

ARTIFICIAL INTELLIGENCE IN INTERDISCIPLINARY SYNESTHETIC SOUND AND VIDEO DESIGN PROJECT

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DOI: [10.7906/indecs.24.6.8](https://doi.org/10.7906/indecs.24.6.8)
Regular article

Received: 16 June 2026.
Accepted: 25 July 2026.

ABSTRACT

This article explores how the music production processes and the artificial intelligence (AI) tools can be integrated within interdisciplinary artistic projects based on artistic synaesthesia. The research is grounded in the *Enitur zeb* principle developed through artistic practice, where visual artworks serve as the conceptual source for the creation of original sound compositions. It is analysed how a structured project management approach can support the development of complex multimedia artworks combining sound, image, and AI technologies. By using a case study analysis of the project “Ja se budim”, the first AI music video in the Balkan region, it is presented how AI tools were used as creative collaborators in the generation of musical materials and sound textures inspired by visual structures. The results demonstrate that the integration of AI-assisted music production with a project management approach significantly improves workflow, creative experimentation, and interdisciplinary collaboration. This enables the development of artistic projects capable of connecting artistic practice, technological innovation, and music production. The study concludes that the synergy between project management, artificial intelligence, and music production represents a promising framework for future interdisciplinary artistic research.

KEY WORDS

artificial intelligence, artistic synesthesia, sound design, project management, interdisciplinary artistic research

CLASSIFICATION

JEL: Z11

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INTRODUCTION

Nowadays, music and video production practice increasingly develops within interdisciplinary environments. The fact is that the rapid development of artificial intelligence (AI) technologies, digital sound and video tools, has significantly modified the processes of creating, producing, and presenting songs and music videos. Therefore, this creative production environment becomes a complex interdisciplinary process involving creative authors, digital technologies, different AI tools, and project management approaches.

One of the most valuable methods related to this field is artistic synaesthesia. Here, it is important to understand that relationships between visual structures and music forms become the basis for creating new artistic content. When using artistic synaesthesia to create today, there is a need to coordinate musical and visual artworks, teamwork, and different technological tools. To be successful in managing these practices, it is important to include a project management approach. At the same time, AI has become a significant collaborator in different creative processes. According to the author's experience, AI tools enable the creation of artistic ideas and compositional structures that expand the traditional boundaries of music and video production. But still, the human artist and creator can not be replaced, while these technologies mostly serve as creative partners that support creative processes and accelerate the development of artistic material.

Interdisciplinary artistic synaesthesia projects that combine music production, visual arts, and AI tools involve many organisational and communication challenges. It requires the integration of project management principles and approaches, which will provide an efficient planning of different creative processes, clear role distribution, and workflow coordination. This paper elaborates on how an interdisciplinary artistic synaesthesia project can be successfully implemented when integrating an agile project management approach, AI tools, music production, and artistic work in creating music videos. The paper presents an artistic research and practical experience of developing a synaesthetic art project “Ja se budim”, where AI tools were used to generate a music video on the basis of an original sound composition. By analysing the interaction among music and visual art, artificial technology, and project management practices, the study contributes to a broader understanding of how contemporary artistic production can benefit from this synergy.

THEORETICAL BACKGROUND

ARTISTIC SYNAESTHESIA AND INTERDISCIPLINARY CREATION

Artistic synaesthesia is a conceptual and methodological framework in which relationships between different sensory domains are a basis for artistic creation. Historically, synaesthetic ideas have appeared in various artistic movements, particularly within early 20th century modernism, where artists and composers attempted to establish connections among colour, form, and sound. Synaesthesia has been associated with increased creativity, as individuals experiencing it are able to form meaningful connections between disparate stimuli [1]. Moreover, synesthesia has been described as a neurodevelopmental condition in which specific stimuli automatically and consistently generate secondary sensory experiences [2]. But, in contemporary artistic research, synaesthesia is often approached not as a neurological phenomenon but as an artistic method that enables translation between visual and auditory domains. According to this, the visual structures may be interpreted through musical parameters such as rhythm, harmony, or dynamics.

