



ReInHerit
WEBINAR

“Video games in the service of CH institutions:
the case of the ReInHerit Museum
Management Game ”

28 September 2023 | 3:00-4:00 pm (CET)





A few words about the presenter





V-EUPNEA ΕΥΠΝΟΙΑ

Eupnea is normal, good, unlabored breathing
Its the natural breathing in all mammals, including humans

<https://en.wikipedia.org/wiki/Eupnea>





The People

V-EUPNEA Team



Christina Serghides

Affiliated Researcher



Stela Makri

PhD in Engineering, Math
November 2019

- **Premiere [H2020]**
- Collective Behavior
- Reinforcement Learning



Andreas Panayiotou

PhD Candidate
Computer Science
September 2020

- **ReInHerit [H2020]**
- Crowd Simulation
- Reinforcement Learning
- Machine Learning



Yiorgos Chrisanthou

General Director
Team co-leader

Panayiotis Charalambous

V-EUPNEA MRG Leader
TEAM Leader



Marilena Lemonari

Affiliated Researcher



Amir Azizi

PhD in Computer Engineering

- **ShareSpace[H2020]**
- Style Transfer
- Computer Vision
- Deep Learning



Theodoros Kyriakou

PhD Candidate
Computer Science
September 2020

- **ReInHerit [H2020]**
- **Premiere [Horizon]**
- Performance Capture and Animation
- Machine Learning



Andreas Aristidou

Research Fellow



Nefeli Anderau

Affiliated Researcher



Mercè Álvarez de la Campa

PhD in Computer Science
September 2023

- **Premiere [H2020]**
- Computer Animation
- Computer Graphics
- Virtual Reality



Marios Charalambous

MSc Candidate
Computer Science
September 2020

- **EHEM [JPICH]**
- **Nicosia3D++ [Internal]**
- Game Engineer
- Virtual Reality



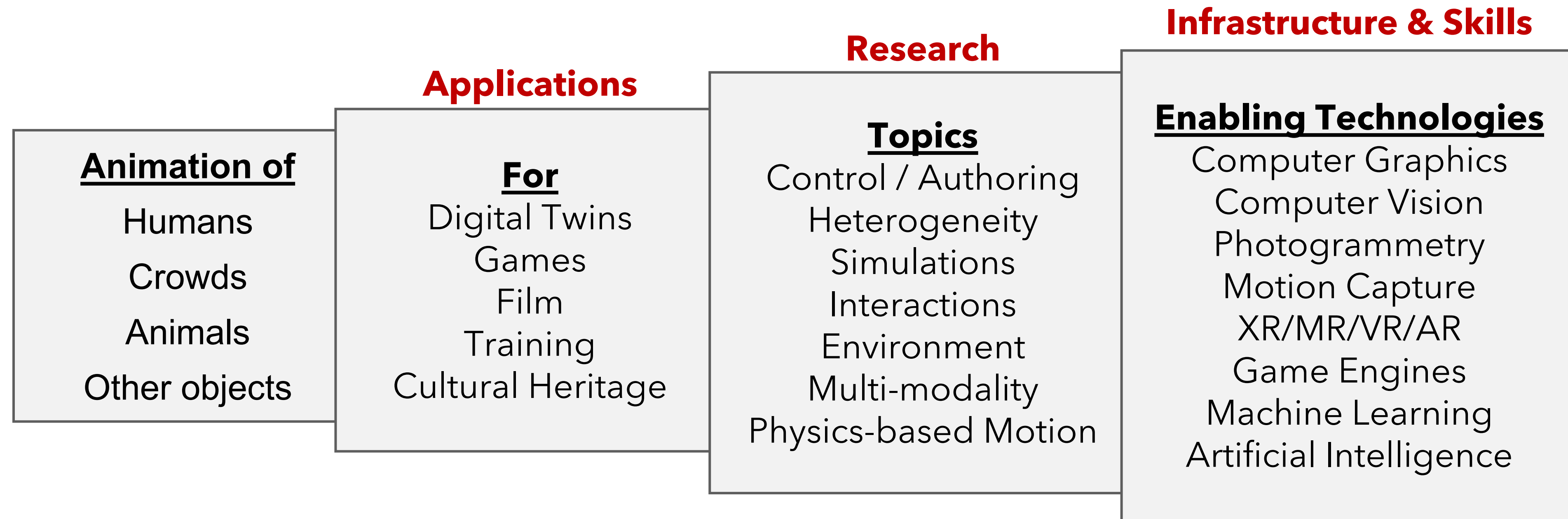
Chrysostomos Chadjiminias

Research Associate





Goals





Projects

	Title	Funding Agency	DATES	OTHER MRGs	ACTIVE
1	ReInHerit	Horizon Europe	3.2021 – 2.2024	ITICA, Museum Lab	Running
2	Premiere	Horizon Europe	10.2022 – 9. 2025	RIPE, ITICA, VCG	Running
3	ShareSpace	Horizon Europe	1.2023 – 12.2025	RIPE, Neo-Move	Running
4	Metacities	Horizon Europe	1.2023 – 12.2026	SNS	Running
5	AstroTourism	RIF Integrated	10.2019 – 9. 2022	ITICA, CCAPPS	Finished
6	EHEM	JPICH	9.2020 – 8.2023	Bio-Scent, Museum Lab	Finishing
7	Nicosia3D++	CYENS (Internal)	4.2022 - 3.2023	DeepCamera	
8	CHARISMA	<i>RIF Dual Use</i>	6.2023 - 5.2025	-	
9	3DMotAaS	<i>RIF Enterprise</i>	12.2023 -11.2025	-	To Start
10	iNicosia	<i>CYENS</i>	11.2021-...	All Team is coordinating the project	Running
11	Sony Pictures Collaboration	<i>CYENS (R&D collaboration)</i>	11.2020-...	DeepCamera, LEAR	Running





Video Games

For History, Education and Heritage





Video Games

- A **game** is a structured form of play, usually undertaken for entertainment or fun, and sometimes used as an educational tool





Video Games

- Key components of games are **goals**, **rules**, **challenge**, and **interaction**.
- Games generally involve mental or physical stimulation, and often both.
- Many games help develop practical skills, serve as a form of exercise, or otherwise perform an educational, simulational, or psychological role.





Video Games

A **video game** is an electronic game that involves interaction with a user interface to generate **visual** feedback on a two- or three-dimensional video display device such as a touchscreen, virtual reality headset or monitor/TV set.





Video games as tools to tell emergent stories

“[T]hat’s where gaming’s strength lies, not as a storyteller but as a **story generator**... Only when games accept that unique strength, take pride in it, and stop borrowing the clothes of others, will they truly achieve their potential as the only truly new creative medium of the last 100 years.”

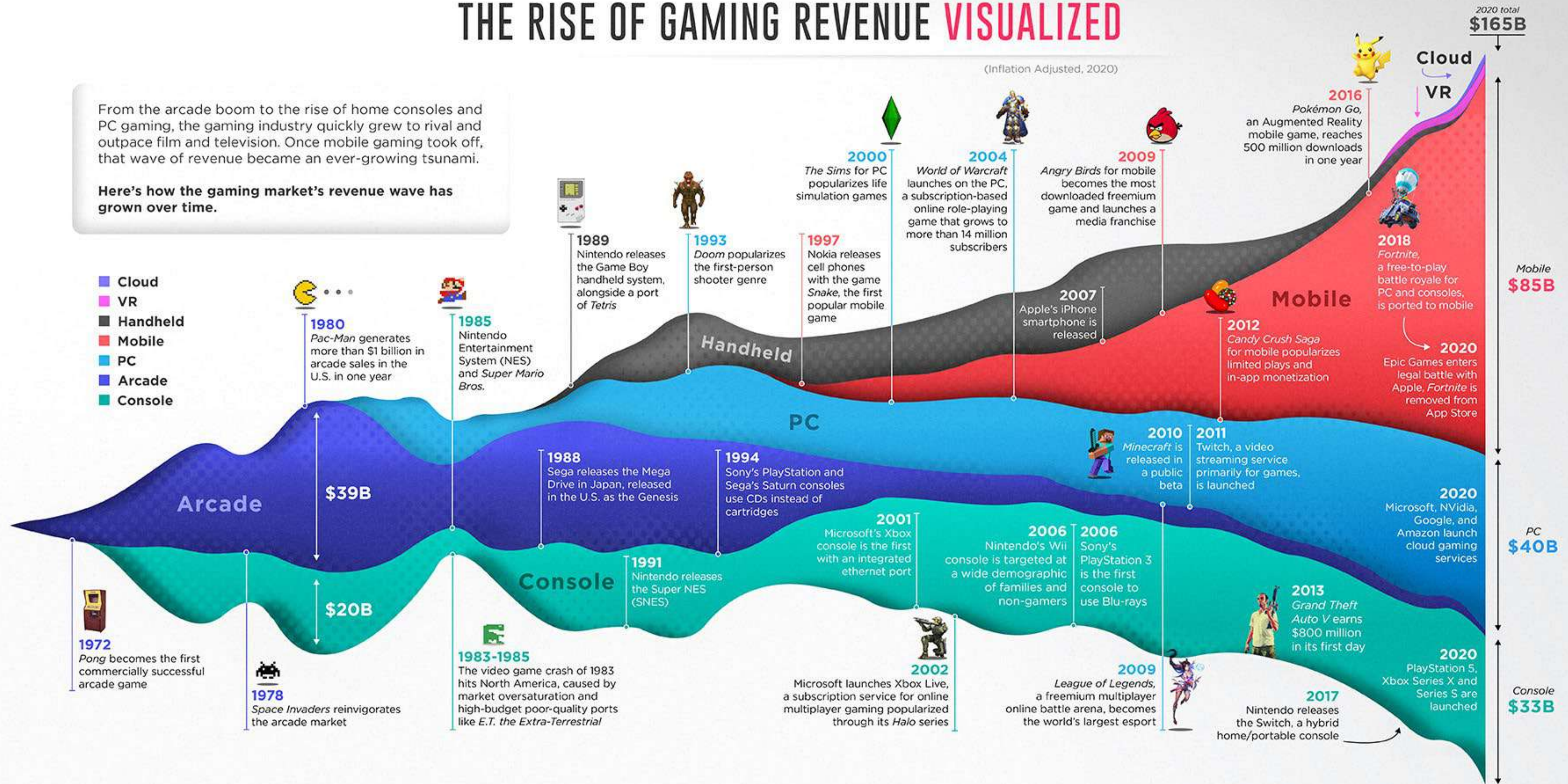
[‘Systems Vs. Stories’](#), *Eurogamer*, 22 June 2013



THE RISE OF GAMING REVENUE VISUALIZED

From the arcade boom to the rise of home consoles and PC gaming, the gaming industry quickly grew to rival and outpace film and television. Once mobile gaming took off, that wave of revenue became an ever-growing tsunami.

Here's how the gaming market's revenue wave has grown over time.

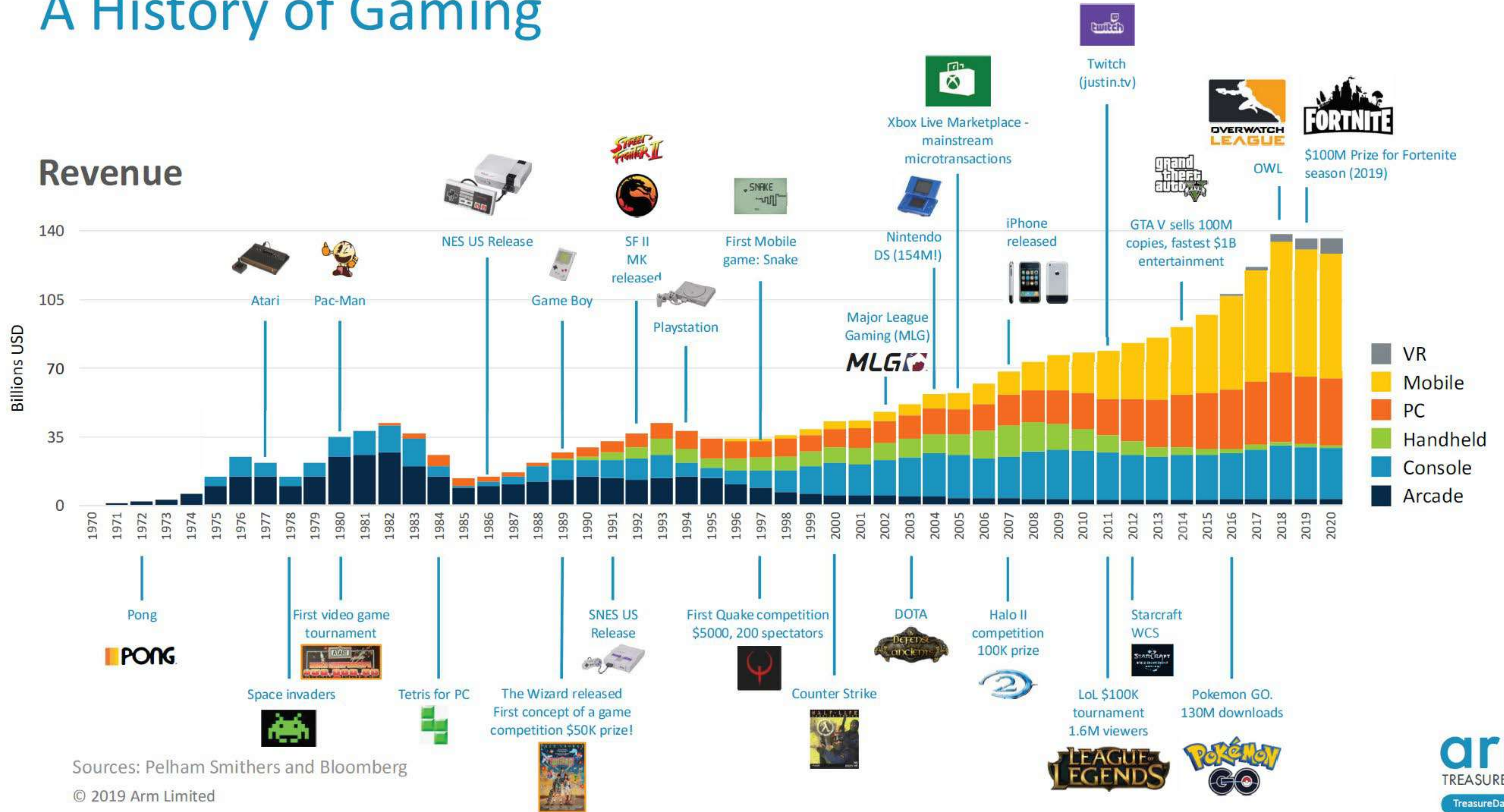


SOURCE: Pelham Smithers
 COLLABORATORS: RESEARCH • WRITING Omri Wallach | DESIGN • ART DIRECTION Clayton Widsworth



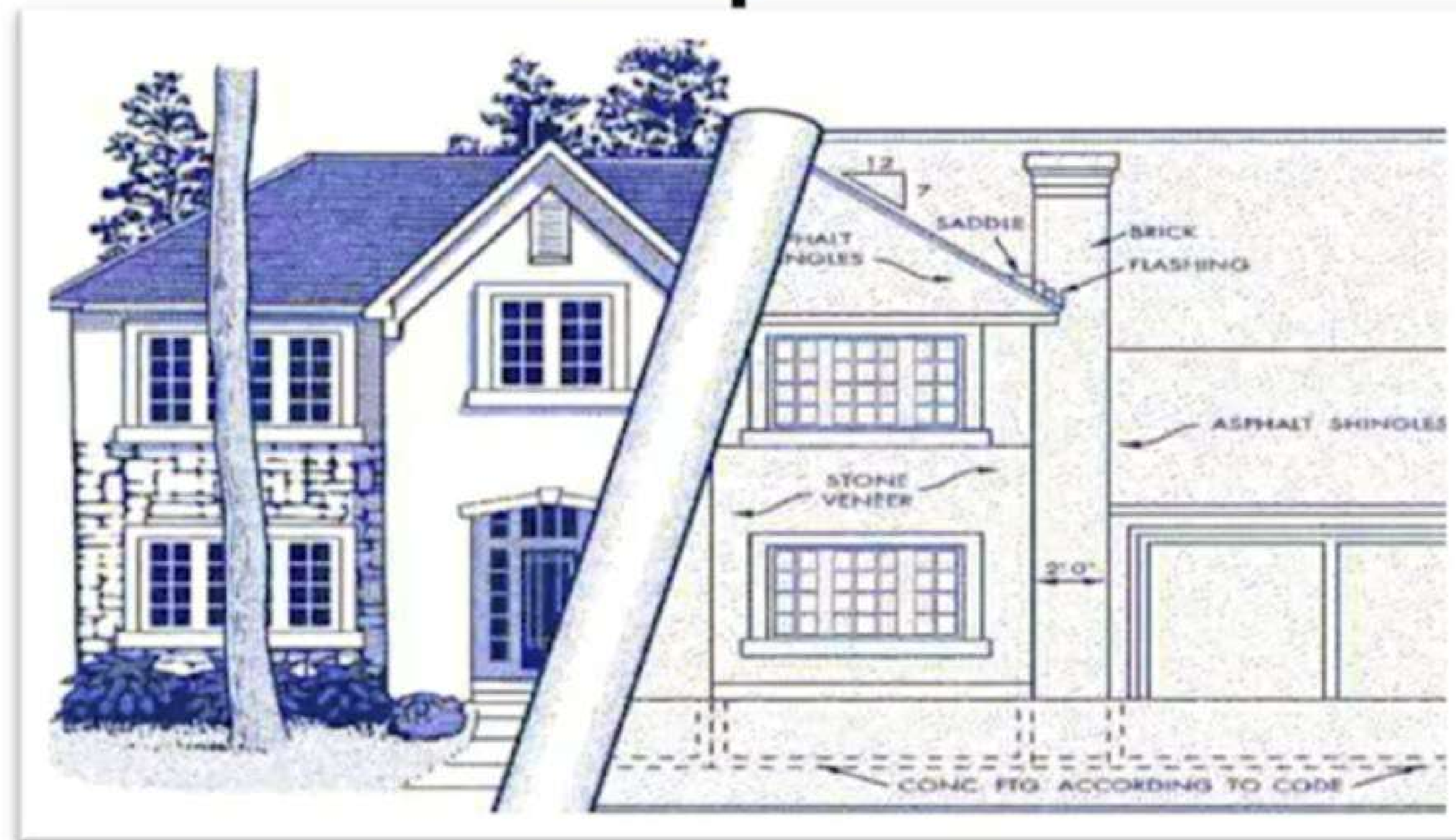
Facebook icon /visualcapitalist
 YouTube icon /visualcapitalist
 Twitter icon @visualcap
 Instagram icon @visualcap
 Website icon visualcapitalist.com

