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METACOMMUNICATIONS AND ARTIFICIAL INTELLIGENCE: THE ECPF APPROACH FOR INTERNATIONAL MANAGEMENT

Lushyn, Pavlo, Sukhenko, Yana. Metacommunications and Artificial Intelligence: The ECPF Approach for International Management.

Introduction. The article addresses the development of metacommunicative competence among international management professionals amid rapid AI integration. Based on analysis of contemporary human-AI interaction research, it establishes theoretical foundations of metacommunication in cognitive heterogeneous environments and substantiates the eco-facilitative approach as a methodological basis for developing this competence in hybrid management contexts.

Aim. The aim is to conceptualize metacommunication as a key mechanism for interacting with AI agents within interface-based reality, and to justify the application of ECPF approach for cultivating management competencies in international contexts and enabling interactions with agents of different nature.

Methods. Interdisciplinary theoretical analysis (psychology, management, post-humanist philosophy, communication studies) combined with logical-semantic modeling, comparative analysis of classical and contemporary approaches to metacommunication, interpretive reconstruction to adapt eco-facilitative principles, conceptual modeling of managerial metacommunicative competence integrating scholarly source analysis, practice synthesis, AI interaction interpretation, and insights from educational experiments.

Results. Human-AI interaction reveals the need for inter-agent sensitivity as capacity to coordinate hybrid dialogue. A metacommunicative competence model encompassing cognitive, communicative, and ethical components was developed, metacommunication as a meaning-making mechanism for responsible multi-agent management was established and tools for ECPF sessions and AI partnership simulations were proposed.

Conclusions. Metacommunication as inter-agent sensitivity enables adaptive AI interaction through meaning-generation. ECPF approach provides ecologically balanced framework for facilitative leadership in hybrid organizations. The development creates methodological foundation for educational programs and next-generation management tools in human-AI environments.

Keywords: metacommunication, ECPF, AI, cognitive interfaces, hybrid competence, inter-agent sensitivity, post-humanist leadership, adaptive management, digital agent, interface-based interaction, hybrid learning

Лушин Павло, Сухенко Яна. Метакомунікація & AI: ECPF-підхід для міжнародного менеджменту.

Вступ. Стаття розглядає проблему розвитку метакомунікативної компетентності фахівців міжнародного менеджменту в умовах стрімкого впровадження AI. На основі аналізу сучасних досліджень взаємодії людини з AI формуються теоретичні засади метакомунікації в когнітивно-неоднорідних середовищах та обґрунтовується екофасилітативний підхід як методологічна основа розвитку цієї компетентності в гібридних управлінських контекстах.

Мета. Мета дослідження полягає в концептуалізації метакомунікації як ключового механізму взаємодії з агентами штучного інтелекту в умовах інтерфейсної реальності, в обґрунтуванні застосування екофасилітативного підходу та методу ECPF для розвитку управлінських компетентностей у сфері міжнародного менеджменту та налагодження взаємодії з агентами іншої природи.

Методи. Міждисциплінарний теоретичний аналіз (психологія, менеджмент, постгуманістична філософія, комунікативістика), поєднаний з логіко-смысловим моделюванням, порівняльний аналіз класичних і сучасних підходів до метакомунікації, інтерпретативна реконструкція понять для адаптації екофасилітативних принципів, концептуальне моделювання метакомунікативної компетентності менеджера, яке об'єднує аналіз наукових джерел,

узагальнення практик, інтерпретацію прикладів взаємодії з AI та висновки з освітніх експериментів.

Результати. Виявлено, що взаємодія з AI потребує міжагентної чутливості як здатності координувати діалог у гібридному середовищі. Розроблено модель метакомунікативної компетентності менеджера, що включає когнітивний, комунікативний та етичний компоненти. Обґрунтовано роль метакомунікації як сенсотворчого механізму відповідального управління у мультиагентному середовищі. Запропоновано практичні інструменти розвитку компетентностей через ECPF-сесії та кейс-симуляції з AI як партнером прийняття рішень.

Висновки. Концептуалізовано метакомунікацію як міжагентну чутливість, що забезпечує адаптивну взаємодію з AI на основі сенсотворення. ECPF-підхід формує екологічно збалансовану рамку для фасилітативного лідерства в гібридних організаціях. Розробка створює методологічну основу для освітніх програм та управлінських інструментів нового покоління в людино-AI середовищах.

Ключові слова: метакомунікація, ECPF, AI, когнітивні інтерфейси, гібридна компетентність, міжагентна чутливість, постгуманістичне лідерство, адаптивне управління, цифровий агент, інтерфейсна взаємодія, гібридне навчання

Introduction.

1. Problem Statement. The managerial processes of the 21st century are undergoing profound transformations under the conditions of an unstable and unpredictable VUCA environment, along with the challenges of globalization, multiculturalism, and the rapid integration of artificial intelligence (AI). This is especially clear in the field of international management, where not only the content of managerial tasks is changing, but also the nature of communication. AI is increasingly functioning not merely as a tool but as an agent of interaction—a participant in decision-making, strategy modeling, and communicative exchange. Under these circumstances, traditional communication models prove insufficient. They do not account for the interface-based nature of interaction with AI, which is realized through large language models that run according to logic fundamentally different from that of human cognition. This needs a rethinking of the concepts of dialogue and mutual understanding, which are now shaped within a shared field of human and algorithmic intelligence.

In this context, metacommunication (MC) gains particular significance as a human ability to reflect upon, regulate, and coordinate the interaction process itself—accounting for emotional tone, context, intentions, and implicit cues. As a procedural form of communicative reflection, metacommunication is essential for effective management within cognitively heterogeneous environments where people, artificial agents, and multi-agent teams collaborate. Despite growing attention to the issue of metacommunication amid digital transformation, the question of how to develop this ability as a professional competence remains unresolved—especially when considering individual characteristics, emerging forms of agency, and the dynamics of interaction within hybrid ecosystems.