Synaesthetes, particularly sound–colour synaesthetes, show a higher prevalence of artists and greater overall involvement in artistic activities [3]. Related to that, the integration of sound

compositions with visual artworks can create interactive experiences in which audiences engage simultaneously with visual and auditory narratives. Moreover, it was indicated that music-colour synaesthesia is associated with greater musical engagement and distinctive, consistent cross-modal associations between musical pitch and colour [4]. That is why visual elements such as spatial composition, colour distribution, texture, and contrast can be interpreted as structural indicators for musical composition and sound design. Such an approach opens the possibility of developing sound environments inspired by visual artworks, allowing audiences to experience artworks through multiple perceptual layers.

ARTIFICIAL INTELLIGENCE IN MUSIC AND VIDEO PRODUCTION

AI technologies provided new possibilities for music and video creation, composition, and production. Today, AI tools are capable of generating melodic structures, harmonic progressions, rhythmic patterns, and complex sound textures. Tools such as Google MusicLM, SUNO, OpenAI MuseNet, AIVA, and Amper Music operate through machine learning models trained on large musical datasets, enabling them to recognise patterns and generate new musical material. AI is transforming music video production by enabling the generation and animation of visual content from prompts, introducing new approaches to audiovisual creation alongside traditional human-driven creative processes [5]. Moreover, the AI-driven video generation reduces production time, cost, and technical barriers by generating videos directly from textual inputs [6].

In creative practice, AI can function in several roles. It may serve as a generative tool that produces musical ideas, as an assistant that supports compositional processes, or as a system that helps analyse and transform existing musical materials. Rather than replacing the role of the composer or producer, AI tools often act as collaborative agents that expand creative possibilities and stimulate experimentation. Therefore, audio-based AI tools show strong potential to enhance contemporary music production and creative workflows, where AI tools are better suited to support the artist's creative workflow [7].

AI significantly reshapes creative workflows by accelerating ideas while introducing new challenges in idea selection, validation, and collaborative decision-making [8]. Furthermore, the human-AI collaboration transforms group dynamics and creative roles, leading to new models of co-creative production [8]. In practice, when using the AI tools in music production, it will reflect many changes in the creative process. Modern music production environments combine digital audio workstations, different algorithmic tools, and AI technologies, which allow authors to explore hybrid creative processes and merge human creativity with technological capabilities. The growing presence of generative AI in music production raises important questions about artistic control, authorship, and the role of the author's creativity in the production process, emphasizing the need for critical reflection on the position of human producers within an evolving technological domain [9].

When implementing interdisciplinary artistic synaesthetic projects, AI-generated elements can be useful in connecting visual structures with music. The contemporary AI tools provide the capacity to replicate artistic styles by training models on an artist's works and evaluating the visual quality and stylistic accuracy of the generated elements [10]. For the purpose of generating video and visual structures that correspond conceptually or aesthetically to music compositions, AI tools can assist in analysing patterns or structural relationships derived from musical artworks.

PROJECT MANAGEMENT IN INTERDISCIPLINARY ART PROJECTS

Interdisciplinary artistic synaesthetic projects increasingly require a structured management approach due to the growing complexity of contemporary creative production. The integration

of multiple artistic disciplines, technological systems, and collaborative teams creates a production environment that demands both creative flexibility and project coordination. Within such environments, the project management approach plays a vital role in enabling efficient collaboration, resource planning, and successful realisation of artistic concepts. For the successful realisation of decentralized music production, it is important to integrate agile project management principles and collective intelligence to effectively coordinate creative collaboration [11]. Unlike traditional projects, artistic projects often involve open creative processes, evolving conceptual directions, and iterative experimentation. These characteristics require project management approaches that support creativity while maintaining clear organisational structures. That is why agile project management practices provide an environment to support this creativity, rather than rigid control mechanisms [11].

Effective project management plays a vital role in coordinating experimentation and collaboration in market-based innovation projects within the music industry [12]. In addition, effective music production requires systematic coordination of production, promotion, and distribution processes to ensure the successful creation and dissemination of musical works within the music industry [13]. However, project management in artistic contexts serves as a facilitative framework that allows creative processes to develop within coordinated production environments.