A History of Gaming





"Blueprint"



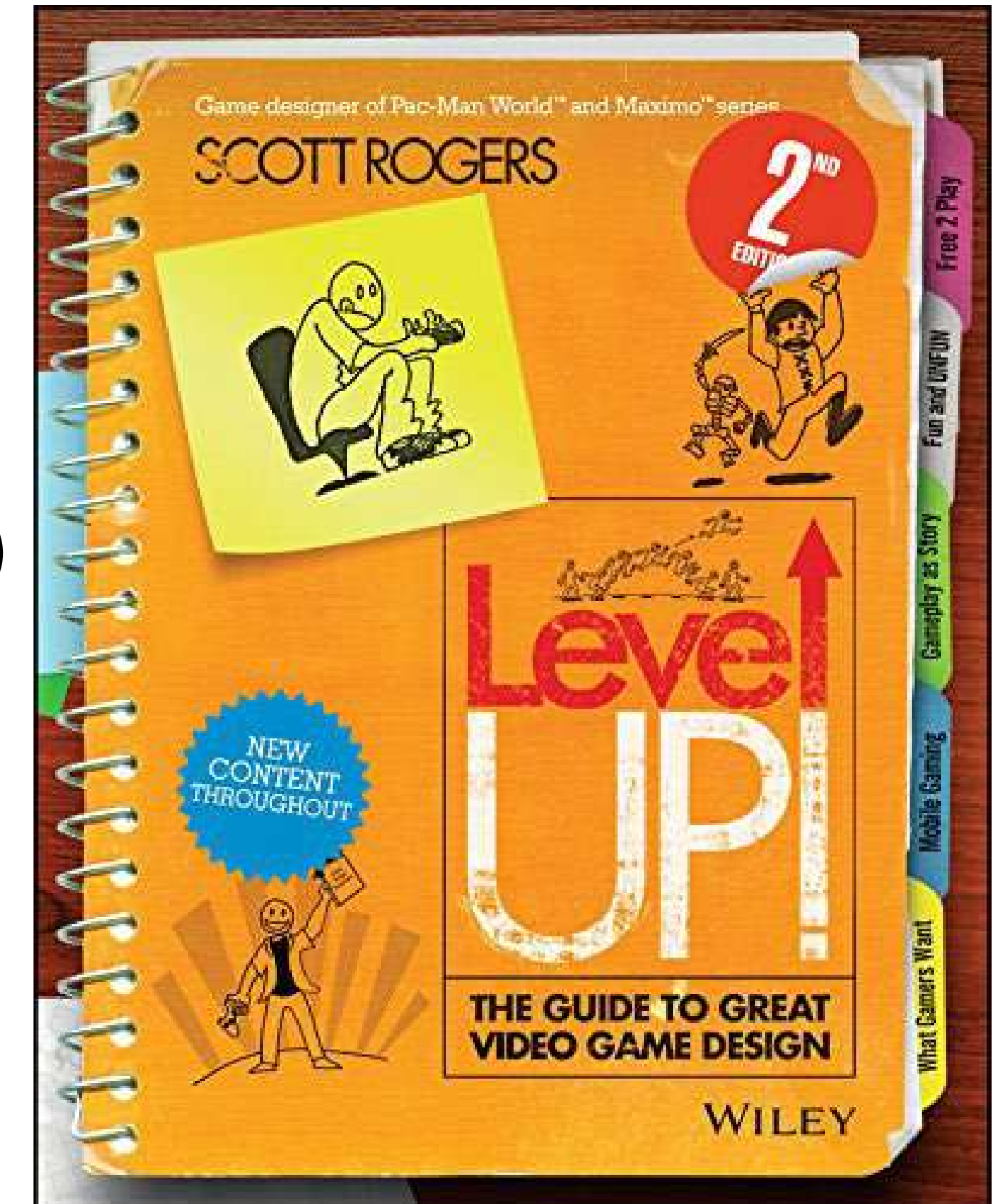
"Game Design Document"





Game Design Document (GDD)

- Describes the game in detail
- Preliminary Game Design Document:
 - Short document that contains:
 - Title
 - Version
 - Genre (how it relates to other games – pick winners)
 - Overview (story, gameplay, content, experience, characters, world, interface)
 - Selling points
 - Platforms
 - Technology
 - Target Audience
- Read: Ten-Page Design of Scott Rogers





GDD Examples



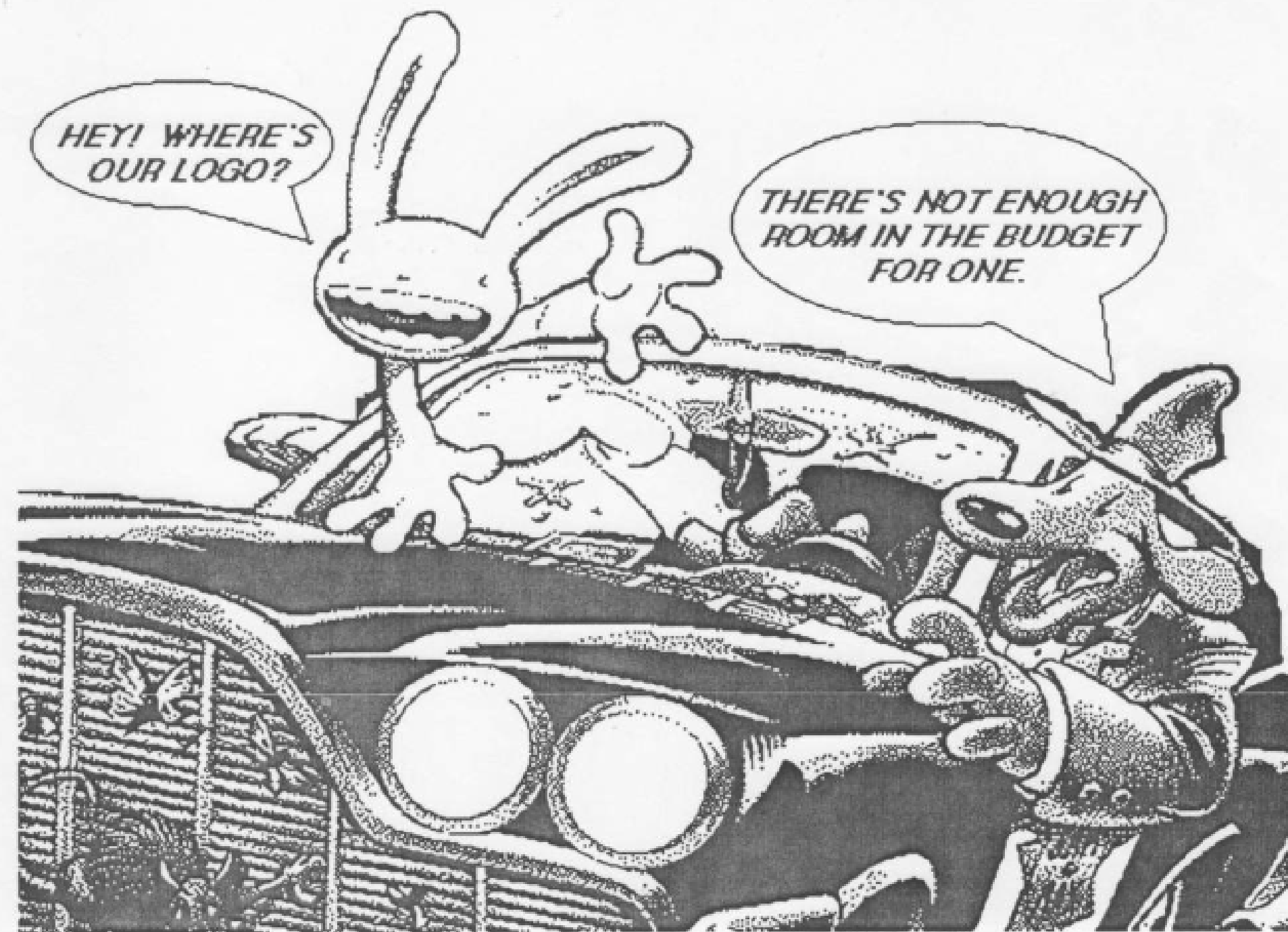
<https://drive.google.com/file/d/0BxMevjNSr2EjbDBpZ2ZMdmNnc28/view>





GDD Examples

Sam and Max Hit the Road™
 an adventure game based on the collected works
 of Drew Barrymore



Star Wars CD

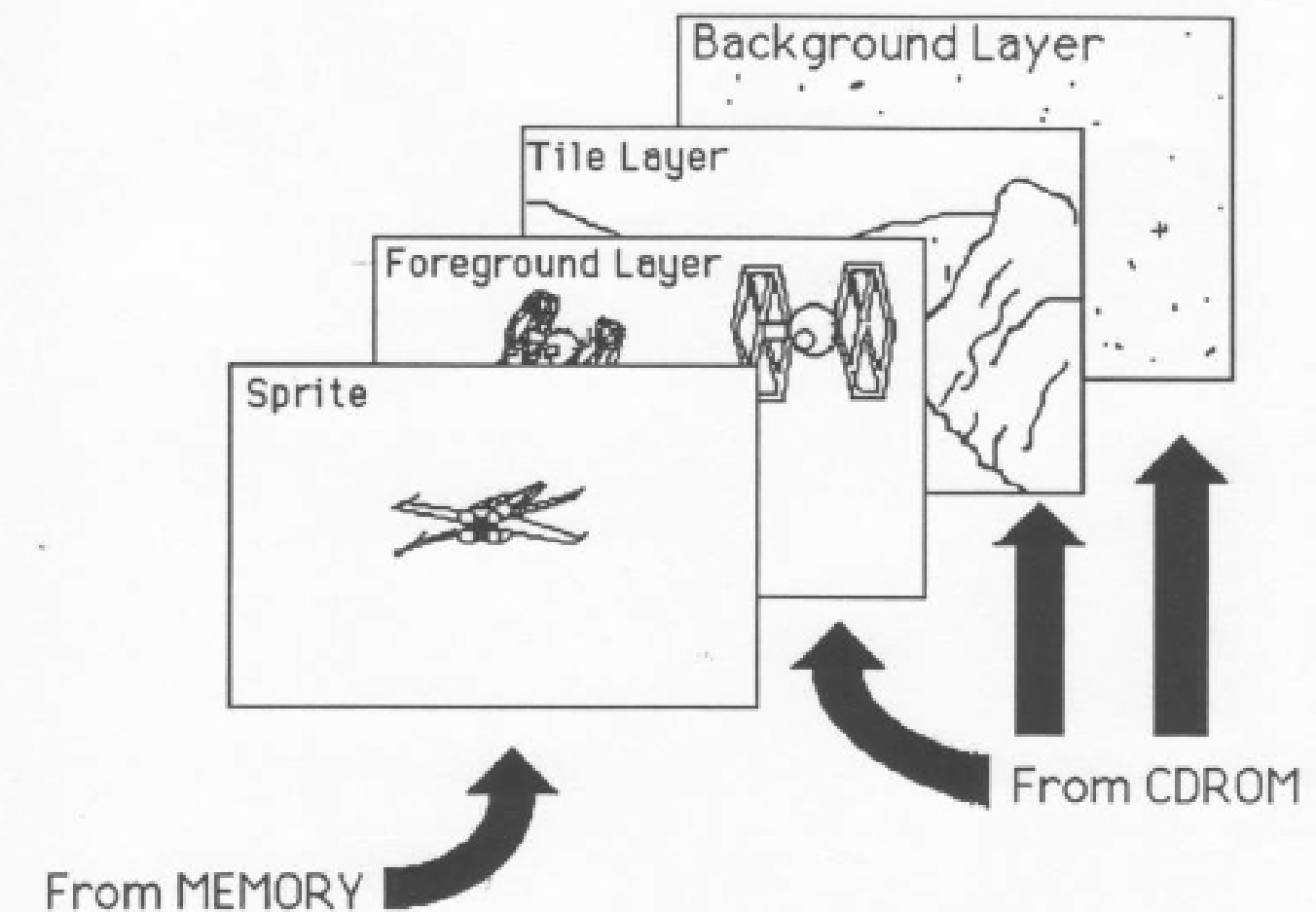
Proposed Design
 Vince Lee 10-Apr-92

INTRODUCTION:

Star Wars CD is a visually-oriented flight/combat game for CDROM-based game platforms. Aspects of its design resemble both PC-based simulators (XWing) and cartridge-based arcade games (Super Star Wars). However, Star Wars CD is neither a true simulator nor a conventional arcade game. Instead, it exploits the massive storage capabilities of CDROM to provide interactive gameplay in a world of realistic imagery and animation. These graphics are 3D-modeled and pre-generated on computer, complete with cinematic cuts, camera angles, pans, and zooms. The emphasis of the game is on stunning imagery and animation and not strategy or complex game play.

Star Wars CD relies heavily on the use of computer-generated ships, planets, asteroids, starfields, and landscapes which are animated beforehand and stored on CDROM in compressed form. A multi-layered animation system, hereafter called the *streaming animation engine*, is used to play back and manipulate these pregenerated animated sequences.

STREAMING ENGINE

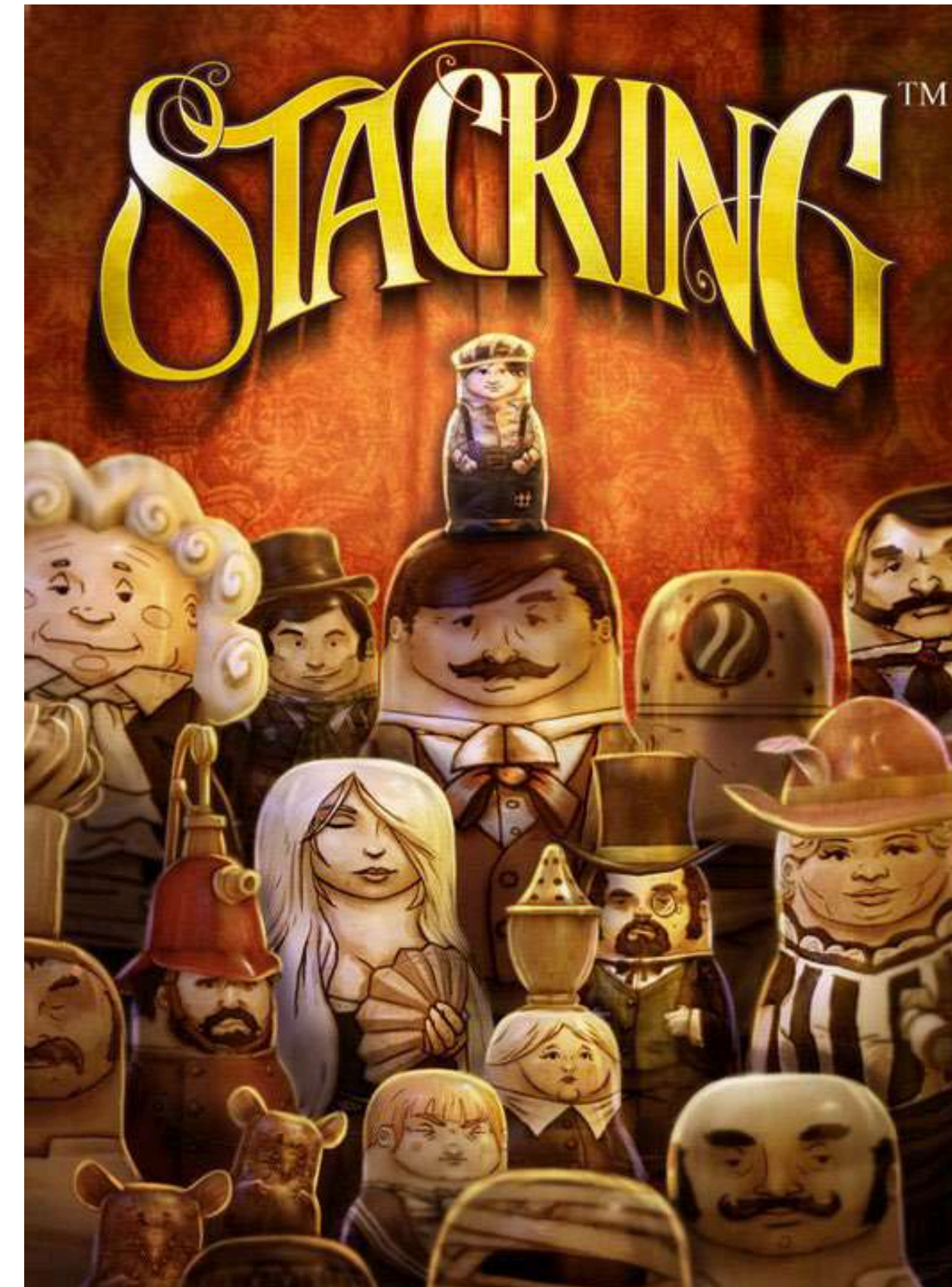
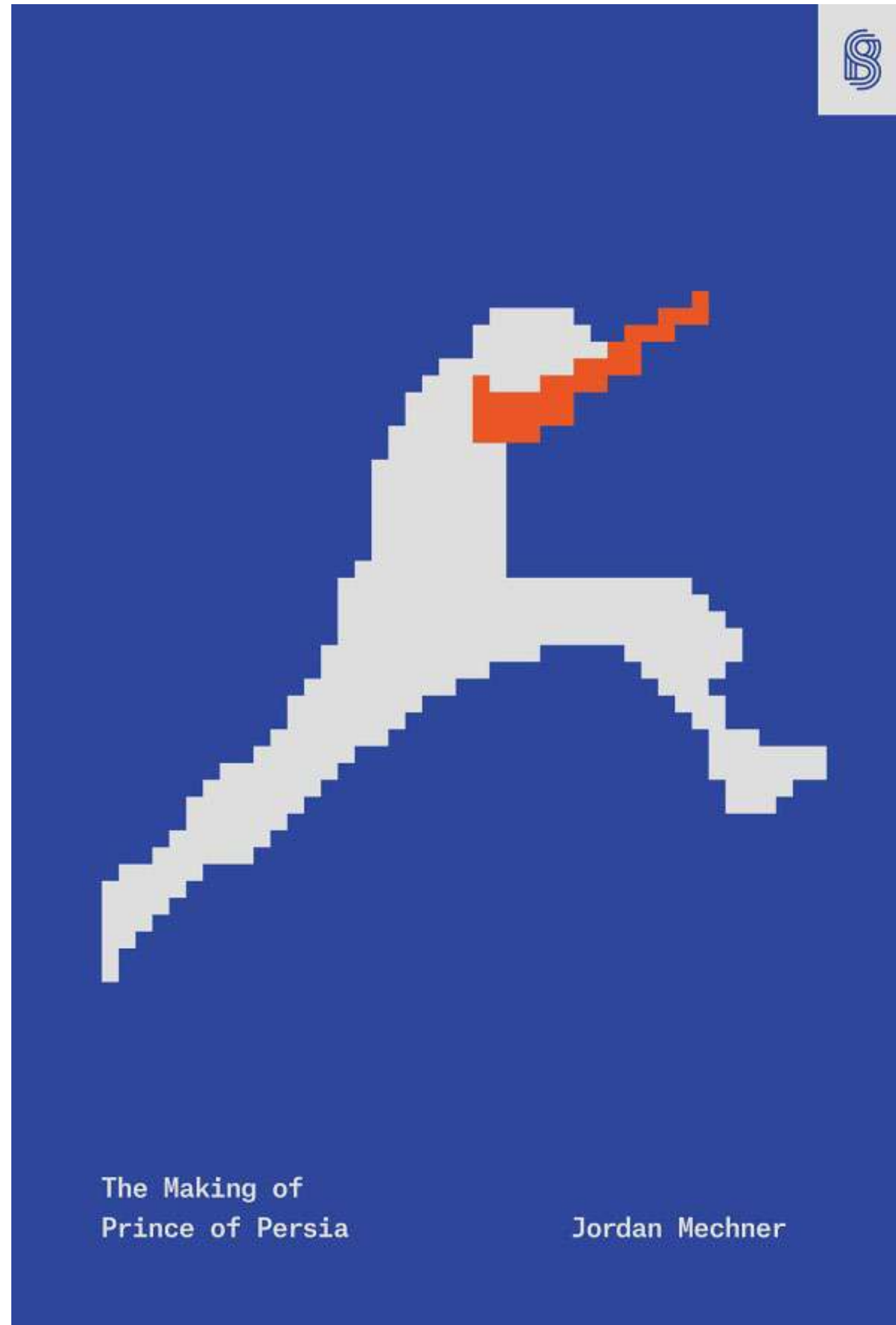


