

IDES OF WAR: WAR MACHINES OF WORLD WAR II (A PROGRAM
MANAGEMENT AND FORCE MANAGEMENT WARGAME
OF THE AXIS-SOVIET FRONT DURING WORLD WAR II)

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MASTER OF MILITARY ART AND SCIENCE
Wargame Design

by

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ABSTRACT

IDES OF WAR: WAR MACHINES OF WORLD WAR II (A PROGRAM MANAGEMENT AND FORCE MANAGEMENT WARGAME OF THE AXIS-SOVIET FRONT DURING WORLD WAR II), by Bryan E. Fanick, 120 pages.

Ides of War: War Machines of World War II is a competitive wargame designed to foster training and develop scenarios for force management professionals to enhance technology adaption to the changing battlefield environment. This wargame models strategic-level resource gathering and transformation to components of a national economy, and an operational-level view of the program management and theater commander perspectives on technology applications to the battlefield. After gathering resources, the player utilizes elements of the Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policies (DOTMLPF-P) force management process to develop and test simulated warfighting technologies in combat simulations on WW II's Axis-Soviet front. Hence, this wargame seeks to demonstrate a series of program management decisions that build and test implications of new technologies on simulated units and the battlespace in order to demonstrate the quality versus quantity of forces.

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ACRONYMS

DAS	Defense Acquisition System
DGDP	Directorate of Graduate Degree Programs
DOTMLPF-P	Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policies
GDP	Gross Domestic Product
JCIDS	Joint Capabilities Integration and Development System
PMESII-PT	Political, Military, Economic, Social, Infrastructure, Information, Physical Environment, and Time
PPB&E	Planning, Programming, Budgeting & Execution
WWII	World War II

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CHAPTER 1

INTRODUCTION

Ides of War: War Machines of World War II – An Overview

Mass becomes immobile, it cannot maneuver and therefore cannot win victories, it can only crush by sheer weight.

The whole future of warfare ... lie[s] in the employment of mobile armies, relatively small but of high quality

—Hans von Seeckt, chief of the German General Staff, 1919-1920, and army commander, 1920-1926, quoted in James Corum, *The Roots of Blitzkrieg: Hans von Seeckt and German Military Reform*

The Axis-Soviet Front during World War II reflects the evolving Western Way of War through levying vast destruction across the European continent and demonstrates revolutionary force management concepts of the Wehrmacht and Red Army. While the Axis focused on employing limited but highly capable forces, Joseph Stalin, often credited with saying “Quantity has a quality all its own,”¹ employed the tenant of mass quantities as a warfighting strategy. Having employed two diverging national security strategies for large scale combat operations and outlining force structures, both still relevant today, these strategies beg the diverse question of capability versus capacity of production and how these strategies play out on the battlefield. To answer this question, the *Ides of War* wargame was developed to evaluate the general question of quality versus quantity in the simulated test lab of the Axis-Soviet Front of World War II. This wargame seeks to demonstrate the important interaction between the operational

¹ Unknown attribution.

commander, programmatic development, economic and industrial capacity, and technology decisions in altering the battlefield landscape.

The atrocities and scale of combat created by the advance in technologies used in the Western Way of War are characterized by multiple revolutions in military affairs and military revolutions which rapidly altered warfighting capabilities across social, political, economic, and technological fronts.² This evolution drastically transformed the warfighting capabilities and capacity in which military force management professionals struggled to keep pace. To learn from these past strategies, force managers, operational commanders, and technology development program manager must insert these technology evolutions onto the battlefield while balancing cost, schedule, and performance of technology adaptations in order to evolve the methods of war.

This wargame's fundamental intent is to present a training, research, and policy-making product by which operations research studies may produce outcomes the wargaming methods predict. While cohesive and sustainable forces are significant at the tactical level, a force construct is irrelevant if it cannot dominate the opponent in operational and strategic-level combat. Thus, the wargame is designed to foster training and develop scenarios for force management professions to enhance technology adaption to the changing battlefield environment. The combination of operational experience and quantifiable analysis of multiple scenarios may allow the player to experiment with programmatic methods to best prepare an industrial base to field a healthy force structure capable of developing the combat power of units desired. Ultimately, players must

² Geoffrey Parker, "The Western Way of War," in *The Cambridge Illustrated History of Warfare* (Cambridge, UK: Cambridge University Press, 1995), 2-9.

grapple with how resource allocation and force generation decisions affect success in war.

It is the authors sincere hope the enduring significance of *Ides of War* will be to help military program managers and force managers 1) investigate the complexities of force management decisions and the interrelated economic forces, processes of industrial production, technology development, and battlefield execution, and 2) to analyze the decision factors required to build a cohesive and sustainable force against diverse enemies. Further, players should explore questions of operational art and strategy, human decision making in a complex and dynamic environment, and warfighting trends present in current and historical operations.

Wargames consist of several design styles with various objectives and outcomes. The *Ides of War* is a historically themed but strategy-based wargame, commonly referred to as a ‘Eurogame’ or ‘hybrid game:’ it assumes a constructionist style of play focused on game mechanics to develop an economy and force structure explored through the lens or exterior wrapper of a historical World War II campaign but is fundamentally built upon economic building mechanics. Therefore, the game scenario is inspired by an analog view of history and cannot prove or re-create the complexities of real life but presents a complex operational environment with the backdrop of the Axis-Soviet Front in World War II. The simulated economies leverage resources gathered from geographical spaces and sets victory conditions which encourage the player to develop units according to several potential strategies woven into the game mechanics. Options at every level of gameplay influence multiple players’ decisions through interacting with probabilistic events and game injects which shape economic decisions in order to drive the doctrine,

organization, training, and material solutions to improve combat capabilities. A player makes choices which drive economic and industrial base events, interleaved with deliberate statistical dice roll outcomes and deck drawing events, to develop more combat power, either in terms of higher quality units and/or mass quantities of units, to conduct simplified operational-level combat.

Research Question

How can a competitive war game of the Axis-Soviet Front of WWII be developed as a training tool for force managers, program managers, and operational commanders to explore technology development and capability implementation on the battlefield in order to provide a decisive advantage between quality of forces compared to quantity of forces for current and future capability gaps?

Secondary Questions

The primary research builds upon several secondary questions which intend to provide qualitative assessments of decisions explored through gameplay:

1. What important lessons should this teach a program manager, force manager, and operational commander?
2. What outside factors influence program management and operational decisions when producing units?
3. How should resources be allocated to reach desired unit and equipment capability outcomes?
4. How can this game represent fundamental force management and program management decisions inherent to technology development?

5. How does investment in future DOTMLPF-P improvements affect future battlefield outcomes?

Assumptions

War is a complex and chaotic series of events that wargame simulations seek to reproduce in order to extrapolate valuable lessons learned. Therefore, the *Ides of War* wargame makes several key assumptions to allow simplification and ease of gameplay in the Axis-Soviet Front of World War II testbed. First, this wargame assumes that the Western, Mediterranean, Pacific, and Japanese fronts and all the historically significant events, regardless of game events, proceed per history. Further, the historic representations of the integration of national economies and their isolated colonial spheres are assumed to be constant throughout the turn sequence and see little impact from outside influences unless driven by in-game decisions.³ Therefore, the command economies and autocratic political models remain constant throughout the game for ease of gameplay despite considerable untapped reserves and possibility of expansion.

Limitations/Delimitations

It is important to understand the salient features required for elements of the board game that will or will not be modeled through specific limitations and delimitations. To appropriately scope the model for this competitive simulation, the wargame must be simplified to ease the complexity in gameplay while maintaining key realism and conflict

³ Mark Harrison, "The Economics of World War II: an Overview," in *The Economics of World War II: Six Great Powers in International Comparison*, ed. Mark Harrison (Cambridge, UK: Cambridge University Press, 1998), 10.

dynamics.⁴ The operational level of warfare and game mechanics seek to interleave historical events as context and add historical scenario flavor to allow the players to explore the complexities of the operational environment, force management process, and DOTMLPF-P elements of Joint Capabilities Integration & Development System (JCIDS) and technology development as they would be applied in today's environment. The major economic, program and technology development, and operational decisions explore the effects of these decisions while avoiding the details of individual program steps of the program acquisitions, funding, and the JCIDS processes.

Ides of War limits the model to the operational and strategic levels of war, rather than the tactical level, to control complexity of gameplay dynamics and to focus on key operational environment and force management interactions. Tactical level details such as unit size, manning, and individual tactics will be treated as constant across units of similar types despite combat losses, outfitting and armament upgrades, logistical challenges, etc. To meet the operational intent of the game, players make decisions that affect the overall gameplay characteristics rather than the specific decisions at unit to Corps levels and are applied equally across all units to ease the unlinked and independent variables which simplify gameplay. For this reason, this scenario only involves general types of ground and air units while consciously excluding all naval warfare, strategic bombers, specific tactical units, all logistical units, and other limitless associated capabilities.

⁴ Philip Sabin, *Simulating War: Studying Conflict through Simulation Games* (New York: Bloomsbury Academic, 2014), 68.

The operations in World War II are too extensive to simulate in their entirety; therefore only small portions may be modeled at any given time. This wargame is thus limited to the Axis and Soviet powers as the sole participants across Axis-Soviet Front from 1933 to 1942. The historical vignette begins with Hitler's rise to power in 1933 and is concluded in the midst of the Battle of Stalingrad in 1942. This limits the time period, campaign theater, and capability scope for the two autocratic nations building demand-driven economies of opposing styles within a decade of drastic force management development. Further, history tells us that Germany's military goal was to achieve a quick victory and consolidation of gains before Russia's growing economy could overtake Germany's resource-limited industrial base. Therefore, the time is specifically scoped when the two countries' economies and resources are most evenly matched and resources are modeled to set quantities limited by the game board and colonial imports.⁵ Although major economic resources were diverted to other geographical areas, the scenario will not model major influences of Africa, Italy, Japan, or the Western front to maintain focus on a limited engagement. Other outside influences such as economic, geographic layout, or total industrial capacities will be modeled for the Axis-Soviet Front only and includes pertinent action cards as game elements but cannot be adequately scoped to include all subordinate decisions.

The historically-inspired scenario elements of the Axis-Soviet Front are generally a predictive tool, but will result in different gameplay outcomes as a product of gameplay decisions, random card variation, and dice roll probability outcomes by the player and are

⁵ Peter Perla, *The Art of Wargaming: A Guide for Professionals and Hobbyists* (Annapolis, MD: Naval Institute Press, 1990), 58.

not intended to prove or re-create history. Although potential outcomes may re-create portions of historical events, these are necessary to provide an initial starting point from which the players' decisions will cause the gameplay to diverge. The historical influences are not intended to validate historical outcomes but are a limited analog representation of the complex realities. Therefore, simplicity of game mechanics to highlight the learning objectives trump the explicit historical accuracy.

Delimitations of the simulation include the time, geography, and map scale to control game dynamics, complexity, and simplify gameplay. In order to accelerate time and represent the realistic historical events, time is consolidated into 12 rounds and three phases. The game is delimited from 1933 to 1942 because the resources remain nearly constant for this period of time and resources beyond these periods demonstrate constraints outside the scope of this force management construct. For example, in 1933 Hitler begins to consolidate power and ramp up wartime production and the Wehrmacht is transformed into its WWII capabilities. History tells us that the Axis required a quick defeat of their enemies. By 1942, the Axis have nearly exhausted their wartime capabilities and resources. Further, the Soviet forces attrited the Axis forces so significantly that the Axis homeland is unable to recruit and train a viable force as a result of limited manpower capital and human resource limitations. Since the toll of outside influences begins to wear down the Axis war machine over a window of several years, the game time period must be delimited to a fixed period to represent manpower and materiel limitations on the reserves required to execute prolonged combat and ignore periods beyond the scope of the game. In order to accelerate time and represent the

significant, realistic historical events, time is consolidated into twelve rounds and three phases.

Finally, the diverse geography of Axis-Soviet Europe is consolidated into three parallel game axis of advance, or rails, to simplify movement and complex tactical elements into a simple operational context game and maintain focus on the programmatic and operational-level decisions of force managers and program managers. Finally, the scale of the conflict is minimized to squares on three rails which are not linearly represented due to available space and increased game complexity. For example, the game will not take into account the vast distances across which both the Axis and Soviets moved, the logistical trains, nor the supporting infrastructure needed to wage warfare in a complex environment.

CHAPTER 2

LITERATURE REVIEW

Framed around historical events, *Ides of War* provides the players the opportunity to examine the simulated environment through the multiple lenses of the force manager, program manager, or operational commander in a realistic learning environment for economic, technological, and combat applications. This chapter discusses sources reviewed to include scenario background, description of implications, and key elements used to complete the game design. This chapter will also review additional commercial game designs and how the mechanics influenced the development of *Ides of War*.

Why Wargame?

Military and other professional scholars regularly analyze after action reviews to reflect on scenario outcomes. Over the last two centuries, military professionals have recognized the importance of extrapolation and predictive analysis to model potential courses of action, analyze dynamic outcomes, forecast future encounters, develop training opportunities for subordinate leaders, and teach new skillsets through wargaming. While conducting military operations in complex, dynamic environments, military professionals grasp the importance of games as a planning tool and are using war games to teach skills necessary in modern complex combat systems. In this sense, a wargame provides a backbone of experiences and teaches strategic, operational, or tactical lessons of the profession in which it models.⁶

⁶ Perla, *The Art of Wargaming*, 78.

Wargaming and military simulations are a unique form of training and professional development that incorporate simulated experiences to develop skills in the critical areas of tactics, maneuver, command and control, and other valuable warfighting functions. Practicing foundational processes and procedures through a wargame was first documented in the Western Way of War by Prussian military leaders in 1824, as battlefield commanders demonstrated a need to mitigate the fog and friction of war. The *Kriegsspiel* wargame highlighted the fundamental need to implement a training and planning tool which practices battlefield communication and combat planning through simulations. *Kriegsspiel* demonstrated an early incorporation of time, space, assets, and resolution, the fundamental games design aspects, in simulating complex battlefield activities. As a result, wargame theory lends itself to teach various methods to shape the battlefield through meaningful player decisions.⁷ In the past few decades, battlefield simulations have evolved into modern wargames and form the foundation for simulations as a planning tool for research into the problems within military operations.⁸

Modern War Game Theory

Wargames are strategy-based games fixed on military operations that execute political and strategic choices vis-à-vis simulated historical, current, potential future, or fantasy themes. The players' decisions and consequent actions drive complex, dynamic themes designed to emulate historical scenarios or create alternate fictitious realities. Often, designers intend wargaming to be an investigative process in which players

⁷ Sabin, *Simulating War*.

⁸ Perla, *The Art of Wargaming*, 51.

execute probabilistic decision tree analyses, infused with elements of chance, to explore past, present, and future events. Wargames used as teaching tools use action-based models to demonstrate the intrinsic cause and effect relationship of decision-based outcomes. Meaningful decisions from gameplay allow the players to discover the viability and validity of multiple or various courses of action and associated consequences in an abstract way without risking life, limb, or damage to property. Wargames allow players to investigate and reflect upon the interactions of interrelated processes on the chosen topic through hands-on execution rather than abstractions of classroom instruction.⁹

Modern wargaming is a rapidly developing field, but is still relatively limited to a small pool of subject matter experts. The growing body of knowledge in the field of wargaming is led by Raph Koster,¹⁰ Philip Sabin,¹¹ and Dr. Peter Perla,¹² all of whom define professional war and simulation games in terms of the key elements of time, space, assets, and resolution. Modeling these elements in *Ides of War* required in-depth knowledge of both general game theory and the Axis-Soviet campaign, geography, units and equipment, economy and industrial production, and historical events. Therefore, *Ides of War* incorporates time, space, assets, and resolution into the important aspects of World War II to model significant elements of the Axis-Soviet Front and develop key

⁹ Perla, *The Art of Wargaming*, 23.

¹⁰ Raph Koster, *A Theory of Fun for Game Design*, 2nd ed. (Sevastopol, CA: O'Reilly Media, Inc., 2014).

¹¹ Sabin, *Simulating War*.

¹² Perla, *The Art of Wargaming*.

decision points that lend to multifaceted gameplay decision. Finally, when developing this wargame, the researcher sought out and used diverse genres and game functions as influences on the game mechanics and the overall design.

Scenario Background – The Axis-Soviet Front of World War II

From the end of World War II through the fall of the USSR, little was known about the Axis-Soviet Front. Stories of German generals in confinement after the fall of Germany were the only sources, and decidedly one-sided. Only since the collapse of the Soviet Union have Westerners begun to discover the events of the mid-war years from the Soviet perspective. Significant sources of information include *A World At Arms*¹³ by Gerhard L. Weinberg that examines the broad history of World War II and outlines the major conflicts, operations and tactics, influential people and places, and general events from the world and Soviet perspective.

The initial historical baseline also requires information about initial conditions from pre-war Germany and the Soviet Union up through the war years. Information about pre-war and wartime Axis and Soviet economies and the capability for the mobilization of industry and resources was extracted from *The Wages of Destruction: The Making and Breaking of the Nazi Economy* by Adam Tooze¹⁴ and *The Economics of World War II*:

¹³ Gerhard L. Weinberg, *A World at Arms: A Global History of World War II*, 2nd ed. (Cambridge, UK: Cambridge University Press, 2005).

¹⁴ Adam Tooze, *The Wages of Destruction: The Making and Breaking of the Nazi Economy* (New York: Viking Penguin Group, 2006).

