

Competencies Model for the Socialization of Artificial Intelligence Systems

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Abstract

Artificial Intelligence (AI) systems are becoming integral parts of our daily lives, influencing how we work, interact, and make decisions. As AI systems continue to advance, it is crucial to ensure that they are not only technically proficient but also socially aware and responsible. This paper proposes a Competencies Model for the Socialization of Artificial Intelligence Systems, which aims to define and cultivate the skills and attributes necessary for AI systems to operate ethically, effectively, and harmoniously in human-centric environments. The Competencies Model is based on a multidisciplinary approach, drawing from AI ethics, machine learning, human-computer interaction, and behavioral psychology. It outlines a framework for developing AI systems with competencies in the following key areas. The paper provides a detailed discussion of each competency area, offering practical strategies and techniques for their development and evaluation. It emphasizes the importance of interdisciplinary collaboration between AI researchers, ethicists, psychologists, and designers to create AI systems that align with human values and societal needs. By implementing the Competencies Model for the Socialization of Artificial Intelligence Systems, we aim to advance the development of AI systems that not only excel in technical capabilities but also contribute to a more socially responsible, user-friendly, and ethical AI landscape. This model serves as a guide for researchers, developers, and policymakers in fostering the responsible integration of AI into our societies.

Keywords ¹

Competencies, socialization, artificial intelligence, conceptual model

1. Introduction

The rapid advancement of artificial intelligence (AI) technologies is reshaping the way we live, work, and interact with the world around us. AI systems are increasingly becoming integral to our daily lives, from virtual personal assistants and recommendation engines to autonomous vehicles and healthcare diagnostics. However, as AI systems become more prevalent and complex, there is a growing imperative to ensure their responsible and effective integration into human society. This integration involves not only technical proficiency but also a deeper understanding of the competencies required for AI systems to interact harmoniously within our social and ethical frameworks [1].

This paper introduces a Competencies Model that serves as a structured framework for the socialization of AI systems [2, 3]. It is a comprehensive guide designed to facilitate the responsible and beneficial integration of AI into various domains and industries [4]. The model covers multiple dimensions of AI competencies, encompassing technical intelligence, business intelligence, emotion intelligence, social intelligence, cognitive intelligence, fluid intelligence, and crystallized intelligence. The central thesis of this paper is that the socialization of AI systems necessitates competencies that go beyond technical expertise. These competencies include an understanding of ethical considerations, the ability to adapt to evolving social dynamics, and the

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capacity to process information and make decisions that align with human values [5, 6]. The Competencies Model outlined in this paper aims to bridge the gap between AI's technical capabilities and its responsible integration into society. In the following sections, we will explore the dimensions of the Competencies Model and provide insights into the following key aspects: Technical Intelligence Competencies. This dimension focuses on the technical expertise required to create, manage, and maintain AI systems. Proficiency in programming, machine learning, and algorithmic knowledge is fundamental to the development of AI [7].

Business Intelligence Competencies. As AI increasingly becomes a part of various industries, it must align with business objectives, market dynamics, and financial considerations. Competencies in this area address the effective integration of AI into organizational strategies.

Emotion Intelligence Competencies. Human-AI interactions are becoming more emotional and personalized. This dimension encompasses AI's ability to understand, interpret, and respond to human emotions, leading to more meaningful and ethical AI interactions.

Social Intelligence Competencies: AI's impact extends to complex social dynamics, including issues of bias, fairness, diversity, and ethical considerations. Competencies in social intelligence address AI's integration into societal values and norms [8].

Cognitive Intelligence Competencies. AI systems must be capable of processing information, making decisions, and adapting to changing circumstances. Competence in cognitive intelligence ensures responsible and adaptive AI behavior.

Fluid Intelligence Competencies. Adaptability, problem-solving, and creativity are essential for AI to navigate complex and evolving environments. These competencies enable AI to contribute effectively to diverse domains.

Crystallized Intelligence Competencies. Accumulating and applying knowledge is crucial for AI systems. Competencies in crystallized intelligence ensure that AI can access relevant information and provide valuable insights [9].

