# Dynamic Principles of Integrated Intelligence Model for Managing Innovation Projects

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**Abstract**

The existing Integrated Intelligence Model for managing innovative projects and programs have been explored by dynamic elements. New architecture includes 2 elements – fluid intelligence and crystallized intelligence. The competency-based approach is considered the basis for the creation of a Dynamic Integration Intelligence Model (DIIM) for managing innovative projects. The model is based on the extension of the system of five groups of interrelated competencies: emotional, social, cognitive, business and technical by fluid intelligence, crystallized intelligence. Fluid intelligence using like the engine in the application of DIIM. Crystallized intelligence is used as an umbrella for emotional, social, cognitive, business and technical intelligence. For each group of intelligence defined key functions and competencies. The architecture Dynamic Integrated Intelligence Model is defined. For the assessment of the competencies of the innovation project management team, the IPMA Delta model was used.

**Keywords 1**

Innovation project, dynamic model, fluid intelligence, crystallized intelligence, managing innovation projects, 5D integrated intelligence model

## 1. Introduction

Every war eventually comes to an end, and the process of post-war reconstruction and renovation begins. Ukraine has chosen a path of innovation and investment development, taking into account the level of technological maturity in its key economic sectors. Simultaneously, digitalization and the development of integrated intelligent systems, based on knowledge, lean manufacturing, and the transition to a circular economy, which are priorities of the European Union, will be the primary trends driving innovation.

The field of project management is characterized by the continuous evolution of knowledge systems, with shorter life cycles for updates. It involves the utilization of methodologies and approaches from the "third wave" and incorporates elements of genetic models of projects as a rich source of information, ideas, and concepts for building projects based on analogous experiences. The rapid pace of knowledge updates and project management concepts in global practice demonstrates the significant interest in this field from both academia and industry.

The life cycle of knowledge and management concepts included in the fourth version of the IPMA Competence Baseline is nearing completion [1]. The experience gained from applying the system of professional knowledge and competence assessment by national branches of the International Project Management Association over the past two decades in numerous countries worldwide confirms the necessity of developing knowledge systems and competence assessment based on projects and programs as essential tools for development [2].

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Modern science and project management practice have developed knowledge systems and tools for implementing projects from "vision to reality," based on the philosophy of life cycles and goal-setting systems. The development of the new version of project management competencies was influenced by the formalization of the dynamic international knowledge and experience accumulated in the 80 member countries of the International Project Management Association, as well as changes in management concepts [2, 3].

The future of project management has been shaped by expectations expressed through goal-setting concepts such as "result, value, output and outcome, performance." These concepts guide development projects towards achieving desired results, adding value, producing outputs and outcomes, and ensuring performance efficiency throughout the life cycle of the product and the organization [4, 5].

Implementing innovative projects and programs has become crucial, considering the challenging global landscape resulting from the COVID-19 pandemic, the global economic downturn, digitalization, and the necessity to adapt to environmental changes. Strengthening the global economic environment, global redistribution, an ageing population, and the global financial crisis has further driven the need for professionals who can embrace driving technologies at all levels of management and ownership. It has also emphasized the importance of implementing innovative initiatives, optimizing production processes, strengthening technological capacity, and fostering open collaboration with the global business environment.

To overcome the crisis and ensure sustainable economic growth, corporations, educational institutions, government agencies, officials, and foreign innovation funds have come together, pooling their efforts. The solution lies in establishing standardized management practices and developing mission-oriented professionals with a clear focus on accelerating the implementation of an innovative approach to managing infrastructure projects and project programs [4].

## 2. Analysis of recent research and publication

In recent years, there has been a growing recognition that project management is a distinct art that can be identified and studied. Project management methodology differs significantly from purely technical methodologies commonly associated with most projects. In reality, many project aspects extend beyond technical domains and require careful and meticulous organization. To achieve project goals with optimal resource utilization and maximum participant satisfaction, these non-technical aspects must be effectively managed, greatly relying on the competence of project managers and their teams.

