

"Clip" thinking as the tool of Agile project management in an artificial intelligence environment

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Abstract

Clip thinking in Artificial intelligence is the tool Agile project management refers to breaking down a large project into smaller, manageable parts, or "clips," to plan, execute, and monitor the project more effectively. This approach is closely aligned with the principles of Agile project management, which emphasize flexibility, adaptability, and continuous improvement. By breaking a project down into clips, Agile teams can focus on one specific area at a time, allowing them to more effectively manage their resources, avoid scope creep, and deliver value to stakeholders more quickly and efficiently. The iterative nature of Agile allows for adjustments to be made to the project as it progresses, based on feedback and data-driven insights. Clip thinking also encourages collaboration and communication among team members, as they work together to identify the most critical areas of the project and prioritize their efforts accordingly. This approach helps ensure that everyone is working towards a shared goal and that progress is regularly made towards that goal. Clip thinking is a valuable approach for Agile project management, as it helps teams stay focused, agile, and responsive to changing needs and priorities throughout the project lifecycle. In the paper have been discussed clip thinking is a powerful approach to Agile project management because it allows teams to focus on delivering value to the customer in small, incremental steps. It also provides a framework for continuous feedback and iteration, which helps teams to adapt to changing requirements and deliver a final product that meets the customer's needs.

Keywords 1

clip thinking; artificial intelligence; Agile methodology; project management; project lifecycle

1. Introduction

"Clip" thinking can also be useful in Agile projects, which usually involve rapid iterative product development with an emphasis on changing requirements and priorities. In this context, "clip" thinking can help the project team quickly change direction and find new solutions that meet the needs of the customer and users. One of the key features of "clip"

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thinking is the ability to quickly generate ideas and put forward hypotheses. In Agile projects, this can be useful for testing different approaches and choosing the best option. For example, a team can quickly prototype a product and conduct a short test to see if it meets users' needs [1, 2]. In addition, "clip" thinking can help an Agile project team to be more flexible and adaptable to change [3]. New requirements or priorities may change during product development. Thanks to "clip" thinking, the team can quickly change direction and find new solutions that meet the needs of the customer and users. However, it is important to maintain a balance between speed and thoroughness in Agile projects. While "clip" thinking can help you quickly find a solution at a given point in time, it can also lead to a lack of attention to detail and possible consequences in the future. Therefore, it is important to be careful and save [4]. "Clip" thinking and creativity can be closely related, as both processes involve the generation of new ideas and solutions. "Clip" thinking is a way of thinking that involves the rapid generation of new ideas and solutions. This may include the use of analogies, accelerated thinking, and hypothesizing. This can be useful in the context of creative activities, where it is necessary to quickly generate new ideas and solutions. Creativity involves the generation of new and original ideas and solutions. This may involve using intuition, association and free thinking. Creativity can be useful in business and innovation projects where new solutions and ideas are needed to solve complex problems. Using clip-on thinking can stimulate creativity because it allows you to quickly generate new ideas and solutions. However, it is important to maintain a balance between speed and thoroughness, as creativity also takes time and careful development [5, 6]. Artificial intelligence (AI) and Agile project management are two distinct domains, but they can complement each other in certain ways. While AI can offer valuable tools and capabilities to support Agile project management, it's important to note that successful Agile practices still heavily rely on effective collaboration, transparency, and adaptability among team members. AI should be seen as an enabler rather than a substitute for these essential human elements in BANI world [7]. In addition, various creativity techniques can be used to stimulate the generation of new ideas and solutions. These can be techniques such as brainstorming, "meeting place", "whiteboards", etc. Using these techniques can help increase the number and quality of ideas generated by the team [8]. The purpose of the article is a create methodology, principles and concepts of the valuable approach for Agile research and responsive to changing needs and priorities throughout, ultimately leading to more effective and impactful research outcomes.

2. Research Methodology

A "clip" mindset can be described as a mindset that focuses on short-term goals and requires immediate satisfaction of needs, instead of a long-term perspective and strategy. Managing innovation projects requires a focus on long-term goals and strategy, so transforming the "clip" mindset can be a useful methodology for achieving success in managing this direction [9].