The Competencies Model introduced in this paper acknowledges the ethical considerations of AI integration, including transparency, accountability, and the protection of human rights. It provides a holistic approach to guiding the development, deployment, and interaction of AI systems, fostering responsible and ethical integration into human society [10].

As AI continues to evolve and expand its role in our lives, understanding and cultivating the competencies outlined in this model is vital to ensure that AI systems are not only technically proficient but also responsible, ethical, and harmonious in their interactions with humans and society [11, 12]. This model serves as a foundational guide for individuals, organizations, and policymakers navigating the complex landscape of AI socialization [13, 14].

2. Conceptual model for the Socialization of Artificial Intelligence Systems

Developing a conceptual framework for the integration of artificial intelligence (AI) systems into society involves delineating the fundamental elements and connections that contribute to the responsible and advantageous assimilation of AI into human life. This framework serves as a top-level structure for comprehending the diverse facets of AI socialization. Presented below is a conceptual framework for the socialization of AI systems.

Technical Proficiency

Found at the core of the model is the technical proficiency indispensable for creating, upkeeping, and overseeing AI systems. This encompasses expertise in machine learning, data science, programming, and algorithmic knowledge.

Ethical Guidance

Encompassing the technical core is an ethical framework that directs the conduct and decision-making of AI systems. This comprises principles of transparency, fairness, accountability, and respect for human rights.

Human-AI Interaction

The interaction layer signifies the connection point between AI systems and humans. It involves natural language processing, speech recognition, and user experience design to facilitate smooth and meaningful interactions.

Emotion Awareness

Understanding and Responding to Emotions. AI systems should exhibit emotional intelligence in perceiving, comprehending, and appropriately responding to human emotions. This is vital for personalized and empathetic interactions.

Social Intelligence

Alignment with Social Norms. Social intelligence entails AI systems comprehending and adhering to societal norms, values, and ethical standards, addressing issues of bias, discrimination, and cultural sensitivity.

Cognitive Intelligence

Information Processing and Decision-Making. Cognitive intelligence empowers AI systems to process extensive data, make informed decisions, and adapt to changing circumstances while aligning with human values and goals.

Business Intelligence

Alignment with Organizational Goals. Business intelligence pertains to the ability of AI systems to comprehend organizational objectives, market dynamics, and financial considerations, ensuring AI aligns with and contributes to business strategies.

Resource Management

Optimizing Resource Usage. Effective resource allocation is crucial for efficient AI socialization, involving the optimization of energy, computing resources, and infrastructure usage while minimizing environmental impact [15].

Adaptability Layer

Adaptation to Changing Environments. Encircling the core components is an adaptability layer. AI systems must be adaptable to evolving technology, regulatory changes, and shifting user needs.

Continuous Improvement Loop

Learning and Continuous Enhancement. The continuous improvement loop represents the mechanism through which AI systems learn from interactions, adapt, and continually improve, fostering responsiveness to user feedback and evolving societal norms.

Transparency and Accountability

Openness and Responsibility. The model incorporates mechanisms for transparency and accountability, involving transparently communicating AI systems' capabilities and limitations, along with holding developers and users responsible for AI actions.

Data Governance

Responsible Data Management. Data governance ensures the ethical collection, storage, and usage of data to safeguard user privacy and adhere to data protection regulations.

Education and Awareness

User and Developer Training. Fostering education and awareness is critical for both users and AI developers. This encompasses educating users on responsible AI interaction and training developers in ethical AI design [16].

Regulatory Environment

Legal and Ethical Framework. The model acknowledges the role of government and regulatory bodies in establishing legal and ethical guidelines for AI systems' behavior [17].

Security and Privacy

Safeguarding Data and Systems. Security and privacy measures are essential for protecting AI systems and the data they manage from cybersecurity threats and breaches.

Sustainability and Environmental Impact

Minimizing Ecological Footprint: The model integrates considerations for AI's environmental impact, emphasizing sustainability and eco-friendly practices.

