I E G U L D Ī J U M S   T A V Ā   N Ā K O T N Ē

**Form for the Final report on the results of implementation of post-doctoral research applications for evaluation of the scientific quality**

| | |
|---|---|
| Title of the Research Application: | **Leveraging ICT Product Innovations by Enhancing Codes of Modern Art** |
| Number and title of the specific aid objective/measure selection: | 1.1.1. Measure 1.1.1.2 "Aid to Post-Doctoral Research" of the Specific Aid Objective "To increase the research and innovative capacity of scientific institutions of Latvia and the ability to attract external financing, investing in human resources and infrastructure" |
| Implementer of the Research Application: | **Vidzeme University of Applied Sciences** |
| Registration number/Taxpayer registration number: | 90001342592 |
| Type of the implementer of the Research Application: | Derived public person |
| Type of the Research Application | Not related to economic activity |
| Research category | Industrial research |
| Field, sub-field of science | 1. Engineering and Technology – Electrical Engineering, Electronics, Information Technology<br>2. Humanities – Music and Art |
| Strategic priority or area of smart specialisation | Strategic priority – Information and Communication Technologies Innovation and research |

| Classification of the implementer of the research application in accordance with NACE general classification of economic activity: | NACE code | Title of the economic activity |
|---|---|---|
| | 72.19 | Other research and experimental development on natural sciences and engineering |
| Classification of the research application in accordance with NACE general classification of economic activity: | 72 | Scientific research and development |
| Research Application identification No.: | 1.1.1.2/VIAA/1/16/106 | |

## SECTION 1 – DESCRIPTION OF IMPLEMENTATION OF THE RESEARCH APPLICATION

### 1.1. Summary of the research application: short evaluation of the achievement of the objective of the research application and the implementation of main activities, results achieved and their sustainability

**ACHIEVEMENT OF THE OBJECTIVE**. The scientific objective of the project Leveraging ICT Product Innovations by Enhancing Codes of Modern Art has been **to integrate research in the fields of ICT and modern art in order to find new ideas to benefit ICT**. The project intends **to form a new methodology for creating ICT products** using knowledge of the theory of modern art and its subsequent postmodernist expression, paving the way for a novel approach to culturally based digital production.

As the international expert has rightly already noted in the evaluation of the project application, initially it described an abstract concept. Yet it has obtained a concrete form in the implementation phase of the project. The postdoctoral researcher has created an innovative, educational platform concerning modern aesthetics that integrates the fields of ICT and modern art and benefits ICT in relation to the developed gaming industry. The platform is followed by a body of scientific articles by the researcher describing the new methodology of serious game's creation that opens a new horizon of gaming related to research into contemporary art, its cultural backgrounds, documentation of artefacts, and intellectual education.

There are almost no educational media in digital games to date that demonstrate the history of ideas and network of intertextual references of modern aesthetics. A digital environment with gaming elements, Art Space, has been created in the crosscut of new media art, research, and serious games. It will inform the audience about current aesthetical stylistics and its connection with modernism in art. This prototype paves the way for a currently undeveloped category of serious games dedicated to contemporary cultural artefacts, as well as encouraging a new research sub-direction at ViA, introducing modern aesthetic research into its profile. The project analyzes and documents contemporary cultural capital related to audiovisual aesthetics that is currently at risk of being lost because of the fleeting character of digital artefacts.

The planned result / the major deliverable of this project, formulated initially as "a new methodology for the translation of art codes into ICT products", has been achieved by suggesting a strategy for serious game creation in the field of modern art with an emphasis on research, knowledge transfer and specific artistic ideas or art codes that have been explained in the new platform Art Space. This is with the aim of reaching the audience beyond the experts, students, and enthusiasts of art. The methodology has been described in several articles, see the list of research articles in the end of this file (Gintere et al., 2018-2021). It has been embodied in Art Space and serves as a pilot project for digital products in the future.

**SUSTAINABILITY OF RESULTS**. The project has been finalized according to all the conditions set out in the contract regarding the project implementation. The position of the postdoctoral researcher, Ieva Gintere, will be active at the applicant institution Vidzeme University of Applied Sciences (hereafter – ViA) for at least five years after the end of the project under the research direction Communication Ecosystems. The project implements the objectives of the measure "Support for Postdoctoral Research" defined in the Regulations of the National Cabinet of Ministers No. 50, i. e., to develop the skills and increase the scientific capacity of young researchers by providing career opportunities in scientific institutions and businesses, as well as the development of research competencies, the renewal of human resources and an increase in the number of qualified specialists.

The researcher Ieva Gintere has gained rich experience in scientific communication by participating in seminars, conferences, and other events where the results of the project have been disseminated. She has as well acquired valuable experience in developing research articles by publishing 10 papers (4 of them indexed by Scopus / Web of Science). A circle of cooperative partners in educational institutions has been established, as well as an international team of young researchers for future projects. Some of these partners are from Greece and Hungary and are included in the application for the Creative Europe grant. New project applications have been submitted to continue the development of the project results.