An Overview by Mark Harrison.¹⁵ To gain a deeper understanding of resource allocation and general industrial capacity to design the game board and industrial capacity components, the researched reviewed the economic geography of Germany and the Soviet Union in *War and Economy in the Third Reich*,¹⁶ *Economic Geography of the USSR*,¹⁷ *The Soviet Scene*,¹⁸ and *Economic Development in the East-Central Europe in the 19th and 20th Centuries*.¹⁹ These works inserted a fundamental pre-war understanding of industry and economic focus which further describes the degree of mobilization, capabilities of production, and general economics that shaped the pre-war and inter-war years.

In *When Titans Clashed*, David Glantz and Dr. Jonathan House provide insight into the operational design and execution of the thousand-mile military thrusts across the Axis-Soviet Front as the Wehrmacht and Red Army swept back and forth across war-ravaged Eastern Europe, from Berlin to Moscow and back. Costing more than twenty million casualties, these campaigns highlight the lightning German offensive, then staunch German defenses, and Soviet offensives and defenses that led to the bloodiest

¹⁵ Harrison, “The Economics of World War II: An Overview.”

¹⁶ Richard Overy, *War and Economy in the Third Reich* (New York: Oxford University Press, 1994).

¹⁷ S. S. Balzak, V. F. Vasyuntin, and Ya G. Feigin, *Economic Geography of the USSR* (New York: The MacMillan Company, 1949).

¹⁸ James H. Bate, *The Soviet Scene* (New York: Edward Arnold Limited, 1989).

¹⁹ Ivan T. Berend and Gyorgy Ranki, *Economic Development in East-Central Europe in the 19th and 20th Centuries* (New York: Columbia University Press, 1974).

battles of World War II. Additionally, Glantz and House examine the political, economic, and social issues that influenced both German and Soviet operational and strategic aims.²⁰

The Axis-Soviet Front offers a unique series of battles that demonstrate the resolve and industrial capacity of the Axis and Soviet industrial war machines. In the pursuit of researching the economy and national industrial output of both nations, Mark Harrison²¹ provides a description of the Soviet herculean mobilization from an agricultural economy to rapid industrialization in the face of a superior enemy while teetering on the verge of collapse. Over time, German superiority erodes, overwhelmed by Soviet production capability and a resource-rich war machine. Additionally, *Russia's War*²² and *Campaigns of World War II Day By Day*²³ provide concurrent source data on the transition of the industrial base caused by the German encroachment into Russia and highlights the relocation in industrial capacity.

For the German perspective, *Germany and the Second World War: Volumes I-X* describes the German initiatives throughout the war. From pre-war buildup and aggression to post-war disintegration, this series of volumes evaluates all aspects of the

²⁰ David M. Glantz and Jonathan M. House, *When Titans Clashed: How the Red Army Stopped Hitler* (Lawrence: University of Kansas, 1995).

²¹ Mark Harrison, "The USSR and Total War: Why Didn't the Soviet Economy Collapse in 1942?" in *A World at Total War: Global Conflict and the Politics of Destruction, 1939-1945* (Cambridge, UK: Cambridge University Press, 2005), 137-156.

²² Richard Overy, *Russia's War* (New York: Penguin Books, 1998), 155.

²³ Chris Bishop and Chris McNab, *Campaigns of World War II Day By Day*. (Hauppauge, NY: B.E.S. Publishing, 2003), 244-252.

German war machine. These volumes highlight industrial build-up, war-time economics, types of technology developed, and a thorough description of types of units and employment during the war. Finally, this series is considered the quintessential description of World War II German history and explains the geography, sequences of events and operations, industrial production and economy, and details of the German mindset that drove their economic foundations and force management structure.²⁴

Units and Technology Development of World War II

Combat scenarios and accuracy in developing unit strengths is a critical component of a wargame that involves direct battle and resolution of head-to-head combat between opposing units. To appropriately model the unit types and capabilities for the *Ides of War* wargame, the researcher pursued a comprehensive list of maneuver and support units used throughout World War II. *Jane's World War II Tanks and Fighting Vehicles*²⁵ and *Jane's Fighting Aircraft of World War II*²⁶ provide a comprehensive encyclopedia of all the combat vehicles of World War II and a nation-by-nation overview of each country's development of warfighting equipment and its involvement in World War II. The profiles include technical specifications and the

²⁴ Wilhelm Deist, Manfred Messerschmidt, Hans-Erich Volkmann, and Wolfram Wette, *Germany and the Second World War: Volume I-X* (Oxford, UK: Oxford University Press, 2015).

²⁵ Leland Ness, *Jane's World War II Tanks and Fighting Vehicles: The Complete Guide* (New York: HarperCollins Publisher, 2002).

²⁶ Fred T. Jane, *Jane's Fighting Aircraft of World War II* (New York: Crescent Books, 1996).

vehicle's strengths of design and limitations used to model the unit's strength, toughness, movement, manufacturability, and manpower characteristics. Further, the researcher reviewed the evolution of the Wehrmacht and Red Army during pre-war and early war years in works such as James Corum's *The Roots of Blitzkrieg*²⁷ and Richard Overy's *Russia's War*²⁸ to gain an appreciation for the dynamic DOTMLPF-P changes made by each military.

Force Management Processes

Today in the United States' military, the force management process transforms identified capability gaps into battlefield solutions. The process includes the Joint Capabilities Integration & Development System (JCIDS),²⁹ Defense Acquisition System (DAS),³⁰ and Planning, Programing, Budgeting & Execution (PPB&E).³¹ These systems define the requirements to be developed by the Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, and Facilities, and Policies (DOTMLPF-

²⁷ James S. Corum, *The Roots of Blitzkrieg: Hans von Seeckt and German Military Reform* (Lawrence: University Press of Kansas, 1992).

²⁸ Overy, *Russia's War*, 155.

²⁹ Director, Joint Staff, Chairman of the Joint Chiefs of Staff Instruction 5123.01H, *Charter of the Joint Requirements Oversight Council (JROC) and Implementation of the Joint Capabilities Integration and Development System (JCIDS)* (Washington, DC: Joint Chiefs of Staff, 31 August 2018).

³⁰ Department of Defense, Department of Defense Directive 5000.02, *Operation of the Defense Acquisition System* (Washington, DC: USD AT&L, 10 August 2017).

³¹ Department of Defense, Department of Defense Directive 7045.14, *The Planning, Programming, Budgeting, and Execution (PPBE) Process* (Washington, DC: USD AT&L, 29 August 2017).

P) framework to solve the shortfall.³² The military publications governing these systems provided the necessary information of the force management process in order to model the desired economic system with the appropriate resources for the wargame's industrial complex and available units.

Commercial Gaming Influences

Many board games simulate aspects of the Axis-Soviet Front during World War II but the researcher was unable to identify a game that specifically focused on the unique operational environment of economics, industrial capacity, DOTMLPF-P capabilities, technology development, and employment of forces in which a force manager must operate. As a result, this study focused on identifying game design concepts and mechanics that could be employed to simulate key aspects of the problem statement. The researcher devoted more than six months of gameplay to understand and analyze gameplay features and mechanics in order to design *Ides of War* as a unique teaching tool. The researcher sought out games of different genres and outcomes that use a broad range of gaming mechanics. These mechanics include standard gameplay features such as hand management, deck and asset drafting, worker and tile placement, area control/area influence, battle card driven, and dice rolling mechanics. The most influential games of

³² Director, J-8, Joint Staff, *Manual for the Operation of the Joint Capabilities Integration and Development System (JCIDS)* (Washington, DC: USD AT&L, 18 December 2015).

this research project were *Quartermaster General*,³³ *Dominion*,³⁴ *Lords of Waterdeep*,³⁵ *Terraforming Mars*,³⁶ and *Tiny Epic Kingdoms*.³⁷ Additionally, *BoardGameGeek LLC*, an online forum for board game hobbyists, provided a database of reviews, game mechanic terms, and a common lexicon of board game terminology and features which proved invaluable in researching modern and legacy board games for the researcher's development of this wargame.³⁸

*Quartermaster General*³⁹ is a World War II wargame that uniquely tackles area control, area influence, campaign and battle card driven, hand management, and partnerships while simplifying combat resolution effects. This game showcases the combination of global utility and instantaneous response effect card elements into decks of predetermined capability and size for each country. Additionally, random draw chance and deck management demonstrate how the player counters opponents actions at the time the action is played or affect combat resolution outcomes. Further, the deck simulates historical events such as economic warfare, and building land and sea units while being

³³ *Quartermaster General*, Ian Brody, Griggling Games, Inc., 2014.

³⁴ *Dominion*, 2nd ed., Donald X. Vaccarino, Rio Grande Games, 2016.

³⁵ *Lords of Waterdeep*, Peter Lee and Rodney Thompson, Wizards of the Coast, 2012.

³⁶ *Terraforming Mars*, Jacob Fryxelius, FryxGames, 2016.

³⁷ *Tiny Epic Kingdoms*, 2nd ed., Scott Almes, Gamelyn Games, 2015.

³⁸ Derk Solko and Scott Alden, BoardGameGeek LLC, accessed 18 November 2018, <https://boardgamegeek.com/>.

³⁹ *Quartermaster General*, Ian Brody, Griggling Games, Inc., 2014.

forced to maintain supply lines through direct lines of communication. This game shows the importance of managing limited deck card count and in-hand capabilities before the nation's economy culminates or negatively impact their allies. Lastly, the partnering feature along with turn sequence and win conditions offers multiple avenues of success via diverse win conditions and highlights how pre-established decks distributed randomly impact the sequence of play and game outcomes. These mechanics were relevant to the researcher's operating design and included in *Ides of War*.

*Dominion*⁴⁰ is a card-only deck drafting and hand management game. This game proves the importance of deck drafting to formulate a deck to increase the probability of specific economic capability building cards coming into play. The player must also manage their hand for desired outcomes and to refute opponents moves. Lastly, the gameplay cycle demonstrates how different cards become available in the draw deck and how weighting the deck-card balance favors a desired economic performance. These key economy-building features and deck-weighting mechanics were modeled within *Ides of War* using different, but comparable, mechanics.

*Lords of Waterdeep*⁴¹ is a strategy board game comprised of set collection, take that, and worker placement mechanics in which the players use resources to complete quests. This game demonstrates production centers, creates resource allocation, and allows players to purchase cards, resources, and assets using resources. Further, the game is played with each player taking multiple turns in each round. When players use other

⁴⁰ *Dominion*.

⁴¹ *Lords of Waterdeep*.

player's production tiles, the other players gain resources as payment in return.

Ultimately, the game mechanics result in developing an economic engine that produces resources for the player to determine the best means of resource allocation towards a desired quest and victory points. The resource collection, worker placement, and economic development themes towards a desired end state were essential characteristics added to *Ides of War*.

*Terraforming Mars*⁴² is another dynamic resource management board game that demonstrates key features of card drafting, hand management, set collection, take that, tile placement, and variable player powers. In this board game, players compete to transform the environment and ecosystems of Mars into a habitable planet. The game demonstrates how to create effective production and resource management of six types of resources to develop an economic engine through a card drafting mechanic. This game is an example of resource allocation towards different industrial bases while combining unique mechanics and multiple rounds of gameplay per turn. The important mechanics showcase the method to create an industrial base that offers multiple avenues of gameplay and creates interesting decision sets for the player at all levels of game play. Additionally, the game reveals multiple, diverging win conditions that allow orthogonal, yet equally effective, strategic and tactical methods to win the game. This game exhibits the shared economic engine and resource gathering effects needed to build the resource and economic mechanics in *Ides of War*.

⁴² *Terraforming Mars*.

Tiny Epic Kingdoms.⁴³ is a variable phase-order game that balances resource management with area control and an action-point allowance system to gain control of regions to build power amongst races within a kingdom. The game demonstrates the variable phase-order mechanic which provides each player an opportunity for a meaningful counter action decision when any action is taken by any player within a round. This creates continuous inputs to the game and inter-turn decisions. It also shows how players are forced to conduct move and countermove actions based on the current and forecasted capabilities of the other player. The action-point allowance system constrains the players' resources and focuses the players' actions on resource-driven systems. The variable phase-order and action-point allowance mechanics are a critical feature needed to show economic development at varying phases of a player's economic strategy and were instrumental in the design of *Ides of War*.

⁴³ *Tiny Epic Kingdoms*.

CHAPTER 3

IMPORTANT DESIGN ASPECTS

Ides of War is a competitive wargame designed to teach important program management and force management decisions and consequences of the United States' military force management process in order to highlight unit quality versus quantity design choices and their theoretical employment on the battlefield. This chapter will capture the factors that are to be modeled in the simulation and provide a brief argument on the importance of each factor to the game design. The wargame models the diverse political, military, economic, social, infrastructure, information, physical environment, and time (PMESII-PT) elements of the operational environment. After examining the capabilities required to meet this environment, the program manager must develop a set of operational requirements to apply the DOTMLPF-P framework to develop a solution to solve the capability gap. For this wargame, the player makes meaningful decisions encompassed by the following key design aspects: 1) time; 2) key historical events and people of World War II; 3) geography in the Axis-Soviet Front of World War II; 4) units and technology development of World War II; 5) economies and national industrial outputs of World War II; 6) force management processes; and 7) combat resolution to compare capacity and capability of units produced.

Time

Time is the first key component of game theory and is modeled as an independent variable that must be considered in the game design of *Ides of War*. Resource gathering, technological innovation, and assembling units consume time in terms of research and

development, manufacture, and production. Nations do not miraculously morph into economic powerhouses over night, but make calculated decisions to build an economic engine and realize the outputs. In the wargame, each player begins with initial capabilities and over time makes decisions to construct a particular economic, political, and technological engine, which shapes the gameplay options.

Another critical element of time is the beginning and ending point of the conflict to bound the game parameters. Historical events of the operational environment provide context on current or developing technology, the available infrastructure or industrial bases, and the physical geography, which guides the time and space layout of the board game. Scoping the battlefield solely to the Axis-Soviet Front, the wargame has a specific beginning and ending time to model specific conditions of the outside and interacting world. These end conditions also allow for the design of specific win conditions relative to the scenario given how major historical events from outside influences have the potential impact the battlefield. Finally, time must be expressed in the form of actions and turns in which the players must select an action and series of resource usages to acquire and employ game assets.

Key Historical Events and People of World War II

Ides of War seeks to illuminate the effects of human decision-making actions from program management, force management, and operational-level commander's perspectives through the Axis-Soviet Front of World War II setting. The historical scenario develops an operational environment founded upon actual events that provides a known historical context and initial conditions. The scenario then progressively evolves with input of real historical events that affect the Axis and the Soviet Union. Moreover,

these historical events only provide context, or a historically representative flavor, for complex decision-making processes and allow the reader to re-create or diverge from a known scenario based on their program management decisions.⁴⁴ Additionally, these historical events tie PMESII-PT environmental factors into specific events that drive the players potential solutions across the DOTMLPF-P spectrum. This presents the player a general context to relate the gameplay experience at the operational and strategic levels of war to the experiences and limitations of real combat. The actual historical events are affected by weather, key leader decisions, and fluke encounters or other events that influenced the outcome of the war. These factors are beyond the scope of this wargame as those aspects detract from the DOTMLPF-P focus. Beyond the initial conditions and event card injects inspired by real-world events, the players' decisions and actions drive the outcome of the game. The game is inspired by history and includes real-world events, but cannot re-create the complexities of a real historical outcome because it is primarily driven by players' decision and actions.

Geography in the Axis-Soviet Front of World War II

A foundational understanding of the geography of the Axis-Soviet Front is an essential component of *Ides of War* because geography dictates numerous elements of how the historical events unfold. In the context of World War II, Axis and Soviet decisions were often driven by events that occurred hundreds or thousands of miles away. For a board game, the physical geography, or gameplay space, provides foundation around which to design the game board. As a result of program management decisions

⁴⁴ Perla, *The Art of Wargaming*, 249.

revolving around the industrial base in building an economic engine, the geography should provide an understanding of natural resources, develops cities as industrial centers, and define a clear and simplified area to frame the game board for the operational and strategic level of warfare.

Units and Technology Development of World War II

The Western Way of War identifies technology development, innovation, discipline, aggressive military tradition, and the power of finance as key elements of the continuity of the western military tradition.⁴⁵ Western nations deliberately use these key elements to develop units and technology. In *Ides of War*, units and technology are some of the assets of the board game. In order to align with the Western Way of War, the game assets must be modeled upon a base unit and have the capability to adapt to players' decisions. Unit adaptations are generated by the players' decisions for DOTMLPF-P solutions and incorporated in the game mechanics, which demonstrates changes in the capability, or quality, of a unit over time. A variety of units must be modeled to allow the player to demonstrate the proper balance of unit types or vast capacity of a single unit type. Finally, the operational environment must allow multiple DOTMLPF-P game interactions which foster variations on unit development, allow for a diverse array of force structures, and explore how units fill capability gaps.

⁴⁵ Geoffrey Parker, ed., *The Cambridge Illustrated History of Warfare* (Cambridge, UK: Cambridge University Press, 1995), 2-9.

Economies and National Industrial Outputs of World War II

As an element of the Western Way of War, the power of finance is a vital for nations to be capable of conducting wars and projecting power across vast distances. Therefore, it is important to demonstrate natural resources, the construction of units, and the employment of these units as products of financial decisions at the operational and strategic level. Both the Axis and Soviet Union experienced sharp economic development and adaptation while working through a series of Versailles Treaty recovery actions and 5-year plans. This wargame incorporates key elements of these plans to demonstrate force management and program management decisions of a logistically-dependent force as well as models critical resources such as petroleum, steel, food, and intellectual capital.