This conceptual framework for the socialization of AI systems accentuates the multi-faceted nature of AI integration into human society [18]. It underscores the significance of technical competence, ethical principles, human-AI interaction, and adaptability. The model offers a high-level synopsis of the elements and connections necessary for the responsible and beneficial

deployment of AI systems, emphasizing their alignment with human values, ethics, and societal norms [19].

Let's look at transition priority on the way to AI socialization (Table 1).

Table 1
Competencies priority on the way to AI socialization

No	Values	Initial Internet Assessment 2000	Digital Age Assessment 2023
1	Technical Proficiency	Low	High
2	Ethical Guidance	Medium	High
3	Human-AI Interaction	Low	High
4	Emotion Awareness	Low	High
5	Social Intelligence	Low	Very High
6	Cognitive Intelligence	Medium	High
7	Business Intelligence	Medium	Very High
8	Resource Management	Low	High
9	Adaptability Layer	Low	High
10	Continuous Improvement Loop	Low	Very High
11	Transparency and Accountability	Low	High
12	Data Governance	Low	High
13	Education and Awareness	High	Very High
14	Regulatory Environment	Low	Medium
15	Security and Privacy	Low	High
16	Sustainability and Environmental Impact	Low	Very High

Source: Authors

This assessment was done by a group of 18 independent experts with the application of creative technology. According to the task, experts assess the time scale from 2000 until 2023. They define big changes in qualified assessment according to priority.

Competencies socialization in the AI age refers to the process of aligning and unifying core competencies across individuals, organizations, and societies in the context of the AI era. In a rapidly changing and interconnected world, it's important to ensure that fundamental competencies, such as ethics, privacy, security, and inclusivity, are shared and upheld. This socialization can be a complex challenge, as digital technologies have the power to both enable and disrupt traditional competencies systems [20, 21].

Let's look at some key points related to competencies socialization in the AI age.

Ethical Consideration. The digital age has introduced new ethical dilemmas, such as privacy concerns, algorithmic bias, and data security. Harmonizing ethical values involves developing and adhering to ethical guidelines and standards in the use of digital technologies.

Global Collaboration. With the internet connecting people worldwide, there is a need for global collaboration to harmonize values. International agreements and standards can help ensure that core values are respected and upheld across borders.

Cultural Diversity. Different cultures have unique values and norms. Harmonizing values in the digital age should respect and embrace cultural diversity while finding common ground on fundamental principles.

Inclusivity and Accessibility. Ensuring that digital technologies are accessible to all and do not discriminate is a crucial aspect of value harmonization. This includes making digital resources available to marginalized communities.

Cybersecurity. As more aspects of our lives move online, cybersecurity becomes a fundamental value. Harmonizing values in this context involves protecting digital systems from threats and ensuring the integrity of data.

Education and Awareness. Promoting digital literacy and awareness of the ethical and societal implications of digital technologies is essential for value harmonization.

Government and Industry Responsibility. Governments and businesses have a role to play in harmonizing values. Regulations, corporate social responsibility, and transparency are all essential in this regard.

Balancing Innovation and Responsibility. Balancing the drive for technological innovation with the responsibility to uphold core values is a key challenge in the digital age.

Value harmonization in the digital age is an ongoing process that involves multiple stakeholders and requires continuous adaptation as technology evolves. It's about finding common ground and shared values while respecting the diversity and complexity of the digital landscape.

The impact of key drivers of harmonization is presented in Table 2.

Table 2
Impact of Key Drivers of Socialization

No	The key driver of socialization	Level of impact
1	Ethical Consideration	Medium
2	Global Collaboration	Medium
3	Cultural Diversity	Low
4	Inclusivity and Accessibility	Medium
5	Cybersecurity	High
6	Education and Awareness	High
7	Government and Industry Responsibility	High
8	Balancing Innovation and Responsibility	High

Source: Authors

These results were developed by a group of 14 independent experts and define the qualitative level of influence key driver of harmonization on future values.

3. Competencies Socialization Model in the AI era

3.1. Individual competencies for socialization AI

The digital era has revolutionized the way individuals access information, communicate, and interact with the world. It has opened up numerous opportunities for value creation at the individual level. Ways in which AI socialization creates value for individuals are presented in Table 3. For setting up the priority of individual competencies, used the Ukrainian case Autumn 2023 year.

