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Dissemination report

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Project name: **Intelligent avatars for digital heritage applications**

Project acronym: **IntAvaVR**

Project no: **09I03-03-V04-00495**

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1. Executive Summary

This Dissemination Report summarizes the communication, scientific publication, knowledge transfer, and stakeholder engagement activities executed under **Work Package 4 (Dissemination)** of the IntAvaVR project. Covering the full lifecycle of the fellowship, the report documents how research outputs—specifically the Extended Advanced Interactive Digital Storytelling (A-IDS) methodology, real-time deepfake video avatar pipelines, and photogrammetric reconstructions of Slovak cultural heritage—were shared across academia, GLAM institutions (Galleries, Libraries, Archives, Museums), regional heritage associations, and the commercial software sector.

2. Dissemination Objectives and Target Groups

2.1 Strategic Objectives

The primary dissemination goals set forth in WP4 encompass:

1. **Academic Excellence & Knowledge Transfer:** Publishing open-access findings in scientific journals.
2. **Institutional Capacity Building:** Fostering high-quality scientific collaboration between the University of Sarajevo (Sarajevo Graphics Group), SSST Sarajevo and Paneurópska vysoká škola (PEU Faculty of Informatics), and engaging students across Bachelor, Master, and PhD levels.
3. **Heritage Sector & Industry Exploitation:** Direct engagement with museums, regional cultural preservation groups, and software developers to demonstrate practical workflows for deploying low-latency AI conversational guides in cultural environments.

3. Overview of Dissemination Activities

3.1 Scientific Peer-Reviewed Publications

In accordance with the project plan, research outputs were submitted exclusively as open-access contributions to international journals indexed in Web of Science and Scopus (targeting Q1/Q2 tiers):

Journal Publication 1:

- Rizvić, S., Zayat, A. A. A., Briški, D., & Lacko, J. (2026). Intelligent Deepfake Avatars for Interactive Digital Heritage Applications. *Information Technology Applications*, 15(2), 3–20. Retrieved from <https://www.itajournal.com/index.php/ita/article/view/274>



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Journal Publication 2 :

- Lacko, J., & Drobny, M. (2026). Longitudinal Recall and Engagement via Real-Time 2D AI Avatars in Virtual Heritage Environments. *Information Technology Applications*, 15(2), 39–50. Retrieved from <https://www.itajournal.com/index.php/ita/article/view/272>

3.2 Academic Seminars and Internal Workshops (PEU)

To fulfill the institutional knowledge transfer objective (Objective 4 & Objective 5), three structured scientific workshops were organized at the Faculty of Informatics, Paneurópska vysoká škola:

- **Research Seminar : Methodology for creating intelligent avatars**

Prof. Dr. Selma Rizvić dňa 25.04.2025

Addressed to academic faculty, reviewing findings from creating intelligent avatars.



3.3 Student thesis

Student final theses related to the subject of research, conducted as commissioned research within the project during a single implementation cycle.

Bachelor thesis:

1. Brinza Tomáš, Bc. - Pohyb kamery vo virtuálnej realite pri použití pohľadu tretej osoby
2. Lipták Jonáš, Bc. - Storytelling vo virtuálnej realite v Unreal engine
3. Almási Daniel, Bc. - Využitie trackovania očí a tváre používateľov vo virtuálnej realite
4. Paulovič Dušan, Bc. - Analýza a implementácia metód detekcie kolízií v 3D prostredí
5. Brezina Jakub Karol, Bc. - Analýza zariadení pre sledovanie pohybu vo virtuálnej realite
6. Ivančík Adrián, Bc. - Cross-platform UX/UI design for video games

Diploma thesis:

1. Hudcovič Ondrej, Mgr. - Deep fake avatari na báze AI s využitím Gaussian splattingu
2. Rahjou Benjamín, Mgr. - Praktické využitie snímania emócií používateľa vo virtuálnej realite
3. Zemaník Roman, Mgr. - Návrh a implementácia systému konverzačnej AI pre avatarov vo virtuálnej realite
4. Salic René, Mgr. - Simulácia historickej udalosti vo VR

3.4 Workshop presentations

The project results were also presented at the workshop:

"School Without Borders: Teaching in Another Dimension"

The event aims to introduce primary school educators to innovative ways of using virtual and augmented reality in the classroom. We will demonstrate how these technologies can boost student motivation and make lessons more engaging—without the need for expensive equipment.

Date: November 28, 2025 (Friday)

Venue: Pan-European University (Paneurópska vysoká škola), Tematínska 10, Bratislava



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Presentations:

- Augmented Reality in the Classroom: Transforming lessons into immersive experiences and working with 3D objects right in students' hands.
- AR as a Driver of Motivation: Practical demonstrations of integrating augmented reality into standard lessons.
- Virtual Reality Education: An overview of VR-related educational opportunities for teachers (presented by PEU).
- **Participants:** Teachers from primary schools looking for new possibilities of using VR by storytelling in education



Members of the research team participated at seminar:

“Central European seminar on computer graphics”

The event targets university students and educators in Central Europe, focusing on computer graphics, computer vision, and virtual reality.

Date: April 27-30, 2026

Venue: Smolenice castle, Smolenice, Slovakia

During the seminar there was a presentation of the Sarajevo students with thesis based on the project outcomes:

- Lamija Halilović (University of Sarajevo) - Real or Rendered: A Comparative Study of Fidelity in AI-Generated Avatars
- Hana Ibrić (Sarajevo School of Science and Technology) - Evaluating the Impact of Lower-Body Tracking on Immersion in a VR Hiking Game

Participants: University students and educators in Central Europe, focusing on computer graphics, computer vision, and virtual reality.



3.5 Digital Outreach

- **Laboratory Web Presence:** Established a project dissemination hub linked to PEU and Sarajevo Graphics Group repositories.
- **Open Source Code & Assets:** Published the modular Unity C# client scripts (LoadVideo.cs), Flask video streaming wrappers, and background masking pipelines to academic open-access code repositories for non-commercial reuse.

5. Qualitative Feedback and Impact

- **Feedback from Museum Professionals:** Curators from the Bratislava City Museum noted that visitors—particularly younger demographics—interacted significantly longer with the conversational display than with traditional static text plaques. The primary operational recommendation was ensuring kiosk fail-safes (pre-buffered responses) in the event of museum Wi-Fi interruptions.
- **Feedback from Regional Heritage Groups:** Representatives of the Stummer Forest Railway noted that animating 1910s–1930s still photographs ("movable photographs") gave new visibility to extinct industrial sites, providing a tangible boost to regional tourism concepts along the Duchonka–Kulháň nature trail.



- **Academic Knowledge Transfer:** The Faculty of Informatics at PEU integrated aspects of the project's XR avatar methodology into a sustainable research line in intelligent XR avatars.

6. Exploitation of Results and Future Follow-Up

The outputs generated in IntAvaVR serve as the foundation for future initiatives:

1. **Long-Term Museum Deployments:** Continuing collaboration with the Bratislava City Museum to transition prototype installations into semi-permanent or rotating seasonal exhibits.
2. **Follow-Up Research Project Submission (Deliverable D4.4):** Utilizing the methodologies developed in IntAvaVR to prepare joint European consortium proposals (e.g., Horizon Europe Culture, Creativity and Inclusive Society; Creative Europe) focused on multi-lingual conversational AI guides for transnational cultural routes.
3. **Curriculum Enhancement:** Establishing persistent laboratory modules at PEU based on the hardware and software workflows configured during the project.
4. **Presentation of project results after its completion:** Use of the PEU podcast platform "Pokey k veci" to present results regarding intelligent avatars – publication is anticipated in December 2026.