

The WickedVUCA[®] Typology

A Problem-Agnostic Framework for Adaptive Problem-Solving in Complex, Dynamic Environments

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ABSTRACT: The WickedVUCA[®] Typology, problem-agnostic by design, synthesizes concepts from Wicked Problems and VUCA (Volatility, Uncertainty, Complexity, Ambiguity) to provide a structured framework for understanding and addressing today's multifaceted challenges. Integrating complexity and conflict dimensions with stakeholder agreement levels guides organizations in categorizing problems from simple and stable (Type 0) to highly conflicted and unpredictable (Type IV). Incorporating cognitive, affective, and conative dimensions ensures comprehensive analysis, acknowledging that stakeholder motivations and emotions influence outcomes. Through Object Measurement[™] and continuous variables, the typology refines conceptual precision, supporting evidence-based decision-making and adaptive responses. This paper presents the theoretical foundations, measurement approaches, and practical implications, demonstrating how WickedVUCA[®] enhances interdisciplinary collaboration, strategic planning, and resilience across diverse sectors. The typology empowers organizations to navigate complex, evolving global environments¹.

KEYWORDS: Cognitive, Affective, and Conative Dimensions | Complexity and Conflict Dimensions | Continuous Variables | Evidence-Based Decision-Making | Global Environments | Interdisciplinary Collaboration | Object Measurement[™] | Problem-Agnostic | Resilience | Stakeholder Agreement | Strategic Planning | VUCA (Volatility, Uncertainty, Complexity, Ambiguity) | Wicked Problems | WickedVUCA[®] Typology |

I Introduction to WickedVUCA[®]

In an era marked by climate change, global health crises, and evolving geopolitical tensions, organizations and communities alike must confront deeply complex and constantly shifting challenges. Traditional, linear approaches often fall short in these contexts, as they struggle to fully account for interwoven factors, diverse stakeholder perspectives, and rapid, unpredictable change.

¹ Cabrera et al. (2023) The Steps to Doing a Systems Literature Review (SLR) *Journal of Systems Thinking.* (23) 3.

The WickedVUCA® Typology offers a comprehensive framework designed to navigate these intricacies. It merges two influential concepts: **Wicked Problems** (2), known for their multilayered, socially complex nature and resistance to clear-cut solutions, and **VUCA (Volatility, Uncertainty, Complexity, Ambiguity)** (3) environments, characterized by instability, limited predictability, and information overload. Beyond this integration, the typology incorporates **Cognitive, Affective, and Conative Elements** (4), ensuring that human thought processes, emotions, and motivations are considered integral parts of the problems and their potential solutions.

By translating complex, evolving issues into a structured matrix that measures complexity-conflict and stakeholder agreement, the WickedVUCA® Typology supports more adaptive, data-driven strategies. For example, a city grappling with affordable housing shortages can use this framework to understand not just policy constraints and market forces, but also the emotional responses of communities and the willingness of stakeholders to collaborate. Such a holistic perspective enables more informed decision-making, guiding flexible and finely tuned responses to the situation's unique demands.

This section lays the groundwork for understanding the WickedVUCA® Typology's foundation, addressing four key areas:

- **The WickedVUCA® Framework:** Explaining how uniting Wicked Problems and VUCA principles forms the core of the typology.
- **Background of the WickedVUCA® Typology:** Highlighting rigorous theoretical research that ensures conceptual robustness and practical relevance.
- **Extending Wicked Problem and VUCA Theories:** Demonstrating how this typology refines established ideas to better capture real-world complexities.
- **Significance in Contemporary Research and Practice:** Illustrating the typology's utility in strategic decision-making, interdisciplinary collaboration, and adaptability across fields such as business, policymaking, and education.

See Appendix A for a detailed exploration of how these foundational theories are synthesized. This in-depth examination reveals how the WickedVUCA® Typology transforms abstract challenges into actionable insights, ultimately helping leaders, policymakers, and practitioners craft solutions that remain resilient in the face of continuous change.

A. The WickedVUCA® Framework

Wicked Problems, as first defined by **Rittel and Webber** (2), describe complex issues that lack clear solutions and involve a high degree of social complexity and stakeholder involvement. Meanwhile, the **VUCA** (3) framework, developed in military contexts, highlights **volatile, uncertain, complex, and ambiguous environments**, making them unpredictable and rapidly changing. The **WickedVUCA® Typology** combines these two frameworks to provide a unified approach for analyzing and managing the multifaceted challenges of the contemporary world.

Incorporating the **Cognitive, Affective, and Conative Elements** (4) adds depth by addressing stakeholder motivations and dynamics. This categorization allows for the development of strategies that

are finely tuned to the specific characteristics of each challenge. Its broad applicability across sectors like business, policymaking, and education makes it a powerful tool for navigating today's intricate problems.

B. Background of WickedVUCA® Typology

The **WickedVUCA® Typology** was developed through rigorous theoretical and conceptual research to address the evolving challenges of complex, dynamic environments. It merges the ideas of Wicked Problems (2) and the VUCA (3) model to form a structured tool that analyzes and categorizes modern challenges based on their **complexity-conflict levels** and **stakeholder agreement**. By combining these powerful frameworks, the typology offers a nuanced understanding of navigating and strategizing for complex, unpredictable issues.

The development of the typology is grounded in **systems thinking** (5) and **complexity theory** (6), ensuring its conceptual robustness and broad applicability across fields such as policy analysis, organizational strategy, and crisis management (see Appendix C for theoretical foundations).

Emphasis on Adaptability and Systemic Analysis

The WickedVUCA® Typology strongly emphasizes adaptability and systemic analysis, recognizing that complex problems evolve over time. External and internal factors can significantly influence these challenges, so the framework encourages a dynamic understanding where solutions are not static but continuously adapted to changing circumstances. This adaptability is key to addressing the multifaceted nature of modern problems.

Integration of Psychic Functions

By incorporating **Cognitive, Affective, and Conative Elements** (4), the WickedVUCA® Typology goes beyond technical and strategic analysis to consider stakeholders' mental activities, emotions, and actions. This holistic approach ensures that problem-solving efforts consider the full spectrum of human dynamics involved in decision-making and conflict resolution.

Innovative Systems Thinking

The typology also incorporates the **DSRP-483² framework** (Distinctions, Systems, Relationships, and Perspectives) (5), which provides a deeper layer of **systems thinking**. This framework enhances the understanding and management of complex challenges by emphasizing the need for distinctions between different elements, the systems they form, the relationships between those elements, and multiple perspectives. It moves beyond traditional **LAMO³** (Linear, Anthropocentric, Mechanistic, and Ordered) thinking (7), promoting innovative, systems-oriented solutions to tackle complexity.

Incorporation of Object Measurement™ (OM™)

² 483 Refers to the 4 Patterns of Organization (DSRP), their 8 Elements (iopwarpv), and their 3 Dynamics (=⇒*) (Cabrera, 2024).

³ LAMO thinking | noun | an acronym that stands for Linear, Anthropocentric, Mechanistic, and Ordered; usually contrasted with DSRP which is used to prevent LAMO Thinking and align better with a VUCA World...VUCA | adjective | an acronym developed by the military that means: Volatile, Uncertain, Complex, and Ambiguous; a good description of how the real-world works, as in a "VUCA-world"; often contrasted with LAMO thinking (Cabrera, 2020).

Integrating **Object Measurement™ (OM™)** (8) further strengthens the WickedVUCA® Typology by offering a structured, quantifiable approach to understanding complex problems. OM™ transforms abstract, wicked issues into measurable elements, enabling organizations to objectively assess and manage their challenges. This method facilitates strategic adaptation and continuous improvement, practically applying the framework in real-world contexts.

Grounded in "Putting Typologies to Work"

The WickedVUCA® Typology is also aligned with the principles outlined in **"Putting Typologies to Work"** (9), highlighting typologies' importance in concept formation, measurement, and organizing explanatory frameworks. By mapping the dimensions of complex phenomena, the WickedVUCA® Typology enables a clearer understanding of the interplay between factors in wicked problems and VUCA environments. This approach underscores the relevance of typologies as analytical tools in managing the complexity of modern challenges.

C. Extending Wicked Problem and VUCA Theories

Organizations face increasingly complex, unpredictable, and multifaceted challenges in today's dynamic and interconnected world. The **WickedVUCA® Typology** builds on two key theoretical foundations: **Rittel and Webber's Wicked Problems** (2) and **Bennett and Lemoine's VUCA framework** (10), to create a structured approach for addressing these modern challenges.

Integrating Wicked Problems and VUCA

Wicked Problems are defined by their complexity, stakeholder diversity, and lack of clear solutions. These problems evolve continuously, making them resistant to traditional, linear problem-solving methods. Similarly, the **VUCA** framework—focused on **volatility, uncertainty, complexity, and ambiguity**—addresses unpredictable environments where strategic flexibility and resilience are essential. By merging these frameworks, the WickedVUCA® Typology provides a comprehensive tool for understanding and categorizing problems based on their **complexity-conflict** levels and **stakeholder agreement**.

Complexity–Conflict Dimension.

This axis gauges both the structural intricacy of a situation and the intensity of stakeholder antagonism. Drawing on complexity-leadership insights (13) and conflict-escalation research (14), it captures how tightly interwoven causal loops and adversarial positions combine to raise the “problem temperature.” As scores climb from low to extreme, solutions must shift from linear planning to adaptive experimentation and skilled mediation, because highly entangled systems and high-stakes disagreements amplify feedback effects and resistance to change.

Agreement-Level Dimension.

Parallel to the systems–conflict gauge, this axis measures how much stakeholders concur on both the nature of the problem and the palette of acceptable remedies. The idea builds on Roberts's wicked-problem typology, which sorts issues by consensus on problem definition and solution choice (12). WickedVUCA® broadens that lens by pairing the consensus scale with the Complexity–Conflict axis and an explicit VUCA context, producing a five-tier ordinal ladder (Types 0–IV). As alignment erodes from

full agreement to outright discord, coordination costs soar, and progress depends on conflict-sensitive facilitation, iterative reframing, and trust-building across scales.

Extending Rittel and Webber's Ten Distinguishing Properties of Wicked Problems

Rittel and Webber's **Ten Properties of Wicked Problems** (2) highlight the inherent complexity, uniqueness, and interconnectivity of such challenges, differentiating them from simpler, "tame" problems. By applying these properties through the **WickedVUCA® Typology**, the approach to problem-solving is extended and refined. The typology addresses the evolving nature of wicked problems by considering **continuous adaptation**, the **stakeholder conflict** inherent in complex environments, and the **ambiguities** of dynamic contexts.

Table 1 outlines how the WickedVUCA® Typology extends each of Rittel and Webber's original properties:

Wicked Problem Characteristics (2)	WickedVUCA® Extensions
There is no definitive formulation of a wicked problem.	Recognizes varying degrees of formulation challenges across all types, with high complexity and low agreement presenting the most significant challenges.
Wicked problems have no stopping rule.	Applies to all types, requiring continuous adaptation and ongoing evaluation, especially in high complexity-conflict situations.
Solutions to wicked problems are not true-or-false, but good-or-bad.	Relevant for all types, with subjective evaluations particularly significant in moderate to low agreement contexts.
There is no immediate and no ultimate test of a solution to a wicked problem.	Applies to all types, with the need for long-term evaluation of solutions being critical in high complexity-conflict types.
Every solution to a wicked problem is a "one-shot operation".	True for all types, with higher stakes in high complexity-conflict scenarios.
Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan.	Applies across all types, particularly in high complexity scenarios with multiple interconnected factors.

Every wicked problem is essentially unique.	Each type has unique characteristics, especially high complexity-conflict and low agreement types.
Every wicked problem can be considered to be a symptom of another problem.	This interconnectivity applies across all types, more so in high complexity scenarios.
The existence of a discrepancy representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution.	Applies to all types, particularly in low agreement scenarios (Type III, Type IV) with diverse stakeholder perspectives.
The planner has no right to be wrong.	High accountability is crucial in all types, especially in high complexity-conflict scenarios.

Table 1 WickedVUCA® Extending Wicked Problem Characteristics

Extending Bennett and Lemoine's VUCA Framework

The **VUCA framework** characterizes environments as volatile, uncertain, complex, and ambiguous, each requiring specific strategies for effective management. By incorporating these elements into the **WickedVUCA® Typology**, the complexity and stakeholder dynamics of modern challenges can be better addressed.