Cooperation with the business partner, digital agency Cube, was implemented in the process of creating the digital game Art Space (in the beginning of the project). Yet due to the non-commercial profile of the project, the artistically non-satisfactory results of the agency as well as its extensive financial demands, this cooperation has now been left on the level of consultations only and the creative functions have been entrusted to new media artists Kristaps Biters and Ieva Vīksne. Assistant Ieva Vīksne joined the project during the third year to help the main programmer and artist Kristaps Biters. The team has published an article describing the experience and conclusions of this project (Gintere et al., 2021). Compared to the benefits from the collaboration with Cube, the work with the new media artists has proven itself as highly fruitful in terms of a common creative work on Art Space. Their research activities have resulted in a publication as well as a continuing exchange of knowledge regarding the newest trends in art and technologies. Cube gave the initial phase of this project some valuable advice, but the team of artists and a postdoctoral researcher have demonstrated a more productive synergy concerning the perspective work possibilities.

During the project implementation, Ieva Gintere attended the English training courses offered by ViA and developed her knowledge of academic English. She has obtained the Linguaskill Cambridge English certificate (C1 level) which is required for high-quality international scientific communication (see Annex 8).

**THE SCIENTIFIC RESULTS** achieved during the project implementation exceed the planned ones. The main benefits are:

- **4 indexed articles** in international databases (Scopus / Web of Science level publications) aimed at promoting the development of a serious gaming genre at the international level:

   Gintere, I. (2020a). Developing the Noise Music Trend in Digital Edugaming. International Journal of Circuits, Systems and Signal Processing, vol. 14, pp. 1176-1180 (**Scopus**).
   Gintere, I. (2020f). A Perspective on a New Digital Art Game: The Approach of Research and Knowledge Transfer. Proceedings of the 12th International Conference on Computer Supported Education (CSEDU-2020), Prague, May 2nd, vol. 1, pp. 311-318 (**Scopus**).
   Gintere, I., Zagorskis, V., Kapenieks, A. (2018). Concepts of E-learning Accessibility Improvement – Codes of New Media Art and User Behaviour Study. Proceedings of the 10th International Conference on Computer Supported Education (CSEDU-2018), 1, pp. 426-431 (**Scopus**).
   Gintere, I. (2020d). The Inclusion of Research and Knowledge Transfer in Art Games. Proceedings of the 12th International Scientific Conference "New Challenges in Economic and Business Development – 2020: Economic Inequality and Well-Being", Riga, 2nd October, 2020. University of Latvia, pp. 150-159 (**Web of Science** Core Collection).

- **6 publications in collections of articles** outside the databases of Scopus/Web of Science (instead of the planned three articles),

- **Art Space, a digital game prototype** with the aim of developing serious gaming,

- international **mobility**/interaction at the University of Lincoln in the UK, during which experiences were exchanged, new ideas obtained, as well the existing path of the project was strengthened,

- a new **full-time equivalent researcher's position** at ViA,

- **development of ViA's scientific profile** by joining with art universities in Latvia,

To ensure sustainability of the post-doctoral project, **two project applications** were submitted on the National and European level with the aim of paving the way for a new category of serious games dedicated to contemporary cultural artefacts alongside the Art Space platform:

1) Creative Europe Small Scale Cooperation projects (deadline: September 2021), international team of researchers Ágnes Bakk (Moholy-Nagy University of Art and Design, Hungary), Emmanouel Rovithis (Ionian University, Greece), & Ieva Gintere (ViA),

2) Latvian Council of Science (deadline: September 2021), international team of researchers Ilze Loža (Zayed University, United Arab Emirates), Alvis Misjuns (Art Academy of Latvia), & Ieva Gintere (ViA).

The results of the project were **disseminated** with the participation of the beneficiaries and the intended target audience: teachers, students, new media artists and audiovisual content creators, game developers, game enthusiasts, emerging researchers, and other interested parties. Dissemination of results was implemented in numerous international conferences as well as in several other events:

1. September 7th, 2017, Post-Doctorate seminar, ViA
2. December 6th, 2017, Future Scientists Forum. Riga, National Library of Latvia
3. November 8th, 2019, University of Lincoln, UK (international mobility), post in Facebook here
4. November 23rd, 2017, seminar at ViA Institute of Social, Economic and Humanities Research (HESPI), post in ViA homepage here (LV)
5. May 28th, 2018, Post-Doctorate seminar, ViA, with participation of doctoral students and open university students
6. December 18th, 2019, Post-Doctorate seminar, ViA
7. January 30th, 2020, HESPI Post-Doctorate seminar, ViA, post in Facebook here
8. April 30th, 2020, Night of Scientists (online streaming event), link to the event here
9. May 3rd, 2021, ViA seminar for doctorate students and post-doctorate researchers
10. June 7th, 2021, ViA seminar for doctorate students and post-doctorate researchers