Table 3
Priority of individual competencies for value creation

No	Competencies	Priority
1	<i>Access to Information.</i> Digital technologies have made it easier for individuals to access a vast amount of information on a wide range of topics. This enables lifelong learning, self-improvement, and informed decision-making.	High
2	<i>Education and Skill Development.</i> Online courses, webinars, and e-learning platforms provide individuals with the opportunity to acquire new skills, gain certifications, and enhance their qualifications, often at their own pace and convenience.	High

3	<i>Remote Work.</i> The ability to work remotely allows individuals to enjoy flexibility in their work schedules, reduce commuting time and expenses, and achieve a better work-life balance.	Very high
4	<i>Entrepreneurship.</i> Digital tools and platforms have made it easier for individuals to start and grow their businesses, whether as freelancers, e-commerce entrepreneurs, or content creators.	High
5	<i>Access to Healthcare.</i> Telemedicine and health apps offer individuals greater access to medical consultations, healthcare information, and personalized wellness plans.	High
6	<i>Online Shopping.</i> E-commerce platforms provide convenience and a wide range of products at individuals' fingertips, often with personalized recommendations.	Low
7	<i>Social Connections.</i> Social media and messaging apps enable individuals to connect with friends, family, and communities, even when geographically distant.	High
8	<i>Personal Finance Management.</i> Digital banking, budgeting apps, and investment platforms help individuals manage their finances more effectively and make informed financial decisions.	Low
9	<i>Entertainment and Content.</i> Streaming services, gaming, and digital media platforms offer endless entertainment options, including movies, music, books, and video games.	Low
10	<i>Travel and Exploration.</i> Digital tools and apps help individuals plan trips, book accommodations, and access travel information, allowing for more adventurous and well-informed travel experiences.	Low
11	<i>Fitness and Health Tracking.</i> Wearable devices and fitness apps assist individuals in tracking physical activity, monitoring health metrics, and achieving their fitness goals.	Low
12	<i>Privacy and Security.</i> Digital technologies empower individuals to secure their personal information and online presence through encryption, two-factor authentication, and cybersecurity tools.	High
13	<i>Environmental Awareness.</i> Digital tools and platforms provide information and resources for individuals to make eco-friendly choices and reduce their environmental footprint.	High
14	<i>Productivity and Time Management.</i> Productivity apps and tools help individuals better organize their tasks, schedules, and goals.	High
15	<i>Crisis Response and Safety.</i> Digital communication can be critical for individuals during emergencies, providing access to emergency services, real-time information, and location-based alerts.	Very high
16	<i>Mental Health and Well-being.</i> Digital mental health apps and resources offer support, self-help strategies, and stress management techniques to promote well-being.	High
17	<i>Personal Branding and Networking.</i> Online presence and social networking can help individuals build personal brands, connect with like-minded professionals, and explore career opportunities.	Low
18	<i>Accessibility and Inclusion.</i> Digital innovations have improved accessibility for individuals with disabilities, facilitating greater participation in society.	Low
19	<i>E-Government Services.</i> Access to government services online, including tax filing and official documents, simplifies bureaucratic processes and saves time.	High
20	<i>Hobbies and Creativity.</i> Digital tools and communities provide platforms for individuals to explore hobbies, share their creativity, and collaborate with others.	Low

AI socialization has transformed various aspects of daily life, offering convenience, personalization, and opportunities for individuals to achieve their personal and professional goals. Individuals need to embrace digital literacy and responsible digital practices to maximize the benefits of the digital era while safeguarding their privacy and security.

3.2. Organizational or business competencies for value creation

In the digital era, organizations and businesses need to develop specific competencies to create value and remain competitive in the rapidly evolving business landscape. The key competencies for value creation in the digital era are presented in Table 4. For setting up the priority of organizational and business competencies, used the Ukrainian case Autumn 2023 year.

