

# Digital and Sustainable Strategies for Preserving Minority Languages Through Music Education

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**Abstract:** The digital transformation of music education is a pivotal innovation, addressing both the evolution of teaching methodologies and the democratization of access to musical and cultural heritage. The ERASMUS+ KA210 YOUTH-funded project, “Musique et Langues Minoritaires Régionales” (MUS-LaMiRé), exemplifies this synergy by focusing on safeguarding European multilingualism through the non-formal musical education of young individuals (aged 13 to 30). This paper explores the integration of digital tools in MUS-LaMiRé, emphasizing their role in the preservation and dissemination of endangered minority languages and fostering a dynamic cultural exchange within the framework of the Small European Orchestra of Linguistic Minorities.

## 1 INTRODUCTION

The integration of digital tools into music education aligns with broader global trends emphasizing accessibility, innovation, and cultural preservation. MUS-LaMiRé operates at this intersection, where musical practice becomes a conduit for multilingualism, leveraging non-formal education methods to inspire cultural engagement. This study examines the project’s objectives, methodologies, and outcomes, situating it within the broader context of digital pedagogy and cultural sustainability.

## 2 CONTEXTUAL BACKGROUND

Musical Education in European institutions is generally oriented on an historical repertoire. In the last years the development of artistic research has been focused towards various aspects of performance practices. Integration with technologies makes it possible to further explore the differences between performances by suggesting interpretative orientations. In this context the possibility of orienting education towards different repertoires has increased and it is more and more possible to involve repertoires of oral, popular and minority traditions.

## 2.1 The State of Minority Languages in Europe

Europe hosts a rich tapestry of minority languages, many of which face extinction due to globalization, urbanization, and shifting socio political landscapes. Initiatives like MUS-LaMiRé aim to counter this trend by integrating these languages into creative and engaging formats, such as musical education, to foster a renewed interest among younger generations.

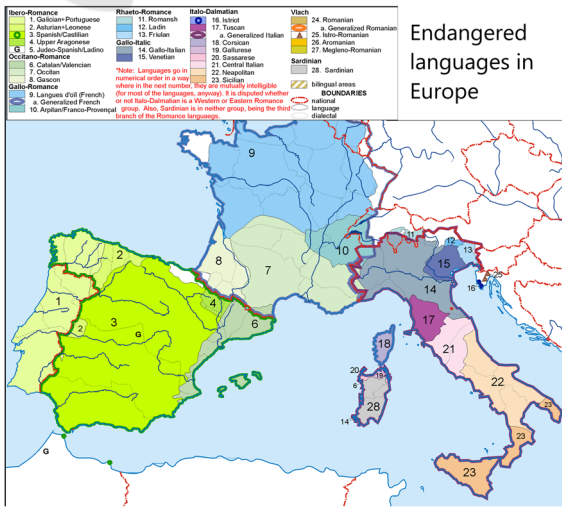


Figure 1: Map of the regional European languages.

## 2.2 The Digital Transition in Music Education

Music education has undergone significant transformation through the adoption of digital technologies. Platforms for online learning, music composition software, and virtual collaboration tools have redefined how students and educators interact with musical content. These tools also facilitate cross-border collaborations, aligning well with the objectives of transnational projects like MUS-LaMiRé.

## 2.3 Project Mus-LaMiRé: Objectives and Motivation

The project “Musique et Langues Minoritaires Régionales” (MUS LaMiRé), co-financed by Erasmus+ under the KA210 YOUTH call, is a 13-month transnational initiative involving partners from France, Italy, and Croatia. The primary objective of Mus-LaMiRé is to safeguard European multilingualism through the non-formal musical education of young adults aged 13 to 30, with a particular focus on endangered minority languages. Additionally, the project aims to enhance the digital transition of musicians and to preserve the memory of nearly forgotten languages through the creation of the Small European Orchestra of Linguistic Minorities.