Project management is not an extraordinary practice; rather, it is the most efficient means of achieving desired outcomes. The success of projects hinges on the skill, intuition, and luck of the managers involved. This reality becomes particularly evident in sectors such as construction, government organizations, aerospace research, medicine, electronics, and more. Unfortunately, the term "project management" often carries different interpretations, leading to varying opinions regarding its scope and those responsible for its execution. Consequently, the profession of project manager exhibits a certain diversity as it continues to evolve dynamically. This, in turn, makes it challenging to establish clear connections, especially in contexts that demand modern, innovative, and interdisciplinary coordination.

Projects are executed by individuals with specific skills and abilities. However, the number of team members and their qualifications can change throughout the project's life cycle, depending on the required level of effort. As a result, many project participants are only needed for relatively short periods. Therefore, it is essential to have a project manager leading a team dedicated to overseeing the project [6, 7].

The Dynamic Intelligence (DI) model, is a theoretical framework that seeks to explain how cognitive abilities interact and develop over time. The DI model was developed by Robert J. Sternberg, a prominent psychologist known for his work on intelligence, creativity, and wisdom [6]. The DI model offers a dynamic and context-sensitive approach to understanding intelligence, highlighting the importance of both cognitive processes and environmental factors in shaping intellectual development.

According to the DI model, intelligence is not a fixed trait but rather a dynamic process that is shaped by both internal and external factors. The model posits that intelligence is composed of three components: meta-components, performance components, and knowledge acquisition components [8].

Metacomponents are higher-order processes that coordinate and control cognitive abilities, such as problem-solving, planning, and decision-making. Performance components are the specific cognitive processes used to carry out tasks, such as memory, attention, and processing speed. Knowledge acquisition components refer to the acquisition and use of information from experiences, such as learning and generalization [9, 10].

The DI model emphasizes the importance of context in understanding intelligence. Different contexts may require different cognitive abilities, and individuals may need to adapt and apply their cognitive abilities in different ways to succeed in different contexts [11].

Research on the DI model has explored topics such as the development of cognitive abilities over time, the relationship between intelligence and academic achievement, and the role of cognitive flexibility in problem-solving [12]. The DI model has also been used to design interventions aimed at improving cognitive abilities, such as training programs for working memory or problem-solving skills.

In practical terms, project teams are also temporary. However, significant attention must be given to the selection and coordination of team members, ensuring that they have a clear understanding of their roles and responsibilities within the temporary organizational environment. This is where human resource management plays a crucial role.

Consequently, it is necessary to constantly forecast the outcome, including the resources consumed. Based on such a forecast, especially if it is unfavourable, adjustments can be made by implementing effective control measures [13].

Control becomes meaningful when all project participants have a clear understanding of their roles and responsibilities, which is achieved through careful planning and coordination. Additionally, the current project status becomes apparent through a comparison with the planned objectives. Often, this comparison can only be made by considering both the external and internal project environment, emphasizing the importance of communication management.

However, the presence of people and effective communication alone is not enough for successful project implementation. Services provided by individuals are also required. It is well-known that project managers must dedicate a significant portion of their time to aligning staff responsibilities with project objectives.

Uncertainty is an inherent factor in projects and is associated with probability and risk. A professional project manager takes steps to minimize the possibility of unfavourable outcomes by effectively managing project risks. This highlights the need for a comprehensive understanding of the project's nature, particularly in innovative and cross-sectoral contexts. These functions fall under the umbrella of risk management.

Every project starts with the idea of initiating change, whether it be in science, art, production, economics, or everyday life. Ideas for changing the world around us emerge in various areas of human activity, ranging from large-scale economic transformations to mundane purchases like a vacuum cleaners. Some ideas lead to the exploration of the secrets of the universe. Consequently, the realm of projects is limitless and can be categorized into research, product development, cultural advancement, financial and innovation activities, and more.

The birth of a project depends on its specific environment and often undergoes a similar process to other living organisms. The project's environment provides it with various ideas, approaches, tools, resources (including financial resources), and means of problem-solving. Just as a person's environment encompasses clothing, housing, habitat, and communication, a project's environment plays a vital role.