Art Space **testing sessions / informative seminars for the beneficiaries**:
12. Jāzeps Vītols' Latvian Academy of Music, May 28th, 2021
12. Art Research Laboratory, Liepāja University, students of the study program "Academic Master in New Media Arts", October 13th, 2020
13. Virtual and Augmented Reality Laboratory, students of the master study program "Virtual reality and Smart technologies" at ViA, October 16th, 2020
14. Valmiera Secondary School of Design and Art, September 8th, 2021
15. Janis Rozentāls Riga Art School, September 13th, 2021

The project has reached the sub-goal formulated in the process of its implementation **of safeguarding the short-lived artefacts** of digital games today by documenting its examples and the little-known historical heritage related to those artworks. The project offers an updated definition of art game thus developing the gaming discourse (Gintere, 2019) and a comprehensive classification of stylistic trends in artistic gaming today.

All the **work packages** (hereinafter – WP) have been completed:

1. Analysis of the state-of-the-art of the subject areas,
2. In-depth interviews and their analysis,
3. Delphi interviews of the experts,
4. Methodology of the art game creation,
5. Game analysis,
6. Study of the design science research method,
7. Conceptual design of the product idea & development roadmap,
8. Concept of the product prototype,

9. Design of the product prototype,
10. Code of ethics,
11. Development of the ICT product prototype,
12. Update of the roadmap,
13. The methodology description,
14. Project management, coordination, monitoring.

**Main activities**: conference papers and scientific publications on the subject of knowledge transfer and methodology innovation in the crosscutting area of ICT and theory of modern art as well as development of serious gaming; creation of the product prototype (game); dissemination of results.
**Duration**: 36 months (with a maternity leave 22 October 2018 - 21 October 2019).
**Total costs**: 133 415,09 EUR.
The final report is supplemented by the annexes confirming the results of the study.

## SECTION 2 – SCIENTIFIC QUALITY

**2.1. Clarity of objectives of the research application:** whether the implementation of the research application has ensured the achievement of the planned objectives and results

The planned objectives and results have been achieved. The project **integrates research in the fields of ICT and modern art** as one of its main activities was research into digital gaming and contemporary aesthetics **in order to find new ideas to benefit ICT**. According to the goals set out in the project application, it **forms a new methodology** for creating serious games which incorporates research and knowledge transfer. The author suggests the development of gaming and interdisciplinary circulation of research knowledge in accordance with ViA's priority of scientific communication. A prototype of digital media named Art Space has been created that categorizes, describes, and popularizes the new art's fuzzy areas which require a commentary due to their complex theoretical structure largely ignored in digital gaming to date. The technology used to create Art Space is Unity3d for game design, Blender 3d object design, Audacity, Ableton music generation and editing, and others (see the article Gintere et al., 2021 for more details). It is a sandbox-style first person game.

The prototype Art Space embodies an innovative approach filling the gap in modern gaming as it:

1. reveals the historical context of contemporary gaming aesthetics,
   1.1. demonstrates the intertextual net of references of gaming aesthetics during the last twenty years,
   1.2. documents modern artefacts and their unfamiliar heritage related to the cultural context and theoretical links to other artistic phenomena,
2. stimulates artistic design in serious gaming,
3. suggests a currently non-existing niche of serious gaming focused on:
   3.1. incorporation of research results of modern art into gaming,
   3.2. knowledge transfer,
   3.3. promotion of new artefacts.

Table 1

| | Output indicators (in accordance with table 1.6.1 of the research application) | | | | |
|---|---|---|---|---|---|
| No. | Title of the indicator | Scheduled value | Achieved value | Value to be achieved during the follow-up period | Unit of measure |

| | | value | value | value | |
|---|---|---|---|---|---|
| 1. | Number of new post-doctoral positions expressed as full time equivalent | 1 | 1 | 1 | Number |
| 2. | Number of scientific articles and publications | 3 | 10 | 1 | Number |
| 3. | Number of new products and technologies which can be commercialized | 1 | 1 | 1 | Number |
| 4. | Raised private investments | | | | EUR |
| 5. | Number of enterprises cooperating with research institutions | 1 | 1 | | Number |

The two main **amendments** of the project proposal were accepted by the expert during the Interim evaluation. The expert has agreed to the changes of the initially planned tasks of WP4 and WP5. They were categorized as irrelevant, and the titles were changed to **WP4 Methodology of the Art Game Creation** and **WP5 Game Analysis**.

Research in the field of art game methodology (**the proposed WP4**) has been an important task. It has led the researcher to basic conclusions about this project, namely, that

- there are almost no digital educational games devoted to the aesthetics of new art,
- research in new art has not been connected to game's creation to date,
- the existing art games that might be categorized as educational ones (such as Prisme7 (2020) by Oliver Mauco and Abdel Bounane, Noize Games (2019) by Emmanouel Rovithis, Vito Acconci (2007) by Mark Beasley, and Patrick LeMieux' Art Games (2008-2009), do not encompass the historical context, intertextual references, and a comprehensive picture of modern aesthetical styles (Gintere, 2020d and 2020f).