The selection of participants was conducted entirely online, utilizing digital platforms and tools such as Google Meet, Zoom, and the Europass resume format. Video recordings of artistic performances were submitted by applicants, allowing for a comprehensive evaluation of their musical skills. This digital approach not only streamlined the selection process but also ensured that it was accessible to a broader and more diverse pool of applicants. The call for participants was sent out at the beginning of February 2025, and the selection process, carried out by the esteemed associations of musicians Identitet (Croatia) and Lira Transalpina (France), took place from mid-February to the end of March.

The main criteria for the selection are: to have a basic knowledge of music and of the language Occitan or Arbëresh. It is not mandatory to have a professional musical level. A basic knowledge of the English language is required. The complete selection criteria are indicated in the Call for selection at the dedicated webpage of the project on Lira Transalpina website: <https://liratransalpina.altervista.org/mus-lamire.html>.

Selected students will benefit from 50 hours of online training in preparation for the concerts. This training will be delivered through digital platforms, ensuring accessibility and flexibility. The use of videoconferencing tools will facilitate real-time interactions and feedback, enhancing the learning experience (Dammers, 2009). The creation of the Small European Orchestra of Linguistic Minorities will leverage digital technologies to coordinate and rehearse, ensuring that musicians from different regions can collaborate effectively. Digital recordings and virtual performances will be used to showcase the orchestra's work, reaching a broader audience and preserving the memory of endangered languages.

Digital platforms will also be used to promote the project and disseminate its outcomes, including social media, websites, and online forums. Virtual events and webinars will be organized to engage a wider audience and share the project's findings and musical performances. This approach ensures that the project's impact is maximized and that its benefits are widely accessible.

The benefits of using digital technologies in the Mus-LaMiRé project are manifold. Firstly, digital technologies make the project accessible to participants and audiences from different regions, breaking geographical barriers. Secondly, online tools streamline the selection process, training, and coordination, reducing time and costs. Thirdly, digital evaluations and tracking ensure a transparent and fair selection process. Lastly, digital recordings and virtual performances help preserve and promote endangered languages and musical traditions.

In synthesis, the Mus-LaMiRé project represents a significant step towards innovation and efficiency in musical education and the preservation of linguistic diversity. By leveraging digital technologies, the project aims to create a more inclusive and accessible learning environment, while also contributing to the digital transition of musicians and the preservation of cultural heritage.

## 2.4 Transnational Partnership

The MUS-LaMiRé project benefits from the collaboration of several key partners, each bringing unique expertise to the initiative. Lira Transalpina, an Italian-French musical ensemble founded by Andrea Bareggi, focuses on disseminating and promoting historically informed music from Italy and France. As the leading organization, Lira Transalpina leverages its extensive experience in historically informed music and ethnomusicology to provide high-quality musical education and training, utilizing advanced digital

technologies such as videoconferencing, Digital Audio Workstations (DAWs), and Virtual Studio Technology (VST). Their innovative online training sessions and immersive performances blend traditional and modern elements, ensuring the preservation and celebration of minority language musical repertoires.

The New European Dream (NED) association handles administrative, communication, and management support, collaborating closely with Lira Transalpina. NED manages project timelines, budgets, and compliance with Erasmus+ guidelines, develops communication strategies, and coordinates partner activities. Their efforts ensure the smooth execution of the project, promoting transparency and accountability.

The Identitet association contributes to the pedagogical and musicological aspects of the project, focusing on the preservation of Arbëresh musical traditions. Their expertise in ethnomusicology and organology enhances the project's focus on minority languages, bringing an authentic and rich cultural dimension. Identitet collaborates with Lira Transalpina to provide high-quality musical education and training, blending tradition with innovation through digital technologies.

The Gianluigi Pascale Cultural Center plays a significant role in valorizing the Occitan language of the Calabrian communities. They host the project's first major event in Guardia Piemontese in June 2025, providing a welcoming and supportive environment for participants. Their expertise in promoting and preserving the Occitan language and culture enriches the project's focus on minority languages and fosters contemporary reflection on religious freedom and the acceptance of differences.

Together, these partners create a dynamic and inclusive educational environment that leverages digital tools to preserve and promote the rich musical and linguistic heritage of Occitan and Arbereshe communities.

