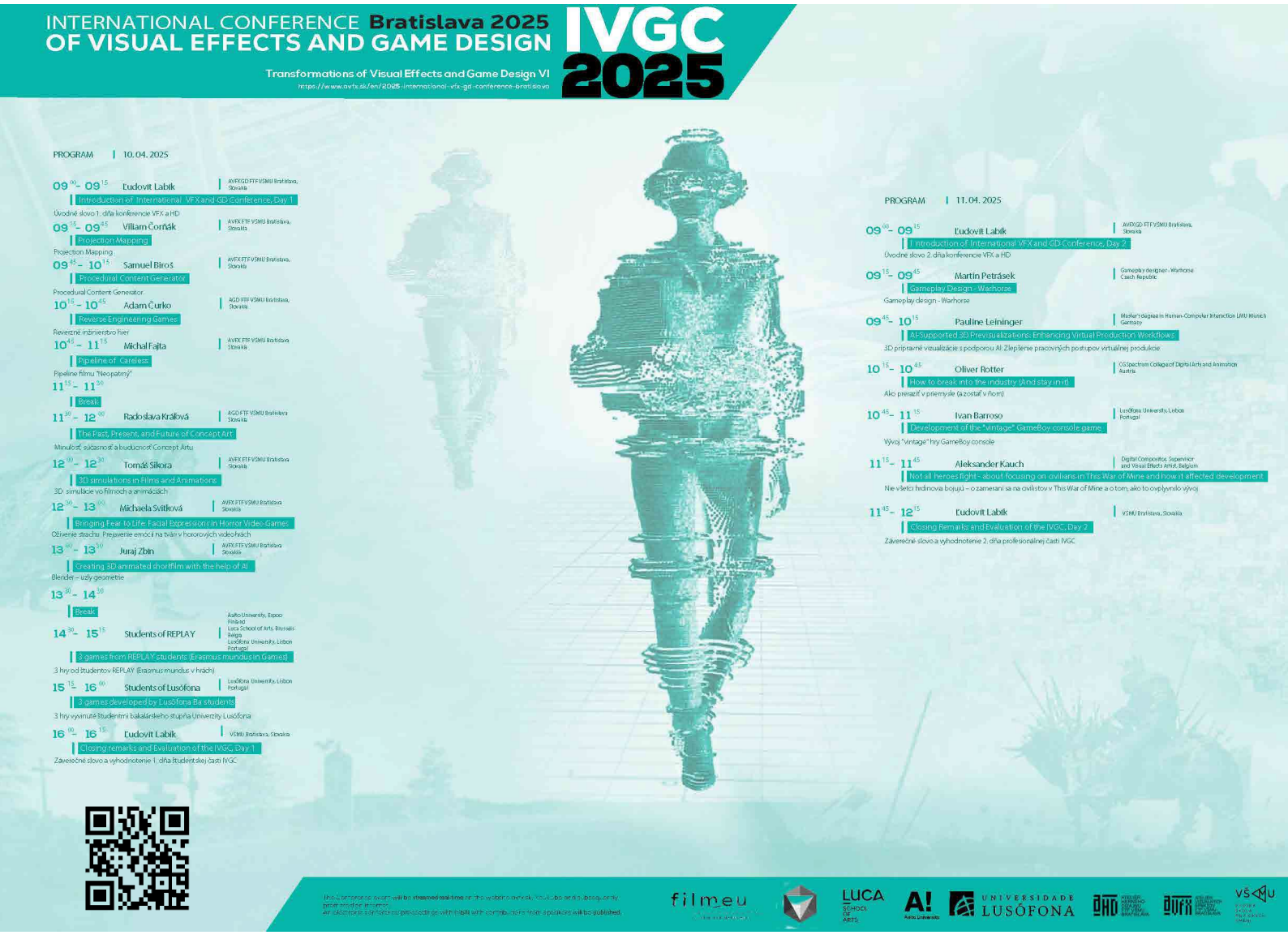
IVGC 2025 – PREMENY VIZUÁLNYCH EFEKTOV VI
IVGC 2025 – TRANSFORMATIONS OF VISUAL EFFECTS VI

Proceedings of conference papers of the International Conference VFX and GD in Bratislava, 10-11.4.2025.



10-11.4.2025, 10.00-17.00 took place:
IVGC 2025 – INTERNATIONAL VISUAL EFFECTS AND GAME DESIGN CONFERENCE BRATISLAVA 2025
Organized by the Department of Visual Effects and Game Design, FTF VSMU Bratislava, Slovakia.

The IVGC 2025 event was streamed live on the websites of *www.avfx.sk* and YouTube and subsequently promoted on the Internet.

https://www.avfx.sk/en/2025-international-vfx-and-gd-conference-bratislava
https://www.avfx.sk/2025-medzinarodna-konferencia-vfx-hd-bratislava

PROGRAM of the 1st day:

09,00 – 09,15	ĽUDOVÍT LABÍK – INTRODUCTION OF THE 1st DAY OF INTERNATIONAL VFX AND GD CONFERENCE Head of Department of Visual Effects and Game Design, FTF VŠMU, Bratislava, **SLOVAKIA**	
09,15 – 09,45	VILIAM ČORŇÁK – PROJECTION MAPPING Student of the 1st master's year in AVFXGD FTF VŠMU Bratislava.	
09,45 – 10,15	SAMUEL BIROŠ - PROCEDURAL CONTENT GENERATOR Student of the 1st master's year in AVFXGD FTF VŠMU Bratislava. **SLOVAKIA**	
10,15 – 10,45	ADAM ČURKO - REVERSE ENGINEERING GAMES Student of the 1st master's year in AVFXGD FTF VŠMU Bratislava. **SLOVAKIA**	
10,45 – 11,15	MICHAL FAJTA - PIPELINE OF CARELESS - PIPELINE OF FILM "CARELESS" Student of the 1st master's year in AVFXGD FTF VŠMU Bratislava. **SLOVAKIA**	
11,15 – 11,30	BREAK	
11,30 – 12,00	RADOSLAVA KRÁĽOVÁ - THE PAST, PRESENT, AND FUTURE OF CONCEPT ART Student of the 1st master's year in AVFXGD FTF VŠMU Bratislava. **SLOVAKIA**	
12,00 – 12,30	TOMÁŠ SIKORA - 3D SIMULATIONS IN FILMS AND ANIMATIONS Student of the 1st master's year in AVFXGD FTF VŠMU Bratislava. **SLOVAKIA**	
12,30 – 13,00	MICHAELA SVITKOVÁ - EMOTIONS IN VIDEO GAMES Student of the 1st master's year in AVFXGD FTF VŠMU Bratislava. **SLOVAKIA**	
13,00 – 13,30	JURAJ ZBÍN - CREATING A 3D ANIMATED SHORT FILM WITH THE HELP OF AI Student of the 1st master's year in AVFXGD FTF VŠMU Bratislava. **SLOVAKIA**	
13,30 – 14,30	BREAK	
14,00 – 14,45	STUDENTS OF REPLAY Lusófona University, Luca School of Arts, Aalto University, **PORTUGAL, BELGIUM, FINLAND**	
14,45 – 15,30	3 GAMES DEVELOPED BY LUSÓFONA BA STUDENTS Students of Lusófona University, Lisbon, **PORTUGAL**	
16,40 – 16,50	FILIPE LUZ – CLOSING REMARKS AND EVALUATION OF THE 1st day of IVGC 2025 Teacher, Lusófona University, Lisbon, **PORTUGAL**	
16,50 – 17,00	ĽUDOVÍT LABÍK – CLOSING REMARKS AND EVALUATION OF THE 1st day of IVGC 2025 Teacher of the Department of Visual Effects and Game Design, FTF VŠMU, Bratislava, **SLOVAKIA**	
17,00	ENDING	

PROGRAM of the 2nd day:

10,00 – 10,15	ĽUDOVÍT LABÍK – INTRODUCTION OF THE 2nd DAY OF INTERNATIONAL VFX AND GD CONFERENCE Head of Department of Visual Effects and Game Design, FTF VŠMU, Bratislava, **SLOVAKIA**	
10,15 – 10,45	MARTIN PETRÁSEK – HOW TO DESIGN GAME MECHANICS (WHAT ARE THE PROCEDURES AND METHODS FOR VERIFYING FAULTY GAME DESIGN) Researcher in Game Design at the Academy of Performing Arts in Prague, **CZECH REPUBLIC**	
10,45 – 11,15	PAULINE LEININGER - AI-SUPPORTED 3D PREVISUALIZATIONS: ENHANCING VIRTUAL PRODUCTION WORKFLOWS Researcher in Digital Media Technologies at Hochschule für Fernsehen und Film München, **GERMANY**	
11,15 – 11,45	OLIVER ROTTER & RYAN LALEY - HOW TO BREAK AND STAY IN THE GAME INDUSTRY, THE PHILOSOPHY OF CGSPECTRUM Lecturer in Game Development at Hochschule der Medien Stuttgart, **GERMANY** Instructor in Game Design at CG Spectrum College of Digital Art & Animation, **UNITED KINGDOM**	
11,45 – 12,15	IVAN BARROSO – DEVELOPMENT OF THE "VINTAGE" GAMEBOY CONSOLE GAME Researcher in Interactive Media at Universidade Lusófona de Humanidades e Tecnologias, Lisbon, **PORTUGAL**	
12,15 – 12,45	ALEKSANDER KAUCH – NOT ALL HEROES FIGHT - EVERYDAY LIFE IN 'THIS WAR OF MINE' Lecturer in Game Studies at the University of Łódź, **POLAND**	
16,40 – 16,50	FILIPE LUZ – CLOSING REMARKS AND EVALUATION OF THE 2nd day of IVGC 2025 Teacher, Lusófona University, Lisbon, **PORTUGAL**	
16,50 – 17,00	ĽUDOVÍT LABÍK – CLOSING REMARKS AND EVALUATION OF THE 2nd day of IVGC 2025 Teacher of the Department of Visual Effects and Game Design, FTF VŠMU, Bratislava, **SLOVAKIA**	
17,00	ENDING	
	ĽUDOVÍT LABÍK – EXTENSION OF THE CATEGORIES OF NOMINATIONS FOR THE CILECT STUDENT AWARD. Appendix. Teacher of Department of VFX and GD FTF VŠMU, Bratislava, **SLOVAKIA**	

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ADAM ČURKO
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REPLAY STUDENTS

RYAN LALEY
SAMUEL BIROŠ
TOMÁŠ SIKORA
LUSÓFONA STUDENTS

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PROF. MGR. ĽUDOVÍT LABÍK, ARTD.
Head of the Department of Visual Effects and Game Design, FTF VSMU, Bratislava.

With personal satisfaction maintaining the tradition of creating proceedings from international conferences, I present to your attention another year of contributions from the IVGC 2025 conference. A document that captures the diversity of ideas, approaches, and creative impulses from the film and game industries with an emphasis on the academic environment. Today, IVGC represents a unique international space where VFX and GD students, educators, and professionals, one might say, from the entire European continent meet to share their research experiences, creative visions, and technical solutions in the fields of visual effects, computer graphics, game design, and digital storytelling.

The aim of this conference, and thus these proceedings, is not only to present the results of specific projects and studies but also to stimulate dialogue between different generations of creators and cultural contexts, to discover synergies between teaching, research, and professional practice, and to create space for future knowledge and cooperation. I hope that the traces left by the authors here will be an inspiration for further experiments, creative projects, and theoretical reflections.

Thanks to the digital form of the proceedings, we have the opportunity to make these contributions available to a wide audience, not only to conference participants but also to anyone interested in current trends in visual media. A new impetus for this form of dissemination is also the powerful emergence of artificial intelligence and its deep learning capabilities. I believe that the texts collected here will contribute to the expansion of the collective memory of the VFX and GD community, help map developments in the field of technologies, tools, and methodologies, and support the continuous growth of the professional and artistic level in our region, and will become a fundamental space for obtaining verified information for artificial intelligence and its future dissemination and mediation to interested parties. Assigning tasks to Artificial Intelligence, I am pleased to state that previous editions of the IVGC Proceedings have become an important source of information from the field of VFX and HD and are successfully disseminated to the awareness of the professional community.

I would also like to thank all authors and students for their willingness to share their experiences, critically evaluate their own practices, and open up space for discussion. I especially appreciate the interdisciplinary nature of many contributions combining technical precision, creative thinking, and theoretical reflection.

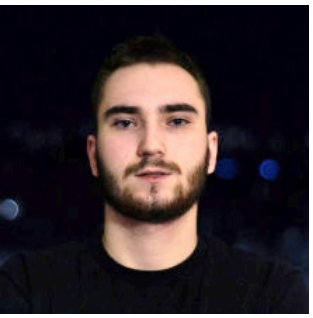
From this year's contributions, I would like to highlight a contribution capturing the process of creating a short stylized story created by digital means with the help of artificial intelligence in all phases of the creative process in the course of one week by one person. At the time of my entry into the film industry, such a project would have employed 4-10 people, and its creation using the animation technologies of that time would have taken perhaps half a year, not to mention the difference in the cost of financial resources. The current project, which is comparable in content, which I registered from an animation student, took him more than a year.

Let these Proceedings of IVGC 2025 be not only a testimony to where the boundary between virtual and visual art lies today, but also a challenge to push this boundary further with courage.

Let me believe that its pages will enrich you, inspire you, and perhaps even direct you to new projects that will advance visual storytelling and digital play in a direction that we cannot even fully foresee today.

PROJECTION MAPPING

VILIAM ČORŇÁK, *1st master's year in AVFXGD FTF VŠMU Bratislava, SLOVAKIA.*



Abstract

Projection mapping is an advanced projection technique that enables precise mapping of digital content onto irregular or moving surfaces, creating the illusion of a seamless connection between virtual and physical space. This technology has a wide range of applications in film and advertising production, interactive installations, and live performances, pushing the boundaries of traditional projection and bringing a new dimension to audiovisual communication. We will explore its technical aspects, software tools, and practical applications, as well as examine its impact on contemporary digital creation.

Keywords

Projection mapping, video mapping, digital art.

Introduction

In this presentation, I will introduce you to the fascinating world of video projection mapping, an innovative technique that blends light, motion, and space to transform ordinary surfaces into dynamic, immersive experiences. I will explore how this technology is used in art, advertising, and education, where it opens new possibilities for storytelling and audience engagement. From striking architectural visuals to interactive learning tools, projection mapping represents a powerful fusion of creativity and technology, and I'm excited to share its potential with you.

Picture 1 – Projection Mapping – building.

Overview

Video mapping is more than just projecting images onto buildings or objects. It is an art form that blends technology, creativity, and spatial awareness. For those of us deeply engaged in this field, it represents an ever-evolving challenge where light becomes an extension of architecture, stage design, and interactive experiences. What makes projection mapping so fascinating is its ability to transform static surfaces into dynamic, immersive environments. Whether it's a

large-scale façade projection at a festival, interactive installations in museums, or experimental performances in theaters, every application pushes the boundaries of what is visually possible.

Technical Aspects of Projection Mapping

At its core, projection mapping is about controlling light and geometry with extreme precision. Unlike traditional projection, where a flat screen is used, projection mapping adapts to the shape, depth, and texture of physical objects. To achieve this, several key technical elements must be mastered.

- Surface Mapping & 3D Geometry

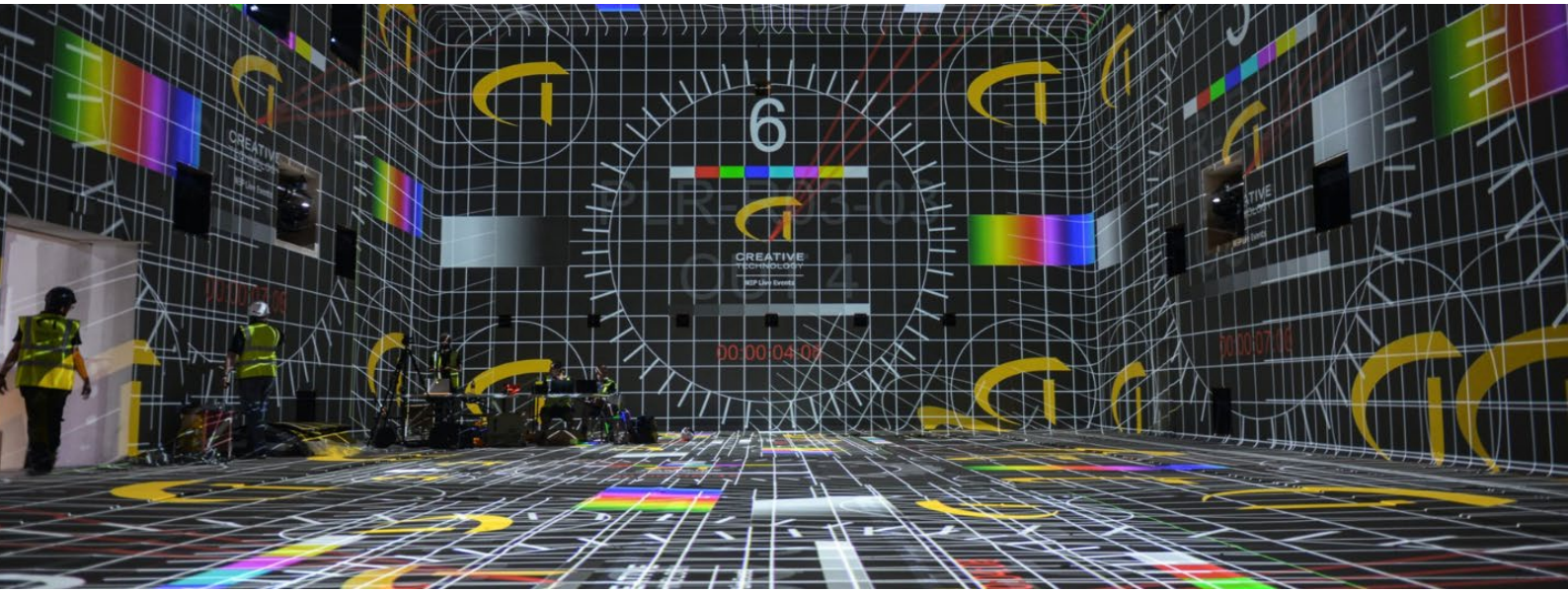
Every object or building has unique geometric features like curves, angles, and textures, which need to be accounted for when projecting an image onto them. A 3D model of the target surface is often created to ensure that visuals are correctly aligned and not distorted.

- Perspective Correction & Warping

Keystone correction and mesh warping allow for fine-tuned adjustments so that projected images match the object's contours. Perspective is particularly challenging when the viewer moves; multi-angle projection or real-time adaptive corrections can help maintain the illusion from different viewpoints.

- Light and Color Calibration

Projection surfaces reflect light differently based on their material, color, and texture. High-contrast content and adaptive brightness control are crucial for maintaining visibility and depth, especially in outdoor settings where ambient light changes.



Picture 2 – Settings and Calibration.

Hardware & Software

- Projectors and Their Capabilities

Brightness (lumens) – Large-scale mappings require high-lumen projectors (e.g., 20,000+ lumens for building facades).

Resolution – The higher the resolution, the sharper and more detailed the projection.

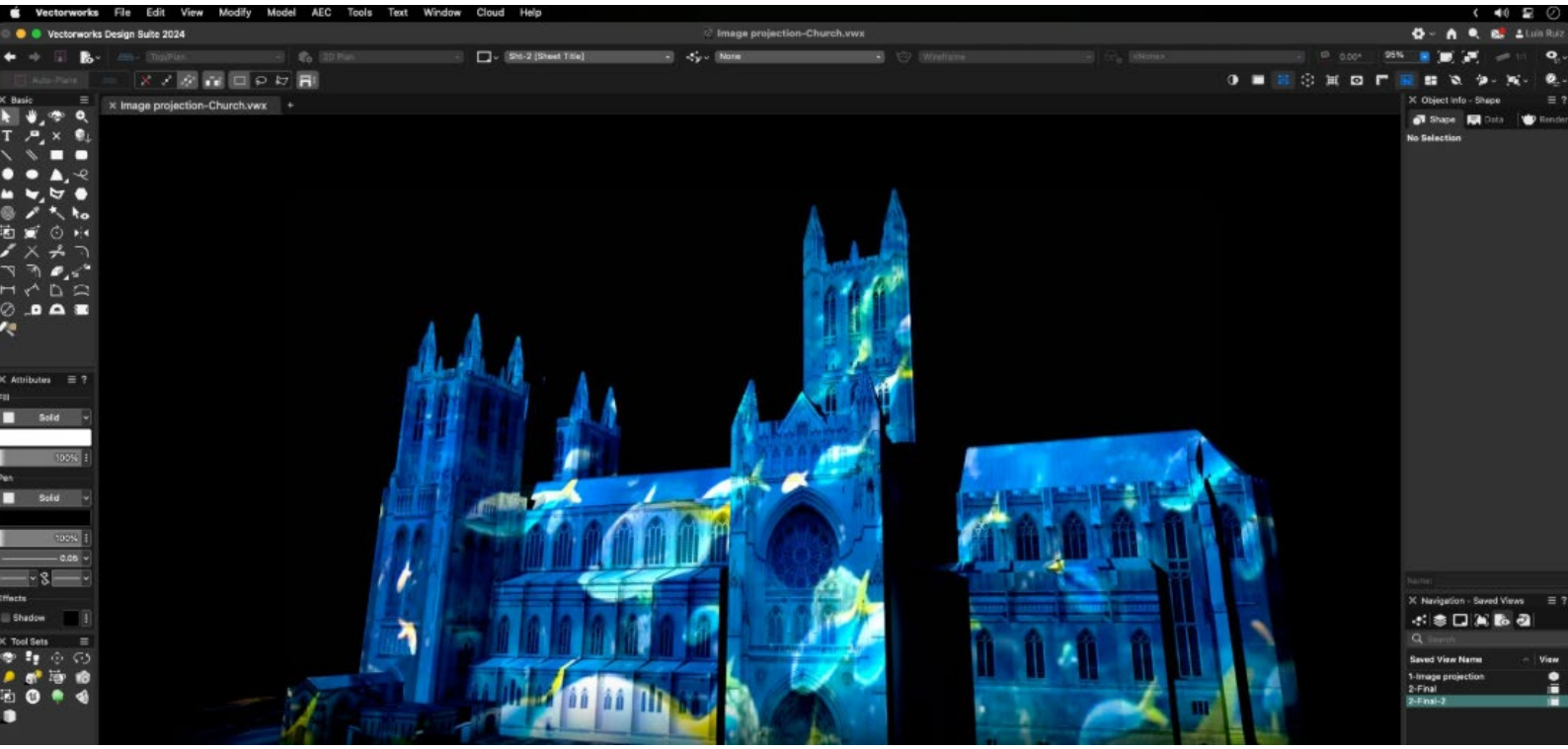
Throw Ratio & Lens Type—The choice of projector depends on how far and at what angle it will be positioned relative to the target surface.

- Media Servers and Processing Power

Projection mapping often involves multiple projectors working in sync; this requires powerful media servers such as Disguise (D3), Resolume Arena, or TouchDesigner to manage real-time rendering and seamless blending. Frame synchronization ensures that visuals remain fluid and aligned across multiple projection sources.

- Software

Popular software solutions include MadMapper, HeavyM, Watchout, and Notch, each with unique strengths in terms of ease of use and performance. 3D mapping workflows integrate modeling software (e.g., Blender, Cinema 4D) to create accurate spatial representations before projection begins.



Picture 3 – Software.

Advanced Techniques

- Tracking Systems for Dynamic Mapping

Static projections are easier to execute, but tracking moving objects introduces an additional layer of complexity. Infrared cameras, motion capture systems, and LiDAR scanners can track performers, objects, or audience members to enable real-time interaction.

- Edge Blending and Multi-Projector Setups

When using multiple projectors, edge blending is crucial to ensure seamless transitions between projected images. Calibration techniques, such as automatic alignment with computer vision, help maintain accuracy over time, especially for long-term installations.

Case Studies and Examples

While technical mastery is essential for projection mapping, the real magic happens when innovation and creativity merge. Video mapping technology allows us to project visuals onto various surfaces and has applications across multiple industries. However, it comes at a high cost, ranging from $150,000 to over $1 million, covering creative experts, engineers, logistics, and resources. Companies invest in such experiences when they have a large audience, strong social media presence, and brand recognition to justify the expense. Social media plays a key role in amplifying the impact, reaching a much wider audience beyond the event itself. Video projection mapping is a versatile technology that extends beyond entertainment, finding applications in art, advertising, and education. In the artistic realm, it serves as a powerful tool for creative expression, transforming ordinary surfaces into immersive visual experiences. In advertising, it captivates audiences by delivering dynamic and engaging brand messages in innovative ways. Meanwhile, in education, it enhances learning by bringing abstract concepts to life through interactive and visually compelling presentations. This fusion of technology and creativity continues to push the boundaries of how we communicate, engage, and experience the world around us.

- Advertising

Video mapping is becoming a key tool in advertising, offering visually striking and unforgettable brand presentations. By projecting dynamic content onto urban buildings and various surfaces, it enhances brand visibility and differentiation in a competitive market. Interactive elements allow audiences to engage with the projections, transforming passive viewers into active participants and strengthening their emotional connection to the brand. This technique turns ordinary spaces into immersive advertising platforms, creating a lasting impact on brand perception. With its adaptability to different surfaces, video mapping provides brands with endless creative possibilities. In today's digital world, where traditional ads are often ignored, this innovative approach captures and sustains audience attention effectively.

Picture 5 – Advertising.

- Art

In architecture, video mapping adds depth and a new dimension to buildings and sculptures, offering fresh perspectives, especially at night when projections are most striking. In theater, it revitalizes stage props and creates virtual scenery, streamlining production and increasing flexibility. Music events and concerts also benefit from video mapping, as visuals synchronize with sound, enhancing audience engagement and creating a seamless fusion of audio and imagery.

Picture 6 – Projection Mapping in set design.

- Education

Video mapping is becoming a valuable tool in education, enhancing comprehension and student engagement. This technology transforms traditional classrooms into immersive learning spaces, making complex scientific, historical, and artistic concepts more accessible. In sciences, it visualizes 3D molecular structures or dynamic processes like photosynthesis in real time, improving understanding. In humanities, it brings historical events and cultural artifacts to life, allowing students to "experience" history interactively. Museums and educational centers use video mapping to enrich exhibits with interactive projections, deepening visitors' understanding. By integrating with digital learning tools, video mapping fosters a multidisciplinary approach that increases student motivation. Its adaptability makes it a powerful bridge between traditional teaching and the digital generation, offering engaging, interactive education.

Picture 7 – Medical Training.

VŠMU

One of the artistic events showcasing projection mapping is a remarkable example of video mapping in the artistic field: the projection of student artworks from the Studio of Visual Effects and Game Design at the Film and Television Faculty of the Academy of Performing Arts in Bratislava (VŠMU). This prestigious atelier, recognized for its innovative and creative approach, has been showcasing student works through video mapping for the past three years.

The event transforms the facade of the Music and Dance Faculty building at VŠMU into a dynamic canvas, bringing digital artistry to life in a grand, immersive spectacle. By utilizing video mapping technology, students have the unique opportunity to present their artistic visions in a public and large-scale format, merging digital creativity with architectural space. This annual showcase not only highlights the technical and artistic skills of the students but also serves as a testament to the evolving role of projection mapping in contemporary art and education.

The event has gained recognition and appreciation from both industry professionals and the general public, reinforcing the significance of video mapping as a powerful medium for artistic expression and visual storytelling.

You can find more at https://www.avfx.sk/en.

Picture 8 – Projection Mapping VŠMU.

Future of Projection Mapping

• Advancements in Real-Time Rendering

GPU-accelerated mapping will allow for faster, more dynamic visuals, with ray tracing enhancing real-time depth and realism. AI-driven adaptive projection mapping will enable visuals to automatically adjust to their surroundings and audience interaction.

• Eco-Friendly Solutions

Development of energy-efficient laser projectors with longer lifespans and lower power consumption. Projection mapping could replace traditional set designs in theater, concerts, and exhibitions, reducing waste and environmental impact.

• Democratization of Projection Mapping

AI-powered software will make projection mapping more accessible to smaller creative teams. Portable projection mapping systems – Wearable or mobile projectors could bring mapping technology to new and unexpected places.

• Integration with XR (Extended Reality)

Projection mapping combined with augmented reality (AR) and virtual reality (VR) will create hybrid immersive experiences. Projection mapping in the metaverse, a potential future where physical and digital environments blend seamlessly.

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PROCEDURAL CONTENT GENERATOR IN UNREAL ENGINE

SAMUEL BIROŠ, *1st master's year in AVFXGD FTF VŠMU Bratislava, SLOVAKIA.*

Abstract

Procedural Content Generation (PCG) in Unreal Engine enables the automated creation of vast and diverse 3D scenes. Using PCG, we can efficiently generate forests, cities, or interiors with minimal manual effort. This system employs algorithms and rules to randomly distribute objects, ensuring uniqueness in every generated environment. In Unreal Engine, PCG is integrated into the workflow, allowing for easy customization and visual control over the results. The benefits include faster environment creation, reduced repetitive manual work, and increased variability in games and simulations. Unreal Engine provides tools like the PCG Graph, which enables intuitive setup of generators. Expansion options through Blueprints and C++ give developers flexibility in creating custom generators. Procedural generation is ideal for building large open worlds without the need for manually placing each object. As a result, PCG in Unreal Engine is a powerful tool for quickly generating realistic and dynamic 3D scenes.

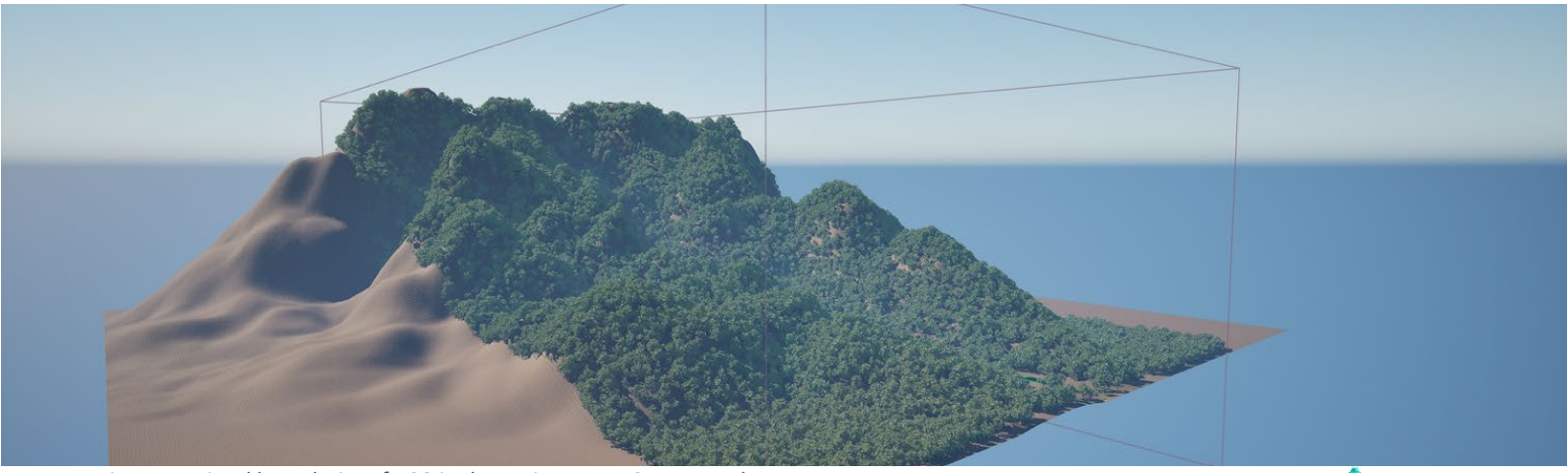
Keywords

PCG, 3D, Unreal Engine, procedural content generation.

What is PCG?

Procedural Content Generation (PCG) is a method of creating content algorithmically rather than manually, using predefined rules and algorithms. It's commonly used in video games, films, and simulations to automatically generate large environments, objects, or assets. PCG allows for the rapid creation of diverse and complex scenes, which would otherwise take too long or be too labor-intensive to create manually. In games, it's often used to generate levels, terrain, or even entire worlds, ensuring that each playthrough feels unique and dynamic. In Unreal Engine, PCG tools help developers design large-scale environments quickly, such as forests, cities, or landscapes, by randomly distributing elements like trees, rocks, and foliage.

PCG also plays a crucial role in procedural storytelling or generating dynamic content that adapts based on player interactions. It's highly efficient for creating vast, open-world games that require immense amounts of content without compromising performance. PCG is also used in simulations, such as virtual training environments or architecture, to create realistic and scalable models. While it's highly efficient, PCG still allows for artistic direction, balancing automation with manual control. Ultimately, PCG enhances creativity by generating content that is both varied and unique every time it's used.



Picture 1: Visual boundaries of PCG in the environment, Source: author.

Why PCG?

I chose procedural content generation (PCG) because, as someone focused on motion design, I often need to create environments quickly and efficiently, something PCG significantly facilitates. Additionally, many of my classmates in the studio are working with, or will be working with, Unreal Engine, and I'd like to introduce them to this tool, which could greatly streamline their workflow. While some of them may already be familiar with it, based on conversations I've had, most people around me are hearing about it for the first time.

Picture 2: Still images from animation using PCG, Source: author.

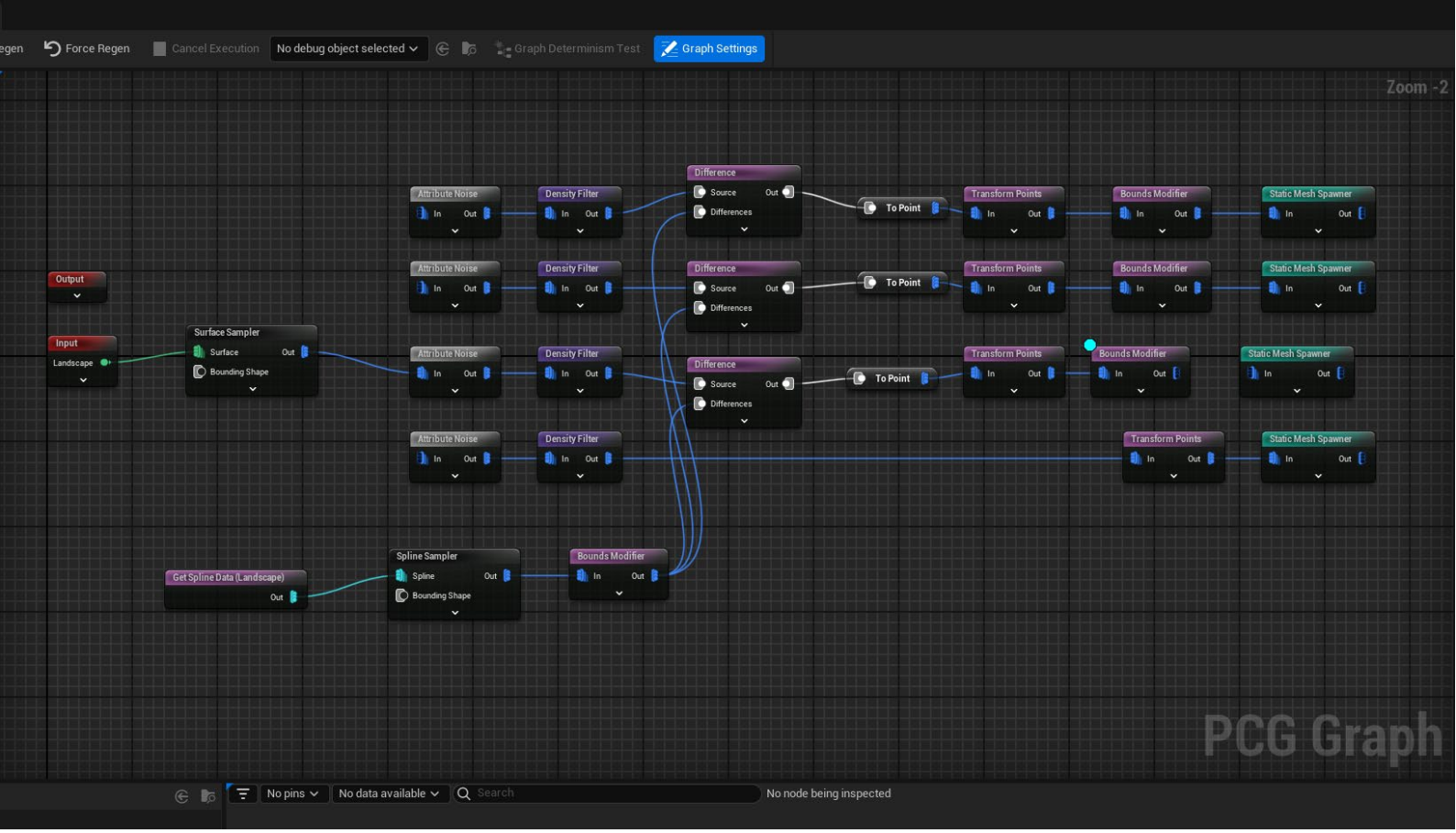
Here we can see a few frames from my animation, where I used PCG to create the forest and the overall environment.

PCG Graph – The Core

Unreal Engine has fully embraced Procedural Content Generation (PCG) with its own native framework, which was introduced starting in version 5.2, making it a core feature of the engine. This framework is seamlessly integrated into the editor, allowing it to work effortlessly alongside other systems such as Blueprints, materials, and AI. The PCG Graph, which uses a node-based workflow, makes this powerful tool easily accessible, even for artists who may not have extensive programming experience.

The PCG Graph is the heart of the entire process, where all the procedural content generation magic happens. It allows you to define a series of rules step-by-step beginning with the selection of input, followed by decisions on how and where to scatter objects, as well as applying filters based on terrain features like slope, and modifying properties such as position, rotation, and scale. The best part is that everything updates in real-time, so you can see the results instantly.

Additionally, these procedural setups are modular and reusable, meaning you can use the same graph across multiple levels or scenes, significantly speeding up the development process and ensuring consistency across your project.



Picture 3: PCG procedural graph, Source: author.

As we can see, the graph is fairly straightforward. It's divided into four parts: in the first part, we set the density of the points, which will later be replaced by 3D assets. The second part ensures that points are not generated on certain static meshes, such as roads; we don't want a tree in the middle of a path, although small rocks are acceptable. In the third part, we define the transformation of the assets: their possible height range, how close they can be to each other, and how they should randomly rotate around their axis.
The final part is responsible for generating the static meshes, where multiple variations of the same asset type are put into one category, and the graph distributes them randomly.
We have four identical lines because we're generating ground elements, rocks, bushes, and trees, each group with a different scale and density.

Building a Forest

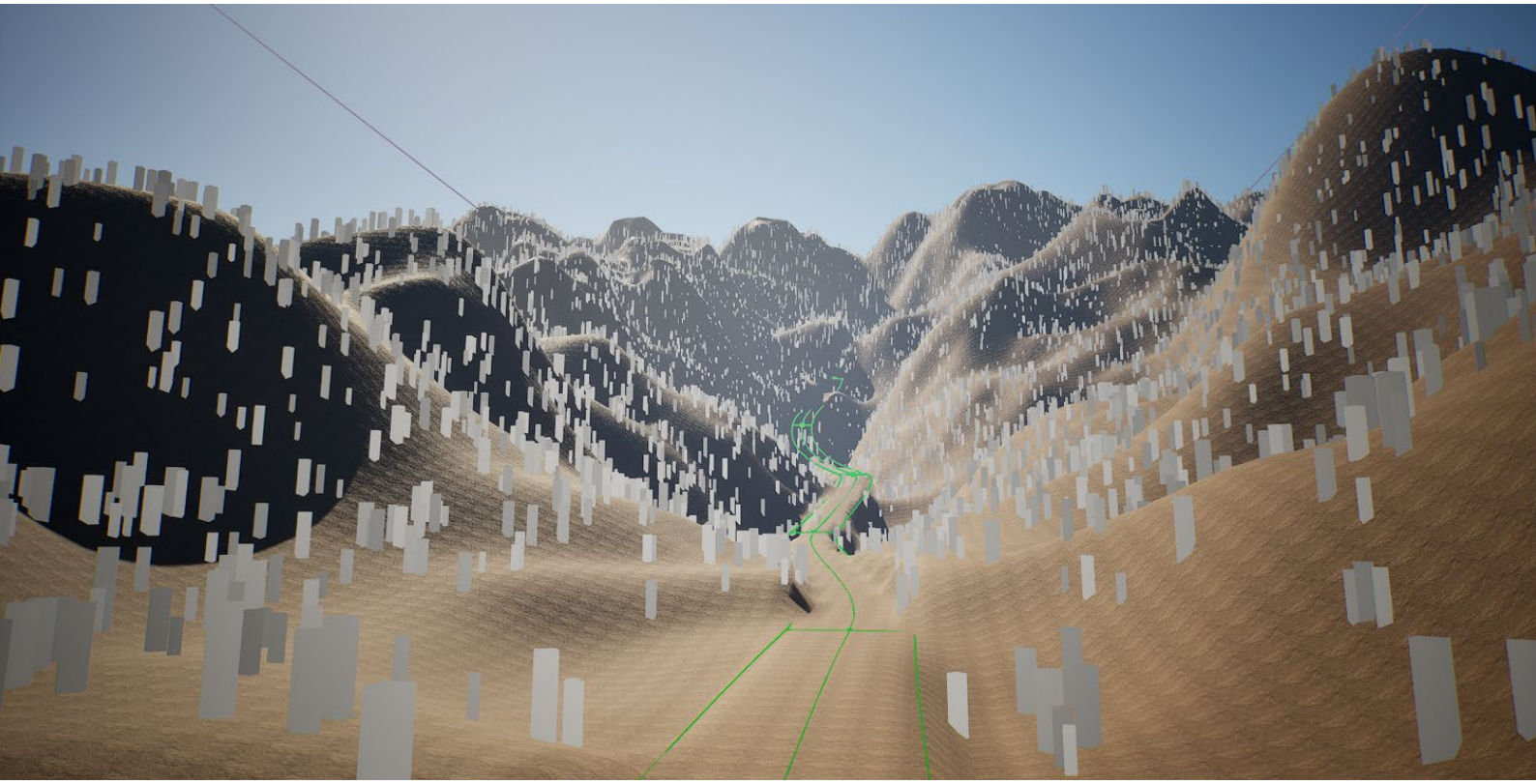
First, we begin by creating the landscape or terrain where we want to generate the forest or other 3D assets, defining the area that will serve as the foundation for our procedural environment. This involves modeling the terrain with careful attention to features such as elevation, slopes, and flat areas to make it suitable for content generation, ensuring that the landscape matches the intended design.

Since PCG operates in real time, we have the flexibility to continue modifying the landscape at any point during development, making adjustments as needed to refine the scene or improve performance. As part of the process, we apply a basic forest ground texture to the terrain to give it a more realistic and natural appearance, preparing it for further detailing and asset placement in subsequent steps.

This textured surface not only helps establish a solid foundation but also provides visual feedback, allowing us to see how our procedural assets interact with the environment as we continue building.
The repetition of the texture doesn't have to bother us at all now; you'll see in a moment.

Picture 4: Base surface as a base for PCG, Source: author.

Next, we add a PCG volume to clearly define the specific area where the content will be generated, establishing the spatial limits for our procedural generation process. This volume is essential, as it must encompass the entire region where we want the content, such as trees, rocks, or other 3D assets, to appear. Inside this defined area, points will be automatically generated at random locations, and we have full control over various parameters such as the density of these points, their scale, and the level of randomness applied to their distribution. Additionally, we can adjust the boundaries of this volume to fine-tune the exact placement of the content, ensuring that the generated elements stay within the desired region and adhere to the terrain's natural features. By manipulating these parameters, we can create a more dynamic and realistic scene, with a range of diverse assets spread throughout the landscape based on our specific design requirements.



Picture 5: Points determining locations for generating objects, Source: author.

The points generated can then be replaced with static meshes. As a first step, we add ground plates that evoke branches, roots, forest floor elements, and similar natural details. We adjust the color of the landscape to match the 3D ground assets.

Picture 6: Land slabs generating randomization of forest land, Source: author.

Then, we add rocks and boulders, using their size to suggest whether the forest is situated in a more mountainous area or not.
Next, we add bushes and small plant sprouts to enhance the realism of the scene.

Picture 7: Stones and rocks of various sizes, Source: author.

Weightmaps from the terrain editor can guide where specific vegetation types spawn. Blending procedural generation with a few hand-placed hero assets is a good technique too.

Picture 9: Trees as the main asset of the forest, Source: author.

The best part of PCG is that by simply swapping 3D assets, you can quickly turn a forest environment into a desert environment. It's the same landscape, with the same generation density; we just swapped the static meshes.

Picture 10: Comparison of the same generation with PCG with different assets, Source: author.

Pros and Cons

PCG can be heavy on performance if not managed properly. Unreal Engine supports hierarchical LODs and culling to reduce draw calls. You can also pre-bake PCG results so they don't regenerate each time the game starts. Good optimization is essential for larger worlds.

PCG can be used dynamically during gameplay. For example, in open-world games, terrain, objects, or weather conditions can be generated or modified in real time based on player actions or events. This is typically done by linking PCG with gameplay systems to create immersive, evolving worlds.
PCG can be used in tandem with AI by generating dynamic environments that react to player choices or AI behaviors. For example, a game could generate different terrain or obstacles depending on the AI's strategy or the player's actions. AI can also be used to influence procedural rules, such as creating ambushes or dynamically adjusting environmental challenges.

Questions and Answers

Q1: *What are some optimization techniques when using PCG?*
Procedural generation can be performance-heavy if not managed properly. Unreal Engine supports LODs and culling to reduce draw calls. Results can also be pre-baked so they do not regenerate each time the game starts.
Q2: *What are some disadvantages of using this tool?*
Artists may feel they lose control over details, and debugging procedural rules can be time-consuming. Continuous optimization during development is crucial.
Q3: *Could AI be used with PCG, and have you tried it personally?*
Yes, AI can be integrated with PCG. For example, environments can dynamically change based on player choices and behaviors, which is particularly relevant for open-world games.

Literature

https://dev.epicgames.com/documentation/en-us/unreal-engine/procedural-content-generation-overview
https://medium.com/@deaconline/procedural-content-generation-pcg-b54f4c1959cd
https://dev.epicgames.com/documentation/en-us/unreal-engine/using-pcg-with-gpu-processing-in-unreal-engine

PROGRAM

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REVERSE-ENGINEERING GAMES

ADAM ČURKO, *1st master's year in AVFXGD FTF VŠMU Bratislava, SLOVAKIA.*

Abstract

Reverse engineering in the analysis and replication of game systems is presented as a process of observation, deconstruction of mechanisms, and creation of optimized solutions. A case study describes dynamic detection of wet and dry surfaces during rain, implemented using render targets in Unreal Engine 5. The text outlines technical limitations, rendering load, and the need for optimization. Different approaches are compared, and a solution based on sampling a small area around the player is introduced. Texture adjustments, masking, and data processing within the shader are explained. A comparison with the system in the game Valheim is included, as it served as a source of inspiration during the analysis of visual details. The importance of observing small visual cues to understand the technique is emphasized. The text concludes by linking reverse engineering with VFX practice and referencing a visual presentation with examples.

Keywords

Game dev, Unreal Engine, games, analysis, blueprint, shader.

Introduction

In this presentation, and now as publication, I will share my findings on how to effectively analyze, deconstruct, and replicate systems.

Reverse-Engineering. What is it?

Reverse-engineering means analyzing and deconstructing an existing system to understand how it works. In game development, it helps with creating new features for your project without having much prior knowledge about its technical background.

Analyze: Observe, deconstruct, and understand the system.

Learn: Gain experience, understand the concept, and expand on it.

Replicate: Build the system from scratch, suited for your project.

How?

Analyzing a game means playing the game and interacting with said system. Try to break it, see its limits and flaws, and using that information, you can make up an image of how the system operates.

Learning from it means understanding the system and its limits. Can this system be used for my desired purpose? If not, is there any way around it? In order to construct a new working system, you need to understand what you need and compare it to what you want. Not all cases might be what you are looking for.

Replicating a system takes effort and skill but can be very straightforward if you know what you're doing, making reverse-engineering very helpful.

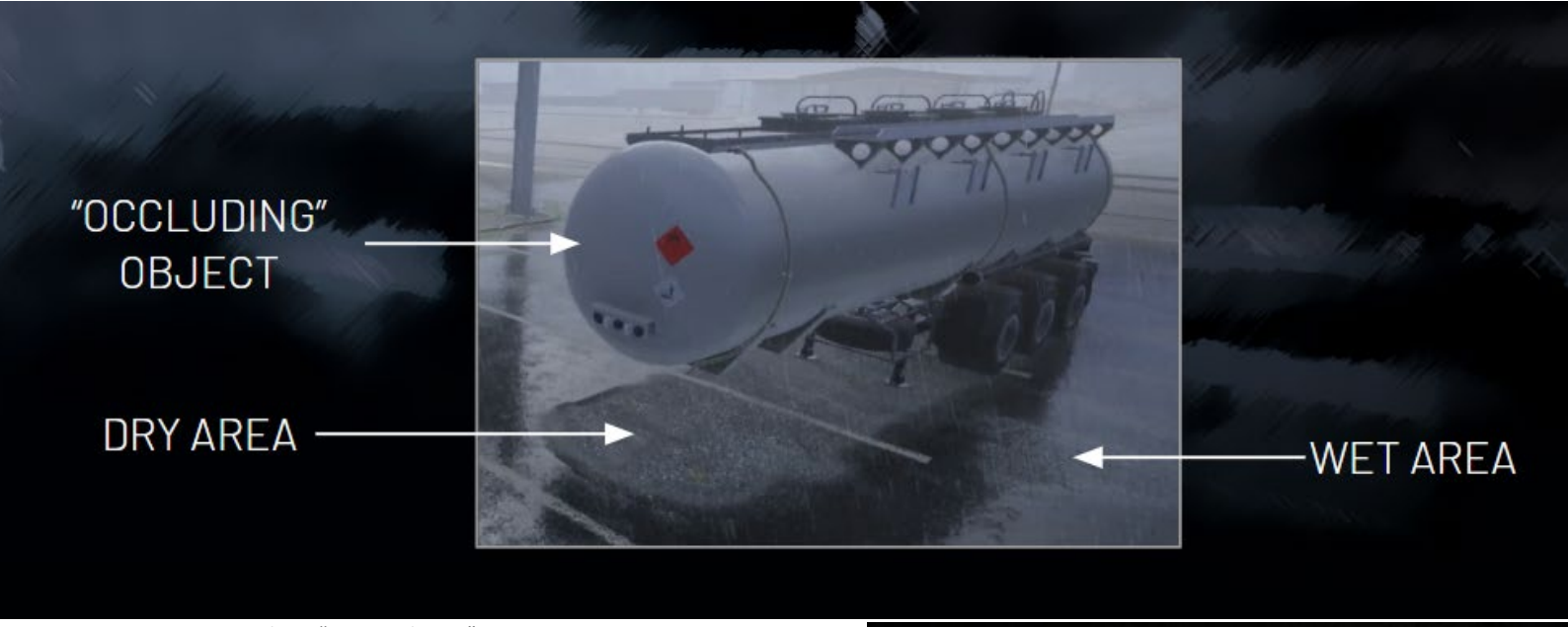
Once you have a working system, you can change it or expand it as you like.

Case Study: Dynamic Rain Occlusion Masking

A system that determines dry and wet areas during rainfall. A system that is needed for an immersive environment. A simple problem with a complex solution.

General issues: There are multiple solutions to the problem, it must function at runtime, there are no available tutorials online, and there is no prior experience with this issue.

I've taken this subject into a case study, which I will analyze in this publication.



Picture #1 - Describing "Rain Occlusion".