Table 2 shows how the WickedVUCA® Typology extends each element of the VUCA framework:

VUCA Elements (10)	WickedVUCA® Extensions
Volatility: Challenge is unknown or unstable and may be of unknown duration, but it's not necessarily hard to understand; knowledge about it is often available.	Recognizes volatility in high complexity-conflict problems, integrating adaptability and resilience into assessment.
Uncertainty: Despite a lack of other information, the event's basic cause and effect are known. Change is possible but not a given.	Measures uncertainty through adaptability and resilience attributes across all types, ensuring solutions handle unpredictable outcomes.

Complexity: The situation has many interconnected parts and variables. Some information is available or can be predicted, but the volume or nature of it can be overwhelming to process.	Categorizes problems based on complexity levels and assesses alignment with stakeholder needs and collaboration quality in all types.
Ambiguity: Causal relationships are completely unclear. No precedents exist; you face "unknown unknowns."	Integrates ambiguity into clarity and communication attributes, using stakeholder feedback and experimental results to refine solutions in all types.

Table 2 WickedVUCA® Extending VUCA Elements

For further theoretical foundations on integrating these frameworks, refer to **Appendix C**, which offers insights into systems thinking, complexity theory, and other concepts underpinning the **WickedVUCA® Typology**.

Conclusion

The **WickedVUCA® Typology** represents a significant advancement in addressing complex, multifaceted challenges by extending the Wicked Problems (2) and VUCA (10) frameworks. Through its complexity, conflict, and stakeholder alignment dimensions, the typology provides a structured method for navigating unpredictable environments while continuously adapting to evolving problems. This synthesis lays a strong foundation for practical applications in organizational strategy, crisis management, and policy-making, emphasizing the need for strategic flexibility and resilience in today’s rapidly changing world.

D. Significance in Contemporary Research and Practice

The **WickedVUCA® Typology** has emerged as a vital tool for understanding and managing the complexity of today's global challenges. This typology provides a comprehensive framework for addressing multifaceted issues in an era shaped by rapid technological change, globalization, and socio-economic shifts. By integrating the insights of **Wicked Problems** (2), characterized by their complexity and diverse stakeholder involvement, with the **VUCA** (10) framework, which emphasizes the unpredictability of modern environments, the typology equips decision-makers across sectors with strategies to navigate uncertainty. It offers practical business, governance, education, and societal problem-solving applications.

Integrated Analysis of WickedVUCA® Typology

The **WickedVUCA® Typology** bridges two influential concepts—Wicked Problems (2) and VUCA (10)—offering a unified framework to analyze contemporary challenges. In fields as diverse as business, governance, academia, and public policy, this typology enhances strategic thinking, decision-making, and leadership in volatile and uncertain scenarios. By providing a structured approach that accounts for complexity, conflict, and stakeholder dynamics, the typology helps prepare professionals to manage the intricacies of today’s rapidly changing environments.

Wicked Problems and VUCA: A Unified Analysis

Wicked Problems require **non-linear, adaptive approaches** due to their complexity and the involvement of diverse stakeholders with varying perspectives. The **VUCA framework** complements this by focusing on the need for resilience and innovative leadership to navigate the volatile and uncertain conditions prevalent in modern contexts. These frameworks advocate for **cross-disciplinary strategies** emphasizing **systemic thinking, continuous learning, and adaptability**. By synthesizing these insights, the WickedVUCA® Typology provides a holistic lens for understanding the interplay of complex problems and dynamic environments.

Significance in Contemporary Research and Practice

The **WickedVUCA® Typology** significantly contributes to contemporary research and practice by supporting strategic decision-making, policy formulation, and organizational leadership. It addresses the complexities and uncertainties of modern challenges across various sectors, preparing professionals to respond effectively to the dynamic global landscape. Below, Table 3 outlines some of the key applications of the typology across different domains.

Key Applications of WickedVUCA® Typology

Application	Description
Adaptability to a Dynamic Global Landscape	Crucial for understanding and managing complexities in a world marked by digitalization and global interconnectivity. The typology aids in developing strategies that are flexible and responsive to rapid changes.
Guiding Business and Organizational Strategy	Assists leaders in navigating uncertain markets and developing adaptable, resilient strategies. The integration of Wicked Problems and VUCA concepts provides a framework for addressing the internal and external challenges that organizations face.
Informing Public Policy and Governance	Offers insights into complex socio-political issues, aiding policymakers in addressing challenges like climate change and economic fluctuations. The typology's structured approach helps in formulating policies that are robust and adaptable to changing conditions.
Enriching Academic Research	Enhances academic studies by providing a structured approach for analyzing complex phenomena and fostering interdisciplinary research. The typology supports the development of comprehensive research methodologies that consider the multifaceted nature of modern challenges.
Tackling Organizational and Social Issues	A key tool in addressing internal and external challenges that organizations and societies face, helping to create effective policies and interventions. It encourages systemic and holistic thinking in problem-solving and strategic planning.
Developing Leadership Skills for Complex Environments	A resource for cultivating leaders capable of managing ambiguity and complexity in VUCA environments. The typology's focus on cognitive, affective, and conative elements ensures a comprehensive understanding of stakeholder dynamics, which is crucial for effective leadership.

Application	Description
Promoting Systemic Thinking	Encourages systemic and holistic thinking in problem-solving and strategic planning. This approach is essential for understanding and managing the interconnected nature of Wicked Problems and VUCA challenges.
Enhancing Educational Programs	Informs curricula by emphasizing critical thinking and collaborative skills to prepare individuals for modern challenges. The typology's application in education enhances the ability of future professionals to tackle complex issues effectively.
Integrating Psychic Functions	Incorporates cognitive, affective, and conative elements to comprehensively understand stakeholder dynamics. This integration enhances the analytical depth of the typology, making it a robust tool for strategic decision-making.
Utilizing Object Measurement™	Offers a structured and quantifiable approach, enhancing effectiveness by transforming abstract complexities into tangible metrics. This method allows for objective assessment and continuous improvement in managing complex problems.

Table 3 Key Applications of WickedVUCA® Typology

Conclusion

The **WickedVUCA® Typology** is relevant in contemporary research and practice, serving as both a theoretical framework and a practical tool for navigating complex, volatile environments. By extending and synthesizing foundational theories like **Wicked Problems** (2) and **VUCA** (10), the typology bridges the gap between academic theory and real-world application. It offers organizations and leaders the flexibility and resilience needed to adapt to modern challenges, emphasizing continuous learning, strategic flexibility, and interdisciplinary collaboration. This typology's comprehensive approach ensures that it remains an essential resource for problem-solving and leadership in an increasingly complex world.

Summary of Section I: Introduction

The **WickedVUCA® Typology** combines two established frameworks—**Wicked Problems** (2) and **VUCA** (Volatility, Uncertainty, Complexity, and Ambiguity) (10)—to create a comprehensive tool for analyzing and managing complex, dynamic challenges.

In **A. The WickedVUCA® Framework**, the typology incorporates the defining features of Wicked Problems, such as social complexity and stakeholder involvement, with the VUCA framework's focus on rapid and unpredictable change. This integration enables a more nuanced understanding of challenges that are both highly intricate and unstable, equipping organizations to navigate these conditions effectively.

B. Background of WickedVUCA® Typology details the typology's development, grounded in rigorous theoretical research. By merging these two models, the typology offers a structured approach for categorizing and addressing challenges across various fields, promoting greater adaptability and resilience in problem-solving approaches.

In **C. Extending Wicked Problem and VUCA Theories**, the typology builds on classical theories by recognizing the importance of **complexity** and **stakeholder alignment** in unpredictable environments. This section emphasizes the continuous adaptation necessary to address modern challenges effectively, highlighting the dynamic interplay between the complexity of problems and the ever-shifting external environments.

Finally, **D. Significance in Contemporary Research and Practice** explores the practical applications of the WickedVUCA® Typology in strategic decision-making, policy development, and leadership across multiple sectors. The typology's structured methodology provides organizations and leaders a powerful tool for understanding and managing complex environments. Its relevance extends beyond academic research, making it an indispensable resource for real-world problem-solving in business, governance, education, and other domains.

II WickedVUCA® Typology

The WickedVUCA® Typology offers a structured approach to understanding and managing complex challenges by analyzing two critical dimensions: complexity-conflict and stakeholder agreement levels. These dimensions provide a detailed framework for organizations to evaluate the nature of problems and develop tailored strategies that address the issue's intricacy and the dynamics of stakeholder involvement.

At its core, the typology integrates the multifaceted nature of Wicked Problems (2), characterized by their deep complexity and social entanglements, with the volatile, uncertain, complex, and ambiguous (VUCA) (10) contexts of modern environments. This synthesis allows for a comprehensive analysis of evolving challenges, offering insights into how stakeholder alignment—or lack thereof—affects potential solutions (for a detailed synthesis, refer to Appendix A). The result is a matrix that guides decision-making in uncertain and dynamic scenarios.

The typology uses both nominal and ordinal scales to classify problems, from Type 0 (low complexity, high agreement) to Type IV (extreme complexity, low agreement). These classifications inform organizations about the level of difficulty in addressing the challenge, helping to prioritize resources, strategize problem-solving efforts, and foster effective stakeholder collaboration.

In the sections that follow, we will explore:

- **Alignment of Each WickedVUCA® Type:** Mapping problem types to complexity and conflict levels, enabling a nuanced approach to addressing each challenge.
- **Concept Formation and Analytic Rigor:** Leveraging Object Measurement™ (OM™) (8) to enhance the precision and objectivity in classifying and analyzing problems.
- **Problem Difficulty Ordinal Matrix:** Visualizing challenges through a matrix that scales complexity and agreement, offering a practical tool for navigating multifaceted issues (see Appendix B for detailed insights).

A. Primary Dimensions: Complexity-Conflict and Agreement-Level

The **WickedVUCA® Typology** is grounded in two essential dimensions: **Complexity-Conflict** and **Agreement-Level**. These dimensions provide a structured framework for evaluating the intricacies of **Wicked Problems** (2) and **VUCA** (10) **environments**, helping organizations analyze and address challenges with greater precision.

1. Complexity-Conflict Dimension

The **Complexity-Conflict** dimension evaluates the intricacy of a problem and the level of conflict it involves, ranging from minimal to extreme. This dimension reflects both the **multifaceted interdependencies** of the problem and the conflicts arising from diverse viewpoints or interests. It categorizes problems based on their **complexity** and **conflict intensity**, helping map out increasing problem difficulty.

- **Psychic Functions** (4): This dimension addresses the **cognitive load** required to understand complex problems, the **affective conflicts** that arise from differing viewpoints, and the **conative efforts** needed to manage these conflicts.
- **Object Measurement™** (8): Utilizes structured metrics to quantify levels of complexity and conflict, offering **data-driven insights** that inform analysis and strategy development.

The **application** of the Complexity-Conflict dimension in **WickedVUCA®** is critical for identifying the nature of **VUCA environments** and conducting nuanced analyses of complex situations. This understanding enables organizations to tailor their approaches to specific problem types, improving **decision-making** and **strategic planning** in the face of varied complexity and conflict.

2. Agreement-Level Dimension

The **Agreement-Level** dimension measures the extent of **stakeholder consensus** on the problem and its potential resolution, ranging from complete agreement to total disagreement. This dimension captures the nature of stakeholder alignment, assessing the level of **shared understanding** or perspective on the problem and possible solutions. It categorizes problems based on the degree of agreement, acknowledging how stakeholder dynamics impact the problem-solving process.

- **Psychic Functions** (4): Evaluates the **cognitive alignment**, **affective responses**, and **conative actions** required to manage or achieve consensus.
- **Object Measurement™** (8): Provides quantifiable measures to assess **agreement levels**, enabling **targeted strategic interventions** based on the degree of stakeholder alignment.

The **application** of the Agreement-Level dimension in **WickedVUCA®** highlights the variability in stakeholder views, emphasizing how consensus—or lack thereof—directly influences **strategic decision-making** and overall effectiveness in addressing complex and uncertain situations.

3. Interplay of Complexity-Conflict and Agreement-Level Dimensions

The interplay between the **Complexity-Conflict** and **Agreement-Level** dimensions forms a **matrix** that categorizes problems into distinct types (Type 0 to Type IV), enhancing the typology's analytical depth.