## 2.5 Traditional Music and Minoritarian Languages

The MUS-LaMiRé project focuses on preserving and promoting the traditional music and minority languages of Occitan and Arbereshe communities. Occitan music, prevalent in the central-southern regions of France, particularly in Auvergne Rhone-Alpes (CMTRA, 2016), is characterized by lively rhythms, melodic richness, and the use of traditional instruments such as the hurdy-gurdy and bagpipes. The Ensemble Lira Transalpina, based in Lyon, plays

a crucial role in preserving and promoting this rich musical tradition through concerts, workshops, and educational programs. Arbereshe music, found in central and southern Italy, particularly in Molise and Calabria, reflects the community's Albanian heritage (Scaldaferri, 2016). It features polyphonic singing and traditional instruments like the lahuta. The association Identitet focuses on preserving and promoting Arbereshe cultural heritage, including its musical traditions, through cultural events and educational programs.

The association Gianluigi Pascale contributes linguistic research, documentation, and educational materials to support the preservation and dissemination of Occitan and Arbereshe languages. Their expertise ensures that the linguistic aspects of traditional music are accurately represented and understood.

NED (Network for European Diversity) provides cultural management and collaboration support, facilitating efficient and effective transnational initiatives. Their expertise ensures that the project's objectives are met through collaboration between partners like Lira Transalpina, Identitet, and Gianluigi Pascale.

The traditional music and linguistic expertise of these partners are integral to the MUS-LaMiRé project. By combining their strengths, the project creates a dynamic and inclusive educational environment where young musicians can learn, perform, and preserve the rich musical and linguistic heritage of Occitan and Arbereshe communities. The use of digital tools further enhances this process, making traditional music and languages accessible to a broader audience and ensuring their preservation for future generations.

## 3 METHODS

### 3.1 Project Framework

MUS-LaMiRé involves participants from diverse linguistic backgrounds, focusing on Occitan and Arbereshe, providing them with access to a blended learning curriculum that combines traditional musical pedagogy with digital innovations. The project centers on three core activities:

1. **Musical Training:** Incorporating minority languages in musical repertoire.
2. **Digital Workshops:** Developing digital literacy among participants to enable music creation and sharing.





Figure 2: A lahuta played by a musician in nord Albanian traditional costume.

### 3. Vocal and Instrumental Collaboration: Forming the Small European Orchestra of Linguistic Minority

The field of music education has undergone significant transformations due to the rise of digital technologies. Traditional teaching methods, such as face-to-face lessons, in-person rehearsals, and live performances, have been integrated and sometimes replaced by new approaches to learning (Johnson, 2017). Distance learning, which allows for remote instruction, and blended learning, which combines online learning with in-person interactions, have emerged as fundamental components of modern educational practices. This shift towards digital instruction methods has been driven by technological advancements, changes in student expectations, and the need for flexibility in education delivery (Burns, 2022). In the context of the MUS-LaMiRé project, funded by Erasmus+ KA210 YOUTH, these transformations are particularly relevant. The project aims to safeguard European multilingualism through the non-formal musical education of young people aged 13 to 30, with a focus on endangered minority languages. The integration of digital technologies is crucial for achieving these goals. Lira Transalpina and Identitet, in collaboration with the Gianluigi Pascale Cultural Center and the New European Dream (NED) association, utilize a combination of distance learning and blended learning to provide high-quality musical education.