Thus, the analysis of art games' methodology has supported the project's main goal, the creation of a new methodology of gaming creation that crosscuts the ICT and theory of modern art as stated in the project application.

Also, Game Analysis (**the proposed WP 5**) has strengthened the theoretical background of the chosen product prototype and its identity. The analysis of games, especially serious and art games over the last twenty years, has revealed the current stylistic trends and their development. For the achievement of the planned objective of the research application, **to find new ideas to benefit ICT**, it was necessary to focus attention on the present state of gaming on order to advance an underrepresented field. The study of gaming in this WP helped to elaborate the thesis of this project that:

- gaming is a powerful tool for transferring knowledge that would otherwise be difficult for the general public to access,
- the subject of contemporary art has been almost ignored in digital gaming and is a rarity among serious games.

The amendment of WP 4 and WP5 were thus changed to reflect the main deliverable, the innovative methodology of the game creation.

**2.2. Clarity and scientific quality of the results of the research application:** how the research results achieved are clear and unambiguous, their scientific quality is relevant, taking into account

the scientific value, the level of novelty of the results achieved; whether sustainability of the achieved research results will be achieved

The project is sustainable as it proposes a matrix where new content can be incorporated in future with the aim of promoting trends of contemporary artistic thought, as well as enlightening and communicating their theoretical context. The main benefit of the project is the creation of an unprecedented educational platform of gaming which is a recognized modern educational technique for bringing new knowledge to the public. The innovative approach addresses gaming industry professionals and researchers with the aim of creating products with a similar mission. The suggested methodology of gaming creation has been embodied in Art Space that serves as a pilot project for digital products in future such as a platform dedicated to noise-related sound or immersive aesthetics which are phenomena of modern world of culture. These phenomena have been explored and included in two project applications (Council of Science, Latvia and European Commission's Creative Europe) by the postdoctoral researcher aimed at the creation of new gaming products.

Art Space was created as a possibly marketable game which could function as a start-up in the future just like, for instance, Musemio (2019), a virtual reality game that aims to bring cultural knowledge closer to children through playing. The mission of Art Space is much like this, with the difference that it has been created not for children, but for youth and adults. Yet Art Space cannot compete with commercial games since it is created as a highly targeted product, and the attraction of a large number of players is not the goal of the game's authors. The game does not meet the standards of mainstream gaming such as competitiveness and dynamics.

## SECTION 3 – SOCIOECONOMIC IMPACT

**3.1. Social and economic impact of the achieved results of research applications:** whether the results of the research application have fostered strengthening of scientific capacity of the post-doctoral researcher, implementer of the research application, cooperation partner, field of science or national economy sector, RIS3 goals, development of society

The project follows the RIS3 objective for Latvia as it **increases innovation capacity** and **creates a high added value product** in the area of edugames. It helps to find new intuition-based solutions and fresh visions for edugames. It supports the needs of society as it helps to reduce the sociocultural segregation caused by the highly intellectual tradition of modernism. The project transfers knowledge of modernism aesthetics to the players; it helps to present the research results of contemporary art in a methodologically innovative model of game. The project compliments the **priorities of the RIS3 in area of research as well as in the digital agenda**. It develops digital education as well as promoting research into gaming and modern aesthetics.

The dissemination activities were aimed at disclosing the research results and demonstrating their embodiment in Art Space. One of the main aims of the project was to widen the public's understanding and appreciation of modern art. Considering the complicated and very particular nature of modernism in the arts, the general public has little knowledge of its historical background and consequently the conceptual framework. The project's dissemination activities have been organized with the aim of ensuring access to experiences that could let the public appreciate this highly intellectual and semantically opaque paradigm (represented, for instance, in art games by artists such as Jodi and many others). Art Space was created to reduce the social segregation related to contemporary art's appreciation and to open up its cultural cache. The dissemination activities aimed at the general public were Night of Scientists 2021 (30th April, remotedly streamed event) and Future Scientists Forum 2017 (6th December, Riga, National Library of Latvia). The projects main author, Ieva Gintere, has contacted the audience in person

during the Forum that was aimed at the young public as well as during the Night of Scientists 2020 that was streamed in real time to ensure the most effective presentation of the prototype's idea.

The results of this research in the form of scientific papers and conferences have significantly boosted the expertise of the post-doctoral researcher, improved her research skills and experience, intensified her interest in research and strengthened her desire to do future work in the field of research.

**3.2. Achievements in dissemination of the results of the research application and knowledge or technology transfer activities**

The project is related to one of the ViA's strategic priorities, the ecosystem of communication. One of the project tasks is to explain and ease the communication of the tradition of modernism inherited in digital art that is difficult to comprehend outside the circle of art connoisseurs. The communication activities were aimed at **building a creative solution for knowledge** transfer for persons interested in the humanities and arts, and indirectly for the wider society. The project distinguishes two different levels of target groups. See Table 1 for means of communication with the target groups.

