) depicts the prior conceptualization of warfare which was a series of destruction based tasks. A specific kind of target, such as air defenses, would be targeted until completely destroyed, and then the next target list – command and control would be targeted until destroyed [1, p. 21].

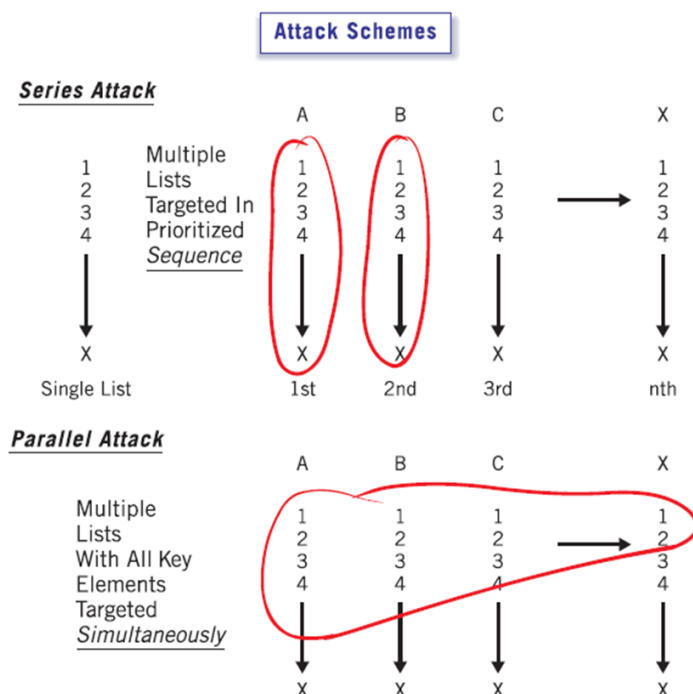


Figure 7
Air campaign attack schemes
(parallel versus serial).

Figure 1: Contrasting pre-Gulf War Series Attack Schemes (TOP) with Parallel Effects Based Operations (EBO) (Bottom) Source: Deptula 2001

In the Gulf War superior US airpower and precision munitions enabled parallel effects based attack schemes as shown in Figure 1 (BOTTOM). Instead of attacking target lists sequentially, they would be attacked in parallel. And instead of requiring the complete destruction of a target list, an 'effects-based' outcome was sufficient. If a bomb failed to fully destroy a command center, but required the evacuation of command personnel the 'effect' was achieved[1, p. 14]. This doctrine of parallel EBO was used to great success in the Kosovo Intervention of 1999 as well as the shock and awe phase of the invasion of Iraq in 2003. Parallel EBO also recognized a flaw in the approach of these campaigns – the massing of US forces outside the battlespace in a regional theater of operations, realizing future adversaries may “capitalize on the massing of forces and associated build-up time required by US...for conducting major theater war (MTW) to deny US access” even predicting that anti-access theater strategies became more effective as “delivery systems such as accurate ballistic missiles...proliferate among potentially hostile states[1, p. 25].”

And strategic adversaries such as Iran were taking note. Understanding the clear dominance of parallel EBO and realizing they couldn't compete at parity in an air war Iran began developing “largely defensive and flexible military doctrine known as a mosaic defense (defence mozaik)[2]”. Over time this would evolve into a concept of mosaic warfare. Iran sought to decentralize its military capabilities in case of decapitation of command and control (C2) while promoting local commanders to take advantage of multi-domain (air, sea, land) and their proxy forces even while “responding to an attack through retaliatory actions that inflict pain on the adversary” through combinations of rocket, missile, and drone barrages; cyber attacks; and terrorism to dissuade them from aggression or to deescalate quickly[3, pp. 19–21].

By 2017[4] thought pieces recognizing that future adversaries would not fight as Iraq and Yugoslavia had began to advance US doctrine from parallel EBO to joint all domain operations (JADO). The first JADO exercise were held by the Department of Defense in 2019 and 2020[5, p. 2]. JADO is described as a multi-domain and multi-layer doctrine (MDML). JADO envisions all the domains of battlespace air, sea, land, space, and cyber[6] integrated across three layers. First a sensing layer of intelligence, surveillance, reconnaissance and analysis (ISR) “to understand the enemy”, subsumed into a command-and-control layer that directs an “effects layer, which includes kinetic, non-kinetic and information operations.[7]”