The eco-facilitative approach and the method of Eco-Centered Psychological Facilitation (ECPF), which focuses on activating the inner resources of individual self-organization under conditions of instability and high-dynamic interaction, seem promising for responding to this challenge (Lushyn, 2003; Lushyn & Sukhenko, 2023; 2024). ECPF may serve as a conceptual foundation for analyzing and developing metacommunicative competence among professionals in international management in the age of artificial intelligence.

2. Review of Recent Research. In contemporary scholarly literature, increasing attention is being given to the challenges of human interaction with AI agents—particularly in the domains of management, delegation of authority, ethical risks, and communicative effectiveness. While some authors have raised the issue of metacommunication, its systematic conceptualization in relation to the development of MC competence among professionals running in hybrid environments stays insufficiently explored.

Zarkowski's (2019) study proved that robots adhering to social norms of communication help reduce misunderstandings and enhance interaction efficiency—highlighting the importance of metacommunicative cues in AI-mediated communication. In the works of Demiray & Misnevs (2016) and Misnevs & Demiray (2017), the role of metacommunication in managing

software projects, especially in high-risk conditions, is examined. The authors argue that the use of metacommunicative practices—such as clarifying context, goals, and intentions—lowers the likelihood of human error and improves the quality of team interaction within complex IT systems. While the proposed models are of practical value for training management personnel, they do not address the systemic development of competence in hybrid teams where interaction occurs with AI agents.

The study by Freisinger & Schneider (2024) reveals that in contexts where decision-making is delegated to AI systems—particularly in complex or ethically sensitive situations—there is often a divergence between the perspectives of decision-makers and those affected by the decisions. While the former tends to place less trust in AI under “surrogate” conditions (when decisions are not made for themselves), the latter do not always view AI as a less desirable agent than a human. Strunk et al. (2024) emphasize that with the rise of agentic information systems (such as AI assistants or autonomous vehicles), there is a growing need to rethink the logic of delegation. This rethinking must consider the characteristics of the task, system properties, and the human factor—together forming the basis for deciding whether authority should be transferred to an AI agent. Heyder, Passlack, and Posegga (2023) stress that effective human–AI interaction in organizational settings requires ethical governance rooted in a socio-technical approach. The authors propose a theoretical framework that explains the interdependence between deontological ethics (duty-based) and virtue ethics (focused on cultivating inner moral qualities) within socio-material systems, where human and artificial agency operate as a unified whole.

As Bisconti (2021) notes, the absence or incompatibility of metacommunicative elements in interactions with robots can lead to asymmetric communication patterns, which not only complicate human–robot relations but may also extend to human–human interaction—altering its structure and psychological dynamics. Van Quaquebeke and Gerpott (2023) challenge the traditional notion of leadership as an exclusively human function, arguing that algorithms driven by artificial intelligence may not only automate managerial roles but potentially meet employees’ psychological needs more effectively. This challenge to the anthropocentric paradigm of leadership introduces new demands for rethinking the human role in the future structure of organizational governance. Sauer and Burggräf (2024) proposed a structured approach to defining the optimal level of collaboration between humans and AI in production management. Their system accounts for decision complexity, error sensitivity, and process variability, allowing for precise calibration of the balance between automation and human intervention. This approach exemplifies hybrid intelligence, oriented toward increasing efficiency, accuracy, and adaptability in dynamic environments.

Bolón-Canedo et al. (2024) examine Green Artificial Intelligence as a direction that combines energy efficiency, accessibility, and environmental responsibility—emphasizing the strategic alignment of AI practices with the principles of sustainable development. Of particular importance is the concept of humanistic leadership, grounded in the principle of the “double bottom line,” which integrates economic efficiency with social responsibility. Leaders are expected not only to pursue profit but also to enhance human well-being, foster creativity, develop emotional intelligence, and strengthen the capacity to solve complex problems in response to AI-related challenges—such as job displacement, algorithmic bias, and threats to privacy. Moreover, this approach calls for intensified cross-sectoral collaboration among political, educational, and business communities (World Economic Forum, 2025).

Lushyn & Sukhenko (2024) extend the eco-facilitative paradigm to human–AI interaction within the field of psychological education, exploring the hybrid ecosystem of human and AI. Special attention is given to a comparative analysis of essays written by students and those generated by chatbots Claude 2.1 and ChatGPT 4. This analysis enabled the identification of criteria for distinguishing between human- and machine-produced texts—particularly in terms of depth of critical thinking, emotional resonance, and originality. The study presents the instructor’s role as that of a facilitator in the emerging educational environment and introduces new professional roles such as AI engineer, AI user-facilitator, and AI facilitator. The authors do not view AI as a threat, but rather as a catalyst for paradigmatic change in professional training,

offering new prospects for individualized, adaptive, and ethically grounded forms of education in socio-technical fields—especially psychology.

Thus, the reviewed studies outline critical aspects of human–AI interaction—such as social signaling, delegation, hybrid agency, ethics, and emerging professional roles. At the same time, they reveal the absence of an integrated interdisciplinary approach to developing metacommunicative competence among international-level professionals working in technologically mediated environments.

3. Theoretical Background of Metacommunicative Interaction in the Context of AI.

This study draws on interdisciplinary approaches that conceptualize metacommunication as a complex reflexive process ensuring the alignment of meanings in interaction—especially under conditions of cognitive heterogeneity and post-humanist shifts. A review of key concepts, models, and terms that directly underpin the development of metacommunicative competence in human–AI interaction reveals several foundational pillars of this research. These span classical views on communication, contemporary linguistic and pragmatic interpretations of metacommunication, and innovative approaches to interaction in the context of digital agency, hybridity, and the post-humanist environment.