Several research methodologies can help manage "clip" thinking in innovation projects [10]. Here are some of the most common ones:

1. Agile Research. This research methodology aligns with Agile project management principles, emphasizing flexibility, adaptability, and continuous improvement. It involves breaking down the research project into smaller, more manageable clips, prioritizing tasks, and regularly monitoring progress to ensure that the research stays on track.
2. Design Thinking. This research methodology is a human-centred approach to innovation that focuses on understanding the needs and preferences of users. It involves breaking down the research project into smaller clips, prioritizing tasks based on user needs, and regularly testing and refining ideas to ensure that they meet user needs.
3. Lean Startup. This research methodology is a framework for developing and validating new ideas quickly and efficiently. It involves breaking down the research project into smaller clips, prioritizing tasks based on customer feedback, and regularly testing and validating ideas to ensure that they are viable [11].
4. Rapid Prototyping. This research methodology involves building quick and low-cost prototypes of ideas to test their viability. It involves breaking down the research project into smaller clips, prioritizing tasks based on the most critical areas, and rapidly iterating on ideas to refine them based on user feedback.

Let's explore how AI can support Agile project management practices.

Data Analysis. AI algorithms can analyze vast amounts of project data, such as user stories, backlog items, and task progress. This analysis can provide insights into project health, identify bottlenecks, and help teams make data-driven decisions.

Predictive Analytics. AI techniques like machine learning can be utilized to predict project outcomes, estimate completion times, and identify potential risks. This information can assist Agile teams in planning and prioritizing their work effectively.

Natural Language Processing (NLP). NLP enables AI systems to understand and process human language. Agile project management often relies on effective communication and collaboration. NLP can be used to analyze team conversations, extract actionable insights, and facilitate better collaboration.

Intelligent Task Assignment. AI-powered systems can analyze team members' skills, availability, and task requirements to intelligently assign work. This can optimize resource allocation and ensure that tasks are assigned to the most suitable team members.

Automated Testing. AI can be leveraged to automate testing processes, reducing the manual effort required for regression testing and enhancing the speed and accuracy of testing activities in Agile projects.

Intelligent Decision Support. AI can assist in decision-making processes by providing recommendations based on historical project data, team performance metrics, and industry best practices. This can help Agile teams make informed decisions and improve overall project outcomes.

Intelligent Automation. AI technologies like robotic process automation (RPA) can automate repetitive and mundane tasks, freeing up Agile teams to focus on higher-value activities. This can lead to increased productivity and efficiency in Agile project management.

These research methodologies can help manage "clip" thinking in innovation projects by breaking down the project into smaller, more manageable parts, focusing on specific tasks

or deliverables, prioritizing based on importance, and regularly monitoring progress to ensure that the project stays on track.

Let's look at research methodology that can help manage "clip" thinking in AI and innovation projects [12]:

1. Focus on the long term. Before starting a project, do your research and determine the long-term goals of the project. For example, if you are planning to create a new product, try to determine how the product will develop in the future.
2. Develop a strategy. One of the key elements of successful project management is strategy. Develop a detailed action plan that includes long-term and short-term goals and the steps necessary to achieve them.
3. Plan for long-term timelines. It is important to have a realistic idea of what long-term timelines are needed to achieve project goals. Plan your time around these deadlines so that you have enough time to complete tasks.
4. Use a SWOT analysis. A SWOT analysis (Strengths, Weaknesses, Opportunities and Threats Analysis) can help identify potential problems that may arise in the way of achieving a goal.