Table 4
Priority of Organizational or Business competencies for AI Socialization

No	Competencies	Priority
1	<i>Data Analytics and Insights.</i> Organizations must be proficient in collecting, analyzing, and deriving actionable insights from data. This competency enables data-driven decision-making and helps in understanding customer behavior and market trends.	Low
2	<i>Digital Marketing.</i> Competence in digital marketing is essential for reaching and engaging with a broader audience through online channels, such as social media, search engines, and email marketing.	High
3	<i>Agile and Lean Practices.</i> The ability to adapt quickly to changing market conditions is crucial. Agile and lean methodologies help organizations respond to customer needs and market shifts efficiently.	Low
4	<i>User-Centric Design.</i> Understanding the user experience and designing products and services with the end user in mind is a key competency for creating value. User-centered design principles enhance customer satisfaction and loyalty.	Low
5	<i>Innovation and Experimentation.</i> The digital era rewards innovation and experimentation. Organizations that are open to trying new ideas and technologies are more likely to discover innovative solutions that create value.	Low
6	<i>Digital Security.</i> In an age of increasing cyber threats, digital security competencies are essential to protect data, systems, and customer trust.	High
7	<i>Ecosystem Collaboration.</i> Building partnerships and collaborations with other organizations, startups, and platforms can help create value by expanding reach, accessing complementary resources, and sharing knowledge.	Low
8	<i>Cloud and Infrastructure Management.</i> Efficiently managing cloud services and infrastructure is crucial for scalability and cost management in the digital era.	Low
9	<i>Artificial Intelligence and Machine Learning.</i> Competency in AI and ML allows organizations to automate processes, gain predictive insights, and provide personalized experiences to customers.	Low
10	<i>Change Management.</i> Digital transformation often requires significant changes in organizational culture and processes. Competency in change management is vital to ensure smooth transitions and employee buy-in.	High
11	<i>Ethical Practices.</i> Organizations must understand and adhere to ethical guidelines and regulations, especially concerning data privacy and the use of AI and automation.	Low
12	<i>Customer-Centricity.</i> Focusing on the customer and their needs is a core competency. Understanding customer journeys and feedback is essential for tailoring products and services.	Low
13	<i>Digital Leadership.</i> Effective digital leadership is crucial for setting the vision, strategy, and direction for the organization's digital initiatives.	High

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|----|---|------|
| 14 | <i>Continuous Learning.</i> Competency in continuous learning and adaptation is essential to keep up with evolving technologies and market dynamics. | Low |
| 15 | <i>Sustainability and Social Responsibility.</i> Addressing environmental and social issues is becoming increasingly important. Organizations that incorporate sustainability into their business strategies can create value and enhance their brand reputation. | High |

These competencies are not exhaustive, and the specific competencies required may vary depending on the industry, organization, and the nature of its digital initiatives. However, developing these competencies can help organizations thrive in the digital era and create sustained value for their stakeholders.

3.3. Society competencies for AI socialization

In the AI socialization era, creating value for society has taken on new dimensions, driven by technology and innovation. Digital advancements have the potential to address various societal challenges and improve the well-being of communities. Ways in which value can be created for society in the digital era are presented in Table 5. For setting up the priority of individual competencies, used the Ukrainian case Autumn 2023 year.

Table 5
Priority of society competencies for value creation

No	Competencies	Priority
1	<i>Digital Inclusion.</i> Ensuring that all members of society have access to digital technologies and the internet. This helps bridge the digital divide, providing opportunities for education, employment, and information access to underserved populations.	High
2	<i>Online Education.</i> Leveraging digital platforms to offer affordable and accessible online education, making learning opportunities available to people around the world, including those in remote or disadvantaged areas.	Very high
3	<i>Telehealth Services.</i> Expanding access to healthcare through telemedicine and remote health monitoring, enables individuals to receive medical consultations and treatments without physical visits to healthcare facilities.	High
4	<i>Social Networking for Social Causes.</i> Using social media and online platforms to mobilize support, raise awareness, and drive social change on issues such as human rights, climate change, and disaster relief.	High
5	<i>E-Government Services.</i> Providing digital government services and e-governance solutions that streamline administrative processes, reduce bureaucracy, and improve citizen services.	High
6	<i>Smart Cities.</i> Implementing digital technologies and data-driven solutions to create more efficient, sustainable, and livable urban environments. These technologies can improve transportation, energy efficiency, and overall city management.	Low
7	<i>Online Philanthropy and Crowdfunding.</i> Using online platforms to facilitate charitable giving and crowdfunding efforts for social causes and nonprofit organizations.	Very high
8	<i>Digital Payments and Financial Inclusion.</i> Expanding access to digital banking and payment systems, making financial services more inclusive, especially for those who were previously unbanked or underbanked.	High
9	<i>Cybersecurity and Data Privacy.</i> Ensuring digital safety and data privacy is crucial to protect individuals and organizations from cyber threats and safeguarding sensitive personal information.	High
10	<i>Environmental Monitoring and Sustainability.</i> Utilizing digital sensors, data	Low