1. The specific target group:

students studying the humanities at universities and colleges as well as researchers, game developers, enthusiasts of experimental gaming, new media artists, and teachers. This target group is composed of persons with a professional interest in the arts and humanities. The target group has been informed about the tendencies in contemporary aesthetics and newest artworks as well as their cultural background. Emerging game developers have been **invited to continue this particular type** of gaming crosscutting related to contemporary aesthetics, research and serious gaming.

2. The general target group:

members of the general public, especially those interested in the area of gaming and new media artistic practices, have benefited from the project by acquiring **new knowledge and experience** in gaming as well as in contemporary art and its conceptual context.

Table 1. Means of communication with the target groups

| Specific target group | General target group |
|---|---|
| Scientific articles, SCOPUS and Web of Science (4); scientific articles of a lower level collections of articles (6); presentation of results in international scientific conferences, related to the scientific article (11) (See Annex 1) | Night of Scientists 2021 (30th April, remotedly streamed event) <br><br> Future Scientists Forum 2017 (6th December, Riga, National Library of Latvia) |
| Digital poster on digital screen in the ViA lobby hall (1) | Representation materials (teaser ad, pictures, videos of Art Space) available at http://artspace.va.lv/ |
| Seminars for doctorate students and post-doctorate researchers at ViA | Press release (Annex 2) in gaming portals: Gamedev (LV), Gamescenes (ENG) |
| Press release about the final results: | Posts on Facebook in the process of implementation: June 10th, 2019 (about the |

| | |
|---|---|
| Satori portal of culture (LV)<br><br>Homepage of ViA: <u>LV</u>, <u>ENG</u> | conference in Liepāja); <u>March 19th, 2019</u> (about the scientific publication in Scopus); <u>April 30th, 2020</u> (about the CSEDU-2020 conference); <u>November 8th, 2019</u> (about the mobility to University of Lincoln); <u>January 27th, 2020</u> (about the HESPI seminar) |
| Information in the existing website of the applicant institution, section <u>Research</u> (updated throughout the project duration) | Posts on Facebook about the final results (September 9th, 2021): <u>Facebook (ENG)</u>, <u>LinkedIn (LV)</u>, <u>Twitter (LV)</u>, <u>Twitter (ENG)</u> |
| Testing sessions in educational institutions (see Annex 5) | |
| Art Space: prototype of the virtual environment, available for download at http://artspace.va.lv/ | Art Space: prototype of the virtual environment, available for download at http://artspace.va.lv/ |

## SECTION 4 – IMPLEMENTATION QUALITY

| |
|---|
| **4. Implementation quality of the research application:** efficiency of the resources used, evaluation of implementation of activities and compliance with the initial plans/mid-term updates of the research application |
| The project has been supervised by the relevant structural unit, the Institute of Social, Economic and Humanities Research (HESPI) and its administrative structural units in order to ensure adequate quality of the project results and steady progress according to the proposed project plan. Any deviations from the proposed project plan have been discussed and assessed within the research project management team and adequately dealt with in order to ensure achievement of all the project results. The main risk during the initial phase of the project was linked to the partnering agency Cube that has already been explained in the Interim report.<br><br>Financial resources in the time period after the interim report were mainly spent on fees for the programmers/new media artists to create the product prototype, as well as on project related expenses to the IT specialists, proof reading by an English-speaking academic and a graphical artist. The fees for IT specialists were planned in order to technically implement the project in response to the Covid-19 situation which necessitated remote work, to gain new technical knowledge as well as to support the researcher facing various technical difficulties regarding the use of digital software and other technical issues of a rapidly developing digital world, gaming techniques and digital interaction particularities. This training was necessary because of the humanitarian education of the postdoctoral researcher in order to ensure her ability to handle challenges related to gaming and develop digital skills. The assistance of an English proof-reader and graphical artist was necessary to ensure the quality, readability and clear visual presentation of the research papers and project applications as well as for the international dissemination of the project results. |

| No. | Research application activity (work package) in accordance with the work plan specified in section 1.5 of the research application and section 3.1 of Annex 4 "Research proposal" of the research application* | Result to be achieved in the activity | Numerical result | | Partners involved (if applicable) | Information on things to be done during the follow-up period, if the results have not been achieved in full (if applicable)[1] |
|---|---|---|---|---|---|---|
| | | | Initially planned | Final achievements | | |
| 1. | WP1. Analysis of the state-of-the-art in the field of modernism codes and its intersection with ICT | Conclusions about the crucial points of intersection of art and ICT in Latvia and abroad. | 1 report, 1 seminar | 1 report 2 seminars Activities completed during the Interim phase | - | |
| 2. | WP2. In-depth interviews and their analysis | Interviews of artists, analysis of interviews, description of art codes. Results of research presented at the scientific seminar at the University of Lincoln. | 1 seminar (international mobility), 1 report | 1 seminar (international mobility) completed during the Interim phase **1 report (R2) submitted with the Final report** | - | |
| 3. | WP3. Delphi method of questioning experts | Questioning sessions with art experts in order to find the most promising media to incorporate knowledge of modern art into ICT production. | 1 report | Activity completed during the Interim phase | Partner agency Cube | |
| 4. | WP4. Methodology of the art game creation | Report on the methodology innovation in gaming | 1 report | **1 report (R4) submitted with the Final report** | - | |