This structure provides a systematic approach to understanding and addressing **WickedVUCA® challenges** with greater detail and nuance.

- **Psychic Functions Integration (4)**: Ensures a comprehensive analysis of stakeholder dynamics, incorporating **cognitive**, **affective**, and **conative elements** that influence problem-solving efforts.
- **Object Measurement™ Integration (8)**: Adds precision to the typology by using **quantifiable metrics** to assess complexity and stakeholder agreement, enabling practical application in real-world contexts.

The integration of **psychic functions** within the **WickedVUCA® Typology** enriches its framework, providing a holistic analysis of the psychological dimensions that affect stakeholder dynamics in **VUCA environments**. This comprehensive approach supports more effective **strategic applications** and **decision-making** when addressing modern challenges.

Conclusion:

Understanding the primary dimensions of **Complexity-Conflict** and **Agreement-Level** is crucial for categorizing and addressing the multifaceted challenges within the **WickedVUCA® Typology**. These dimensions offer a structured lens through which organizations can analyze problem dynamics, enabling **informed decision-making** and **strategic alignment**. By focusing on these core aspects, the typology equips stakeholders with the tools needed to navigate complex scenarios with greater precision and clarity.

B. Alignment of Each WickedVUCA® Type

The **WickedVUCA® Typology** classifies problems based on three critical factors: **complexity**, **conflict levels**, and **stakeholder agreement**. Each **WickedVUCA® Type**, ranging from **Type 0** to **Type IV**, presents unique challenges, requiring different approaches to problem-solving, resource allocation, and stakeholder collaboration. Understanding how these types align with specific problem characteristics helps organizations better navigate the complexity and uncertainty inherent in today's **VUCA environments**.

This section provides a detailed exploration of how each **WickedVUCA® Type** aligns with problem characteristics, examining how complexity, conflict, and agreement levels interact within each category. These factors significantly influence **decision-making**, **strategy development**, and **stakeholder engagement**. By clearly defining the attributes and challenges associated with each type, this alignment serves as a guide for tailoring responses and solutions to the nature of the problem at hand.

The following subsections delve into the specific characteristics of each **WickedVUCA® Type**, offering insights into how organizations can align their strategies and resources to address the varying degrees of complexity and stakeholder dynamics each type represents.

WickedVUCA® Type Definition					
Conceptual Clarity	Measurement	Psychic Functions	Analytic Utility	Application	Utility
Type 0 WickedVUCA®: Problems with low complexity and minimal cognitive or affective conflict despite existing within a VUCA environment. Stakeholders generally agree on the nature of the problem and its solution, leading to straightforward coordination and management. The cognitive load is low due to this shared understanding, while minimal affective conflict reduces emotional strain, aiding in harmonious problem-solving. Actions are straightforward and facilitated by stakeholder alignment, though solutions must still consider broader impacts due to the uniqueness of each problem.					
Low complexity, high agreement	Easily identifiable with straightforward metrics	Aligned cognitive processes, low affective conflict, straightforward conative actions	Identifies simple problems, vigilant for underlying complexities	Initial stages of project planning, early-phase policy development	Prevents oversimplification, encourages deeper examination
Type I WickedVUCA®: Involves high complexity and uncertainty within a VUCA context, with minimal cognitive conflict among stakeholders. The absence of affective conflict allows focus on collaborative, adaptive strategies for effective problem management. Enhanced cognitive efforts are necessary to process diverse viewpoints and adapt continuously, while the lack of emotional discord channels energies toward problem-solving rather than interpersonal issues. Conative functions leverage adaptive and collaborative strategies, utilizing divergent perspectives to address complex challenges.					
Conceptual Clarity	Measurement	Psychic Functions	Analytic Utility	Application	Utility
Moderate complexity, moderate agreement	Balanced complexity and agreement, effective categorization	Moderate cognitive engagement, some affective conflict, collaborative conative actions	Highlights adaptive strategies for moderate complexity	Stakeholder negotiations, interdisciplinary research projects	Promotes balanced approaches leveraging consensus and moderate complexity
Type II WickedVUCA®: Situations characterized by consensus on the problem's nature, reducing cognitive conflict, but substantial affective conflict over solution paths. This necessitates adaptive, innovative, and collaborative strategies to balance diverse personal values and interests within a VUCA environment. While cognitive agreement streamlines some processes, complexity in selecting appropriate solutions remains. Significant emotional challenges arise from affective conflicts, requiring effective					

WickedVUCA® Type Definition					
Conceptual Clarity	Measurement	Psychic Functions	Analytic Utility	Application	Utility
emotional management and empathy. The conative aspect involves high flexibility and creativity in action-taking to reconcile diverse values and interests.					
Conceptual Clarity	Measurement	Psychic Functions	Analytic Utility	Application	Utility
High complexity, low agreement	Pronounced conflict and disagreement, measurable	High cognitive load, significant affective conflict, innovative conative efforts	Guides high-stakes, conflict-laden problem-solving	Conflict resolution, addressing social inequalities	Highlights the need for creative and flexible strategies
Type III WickedVUCA®: Represents highly complex problems with both cognitive and affective conflicts among stakeholders due to a lack of consensus on the problem's nature and solutions. The VUCA environment exacerbates these challenges, making the problem-solving process politically charged. Intense cognitive efforts are needed for negotiation and collaborative problem-solving, while significant emotional challenges necessitate resilience and empathetic management of diverse viewpoints. The conative function focuses on managing conflicts and fostering collaboration, requiring high adaptability and innovative problem-solving.					
Conceptual Clarity	Measurement	Psychic Functions	Analytic Utility	Application	Utility
Very high complexity, very low agreement	Extreme conflict and lack of agreement, distinct metrics	Very high cognitive demands, intense affective conflict, extensive collaborative conative actions	Navigates problems requiring extensive negotiation and collaboration	International diplomacy, large-scale organizational change	Encourages comprehensive, integrative approaches

WickedVUCA® Type Definition					
Conceptual Clarity	Measurement	Psychic Functions	Analytic Utility	Application	Utility
Type IV WickedVUCA®: Involves deeply systemic problems within a rapidly changing VUCA context, characterized by profound cognitive and affective conflicts. Fundamental disagreements on the problem’s nature and solutions necessitate unprecedented levels of collaboration, adaptability, mutual learning, and innovative problem-solving. Substantial cognitive challenges require critical thinking and continuous re-evaluation of beliefs and knowledge. Profound affective conflicts demand emotional resilience and empathetic negotiation in a continually evolving context. The conative function calls for radical collaboration, adaptability, and mutual learning approaches to address deeply embedded conflicts and complexities.					
Conceptual Clarity	Measurement	Psychic Functions	Analytic Utility	Application	Utility
Extreme complexity, no agreement	Clearly identifiable extreme nature	Maximum cognitive engagement, profound affective conflict, radical conative efforts	Addresses the most difficult problems, demands adaptability and innovation	Climate change adaptation, handling global health crises	Guides highly adaptive, innovative, transformative approaches

Table 4 Alignment of Each WickedVUCA® Type

Conclusion:

The alignment of each **WickedVUCA® Type** within the typology demonstrates its value in systematically categorizing complex challenges. By understanding how **complexity**, **conflict**, and **agreement dynamics** interact, organizations can tailor their strategies to address the unique characteristics of each scenario. This structured approach to classification enhances **decision-making** and **adaptability** in navigating the multifaceted nature of Wicked Problems and VUCA environments, providing a clearer path for solutions that reflect both the complexity of the issue and the perspectives of stakeholders.

C. WickedVUCA® Concept Formation, Measurement, and Analytic Rigor

The development of the **WickedVUCA® Typology** revolves around defining and quantifying its key dimensions: **Complexity-Conflict** and **Agreement-Level**. These dimensions are grounded in extensive theoretical and conceptual research, accurately capturing the intricacies of complex environments. The process employs both **qualitative** and **quantitative methods**, ensuring a comprehensive assessment of

diverse scenarios. With this solid theoretical base, the typology categorizes and interprets the evolving nature of modern challenges, supporting **strategic decision-making** and **problem-solving** in volatile and uncertain contexts.

Key Dimensions of the WickedVUCA® Typology include:

1. Concept Formation

The **WickedVUCA® Typology** integrates two complex concepts—**Wicked Problems** (2) and the **VUCA framework** (10)—to provide a structured and nuanced understanding of challenging environments. This synthesis aligns with the emphasis on concept formation and refinement, as outlined in the work of Collier et al. (9). By combining these frameworks, the typology enhances the ability to conceptualize and navigate the multifaceted nature of contemporary problems.

2. Measurement

The typology employs two clear dimensions—**Complexity-Conflict** and **Agreement-Level**—allowing for systematic categorization of problems. This approach aligns with the focus on measurement and the organization of explanatory claims, as advocated in **Collier, LaPorte, and Seawright's** work (9). These dimensions ensure that challenges are accurately classified based on both complexity and stakeholder alignment.

3. Psychic Functions

Incorporating **cognitive** (thought processes), **affective** (emotional responses), and **conative** (volitional actions) elements ensures a comprehensive understanding of how stakeholders perceive, react to, and engage with complex problems (4). This integration enhances the typology's utility by addressing the psychological dimensions of **problem-solving** and **decision-making**, making it a holistic tool for analyzing stakeholder dynamics.

4. Object Measurement™ (OM™)

Object Measurement™ (OM™) offers a structured and quantifiable approach to evaluating abstract complexities (8). By transforming the **Complexity-Conflict** and **Agreement-Level** dimensions into tangible metrics, OM™ enables organizations to assess challenges through objective data. This facilitates **strategic adaptation** and **continuous improvement**, making the typology not just theoretical but practically applicable across sectors.

5. Analytic Rigor

By providing a clear classification for various types of complex problems, the **WickedVUCA® Typology** supports a rigorous analytical approach, consistent with guidelines for creating and refining typologies (9). This rigor allows for a precise analysis of problems, helping to refine strategies and responses that align with the complexity and uncertainty of VUCA environments.

6. Application

The **WickedVUCA® Typology** is versatile and can be applied across diverse fields such as **organizational strategy**, **public policy**, **crisis management**, and **environmental planning**. By identifying and categorizing complex problems within these contexts, the typology supports more targeted and effective problem-solving approaches tailored to the specific characteristics of each challenge.

7. Utility

The primary utility of the **WickedVUCA® Typology** lies in providing a structured framework for understanding and responding to complex problems. It guides stakeholders in selecting appropriate strategies based on the **problem's complexity** and **level of agreement**, ensuring that responses are well-matched to the nature of the problem.

Conclusion:

The integration of **Object Measurement™ (OM™)** (8) and **analytic rigor** in the **WickedVUCA® Typology** ensures that abstract complexities are translated into measurable data points. This precision in quantification enhances the robustness of **decision-making**, allowing stakeholders to base their strategies on clear, data-driven insights. By grounding the typology in rigorous theoretical principles, this approach fosters a deeper understanding of WickedVUCA® challenges and guides organizations in developing more effective, adaptable solutions.

D. Simplified Typology Matrix

Purpose:

The **Simplified Typology Matrix** provides an accessible starting point for readers new to the WickedVUCA® framework. It illustrates the general idea that as complexity and conflict rise, and as agreement among stakeholders decreases, problems typically become harder to manage.

This matrix focuses on two levels of complexity-conflict—**Low** and **Very High**—while including four agreement levels. It offers a straightforward way to see how changes in complexity-conflict and stakeholder alignment correlate with varying levels of problem difficulty.

Simplified Typology Matrix

Complexity-Conflict / Agreement	High Agreement	Moderate Agreement	Low Agreement	No Agreement
Low Complexity/Conflict	Type 0	Type I	Type II	Type IV
Very High Complexity/Conflict	Type III	Type III	Type III	Type IV

Note:

This simplified matrix is intended for initial conceptual understanding and does not represent the full range of conditions. For a comprehensive classification encompassing multiple levels of complexity, conflict, and stakeholder agreement, please refer to the authoritative WickedVUCA® Problem Difficulty Ordinal Matrix.

Interpretation:

- **Type 0 (Blue):** Low complexity/conflict and high agreement—problems are easy to manage.
- **Type I (Green):** Slightly more complexity or varied stakeholder views, but still manageable due to relatively strong alignment.