analytics, and IoT (Internet of Things) technologies to monitor and address environmental issues, such as air quality, water conservation, and waste management.

- 11 *Crisis Response and Disaster Management.* Using digital tools and platforms for Very high effective disaster response, including early warning systems, real-time information sharing, and coordination of emergency services.
- 12 *Remote Work and Flexible Employment.* Offering remote work opportunities, gig High economy jobs, and freelance work, can provide individuals with greater work flexibility and income opportunities.
- 13 *Innovative Healthcare Technologies.* Incorporating digital health solutions like Low wearable devices, AI-based diagnostics, and telemedicine to improve healthcare accessibility, efficiency, and patient outcomes.
- 14 *Energy Efficiency and Renewable Energy.* Implementing digital technologies to Low optimize energy consumption, integrate renewable energy sources, and reduce greenhouse gas emissions.
- 15 *Online Civic Engagement.* Encouraging citizen participation in decision-making Low processes through digital platforms, promoting democracy and accountability.

Creating value for society in the AI socialization era is a multifaceted endeavour that requires collaboration among governments, businesses, non-profit organizations, and individuals. The responsible and ethical use of technology plays a crucial role in harnessing digital advancements for the betterment of society.

3.4. Competencies AI Socialization model

In the AI socialization era, achieving Competency harmonization for AI-generated products across all key aspects is paramount. Business priorities have shifted, and the commercial Competencies of new technology-based products are no longer the sole criterion for decision-making. If specific aspects of these products' Competencies are questionable and fail to meet contemporary standards, it becomes essential to refine the products to ensure Competency harmonization.

Consequently, the challenge of assessing multidimensional Competencies in the digital era emerges as the initial step in determining the acceptability of new technology-based products. Figure 1 illustrates the concept of assessing AI product Competencies within the context of harmonization processes.

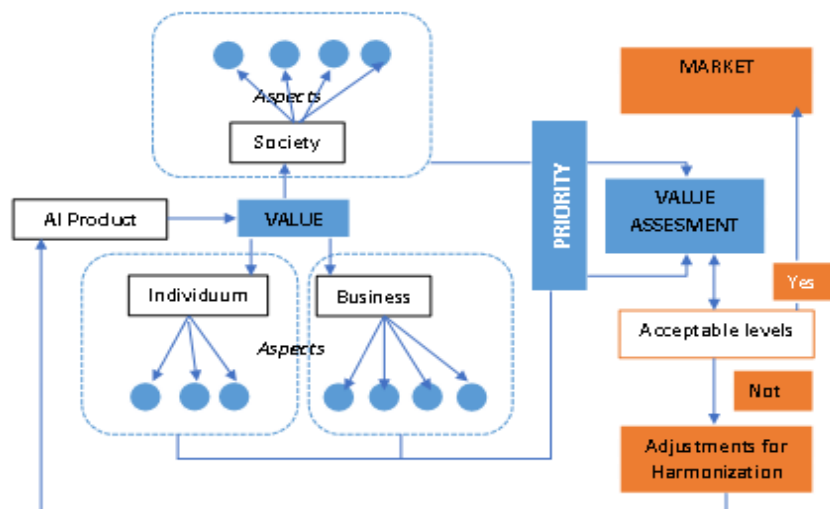


Figure 1: The concept of assessing Competencies towards harmonization in the AI socialization era

The multidimensionality of Competencies entails numerous assessment points, with the primary ones for AI products being society, individual, and business (see Figure 1). For each of these identified assessment points, several detailed aspects form, reflecting the intricacies of the requirements and interests of society, individuals, and businesses.