Resources in the game are a function of gathering and conversion of raw materials, trade, and access to physical geography. These elements are available within the game space and as assets to the individual nations. Logistics of gathering, transporting, and refining these types of resources are an important component in any industrial economy, but these operational-level details are not necessary to this wargame and will not be modeled. However, industrial development historical events occurred, which influenced the outcome of the war. For example, for political reasons Germany chose not to fully engage its population into a wartime economy until late in the war, when it then diverted resources across the industrial complex in response to the Allied operational actions. These elements are modeled through event card external inputs and may create additional programmatic decision points for the players. Finally, the players

construct industrial centers in the form of cities and industrial factories that produce specific unit types and quantities.

Force Management Processes

The United States Army's force management process is the critical methodology that identifies a capability gap, to which a desired effect is transformed into a solution that incorporates new capabilities on the battlefield. The process uses the Joint Capabilities Integration & Development System (JCIDS), Defense Acquisition System (DAS), and Planning, Programing, Budgeting & Execution (PPB&E) processes to define requirements that are to be framed through a Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities, and Policies (DOTMLPF-P) to identify potential materiel or non-materiel solutions. The force management process chooses a solution and funds and fields the solution, minimizing cost and time required to field the solution, while maximizing unit performance. As a result, it is feasible to model the force management process by gathering resources and developing warfighting technologies through consumption of resources. Then this wargame demonstrates a series of program management decisions that build and test implications of new technologies on simulated units and the battlespace in order to identify decisions and consequences of choosing either quality or quantity of forces.

In order to teach modern force management topics, this wargame demonstrates how a JCIDS capability gap is identified and employs the DOTMLPF-P framework to identify a solution. For the materiel solution, the DAS creates units with specific properties that embody the desired capabilities to affect an adversary. The program manager uses resources to create a unit with the desired effects, which may result in

changing a unit's capabilities. The capabilities are mirrored through a specific offense, defense, and movement components. Based on the resources and capabilities available, a range of unit effects may be identified. The program manager develops units to meet the desired effects and may have to decide whether to build more units of a weaker capability to create the same effect of fewer units of greater capability.

The player should explore how resources and program development models are used to visualize the effect of phasing and resources utilization has on the ability to create future warfighting units of a specific quality and quantity. Unfortunately, not all DOTMLPF-P and DAS improvements render a positive effect on the battlefield; at times they may result in wasted resources. As a result, a key aspect of this wargame is for the program manager to model the opportunity for and implementation of technology developments, production scenarios, and resource inputs. Finally, the game allows the player to explore potential tipping points for program managers. By offering a variety of execution strategies, the program manager and force manager can analyze the outcomes of using fewer, higher quality (technically capable) units compared to more numerous, lower quality units.

Combat Resolution

To resolve the question of unit capabilities compared to the capacity of the industrial complex to produce large number of these units, it is important to test the units produced by opposing economic structures on an equal playing field. Therefore, a combat resolution system is essential to evaluate the probability of unit success against another unit with the fewest number of independent variables. Focusing on key outputs of unit success allows development and execution at the operational level of warfare, which

reduces the tactical complexity for the player. The combat mechanism echos the operational level of warfare and employs a simplified combat mechanism to allow greater focus on the important and relevant program management and force management decisions. Further, each unit produced incorporates variable strengths that makes the units unique to construct and provides specific balance to the combat mechanism, which both eliminates non-traditional use of units and emulates the DOTMLPF-P development. Furthermore, unit capabilities must echo the capabilities of World War II Germany and Soviet Union units, providing a balanced, accurate reflection of diverse units and combined arms employment in the operational design of Blitzkrieg and operations in depth by the Axis and Soviet forces.

CHAPTER 4

ANALYSIS OF MAJOR DESIGN ASPECTS

Wargames are representations of the realities they intend to model and must carefully consider game mechanics to create meaningful player decision-making opportunities in order to drive the game events forward.⁴⁶ *Ides of War* is a Eurogame style wargame that places the primary focus on the complex interactions between the operational environment, force management strategies, program management decisions, and operational combat employment. Chapter 3 discussed the important design aspects of the wargame and provided rationale of why those aspects should be modeled. Chapter 4 will focus on mechanics that incorporate the important design aspects, how they are modeled, desired effects on outcomes and player learning, and the rationale for their employment in the wargame. This chapter is organized sequentially, as if the player was playing along with the game while reading, to demonstrate the important aspects of gameplay. This chapter seeks to answer a few key questions about gameplay. First, who is the target audience and what are their interests? Second, what information does the designer intend to convey and how do players take away these lessons? Finally, how does the game structure provide critical lessons?⁴⁷ These sections include an overview of the target audience, game components, player roles, and critical mechanics. Each subsection includes details on the game scenario, key events and decisions, types of decisions required, and effects of the game system's mechanical requirements on the player's

⁴⁶ Perla, *The Art of Wargaming*, 197.

⁴⁷ Ibid., 178.

decision making. Additionally, this chapter demonstrates how the Wehrmacht's and Red Army's force development and overall industrial production through the lens of the US force management structure. Finally, this chapter discusses initial game setup, player actions, combat, victory conditions, and the player's turn to highlight specific actions and insights the players need to take away from the game.

Target Audience

The target audiences for this game are mid-level military force management officers, program managers, and operational commanders. This game enhances experience with resource management, industrial and production capacity, unit capability development, and modeling a dynamic operational environment based on the available force structure at the operational and strategic levels. Players execute the roles at various levels of gameplay simultaneously while developing operational and strategic plans to mature the national economy, manage technology implementation on the battlefield, identify capability gaps and enhance capabilities evolutions, and conduct combat across multiple fronts. The player's decision-making process organically incorporates historical events, economic growth, resource balance for multiple projects, geographic movements based on resources, victory point collection, and effectiveness assessment of operational-level combat. The game develops all mechanics around the central theme of resource conversion into an economic system, industrial base, and military enterprise driven by the DOTMLPF-P model without becoming consumed by the details.

Game Components

The Axis-Soviet Front of World War II sets the stage for the force management structure, resources available, and the physical game board. This model translates data and important decisions into the gameplay space by defining the game board and the executable actions which create cause and effect relationships and manage the player's information and gameplay flow.⁴⁸ Components of the model include the gameboard and geographical map, units and factory counters, production capabilities tables, unit strength matrix, DOTM Research Matrix, combat fronts axis of advance chart, combat resolution matrix, event cards, and seven dice.

Game Board

The gameboard is geographically aligned to the Axis-Soviet Front of World War II and spans the timeframe from 1933 to 1942. It consists of three war phases spanning the thematic time period for the game and three rails, or axis of advance, as three fighting fronts of the Axis-Soviet Front. The board generally captures the major elements of geography, and economic and national industrial locations across the Axis-Soviet Front during World War II. These components are seen in the figure below.

⁴⁸ Perla, *The Art of Wargaming*, 197).

Prelude to War			Early War				Middle War				
1933	1935 (Road to War +1)	1938 (Road to War +1)	1939 (Road to War +1)	1940 (Road to War +1)	Jan-July 1941 (Road to War +2)	Aug-Nov 1941 (Road to War +3)	Dec 41- Mar 42 (Rasputitsa - No attacking)	Apr-Jun 1942	July-Aug 1942	Sep-Nov 1942	
Northern Front		Hamburg Leipzig	Berlin Dresden	Danzig		Bialystok	Riga Vilnius	Leningrad	Demyansk		Vologda
		   	 *AG North 	 VP 	 VP	 VP 	 *North Army 	 		 	
	Cologne	Frankfurt	Prague		Warsaw Krakow	Lublin Lviv	Minsk		Kursk	Smolensk	Moscow Gorki
Central Front	 	 *AG Center 	 	VP 	VP 	VP 	VP  	VP 	 *Center Army		  
Southern Front		Munich	Vienna	Budapest	Belgrade	Bucharest	Kiev	Odessa	Kharkov	Sevastopol	Rostov Stalingrad
		  *AG South 	 	VP 	VP 	VP 	VP  		 *South Army 		  

Figure 1. Game Board

Source: Created by author.

Round Tracker

The round tracker implements elements of time into the simulation through a historical lens of the Axis-Soviet Front during World War II and controls the elements of the operational environment which the players must abide. The rounds, representing elements of time, are divided into three phases – Prelude to War, Early War, and Middle War - based on thematic periods of development and conflict. Time is the independent variable that decreases as the capacity of the industrial base increases. Additionally, the round is constrained to 8 actions which limits the total resource acquisition available. The actions or ability to conduct multiple actions each turn is further determined by the

quantity of resources each player is able to accrue during turns in which the player gather resources instead of completing the action. As players advance rounds into the game, the relative game time slows from multi-year intervals to quarterly intervals as each nation's economic engine begins to develop and forces greater interplay of the industrial capacity and force management structure. To maintain the historical flavor, the round tracker generally corresponds to the map colors, event card phases, and the Road to War levels referenced in later sections. The round tracker is subdivided into multiple years or execution quarters and has an associated color.

The prelude to war phase identifies the years leading up to the conflict spanning 1933, 1935, and 1938. Captured in the grey phase, these years are considered to allow each player to build their national economic engine of the demand driven economy for Germany and the Soviet Union prior to the outbreak of war. Through this period, the game demonstrates the opening operational environment, PMESII-PT, and DOTMLPF-P factors as the Nazis and Soviets consolidate power to expand their regional influences.

The early war period phase is shown as the red phase from 1939 to Nov 1941. This period, broken into four rounds, represents the initial war years in the Axis-Soviet Front and captures the exploitation of Poland, the annexation of the Balkans, and the initial Axis thrust into the Soviet Union. The phases decrease to a 3-year window to illustrate the industrial capacities increase to meet changing force management and industrial capacity demands. Additionally, this allows the players to fully implement their economic strategies and explore the complex interplay between the operational environment, DOTMLPF-P, and production capacity.

The Middle War period is captured as the white phase where time is broken into quarters of a year from Dec 1941 to Nov 1942. This period constitutes the bulk of the fighting as the Germans pressed deep into the Soviet Union. Time periods are approximate windows into the chaos of fighting but allow for development of units relative to historical production. These three-month windows are realistic rounds that allow players to explore the technology development and DOTMLPF-P improvements at the operational level without congesting day to day research and development or production decisions. These periods also allow campaign level actions and correspond to large scale offensives across entire fronts to execute the combat resolution functions discussed in later sections.

Event Cards

The event cards are an optional deck management investment characteristic employed by each player. The cards incorporate the instantaneous response effect card, battle card, hand management, and card drafting mechanics with the DOTMLPF-P elements and provide additional PMESII-PT context. The event cards specifically incorporate influences in the Leadership and Education, Personnel, Facilities, and Policy elements of DOTMLPF-P aspects through historical events that changed the outcome of the war. These PMESII-PT updates provide resource gathering, facility improvement, DOTM improvements, etc. advantages to the initiating player or disadvantages to the opponent. The event cards are a significant investment to the initiating player and are randomly distributed with the potential for a high payoff on investment. Furthermore, the card usage is limited to the phase for which the card is purchased. For example, a card with historical events from 1939 is limited to be played within the Early War phases

which includes 1939. Once the phase is complete, the card from that phases are discarded in order to force the players resource driven decisions. In general, the event cards provide an initial advantage to the Axis player, but as time progresses, the events begin to favor the Soviets in accordance with the historical flavor and changes in industrial capacity and national will. An example event card is pictured below.

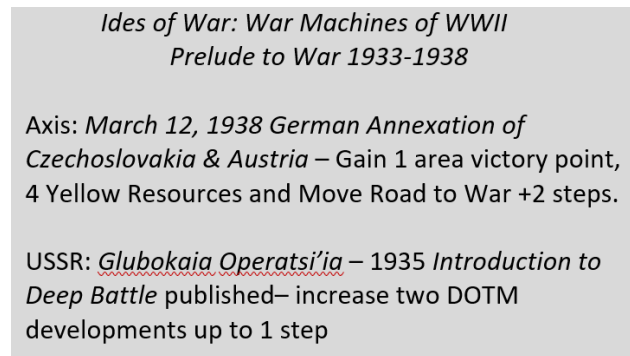


Figure 2. Event Card

Source: Created by author.

Axis of Advance Rails

The geography of the Axis-Soviet Front is simplistically modeled along three axis of advance in accordance with the Northern, Central, and Southern fronts utilized throughout the campaigns and represent the area control, area influence, worker placement, and set collection mechanics. The three axis of advance include: Austria, Czechoslovakia, East Prussia, Estonia, Germany, Hungary, Latvia, Lithuania, Poland, Rumania, Ukraine, USSR, and Yugoslavia. To simplify gameplay, the individual cells are not a constant scale but roughly capture major land masses to demonstrate relative

physical relationships to one another. City placement and division between fronts is solely an abstraction to simplify gameplay. Within each cell, there are several types of objects with significance to gameplay – color, cities, resource cubes, initial army front placement, victory points, and objectives.

Colors

The cell colors on the round tracker and geographical rail cells correspond to various historical events which are representative of the phases and to the road to war tracker. The varied colors of grey indicate the expansion into the Sudetenland and Rhineland in violation of the Versailles Treaty. As the color grey gets darker, the Germans annex more territory. The colors Orange and Red are indicative of the Early War Period. Red represents the areas of Poland and Czechoslovakia annexed by Germany and the Soviet Union up through the Molotov-Ribbentrop Pact. Orange represents the German annexation of Bulgaria, Romania, and Yugoslavia as they expanded towards the USSR. White is reserved for the initial national boarder of Russia.

Cities

The cities or industrial production centers illustrate important area control, hand management, and tile placement elements required to demonstrate economic engines of the force management process. The cities are placed approximately within the geographic boundaries of the given axis of advance and have a production capacity as demonstrated by the production capabilities card. To be a viable production center for the owning player, the cities must be controlled by friendly forces to allow placement of factories in the city. As a result of the combat elements discussed later, the cities demonstrate area

control but the player must balance capacity with proximity to the approaching fronts in the same light as production centers vulnerable to real world influences and attacks.

Resource Cubes

The four colored resource cubes on the axis of advance incorporate important resource management, area control, hand management, and tile placement components of economic engines due to limited player resources. The players must control the area that contains the resource to gather that resource through player actions. The player may only gather a resource where the Army front is forward of the resource. Geographically assigned resources are intended to drive player movements to open up desired resource availability along each axis of advance by controlling territory that holds the given resource.

The operational level of the game dictates that the types and quantities of resources are consolidated into a limited number of resource types and utilizations in order to remove unnecessary complexity for a single player managing a large economic structure. Resource cubes are included as four primary resource types: Food (Dark Green), Petroleum (Black), Steel (White), and Intellectual Property (Yellow). These resources indicate a final processed product ready to be implemented into the national industrial capacity in order to build factories or units.

Army Fronts

The game begins in 1933 with forces operationally dispersed throughout the nations and the players must consolidate their forces to begin an advance on the enemy. This early dispersion of forces causes both players to consider the dispersion of units and

resources allocated in front of those resources. Due to the operational-level nature of the game, the fronts consolidate units across thousands of miles and into a single Army marker in order to simplify the game combat elements. These fronts may be comprised of a single type of unit or diverse combined arms units as the player develops and fields these capabilities.

Victory Points and Objectives

The game is driven by two opposing win conditions – objectives and victory points. The objectives are broad decisive victory conditions in which the player must occupy their choice of one star objective and two triangle objectives of the opponent. If the decisive victory is not achieved in the 11 round time scale, each player may achieve the win condition by earning the most combat and area victory points. These victory points are earned by demonstrating area control and executing the action point allowance system.

Production Capability Cards

Players control production capacity through placing factories on available cities behind their operational fronts to demonstrate critical industrial considerations of the force management process. Players must consider the PMESII-PT operational environment, geographic locations determined by the axis of advance, and production capacity of the available locations. Production capacity is limited in various cities to force players to consider how and where they will place factories in accordance with opponent influences and their desired victory conditions. The players must have available spaces within their control to build and are only allowed to build factories from which they have

[illegible]

author.

Soviet Production Capabilities

Hamburg	Leipzig	Dresden	Berlin	Danzig		Bialystok	Riga	Vilnius	Leningrad	Demyansk	Vologda
Cologne	Frankfurt	Prague	Warsaw	Krakow	Lublin	Lviv	Minsk	Kursk	Smolensk	Moscow	Gorki
Munich	Vienna	Budapest	Belgrade	Bucharest			Kiev	Odessa	Kharkov	Sevastopol	Rostov

Figure 4. Soviet Production Capabilities Card

Source: Created by author.

Player Card

The player card includes pertinent information to assist the players with developing unit capabilities and strengths, manage the axis of advance and combat capability for the front, tracking victory points, and tracking available resources. Players must carefully manage the DOTM Research Matrix and Unit Strength Matrix to construct a force according to the quantity or quality methodology pursued. To balance game components, the DOTM Research Matrix becomes the driving factor to the Unit Strength Matrix. When identifying critical capability gaps to determine a force management solution, the force manager must make changes to elements of the DOTMLPF-P spectrum. Hence, the interplay between each matrix significantly affect the fielded force strength and capability. Finally, these elements are susceptible to enemy action such that

changes in the operational environment drive changes to the DOTM Research Matrix and Unit Strength Matrix. The player cards are shown below.

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Figure 5. Axis Player Card

Source: Created by author.