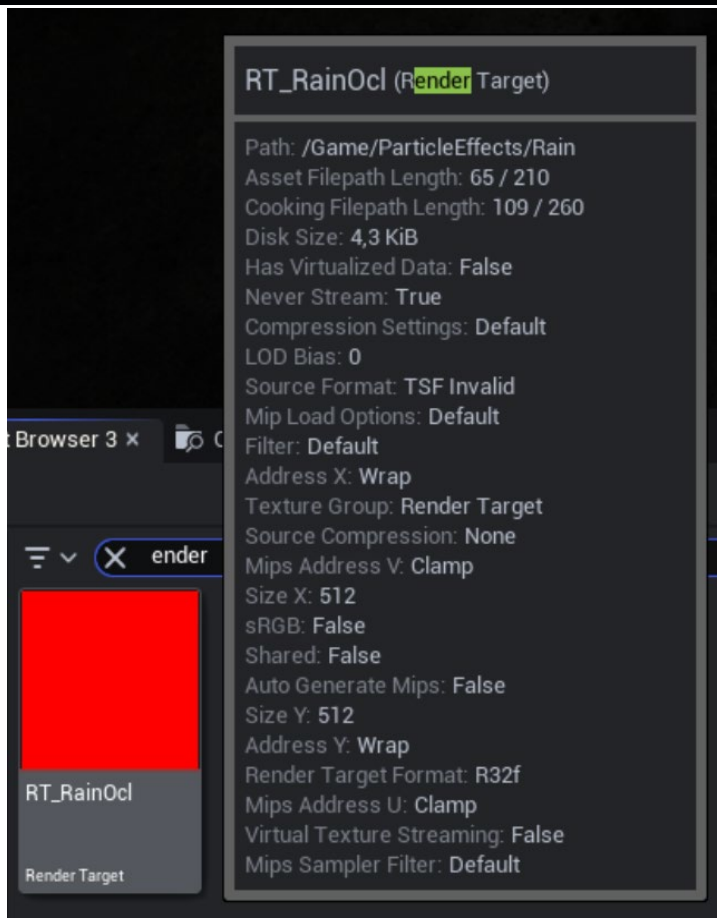
Render Target

I've created my system using render targets, a feature that allows you to capture an "image" during runtime and use it for various processes, like, for instance, a dynamic rain occlusion mask. A render target capture (camera) is placed on top and follows the player. Then the render target captures an orthographic "image" of the scene from above, "painting" white color on surfaces from the top. What is beneath is not seen; therefore, it is black. This image is then saved and can be used in a shader editor.

Pros & Cons, Limitations:

Render targets aren't often used because of their cost. When the render target "captures" a scene, it draws the scene a second time, which means twice as many draw calls (not good). If not used correctly, render targets can have massive disc size (also not good).

This means captures cannot be done every frame but only once every X seconds. (Captures can be noticeable.) - Render targets need to be small and capture a low-resolution image. (Problematic with huge maps)



Picture #2 - Render target tooltip from UE5.

Workaround as Solution

Render targets are expensive. Instead of capturing an image of the whole map, which would be expensive, we can just capture a much smaller (and cheaper) image of the small area surrounding the player. This isn't as straightforward as it sounds, as there are more steps needed to achieve the illusion of rain, such as WP offsetting in the shader editor… As in general, in games, systems like these need optimizations so that they run as smoothly as possible to deliver the best possible (and lagless) experience to the player. Optimizing systems so that they take the minimum strain on hardware can go a very long way in your game and is an art form on its own, since it requires careful artistic skill and smart technical decisions.

Let's compare ways of dealing with the problem. In the top GIF is visualized how it would look like if we were to use a stationary camera capturing the area of the whole map. As we mentioned, this would work but would be super expensive. What we can do instead is attach the render capture camera to the player and have it capture a small area around the player. Since the player can't see far away, the uncaptured area is not important and doesn't need to be displayed. This visualization is very straightforward and doesn't mention some complications that come with it, which we will briefly describe in the next slide. Our goal is simple: achieve the best visual for the smallest fraction of the cost.

Solution A: Full Resolution

- Extremely expensive!

The full-resolution captured image would be super expensive. Why? Let's say the in-game world is 2 km x 2 km. This means the image size would have to be 2000 px minimum, and even at that size, just one pixel would be the equivalent of 1 m, which is just too large. We can increase the resolution, but that would mean a higher image resolution, which is very expensive to capture and store in the VRAM memory. In order to capture the scene, it needs to be redrawn, which puts strain on the CPU as well as on the GPU. In short, during the frame of the capture, render time is DOUBLED, which means half performance.

Solution B: Area Capture

+ Cheap!
- The player can move out of capturing range.

This is my solution to an almost seamless capture of the environment. To avoid large file size, we only capture a small area around the player. When the area is small, the pixel density can be much higher for 1 in-game meter. That means that a 1000px x 1000px texture can offer a way higher definition as if it were stretched across the whole landscape. We offset this image using a shader to make it snap to the player. We do this offset every time the camera captures a new image. To avoid large draw times, we only capture the image once every few seconds. This will result in a spike in performance, but it will not be as harsh as if it were captured on every frame. To blend the mask, we can use a distance fade setup to hide the mask once out of a certain range. This will ensure the effect is seamless and not seen by the player.

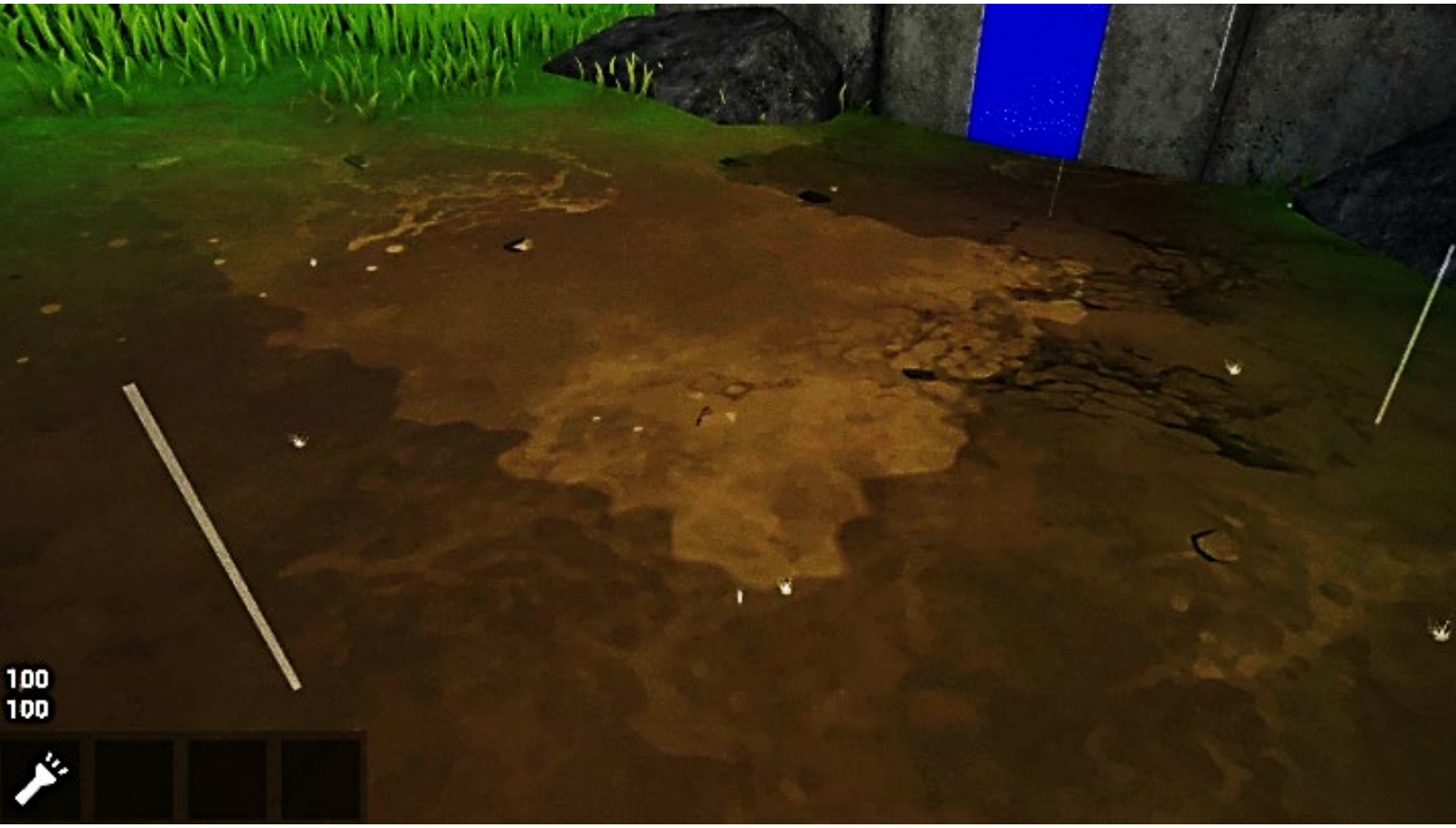
Even though this solution is easy for the game to process, it is fairly more difficult to set up. Before the function is ready to use, it has to go through multiple treatment processes. This means repeating UVs, controlling the sample rate, and setting up some distance blending. Then when we get the sampled image, it has to go through mask treatment in the shader, which is also not a super straightforward process. For the full details, you can check them out in the official presentation.

Picture #3 - Material masking function.

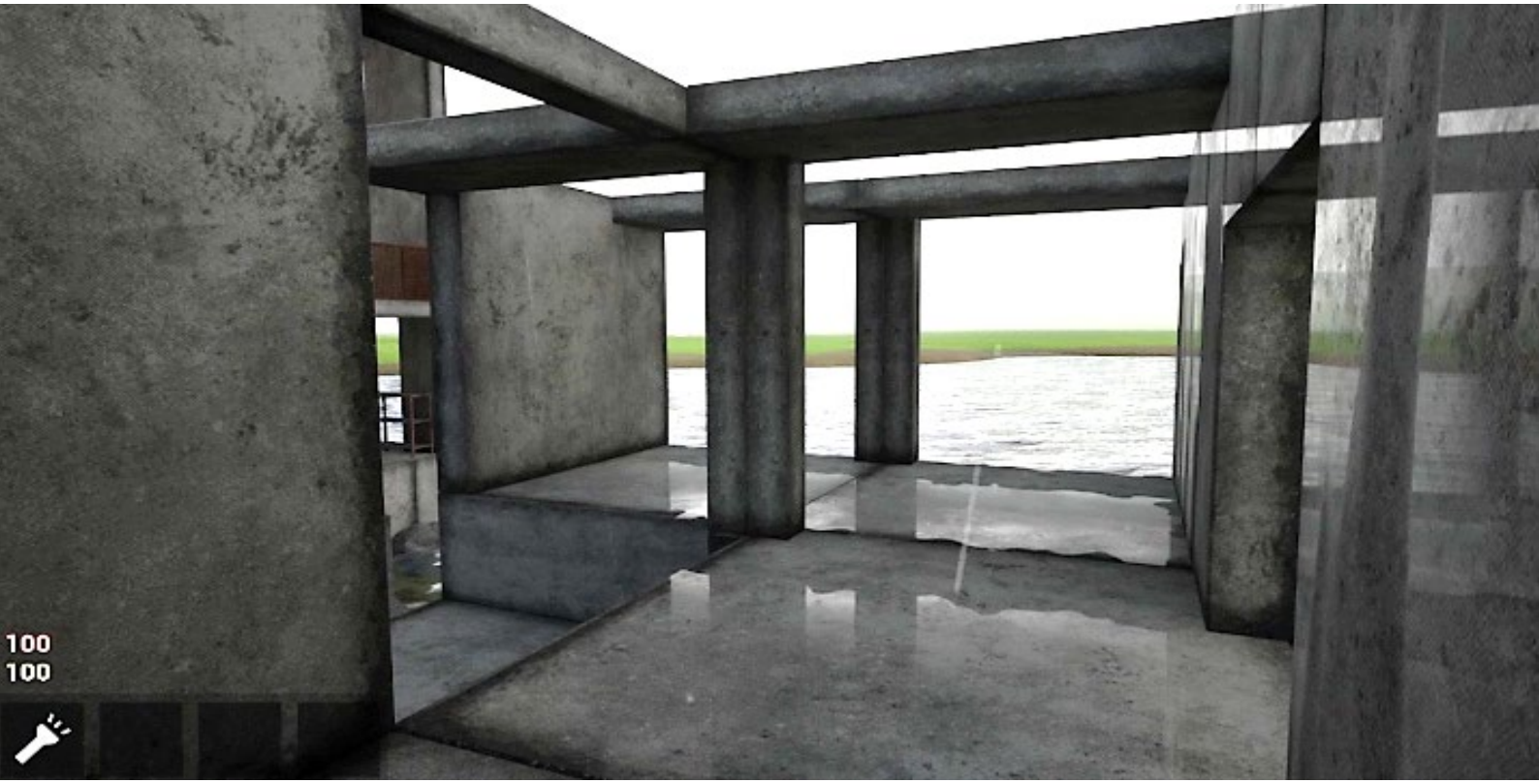
Final Product

After treating the captured image through a shader (previous slide), I've put the entire shader into a "Material Function," which allows me to use it in any shader graph easily. For instance, I'm using it on the dirt material to make it darker, since wet dirt often looks darker than when it's dry. On the concrete structure below, I've placed some

overhead objects to test the effect. On the concrete material, I've used the function to multiply its roughness to make it seem wet. For the occlusion itself, we can see how the overhead structures "occlude" the rain, and the covered areas remain masked out, therefore dry. It needs to be mentioned that the mask is not perfect and needs to be treated (previous slide). In the example images you can see the "Noise" I used to distort the low-resolution edges and make them wobbly. In the top image you can see where the mask "snaps." That is the moment when the capture is done.



Picture #4 - In-game rain occlusion mask (dirt).



Picture #5 - In-game rain occlusion mask (concrete).

How I Used Reverse Engineering

- Having targeted study material.

Valheim is a game that also contains the system of dynamically painting a wet mask during rainfall. On the plus side, the game has very transparent visuals, and I already have experience with the game. Valheim also has this feature, mainly because in Valheim you can build structures. Since the developers don't know what the player might build, the game needs to adapt and decide by itself where it is dry and where it is wet. Let's say I decide to build a temple. The developers don't know where I'll build it, how big it will be, which pieces I will use, etc… They need to have a system in place to be able to decide on its own where it's going to be wet or dry during rainfall.

Visible Limitations

While playing Valheim, I've also been using it as a case study. Over time, I noticed that the technique is there and eventually noticed how it works. In-game you can notice that they also had to "blur out" and treat the imperfect edges with a noise texture. (smaller than mine). You can also see how they use this mask, visible in the ground roughness. From small details like these, you can eventually destruct them, understand them more closely, and learn from them.

The first image shows a moment when the player is out of range of the render target capture camera. We can see that the camera is attached to the player because the area that should be occluded suddenly becomes visible. This is because of the distance fading mentioned earlier. The second image shows a detail that reveals when the render target captures the image. We can see that when the player is moving, the mask slightly moves too. This is because the image resolution is not pixel-perfect, and the mask often "spills" into other pixels. This reveals that the exact moment the mask moves is when the capture occurs, and it is offset by the player's position. There are just examples of the small details revealing and giving off some secrets to help us reverse-engineer this technique.

Reverse-Engineering in VFX

Talking about VFX, there is a great YouTube channel named "Captain Disillusion," a creator who analyzes and deconstructs various visual effects. In many cases such as this, "deconstructing" means "reverse-engineering."

Questions and Answers

Q1: *How do you apply the mask to every object in the scene?*

The mask is implemented as a material function in Unreal Engine. This function can be plugged into any shader and set to affect properties such as roughness. Because the math is contained within the function, it can be reused across multiple shaders without duplicating calculations.

Q2: *How does the system behave with semi-transparent or moving objects, such as leaves or trees?*

Since the method relies on sampling visual data rather than collision, the mask adapts to semi-transparent objects. Under foliage, the effect produces partial dryness and wetness depending on opacity. Adjusting the mask's contrast or blur can refine how rain interacts with such surfaces.

Q3: *Do you apply reverse engineering principles to every game you play, and are there resources that help with this process?*

With sufficient experience in 3D and game development, developers naturally begin noticing technical details during gameplay, such as polygon edges or LOD switching. Debug consoles also allow exploration and breaking of systems. There are few formal resources; most insights come from attentive play and logical deduction.

Full Presentation

This publication is a minimalized version of a presentation, which you can find here:
https://docs.google.com/presentation/d/1_xmOj-1P8Gb6ZfJ_eGIya258b93quA9fHJK9jd4kh9Q/edit?usp=sharing
The presentation contains useful visualizations that can describe the topic better.
Used study materials: *https://youtu.be/yYE1Hfg067I, https://youtu.be/pVKDfZMffpc*
Referenced imagery:
Picture #1
https://www.reddit.com/r/unrealengine/comments/rkppqg/a_quick_test_of_dynamic_occlusion_and_improved/
Picture #2 - My own screenshot from UE5
Picture #3 - My own screenshot from UE5
Picture #4 - My own screenshot from UE5
Picture #5 - My own screenshot from UE5

PIPELINE OF "CARELESS"

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Abstract

Overview of technical solutions for the production of a full CG short film in a student environment. Problems such as collaboration, file sharing, folder structures, and scene assembly are explored. A brief description of the creation of a shot, from storyboard to animatic, layout, process of recording and animation using motion capture, simulations, lighting, rendering, and compositing. It is also a presentation of tools created specifically for the film and the setup of a render farm.

Keywords

Pipeline, 3D, animation, mocap, scene assembly.

Introduction

Careless is a 3D animated short film that questions whether to be careful or not during a chase through the streets of a night city. This movie was created in collaboration with my classmate Juraj Zbín as our bachelor's project.
If anyone's interested, here's a link to the full movie: *https://vimeo.com/1046363314*

Image No. 1 – Stills from the movie "Careless".

Overview

Well, the main goal of this project was collaboration. Previously I worked mostly solo on personal projects, and I wanted to try out working with other people, which raised a question for a "pipeline." When you're working solo, you can have your little creative mess, and nothing happens, but when other people get involved, things tend to fall apart pretty quickly.
I would like to point out that no matter how good of a pipeline you have, from a technical standpoint, clear communication always solves most problems.
I would like to clarify that this is only an overview of our approach in a "school" environment (not necessarily the best way to do things, but it "worked" :))
In terms of software, it was mostly a combination of Blender, Nuke, Marvelous, and Substance Painter.

File Sharing

The first problem we encountered was, how are we going to share our files?
The ideal scenario would be to have some kind of NAS server and work on the same network; however, we were both working remotely on our personal computers, so are we going to be sending zip files back and forth, or are we going

to do something different? Well, we decided since our school provided us with OneDrive cloud storage that we'll just use that.

The problem with this approach is that everyone installs the cloud in a different place on their computer. For example, someone has just one drive in their PC, so they install the cloud on the C drive, but the other person has two drives, an SSD where they store only the operating system and software and then a large hard drive for actually storing files. So, then the other person installs OneDrive on the D drive. Well now, if the 3D software were looking for a texture on the C drive, it wouldn't find it and would just return an error since it's on a completely different drive. How do we solve this? The simplest solution we found is to use the "Map network drive" function in Windows. This is typically used for making a server act as a drive-in PC. But we can also make a local folder act as a "virtual drive." This function can be found in Windows Explorer; the only thing that you have to pay attention to is the path to the folder. You have to put it in a special format. For example, \\localhost\D$\ is the path to the folder. This is because it has to be entered as a network location; it's just that the folder is stored on the same PC. Then everyone has to choose the same drive letter, in our case N, and voila, the file paths on all the computers are the same. (You just have to access the files through the new drive, not the actual folder where they are stored.)

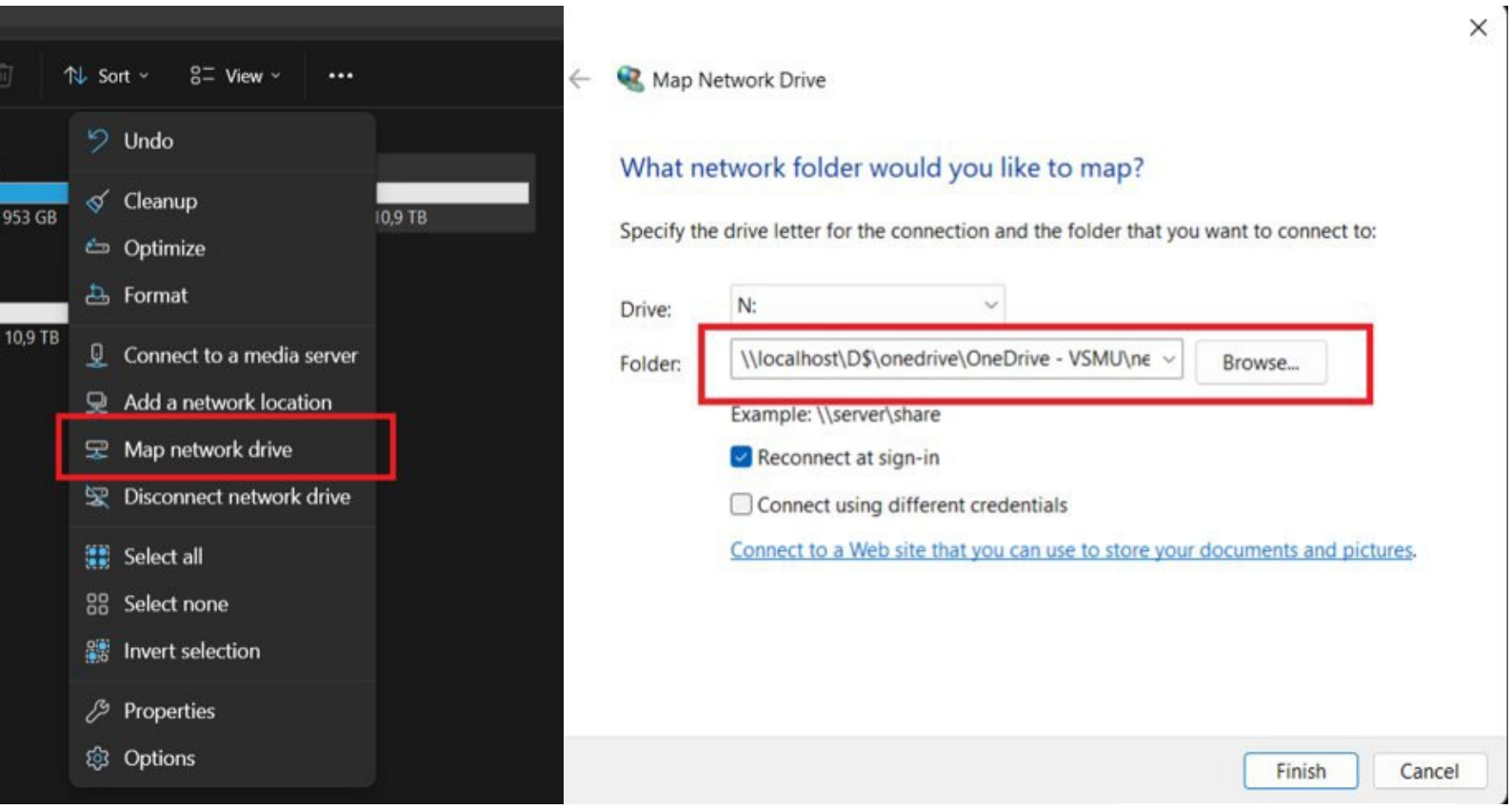


Image No. 1 – Map network drive.

Folder structure and naming conventions

Now that our files are synced, another question appears: how are we going to organize them? Here you can see how we separated all of the folders. The most important thing here is that we have the assets and shots separated from each other. so that we can link or reference the assets in our shot files. And if an asset gets changed, it automatically updates in all of the shots.

For the actual shots we were using a common naming convention of incrementing the shot number by 10 instead of 1. This is so that we could later add shots in between shots. For example, the first shot is not 1 but 10, and the next is 20. If later in production, we realize that we need a shot in between, then we add shot 15, and again, if we want a shot between 15 and 20, we add 17. Usually, you are also separating the shots by sequences, but since this was a short film that basically only had one sequence, we dropped that and only used shot numbers.
One thing that I would like to point out is that we had a shot of 000. This wasn't an actual shot but just a template folder structure, which we could easily copy if we needed.

Another thing that you can see here is that we were creating versions of our files. This is to have a backup if something gets corrupted and also to simplify the iteration process. For example, if v2 looked better than v3, we can simply return to it.
In terms of the actual tasks for the creation of a shot, we only had it separated into 3D and compositing. Usually, you would have a task for layout, animation, FX, lighting, etc.… but we thought it would just complicate things, because all of our shots were technically the "same."
As you can see, the renders had the same name as the name of the project file. This is actually not that easy to do in Blender automatically, so we had to develop some custom tools about which I'll talk later.

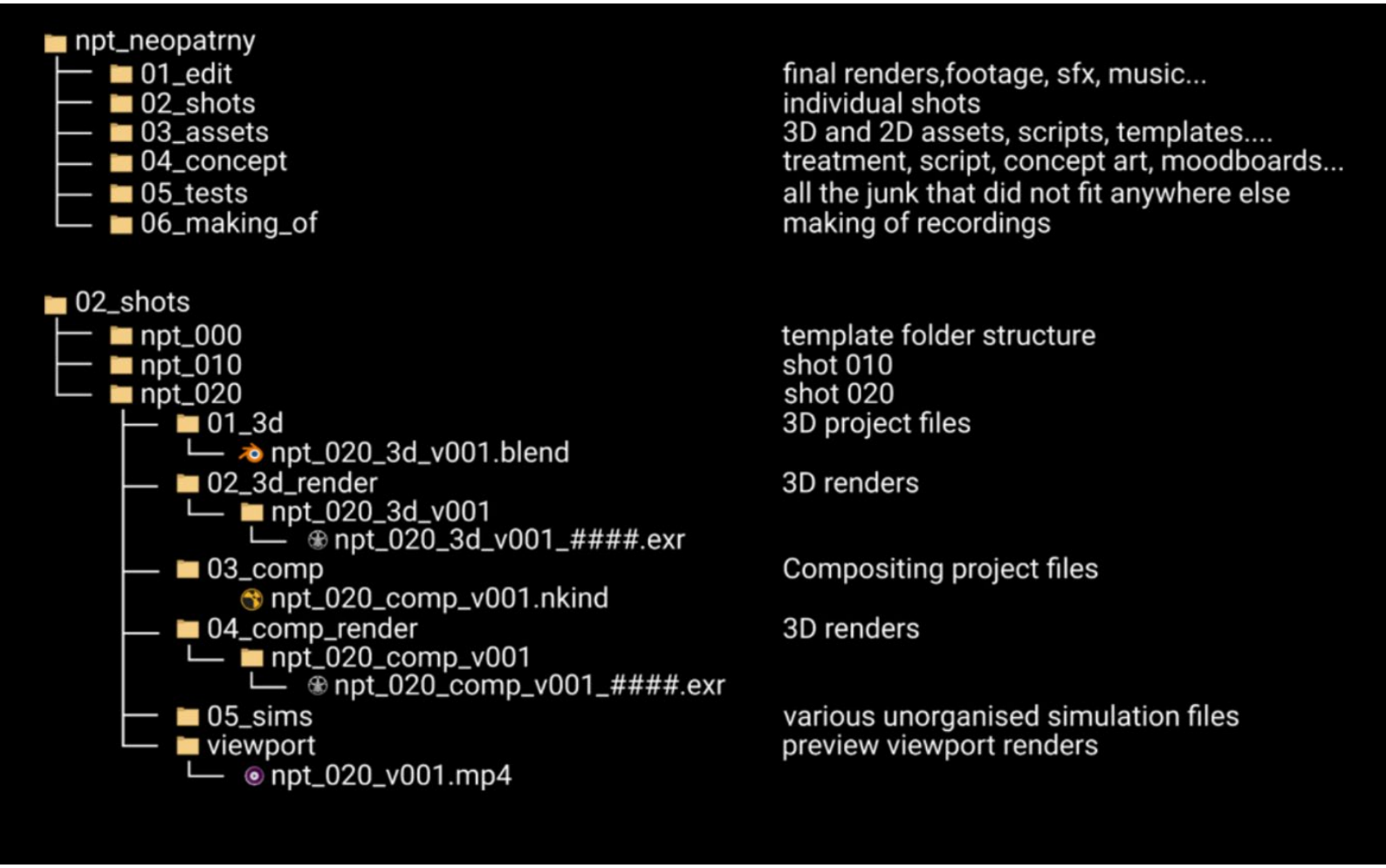


Image No. 2 – Folder structure.

Asset Organization

Here you can see how we organized our assets. The most interesting thing here is how we tackled the process of updating the assets to the current version. Well, if you know how linking in Blender works, you are basically referencing the actual file. So if you have a v1 of your asset that's linked into all of the shot files and then you create a v2, obviously you would still have only v1 in all of the shots, which you would have to manually replace for a v2. We came up with a little workaround to solve this issue. As you can see, we have a "blend" folder where all of the versions are stored, and then we have a "published" asset file without the version number in the filename, which is just a copy of the current version. You are only working on the files in the blend folder and never on the published one. Copying these files manually would be time-consuming and error-prone, so I created a little add-on that does this automatically. You just hit a button, and the version you want gets "published." We are then linking this published file without the version number. This ensures that we are always seeing the current version and also have a backup.

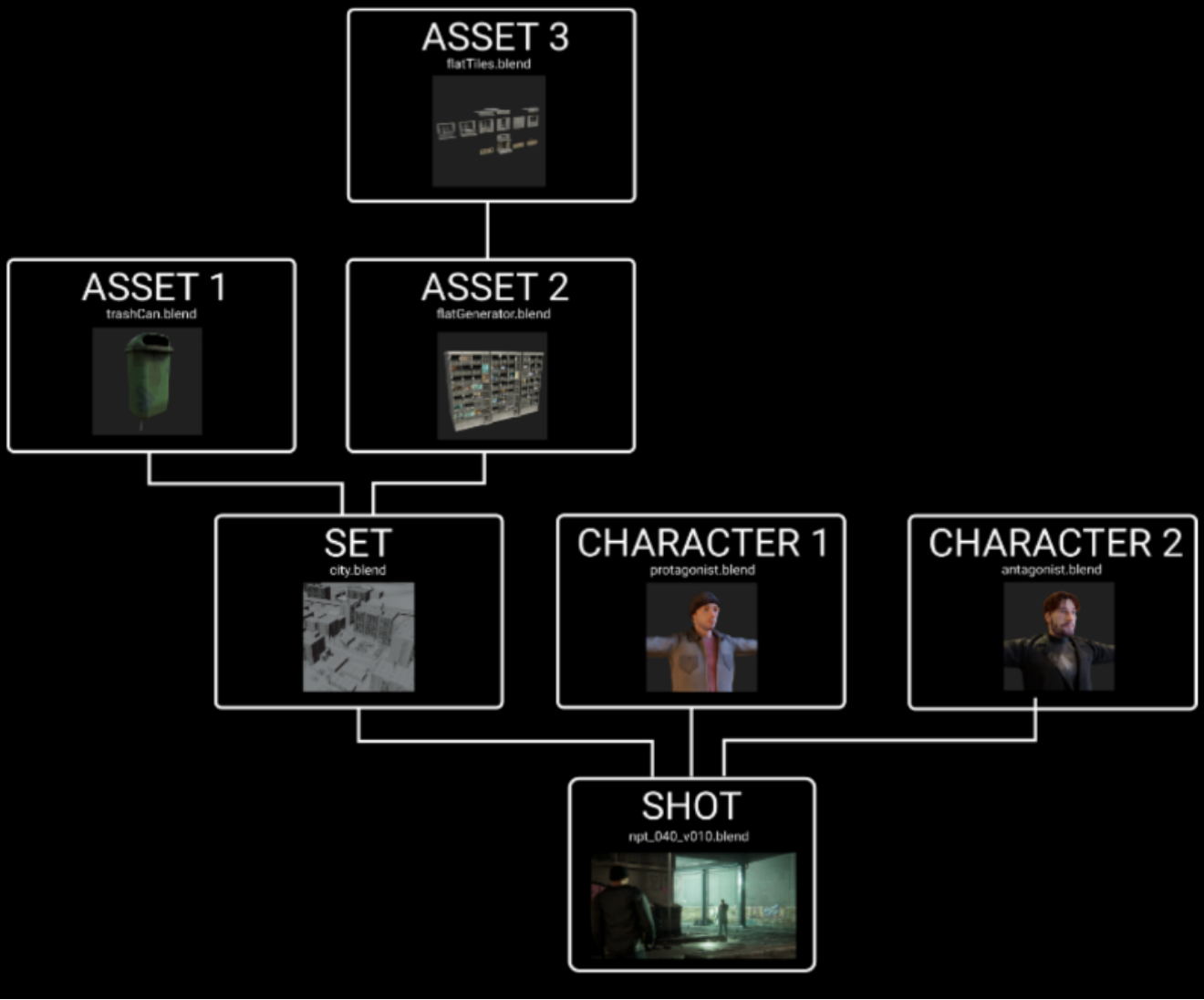
Image No. 4 – Asset Folder structure

Image No. 4 – Asset Folder structure.

Scene Assembly

As I mentioned before, we were using the linking and library overrides system in Blender. This means that if we, for example, have a shot, this shot could be referencing characters and the set or environment. And then the set could be referencing other assets like a trash can, lamp post, building, etc. This not only makes changes in all of the files instant, but it also, as a side effect, reduces the file size of all the files because the assets are not stored in them, only linked. In our case this graph represents pretty much all the shots. The actual "work" that was needed for each shot was just the animation, FX, and lighting.

Image No. 5 – Scene assembly.



One weird thing that we did was that we had only one set, like the whole city in one file. This is not something you should do because of performance. Why would you be linking the whole city into each shot if you only see a part of it, right? Well, from the animatic, as we were creating shots, we worked this way, slowly replacing all of the low-poly assets for the final ones. This gave us a lot of creative flexibility, because at any point we could put the camera anywhere, just like you could in the real world. Careless was just at the edge where this workflow was possible. In terms of the actual performance, we had to optimize the scene for viewport playback. For example, disabling heavy objects or modifiers. One thing that helped a lot with performance was using instances. In general, if you are creating environments, you should be instancing everything. Not only is the performance better, but also working with it is easier (if you want to modify an asset, you don't have to do it a million times). The environment itself was created as a mix of manual and procedural workflows.

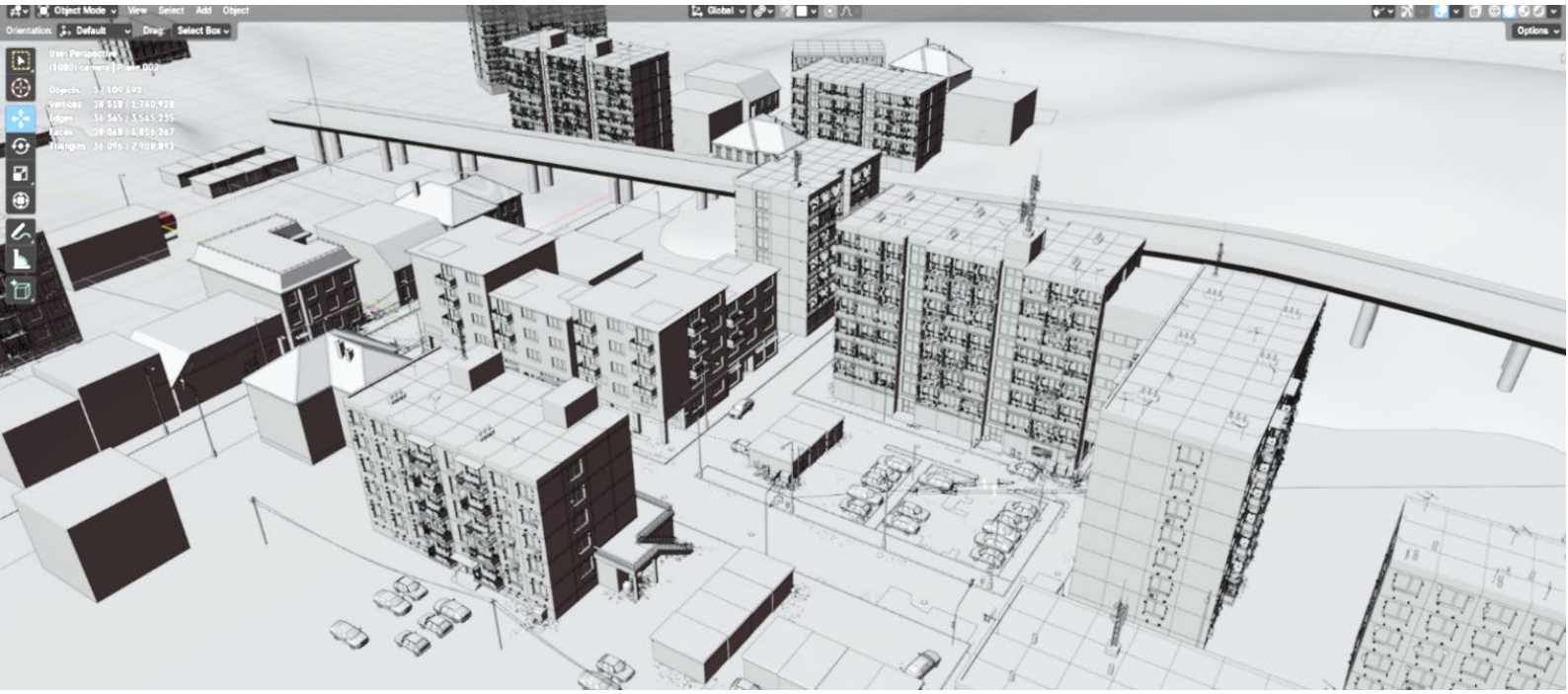


Image No. 6 – Overview of environment.

For example, I created a flat generator, which allowed us to easily modify the layout and composition of a shot, and since it was created using instanced tiles, it was also good in terms of performance. This is also a great example of the linking workflow I described, where, for example, this flat generator is referencing other assets like the tiles, details such as hanging clothes and air conditioners, and also the window shader that's used across all the buildings, even non-procedurally generated ones.

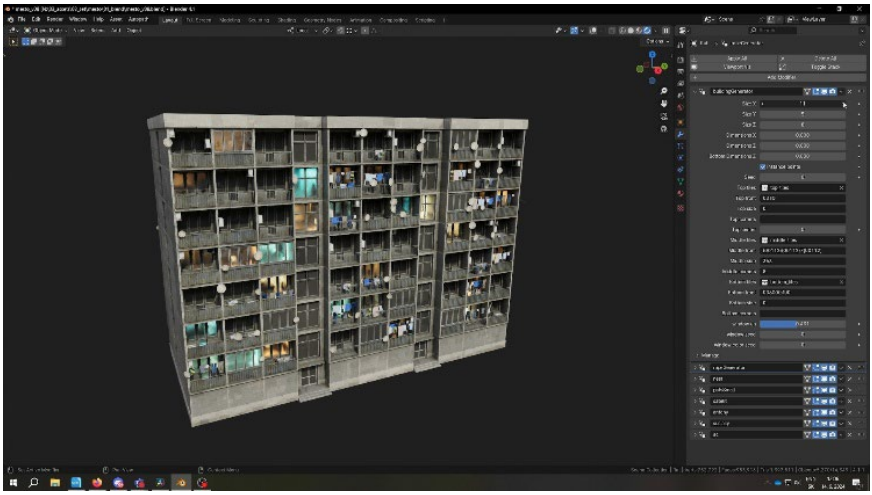


Image No. 8 – Procedural building generator.

Custom Tools

Now onto the custom tools I mentioned before. I created two add-ons for Blender. The first one takes care of the asset publishing. And another for ensuring that the file paths for rendering are the same across all the shots with the filename included. This functionality is really missing from Blender, and thanks to this simple add-on, we did not have to pay attention to the file paths at all. It works for both the standard output path and file output nodes in the compositor. Also, there is an option for a viewport render that sets the path differently when play blasting. I decided to share these tools with you, so if you're interested, you can download them here[1].
I also included the OCIO ACES config we used, which I modified to be compatible with Blender.

[1] *https://drive.google.com/drive/folders/1AIIkUq58h6qAzPoWc5OelBu_vxy3qfsk?usp=sharing*

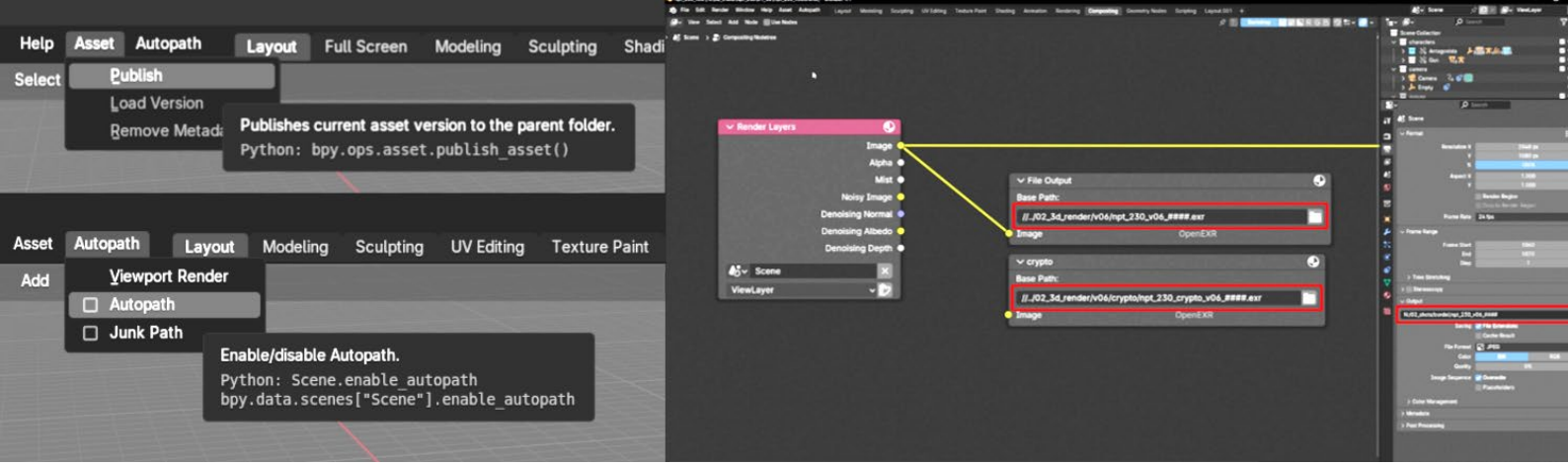


Image No. 9 – Addon for automated output.file .paths.

Shot Creation

Now onto the exciting stuff. Shot creation. So, our movie started with a treatment, then we broke it down into shots, which we organized in a spreadsheet. Afterwards we created a simple storyboard, which helped us visualize the movie.

The next important step was previz. We did a live-action one. It was really janky. Action scene chase dimensions timing. Animatic block out of environment, pretty much final dimensions and layout, just replacing assets for the final ones, animation using mocap even at this stage, maybe not the best idea. We even utilized music and SFX in the animatic. Animation using mocap, cleanup, face mocap, and synchronization. I would use the camera for reference in the future. For the final animation, the camera was animated manually. We were going for a bit of a handheld look. Afterwards simulations in basically every shot, including cloth, hair, fluid, and rigid body physics. Marvelous clothes. The film in this kind of state was sent to the composer of music.

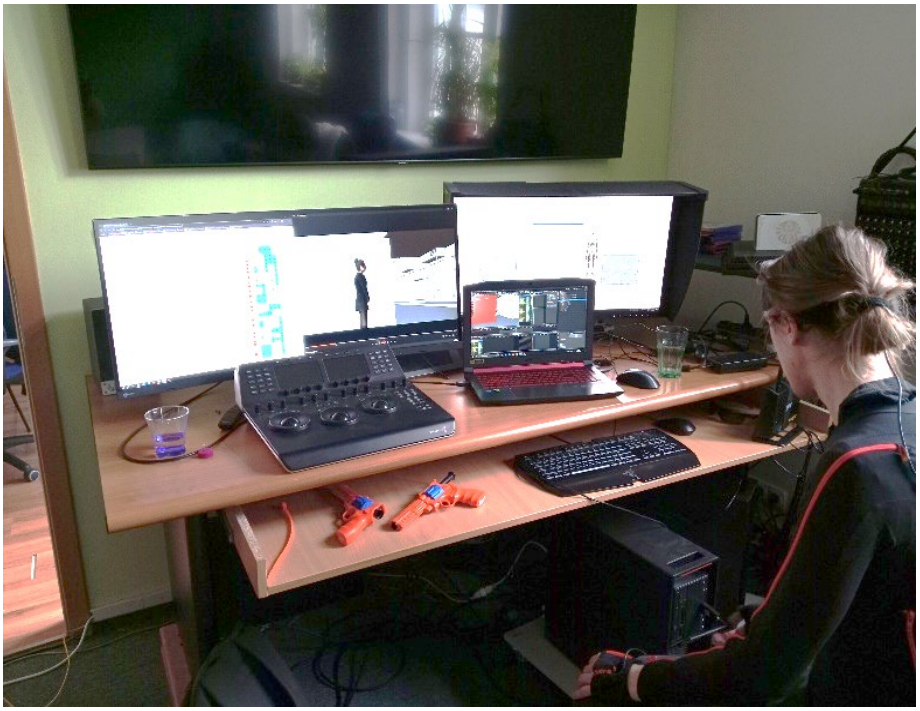


Image No. 10 – Motion capture recording

In terms of lighting, we had a base lighting in our set, which was then tweaked on a per-shot basis using the library overrides system in Blender, for example, by adding rim or fill lights or tweaking the intensity of existing lights like the streetlamps. This approach maintained certain consistency between shots.

Render Farm

The final step is rendering. We used Cycles, which is a standard path tracker. And as everyone knows, path tracing takes a long time. Especially in our case with a foggy night atmosphere with a lot of bounce light. The only way we could deliver on time was to set up a render farm at our school.

In terms of software, we used a combination of Blender, Flamenco, and OneDrive.

Thanks to the fact that Blender is open source, we could easily set it up on as many computers as we wanted. Flamenco is a render manager made specifically for Blender; the setup is straightforward. I won't go into how to do it here because there are already good resources available in the link I provided here[2].

The main thing in our case with the render farm was that we only synced OneDrive to just the main manager computer from which the files were shared to workers only on the local network. This was important because otherwise we would be uploading and downloading files just for the sake of it.

Another thing we ran into is that by default, flamenco puts all the renders into one folder with time stamps in the file names. This wasn't the behavior we wanted. A quick fix for this was to use the file output nodes in the compositor that aren't affected by it. This, of course, was made more straightforward thanks to our Autopath add-on.

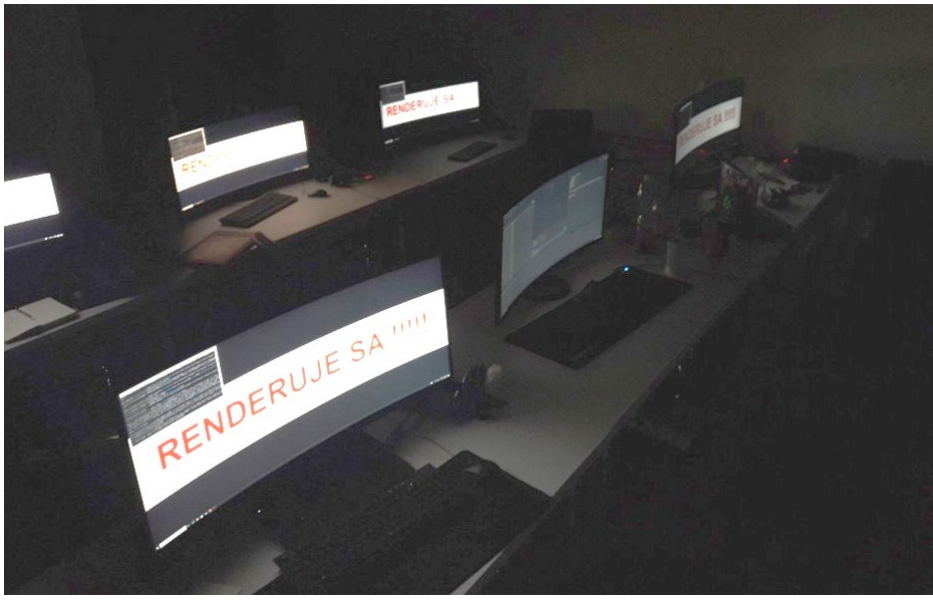


Image No. 11 – Render Farm

And this is basically the pipeline of our film. Big thanks to everyone that helped make it. :)

Questions and Answers

Q1: *How was your time management looking back?*

At the beginning we tried to establish a schedule, but as production progressed the plan kept changing. Despite careful planning, real-world conditions often disrupted the schedule, requiring flexibility and adjustments.

Q2: *What was the final rendering time for the whole movie?*

The film was rendered twice. The first version for exams took approximately three days. The second version, prepared for festivals, required about one week of continuous rendering on all available school computers. Some shots required 20 to 30 minutes per frame.

Q3: *How many hours of motion capture data did you record?*

The team recorded motion capture over two to three days, producing multiple takes for each shot to ensure flexibility. An additional session was held with actors for facial performance capture. The exact length of recorded data was not calculated, but the volume was substantial.

List of images

Image No. 1 – Stills from the movie "Careless," personal archive
Image No. 2 – Map network drive, personal archive
Image No. 3 – Folder structure, personal archive
Image No. 4 – Asset folder structure, personal archive
Image No. 5 – Scene assembly, personal archive
Image No. 6 – Overview of environment, personal archive
Image No. 7 – Procedural building generator, personal archive
Image No. 8 – Addon for automated output file paths, personal archive
Image No. 9 – Motion capture recording, personal archive
Image No. 10 – Render Farm, personal archive

[2] https://www.youtube.com/watch?v=O728EFaXuBk

CONFERENCE CONTRIBUTION – 5, DAY 1

CONCEPT ART: PAST, PRESENT, FUTURE

RADOSLAVA KRÁĽOVÁ, *1st master's year in AVFXGD FTF VŠMU Bratislava, SLOVAKIA.*

Abstract

Concept art is the bridge between imagination and reality, shaping the worlds of film, video games, and animation. From its early roots in the 20th century—when artists like Ralph McQuarrie helped bring Star Wars to life—to today's cutting-edge digital techniques, concept art has evolved alongside technology. What began as traditional sketches and paintings has transformed into a vast digital playground, where AI, VR, and 3D sculpting are redefining the creative process.

As we look to the future, the role of concept artists will continue to shift. Will AI-generated art enhance creativity or threaten artistic individuality? Will immersive tools like VR allow artists to step inside their creations before they even exist? One thing is certain: concept art will always remain the foundation of visual storytelling.

For me, concept art isn't just about creating visuals—it's about telling a story, capturing emotion, and bringing dreams to life. In this presentation, I'll explore the evolution of concept art, discuss its potential future, and share why this art form continues to inspire both artists and audiences alike.

Keywords

Concept art, AI, old and current artists, digital art, storytelling, past, present, future.

Introduction

Welcome, and thank you for being here. In this presentation, I will explore the evolution of concept art, discuss how technology is reshaping the creative process, and share why this art form remains the foundation of visual storytelling—a space where imagination truly becomes reality.

Overview

Concept art is more than just creating illustrations or designing characters; it is an art form that merges imagination, storytelling, and visual design. For artists working in this field, it represents an ever-evolving challenge where ideas take shape long before a camera rolls or a game begins. Concept art serves as the blueprint for entire worlds, defining their atmosphere, style, and emotion.

What makes concept art so compelling is its ability to translate abstract ideas into tangible visions. It's where a spark of imagination becomes a universe, a character, or a moment that feels real. From the early sketches that shape cinematic universes to the digital paintings that guide game environments, each piece of concept art pushes the boundaries of what we can visualize and believe.

Whether it's developing the look of a futuristic city, designing creatures for fantasy worlds, or crafting emotional story moments, concept art stands at the crossroads of creativity and innovation, turning dreams into visual reality.

Conceptual art vs. Concept art

The terms "conceptual art" and "concept art" are often mistaken for one another. They sound almost the same, despite meaning very different things.

Both terms look similar due to the fact that both of these art types are based on and revolve around an idea, also known as a concept. However, the context of their use and their purposes are very different.

Marcel Duchamp is widely regarded as a foundational figure in conceptual art.

His art challenged the concept of what could be considered art, mocking the elitism of the art world, a move that can be interpreted as defying authoritarian control in the cultural sphere. Duchamp helped organize exhibitions that kept radical European art alive during a time when Europe itself was under fascist threat. He didn't wave banners or write manifestos against fascism, but his art and actions embodied a quiet, cerebral resistance to authoritarianism. He

undermined traditional power structures in the art world and supported fellow artists fleeing fascist Europe, aligning him with anti-fascist values in both spirit and practice.
His piece **Fountain (1917)**, a porcelain urinal signed **"R. Mutt,"** is often cited as the first true conceptual artwork because it challenged traditional notions of artistic skill, craftsmanship, and aesthetic beauty.