- **Type II (Yellow):** As complexity/conflict increases and agreement weakens, challenges require more negotiation and careful coordination.
- **Type III (Orange):** Under very high complexity/conflict, problems are difficult to manage even when some agreement is present.
- **Type IV (Red):** With no agreement, regardless of complexity, problems are extremely challenging and demand radical, innovative approaches.

With this conceptual foundation in place, readers can proceed to the fully detailed WickedVUCA® Problem Difficulty Ordinal Matrix, which provides a complete framework for analyzing and navigating a wide spectrum of complex, evolving scenarios.

E. Description of Psychic Functions: Cognitive, Affective, and Conative Elements

The **WickedVUCA® Typology** integrates three key **psychic functions**—**Cognitive**, **Affective**, and **Conative** (4)—to effectively navigate the complexities of **VUCA environments**. These functions provide a comprehensive understanding of how individuals and groups perceive, respond to, and act upon complex challenges, enhancing both the analytical and practical utility of the typology

1. Cognitive Function

The **Cognitive** function involves the intellectual processes required to understand complex problems, including **perception**, **memory**, **judgment**, and **reasoning**. This function is critical for analyzing how individuals process **complexity** and **conflict** within **WickedVUCA® challenges**.

- **Object Measurement™ (8)** quantifies cognitive engagement by assessing the **intellectual effort** required to navigate high complexity or conflict levels. When **complexity** or **conflict** is high, greater intellectual effort is demanded from stakeholders, while the **agreement level** influences how cognitively aligned they are.

2. Affective Function

The **Affective** function captures the **emotional responses** of stakeholders when faced with complex challenges. These responses range from positive emotions like **happiness** to negative emotions such as **fear** and play a significant role in shaping the dynamics of stakeholder interactions.

- **Object Measurement™ (8)** can evaluate the intensity and variability of emotional responses, providing scales that measure these affective dimensions. Typically, higher **conflict levels** correspond to more intense emotional responses, while the **agreement level** either harmonizes or exacerbates these emotions within a group.

3. Conative Function

The **Conative** function refers to the volitional aspects of behavior, including **decision-making**, **actions**, and **persistence** in engaging with complex problems. This function is crucial for understanding the **motivations** and **commitments** stakeholders bring to problem-solving efforts.

- **Object Measurement™** (8) quantifies conative actions by evaluating the **strength** and **direction** of stakeholders' efforts. The **complexity** and **conflict levels** influence the types of conative actions required, while the **agreement level** determines how effectively these actions are coordinated among stakeholders.

Integrating Psychic Functions in WickedVUCA® Typology

By incorporating **Cognitive**, **Affective**, and **Conative functions** (4), the **WickedVUCA® Typology** provides a holistic framework for analyzing stakeholder dynamics. This integration significantly enhances the typology's depth, allowing decision-makers to develop more effective strategies that address both the **intellectual** and **emotional** needs of stakeholders.

- The **cognitive function** ensures a clear understanding of the intellectual effort involved in complex problem-solving.
- The **affective function** accounts for the emotional landscape, which can either facilitate or hinder collaboration depending on the conflict levels.
- The **conative function** helps evaluate the willingness and persistence of stakeholders to act, aligning efforts with the overall problem-solving process.

This comprehensive approach enables the **structured quantification** of these functions, offering actionable insights for managing **Wicked Problems** in **VUCA environments**. It ensures that problem-solving strategies are adaptive, addressing the **rational** and **emotional** dimensions of stakeholder engagement.

Conclusion:

Incorporating **Psychic Functions—Cognitive, Affective, and Conative Elements** (4)—into the **WickedVUCA® Typology** deepens its analytical capabilities by capturing how stakeholders perceive, respond to, and engage with complex issues. This holistic approach ensures that both **rational** and **emotional** responses are considered, leading to more effective and adaptive **decision-making** processes in **VUCA environments**.

F. Incorporation of Continuous Variables

The integration of **continuous variables** into the **WickedVUCA® Typology** enhances its analytical capabilities, allowing for a more detailed and nuanced examination of **VUCA environments**. By treating the core dimensions—**Complexity-Conflict** and **Agreement-Level**—as continuous spectrums rather than fixed categories, the typology gains the flexibility needed to capture subtle variations in complexity and stakeholder alignment.

Continuous Variables in Complexity-Conflict and Agreement-Level

Continuous variables provide a spectrum of values that offer a more granular view of complex phenomena. In the **WickedVUCA® Typology**, both **Complexity-Conflict** and **Agreement-Level** are redefined as ranges, from **minimal to extreme** complexity and conflict, and from **full agreement to**

complete disagreement. This approach allows for a more dynamic and in-depth analysis of challenges, providing a fluid representation of how these dimensions shift over time and across different scenarios.

Advantages of Using Continuous Variables

- **Granular Analysis:** By treating the dimensions as continuous variables, the typology enables finer distinctions in analyzing the complexities of **VUCA environments**. This approach enhances the typology's explanatory power, allowing for the use of advanced statistical techniques, such as **regression models**, to assess the impact of varying levels of complexity and agreement on stakeholder dynamics.
- **Improved Accuracy:** Continuous variables help capture the **cognitive, affective, and conative** responses of stakeholders with greater precision. This deeper understanding of stakeholder engagement is critical for addressing the nuanced nature of **WickedVUCA® challenges**.
- **Object Measurement™ (8) :** The integration of **Object Measurement™** facilitates the precise assessment of these continuous variables, enabling organizations to quantify complex attributes and respond with data-driven strategies.

Challenges and Opportunities

While the use of continuous variables introduces certain challenges, such as the difficulty in precisely measuring stakeholder agreement levels, it opens up opportunities for a more fluid understanding of **VUCA challenges**. This spectrum-based approach better reflects real-world conditions, where complexity and agreement often exist on a continuum rather than in discrete categories. By acknowledging the **gradational nature** of problem complexity and conflict intensity, the typology remains adaptable and relevant for both **academic research** and **practical application**.

Conclusion:

The incorporation of **continuous variables** in the **WickedVUCA® Typology** enables a more nuanced and dynamic assessment of challenges. By capturing subtle variations in complexity and agreement, this approach allows organizations to develop **adaptive strategies** that respond more effectively to evolving conditions. The **spectrum-based analysis** ensures that solutions are tailored to the specific needs of each scenario, enhancing the typology's effectiveness in managing **WickedVUCA® problems**.

Summary of Section II: WickedVUCA® Typology

The **WickedVUCA® Typology** provides a detailed framework for categorizing and addressing complex challenges in volatile, uncertain, complex, and ambiguous environments. This section outlines the primary dimensions and their applications, offering a systematic approach to understanding the dynamics of **Wicked Problems (2)** and **VUCA (10)** contexts.

1. Primary Dimensions: Complexity-Conflict and Agreement-Level:

The typology is built upon two core dimensions: **Complexity-Conflict** and **Agreement-Level**, which measure the intricacy of challenges and the degree of stakeholder alignment. These dimensions form the foundation for categorizing and analyzing problems based on their severity and stakeholder dynamics.

2. **Alignment of Each WickedVUCA® Type:**

The typology categorizes problems into five types (Type 0 to Type IV), ranging from low complexity and high agreement to extreme complexity and low agreement. This classification guides organizations in developing tailored solutions that address the specific challenges posed by each type, ensuring strategic alignment with the complexity and conflict levels present in the problem.

3. **WickedVUCA® Concept Formation, Measurement, and Analytic Rigor:**

This subsection emphasizes the theoretical foundation of the typology, focusing on the precision of problem classification. The integration of **Object Measurement™ (OM™)** (8) provides a quantifiable approach to analyzing complexity and agreement levels, enhancing the rigor of the typology through both qualitative and quantitative methods.

4. **WickedVUCA® Problem Difficulty Ordinal Matrix: Complexity, Conflict, and Agreement Dynamics:**

The **Problem Difficulty Ordinal Matrix** ranks challenges based on increasing complexity, conflict levels, and decreasing stakeholder agreement. This matrix serves as a visual tool to help organizations prioritize resources and decision-making strategies, based on the severity and nature of each problem type.

5. **Description of Psychic Functions: Cognitive, Affective, and Conative Elements:**

The integration of **psychic functions** (4) —**cognitive, affective, and conative elements**—offers a holistic view of how stakeholders perceive, engage with, and act on complex challenges. These functions deepen the typology's ability to capture the intellectual, emotional, and volitional dimensions of problem-solving, contributing to more effective and adaptive strategies.

6. **Incorporation of Continuous Variables:**

The typology's use of **continuous variables** allows for a more flexible and detailed analysis of WickedVUCA® challenges. By treating **Complexity-Conflict** and **Agreement-Level** as continuous spectrums, the typology captures subtle shifts in stakeholder dynamics and problem complexity, allowing for more adaptive and precise responses in evolving scenarios.

Conclusion:

The **WickedVUCA® Typology** offers a robust, multi-dimensional framework that integrates both **quantitative** and **qualitative** insights, enabling organizations to systematically analyze, categorize, and address complex problems. By leveraging its core dimensions, organizations can develop strategic, data-driven approaches that are both adaptable and resilient in the face of uncertainty and volatility.

III. Measurement Scales for WickedVUCA® Typology

The **WickedVUCA® Typology** utilizes precise measurement scales to evaluate problems based on two key dimensions: **complexity-conflict levels** and **stakeholder agreement**. These scales provide a structured framework for assessing **stakeholder alignment, adaptability, and resilience**, enabling organizations to develop data-driven strategies tailored to the specific characteristics of each challenge.

A central feature of this approach is **Object Measurement™ (OM™)** (8), which transforms abstract complexities into quantifiable metrics. By systematically analyzing **WickedVUCA® challenges** through this methodology, stakeholders can make informed decisions that are responsive to the problem's evolving nature, thereby improving the effectiveness of their strategic responses.

For guidance on operationalizing these measurement scales across diverse contexts, refer to **Appendix D**, which provides detailed instructions on applying the typology's core dimensions consistently. These guidelines enhance the typology's practical utility, making it an invaluable tool for navigating complex **VUCA environments** and supporting real-world problem-solving.

A. WickedVUCA® Problem Difficulty Ordinal Matrix: Complexity, Conflict, and Agreement Dynamics

Having established a basic understanding of how complexity-conflict and stakeholder agreement affect problem difficulty, the **WickedVUCA® Problem Difficulty Ordinal Matrix** offers a fully developed, authoritative tool. It categorizes problems along a continuum from Type 0 to Type IV by integrating multiple levels of complexity/conflict and agreement, providing a precise guide for decision-makers.

This comprehensive matrix enables organizations to more accurately assess problem difficulty, prioritize resources, and devise adaptive strategies. By matching challenges to their correct type, leaders can better anticipate obstacles, engage stakeholders effectively, and respond to evolving conditions with greater confidence.

Key Elements and Interpretation of the Matrix

The matrix organizes problems into five types (Type 0 to Type IV) based on the interplay of two dimensions:

1. **Complexity-Conflict (Row Variable):**

This dimension represents the complexity of the problem and the level of conflict among stakeholders. Moving from the top (low complexity/conflict) to the bottom (extreme complexity/conflict), problems become more intricate and difficult to manage. Higher complexity-conflict scenarios demand more adaptive, innovative strategies and advanced problem-solving techniques.

2. **Agreement-Level (Column Variable):**

This dimension reflects how aligned stakeholders are in understanding both the nature of the problem and potential solutions. The Agreement-Level axis draws conceptually on Roberts's wicked-problem typology, which classifies issues by stakeholder consensus on both problem definition and solution approach (12). WickedVUCA® generalizes this dimension and pairs it with a Complexity-Conflict gauge and an explicit VUCA context layer to create a five-type ordinal scale (0–IV). Moving from left to right, stakeholder agreement decreases. High Agreement on the far left indicates simpler coordination, while No Agreement on the far right signifies severe fragmentation and contention. As agreement diminishes, the difficulty of managing the problem intensifies.