An important characteristic of interdisciplinary artistic synaesthetic projects are many different professional roles that were involved, where artists, musicians, producers, designers, programmers, and technical specialists frequently collaborate within a single music project. Each of these participants contributes with specific knowledge and expertise, making communication and coordination essential for the final project result. To be successful, the interdisciplinary artistic synaesthetic project requires a structured project management approach with creative openness at the same time, allowing artists and producers to navigate uncertainty while sustaining innovation and artistic expression [14]. Related to this, agile project management is able to support effective coordination of teams in music production by enabling flexible collaboration, iterative creative development processes, and shared decision-making among different participants [11]. Therefore, the project management approach in this artistic environment should provide clear communication channels, clear responsibilities, and an alignment between artistic vision and practical implementation.

An important aspect of applying project management approaches in artistic production is the management of creative processes. In projects that involve music production, visual arts, and AI tools, the production process usually includes several parallel phases, such as concept development, artistic experimentation, technical development, and final presentation. Coordinating these stages requires careful planning and timelines, iterative evaluation of results, and flexibility in adapting production ideas as the project develops, where agile project management approaches might offer an appropriate framework [11]. In addition, creative leadership plays a vital role in managing interdisciplinary artistic projects. While project management provides the managing structure, creative leadership ensures to have the artistic coherence and conceptual integrity. In many contemporary artistic initiatives, this leadership role is shared between artistic directors and project coordinators who facilitate collaboration between creative and technical participants. The transformational leadership characterized by vision, inspiration, and intellectual stimulation plays a vital role in motivating creative teams and achieving project success in the creative industries [15]. However, effective leaders must balance creative freedom with managerial structure, stimulating an environment where artists can innovate while still ensuring coordination, accountability, and successful project outcomes [15]. Moreover, effective leadership plays a vital role in project success by influencing team performance, coordination, and the ability of team members to enhance the

expected results [16]. Consequently, project management in interdisciplinary art projects should be understood as a framework that connects the artistic vision of the author and AI tools.

AI-ASSISTED MUSIC PRODUCTION AND THE CREATION OF THE MUSIC VIDEO – CASE STUDY “JA SE BUDIM” (2023)

The following case study presents an interdisciplinary synaesthetic artistic research project with integration of AI tools within contemporary audiovisual production is the music video for the song “Ja se budim” in 2023. The project was initiated and conceptually developed by Ivan Kljajić, D. A., music producer and researcher in sound design and music production, while the visual realization of the video was created and executed by Nenad Kuzmanović, D. A., sound designer, visual artist, and researcher in digital visual arts. The project was developed as part of a broader artistic exploration by Ivan Kljajić, based on the *Enitur zeb* principle, an approach that combines artistic synaesthesia, experimental music production, and conceptual translation between visual and music domains. The *Enitur zeb* principle represents a methodological approach to artistic creation that emphasises the avoidance of rigid compositional routines and encourages intuitive exploration of sound structures inspired by non-musical sources.

According to the authors’ knowledge and available regional production records, the video “Ja se budim” can be considered among the earliest commercially distributed music videos in the Balkan region, whose visual narrative was developed predominantly through generative AI technologies. The visual material was created using the Stable Diffusion platform. It enabled the generation of stylized visual environments and characters that correspond to the emotional and structural qualities of the song “Ja se budim”. It was a practical example of an interdisciplinary synaesthetic project, where the musical structure, emotional path, and lyrical narrative of the song “Ja se budim” served as the primary source of inspiration for the visual music video design.

This interdisciplinary synaesthetic artistic project extends beyond purely musical production. It influenced audiovisual forms such as music videos. The production of this music video represents a practical example of how AI technologies can be used to support the visual conceptualisation of the song. During the project, the production process followed principles of agile project management, characterised by iterative development and continuous creative evaluation. The creative team worked through successive sprints in which musical, visual, and narrative elements were continuously improved. In this case, AI tools allowed the creative team to explore alternative visual forms and to create a prototype that could be evaluated, modified, or replaced in the following sprints. This iterative process reflects core principles of agile project management, where creative outcomes develop through incremental and flexible adjustment. The authors experienced how the AI reduced the time traditionally required for concept development and visual pre-production.