Table 2. **Evaluation of the implementation of the performed activities of the research application\*:** results of activities, tasks fulfilled, deliverables made, milestones reached, their achievement time and verification method

---

[1] The following research results (output indicators) can be reached in the follow-up period of the research application (5 years after receiving the final payment, but no later than 31.12.2023):

1) Number of scientific publications, for the development and publishing of which support within the scope of research applications was provided;

2) technology rights;

3) intellectual property licence agreements.

| | | | | | | |
|---|---|---|---|---|---|---|
| 5. | WP5. Game analysis | Conclusions from the digital game analysis | 1 report | **1 report (R5) submitted with the Final report** | - | |
| 6. | WP 6. Study of the design science research method | Description of the use of design science research method in the research project | 1 research article, 1 conference presentation, 1 report | 1 research article, 1 conference presentation, 1 report. Activities completed during the Interim phase | - | |
| 7. | WP 7. Conceptual design of product idea & development roadmap | Description of design of product idea Development roadmap / timeline | 1 timeline | **1 timeline (R7) submitted with the Final report** | - | |
| 8. | WP 8. Concept of the product prototype | The concept of Art Space. Communication and dissemination of the concept | 1 research article, 1 conference presentation, 1 seminar | Activities completed during the Interim phase | Paid programmer/artist and assistant to the artist (outsourcing) | |
| 9. | WP9. Design of the product prototype. Creative lab 1 | Design of Art Space. Communication and dissemination of the design model (Gintere, 2020d, see Annexes 1, 6 & 7). | 1 research article, 1 conference presentation | **Article and conference presentation submitted with the Final report. Article indexed in Web of Science** | Outsourcing | |
| 10. | WP10. Code of Ethics | Code of Ethics developed. Communication and dissemination of the project results | 1 report, 1 seminar | Activities completed during the Interim phase | - | |
| 11. | WP11. Experimental development of the ICT model/prototype. Creative lab 2 | Creation of the ICT product prototype (available here). Results of the experimental artistic work, theoretical model incorporated in the prototype and published in the research article (Gintere, 2020e, see Annex 1) | 1 prototype, 1 research article | **Prototype and research article submitted with the Final report** | Outsourcing | |
| 12. | WP12. Update of the roadmap | Project's goals and deliverables presented on an updated timeline (see R7). Conference presentation (Gintere, 2020e, see Annex 7) | 1 timeline (R7), 1 conference | **Timeline and conference papers submitted with the Final report** | - | |
| 13. | WP13. Creation of methodology | Innovative methodology of the serious art game creation. Communication and dissemination of the project results. Press release (see Annex 2). 6 research articles and conferences (Gintere et al., 2021; Gintere, 2021, 2020a, b, c & f, see Annexes 1, | 1 research article, 1 conference, 1 press release, 2 seminars | **6 articles, 6 conferences, and a press release submitted with the Final report, 2 articles indexed in Scopus (Gintere, 2020a** | - | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 6 & 7).<br>May 3rd & June 7th, 2021 ViA seminar for doctorate students and post-doctorate researchers (See Annex 3) | | | **& f),**<br>**2 seminars at ViA,**<br>2 more seminars submitted with the Interim report. | | |
| 14. | WP14. Project management, coordination, monitoring | Final report on the project results | | Final report | **Final report submitted** | - | |

| Table 3.1 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Summary budget of the research application not related to economic activity** | | | | | | | |
| **Code** | **Title of the cost item** | **Use of standard rate of unit cost (yes or no*)** | **Quantity** | | **Unit of measure** | **Costs of the research application** | |
| | | | **Initially planned** | **Final achievements** | | **Initially planned** | **Final achievements** |
| 1. | **Costs of remuneration of the research application implementation staff (gross post-doctoral researcher's wage + employer's mandatory state social insurance contributions)** | No | 36 | 36 | 2731 | 98111.04 | 83244.79 |
| 2. | **Research application implementation costs (research costs)** | Yes | 36 | 36 | 800 | 28800 | 28000 |
| 3. | **Research application administration and infrastructure maintenance costs** | Yes | 35 | 35 | 185.83 | 6504.05 | 6318.22 |
| 4. | **Investment in kind (does not exceed 5% from the eligible costs of the research application)** | (if applicable) | - | - | - | 0 | 0 |
| 4.1. | Fixed assets (tangible assets) | - | - | - | - | 0 | 0 |
| 4.2. | Granted materials (tangible assets) | - | - | - | - | 0 | 0 |
| 4.3. | Professional activities related to research within the scope of the research application | - | - | - | - | 0 | 0 |
| | **Total** | | | | | **133415.09** | **117563.01** |

**List of annexes**

1. **Research articles**

1.1. Gintere, I., Biters, K., Vīksne, I. (2021). An Innovative New Media Environment as a Tool for Education of Contemporary Stylistic Heritage. Proceedings of the 15th International Technology, Education and Development Conference (INTED-2021), 8-9 March 2021, Valencia. The International Academy of Technology, Education and Development (IATED), pp. 10569-10573. Abstract available here. **WP13 (submitted with the Final report)**.