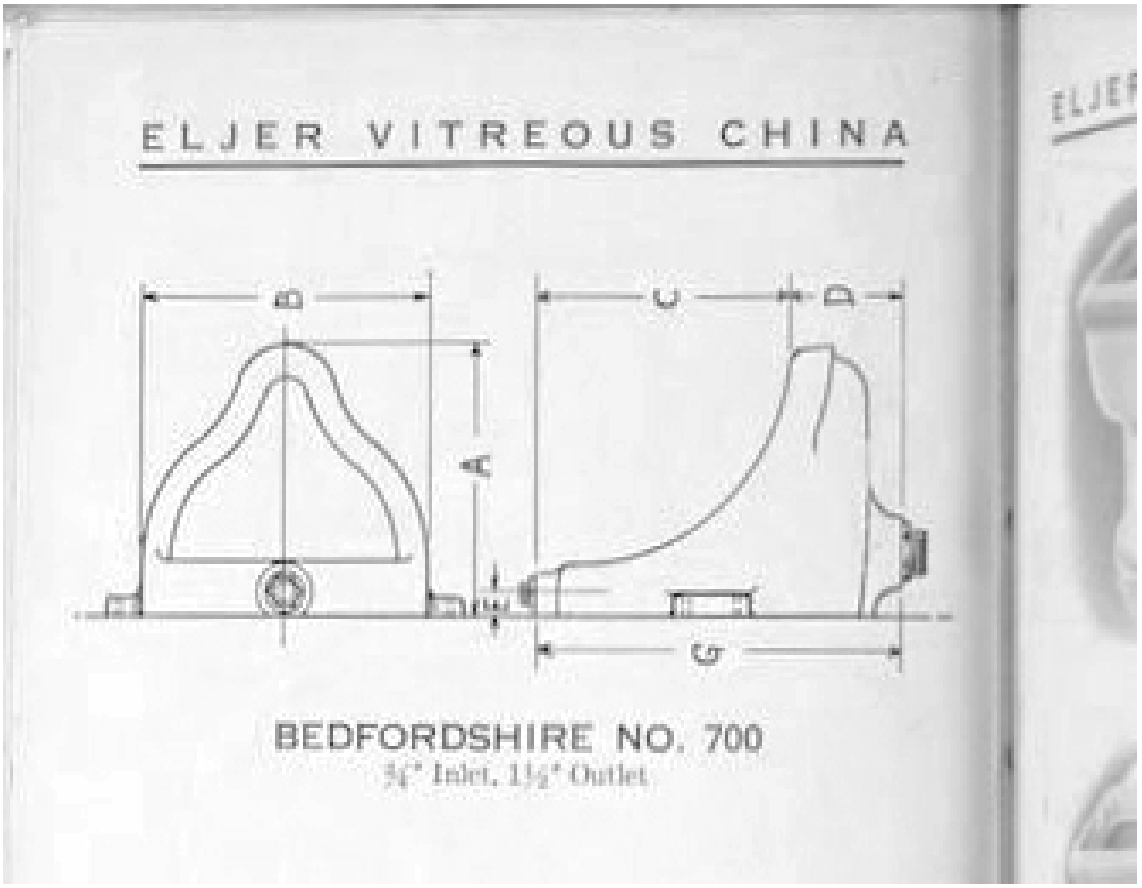
Picture 2: Fountain, 1917, photograph by Alfred Stieglitz.

Picture 3: A miniature of Fountain appears in Duchamp's Boîte-en-valise, Cleveland Museum of Art.

Picture 1: Marcel Duchamp.

Defining concept art

It's a form of illustration used to visually communicate ideas. Characters, environments, props, or other creative projects. It emerged as an art movement in the 1960s. It serves as a blueprint for the artistic direction of a project. Concept artists use both traditional and digital tools to create these early visualizations. Concept artists are not limited to one medium. They often work on video games, movies, theme park attractions, and even industrial design.



Picture 4: Eljer Co. Highest Quality Two-Fired Vitreous China Catalogue 1918.

"A common misconception is that concept art is about doing cool and pretty drawings or illustrations—it is not."
- Pierre Armal, Shiro Games.

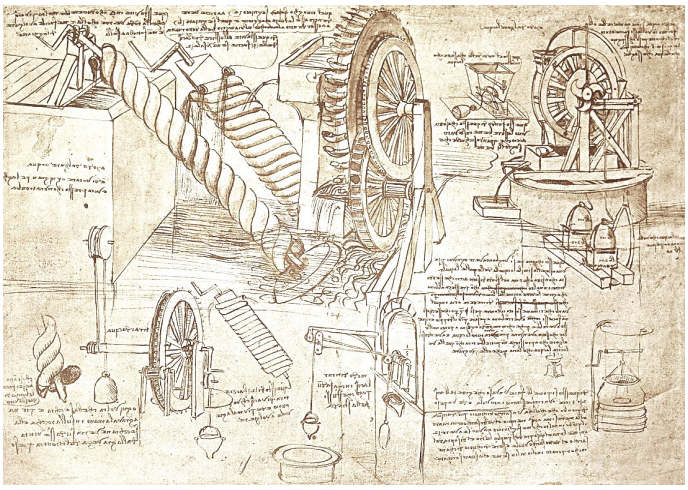
The Golden Age of Illustration

Early Influences (Pre-20th Century)

The idea of concept art predates the term itself.

The early influences (pre-20th century) of concept art can be traced back to the practices of artists, inventors, and designers who created visual studies and preparatory sketches to explore ideas before executing a final piece. During the Renaissance, artists and inventors created detailed preliminary drawings to plan their larger works, similar to modern concept art.

- **Leonardo da Vinci** created detailed sketches and studies for inventions, architecture, and paintings. His war machines, flying devices, and stage designs were highly imaginative, showing early attempts to visualize things that didn't yet exist. The "Codex Atlanticus" contains thousands of conceptual sketches for engineering, weaponry, and anatomy.
- **Michelangelo** created extensive preparatory sketches for sculptures and frescoes (e.g., *The Sistine Chapel*).



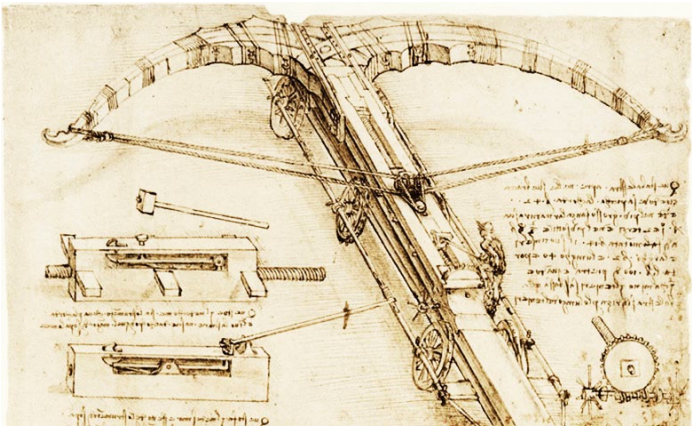
Picture 5: Archimedes Screws and Water Wheels by Leonardo da Vinci.

By the end of the 19th century, illustrators and painters had already established many principles of conceptual visualization.

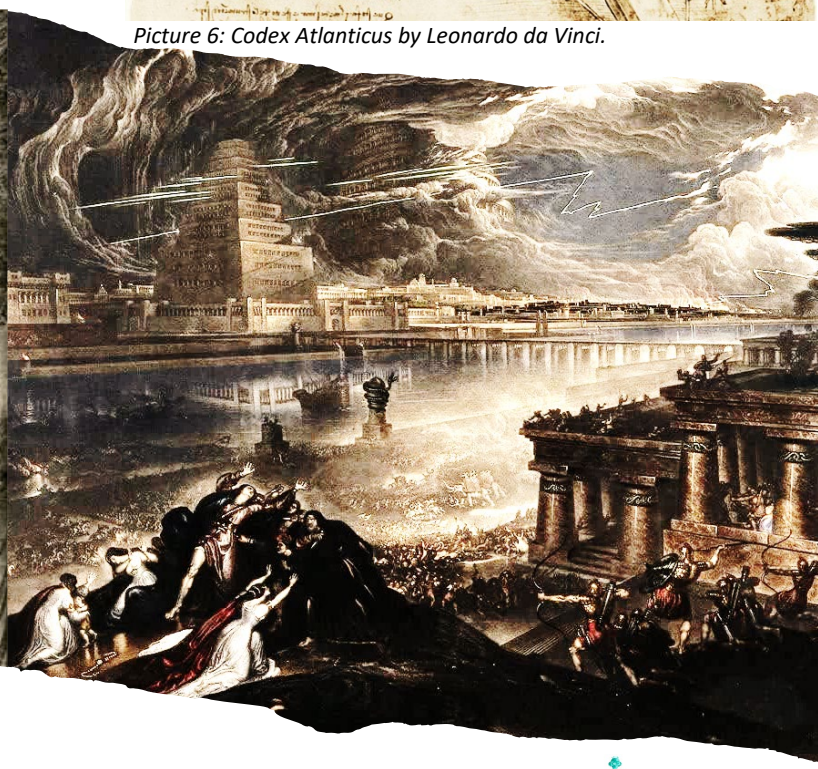
Case Studies and Examples:

Golden Age of Illustration (late 19th–early 20th century)

With industrialization and mass publishing, illustrative concept work grew in importance, especially in fantasy, mythology, and adventure stories. The rise of illustration and fantasy art in books, magazines, and theater set the stage for concept art.
Gustave Doré and John Martin created highly imaginative illustrations, often used for literature and stage productions.



Picture 6: Codex Atlanticus by Leonardo da Vinci.



Picture 7: Charles Perrault. FAIRY TALES art by Gustave Doré, 1862.

- **Gustave Doré** created **intricate illustrations** for classic literature (*Dante's Inferno, the Bible, and Paradise Lost*). His work is considered a precursor to fantasy and dark concept art.
- **John Martin,** famous for epic, apocalyptic landscapes that influenced later fantasy and sci-fi settings.

Artists such as **Howard Pyle, N.C. Wyeth, and Arthur Rackham** developed intricate visuals for storytelling.

Driven by technological advancements in printing that allowed for mass-produced illustrated books, magazines, and advertisements. Focused on visual storytelling, where illustrations became integral to literature. Artists began working on preliminary sketches and detailed compositions, much like modern concept artists.

Hollywood and the Birth of Concept Art (1920s–1950s)

The film industry, especially Walt Disney Studios, played a crucial role in developing concept art as a profession. Science fiction and fantasy films in the 1950s also used concept art to visualize futuristic designs.
During this era, the Hollywood studio system was booming. As filmmaking grew in scale and complexity, the need for visual planning became more urgent. Though the term "concept art" wasn't widely used yet, the practice of visualizing sets, characters, costumes, and scenes before production became increasingly essential.

Picture 9: "Fantasia" (1940) [Series] the Sorcerer's Apprentice sequence.

- **Story sketch artists**
- **Scenic painters**
- **Costume illustrators**
- **Set designers**

Picture 11: The Man Gave Him Some Snowshoes by Kay Nielsen, 1914.

Picture 10: Wind Breaks by Eyvind Earle, 1979.

While these jobs weren't labeled "concept artists," they laid the foundation for today's visual development pipeline. In early Hollywood, the closest equivalent to a concept artist was the production illustrator.
These artists helped directors, set designers, and producers visualize story moments and set pieces before they were built or filmed.

- **In 1951, Eyvind Earle** joined Walt Disney Studios as an assistant background painter. Disney kept the artist busy for the rest of the decade, painting the settings for such stories as “Peter Pan” and “Lady and the Tramp.” Earle was responsible for the styling, background, and colors for the highly acclaimed movie “Sleeping Beauty” and gave the movie its magical, medieval look.
- **Kay Nielsen**, known for his delicate, fantastic style seen in Fantasia and early concept work for The Little Mermaid (decades before it was made). One of the first to bridge fine art illustration and concept design.

Disney Studios began to use concept artists as visual storytellers. Disney artists like **Kay Nielsen** created early concept designs for animated films.

Mario Larrinaga and Byron Crabbe created stunning concept paintings of Skull Island and Kong that helped shape the film’s look.

- **Byron Crabbe, King Kong**—one of the first major films to use extensive previsualization—including storyboards, creature designs, and set sketches. These paintings helped visualize scale, mood, and drama, much like modern concept art does today.

Picture 12: Mary Blair, Concept art for façade of “It’s a Small World,” c. 1962-63, gouache on board. (Photo Courtesy of the Hilbert Museum).

Picture 14: Being chased by a triceratops by Byron Crabbe and Mario Larrinaga.

Picture 13: Vintage KING KONG 1933 Concept Art.

Rise of Modern Concept Art (1960s–1990s)

By the late 20th century, studios began to recognize the need for dedicated artists who could visualize ideas before production began. The term “concept art” started being used more explicitly, especially in animation and science fiction. Though traditional media (gouache, markers, and inks) were used, the late '80s and early '90s introduced early digital tools like **Deluxe Paint** and **Photoshop**, paving the way for the digital boom.
Major films like **Star Wars (1977)** brought concept art into the spotlight. Video games emerged as a new industry in the 1980s and 1990s, requiring concept artists for character and environment designs.
In the 1990s, as 3D gaming evolved, studios started incorporating concept art into game design. It was used to establish the look of characters, levels, and cutscenes in franchises like **Final Fantasy, Zelda, and Metal Gear Solid.**
The late 1970s and 1980s saw a boom in science fiction and fantasy films, which relied heavily on imaginative world-building. **Films like**

- **Star Wars (1977)**—Ralph McQuarrie’s concept paintings became iconic.
- **Blade Runner (1982)**—Syd Mead’s futuristic cityscapes set a new standard for world design.
- **Alien (1979)**—H.R. Giger’s biomechanical designs introduced dark surrealism into mainstream visual storytelling.

Picture 15: The Art of Ralph McQuarrie.

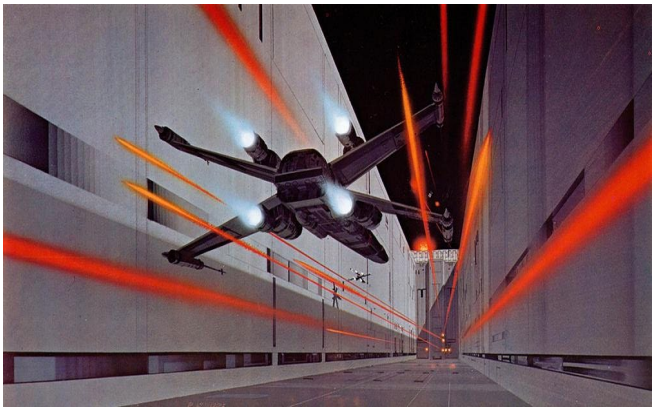
The Art of Ralph McQuarrie

Picture 16: Ralph McQuarrie.

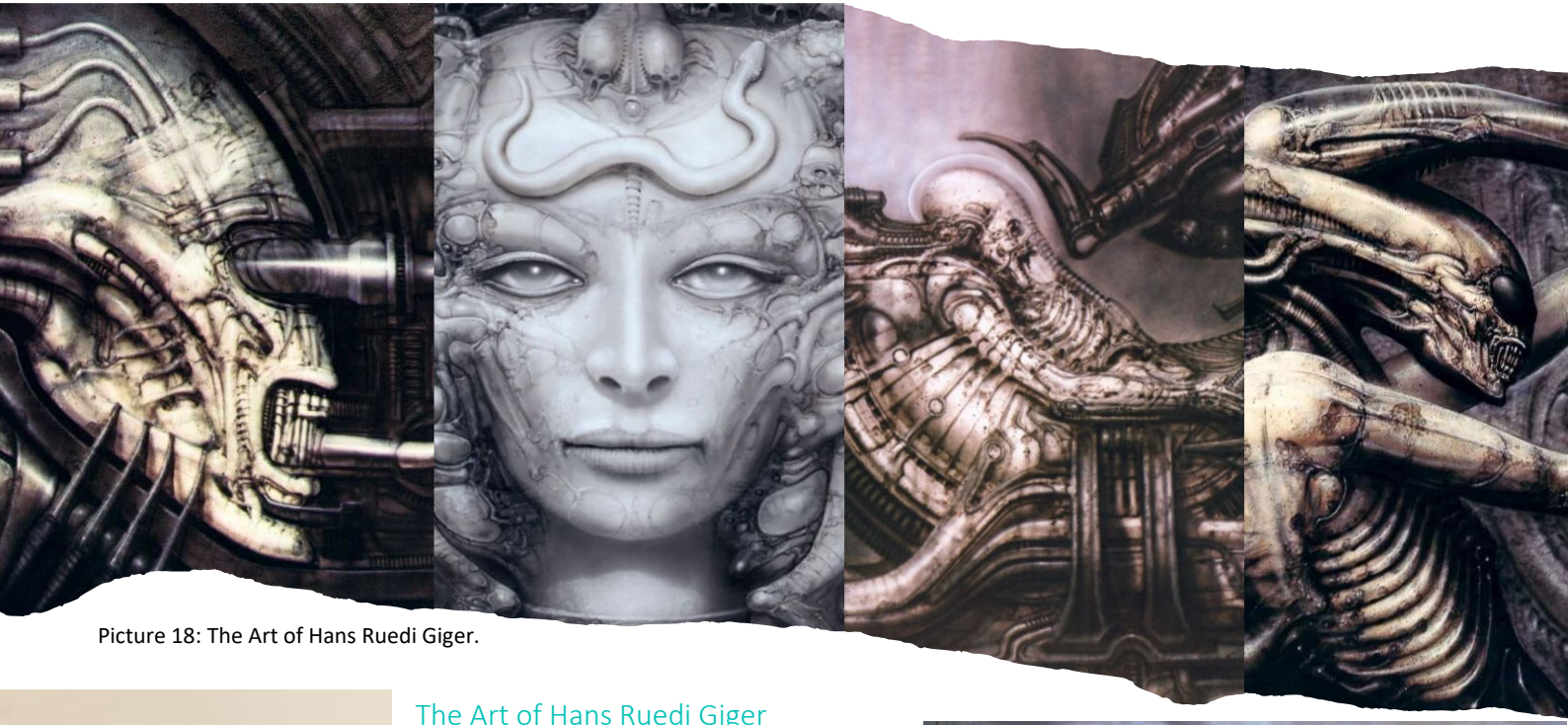
Ralph Angus McQuarrie was an American conceptual designer who worked in film and television. His career included work on the original Star Wars trilogy, the original Battlestar Galactica television series, the film E.T. the Extra-Terrestrial, and the film Cocoon, for which he won an Academy Award.

Star Wars has always been at the forefront of concept art, and today, it continues to evolve with cutting-edge digital tools, immersive design, and new storytelling directions.

McQuarrie designed many of the film's characters, including Darth Vader, Chewbacca, R2-D2, and C-3PO, and drew many concepts for the film's sets.



Picture 17: Star Wars Illustration by Ralph McQuarrie.



Picture 18: The Art of Hans Ruedi Giger.

Picture 19: H. R. Giger.

The Art of Hans Ruedi Giger

He was a Swiss artist best known for his dark, surreal, and biomechanical style that blends human anatomy with machine elements, most famously recognized for designing the creature and environments in **Ridley Scott's 1979 film Alien.**

Giger's signature style, often referred to as biomechanical, fuses organic and mechanical forms into eerie, often erotic, and unsettling imagery. His work explores themes of birth, death, sex, and the fusion of flesh and machine, frequently presenting nightmarish, dystopian worlds.

Giger's big breakthrough into mainstream culture came when director Ridley Scott saw his *Necronomicon* art book and hired him to design the titular creature in *Alien*. The result was the now-iconic Xenomorph—a sleek, terrifying monster with phallic and skeletal undertones.

- He created an entire visual language for the *Alien* universe that continues to influence sci-fi and horror aesthetics to this day.

Picture 21: Spaceship Illustration by H. R. Giger.

Picture 20: Illustration by H. R. Giger for the film project Dune.

Picture 22: The Art of Syd Mead.

Picture 23: Syd Mead.

The Art of Syd Mead

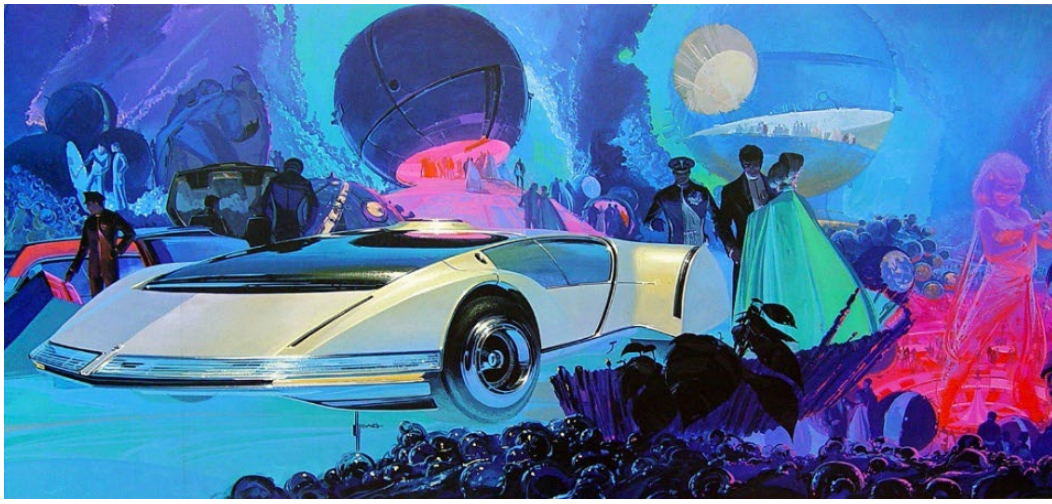
Syd Mead had a background in industrial design—he worked for Ford and then for major companies like Philips and U.S. Steel. This industrial, product-based thinking gave his designs a realism that set him apart from purely imaginative illustrators.
His trademark style includes:
Clean, aerodynamic forms.

Futuristic yet believable cities and tech.

Bold use of perspective and scale.

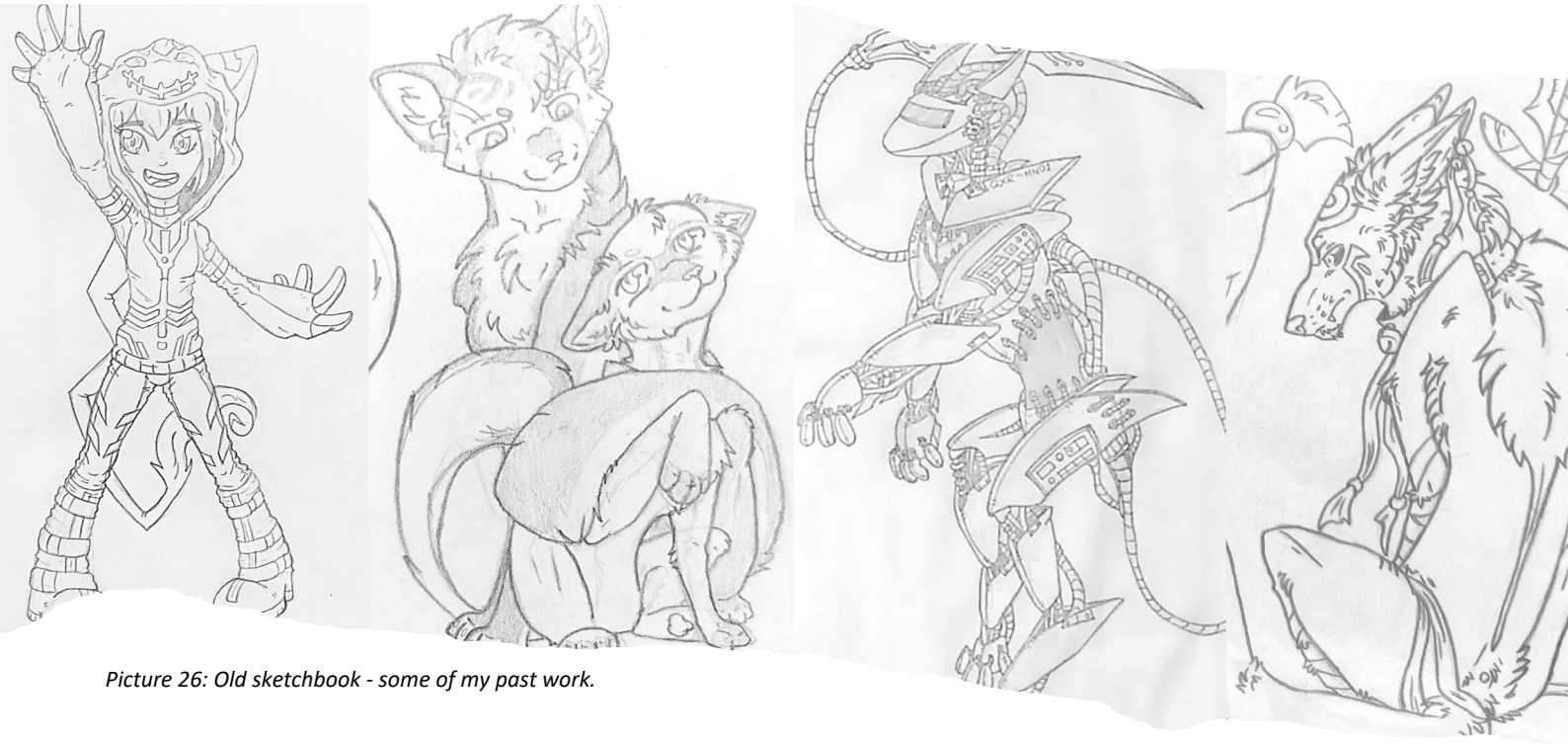
His work merges high-tech realism with a deep sense of style and precision. His sleek, visionary designs helped define what the future looks like on screen in movies like **Blade Runner and Tron.**

Picture 24: Syd Mead "Sentinel" cover (1979).

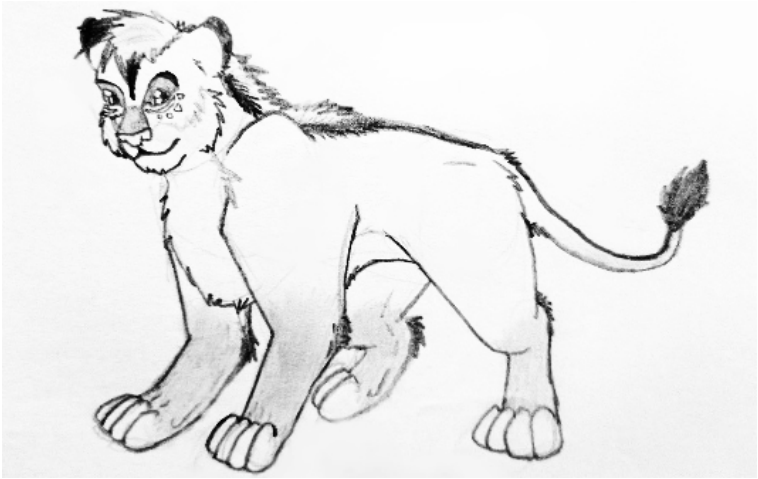


Picture 25: One of Mead's conceptual artworks for Blade Runner.

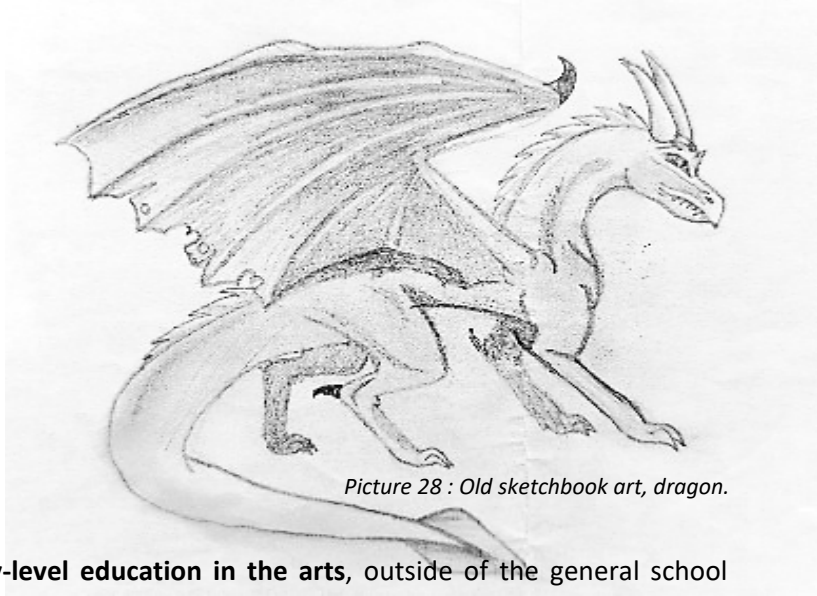
Some of my past work



Picture 26: Old sketchbook - some of my past work.



Picture 27: Old sketchbook art, lion.

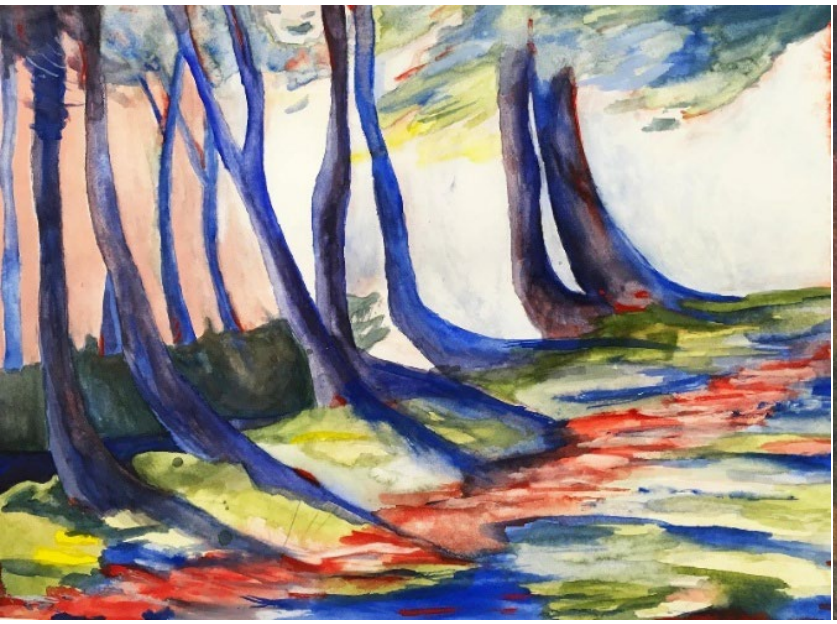


Picture 28 : Old sketchbook art, dragon.

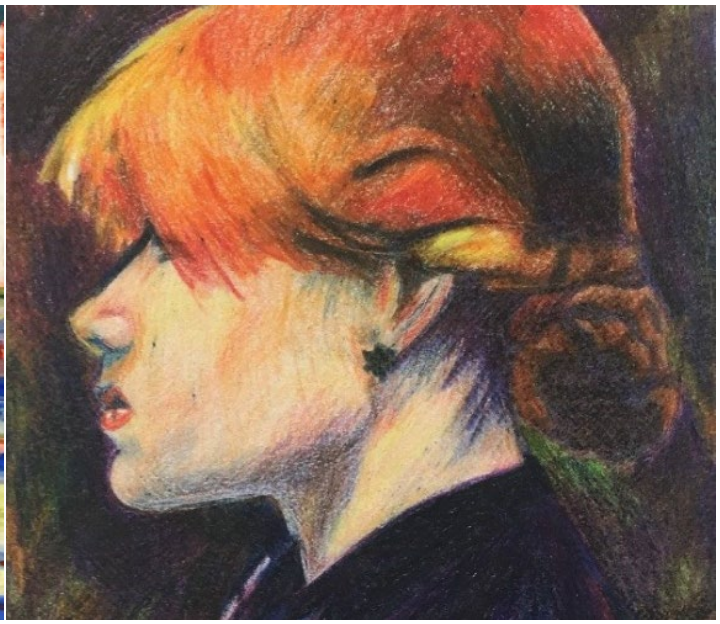
These are specialized schools that provide **elementary-level education in the arts**, outside of the general school system. They are very common in Slovakia and other Central European countries.

Secondary Vocational Art School

Refers to the network of **secondary-level specialized art schools that** provide **professional training in artistic disciplines** to students typically aged **15 to 19/20.** After primary school I knew I wanted to continue pursuing art. Secondary Vocational Art School, Košice – Concept art.

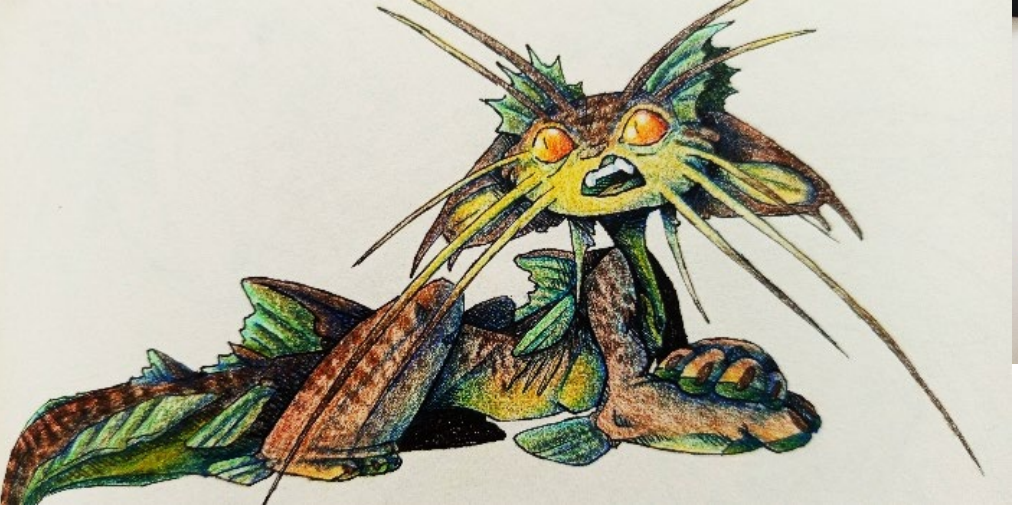


Picture 29: Secondary Vocational Art School - aquarelle painting, forest.



Picture 30: Secondary Vocational Art School - colored pencil, portrait.

Picture 31: Old sketchbook drawings.

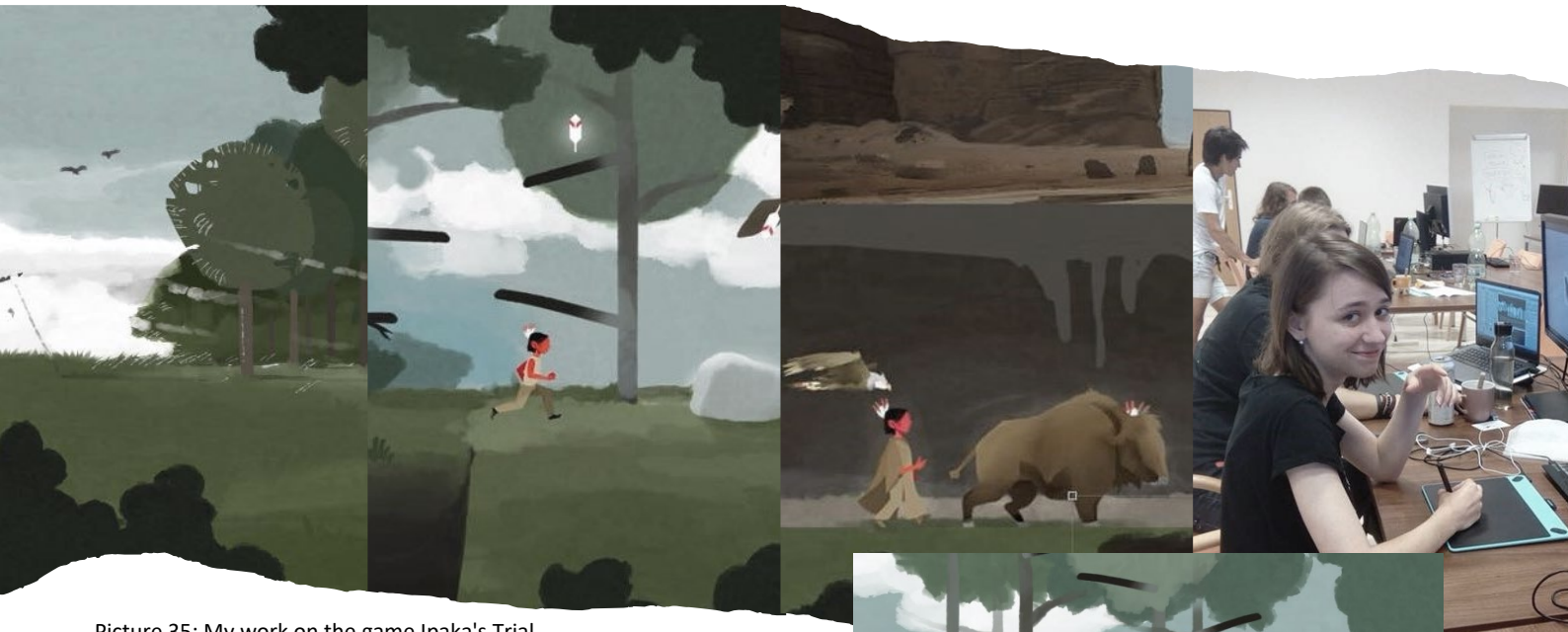


Picture 33: Old sketchbooks.

Picture 32: Old sketchbook drawing, catfish.

Old sketchbook drawings
Some of my old sketchbook drawings, featuring cats, monsters, and Pokémon—but mostly cats.

Paint Tool Sai + Wacom tablet
These are some of my earliest digital drawings (2017-2020).

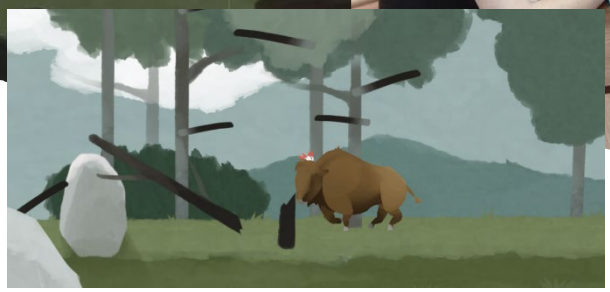


Picture 35: My work on the game Ipaka's Trial.

You can find the game **here**.

End of high school/beginning of college

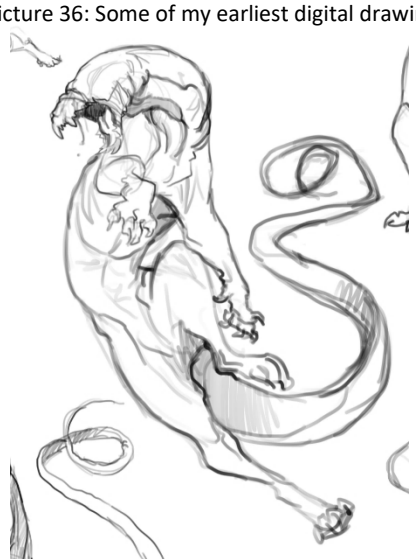
Some art I made toward the end of high school—by then, I was mostly focused on digital work.



Picture 35: Ipaka's Trial gameplay.

A 5-week game development course happening in Bratislava, Slovakia (July 2018).

Picture 36: Some of my earliest digital drawings, Paint Tool Sai + Wacom tablet.



Picture 37: Digital art made toward the end of high school.

02 Present

How the Golden Age Shaped Modern Concept Art

Digital revolution (2000s–present)

Before the 2000s, concept art was primarily created using **pencil, ink, paint, and airbrush**. **Wacom tablets, Cintiq screens, and iPads** replaced traditional sketchpads for many artists.

- **2D Digital Painting**: Adobe Photoshop, Corel Painter, Procreate.
- **3D Integration**: ZBrush, Blender, Maya, and 3ds Max—used to create base models for digital painting.

Picture 38: Wacom Cintiq 27QHD Creative Pen Display Tablet, Image Credit: Wacom.

VR & 3D Painting: VR and AR technologies are changing how concept artists create, allowing them to sketch in 3D space using tools like Tilt Brush. Digital tools like Photoshop and 3D modeling software revolutionized concept art. Concept art is no longer limited to film only.

- Procedural design and real-time engines (Unreal Engine, Unity) are influencing how concept artists work, blending 2D and 3D art seamlessly. Concept art is now essential in film, video games, animation, and TV.

Rise of Online Learning & Communities

- ArtStation, DeviantArt, Behance, and Instagram have made it easier for concept artists to showcase work globally.
- Online courses like Schoolism and FZD School of Design train new artists.
- Many artists work remotely with international studios, leading to more freelance and independent careers.

Picture 39: Logos - Photoshop, Zbrush, Blender.

Picture 40: Work of Dave Whitaker.

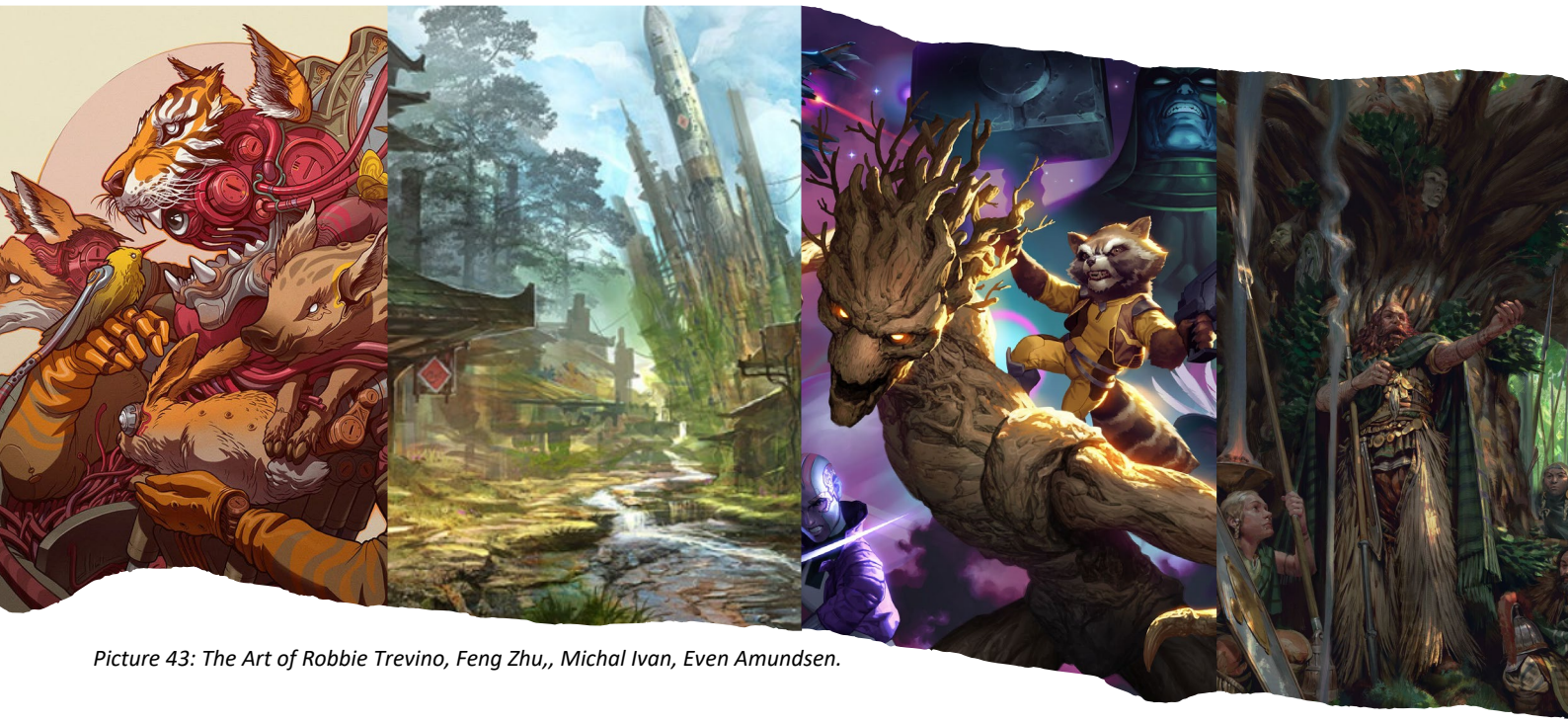
Picture 41: The Art of Geoffroy Thoorens, Alberto Mielgo, Dylan Cole, Shiyoon Kim.

These artists are just a few examples of the creative talents redefining visual storytelling in the digital age. Their work not only pushes the boundaries of technology and imagination but also inspires emerging artists around the world.

- **Geoffroy Thoorens** is a freelance concept artist, illustrator, and matte painter based in Paris, France. He has recently worked on a series of experimental short films created by director Neill Blomkamp and his VFX team at Oats Studios. Has worked on movies, series, and video games for Paramount, Netflix, Fox, DreamWorks, Sony, Ubisoft ...
- **Alberto Mielgo** is a Spanish director, artist, and animator. In 2019, Mielgo wrote, designed, and directed "The Witness" episode for the Netflix animation anthology series Love, Death & Robots. In 2015, Mielgo was a production designer/art director for Sony's Spider-Man: Into the Spider-Verse and created an early animation test for the film.
- **Dylan Cole** oversees design for the entire Avatar franchise, specifically for the moon of Pandora, including all its environments, creatures, characters, and cultures. A veteran of the industry for over 20 years, he has contributed art to over 60 films.

Picture 42: Shiyoon Kim - Zootopia concept art.

- **Shiyoon Kim** has been responsible for designing and helping bring characters to life from Tangled, Wreck-It Ralph, Frozen, and Zootopia. He is credited with designing Zootopia characters. Kim would later serve as lead character designer on Sony Pictures Animation's Spider-Man: Into the Spider-Verse in 2018.



Picture 43: The Art of Robbie Trevino, Feng Zhu,, Michal Ivan, Even Amundsen.

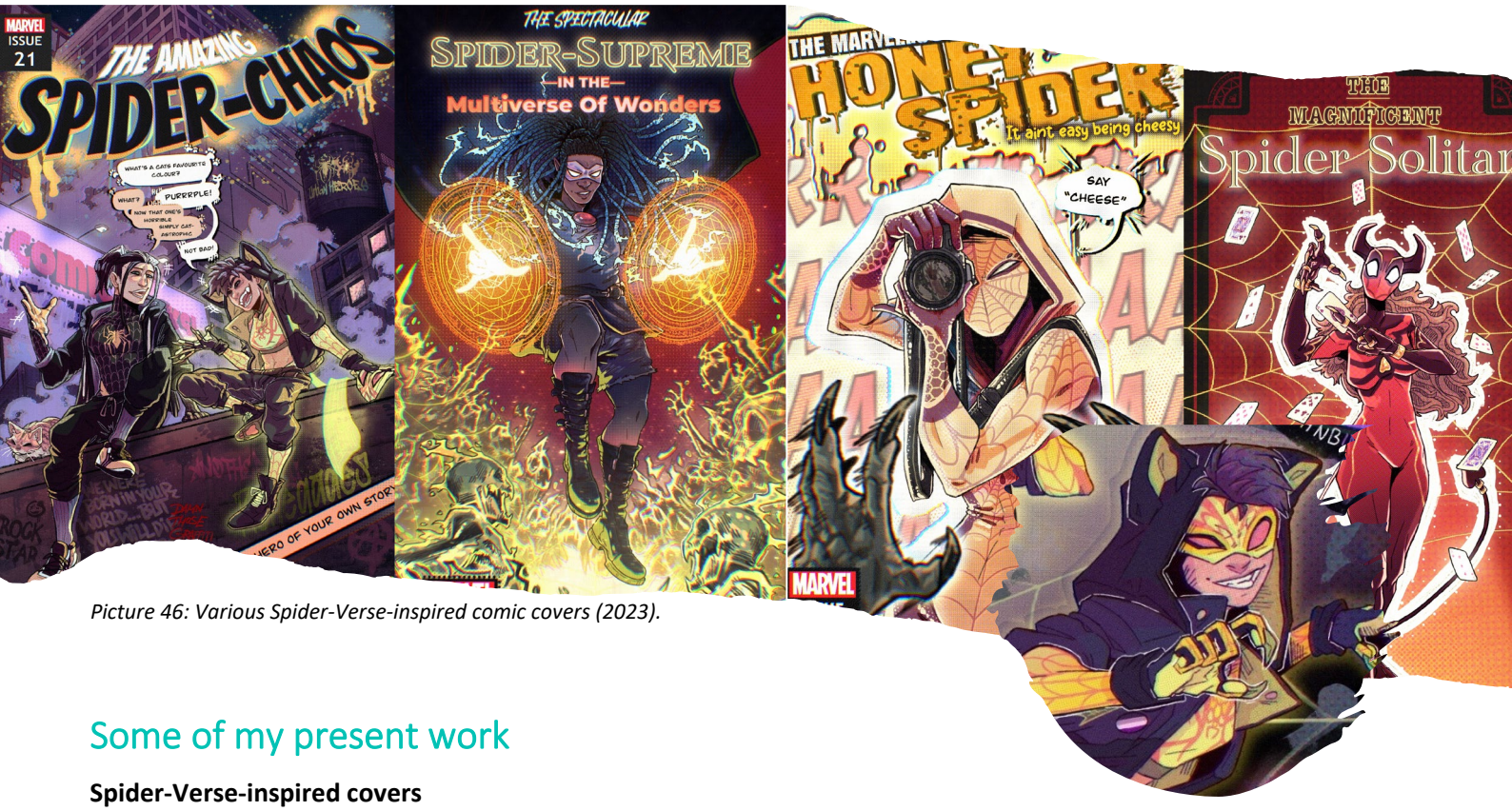
In video game development, **concept art** serves as the foundational visual guide that shapes the game's aesthetic, mood, and overall vision. It encompasses initial illustrations and designs for characters, environments, props, and other elements.

- **Robbie Trevino** is a freelance concept designer and illustrator based in Seattle, WA, specializing in surreal and sci-fi design and illustration. Over the years he has created work for a number of clients, including Valve, Wizards of the Coast, Netflix, West Studio, and many more.
- **Feng Zhu** is a working concept artist and educator. He has been pivotal in guiding a new generation of artists in the digital realm, especially within the video game industry. His clients include Microsoft, Electronic Arts, Sony, Activision, Warner Brothers, Lucasfilm, Epic Games, and many other top studios. He has worked closely in Hollywood with well-established directors, including George Lucas, Steven Spielberg, James Cameron, Michael Bay, and many more.
- **Michal Ivan** is an illustrator, concept artist, video game artist, and comic book artist from Slovakia. He is well known for his illustrative work for video game companies, as well as his unique traditional mixed media style. Michal has worked on many video game projects for companies such as Riot Games, Blizzard, and Ubisoft, working on renowned titles such as League of Legends and World of Warcraft and recently working on illustrations for Riot Games and Marvel.
- **Even Amundsen** is a freelance concept artist from Norway, best known for fantasy-based character and creature designs. During his career, Even has worked for a number of high-profile companies such as Ubisoft,

Blizzard, Riot, Wizards of the Coast, and many others. Even's work has been featured in many popular titles, including Assassin's Creed Valhalla, Warhammer 40K, and Overwatch.

Picture 44: Basilisk Rider by Michal Ivan.

Picture 45: Clash by Michal Ivan.



Picture 46: Various Spider-Verse-inspired comic covers (2023).

Some of my present work

Spider-Verse-inspired covers
A series of Spider-Verse-inspired comic cover commissions (July 2023).

Academy of Performing Arts (2021–2023 and 2024–2025)

This is some of my personal work I completed during my academic studies. Made during a train ride that lasted forever and felt even longer.

Picture 47: Various artworks made between 2021 – 2025.

Picture 48: Concept art for the game „Frankie“.

Frankie

During my internship at **ARTillery, s.r.o.**, under the supervision of Dávid Kaleta, I worked as a **2D character and concept artist** on the game **Frankie**. I began working on this project in August of last year, focusing mainly on the visual aspects of the game.

I serve as the **lead concept artist and character designer**, meaning I set the overall visual style of the game. I create multiple design iterations to explore different visual approaches and experiment with color schemes, textures, and forms to meet the project's creative goals.

Through my work, I aim to convey the story, mood, and themes of the game, helping players immerse themselves more deeply in the narrative.

This role has given me the opportunity to gain experience in a professional game development environment, take on the responsibility of lead artist, and acquire a wealth of practical knowledge.