Managing innovation projects and dealing with dynamic leadership present particular challenges due to the constant need to address innovative tasks. Furthermore, the low level of performance culture among project participants, including customers, investors, financing organizations, project managers, project performers, and control services, compounds these challenges [14]. In this context, project management serves as a universal language of communication among project stakeholders. An accurate and professional understanding of the language of project management significantly impacts the success of implementing an innovative project based on selected criteria such as time, cost, and quality [15].

The primary problems in managing innovation projects stem from various factors. These include managing customer requirements and enhancing their competence, dealing with the innovation of resulting products or projects, navigating relationships and influences from the external project environment (economic, political, environmental, social, and cultural), managing uncertainty and risk, undertaking organizational restructuring, adapting to the frequency of technology changes, and addressing planning and pricing errors. These factors often give rise to conflicts and challenges within the project monitoring process, involving designers, customers, and contractors [16].

## 3. Existing intelligence models

Contemporary models of intelligence have advanced our understanding of the complex and multifaceted nature of intelligence, and there is increasing recognition of the need to integrate different levels of analysis into a more unified framework.

Contemporary models of intelligence aim to provide a more comprehensive and multidimensional understanding of intelligence. These models bridge different levels of analysis, including psychometric, physiological, and social, and often integrate multiple factors that contribute to intelligent behaviour. Here are some of the prominent models:

- psychometric level models. These models are based on psychometric assessments of intelligence, which measure cognitive abilities such as verbal and mathematical reasoning, spatial ability, and memory. The most well-known psychometric model is the Cattell-Horn-Carroll (CHC) theory, which posits that intelligence is composed of several broad abilities, such as fluid reasoning, crystallized intelligence, and working memory, which are further subdivided into narrower abilities. Another important model is the three-stratum theory, which includes a general intelligence factor (g), intermediate-level abilities, and specific abilities. Critiques of psychometric models suggest that they may not capture the full range of human intelligence, as they are limited to cognitive abilities that are traditionally valued in academic and professional settings;
- physiological level models. These models focus on the neural and biological mechanisms that underlie intelligent behaviour. They include dual-process theories, which propose that intelligent behaviour is the result of two types of mental processes: System 1, which is intuitive, automatic, and effortless, and System 2, which is deliberate, effortful, and controlled. Other physiological models examine brain regions and networks that are involved in specific cognitive functions, such as the prefrontal cortex and working memory;
- social level models: These models emphasize the role of social and environmental factors in shaping intelligence. They include Gardner's theory of multiple intelligences, which proposes that there are eight distinct types of intelligence, such as linguistic, logical-mathematical, and interpersonal intelligence. Another social-level model is Sternberg's triarchic theory of intelligence, which posits that intelligent behaviour is composed of three aspects: analytical, practical, and creative intelligence.

Recent studies have shown that these different levels of analysis are interconnected and can provide complementary insights into the nature of intelligence. For example, neuroimaging studies have identified brain regions that are activated during problem-solving tasks, while social-level models have emphasized the importance of cultural and societal factors in shaping intelligence.

*Crystallized intelligence* is a term used in psychology to describe a person's accumulated knowledge and skills, including their vocabulary, factual knowledge, and the ability to use language effectively. It is often contrasted with fluid intelligence, which is the ability to think abstractly, solve problems, and adapt to new situations.

The concept of crystallized intelligence was first introduced by Raymond Cattell in the 1940s. Cattell believed that intelligence was composed of two distinct factors: fluid intelligence and crystallized intelligence.

According to the crystallized intelligence model, as people age, their fluid intelligence tends to decline, while their crystallized intelligence remains relatively stable or even increases. This is because crystallized intelligence is largely based on learned information, which is accumulated over time through education and life experiences.

The crystallized intelligence model suggests that people who are exposed to more diverse and challenging experiences are likely to have higher levels of crystallized intelligence. This is because exposure to new information and situations allows individuals to learn and incorporate new knowledge into their existing store of information.

The concept of crystallized intelligence has important implications for our understanding of human cognitive development and ageing. It suggests that although fluid intelligence may decline with age, individuals can continue to accumulate knowledge and develop their crystallized intelligence throughout their lives.