## 3.2 Distance Learning

One of the most innovative aspects of the MUS-LaMiRé project is the use of advanced techniques such as Networked Music Performance (NMP). NMP allows musicians to rehearse and perform together in real-time over the internet, overcoming geographical barriers and enabling collaborative music-making. The project leverages open-source platforms like Jamulus, which is designed specifically for low-latency audio streaming, making it ideal for virtual rehearsals and performances. The use of open-source software is a strategic choice to reduce the digital divide. Open-source tools ensure that all participants, regardless of their financial resources, have access to high-quality educational tools. Jamulus, for instance, can be easily integrated into a Digital Audio Workstation (DAW) like Reaper, thanks to a plugin developed during the Erasmus+ METAMORPHOSES project (No 2022-1-FR01-KA220-VET-000085833) in collaboration with ESME School of Engineering. This integration allows students to record, edit, and mix their performances using professional-grade software, while also benefiting from the real-time collaboration capabilities of Jamulus. Online lessons, conducted using videoconferencing platforms like Google Meet and Zoom, complement the NMP tools by allowing for real-time interaction between students and teachers. These platforms enable discussions, Q&A sessions, and collaborative activities, while screen-sharing features allow instructors to demonstrate musical concepts and techniques visually. Digital tools such as MuseScore (MuseScore, 2025) for collaborative music writing and the Google Suite for real-time document sharing further enhance the learning experience. These tools enable students to work together on musical compositions, share feedback, and make revisions in real-time, fostering a collaborative learning environment.

### 3.3 Digital Audio Workstations (DAWs) and Virtual Studio Technology (VST)

The integration of Digital Audio Workstations (DAWs) like Reaper (Cockos, 2025) and Virtual Studio Technology (VST) enables students to explore new creative possibilities, blending tradition with innovation. DAWs provide a comprehensive suite of tools for recording, editing, and mixing audio, allowing students to produce high-quality musical compositions. VST plugins expand the functionality of DAWs by offering a wide range of virtual

instruments, effects, and synthesizers, enabling students to experiment with different sounds and musical styles. Notice that all these technological tools are open source, promoting a sustainable perspective. Open-source software ensures that students have access to high-quality tools without the financial barriers associated with proprietary software, fostering inclusivity and accessibility in music education.

Online lessons, conducted using videoconferencing platforms like Google Meet and Zoom, allow students to participate from anywhere in the world, overcoming geographical barriers. Digital tools such as MuseScore (MuseScore, 2025) for collaborative music writing and the Google Suite for real-time document sharing facilitate interaction and collaboration between students and teachers. Additionally, the integration of Digital Audio Workstations (DAWs) like Reaper (Cockos, 2025) and Virtual Studio Technology (VST) enables students to explore new creative possibilities, blending tradition with innovation. Notice that all these technological tools are open source in a sustainable perspective.

### 3.4 In-Person Training Sessions

The project's methodology also includes in-person training sessions, such as the workshop in Guardia Piemontese in June 2025. These sessions provide students with the opportunity to engage in face-to-face interactions with instructors and peers, enhancing the learning experience. In-person training allows for hands-on demonstrations, group activities, and immediate feedback, which are essential for developing musical skills and techniques. The blended learning approach of the MUS-LaMiRé project combines the benefits of online and in-person learning, creating a rich and diverse educational environment. This methodology not only promotes the preservation of minority languages and their musical traditions but also prepares students for the future by equipping them with the skills needed to navigate the digital musical world.

Collaborative projects and performances are integral to the MUS-LaMiRé project. Students work together to create musical compositions that incorporate minority languages, utilizing digital tools for collaboration and communication. These projects culminate in live performances, both in-person and virtual, showcasing the students' work to a broader audience.

### 3.5 Assessment and Feedback

Assessment and feedback are crucial components of the MUS-LaMiRé project's methodology. Instructors provide continuous feedback to students through online and in-person interactions, helping them to improve their musical skills and compositions. Peer feedback is also encouraged, fostering a supportive learning community. Formative assessments, such as tasks assignments, are conducted throughout the project to monitor students' progress and identify areas for improvement. Summative assessments, including final projects and performances, evaluate students' overall achievement and the effectiveness of the blended learning approach.

## 4 DIGITAL TOOLS IN PRACTICE

Digital tools used in project Mus-LaMiRé includes:

- Online repositories of research papers, music scores and educational resources on music for minority languages (Occitan, Arberesche, others), stored on collaborative online platforms (e.g. Google Drive).
- Collaborative tools for presentations and graphic editing (e.g. Canva).
- Digital tools for video editing and streaming (e.g. ClipChamp (Microsoft Corp., 2025), OBS studio, Twitch)
- DAWs (e.g., Reaper) for composition and arrangement and VST instruments via MIDI devices.
- NMP tools (e.g. Jamulus (Fischer, 2015)) for virtual rehearsals.
- Open-source music writing tools (e.g., MuseScore) for collaborative score preparation.