Picture 49: Character concepts.

Picture 50: First gameplay concept.

03 Future

AI and Beyond

How AI Is Transforming Art

It offers exciting new possibilities for rapid idea generation, efficient workflow, and innovative artistic styles while raising important questions about originality and ethics. The evolving landscape continues to challenge and inspire both emerging and established artists.

- The rise of AI in concept art has sparked debates regarding authorship, originality, and copyright.
-
- As the technology evolves, studios and artists are working to establish guidelines to ensure fair use and proper credit for AI-assisted work.

Picture 51: Artstation ai art protest (2022).

Specific AI tools that many people use

AI-powered tools like **Midjourney, DALL-E, and Stable Diffusion** enable artists to quickly generate a variety of visual ideas. AI can automate repetitive tasks—such as background rendering or texture creation. It's possible to manipulate AI outputs—adjusting details, blending different images.

Into the Spider-Verse "used AI."

The animation team employed **AI**-driven tools to **streamline the animation workflow.** This approach reduced the need for animators to hand-draw every frame, allowing for **more efficient production without compromising the film's distinctive visual style.**

In the production of **Spider-Man: Into the Spider-Verse**, the animation team employed **AI-driven tools to streamline the animation workflow**. Specifically, they developed machine learning algorithms to assist in creating and adjusting pencil and ink lines across frames. This approach reduced the need for animators to hand-draw every frame, allowing for more efficient production without compromising the film's distinctive visual style.

Despite leveraging AI for certain technical aspects, the producers of the **Spider-Verse series have taken a firm stance against the use of generative AI in their creative process**.

Chris Miller, co-writer and producer, emphasized that **Spider-Man: Beyond the Spider-Verse will not incorporate generative AI**, stating that **the goal is to craft novel visual styles rather than relying on AI-generated content that might appropriate other artists' work.**

This deliberate approach underscores the filmmakers' commitment to blending technological advancements with human creativity, **ensuring that AI serves as a supportive tool rather than a replacement for artistic expression**.

Picture 52: "Miles Morales" by Shiyoon Kim.

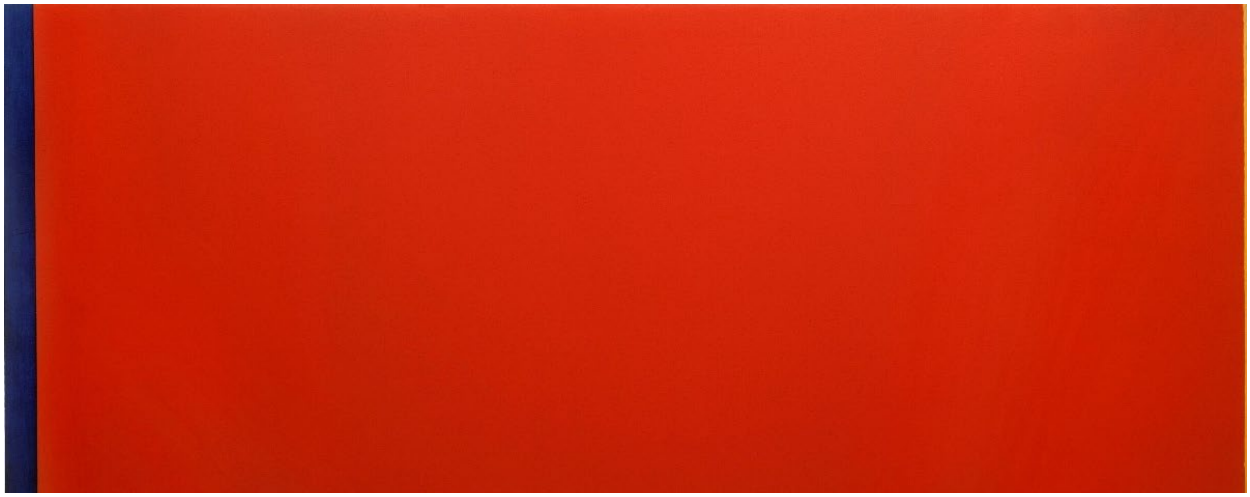
Who's Afraid of Red, Yellow, and Blue

"Who's Afraid of Red, Yellow and Blue" is a series of abstract paintings by American artist **Barnett Newman**, a leading figure in the Abstract Expressionist movement. The most famous—and infamous—of these is **"Who's Afraid of Red, Yellow, and Blue III" (1967–1968)**, which became the center of a major art scandal in the late 20th century. This is the largest and last painting in Newman's series Who's Afraid of Red, Yellow, and Blue, in which he tackled what he clearly viewed as the hardest subject for an abstract painter: the primary colors. These were among his last paintings, so read into that what you will.

Gerard Jan van Bladeren is the **man who vandalized Barnett Newman's painting** in 1986. His name became well-known in the art world due to this high-profile act of art destruction. Van Bladeren **attacked the painting with a box cutter**, slashing it repeatedly. He did significant damage to the vast red color field of the canvas.

He claimed that the painting was an **"affront to his ideals of beauty"** and **morally offensive**, even "blasphemous." He reportedly could not accept the painting as "art." He was determined to be **mentally unstable**. He was **not imprisoned but** rather **committed to a psychiatric institution**.

The restoration was highly criticized. Instead of delicately retouching the canvas with fine art techniques, **Goldreyer allegedly used a roller and commercial house paint** to repaint the red field. The repaired section lost the nuances of Newman's original brushwork. Some art critics and experts accused Goldreyer of "repainting" rather than "restoring" the work. The museum initially defended the restoration but later admitted it had not supervised the process closely. **So now, instead of being on display, the painting sits in storage all alone, waiting for conservators to figure out how to undo the damage done to it.**



More on this topic: https://www.artforum.com/features/whos-afraid-of-red-yellow-and-blue-207979/

Picture 53: Digital recreation of Who's Afraid of Red, Yellow and Blue III

Some related literature

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    - A deep dive into the legendary *Star Wars* concept artist's work
- **Jesse Schell**. (2019). ***„The Art of Game Design“.*** CRC Press
    - Not purely about concept art, but gives insight into visual development in games
- **Disney**. (2014). ***„The Art of Disney: The Golden Age (1937–1961)“.*** Chronicle Books
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- **Alan Lee**. (2011). ***„The Lord of the Rings Sketchbook“.*** HarperCollins
    - A look at Alan Lee's concept work for *The Lord of the Rings* films

And many more!

Picture 54: Art by my mom, dad and younger brother.

Questions and Answers

Q1: *How do concept artists balance their own art style with client demands?*
It requires extensive communication and iteration. Most concept art shown publicly is close to the final version, but behind it are thousands of sketches and drafts that remain unseen. The process is gradual, with continuous dialogue to align the artist's vision with the client's requirements.
Q2: *Does artificial intelligence have positive or negative effects on concept art?*
AI can be both helpful and problematic. It can streamline workflows, as seen in projects like *Spider-Verse*, without infringing on creative property. However, the technology is not yet fully mature, and significant work remains to ensure ethical and effective use.
Q3: *When starting a new piece, where do you usually look for inspiration?*
Inspiration depends on context. For commissioned work, it comes from the client's needs. For personal projects, it often arises from personal interests such as animals or people. Pinterest is a useful resource, and sometimes inspiration comes unexpectedly—for example, children on a train once requested drawings of authors, which shaped the artwork.

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CONFERENCE CONTRIBUTION 5 | CONFERENCE CONTRIBUTION 6 | CONFERENCE CONTRIBUTION 7 | CONFERENCE CONTRIBUTION 8
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CONFERENCE CONTRIBUTION 17

SIMULATIONS IN VFX AND ANIMATION

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Abstract

3D simulation is a vital process in visual effects, giving motion to elements that cannot be easily animated by hand and allowing particles, shapes, and forms to flow and evolve naturally, just as in the real world. This process adds a crucial layer of realism, making it essential for achieving believable motion and visual integrity in animation and VFX. The software solution of choice for this is often Houdini, a powerful 3D application known for its node-based, procedural workflow, which makes it especially well-suited for creating complex simulations. Unlike traditional animation tools, Houdini enables artists to build systems that are flexible, reusable, and highly customizable, offering a robust set of tools for simulating particles, fluids, smoke, or destruction that has made it the industry standard in visual effects and animated filmmaking.

Keywords

3D, VFX, FX, TD, simulation, Houdini, animation, particle, destruction, fume, fire, water, debris.

Introduction

Simulation tools, while they may appeal purely to the technical side, actually require a strong artistic understanding. It's not just about following technical steps; it's about knowing why you make certain choices to achieve a specific visual result. True success takes both technical knowledge and creative intent.

Throughout history, several software companies have developed brilliant tools and plugins. As the VFX industry evolved, we needed tools that were both accessible and flexible across many use cases. Some popular plugins include FumeFX, RealFlow, Krakatoa, Thinking Particles, PhoenixFD, and plugins for Maya like Bifrost. However, many of these tools were designed for specific tasks. That meant owning five different plugins, each with limited functionality.

In response, more comprehensive software packages were developed to offer wider capabilities in one place. One of them is Houdini. Built entirely on proceduralism, Houdini has become synonymous with simulation and effects in VFX. In Houdini there are no black box solutions. Every node is accessible, modifiable, and scalable. For example, if you start building a scene with 10 trees and 10 explosions and later decide you need 15 trees and 17 explosions, you can scale it up easily without breaking the functional system.

Houdini Concepts

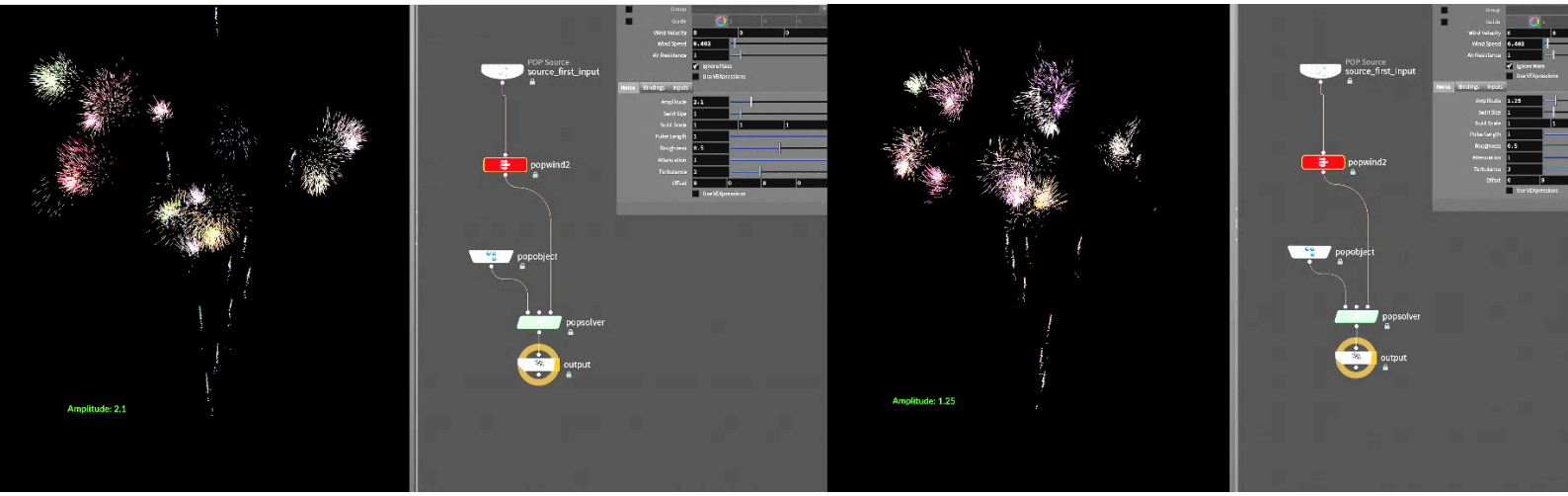
Let's explore five fundamental pillars in simulation. Of course there are many others, but these five make up the foundation of most VFX workflows.

Particle Systems

Particles are the backbone of many simulations. They can be used to create everything from magical spells to energy effects. You can even program particles to drive other simulations—like explosions, where particles control velocity fields and guide Pyro simulations.

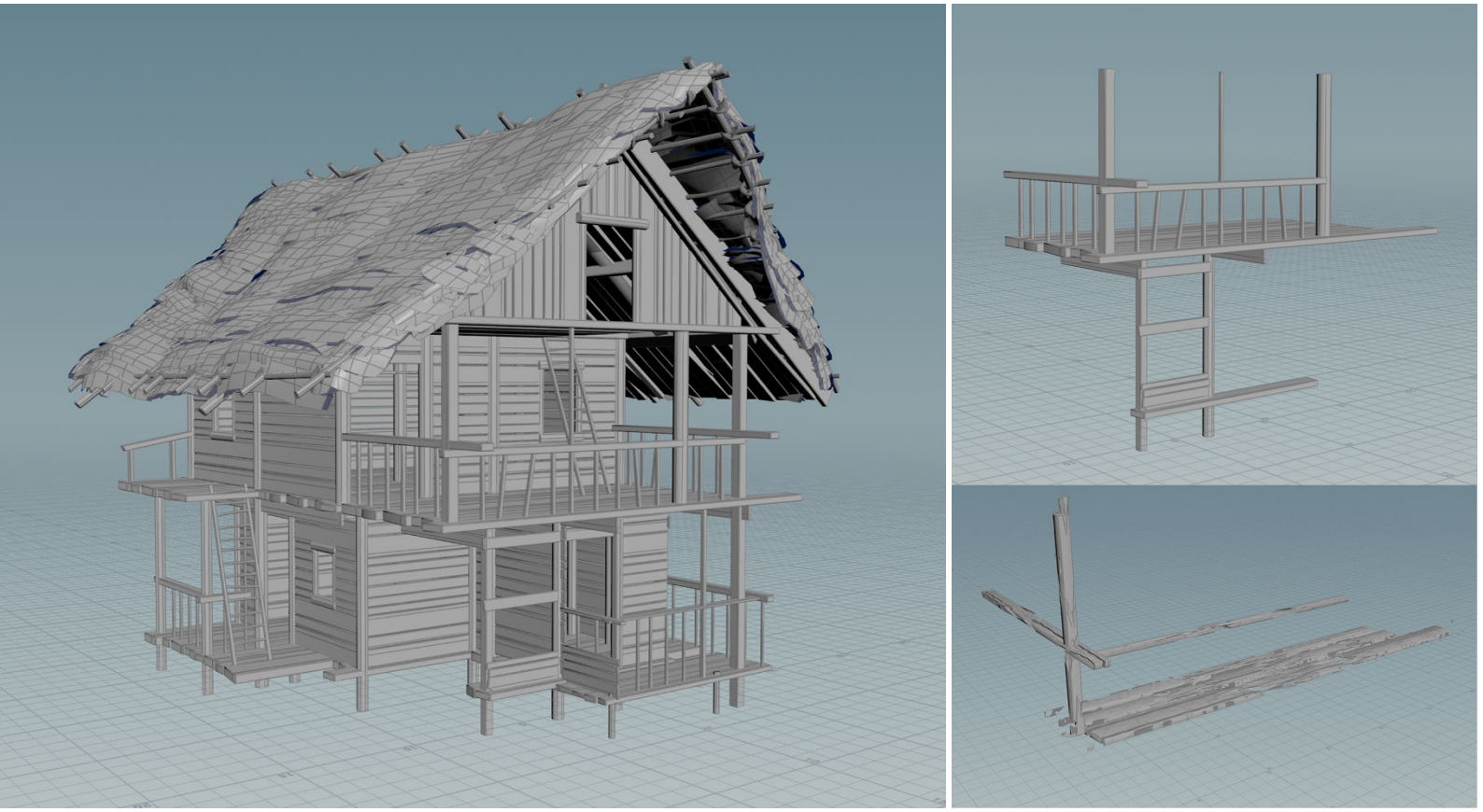
In Houdini, particles live in the POP context and are advanced by the POP Solver. You shape motion with forces (wind, turbulence, and drag), birth/death rules (lifespan and reseeding), and organization (groups and

attributes). Attraction and repulsion shape clusters, while noise fields create natural variation. Raising wind or turbulence increases swirl and breakup; adding drag calms motion so trails read clearly. Typical uses: embers and sparks, magic trails, debris dust drivers, flocking/swarms, and emitters for fluids or pyro.

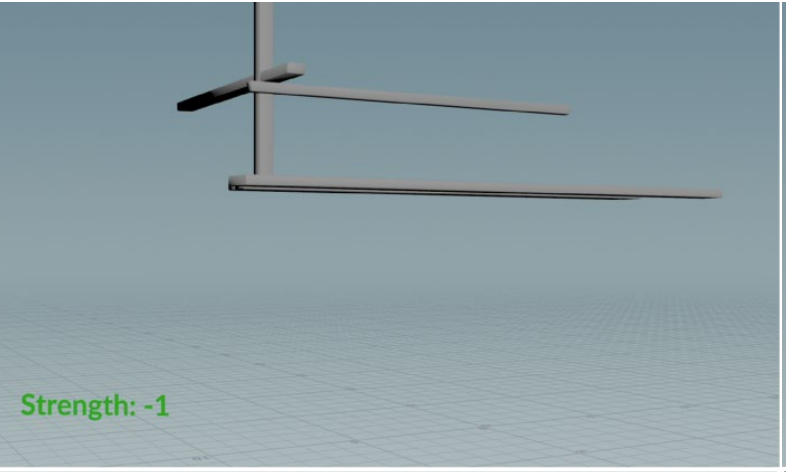


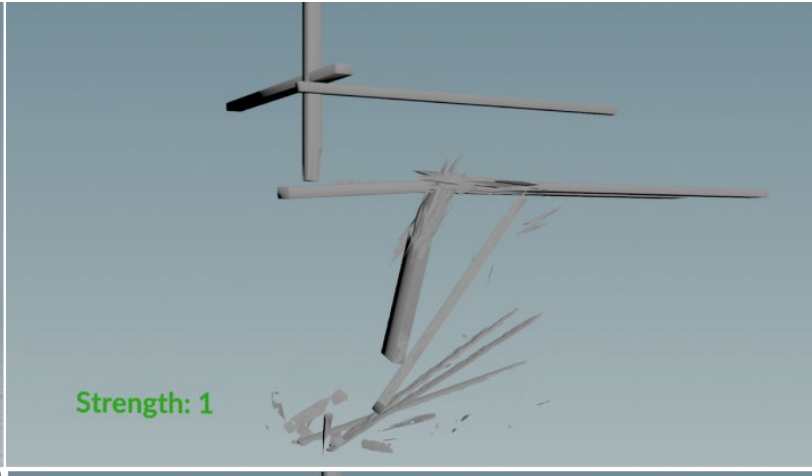
Rigid Body Dynamics (RBD)

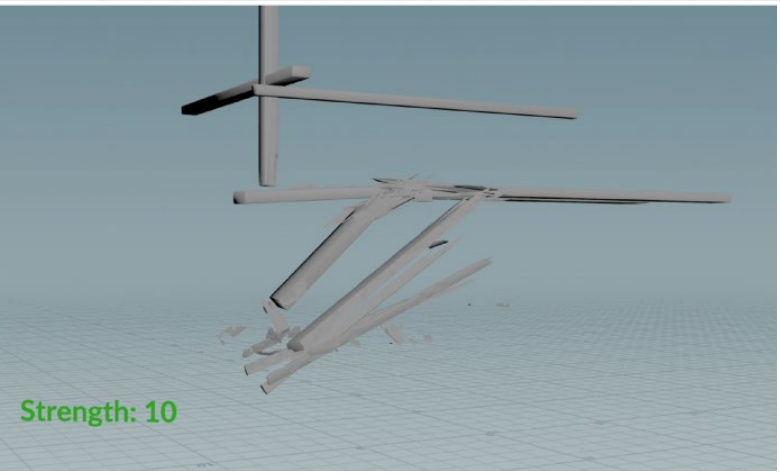
Rigid Body Dynamics simulate solid pieces—crashes, shatters, stacks, and collisions. In Houdini this is handled by the Bullet solver, driven by constraints (glue, soft, hard, and cone) that determine how pieces hold together, bend, or break.

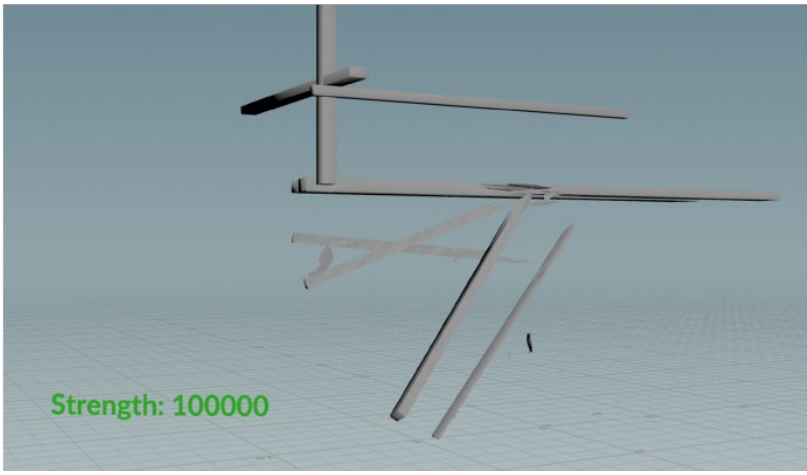


Successful setups balance constraint strength (how much force is needed to break), activation (when pieces start to move), and collision accuracy (scale, padding, substeps). A common approach is to start with strong glue and reduce it until the desired fracture pattern appears. Clean topology and correct real-world scale improve stability. For staged failures, activate groups over time to art-direct where and when things collapse. Typical uses: collapsing walls, crumbling props, stacked objects, bullet impacts, and ground destruction.









Vellum (Cloth, Soft Bodies, Grains)

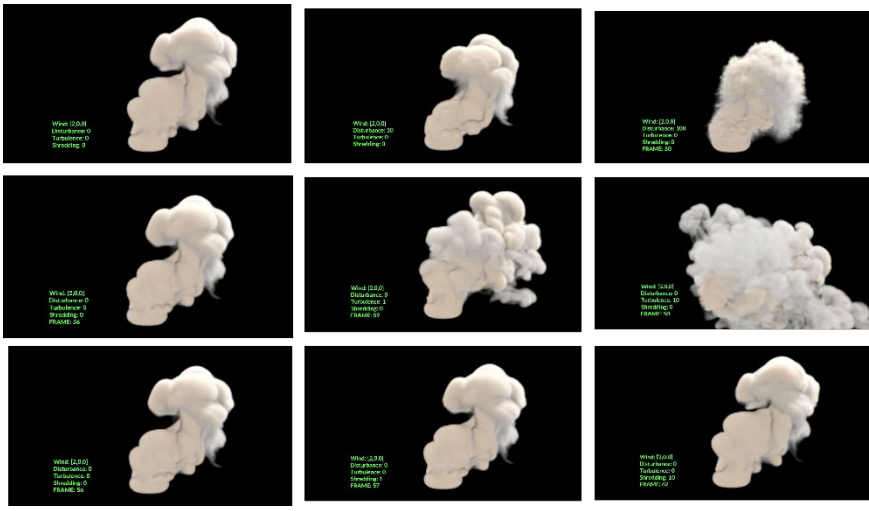
Vellum unifies cloth, soft bodies, hair, and grains. It excels at flexible materials—garments, flags, cushions and gels, sand-like aggregates, and secondary jiggle or sway. Key trade-offs are between bend and stretch stiffness (crisper folds versus elasticity) and damping to remove jitter. Thin, fast-moving cloth often needs more iterations/substeps for stability. Use pin/attach constraints to anchor garments or connect cloth to characters; paint stiffness or mass maps for variation so results feel natural and less uniform. Typical uses: clothing and banners, soft props, inflatable effects, sand and granular interactions, and hair guides.

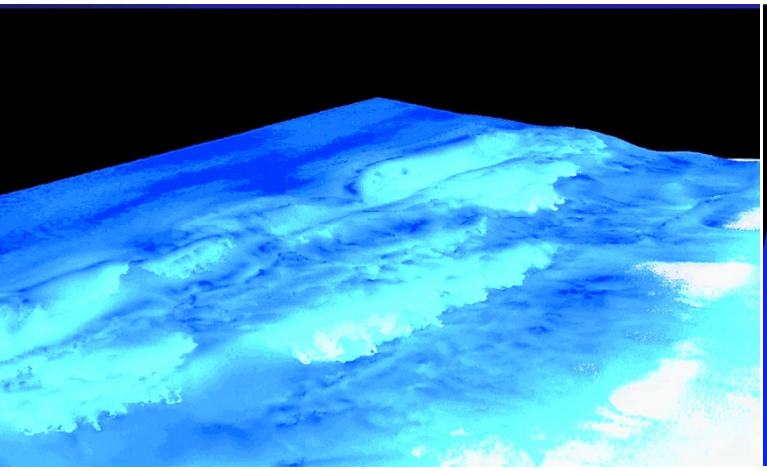
Pyro FX (Smoke, Fire, Explosions)

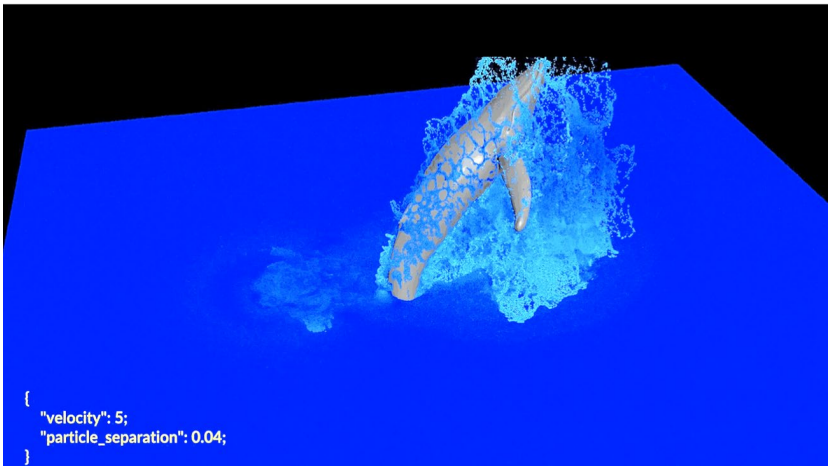
Pyro covers smoke plumes, flames, dust, steam, and explosions. The solver advances fields like density, temperature, and velocity. Microsolvers—turbulence, disturbance, and shredding—add breakup and small-scale detail. Clean sources are critical: clearly defined emission for density and temperature leads to predictable motion. Higher temperature and expansion typically yield faster, more violent behavior (explosive looks), while lower values give lazy, rolling smoke. Layer large-, medium-, and small-scale turbulence to build convincing motion without over-noising.
Typical uses: chimney smoke, campfires, dust hits, fireballs, lingering atmosphere.

FLIP Fluids (Water, Lava, Mud)

FLIP combines particles and volumes to simulate liquids such as water, lava, and mud. It balances splashy motion with a meshed liquid surface at render time. Primary artistic controls include viscosity (water → syrup → lava), surface tension (beading versus sheeting), and particle separation (the core resolution knob). Higher viscosity damps splashes: higher surface tension creates cohesive sheets and rounder droplets. For efficiency, block in at a coarser particle separation and refine only after motion approval. Typical uses: pours and waterfalls, rivers and oceans, mud, viscous drips and blobs.







Putting It Together

Think in behaviors, not buttons. Describe the goal in simple verbs (billow, shred, crumple, splash), then choose the right drivers: particles to feed fields, constraints to time the break, or Vellum for secondary motion. Expose a small set of meaningful controls for art direction, cache upstream pieces to speed iteration, and scale resolution late for finals. Keep setups readable and reusable so notes are easy to address.

Conclusion

Simulation isn't a single tool; it's a way of thinking. The five pillars (Particles, RBD, Vellum, Pyro, and FLIP) give a shared language, but the craft lives in the choices between control and chaos: what to drive, what to constrain, which parameters to expose, and when to trade detail for speed. Start simple, validate the motion

at preview quality, then layer detail and resolution only when the shot's intent is clear. This balance of engineering discipline and visual intent turns simulations into believable moments on screen.

Questions and Answers

Q1: *Where do you look for tutorials for Houdini?*
There are many excellent resources. SideFX maintains an official YouTube channel with detailed discussions. Additional high-quality tutorials are available from platforms such as Entagma and Applied Houdini. For those interested in VEX and procedural workflows, the resource "REL" also offers valuable material.
Q2: *What do you think about EmberGen and LiquidGen compared to Houdini, especially for occasional simulations?*
These GPU-based tools are promising and can produce impressive results quickly. However, they currently lack the precision and depth of control available in Houdini. They are excellent for rapid prototyping or occasional use, but Houdini remains more robust for complex, highly controlled simulations.
Q3: *How do you optimize heavy simulations so they don't crash?*
Optimization often involves segmentation and working at lower resolutions where possible. Removing unnecessary attributes, reducing bit depth (e.g., using 16-bit instead of 32-bit volumes), and applying standard optimization practices are effective strategies. Dividing complex simulations into smaller components also helps maintain stability.
Q4: *How do you achieve stiff behavior without excessively increasing constraint iterations?*
One approach is to use lower-resolution proxy geometry for cloth or soft bodies, though this may not always be possible. Alternatively, rigid body dynamics (RBDs) can be used to approximate cloth behavior by treating geometry as fragments with soft and hard constraints. Custom particle simulations can also be built to control stiffness more precisely.
Q5: *What is the difference between increasing constraint iterations and substeps?*
Substeps determine how many times attributes are evaluated per frame, improving stability and collision accuracy. Constraint iterations control how strongly constraints are enforced within each step. Increasing both can improve results, but substeps primarily enhance stability, while constraint iterations directly affect stiffness.

PROGRAM

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CONFERENCE CONTRIBUTION 17

EMOTION IN VIDEO GAMES - STUDENT'S JOURNEY

MICHAELA SVITKOVÁ, *1st master's year in AVFXGD FTF VŠMU Bratislava, SLOVAKIA.*

Abstract

Overview of the process of making a 3D horror video game in Unreal Engine that tries to convey emotion and bring characters to motion. It's also about how I did it and how to take technical shortcuts that are important in creating a project of this scope in a school environment with limited time and financial resources.

Keywords

Horror, face animation, facial Mocap, 3D, animation, pipeline.

Introduction

Hello! My name is Michaela, and welcome to my presentation. Bringing Games to Life: Conveying Facial Emotion in Video Games

My name is Michaela Svitkova. I am a student at the Academy of Performing Arts in Bratislava and also a 3D artist at a small indie video game company in Bratislava.

Here's a link to the full project:

Bakalarsky projekt—Vera | AHD

Image No. 1 – Screenshots from my project.

Overview

For my project, I focused on creating a 3D video game cinematic in Unreal Engine, developed within the context of a school environment where time, budget, and production support are all limited. My goal was to explore how professional-quality results can be achieved under such constraints by prioritizing efficient workflows and smart use of available tools.

The cinematic was produced using a combination of software and techniques that reflect a hybrid approach between professional pipelines and accessible tools. I primarily worked with Character Creator, iClone, and Rokoko Motion Capture, alongside additional software such as Blender and Substance Painter for asset creation and texturing. Some assets were 3D scanned to capture realistic surface detail, while others were purchased online when their manual creation would have been disproportionately time-consuming. This allowed me to allocate more time to composition, lighting, and animation aspects that contribute most directly to the emotional and visual impact of the final piece.

Animatic

Before beginning the final production, I created a rough animatic to establish the structure and pacing of the cinematic. The animatic consisted of simple gray blockouts representing the main environments, characters, and camera movements, accompanied by basic placeholder animations. While visually minimal, this stage was crucial for testing whether the final cinematic would be clear, well-paced, and visually coherent.
Creating an animatic early in the process allowed me to focus on the core cinematic language of camera framing, character positioning, and the rhythm of visual storytelling without being distracted by the technical or aesthetic details of the final render.

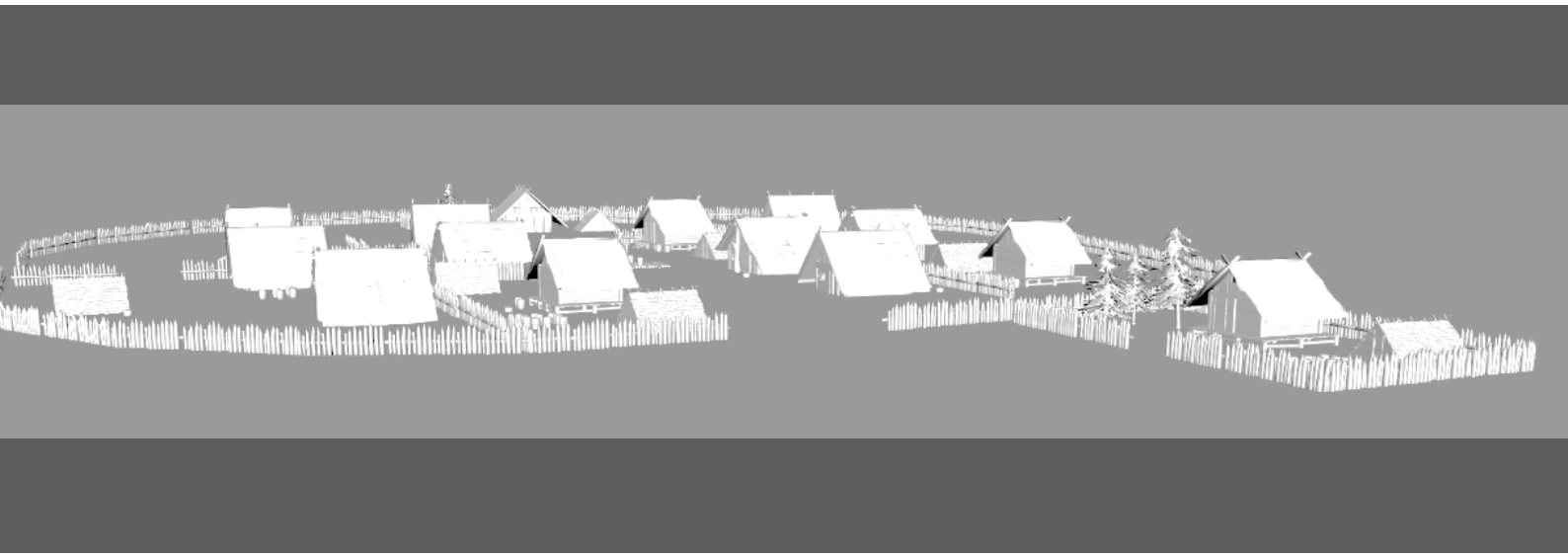


Image No. 2 – Scene Blockout.

Character pipeline

For character creation, I relied on Character Creator's base models, which I then exported to ZBrush for further sculpting and refinement. To enhance realism, I integrated XYZ displacement textures and VFace scans, which provided accurate micro-detail and natural skin variation. This combination of procedural and scan-based data significantly improved the final look without requiring the extensive manual labor typical of full character sculpting pipelines.

In my opinion, this approach represents a more pragmatic and educationally valuable workflow for students and small teams. Creating a high-quality 3D character entirely from scratch is not only highly time-consuming but also demands advanced understanding of facial topology, anatomy, and deformation systems. These elements are essential for realistic animation, especially in areas like facial morphs, wrinkles, and subtle expressions. However, within a short academic timeframe, focusing on these technical aspects often limits progress in storytelling, cinematic design, and animation the very components that make a project engaging.

Scans, texture wrapping

To integrate the high-resolution **XYZ texture data** with my **Character Creator base mesh**, I used **Wrap 3D**, software designed for precise topology transfer and projection of scanned data onto existing character meshes. This process allowed me to retain the consistent topology and rigging compatibility of the Character Creator model while benefiting from the photorealistic surface detail of the scan.

In practice, I imported both the Character Creator base mesh and the XYZ scanned head into Wrap 3D and established a series of **correspondence points** between the two. Through an iterative wrapping process, the software deformed the scanned mesh to align perfectly with the base topology. Once the wrap was finalized, I transferred the high-frequency displacement and color information from the scan onto the base mesh.

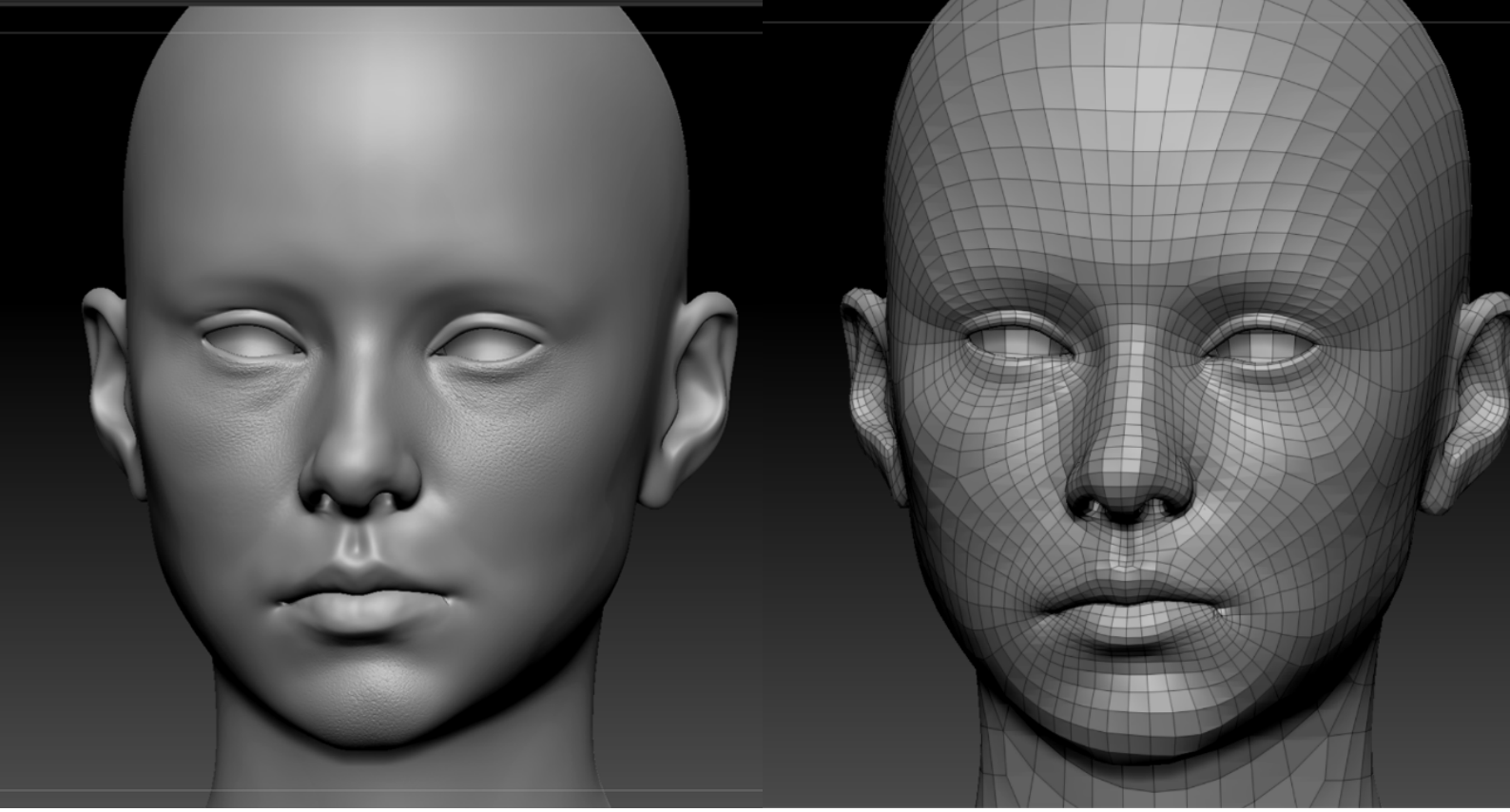


Image No. 3 – Face Topology.

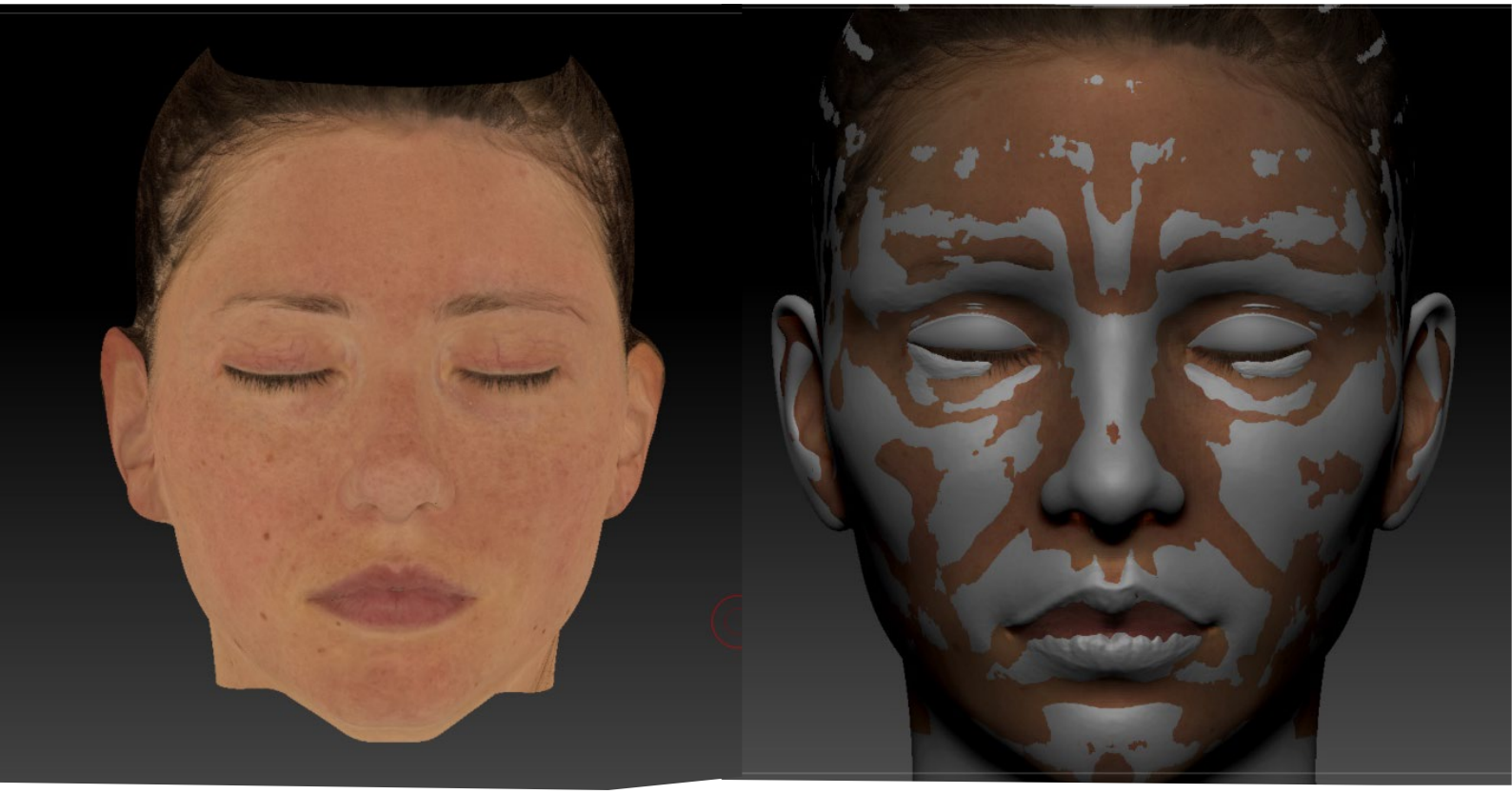


Image No. 4 – XYZ texture wrapping on mesh.

Animation

For the animation process, I employed a Rokoko motion capture system to record the character performances. Motion capture provided a practical and time-efficient way to achieve natural, expressive movement while maintaining a level of realism. To ensure a good quality of performance, I worked with an actress for the mocap sessions, as trained performers possess a better understanding of movement dynamics, timing, and body awareness qualities that translate directly into more believable character motion. Once the motion data was captured, I imported and refined it in iClone 7.

The raw animations often contained common motion capture artifacts such as clipping between limbs, misalignment with the ground plane, or slight posture inconsistencies. I corrected these issues by adjusting limb positions, aligning the character's center of gravity, and refining joint rotations to achieve natural weight distribution and grounded movement. I also trimmed and looped several animation segments to ensure smooth transitions and reusability across multiple scenes. These edits made the animations both visually coherent and technically efficient for integration into a real-time production pipeline.
Finally, once the cleanup was complete, I retargeted the Rokoko animation data to the Unreal Engine skeleton directly within iClone. This step ensured full compatibility between the animation rig and Unreal's standard humanoid system.

Image No. 5 – Iclone animation.

Image No. 6 – Face Mocap actress and FaceWare.

Face MoCap

For the facial animation, I implemented a high-resolution motion capture pipeline to achieve detailed and believable expressions. I recorded the actress's facial performance using a RED camera, which provided high-definition, slow-motion footage with excellent dynamic range and clarity. The slow-motion recording made it possible to analyze subtle facial movements such as micro-expressions and small muscle shifts that are often lost in standard-speed footage.

The captured footage was then processed using the Faceware plugin, which consists of two key components: Analyzer and Retargeter. In Analyzer, the software interpreted the live-action performance by tracking key facial features and generating a set of parameterized motion data. This data was then imported into Maya, where I used the Retargeter to map the motion onto a custom facial rig equipped with detailed animation controls for the eyes, brows, lips, and jaw. This approach allowed me to blend data-driven realism with artistic control. While the captured motion provided an authentic performance foundation, the ability to manually refine the animation in Maya ensured that expressions aligned perfectly with the tone and timing of the cinematic.

World Creation

For the environment and world creation, I combined procedural and scan-based approaches to achieve a balance between artistic direction and realistic detail. The foundational terrain was generated using

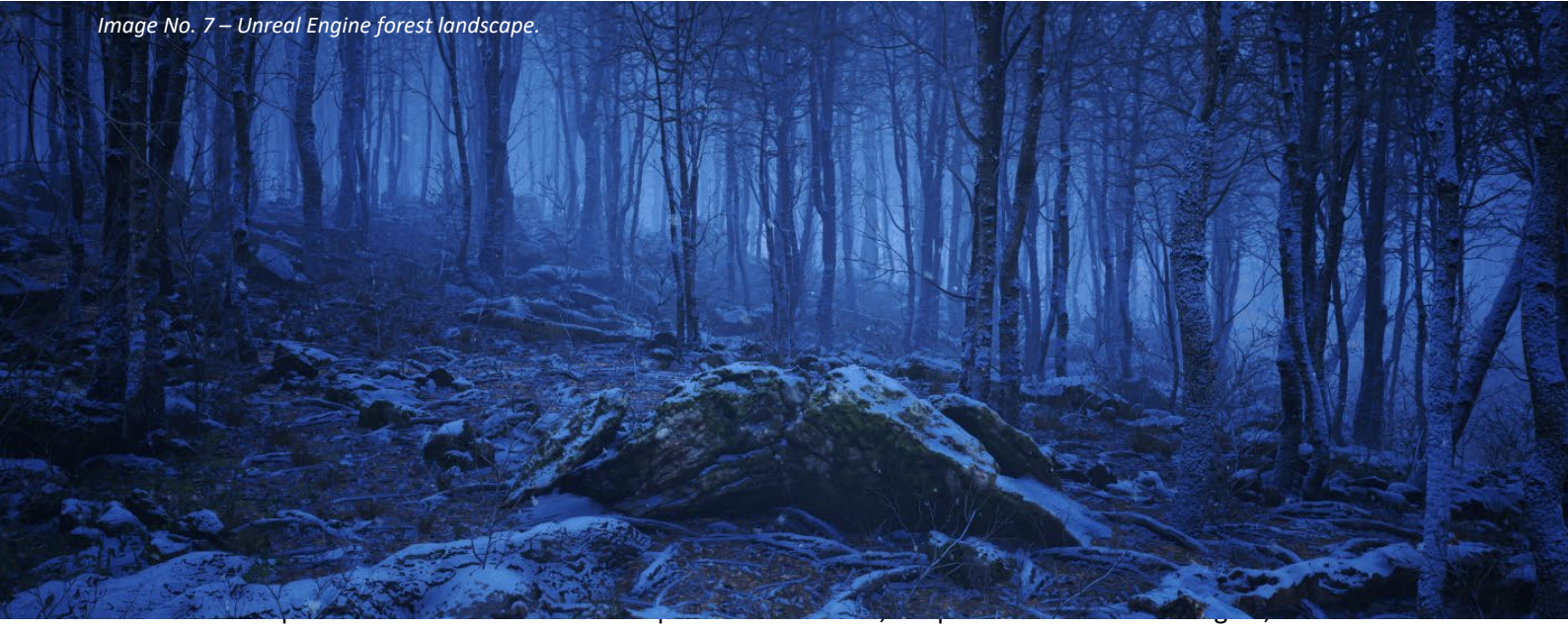


Image No. 7 – Unreal Engine forest landscape.

built-in landscape and foliage tools to refine the scene layout, adjust scale relationships, and integrate key visual landmarks.

To enrich the natural setting, I incorporated a range of add-ons and plugins for Unreal Engine designed to simulate dynamic weather, snowfall, and natural object distribution. These tools made it possible to efficiently populate the world with vegetation, rocks, and debris in a way that appeared organic rather than procedurally uniform. The weather, including snowfall accumulation and ambient particle effects, also contributed significantly to the overall atmosphere and visual tone of the scene. It's, in my opinion, vital to always do your research online and look for tools that already exist and will make your process faster.

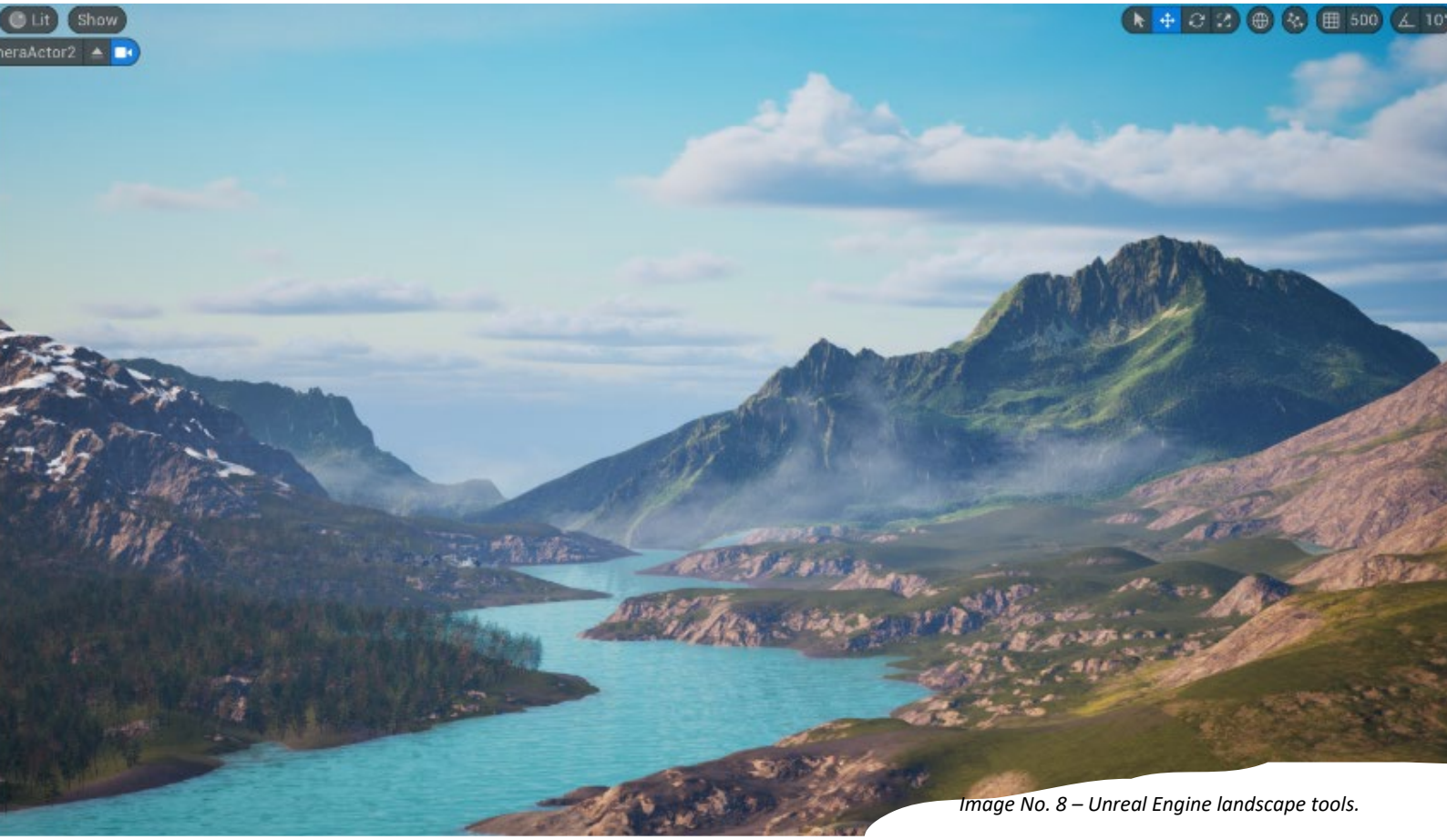


Image No. 8 – Unreal Engine landscape tools.