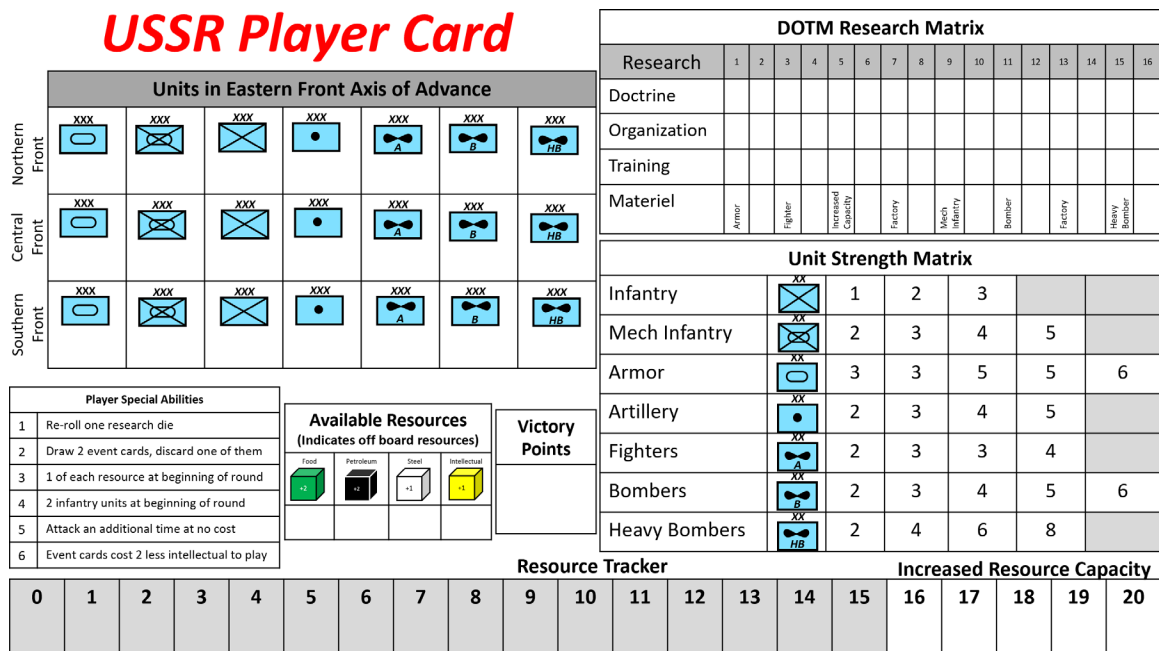


Figure 6. Soviet Player Card

Source: Created by author.

DOTM Research Matrix

The DOTM Research Matrix provides access to the Unit Strength Matrix by encouraging the player to develop doctrine, organization, training, and materiel elements inherent of a force structure without getting bogged down in the details of individual force management actions. The remaining leadership and education, personnel, facilities, and policy elements of DOTMLPF-P are captured in other elements of the game already discussed such as time, event cards, and production capacities.

Players have the option to purchase research dice rolls as an action. These opportunities allow the player to invest in their DOTM force management structure and solve capability gaps. Dice are used to indicate a probabilistic outcome in finding a

solution to the capability gap. When a player increases the DOTM capacity across all four element rows according to the lowest common denominator column, they are rewarded with a unit strength matrix increase for a single unit. Players must declare each element and the number of dice rolls allocated against the DOTM research category prior to rolling. Historically, DOTMLPF-P developments have not always been linear in nature because significant investment never came to fruition and were run to completion rather than being fixed after every action. The players roll the pre-allocated dice to determine the outcome of the DOTM developments with a 50/50 chance of developing the new DOTM capability on that turn. Alternate research strategies and dice allocation may be utilized on subsequent rounds but do not allow for immediate actions in order to model the outcomes of each national 5- and 10-year plans. Additionally, other players have capability of reversing DOTM developments through event card effects based on espionage, individual national setbacks, or other historical events to illustrate changes in the operational environment. These events provide historical flavor for events such as the red purges or development of mechanized infantry.

The materiel element of the DOTM Research Matrix exhibits a special capability that shapes the order in which units may be developed. With each development on the materiel scale, the player receives a technology development roughly corresponding to historical developments that adds unique capabilities from a materiel and technology perspective. In the case of the Axis, the player receives an early factory and then develops armor and fighter technology. Similarly, the Soviets develop armor, then the fighter, and finally increase their resource capacity. Hence, the game forces player

decisions to balance the technological developments on the materiel perspective with the need to develop unit capabilities on the Unit Strength Matrix.

As the game proceeds, the phases represent different capabilities to the DOTM development. The prelude to war phase is heavily focused on DOTM developments and the Axis player initially has greater technology development capabilities. For example, the Axis player rolls 4 dice initially over the Soviet's 3 dice. This adds historical flavor in order to encourage, not dictate, the technology development strategies each player pursues. In later phases of the game, the DOTM trends favor the Soviet player. Random aspects of the event card decks, dice rolling, and probability of available factor cards intend to introduce player decision making to produce a different outcome each game and drives different strategies for employment of complex DOTM considerations.

Unit Strength Matrix

The Unit Strength Matrix indicates the relative strengths of units from the DOTM improvements of the resulting force management structure and account for tactics, organization, unit capabilities, and doctrine in a single combat strength value. When a unit type is developed from the DOTM Research Matrix, that unit is now available to be produced if the corresponding factory is available on the action card of available factories matrix. A unit's operational capabilities and limitations are rolled up into a single integer to represent the unit strength. Each row of the Unit Strength Matrix corresponds to the unit type and generally describes the unit's capabilities as a result of the DOTMLPF-P influences on unit developments.

History does not always follow a systematic progression in which significant investment came to fruition, hence, not all unit strength increments are linear. In *Ides of*

War, not all units start at strength 1, evolve at the same rate, or climax at the same strength. These variations represent examples of starting, in-progress development, and ending strengths as armies better understand how to employ units at the tactical level and improves the DOTM. This wargame demonstrates unit strength values such as $2 \rightarrow 3 \rightarrow 3 \rightarrow 5$ rather than $2 \rightarrow 3 \rightarrow 4 \rightarrow 5$ to represent these slower developments until a massive breakout in capability as the DOTM is developed. These values intend to show development of the unit strength over time in accordance with DOTMLPF-P elements and are coarsely driven by historical strengths of the respective units. Additionally, the game was designed to balance the available unit development actions to encourage players to consider the utility of unit cost versus capabilities of units. This prevents the least expensive unit on the board from being the most powerful and easiest to produce without considering developments across broad unit type and the capability spectrum.

The Axis and Soviets do not field the same types of units at the same points in game play or evolve them at the same rates through the DOTMLPF-P elements. Unit strength and composition varies throughout any campaign based on a multitude of complex factors to include how they are organized, trained, and equipped. The net difference between the two DOTMLPF-P troop formations ultimately results in a common unit strength. All of these variations and unit models are consolidated into a general unit type, such as infantry or armor, as a general abstraction of the game functionality. Further, the units maintain a constant unit strength in terms of end units and combat power to represent level of unit organization. Since this is an operational-level game, the units are simulated as Division and Corps assets to provide the appropriate level of maneuver fidelity at the army front level in accordance with the map and game

resolution. This summation of strength, as a controlled minimum and maximum unit strength, is consolidated into a single combat power number that represents the total offensive and defensive capability of the entire unit. This wargame provides Axis Divisions and Soviet Corps a relative combat power for each unit based on its capabilities at various periods in the war by unit type and capability.

As a result of the DOTM improvements, the player increases the unit combat power represented by a single unit strength number. The operational-level nature of the game ignores components of the DOTMLPF-P elements such as force ratios, force densities, defensive depth, casualty rates, advance rates, balance of men and equipment, specific tactic differences between similar units, numerical concentration, individual unit attrition, etc as modifiers to the unit end strength. By way of example, the Axis infantry units from the Unit Strength Matrix on the Axis Player Card in Figure 5 begin at strength 2 and evolve to strength 3 at a different rate than their Soviet counterparts. To improve this strength value the Axis first improved their DOTM which moved the strength to 2, or no change. As the war progresses, the Axis increase DOTM improvements in doctrine and training which improve the overall combat effectiveness of the unit raising the combat strength to 3. Conversely, the Soviet infantry is initially modeled as a weaker end strength of 1 in the Unit Strength Matrix from Figure 6. By improving the DOTM Matrix the Soviets may move the unit strength to 2, then 3. In essence, the game mechanism strives to show how developing the DOTMLPF-P framework may be used to improve a unit combat strength through wide variety of means and consolidates these improvements into a single unit strength, rather than represent them with complex counters, tokens, and increasingly complex components.

Resource Tracker and Available Resources

The resource and available resources trackers are helpful tools for the player to track the resources available after each action as resources are gathered, stored, and expended. The available resources tracker allows the player to indicate the quantity of specific resources to be gathered upon each action. Since the economics of geography dictate the available resources, the tracker changes as the player expands their operational reach and controls territory. The resource tracker identifies the resources available for use during any given action. To mirror the real-world maximum capacity and force players to control the economic throughput of the industrial complex, resources that exceed the total storage capacity are forfeited as if they had become industrial waste. As players develop greater materiel capabilities, the capacity may increase according to the Materiel DOTM developments.

Action Card

The action card is the key component that determines gameplay for each player. The card consists of a Road to War Tracker, list of 8 available actions, expansion of the build requirements for all 7 unit types and a factory build, and the 4 available factories able to be built each round. This card utilizes the variable phase order mechanic as the fundamental mechanic in which each player builds an economic engine to conduct the force management and program management processes. The action card is pictured below.

returns the road to war marker, game board geography and attack options are opened or closed to model the Axis and Soviets advance into the Rhineland, Poland, and beyond.

Actions

The actions table on the Action Card is the backbone mechanic of the variable phase order process for each player to conduct actions within a round in alternating order. The list of 8 available actions allows the player to conduct the named action which drives their industrial base or gather resources in order to supplement the economy. The 8 actions are: reset available factories or draw an event card, play an event card, trade resources, build units or factories, research, move fronts or units between fronts, move the road to war marker or attack, and gather resources. The player with the initiative selects the action on their turn and both players complete the same selected actions. The active player executes the chosen step first or forfeits the turn. The non-active player (second player) follows the active player and conducts the action or may choose to ignore the action and gather resources instead of completing the action. Then the second player assumes the initiative and becomes the first player. This alternating order continues with action placement and corresponding action until the all eight actions are placed. The transfer of initiative and continued actions on every turn drives the respective player economies and forces both players to continually direct complex decisions based on game strategy and available assets within the play space. Since the game is resource based, the action requires the player to plan for and expend resources in a specific sequence and time. A player may also control the opposing players actions by purposefully selecting a restrictive sequence by playing an action or event card at a detrimental time in which the opposing player cannot act.

The eight action turns are organized in rounds from quarterly to multi-year periods. This assumes fluctuations in the economy as being constant and represents the historical national economy remaining relatively constant throughout the course of World War II despite significant influx of captured territories and colonial spheres. Further, this prevents an exponential snowball effect in players economies increase or decrease but does not remove it entirely when capturing territory. Since neither side saw a detrimental impact to the economy during the period of war until after 1942, the game models a relatively constant economy. Even as each nation loses territory, they lose limited portions of their economies due to captured territories but do not experience such catastrophic impacts that it disrupts the game mechanics. In this way, the mobilization of the war effort forms the economic play space with limited outside influences such that the player must decide the balance of resources required to expand territory in order to gain a greater share of the board resources.

Factory Reset

Available factories are limited within the game to simulate the complexity of the operational environment and explore relationships between industrial capacity and force management decisions. The limited factory mechanics prevent a player from exploiting a single unit type of a highly developed unit strength from the DOTM research matrix. Furthermore, the number and type of factories are predetermined based on extrapolated historical production rates and intend to balance the types of factories available at any given time for production. As a result, if no factory unit types are available that a player has researched on the Materiel row of the DOTM research matrix, then resetting the action card available factories with four new factories may be necessary. This feature

prevents a player from being locked-in to a specific unit factory type and limited production capabilities. However, when the player resets the available factories they are required to spend limited resources at the risk of losing the currently displayed factories for other needed production benefits. This limits the quantity and capacity of available factories and may drive players to build less desired units within the limited available factory pool or spend resources to develop new capacity by building additional factories. Ultimately, this mechanic permits the player options to reshape PMESII-PT characteristics by enabling weighted elements of chance when drawing for new desired factory sets.

Event Card

The event cards present controlled operational environment variables inserted randomly into the game mechanics that incentivize economic development and force management paths for each player. The event cards model historical figures, key events, resource development, DOTMLPF-P improvements, and key technology breakthroughs. Randomness fosters diversity of the capability development options according to a historical backdrop while allowing flexible PMESII-PT elements, additional DOTMLPF-P incentives, and player decisions to shape gameplay. Removing the randomness of each phase by using predetermined cards may serve as the ‘school solution’ to compare actual historical events as strategic and operational realities against the player decisions and drives critical discussion of gameplay decisions.⁴⁹

⁴⁹ Perla, *The Art of Wargaming*, 79.

Play an Event Card

Event cards have the potential to positively impact the active player or negatively impact the opposing player. The ability to play each event card is dictated by the availability of the open action on the action card and requires two intellectual property resources to activate the event card. The event cards are organized into three primary phased decks. If not used within their historical phase window, the card lapses and is discarded which creates a higher probability of driving events according to the actual historical outcome.

Trade

The trade action allows players to trade valuable excess resources for needed shortfalls. Since all actions require resources and each player is resource limited in certain areas according to their national economy, the trade feature allows either player to continue to gather a specific shortfall resource at the detriment of the exchange rate. Each player may make up to five exchanges and rebalance needed resources as the players shape their national industrial complexes. The trade exchange rates allows the games resources to be simplified into a common resource currency of food and creates a common currency to weigh and balance the cost of individual requirements for units and factories. For example, 4 food = 1 intellectual property; and 4 food = 2 steel or petroleum resources. Infantry cost 1 food and 1 steel, therefore, the common currency is 3 food.

Build

The culmination of the industrial capacity feature is to construct units based on available factories and resource. This action allows each player to build up to four

randomly distributed factories and seven different unit types. These unit types include infantry, mechanized infantry, artillery, armor, fighters, bombers, and heavy bombers with a basic warfighting strength to demonstrate a numerical estimate of the unit's type and capabilities. Players may only build within their industrial capacity limits defined by the number of unused factories and resources available when the build action is played each round. Therefore, it is important to develop an industrial capacity capable of meeting your resource production requirements and in accordance with your force management strategy. Further, the timing and placement of resources when selecting the build feature forces the players to face complex economic, technology development, and combat requirement decisions for the given round while balancing resource availability.

Research

The research action allows the player to employ elements of the DOTMLPF-P solutions to solve capability gaps interconnecting the JCIDS and DAS aspects of the force management structure. In the game, the research action is conducted as a dice roll with a 50/50 chance of success developing an element on the DOTM Research Matrix. Since a significant portion of DOTMLPF-P effects never make it to or are ineffective on the battlefield, this gameplay element attempts to include the same components of chance in the force management development cycle. When researching, each player is allotted different numbers of dice according to the nationality in order to incorporate operational environment aspects representative of historical actions and national development impetus. The complexity of decision making is further compounded by requiring players to select the DOTM elements they intend to invest in prior to all rolls without knowing the final outcome and adjust their strategy in subsequent actions or rounds.

Move

The axis of advance in Eastern Europe of World War II were by no means a static battlefield as seen in WWI. To account for a geographic reach of more than 1,500 miles across the entire front and a rapid mobility environment, players must utilize operational-level movement and maneuver to reposition forces. Moving fronts and individual units serve three primary purposes: 1) allow greater resource gathering behind a friendly controlled front area; 2) advance the fronts to allow combat between opposing units in order to test the quality versus quantity research question, and; 3) reposition units between fronts after combat attrition.

Since a fundamental tenant of the game is resource management, the front locations and ownership of area cells determine access to harvestable resources. Therefore, it is necessary to allow the players to take advantage of mobile fronts to allow players to decide how and when to utilize the fronts to gather resources. Initially, all fronts must stay within the nation's sovereign borders. As the game rounds progress and the road to war markers increase, each player may expand their territory according to the operational environment and resources available. Second, players must engage in combat in order to win the game and test the capabilities of their force management structure. Hence, the fronts require a level of mobility incorporated by a move action to move an entire front at the cost of resources. Finally, units will expect combat losses on each front. Since units stay with a front from initial production until moved, it is necessary to allow the player the operational flexibility to reposition units. However, these repositions consume resources and the player must balance resources with new unit production capabilities

Road to War or Attack

The Road to War or Attack action is another multi-function gameplay action feature that explores the research question. This action demonstrates the combat elements and complex force management decisions in a dynamic operational environment that are necessary to test player strategies of force quality versus quantity. Furthermore, this action allows the player with the initiative to utilize elements of the DIME instruments of power to increase the Road to War marker or Attack along a front and the second player may attack or gather resources. When selecting the attack action, the player must also consume resources to drive the opponent from the adjacent occupied cell.

In early gameplay, before the road to war marker reaches the required level 7 indication to attack, both players must consider their operational environment and capacity to wage war. If they have the initiative, they have the choice to move the road to war up or down one step in recognition of the historical scenario as these two tentative allies draw closer to war. It behooves the player whom is less prepared to enter combat to approach the situation more conservatively by utilizing the diplomatically instrument of power to delay war upon the fronts. However, as each round passes, the game forces both players into greater contention and the looming outbreak of war by raising the Road to War marker each turn according to the round indicator.

In later gameplay, when the Road to War marker reaches 7, both sides have met the attack conditions corresponding the appropriate game board color scheme and may now attack. At this point, the attack action may take the place of the Road to War action. When deciding how and where to attack, players must consider fundamental resource

limitations to avoid over-pursuit of the enemy for fear of over-extending lines of communication and inviting a counterattacked.