### 4.1 Collaborative Video Tools

In the Mus-LaMiRé project, video tools play a crucial role in enhancing the musical performances by providing contextual visuals that enrich the audience's experience. During the performances, videos will be projected onto the stage and the surrounding environment, utilizing the stage configuration to create an immersive atmosphere (Greckel, 2021). These projections serve multiple purposes: they provide translations of Occitan and Arbëresh texts, ensuring that the audience can follow the lyrics regardless of their linguistic background;

they display images representing the traditional culture conveyed through the songs, offering visual insights into the historical and cultural context; and they showcase photographs of typical costumes and musical instruments, adding a layer of authenticity to the performance.

To achieve this multifaceted visual experience, the project employs a variety of advanced tools. Video editing software like ClipChamp is used to create and refine the video content, ensuring that it is polished and engaging. Real-time streaming tools such as OBS Studio and Twitch are utilized to broadcast the performances live, allowing a global audience to participate and engage with the event in real-time. Additionally, the videos may incorporate images generated using AI text-to-image tools, which can create visually stunning and contextually relevant images based on the lyrics and themes of the songs. For an even more immersive experience, the project may also include VR-generated images from platforms like Spatial.io, which can transport the audience into a virtual environment that complements the musical performance.

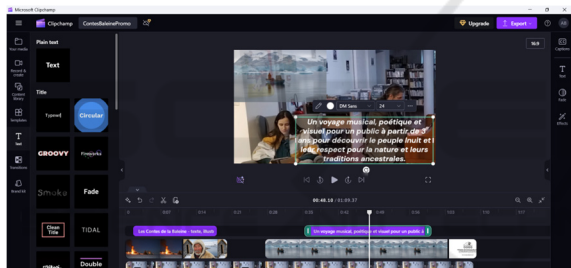


Figure 3: Sustainable video editing with ClipChamp.

The generation and transitions of images can also be effectively managed using collaborative software like Canva. This tool allows team members to work together remotely on creating and editing visual content, ensuring that the final product is cohesive and high-quality. This collaborative approach to image creation is one of the project's strengths, enabling distant collaboration on creative visuals and ensuring that the performances are visually compelling.

This integration of visual elements not only contextualizes the musical content but also creates a dynamic and engaging performance that celebrates the rich cultural heritage of minority languages. By combining traditional musical elements with cutting-edge technology, the Mus-LaMiRé project offers a unique and memorable experience for both the performers and the audience. The use of video tools ensures that the performances are not only aurally captivating but also visually compelling, making the

cultural and linguistic themes of the project more accessible and engaging for a diverse audience.

## 4.2 Networked Music Performance

Networked Music Performance (NMP) represents a dynamic frontier in ongoing research, merging technology with contemporary, popular, and electronic music genres. This convergence has laid the foundation for informatic communication in the realm of music. As the network transcends conventional communication paradigms, transforming into a shared virtual space that thrives on presence and bodily interaction, traditional notions of chamber music—defined by intricate spatial and temporal dynamics—undergo a profound metamorphosis under the auspices of NMP.

NMP systems, classified by temporal (synchronous/asynchronous) and spatial (co-located/remote) dimensions, aim to facilitate real-time synchronous musical interactions between musicians separated by geographical boundaries. The overarching goal is to simulate immersive environments that support a wide range of musical activities, from tele-auditions and distance learning to distributed jam sessions and concerts. However, the complexity of musical interactions requires meticulous consideration. Musicians accustomed to practicing in physical proximity rely not only on auditory cues but also on environmental reverberation and visual cues derived from the movements and gestures of fellow musicians.