The multi-layer approach is a current framework of a concept developed in the 1960's of observation-orientation-decision-action loops, (OODA Loop)[8],[9]. Pioneered in dogfighting, OODA loops might originally be measured in the seconds between two individual pilots reflexes and the performance characteristics of their planes. But as technology has advanced and JADO capabilities proliferated, OODA loops now consist of vast arrays of ground, air, maritime, and space based sensors that can direct strikes, and counter strikes, from any of these domains. And OODA loops can be broken into offensive, such as air combat between planes and defensive, such as the ability of a patriot missile battery to detect and intercept an incoming ballistic missile. As the concept has grown, the acronym has complexified now colloquially referred to as Find, Fix, Track, Target, Engage and Assess (F2T2EA) but these are just variations on OODA loops.

And the OODA loops were spreading over larger areas with more dispersed forces. Increasing proliferation of barrage capabilities targeting massed and massing concentrations of US forces gave form to the threat Deputal had warned would undermine parallel EBO. Iranian mosaic warfare was always conceived as a dispersed operation. But both the US Air Force and Navy adopted similar doctrines to address the risk. Both Agile Combat Employment (ACE)[10] for the US Air Force and Distributed Maritime Operations (DMO) for the Navy[11] are doctrines calling for dispersal of forces away from clustered targets the enemy could strike, emphasizing network coordination and maneuver to bring together capabilities across a theater. Rather than massing air power at large air bases – Blue forces would be split between naval carrier strike groups, many regional air installations, and even in some cases the ability to fly in B-52 bombers from hemispheric locations and B-2 bombers from the other side of the globe.

The theater of operations was growing larger and more complex. Whereas OODA loop interactions of past conventional conflicts such as the Gulf War (1991), Kosovo Intervention (1999) and Iraqi Invasion (2003) had dozens or hundreds of aircraft trading missile fire or conducting missions in a theater the size of a country, now the battlespace is crowded with thousands of entities interacting dynamically and simultaneously over a battlespace the size of a region. Parsimoniously depicted in concept Figure 2 below [5, p. 1].