Complexity-Conflict (Row Variable)	High Agreement	Moderate Agreement	Low Agreement	Very Low Agreement	No Agreement
Low Complexity/Conflict	Type 0	Type I	Type II	Type III	Type IV
Moderate Complexity/Conflict	Type I	Type I	Type II	Type III	Type IV
High Complexity/Conflict	Type II	Type II	Type II	Type III	Type IV
Very High Complexity/Conflict	Type III	Type III	Type III	Type III	Type IV
Extreme Complexity/Conflict	--	--	--	--	Type IV

Table 5 Complexity, Conflict, and Agreement Dynamics

Interpreting the WickedVUCA® Types:

- **Type 0 (Blue):** Low complexity/conflict, high agreement—easiest to manage. Stakeholders share a common understanding, requiring straightforward coordination.
- **Type I (Green):** Slightly greater complexity or diverse stakeholder views, yet still manageable due to relatively strong alignment. Organizations can handle these with moderate adaptation.
- **Type II (Yellow):** Marked increase in complexity/conflict with moderate to low agreement. Negotiation, strategic resource allocation, and diplomacy become essential.
- **Type III (Orange):** Very high complexity/conflict combined with low to very low agreement. These situations demand innovative strategies, conflict resolution skills, and adaptive leadership.
- **Type IV (Red):** Extreme complexity/conflict and no agreement—representing the toughest problems. Radical collaboration, creative thinking, and ongoing learning are required to address fundamental disagreements and systemic challenges.

Practical Applications:

- **Assessing Problem Difficulty:** Identify how challenging a situation is, factoring in its complexity and the degree of stakeholder alignment.
- **Prioritizing Interventions:** Direct resources, attention, and efforts to areas where the difficulty is greatest and stakes are highest.
- **Guiding Strategy Development:** Tailor approaches to the specific complexity and agreement conditions present, thus improving the likelihood of successful outcomes.

With this authoritative matrix, leaders, policymakers, and practitioners can move beyond basic conceptual understanding, applying the WickedVUCA® Typology's insights to real-world decision-making, achieving greater resilience and adaptability in the face of modern, multifaceted challenges.

Conclusion:

The **WickedVUCA® Problem Difficulty Ordinal Matrix** provides a powerful framework for visualizing the scale of **complexity** and **conflict** within challenges. By ranking problems according to their difficulty levels, the matrix serves as a strategic guide for organizations, helping them to prioritize resources and tailor solutions to the evolving complexity and stakeholder dynamics inherent in **Wicked Problems** (2) and **VUCA environments** (10).

B. Object Measurement

Object Measurement™ (OM™) (Donaldson & Siegel, 1998) offers a structured and quantifiable approach for transforming complex, multi-dimensional problems into measurable entities. By applying OM™ to the **WickedVUCA® Typology**, organizations can quantify essential attributes like stakeholder alignment, adaptability, resilience, and other critical metrics within **VUCA environments**. This integration enhances strategic planning, adaptability, continuous improvement, and the navigation of the challenges posed by **Wicked Problems**.

Key OM™ Attributes for Managing WickedVUCA® Challenges

The table below outlines the key attributes measured by **OM™** and their applications within the **WickedVUCA® Typology**:

Attribute	Description	Dimensions Addressed
Alignment with Stakeholder Needs	Measures how well the solution meets the diverse needs and expectations of stakeholders.	Agreement-Level, Cognitive, and Affective Elements
Adaptability	Measures the solution's ability to adapt to changing circumstances and new information.	Complexity-Conflict, Volatility, Uncertainty
Resilience	Measures the robustness of the solution in facing unforeseen challenges and conflicts.	Complexity-Conflict, Ambiguity, Uncertainty
Collaboration Quality	Measures the effectiveness of stakeholder collaboration in developing and implementing solutions.	Agreement-Level, Cognitive, and Conative Elements
Clarity and Communication	Measures the degree of clarity in problem definition and the effectiveness of communication among stakeholders.	Agreement-Level, Ambiguity
Volatility	Measures the rate and unpredictability of change impacting the problem and solution.	Complexity-Conflict, Adaptability
Uncertainty	Measures the extent to which future outcomes are unpredictable and information is incomplete.	Complexity-Conflict, Resilience

Attribute	Description	Dimensions Addressed
Complexity	Measures the intricacy of the problem, including the number of interconnected parts and stakeholders involved.	Complexity-Conflict, Cognitive, and Collaboration Quality
Ambiguity	Measures the vagueness and potential for multiple interpretations of information.	Clarity and Communication, Resilience
Cognitive Element	Measures the stakeholders' shared understanding and thought processes regarding the problem and solution.	Alignment with Stakeholder Needs, Collaboration Quality
Affective Element	Measures the emotional alignment and buy-in of stakeholders regarding the problem and solution.	Alignment with Stakeholder Needs, Collaboration Quality
Conative Element	Measures the will and determination of stakeholders to act towards the problem's resolution.	Collaboration Quality, Resilience

Table 6 Object Measurement Attributes for WickedVUCA® Typology

The measurement attributes outlined in **Table 6** provide a comprehensive framework for evaluating solutions in **WickedVUCA®** environments. **Alignment with Stakeholder Needs** ensures that solutions meet the expectations of diverse stakeholders, fostering both cognitive and affective agreement. **Adaptability** assesses a solution's ability to adjust to changing environments, addressing elements such as **complexity, volatility, and uncertainty**. **Resilience** measures the robustness of solutions in managing ambiguity and unforeseen challenges, enhancing long-term stability. **Complexity** evaluates the intricacy of the problem, considering the interconnected parts and stakeholders involved, helping to inform strategies for addressing multifaceted challenges. **Collaboration Quality** assesses the effectiveness of stakeholder cooperation, which is essential for aligning cognitive and conative efforts in problem-solving. **Clarity and Communication** focuses on how well problems are defined and communicated, helping to reduce ambiguity and confusion among stakeholders. Other attributes such as **Volatility, Uncertainty, and Ambiguity** assess the unpredictability and complexity surrounding the problem, providing insight into the external forces at play. The **Cognitive, Affective, and Conative Elements** capture the mental processes, emotional buy-in, and willingness to act among stakeholders, enriching the analysis of stakeholder dynamics.

Conclusion:

The integration of **Object Measurement™ (OM™)** within the **WickedVUCA® Typology** is a critical tool for transforming abstract attributes into quantifiable insights. By capturing the **cognitive, affective, and conative elements** of stakeholder dynamics, **OM™** adds depth to the analysis, supporting a more comprehensive understanding of **WickedVUCA® challenges**. This quantification strengthens the typology's analytical rigor, fostering **data-driven strategies** that promote adaptability, resilience, and continuous improvement in decision-making.

Summary of Section III: Measurement Scales for WickedVUCA® Typology

The **WickedVUCA® Typology** employs a structured approach to quantify the complexities of modern challenges, using well-defined measurement scales to systematically assess **complexity-conflict** and **agreement levels**. This section outlines how abstract elements of **WickedVUCA® problems** are converted into tangible data, enabling more precise analysis and **data-driven decision-making**.

In **A. Measurement Scales for WickedVUCA® Typology**, specific scales are used to evaluate key factors such as **stakeholder alignment**, **adaptability**, and **resilience**. These scales provide organizations with a clear framework for consistently assessing the nature and severity of challenges in **volatile** and **uncertain environments**, ensuring that strategic responses are targeted and effective.

B. Object Measurement™ (OM™) offers a quantifiable methodology for transforming the abstract attributes of **WickedVUCA® challenges** into measurable data points. By capturing the **cognitive**, **affective**, and **conative elements** of stakeholder dynamics, **OM™** delivers a holistic view of these challenges. This integration of **OM™** enhances the typology's capacity for continuous improvement and adaptability, enabling organizations to respond more effectively to evolving challenges.

IV. Goals of the WickedVUCA® Typology

The WickedVUCA® Typology is designed with four core objectives to help organizations navigate modern, rapidly changing environments. These goals focus on systematic categorization, data-driven strategic decision-making, interdisciplinary collaboration, and continuous adaptation. By providing a holistic framework that considers human thought, emotion, and motivation—alongside rigorous measurement tools—the typology equips stakeholders to understand, manage, and respond to the complexities of Wicked Problems in VUCA contexts. For additional theoretical insights, refer to Appendix C.

1. Categorizing Complex Environments

Aim: To systematically classify problems according to their complexity-conflict and agreement levels.

Application: By mapping problems from straightforward to extraordinarily complex, organizations gain a precise understanding of their challenges.

Psychic Functions: Incorporating cognitive, affective, and conative dimensions ensures a full appreciation of stakeholder thought processes, emotional states, and willingness to act.

Object Measurement™: OM™ provides quantifiable metrics to transform abstract complexities into actionable data, allowing for more targeted and effective interventions.

2. Enhancing Strategic Decision-Making and Planning

Aim: To guide leaders in developing responsive, evidence-based strategies suited to different kinds of WickedVUCA® problems.

Application: By aligning solutions with the identified complexity and stakeholder dynamics, organizations can anticipate challenges, reduce risks, and allocate resources efficiently.

Psychic Functions: Understanding stakeholder cognition, emotions, and motivations leads to more nuanced decision-making and better alignment among involved parties.

Object Measurement™: Data-driven insights ensure decisions are grounded in measurable attributes, supporting ongoing refinement of strategies as conditions evolve.

3. **Fostering Interdisciplinary Collaboration**

Aim: To encourage cooperation across sectors and disciplines, ensuring that diverse knowledge bases inform complex problem-solving.

Application: A common framework and shared metrics make it easier for stakeholders with different backgrounds to build consensus, coordinate efforts, and innovate collectively.

Psychic Functions: Recognizing varied cognitive, affective, and conative perspectives fosters empathy and reduces friction, enhancing cooperation and synergy.

Object Measurement™: Consistent measurement tools enable meaningful comparisons, track collective progress, and highlight where interdisciplinary efforts are most needed.

4. **Supporting Continuous Adaptation and Learning**

Aim: To help organizations remain agile and responsive to shifting conditions in volatile environments.

Application: By regularly reassessing complexity levels, agreement patterns, and emotional climates, strategies can be fine-tuned or completely reimagined as new information emerges.

Psychic Functions: Continuous attention to how stakeholders think, feel, and act encourages lasting engagement, emotional resilience, and sustained motivation for problem-solving.

Object Measurement™: Feedback loops based on OM™ metrics guide iterative improvements, ensuring strategies remain relevant, effective, and future-ready.

Conclusion:

These four objectives strengthen the WickedVUCA® Typology's role as both a conceptual framework and a practical toolkit. By categorizing complexity, guiding strategic action, uniting diverse expertise, and enabling adaptive learning, the typology helps organizations address the inherent challenges of modern, dynamic environments. Its integration of human factors (cognitive, affective, conative) with rigorous measurement (OM™) ensures that responses to Wicked Problems and VUCA scenarios are not only informed and structured, but also empathetic, flexible, and sustainably effective.

Summary of Section IV: Goals of the WickedVUCA® Typology

The WickedVUCA® Typology's goals collectively empower organizations to confront today's complex, rapidly changing challenges. First, by categorizing environments along complexity-conflict and agreement dimensions, it clarifies the intricacies of Wicked Problems and VUCA scenarios. This foundational understanding enables more informed and targeted strategic actions.

Next, the typology enhances strategic decision-making and planning. With Object Measurement™ (OM™) providing quantifiable insights, organizations can develop adaptive, evidence-based strategies that align with evolving conditions. Considering cognitive, affective, and conative elements ensures that decisions address stakeholder thought processes, emotions, and motivations, improving both buy-in and outcomes.

The typology also fosters interdisciplinary collaboration, uniting experts from diverse fields under a shared framework. This interdisciplinary focus encourages holistic solutions and greater innovative capacity.

Finally, by emphasizing adaptation and learning, the typology supports continuous refinement. Through regular feedback loops and metrics, organizations can evolve their approaches, maintaining agility and resilience as conditions shift.

Together, these objectives position the WickedVUCA® Typology as a dynamic, human-centered, and data-informed tool—one that not only classifies and measures complexity but also guides robust, innovative responses to the evolving challenges of contemporary environments.

V. Conclusion

The WickedVUCA® Typology offers a comprehensive and innovative framework for addressing the intricate challenges posed by modern volatile and dynamic environments. By integrating the principles of Wicked Problems with the dynamic elements of VUCA, this typology provides a structured approach to navigating scenarios characterized by uncertainty, complexity, and rapid change. Throughout this document, the typology has demonstrated its value in meeting its primary goals: systematically categorizing complex environments, enhancing strategic decision-making, fostering interdisciplinary collaboration, and supporting continuous adaptation.