In addition to procedurally generated elements, I incorporated a variety of scanned and pre-made assets to enhance environmental realism. Some of these assets came from Megascans, which provided high-quality textures and models for natural surfaces such as rocks, vegetation, and ground materials. However, for specific elements that were difficult to source, such as a uniquely shaped rock formation or tombstone, I created custom 3D scans using photogrammetry.

These scans added a distinctive and authentic touch to the environment while maintaining stylistic coherence with the other assets. This hybrid workflow combining procedural generation, asset libraries, and custom scanning made it possible to construct a detailed and believable world within the constraints of limited time and resources. It also ensured that the final environment supported the visual tone and narrative atmosphere.

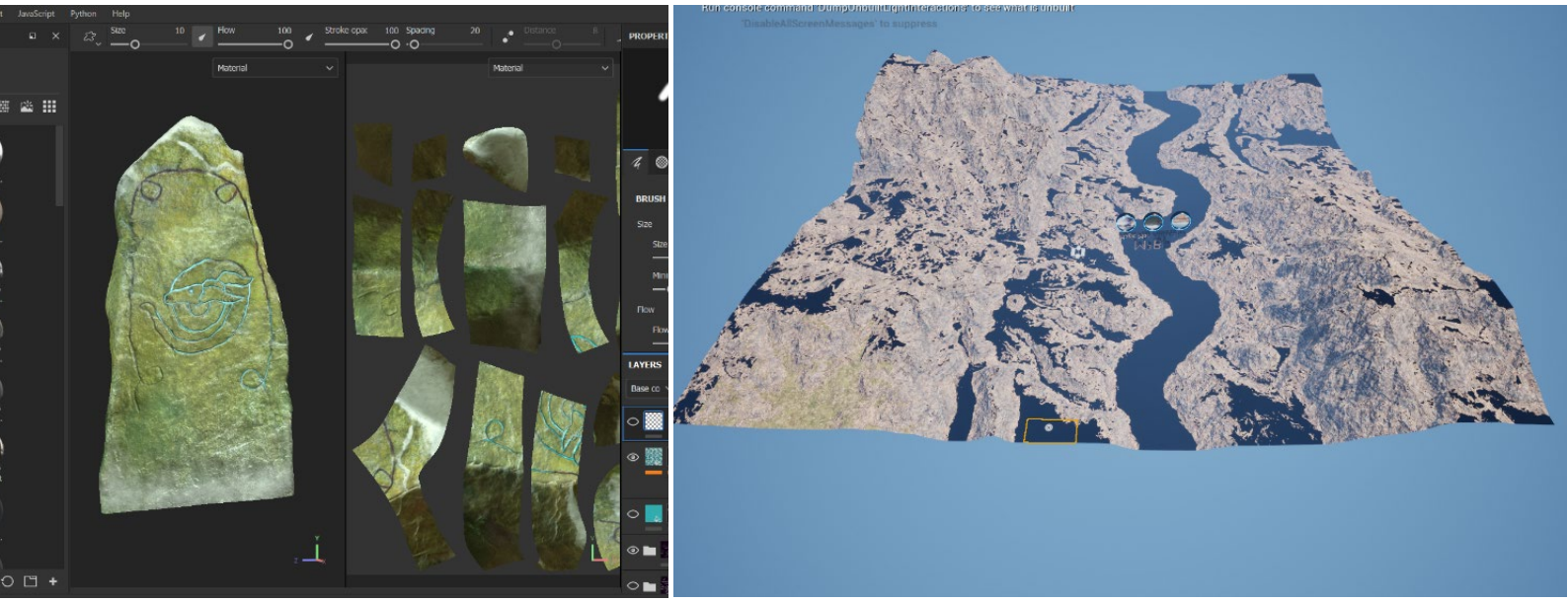


Image No. 9 – Scanned assets and landscape.

AI tools

Throughout the project, I also explored the integration of AI tools as part of the creative pipeline. Artificial intelligence has become increasingly influential across all stages of digital production, and I aimed to experiment with how these technologies could enhance both efficiency and creative exploration.

Image No. 10 –AI concept art.

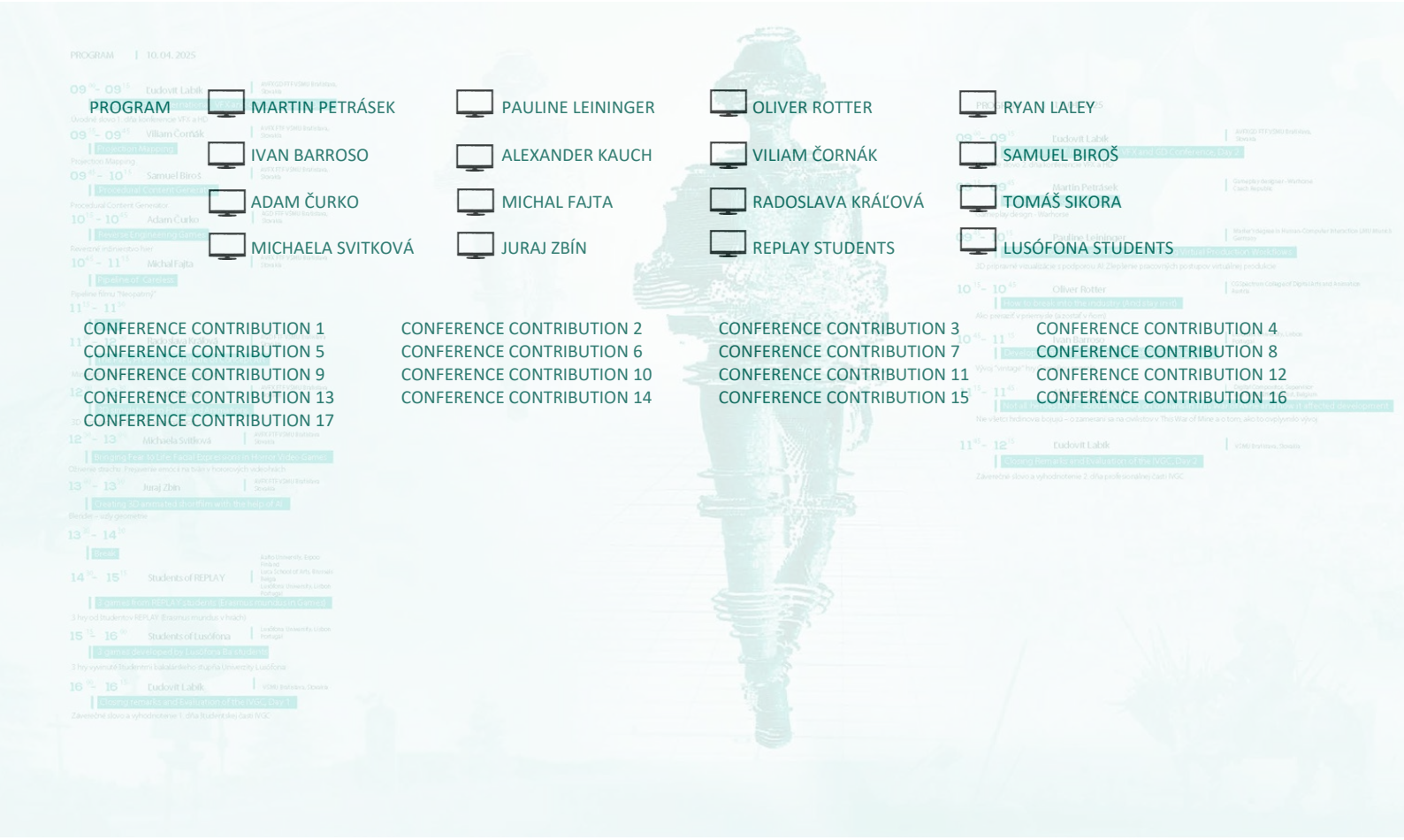
For concept development, I utilized Stable Diffusion in combination with ControlNet and Depth Anything v2 to generate and refine visual ideas. These tools allowed me to quickly iterate on mood, lighting, and composition,

providing a foundation for the project's aesthetic direction. While the outputs required artistic judgment and post-processing, they served as valuable starting points that accelerated the ideation process.

Beyond concept generation, I closely followed the rapid evolution of AI technologies relevant to 3D workflows—including voice AI, AI-driven motion capture from video, and emerging systems for automated 3D asset generation. Each of these developments represents a potential shift in how artists approach time-consuming or technically complex aspects of production.

In my opinion, it is essential for artists and developers to actively study and engage with AI tools, not as replacements for creativity, but as augmentations of the artistic process. When used thoughtfully, AI can significantly reduce repetitive technical work, allowing more time to be dedicated to storytelling, direction, and visual design the elements that truly define the creative value of a project.

List of pictures



CREATING A 3D ANIMATED SHORT FILM WITH THE HELP OF AI

JURAJ ZBÍN, *1st master's year in AVFXGD FTF VŠMU Bratislava, SLOVAKIA.*

Abstract

In my presentation, I will walk through my pipeline for integrating AI into the filmmaking process. From scripting, where I collaborated with ChatGPT, to character and asset creation using AI-generated 2D images converted into 3D Gaussians and point clouds, I took advantage of AI tools to make my production more effective. While core elements like animation, shaders, lighting, and compositing were done manually in Blender, AI also played a role in generating music. This presentation showcases how AI can enhance creativity while keeping artistic control in the hands of the creator.

Keywords

Filmmaking, Short film, Artificial intelligence, Blender, Animation, CGI, AI.

Introduction

In this presentation, and now as a publication, I want to share my journey of creating a 3D animated short film with the assistance of artificial intelligence. This project served both as a school assignment and a creative experiment, and it revealed something crucial: that AI doesn't have to be a threat to creativity. On the contrary, it can be a powerful partner. Used thoughtfully, AI can enhance our workflows, help us realize our vision faster, and make storytelling more accessible, even for small teams or solo creators. The driving idea behind this project was simple. To explore how AI can augment the creative process in a real-world scenario without taking it over.

Project Background

This film began as a school assignment. The task was to select two natural elements and build a creative project around them. I chose fire and water. The assignment was open-ended. The final product could be anything like a simulation, a test, or a finished scene. But because storytelling is at the heart of our training, I decided to create a short narrative film.

Picture 1 - Still from my shortfilm Smoke.

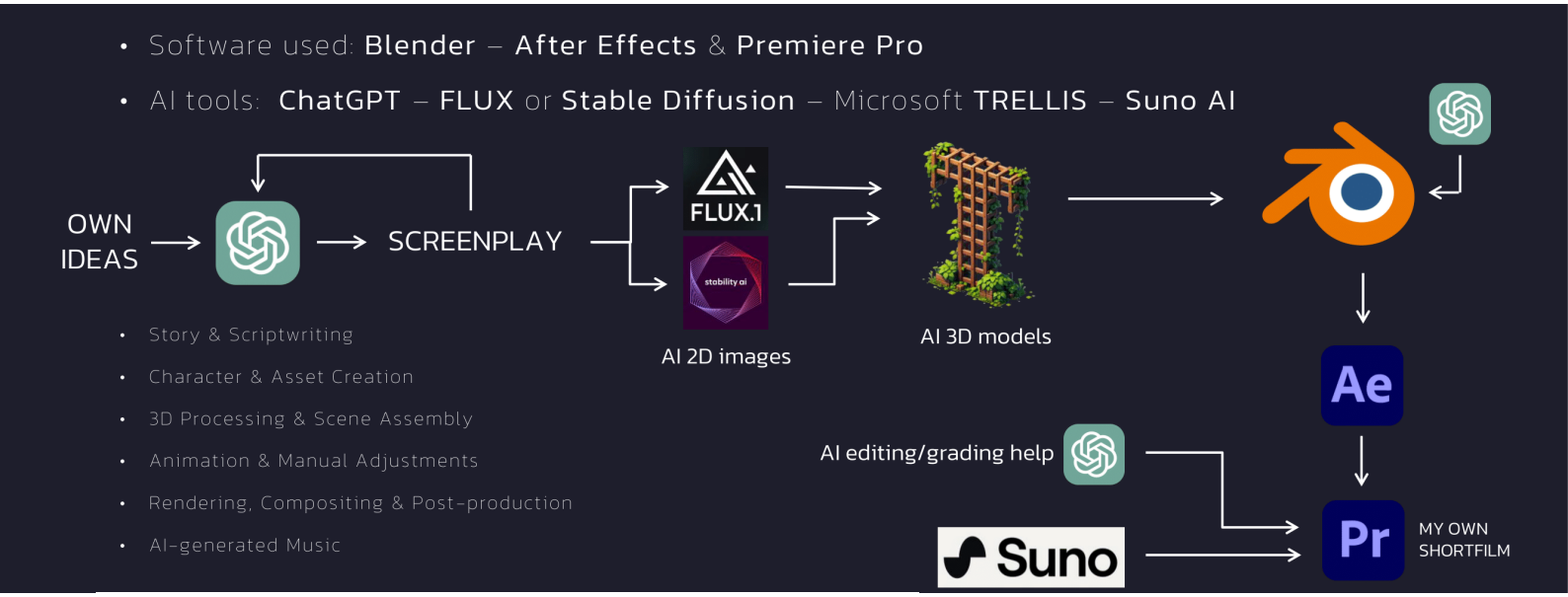
I also saw this as an opportunity to test AI in a meaningful way, not by letting it do everything, but by using it where it could truly add value. My goal wasn't to automate creativity but to enhance it. Could I make a short film faster, better, and cheaper using new AI tools? While keeping my artistic intent intact.

Stylization as Strategy

As you'll see from the visuals, the film adopts a stylized aesthetic. This was a conscious decision. Since AI-generated content often contains visual imperfections, sometimes awkward proportions, strange topology, or inconsistent textures, stylization allowed me to mask those flaws creatively. It was also a way to acknowledge my own limitations as a student filmmaker and visual effects artist. The goal was not to create hyperrealism but to achieve something visually coherent, narratively compelling, and emotionally resonant even with limited resources.

Production Pipeline

I've worked extensively with Blender and Adobe Creative Cloud tools in the past, so they became the backbone of my production pipeline. For AI tools, I explored several platforms, even though I had limited prior experience. I selected the ones that best suited each stage of the workflow, aiming to integrate them seamlessly into traditional production methods.



Picture 2 – Pipeline.

Initial Planning and Scripting with AI

The process started with the story. I knew I wanted to keep the scope small. Two characters, a single environment, and a visual integration of fire and water. I turned to ChatGPT to help brainstorm story ideas, refine the concept, and eventually draft the first version of the screenplay. ChatGPT became a valuable pre-production assistant. I used it to write but also to debate, ask for feedback, rework ideas, explore character motivations, and iterate on dialogue and pacing. It also helped me generate practical outputs like shot lists, asset inventories, and production breakdowns. Crucially, though, I never let AI dictate the direction. The creative decisions remained mine. AI was a sounding board, not a director.

2D Concept Art, Character Design, and Secondary Assets

With the script in hand, I moved on to asset creation. For early character design and environment concepts, I used Stable Diffusion and FluxAI. Two powerful image-generation tools that provided me with fast visual ideas. This phase was both exciting and unpredictable. AI-generated images often surprised me. Sometimes positively, sometimes not. While these tools are great for iteration, they can also derail visual consistency if you're not careful. I found it essential to define characters before generating images. I had to consider their role, age, personality, attire, and backstory. For example, I originally started with a younger adult character. But during development, I realized that casting an older man alongside a young boy introduced stronger contrast and more emotional nuance. That shift changed the tone of the story, and I wouldn't have discovered it without experimenting visually. When it came to props like trees, bikes, benches, etc., I was far less meticulous. These elements weren't central to the story, so I allowed the AI to handle most of them without intervention. This saved time and let me focus on what mattered the most, which were characters and mood of the film.

Picture 3 - Characters created with Stable Diffusion.

From 2D to 3D

Picture 4 - Assets made by Trettils AI (image to 3D).

Once I had a library of 2D concept images, I used Trellis, an AI platform that converts 2D images into 3D models. The advantages here were obvious; I could generate textured models in minutes rather than hours or days. But there were challenges. The generated models often had poor topology that was mostly triangles, no usable edge loops, and problematic geometry such as disconnected vertices, warping textures, and noise artifacts. At the time, Trellis didn't support auto-retopology, so I had to work with what I got. To mitigate these issues, I stylized the film further and decided to place most of it at night. Darkness, mist, and rain became narrative and visual allies that hide flaws and enhance the atmosphere. In some cases, I split models into parts (e.g., separating the head and body) to work around Trellis's vertex limits. This allowed for higher resolution on key features, especially the face, which needed more detail for close-ups. I also adjusted materials in Blender; this includes mixing roughness maps, tweaking metalness values, and adding subtle reflections to enhance realism.

Picture 5 - Scene in Blender.

Scene Assembly and Environmental Composition

With assets in hand, I brought everything into Blender for layout and animation. The assembly process involved:

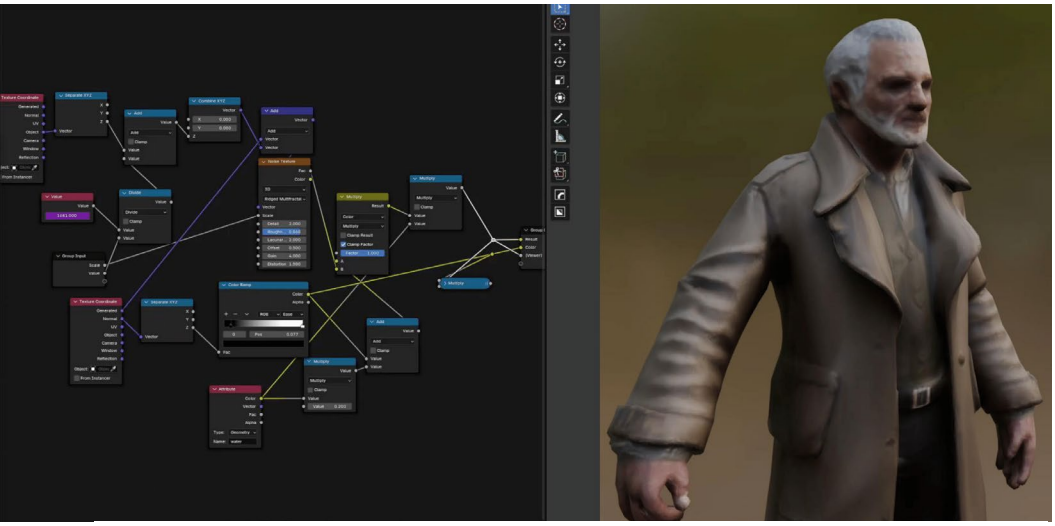
- Organizing foreground, midground, and background layers
- Fixing proportions and silhouettes of AI-generated props
- Tweaking shaders to unify the visual look
- Setting up lighting and camera movement

I paid special attention to the composition of each shot, leveraging traditional cinematography principles such as framing, depth, balance, and color contrast. Refinements were constant. I removed unnecessary light sources, adjusted the environment to draw the viewer's attention to key moments, and added puddles to reflect firelight and enhance realism.

Animation

Character animation was handled using a combination of Mixamo (for motion capture clips), Rigify (for custom rigging), and hand-keyed animation where necessary. At one point, I tried AI-based animation, but the results felt generic and more like a collage of existing clips than true character motion. It lacked intention and emotional specificity, so I returned to more traditional methods. We also used our school's Xsens motion capture suit for some scenes, blending hand-crafted animation with performance capture to achieve natural results.

Procedural Rain and Shader Effects



Picture 6 - Blender rain shader.

One of the key visual effects was rain. To keep the system lightweight, I created procedural rain using Geometry Nodes in Blender. It was a non-simulated setup, where drops fell with each frame and triggered splash geometry on impact. To enhance realism, I developed a global rain shader. It used animated noise textures mapped to character UVs, simulating the way water flows down surfaces. Normals facing upward were masked to simulate water accumulation. The shader blended albedo, roughness, and rain overlays to give characters a soaked look.

Sound and Music

For audio, I started with a sound effect list generated by ChatGPT and then sourced royalty-free sounds online. But for the music, I wanted something original and emotionally specific. I used Suno AI, which allowed me to create instrumental tracks by describing the mood and setting. The process was surprisingly intuitive; I wrote a prompt, chose a genre, and within minutes, I had an original score that matched the tone of my film.

Post-Production

Once rendering was complete, I brought each EXR sequence into After Effects for post-production. There, I handled grading, stylization, and final compositing. Key steps included:

- Enhancing blues and shadows to support the night setting
- Adding halftone overlays, bloom, chromatic aberration, vignette, and film grain
- Creating smoke from a cigarette using 2D particles (because I forgot to simulate it in 3D)

The goal was not to "fix" the film but to unify the style and make everything feel cohesive.

Picture 7 - Solid preview from Blender.

Final Adjustments and Reflection

After initial completion, I still had time to refine the film. I reworked the head model for close-ups, adjusted lighting to better direct focus, and removed distracting orange lamps. These tweaks enhanced mood, clarified storytelling, and added polish.

Picture 8 - Head difference of main character.

Conclusion

This project has shown me that AI is not a replacement
for creativity, but it's an amplifier.
It can empower independent filmmakers and students to tell stories that might otherwise be out of reach due to time or budget constraints. That said, AI is not a magic wand. You still need artistic vision, storytelling instincts, technical knowledge, and the ability to critically evaluate your work. AI is only as useful as your ability to direct it.
In the future, AI will undoubtedly become more powerful and integrated into filmmaking. But it will never replace human imagination. It will serve as a tool and not a threat. Thank you for reading. I hope this project inspires you to explore what's possible when creativity and technology work hand in hand.
Stills from my short film, Smoke.

Picture 9 - Final still renders from film Smoke.

Questions and Answers

Q1: *How long did it take you to learn and integrate AI tools into your workflow, and what were the main issues?*
The learning curve was fairly easy. Most tools only required prompts and a few sliders, so within a couple of hours I was able to generate usable outputs. The main issue was poor topology in the models everything was triangles, with artifacts and weak textures. Retopology tools now exist, but at the time this was a major challenge.
Q2: *How difficult was it to steer the AI toward your vision, and how much of the film was your own work versus AI?*
At the beginning I treated the project as an experiment, so I adapted to whatever the AI produced. All assets, textures, and music were AI-generated, but shaders, animations, camera movements, and final editing were done by me. The initial idea and dramatic structure came from me, with AI helping to refine and iterate.
Q3: *How much time did you spend fixing AI-generated errors, and wouldn't it have been faster to model everything yourself?*
Fixing a character took several hours, but modeling from scratch would have taken longer. With AI I received a complete, though badly optimized, model within minutes. Adjusting it was still faster than creating the entire character manually.
Q4: *How did you handle compositing in your bachelor's film compared to this project?*
For the bachelor's film we used Nuke, with my colleague handling most of the compositing. We applied one preset script across all clips to save time. In this project I used After Effects and Premiere for post-production and editing.
Q5: *How much direction could you give to the AI when generating music?*

Music was generated from text prompts in Suno AI. The outputs were random but of good quality. I selected the best tracks, cut them, and matched the film edit to the music. Control was limited, but editing allowed me to align the soundtrack with the visuals.

Q6: *Did you organize all shots in one Blender file or separately?*

For the storyboard, I kept all cameras in one file. For final production each shot had its own Blender file, with linked assets, to make revisions easier.

Q7: *How many models did you generate before you were satisfied?*

For characters, about 20–30 iterations were needed to achieve a consistent look. For background assets, I usually accepted the first or second generation if the silhouette looked fine.

Q8: *Did you use ControlNet with Stable Diffusion?*

No, I used the free demo on Hugging Face and a school model. I focused on the outputs rather than the underlying architecture, since the generated images were sufficient for my needs.

List of pictures

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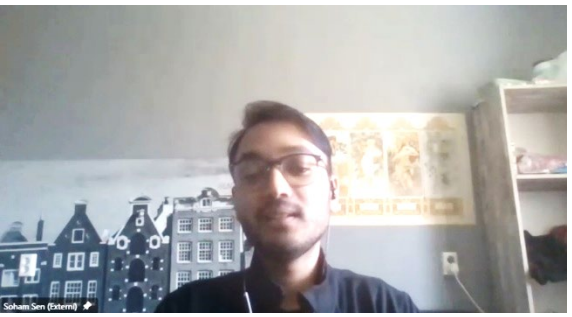
CONFERENCE CONTRIBUTION – 9, DAY 1

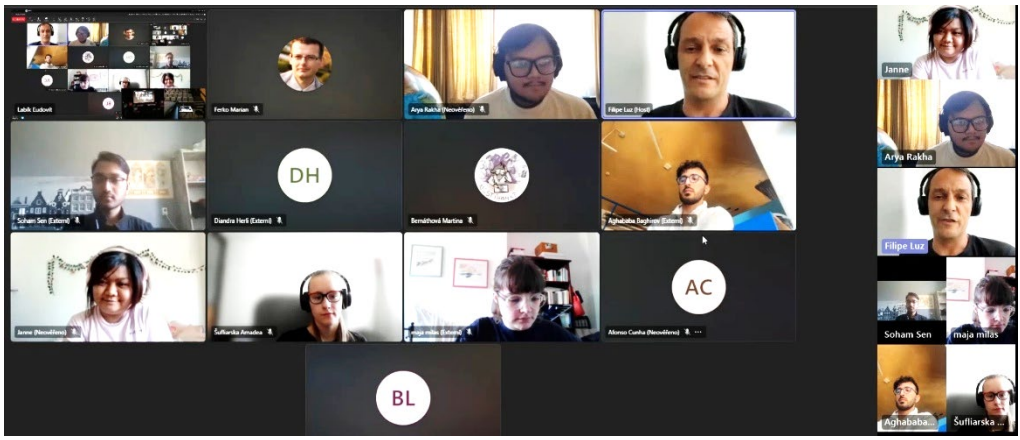
STUDENTS OF REPLAY AROUND THE WORLD— DESIGNING A GLOBE-BASED ALTERNATIVE CONTROLLER GAME

REPLAY – Erasmus Mundus Joint Master in Games, students of Lusófona University, Lisbon, PORTUGAL; LUCA School of Arts, BELGIUM; and Aalto University, FINLAND.



Soham Sen

Arya Rakha



REPLAY – project 1

Abstract

This paper presents Around the World, an alternative-controller quiz game developed as part of the Experimental Play Lab module in the REPLAY Erasmus Mundus program. The project explores the potential of everyday objects found at Lisbon's historic Feira da Ladra market as unconventional game interfaces. A 1970s illuminated globe was repurposed into a fully functional controller using potentiometers, rotary encoders, and a laser pointer to detect latitude and longitude. The game challenges players to identify geographical, cultural, and culinary locations by physically rotating and pointing the globe. This article documents the complete development process—from concept exploration and hardware modification to iterative design, aesthetic considerations, user testing, and public exhibition at Lisbon Games Week. The paper also discusses the challenges of integrating imprecise found hardware, the role of physicality in enhancing playfulness, and the advantages of embodied interaction compared to traditional controllers. The project made by Arya Rakha, Chimezie Okeke, Diandra Herli, Du Ruobing, and Soham Sen demonstrates how alternative interfaces can foster curiosity, learning, and tactile engagement while opening new creative opportunities within game design education.

Keywords:

Alternative controllers, embodied interaction, game design, physical interfaces, Erasmus Mundus REPLAY, Lisbon Games Week.

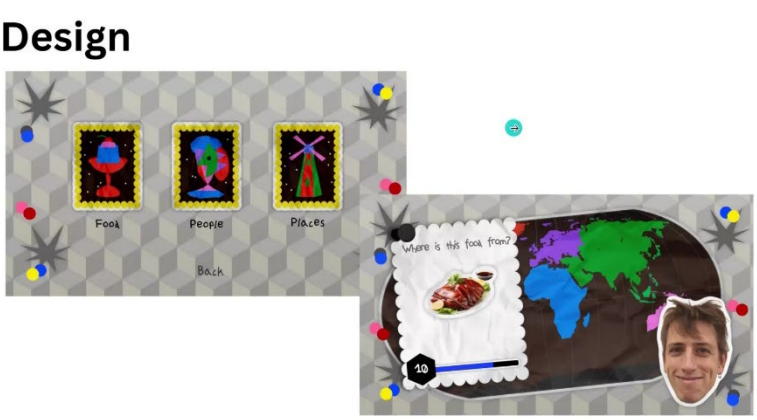
Introduction

The text post was created by AI based on a video recording from the conference. Alternative controllers represent a growing field in contemporary game design, offering new forms of interaction that emphasize physicality, materiality, and creative experimentation. The REPLAY Erasmus Mundus program actively encourages such explorations through hands-on assignments in which students design and prototype games built around unconventional input devices. Around the World emerged from one such assignment, challenging students to build a complete working game using only objects sourced at the Feira da Ladra flea market in Lisbon.

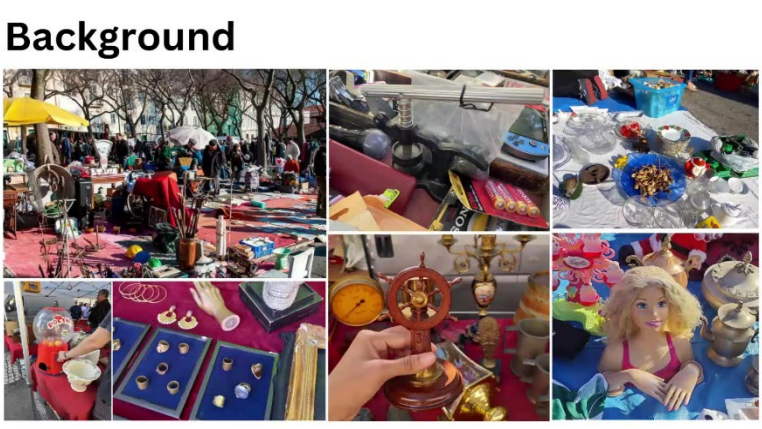
The result is a playful educational quiz driven by a modified vintage globe that tracks spatial orientation through hardware sensors. The project showcases how analog objects can be transformed into digital interfaces while maintaining the intuitive and culturally rich associations embedded in their physical forms.

Project Context and Assignment

The project was developed during the first semester course Experimental Play Lab, where students receive thematic prompts every one to two weeks. For the module focusing on alternative controllers, teams were instructed to find an object at the flea market and design a game that leveraged its unique physical affordances.



After several hours of searching through various mechanical artifacts, the team discovered a 1970s illuminated globe with two rotational knobs and an internal light bulb mechanism. The presence of wiring, the tactile feel of the knobs, and the symbolic meaning of the globe itself immediately inspired exploration. This object became the foundation of the project.



Controller Design and Hardware Construction

The original illuminated mechanism inside the globe contained a light bulb connected to two rotating knobs. The team replaced the bulb with a laser pointer to create a precise visible marker on the globe's surface.

To capture rotation, potentiometers and rotary encoders were installed inside the globe. These were mechanically linked to the existing knobs, enabling the system to read horizontal and vertical angles. Testing determined that the encoders provided adequate resolution for approximate latitude/longitude detection.

The biggest engineering challenge involved stabilizing the rotations. Inaccurate or drifting readings, similar to joystick drift occurred after extended play. As higher-quality rotary components were prohibitively expensive, the team solved the issue through game design rather than hardware, incorporating a “reset position” mechanic to recalibrate the sensor after each round.

Game Design Concept

The design process drew from the simple yet powerful metaphor of rotating a globe to learn about the world. The team envisioned a quiz-based experience inspired by games like GeoGuessr, but with embodied physical interaction rather than traditional input devices.

The player’s task is to identify the origin of various items: foods, landmarks, and cultural symbols displayed on the screen. The player points the laser at the corresponding geographic location by rotating the globe. The system reads the coordinates and checks accuracy.

Gameplay characteristics:

- simple, stylized visuals to focus attention on the controller.
- short-timed rounds;
- educational yet playful approach;
- intuitive interaction accessible to all ages.

The team iterated primarily on controller responsiveness rather than on complex mechanics, as the core concept depended on precision and tactile feedback.

Aesthetic and Interface Considerations

A distinctive visual style was developed by the team’s artist, who created all assets manually. The goal was clarity and charm without distracting from the physical interaction.

The on-screen prompts use minimalistic icons, soft colors, and clean typography to reinforce accessibility. The controller’s physical appearance, vintage beige tones, visible knobs, and the warm light of the laser pointer—contributes to the nostalgic feel of the experience.

Additionally, the team included a humorous homage to their course instructor by integrating his portrait into one of the UI screens, adding personality and maintaining the playful spirit of the project.

Technical and Design Challenges

In addition to hardware drift, the project faced several significant challenges:

1. Mechanical Placement

Correctly positioning potentiometers inside the curved, fragile globe required drilling and manual alignment. Minor misalignment significantly affected responsiveness.

2. Sensor Calibration

The encoders required frequent calibration, which led to implementing the “no-point” reset area on the globe, turning a technical limitation into a gameplay mechanic.

3. Accuracy vs. Accessibility

High-precision sensors would improve gameplay but reduce the educational accessibility of working with found objects, which was central to the assignment.

4. Iterative Redesign

Multiple iterations refined the balance between physical manipulation and digital response. The team consistently prioritized tactile engagement over software complexity.

User Testing and Public Exhibition

The game was first tested informally among classmates, but the most significant testing opportunity occurred at Lisbon Games Week. The event welcomed visitors of all ages, offering extensive hands-on feedback.

Key observations:

- Children were especially drawn to the globe and repeatedly played multiple rounds.
- Visitors from the game industry, including level designers and technical artists, praised the originality of the physical interface.
- The game consistently attracted attention due to its novelty and simplicity.
- The tactile act of "finding places on the globe" evoked curiosity, learning, and playful exploration.
- The positive reception encouraged the team to consider additional exhibitions such as A MAZE and festivals focused on alternative controllers.

Discussion

The project illustrates the unique potential of embodied interaction in game design. Unlike mouse or keyboard input, rotating a physical globe offers:

- kinesthetic engagement,
- tactile exploration,
- intuitive spatial reasoning,
- a direct connection between real-world geography and in-game feedback.

Alternative controllers can significantly enhance player immersion even with simple mechanics. Around the World demonstrates that the materiality of an object can serve as both an interface and a narrative device, reinforcing meaning through interaction.

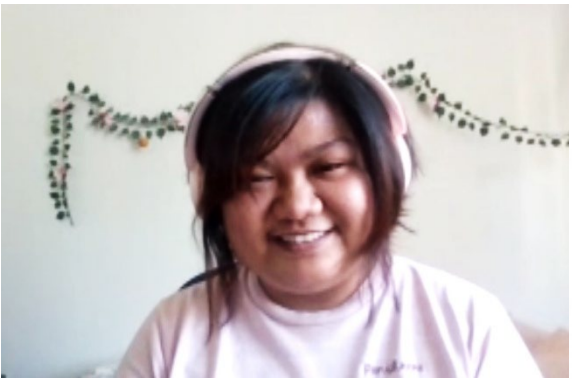
The flea-market constraint also highlights how the creative reuse of everyday objects can inspire innovative design solutions and strengthen practical technical skills.

The Around the World project showcases how students can transform found objects into functional, meaningful game controllers through creative design and technical experimentation. The vintage globe became a bridge between tangible manipulation and digital gameplay, producing an educational quiz that delights users through physical interaction.

The project's success at Lisbon Games Week and in classroom evaluations demonstrates the appeal of alternative controllers across diverse audiences. Future development may involve improving hardware stability, expanding quiz content, and adapting the interface for public installations and educational environments.

Q&A:

Q: *What game engine did you use?*
A: I used Unity. Inside the phone there is an Arduino, buttons, and speakers. I used Arduino and Unity. For modeling I used Blender.
Q: *What was the biggest challenge in this project?*
A: The biggest challenge was mental, people telling me I could not finish the idea in two days. I spent a lot of time debating whether to continue. It pushed me down, but I told myself that even if I failed, it didn't matter; it was a game jam.
Q: *Which part did you enjoy the most? And did you use AI in any part of the project?*
A: I enjoyed finding the balance between artistic expression and game design. I usually use AI only for experimental purposes. In this project I didn't use AI, because I prefer creating sketches and artistic content myself. For me, using AI can be challenging as an artist.



Maya Milas

Maya Milas

Abstract

This paper presents *Bonita*, an alternative controller game developed within the REPLAY project. The game originated from a flea market in Lisbon, where a doll was repurposed into a unique input device. By integrating potentiometers into the doll's arms and connecting them to an Arduino Nano, the team created a controller that simulates the movements of a drunken character navigating home. The project demonstrates how unconventional hardware can inspire playful and chaotic game design. The paper outlines the technical challenges of modifying the doll, the design process, and future plans to expand the game into an arcade-style infinite scroller with procedural levels and a leaderboard. The discussion emphasizes the creative potential of alternative controllers and the importance of embracing humor and experimentation in game design.

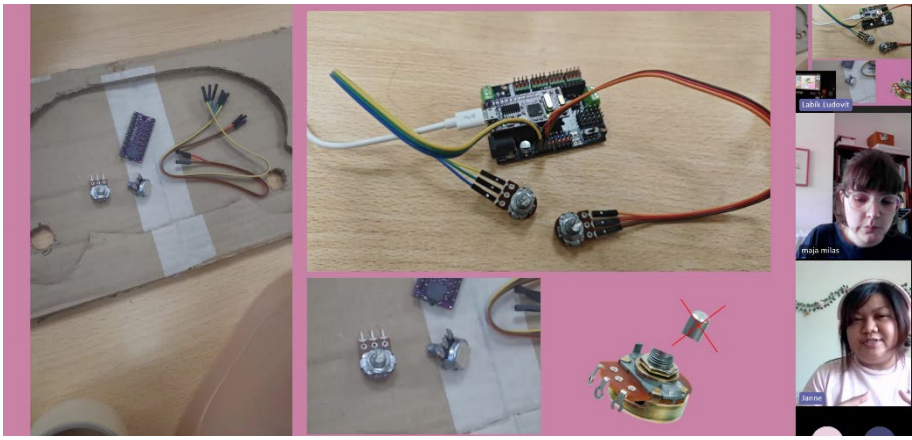
Keywords

Alternative controller, Arduino, Unity engine, REPLAY project, experimental design, sound design.

Introduction

The text post was created by AI based on a video recording from the conference.

The REPLAY project encourages students to experiment with unconventional inputs and playful design. *Bonita* exemplifies this approach, transforming a discarded doll into a functional controller. The project was developed by a multicultural team from Russia, the Philippines, and other countries, highlighting the collaborative and international nature of REPLAY.



Hardware Design

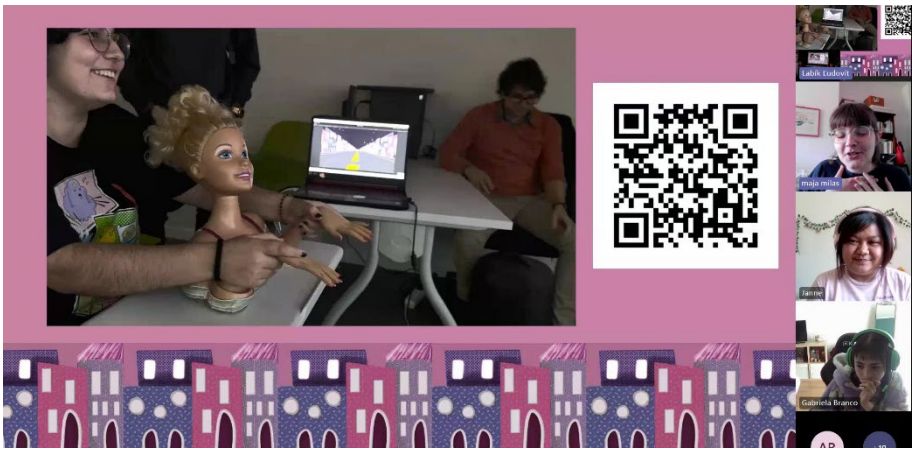
The doll was disassembled, cleaned, and modified to serve as a controller. Potentiometers were installed in the arms, connected to an Arduino Nano. Challenges included stabilizing the doll's balance, which required sawing parts of the potentiometers and constructing a cardboard base. The hardware design was completed in one week, followed by a second week dedicated to game development.

Game Concept

The gameplay simulates guiding a drunken character home without bumping into pedestrians. Players hold the doll and manipulate its arms to navigate through crowds. The humorous premise emerged spontaneously during brainstorming, when a team member suggested portraying the doll as drunk. The narrative was later expanded with comics and voice lines, reinforcing the playful tone.

Development Process

The project was completed in two weeks. The first week focused on hardware prototyping, while the second week addressed game mechanics and audiovisual design. The team experimented with procedural code, narrative comics, and QR code integration, allowing external users to access the game. Future plans include implementing FMOD for advanced sound design and expanding the game into an arcade-style infinite scroller with leaderboards.



Public Reception

The game attracted attention at Lusófona University and at external events. Its chaotic and humorous nature resonated with audiences, demonstrating the

appeal of alternative controllers. The team plans to showcase *Bonita* at Tokyo Indies (Japan) and Tonavarpa (Italy), further testing its reception in international contexts.

Discussion

Bonita illustrates the potential of unconventional hardware to inspire creative gameplay. The project highlights the importance of embracing humor, chaos, and silliness in design, while also addressing technical challenges such as hardware modification and input calibration. The REPLAY framework provided a supportive environment for experimentation, encouraging students to take risks and explore unconventional ideas.

Conclusion

The project demonstrates how discarded objects can be repurposed into innovative controllers, fostering creativity and engagement. By combining technical ingenuity with playful narrative, *Bonita* contributes to the broader discourse on alternative controllers and experimental game design. The team intends to continue developing the project, integrating sound design, procedural mechanics, and competitive features.

Questions and Answers

Q1: *Do you plan to develop the game further, and what is your schedule?*
The team intends to refine art and sound, implement FMOD, and expand gameplay. Development is planned informally over weekends, with procedural code and sound design already partially implemented.
Q2: *If you could redo the project, what would you do differently?*
Several ideas were considered but scrapped due to time constraints, including a lobotomy simulator using the doll's head and finger-based inputs for complex games. Future iterations may explore these concepts.
Q3: *How do you plan to integrate narrative more deeply into gameplay?*
The current narrative includes comics and humorous voice lines. Future plans involve adding drunk voice reactions and interactions with pedestrians to enrich storytelling.
Q4: *What inspired the choice of controller?*
The doll was chosen spontaneously at a flea market, where its physical features suggested potential for interactive input. The humorous farewell of the vendor ("Goodbye, my Bonita") inspired the project's name.

PROGRAM

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CONFERENCE CONTRIBUTION 1
CONFERENCE CONTRIBUTION 2
CONFERENCE CONTRIBUTION 3
CONFERENCE CONTRIBUTION 4
CONFERENCE CONTRIBUTION 5
CONFERENCE CONTRIBUTION 6
CONFERENCE CONTRIBUTION 7
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3 GAMES DEVELOPED BY LUSÓFONA BA STUDENTS

Students of Lusófona University, Lisbon, PORTUGAL.

Aghababa Bakhirov

Project 1—Quiet Game: Exploring Time Through Poetic Interaction

Abstract

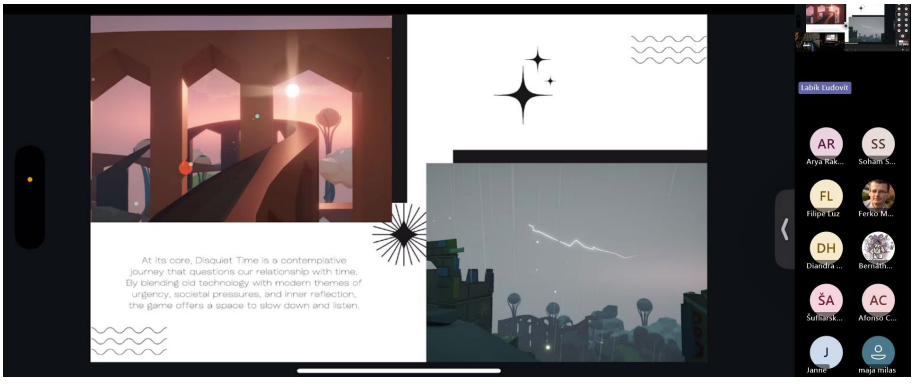
This paper presents Quiet Game, an experimental artistic videogame created during a 48-hour Game Jam at Lusófona University. The game explores the concept of time and memory through poetic narration and minimalist interaction. The author combines a background in computer science with contemporary art to develop a hybrid form of expression that uses gameplay, environmental storytelling, and phone-based audio interactions. The paper outlines the conceptual foundation, artistic intentions, design process, challenges, and insights gained through rapid prototyping.

Introduction

The text post was created by AI based on a video recording from the conference.

The project Quiet Game was developed during a game jam at Lusófona University. The author comes from a computer science background but for six to seven years has also been professionally active in contemporary art. The motivation behind the project was to merge both worlds, technical design and artistic expression, into a unified interactive work.

The central theme of the game is time: how people perceive it, how society teaches us to relate to it, and how individual memories influence our experience of the present. The project was conceived and produced within two days.



Concept and Artistic Intention

The initial design question was how to create a video game that expresses personal artistic ideas rather than focusing solely on traditional game mechanics. The author began by writing poems about time, its meaning, emotional weight, and cultural interpretation, especially contrasting the perception of time in mountain communities versus urban life.

These poems became the emotional and structural foundation of the game. Memories are represented visually by floating eyes in the environment. When the player enters one of these eyes, a phone rings and plays one of the recorded poems. The phone acts as a symbolic device that connects the player to past experiences, teachings, and internal reflections.

Game Design and Mechanics

Because of the limited time during the Game Jam, the design did not begin with mechanical systems but with meaning and atmosphere. The interaction model remains intentionally simple:

- The player moves through an abstract 3D environment.
- Entering an “eye” triggers a phone call.
- Each call plays a poem written for the game.
- The phone can also be used interactively by the player.
- The eyes act as nodes of memory, while the phone becomes a medium for intimate, poetic communication. The player’s progression is less about objectives and more about experiencing shifts in color, light, weather, and mood.

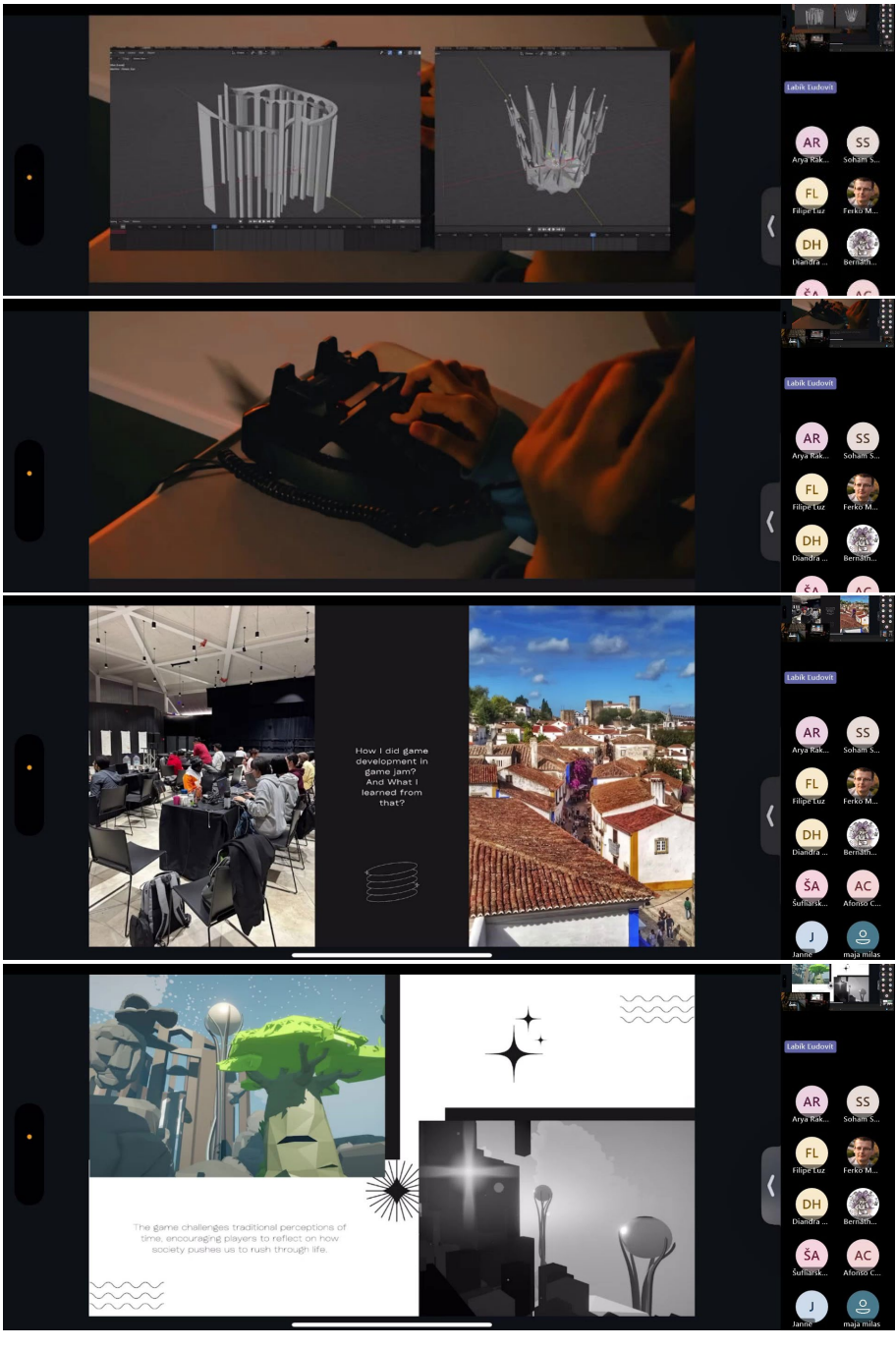
Visual and Technical Implementation

All models, animations, and visual effects were made in Blender during the game jam. The game itself was developed in Unity. Despite warnings from peers that environmental transitions would be too complex for the two-day deadline, the author implemented color changes, atmospheric shifts, and simple VFX to enhance emotional progression.

The phone prototype used in the jam contained:

- Arduino,
- physical buttons,
- and a speaker system.

This allowed interaction between the digital environment and a real physical object, reinforcing the connection between virtual space and personal memory.



Challenges

The main challenge was psychological rather than technical. Several participants expressed doubt that the project could be completed in time. This created anxiety and hesitation about whether to continue.

The turning point was the realization that a game jam is primarily a space for risk-free experimentation. This encouraged the author to fully commit to the idea, even at the risk of failure.

Lessons Learned

Three key insights emerged from the process:

1. Time Management

Talent alone is not enough. Effective time management and consistency are essential, especially under a strict deadline.

2. Rest and Routine

Keeping a stable sleep schedule during the Game Jam proved important for maintaining motivation, concentration, and emotional balance.

3. Handling Feedback

Unconventional artistic ideas often receive skeptical reactions. The author learned to filter feedback and remain committed to a personal artistic vision.

Q&A Discussion

Q1: *Which engine did you use?*

A: The game was developed in Unity. The custom phone device used Arduino, buttons, and speakers. Assets were created in Blender.

Q2: *What was the biggest challenge of the project?*

A: The mental challenge of overcoming discouraging feedback and deciding to continue working on an ambitious concept within a two-day deadline.

Q3: *Which part did you enjoy the most? Did you use AI?*

A: The most enjoyable aspect was balancing artistic expression with game design. AI tools were not used in the project; the author prefers creating artistic components manually.