*Fluid intelligence* is a term used in psychology to describe a person's ability to think abstractly, solve problems, and adapt to new situations. It is often contrasted with crystallized intelligence, which refers to accumulated knowledge and skills. The concept of fluid intelligence was first introduced by psychologist Raymond Cattell in the 1960s. Cattell believed that intelligence was composed of two distinct factors: fluid intelligence and crystallized intelligence. According to the fluid intelligence model, fluid intelligence is largely based on innate abilities such as working memory, processing speed, and abstract reasoning. These abilities are thought to be largely genetically determined and to decline throughout adulthood.

Research has shown that fluid intelligence tends to peak in early adulthood and then gradually declines with age. However, individuals can take steps to maintain and even improve their fluid intelligence through activities such as engaging in mentally challenging tasks, learning new skills, and practising cognitive exercises.

The concept of fluid intelligence has important implications for our understanding of human cognitive development and ageing. It suggests that while our ability to think abstractly and adapt to new situations may decline over time, individuals can take proactive steps to maintain and improve their fluid intelligence throughout their lives.

Intelligence competencies play a crucial role in creating value and managing innovation projects and programs. These competencies encompass systematic processes such as implementation, preservation, and distribution, which form the intellectual capital of an organization.

Models and methods of intelligence serve as valuable tools for managing innovation projects, allowing project management teams to establish an effective competency system [17, 18]. Intellectual competencies serve as the foundation of project management as a whole and play a decisive role in the success of managing innovation projects. In the context of innovation projects, different types of intellectual products contribute to the development of potential innovation competencies in project management.

Analytical products involve various types of analyses such as result analysis, analysis of research area structure, market profiling of innovation technologies, network analysis, risk and opportunity analysis, goal profiling, and rapid assessment of project status and prospects.

Search products are closely tied to the uncertainty, diversity, and quality of information in the project environment.

Knowledge products serve as the basis for further model development, ensuring the quality maintenance and balance of the socio-cognitive space.

System products are designed to provide appropriate innovation models for efficient operation, minimizing inefficient practices like utilizing multiple information systems platforms.

Professional management is considered the most rational approach to managing innovation projects. It represents a higher stage in management specialization and concentrates management functions for specific breakthrough projects. As the scale, cost, and number of projects increase, customers find it challenging to navigate and possess expertise in all aspects of project preparation and implementation. Therefore, customers typically entrust project organization and management to specialized structures that possess professional knowledge, methods, necessary information, and decision-making authority.

The tasks of professional management structures include participating in project concept development and providing advisory assistance to the customer, selecting designers, contractors, and other project participants, organizing and coordinating project implementation, arranging construction financing, equipment, and material provisions, meeting the information needs of all project participants, and controlling, analyzing, and regulating the project's state throughout its stages.

Professional project management structures were developed as a result of the continuous search for progressive forms of organization and management of innovation activities. These structures combine the customers' stringent requirements for technical quality with acceptable risk levels, cost control, and project timelines. Meeting these high requirements for large-scale and complex innovation projects necessitated not only specialization and professionalization of management activities but also the development of special organizational forms, methodologies, and project management techniques incorporating computer data processing systems.

The project management methodology involves creating a dedicated project team consisting of representatives from all participants involved in the innovation process [19, 20]. The composition of the project team should cover all areas relevant to the project's implementation. Typical team members include the project manager, customer, investors, architects, engineers, construction contractors, landowners, financial institutions, legal services, local authorities, suppliers, and others. During the active implementation phase, including construction, a unified headquarters is established among the project team members. This project management approach enhances the activity of each participant, predicts and identifies bottlenecks, and effectively resolves related issues.

The project head or manager holds a central position within professional project management. Usually representing a specialized management firm in design, construction, or both, the project manager possesses a group of dedicated managers and technical personnel equipped with modern project management methodologies and technologies. They fully represent the customer's interests, have appropriate authority and resources, and bear responsibility for the final results.

The main functions of a professional project manager include participating in project concept development, providing advisory assistance to the customer, selecting designers and contractors, detailed work planning and scheduling, cost, volume, and quality control, and overseeing project completion and facility operation [21].

This organizational structure is particularly effective for large and complex projects, including industrial and non-industrial facilities.