The streaming engine takes sequences of pre-generated moving images and plays them back in real time off of a CD ROM disk. Thus, it resembles a VCR in that it can playback selected pre-recorded sequences. To create more than just a passive viewing experience, however, we add interactivity with a few tricks:





GDD Examples



<https://www.scribd.com/doc/266278029/Stacking-GDD>





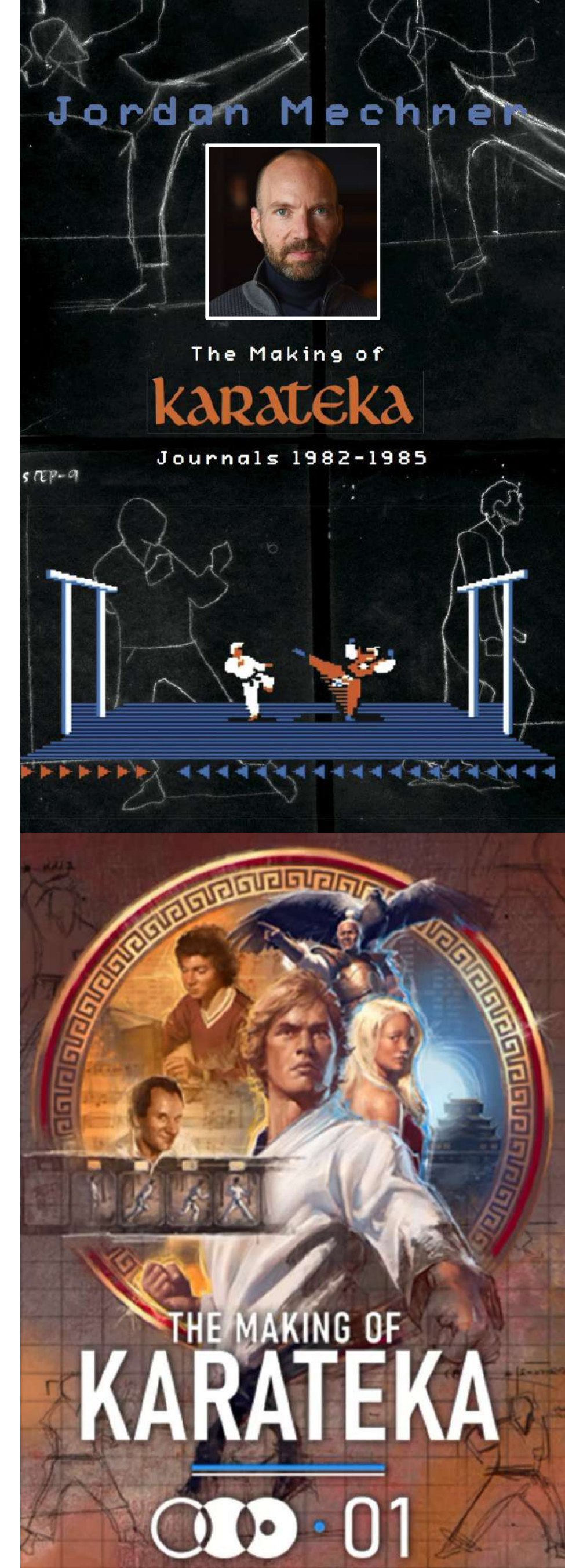
Revisiting GDDs

from documents to multimedia



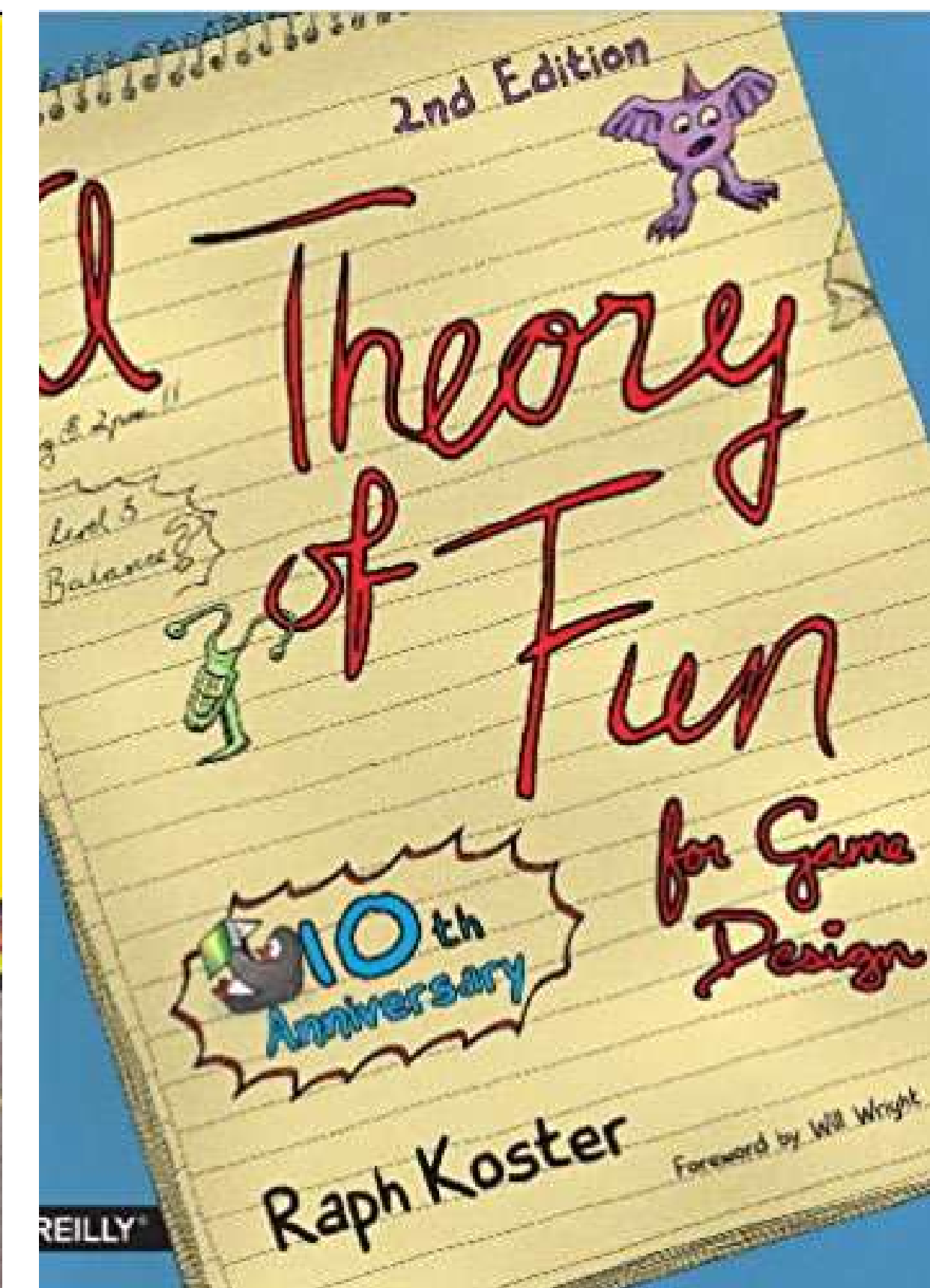
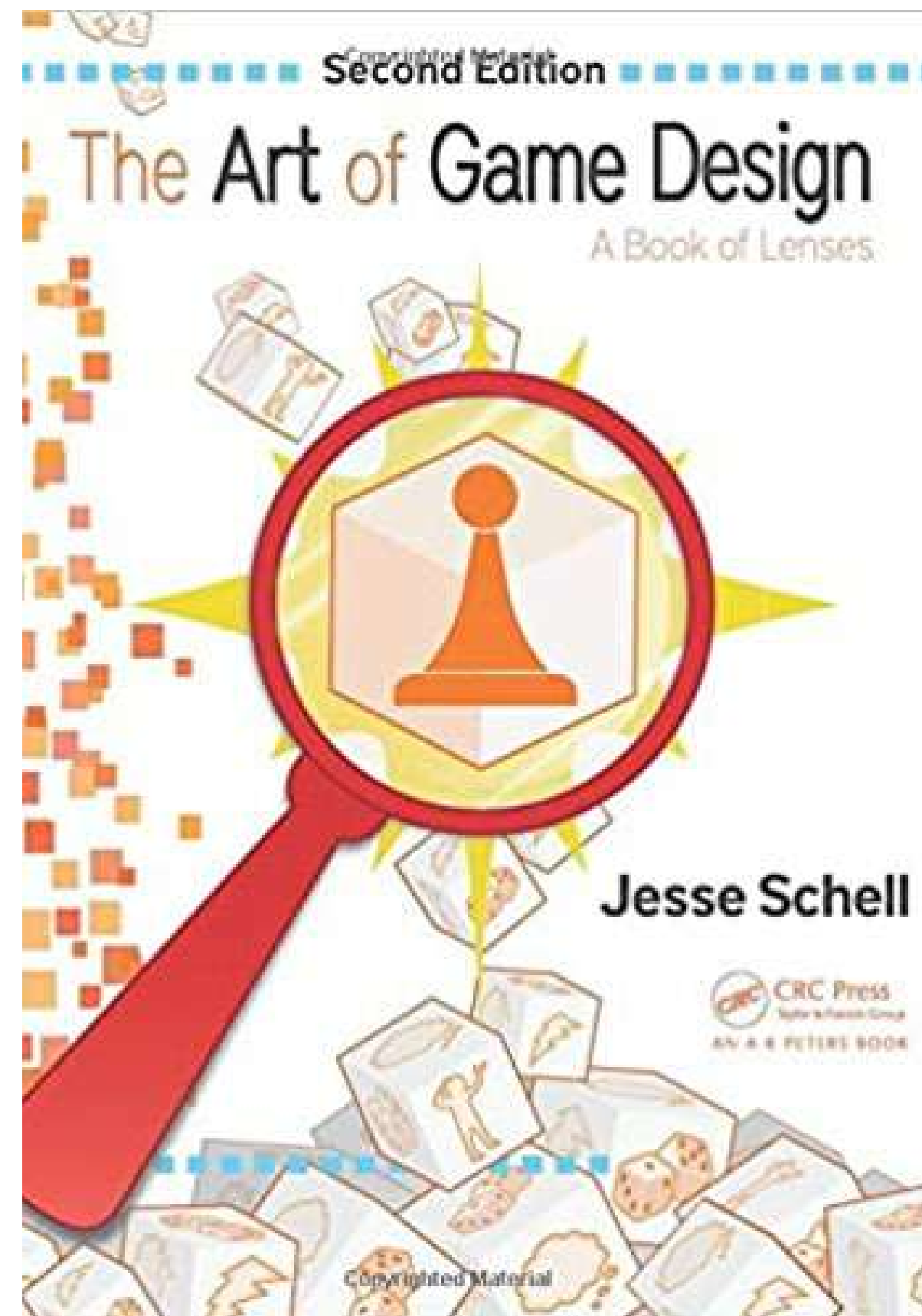
The Making of Karateka

<https://youtu.be/DyfNjdTaFLE?si=Xa6KWrBtlrwsq4EU>





Some Books





Popular Games with Historical Context



The Oregon Trail (1971-)

The Actual Oregon Trail



The Oregon Trail

You may:

1. Travel the trail
2. Learn about the trail
3. See the Oregon Top Ten
4. Turn sound off
5. Choose Management Options
6. End

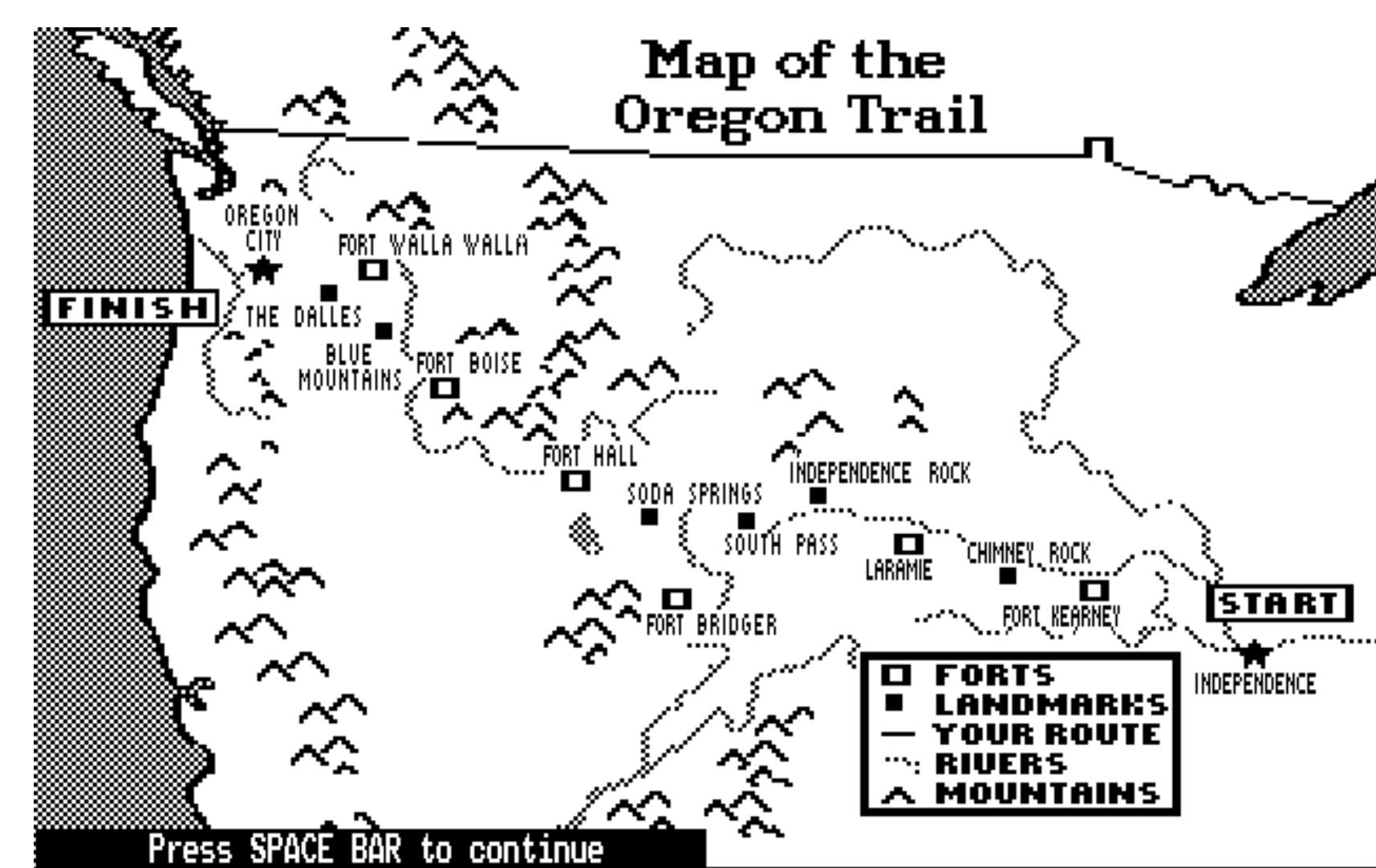
What is your choice? _

Your Supplies

oxen	8
sets of clothing	10
bullets	344
wagon wheels	2
wagon axles	3
wagon tongues	1
pounds of food	1454

You meet another emigrant who wants 1 wagon tongue. She will trade you 33 pounds of food.

Are you willing to trade? _



Independence
 March 1, 1848
 Press SPACE BAR to continue

You have died of dysentery.

https://archive.org/details/msdos_Oregon_Trail_The_1990

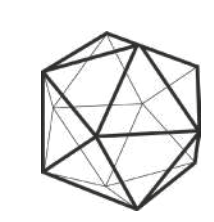
Sold > 65 Million Copies!