The steps to manage "clip" thinking in ICT and innovation projects are:

1. Identify the project scope. Determine the overall scope of the innovation project and identify the specific areas that need to be focused on to achieve the project goals.
2. Break down the project into clips. Break down the innovation project into smaller, more manageable clips that can be completed in a shorter period. The clips should be focused on specific tasks or deliverables and should be prioritized based on their importance.
3. Define clip objectives. Define clear and measurable objectives for each clip, outlining what needs to be accomplished and how success will be measured.
4. Assign team roles and responsibilities. Assign team members to each clip and define their roles and responsibilities, ensuring that everyone is clear on what they need to do and how they will contribute to the project's success.
5. Monitor progress. Monitor the progress of each clip regularly, using metrics and key performance indicators to measure progress against the defined objectives. Make adjustments to the project plan as necessary to ensure that the project stays on track and that the objectives are being met.
6. Review and adapt. Review the outcomes of each clip and use the insights gained to adapt the project plan as needed, ensuring that the project remains aligned with the overall project goals.

With these steps, Agile innovation project teams can effectively manage "clip" thinking and deliver successful outcomes more efficiently and effectively.

3. The Clip Thinking Principles

Clip thinking is one of the key principles of Agile project management methodologies. These are the key tools for Scrum master. At its core, it is an iterative and incremental process of software development that allows teams to focus on delivering value to the customer in small, incremental steps. The principles of clip thinking in Agile systems include [13]:

Clip Thinking refers to a short-sighted approach to projects, focusing on immediate deliverables or tasks rather than the long-term vision and goals. It often involves a fragmented understanding of the bigger picture.

Clip Thinking Principles wouldn't be a set of established guidelines. The principles can be explored that counteract "clip thinking" in project management, particularly for AI and innovation (Fig. 1).

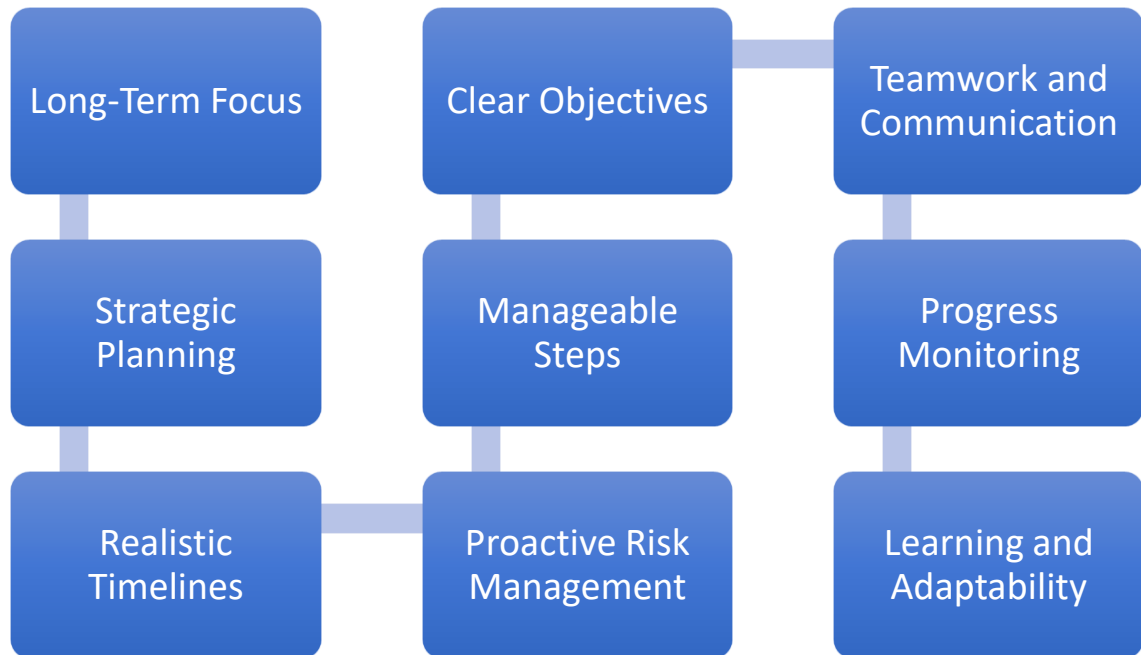


Figure 1: Clip thinking principles for managing innovation projects

Clip thinking is a powerful approach to Agile project management as it allows the team to deliver value to the customer in small, incremental steps while also enabling them to adapt quickly to changes and continuously improve the quality of the product [14].