Lastly, it is important to distinguish between attack actions and movement actions when considering variable phase order mechanics to allow the most operational flexibility in managing theater forces. Since the operational-level scenario is limited to only eight action turns each round, the separate move and attack action is necessary to allow a player to reposition forces between fronts without wasting an opportunity to attack. This extra action also allows an additional turn to gather resources and drive the economy in preparation for a future action.

Gather Resources

The simplest and arguably the most valuable action available to a player is the nonspecific gather resources action. This action allows both players to avoid wasting a valuable action within the variable phase order mechanic while gaining value from taking the action. Players may utilize this action to gather resources in preparation for later actions within the round or as a turn phasing move in order to offset the next players initiative. In either case, the players execute the key aspects of gathering resources and force a series of complex and interrelated force management and industrial capability decisions within the gameplay.

Unit Production Matrix Required Production Resources

The unit production matrix is the legend for unit production of the seven unit types and four factory production options. When developing the force management

structure, the player must weigh the DOTMLPF-P development strategy based on available units and resources, and unit production costs against potential unit strength capabilities from the Unit Strength Matrix. Unit costs may be simplified into a common resource currency by comparing food, steel, petroleum, and intellectual property exchange rates from the actions matrix.

Available Factories Matrix

When building factories during the build action, the game mechanics limit the types of factories available to build. There are 30 types of factories available for each player and are weighted against unit types based on production capacities through the war. Although an artificial creation of the game, this mechanic strengthens the basic unit development construct which forces the player to deal with complex operational environment decisions of a program manager. Specifically, this mechanic prevents building only one type of unit such that the player must consider DOTMLPF-P development as central tenant of the game according to economic and industrial limitations within the national capabilities. The available factories are weighted by types of units produced historically which causes players to adapt their force management strategies. Since all board games can be decomposed into a series of spreadsheets at some discrete level, this weighted probability mechanic creates a forcing function which drives a different game scenario at every play test. Moreover, this weighted operational environment allows different methods to accomplish the same quality versus quantity decisions from different perspectives. For the Axis player, the available factory balance generally encourages capability development through DOTMLPF-P technology improvements early but reduces types of units they can produce. In an attempt to model

historical elements as accurately as feasible, the Axis player is likely to attempt a more well-rounded force based on high quality units rather than the general Soviet approach of mass quantities of a single unit type.

Combat Resolution Matrix

Combat action outcomes are decided by comparing total unit strengths at the front level through a combat resolution matrix as the single means in testing unit capabilities versus the capacity of the industrial complex. The result is a roll-up sum of combat strength of each unit represented by the strength of the front on the combat resolution matrix. This total combat firepower at the front level is divided into several columns of varying strength from 1-15, 16-30, 31-45, etc. As fronts advance in strength, they increase the total combat firepower and concurrently increase the probability of success in the resulting dice rolls. Players roll two six-sided dice (2x 1d6) to determine the losses inflicted on the enemy. The intersection of the row from the sum of the two dice rolled and the total combat firepower column determines the losses each side takes and are inflicted equally upon both sides.

Only two modifiers are incorporated into the combat resolution matrix to provide distinct advantages to either side – combined arms column shifts and overwhelming firepower. Combined arms are modeled as the maximum efficiency of using all units in the front rather than just using individual armor or infantry units effectively. Combined arms present the enemy with increased mobility, force dynamics, and force complexity challenging the enemy capabilities across the range of terrain and domains. As a result, the enemy is presented with multiple dilemmas and a variety of unit capabilities, when combined, which are significantly stronger than individual unit capabilities and creates a

compounding strength across different units. For example, a player with four different unit types receives one column shift right combined arms bonus over a player that has three different unit types. This demonstrates the value of multiple types of units executing simultaneously on the battlefield and the increased potential to deal greater damage to opponents.

Second, fronts receive an overwhelming firepower bonus of additional dice to be rolled during combat resolution if the sum of the combat strength exceeds 100. The player rolls a third die if the combat power exceeds 100 and a fourth die when the combat fire power exceeds 130. This demonstrates the effects of mass while simplifying gameplay and combat complexity. The combat resolution matrix is picture below.

Count on Roll	Total Combat Firepower							
	1-15	16-30	31-45	46-65	66-85	86-105	106-130	131→
2	0	0	0	0	0	1	1	2
3	0	0	1	1	1	2	3	4
4	1	1	1	2	2	3	5	6
5	1	1	2	2	3	4	6	8
6	1	1	2	3	4	5	7	10
7	1	1	3	4	4	6	9	12
8	1	2	3	4	5	7	11	14
9	1	2	3	5	6	8	12	15
10	1	2	4	5	7	9	14	16
11	1	3	4	6	8	10	16	17
12	1	3	5	7	9	11	18	18
13*						12	19	19
14	⊕ Player with the greater number of combined arms = 1x column shift right. If Firepower exceeds 100, modify as follows: 100 – 130 = Roll 3 Dice >130 = Roll 4 Dice □					13	20	20
15						15	21	21
16						16	22	22
17						17	23	23
18						18	24	24
19							25	25
20							26	26
21							27	27
22							28	28
23							29	29
24							30	30

Figure 8. Combat Resolution Matrix\

Source: Created by author.

Player Roles

Artificialities limit the ability of *Ides of War* to simulate the specific decision-making environment of combat situations with complete realism, however, it is the designer's intent to reproduce aspects of a commander's operational activities with the greatest fidelity and least amount of complexity possible. The intellectual experience should reflect the operational, command, and historical scenarios similar to real-world situations and teach lessons to inexperienced subordinate leaders in order to conduct the actions themselves. The operational experiences include force selection and employment, demonstrating system capabilities and limitations, and an ability to rapidly assess the operational environment. From the command perspective, the player should understand effective ways to display and evaluate available resources, technology developments, and area of operations information. Finally, the scenario should provide insight into historical decisions, develop an understanding of area control, and explore the operational environment.⁵⁰

Ides of War is designed as a role-playing game to emphasize the learning aspects of how a national industrial complex drives the effectiveness of a force management structure to employ the warfighting capacity of the military complex. The player roles tease out the important design aspects of developing a national economy around limited resources and accepting risk to attempt to fill capability gaps. Players must emphasize the DOTMLPF-P aspects of new capabilities, organization, training, and policies of a national industrial complex supported by the Gross National Product (GDP) of the

⁵⁰ Perla, *The Art of Wargaming*, 225.

nation's economy. Participation allows the player to practice specific functions within the economic development of a player's GDP, and explore aspects that support an industrial base and how they are employed on the battlefield. The player's role encompasses managing the military based national command economy which entices the player to make meaningful decisions that drive the economic production capacity and capabilities. This model represents a scaled down version of the complexities faced in the real world but provides education, training, and an increased understanding of representative actions required to develop an industrial complex.

The player role of the Axis is distinctly different than the role of the Soviets in several ways and encourage each player to explore in-game strategies while adapting to game driven events. First, one of the initial conditions is to roll a six-sided die to determine player special abilities. Automatically, this special ability should shift the player focus to a specific strategy based on the ability. For example, if the player rolls the number one, the special ability is "When researching, re-roll one die, once per research action." This ability automatically incentivizes the player to assert a quality-based strategy because they gain a higher probability of creating a DOTM research development on each roll and may re-roll a lower number die at their discretion.

Similarly, the Axis focus is intended to model an initial rapid intellectual development and high degree of technology importance throughout the game. The Axis player should generally be encouraged to develop high quality units because they are allotted four dice rolls when researching on the DOTM Research Matrix. Further, the Axis player is incentivized to develop high quality units with fewer resources. Conversely, the Soviets face the predicament of rolling one fewer dice when researching

and have fewer intellectual property resources available to encourage a quantity-based approach. These stochastic incentives drive a more likely strategy for each player, but do not prevent either player from pursuing an entirely quantity-based or an entirely quality-based strategy due to outside variables such as event cards may increase research capacity through increasing the number of die rolls or resources.

Available resources constrain both players for the duration of the game. Initially, the Axis have fewer territorial available resources and must adjust the road to war marker in order to expand to external territory and gain resources. Similarly, the Soviets have more resources available within their territory but must expend resources to move fronts forward to allow gathering resources within their sphere of influence. This process continues throughout the game to encourage both sides to consider geographical resources availability with geopolitical elements and create a wide course of available decisions.

Developing an economic engine is a fundamental take-away from the program management and force management game role perspectives. Early player actions set the stage for future capabilities similar to the 5- and 10-year plans developed in the 1930s prior to the outbreak of the war. Players must manage resources, technology development strategies, key geopolitical events, and variable phase order action decisions to develop an integrated and rational force management strategy. These decisions explore phases and buildup to warfare by using very different methods. This demonstrates how outcomes of preceding phases and earlier decisions are critical to execution at later stages of game execution and into combat.

Game Mechanics

In order to learn from complex interrelationship and human decision making processes, the *Ides of War* game mechanics are interleaved with historical flavor to uncover the complexities of the Axis-Soviet operational environment, force management process, JCIDS and elements of DOTMLPF-P, and employing technology capabilities on a battlespace. These principle drivers tie in with the major economic elements, program management of technology insertion projects, and operational decisions to explore the effects of these decisions while avoiding the details of executing the individual steps of the program acquisitions, PPB&E funding, and JCIDS processes. The previous sections outline the game components and the focus areas for each portion of the game board and associated assets. This section seeks to explore the interplay of these components, showcase the valuable learning opportunities of the complex decision variables, and demonstrate how they affect player actions as experienced during gameplay.

The fundamental mechanics and game elements include variable phase order, action point allowance system, area control, area influence, campaign and battle card events, hand management, simplified combat resolution effects, deck drafting and hand management game, set collection, ‘take that’, tile and worker placement, and variable player powers. Many of these mechanics have been discussed in previous sections, but do not showcase the intricacy of decision interactions when executed individually. Therefore, the following sections will present player actions and decisions points from the day in the life of the game perspective to explore the intended player interactions and outcomes.

World War II Axis-Soviet Front Scenario

The *Ides of War* intends to depict the prominent factors reflecting upon the decisions of the leadership and people of the time period. The historical events portrayed are meant to identify and reflect the challenges of the period but remain flexible enough to replicate and deal with unusual in-game player decisions. Historical characteristics of basic national strategy, historical events and people, industrial capacity, geography, and unit developments are intended to reflect the influence of prominent factors in the decision processes of player roles.⁵¹ In many cases this wargame deviates from history to balance reality with playability within the mechanics. Situations of overwhelming advantage are balanced to create a more playable and competitive game because the game is intended as an analytical training tool to explore force management and program management decisions that test quality versus quantity of forces.⁵²

Taking Actions

The variable phase order mechanic of taking actions ensures that all actions are resource limiting. Player must either take the action utilizing limited resources or forego the action and gather resources to conduct a necessary action in future rounds. The turn sequence allows each player to conduct the action or gather resources and balances the initiative of the combatants. This trade-off of initiative within the actions model drives the force management capabilities of the system through important resource development and program management decisions. The active player has the initiative and conducts an

⁵¹ Perla, *The Art of Wargaming*, 197.

⁵² Ibid., 189.

action while the secondary player has the option to replicate the action or gather resources. While modeling the variety of needs within the wartime national economies, this feature also drives resource management decisions upon both players continuously throughout the game. Therefore, each player may choose to develop and execute the national economy by collecting resources and/or mobilizing the manpower pool and resources to conduct an economic action.

The turn phasing mechanic shapes the utilization of limited actions to force decisions points within realistic ranges and provides alternative actions while restricting the range of resource availability. These decision points are intended to encourage the players down one of several major alternative paths. Further, this limits the variables within each round to a single action of each type, in an order determined by the players, which provides guidelines and bounding to force decision making but does not overly restrict flexibility. Therefore, the mechanics are intended to meet the industrial development objectives by forcing player decisions and experiences within a simplified but realistic decision making strategy.

Resource distribution and economic development choices are created at every action to drive decision processes for both players. On the active players' turn, the player may choose to conduct the action at some cost to mobilizing the economy. Conversely, to continue to drive the economy forward, the secondary player has the most choice in the action at the cost of the initiative. The secondary player may also choose to conduct the same action as the active player or gather resources. The lead player may choose not to conduct the action, effectively forfeiting the turn, if they intend to prevent the opponent from conducting that action when they do not have sufficient resources. There are eight

actions per turn with 15 Axis and 10 Soviet resources initially available. Each player may gather resources up to 5 times each round in order to maximize the national GDP in exchange for conducting other force management or program management decisions selected by the opposing player.

The variable phase order forces both players to consider resource availability, timing of resources, and current and future actions they wish to take while allowing the other player to have an instrumental role in how the events unfold. This drives a cost benefit decision to each player on choosing to build the economy versus allow the opponent to select the preferential action. Not all actions may be blocked simultaneously, so the player must consider this action as a form of offense or defense and which action provides the greater benefit to them or the opponent. The player may also select an action using the ‘take that’ mechanics and prevent their opponent from conducting a key task or inflict significant damage to the player. The sequencing of these critical program management and industrial decisions is a cornerstone of the game design and intends to force the player into a complex decision cycle of determining force development and balancing the opponents actions.

The DOTM Research Matrix is a critical component in the development of this force management game and models unit capability improvements to explore the tipping point in combat power of individual units compared to the quantity of combat power. In developing the quality of units, the player must utilize limited resources to improve the potential to create units with greater combat strength. The player must decide what strategy to use based on the player special ability determined at the beginning of the game, resources available, and player capabilities according to number of dice rolled for

each player when researching DOTM improvements. Further, the player must balance the selection of the research action in the variable phase order mechanism and maintain enough resources on hand when the action is selected. If the player does not balance appropriate resources, an entire rounds worth of capability may be left unutilized and hinder further unit developments.

Open Game vs. Closed Game

Play testing revealed significant concern with allowing omnipotent access to all player information throughout the game. Ultimately, visual dividers were not added to the game because the variable phase order mechanism negates much of the advantage gained by knowing the opponents current status and creates interesting and desired dynamics within the force management and program management decision cycles. First, history tells us that it is likely both sides had substantial information of the enemy's whereabouts, combat capabilities, industrial capacity, and upcoming technology. This access to information allowed both sides to conduct preemptive actions and conduct operations against the enemy's most likely course of action. Second, the players decisions are more heavily influenced by greater amounts of information and drive considerations of executing actions directly against known enemy threats. For example, each player may monitor the other players relative resource availability, combat power and force buildups, and industrial capacity. This information allows the player to conduct actions which thwart or counter the opponents intended path and forces both players to consider deliberate actions within their strategy. Further, it encourages players to forecast strategies significantly in the future as a chess player forecasts the opponents most likely move, several moves in advance.

Combat

The iterative test of a player's quality versus quantity is resolved through a series of combat actions as played out on three fronts simultaneously. The simplified style combat resolution removes tactical actions and allows the players to resolve combat identically at the operational-level with three variables determining the outcome of combat – overall front strength, combined arms, and weighted dice probabilities. Bonuses are not provided for units in the defense to simplify combat and focus the players actions towards determining a balance of the aforementioned three elements while considering resource consumption. Since combat is a heavily resource dependent action that drains significant production capabilities, both sides must have sufficient reserves amassed to augment the actions required to execute their strategy.

The combat rules are primarily Jominian in approach and is intended to limit the impact of luck on the game but not remove it entirely. The majority of the combat outcome is determined by weighting higher probability die rolls with rational decisions at the force management and resource allocation level. Therefore, intelligent development decisions are intended to provide a higher probability of a successful outcome and avoid focusing decisions on the Clausewitzian categories of passion, reason, and chance.

Wargaming is by definition the simulation of unrepeatable events coordinated in a game model to generalize and play out historical or fictitious events. Therefore, gameplay must be a generalization of combat events that incorporates specific randomness using weighted dice roles. Players roll two six-sided dice (2x 1d6) as a function that drives key gameplay decisions. In the span of a game, the randomness of real life events must be

self-contained through playable game generalizations to scope important player decisions and drive a series of impactful player choices.

War games include no actual fighting, so combat must be simulated at some level. History provides numerous examples in which the human elements and chance were a far greater determinant of success or failure than what a specific combat simulation said was possible. Examples of courage, fear, morale, and leadership or random acts of fate have a lesser influence on how events unfold than systematic programing and analysis. To incorporate this combat unpredictability, the weighted probabilities of die rolls are uniquely employed. The dice roll probabilities capture warfare outliers by including the weighted chance to represent the unpredictability of the outcome within bounded limits and are cognizant of the system inputs to unit capabilities and quantities. For example, in real combat, greater quantity might be significantly deficient tactically but still win the battle because overwhelming numbers prevail.

Combat is one of the most important elements of the game and demonstrates realism of the battle damage assessment to quantify the outcomes of key player capacity versus capability decisions. *Ides of War* models combat by evaluating the sum of the total unit strengths and adds a column shift for the greater combined arms overmatch capability. As forces experience combat attrition, players are encouraged to nest two additional decisions in resolving combat. First, the player determines which units take losses. Second, the combined arms column shift encourages players to maintain combined arms benefits as long as possible. Therefore, the natural progression of the game will attrit less costly and lower strength infantry units to maintain the highest combat power of fronts until the infantry assets are exhausted. Then, players see

significant decreases in combat power as more expensive, higher strength units are destroyed. This forces the player to consider potential retreat options to maintain combat power and how to reconstitute forces on the subsequent rounds. At the resolution of combat, players earn victory points as discussed in the following section.

Victory Conditions

Wargames are imperfect images of real warfare and provide partial justice to the difficulties of real victory. To understand some of these operational-level complexities, the game is designed to emulate either a total victory, or more likely, a grueling war of attrition. Total victory includes control of the majority of the playable terrain according to taking one star and two triangle objectives. However, the more likely scenario encompasses two armies begrudgingly locked in vicious stalemate trying to out leverage the others resource, industrial capabilities, and combat power. This leads to a game outcome that is decided by the combination of two types of victory points, area control and combat victory point.