The Oregon Trail (2021)

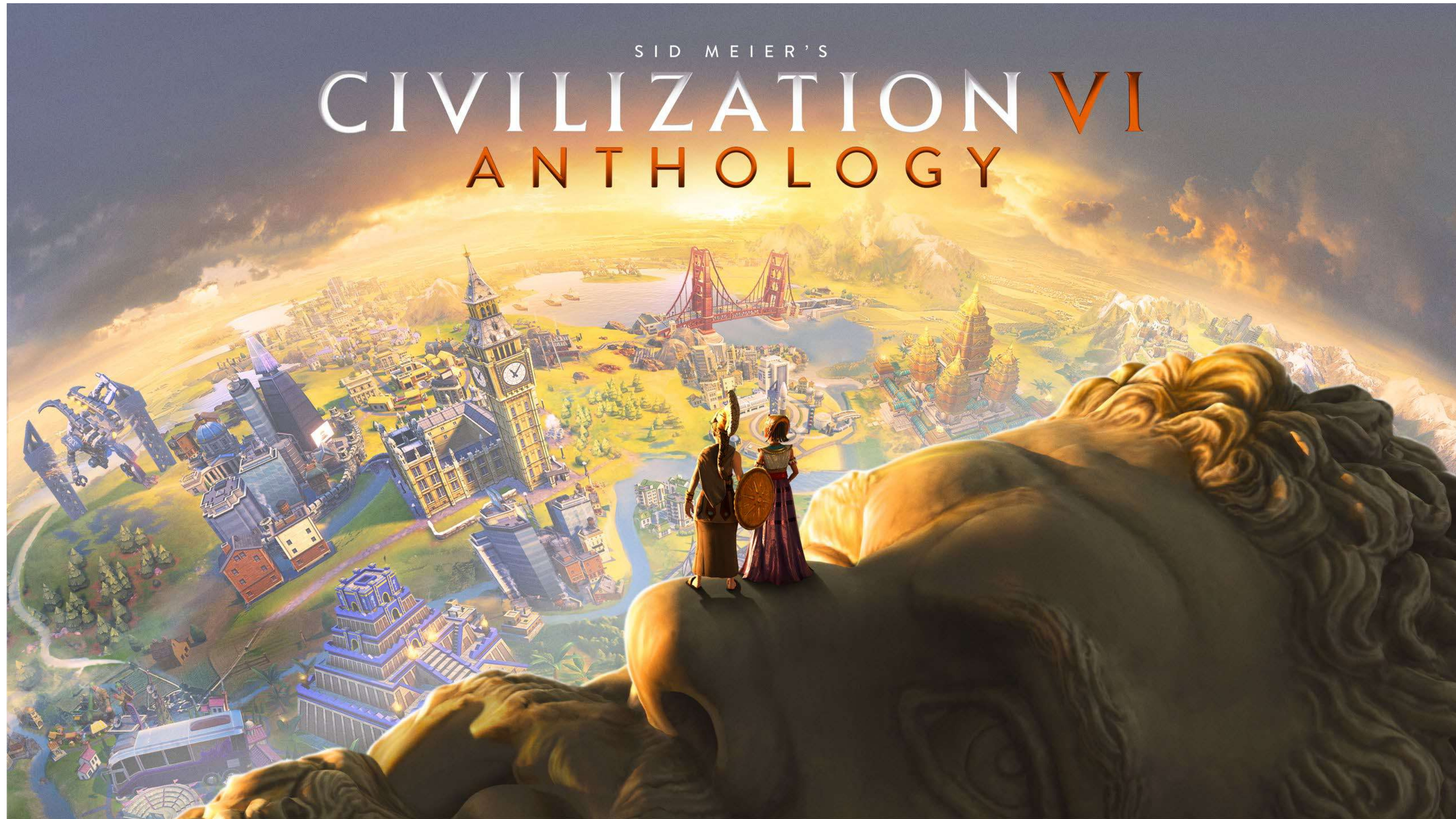


<https://youtu.be/h65XDIEoFZ0?si=1FgH1DOWDnQRU7IV>





Civilization (1991-)



<https://arstechnica.com/gaming/2016/10/civilization-vi-is-a-beautiful-prance-through-history/>





Civilization (1991-)

The screenshot shows the Religion screen in Civilization VI. The interface is titled "RELIGION" and features a "My Pantheon" tab with five icons representing different religions. The "All Religions 5/5" tab is selected. Three religions are listed:

- EASTERN ORTHODOXY**
FOUNDER: RUSSIA
DOMINANT RELIGION IN 7 CITIES
- Feed the World: Shrines and Temples provide Food equal to their intrinsic Faith output.
- Pagoda: Allows construction of Pagodas (+3 Faith, +1 Housing).
- CONFUCIANISM**
FOUNDER: GERMANY
DOMINANT RELIGION IN 1 CITY
- Jesuit Education: May purchase Campus and Theater Square district buildings with Faith.
- Wat: Allows construction of Wats (+3 Faith, +2 Science).
- PROTESTANTISM**
FOUNDER: BRAZIL
DOMINANT RELIGION IN 7 CITIES
- Reliquaries: Relics have triple yield of both Faith and Tourism.
- Meeting House: Allows construction of Meeting Houses (+3 Faith, +2 Production).
- Church Property: +2 Gold for each city following this Religion.

The background shows a map of a snowy region with a city named "LOS ANGELES" selected. The city's status is shown as "BUILDINGS Granary", "RELIGIOUS CITIZEN...", and "AMENITIES". The "NEXT TURN" button is visible in the bottom right corner.



Civilization (1991-)

FREDERICK BARBAROSSA
GERMAN EMPIRE

Send Delegation
Costs 25 Gold

Make Deal

INTEL REPORT

Gossip Items: No New Items
Access Level: Limited
Our Relationship: Declared Friend
Agreements:
Agendas: Iron Crown
1 Hidden agenda
Government: Classical Republic

Relationships:

GOSSIP

LAST TEN TURNS

- A recent news article revealed that Germany has denounced the evil deeds of Greece.
- A recent news article revealed that Germany has progressed from the Renaissance Era to the Industrial Era.
- A recent news article revealed that Germany has denounced the evil deeds of England.
- A recent news article revealed that Germany has denounced the evil deeds of France.

OLDER

- A recent news article revealed that Germany has declared their friendship with America.
- A recent news article revealed that Germany has conquered Brasilia.
- A recent news article revealed that Germany is expanding, adding the new settlement: Brasilia.

< SINGLE PLAYER

Old World

CHOOSE A LEADER



 **PHILIP**
Greece

BIO

STATS

I am King Philip II of Macedon, son of King Amyntas III, founder of the Unified Macedonian State.

I received a diplomatic and military education from Epaminondas and established a federation of Greek states known as the League of Corinth. I reformed the Ancient Macedonian Army and established the Macedon Phalanx.

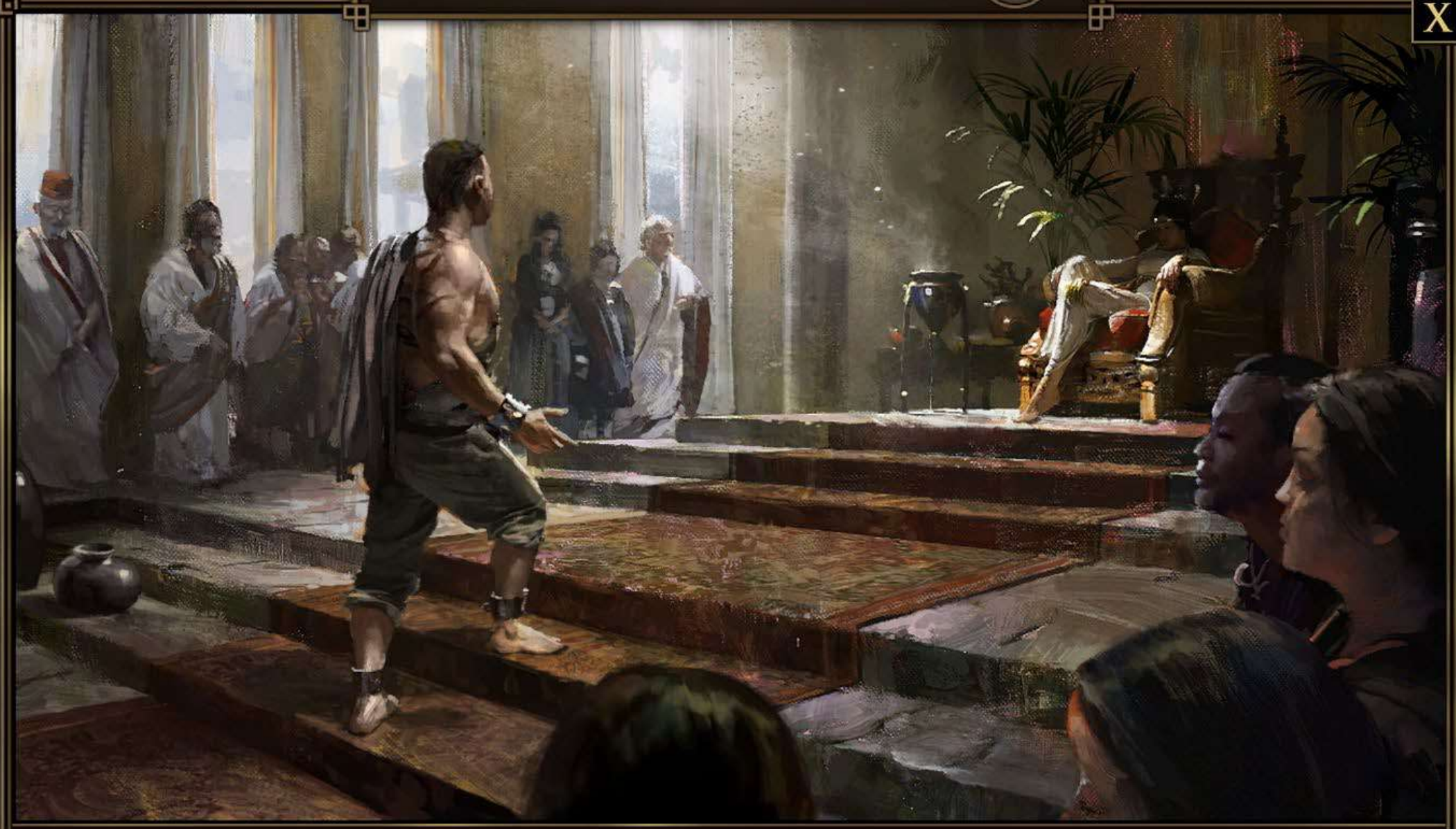
As a teen, I may have had an older male lover, a general I lived with named Pammenes.

Over the course of my life, I married seven times. One of my wives, Olympias, gave me a son, and I named him Alexander. He was born the year my horse won in the Olympic Games. Alexander is now 13.

NEXT



THE MECHANISM



In court, the great thinker Erishti-Aya the Scientist 🏆 places a strange bronze object before the throne. Composed of numerous moving pieces and rotating gears, the object proves both intriguing... and unsettling.



Erishti-Aya explains that her "mechanism" predicts the changing night sky, but others in court joke that it predicts her madness.

[Requires Composite Bow]

- Destroy this cursed mechanism.
- How can we take advantage of this discovery?
- Teach us how it works.
(Requires Queen Melulatum the New 🏆 : Intelligent)

TRIBES

Danes

AMBITIONS:

Control Four Cities (LEGACY)	2/4
Found Religion (LEGACY)	0/1
Control Six Lumbermills	0/6

1
 6
 19

NEXT UNIT

2

Old World



Panzer General (1994)

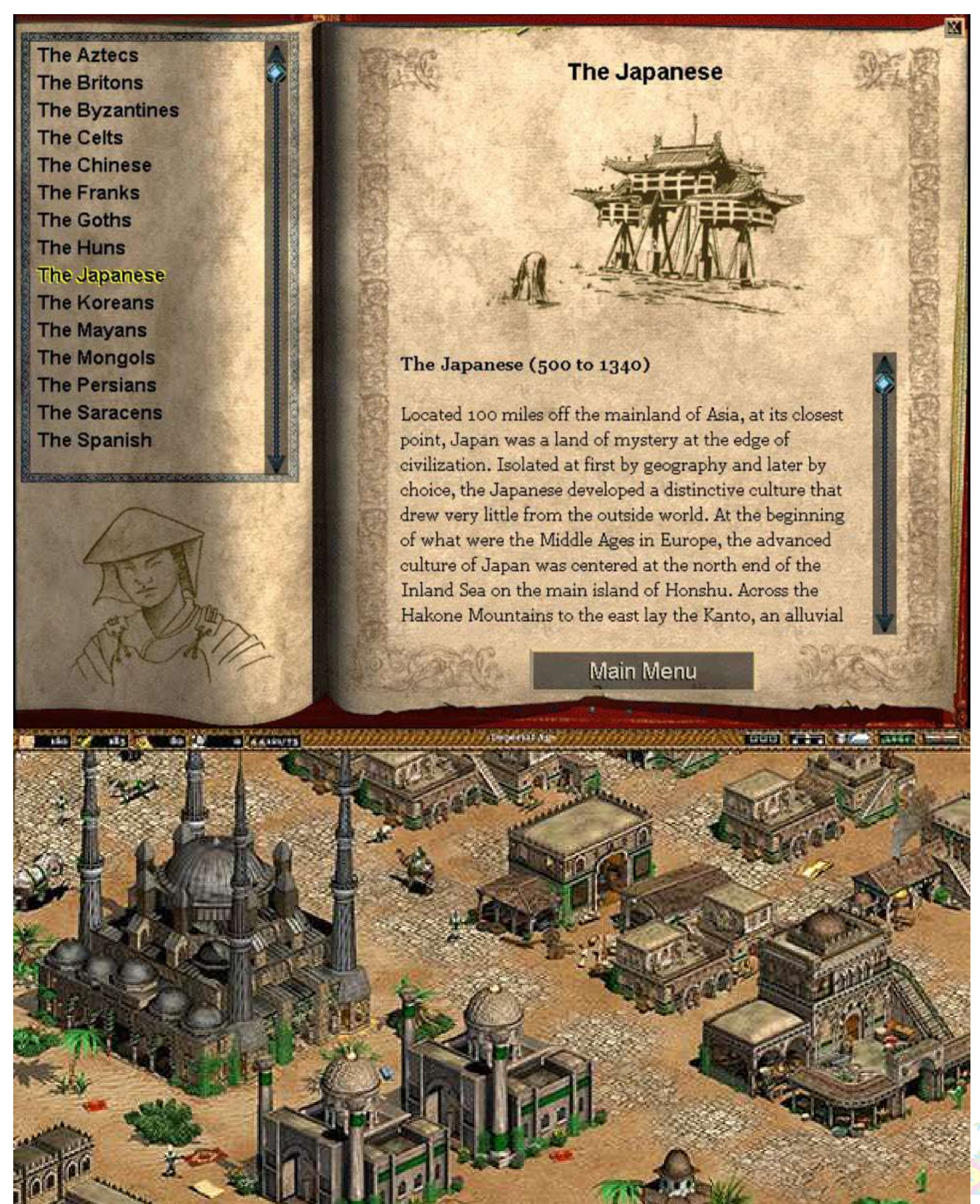
Turn Based Strategy



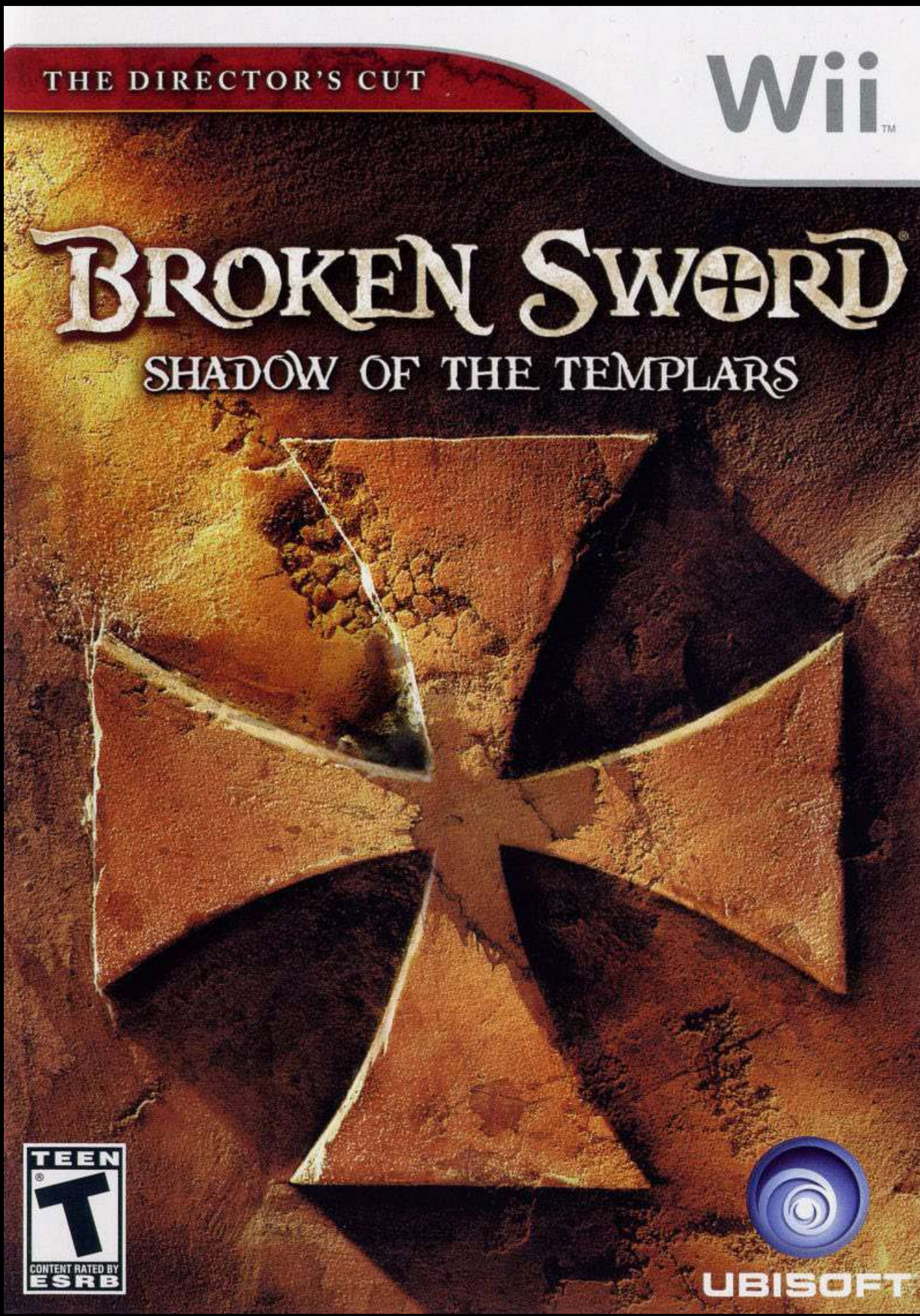
Age of Empires (1997-)