The classic study by Watzlawick, Bavelas, and Jackson (1967) laid the groundwork for understanding metacommunication as a fundamental mechanism for regulating human interaction. The authors describe communication not merely as content exchange but as a structure shaped by continuous mutual interpretation, including at the metalevel—where hidden signals, intonation, pauses, or nonverbal cues play a crucial role in keeping relationship integrity and systemic stability in interaction. This interdependence of communicative levels is key to understanding not only interpersonal communication but also human–machine interaction, especially within the growing complexity of sociotechnical systems.

Craig (2015) affirms the relevance of the constitutive metamodel—an approach that views communication not merely as the transmission of information but as the construction of social reality, including the definition of relationships, roles, and norms of interaction. Within this framework, metacommunication functions as a key mechanism of reflection, enabling participants to consciously adjust and reshape the format of their interaction. This approach is especially pertinent to the analysis of human–AI interaction, as it reveals how the structures of such interaction do not simply mirror reality but actively create new modes of coexistence—whether hybrid, collaborative, or asymmetrical.

Bahri and Williams (2017) emphasize that excessive fragmentation in approaches to studying metacommunication may undermine its integrative nature. In their view, a comprehensive understanding of communicative interaction is possible only when all its components—verbal, nonverbal, and contextual—are considered simultaneously as interrelated and interdependent elements of a single unified process.

Grabovska (2018) defines metacommunication as communication that goes with the primary process of interaction, finding four basic approaches to its study within linguistics. She emphasizes its connection to metadiscourse and metatext, highlighting its regulatory function in social interaction and its role in setting the emotional tone of communication.

D. Sanford and Roach (1987) developed the theory of “dialogue structures,” which illustrates how metacommunication functions as a mechanism for managing relationships between participants in communicative interaction. The authors show that metaknowledge embedded in the structure of dialogue allows for the correct interpretation of even indirect requests, thereby ensuring both flexibility and precision in communication.

Of scholarly interest are the works by Dynel (2023) that examine human interaction with the chatbot ChatGPT as a space for the active expression of users’ metacommunicative and metalinguistic awareness. Based on an analysis of Reddit posts, he shows how, through games, tests, or experiments with ChatGPT, users display a conscious attitude toward language, communicative intentions, discursive frames, and pragmatic meanings. Interaction with AI becomes a kind of metacommunication simulator, where metapragmatics, metadiscourse, metalanguage, and metacommunication intertwine and mutually reinforce one another. In other words, the author proves that AI does not merely respond to queries—it also acts as a catalyst for

users' reflexive language behavior, which is especially significant for developing new communicative strategies in hybrid environments.

As Lamola (2022) notes, the emergence of AI agents necessitates the facilitation of cross-format interaction—between human and machine intelligence—which, in turn, demands a rethinking of the foundations of dialogue, existential presence, and ethics within a posthumanist context.

Braidotti (2013) views the post-human paradigm as an opening toward multiple, hybrid, and non-anthropocentric subjectivities emerging amid global technological shifts. The communicative subject is no longer limited to the human; rather, interaction becomes multilevel, dynamic, and involves the participation of diverse agents, including artificial ones. According to the scholar, post-humanism does not imply a loss of humanity, but instead presents an opportunity to rethink identity, interdependence, and responsibility—encompassing not only humans but also artificial agents, the biosphere, and other forms of life. This approach provides an ethical and ecological framework for understanding new formats of interaction—particularly those between humans and AI.

Lushyn & Sukhenko (2023) propose the concept of eco-psychological facilitation as an innovative Ukrainian approach to fostering personal and social resilience under conditions of uncertainty—particularly within the framework of hybrid education during wartime. The authors present eco-facilitative pedagogy as a means of sustaining rhythmic development (thesis–antithesis–synthesis) and stabilization in crisis situations, emphasizing a non-directive form of learning as a resource for personal self-organization. Their intensive eco-facilitation course is described as a tool for cultivating adaptation skills, autonomy, and the restoration of meaning within a dynamic and socially traumatic environment. This approach is intricately linked to the issue of metacommunication, as it creates conditions for developing the capacity for reflexive adjustment in interaction, contextual recognition of communicative signals, and the maintenance of meaningful dialogue amid cognitive and emotional uncertainty.

Taken together, the presented concepts form a multi-level theoretical foundation for understanding metacommunication as a process that not only enables reflexive regulation of communication but also helps adaptation to new forms of agency within hybrid human–AI interaction. The integration of classical and contemporary approaches—including the eco-facilitative methodology—opens pathways for developing a systemic model of professional metacommunicative competence in the field of international management.

4. Why the Eco-Facilitative Approach Engages Metacommunication in Interaction with AI

In the context of global transformations and the growing influence of artificial intelligence on managerial processes, metacommunication gains particular significance as a tool for adaptation, conscious interaction, and effective decision-making. Contemporary international management is increasingly intertwined with digital agents—including AI models, chatbots, and analytical systems—which are transforming the nature of work processes and managerial practices. Recent studies (Aizenberh, 2024; Hasan & Ojala, 2024; Menzies et al., 2024) confirm this trend, demonstrating the expanding role of AI in strategic planning, analytics, business process automation, human resource management, supply chains, and cross-cultural communication.

However, traditional models of interpersonal communication do not account for the interface-based nature of interaction with AI. This challenge is aptly illustrated by the interface theory of perception proposed by Hoffman (2018). According to this theory, human perception is not a transparent window into reality, but rather an interface adapted for survival and interaction—much like icons on a screen, which conceal the complexity of underlying processes.