Clip thinking is a project management approach that focuses on breaking down complex projects into smaller, manageable units called "clips." These clips can be worked on independently and then assembled to form the final product. This approach is well-suited for the fast-paced and iterative nature of AI projects, where requirements and goals can evolve rapidly.

Here's how clip thinking can be beneficial in Agile project management for AI.

Faster Iteration and Feedback By working on smaller clips, teams can get working prototypes or functionalities up and running quickly. This allows for earlier feedback and adaptation based on user testing or performance evaluation.

Reduced Risk by breaking down the project mitigates the risk of major setbacks. If a clip encounters issues, it can be addressed without derailing the entire project.

Enhanced Team Collaboration with Clip-based projects can be distributed among team members with specific expertise, enabling parallel development on different functionalities.

Clip thinking aligns well with core Agile principles like iterative development, continuous improvement, and responsiveness to change.

Let's look at the limitations of Clip Thinking in AI Projects:

- Clip thinking can lead to focusing on isolated datasets for immediate tasks, neglecting the importance of comprehensive data collection and integration for robust AI models.

- By prioritizing short-term goals, AI projects might not be exposed to diverse data or learning opportunities needed for long-term adaptability and improvement.

- Focusing on immediate results might lead to choosing simpler, less adaptable algorithms over those requiring a longer training period but offering superior long-term performance.

- Clip thinking can lead to overlooking potential ethical biases or unintended consequences embedded in AI models due to a rush to achieve short-term deliverables.

- With a focus on immediate outputs, the project might struggle to establish metrics to evaluate the long-term impact and effectiveness of the AI solution.

Consider addressing these limitations requires:

- Developing a comprehensive data strategy that gathers and integrates relevant data for both short-term tasks and long-term AI model development.

- Prioritizing strategies like lifelong learning for AI models to ensure they can adapt and improve over time with exposure to new data and situations.

- Choosing algorithms that offer long-term benefits and adaptability, even if they require a larger initial investment in training time.

- Integrating ethical considerations throughout the project lifecycle, from data collection to model development and deployment.

- Developing metrics to assess the AI solution's long-term effects on achieving the project's overall goals and potential societal impact.

4. Conceptual Model of Clip Thinking in Agile Project Management

Clip thinking is a conceptual model used in Agile project management to describe the iterative and incremental approach to software development based on project requirements (product backlog). In clip thinking, a project is broken down into a series of clips or short cycles, each of which involves a small piece of development work by a scrum master that can be completed within a short timeframe, typically two to four weeks [15]. The goal of each clip is to deliver a working piece of software that provides value to the customer. The process involves continuous feedback and iteration, with each clip building on the previous one to create a final product that meets the customer's needs.

At the start of each clip, the team defines the scope of work for that cycle and creates a plan for how they will achieve it. This plan includes a list of tasks and activities that need to be completed, as well as estimates for how long each task will take.

Throughout the clip, the team works closely together to complete the tasks and deliver the working software. They hold regular meetings to discuss progress, identify and resolve any issues, and adjust the plan as needed.

At the end of each clip, the team presents the completed work to the customer for feedback. This feedback is used to inform the planning and development of the next clip, to continuously improve the product.

Snapshot thinking and leadership can be linked because both processes involve the rapid generation of new ideas and solutions [16].

"Clip" thinking is a way of thinking that involves the rapid generation of new ideas and solutions. This can be useful for leaders who must make quick decisions in the face of uncertainty and unfamiliarity with the situation. Speed and flexibility of thinking can help leaders respond to change quickly and effectively.

Leadership involves the ability to make decisions, lead a team and lead it to achieve a common goal. This may include using creative and innovative approaches to problem-solving and goal achievement. Leaders can use "clip" thinking to quickly generate new ideas and solutions that can help them solve problems and achieve their goals [17, 18].

However, it is important to maintain a balance between speed and thoroughness, as uncontrolled "clip" thinking can lead to poor decisions. Leaders must also be able to carefully analyze a situation and explore possible solutions before making a decision [19].