AGILE PROJECT MANAGEMENT FRAMEWORK WITH TIMELINE AND RISK MITIGATION

The production of the AI-assisted music video “Ja se budim” in 2023 was completed within the framework of agile project management, which was particularly suitable for a creative project involving generative AI tools. Due to the exploratory nature of AI-generated tools, the project result emerged through iterative cycles of testing, evaluation, and optimization, Figure 1.

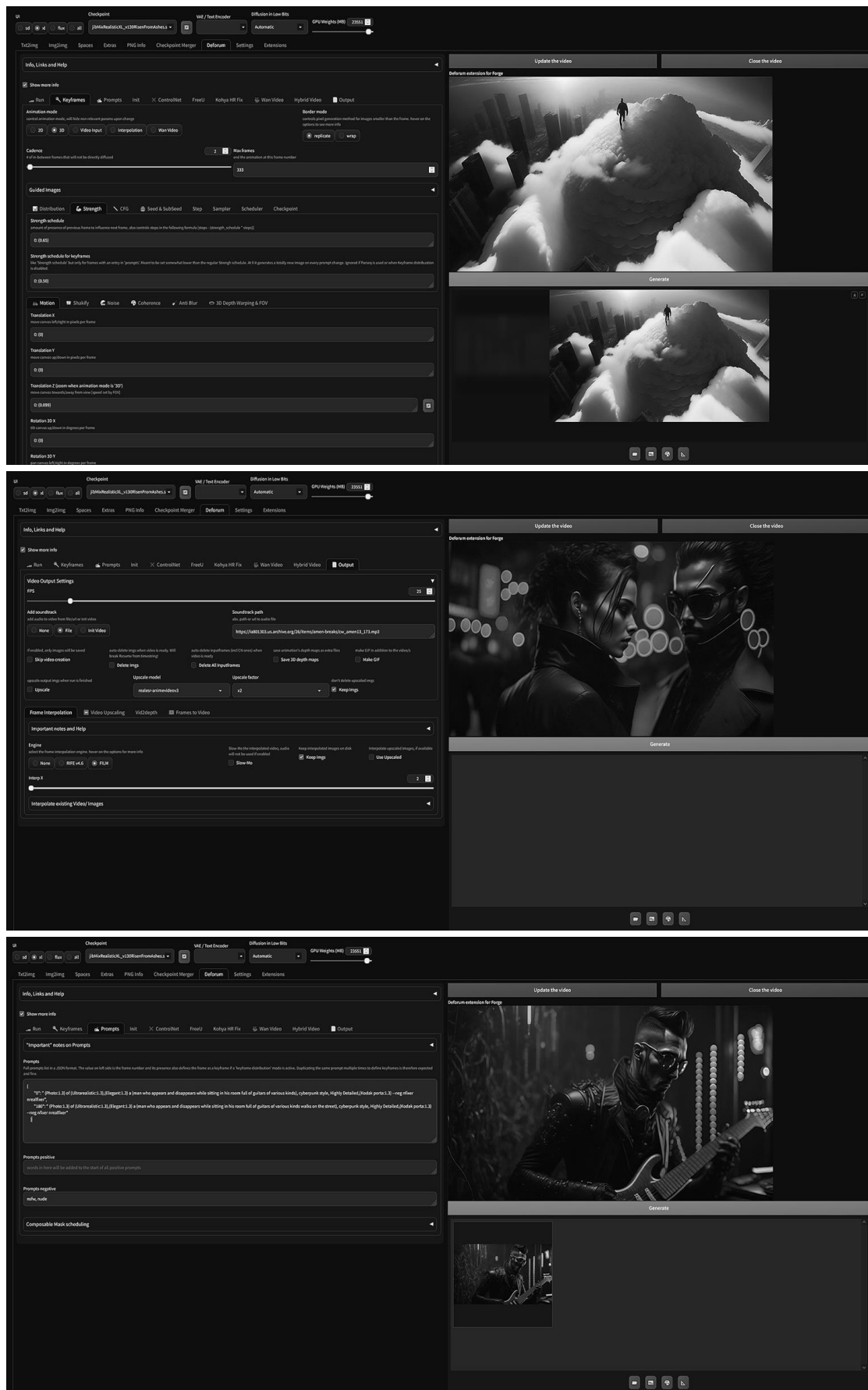


Figure 2. Development of visual material frame-by-frame using Stable Diffusion models in AUTO1111.

Review and adjustment sprint

Here, the generated video material was reviewed by the authors to decide on the consistency between scenes and alignment with the musical structure of the song. It lasted approximately 1 week, where differences in lighting, color palette, and visual composition between generated frames occasionally disrupted the narrative flow. These discrepancies were resolved through selective image replacement and additional generation iterations in Stable Diffusion.

Final integration and production sprint

In the final sprint, which lasted approximately 1 week, the selected visual material was edited and composited in order to combine it into a coherent video structure. Synchronization with the music track and final visual adjustments were performed prior to public release. During this final editing, minor inconsistencies between visual flow and musical phrasing were observed. These were resolved through adjustments in editing rhythm and selective frame replacement.

RESULTS AND DISCUSSION

This case illustrates how AI-assisted music production can naturally extend into audiovisual creation while using an agile project management framework. Within this interdisciplinary artistic synaesthetic project, the authors remain responsible for conceptual direction and artistic interpretation, while AI tools provide the range of possible creative solutions in music video production.

The production process of the music video “Ja se budim” was structured through a series of iterative development sprints. This agile approach enabled a flexible workflow with the activities of creative experimentation, technological testing, and artistic evaluation. The results of this process demonstrate that the agile approach effectively supported the development of an AI-generated music video, where we combined music production activities, visual design, and AI tools implementation.