Naturally, not all the established and acknowledged evaluation criteria hold equal significance, necessitating the creation of a prioritization system. Any assessment lacks meaning without the establishment of acceptable thresholds. Therefore, it's imperative to define acceptable thresholds for each dimension of Competencies. When the individual components of Competencies fall below these acceptable thresholds, adjustments are necessary for the AI product to ensure Competency harmonization in that context. Only when all Competencies components surpass the established minimum thresholds can the product be introduced to the market. It's important to note that determining these minimum acceptable levels is a complex undertaking that warrants dedicated research.

For evaluating Competencies in the AI socialization era, the following formula is proposed:

$$V = \sum_{i=1}^3 \beta_i \left[\sum_{k=1}^{K_i} \alpha_i^k \cdot S_i^k \right], \quad (1)$$

where $0 \leq V \leq 1$ is common Competencies,

$0 < \beta_i < 1, i = \overline{1,3}$ is priority of assessment direction - point of view on the product,

$0 < \alpha_i^k < 1, k = \overline{1, K_i}$ is priority of the Competencies aspect for each assessment area;

$K_i, i = \overline{1,3}$ is number of Competencies aspects for each direction;

According to the generally accepted approach for priorities (weights), the following conditions must be met:

$$\sum_{i=1}^3 \beta_i = 1, \quad (2)$$

$$\sum_{k=1}^{K_i} \alpha_i^k = 1, i = \overline{1,3} \quad (3)$$

$0 \leq S_i^k \leq 1$ is the evaluation of a product's Competencies concerning each aspect of Competencies is typically carried out by experts, which can yield a rather subjective perspective influenced by the specific traits of these experts. Alternatively, a more rational approach involves assessment by artificial intelligence, which requires a foundation for comparison and reference, typically in the form of a collection of judgments representing modern society's stance on various aspects of digital technologies and AI products.

Considering the three facets of Competency assessment – Individual, societal, and business – it's not just the ultimate Competency assessment that is the primary focus, but rather the three constituent components:

$$V_i = \sum_{k=1}^{K_i} \alpha_i^k \cdot S_i^k, i = \overline{1,3} \quad (2)$$

Thus, the Competencies of the AI product is assessed by taking into account each aspect and its priority, which forms three final assessments (Fig. 2).

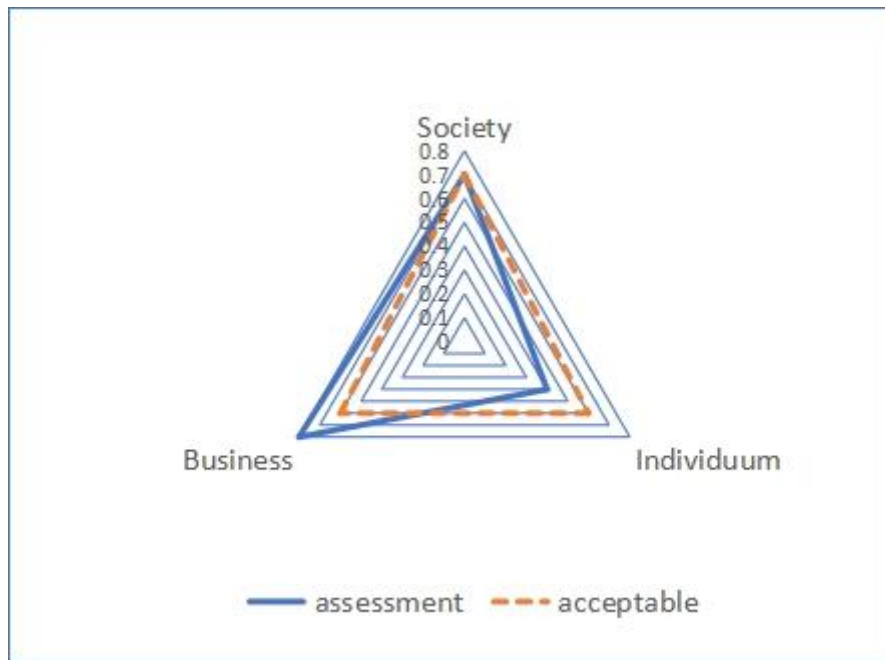


Figure 2: An example of the assessing Competencies components in the AI Socialization