Preliminary research on NMP seeks to uncover the intricate technological challenges involved in facilitating near real-time performances between musicians in different locations, with a particular focus on professional and pre-professional training in the operatic environment. The disruptive impact of the Covid-19 pandemic on music education, particularly at the tertiary level, has underscored the urgency for innovative solutions in distance and blended learning methodologies.

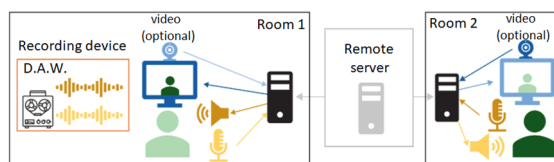


Figure 4: The framework of NMP, interfaced to DAW.

In the context of the Mus-LaMiRé project, NMP serves as a crucial tool for synchronous distance music training. By utilizing NMP, the project enables real-time musical interactions and collaborations



among participants, regardless of their geographical locations. This approach not only enhances the learning experience but also ensures that the project's goals of preserving and celebrating the musical heritage of minority languages are achieved effectively.

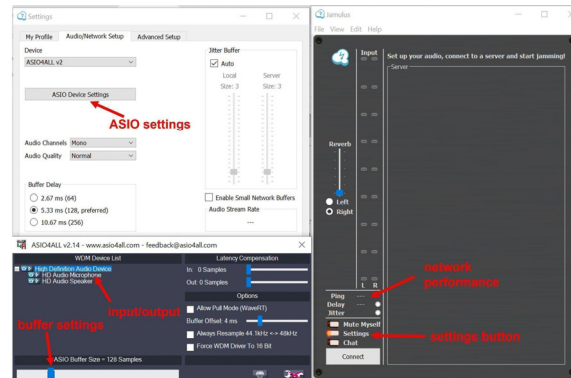


Figure 5: The main interface of Jamulus, the open source NMP platform used in the project.

## 5 CASE STUDY AND CONCERTS

A group of 15 young amateur musicians will be selected to participate in these concerts. The learning process will include distance learning supported by:

- DAWs (e.g., Reaper) for composition and arrangement.
- NMP tools (e.g., Jamulus) for virtual rehearsals.
- Open-source music writing tools (e.g., MuseScore) for collaborative score preparation.

Participants report increased motivation and cultural awareness. A case study of a Sardinian participant highlighted how integrating their native language into a contemporary composition not only enriched the musical output but also deepened their connection to their cultural roots. The Small European Orchestra of Linguistic Minorities' debut performance showcased compositions blending various minority languages. Digital tools enabled participants to collaborate asynchronously, merging diverse linguistic and musical traditions into a cohesive artistic expression.

Three concerts are planned as part of the MUS-LaMiRé project:

1. **Italy (Guardia Piemontese, Early June 2025):** During the festival commemorating the Valdeses community in southern Italy.

2. **France (Roanne Region, Mid-July 2025):** At a historical and rural site, celebrating Occitan culture.
3. **Croatia (Zadar, January 2026):** At the beginning of the festival of Arberesche music.

### 5.1 Candidates Selection and Online Interview

The call for participation is a pivotal phase in the student admission process for our program. In line with our commitment to innovation and efficiency, we have decided to conduct this selection entirely online, leveraging digital technologies to evaluate student resumes, their musical experiences, and linguistic competencies. This approach not only streamlines the process but also ensures that we can reach a broader and more diverse pool of applicants.

Our primary objectives for the selection announcement are threefold. First, we aim to utilize digital platforms to collect and evaluate student resumes efficiently. Students will be required to submit their resumes in the Europass format, which is widely recognized and standardized across Europe. This ensures consistency and ease of evaluation. Second, we focus on analyzing students' musical experiences through digital portfolios and video recordings. Students will submit video recordings of their artistic performances, allowing us to gain a comprehensive understanding of their musical backgrounds and skills. Third, we assess students' linguistic competencies, with a particular emphasis on English and minority languages, through online tests and virtual interviews. These tests can include multiple-choice quizzes, writing exercises, and oral interviews conducted via videoconference.