In general, "clip" thinking can be useful for leadership because it allows the rapid generation of new ideas and solutions.



Figure 2: The dynamics of applying system, process and clip thinking in AI project management based on the Agile methodology

However, it is important to maintain a balance between speed and thoroughness, as well as the ability to thoroughly analyze. The information provided suggests that there has been a shift in mindset in Agile digitalization project management.

The study conducted with the help of 25 project management experts indicates that there are three types of thinking commonly used in IT companies: system thinking, process thinking, and clip thinking (Fig. 2).

According to the findings, there has been a significant increase in the use of clip thinking, reaching up to 40% by 2020. This rise in clip thinking is notable because it competes with the traditional systematic approach, which has seen a decrease in active use to 50% by 2020.

This trend may be attributed to the growing prevalence of mobile devices in addressing digitalization challenges. Let us consider as an example the project of creating a centre of competence for project management of the post-war reconstruction of Ukraine, which was created at the Kyiv National University of Civil Engineering and Architecture. The Competence Center was formed based on the employees of the Project Management Department. At the initial stage, employees were assessed on the competencies of Agile clip thinking. The approach developed in the IPMA Delta model was used as an assessment tool [2]. Analysis of the representation in Fig. 3.

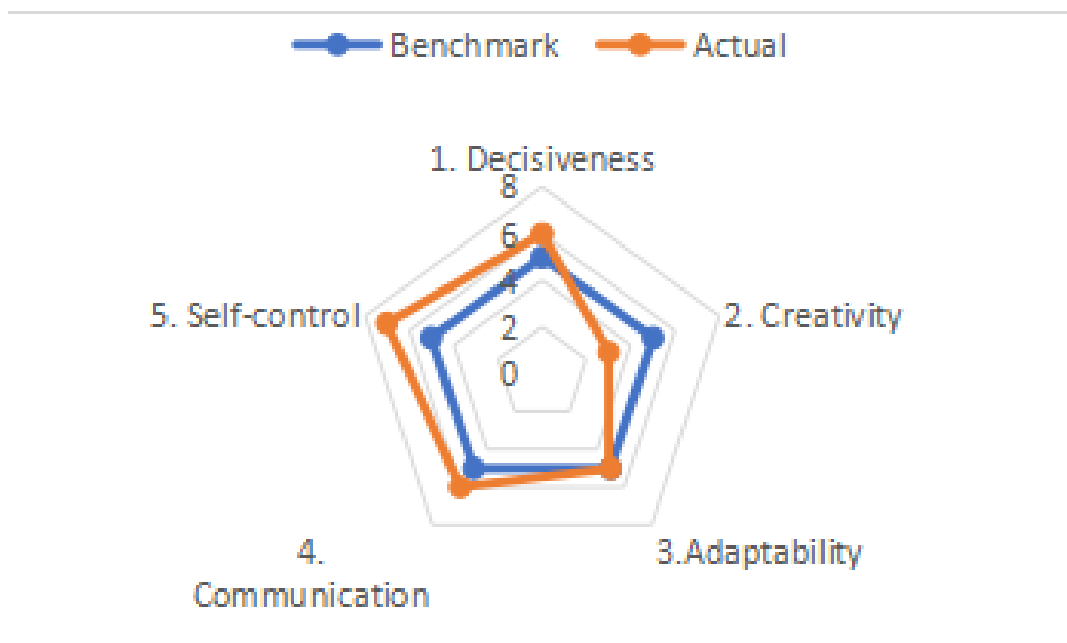


Figure 3: Initial assessment of case study for development Clip competencies in Agile environment

Two weaknesses were identified compared to the benchmark. This is creativity and adaptability. A training program for employees was held to develop these competencies. As a result of the completion of this program, a re-evaluation was carried out, the results of which are shown in Fig. 4.