The choice of organizational structure for effective management of innovation projects depends on various factors such as project scale, specificity, ownership form, organization scope, specialization, production structure, innovation and contracting market conditions in the project's location, adopted supply systems, and the presence of appropriate customer structures.

## 4. Dynamic Integrated Intelligent Model for Managing Innovation Projects

The Dynamic Integrated Intelligent Model for Managing Innovation Projects (DIIM) is a framework for effectively managing innovation projects. The model emphasizes the importance of integrating dynamic and intelligent elements into project management processes to optimize project outcomes. The DIIM model stresses the importance of using intelligent tools and techniques to identify opportunities and assess their potential. This model emphasizes the importance of using dynamic tools and techniques to ensure that the project plan is adaptable and can respond to changing circumstances.

The dynamic intelligence model provides a more comprehensive and holistic approach to understanding intelligence, taking into account both cognitive and non-cognitive factors that contribute to intellectual development over time. It has important implications for education and personal development, emphasizing the importance of creating opportunities for individuals to engage in challenging and meaningful learning experiences that promote cognitive plasticity and intellectual growth.

The dynamic intelligence model is a relatively new approach to understanding intelligence that emphasizes the importance of both cognitive and non-cognitive factors in shaping intellectual development over time. This model posits that intelligence is not fixed and unchanging, but rather dynamic and can be improved through experience, practice, and exposure to new challenges.

According to the dynamic intelligence model, intellectual development is influenced by a range of factors, including genetics, early childhood experiences, social and cultural environments, and educational opportunities. These factors interact in complex ways to shape the development of cognitive abilities, such as memory, attention, and problem-solving skills.

One important aspect of the dynamic intelligence model is its emphasis on non-cognitive factors, such as motivation, self-regulation, and mindset. These factors are thought to play a crucial role in determining how individuals approach learning and problem-solving tasks and can have a significant impact on intellectual development over time.

Another key feature of the dynamic intelligence model is its focus on the concept of "cognitive plasticity," which refers to the brain's ability to change and adapt in response to experience and learning.

This concept suggests that individuals can improve their cognitive abilities through deliberate practice and exposure to new and challenging experiences.

The DIIM model provides a comprehensive framework for managing innovation projects that integrates dynamic and intelligent elements to optimize project outcomes.

The architecture of the dynamic integrated intelligence model is present in Fig. 1.

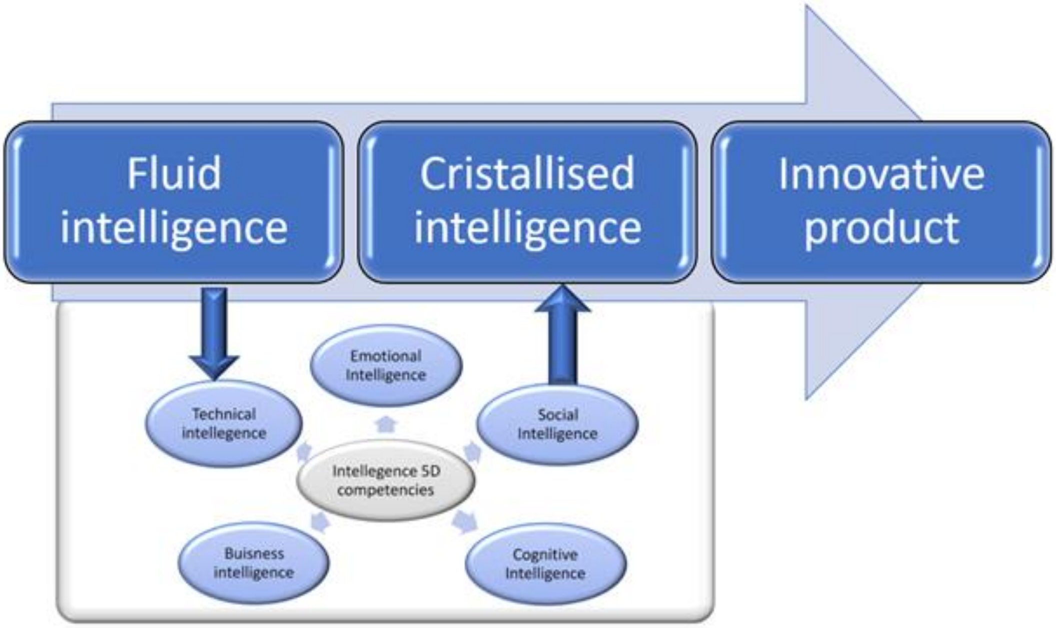


**Figure 1:** Architecture of integrated intelligence model

The architecture of the model includes fluid and crystallized intelligence to create an innovative product.