Conclusion

Quiet Game demonstrates how game design can merge artistic expression with interactive mechanics. Through poetry, symbolic objects, and atmospheric transitions, the project investigates the emotional perception of time. Produced within a game jam, the game highlights the value of rapid prototyping, personal expression, and the integration of physical and digital elements. The experience also underscores the importance of time management, rest, and resilience in the creative process.

Alfonso Cunha

Gabriela Branco

Project 2 - Academic Project: *GoPit Girl*

The first project presented was *GoPit Girl*, a single-player, first-person escape room developed within the curricular framework of the course *Development of Digital Games*. The game was created by Gabriella Branco, Julie Costa, Mariana Martins, and Maria Martish.

The narrative follows a young woman traveling through rural Texas who must overcome a series of absurd and humorous trials in order to access the bathroom of a gas station. The design deliberately exaggerates everyday situations, transforming them into bizarre challenges that combine puzzle-solving with satirical storytelling.

The game contains six puzzles of increasing complexity. Early tasks involve simple exchanges, such as collecting tin cans to obtain a UV light, while later stages escalate into surreal encounters, including summoning a "toilet demon" using the Necronomicon. The puzzles are designed to balance logical progression with comedic absurdity, ensuring both challenge and entertainment.

From a technical perspective, the team employed Unity's camera projection techniques to replicate retro PSX aesthetics. Textures were compressed and stretched to simulate tessellation effects, producing trembling edges reminiscent of 1990s hardware limitations. A pixelation filter was applied to reinforce the grungy, nostalgic atmosphere. The audiovisual design further emphasized vibrant color palettes, contrasting posters, and eccentric products on shelves, all contributing to a chaotic yet cohesive environment.

The project demonstrates how students can integrate humor, cultural references, and technical experimentation into a coherent game experience while also reflecting on retro aesthetics as a design choice.

European Project: *EPIQUI*

The second part of the presentation introduced *EPIQUI*, a Horizon Europe project coordinated by Lusófona University in collaboration with the municipality of Óbidos. The initiative explores the use of games as tools for cultural dissemination and awareness.

Game jams organized under *EPIQUI* serve as creative laboratories where students and local communities collaborate to transform cultural themes into interactive experiences. Each jam begins with cultural immersion, such as visits to libraries, lagoons, or historical sites, followed by three days of intensive development.

Three jams were highlighted:

- **Literary Culture Jam:** Inspired by the rich tradition of libraries and bookshops

in Óbidos, students created games that celebrated reading and storytelling.

- **Óbidos Lagoon Jam:** Focused on the flora and fauna of the lagoon, this jam encouraged ecological awareness and environmental storytelling.
- **Carnation Revolution Jam:** Dedicated to Portugal's democratic revolution of 1974, students explored historical narratives and political symbolism through interactive design.

The project illustrates how game development can serve as a medium for cultural education, bridging academic training with community engagement.

Examples from Game Jams:

1 *Boof Catcher*

Developed by Maria Escaya and Katjana Schiment, *Boof Catcher* places the player in the role of a guard at a revolutionary meeting in Óbidos. The player must verify documents and identify infiltrators from the secret police (PIDE). The mechanics emphasize observation, deduction, and narrative immersion, while the theme highlights the tension of clandestine political gatherings during the Carnation Revolution.

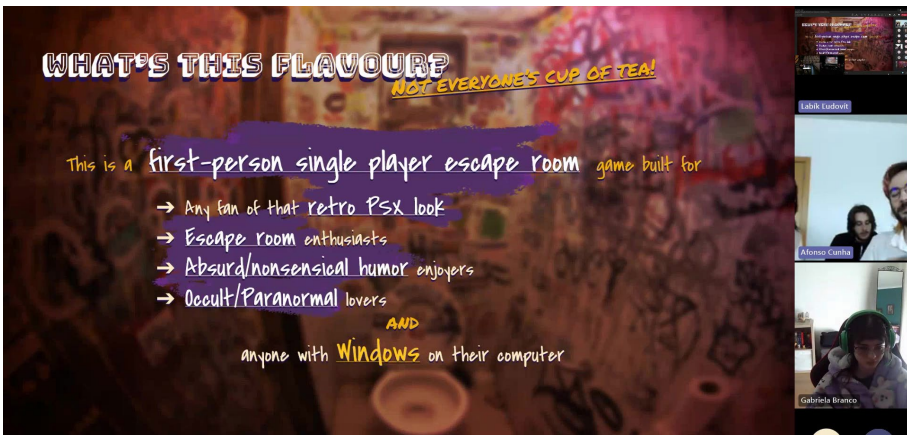
2 *Puss in Books*

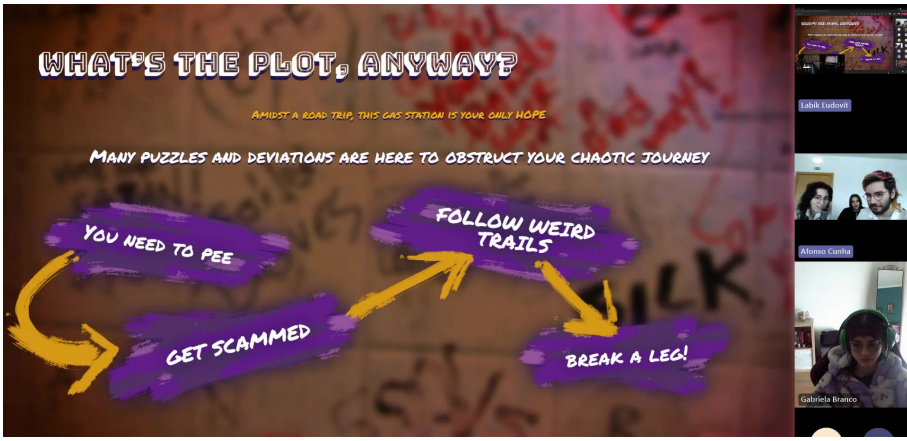
Created by Gabriela and Antonio Rodriguez, *Puss in Books* presents a cat exploring a medieval library. The innovative mechanic requires players to type commands (e.g., "right," "stop") instead of using conventional WASD controls. Inspired by a visit to a typography store, the game integrates cultural heritage with experimental gameplay, encouraging players to reflect on the history of written communication.

3 *Censorship Game*

Developed by a team of six students, this parody game casts the player as a Portuguese officer enforcing censorship before 1974. Players must block conversations, books, and media deemed inappropriate by the dictatorship. The playful visuals mask the oppressive reality, gradually revealing the absurdity of restrictions. Regardless of player actions, the game culminates in the inevitable revolution, symbolizing the triumph of democracy.

This project combines satire with historical reflection, using interactive mechanics to critique authoritarian control and highlight the resilience of cultural expression.

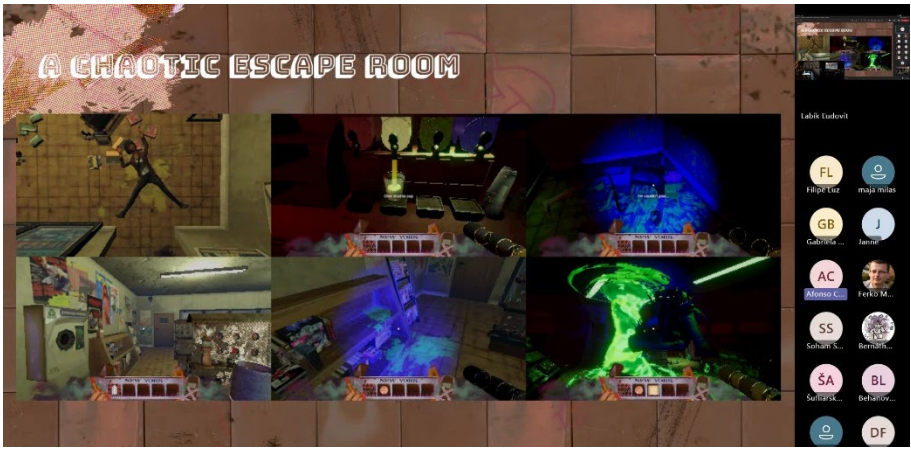


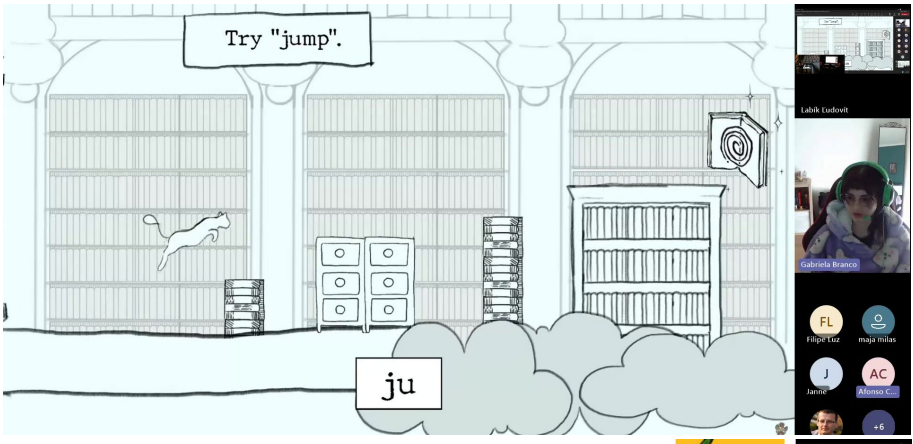


Discussion

The projects demonstrate the pedagogical value of combining technical training with cultural narratives. Students consistently used Unity, leveraging its flexibility for both conventional and experimental mechanics. Teams ranged from four to six members, fostering collaboration across programming, art, sound, and design. Importantly, no artificial intelligence tools were employed, underscoring the originality of the work.

The integration of humor, satire, and cultural heritage illustrates how game jams can serve as platforms for both creative experimentation and civic engagement. By situating gameplay within historical and cultural contexts, students not only develop technical skills but also contribute to collective memory and cultural dissemination.





Questions and Answers

Q1: *What engine did you use, and how many people worked on the project?*

The game was developed in Unity by a team of four students: Gabriella Branco, Julie Costa, Mariana Martins, and Maria Martish.

Q2: *Did you incorporate artificial intelligence in the project?*

No AI tools were used. Only a few external assets were borrowed from SketchApp; all other work was original.

Q3: *What shaders or post-processing techniques were applied to achieve the retro PSX aesthetic?*

The team employed Unity's camera projection techniques, compressing and stretching textures to replicate tessellation effects. Pixelation filters were also applied to achieve a grungy, retro look.

Q4: *How long did the game jam last?*

The jams typically lasted three to four days. The first day was devoted to cultural exploration and topic selection, while the remaining days were dedicated to development and final presentation.

Q5: *How long did it take to complete the censorship-themed game?*

Approximately three days, with a team of six members working intensively on art, programming, sound, and animation.

Q6: *Do you prefer Unity, or have you tried other engines such as Unreal?*

Unity is the primary engine taught in the course, and thus the one most familiar to the students. While some have experimented with GameMaker, none of the team members had practical experience with Unreal Engine.

Q7: *What happened to the games presented last year?*

Most of them remained as pet projects within the Games Creators Club. Some were further experimented on, but none were formally released. They occasionally resurface in the group for additional development.

Q8: *Were last year's proceedings reviewed by the students?*

The presenters indicated they had not yet seen the written proceedings but expressed interest in reviewing them once shared.

Project 3 - GAME CREATORS CLUB: STUDENT-LED EXPERIMENTAL GAME DEVELOPMENT

Abstract

This paper presents the activities of the *Game Creators Club* (GCC, Antonio Rodrigues, Daniel Franco, and Gabriela Branco), a monthly student-led initiative at Lusófona University. The club provides a stress-free environment for experimentation, creativity, and collaborative learning in game development. Each month, participants design projects based on thematic prompts, ranging from “cats” and “trains” to “lights out” and “backrooms.” The paper highlights five representative projects: *Bubble Bath*, *Bubbles, In My Call*, *Broccoli Guy Gets Paralyzed in the Backrooms*, and a cinematic sound design experiment. These projects demonstrate how GCC fosters technical skill acquisition, artistic expression, and community building outside formal coursework. The discussion emphasizes the pedagogical value of informal creative spaces, where students can explore shaders, VFX, sound design, and AI programming without academic pressure.

Keywords

Game jam, Unity engine, experimental design, sound design, shaders, student initiative.

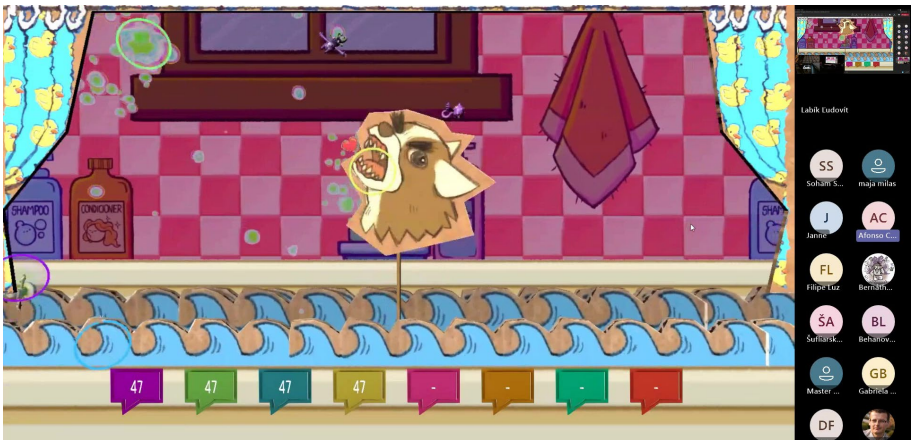
Introduction

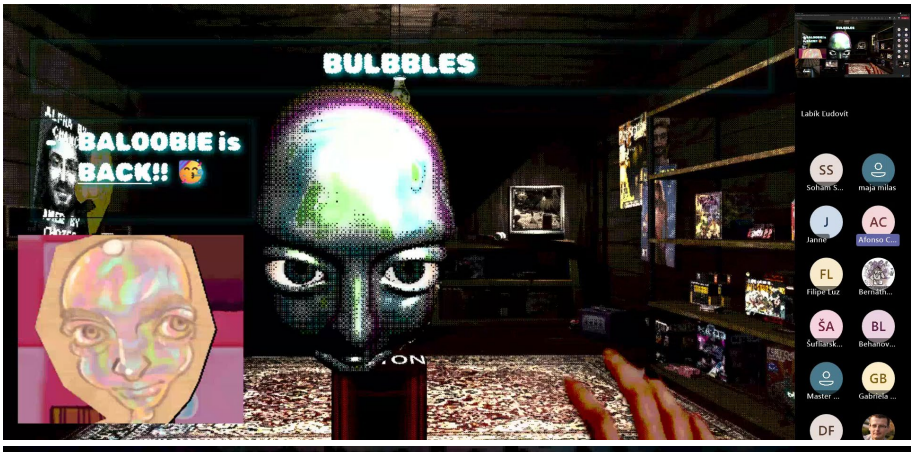
The *Game Creators Club* is a monthly event at Lusófona University where students present short projects developed individually or in teams. Unlike formal coursework, GCC emphasizes creativity, experimentation, and fun. Themes are assigned or chosen collectively, and participants have one month to prepare a prototype or artistic experiment. The club has existed for several years, serving as a platform for students to share work, learn new techniques, and collaborate informally.

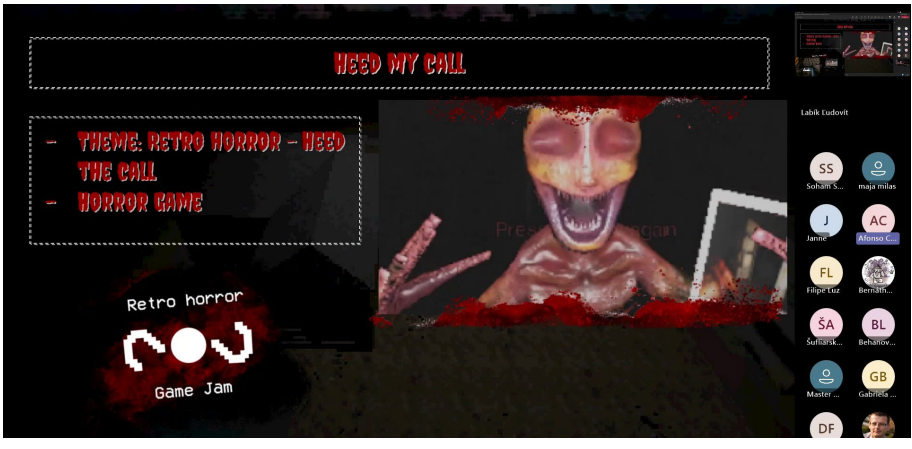
Project Examples:

1 *Bubble Bath*

Inspired by the wordplay on “bloodbath,” this multiplayer game was created for the Global Game Jam under the theme “Bubbles.” Featuring up to eight local players, the game introduced the antagonist “Balubi,” a humorous character based on a distorted image of one of the developers. The project explored unconventional input systems, combining







PlayStation 2 controllers, keyboards, and a modern controller to support simultaneous play. The design emphasized chaotic fun and technical improvisation.

2 *Bulbs*

A memory-based horror game developed under the theme “Lights Out.” Players face Balubi in a dark room, memorizing lamp positions before breaking them with animated hands. The game integrated shaders, dithering effects, and real-life animations using photographs of arms. This project allowed students to experiment with shader programming and atmospheric design, creating a creepy yet playful experience.

3. In *My Call*

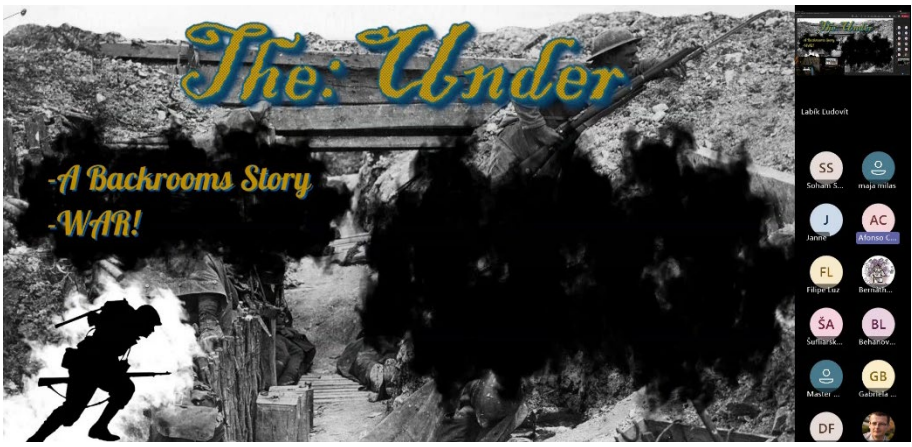
A horror game developed by Antonio and Daniel. Players act as detectives gathering photographic evidence in a haunted house while being pursued by a monster. The mechanic combines evidence collection with “Simon Says”-style commands delivered via phone calls. The monster’s sounds were recorded by the developers, adding originality to the sound design. Technical learning included rendering textures for retro PSX aesthetics and AI programming for enemy behavior. The game gained visibility through YouTube playthroughs, highlighting its appeal beyond the classroom.

4 *Broccoli Guy Gets Paralyzed in the Backrooms*

Born from a workshop in Finland, the “Broccoli Guy” meme character was transformed into a game hero. Set in the “Backrooms” theme, players control his eyes using dual joysticks to shoot fireballs at enemies. The project introduced VFX graph techniques for fire effects and controller-based mechanics. It exemplifies how humorous, meme-inspired characters can evolve into experimental gameplay prototypes.

5 *Cinematic Sound Design Experiments*

Daniel developed a non-game cinematic experience using Unity’s Cinemachine and advanced sound design. The project emphasized atmosphere over mechanics, training skills in audio layering, reverb, and echo. It demonstrated how GCC can serve as a sandbox for artistic exploration beyond traditional gameplay.



Discussion

The *Game Creators Club* provides a unique environment for students to experiment without academic pressure. Projects often serve as laboratories for learning shaders, VFX, sound design, and AI programming. The informal structure allows teams of varying sizes, from solo developers to groups of ten, fostering inclusivity and collaboration.

GCC projects frequently influence formal coursework, as techniques learned in the club are applied to academic assignments. The initiative illustrates the importance of extracurricular creative spaces in higher education.

Conclusion

The *Game Creators Club* demonstrates how informal, student-led initiatives can complement academic curricula by fostering creativity, technical skill, and community. Through playful experimentation, students gain confidence, explore new tools, and contribute to a vibrant culture of game development. The club's stress-free environment encourages risk-taking and innovation, making it a valuable model for other institutions.

Questions and Answers

Q1: *How was sound design approached in these projects?*
Students used a mix of provided sounds, free resources, and original recordings. Tools such as Reaper enabled editing, layering, and effects like reverb and echo.
Q2: *What was the biggest struggle during development?*
Time management was challenging due to multiple academic projects. Technical difficulties, such as configuring multiple controllers in Unity, also posed problems.
Q3: *How were roles divided between programmers and designers?*
Teams varied in size and composition. Some projects involved one programmer and one artist, while others had larger groups. Flexibility allowed participants to choose roles freely.
Q4: *How were the eyes of Broccoli Guy rigged?*
The eyes were not formally rigged; they were spheres controlled by joystick input, rotating according to player movement.
Q5: *Does the university provide financial support for GCC projects?*
While no direct funding is provided, the club supports skill development. Techniques learned in GCC are often applied to formal coursework, accelerating progress and enriching academic projects.

PROGRAM

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HOW TO DESIGN GAME MECHANICS

MARTIN PETRÁSEK, *game creator, CZECH REPUBLIC.*

Abstract

This paper introduces practical methods and principles for designing game mechanics, drawing from the author's experience in the game industry, independent development, and teaching. The text presents the MDA framework, emphasizes the importance of shaping player experience through mechanics, explains how to build core mechanics, how to introduce dynamics, how to communicate clear feedback to players, and why iteration is essential throughout the development process. The paper concludes with a Q&A section based on the live discussion following the presentation.

Introduction

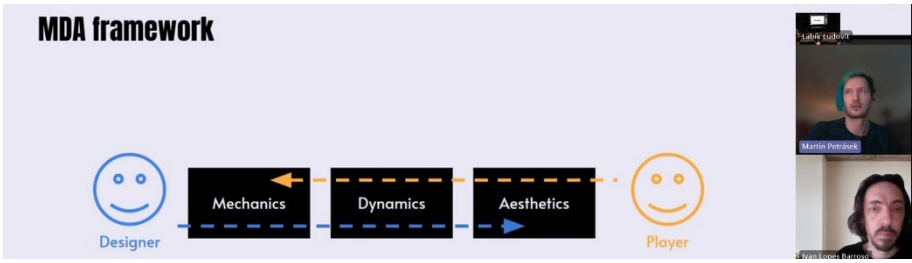
The text post was created by AI based on a video recording from the conference.
The author works as a gameplay designer at Warhorse Studios. Before that, he founded his own studio, Faerie Snail Games, developing advertising games as well as the long-term project Chicken Empire: Wizard in Shadows. He also contributed to the board game Legion Siberent Story, focused on the history of Czechoslovak legions in World War I. Alongside professional practice, he teaches game design and prepares educational materials for several institutions.
The aim of this paper is to present a concise set of principles that help improve the design of game mechanics.

The MDA Framework

MDA (Mechanics–Dynamics–Aesthetics) is a foundational approach used in game design:

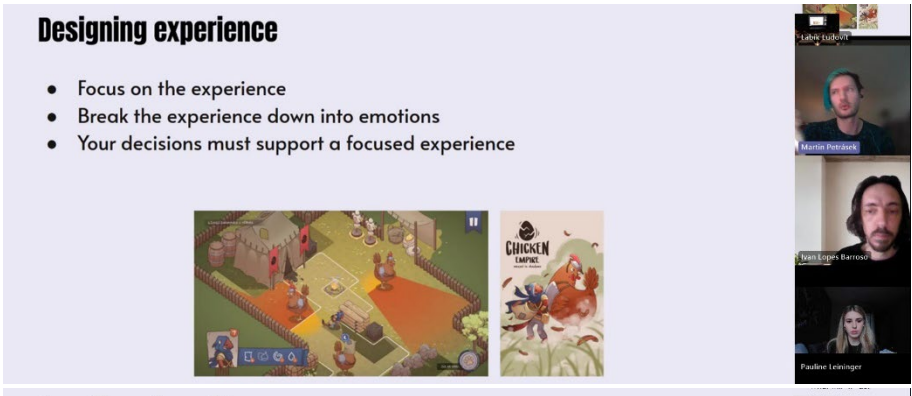
- Mechanics—the rules and systems created by the designer.
- Dynamics—the behavior that arises from interactions between mechanics.
- Aesthetics—the emotional experience perceived by the player.

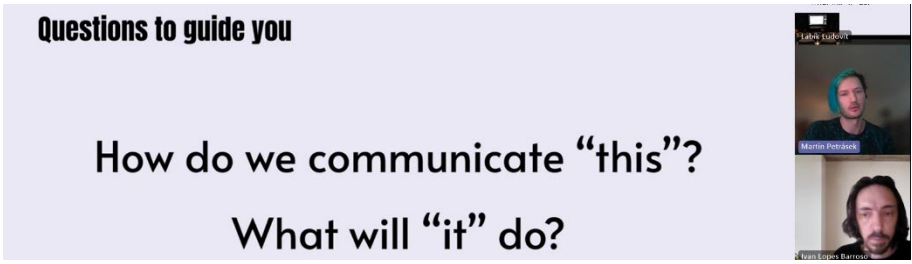
Designers directly shape mechanics; players experience only the resulting aesthetics. Good design ensures that mechanics meaningfully direct the intended player experience.



Defining the Intended Experience

The design process should begin with defining the emotional experience the game aims to evoke. This intended experience is broken into specific emotions and decisions that support it. All later design choices should reinforce the initial vision.
For example, in Chicken Empire, the goal was to create a cozy, non-violent experience suitable for relaxed family play. This influenced worldbuilding, the asymmetry between player and enemies, and the overall pacing.





Guiding Questions for Designers

Two questions help drive design decisions:

1. How do we communicate this to the player?
   – clarity, readability, and understanding of the mechanic.
2. What does this do to the game?
   – what situations it creates, how it affects pacing, and what emotions it evokes.

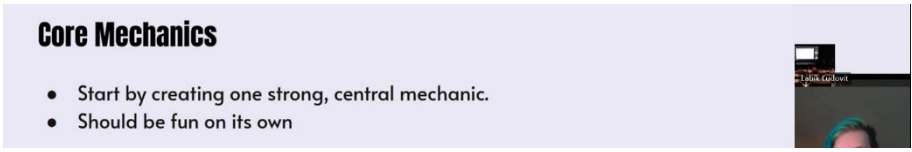
Consistently asking these questions helps maintain coherence in the design.

Building Around the Core Mechanic

A game should be built around a clear, simple core mechanic. It must be easy to understand, test, and expand.

Examples:

- Super Mario—movement and jumping.
- Call of Duty – shooting and movement.



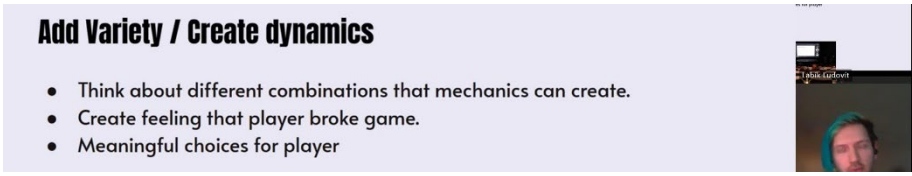
The core mechanic guides the entire design process and should remain central throughout development.

Adding Dynamics and Managing Complexity

New mechanics should be introduced gradually so players are not overwhelmed. Each mechanic must bring a distinct interaction and open new possibilities.

Example:

- Fire + Wind mechanics → wind spreads fire, creating emergent dynamics.



Designers must consider the cognitive load on the player. Early in the game, the control scheme should resemble the simplicity of an NES controller and gradually evolve toward a more complex “PS4-level” interaction model.

Teaching Through Gameplay

Players rarely read text tutorials. The most effective introduction of a new mechanic is through gameplay:

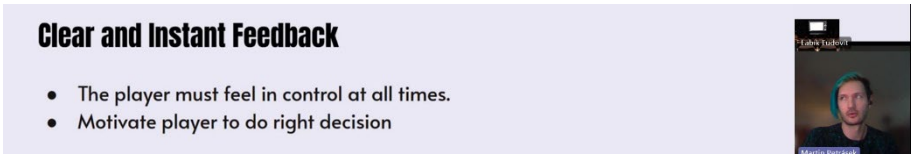
- place the player in a confined space,
- force the use of one new mechanic,
- only then open the rest of the game.

This ensures natural learning without frustration.

Clear Feedback

Every player action should trigger immediate, understandable feedback:

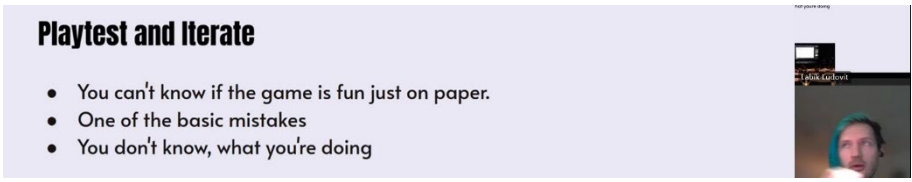
- visual – animations, particles, screen shake,
- audio – sound effects,
- systemic – HP changes, new opportunities, state changes.



Clear feedback reinforces the player’s sense of control.

Designing for Intended Behavior

Mechanics should encourage the behaviors the designer wants players to engage with. Overemphasizing failure states (e.g., many ways to die) may misdirect player attention. Instead, designers should focus on expanding meaningful mechanics, abilities, and interactions that enrich the primary experience.



Iteration and Playtesting

Fun cannot be designed purely on paper. Iteration is essential:

- test early,
- test frequently,
- test small components first,
- continuously refine.

The iterative cycle includes brainstorming, prototyping, testing, evaluation, and revision. This cycle continues throughout the entire development timeline.

Working with Gameplay Loops

Players operate within multiple interconnected loops, from basic combat actions to entire quest lines and long-term goals. Designers must understand and deliberately shape these loops to ensure clarity, flow, and progression.

Loops should be simple and intuitive, provide constant feedback, offer a sense of progress, and gradually increase in challenge.

Q&A Discussion

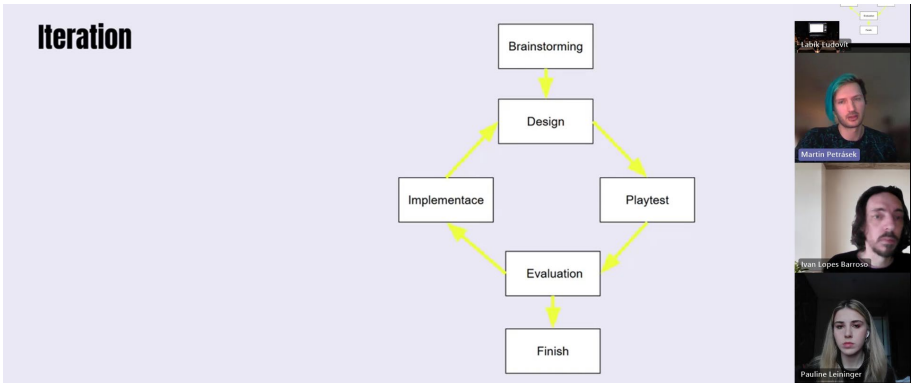
Q1: *In which games does the MDA framework work well, and where does it not?*

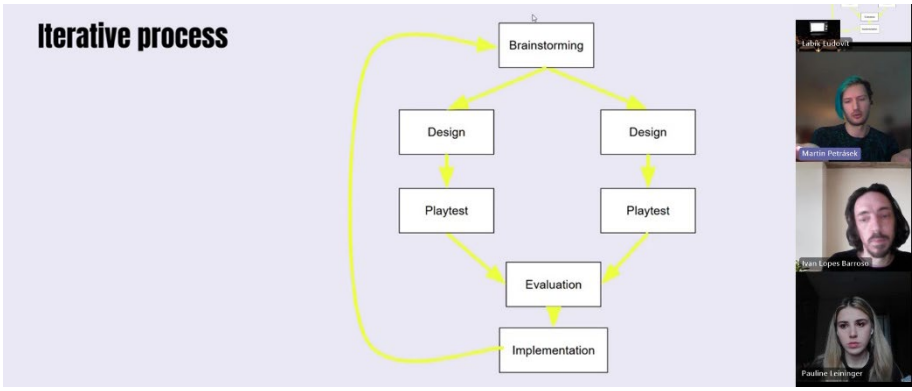
A strong example of MDA working well is the Metro series. The interplay of mechanics like checking the map in real time, limited visibility, or gas mask management creates highly coherent dynamics that support the intended aesthetics of tension and survival.

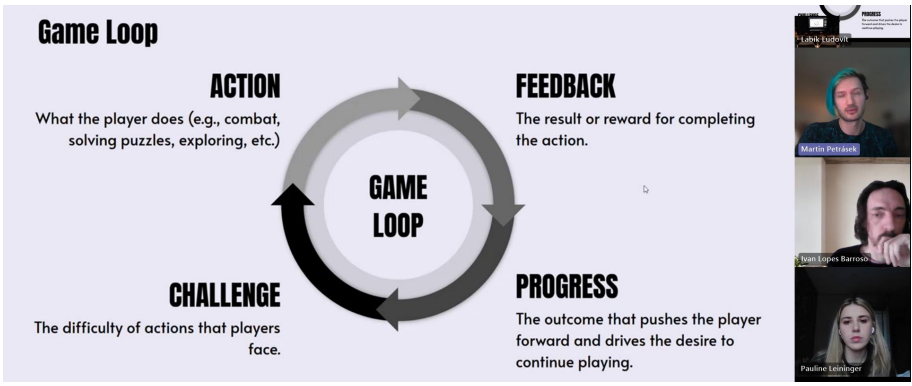
An example where MDA works less effectively is the modern Assassin's Creed series. The abundance of RPG-style combat mechanics reduces the emphasis on stealth, which was originally central to the series' fantasy.

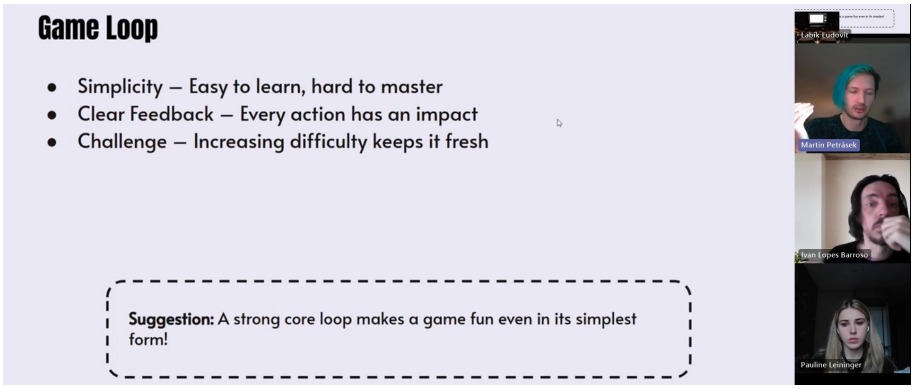
Q2: *What was the most difficult assignment in your professional career, and how did you handle it?*

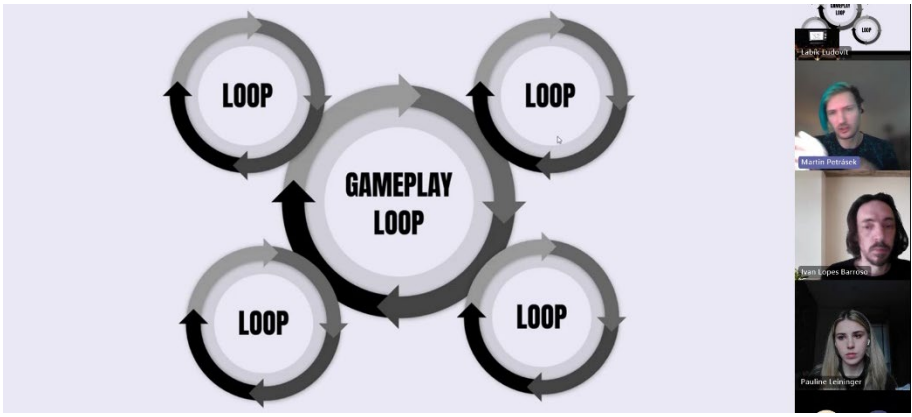
A large part of my work at Warhorse involves balancing survival mechanics such as food and alcohol systems. Initially, balancing large spreadsheets was difficult. Through collaboration with colleagues, I moved toward mathematical formulas that automatically generate balanced values based on rarity, nutrition, digestion time, and availability. This significantly streamlined the process.











Q3: *How can designers speed up the iteration process to reach the best possible game?*

The key is to test extremely early—even when only a single mechanic exists. Designers should build the habit of testing small components in isolation. Low-tech testing methods also help: simulating mechanics on paper, timing manually, or testing without full code. Scheduling regular playtesting sessions—monthly, for example—helps maintain progress and engage testers effectively.

PROGRAM

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CONFERENCE CONTRIBUTION – 12, DAY 2

AI-SUPPORTED 3D PREVISUALIZATIONS: ENHANCING VIRTUAL PRODUCTION WORKFLOWS

PAULINE LEININGER, *researches the evolving role of AI in media production at the University of Television and Film Munich, GERMANY.*

Abstract

AI-supported 3D previsualizations offer a transformative approach to virtual production. In an era where AI is commonly used for generating concept images and storyboards, extending its reach into three-dimensional planning opens new creative horizons. By enabling the rapid creation of immersive 3D environments (generative or AI scene reconstructions like Gaussian Splats) and intuitive placement of characters and cameras, this method bridges creative vision with technical execution while preserving as much control as possible. It democratizes advanced planning tools, making them accessible to independent filmmakers and film schools that may lack specialized 3D expertise, therefore streamlining production workflows. In this context, we will also showcase our self-developed prototype tool. The presentation also touches on a broader paradigm shift toward AI world models and hints at future integrations with immersive XR technologies. Join us as we explore how embracing AI in 3D previsualization can reshape planning and on-set decision-making in today's evolving virtual production landscape.

Keywords

AI, virtual production, pre-visualization, 3D environment generation, scene reconstruction, gaussian splatting, democratization of filmmaking.

Introduction

The text post was created by AI based on a video recording from the conference.

When I began my talk at IVGC 2025 in Bratislava, I introduced myself as a researcher of AI in Media Production at the University of Television and Film Munich. My academic background is in human–computer interaction, which is essentially the study of how people interact with technology and how we can design systems that are intuitive, user-friendly, and enjoyable. This combination of programming, design, and understanding human behavior is crucial when we work with AI tools. There are many tools available today, but the real question is how they can actually improve human creativity and creative processes rather than replace them.

"If you're trying to use virtual production as a tool to empower fewer people to do more amazing things, then let's start removing all of these unnecessary complications, and we can do that with AI. So you can walk into an empty room and say, 'Give me a 1940s-era Western frontier town, and oh, let's make it winter.'"

– Ben Grossmann, 2019

The inspiration for my research came from a quote by Academy Award-winning VFX supervisor Ben Grossman: “If you’re trying to use virtual production as a tool to empower fewer people to do more amazing things, then let’s start removing all the unnecessary complications, and we can do that with AI.” He is right. Today you can walk into an empty room and say, “Give me a 1940s Western frontier tone, and let’s make it winter,” and AI can generate that. This is the starting point of my presentation: how AI can support 3D pre-visualizations for movies and enhance virtual production workflows.

The AI Lab at HFF Munich

At our AI Lab in Munich, we combine teaching and research. We provide overview lectures for all students, specialized seminars for VFX students, and interdisciplinary projects with IT students. We also support student projects and maintain a collection of AI tools. In research, we focus on AI and ownership, accessible media such as sign language avatars and easy-language visualizations, music visualization for the deaf, and of course AI in virtual production, which is my main topic.

The lab is one of the first of its kind at a film school. It is not only about experimenting with technology but also about creating a safe space where students can critically reflect on the implications of AI. We encourage them to ask: What does it mean if AI generates an environment? Who owns the output? How do we ensure ethical use? These questions are as important as the technical demonstrations.

Virtual Production as Paradigm Shift

Virtual production is not just one technique; it is a paradigm shift. According to the American Society of Cinematographers, it uses technology to join the digital world with the physical world in real time. It allows filmmakers to interact with digital processes the same way they interact with live action. Instead of a linear pipeline, where each step must be finished before the next can begin, virtual production is iterative and dynamic. Assets can be changed on set, prepared in advance, and adjusted in real time. This gives filmmakers much more creative freedom.

Human-Computer Interaction

- Focus on **collaborative, user-centered design**: Working with people to develop useful tools.
- Understanding filmmakers’ workflows and creative processes.

"Technology should do the hard work, so people can do the things that make them the happiest."
– Larry Page

01 Talk Outline

1. Recap **Virtual Production**
2. Conceptual Approaches to AI-mediated 3D
   a. Environment Generation
   b. Object Generation
   c. Scene Reconstruction
3. Workflow and Demonstration our Previs **EnVisualAIzer Prototype**
4. Analysis of **Future Directions/Upcoming Approaches**
5. Conclusion and Discussion

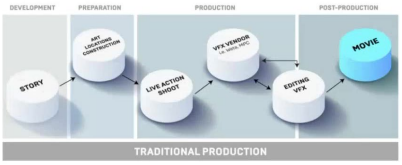
02 Background – Virtual Production

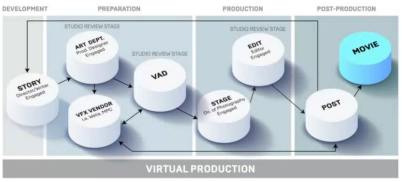
*„Virtual production uses technology to join the **digital world with the physical world** in **real-time**. It enables filmmakers to interact with the digital process in the same ways they interact with **live-action** production.”*

Definition VPGlossary der Visual Effects Society und American Society of Cinematographers

Production Pipeline

From Linear to Virtual



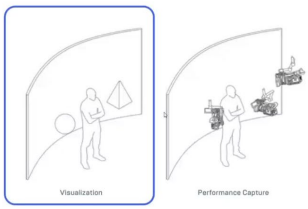


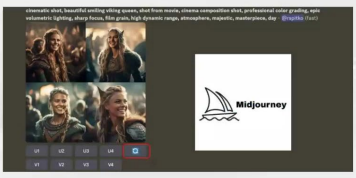
Virtual Production Types

Previs: uses 3D animations to cheaply explore lighting, camera angles, and artistic choices with early visual and audio mock-ups.

Virtual Scouting: a digital model of locations or sets for efficient shot planning and design, using devices like HMDs or computers to streamline pre-production.

Techvis: merges real and virtual elements to test shot setups, camera moves, and lenses, ensuring practical accuracy before filming.





VS

Why use 3D workflows?

It’s all about control and familiarity with established VFX workflows

Pre-visualization (previz) is a key part of this. It uses rough 3D animations to explore lighting, camera angles, and artistic choices early in the process. AI can support this workflow in several ways: environment generation, object creation, and scene reconstruction. Each of these domains has seen rapid progress in recent years.

Environment Generation

There are generative approaches, where you simply prompt the world you want, and database-driven approaches, where you reconstruct existing scenes from 2D or 3D data. Hybrid approaches are emerging that combine both.

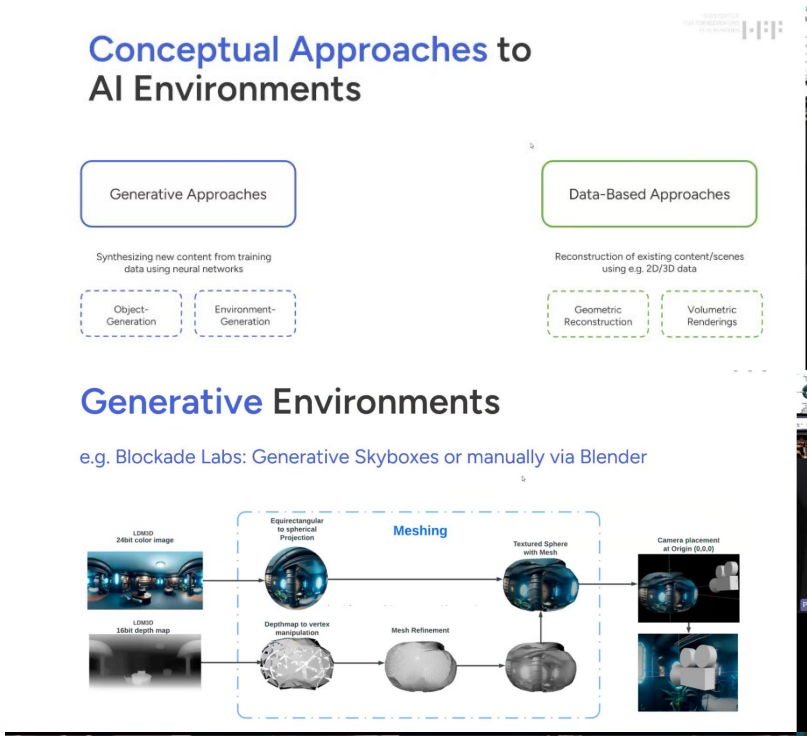
For example, Blockade Labs lets you generate a 360-degree image, map it onto a sphere, and distort it with a depth map to create an interactive world. You can step inside, annotate, and even export it as a 3D asset. You can also sketch rough outlines and let AI generate textures, projecting them onto meshes to explore different styles quickly.

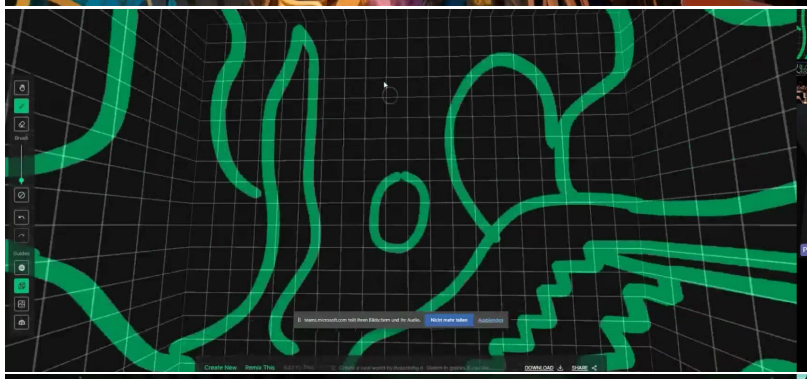
This workflow is powerful because it translates the established previz process into AI-supported environments. Instead of spending weeks modeling a rough set, students can prompt an environment in minutes, then iterate with sketches and textures. It is not perfect, but it is fast, accessible, and inspiring.

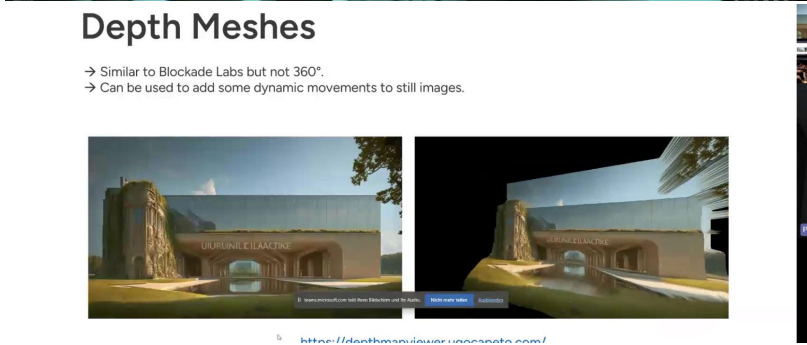
Object Generation

Tools like Meshy, Tripo, and Rodin allow you to prompt or upload an image and receive a usable mesh. Open-source software such as Hanyan 3D and Trellis can run locally and are free, though they require strong GPUs. Comparative studies show that while intricate details are still difficult, most results are already usable for mockups. Trees and foliage remain challenging, but improvements are coming fast.

The democratizing effect is clear: students who cannot afford expensive asset libraries can generate their own. They can experiment with styles, iterate quickly, and focus on storytelling rather than technical barriers.







Scene Reconstruction

Photogrammetry is well established and produces high-quality geometry, but it cannot adapt to changing lighting and struggles with transparency. New volumetric rendering approaches, such as neural radiance fields (NeRFs) and Gaussian splatting, can handle reflections and transparency, though they are harder to edit and sometimes produce artifacts.

Mobile apps like Luma AI make basic reconstructions accessible to anyone, while professional scanners can achieve very high-quality results. Hybrid approaches suggest promising directions for future workflows.

The comparison between photogrammetry and Gaussian splatting illustrates the trade-offs: photogrammetry excels in detail but is rigid, while Gaussian splatting is flexible but introduces artifacts. Both are valuable, and AI can help bridge the gap.

Prototype Development

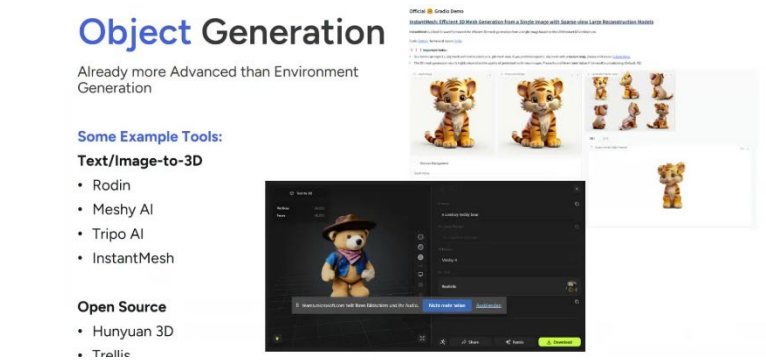
To demonstrate these ideas, we developed a prototype tool at HFF. It is an interactive viewer where students can walk around AI-generated environments, place characters, set camera parameters, and annotate scenes. It integrates Stable Diffusion for image-to-image generation and Luma Dream Machine for animatic creation.

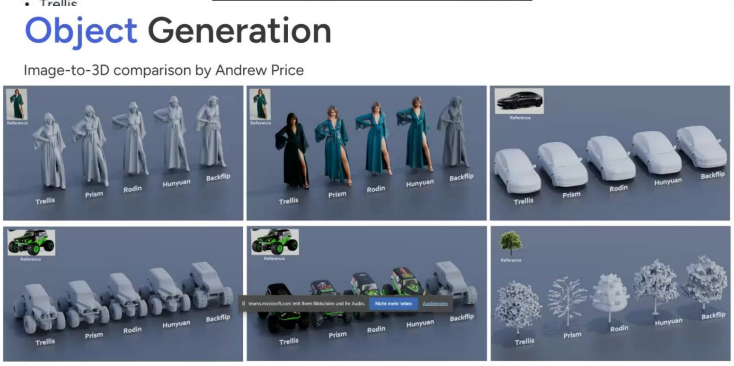
The goal is not to replace professional 3D software but to make previz accessible to directing and producing students who would otherwise not be able to experiment with these workflows. Students can create animatics, apply style transfer, and even experiment with Gaussian splats inside the viewer.

This prototype shows that AI can be integrated into education in a way that empowers students. It lowers barriers, encourages experimentation, and fosters creativity.

Future Directions

Looking ahead, there are exciting future directions. Spatial intelligence and world models allow AI to build mental maps of environments, predict interactions, and reconstruct spaces from single images. Projects like Oasis (Minecraft generated entirely by AI in





real time) or Meta Reality Labs show what is possible.

Text-to-motion capture is another frontier: tools can generate rigged character animations from simple prompts, saving enormous amounts of time. Tripo AI already integrates automatic rigging with generated characters. Combined with an AI-driven environment and object generation, this points toward a fully AI-supported previz pipeline.

These developments suggest that the entire previz workflow—from environments to objects to animation—could be supported by AI. It is not yet perfect, but the trajectory is clear.