Area control victory points are self-explanatory because the player who controls the territory associated with the victory point as indicated by a VP in the game board space owns the points at the end of the game. Players must jockey for position and take control of these areas by maneuvering forces across the game board in the form of the three fronts. The maneuvering of these forces comes at the cost of utilizing resources to fund movements towards the enemy. Once the forces come into contact with one another, the game dynamics changes to a combat oriented victory point scenario.

Combat victory points are earned by physically forcing the enemy to vacate an occupied space. Combat is declared and the defending force may defend or retreat from a

space. The defending player must make an operational decision to vacate the square and trade space for time, maintain resources, exhaust an opponent of resources, or take a defensive stand. In either case, the losing player vacates a combat victory point or attrits their forces and then vacates the space. If trading space for time, the defender may continue to retreat until they decide that they must defend the position to maintain valuable resources, protect a key geographic location or industrialized city, or defend for other geopolitical reasons and prevent losses of area victory point. In either case, the player must balance the tightrope requirements of current resources, future or anticipated resources, exhaust an opponents resources, forecast future industrial needs, or maintain combat power for a counter attack. As a result of the variable phase order mechanic, both players receive the alternating initiative. The offensive player chooses when and where to attack according to available forces and current and future resources available to both players. On the other hand, the defender has the advantage of trading space for time or waiting for the right moment to initiate a counterattack after the attacker is resource limited. Finally, combat is organized such that no player can win the game in a single round but must identify the right time and series of events to capture the opponent in its weakest posturing.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Playing *Ides of War* and reflecting upon operational lessons learned should yield extensive insight into the research question which explores technology development and capability implementation on the battlefield. The players should come away with an understanding of how quality of forces compares to quantity of forces. This wargame was intended to create a training tool inspired by the Axis-Soviet Front of World War II which allows force managers and program managers to extract an operational-level understanding of capability gaps derived from the study of force structures, industrial complexes, resource availability, and the operational employment dichotomy between lower quality but large masses compared to smaller sized but higher quality forces. Players should gain a greater appreciation for the complexities of these processes and be able to understand the feasibility of alternatives and opposing strategies, understand areas of strength and weakness in friendly and enemy combat power and force supportability, develop advantageous employment of different types and numbers of forces, and critique the relative contribution of the various types of forces to the overall outcome of the campaign. The increased understanding through this training tool is showcased in the following conclusions and recommendations of this chapter.

Conclusions

Ides of War discovers the dichotomy between a smaller force size of high quality units and a larger force of lower quantity through the lens of a competitive war game framed within the Axis-Soviet Front of World War II. This training tool allows force

managers and operational commanders to explore complex decisions of an industrial economy empowered by resource gathering, the military force management structure, and DOTMLPF-P processes through technology development and capability implementation to meet current and future capability gaps. Hence, players must analyze the effects of individual program management events while playing through a dynamic operational environment under the obstruction of an opponent's countermoves. The wargame requires the player to specify types of actions taken when balancing program management decisions with industrial capacity and warfare on an operational front. Players must manage straightforward development inputs of military technology and unit types which drives capacity of the industrial economy in order to experiment with the developed capabilities by attacking and defending across three fronts simultaneously in a theater-level warfare scenario. As a result, players are encourage to utilize greater variety of unit types, utilize a broad spectrum of DOTMLPF-P improvements, and create diverse industry or force a production chain with little unit variety but the capacity to produce vast quantities. This scenario allows the player to receive real time feedback of program management decisions to experience the impacts of new technology, organization, policies, and grand tactics in order to refine the industrial decision-making process while testing realistic operational plans across the theater.

As secondary research questions, players should also extrapolate important lessons from a force manager, program manager, and operational commander perspectives. This wargame forces players to consider geography, resource availability and allocation, capability gaps, and the appropriateness of specific DOTMLPF-P improvements. The game uses a simplified combat mechanism to experiment with these

strategies and force estimations. Further, the strategic and operational significance becomes clear when the player reflects upon unforeseen difficulties and unexpected solutions. These realizations should highlight the balance between actions and effects within the game and should easily translated into current operational concepts, opportunities for further testing, and may be refined for practical applications of today's force management challenges. As a result, this wargame represents a body of knowledge greater than just an interesting one-time exercise but may be utilized to hone one's skill relative to the force management and program management problem sets.

When directing an immense industrial complex, outside factors have a critical influence on program management and force management decisions of the unit type and quantity of production. In the case of modeling the Axis-Soviet Front for this war game, less is more. Fewer inputs to the economic engine reduce the overall complexity of the game, making it playable as a board game, but do not reduce the complicated decision processes. The opportunity exists to create a game modeling the most intricate real-world situations and force management structure with no commensurate increase in effectiveness. Therefore, the game mechanics focus on modeling limited but dynamic gameplay decisions relevant to the DOTMLPF-P spectrum and as closely tied to the historical vignette as possible.

Player paralysis may also result from how the program manager and force manager execute their proposed strategy. The player must simplify their approach and commit to a consistent plan in order to maximize resources, industrial capacity, and unit capabilities. If the player pursues too diverse a strategy or too many independent strategies, they risk diluting the intended force structure. Therefore, players must develop

and stick to a coherent strategy allowing only small adjustments as necessary to avoid bouncing between key steps during execution.

Timing is critical to executing the strategy. The player must monitor their own resources as well as the opponent's resources to execute the variable phase order mechanic in order to maximize opportunities to acquire desired unit capabilities. Similarly, the enemy gets a vote in the action mechanic such that the cleverest strategy may be thwarted by the opposing player. This game showcases that a determined enemy is not defeated until their material ability to wage war is eliminated. During combat, once a player exhausts their purely low quality forces, it follows that they begin to attrit the technological military advantages of high quality forces while managing victory points and geographic areas. As a player's combat units are depleted in strength, they must resist the destruction of higher quality units which deplete the overall front strength more rapidly. From a capabilities standpoint, both sides must ensure an economic engine is in place to maintain a constant throughput of forces in order to translate economic superiority into overwhelming superiority on the battlefield.

Early player decisions yield significant impact to later force capabilities. The wargame affords players the opportunity to explore their strategy limits in the context of industrial capacity and economic advantage through the DOTMLPF-P construct. Since the unit capabilities are innately tied to the industrial complex in which they operate, early player economic and industrial decisions define the supporting economy, infrastructure production, and unit capabilities throughout the game. As a result, the quality and quantity of available units generated for operational employment are gauged by the capabilities of the supporting infrastructure and economic engine. Therefore, the

player must cultivate the economic, industrial capabilities, DOTMLPF-P structure, and total front capabilities in 1933 to set the conditions for success in 1939 and beyond.

Resource limitations are the greatest constraint through a variety of phases. The game highlights how certain resources are more heavily utilized in certain phases and become less important during other phases. For example, while building a force structure in the early stages of the game, yellow intellectual property resources are significantly more important when developing the DOTM Research capabilities. During later stages of the game, black petroleum resources become a limiting factor when trying to move and maneuver your forces. As a result, force managers, program managers, and operational commanders must be aware of resources required to conduct operations. This includes forecasting, storing, and managing resources across all phases of production and combat.

This wargame game traverses fundamental force management and program management decisions inherent to technology development through utilizing the DOTMLPF-P construct. Actions executed by the player within the DOTMLPF-P research matrix help clarify underlying strategies of the industrial complex and economic system which may not be apparent through more conventional styles of planning and operational research. Therefore, implementing improvements within the DOTMLPF-P construct showcases how these actions directly translate into unit strength improvements which the player tests in a simulated combat environment in order to determine the balance between quality and quantity of unit results from combat attrition.⁵³ Materiel improvements are a significant driving factor to how each player was able to execute

⁵³ Perla, *The Art of Wargaming*, 111.

within their industrial complex. Similarly, the other DOTMLPF-P areas could be designed to impact unit capabilities for a different scenario. With minor adaptations and slight increases in game complexity, players could further experiment substituting technology to field superior weapons platforms while balancing the tenants of mass in various scenarios.

Combined arms formations and use of multiple unit types produce multiple dilemmas to an enemy as another form of improved combat power in a front's capabilities. Using a diversified array of units provide unique combined capabilities that challenge an enemy to destroy or weaken a broad variety of units rather than focusing on a single unit type to achieve their objectives. As a result, this game explored how different units could be developed independently through the DOTMLPF-P process. When these units combined into a diverse force structure, combat synergies compliment other units power by maintaining the greatest combat power in the higher quality units and minimize the impacts to the front by losing lower quality units first. Conversely, the force structure built upon a less diversified unit base, created a more constant combat degradation when taking losses but required significantly more losses to attrit the combat power than higher quality units.

Battlefield outcomes are the deciding factor in this wargame and required an understanding of the significant investment in DOTMLPF-P actions which affect future battlefield outcomes. *Ides of War* clear demonstrates the importance of identifying capability gaps through resource limitations, 'take that' player interactions, capacity bottlenecks, and unit capability shortfalls that the researcher found representative of a simplified, real-world operational environment. To this end, each player is introduced to

the relevance of improving each DOTMLPF-P aspect as evenly as possible and in coherence with other economic, industrial, technology, and operational considerations within the PMESII-PT environment. It also became apparent that these same principles may be replicated across multiple operational environments to allow the game to be translated into other operation models and scenarios while producing comparable results.

Recommendations

Ides of War was originally designed as a historical re-creation of the Eastern European actions in World War II in order to gain a better understanding of the Axis-Soviet Front and replicate the dynamic attrition-based warfare. The intent of the re-creation was to understand how the Soviet national will overcame what many consider to be the most well trained and equipped army of the day. As the game evolved, it quickly became clear that the game mechanics may easily be transferrable to multiple scenarios. However, re-creating the Axis-Soviet Front in exact detail to model the force management and program management structures was easily outside the scope and complexity of a two hour or less game designed for the operational level. Having developed this case study wargame as a training tool, the model could be modified and applied to other cases and multiple different conflicts such as the Napoleonic War, Vietnam War, or Yom Kippur War. Further, this wargame represents a body of knowledge for multiple play attempts with reasonably different outcomes. It appears likely that the game may be expanded and adapted to conduct operational research on how we execute in condition-based situations in order to predict how our enemies might react under similar constraints.

The game board would significantly benefit from an area based map more representative of the Eastern European geography. The linear scale of the axis of advance limit combat to a one-dimensional fight and the board could easily be expanded to model history and geography with greater fidelity by allowing a two-dimension approach. Further, the board could be made for many geographic areas of varying scenarios. The middle east and far east could be modeled in a two-dimensional scenario to incorporate complexities of an operational environment including internal and external lines of communication.

At the game mechanics level, there are opportunities to incorporate greater historical fidelity or divergence depending on the objective. In the case of player special capabilities, the players roll for randomly determined special abilities. Instead, predetermined player capabilities or even selectable capabilities the player can earn throughout gameplay would allow additional dimensions to exploit force management and industrial capacity opportunities. From a resource management perspective, the resources gathering and conversion to units or factories are relatively linear and straight forward. Players simply gather resources and utilize the resource to conduct an action. Further design might allow multiple levels of resource transformation to increase player involvement in advancing the industrial complex. For example, players must drill for oil and convert it to petroleum, or mine iron ore and convert it to steel in order to utilize the processed end-product for unit production. These additional mechanics might expand the players understanding of the complex inputs required to develop the industrial capacity and make increasing intricate decisions on where and how to build an economic engine.

The combat mechanic is another area in which the game resolution could be expanded. Units could incorporate individual unit strengths or capabilities within the DOTM construct to exploit tactical and operational-level capabilities. For example, armor and mechanized infantry could include deep area exploitation when the attacker has specific unit distance and strength capabilities enabled. This potentially adds complexity to the combat resolution which must balance simplicity with accuracy and may distract from the initial concept of measuring all unit outputs equally with a common combat value.

Finally, play balance deserves greater play testing to fully develop the required balance of each mechanic, component, and theme. Specifically, substantial testing time should be devoted to balancing resources, the operational environment, and historical or scenario accuracy. A significant challenge during play testing became to make minor adjustments without dislocating other key game features. As the design progressed, multiple iterations smoothed out rough features but highlighted the interrelated nature of a complex game mechanic and how a insignificant change would propagate through the game in undesired ways. Further, the game assumptions on historical accuracy should always be secondary to game balance in this demonstration of the DOTMLPF-P process.

GLOSSARY

Action Point Allowance System. Game mechanic system in which each player is allotted a certain amount of points or resources per round based on meeting set conditions. These points are redeemable to conduct actions, build units, or complete quests of an almost limitless solution sets.

Hand Management Card or Asset Drafting. Game mechanic in which players competitively select cards or tiles from a common pool and assemble these components to create an advantageous system working towards a goal.

Set Collection. Mechanic that drives players to collect a set of items in order to accomplish game objectives

Take That. Game maneuvers that impedes an opponent's progress through direct attack of an opposing player's strength, level, or life points

Variable Phase Order. Mechanic that does not limit a game's sequence of events to a single order. The player that starts the round may select the role they take and conduct actions in the desired order. Similarly, players may be denied the ability to take a needed action if an opponent takes the action first.

Worker Placement. Process actions selected by the placement of game pieces on a limited number of resources, areas, or spaces

APPENDIX A

PARTS LIST

Component	Quantity
Game Rules	2
Game Board (11"x17")	1
Axis Production Capabilities Board (11"x17")	1
Soviet Production Capabilities Board (11"x17")	1
Action Card (11"x17")	1
Axis Player Card (11"x17")	1
Soviet Player Card (11"x17")	1
Combat Resolution Matrix	1
Event Cards: 7 - Prelude to War Event Cards (2"x4") 10 - Early War Event Cards (2"x4") 10 - Middle to War Event Cards (2"x4")	27
Front Indicators: 3 - Axis Front Indicators 3 - Soviet Front Indicators	6
Axis Factory Cards: 6 - Infantry 4 - Mechanized Infantry 6 - Artillery 6 - Tank 3 - Fighter 3 - Bomber 2 - Heavy Bomber	30
Soviet Factory Cards: 8 - Infantry 3 - Mechanized Infantry 7 - Artillery 7 - Tank 2 - Fighter 2 - Bomber 1 - Heavy Bomber	30
Game Cubes: 8 - Light Green (Action Markers) 2 - Orange (Round and Road to War Marker) 11 - Blue (Axis DOTM and Unit Strength Matrix Marker) 11 - Red (Soviet DOTM and Unit Strength Matrix Marker) 2 - Dark Green (Food Resource Marker) 2 - Black (Petroleum Resource Marker) 2 - White (Steel Resource Marker) 2 - Yellow (Intellectual Capital Resource Marker)	40
6-Sided Dice	4

APPENDIX B

GAME RULES

Ides of War: War Machines of WWII Rules

1.0 Introduction: The year is 1933 and Western Europe and the USSR are recovering from the greatest depression the world has ever seen. Famine and the Treaty of Versailles reparations stifle German industry leading Hitler and the Nazis to power as Stalin tightens his control in Soviet Russia. In order to survive, you must seize control of your national industry, improve and weaponize your nation, and lead them to victory in the Eastern Front of WWII. Will precision planning rule the day or will massive enemy hordes overrun your capabilities by 1942? You decide as the Axis and Soviets clash across Eastern Europe in Ides of War: War Machines of World War II.

2.0 Initial Game Setup: Place the game cards as indicated by Figure 2.0 below.

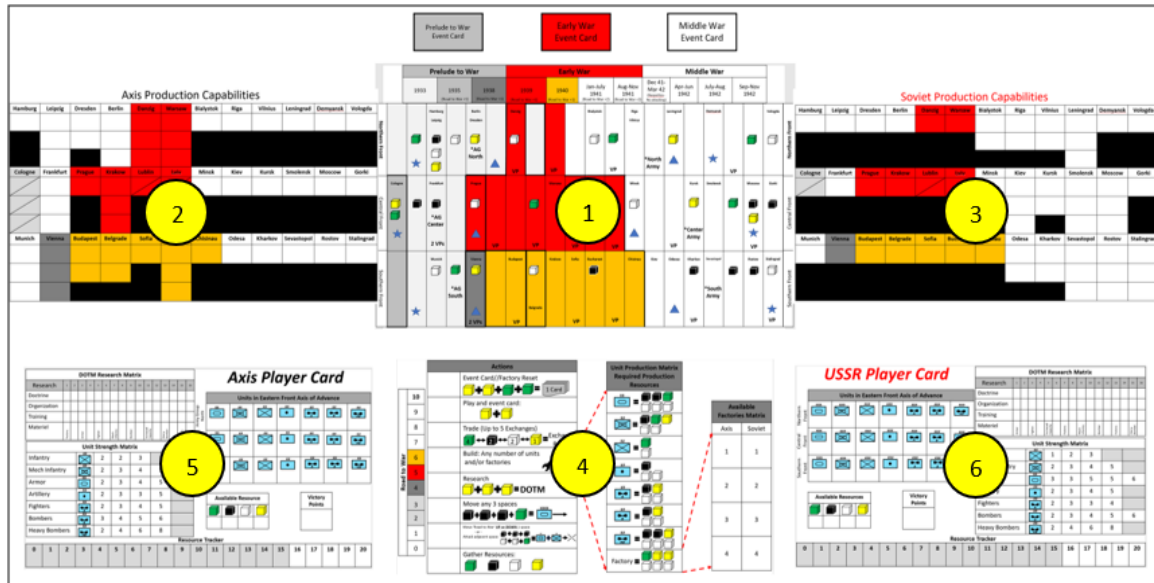


Figure 2.0 – Initial Game Setup

Component	Description	Component	Description
1	Main Game Board	4	Action Card
2	Axis Production Capabilities	5	Axis Player Card
3	Soviet Production Capabilities	6	Soviet Player Card

Table 2.0 – Game Component Descriptions

2.1 Main Game Board (Component 1): This is the main game board in which players will draw event cards, track game rounds, gather resources, maneuver armies along fronts, and earn victory points.