Mostly have a simplified view of history
Highly replayable



Broken Sword Series

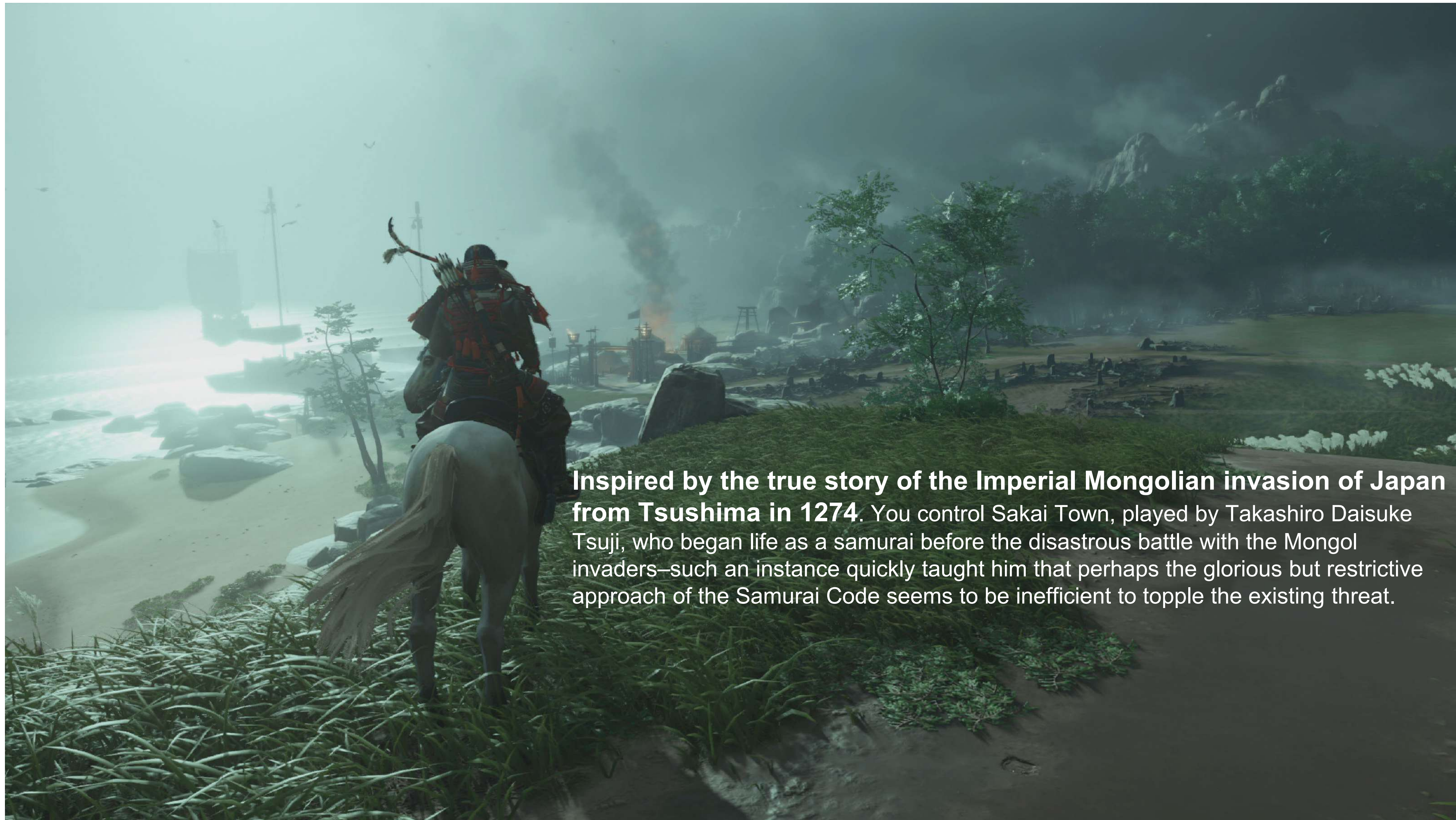


Building a **mythology** around historical figures or events





Ghost of Tsushima



Inspired by the true story of the Imperial Mongolian invasion of Japan from Tsushima in 1274. You control Sakai Town, played by Takashiro Daisuke Tsuji, who began life as a samurai before the disastrous battle with the Mongol invaders—such an instance quickly taught him that perhaps the glorious but restrictive approach of the Samurai Code seems to be inefficient to topple the existing threat.





VALIANT HEARTS
- THE GREAT WAR -

Valiant Hearts weaves a narrative of four primary protagonists: an African American soldier, a Belgian nurse, a German soldier, and his French father-in-law. The game's story **follows the contours of the war**, even placing two of the characters on opposite sides of the conflict.

Historical information is presented with colorized photos and game scenes are intertwined with fascinating or frightening historical moments; for example, the French Army's requisitioning of Parisian taxis to transport soldiers to the First Battle of the Marne, and the destruction of Ypres. Additional historical information is embedded into the story or is presented in the start menu, allowing gamers to learn information that rounds out the overall experience.

<https://origins.osu.edu/connecting-history/top-ten-origins-historically-themed-video-games>



Valiant Hearts (2014)

Puzzle Adventure Game



Valiant Hearts
<https://youtu.be/MP8q5F6dFqQ?si=UZdV7OsRD6iyACLR>



Valiant Hearts (2014)

The team looked at design documents from old LucasArts adventure games for inspiration. To ensure the game was historically accurate, the development team listened to first-hand accounts of the war from team members' families, read letters written by soldiers, and travelled to the trenches in France. The information and stories they collected were then incorporated into the title as collectibles to let players gain new knowledge about the war. Ubisoft also partnered with the producers of the documentary film *Apocalypse World War I* to incorporate archived materials into the game.*





Video Games by/for Museums





Advertised as first video game released by a Museum



A Life in Music - Teatro Regio di Parma

The game focuses on the story of two young musicians whose stories intersect with those of Maestro **Giuseppe Verdi**

<https://www.alifeinmusic.it/>



TUO  USEO



FESTIVAL
VERDI
PARMA



TEATRO
REGIO
PARMA



Story about escaping an unhappy present and romanticizing the past



M A R T A

MUSEO
NAZIONALE

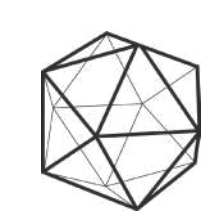


Time Explorer

Isometric Flash (RIP) Game

The British
Museum

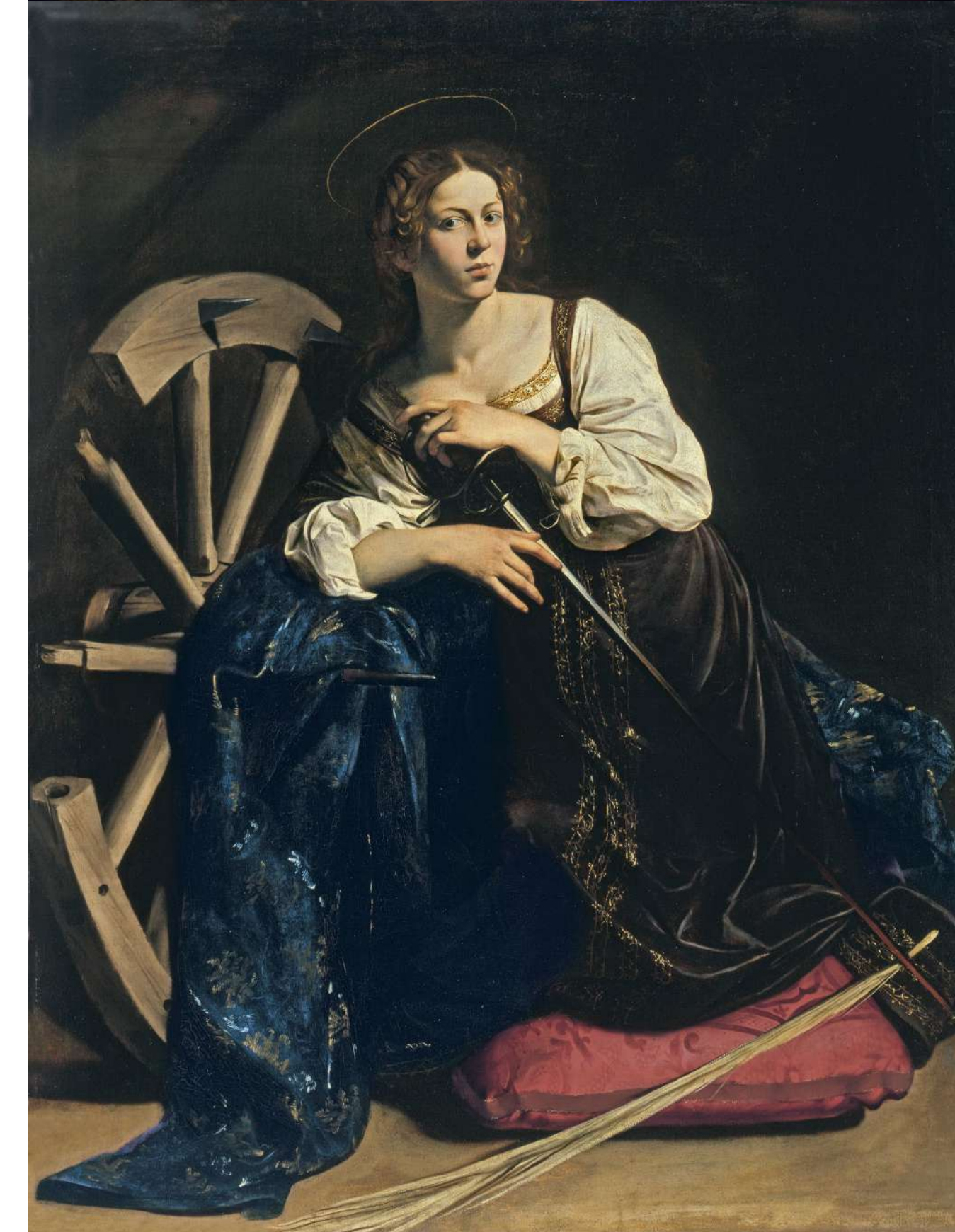








Nubla's main aim is to develop projects connected to technology and video games, with the hope that the conceptualisation, implementation and production of projects and games by young people in an open and collaborative atmosphere will allow them to become more involved in the museum.



<https://mw2016.museumsandtheweb.com/glami/the-nubla-universe/>

Development Diary of Nubla



Nubla: where art meets video games - Development Diaries

Part 1: <https://youtu.be/zeJBXPoVGyg>

Part 2: <https://youtu.be/3HgJ9NZFniU>

Part 3: <https://youtu.be/cgLbot85s2c>





The ReInHerit Museum Management Game





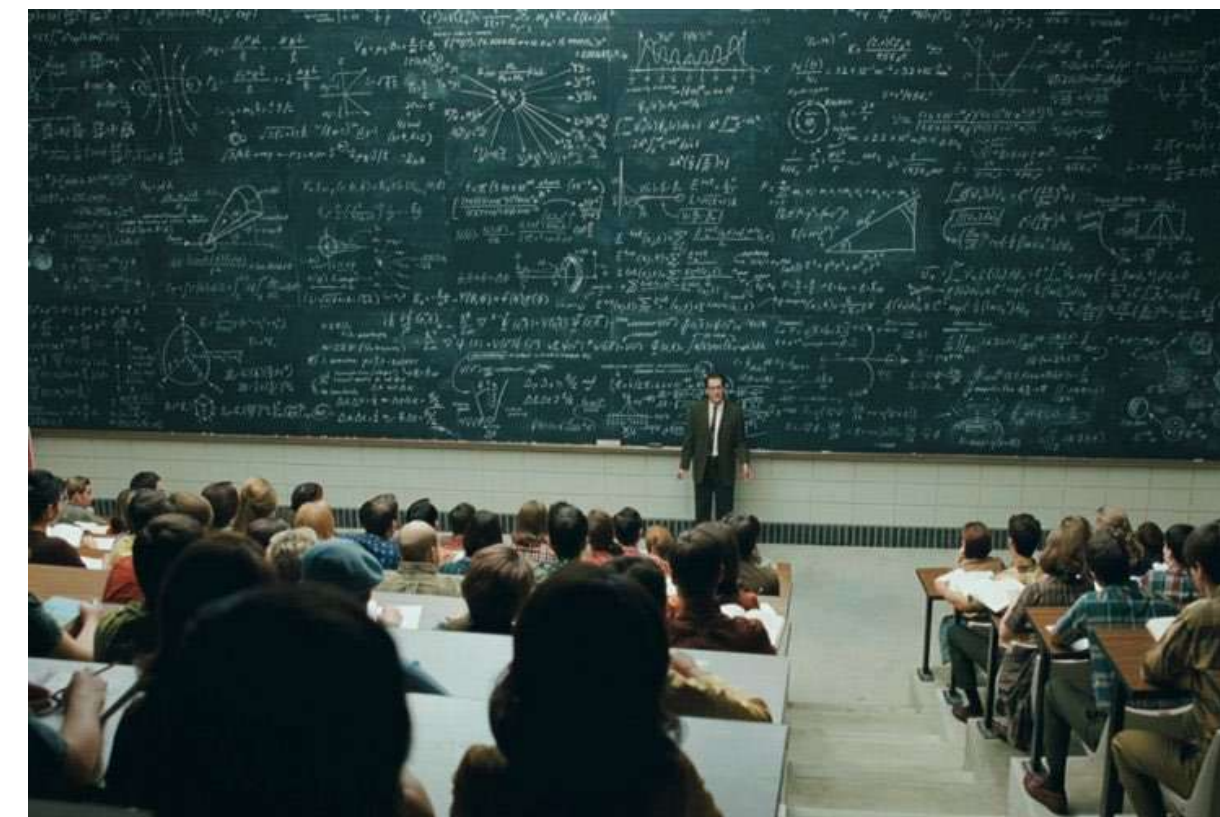
Things to consider





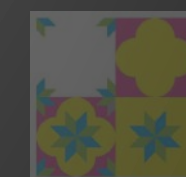
Balance

Educational vs academic value





Ubisoft's Assassin's Creed Odyssey Team





Roles in a team

- **Graphics Artists**

 - Concept Artist

 - Storyboard Artist

 - 3D Modeler

 - Environment Artist

 - Texture Artist

 - Visual Effects Artist

 - User Interface Artist

 - Animator

 - Technical Artist

 - Art Director

- **Audio Artists**

 - Musician

 - Composer

 - Audio Engineer

 - Sound Effects Designer

- **Designers**

 - Writer

 - Level Designer

 - System Designer

 - Combat Designer

 - Creative Director





Roles in a team

Programmers

A.I. Programmer

Gameplay Programmer

Graphics Programmer

Engine Programmer

Server Architect

Middleware/Tools Programmer

Database Designer

Systems Analyst

Information Architect

Platform Designer

Action Scripter

- **Testers**

 - Quality Assurance

 - Localization

- **Producer**

 - Associate Producer

- Product Manager

- Creative Manager

- QA Manager

- ...





Our Team



Christos Othonos

- Dev Team Leader
- Technical Artist
- Programming



Charis Marangos

- Lead Designer
- Technical Artist
- Programming



Andreas Panagiotou

- Artificial Intelligence
- Crowd Simulations
- Programming



Theodoros Kyriakou

- Animation Researcher
- Artificial Intelligence
- Programming



Panayiotis Charalambous

- Project Manager
- AI Evangelist 😊

The team is highly technical, CS oriented!
We should aim for a more technical, systems-based game instead of a heavily artistic game.