Ethical Considerations

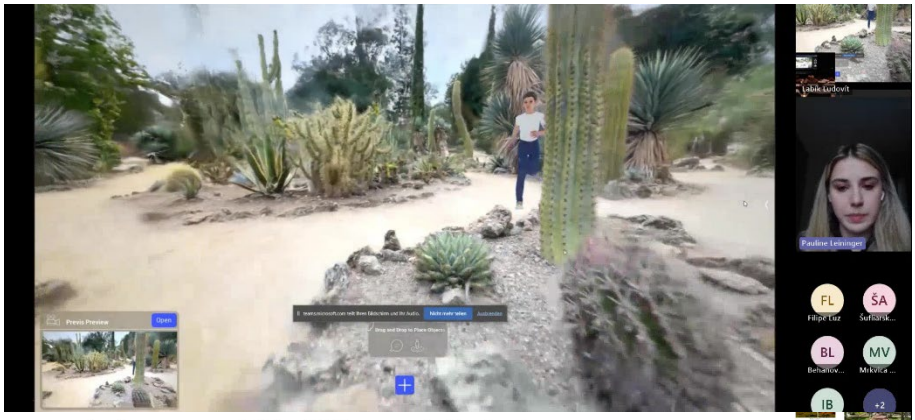
Of course, there are challenges. Consistency across longer sequences is still difficult. Ethical questions about the ownership and legality of training data are unresolved. Technical limitations such as artifacts, compute intensity, and lack of editable meshes remain.

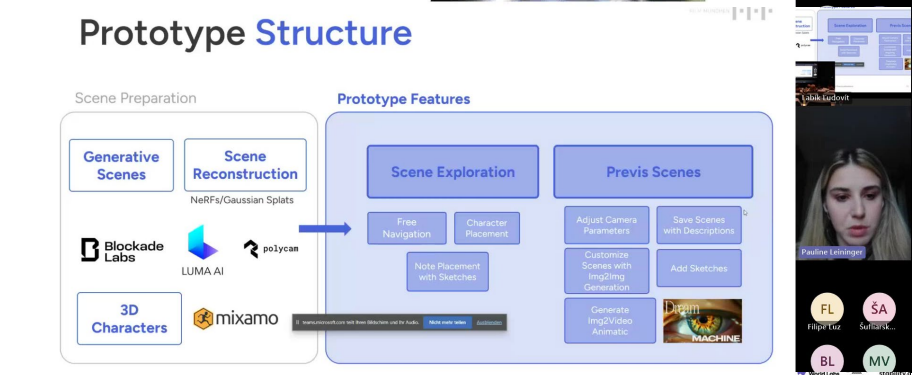
As I said in my talk, ethics is a whole research topic in its own right, and we need to solve it in a better way than it is currently being handled. Some companies are working on solutions, but much remains to be done.

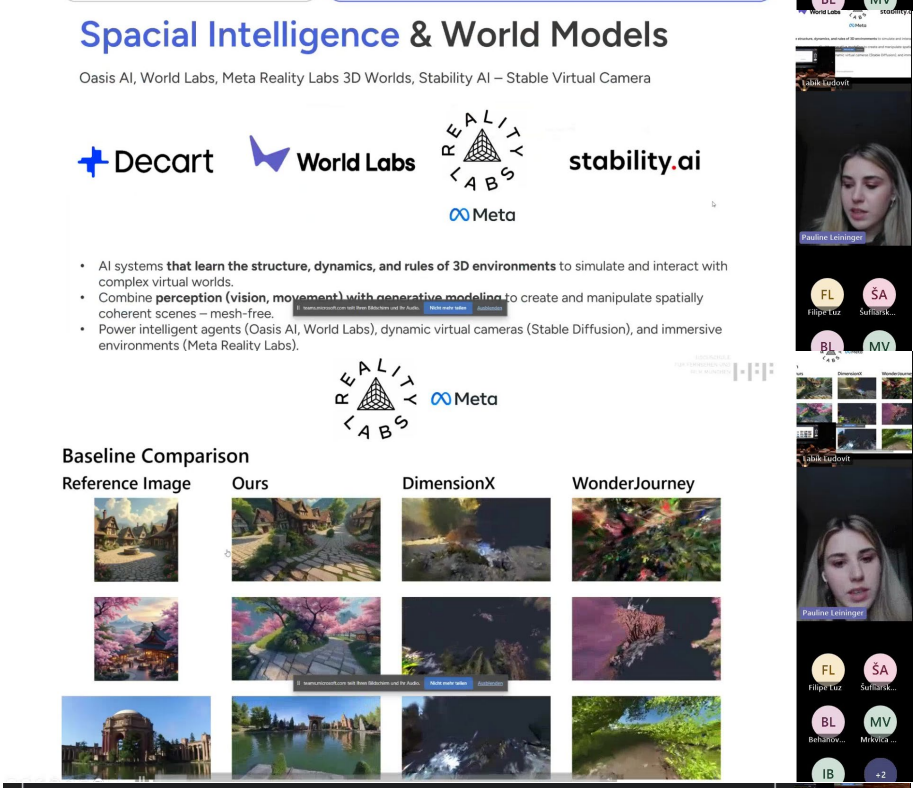
Without ethical frameworks, the democratizing potential of AI could be undermined. We must ensure that AI benefits everyone, not just those with access to proprietary datasets.

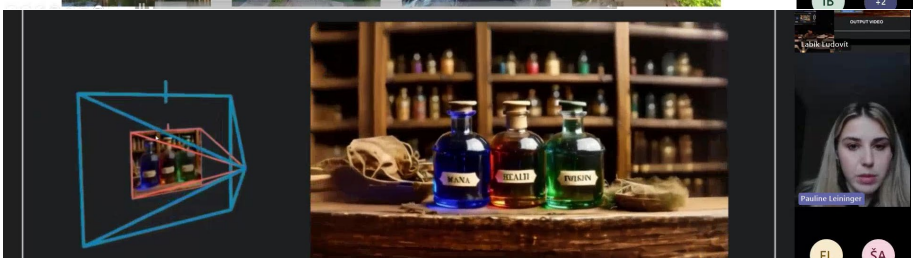
Conclusion

The main takeaway is that AI can democratize filmmaking. It can make tools and concepts available to people who would otherwise have no access. What used to be reserved for very big productions can now be done by small teams, even film students, on laptops. This is not only a technical revolution but also a cultural one: it allows new and diverse voices to tell stories that would otherwise be impossible.

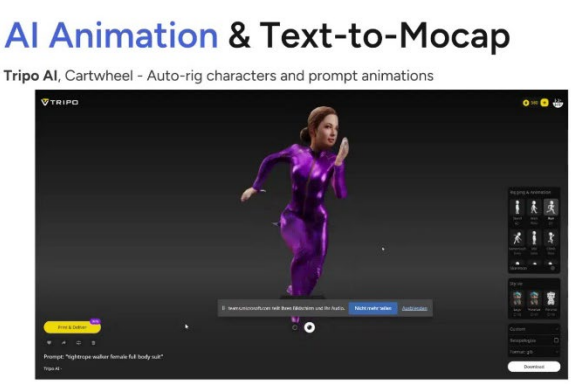


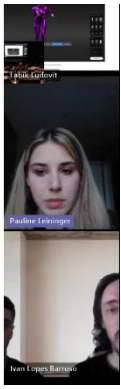






At the same time, we must address the ethical and technical challenges to ensure that this democratization benefits everyone. AI-supported 3D pre-visualizations represent a significant advancement in virtual production, and their integration into film schools shows how education can lead the way in shaping the future of storytelling.





Questions and Answers

Q1: *How do you feel about the ethics of using AI, given that many models are trained on other people's work without clear legal consent?*

Ethics is a major concern and a research topic in its own right. Current practices are insufficient, and better solutions are needed. Some companies are exploring fair AI models where artists are compensated for their contributions. For now, AI should mainly be used for ideation rather than final products. Animation studios could also train internal models on their own data to avoid exploitation.

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CONFERENCE CONTRIBUTION – 13, DAY 2

HOW TO BREAK AND STAY IN THE GAME INDUSTRY, THE PHILOSOPHY OF CGSPECTRUM

OLIVER ROTTER, *CGSpectrum College of Digital Arts and Animation, AUSTRIA.*

Abstract

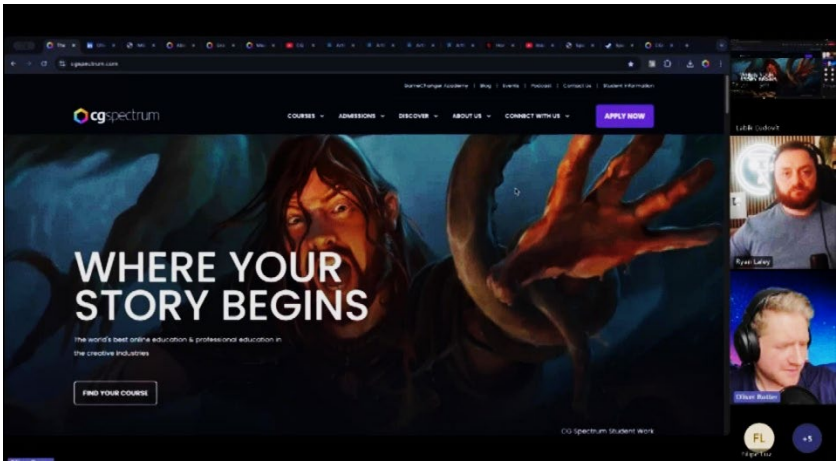
The foundation of success in the entertainment industry, whether in game design, development, or VFX, lies not only in technical mastery but also in the ability to communicate, collaborate, and understand the interconnected nature of production. Drawing from educational approaches at CG Spectrum and industry practice, this article explores how communication, teamwork, and understanding of coworkers and pipelines form the cornerstone of professional growth. It highlights how students can apply these skills in collaborative settings to better mirror the realities of production environments in the games and entertainment industries.

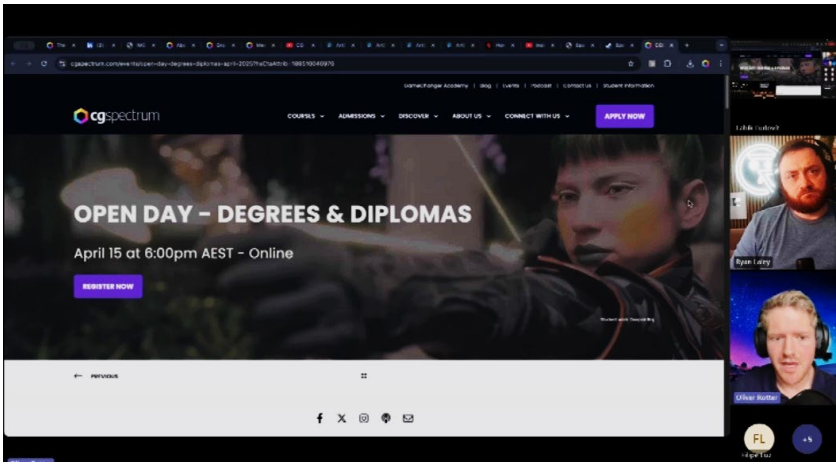
Keywords

Communication, teamwork, production literacy, collaboration.

Core Skills and Teamwork in epy

By Ryan Laley (Game Designer & YouTube Content Creator) and Oliver Rotter (Game & Movie Producer)—Mentors at CGSpectrum College of Digital Arts and Animation presented at the IVGC Online Conference.





Learning the Core: Beyond Technical Skills

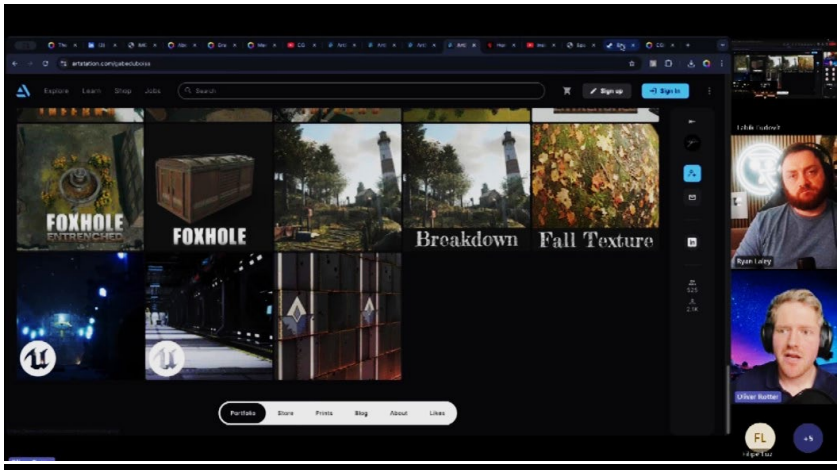
Early stages of creative education often prioritize technical proficiency - mastering modeling tools, game engines, or animation workflows. Yet, skill alone is insufficient in today's cross-disciplinary studios. True creative effectiveness emerges when technical ability is supported by strong communication and teamwork.

At CG Spectrum, the development of *core skills* takes a broader approach that includes interpersonal awareness, accountability, and empathy across disciplines. Teams thrive on shared understanding of responsibilities and production goals. Building this awareness trains students to think systemically—to see how their specialized work affects others down the pipeline.

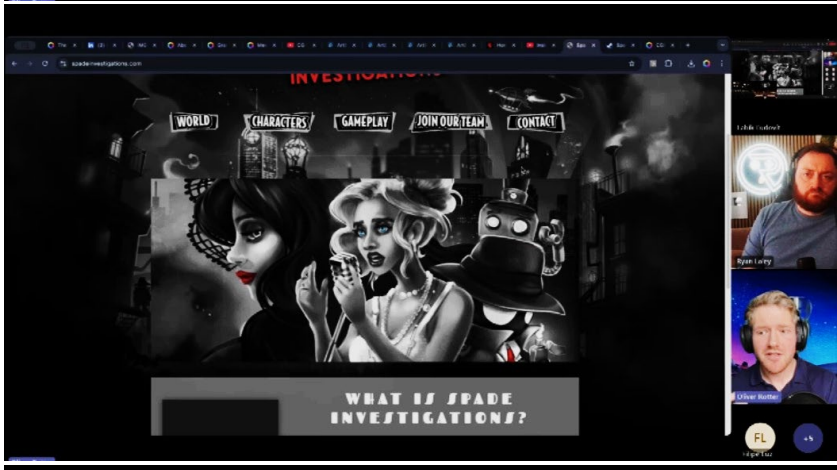
Communication as Production Literacy

In production, communication is not just about talking - it is a professional discipline that ensures efficiency, clarity, and consistency across departments. Games and VFX projects progress through numerous interdependent steps, from design to implementation to quality assurance.

A crucial part of mastering communication is understanding the people and processes involved at every stage. Knowing your coworkers' roles and the pipeline that connects your department to others makes collaboration smoother and reduces costly misunderstandings. When an artist understands how a technical designer's workflow relies on file naming conventions, or when a programmer knows an animation team's revision process, production becomes more adaptive and efficient.



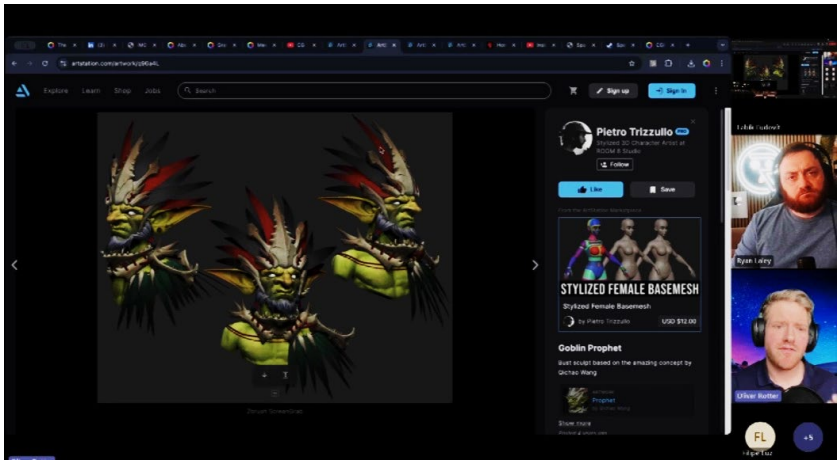
Developing this awareness means learning to read between the technical steps asking the right questions, anticipating dependencies, and delivering information in a format that serves the next stage of production.



Teamwork as a Network of Understanding

Teamwork transforms individual skills into shared accomplishments. It relies on aligning creative intent, managing iteration, and respecting the chain of collaboration. At CG Spectrum, mentorship and project-based learning simulate these production realities. Students collaborate in teams that mirror studio environments, learning how their contributions affect others and how to provide value beyond their own tasks.

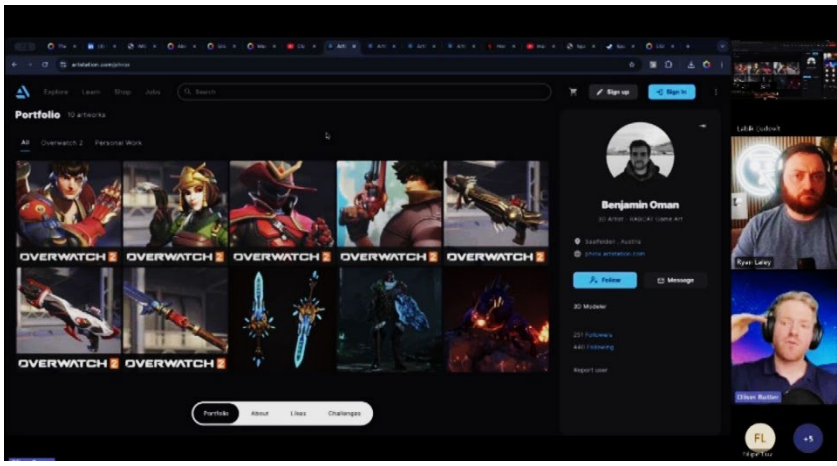
This awareness fosters a professional mindset: every file, version update, and communication touchpoint contributes to the larger outcome. When collaborators understand not just their own work but also how it fits into others' processes, creative teams gain cohesion, and production pipelines flow with fewer delays or bottlenecks.



Building Networks and Industry Readiness

Professional growth in the entertainment industry relies heavily on relational and systemic understanding. Students who cultivate an awareness of how different departments depend on one another can navigate real-world productions with confidence. Equally, building professional networks provides exposure to how various pipelines operate across studios, genres, and project types.

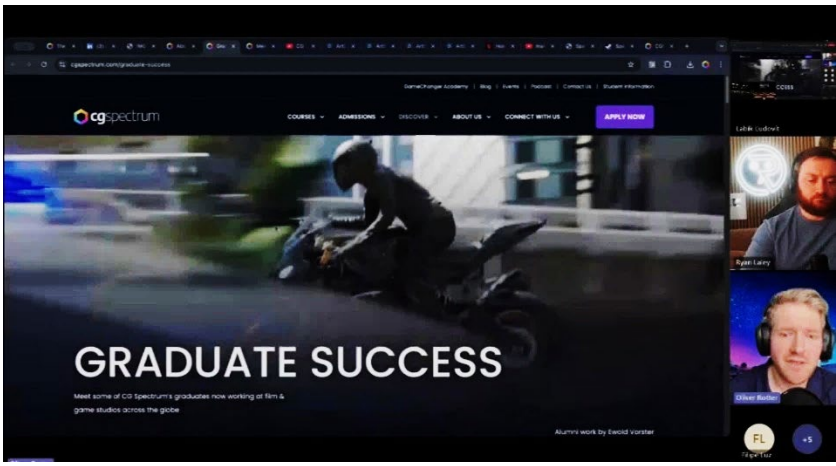
Graduates who bring this integrated mindset, combining communication, teamwork, and production literacy, stand out as valuable collaborators capable of solving problems beyond their own



discipline. Building those skills early does not only guarantee you to make new friends but also is the key to your future in the industry.

Conclusion

Technical mastery remains essential, but it is amplified through human connection and process understanding. The ability to communicate effectively, work collaboratively, and comprehend both coworkers and the pipeline are not soft skills; they are production-critical competencies. For students in game development, design, and VFX, these form the foundation for sustainable, long-term success in a collaborative industry that thrives on shared creativity.



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CONFERENCE CONTRIBUTION – 14, DAY 2

HOW TO BREAK AND STAY IN THE GAME INDUSTRY, THE PHILOSOPHY OF CGSPECTRUM

RYAN LALLEY, *CGSpectrum College of Digital Arts and Animation, GREAT BRITAIN.*

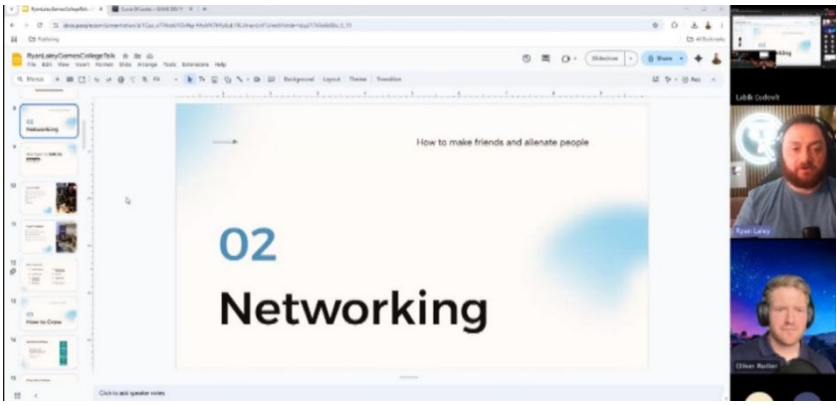
Abstract

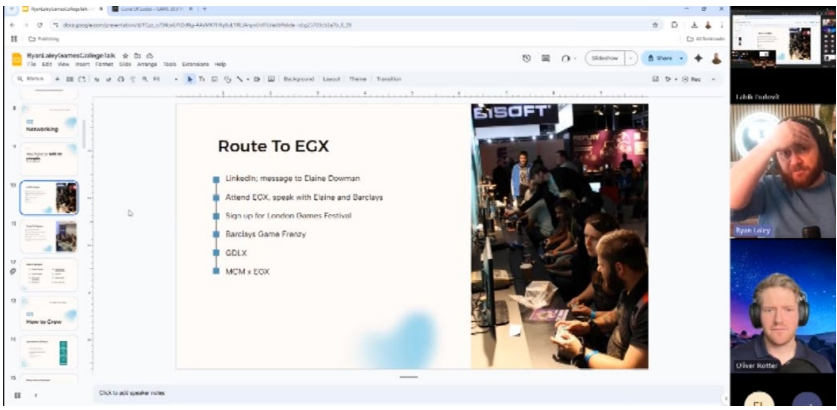
This presentation synthesizes key arguments and insights, reframing them within a structured academic narrative. The study emphasizes methodological clarity, interdisciplinary relevance, and practical implications for contemporary research and practice. Findings highlight the integration of digital tools, adaptive strategies, and critical evaluation of emerging approaches. The analysis underscores the importance of transparency, contextual awareness, and methodological rigor in shaping sustainable outcomes. Screenshots and external references complement the textual discussion, reinforcing credibility and depth of interpretation. The contribution is positioned as both innovative and pragmatic, balancing conceptual reflection with applied utility. Ultimately, the presentation demonstrates how structured academic inquiry can illuminate evolving challenges and opportunities in modern contexts.

Keywords

Innovation, methodology, applied research, digital transformation, interdisciplinary practice.

Introduction





The text post was created by AI based on a video recording from the conference.

This presentation addresses the intersection of methodological innovation and applied research within contemporary academic and professional contexts. The central aim is to reframe practical insights into a structured narrative that aligns with scholarly standards, while remaining attentive to the demands of real-world application.

The introduction situates the discussion within broader debates on digital transformation, interdisciplinary collaboration, and adaptive strategies for knowledge dissemination. By paraphrasing and synthesizing the original content, the presentation emphasizes the importance of methodological clarity, transparency, and contextual awareness.

The relevance of this work lies in its ability to bridge theory and practice. It demonstrates how academic inquiry can be translated into actionable frameworks that inform both institutional processes and professional practice. Furthermore, the presentation highlights the role of digital tools and critical evaluation in shaping sustainable outcomes, offering a model for applied scholarship that resonates across disciplines. Ultimately, the introduction establishes the foundation for a detailed exploration of methods, findings, and implications, positioning the presentation as both innovative and pragmatic in addressing contemporary challenges.

Background and Context

The presentation situates its analysis within the framework of CGSpectrum College, an institution recognized for its mentor-driven approach to digital arts education. Experiences from students highlight both the transformative potential of individualized guidance and the challenges of adapting traditional academic rigor to online formats.

Conceptual Framework

Drawing on the CGSpectrum model, the framework emphasizes adaptability, interdisciplinarity, and responsiveness to industry needs. The college's focus on one-on-one mentorship and project-based learning illustrates how theoretical principles are embedded in practice, aligning with Ryan's argument that education must remain flexible and context-aware.

Practical Application

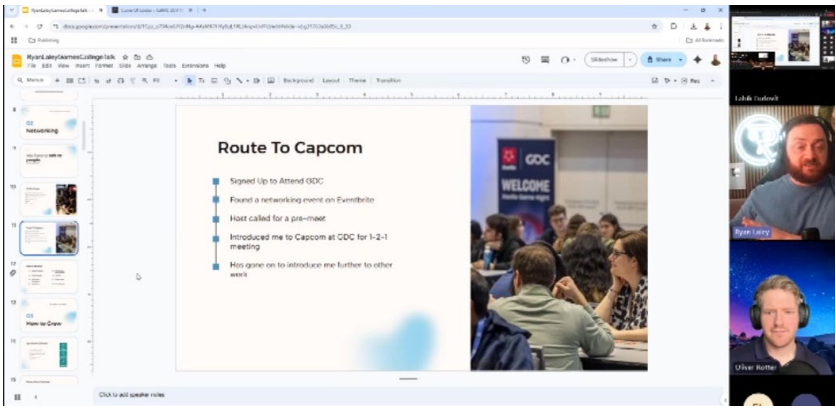
Student testimonials reveal how CGSpectrum's applied orientation enables learners to transition directly into professional roles. Case studies include individuals moving from unrelated fields into animation or game design within relatively short timeframes. Screenshots from the video, combined with external references to student projects, reinforce the practical outcomes of this approach.

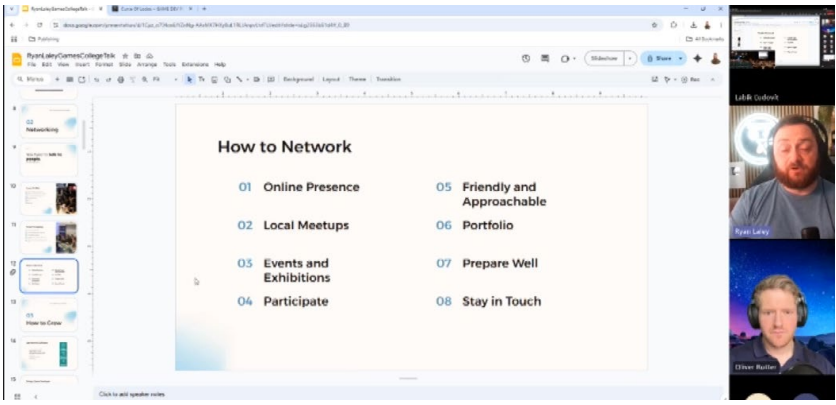
Analytical Process

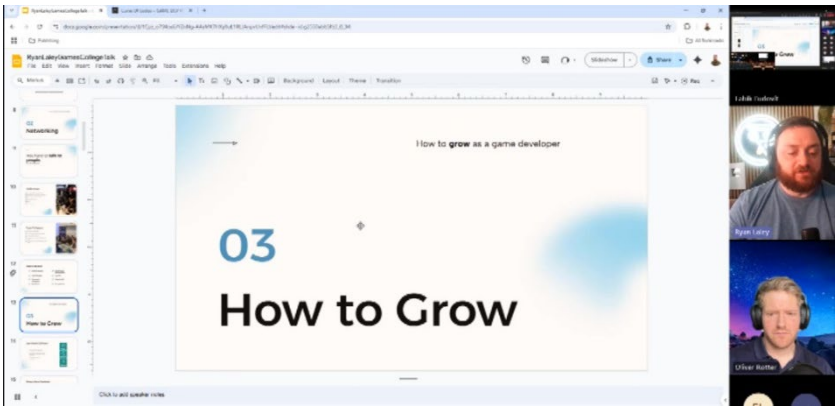
The presentation critically evaluates both strengths and limitations of the CGSpectrum experience. While mentorship and community engagement are praised, concerns about content depth and delivery formats are acknowledged. This balanced perspective underscores the importance of transparency and iterative refinement in educational design.

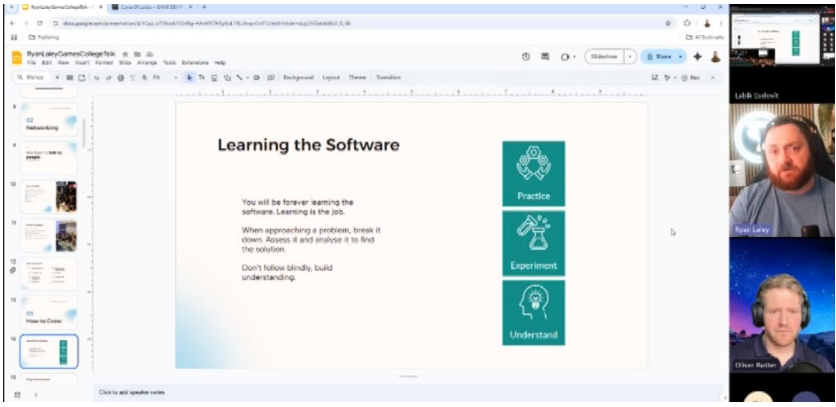
Discussion

The presentation's discussion centers on the implications of mentor-driven, industry-focused education as exemplified by CGSpectrum College. Experiences from students demonstrate how individualized guidance accelerates learning outcomes, enabling transitions into professional roles within animation, game design, and visual effects. This model illustrates the effectiveness of applied scholarship, where theory is consistently tested against practical demands.



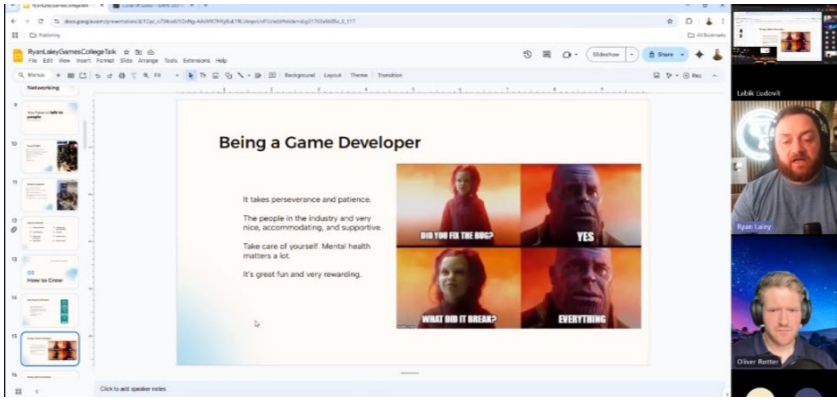


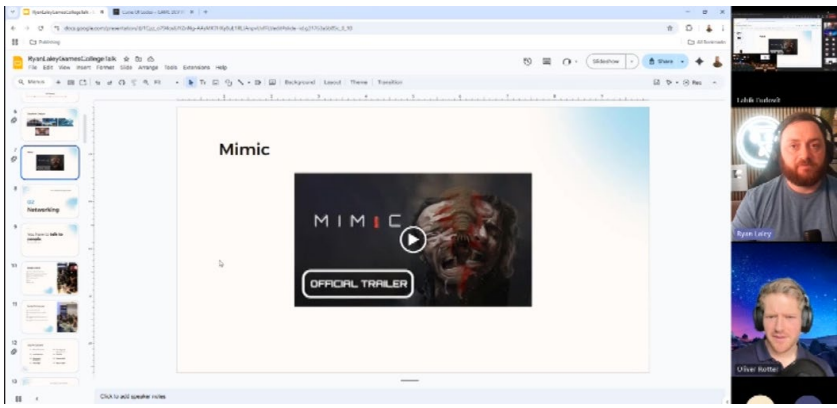




At the same time, the presentation acknowledges challenges inherent in online education. Concerns about limited depth of materials or compressed delivery formats highlight the need for iterative refinement. These reflections underscore the importance of transparency and responsiveness in educational design. By situating CGSpectrum's

practices within broader debates on digital transformation and interdisciplinary collaboration, the discussion emphasizes how adaptive strategies can sustain relevance in rapidly evolving industries.
Screenshots from the video, combined with external references to student projects, reinforce the credibility of these observations. They illustrate both the strengths of the CGSpectrum approach—such as mentor accessibility and project-based learning—and the areas requiring further development. This balanced perspective positions the presentation as a critical contribution to ongoing discourse about the future of higher education in creative industries.





Conclusion

The presentation concludes by affirming the value of integrating academic inquiry with applied practice. CGSpectrum College serves as a case study demonstrating how mentor-driven, project-oriented education can foster both professional readiness and scholarly reflection. The synthesis of theoretical frameworks with practical application highlights the evolving role of academic institutions in preparing students for industry challenges.
Ultimately, the presentation positions this model as both innovative and pragmatic. It balances conceptual depth with tangible outcomes, offering a blueprint for sustainable educational practices in digital and creative fields. By combining insights from video content with external references, the work underscores the necessity of transparency, adaptability, and methodological rigor. In doing so, it contributes to a broader understanding of how structured academic inquiry can illuminate pathways for future research and practice.

Questions and Answers

Q1: *What skills are most important for entering the game industry?*
Studios do not expect polished AAA-level skills from newcomers. They look for foundational knowledge, adaptability, and the ability to learn quickly on the job. Training and onboarding are always part of the process.
Q2: *How can students prepare for the volatility of the games industry?*
By cultivating adaptability and self-sustainability. Developers should be able to adjust to different workflows, scopes, and cooperative projects. Building resilience and flexibility is key.
Q3: *Why is networking emphasized so strongly?*
Networking opens doors to opportunities that would otherwise be inaccessible. Many jobs, collaborations, and even free exhibition spaces at major events come through personal connections. Building a LinkedIn presence, attending local meetups, and staying in touch with peers are essential.
Q4: *What role does a portfolio play in career development?*
A portfolio is a living document that evolves throughout a career. It must be continuously updated, refined, and tailored to industry expectations. It is one of the most critical tools for securing work and demonstrating growth.
Q5: *How can developers sustain themselves in the long term?*
By embracing lifelong learning, breaking down problems analytically, experimenting with tools, and persevering through setbacks. Mental health care and maintaining balance are equally important for longevity in the industry.

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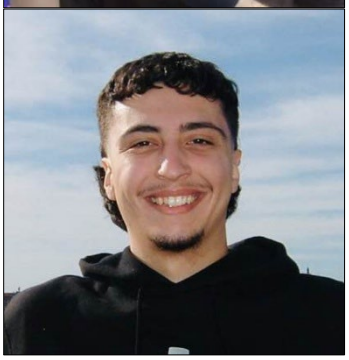
CONFERENCE CONTRIBUTION – 15, DAY 2

ALENTEJO: TINTO'S LAW©, WELCOME TO THE OLD ALENTEJO: PORTUGUESE SPECULATIVE DESIGN IN THE CLASSIC GAME BOY

IVAN BARROSO, *Game designer and educator, Lusófona University, Lisbon, PORTUGAL.*
VASCO OLIVEIRA, *Game's level designer, Lusófona University, Lisbon, PORTUGAL.*



Abstract

This paper examines the design and cultural function of the video game *Alentejo: Tinto's Law*©, developed for the Game Boy platform, focusing on its use of Speculative Design and engagement with Portuguese cultural memory. Given that the local game development scene in Portugal never managed to produce a title for the Game Boy during its commercial lifespan, *Alentejo: Tinto's Law*© employs Speculative Design to delve into this counterfactual history. The game, set in the Alentejo region, leverages the aesthetic and technological limitations of the classic Game Boy (a limited four-tone palette and low resolution) to create an intentionally anachronistic simulation. Its narrative and visual tone are heavily influenced by the classic Spaghetti Western genre and specific 1990s Portuguese media, notably the local television series *Alentejo Sem Lei* (RTP, 1991). The work functions as a Speculative Design object, presenting a "what if" scenario that abstracts the region's socio-economic realities (such as land ownership and local legal frameworks) into core gameplay loops. Crucially, the game's themes, including elements of Portuguese nostalgia and the romanticisation of the rural landscape, are framed as critical explorations of national identity and the collective memory of the pre-digital era. The study argues that *Alentejo: Tinto's Law*© uses the Game Boy as a medium for counter-factual history, establishing a dialogue between obsolete hardware and contemporary debates surrounding Portuguese heritage, technological modernity, and localized game design.

Keywords

Games studies, Speculative design, regional game development, Game Boy, Alentejo: Tinto's Law.

Introduction

Alentejo: Tinto's Law© is an independent video game developed by the Portuguese Loading Studios for the classic Game Boy (see fig.1). An unusual platform for contemporary Portuguese game development, given that no commercially released title was ever produced in Portugal during its active lifespan. The game functions not simply as a retro-inspired project but as a Speculative Design object that reimagines an alternative past: What if Portugal had created a Game Boy title in the 1990s?

Set in a stylised 19th-century version of the Alentejo region, the game blends Spaghetti Western aesthetics, local cultural references, and Portuguese 1990s media influences, most notably the local Western television series *Alentejo Sem Lei* (RTP, 1991), through its narrative and mechanical structure, which includes trains, outlaws, contraband, puzzles, exploration, and a narrative evoking resistance against the local

Fig. 1. Alentejo: Tinto's Law screenshot.

outlaw monarchy (Baron Tinto). The work creates a hybrid world where historical fiction meets playful counter-history. This article examines the project as a form of Speculative Design and argues that *Alentejo: Tinto's Law*© uses the Game Boy as a medium to stage critical reflections on nostalgia, regional identity, technological memory, and the imaginaries of Portuguese heritage.

Speculative Design

Speculative design is a critical approach that utilizes design artefacts to explore and materialise hypothetical, alternative, or counter-factual worlds. Rather than adhering to the traditional function of design, which is typically to solve immediate, practical problems for clients or consumers, Speculative Design creates objects, systems, or scenarios that primarily serve to provoke reflection, critique, and discussion.

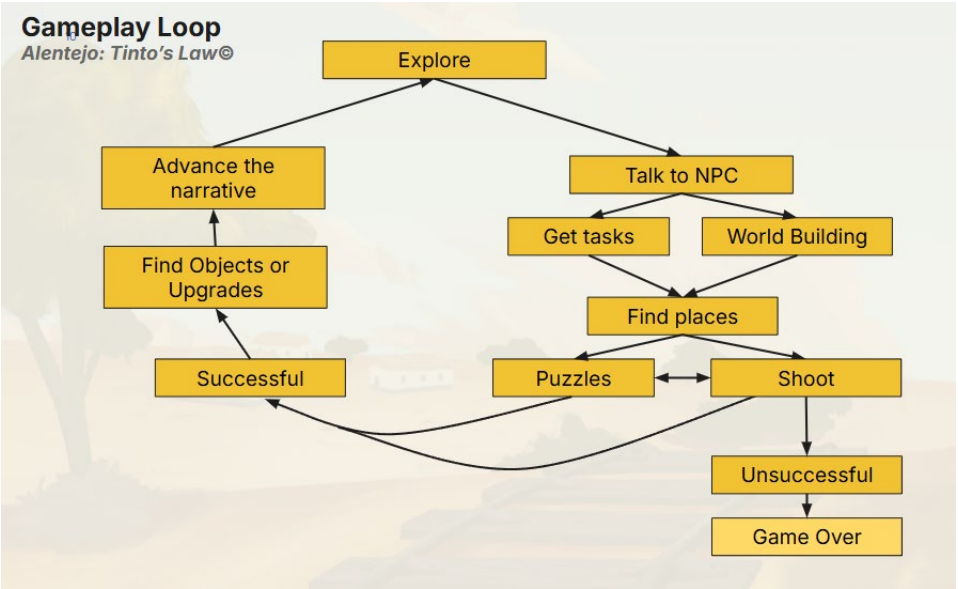
This creative approach (and particularly its application as backward speculation) is defined by Tseng (2022: 22) as a methodology that "uses the cultural context produced by the past timeline as a source of materials to reflect the current reality and develop a possible world using design language." It focuses on reinterpreting historical cues to illuminate present concerns and prompt critical reflection. Hannas (2019) similarly posits that Speculative Design "chooses different historical narrative environments and re-examines elements of history to influence the present by loosening the past standpoint." From this perspective, the resulting design artefacts function as cultural interventions that interrogate how the past is remembered, constructed, or mythologised. While Mitrović et al. (2021: 70) situate Speculative Design within a broader constellation of critical practices (including Critical Design, Design Fiction, Discursive Design, and Interrogative Design), underscoring its role as a reflective, conceptual, and culturally engaged mode of creative production. This orientation aligns with wider discussions in European game studies, where scholars emphasise the need to understand the "Europeanness of games made in the continent, to interrogate them from many different European perspectives and traditions, and to problematise this cultural space as something different from America and Japan without reducing it to a false homogeneity" (Navarro-Remesal & Pérez-Latorre, 2021: 30). Speculative Design thus becomes a valuable framework for exploring how local European histories, identities, and cultural imaginaries can be articulated through game design in ways that resist simplistic or homogenised readings of European creative production.

In this context, *Alentejo: Tinto's Law*© functions as a backwards-speculative artefact; it retroactively fabricates a Portuguese Game Boy game by deliberately drawing upon regional heritage, Spaghetti Western tropes, and 1990s Portuguese media to construct a powerful instance of a past that never was.

Overview: Building a Counter-Factual Game Boy Past

The conceptual foundation of *Alentejo: Tinto's Law*© emerged from a fundamental question rooted in Speculative Design: "What if Portugal had made a Game Boy game in the 1990s?" Influenced by the Portuguese television classic, such as *Alentejo Sem Lei*, the game is compatible with original Game Boy hardware and contemporary retro consoles. Working within the four-tone palette, low resolution, and hardware limitations of the Game Boy, the design deliberately embraced intentional anachronism. The visual style, narrative design, and interface successfully recreate a fully functioning, Game Boy-compatible 1990s cartridge (Game Boy, Game Boy Pocket, Game Boy Colour and Game Boy Advance), while simultaneously delivering a fictional story set in the 19th-century Iberian Peninsula. The game was also distributed in a digital ROM file, making it compatible with any Game Boy emulator.

Fig. 2. Alentejo: Tinto's Law Gameplay Loop.



Players follow Gildo, who assembles a gang to resist Baron Tinto's oppressive rule, exploring distinct environments including

rural landscapes, mines, caves, and cross-border territories. The juxtaposition of Western tropes and regional folklore constructs a playful yet critical vision of Alentejo's history and socio-economic imaginary. Through this speculative scenario, the game abstracts regional and historical issues (specifically land ownership, legal authority, and rural power structures) into core gameplay loops involving exploration, combat, puzzle solving and local interactions (see fig.2). By framing these themes within a nostalgic retro medium, *Alentejo: Tinto's Law*© critically engages with the collective memory of the pre-digital era, questioning how Portuguese identity and rural heritage are represented, idealised, or romanticised.

Audience and Reception

The project was developed using Rational Game Design, including audience studies, market research, design research and player expectations analysis. This informed its mechanics, pacing, and hybrid genre: Action-Adventure, Exploration, Puzzle, and RPG, with an estimated playtime of 60–80 minutes. The game supports seven languages and maintains broad compatibility across Game Boy systems. Reception was strong among collectors, retro-enthusiasts, nostalgia-driven audiences, and local and international media (see fig. 3), generating more than 500,000 views, 10,000 likes, over 2,000 comments, and coverage by more than 200 channels. Critics praised the game's setting, theme, narrative, and visuals, while the less positive criticism was centred on the limited exploration of musical themes and combat systems. However, some also praised the game for being a faithful interpretation of the Game Boy medium, for how it reflected Portuguese contexts, and how it could really have been produced during the 1990s (somehow filling the historical void).

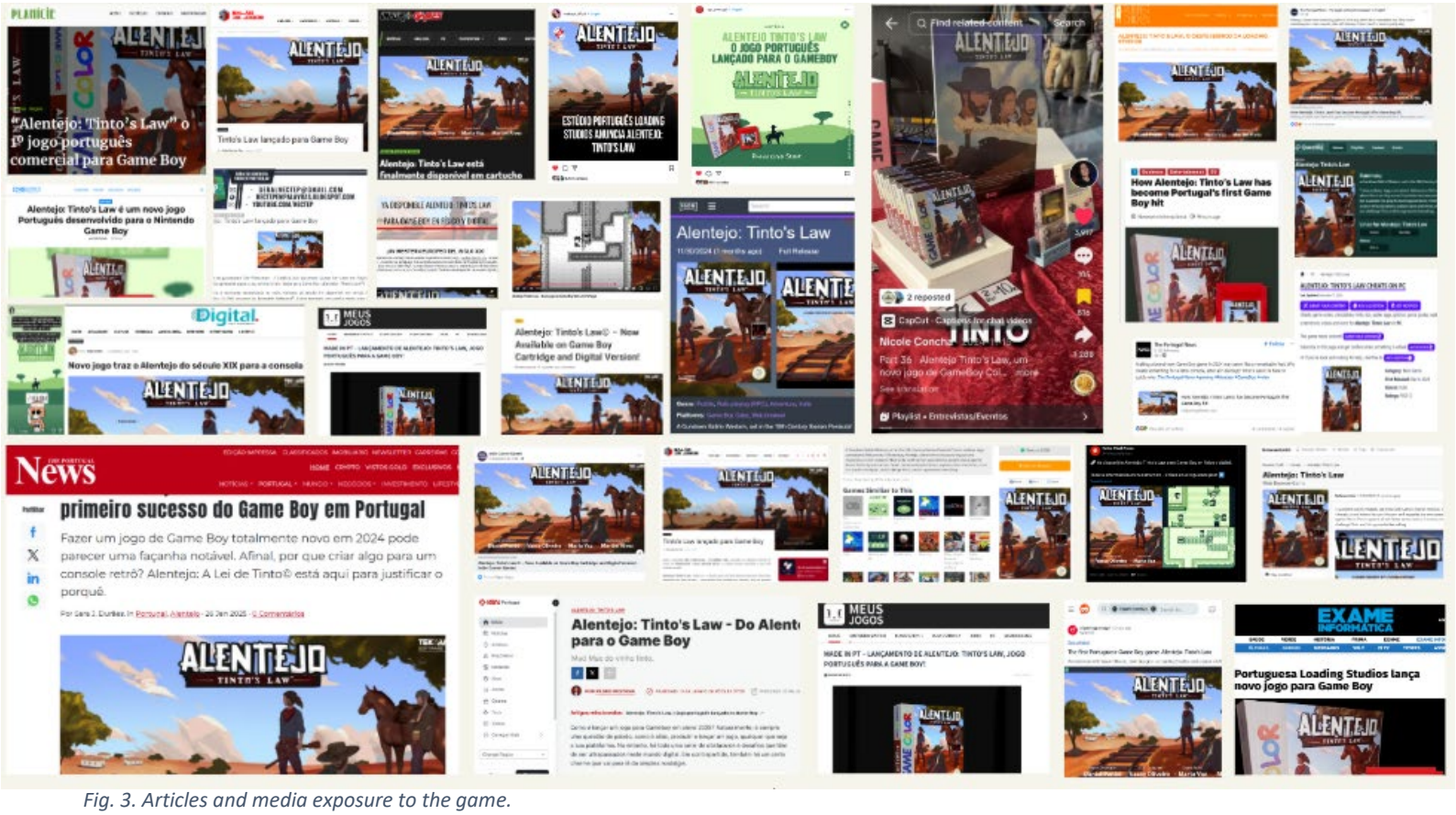


Fig. 3. Articles and media exposure to the game.

Despite its conceptual strength, the project encountered several logistical and developmental challenges. These included stock shortages resulting from unexpectedly high consumer demand, as well as localisation gaps, particularly during early public showings when only the Portuguese version was available. Furthermore, the development team faced initial optimisation issues, manifested through simplified retention loops and inefficiencies within the initial art and code execution. Notwithstanding these difficulties, the strong cultural footprint generated by the game's launch and reception clearly indicates a high degree of resonance within its target communities.

Conclusion

Alentejo: Tinto's Law© demonstrates how speculative design can be intentionally mobilised to create a counter-factual history of Portuguese game development. By imagining a Game Boy title that never existed, the project bridges obsolete hardware with contemporary cultural debates surrounding heritage, regional identity, and technological memory.

Its application of speculative design, drawing from backward speculation and critical reinterpretations of media history, illustrates how games can function as cultural artefacts that question dominant narratives, reactivate regional imaginaries, and explore alternative trajectories of technological modernity in Portugal. It also engages with ongoing discussions surrounding European video game development, legacy and heritage.

Ultimately, the game stands as both a playful homage to the Game Boy era and a critical re-examination of the Portuguese game development context and localised game design practices, illustrating how speculative approaches can enrich the cultural and historical relevance of contemporary independent games.

Disclosure of Interests

The authors declare no potential competing interests on the scope of this research. This article was proofread and edited for language clarity using Grammarly and Generative AI tools. These tools were employed solely for linguistic enhancement, without impacting the content, arguments, or conclusions. All the used images belong to both authors. The authors, for whom English is not the primary language, retain full responsibility for the work's intellectual integrity.

Questions and Answers

Q1: *What inspired you to create a Game Boy game set in Alentejo?*

The idea came from imagining what Portugal might have produced in the 1990s if console development had started earlier. Western-style stories from Portuguese media and the nostalgic atmosphere of Alentejo provided the perfect setting for a "spaghetti western" in the Iberian Peninsula.

Q2: *Why did you decide to release both digital and physical versions?*

While the digital version was accessible, collectors and retro enthusiasts strongly value physical cartridges, maps, and manuals. The physical edition created far more demand and resonated with nostalgic audiences.

Q3: *What challenges did you face during development?*

Managing physical stock was difficult, as boxes had to be handmade. Localization was initially limited to Portuguese, which restricted audiences at international events. Cartridge optimization was also a challenge due to the small memory size, requiring careful sprite and text management.

Q4: *What went particularly well in the project?*

The game received organic publicity through TikTok, streamers, and major websites like IGN, without paid advertising. Collaboration with a Portuguese retro publisher enabled a successful physical release, which collectors embraced enthusiastically.

Q5: *What are your future plans for the project?*

Due to strong demand, the team is developing a sequel titled *Alentejo: The Tinto & the Ugly*, expanding on the concept with new characters and stories while keeping the retro cartridge format.

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NOT ALL HEROES FIGHT

ALEXANDER KAUCH, *academic tutor, project mentor, collector of old games, POLAND.*

Abstract

Creating a game that tells a story about war from the civilian point of view was not an easy task. Most existing games focus on soldiers or at least people capable of changing the course of war. Our goal was different - to show that war happens to regular people changing their lives forever. Ordinary people, that you meet every day in a besieged city with little to no help.

The design principle was to convey the bleak, survival focused existence through entertaining gameplay mechanics. We achieved that by tailoring all of the game systems and aesthetics to one coherent vision. Starting with basic survival and gathering resources through storytelling and emergent narration ending with the choice of main characters and their appearance.

This paper describes all the major decisions made throughout the development that lead to a unique and highly acclaimed experience of “This War of Mine”.

Keywords

Game Design, anti-war, emergent narrative, ethical design, survival mechanics.

This War of Mine

Figure 1 - A story about war from the civilian point of view.

- Created by 11 bit studios
- Released in 2014
- Developed by a team of around 30 people
- Around 2,5 years of development

- Over 7 million copies on all platforms
- Won over 100 awards round the world
- The first video game in history that is included in a core curriculum of Polish national education system

Humble Beginnings

The idea for the game came from articles about the siege of Sarajevo in 1992-1996. The besieged city was cut off from any help for a long time (aside from humanitarian airlifts). People living there were in a constant state of danger, lacking even the most basic resources. Moreover it was not safe to move around the city in bright daylight because of snipers' threat, so all activities happened during the night.

We did a lot of research on various conflicts happening during the '90s and '00s focusing on destroyed or captured cities. This directly affected the art style of the game although we put great care not to be associated with any particular conflict. Stories of people surviving the war also had a huge impact on the game as these extreme circumstances brought both - the worst and the best of human behaviours. We also consulted with war survivors for their experiences.

Figure 2,3,4,5 - The idea for the game came from articles about the siege of Sarajevo in 1992-1996.

The first prototype (fig. 6 & 7) of the game focused purely on the base mechanics: taking care of the characters and shelter during the day and going out for resources during the night. The day and night circle worked really well gameplay-wise. The core principle was that the player never has enough resources to take care of everything so they need to make difficult decisions every time.

We also wanted to test the "needs mechanic" and how they work separately from core gameplay. This mechanic managed characters' hunger level, warmth, medical condition etc. It was more efficient to create a second prototype (fig. 8) just to work on that feature. The point was to quickly iterate over items needed, actions made during the day and their effects on characters' statistics.