Similarly, in interacting with AI, we do not encounter the “reality” of machine intelligence itself, but rather its interface representation, which reinforces the need for metacommunication as a mechanism for coordinating frames, meanings, and modes of interaction with an agent of a different nature. Such a situation may create a communicative vacuum, where managers rely on familiar communication patterns without adapting them to the specific nature of the algorithmic interlocutor. Communication with AI goes beyond the classical

“human-to-human” model and takes on characteristics of multilayeredness, hybridity, and interface-based interaction, which introduces risks such as cognitive disorientation, automated thinking, loss of trust, or the false personification of AI. Accordingly, a demand arises for the development of metacommunicative competence—understood as the ability to recognize, modulate, and adapt one’s own communicative behavior in interaction with agents of a different nature. The eco-facilitative approach proves relevant and promising in this regard, as it is directed not toward control or standardization, but toward supporting adaptation, self-regulation, and self-organization under conditions of uncertainty (Lushyn, 2003; Lushyn & Sukhenko, 2023; 2024).

ECPF pedagogy views technological interaction as an opportunity for the emergence of new forms of reflection, personalized learning, and inter-agent partnership. In this context, AI appears not merely as a tool, but as an interface-based reality that demands from the manager both ethical flexibility and communicative plasticity. The eco-facilitative approach suggests considering such interaction as analogous to a psychological facilitative process: without attempting to change the interlocutor (in this case, AI), the manager creates the conditions for a flexible dialogue that supports the self-regulation of the “human–AI” system. This logic enables the formation of a new type of professional interaction, in which instead of domination or complete subordination of AI, co-attunement takes place within an open and adaptive system. The ECPF approach offers a way of interacting with digital agents that bears a certain analogy to the work of an eco-facilitator in psychological assistance. Just as in the psychotherapeutic process the facilitator does not change the personality but supports its natural tendencies toward self-development, so too in interaction with AI, the manager does not aim for full control over the digital agent but instead creates the conditions for flexible dialogue and adaptive interaction, which fosters self-regulation within the “human–AI” system. The growing relevance of and attention to interaction with agents of a different nature requires not only new techniques but also a rethinking of the very nature of metacommunication. The ECPF approach turns to metacommunication as a means of conscious interaction with agents of a different nature—opening prospects for the formation of a new kind of managerial skillset and for strengthening the resilience of hybrid international organizations.

Within the scope of this article, metacommunication is viewed not merely as a discrete skill, but as a multidimensional phenomenon that manifests in several interrelated forms: as the capacity for context-sensitive interaction, as a process of frame alignment in complex situations, as a professional competence of the manager in a multi-agent environment, and as a personal trait (metacommunicativeness) associated with a disposition toward reflection, emotional regulation, and ethical interaction.

The aim of this study is to conceptualize metacommunication as a key mechanism for interacting with artificial intelligence agents within the framework of interface-based reality, and to justify the application of the eco-centered psychological facilitation (ECPF) approach for cultivating managerial competencies in international management and enabling interaction with agents of a different nature.

The objectives of the study include: identifying the challenges of interface-based interaction in international management in relation to the rise of AI as a communicative agent; defining the conceptual foundations of the eco-facilitative approach and ECPF method in the context of digital agent interaction; revealing the multidimensionality of metacommunication as a foundation of hybrid communicative competence; analyzing the potential of ECPF in developing metacommunicative sensitivity and inter-agent reflective thinking; and demonstrating the practical implications of implementing ECPF in training the next generation of managers to operate effectively in multi-agent systems within the international business environment.

Methods of the research and procedure. The study is theoretical and methodological in nature and is aimed at conceptualizing the phenomenon of metacommunication in interaction with AI from the perspective of the eco-facilitative approach. The methodological foundation consists of a combination of interdisciplinary theoretical analysis (psychology, management, post-humanist philosophy, communication studies) with logical-semantic modeling, which is

used to structure the conceptual relationships between the key concepts of the study. A comparative analysis of classical and contemporary approaches to metacommunication was applied, which made it possible to outline the specifics of its eco-facilitative interpretation. Interpretive reconstruction of the concepts enabled the adaptation of eco-facilitative principles from psychological practice to the field of international management and interaction with digital agents. On this basis, conceptual modeling of the manager's metacommunicative competence was carried out, combining the analysis of scholarly sources, synthesis of practices, interpretation of examples of AI interaction, and conclusions from educational experiments. Such a comprehensive approach allows for a theoretical description of the processes of forming new managerial skills in a hybrid environment.

Results and discussion

1. Eco-facilitation as a Response to the Challenges of Interface-Based Interaction. The implementation of artificial intelligence in management processes introduces not only new tools, but a fundamentally different type of interaction—interface-based, hybrid, and inter-agent—which unfolds through cognitive interfaces, where human intentionality intersects with algorithmic logic. This extends beyond purely technological adaptation and leads to the transformation of thinking, communicative practices, and ethical attitudes toward the “other”, represented by the digital interlocutor whose cognitive architecture differs from that of a human. In this context, the ECPF approach offers a response grounded in working with the dynamics of inner readiness, adaptability, and meaning making. AI is viewed not only as a tool for task execution, but as a partner in hybrid thinking, a co-participant in cognitive processes, requiring communicative coordination at the levels of intentions, contexts, and logic.

An example of such interaction may be a managerial situation involving the implementation of AI-based analytical systems to support decision-making. A manager who operates from an eco-facilitative position does not perceive algorithmic recommendations as unconditional. Instead, they organize metacommunicative discussions within the team, analyze the logic behind the AI-generated conclusions, consider their impact on group dynamics, and adjust the interaction following the value-based and emotional context.

The eco-facilitative approach is based on supporting self-organization, individualized developmental trajectories, and facilitative work with real cases, which are processed through live dialogue and reflection (Lushyn & Sukhenko, 2023). This approach can be adapted to the training of managers who operate in hybrid environments, where AI functions as a fully-fledged interaction agent. It enables the formation of a management culture in which humans and machines do not compete, but rather complement each other, expanding the range of cognitive processing and ethical orientation. In this logic, metacommunicative practices become a kind of “bridge” between several types of intelligence. They ensure not only the transmission of information, but also the alignment of meanings, adaptation to change, and mutual learning. This is especially important in the field of international management, where the challenges of technological nature are compounded by cultural and cognitive heterogeneity—differences in thinking styles, communicative strategies, and decision-making models.