2.1.1 Event Decks- Place the 3 event decks in order of phases above the turn indicators:

1) Prelude to War 1933-1938 (Gray Deck)

- 2) Early War 1939 - Nov 1941 (Red Deck)
 - 3) Middle War Dec 1941 – Nov 1942 (White Deck)
 - 2.1.2 Turn Indicator:** Place the orange turn indicator on 1933
 - 2.1.3 Army Fronts:**
 - 2.1.3.1 Axis:** Place Army Group North, Center, and South on the initial markers along the rails. Axis begin with 1 infantry in the Northern Front, 2 infantry in the Central Front, 1 infantry in Southern Front.
 - 2.1.3.2 USSR:** Place North, Center, and South Armies on the initial markers along the rails. The Soviets begin with 2 infantry in Northern front, 3 infantry in Central Front, 2 infantry in Southern Front.
 - 2.2 Axis Production Capabilities (Component 2):** This card indicates the total production capacity from available factories for the Axis player. Place 2 Infantry and 1 Artillery factories on German production centers indicated by light grey spaces along any front.
 - 2.3 Soviet Production Capabilities (Component 3):** This card indicates the total production capacity from available factories for the Soviet player. Place 3 Infantry and 2 Artillery factories on USSR production centers indicated by white spaces along any front.
 - 2.4 Action Card: (Component 4)**
 - 2.4.1 Road to War Indicator:** Place an Orange Road to War marker on 0.
 - 2.4.2 Action Markers:** There are 8 light green action markers. Distribute 4 to each player. The Soviets begin the game with the initiative.
 - 2.4.3 Place Available Factories:** There are 30 factory tokens for each player. Randomly place 4 available factories on the empty factory spaces and make a pile of the remaining factories for each player.
 - 2.5 Axis Player Card (Component 5):** This card indicates the primary player capabilities, unit strengths and location, and resource availability.
 - 2.5.1 DOTM Research Matrix:** Place 4 blue cubes on the DOTM Research Matrix, one for each research category.
 - 2.5.2 Unit Strength Matrix:** Place 7 blue cubes on the Unit Strength Matrix, one for each research category. The Axis have already developed infantry and artillery, so place 1 cube on the first column these categories.
 - 2.5.3 Place initial units:** The Axis begin play with 4 infantry units. Using an erasable writing utensil, place a tally marking 1 in Army Group North, 2 Army Group Center, and 1 in Army Group South axis of advance.
 - 2.5.4 Select initial resources:** The Axis player begins the game with 15 resources of any combination. Utilize the Dark Green, Yellow, Black, and White resources to indicate the available resources of each type.
- Example: 15 resources → 2 – Food (Dark Green), 4 – Petroleum (Black), 4 – Steel (White), 5 – Intellectual Capital (Yellow)
- 2.5.5 Available Resources:** Utilize this matrix to track your available resources from the terrain you control on the Main Game Board. The Axis control 10 initial resources: 2 Food, 2 Intellectual Capital, 3 Petroleum, and 3 Steel. Additionally,

the Axis permanently control 7 off board resources from the Player Card: 2 Food, 1 Intellectual Capital, 2 Petroleum, and 2 Steel.

2.6 Soviet Player Card (Component 6): This card indicates the primary player capabilities, unit strengths and location, and resource availability.

- 2.6.1 DOTM Research Matrix:** Place 4 red cubes on the DOTM Research Matrix, one for each research category.
- 2.6.2 Unit Strength Matrix:** Place 7 red cubes on the Unit Strength Matrix, one for each research category. The Soviets have already developed infantry and artillery, so place 1 cube on the first column these categories.
- 2.6.3 Place initial units:** The Soviets begin play with 7 infantry units. Using an erasable writing utensil, place a tally marking 2 in Northern Army, 3 Central Army, and 2 in Southern Army Group axis of advance.
- 2.6.4 Select initial resources:** The Soviet player begins the game with 15 resources of any combination. Utilize the Dark Green, Yellow, Black, and White resources to indicate the available resources of each type.

Example: 10 resources → 1 – Food (Dark Green), 2 – Petroleum (Black), 3 – Steel (White), 4 – Intellectual Capital (Yellow)

- 2.6.5 Available Resources:** Utilize this matrix to track your available resources from the terrain you control on the Main Game Board. The Soviets control 10 initial resources behind their Army fronts: 2 Food, 3 Intellectual Capital, 4 Petroleum, and 2 Steel. Additionally, the Soviets permanently control 6 off board resources from the Player Card: 2 Food, 1 Intellectual Capital, 2 Petroleum, and 1 Steel.

2.7 Special Abilities: Each player will receive a random special ability for the duration of the game. Roll one die to determine the special ability as follows:

- #1) When researching, re-roll one dice, once per research action.
- #2) When purchasing event cards, draw two cards. Select one card, then discard the other.
- #3) At the beginning of each round, receive an additional resource of each type.
- #4) At the beginning of each round, receive an additional 2 infantry units.
- #5) Attackers may attack an additional time at no cost each turn.
- #6) Event cards cost two less Intellectual Property resources to play.

3.0 Win Conditions:

- 3.1** Advance the front lines along each rail. One front must advance to OBJ STAR and the other two fronts must advance to OBJ TRIANGLE.
- 3.2** If neither player has achieved decisive victory by the end of the available game rounds, the winner is determined by the highest number of victory points. These points may be won and lost.
- 3.3** Victory points are earned via two methods – combat victory points and area victory points.
 - 3.3.1** Combat Victory Points – Victory points earned in battle. See Resolving Combat Instructions Section.

3.3.2 Area Victory Points – Points earned by occupying territory that has a VP in that square.

4.0 Turn Sequence: Soviets begin the game. Each turn, the initiative shifts to the other player.

4.1 Select an Action – Active player places one action token on an action of the Action Card (Component 4). It must be placed on an action that doesn't already have a token on it. Announce which action, which front, and which production center you are taking the action. Players may execute the same action across multiple fronts and production centers simultaneously.

4.2 Take Action or Collect Resources – Both players complete one of the selected actions simultaneously. **The active player must execute the chosen step or forfeit the turn.** The non-active player (second player) may choose to ignore the action and gather resources instead of completing the action.

4.2.1 Event Card//Refresh Factory Options – Select one of two actions:

4.2.1.1 Pay 2 Intellectual Capital and 2 Food resources to select an event card from the event deck of the current phase, or;

4.2.1.2 Clear the four factory options available and replace them with 4 new factory cards from the remaining factory deck.

4.2.2 Play an Event Card – Pay 2 Intellectual Capital resources to play event cards.

4.2.2.1 Players may play as many event cards as they have cards and resources. Once played, these cards are discarded unless they have an enduring effect.

4.2.2.2 Players may only play event cards from the current turn phase by colors. All other cards will be discarded upon entering a new phase.

4.2.2.3 Conduct the action on the card according to the players role.

4.2.3 Trade – Make up to 5 exchanges at the following exchange ratios → 4 Food: 2 Petroleum: 2 Steel: 1 Intellectual Capital

4.2.3.1 Exchanges must be made as multiples of the exchange rate. Exact exchange rates are required.

4.2.4 Built – Pay resources to build any number of units or factories based on unit cost in the Production Matrices.

4.2.4.1 Factories:

4.2.4.1.1 Only factories in the available factory matrix may be built.

4.2.4.1.2 Unit types must be researched on the DOTM (Materiel) matrix before those unit factories are available to be built.

4.2.4.1.3 Factories may be place it in an available space on the unit production capabilities board in territory controlled by that player, then replace the empty space with another factory from the factory pile.

4.2.4.1.4 Units may be built at a factory the turn it comes into play.

4.2.4.1.5 All four factories may be refreshed by taking the 'Event card//factory reset action'

4.2.4.2 Units:

4.2.4.2.1 Units are built by factories placed on the unit production capabilities board.

- 4.2.4.2.2** To build, pay the resources required per unit as listed on the Unit Production Matrix Required Production Resources

Example: Infantry requires 1 Food and 1 Steel resource to build.

Example: Factories require 1 Food, 2 Intellectual Property, and 3 Steel Resources to build.

- 4.2.4.2.3** Only one unit may be produced from each factory per round. (contradicts 4.2.4)
- 4.2.4.2.4** After a unit is built, it is immediately moved to the front in which it was built and recorded on the Units in the Eastern Front Axis of Advance Tracker.
- 4.2.4.2.5** Each player may pay an additional 1 Petroleum resource to move the unit to a different front.

- 4.2.5 Research** – Pay 3 Intellectual Capital Resources, earn X die rolls dependent on the player. Before rolling, the player must select which DOTM category they will research and how many rolls they are investing in each category.

4.2.5.1 DOTM Research Matrix Rolls:

Soviets – Roll 3 dice

Axis – Roll 4 dice

- 4.2.5.2 Declare Rolls:** Player spends resources and declares which DOTM category they intend to improve **for all the rolls before rolling is begun.**
- 4.2.5.3 Calculating Rolls** - If the result is 4 or greater, move the invested DOTM Research Matrix category up one step. If the result is 3 or less, no effect.
- 4.2.5.4 Increasing Unit Strength Matrix:** Increases to the DOTM Research Matrix increase the unit type strengths.

- 4.2.5.4.1 Lowest Common Denominator** - When the lowest common denominator of each of the DOTM rows is moved up a space, then the player may choose a unit strength to increase.

Example: DOTM is at Doctrine = 2, Organization = 3, Training = 1, and Materiel = 4. If training is improved to 2, and the lowest common denominator is now 2, then the player receives a unit strength improvement of their choice. The player may select a unit strength increase to Artillery. To achieve another strength improvement, both the Doctrine and Training must be improved to 3 as the new lowest common denominator.

- 4.2.5.4.2 Materiel Effects** – When a player develops a materiel improvement, that improvement takes effect immediately.

Example: If the player develops a material solution to build fighters, move the unit strength matrix for fighters to the first column.

Note: No fighters may be built until you have first built a fighter factory.

- 4.2.6 Move:** Pay 3 Petroleum and 1 Food Resource to move any combination of fronts up to 3 spaces or conduct a reposition of forces move.

Example: Pay 3 Petroleum and 1 Food Resource and move the northern front 2 spaces and the central front 1 space.

4.2.6.1 Each player may only advance to the furthest adjacent square to the opponent without attacking.

4.2.6.2 Adjacent units are not required to attack.

4.2.6.3 Reposition Forces Move: Pay one petroleum resource for every two units being relocate between fronts.

Example: Pay 2 Petroleum resources to move four units of your choice from the southern front to the central front.

- 4.2.7 Road to War** – Select one of two actions (Shift Road to War or Attack):

4.2.7.1 Shift Road to War: Shift the road to war marker **UP or DOWN** one step.

4.2.7.1.1 UP: Once the Road to War marker has been moved UP into a colored step, each player may now enter that colored area on the game board.

4.2.7.1.2 DOWN: If the marker is moved down a step, the other player may roll a die for an opportunity at a DOTM improvement of their choice.

4.2.7.1.2.1 If a player has moved into a color on the game board along one of the fronts, no player may proceed deeper into enemy territory along that color until the road marker returns to greater than, or equal to, that color.

Example: If the Axis front is in Prague and the Road to War marker is moved to light grey (3), the Axis forces may not advance past Prague until the Road to War marker is returned to Red (5 or greater)

- 4.2.7.1.3** Players may not enter the corresponding colored front spaces until the road to war marker is greater than, or equal to, the color in the road to war marker space.

Example: The Axis may not advance into Prague until the Road to War marker is Red (5 or greater)

- 4.2.7.1.4** If the lead player selects the Road to War action, the second player may only gather resources.

- 4.2.7.2 Attack** – Player may attack adjacent space by paying 3 Petroleum, 2 Steel, and 1 Food resource per attack. Combat is resolved according to combat resolution matrix. See ‘Resolving Combat Instructions’ below.

No player may attack if the Road to War Marker is less than 7.

- 4.2.8 Gather Resources** – Gather resources from available resource squares.

- 4.2.8.1** Each player may only gather resources for squares behind their front lines **AND** in accordance with the colored spaces according to the Road to War marker

Note: The Axis do not control the Light Grey colored terrain at the onset of the game. This territory and resources are available in the Road to War marker reaches steps 2 & 3.

- 4.2.8.2** Neither player may gather more resources than their capacity allows. Initially, both players are limited to 15 resources of any given type.

- 4.2.8.3** Players may increase their capacity by developing the DOTM (Materiel) development.

4.3 Check for End Game Win Conditions.

- 4.4 Clear the action card** – Each player takes turns placed an action token until the tokens are exhausted and all actions have been executed. If no actions are available, clear the action card and advance the game round 1 into the future.

4.5 Transition Phase:

- 4.5.1** Increase Road to War Marker steps as indicated by the round marker.
- 4.5.2** At the end of each phase, remaining phase event cards from the previous phase are removed from play.
- 4.5.3** Redistribute 4 action cubes to each player.

5.0 Resolving Combat Instructions: Both players may attack each turn. First, the player with the initiative may attack. When the first player culminates on attacks on all fronts, the second player may counter attack.

- 5.1 Announce the attack and pay resources:** The attacking player pays 3 Petroleum, 2 Steel, and 1 Food resource per attack. The fronts must be in adjacent squares to announce the attack.

5.2 Defender announces intentions to defend or retreat:

- 5.2.1 Defend:** If the defender choses to defend, they pay 1 Steel and 1 Petroleum resource.

5.2.2 Retreat: The defender may choose to retreat, vacates the occupied square, and the attacker receives a victory point.

5.3 Determine the total combat firepower of each front: Find the sum of the products of the unit quantity and strength. Each player counts the number of each type of units and multiplies it by the respective unit strength matrix value, then adds the total unit strengths together.

Example: 4 Infantry (Strength 2) + 3 Artillery (Strength 2) + and 1 Armor (Strength 4) = $4 \times 2 + 3 \times 2 + 1 \times 5 = 19$

5.4 Column Determination: Determine which column the Total Combat Firepower will use on the combat resolution matrix.

Example: Total Combat Firepower = 19 → use column 16-30

5.4.1 Combined Arms: Fronts consisting of different unit types receive combined arms column shift bonuses. Count the number of different types of units for the attacking and defending front. The player with the greater number of combined arms receives one column shift right when tabulating the column to use.

5.4.2 Overwhelming Firepower: Total Combat Firepower greater than 100 will receive additional dice based on the table at the bottom of the CRM.

5.5 Combat Rolls: Roll two dice and follow the sum of the dice roll to the combat resolution row displayed on the dice.

Example: Roll = 7, in column 16-30, then the opposing player loses 1 unit of their choice.

5.5.1 Both attacker and defender roll the dice and apply losses.

5.6 Pursuit Attacks: Additional attacks may be performed by paying the appropriate resources. Attackers may attack and drive the defender any number of spaces backwards but must utilize resources for every attack.

5.7 Counter Attacking: Counter attacks are allowed since both players have the opportunity to conduct the action. The player with the initiative must complete their portion of the turn and relinquish the initiative before counter attacks may occur.

5.8 Combat Victory Points: Combat victory points are awarded to the player with the fewest losses at the end of the battle receives 1 Combat VP.