Note that the final assessment of Competencies V can be used when making decisions, for example, on the selection of appropriate projects for implementation from a variety of alternatives, and are used as restrictions V_i , taking into account the establishment of their minimum acceptable Competencies V_i^{\min} .

It's important to observe that the suggested method, in which AI conducts Competency assessments, presents a dual aspect. On one hand, artificial intelligence assesses the Competencies of new AI products. On the other hand, the capabilities of AI provide a foundation for a thorough comparison in every Competency aspect, ensuring the utmost impartiality during evaluations (see Figure 3). This approach serves to mitigate the "commercial" aspect of human judgment and the potential subjectivity of experts.

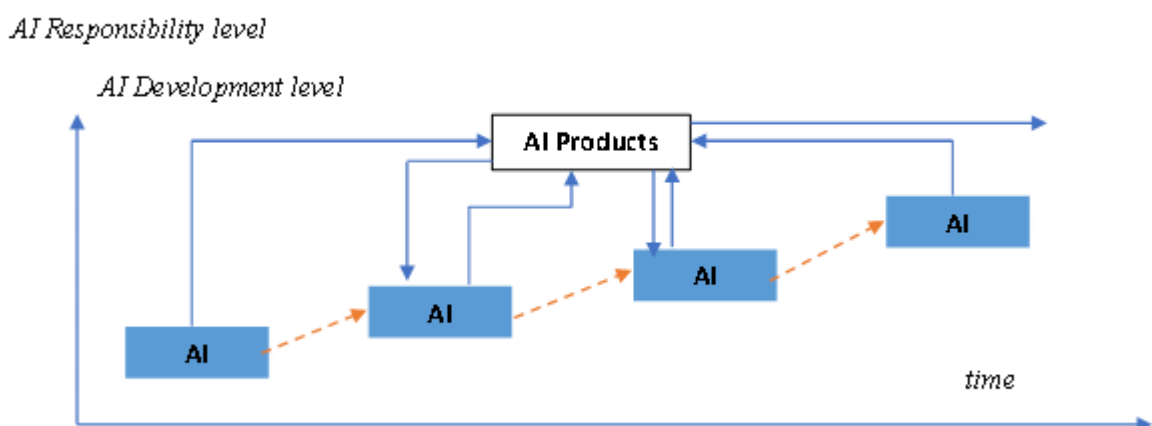


Figure 3: Artificial Intelligence as a Dynamically Evolving Competencies Assessment Tool in the AI Socialization Era

As the development and complexity of artificial intelligence technologies rise, so does the development and complexity of the associated products. This also brings about an increase in the

responsibilities of artificial intelligence within the contexts mentioned. By advancing AI with a focus on meeting the responsibilities towards individuals, society, and businesses, we can ensure that AI's competencies align harmoniously with the needs of humanity.

Conclusion and recommendation

The socialization of artificial intelligence (AI) systems is a complex and challenging task. However, we must develop AI systems that can interact with humans in a safe, ethical, and responsible manner. A competencies model for the socialization of AI systems can provide a framework for developing and evaluating AI systems that are ready to be integrated into society. This model should include technical, social, and ethical competencies. Technical competencies are essential for AI systems to be able to understand and respond to human language and behavior. AI systems also need to be able to learn and adapt to new information and situations. Social competencies are necessary for AI systems to understand and respect human values and norms. AI systems should also be able to avoid discrimination and bias and resolve conflict peacefully and constructively. Ethical competencies are essential for AI systems to be able to discern right from wrong and make decisions that are consistent with human values. AI systems should also be able to protect human privacy and security and avoid causing harm to humans. By developing AI systems that have the necessary competencies, we can ensure that they are socialized in a way that benefits both humans and machines.

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