Thus, interaction with AI is viewed not only as a challenge, but as a space for the emergence of a new psychic reality, formed in distributed thinking and hybrid dialogue. In this context, metacommunication serves as a semantic transition beyond traditional communicative frameworks. A manager who acts facilitatively does not merely communicate with an algorithm but goes with the unfolding of the “human–AI” ecosystem as a living process in which both sides of the interaction are transformed. This defines a new dimension of managerial presence—as the capacity to recognize and support the evolution of the system, not merely its functioning.

2. The Eco-Facilitative Perspective on Metacommunication. In classical theoretical approaches, metacommunication was in a certain sense regarded as a secondary phenomenon—a commentary on the main communicative message, a feedback mechanism, or a tool for correcting misunderstandings, for example: “You didn’t understand me” or “I meant something else.” From an eco-facilitative perspective, metacommunication appears as a mechanism of flexible adaptation in a complex, multi-component environment—retuning and aligning contexts within dynamic interaction. Metacommunication in interaction with AI, according to the eco-

facilitative approach, includes not only the regulation of one's own intentions and communicative frames, but also the ability to understand the logic, style, and limitations of the digital interlocutor (e.g., templated responses, sensitivity to query formulation). This ability forms the basis for productive dialogue between heterogeneous agents. Within the eco-facilitative approach, metacommunication is viewed as a process that shapes a new ethical and operational culture of dialogue under conditions of cognitive heterogeneity (human–AI). Such interaction requires the capacity to rethink habitual communication patterns and to free oneself from automatic expectations that have been formed in the context of traditional interpersonal communication.

In contrast to directive approaches to learning, eco-facilitation offers support for the formation of new skills based on the individual pace of development, the level of adaptation, and inner readiness for interaction with new agents. This approach is grounded in the support of internal mechanisms of personal self-organization and in the development of the ability for conscious, adaptive interaction with agents of digital nature—particularly with algorithms and language models. Accordingly, metacommunication allows not only for the clarification of communicative intentions, but also for rethinking the very logic of interaction: for example, while working with a digital agent, a manager may become aware not only of the content of a response but also of the algorithmic logic of analysis that produced it. They may ask themselves: “Why did the system arrive at this conclusion?” and, based on that, adjust the wording of the next query. Such meta-awareness becomes the foundation for effective hybrid interaction.

An important concept in understanding metacommunication is hybrid intelligence. Collaboration between humans and AI has the potential to become synergistic, rather than competitive. Within this paradigm, the manager of the future acts as a facilitator of hybrid thinking, capable of discerning when to delegate routine tasks, and when to engage at the level of meaning and metacommunication. This position reflects a transformation in the very notion of leadership, moving toward a post-humanist paradigm, in which effectiveness is determined not so much by control as by the ability to create productive hybrid ecosystems.

Thus, within the eco-facilitative paradigm, metacommunication appears not as a purely technical skill, but as a characteristic of one's attitude toward interaction, allowing for the maintenance of dialogue even in situations of cognitive or emotional divergence. This forms a methodological foundation for the further implementation of eco-facilitative logic in managerial practices within hybrid and multi-agent environments.

3. Metacommunication as a Skill of Inter-Agent Sensitivity. Metacommunication in interaction with AI requires not only a rational understanding of its functioning principles or algorithmic logic. It also involves developing the ability to interpret implicit signals, to recognize cognitive and emotional patterns, and to reflect on the form of the query, intonation, stylistics, and the overall context of the interaction. In this sense, metacommunication becomes a key instrument for the fine-tuning of dialogue with agents of a different nature. Research confirms that it is precisely the unintentional metacommunicative signals arising during interaction with robotic systems that can significantly affect a person's emotional comfort, level of trust in AI, and the overall effectiveness of communication. This is especially relevant in managerial contexts, where mutual understanding finds the quality of decision-making.

From the perspective of the ECPF approach, metacommunication functions as an integrative element between human subjectivity and algorithmic logic. Such integration reduces the risks of inter-agent ruptures, enhances the accuracy of message interpretation, and makes it possible to create psychologically safe conditions for interaction. In practical terms, managers working with voice assistants or generative text systems often meet AI responses that cause discomfort: an unexpected tone, a delay in response, artificial formality, or overly blunt argumentation. In such cases, it is precisely metacommunicative skill that allows one to clarify the phrasing of the request, adjust the query at the level of intention, or adapt one's own expectations regarding the dialogue with the digital agent.

The development of inter-agent sensitivity involves the ability to “read between the lines”—both in dialogue with a human and in interface-based interaction. This includes the capacity to recognize when AI is running within its competence, and when it begins to

“hallucinate” (i.e., generate plausible but incorrect content due to a lack of contextual understanding). Such sensitivity also enables prompt adaptation of the pace, style, and form of communication according to the complexity of the task and the type of AI model. For managers of international teams, inter-agent sensitivity is especially important, as they operate in multicultural, multilingual, and often distributed environments. Under such conditions, metacommunicative skills allow for the effective coordination of interaction among people with different communicative styles and with digital systems of varying levels of autonomy and complexity. In this sense, inter-agent sensitivity becomes the foundation for the development of a new ethic of presence in hybrid management.

4. Developing the Manager's Hybrid Competence. Theoretical analysis of the problem of metacommunication with AI allows us to outline the structure of the hybrid competence of the modern manager. This competence includes three interrelated components:

- Cognitive: understanding the logic, capabilities, and limitations of AI, as well as mastering basic skills for working with various types of digital interfaces (language models, analytical systems, visual dashboards);
- Communicative: the ability to conduct dialogue with different types of agents (a human, an algorithmic system, or a hybrid group);
- Ethical: awareness of responsibility for the consequences of interaction with AI, the ability to recognize manipulative patterns, and adherence to the principles of psychological ecology in decision-making.