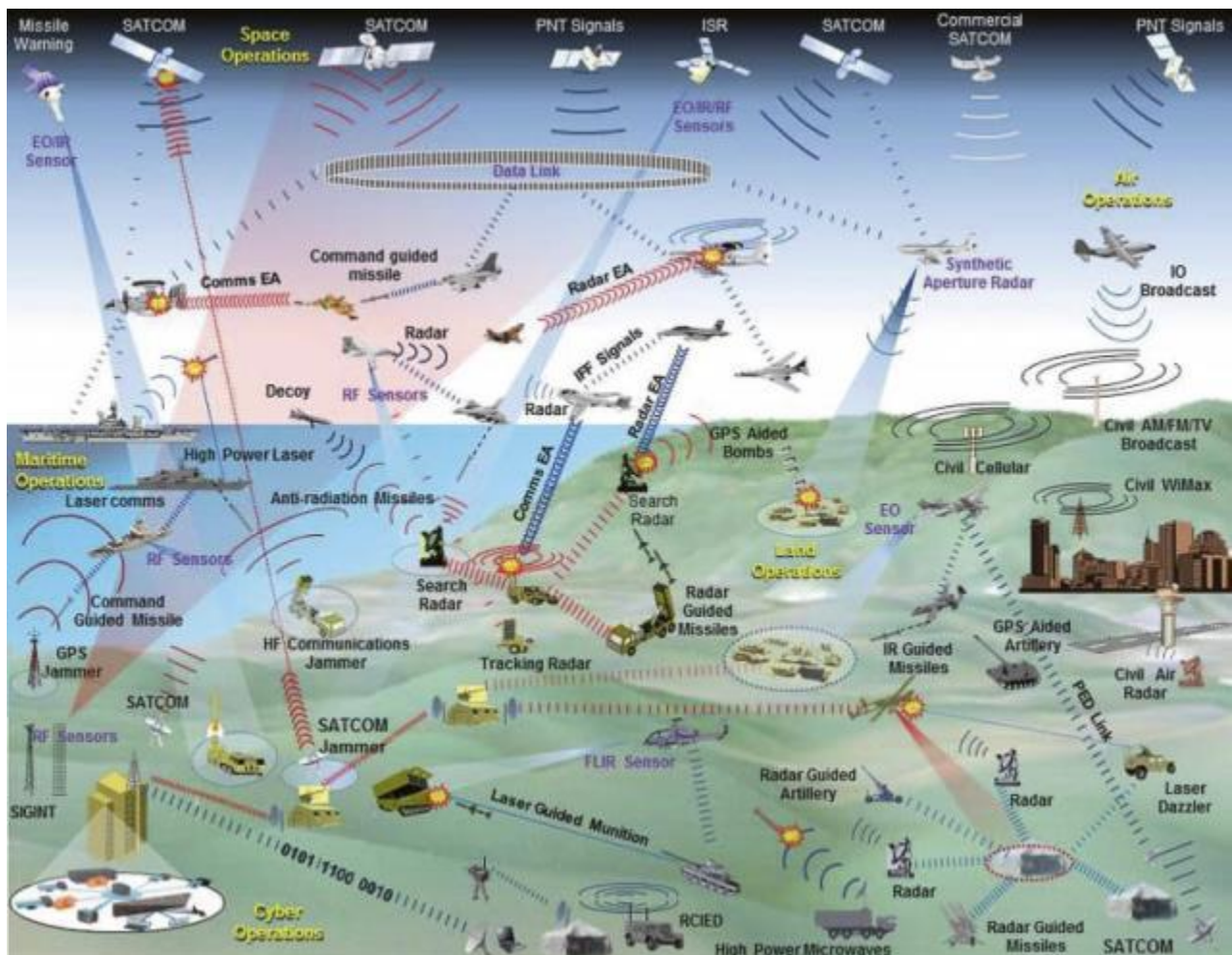


Figure 2: Depiction of Joint all Domain Operations (JADO) Concept

The image in Figure 2 is busy and static at the same time. But focusing in on details what emerges are overlapping series of offensive and defensive OODA loops, frozen at a moment in time like a frame in a film. This is what lends understanding JADO through system dynamics. CLDs explicitly model the feedback loops and their dynamic behavior over time with a good understanding of the interaction of positive and negative feedback loops. While a system dynamics computer simulation built from the CLD, leveraging calculus, can ‘advance the frame’ of the static image as integrations of these interacting feedback over time. A computer simulation can also use the standard of so-called DIME-PMESII, which stands for the diplomatic, information, military, and economic inputs creating political, military, economic, social, information, and infrastructure outputs[12]. Offensive and defensive OODA loops represent the military inputs and outputs, but can then be connected to other factors in DIME-PMESII to model regional scale operations of the scale necessary for JADO.

The competing theater strategies of mosaic warfare and ACE/DMO are both variations of additive complexity within the JADO context. An approach to warfare built on an understanding of conflict as complex systems:

“additive complexity involves a series of actions targeting an actor, each of which requires a certain amount of organizational complexity (e.g. resources, managerial decision making, personnel) to respond too ...a threshold effect is reached when the gradual incremental accumulations create a condition where the next additive complexity cannot be handled as well as the previous. This creates a loss of capability which then creates a feedback effect, further reducing available complexity to handle the next incremental addition by a larger gap. This feedback effect can compound rapidly and, in theory, leads to a cascade of failures across the actor targeted. While outright collapse might not be a result as non-critical functions are abandoned to focus on critical functions – additive complexity can seriously impair responses[13].”

These two theater strategies are competing in the current war. The Blue tACE/DMO JADO theater strategy leverages network superiority to coordinate hundreds of offensive OODA loop operations to simultaneously achieve air superiority over the Red force, decapitate the Iranian regime, and begin attacking military units; governmental targets; and infrastructure in order to collapse the regime under additive complexity. The Red mosaic warfare theater strategy seeks to absorb Blue offensive actions with dispersed and disaggregated autonomous units operating without C2 and conducting retaliatory strikes to overwhelm Blue network capabilities to sense, prioritize and direct responses, while exhausting counter measures and achieve enough direct strikes against assets and implied threats against the Strait of Hormuz. Paraphrased, Blue’s theater strategy is to employ additive complexity to collapse Red while Red’s theater strategy is to diffuse Blue in defending so many targets it cannot sustain the attack on Iran while defending regional assets, leading to regional and global pressure to negotiate a ceasefire and end the conflict.

2 The Road to War June 24, 2025 – February 28th, 2026

The forty year history of conflict between the United States and Iran is well documented elsewhere. But to understand how the two competing JADO theater strategies came into conflict,

we can arbitrarily pick the conclusion of the 12-Day War on June 24th, 2026. Israel had spent much of the conflict eliminating Iranian air defense capabilities while Iran used limited retaliatory fires, largely symbolic while trying to absorb attacks. By the 24th Israel had achieved air superiority over Iran, and in partnership with the United States effectively destroyed nuclear enrichment programs, and demonstrated credible threats by conducting limited strikes against internal security institutions versus actually trying to topple the regime leading to a cease fire[14].