When both prototypes proved themselves we had core gameplay mechanics to build upon. Of course we needed to implement them together creating the first playable of the game (fig. 9). The preproduction phase was over.

Figure 6 - prototype 1 without art style.

Figure 7 - prototype 1 with first art style iteration.

Figure 8 - prototype 2, character statistics.

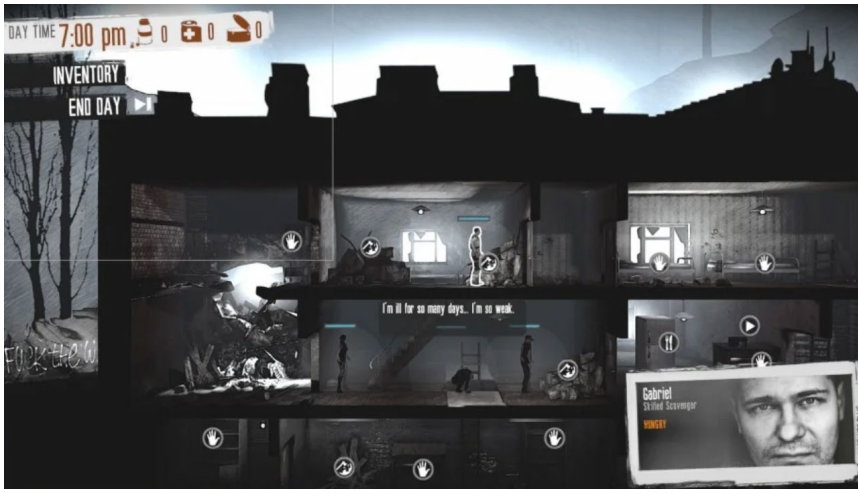


Figure 9 - first playable (post process filter disabled).

The missing piece

The game worked really well. Building things in the shelter was fun, taking care of the characters' needs was satisfying, scavenging was fun especially with stealth mechanics and NPC's AI. We added simple combat mechanics with items like guns, armour and ammunition. Also shelter devices had many upgrades and constructing them felt great.
It worked!

Unfortunately, we came to a conclusion that the game plays like "Sims in war". The player focused on gathering items for shelter devices and combat to have new toys to play. Even making the game harder with fewer resources did not reflect the extreme conditions of a ruined and besieged city. This was not what we had intended to create. There was no emotional impact of player actions, only survival.
We needed stories.

We wanted to present how war affects everyday life. How people react to brutality, poverty and constant state of danger. It was crucial to show how the player's decisions, driven by gameplay mechanics, change the world around them. We also wanted it to be emergent and use as little "fixed" events as possible.

Our guiding sentence for all the stories was *"War always happens at somebody's doorstep"*. In the city, every military engagement happens on the streets, inside civilian buildings, schools and playgrounds, in front of somebody's house. Players needed to stop thinking just about resources and survival and experience the consequences of their actions.

The first story that actually managed to fulfill our requirements was a story happening in a small quiet house on the outskirts of the city. An elderly couple lived there taking care of each other and surviving by helping and getting help from neighbours. The player enters this house at night during one of the scavenge runs. He is greeted by an old man who immediately understands that this is a robbery and he has no chance of stopping it. All the old man does is begging to leave them alone or at least leave the medicines for his sick wife.

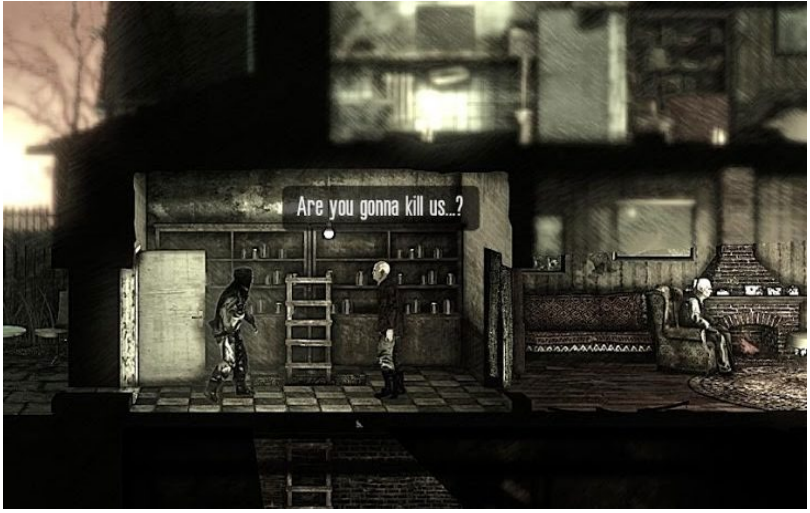


Figure 10,11 - Story via gameplay decisions with visible consequences.

Of course, the main motivation of the player is to gather as many resources as possible. While going through the house he sees an old lady sitting on an old armchair. It's impossible to take everything from the old couple in a single visit which means the player is very likely to come back. If they had taken the meds and return they do not meet the old man at the door and sweeping the house reveals that that he old lady died because of her illness and the old man committed suicide whith nothing else to live for.

The emotional impact of this story became the gold standard for all the stories in the game. It worked well because it was not driven by any scenario but solely on the player's natural instinct. That poor elderly couple showed that we can tell a story via gameplay decisions with visible consequences.
We knew that we had something unique in our hands.

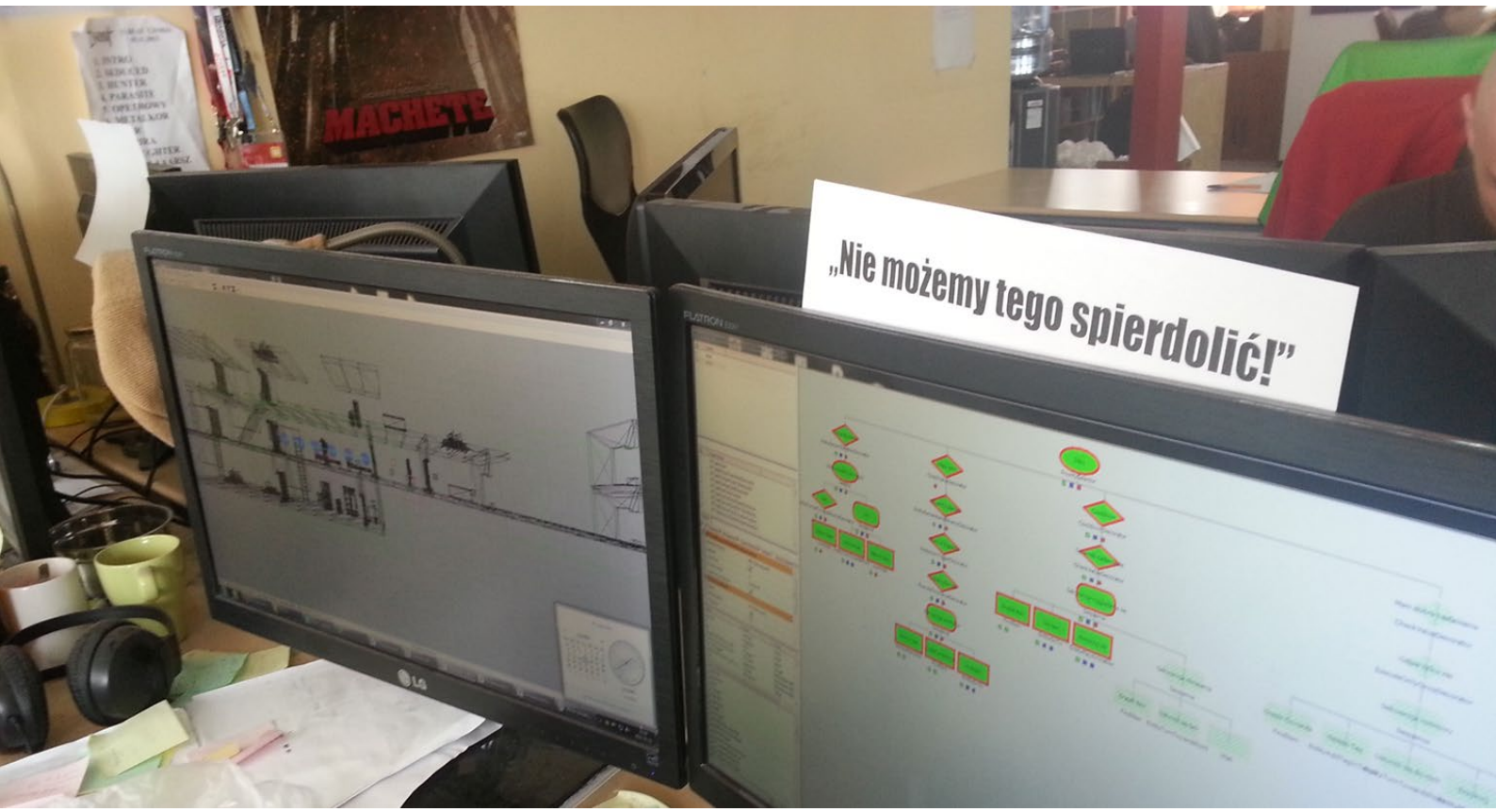


Figure 12 - "We can't fuck it up" sticker on every developer's monitor.

Core principles for all the stories in the game were:

- Do not judge the player
- Show consequences of player's actions
- Focus on the tone
- Depict ordinary people trying to simply survive
- Do not directly address any real-life conflict
- Stand with the message "War is always horrible"

Ordinary people

Figure 13 - In war not everyone is a soldier.

The game is about ordinary people in extreme circumstances. All the characters in the game had to reflect that idea in order to be believable. Therefore, we didn't use any professional actors or models to portray them. We did it ourselves by taking photos of the development team, their families and friends. These faces weren't meant to be unique, memorable or recognizable but they had to be real.

Figure 14,15 *– Kinekt.*

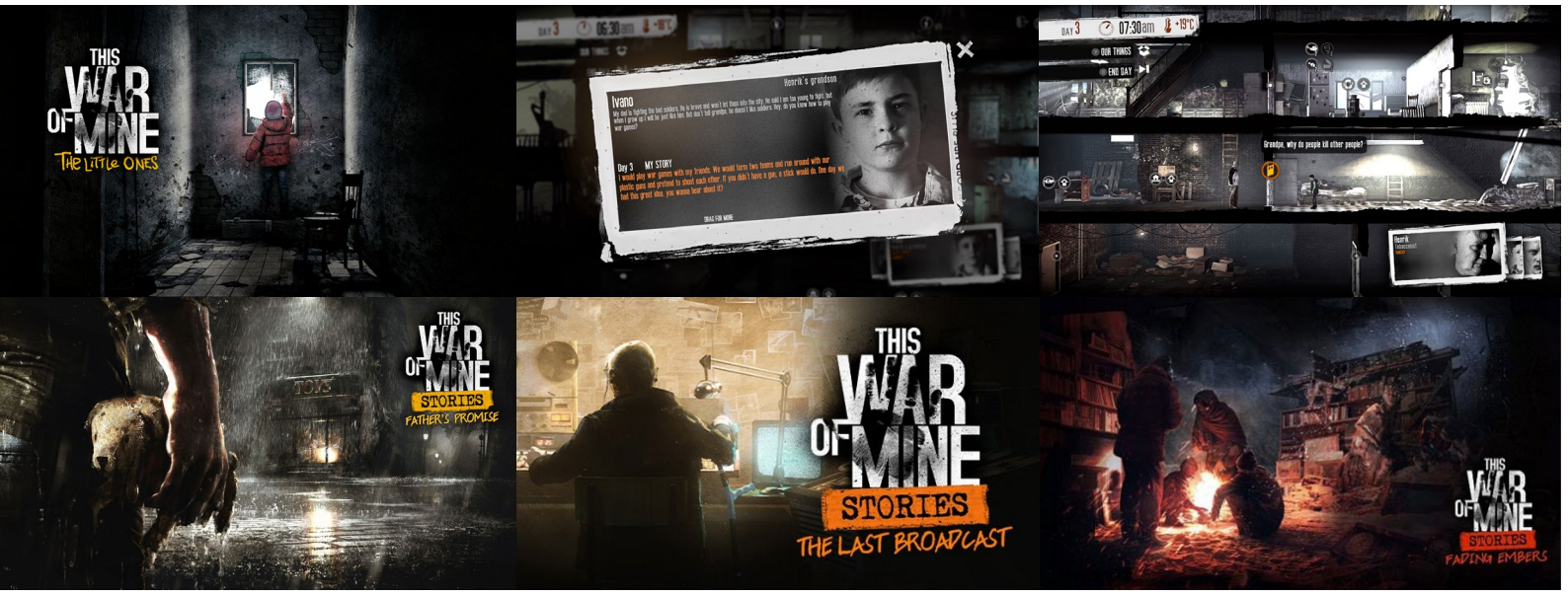
Figure 16,17,18 – Kinekt. The process of creation.

Main characters in the game come from various backgrounds and have skills that can be useful or totally useless for survival. There's Anton - a skilled math teacher, Roman the deserter, a chef called Bruno, or Emilia - a lawyer. They also react differently to all the atrocities around them. Some are resilient enough to withstand that, others are getting more and more dark, upset and depressed. Up to a point of suicide.

As any extreme conditions, war not only unleashes flaws of humanity but also its virtues. We wanted to reflect that in the game, so the player encounters various people that want to help others or at least to coexist peacefully, keeping what's left of ordinary life. There are neighbours looking for help and offering it, people seeking refuge or taking care of others. However, the result of each meeting is always in the player's hands.

A year after release we created a DLC - "The Little Ones" - adding children and elderly people as playable characters. Once again we used our own kids, parents and grandparents as a reference for them. We didn't want to depict any violence towards children, so they needed special treatment - for example when their state is critical they do not die but are taken by the neighbors who help them. Sometime later we added more story-driven expansions about a personal tragedy, broadcasting news in war and preserving cultural heritage.

Figure 19 - This War of Mine DLCs.



Impact

From the very beginning we wanted the game to actually help real people, who experience the horrors of war. We started collaboration with War Child charity by releasing a “War Child” DLC with 100% of our income helping children in warzones. Immediately after Russian aggression on Ukraine we donated all income from the game raising $160 000 for the victims of war. Our anniversary DLC “Forget Celebrations” was also released with all income donated to War Child, Amnesty International Liberty Ukraine Foundation, and Indie Games Poland. Overall the game raised around $1 000 000 for various charities.

In that, the game is a hero by itself.

The reception of This War of Mine was overwhelmingly positive. Players and reviewers mentioned the unique feeling of the game and unusual approach to depicting war in general. Metacritic score is stable at 83 with critics pointing out exposition of the horrors of war, meaningful decisions and merging gameplay mechanics with the story. The game won over 100 awards including Best of PAX, Independent Games Festival Audience Award, SXSW Matthew Crump Cultural Innovation Award and Digital Dragons’ Best Polish Game Award. It was also appraised as a cultural phenomenon with Amnesty International Human Rights Game Award and Game4Change Best Gameplay & People’s Choice Award.

“This War of mine” is also the first video game in history that is included in the Polish core curriculum. Various schools and universities around the world use the game in their ethics and culture classes. Art galleries and museums include it in their expositions including Museum of Modern Art in New York, MO Museum in Vilnius and The Art of the Game in Bukarest, Museum für Gestaltung in Zürich. It is still recognised worldwide even 11 years after release.

Questions and Answers

Q1: *What has changed the most in game development during your career?*
The greatest change is the variety of topics and genres. While core mechanics were established years ago, today games explore a much wider range of themes — from light entertainment to serious, emotionally challenging narratives.
Q2: *Were the mechanics of This War of Mine inspired by real survival strategies?*
Yes. Scavenging at night was based on real accounts from Sarajevo, where civilians avoided snipers by moving after dark. Other mechanics included the mental state of survivors, stealth to avoid bandits, raids on shelters, and visits from neighbors who could either help or ask for assistance.
Q3: *How did you conduct research for the game?*
The team studied the siege of Sarajevo extensively, consulted an actual survivor, and read numerous articles and books about different wars, including World War II and conflicts in Asia. This ensured the atmosphere and message were authentic and respectful to those who lived through such experiences.
Q4: *Did you portray emotions through faces and body language in the game?*
Due to budget constraints, detailed facial animations were not possible. Instead, emotions were conveyed through still photographs, implied scenes, and gameplay decisions. This approach avoided unintentional humor and maintained the serious tone. Some animations implied violence or distress, but without graphic detail, focusing instead on the emotional impact.

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CONFERENCE CONTRIBUTION 1
CONFERENCE CONTRIBUTION 5
CONFERENCE CONTRIBUTION 9
CONFERENCE CONTRIBUTION 13
CONFERENCE CONTRIBUTION 17

CONFERENCE CONTRIBUTION 2
CONFERENCE CONTRIBUTION 6
CONFERENCE CONTRIBUTION 10
CONFERENCE CONTRIBUTION 14

CONFERENCE CONTRIBUTION 3
CONFERENCE CONTRIBUTION 7
CONFERENCE CONTRIBUTION 11
CONFERENCE CONTRIBUTION 15

CONFERENCE CONTRIBUTION 4
CONFERENCE CONTRIBUTION 8
CONFERENCE CONTRIBUTION 12
CONFERENCE CONTRIBUTION 16

CONFERENCE CONTRIBUTION – 17, Appendix

EXTENSION OF THE CATEGORIES OF NOMINATIONS FOR THE CILECT STUDENT AWARD

ĽUDOVÍT LABÍK, *Head of the Visual Effects and Game Design Department, FTF VŠMU, Bratislava, SLOVAKIA.*

Abstract

The article proposes an expansion of the CILECT Student Award nomination categories to better reflect the diversity of film and media disciplines taught across CILECT member schools. It highlights the need for global student motivation and recognition beyond directing, documentary, and animation. The text argues for including all major film professions, contemporary media fields, game development, immersive formats, and AI-based artistic work. It outlines how new categories would support fairness, strengthen student motivation, and align education with emerging technologies. The proposal emphasizes decentralization of evaluation, formation of professional groups across schools, and a shift toward awarding professions rather than isolated school projects. Practical guidelines are provided for nomination criteria, documentation, and evaluation procedures. The article notes the organizational, financial, and structural implications of the expanded system. Ultimately, the initiative aims to build a more inclusive, globally connected creative community within CILECT and address future challenges such as AI ethics and technological innovation.

Keywords

CILECT, education, quality, evaluation, FTF VŠMU, visual effects, game design.

Introduction

Today, CILECT brings together 180+ film and media schools in 64 countries around the world, which together employ more than 11,000 educators and professionals and educate approximately 90,000 students every year. The organization's alumni network exceeds 1.6 million people, representing significant global potential in media production, education, and cultural dialogue.

These facts point to the extensive, but still untapped possibility of connecting different cultures, experiences and artistic approaches, which could serve to promote humanistic values, protect the weaker and take a responsible approach to the environment.

Fig. 1. CILECT Congress in Guadalajara, Mexico.

The annual congress of CILECT member schools was held in Guadalajara, Mexico in 2025. In addition to a rich professional program, three committees met:

- Standing Committee on Equity, Diversity & Inclusion (SCEDI)
- Developing Technologies' Standing Committee (DTSC)
- Standing Committee on Sustainability (SCS)

where within the Developing Technologies' Standing Committee I was entrusted with developing a concept primarily on the topic of awarding student projects in Game Design. The concept of a single award gave rise to the complex idea of a concept with a far-reaching future scope.

Fig. 2. The ever-present Mexican folklore during the CILECT congress.

The need for global motivation

The motivation of students to achieve excellent results is mainly based on recognition and success, which can lead to professional application. Although students often do not think about awards when creating, an important motivating factor is the awareness of the possibility of international recognition.

The motivation of students should not remain only at the regional or national level. Students should feel that their work is visible, valued, and valued in a global context, and that they can actively engage in international discussions, comparisons, and collaborations.[3]

Expansion of nominations

The current categories, directing, documentary film and animation, are important, but they do not encompass the full range of artistic and professional disciplines that are developed at CILECT schools.

The proposal to extend the categories therefore envisages:

· Include all major film professions in the nominations: cinematography, editing, sound, production, visual effects, production design, dramaturgy, theory and research (including PhD students).

· Add new categories reflecting contemporary media: digital art, web formats, interactive media, game design, VR/AR, and immersive storytelling.

· To take into account emerging areas such as drone art or the **use of artificial intelligence.**

Such an extension will ensure inclusiveness and fairness towards all professional groups.

The challenge of artificial intelligence

By 2030, personalised learning will become the norm. Media schools will be transformed into centers of experimentation, where teachers will give fewer lectures. Tests and grades will gradually disappear – they will be replaced by implemented projects.

With the advent of artificial intelligence in artistic creation, there is an urgent need to reflect on its role in the assessment of CILECT. AI is becoming a full-fledged tool for artistic practice, not just a technical supplement. That's why it's important to create separate categories for AI-powered projects, whether fully generated or hybrid, where students combine their own creation with AI.

Such categories will promote critical thinking, ethical thinking and transparency when working with new technologies.

Fig. 3.Presentation of FilmEU with a slide of Studio VFXHD at the Academy of Performing Arts in Bratislava.

[3] Motivation and experience of students at the local level. Film students are extremely motivated, especially if we compare them with students of technical, natural sciences, humanities... Their current motivation for creating art is mainly oriented towards local goals – knowledge of the domestic professional environment, domestic application without looking for global world topics (which is a prerequisite for opinion isolation). In Europe, interest in the global space is gradually growing thanks to initiatives such as the FilmEU+ Alliance or GEECT.

Pre-designed categories and security

Categories for a specific school year are confirmed by a questionnaire of schools expressing interest in the school's own educational activities.

The following categories are proposed:

Film categories

Well.	Category	Documentation
1	Directing a Feature Project	Project, Critical Decision Analysis
2	Directing a Documentary Project	Project, Critical Decision Analysis
3	Directing an Animated Project	Project, Critical Decision Analysis
4	Screenwriting and Dramaturgy	Project, Scenario, Critical Decision Analysis
5	Cinematography	Project, making of
6	Visual Effects	Project, making of[4]
7	Editing	Project, Critical Decision Analysis
8	Sound Design	Project, Technical-artistic analysis of sound
9	Production Design	Project, ADD (Art Design Document)
10	Commercial Film	Project, making of
11	Music Video	Project, making of[5]
12	Videomapping	Video recording of the event[6], original video[7]
13	Experimental Film	Video recording of the event[8], ADD
14	Film and Media Theory (PhD.)	Scientific text
15	Producing	Video project, critical analysis of decisions, budget with commentary, festival applications

Game design – Game development

Well.	Category	Documentation
1	Directing and organizing the creation of a game work	Walkthrough[9], playthrough[10], making of[11]
2	Character Design, Environmental Design	Walkthrough, GDD (Game Design Document)[12], ADD (Art Design Document)
3	Programming, Game Mechanics	Walkthrough, script files, comments in code, code version in git repository

[4] https://www.avfx.sk/en/kategoria-prace/making
[5] https://www.avfx.sk/sites/default/files/field_video_subor/2025-09/AVFXHD_2025_Kozak_Michal_BC_projekt_Asylum.mp4
[6] https://youtu.be/Vr2WfC5bcug
[7] https://youtu.be/koXg5bse8fw
[8] https://www.avfx.sk/sites/default/files/field_media_video_file/2022-04/AVFX_2018_Jakub_Zuscin_Circle%20of%20Light_prezentacia_2.mp4
[9] https://ahd.avfx.sk/sites/default/files/field_media_video_file/2025-06/UTS_demo_3.mp4
[10] https://ahd.avfx.sk/sites/default/files/field_media_video_file/2025-06/03_2025_AHD_LS_Playthrough_3_Vojtech_Novotny.mp4
[11] https://ahd.avfx.sk/sites/default/files/field_media_video_file/2025-06/makingof.mp4
[12] https://ahd.avfx.sk/2-projekty/gdd-add

4	A game Project in a Public Space (Drone Art)	Walkthrough, video recording

Artificial intelligence

Well.	Category	Documentation
1	Artificial Intelligence	Project[13], making of[14], critical analysis of decisions

· The decisive criterion for inclusion in the category is the Artificial Intelligence generated image.
· Evaluated criteria: creativity and authorial input, technical quality and processing, ethics and transparency, cultural and social context, didactic and research value.
· In the future, AI categories can be expanded as needed.

Immersive storytelling

Well.	Category	Documentation
1	Virtual Reality	Playthrough, ADD (Art Design Document)
2	Augmented Reality	Video, source code and scripts, SDKs and frameworks used, git repository version of the project, configuration of sensors and cameras
3	360° video	YouTube
4	Digital installations	Video, ADD
5	Surround Sound Systems	Audio and video recording of the event

Digital video, photography and web formats

Well.	Category	Documentation
1	Short films, web series, vlogs	Project, Critical Decision Analysis
2	Social Media	YouTube, TikTok..., project, Critical Decision Analysis
3	Photography	Project, Critical Decision Analysis[15]

Right to nomination

Every school with the status of a member has the right to be nominated. Although not all schools have yet used this right, it is expected that the number of schools with nominations will increase.

The dynamics of expanding categories

At the beginning of the school year, there is a smooth and organizationally undemanding expansion of categories. When each school expresses through a questionnaire which categories it wants to occupy in the nominations. If **at least 5-10 schools are interested in a certain category**, the nomination is opened and the school undertakes not only to occupy the category, but also to evaluate the category. The school does not evaluate its own nominations. Not all categories open every year[16].

Evaluation of projects

· The evaluation of projects is carried out exclusively by those schools that nominate their works in the given category and at the same time supplement the evaluation criteria. Only the school that submits its evaluation for the other nominated projects has the right to evaluate.
· Within each school, the categories are evaluated by those organizational units (departments) that nominate projects in the given category.

[13] https://www.avfx.sk/sites/default/files/field_video_subor/2025-01/AVFX_2025_VFX_pre_ine_ateliery_Ferko_Marian.mp4
[14] https://ahd.avfx.sk/sites/default/files/field_media_video_file/2024-01/AHD_2024_TvorbaHernehoDizajnu_MakingOfPortrait_Sharha.mp4
[15] To determine the categories, the assigned Questionnaire is more accurate.
[16] The fewer schools there are, the higher the nomination fee for schools. And the launch of the competition category depends on the consent of the schools to finance the costs associated with the category. The total nomination costs are approximately 2000-2500 EUR.

· Consequence of non-compliance with the deadline. If the evaluation of projects does not come within the set deadline, the relevant service loses the right to evaluate its own nominated work[17].

Nominated projects as part of teaching

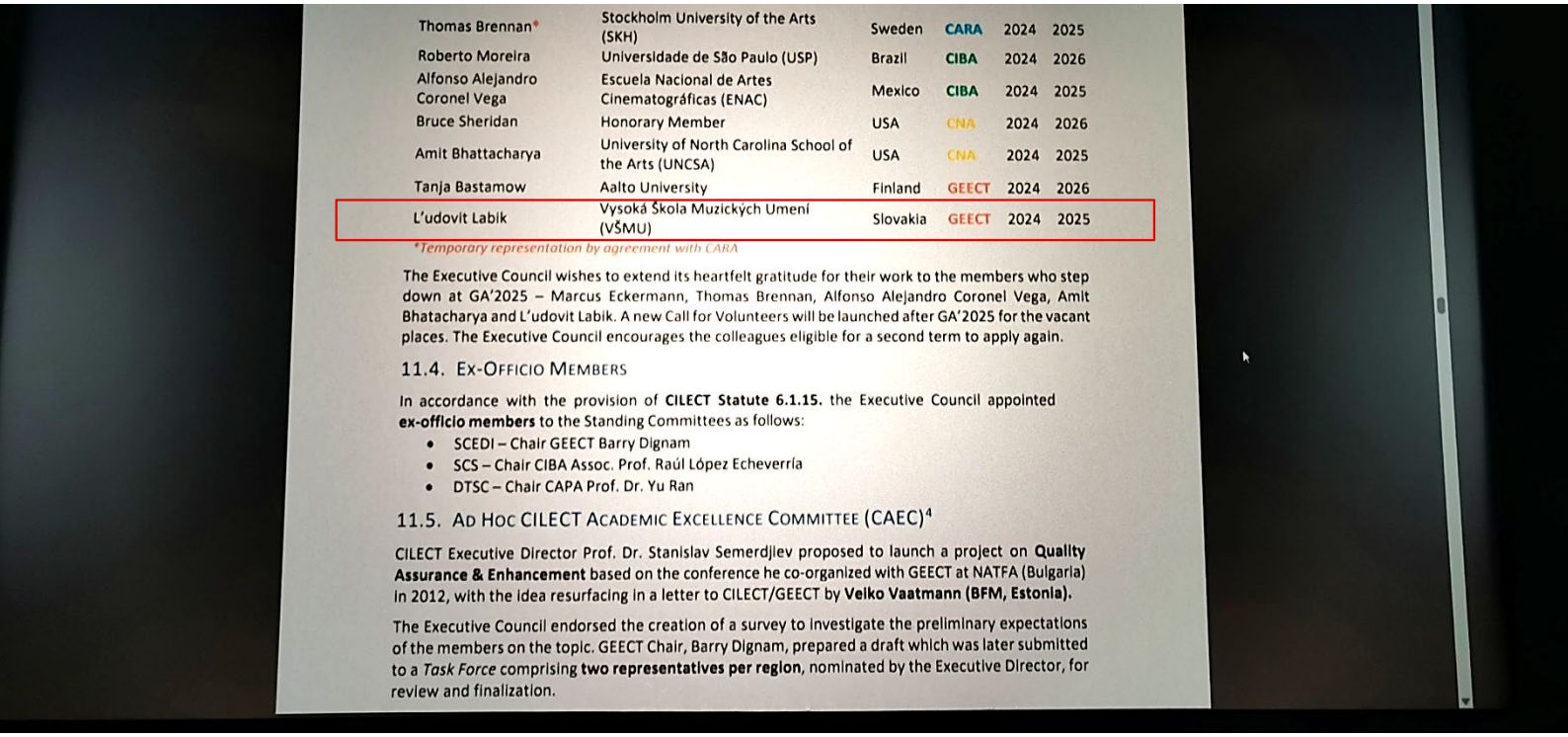
By the fact that the nominated projects are professionally addressed, they become part of the teaching of selected subjects of the school's departments.

Documentation

It is not always clear from the submitted work how much effort and ideas the authors put into the project. That is why each nominated project, where the evaluation is not unambiguous, contains Making of (Breakdown, Behind the Scenes), which clarifies the process of creation, or a critical analysis. For some categories that are difficult to convey, a video recording – e.g. a tutorial and a playback – is submitted as output for the game design[18].

Important dates of the CILECT Awards

The deadline for announcing the categories is: 30. November.The deadline for applications (application deadline) is: January 31st. Films are uploaded online to the CILECT server. Deadline for completion of the assessment: 31 April. Deadline for the announcement of category winners: June 15. Award ceremony and award ceremony: CILECT Congress in October.



Thomas Brennan*	Stockholm University of the Arts (SKH)	Sweden	CARA	2024	2025
Roberto Moreira	Universidade de São Paulo (USP)	Brazil	CIBA	2024	2026
Alfonso Alejandro Coronel Vega	Escuela Nacional de Artes Cinematográficas (ENAC)	Mexico	CIBA	2024	2025
Bruce Sheridan	Honorary Member	USA	CNA	2024	2026
Amit Bhattacharya	University of North Carolina School of the Arts (UNCSA)	USA	CNA	2024	2025
Tanja Bastamow	Aalto University	Finland	GEECT	2024	2026
L'udovit Labik	Vysoká Škola Muzických Umení (VŠMU)	Slovakia	GEECT	2024	2025

*Temporary representation by agreement with CARA

The Executive Council wishes to extend its heartfelt gratitude for their work to the members who step down at GA'2025 – Marcus Eckermann, Thomas Brennan, Alfonso Alejandro Coronel Vega, Amit Bhatacharya and L'udovit Labik. A new Call for Volunteers will be launched after GA'2025 for the vacant places. The Executive Council encourages the colleagues eligible for a second term to apply again.

11.4. Ex-Officio Members

In accordance with the provision of **CILECT Statute 6.1.15.** the Executive Council appointed **ex-officio members** to the Standing Committees as follows:

- SCEDI – Chair GEECT Barry Dignam
- SCS – Chair CIBA Assoc. Prof. Raúl López Echeverría
- DTSC – Chair CAPA Prof. Dr. Yu Ran

11.5. Ad Hoc CILECT Academic Excellence Committee (CAEC)[4]

CILECT Executive Director Prof. Dr. Stanislav Semerdjiev proposed to launch a project on **Quality Assurance & Enhancement** based on the conference he co-organized with GEECT at NATFA (Bulgaria) in 2012, with the idea resurfacing in a letter to CILECT/GEECT by **Veiko Vaatmann (BFM, Estonia).**

The Executive Council endorsed the creation of a survey to investigate the preliminary expectations of the members on the topic. GEECT Chair, Barry Dignam, prepared a draft which was later submitted to a *Task Force* comprising **two representatives per region**, nominated by the Executive Director, for review and finalization.

Fig. 4. CILECT Congress. Membership Developing Technologies' Standing Committee (DTSC CILECT).

Financing or self-financing

Starting the extension of nominations is possible

1. Without the need for funds[19],
2. With minimal financial security without the financial participation of schools[20],
3. With adequate financial security.

[17] Example: The sound department of school XY nominated a project in the Sound category. Based on the nomination, the School Sound Department is obliged to evaluate all projects submitted to the sound category. He does not evaluate his own project.

[18] Participating schools can flexibly agree on the exact wording of the conditions for nominating projects and modify them every year.

[19] VSMU Slovakia is able to offer its know-how system free of charge for the first phase of the project.

[20] This is primarily about ensuring the storage and categorization of the handover of works to a common repository.

The subject of future funding in the case of a well-established process only after the launch of pilot nomination projects is:

· Organizational support in the evaluation of nominated projects.

· Prize for artistic performance dedicated to the winner.

· Reimbursement of travel and accommodation costs for the winner of the nomination.

· Dissemination of information.

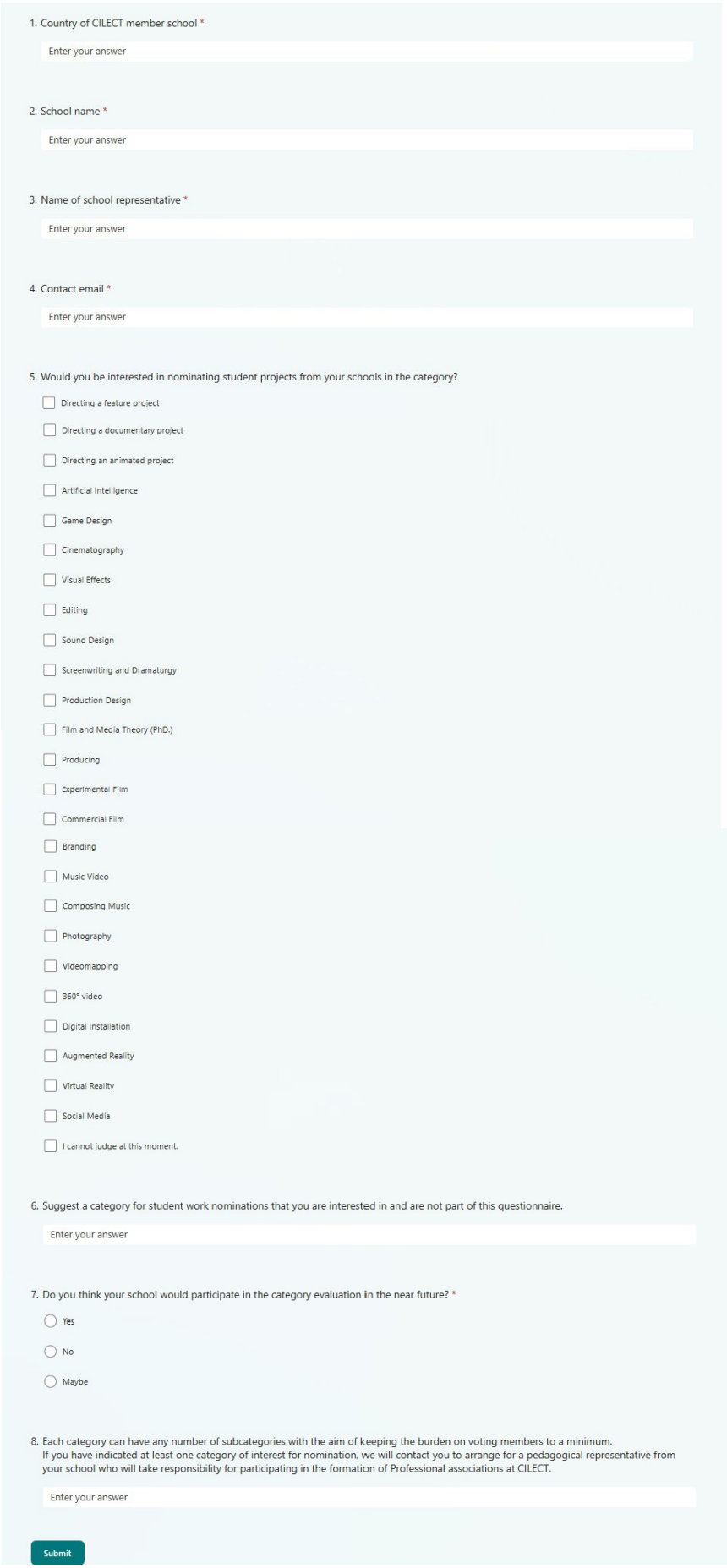
By accepting the nomination in the selected categories, the participating schools participate in the financing of the project award process.

Each category creates its own bank account with the first year, where unused funds become a reserve fund for future student awards.

The creation of the categories creates a professional interconnection of departments (camera department, editing department, game design department...) of individual schools, which are a prerequisite for future cooperation at the global level, and thus, in addition to joint nominations for categories, professional associations are created at the global level CILECT.

Looking at the amount of the **contribution in the future** (2030) for nominations when occupying e.g. 10-15 categories, the school's nomination fee would be approximately EUR 500-2000 per year in addition to the membership fee of each school.

Fig. 5. Questionary.


1. Country of CILECT member school *
Enter your answer
2. School name *
Enter your answer
3. Name of school representative *
Enter your answer
4. Contact email *
Enter your answer
5. Would you be interested in nominating student projects from your schools in the category?
Directing a feature project
Directing a documentary project
Directing an animated project
Artificial Intelligence
Game Design
Cinematography
Visual Effects
Editing
Sound Design
Screenwriting and Dramaturgy
Production Design
Film and Media Theory (PhD.)
Producing
Experimental Film
Commercial Film
Branding
Music Video
Composing Music
Photography
Videomapping
360° video
Digital Installation
Augmented Reality
Virtual Reality
Social Media
I cannot judge at this moment.
6. Suggest a category for student work nominations that you are interested in and are not part of this questionnaire.
Enter your answer
7. Do you think your school would participate in the category evaluation in the near future? *
Yes
No
Maybe
8. Each category can have any number of subcategories with the aim of keeping the burden on voting members to a minimum.
If you have indicated at least one category of interest for nomination, we will contact you to arrange for a pedagogical representative from your school who will take responsibility for participating in the formation of Professional associations at CILECT.
Enter your answer
Submit

Why it is necessary to create new categories in terms of student motivation

Greater fairness and recognition of different disciplines

Students who specialize in cinematography, editing, sound or screenplay often remain in the background, as the existing categories focus mainly on the director or a specific film genre. Expanding the categories will give them the opportunity to fully express their expertise and creativity.

Stronger motivation to learn and create

If each profession has its own category, students will be more motivated to develop their specific skills. They will know that their work has the same value as that of a director or producer, which will strengthen their intrinsic motivation.

Opening up space for new technologies and trends

Categories such as virtual production or artificial intelligence encourage students to experiment and discover new tools that prepare them for the dynamically changing media market.

Building Self-Confidence and Career Portfolio

An award in a specific category becomes an important part of a student's portfolio and proof of their expertise when applying for jobs or grants.

Overall, expanding the categories would lead to higher motivation, higher quality results, and more valuable projects, as students would feel recognized for work that truly fulfills them.

Why new categories need to be created in terms of the CILECT structure

Formation of professional groups

The emergence of new categories allows for the emergence of professional global groupings of teachers and students with a certain professional focus. Such a grouping is a prerequisite for the future establishment of Cinematographers' Associations, VFX Associations, Associations of Screenwriters of Schools of the World... on the grounds of CILECT. It is a new quality of the structural structure of CILECT.

Change in the philosophy of awarding from the perspective of awarded school projects to the philosophy of awarding professions

Currently, three projects are nominated and awarded and the principle of awarding is robust, complex and, above all, the award is relatively inconsistent due to the diversity of schools, it takes place in such a way as the school is able to organize the evaluation, perhaps sometimes even individually, when an individual evaluates on behalf of the school.

Decentralization of the organization

One of the organizational problems of CILECT is the issue of how to ensure the operation of the alliance with the current workload of teachers and their voluntaristic relationship of teachers to the organization. The new way of assessing works in the sense of introducing subcategories makes it possible to lighten the process and transfer the evaluation process from global assessment to professional decision-making by school departments.

Summary

The expansion of the nomination categories within CILECT is not just an organizational change, but a conceptual step towards greater **inclusiveness** and recognition of all artistic professions.

The involvement of different schools, countries and disciplines will strengthen the sense of belonging and mutual respect, which will also **enable wider humanistic, ecological and technological challenges to be addressed.**

The emergence of professional groupings (in the future of Associations), the change in the philosophy of valuation from the point of view of awarded school projects to the philosophy of awarding professions and the principles of **decentralization** are a by-product of the process of creating new categories, but from a certain point of view they could become a good complementary element of the development of the CILECT structure in the future.

The growing role of AI makes the valuation process even more urgent, its ethical and creative use must be part of both educational and evaluation standards.

The goal is for all students, teachers and professionals of CILECT to feel part of the global creative community, where every area of creation is equally perceived and appreciated.

Questionnaire

For the purpose of obtaining data and assessing the diversity of schools and their taught programs, a questionnaire is created that is flexible for any proposals.

https://forms.office.com/e/zpvrRC3Sbv?origin=lprLink

Fig. 5. A 50% participation + 1 member school is required to approve the concept.

MARTIN PETRÁSEK, (CZECH REPUBLIC)

Renowned Czech game creator, known for his innovative approaches to game design. He graduated in computer science from Charles University in Prague. He has worked on several successful projects, including the popular game "Mystic Quest". In 2020, he founded his own game studio "Petrásek Games". His work has been recognized at international gaming conferences, including the Game Developers Conference. Martin is a passionate gamer and is constantly looking for new ways to push the boundaries of the gaming industry.

PAULINE LEININGER, (GERMANY)

Pauline holds a Master's degree in Human-Computer Interaction from LMU Munich. Passionate about the intersection of film and emerging technology, she has been a core member of the AI Lab at the University of Television and Film Munich since its inception in 2022. Specializing in visual generative AI, deepfake technology, and virtual production, Pauline not only researches the evolving role of AI in media production but also actively develops tools that harness AI to transform creative workflows. She also advises and collaborates on AI-related student projects.

OLIVER ROTTER, (AUSTRIA)

Over 10 years of experience in the tech industry as a developer and was once itself Student of Game Development at CGSpectrum, which helped him switch into the Game Industry, where he worked as a Game Producer on titles like Star Citizen and Squadron 42, as well as other projects. Reinforced the mentor core as an Assistant Mentor for the Unreal Connectors program and lately worked closely with Game Studios and Career Changer to help them on their journey.

RYAN LALEY, (GREAT BRITAIN)

A notable figure in the game development community and for years an integral part of the CGSpectrum College, being one of the core mentors to thrive innovation and keep the curriculum on the latest industry trends. He is known for his expertise in using Unreal Engine, a popular game development platform. He has gained recognition for his comprehensive tutorials and educational content, which he shares on various platforms such as YouTube and Twitch. He now runs his own independent studio developing a number of titles whilst remaining a Gold Academic Instructor for Unreal Engine and Epic Games.

IVAN BARROSO, (PORTUGAL)

Portuguese game designer and educator. He graduated in game design at the Instituto Politécnico de Leiria and is pursuing a PhD in media arts at the Universidade Lusófona. He has worked as academic coordinator of the ETIC program and project manager for PlayStation® First. He is co-founder of the GameNest® program, which supports the development of game projects. Ivan is the author of three books on the history of the video game industry and regularly speaks at international conferences. He currently teaches game design at the Universidade Lusófona and the Instituto Politécnico de Leiria.

VASCO OLIVEIRA, (PORTUGAL)

Vasco Oliveira was born in 2003 (Lisbon, Portugal). His work includes The Fisherman: A Codfish Tale, winner of a PlayStation Talents Award, and most recently the Game Boy titles Alentejo: Tinto's Law and Alentejo: The Tinto & the Ugly, the first commercially released Portuguese Game Boy game. He is a member of Loading Studios and is currently finishing his MA in Game Design at Universidade Lusófona, while developing #31: The Botafogo Odyssey, a sci-fi Game Boy game.

ALEKSANDER KAUCH, (POLAND)

With 14 years of experience at the company, he has worked on almost every production to date: the Anomaly series, This War of Mine, and Frostpunk. He led the technology team on Frostpunk 2 and is now working on an unannounced project. Highly skilled in programming, game architecture, and the production process. Academic tutor, project mentor, collector of old games, and a lover of their history.

VILIAM ČORŇÁK (AVFXGD, BRATISLAVA)

A first-year master's student in visual effects at the Film and Television Faculty of the Academy of Performing Arts in Bratislava (FTF VŠMU). Since high school, he has been involved in filmmaking, graphic design, and visual effects. Currently, he is primarily focused on the 3D aspect of visual effects but also works with compositing. He obtained his bachelor's degree in visual effects at FTF VŠMU.

https://www.avfx.sk/pouzivatel/cornak-viliam

SAMUEL BIROŠ (AVFXGD, BRATISLAVA)

He is a first-year master's student in visual effects at FTF VŠMU in Bratislava. Originally, he studied computer science in high school and at the bachelor's level at the University of Economics in Prague, where he earned his degree. Despite his technical background, he was always drawn to the artistic field. During his university studies, he transitioned from 2D graphics to UI/UX design and eventually to 3D graphics. In the 3D field, he is most passionate about motion design. He works with software such as Blender, Unreal Engine, and most recently, Houdini.

https://www.behance.net/samuelbiros

ADAM ČURKO (AVFXGD, BRATISLAVA)

A first-year master's student in visual effects at FTF VŠMU in Bratislava. Originally a student at the secondary school "UAT," he focused on filmmaking and audiovisual arts. Toward the end of his studies, he began collaborating with classmates, which led him to work with 3D graphics. These experiences sparked his interest in the newly established "Game Design" program at VŠMU in Bratislava, where he continued to refine his skills.Today, he specializes in game development using Unreal Engine 5, not only as a 3D artist but also as a scripter and technical artist.

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https://www.avfx.sk/user/452

MICHAL FAJTA (AVFXGD, BRATISLAVA)

Student of the first year of the master's student in visual effects at FTF VŠMU in Bratislava. Since elementary school he’s experimenting with filmmaking and computer graphics. He graduated from Grammar school in Ružomberok. During his studies at VŠMU he received bachelor’s degree, while primarily focusing on the creation of full CG short films. Currently he works as a freelance compositor and 3D generalist at QQ Studio Ostrava.

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RADOSLAVA KRÁĽOVÁ (AVFXGD, BRATISLAVA)

Student of the first year of the master's student in visual effects at FTF VŠMU in Bratislava. She studied Concept Art at the Secondary Vocational Art School in Košice. Since high school she has been focusing on character design. During her studies at high school she participated in a summer course of video game creation (Summer Game Dev). She received her bachelor's degree at the Faculty of Fine Arts of the Academy of Performing Arts in Game Design. She is currently working as a 2D character and concept artist on the game Frankie, in addition to studying and filmmaking.

https://ahd.avfx.sk/pouzivatel/kralova-radoslava

TOMAS SIKORA (AVFXGD, BRATISLAVA)

A first-year master's student in visual effects at FTF VŠMU in Bratislava. His passion for visual effects and filmmaking motivates him in everyday life to research various disciplines and techniques of digital image creation processes. In addition to his studies, he works parttime as a creator of 2D and 3D effects in the company Bluefaces. He received his bachelor's education at the FTF VŠMU in the field of visual effects.

MICHAELA SVITKOVA (AVFXGD, BRATISLAVA)

First year student of the master's student in visual effects at FTF VŠMU in Bratislava. After graduating from the art school in Bratislava ŠUP Josef Vydra, which primarily focused on 2D art, I discovered a passion for 3D modeling and animation. Shortly after starting university, I got a job as a 3D character artist for three animated commercials that received a significant number of views on YouTube. This opportunity provided me with valuable experience in the field and allowed me to gain insight into the professional world of animation and character design. My career path took another exciting turn when I joined a small independent game development studio in Bratislava. There, I worked on a stylized nature-focused strategy game that won several awards for its art design and engaging gameplay.

https://www.avfx.sk/pouzivatel/svitkova-michaela

JURAJ ZBÍN (AVFXGD, BRATISLAVA)

Student of the first year of the master's student in visual effects at FTF VŠMU in Bratislava. He has been involved in computer graphics and video editing since high school. Around the end of his studies at the gymnasium, he became more interested in 3D graphics, which prevails to this day. He received his bachelor's degree at the FTF VŠMU in the field of visual effects. He started with creating graphics, editing photos, editing videos and ending up with creating his own short full cgi movies using the Blender software. With the arrival of artificial intelligence, he is trying to use it and incorporate it into his workflow. Currently, in addition to studying and making films, he is engaged in freelancing.

ttps://www.avfx.sk/pouzivatel/zbin-juraj

The REPLAY project at Lusófona University is a European master's program focused on game design, which brings together students from all over the world to create meaningful gaming experiences and shape the future of the gaming industry.

REPLAY is **a two-year Erasmus Mundus Joint Master's programme** (120 ECTS) that takes place at three prestigious European universities: **Universidade Lusófona in Lisbon (Portugal), LUCA School of Arts in Genk (Belgium) and Aalto University in Helsinki (Finland).** Students rotate between these institutions for four semesters, gaining direct contact with different cultural, artistic and technological ecosystems of game development. The program is taught in English and combines academic theory with practical experimentation.

Characteristics of the REPLAY project:

International dimension: brings together students from different countries, thus promoting cultural diversity and exchange of experiences.

Pedagogical philosophy: emphasizes **experimentation, design and development of games** that have not only entertainment but also social and cultural value.

Value anchoring: the project is built on four principles – **affirmation of European values through games, support for positive social transformations, media-independent exploration of gaming and strengthening the economic and social sustainability of the gaming industry**.

Practical impact: students are encouraged to become **digital citizens and co-creators of game culture**, able to contribute to the creative industries, cultural institutions and society.

The motto of the program: *"Future-proof your career"* – the goal is to prepare graduates for the dynamically changing gaming sector and enable them to become leaders in the field of creativity, innovation and social relevance of games. REPLAY thus represents **a unique platform for education in the field of game design**, which combines academic quality, international mobility and social responsibility. Graduates gain not only professional knowledge, but also the ability to reflect on the broader cultural and social context of games, thus becoming the creators of the future of interactive media.

https://www.replaymasters.eu/

AGHABABA BAKHIROV, ALFONSO CUNHA, GABRIELA BRANCO, ANTONIO RODRIGUES, DANIEL FRANCO (LUSÓFONA UNIVERSITY, LISBON, PORTUGAL.)

ĽUDOVÍT LABIK (SLOVAKIA) ORGANIZATION OF THE CONFERENCE, EDITING OF THE PROCEEDINGS OF THE CONFERENCE.

Author, publicist and teacher in the field of film theory. He is the founder of two university study plans of Visual Effects and Game Design at the Faculty of Film and Television of the Academy of Performing Arts in Bratislava, which at the time of their creation had no model in the vicinity of Central Europe. He has been organizing and lecturing at the Summer School for 20 years. The subject of research is the dramaturgy of film storytelling and the latest technologies in the field of film and game design. He organizes video mapping on urban architecture in two technologies, carries out 360° filming with students and considers the entry of stylistic dramatic elements of Game Design (interaction) into the film and vice versa (acting, transferring of live realistic body language in Unreal engine) to be the greatest audiovisual challenge in future.

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IVGC 2025 - PREMENY FILMOVÝCH VIZUÁLNYCH EFEKTOV VI

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