An important aspect of hybrid competence is the manager's ability to effectively delegate tasks between human and artificial intelligence. Flexibility in distributing functions between agents not only enhances productivity, but also reduces the load on human cognitive resources, especially under conditions of information overload. To illustrate this competence, one can consider the example of a manager interacting with a customer relationship management (CRM) system enhanced with AI-based analytical functions. A manager who owns hybrid competence consciously divides responsibilities: data, patterns, and predictions fall within the domain of algorithms; while meaning, strategy, and emotional communication remain a matter of human responsibility. They delegate routine and predictable tasks to the system and focus instead on meaning-making, empathy, and critical analysis. Awareness of the boundaries and roles of different agents in the decision-making process requires not only cognitive, but also worldview-level shifts. This vision resonates with the eco-facilitative approach, which emphasizes not only changes in forms of communication, but also a transformation in the manager's role—from controller to facilitator, capable of holding space for polyphonic dialogue. Within this same logic unfolds the idea of post-humanist leadership, which involves meaning-centered interaction with agents of different natures based on ethical sensitivity, rather than merely functional control (Braidotti, 2013; Van Quaquebeke & Gerpott, 2023). In this framework, the manager acts as a facilitator of hybrid interaction, supporting alignment between human intentionality and algorithmic logic.

The eco-facilitative approach to developing hybrid competence assumes that this process should not be directive, regulated, or standardized. Instead, it requires the creation of conditions for the natural development of the ability to interact with agents of different natures. Such an approach makes it possible to preserve the eco-psychological integrity of the educational process, to take into account the individual characteristics of managers, and to support their intrinsic motivation to develop metacommunicative skills in complex systems.

A key aspect of this approach is adherence to ethical principles in the use of AI. This involves protecting privacy, preventing automated decision-making in complex situations, ensuring human oversight in ethically sensitive contexts, and maintaining transparency of algorithmic logic. Thus, the Ethical Standards for the Practice of the Eco-Facilitator Psychologist emphasize the unacceptability of replacing human sensitivity with algorithms, as well as the importance of critical evaluation of AI-generated outcomes (Ukrainian Association for Ecological Psychological Assistance, 2024). These provisions can also be adapted to the field of international management, where interaction with AI is becoming part of everyday managerial thinking.

5. The Manager as a Facilitator of Interface-Based Interaction. The modern managerial environment is transforming the role of the manager, shaping a new professional identity, far removed from that of the traditional system administrator. There is a shift toward the role of coordinator of inter-agent processes, one who ensures conscious, meaningful, and ethically attuned interaction between agents of different natures—humans, algorithmic linguistic systems, and hybrid teams. Within this paradigm, the manager creates conditions where each participant has the opportunity to be heard, and every technology is integrated in an ecologically balanced manner. In such a context, the manager emerges not only as a driver of organizational change, but also as a facilitator of semantic, cultural, and technological transformations, which require consideration of the team's individual pace, specific features, and the level of autonomy of digital systems. They help the team adapt to new forms of collective work, where traditional human skills are combined with the algorithmic capabilities of digital agents. Such adaptation lays the foundation for the development of a human-centered approach to leadership, which is becoming a key factor in the effective integration of AI into the management environment (World Economic Forum, 2025).

This also concerns the emergence of new professional roles, particularly that of the AI facilitator—a specialist capable not only of technically integrating AI, but also of shaping the semantic, ethical, and contextual framework for its application in communicative and supportive practices (Lushyn & Sukhenko, 2024). This approach aligns with the image of the manager as a facilitator of interaction within cognitively complex ecosystems. The practical dimensions of this role include the use of reflective and dialogical facilitation techniques, in particular, “tactical and strategic mirroring,” which originates from eco-psychological facilitation. In interaction with AI, this technique transforms into a practice of regular rethinking of the logic and content of AI's responses, discussion of team expectations, clarification of the goals of inquiries, and analysis of the received results.

An important aspect of facilitating interface-based interaction is the manager's ability to maintain a balance between technological efficiency and humanistic values. This involves creating an environment in which technologies serve to enhance human capabilities, rather than replace the human being. Such an approach requires the development of ethical sensitivity, which includes the ability to recognize when algorithmic decisions require human intervention—taking into account cultural, social, or moral factors that lie beyond the scope of machine analysis. For international teams, the manager's role as a facilitator of interface-based interaction becomes even more complex. It demands awareness of the cultural context of technology perception, language differences, communication styles, and varying levels of digital literacy. Under such conditions, the manager's metacommunicative competence becomes a key factor in the successful integration of human and machine participants into a shared communicative system capable of functioning effectively in hybrid environments.

6. Implications for Practice. The eco-facilitative approach creates conditions for learning and developing metacommunicative skills through several key practices. Understanding metacommunication as a facilitative action leads to a rethinking of approaches to the training of modern managers. The practical implications of the eco-facilitative approach encompass several major directions in developing metacommunicative skills for interaction with AI. The first direction involves the creation of discussion-based formats in which AI is not treated as an object of analysis, but as a simulated interlocutor, allowing managers to build hybrid competence—the ability to combine human and algorithmic resources for effective decision-making. Unlike training models where AI is considered merely a tool, the eco-facilitative model promotes the development of reflective dialogical interaction, which includes empathetic listening, clarification of intentions, and “reading between the lines” of AI responses. The implementation of this logic in educational settings (Lushyn & Sukhenko, 2023) has confirmed the effectiveness of creating “living” environments, where students learn through case facilitation, reflection, and tolerance of uncertainty in interaction.