Achievements of the WickedVUCA® Typology

1. **Categorizing Complex Environments**

The WickedVUCA® Typology systematically classifies challenges according to complexity-conflict and agreement levels, offering clarity and precision for understanding multifaceted issues. This categorization encompasses not only technical aspects but also the cognitive, affective, and conative dimensions that shape stakeholder perceptions and motivations.

2. **Strategic Decision-Making**

By transforming abstract complexities into measurable data points through Object Measurement™, the typology enables organizations to ground their strategies in clear, actionable insights. Recognizing how stakeholders think, feel, and act ensures that decisions are informed by the full spectrum of human factors influencing outcomes, thereby improving both the relevance and effectiveness of responses.

3. **Interdisciplinary Collaboration**

A key strength of the typology is its emphasis on fostering cross-field synergy. By bringing together diverse expertise, perspectives, and analytical approaches, it creates conditions where innovation can thrive. This multidisciplinary lens helps decision-makers appreciate the interconnectedness of complex problems, leading to holistic, creative, and robust solutions.

4. **Continuous Learning and Adaptation**

The typology's adaptability is anchored in continuous feedback loops and data-driven insights. As conditions evolve, organizations can refine their approaches, maintaining agility and

resilience. The ongoing process of re-assessment and improvement ensures that strategies remain aligned with shifting stakeholder landscapes and the dynamic interplay of complexity and conflict.

Practical Relevance and Future Applications

Beyond theory, the WickedVUCA® Typology serves as a practical tool that guides leaders and decision-makers through the uncertainties of modern challenges. Its structured approach equips organizations to respond nimbly to emerging conditions, informed by both objective metrics and a deep understanding of stakeholder dynamics. By bridging gaps in knowledge, inspiring collaboration, and acknowledging the emotional and motivational underpinnings of human behavior, the typology encourages more empathetic, flexible, and sustainable strategies.

The integration of Object Measurement™ is especially valuable, allowing organizations to quantify complex factors and continuously refine their responses. In doing so, the typology not only classifies and measures complexity but also enables progress toward resilient, adaptive, and inclusive solutions. Ultimately, the WickedVUCA® Typology stands as a dynamic, human-centered, and data-informed framework that empowers organizations to navigate the evolving challenges of contemporary environments with greater confidence and efficacy.

Appendix A – Integration of Concepts

The WickedVUCA® Typology integrates key principles from Wicked Problems (2) and VUCA (10) scenarios, offering a holistic approach to navigating multifaceted, rapidly changing challenges. By weaving together complexity, conflict intensity, stakeholder agreement, and psychic functions (4), the typology provides a comprehensive framework for understanding and managing intricate problems across diverse contexts.

In addition, the inclusion of Object Measurement™ (OM™) (8) turns abstract characteristics into quantifiable metrics, supporting data-driven strategic decisions. This measured perspective—combined with systems thinking through DSRP (Distinctions, Systems, Relationships, and Perspectives) (5) — ensures a more profound appreciation of interconnected factors. Ultimately, this synthesis allows leaders, policymakers, educators, and other stakeholders to identify key leverage points, foster interdisciplinary collaboration, and adapt continuously as conditions evolve.

Concept	Description
Combining Wicked Problems and VUCA	Integrates the complexity, evolving stakeholder interests, and resistance to simple solutions found in Wicked Problems with the adaptability and resilience needed in VUCA (Volatility, Uncertainty, Complexity, Ambiguity) contexts.
Synergy	Establishes synergy between the inherently intricate nature of Wicked Problems and the fluid, unpredictable conditions of VUCA environments, enabling a more accurate understanding of multi-dimensional issues.

Core Dimensions of the Typology	Complexity-Conflict Dimension: Evaluates situational complexity, stakeholder conflicts, and interdependencies.
Agreement-Level Dimension: Assesses stakeholder consensus, from high agreement to deep division, influencing manageability and solution development.	
Classifying Environments	Categorizes scenarios into five types (Type 0 to Type IV), guiding users in mapping challenges onto a continuum of complexity and agreement, and informing the selection of suitable strategies.
Versatility Across Domains	Applicable across various fields—business, policy, education, healthcare—the typology supports analysis and action in diverse, evolving scenarios.
Emphasis on Systems Thinking	Encourages a holistic, non-linear perspective that acknowledges interconnectedness. Counteracts LAMO (Linear, Anthropocentric, Mechanistic, Ordered) approaches by employing DSRP to consider multiple viewpoints.
Guiding Leadership and Strategy	Informs leaders and strategists by highlighting adaptive methods, stakeholder inclusion, and long-term resilience.
Integration of Psychic Functions	Incorporates cognitive (thinking), affective (emotions), and conative (motivations) elements, ensuring a nuanced understanding of stakeholder behaviors and responses.
Utilizing Object Measurement™	Provides structured, quantifiable metrics for assessing complexity, conflict, and agreement. OM™ enables continuous learning, evidence-based decision-making, and iterative improvement.
Dynamic and Adaptable Nature	Designed for ongoing refinement, incorporating feedback, evolving research, and shifting global conditions to maintain its relevance and utility over time.

Appendix A 1 Integration of Concepts

By uniting these concepts, the WickedVUCA® Typology equips organizations and communities with a robust, adaptable framework. This integrated perspective helps uncover hidden relationships, anticipate emergent complexities, and foster collaborative, adaptive solutions for the challenges that define our contemporary world.

Appendix B - Applying the Principles of "Putting Typologies to Work"

Building on the guidelines established in “Putting Typologies to Work” (9), the WickedVUCA® Typology embraces a systematic, iterative approach to ensure both theoretical rigor and practical applicability. Each principle below underpins the typology’s design, implementation, and evolution, reinforcing its capacity to respond to the complexity, uncertainty, and stakeholder diversity characteristic of Wicked Problems (9) and VUCA environments (2).

By consistently adhering to these principles, the typology can be refined through user feedback, empirical testing, and ongoing research, ensuring that it remains a valuable tool for decision-makers seeking to understand and address complex challenges. For example, an international policy team might apply the typology to a global health crisis, using Complexity-Conflict and Agreement-Level metrics to gauge the severity of the situation, incorporate multidisciplinary expertise, and update strategies as conditions shift—thereby illustrating how principles guide real-world applications.

Principle	Description
Identification of Core Dimensions	Complexity-Conflict: Define clear, context-relevant indicators for problem intricacy and stakeholder contention. Agreement-Level: Specify criteria to measure how closely aligned stakeholders are regarding problem definitions and solutions.
Rigorous Definition and Operationalization	Develop concrete indicators, scales, and Object Measurement™ (OM™) metrics so that each dimension can be quantitatively or qualitatively assessed. This ensures a common language and measurable benchmarks that facilitate evidence-based decision-making.
Creating a Multidimensional Framework	Combine Complexity-Conflict and Agreement-Level dimensions to classify environments into five distinct types (Type 0 to Type IV). This multidimensional approach enables nuanced analyses of WickedVUCA® scenarios, integrating cognitive, affective, and conative factors for a more holistic understanding.
Theoretical Foundation	Ground the typology in established literature, including complexity theory, systems thinking, and stakeholder analysis, to ensure conceptual depth and reliability.
Practical Application Across Domains	Apply the typology in diverse settings—business strategy, organizational development, public policy, education—allowing users to diagnose challenges, compare scenarios, and adapt interventions accordingly.
Adaptability and Evolution	Incorporate feedback loops from practitioners and researchers, as well as new data and changing conditions, to refine the typology’s criteria and metrics. This ongoing adaptation ensures continued relevance and effectiveness as global circumstances evolve.
Accessibility and Usability	Present the typology in clear, actionable terms. Provide guides, examples, and training materials that help academics, business leaders, policymakers, and other practitioners apply it easily and interpret results confidently.
Interdisciplinary Integration	Draw from multiple disciplines—economics, sociology, ecology, engineering, psychology—to enrich the typology and ensure it reflects the interconnected nature of Wicked Problems and VUCA contexts. By

	recognizing diverse perspectives, it supports more innovative, systemic solutions.
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Appendix B 1 WickedVUCA®: Putting Typologies to Work

By adhering to these principles, the WickedVUCA® Typology remains a robust, evolving, and human-centered framework. It leverages OM™ (8) for data-driven insights, acknowledges stakeholders' cognitive, affective, and conative (4) dimensions, and promotes adaptive, interdisciplinary approaches. In doing so, it aligns theory and practice, guiding decision-makers as they navigate the turbulence and complexity that define our contemporary world.

Appendix C - Theoretical Underpinnings

The WickedVUCA® Typology rests on a rich theoretical foundation that blends insights from Wicked Problems (2) and VUCA (10) frameworks with a range of complementary theories. Each perspective contributes to understanding the intricate, evolving nature of contemporary challenges and informs the typology's core dimensions—Complexity-Conflict and Agreement-Level—along with its use of Object Measurement™ (OM™) (8) and the integration of cognitive, affective, and conative (psychic) (4) functions. Together, these theories guide decision-makers in diagnosing, strategizing, and continuously adapting to the complex scenarios they face.

Foundation	Description
Wicked Problems and VUCA Concepts	Wicked Problems (2): Highlight that certain issues are inherently complex, socially entangled, and resistant to straightforward solutions, demanding systemic thinking and inclusive stakeholder engagement. VUCA (10): Underscores the volatile, uncertain, complex, and ambiguous nature of modern environments, necessitating agility, adaptability, and iterative learning.
Systems Thinking	Encourages viewing problems as interconnected systems rather than linear cause-effect chains. This approach counters LAMO (Linear, Anthropocentric, Mechanistic, Ordered) (7) thinking and employs DSRP (Distinctions, Systems, Relationships, Perspectives) (11) to reveal hidden linkages and ripple effects. For example, recognizing how changing climate patterns (a systems perspective) affect supply chains can help explain rising stakeholder conflicts over resource allocation.
Complexity Theory	Examines how numerous interacting components give rise to emergent, unpredictable patterns. Complexity theory (6) illuminates why seemingly simple interventions may have unforeseen consequences. In the typology's Complexity-Conflict dimension, this theory explains how multiple stakeholder interests and shifting conditions can intensify conflicts or produce unexpected alliances.
Psychic Functions	Incorporates cognitive (thinking), affective (feeling), and conative (willing/acting) elements to acknowledge that human perceptions, emotions, and motivations shape how stakeholders interpret and respond to challenges. For instance, in a public health crisis, differing emotional responses to risk impact agreement levels and the feasibility of proposed solutions.
Stakeholder Theory in Wicked Problems	Stresses the importance of including diverse voices and interests to capture the full complexity of a problem. Stakeholder theory's influence is evident in the

	Agreement-Level dimension, where the extent of alignment or discord among varied parties—such as government agencies, NGOs, and local communities—directly affects strategic options.
Conflict Resolution and Negotiation	Explores methods for managing and resolving disputes when multiple interests collide. In scenarios like international climate negotiations, conflict resolution strategies inform how the Complexity-Conflict dimension is interpreted, guiding choices that mitigate tensions and foster mutually acceptable outcomes.
Adaptation and Evolutionary Theory	Suggests that organizations and systems can evolve their strategies in response to changing conditions. The WickedVUCA® Typology's iterative refinement process, supported by OM™, mirrors evolutionary adaptation by continually integrating new data, user feedback, and emerging insights.
Object Measurement™ (OM™)	Provides quantifiable metrics to measure attributes like complexity, volatility, and stakeholder alignment. OM™ (8) acts as a feedback loop: as conditions change, organizations reassess key metrics, refining their approaches over time. For example, if OM™ indicates stakeholder trust is declining, decision-makers can adjust strategies before conflict escalates.

Appendix C1 WickedVUCA® Theoretical Foundation

Consider the citywide housing shortage scenario:

- **Systems Thinking** maps out how transportation, employment opportunities, cultural preferences, and policy frameworks interconnect.
- **Complexity Theory** explains why one well-intentioned policy can have cascading, unpredictable effects.
- **Stakeholder Theory and Conflict Resolution** guide the involvement of various groups—residents, developers, and activists—ensuring their voices shape more inclusive solutions.
- **Psychic Functions** remind leaders that the emotions and motivations of these groups profoundly influence what strategies will gain traction.
- **Adaptation Theory and OM™** ensure that as market conditions, regulations, or demographics shift, policies can be revised. For instance, regular OM™ assessments may reveal emerging frustrations or improve clarity, prompting timely adjustments.