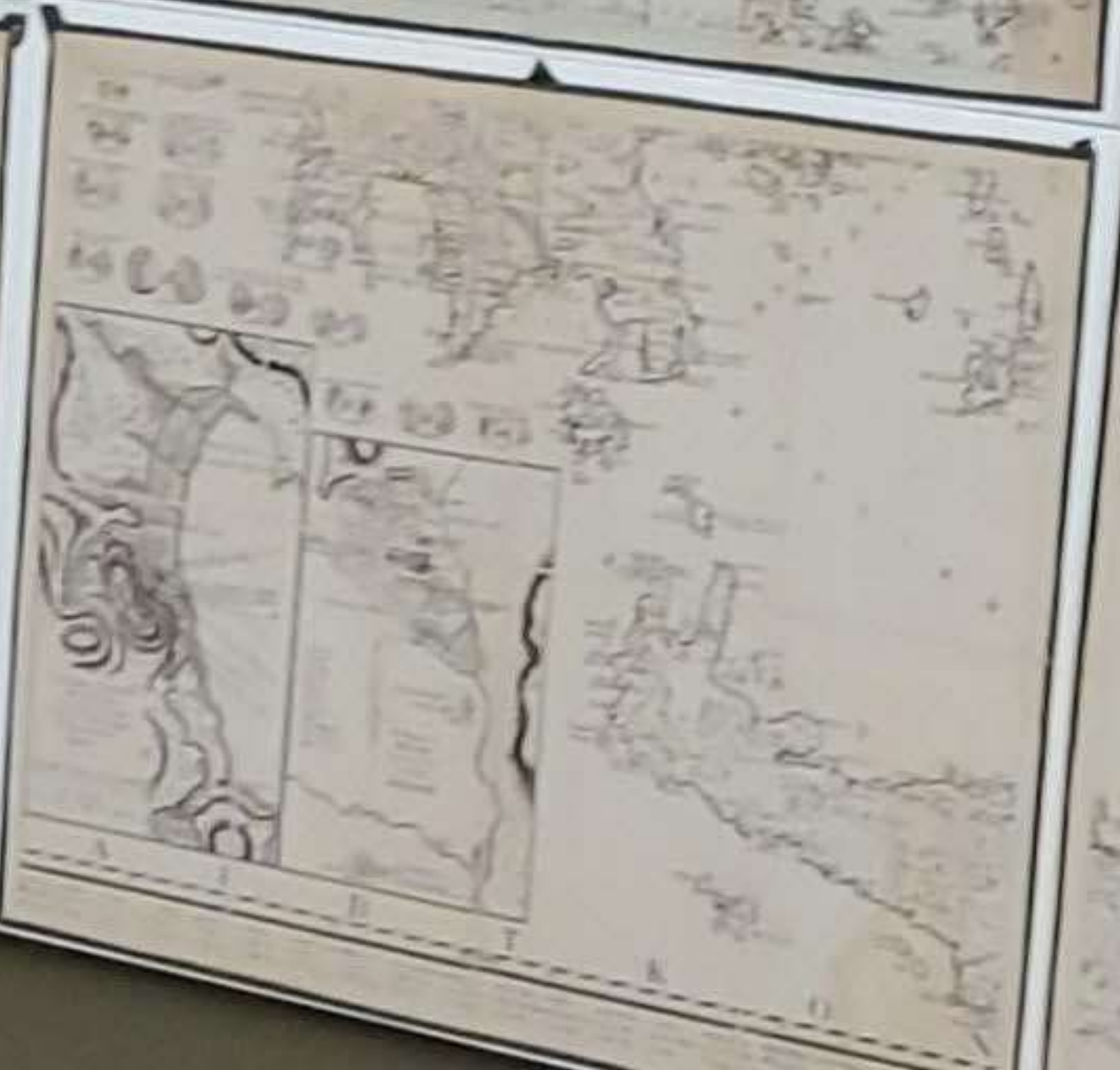
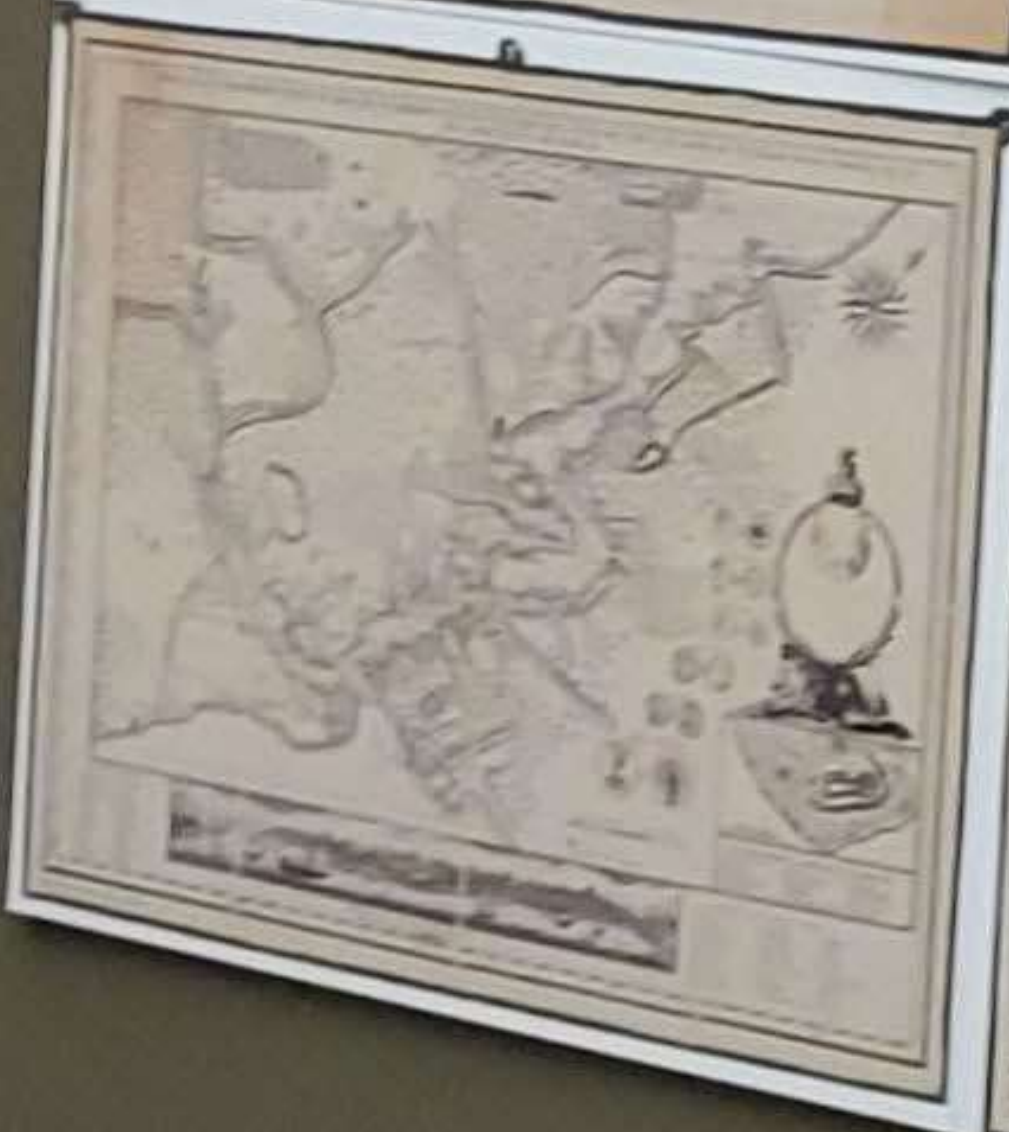
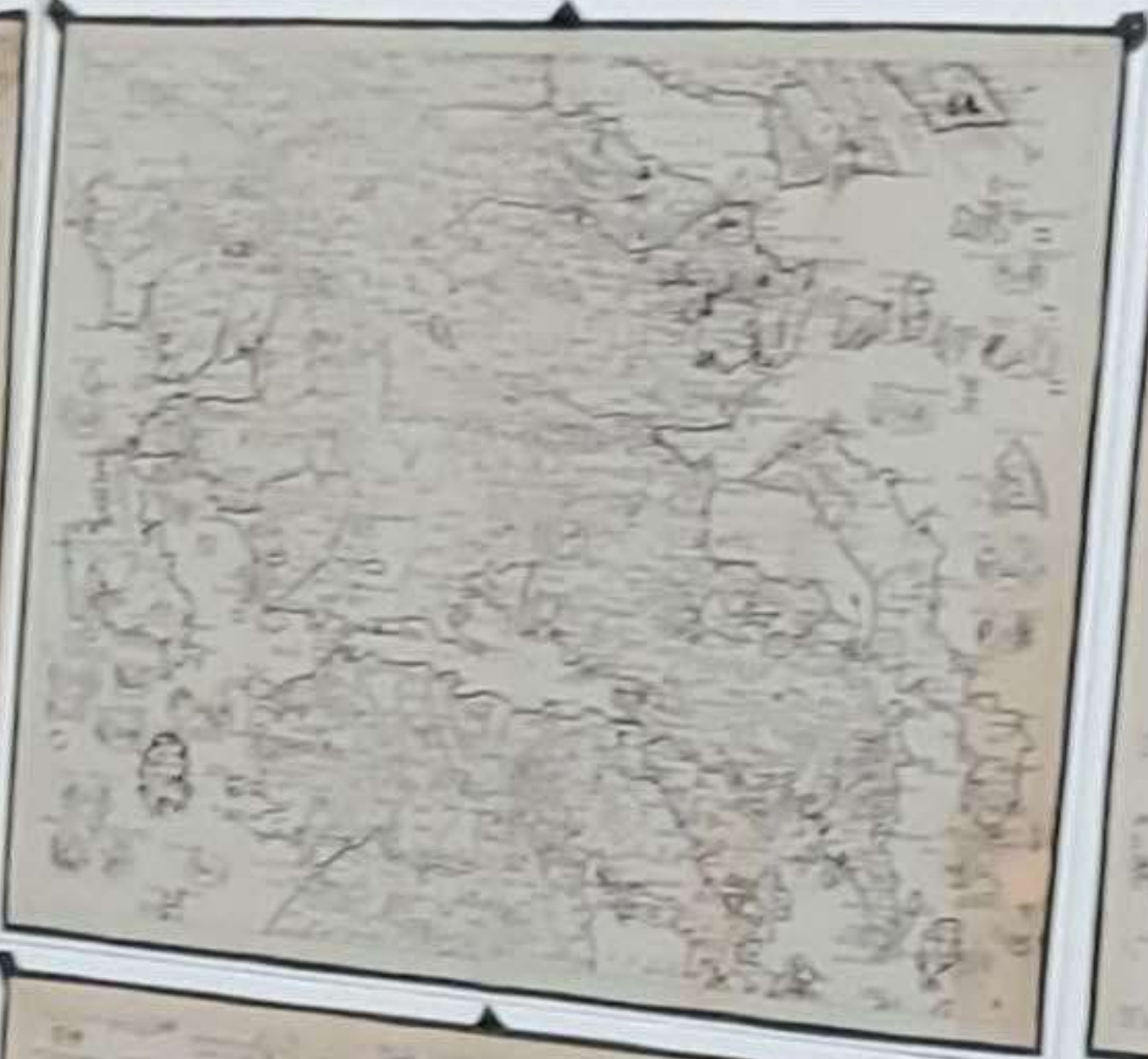
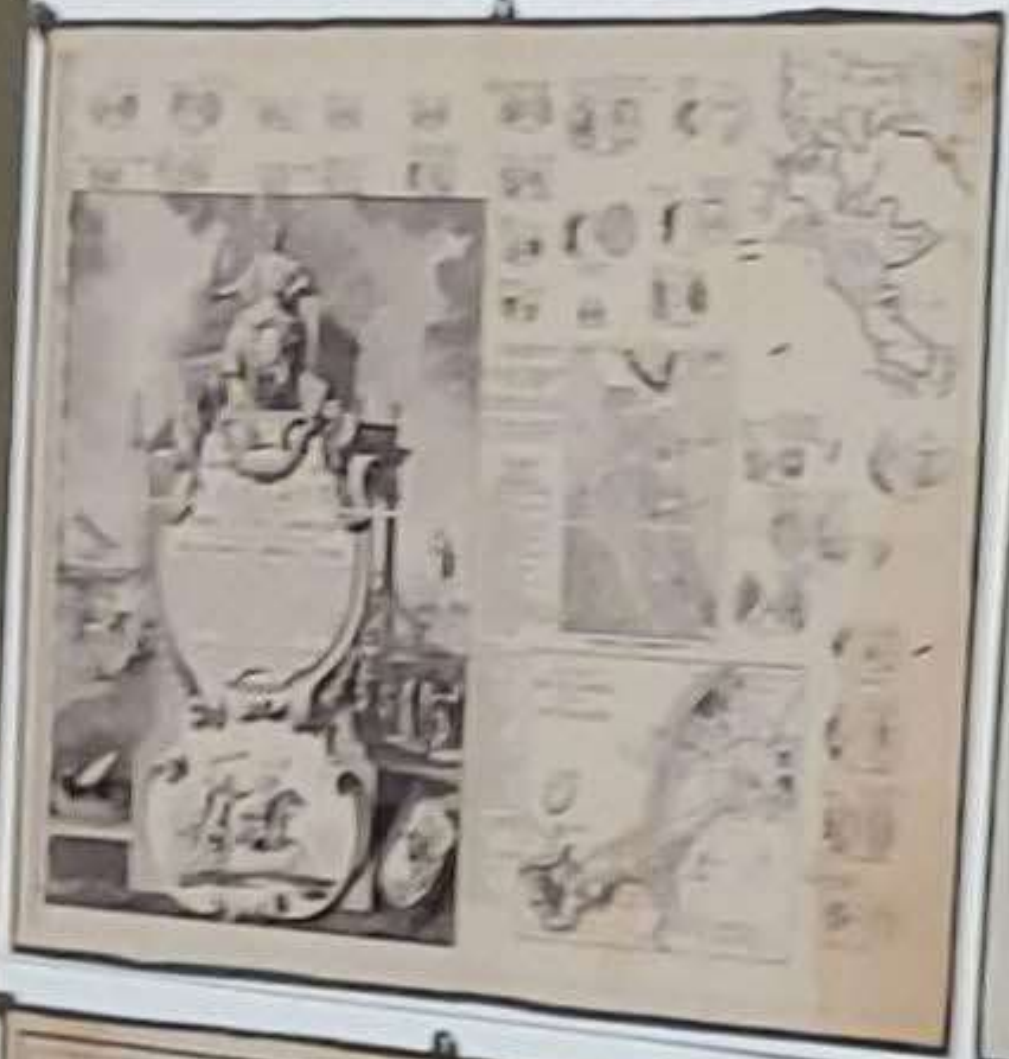
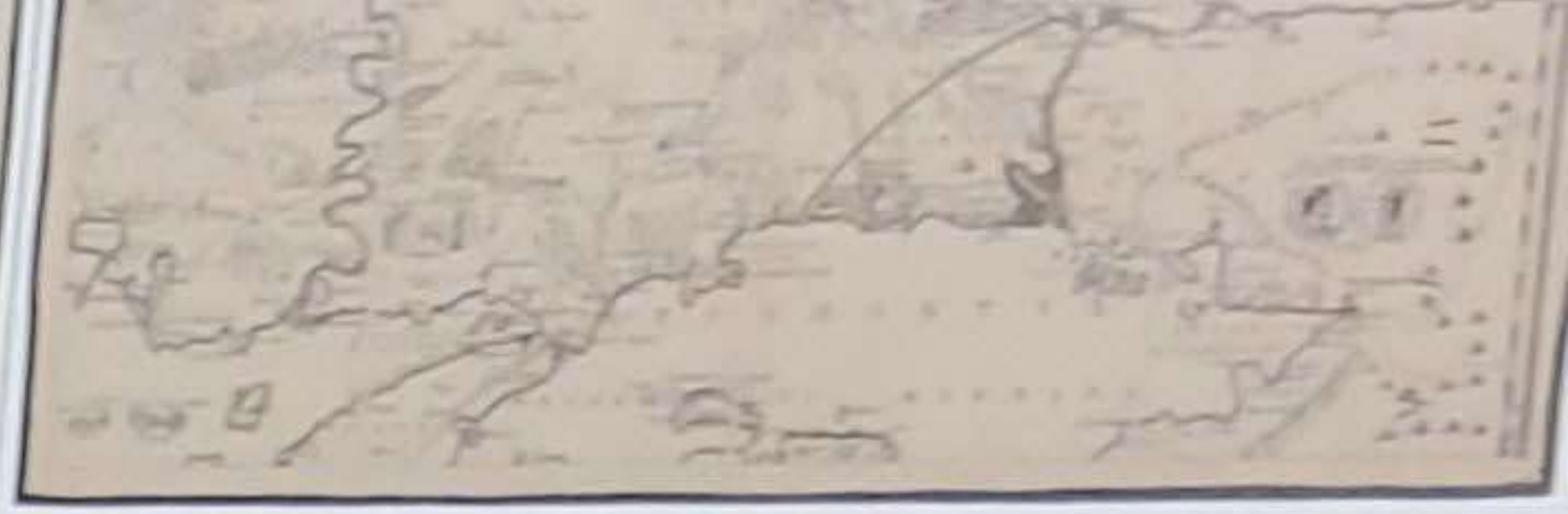
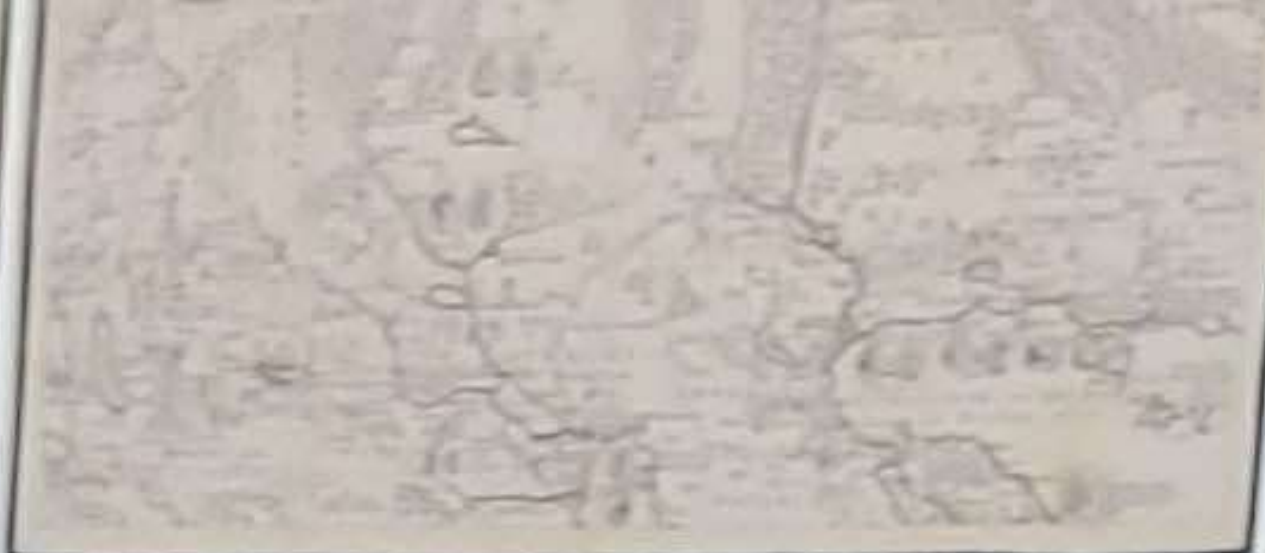