To achieve these objectives, we employ a variety of digital technologies. For resume management, we use the Europass format to ensure standardization and ease of evaluation. For evaluating musical experiences, we utilize video recordings of artistic performances submitted by the students. Additionally, we conduct oral interviews and linguistic evaluations using videoconferencing tools such as Google Meet and Zoom. These platforms provide a reliable and user-friendly interface for conducting virtual interviews and assessments.

The call for participants was sent to potential candidates at the beginning of February 2025. The selection process, carried out by the esteemed associations of musicians, Identitet (Croatia) and Lira Transalpina (France), took place from mid-February to the end of March. These associations bring a

wealth of expertise and experience in the field of music, ensuring that the evaluation is conducted with the highest standards of professionalism and accuracy.

The benefits of this digital approach are manifold. Firstly, it significantly reduces the time and costs associated with manual resume management and evaluations. Secondly, it enhances accessibility, allowing students from anywhere in the world to participate in the selection process. Lastly, it increases transparency in the evaluation process, as we can track and review evaluations digitally.

In conclusion, the online selection announcement represents a significant step towards innovation and efficiency in the student admission process. By utilizing digital technologies such as Google Meet, Zoom, the Europass resume format, and video recordings of artistic performances, and with the expertise of Identitet and Lira Transalpina, we are able to more accurately and transparently evaluate students' competencies and experiences, ensuring a more accessible and inclusive process.

## 5.2 Blended Educational Process in Mus-LaMiRé Project

Lira Transalpina and Identitet are currently providing 50 hours of online training to the 15 students selected during the application process. This training is conducted entirely online, leveraging a variety of digital technologies such as videoconferencing, Networked Music Performance, and online repositories. The online course includes shared scientific articles on the musical repertoires of the minority languages considered in the project. Additionally, there is extensive use of online whiteboards, collaborative writing tools like MuseScore, and real-time editable shared documents such as those in the Google Suite.

This blended learning approach, which combines online instruction with in-person sessions, offers several critical advantages. A significant portion of the training will be conducted in person at Guardia Piemontese in June 2025, providing students with the opportunity to engage directly with their instructors and peers. This hybrid model ensures that students receive the benefits of both face-to-face interaction and the flexibility of online learning.

One of the most notable benefits of this blended learning approach is its ecological sustainability. By conducting a substantial part of the training online, we significantly reduce the need for travel, thereby lowering the carbon footprint associated with traditional in-person education. This is particularly

beneficial for students located in remote or hard-to-reach areas, who might otherwise face significant barriers to participation. The use of digital technologies enables these students to access high-quality education from anywhere in the world, promoting inclusivity and equal opportunities. However, digital skills and musical/musicological competences are determinant in creating a virtuous approach to blended learning to vocational education and youth training in practical music involving live performance. For these reasons, the blended learning approach should be delivered by trainers with a wide experience in both fields, music and digital technologies (Bayon, 2017).

Moreover, the online component of the training enhances accessibility and inclusivity. Students who may have mobility challenges or other constraints can fully participate in the educational experience. The use of collaborative tools like MuseScore and the Google Suite ensures that all students, regardless of their location, can actively engage in real-time discussions, collaborative projects, and shared learning experiences. This inclusivity is a cornerstone of the project's commitment to providing equal opportunities for all participants (King, 2021).

In synthesis, the blended learning approach adopted by Lira Transalpina and Identitet represents a forward-thinking and sustainable model for musical education. By leveraging digital technologies, we are able to provide a comprehensive and inclusive learning experience that benefits both the students and the environment. This approach not only prepares students for the digital transition in music but also ensures that the rich cultural heritage of minority languages is preserved and promoted for future generations.

## 5.3 DAW & VST in Traditional Music Performance for Minority Languages

The Mus-LaMiRé project places a strong emphasis on the integration of new technologies in music performance, particularly through the use of Digital Audio Workstations (DAWs) and Virtual Studio Technology (VST). These technologies not only enhance the creative possibilities for the musicians but also promote sustainability and inclusivity, aligning with the project's broader goals.