5.8.1 Battles may consist of multiple attacks by either or both players.

5.8.2 Combat victory points may not be removed.

APPENDIX C

GAME COMPONENTS

Game Board (11"x17")

Prelude to War			Early War				Middle War			
1933	1935 (Road to War +1)	1938 (Road to War +1)	1939 (Road to War +1)	1940 (Road to War +1)	Jan-July 1941 (Road to War +2)	Aug-Nov 1941 (Road to War +3)	Dec 41- Mar 42 (Raspoutsa - No attacking)	Apr-Jun 1942	July-Aug 1942	Sep-Nov 1942
Northern Front			Central Front			Southern Front				
Hamburg Leipzig	Berlin Dresden * AG North	Danzig	Warsaw Krakow	Bialystok	Vilnius	Leningrad	Demyansk			Volgda
Cologne	Frankfurt * AG Center	Prague	Lublin	Minsk	Kiev	Kursk	Smolensk	Moscow	Gorki	
Munich * AG South	Vienna	Budapest	Bucharest	Odessa	Kharkov	Sevastopol	Rostov	Stalingrad		

[illegible][illegible]

Soviet Production Capabilities Board (11"x17")

Soviet Production Capabilities

[illegible]

Action Card (11"x17")

Actions		Unit Production Matrix Required Production Resources		
10	Event Card - or - Factory Reset      =  1 Card	 =   	Axis	Soviet
9	Play an event card:  	 =   		
8	Trade (Up to 5 Exchanges)  4 ↔  2 ↔  2 ↔  1 = Exchange Ratios	 = 	1	1
7	Build: Any number of units and/or factories 	 = 	2	2
6	Research    = DOTM	 =  	3	3
5	Move up to 3 spaces: - OR - Move 2 units between fronts:  =    XXXX XXXX XXXX XXXX	 =  	3	3
4	Move 'Road to War' <u>UP</u> or <u>DOWN</u> 1 step (no cost) - OR - Attack adjacent space:         XXXX XXXX XXXX XXXX	 =   	4	
3	Gather Resources:    	Factory =   		
2				
1				
0				

Axis Player Card (11"x17")

DOTM Research Matrix																
Research	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Doctrine																
Organization																
Training																
Material	Factory		Armor		Fighter		Mech Infantry		Bomber		Increased Capacity		Heavy Bomber		Factory	

Unit Strength Matrix						
	XX					
Infantry		2	2	3		
Mech Infantry		2	3	4	5	
Armor		2	3	4	5	6
Artillery		2	3	3	5	
Fighters		2	3	4	5	
Bombers		3	4	5	6	
Heavy Bombers		2	4	6	8	

Army Group South	Army Group Center	Army Group North	Units in Eastern Front Axis of Advance
 XX	 XX	 XX	
 XX	 XX	 XX	
 XX	 XX	 XX	
 XX	 XX	 XX	
 XX A	 XX A	 XX A	
 XX B	 XX B	 XX B	
 XX HB	 XX HB	 XX HB	

Player Special Abilities				
1	Re-roll one research die			
2	Draw 2 event cards, discard one of them			
3	1 of each resource at beginning of round			
4	2 infantry units at beginning of round			
5	Attack an additional time at no cost			

Resource Tracker																Increased Resource Capacity				
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

USSR Player Card

Soviet Player Card (11"x17")

Units in Eastern Front Axis of Advance

Northern Front								
Central Front								
Southern Front								

Player Special Abilities

1	Re-roll one research die
2	Draw 2 event cards, discard one of them
3	1 of each resource at beginning of round
4	2 infantry units at beginning of round
5	Attack an additional time at no cost
6	Event cards cost 2 less intellectual to play

Available Resources
(Indicates off board resources)

Food	Production	Steel	Intellectual

Victory Points

--

DOTM Research Matrix

Research	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Doctrine																
Organization																
Training																
Materiel																
Armor																
Fighter																
Increased Capacity																
Factory																
Mech Infantry																
Bomber																
Factory																
Heavy Bomber																

Unit Strength Matrix

Infantry		1	2	3		
Mech Infantry		2	3	4	5	
Armor		3	3	5	5	6
Artillery		2	3	4	5	
Fighters		2	3	3	4	
Bombers		2	3	4	5	6
Heavy Bombers		2	4	6	8	

Resource Tracker

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----

Increased Resource Capacity

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Combat Resolution Matrix (8.5" x 11")

Count on Roll	Total Combat Firepower							
	1-15	16-30	31-45	46-65	66-85	86-105	106-130	131→
2	0	0	0	0	0	1	1	2
3	0	0	1	1	1	2	3	4
4	1	1	1	2	2	3	5	6
5	1	1	2	2	3	4	6	8
6	1	1	2	3	4	5	7	10
7	1	1	3	4	4	6	9	12
8	1	2	3	4	5	7	11	14
9	1	2	3	5	6	8	12	15
10	1	2	4	5	7	9	14	16
11	1	3	4	6	8	10	16	17
12	1	3	5	7	9	11	18	18
13*						12	19	19
14						13	20	20
15						15	21	21
16						16	22	22
17						17	23	23
18						18	24	24
19							25	25
20							26	26
21							27	27
22							28	28
23							29	29
24							30	30

Player with the greater number of combined
arms = 1x column shift right.

If Firepower exceeds 100, modify as follows:
100 – 130 = Roll 3 Dice
>130 = Roll 4 Dice

Prelude to War Event Cards – Front (8.5” x 11”)

<i>Ides of War: War Machines of WWII Prelude to War 1933-1938</i> Axis: <i>March 12, 1938 German Annexation of Czechoslovakia & Austria</i> – Gain 1 area victory point, 4 Yellow Resources and Move Road to War +2 steps. USSR: ~~<i>Glubokaia Operatsiia</i>~~ – 1935 <i>Introduction to Deep Battle</i> published– increase two DOTM developments up to 1 step	<i>Ides of War: War Machines of WWII Prelude to War 1933-1938</i> Axis: <i>Spanish Civil War</i> – Axis exercise combined arms. Increase 3 DOTM developments up to 1 step. USSR: <i>Soviet-Japanese Border Conflicts 1935-1937</i> – Soviets exercise combined arms against the Japanese. Increase 2 DOTM developments up to one step.
<i>Ides of War: War Machines of WWII Prelude to War 1933-1938</i> Axis: <i>Interwar Soviet-German Cooperation</i> - Germany testing of tactics and equipment in Russia – Gain 2 DOTM steps of your choice. USSR: <i>Soviets develop T-34 tank technology</i> – increase Material to Armor (or up one step) and build an armor factory immediately.	<i>Ides of War: War Machines of WWII Prelude to War 1933-1938</i> Axis: <i>1933-Hitler Rises to Power</i> – Increase Doctrine and Organization 2 steps USSR: <i>Soviet Mass Industrialization – 5-Year Plan</i> - Build an available factory in Minsk and ~~<i>Bialystock</i>~~
<i>Ides of War: War Machines of WWII Prelude to War 1933-1938</i> Axis: <i>Violate the Treaty of Versailles</i> – Gain 4 Yellow resources, build 1 available factory, and increase the Road to War 1 step. USSR: <i>Allied Appeasement</i> – Axis receive one fewer of each resource until Road to War Level 5. (Discard this card after Level 5 is reached for the first time.)	<i>Ides of War: War Machines of WWII Prelude to War 1933-1938</i> Axis: <i>Re-Militarization of the Rhineland</i> – Build 2 available factories in Cologne and move the Road to War to step 2. USSR: <i>Academy of Sciences of the USSR</i> - rapid technology development and industrialization of the Soviet Sciences despite systematic persecution of scientists. Increase the Research die rolls by 1 die.
<i>Ides of War: War Machines of WWII Prelude to War 1933-1938</i> Axis: <i>German Conscription</i> – Increase Infantry capabilities 1 step, gain 4 Yellow resources USSR: <i>Kristallnacht (Crystal Night or Night of the Broken Glass) Nov 9, 1938 Persecution of German Jews</i>– Remove 4 Axis Yellow resources and decrease Organization 1 step	<i>Ides of War: War Machines of WWII Prelude to War 1933-1938</i> Axis: USSR:
<i>Ides of War: War Machines of WWII Prelude to War 1933-1938</i> Axis: USSR:	<i>Ides of War: War Machines of WWII Prelude to War 1933-1938</i> Axis: USSR:

Prelude to War Event Cards – Back (8.5” x 11”)

<i>Ides of War: War Machines of WWII</i> <i>Prelude to War 1933-1938</i>	<i>Ides of War: War Machines of WWII</i> <i>Prelude to War 1933-1938</i>
<i>Ides of War: War Machines of WWII</i> <i>Prelude to War 1933-1938</i>	<i>Ides of War: War Machines of WWII</i> <i>Prelude to War 1933-1938</i>
<i>Ides of War: War Machines of WWII</i> <i>Prelude to War 1933-1938</i>	<i>Ides of War: War Machines of WWII</i> <i>Prelude to War 1933-1938</i>
<i>Ides of War: War Machines of WWII</i> <i>Prelude to War 1933-1938</i>	<i>Ides of War: War Machines of WWII</i> <i>Prelude to War 1933-1938</i>
<i>Ides of War: War Machines of WWII</i> <i>Prelude to War 1933-1938</i>	<i>Ides of War: War Machines of WWII</i> <i>Prelude to War 1933-1938</i>

Early War Event Cards – Front (8.5” x 11”)

<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i> Axis: <i>Blitzkrieg</i> - German implement combined arms. Units receive additional column shift bonus when using combined arms in combat thru Nov 1941. USSR: <i>Glubokaja Operatsi'ia</i> – Deep Operations Doctrine development – increase two DOTM developments up to 2 steps each.	<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i> Axis: <i>Operation Typhoon</i> – increase Axis armor and infantry strength 1 step for the remainder of the turn. USSR: <i>GOSPLAN</i> – Soviets react to Axis invasion & may relocate up to 5 factories to Moscow and Gorki. These factories may produce units this turn.
<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i> Axis: Effects of <i>Red Army Purges</i> – Stalin purged 38,000 experienced Stavka officers. Decrease up to 3 Soviet DOTM developments 1 step each. (Note: This action may roll back a unit strength improvement) USSR: <i>Frozen Tundra</i> – severe weather conditions lead to mass German frostbite. Remove any 3 Axis units from play.	<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i> Axis: <i>Balkans Reinforcements</i> – the Axis annex the Balkans. Receive 5 infantry units. USSR: <i>1939-40 Finnish War</i> – Soviets invade Finland and gain valuable combat experience. Increase any 1 DOTM development 2 steps.
<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i> Axis: <i>Stand Fast</i> – Hitler orders Wehrmacht to stand and fight with 'Fanatical Resistance'. Increase all German combat 1 column shift this turn. USSR: <i>Scorched Earth</i> – Soviets destroy factories and resources as they retreat. If captured, no factories or resources may be used for German war effort.	<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i> Axis: <i>Operation Barbarossa</i> – Invade USSR with decisive 4 month thrust to take Leningrad, Moscow, and Kiev. Increases combat 1 column shift this turn. USSR: <i>1939 – Molotov-Ribbentrop Pact</i> – mutual non-aggression pact which secretly divided eastern Europe. No attacks allowed this turn.
<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i> Axis: <i>Battle of France</i> – Gain 5 Yellow resources, 1 DOTM development, & move Road to War up 2 steps. USSR: <i>Nov 1941 Siberian Reinforcements</i> - spies determine Japan will not attack & Red Army moves 30 Divisions from Eastern Russia to German Front. Soviets receive 4 Infantry and 2 Artillery units to be placed on any combination of fronts.	<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i> Axis: <i>Open submarine warfare</i> – Axis U-Boats wreak havoc on US/Britain Lend-Lease shipping, Soviets do not gather resources on the next two actions regardless of the action taken. USSR: <i>Fall Rasputitsa</i> – “Time without roads” Russian fall rainy season delays German advance – Axis player may not initiate combat this turn.
<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i> Axis: <i>Spring Rasputitsa</i> – “Time without roads” Russian spring rainy season delays Soviet reinforcements – Soviet units produced this turn may not enter combat this turn. USSR: <i>Quantity has a quality all its own</i> – Soviets produce 2 additional Infantry units on each research phase for the remainder of the game.	<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i> Axis: <i>General Plan Ost/The Hunger Plan</i> – The Axis receive and additional yellow and green resource for the rest of the game. USSR: <i>Allied Strategic Aerial Bombardment</i> - Roll a die: • For >= 3, remove 1 Axis factory • For >= 5, remove 2 Axis factories

Early War Event Cards – Back (8.5” x 11”)

<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i>	<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i>
<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i>	<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i>
<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i>	<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i>
<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i>	<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i>
<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i>	<i>Ides of War: War Machines of WWII</i> <i>Early War 1939 - Nov 1941</i>

Middle to War Event Cards – Front (8.5” x 11”)

Ides of War: War Machines of WWII
Middle War Dec 1941 – Nov 1942

Axis: *Precision German Engineering & Strategic Reserves* – rapid improvement to Mark V & VI tank capabilities – Increase German armor strength 1 step, and place 3 Armor units on any front.

USSR: *Glybokaja Operatsi'ja* – Soviet Deep Operations Doctrine implemented – increase any combination of DOTM developments up to 4 steps.

Ides of War: War Machines of WWII
Middle War Dec 1941 – Nov 1942

Axis: *Heinz Guderian reinstatement as Inspector General of Armoured Troops* - relocate up to two factories of your choice. These factories produce an extra unit this turn.

USSR: *July 1942: Battle of Stalingrad* – Force Axis player to relocate up to 5 units to Army Group South. Soviet receive combat column shift in the Southern Front for the rest of the game.

Ides of War: War Machines of WWII
Middle War Dec 1941 – Nov 1942

Axis: *Stalin's Folly* – Stalin purges unreliable political and military leaders. Remove up 2 factories from Soviet players industrial production.

USSR: *US/Britain Lend-Lease* – Soviet player receives 2 additional yellow resources when gathering resources for the rest of the game.

Ides of War: War Machines of WWII
Middle War Dec 1941 – Nov 1942

Axis: *Soviet Slave Labor Revolts* – Destroy one Soviet factory at the end of every round for the remainder of the game.

USSR: *Soviet Guerilla Resistance* – Each German attack costs an additional Black and White resource for the rest of the game.

Ides of War: War Machines of WWII
Middle War Dec 1941 – Nov 1942

Axis: *Ni Shagu Nazad! (Not a step back)* – Stavka Order #227 – 28 July 1942 – Red Army shoots retreating soldiers to curb war defeatism. Soviet forces may retreat at the cost of 3 units of the Axis choice.

USSR: *Maskirovka* – Soviet strategic deception doctrine. Improve Doctrine 2 steps and increase combat column shift right 1x for the rest of the game.

Ides of War: War Machines of WWII
Middle War Dec 1941 – Nov 1942

Axis: *Germany Total War* - Up to 3 German factories may produce an additional unit this turn at no cost.

USSR: *Industrial Mobilization* - Up to 5 Soviet factories may produce an additional unit this turn

Ides of War: War Machines of WWII
Middle War Dec 1941 – Nov 1942

Axis: *Feb 1942: Operation Blau* – Axis thrust towards Caucasus oil fields & Stalingrad - All combat this turn in Army Group South's AOR give Axis 2+ column shift

USSR: *Rebirth of the Stavka* – Soviet high command issues policy and doctrine update Stavka Directive No. 3. Increase DOTM any combination of 4 steps.

Ides of War: War Machines of WWII
Middle War Dec 1941 – Nov 1942

Axis: *Soviet Red Scare* – Soviets may only increase unit strength matrix once per turn for the rest of the game

USSR: *Soviet Unlimited Reserves* – Soviets place an additional 2 Infantry units during the build phase each turn

Ides of War: War Machines of WWII
Middle War Dec 1941 – Nov 1942

Axis: *Operational Redeployments* – Shift up to 5 units from one Army Group to another and gain a column shift in combat during the next attack action

USSR: *General Franz Halder is removed as Wehrmacht Chief of Staff* – Decrease the highest two Axis DOTM improvements 1 step

Ides of War: War Machines of WWII
Middle War Dec 1941 – Nov 1942

Axis: *Effects of Red Army Purges* – Stalin's purges devastating the Stavka. Decrease a Soviet DOTM development 1 step (Note: This action may roll back a unit strength improvement)

USSR: *Allied Strategic Aerial Bombardment* - Roll a die:

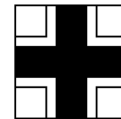
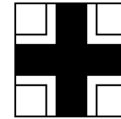
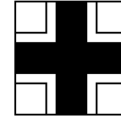
- For >= 2, remove 1 Axis factory
- For >= 4, remove 2 Axis factories

Middle to War Event Cards – Back (8.5” x 11”)

<i>Ides of War: War Machines of WWII</i> <i>Middle War Dec 1941 – Nov 1942</i>	<i>Ides of War: War Machines of WWII</i> <i>Middle War Dec 1941 – Nov 1942</i>
<i>Ides of War: War Machines of WWII</i> <i>Middle War Dec 1941 – Nov 1942</i>	<i>Ides of War: War Machines of WWII</i> <i>Middle War Dec 1941 – Nov 1942</i>
<i>Ides of War: War Machines of WWII</i> <i>Middle War Dec 1941 – Nov 1942</i>	<i>Ides of War: War Machines of WWII</i> <i>Middle War Dec 1941 – Nov 1942</i>
<i>Ides of War: War Machines of WWII</i> <i>Middle War Dec 1941 – Nov 1942</i>	<i>Ides of War: War Machines of WWII</i> <i>Middle War Dec 1941 – Nov 1942</i>
<i>Ides of War: War Machines of WWII</i> <i>Middle War Dec 1941 – Nov 1942</i>	<i>Ides of War: War Machines of WWII</i> <i>Middle War Dec 1941 – Nov 1942</i>

Game Assets

	Turn/Road to War Marker
	Action Marker
	Axis DOTM and Unit Strength Marker
	Soviet DOTM and Unit Strength Marker
	Food
	Petroleum
	Steel
	Intellectual Property



Axis-Soviet Factory Cards – Front (8.5” x 11”)

Armor	Infantry	Artillery	Mech Infantry	Fighter	Armor	Infantry	Artillery	Mech Infantry	Fighter
Armor	Infantry	Artillery	Mech Infantry	Fighter	Armor	Infantry	Artillery	Mech Infantry	Fighter
Armor	Infantry	Artillery	Mech Infantry	Fighter	Armor	Infantry	Artillery	Mech Infantry	Bomber
Armor	Infantry	Artillery	Mech Infantry	Bomber	Armor	Infantry	Artillery	Armor	Bomber
Armor	Infantry	Artillery	Heavy Bomber	Bomber	Armor	Infantry	Artillery	Artillery	Infantry
Armor	Infantry	Artillery	Heavy Bomber	Bomber	Armor	Infantry	Artillery	Heavy Bomber	Infantry

Axis-Soviet Factory Cards – Back (8.5” x 11”)

Soviet	Soviet	Soviet	Soviet	Soviet	Axis	Axis	Axis	Axis	Axis
Soviet	Soviet	Soviet	Soviet	Soviet	Axis	Axis	Axis	Axis	Axis
Soviet	Soviet	Soviet	Soviet	Soviet	Axis	Axis	Axis	Axis	Axis
Soviet	Soviet	Soviet	Soviet	Soviet	Axis	Axis	Axis	Axis	Axis
Soviet	Soviet	Soviet	Soviet	Soviet	Axis	Axis	Axis	Axis	Axis
Soviet	Soviet	Soviet	Soviet	Soviet	Axis	Axis	Axis	Axis	Axis

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