The second direction involves conducting team/group reflective sessions to analyze difficulties or disruptions in interaction with digital agents. Such practices promote the formation of a psychologically safe space, where participants can discuss the cognitive and emotional

aspects of interaction. Particularly important is the diagnosis of implicit communication patterns, biases, and false expectations, which enhances metacommunicative sensitivity in multinational teams.

The third direction emphasizes the development of hybrid competence as a combination of instrumental, communicative, and ethical components. This involves not only technical skills in working with technologies, but also the capacity for ethical reflection and critical understanding of the delegation of functions to AI. An effective format includes case simulations, where AI acts as a decision-making partner or opponent. Such simulations make it possible to develop, in a safe space, the ability to reconsider and clarify both one's own intentions and those of the other.

The fourth direction focuses on transforming the manager's role into that of a facilitator of multi-agent interaction, which entails a shift toward a non-directive model of management and coordination of hybrid systems in which human and digital agents act synergistically. The key objective here is to create conditions for coordinated action, rather than to impose decisions.

In this context, it is essential to articulate a set of core metacommunicative competencies that an eco-facilitator must develop in their role as a sensitive, adaptive intermediary operating across diverse levels of interaction: human-human, human-group, human-AI, and human-environment. These competencies form not only a technical but also an ethical and reflexive foundation for facilitating hybrid interaction.

Metacommunicative Competencies of the Eco-Facilitator:

1. Dual Focus Awareness (Content and Process): The ability to simultaneously track what is being said and how it is being said—attending to tone, intonation, pauses, nonverbal signals, and the broader interactional context.
2. Reflexive Sensitivity: The capacity to notice and interpret one's own inner reactions (emotions, doubts, bodily sensations) as indicators of shifts in the interactional field.
3. Making the Implicit Explicit: The gentle articulation of unspoken tensions, fears, uncertainties, or expectations within the group or individual client.
4. Ethical Boundary-Holding and Bridge-Building: The skill to name and uphold personal/group boundaries while creating space for their expansion, redefinition, or transformation in the context of growth and reciprocity.
5. Sensitivity to Cognitive Interfaces: Understanding that each participant has a unique "map of reality" (information processing style, interpretive frame) and being able to engage with these differences without coercion.
6. Gentle Deconstruction and Reconstruction of Meaning: The ability to identify habitual narratives and gradually dismantle them, offering alternative perspectives without destabilizing identity.
7. Facilitation of Transitional Spaces: Holding the space of uncertainty where old meanings no longer work and new ones are not yet formed; creating a safe environment for exploration and experimentation.
8. Dialogue with Shadow Aspects: Engaging with what is usually left unsaid—resistance, projections, hidden desires or fears—with acceptance rather than judgment.
9. Adaptive Management of Silence, Pauses, and Rhythm: Recognizing silence as a legitimate participant in dialogue; resisting the urge to fill it, allowing it to structure the process.
10. Metacommunication with Non-Human Agents: Interpreting, "translating," and coordinating interaction with AI, digital systems, and other nonlinear agents participating in the facilitated process.

Conclusions. This article presents a conceptual rationale for the application of the eco-facilitative (ECPF) approach to the development of metacommunicative skills in the field of international management under conditions of hybrid interaction with AI. The analysis demonstrates that metacommunication in this context extends beyond the traditional understanding of a technical skill and assumes the status of inter-agent sensitivity, which ensures adaptation, reflectiveness, and ethical responsibility in environments marked by shifting

cognitive interfaces as modes of interaction between human and algorithmic information processing.

The eco-facilitative approach provides a methodological foundation for rethinking interaction with AI as part of a broader communication ecosystem, where the emphasis shifts from control to facilitation of self-development, from directive to dialogical interaction, and from functionality to meaning making. Within this paradigm, metacommunication emerges as a key mechanism in the formation of hybrid competence, integrating cognitive, communicative, and ethical components into an ecologically balanced management practice.

The manager's role is transformed: no longer merely a user of technology, the manager becomes a facilitator of interaction in multi-agent and multicultural environments. Their task lies in the alignment of meanings, the overcoming of inter-agent barriers, and the creation of conditions for productive dialogue between humans and AI. In this process, professional ethical guidelines acquire particular importance, taking into account the specifics of digital interaction formats and orienting managerial practice toward the principles of posthumanist leadership—one that recognizes the multi-subjectivity of interaction and supports value-based equality between human and artificial agents.

Practical implications include the implementation of facilitative and reflective ECPF sessions and case simulations, which foster the development of key components of metacommunicative competence: the cognitive (understanding the logic of AI and hybrid interaction scenarios); the communicative (ability to conduct dialogue with agents of different natures); and the ethical (responsible decision-making in multi-agent environments).

Further research. The conceptual framework outlined in this article lays the groundwork for further research, including the development of educational programs, empirical models, and practical tools for cultivating metacommunicative competence among professionals. The findings have applied significance for preparing a new generation of managers capable of working effectively in hybrid teams and ensuring ecologically balanced interaction between human and artificial intelligence in the international business environment.