The aftermath of the 12 Day War led to a breakdown in nuclear weapon disarmament and implementation of 'snap-back provisions' of the Joint Comprehensive Plan of Action (JCPOA) on October 18th, 2025. This returned sanctions to the extremely strict levels and immediately impacted Iran's economy leading to rising prices and inavailability of many goods. As a consequence of the deteriorating economic conditions under JCPOA snapback, domestic protests began in late December of 2025. Originally targeted at the expense and difficulty to sustain daily living conditions they rapidly took on an anti-government posture. By January had escalated into the most serious threat the Iranian regime had faced in decades with an estimates 7-10 million Iranians protesting. Supreme Leader Khameni ordered a crack down which took place 8-9 JAN with death tolls conservatively estimated at between 3,000-5,000 and some estimates going as high as 30,000. During the crack down President Trump threatened military intervention against Iran even publicly announcing "help is on the way" on the Monday the 11th of January 2026. However, a map annotated by the author, depicted in Figure 3 indicates that no US Navy carrier groups are operating in the region, instead deployed to the South China Sea and into the Caribbean[15].



Figure 3: Missed Window

The US military projects both offensive and defensive OODA loops in expeditions through its US Naval carrier groups. These carrier groups have the striking power of mid-sized countries. Although nuclear powered carriers, with their several dozen accompanying aircraft, are the most well known. Each carrier group is also escorted by a dozen or more vessel with many destroyers and cruisers specializing in both ballistic missile fires (offensive OODA loops) and anti-missile interception (defensive OODA loops.)

As annotated by the author on the map, any seriously contemplated action against Iran with an aim of overthrowing the regime in support of uprisings would need both dynamic providers of offensive and defensive OODA loops in position. The offensive OODA loop region consists largely of the territory of Iran itself and requires a carrier group in either the Persian Gulf or Gulf of Oman. Such a position would also allow that carrier group to provide partial defensive OODA loop coverage to the region encompasses the Gulf Cooperation Council (GCC) states of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates. But a carrier group positioned in the eastern Mediterranean or Red Sea is necessary to provide remaining defensive OODA loop coverage to US allies in Israeli and Jordan.

But carrier groups take longer to deploy than a flight of B-2's and it wasn't until the 26th of January 2026 that the USS Abraham Lincoln carrier strike group (CSG) arrived in position to provide offensive OODA loops and partial defensive OODA loop coverage as shown in Figure 4 (A). Still missing was dynamic provision of offensive and defensive OODA loops capable of covering Israel and Jordan.