1.2. Gintere, I. (2021). An Educational Digital Environment of Contemporary Aesthetics Focused on Slow Gaming. Proceedings of the 13th International Conference on Computer Supported Education, Prague, 23-25 April 2021 (CSEDU-2021). Institute for Systems and Technologies of Information, Control and Communication, Prague, SciTePress library, vol. 2, pp. 163-168. **WP13 (submitted with the Final report)**.

1.3. Gintere, I. (2020a). Developing the Noise Music Trend in Digital Edugaming. Proceedings of the 4th European Conference on Electrical Engineering and Computer Science, ELECS-2020, International Journal of Circuits, Systems and Signal Processing, vol. 14, pp. 1176-1180 (**Indexed in Scopus**). Bern, December 21-23, 2020. **WP13 (submitted with the Final report)**.

1.4. Gintere, I. (2020b). Art Space: An Innovative Digital Game of Modern Aesthetics. 13th annual International Conference of Education, Research, and Innovation (ICERI-2020), Seville (Spain), November 9th-11th, 2020. ICERI2020 Proceedings, ISBN: 978-84-09-24232-0 / ISSN: 2340-1095. DOI: 10.21125/iceri.2020. The International Academy of Technology, Education and Development (IATED), pp. 1521-1527. Abstract available at: https://library.iated.org/view/GINTERE2020ART. **WP13 (submitted with the Final report)**.

1.5. Gintere, I. (2020c). Fusing Art Game and Edugame: An Innovative Digital Game of Modern Aesthetics. European Proceedings of International Conference on Education and Educational Psychology, EpICEEPSY-2020, pp. 220-228. 11th International Conference on Education and Educational Psychology, Sicily, Italy, 6th-8th October. Available here. **WP13 (submitted with the Final report)**.

1.6. Gintere, I. (2020d). The Inclusion of Research and Knowledge Transfer in Art Games. Proceedings of the 12th International Scientific Conference "New Challenges in Economic and Business Development – 2020: Economic Inequality and Well-Being", Riga, 2nd October 2020. University of Latvia, pp. 150-159 (included in the **Web of Science** Core Collection). **WP9 (submitted with the Final report)**.

1.7. Gintere, I. (2020e). Art Space: An Experimental Digital Art Game. Proceedings of the 14th International Scientific Conference Society, Integration, Education (SIE-2020), vol. 5, pp. 649-660. Rēzekne Academy of Technologies, Latvia, 22nd May 2020. Available here. **WP12 (submitted with the Final report)**.

1.8. Gintere, I. (2020f). A Perspective on a New Digital Art Game: The Approach of Research and Knowledge Transfer. Proceedings of the 12th International Conference on Computer Supported Education (CSEDU-2020). Institute for Systems and Technologies of Information, Control and Communication, Prague, May 2nd, vol. 1, pp. 311-318 (**Indexed in Scopus**). Available here. **WP13 (submitted with the Final report)**.

1.9. Gintere, I. (2019). A New Digital Art Game: The Art of the Future. 13th International Scientific Conference "Society, Integration, Education" (SIE-2019) Proceedings, vol. 4, pp. 346-360. Rēzekne Academy of Technologies, Latvia, 24th-25th May 2019. Available here. **WP8 (submitted with the Interim report)**.

1.10. Gintere, I., Zagorskis, V., Kapenieks, A. (2018). Concepts of E-learning Accessibility Improvement – Codes of New Media Art and User Behaviour Study. 10th International Conference on Computer Supported Education (CSEDU-2018), 1, pp. 426-431. Portugal, Madeira, March 15th -17th 2018 (**Indexed in Scopus**). Available here. **WP6 (submitted with the Interim report)**.

2. **Press release on the project results: 2.1. ENG, 2.2. LV**

**3. Informative events of the second half of the project (after the Interim phase)**

3.1. May 3rd, 2021, ViA seminar for doctorate students and post doctorate researchers

3.2. June 7th, 2021, ViA seminar for doctorate students and post doctorate researchers

3.3. April 30th, 2020, Night of Scientists: certificate of presentation

**4. Reports completed during the second half of the project (after the Interim phase)**

4.1. R2: Interviews of artists, analysis of interviews, description of art codes

4.2. R4: Report on the methodology innovation

4.3. R5: Report of game analysis

4.4. R7: Conceptual design of product idea & development roadmap

**5. Certificates of testing sessions at educational institutions**

5.1. Jāzeps Vītols' Latvian Academy of Music, May 28th, 2021

5.2. October 13th, 2020, by the students of the study program "Academic Master in New Media Arts" at the Art Research Laboratory, Liepāja University

5.3. October 16th, 2020, by the students of the master study program "Virtual reality and Smart technologies" at the Virtual and Augmented Reality Laboratory, ViA

5.4. Valmiera Secondary School of Design and Art, September 8th, 2021

5.5. Janis Rozentāls Riga Art School, September 13th, 2021

**6. Screenshots from the international databases of research articles**

**6.1. Scopus:**

Gintere, I. (2020a). Developing the Noise Music Trend in Digital Edugaming. International Journal of Circuits, Systems and Signal Processing, vol. 14, pp. 1176-1180.