At the same time, fluid intelligence is the driver of the model. Crystallized intelligence provides basic knowledge, and the 5D model forms key solutions for innovative products in various fields of activity. Direct and feedback links with the 5D model make it possible to form and implement an innovative product.

Let's look at the testing of fluid and crystallized intelligence.

Crystallized intelligence for managing innovation projects testing measures general knowledge. Test types include vocabulary, verbal, and language use assessments. For testing, we apply a fragment of P2M [4].

Fluid intelligence necessitates a diverse testing approach due to its inclusion of various cognitive qualities. To assess these competencies, we utilize the IPMA OCB model [2], employing the following assessment methods:

- progressive matrices. Used to evaluate the recognition of valuable patterns.
- digital span project information sequencing: Assesses working memory capabilities.
- trail-making test. Measures cognitive flexibility in the management of innovation projects.
- digital fluency test. Evaluates creativity, problem-solving, and inhibition. We utilize the IPMA business game, Sea Wolf.
- tower test. Measures planning ability specifically for managing innovation projects [4].
- cognitive failures questionnaire. Assesses attention, memory, distractibility, and executive function.

In practical project management, professionals employ a conceptual model that encompasses five domains of competencies:

– emotional Intelligence (EI) competencies [21]. Result Orientation, Initiative, Flexibility, and Self-Confidence;

– social Intelligence (SI) competencies. Empathy, Influence, Networking, and Distributed Team Leadership. Additionally, they exhibit significantly higher cognitive competencies in Systems Thinking and Pattern Recognition;

– cognitive Intelligence (CI) competencies. Crucial for effectiveness in knowledge acquisition, creativity and innovation, artificial intelligence, and modelling within an organization;
– business Intelligence (BI) competencies. Including Strategy, Culture and Values, Planning and Control, and Opportunity and Risk Management;
– technical Intelligence (TI) competencies. Focusing on product and result vision, technical, technological, and organizational solutions in project implementation, working in conditions of uncertainty and innovation, and clear definition of boundaries and contextual work.

The model proposes that intelligence is composed of three group components: meta-components (1,2), performance components (4,5), and knowledge acquisition components (3).

The 5D model of Competencies Intelligence for managing Innovation Projects is depicted in Fig. 2.