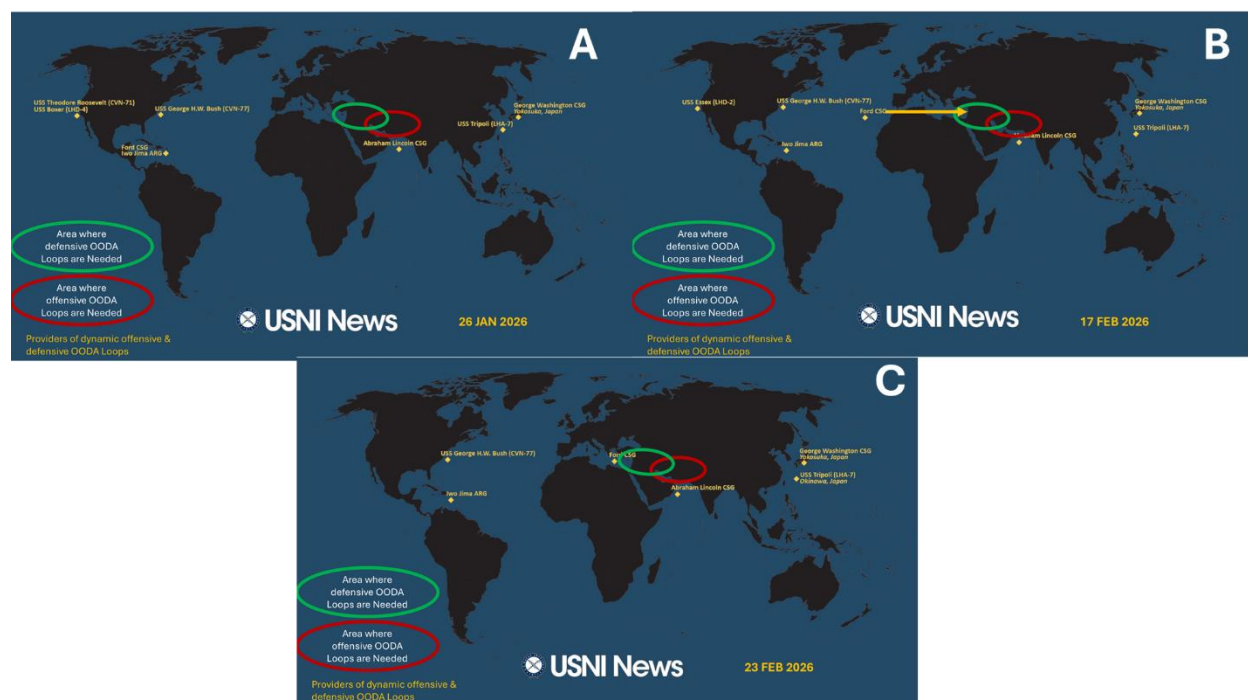


Figure 4: Progression of US CSG Abraham Lincoln and Ford into position (A) 26 JAN; (B) 17 FEB; (C) 23 FEB.

Figure 4 depicts three snap-shots of the annotated USNI maps showing the US Carrier Strike Groups Abraham Lincoln and Ford moving into position to provide both offensive and defensive OODA loops in the region[16],[17],[18].

2.1 17-20 FEB Return of Iranian Protests after Chelam Mourning Period

However, there is a well known timing mechanism of Iranian protests and uprisings. In the Shia religion a mourning ritual known as “arba'in” or “chehellom” consists of a forty day window after the death of a loved one, after which additional mourning rites are performed. During the Iranian revolution under suppression of the Shah, resistance groups without access to mass communications would use the chehellom as a natural timing pattern to return to the streets forty days after a significant crackdown resulting in deaths. On 16th January the author noted that the chehellom window for the massacres involved in the uprising crackdown would occur sometime between the 17th and 20th of February.

And the timing proved correct.

At this time, President Trump had ordered the US Navy CSG Ford to the Mediterranean, depicted in the annotated map in **Error! Reference source not found.**[17]. The CSG Ford is widely considered the strongest strike group in the US Navy with an advanced nuclear power aircraft carrier accompanied by

2.2 23 FEB 2026 – USCG Ford Arrives in Mediterranean

By the 23rd of February the USCG Ford had entered the At this point only the literature curvature of the earth, the oceans that have to be traversed, could prevent foreseeing what came next. The US CSG Ford arrived on position west of Israel in the eastern Mediterranean as depicted in **Error! Reference source not found.**

3 Preserved Initial Model, Phases, & Forecasts

These posts preserve major points of the development of this analysis, beginning with the outbreak of hostilities on 28 FEB; the first presentation of model, phases, and forecasts on 1 MAR, updating to include the new revised objectives on 4 MAR and concluding with the sharing of the dynamci hypotheses built on the 1 MAR forecasts on 5 MAR. The screen shots only capture relevant details and time-date stamps (many posts were 2,000 words or longer.) Other posts explaining technical aspects of the conflict (e.g. the ‘ordnance problem’) are not included as they did not relate to the model or forecasts. All posts are preserved online and publicly available both on Facebook (initial posting) and author’s Blog (archived).

3.1 February 28th, 2026 – 1:58am EST Initial Analysis & Historical Context

The first analysis, posted shortly after the start of hostilities, mainly concerned historical context leading up to the conflict.

(SCREENSHOT BLINDED FOR REVIEW)

Figure 5: Initial Analysis & Historical Context with no Model, Phases, or Forecasts as of 2/28/2026 1:58am EST

3.2

3.3 March 1st, 2026 – 6:49pm First Model, Phases & Forecasts

The initial forecasts were posted on the 1st of March at 6:49pm on the author's personal Facebook page. They are preserved below as screenshots