Gintere, I. (2020f). A Perspective on a New Digital Art Game: The Approach of Research and Knowledge Transfer. Proceedings of the 12th International Conference on Computer Supported Education (CSEDU-2020). Institute for Systems and Technologies of Information, Control and Communication, Prague, May 2nd, vol. 1, pp. 311-318. Available here.

Gintere, I., Zagorskis, V., Kapenieks, A. (2018). Concepts of E-learning Accessibility Improvement – Codes of New Media Art and User Behaviour Study. Proceedings of the 10th International Conference on Computer Supported Education (CSEDU-2018), 1, pp. 426-431. Portugal, Madeira, March 15th -17th 2018 (**Indexed in Scopus**). Available here.

6.2. **Web of Science:** Gintere, I. (2020d). The Inclusion of Research and Knowledge Transfer in Art Games. Proceedings of the 12th International Scientific Conference "New Challenges in Economic and Business Development – 2020: Economic Inequality and Well-Being", Riga, 2nd October 2020. University of Latvia, pp. 150-159 (Web of Science Core Collection).

**7. Conferences: presentations, certificates, posters, and programs during the second half of the project (after the Interim phase)**

7.1. Gintere, I. (2020d). The Inclusion of Research and Knowledge Transfer in Art Games. 12th International Scientific Conference "New Challenges in Economic and Business Development – 2020: Economic Inequality and Well-Being", Riga, 2nd October 2020. University of Latvia (article included in the **Web of Science** Core Collection):

      7.1.1. Presentation (ppt format).

      7.1.2. Certificate of presentation.

      7.1.3. Program.

7.2. Gintere, I. (2020e). Art Space: An Experimental Digital Art Game. 14th International Scientific Conference Society, Integration, Education (SIE-2020). Rēzekne Academy of Technologies, Latvia, 22nd May 2020.

      7.2.1. Presentation (ppt format).

      7.2.2. Certificate of presentation.

      7.2.3. Program.

7.3. Gintere, I. (2020f). A Perspective on a New Digital Art Game: The Approach of Research and Knowledge Transfer. 12th International Conference on Computer Supported Education (CSEDU-2020). Institute for Systems and Technologies of Information, Control and Communication, Prague, May 2nd (article indexed in **Scopus**).

      7.3.1. Presentation (ppt format).

      7.3.2. Certificate of presentation.

      7.3.3. Program (screenshot).

7.4. Gintere, I. (2020c). Fusing Artgame and Edugame: An Innovative Digital Game of Modern Aesthetics. International Conference on Education and Educational Psychology,

EpICEEPSY-2020, Sicily, Italy, 6th-8th October.

      7.4.1. Presentation (ppt format).

      7.4.2. Certificate of presentation.

      7.4.3. Program.

7.5. Gintere, I., Biters, K., Vīksne, I. (2021). An Innovative New Media Environment as a Tool for Education of Contemporary Stylistic Heritage. 15th International Technology, Education and Development Conference (INTED-2021), 8-9 March 2021, Valencia. The International Academy of Technology, Education and Development. Certificate of presentation.

7.6. Gintere, I. (2021). An Educational Digital Environment of Contemporary Aesthetics Focused on Slow Gaming. 13th International Conference on Computer Supported Education, Prague, 23-25 April 2021 (CSEDU-2021). Institute for Systems and Technologies of Information, Control and Communication.

      7.6.1. Poster.

      7.6.2. Certificate of presentation.

      7.6.3. Program (screenshot).

7.7. Gintere, I. (2020a). Developing the Noise Music Trend in Digital Edugaming. 4th European Conference on Electrical Engineering and Computer Science, ELECS-2020, Bern, December 21st-23rd, 2020. Certificate of presentation.

7.8. Gintere, I. (2020b). Art Space: An Innovative Digital Game of Modern Aesthetics. 13th annual International Conference of Education, Research and Innovation (ICERI-2020), Seville (Spain), November 9th-11th, 2020. The International Academy of Technology, Education and Development. Certificate of presentation.

7.9. Gintere, I. (2019). Art Space: An Experimental Digital Art Game. Innovations and Creativity, International Conference, June 6th-8th 2019, Liepāja University.

      7.9.1. Certificate of presentation.

      7.9.2. Program.

**8. Linguaskill Cambridge English test C1**