The initial concept and planning sprint introduced the author’s narrative structure and artistic direction of the video. The visual exploration sprint, as the next one, focused on testing the generative capabilities of the Stable Diffusion platform and defining a coherent visual language for the project. In order to determine how stylistic consistency could be maintained across generated images, the authors explored multiple prompt structures. The third generative production sprint represented the core stage of the project, during which visual material was developed frame-by-frame using Stable Diffusion models within the AUTO1111 interface and the Deforum animation extension. Subsequent review and refinement stages focused on maintaining visual synchronisation with the musical structure of the song. The final integration sprint combined the selected visual material into a coherent audiovisual structure through editing and compositing.

CONCLUSION

The final result in this interdisciplinary artistic project, that is an AI-generated music spot “Ja se budim”, was realised through the integration of AI-generated visual concepts and human artistic management. While AI tools supported the generation of visual elements and environments, the final narrative structure, editing decisions, and overall artistic experience remained under human creative control. In addition to the technological aspects in this creative process, the project highlighted the importance of structured creative decision-making. During the project, the generative nature of AI had a high degree of variability and unpredictability in visual outputs, which requires from our side a continuous evaluation and decision-making process.

This project was completed successfully by using an agile project management approach, combined with iterative AI processes. This approach was helpful in solving many uncertainties

during a generative visual production, when our conceptual ideas were translated by AI tools to provide the final music video “Ja se budim”. The process of creating an AI-generated music video remained under our artistic control, while this agile approach of managing the project provided an efficient framework for creativity. It means that the usage of agile principles allowed this project to adapt dynamically to unexpected issues and outcomes generated by AI tools. Instead of treating such challenges as obstacles, we incorporated them into the creative process, which often led to new aesthetic solutions that were not initially anticipated in the scenario.

This experience, gathered from creating the music video “Ja se budim”, suggests that future interdisciplinary synaesthetic projects, which combine music production, AI, and audiovisual media, may benefit significantly from being integrated by an agile project management approach. This is because an agile approach supports flexibility, while ensuring that the final synaesthetic vision remains guided by the authors and their human creativity.

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