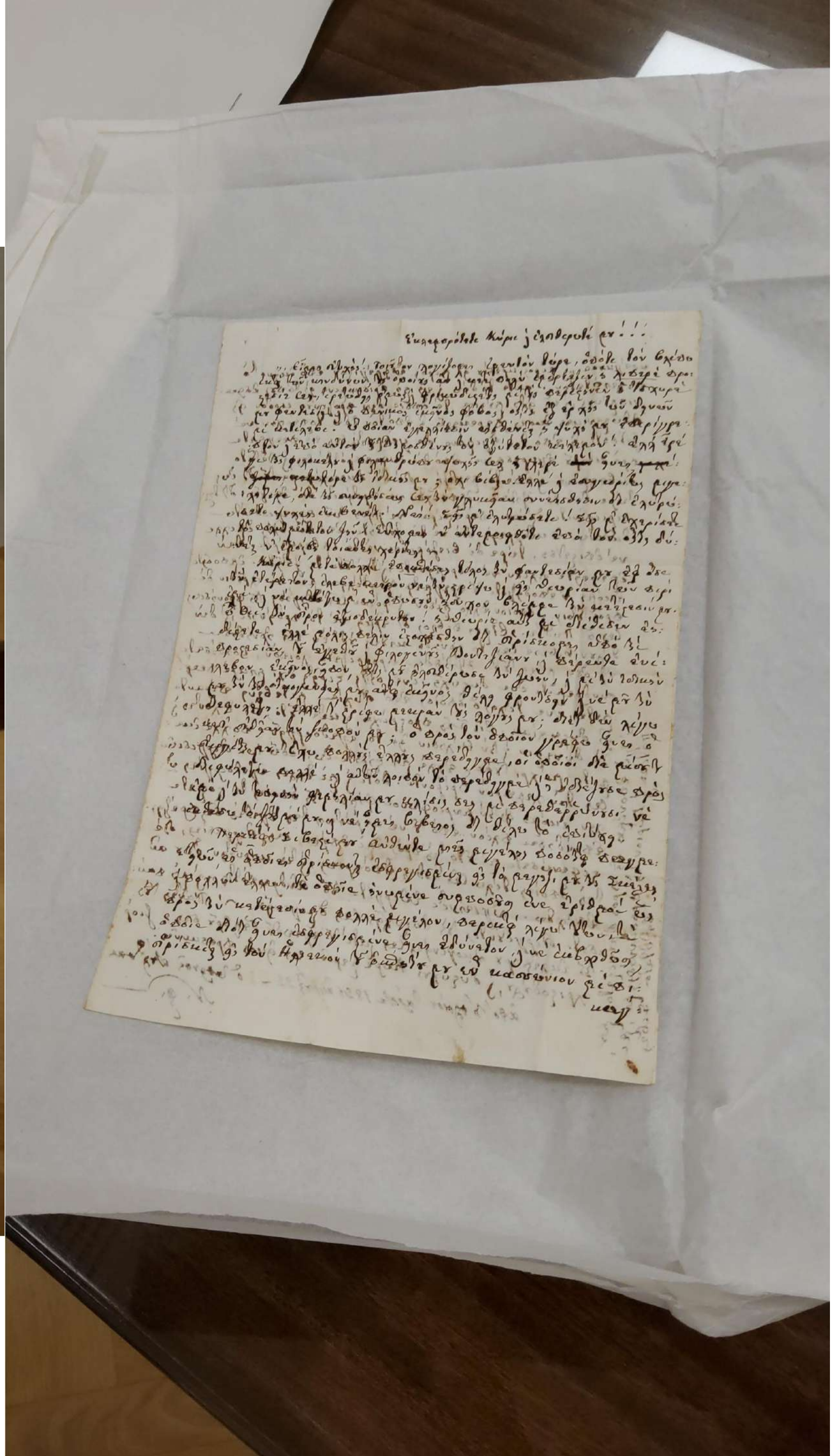
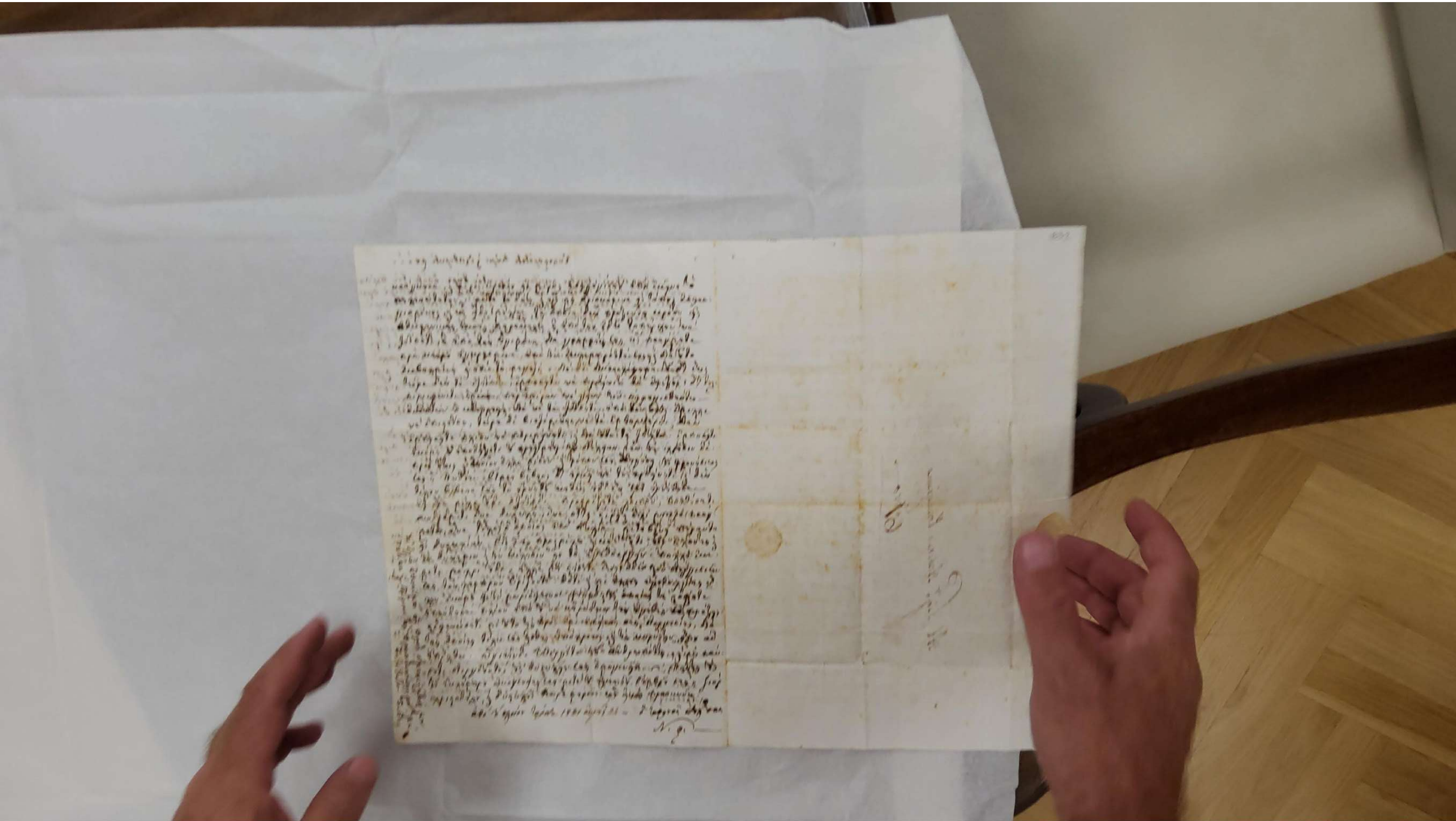


In search of inspiration











Handwritten labels on the drawers of the wooden cabinet, likely identifying the specimens or the artist's work. The labels are arranged in a vertical column and contain illegible text.





Εποχή του Σιδήρου

Κυπρο-Αρχαϊκή: ca. 750 – ca. 480 π.Χ.

Γλυπτική

Η Κύπρος δεν διαθέτει κοιτάσματα μαρμάρου, έτσι οι Κύπριοι γλύπτες περιορίστηκαν στη χρήση μαλακού ασβεστόλιθου, ο οποίος δεν είναι το ιδανικό υλικό για τη γλυπτική. Ωστόσο, δημιούργησαν κάποια εξαιρετικά δείγματα αγαλμάτων, κυρίως κατά τον 6ο αιώνα π.Χ., ο οποίος αποτελεί και την περίοδο ακμής της μυκηναϊκής γλυπτικής. Η ανάπτυξη της γλυπτικής σε λίθο ήταν παράλληλη με την κορνηλαστική, που εξυπηρετούσε τις ανάγκες των κριών. Κάποια γλυπτά ήταν φυσικού μεγέθους. Η συλλογή περιλαμβάνει μία τέτοια κεφαλή (αρ. καταλόγου 186) του πρώιμου 6ου αιώνα π.Χ. και ένα άγαλμα φυσικού μεγέθους (αρ. καταλόγου 188).

Ο πανελλήνιος ήρωας Ηρακλής ήταν αρκετά δημοφιλής στην κυπριακή εικονογραφία και ιδιαίτερα στη γλυπτική. Η συλλογή περιλαμβάνει ένα πλήρες αγαλματίδιο (αρ. καταλόγου 189) και δύο κεφαλές (αρ. καταλόγου 189-190). Η κολλοσσισία γυναικεία κεφαλή (αρ. καταλόγου 191), με το πλούσιο διακοσμημένο στεφάνι και τα κοσμημάτά της, είναι ένα εξαιρετικό δείγμα ενός τύπου που παριστάνει την ίδια την Αφροδίτη ή κείνη της και χρονολογείται περίπου στο 5ο αιώνα π.Χ. Από τα μικρότερα αγάλματα (αρ. καταλόγου 192) ο Άλλωνος διαπνέει αρκετά το



1. Αγαλματίδιο της Αφροδίτης, 6ος αιώνας π.Χ. (αρ. καταλόγου 189)

2. Κεφαλή της Αφροδίτης, 6ος αιώνας π.Χ. (αρ. καταλόγου 189)

3. Κεφαλή της Αφροδίτης, 6ος αιώνας π.Χ. (αρ. καταλόγου 190)

4. Κεφαλή της Αφροδίτης, 6ος αιώνας π.Χ. (αρ. καταλόγου 191)

5. Αγαλματίδιο της Αφροδίτης, 6ος αιώνας π.Χ. (αρ. καταλόγου 192)

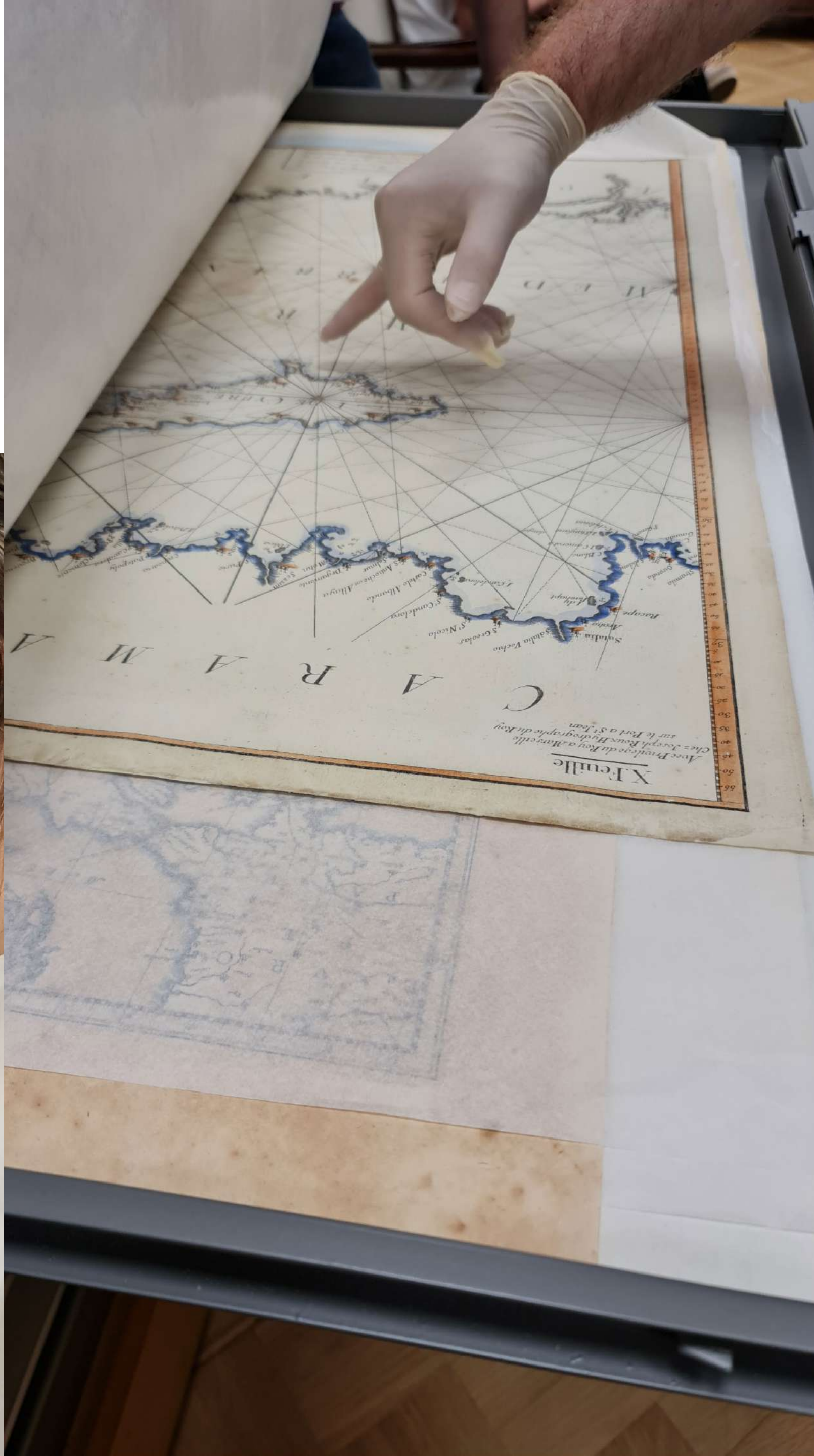
6. Αγαλματίδιο της Αφροδίτης, 6ος αιώνας π.Χ. (αρ. καταλόγου 193)

7. Αγαλματίδιο της Αφροδίτης, 6ος αιώνας π.Χ. (αρ. καταλόγου 194)

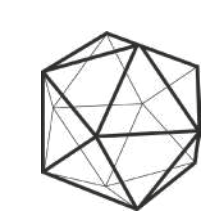


Main Inspiration

Museums, its people and how these organizations work!







Inspirations – Management Games



Two Point Hospital



Idle Museum Tycoon





ReInHerit: A Journey through Museum Management

Project Management

- A Museum creation and management game
- The goal is to get a high score (reviews) from the visitors
- Improve the museum with the help of funding and donations.
- Hire and manage employees to keep the establishment clean and to deal with trouble makers.