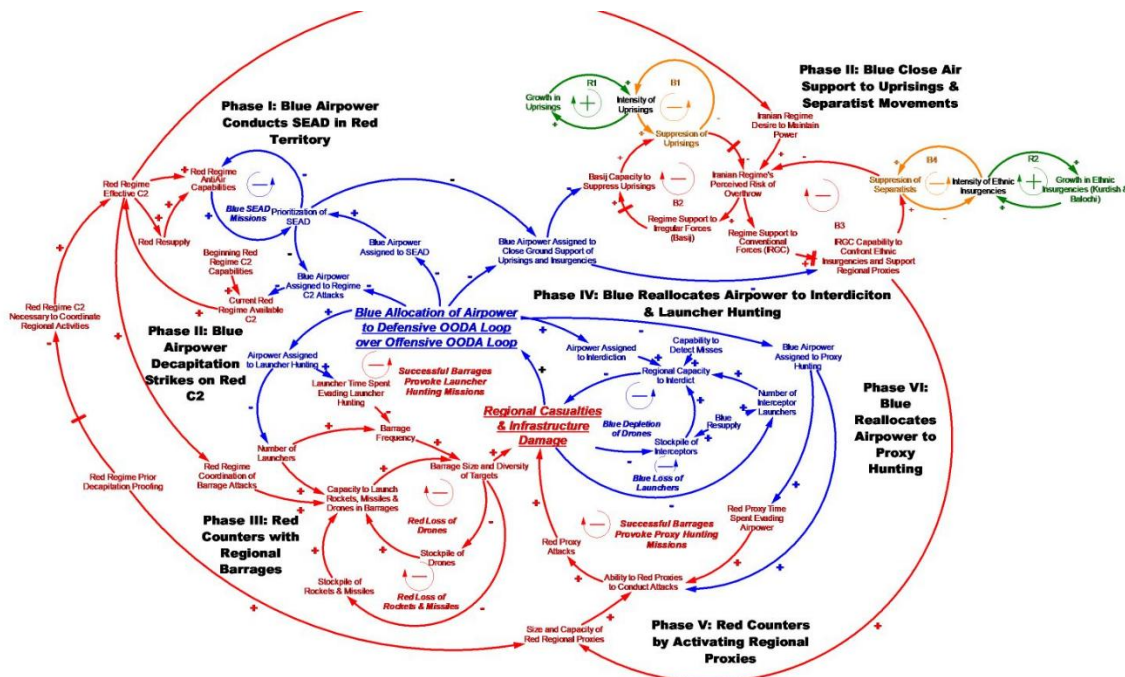


Figure 6: Initial CLD Phases I-VI as of 3/1/2026 at 6:49pm EST

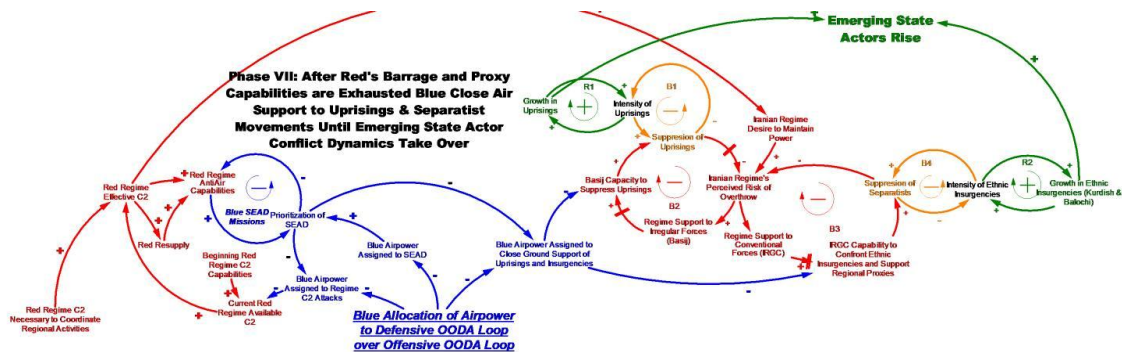


Figure 7: Initial CLD Phase VII as of 3/1/2026 at 6:49pm EST

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Figure 8: Initial Forecasts as of 3/1/2026 6:49pm EST

3.4 March 4th, 2026 – 6:49pm Summarized Forecasts & Inclusion of Revised US Objectives

In this post the longer forecasts of 1 MAR were summarized but preserved in order and likelihood.

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3.5 March 5th, 2026 – 5:02pm EST Dynamic Hypotheses on 1 MAR Forecasts

In this post the the dynamic hypotheses were presented alinging with the 1 MAR forecasts. Additionally the summarized forecasts were restated with the associated dynamic hypothesis of hoped, feared, actual.

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Figure 9: Dynamic Hypotheses on 1 MAR Forecasts

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