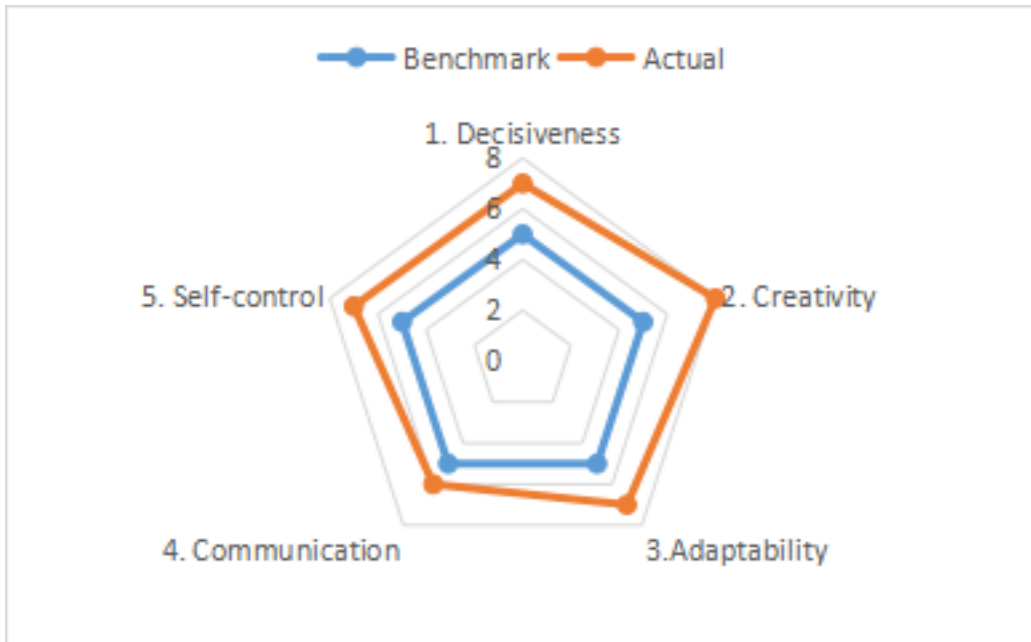


Figure 4: Results of case study for development Clip competencies in Agile environment after special training

As a result, we see a significant increase in the level of competence in the previously identified competencies.

The process approach, on the other hand, is deemed less critical when working with Agile methodology, implying that it may not receive as much emphasis or focus compared to system and clip thinking in Agile digitalization project management.

It's important to note that without further details or a deeper understanding of the terms "system thinking," "process thinking," and "clip thinking," it is difficult to provide a more specific analysis or commentary on their implications in Agile project management. The project was completed successfully within the estimated time and budget. The new digital process was well received by the stakeholders and resulted in significant time savings and improved communication between users. The project team attributed their success to the clip-thinking approach, which allowed them to deliver value quickly and adapt to changes in requirements.

Conclusion

Innovation projects can be complex and challenging, requiring a structured approach to manage their execution effectively. Clip thinking is a valuable practice for breaking down a large project into smaller, manageable parts, helping teams to stay focused, agile, and responsive to changing needs and priorities throughout the project lifecycle. By breaking a project down into clips, innovation teams can focus on one specific area at a time, allowing them to more effectively manage their resources, avoid scope creep, and deliver value to stakeholders in a more timely and efficient manner. Adopting research methodologies like Agile, Design Thinking, Lean Startup, or Rapid Prototyping can also help innovation teams

manage clip thinking more effectively, enabling them to prioritize tasks based on importance, monitor progress regularly, and adjust the project plan as needed. Overall, managing clip thinking in innovation projects can help teams deliver successful outcomes more efficiently and effectively, driving business growth and competitiveness.

"Clip thinking" can be a significant hurdle in AI and innovation projects. It prioritizes short-term deliverables over long-term goals, potentially hindering a project's ultimate success. This paper has explored a research-based methodology to combat "clip thinking" and ensure projects deliver lasting value.

Clip thinking can be a valuable tool for managing AI projects in an Agile environment. By understanding its benefits and limitations, and implementing best practices, teams can leverage this approach to deliver successful AI projects with greater flexibility and adaptability.

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