During the concerts, we utilize MIDI keyboards to play traditional musical instruments that are not physically present, such as the cymbalum. Additionally, we incorporate a variety of other instruments, including bells, string instruments, and



drums. This approach allows us to expand our musical repertoire and experiment with new sounds and textures. The use of DAWs enables us to launch pre-recorded audio files and add various sound effects, such as fade-in/out, reverb, and pitch shifting, to enrich the overall performance.

The primary tools we use for these operations are the popular and sustainable DAW platform “Reaper” and the free version of Kontakt Player. These tools provide a robust and flexible environment for creating and manipulating sound, ensuring that our performances are both innovative and high-quality. By leveraging these technologies, we can seamlessly integrate traditional and modern elements, creating a unique and engaging musical experience.

In addition to audio technologies, our artistic performances also incorporate visual elements, including synthesized images generated using text-to-image techniques based on artificial intelligence. We employ Virtual Reality (VR) techniques to create immersive and interactive visual experiences. For these visual elements, we utilize free, participative, and web-based platforms such as Spatial.io (Spatial, 2025). These platforms allow us to create dynamic and engaging visuals that complement the musical performances, enhancing the overall audience experience.

The live performance experience that characterizes the associations Identitet and Lira Transalpina, combined with their expertise in digital tools, ethnomusicology, organology, and musical acoustics, has enabled us to blend tradition and innovation without compromising the quality and authenticity of the music presented. This fusion gives a fresh perspective to the traditional repertoires of the minority languages considered in the project, breathing new life into these cultural treasures.

A key aspect of the Mus-LaMiRé project is its commitment to reducing the digital divide. By utilizing open-source and freely available tools, we ensure that our approach is both sustainable and inclusive. This inclusivity is crucial for reaching a broader audience and ensuring that participants from diverse backgrounds and locations can fully engage with the project. The use of these technologies not only enriches the artistic performances but also aligns with the project's goals of promoting cultural heritage and fostering a more inclusive and accessible musical education.

In conclusion, the integration of new technologies in the Mus-LaMiRé project represents a significant step towards innovation and sustainability in music performance. By leveraging DAWs, VST, and VR technologies, we create dynamic and engaging

performances that blend traditional and modern elements. Moreover, our commitment to using open-source and freely available tools ensures that the project remains inclusive and accessible, reducing the digital divide and promoting cultural heritage for future generations. The expertise and experience of Identitet and Lira Transalpina have been instrumental in achieving this harmonious blend of tradition and innovation, ensuring that the musical repertoires of minority languages are preserved and celebrated in a contemporary context.

## 6 CHALLENGES AND CONCLUSIONS

The project is also structured into the following phases: 1-sourcing of materials, 2-learning through distance methodologies and blended learning, 3-in-person training, and practical demonstration of acquired skills through concerts. Most of these phases are supported by technologies.

MUS-LaMiRé demonstrates the transformative potential of integrating digital tools into music education, particularly in the context of cultural and linguistic preservation. Access to reliable internet and digital devices remains uneven across participant regions. The project mitigated this by providing subsidized hardware and localized training sessions. Ensuring authenticity in the representation of minority languages while adapting them to digital formats required a careful balance, achieved through consultations with linguistic and cultural experts.

Future iterations of the project could expand its scope by incorporating virtual reality experiences, AI-assisted language training, and partnerships with global institutions dedicated to cultural heritage. MUS-LaMiRé demonstrates the transformative potential of integrating digital tools into music education, particularly in the context of cultural and linguistic preservation. Access to reliable internet and digital devices remains uneven across participant regions. The project mitigated this by providing subsidized hardware and localized training sessions. Ensuring authenticity in the representation of minority languages while adapting them to digital formats required a careful balance, achieved through consultations with linguistic and cultural experts. Future iterations of the project could expand its scope by incorporating virtual reality experiences, AI-assisted language training, and partnerships with global institutions dedicated to cultural heritage. By intertwining musical expression with digital

innovation, MUS-LaMiRé sets a benchmark for similar initiatives, underscoring the importance of safeguarding cultural diversity in a rapidly digitizing world.

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