This integrated, theory-driven foundation ensures the WickedVUCA® Typology is conceptually robust and practically applicable. It enables leaders, policymakers, and communities to address multifaceted challenges—like a housing shortage—not only by understanding the complexity at hand but by navigating uncertainty, fostering collaboration, and adapting strategies as circumstances evolve.

Appendix D – Object Measurement™

Introduction

Integrating Object Measurement™ (OM™) (8), developed by Scott E. Donaldson and Stanley G. Siegel,⁴ into the WickedVUCA® Typology significantly enhances managing and understanding complex problems within volatile, uncertain, complex, and ambiguous (VUCA) (2) environments. Their approach, focusing on quantifying an object (real or abstract) through a multidimensional measure, is crucial in transforming the abstract complexities of WickedVUCA® scenarios into tangible, quantifiable entities.

The essence of WickedVUCA® lies in its ability to categorize problems based on the degree of complexity, uncertainty, cognitive conflict, and affective conflict they present. By applying OM™ (8) to WickedVUCA® scenarios, one can create a structured, measurable framework that quantifies these scenarios, thus enabling more objective assessments and informed decision-making.

By using a measurable framework, stakeholders can evaluate the effectiveness of their strategies in managing different types of WickedVUCA® problems and prioritize interventions based on quantifiable data. Such measurement allows for systematically applying and evaluating complex problems in diverse contexts. This approach not only aids in better management, but also ensures that the strategies employed are adaptable and effective across different operational landscapes.

Overall, integrating OM™ (8) with WickedVUCA® typologies provides a comprehensive framework that aids organizations in navigating the intricate challenges posed by a VUCA (2) world, facilitating strategic adaptations and continuous improvement in problem management practices.

OM™ Methodology

OM™ (8) uses the concept of an “index” as a convenient way to quantify something with multiple dimensions. The mathematical and scientific disciplines often handle multidimensional quantities with entities known as “vectors.”

As shown in **Exhibit D-1**, the idea for an OM™ Index (8) derives from the concept of the length of a line in space. The exhibit shows how the length of a line can be portrayed in spaces of various dimensions as the magnitude of a vector representing displacement.

For example, displacements are represented in three-dimensional space by specifying a triple of numbers (X_1, X_2, X_3), which defines the displacement of a point with respect to three mutually perpendicular axes. These axes establish a scale of values in this space.

This notion of displacement in space is used to derive the idea of an OM™ Index (8). The space of interest is the Index *dimension* space or Index *attribute* space. The axes in this space, also called the Index “integrity” space, are attributes.

⁴ Scott Donaldson and Stanley Siegel developed the OM™ methodology in late 1990s and applied it within numerous government, commercial and academic environments. (Material adapted from *Successful Software Development*, 2nd edition. (Upper Saddle River, NJ: Prentice Hall PTR, 2001); *Enterprise Cyber Security: How to Build a Successful Cyberdefense Program Against Advanced Threats*. (New York, NY: Apress, 2015).

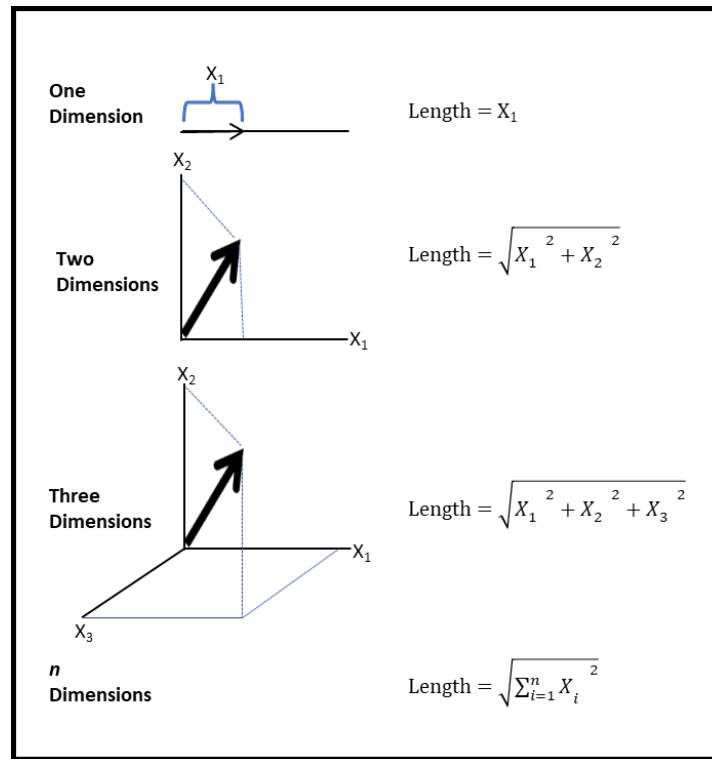


Exhibit D-1. This exhibit shows how the length of a line can be portrayed in spaces of various dimensions as the magnitude of a vector representing a displacement.

One dictionary definition of “integrity”⁵ is *completeness*. For OM™ (8), completeness is tied to multiple perspectives and attributes. The integrity concept allows for blending multiple perspectives and attributes.

The tail of the vector represents the starting point, and the head of the vector represents the destination point. The length of the **vector** represents the distance between the starting point and the destination point. Similarly, the **OM™ Index** is the **length** of a line in n dimensions (8).

Exhibit D-2 illustrates a general three-dimensional Index integrity space and a three-dimensional WickedVUCA® Index integrity space.

⁵ It should be noted that the dictionary gives a spectrum of definition for *integrity*. For example, one dictionary defines the word *integrity* as follows: 1. Firm adherence to a code of especially moral or artistic value: INCORRUPTIBILITY; 2. An unimpaired condition: SOUNDNESS; and 3. The quality or state of being complete or undivided: COMPLETENESS. *Merriam-Webster's Collegiate Dictionary, Tenth Edition* (Springfield, MA: Merriam-Webster, Inc., 2000).

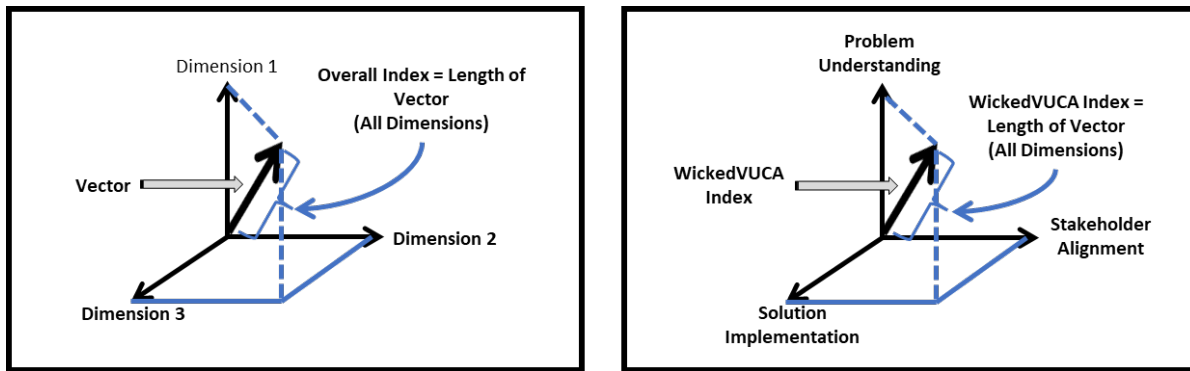


Exhibit D-2. *OM™ uses the notion of vector length to combine multiple dimensions into a single quantity called an index (8).*

The left-hand side of **Exhibit D-2** depicts how OM™ uses the notion of a **vector** to derive an **overall index (8)**. The right-hand side depicts a corresponding example WickedVUCA® Index based on three WickedVUCA® Key Areas.

It is recognized that the attributes chosen to fold into someone’s notion of “integrity” would not necessarily be the same as the attributes that others would choose. Consequently, OM™ allows others to mold the integrity concept to their needs.

OM™ Index Equation

Based on the notion of vector length previously introduced, **Exhibit D-3** depicts the general OM™ Index Equation, where vector dimensions are expressed in terms of object attributes (8).

$$\text{OM}^{\text{TM}} \text{ Index} = \frac{\sqrt{\sum_{i=1}^n w_i^2 at_i^2}}{\sqrt{\sum_{i=1}^n w_i^2 (\text{maximum}[at_i])^2}}$$

where at_i = object attribute measurement
 n = number of object attribute measurements
 w_i = weighting factor for object attribute at_i
 $\text{maximum}[at_i]$ = maximum value of at_i

Exhibit D-3. *The OM™ Index equation combines multiple object attributes (dimensions) into a single number value (8).*

Each attribute can be weighted, and there are no mathematical limits to the number of attributes. However, remember that measurement programs will fail if they are too demanding. Also note the denominator is set up to normalize the OM™ Index (in other words, restrict the OM™ range from zero to one). Removing the denominator elements this normalization. **Exhibit D-4** depicts three examples of how the OM™ Index equation can be defined (8).

Example 1: Equal weighting factors $n = 5$ all $w_i = 1$, all maximum $at_i = 1$	$OM^{\text{TM}} \text{ Index} = \frac{\sqrt{\sum_{i=1}^5 at_i^2}}{\sqrt{5}}$
Example 2: One attribute is twice as important as any other attribute $n = 5$ all $w_i = 1$ except for $w_1 = 2$ all maximum $at_i = 1$	$OM^{\text{TM}} \text{ Index} = \frac{\sqrt{4at_1^2 + \sum_{i=2}^5 at_i^2}}{\sqrt{8}}$
Example 3: One or more attributes are suppressed $n = 5$ all $w_i = 1$ except for $w_2 = w_3 = 0$ all maximum $at_i = 1$	$OM^{\text{TM}} \text{ Index} = \frac{\sqrt{\sum_{i=1,4,5} at_i^2}}{\sqrt{3}}$

Exhibit D-4. The OM™ Index Equation provides a generalized measurement methodology that can be tailored to specific measurement requirements (8).

OM™ Approach

The OM approach is designed to keep the measurement process straightforward, well-understood, and mutually agreed to by participating parties—otherwise, it will die quickly. **Figure D-5** conceptually depicts the OM approach (8).

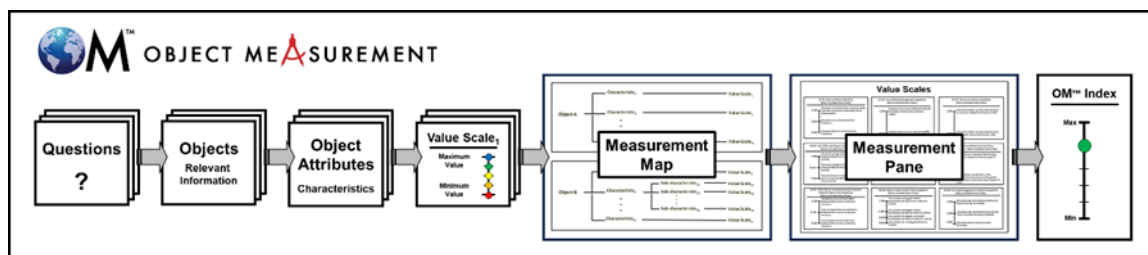


Exhibit D-5. OM™ combines multiple individual measurements into a single number or Index (8).

Simply stated, the OM™ approach consists of the following steps:

- **Step 1:** Define the question(s) the organization wants to answer.

- **Step 2:** Select the appropriate objects(s) to measure for collecting relevant information to answer the defined question(s).
- **Step 3:** For each object, define object attribute(s) to measure.
- **Step 4:** For each object attribute, create a corresponding value scale with tick marks and tick marks descriptions in plain, unambiguous language.
- **Step 5:** Create an OMTM measurement map to help explain the measurement scope (i.e., overall index to be calculated) in terms of selected objects, corresponding attributes, and value scales.
- **Step 6:** Create measurement pane(s) to help record, visualize, and preserve value scale measurements.
- **Step 7:** Measure each object attribute by (a) using expert judgment to form an opinion and matching the opinion with the appropriate value scale(s) and tick mark value(s), or (b) matching the observed data or observed behavior with the appropriate value scale(s) and tick mark value(s).
- **Step 8:** Substitute the selected tick mark numeric values into an appropriate OMTM equation to calculate the overall index or OM Index (8).