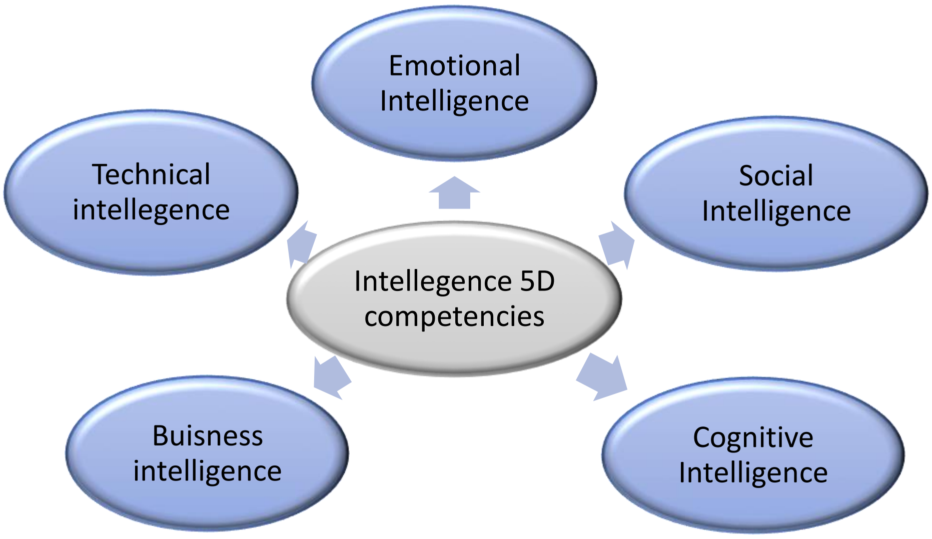


**Figure2:** The competencies intelligence 5D model

The approach to attaining a specific objective is contingent upon the situation at hand. The guiding principles of intelligence encompass both prospective competencies and the technological solutions employed to construct the desired outcome. This selection process begins by assessing the existing best practices and determining what additional elements need to be incorporated. This forms the foundation of the technological architecture.

Given the presence of complexity and uncertainty, each situation necessitates a unique approach. Hence, the various Agile approaches are commonly referred to as "Frameworks" since they serve as the starting point from which the approach gradually evolves. When initiating a project, we examine lessons learned, select a particular structure, and acknowledge that this choice is an assumption that has yet to be proven correct [22, 23].

We work empirically by testing this assumption or hypothesis through experimentation. The hypothesis must be formulated in a way that allows for falsification. We often make adjustments in small increments, and occasionally, a radical shift in our approach becomes necessary. A clear, inspiring, and supportive vision for the product or outcome to be delivered gives purpose to the organization's higher goals. It provides guidance and establishes boundaries. In situations where there are numerous uncertainties and a constantly changing context, it becomes challenging to define specific goals and requirements for the desired outcome. Therefore, ongoing communication with the user remains essential. The focus and boundaries set by the product vision enable continuous improvement through the use of sub-goals. This involves working in a plan-do-check-act cycle until the desired results are achieved.

To address the mechanisms of intellectual support for 5D models and their Smartification, careful consideration is given to leveraging intellectual capabilities in line with the model's principles.

In general, goal-setting and management principles can be applied to intelligence areas, including cognitive and emotional development. As usual, researchers and educators may use SMART goals to set specific targets for improving cognitive abilities, such as memory or problem-solving skills. These goals could be made measurable by using standardized tests or other assessments to track progress, and achievable by providing appropriate training and support. Relevance could be addressed by focusing on goals that are important for an individual's academic or career success, while time-bound goals could be set to ensure that progress is being made within a reasonable timeframe. It is important to understand that intelligence is a complex and multifaceted construct, and setting SMART goals may not capture all aspects of intelligence development. Other factors, such as motivation, learning strategies, and social and cultural influences, may also play a role in cognitive development and should be considered when designing interventions aimed at improving cognitive abilities.

Emotional intelligence is reinforced through the Smartification mechanism, which encompasses competencies such as flexibility, self-management, emotional contagion, and result orientation.

The Smartification of the socio-intelligence mechanism is determined by actively utilizing social networks, distributed teams, and empathy.

Cognitive intelligence undergoes Smartification by focusing on competencies such as knowledge acquisition, creativity and innovation, artificial intelligence, and modelling within an organization.

Smartification of business intelligence mechanisms is based on competencies such as strategy, culture and values, planning and control, and opportunity and risk management.

Technical intelligence mechanisms are Smartified by emphasizing competencies such as the vision of the product and result, technical, technological, and organizational solutions in project implementation, working in conditions of uncertainty and innovation, and having a clear definition of scope (boundaries) and contextual awareness.

To assess competence within the proposed model, Key Intelligence Indicators have been developed for each competency.

In the case study of the proposed intelligence competence model, a conceptual model was developed as part of a Double Degree Master's program for Project Managers at Kyiv National University of Construction and Architecture. The model was applied to a group of 20 students who underwent assessment based on the five-domain conceptual model of innovation competencies.

The project team's competence was evaluated using the IPMA OCB and IPMA ICB 4 models [1,2].