References

1. Bahri, H., & Williams, R. (2017). Interconnectivity and metacommunication. *Training, Language and Culture*, 1(3), 8-29. <https://doi.org/10.29366/2017tlc.1.3.1>
2. Bisconti, P. (2021). How robots' unintentional metacommunication affects human-robot interactions: A systemic approach. *Minds and Machines*, 31 (487-504). <https://doi.org/10.1007/s11023-021-09582-1>
3. Bolón-Canedo, V., Morán-Fernández, L., Cancela, B., & Alonso-Betanzos, A. (2024). A review of green artificial intelligence: Towards a more sustainable future. *Neurocomputing*, 599, Article 128096. <https://doi.org/10.1016/j.neucom.2024.128096>
4. Braidotti, R. (2013). *The posthuman*. Polity Press.
5. Craig, R. T. (2015). The constitutive metamodel: A 16-year review. *Communication Theory*, 25(4), 356-374. <https://doi.org/10.1111/comt.12076>
6. Demiray, U. Misnevs, B. (2016). Communication and meta-communication in software engineering. *International Journal of Social Sciences & Education*, 6(2). <https://www.academia.edu/110843750>
7. Dynel, M. (2023). Lessons in linguistics with ChatGPT: Metapragmatics, metacommunication, metadiscourse and metalanguage in human-AI interactions. *Language & Communication*, (93), 107-124. <https://doi.org/10.1016/j.langcom.2023.09.002>
8. Freisinger, E., & Schneider, S. (2024). Decoding decision delegation to artificial intelligence: A mixed-methods study on the preferences of decision-makers and decision-affected in surrogate decision contexts. *European Management Journal*. Advance online publication. <https://doi.org/10.1016/j.emj.2024.10.004>
9. Grabovska, I. V. (2018). The basic approaches to the study of metacommunication in linguistics. *Naukovy visnyk Natsionalnogo universytetu bioresursiv i pryrodokorystuvannya Ukrainy. Seria: Filologichni nauky [Scientific Herald of National University of Life and Environmental Sciences of Ukraine. Series: Philological Sciences]*, (292), 74-78. Milenium. <https://tinyurl.com/mrxp9dsj>
10. Heyder, T., Passlack, N., & Posegga, O. (2023). Ethical management of human-AI interaction: Theory development review. *The Journal of Strategic Information Systems*, 32(3), 101772. <https://doi.org/10.1016/j.jsis.2023.101772>
11. Hoffman, D. D. (2018). The interface theory of perception. In J. T. Wixted (Ed.), *Stevens' handbook of experimental psychology and cognitive neuroscience: Volume 2. Sensation, perception, and attention* (4th ed.). Wiley. <https://tinyurl.com/5bzhzfz4>
12. Lamola, M. J. (2022). The future of artificial intelligence, posthumanism and the inflection of Pixley Isaka Seme's African humanism. *AI & Society*, 37(1), 131-141. <https://doi.org/10.1007/s00146-021-01191-3>

13. Lushyn, P., & Sukhenko, Y. (2023). Ecofacilitative pedagogy as a form of sustainability and social therapy. In: *4rd International Conference on Sustainable Futures: Environmental, Technological, Social and Economic Matters (ICSF)*, 1254(1), 012081. <https://doi.org/10.1088/1755-1315/1254/1/012081>
14. Lushyn, P., & Sukhenko, Y. (2024). Transforming education: navigating the human-ai ecosystem in psychological training and beyond. In: *5th International Conference on Sustainable Futures: Environmental, Technological, Social and Economic Matters (ICSF)*, 1415 012011. <https://doi.org/10.1088/1755-1315/1415/1/012011>
15. Misnevs, B., & Demiray, U. (2017). The role of communication and meta-communication in software engineering with relation to human errors. *Procedia Engineering*, (178), 213-222. <https://doi.org/10.1016/j.proeng.2017.01.100>
16. Sanford, D. L., & Roach, J. W. (1987). Representing and using metacommunication to control speakers' relationships in natural-language dialogue. *International Journal of Man-Machine Studies*, 26(3), 301-319. [https://doi.org/10.1016/S0020-7373\(87\)80065-2](https://doi.org/10.1016/S0020-7373(87)80065-2)
17. Sauer, C. R., & Burggräf, P. (2024). Hybrid intelligence – Systematic approach and framework to determine the level of Human-AI collaboration for production management use cases. *Production Engineering – Research and Development*. Advance online publication. <https://doi.org/10.1007/s11740-024-01326-7>
18. Strunk, J. A., Banh, L., Nissen, A., Strobel, G., & Smolnik, S. (2024). *To delegate or not to delegate? Factors influencing human-agent IS interaction*. ICIS 2024 Proceedings. https://aisel.aisnet.org/icis2024/lit_review/lit_review/2
19. Van Quaquebeke, N., & Gerpott, F. H. (2023). The now, new, and next of digital leadership: How artificial intelligence (AI) will take over and change leadership as we know it. *Journal of Leadership & Organizational Studies*, 30(3). <https://doi.org/10.1177/15480518231181731>
20. Watzlawick, P., Beavin, J. H., & Jackson, D. D. (1967). *Pragmatics of human communication: A study of interactional patterns, pathologies, and paradoxes*. W. W. Norton & Company.
21. World Economic Forum. (2025, January 10). *Leading with purpose: Why human-centric strategies are vital in the AI era*. <https://tinyurl.com/3dma5277>
22. Żarkowski, M. (2019). Multi-party turn-taking in repeated human-robot interactions: An interdisciplinary evaluation. *International Journal of Social Robotics*, 11(4), 693-707. <https://doi.org/10.1007/s12369-019-00603-1>
23. Aizenberh, T. (2024). Artificial intelligence technologies in international management. *University Economic Bulletin*, 19(1), 34-43. <https://doi.org/10.69587/ueb/1.2024.34>
24. Hasan, R., & Ojala, A. (2024). Managing artificial intelligence in international business: Toward a research agenda on sustainable production and consumption. *Thunderbird International Business Review*. <https://doi.org/10.1002/tie.22369>
25. Menzies, J., Sabert, B., Hassan, R., & Mensah, P. K. (2024). Artificial intelligence for international business: Its use, challenges, and suggestions for future research and practice. *Thunderbird International Business Review*. <https://doi.org/10.1002/tie.22370>
26. Lushyn, P. V. (2003). *The psychology of personal change* [Doctoral dissertation, G. S. Kostyuk Institute of Psychology at the Academy of Pedagogical Sciences of Ukraine].
27. Ukrainian Association for Eco-Centered Psychological Facilitation. (2024). *Ethical Standards of Professional Activity of Psychologist-Ecofacilitator*. NGO "UAEPF".

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