Even though OMTM can measure almost anything, OM is not a measurement bullet. OM applies to efforts where multidimensional measurements are desired (8).

OMTM Value Scales

Value scales help associate an organization's vocabulary (language) with measurement. The challenge is establishing value scales relatively painlessly to make measurements based on these value scales. In the end, an organization needs meaningful measurements. *Meaningful* here means the organization uses the measurements to determine whether and where improvements are needed. **Figure D-6** shows three types of OMTM value scales: discrete, binary, and sliding (8).

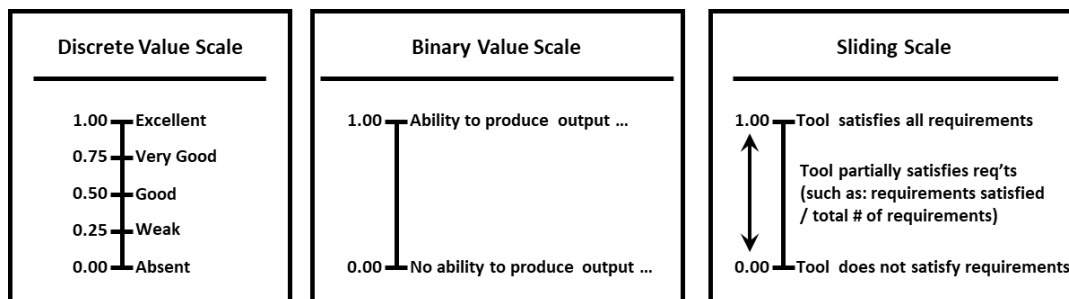


Exhibit D-6. A value scale is defined by numbers associated with expert judgment or observable data (8).

Value scales:

- Have minimum and maximum numeric values and plain language descriptions on the tick-mark labels.
- Do not have to be restricted to the numeric range of zero (0.00) to one (1.00) and can accommodate any numeric range.
- Can allow for distinct interim numeric values and corresponding tick-mark labels.
- Can allow for binary values to measure on/off or yes/no or desired behavior/lack of desired behavior and can suggest an organization places importance on the desired behavior.

- Can allow for a numeric value based on a ratio, such as percent-complete values.

The **Exhibit D-6** value scale examples, the minimum tick-mark labels generally indicate not doing something. In contrast, the maximum tick-mark labels generally indicate the opposite of the minimum ones (8).

OM™ Measurement Map

To help define and visualize the value scales for each object to be measured, it is often convenient to create an OM™ Measurement Map. **Exhibit D-7** depicts two generic measurement maps that can be used in concert with the OM Steps described above (for example, Step 3, Step 4, and Step 5) (8).

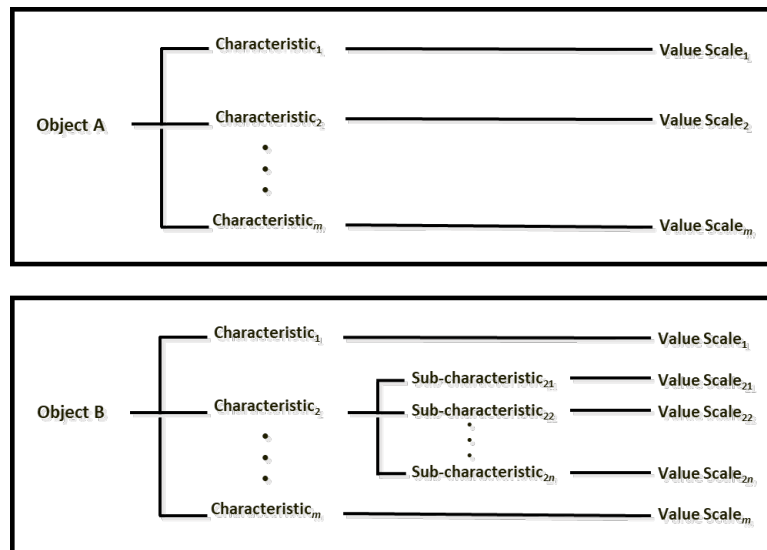


Exhibit D-7. OM™ Measurement Maps help define the appropriate value scale to measure an object (8).

The upper half of **Exhibit D-7** depicts Object A in terms of a number of characteristics and corresponding value scales (one characteristic and one corresponding value scale). The lower half of **Exhibit D-7** depicts Object B in terms of characteristics, sub-characteristics, and corresponding value scales (in other words, one characteristic and one corresponding value scale; one characteristic with multiple sub-characteristics and corresponding value scales, and another characteristic and another value scale). Measurement maps define the value scale at the lowest level (far right-hand side of the map). Furthermore, a measurement map helps define objects in unambiguous terms and represents, in part, the scope of what is to be measured.

Observation

After you have decided on what questions you want answered and what objects you want to measure, you need to decide on the granularity of your measurements. It is recommended that you do not select too many object attributes at first. You do not want the measurement program to take on a life of its own. You need to collect data and determine what attributes are worth measuring. As the number of attributes increases, each attribute's contribution to the measurement is reduced accordingly. Still, you do not want too few, or else you may not gain significant insight into the answers to your questions.

The tables provided in this appendix serve as practical tools for assessing and quantifying the complexities of WickedVUCA® challenges. They offer a structured way to apply Object Measurement™ principles to real-world scenarios, making the abstract elements of these challenges more tangible and actionable.

The measurement tables in Appendix D operationalize the principles outlined in Appendix D – Object Measurement™, offering practical applications for evaluating WickedVUCA® scenarios. By linking these measurable attributes directly to the foundational concepts, Appendix E provides a clear pathway for implementing data-driven strategies in complex environments.

Object Measurement Attributes

Exhibit D-8 provides a comprehensive breakdown of the key attributes used in the Object Measurement™ (OM™) methodology to quantify the complexities of WickedVUCA® challenges. These attributes—such as **Alignment with Stakeholder Needs**, **Adaptability**, **Resilience**, **Collaboration Quality**, and more—serve as essential metrics for assessing how effectively a solution addresses the dynamic elements of Wicked Problems and VUCA environments. Each attribute is linked to specific dimensions within the WickedVUCA® Typology, enabling a structured and data-driven approach to problem-solving and strategy development.

This table illustrates the practical application of the OM™ principles, guiding stakeholders in evaluating solutions against measurable criteria to ensure that responses are robust, adaptable, and aligned with stakeholder expectations.

Measure	Description	Dimensions Addressed
Alignment with Stakeholder Needs	Measures how well the solution meets diverse stakeholder needs.	Agreement-Level, Cognitive and Affective Elements
Adaptability	Measures the solution's ability to adapt to changing circumstances.	Complexity-Conflict, Volatility, Uncertainty
Resilience	Measures the robustness of the solution in facing unforeseen challenges.	Complexity-Conflict, Ambiguity, Uncertainty
Collaboration Quality	Measures the effectiveness of stakeholder collaboration.	Agreement-Level, Cognitive and Conative Elements
Clarity and Communication	Measures the degree of clarity in problem definition and communication.	Agreement-Level, Ambiguity
Volatility	Measures the rate and unpredictability of change impacting the problem.	Complexity-Conflict, Adaptability
Uncertainty	Measures the extent to which future outcomes are unpredictable.	Complexity-Conflict, Resilience
Ambiguity	Measures the vagueness and potential for multiple interpretations.	Clarity and Communication, Resilience

Measure	Description	Dimensions Addressed
Cognitive Element	Measures the stakeholders' shared understanding and thought processes.	Alignment with Stakeholder Needs, Collaboration Quality
Affective Element	Measures the emotional alignment and buy-in of stakeholders.	Alignment with Stakeholder Needs, Collaboration Quality
Conative Element	Measures the will and determination of stakeholders to act.	Collaboration Quality, Resilience

Appendix D 1 Object Measurement Attributes

Wicked Problem Object Measurement Attributes

Exhibit D-9 details the application of Object Measurement™ (OM™) specifically for **Wicked Problems**, providing a structured approach to assess their unique attributes. This table outlines key measurement criteria, such as **Clarity and Communication, Adaptability, Resilience, and Collaboration Quality**, which are crucial for managing the inherent complexity and conflict within Wicked Problems. By linking each attribute to the core characteristics of Wicked Problems, the table guides practitioners in evaluating solutions and strategies through objective, quantifiable metrics.

This targeted approach ensures that stakeholders can systematically address the evolving and multifaceted nature of Wicked Problems, enhancing their ability to develop adaptive and resilient solutions.

Wicked Planning Property (2)	Object Measurement	Attributes	Example Strategies
No Definitive Formulation	Assess clarity and communication to ensure problem statements are well-defined given inherent ambiguity.	Clarity and Communication, Cognitive Element	Regular stakeholder workshops to refine problem statements
No Stopping Rule	Measure adaptability and resilience to ensure solutions can evolve and adjust to ongoing feedback.	Adaptability, Resilience	Implement agile project management methodologies
Solutions are Not True-or-False, but Good-or-Bad	Evaluate alignment with stakeholder needs to capture the subjective nature of solution effectiveness.	Alignment with Stakeholder Needs, Affective Element	Use stakeholder surveys and feedback loops
No Immediate and No Ultimate Test of a Solution	Track long-term performance criteria and iterative feedback to monitor ongoing impact of solutions.	Adaptability, Resilience, Collaboration Quality	Establish continuous monitoring and evaluation processes

Wicked Planning Property (2)	Object Measurement	Attributes	Example Strategies
Every Solution is a "One-Shot Operation"	Assess robustness of the solution and quality of stakeholder collaboration to minimize risks of single attempts.	Resilience, Collaboration Quality	Conduct risk assessments and scenario planning
No Exhaustively Describable Set of Solutions	Measure flexibility of solution approaches and openness to innovative, non-traditional methods.	Adaptability, Cognitive Element	Encourage cross-disciplinary brainstorming sessions
Every Wicked Problem is Essentially Unique	Evaluate how well the solution is tailored to the specific context and uniqueness of the problem.	Alignment with Stakeholder Needs, Cognitive Element	Customize solutions based on thorough contextual analysis
Every Wicked Problem Can Be Considered a Symptom of Another Problem	Assess interconnectedness of issues and extent to which solutions address broader systemic problems.	Resilience, Clarity and Communication	Apply systems thinking to identify and address root causes
The Existence of a Discrepancy Can be Explained in Numerous Ways	Measure stakeholder alignment and diversity of perspectives to ensure comprehensive understanding.	Cognitive Element, Affective Element	Facilitate diverse stakeholder forums to gather multiple viewpoints
The Planner Has No Right to Be Wrong	Evaluate thoroughness of planning and degree of stakeholder involvement to mitigate risks of failure.	Collaboration Quality, Conative Element	Develop thorough planning processes with broad stakeholder engagement

Appendix D 2 Wicked Problem Object Measurement Attributes

VUCA Object Measurement Attributes

Exhibit D-10 presents the Object Measurement™ (OM™) framework as applied to the core attributes of VUCA environments—**Volatility, Uncertainty, Complexity, and Ambiguity**. This table provides a detailed outline of measurement criteria that help quantify these attributes, enabling a systematic evaluation of how well strategies and solutions address the dynamic and unpredictable nature of VUCA scenarios. By using these specific metrics, organizations can better understand and manage the intricate challenges that arise in rapidly changing and uncertain environments.

This table serves as a practical guide for assessing the effectiveness of responses to VUCA conditions, ensuring that decision-making processes are grounded in robust, data-driven insights.

VUCA Element (10)	Object Measurement	Attributes	Example Strategies
Volatility	Assess rate of change and organization's ability to adapt quickly to sudden shifts.	Adaptability, Volatility	Develop rapid response teams and contingency plans
Uncertainty	Measure effectiveness of information gathering and ability to make informed decisions despite incomplete data.	Uncertainty, Cognitive Element	Invest in data analytics and scenario analysis
Complexity	Evaluate capacity to manage interconnected parts and efficiency of internal operations.	Complexity-Conflict, Collaboration Quality	Use integrated management systems and foster interdepartmental communication
Ambiguity	Assess clarity of communication and ability to experiment intelligently to find effective solutions.	Ambiguity, Clarity and Communication	Implement iterative prototyping and feedback mechanisms

Appendix D 3 VUCA Object Measurement Attributes

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