**Table 1**

The project team's competence assessment

| N | Name of competencies | Benchmark | Existing competencies |
|---|---|---|---|
| 1 | Progressive matrices | 5 | 6 |
| 2 | Digital span project information | 5 | 7 |
| 3 | Trail making test | 6 | 8 |
| 4 | Digital fluency | 5 | 7 |
| 5 | Tower for measuring planning ability | 5 | 9 |
| 6 | Cognitive failures | 4 | 8 |

As the result of analyses, there are two competencies, where the assessment level is low the Benchmark (fig. 3).

Following the training provided to the project team, the evaluations of innovation competencies surpassed the benchmark level in nearly all cases. This demonstrates the preparedness of the project team for the successful implementation of their tasks.

The Dynamic Integrated Intelligent Model for Managing Innovation Projects (DIIM) is a framework designed to highlight the significance of incorporating dynamic and intelligent elements into project management processes to maximize the outcomes of projects.

The model consists of four phases, including the exploration phase, planning phase, execution phase, and evaluation phase. Each phase emphasizes the use of both dynamic and intelligent tools and techniques to ensure that project plans are adaptable and responsive to changing circumstances, risks, and challenges.

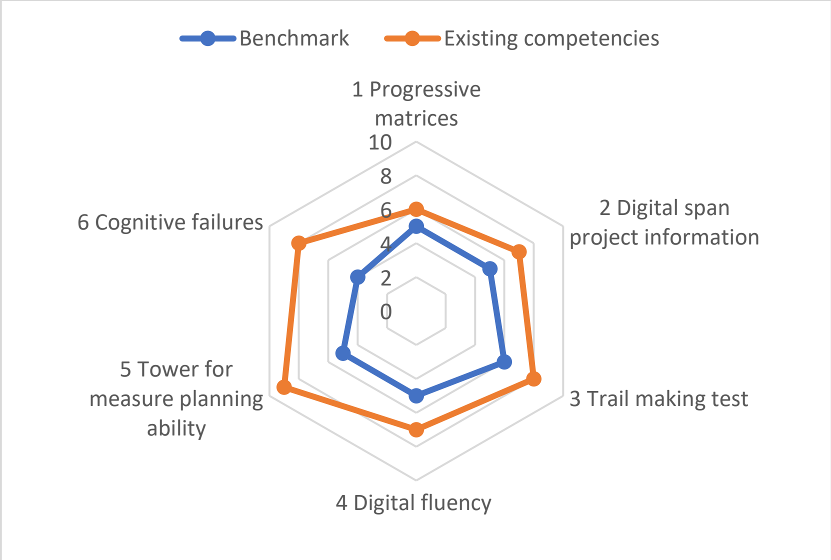


**Figure 3:** Results of the case study of assessment by 5D Intelligence model of competencies for Innovation Projects success

The DIIM model recognizes that innovation projects are complex and dynamic, and therefore require a flexible and integrated approach to project management. By leveraging dynamic and intelligent tools and techniques, project managers can effectively manage projects, mitigate risks, and optimize project outcomes.

## 5. Conclusion

The Integrated Intelligence model provides a comprehensive framework for understanding the cognitive abilities that contribute to intelligence. It emphasizes that intelligence is a dynamic and adaptive process that is shaped by both internal and external factors. The model proposes that intelligence is composed of three group components: meta-components, performance components, and knowledge acquisition components. Competence development based on the Integrated Intelligence model involves improving each of these components through training and practice.

Competence development based on the Integrated Intelligence model also involves considering the context in which cognitive abilities are applied. Different contexts may require different cognitive abilities, and individuals may need to adapt and apply their cognitive abilities in different ways to succeed in different contexts. Therefore, training and education programs should be designed to prepare individuals to use their cognitive abilities flexibly and effectively in different contexts.

The Integrated Intelligence model offers a useful framework for understanding competence development and improving cognitive abilities. By targeting specific components of intelligence and considering the role of context, educators and trainers can help individuals reach their full potential and achieve success in a wide range of contexts. To ensure the success of an innovation project, an assessment of competencies is conducted using a benchmark level. This assessment helps identify any deficiencies in certain competencies and enables the planning of corrective actions to enhance the project's capabilities during the project initiation stage. The effectiveness of the proposed model was validated through a master's program with double diplomas as an example. The provided step-by-step process model enables the successful execution of innovation projects.

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