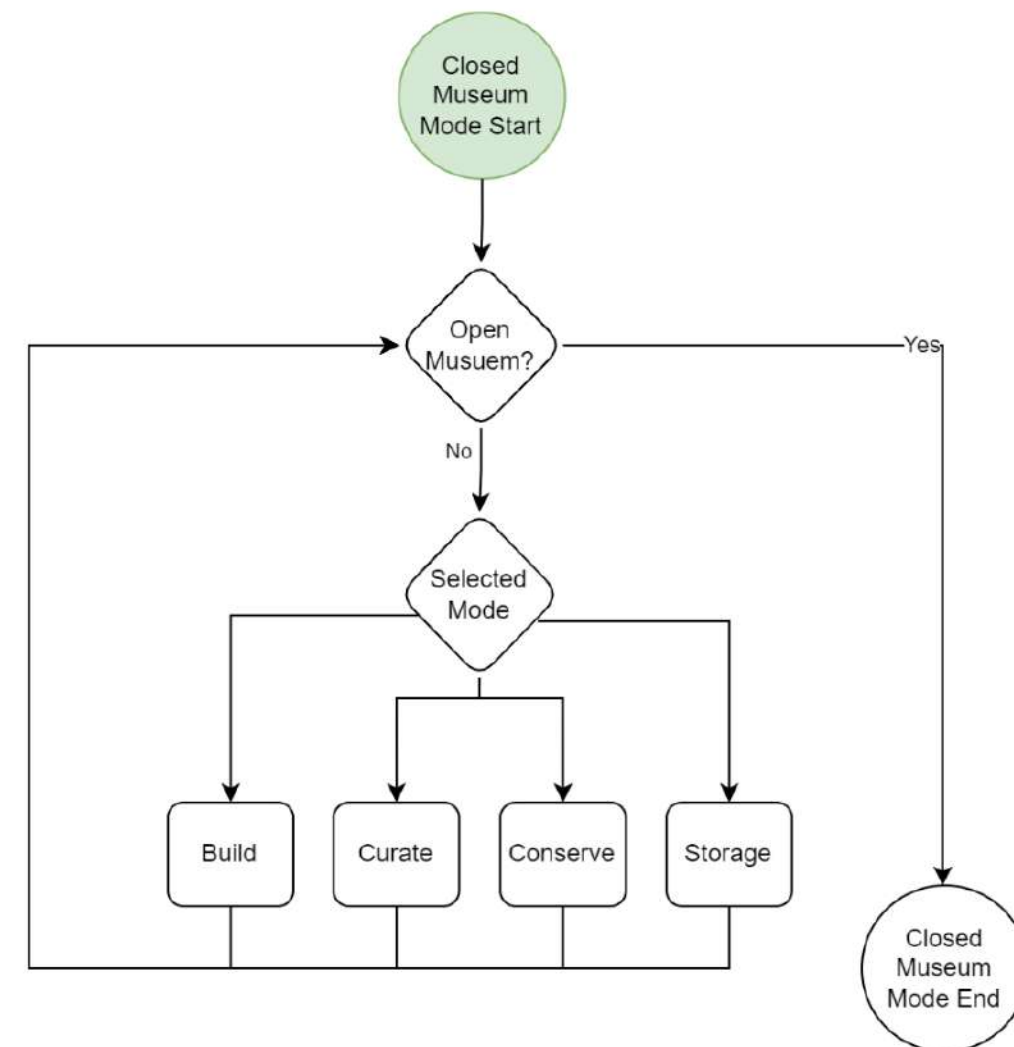
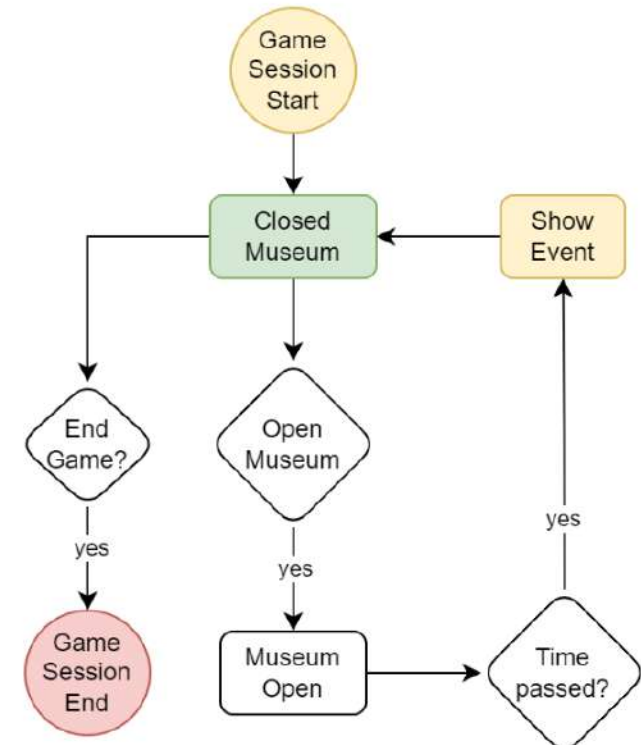
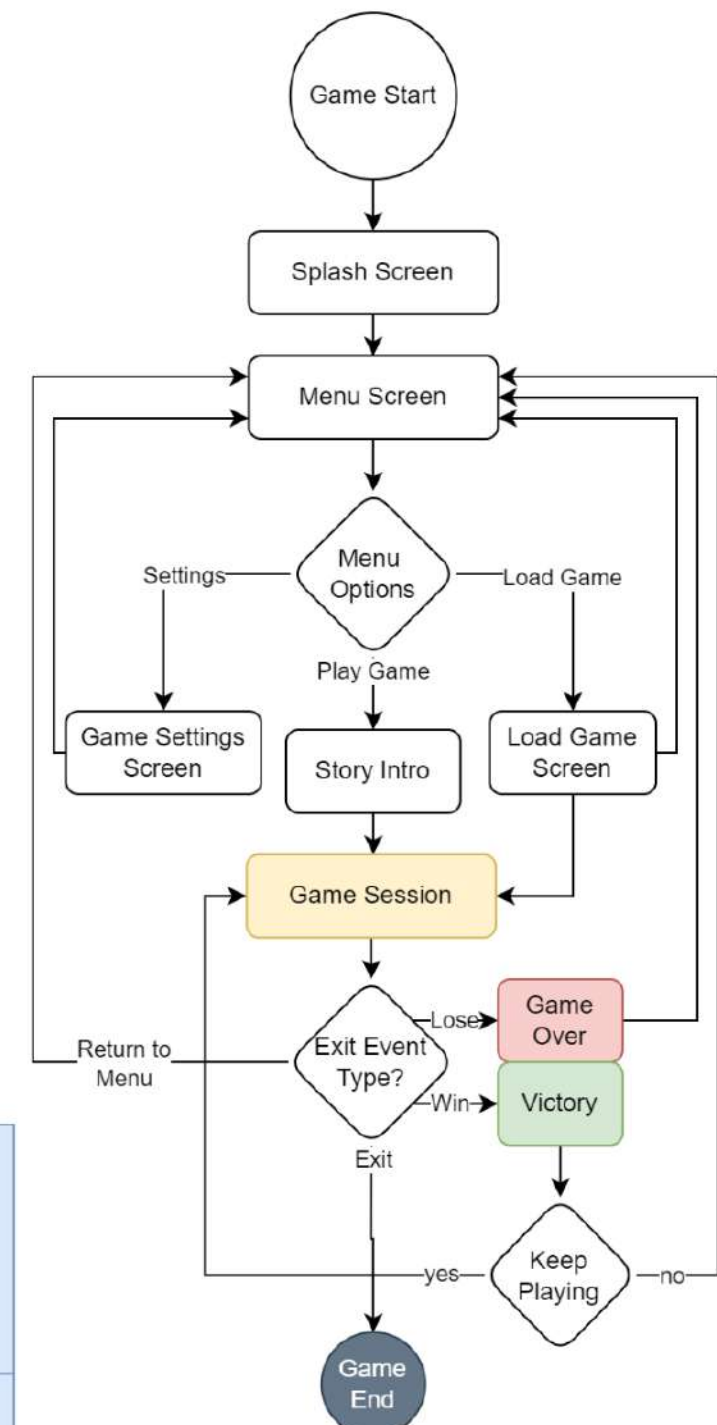
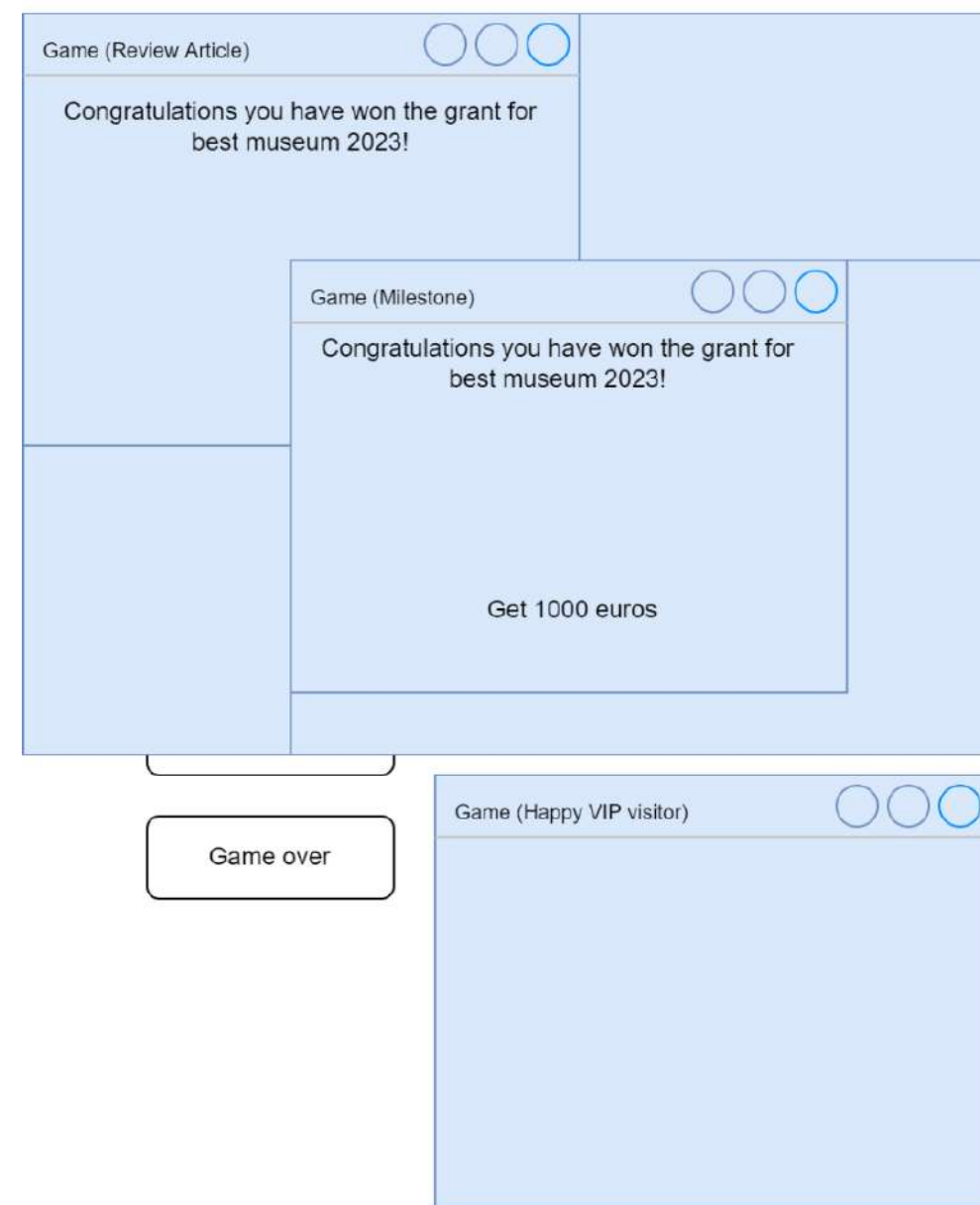
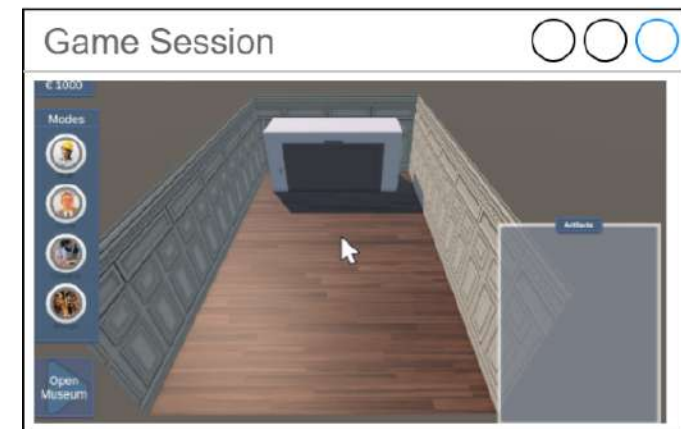
<https://reinherit-hub.eu/game/>

- We allow players to take multiple **roles in phases**
 - Architect (Build)
 - Curator
 - Conservator
 - Archivist

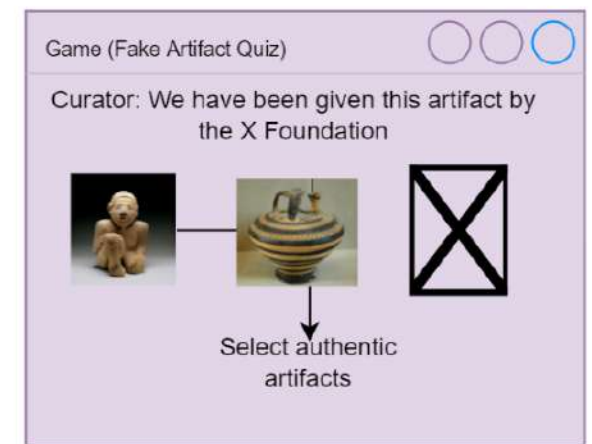
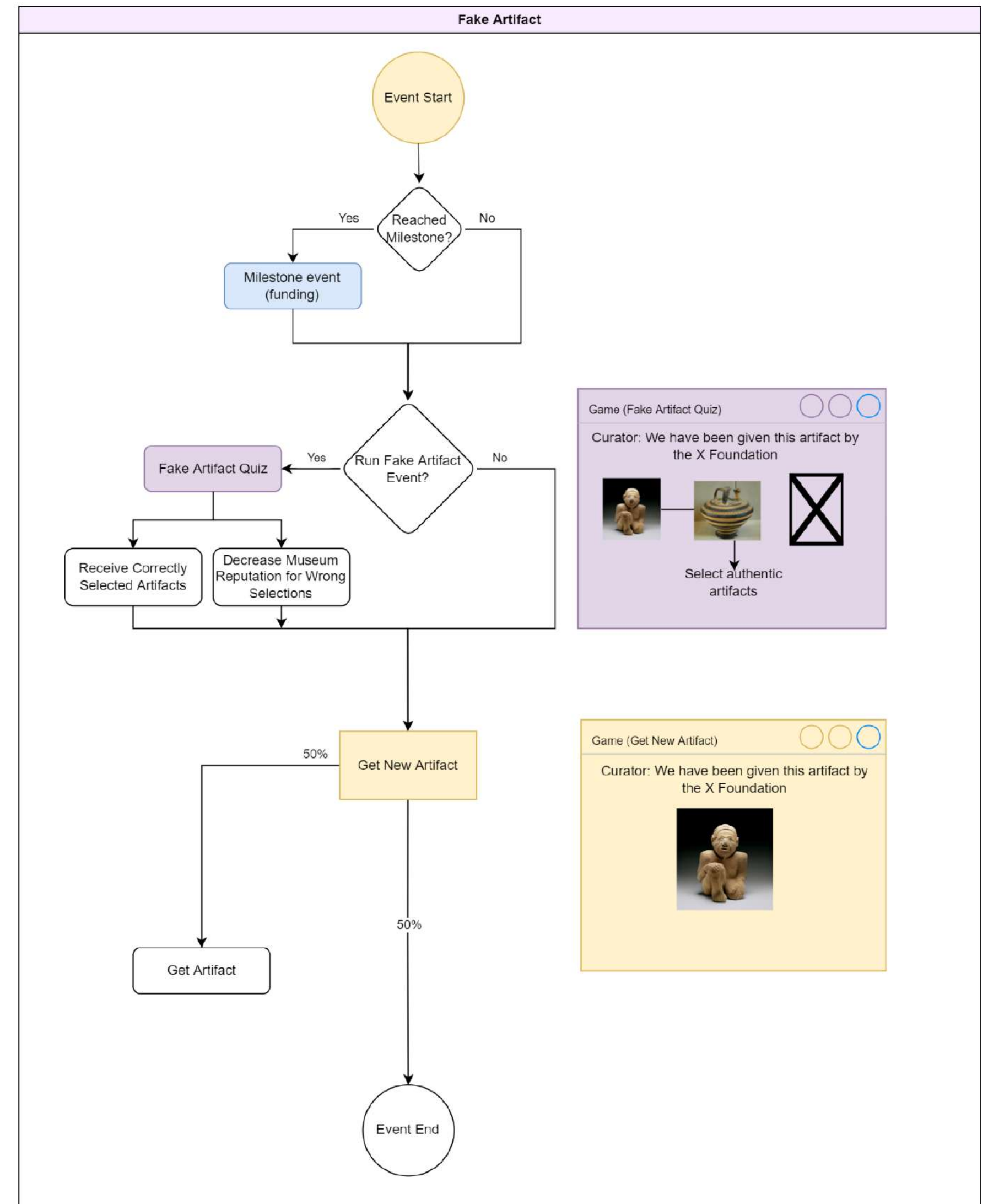




Game Flow



Events

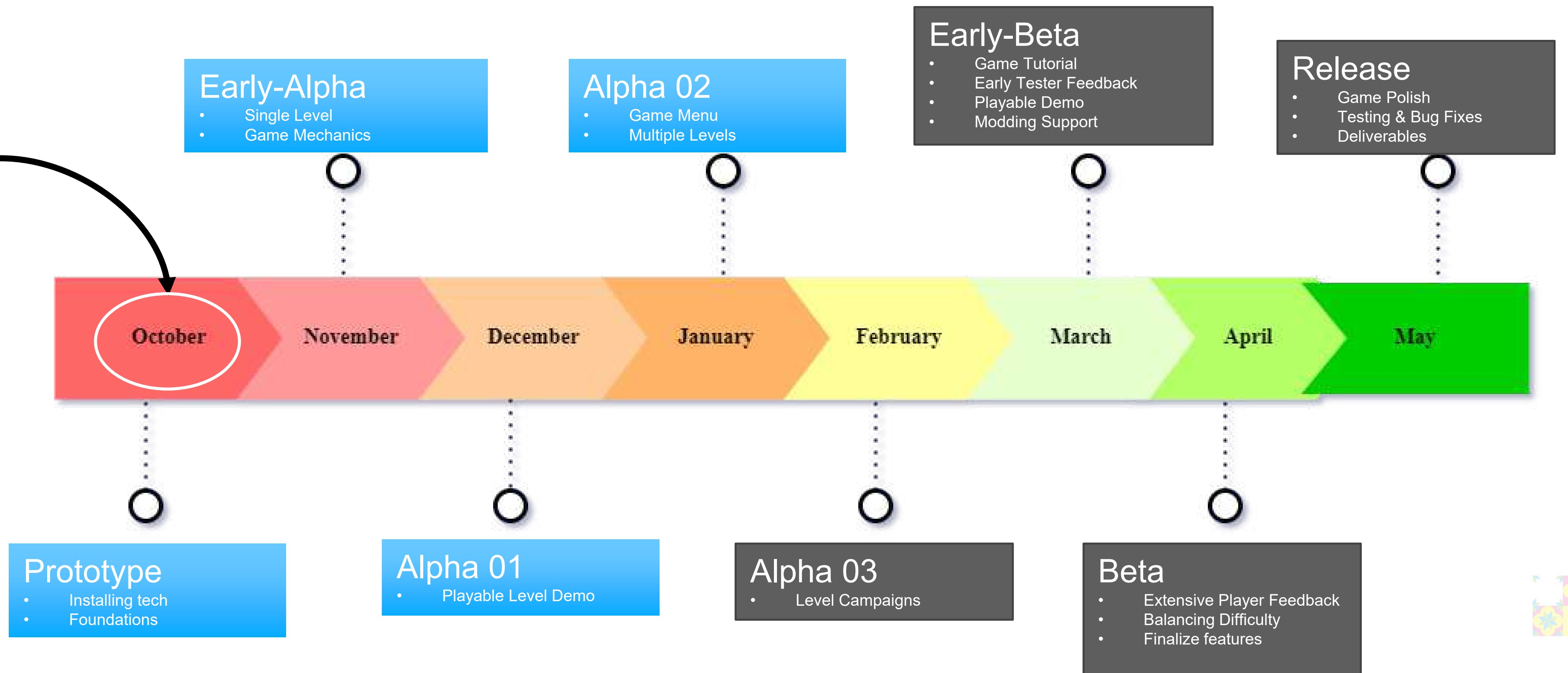




Roadmap

An agile view

- Agents can navigate and visit exhibits in order
- AI Tools: Asset generation
- Room creation.





Role - Architect

€ 300 2.0/5 0

ROUND: 1

SAVE GAME

BUILD CURATE

BUILD TOOLS

NONE

ADD

CONNECT

DELETE

TIMESCALE

x1 x2 x3

OPEN MUSEUM

<https://youtu.be/jHFfhZ0WI2Q>





Role - Curator

€ 300 2.0/5 0

ROUND: 1

SAVE GAME

BUILD CURATE

BUILD TOOLS

NONE

ADD

CONNECT

DELETE

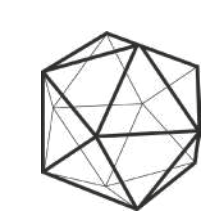
TIMESCALE

x1 x2 x3

OPEN MUSEUM

<https://youtu.be/O5A-x12o73A>





We scanned several artifacts of BoCCF



<https://skfb.ly/oDN7X>





We were lucky enough to get services from...

Andreas Lennis

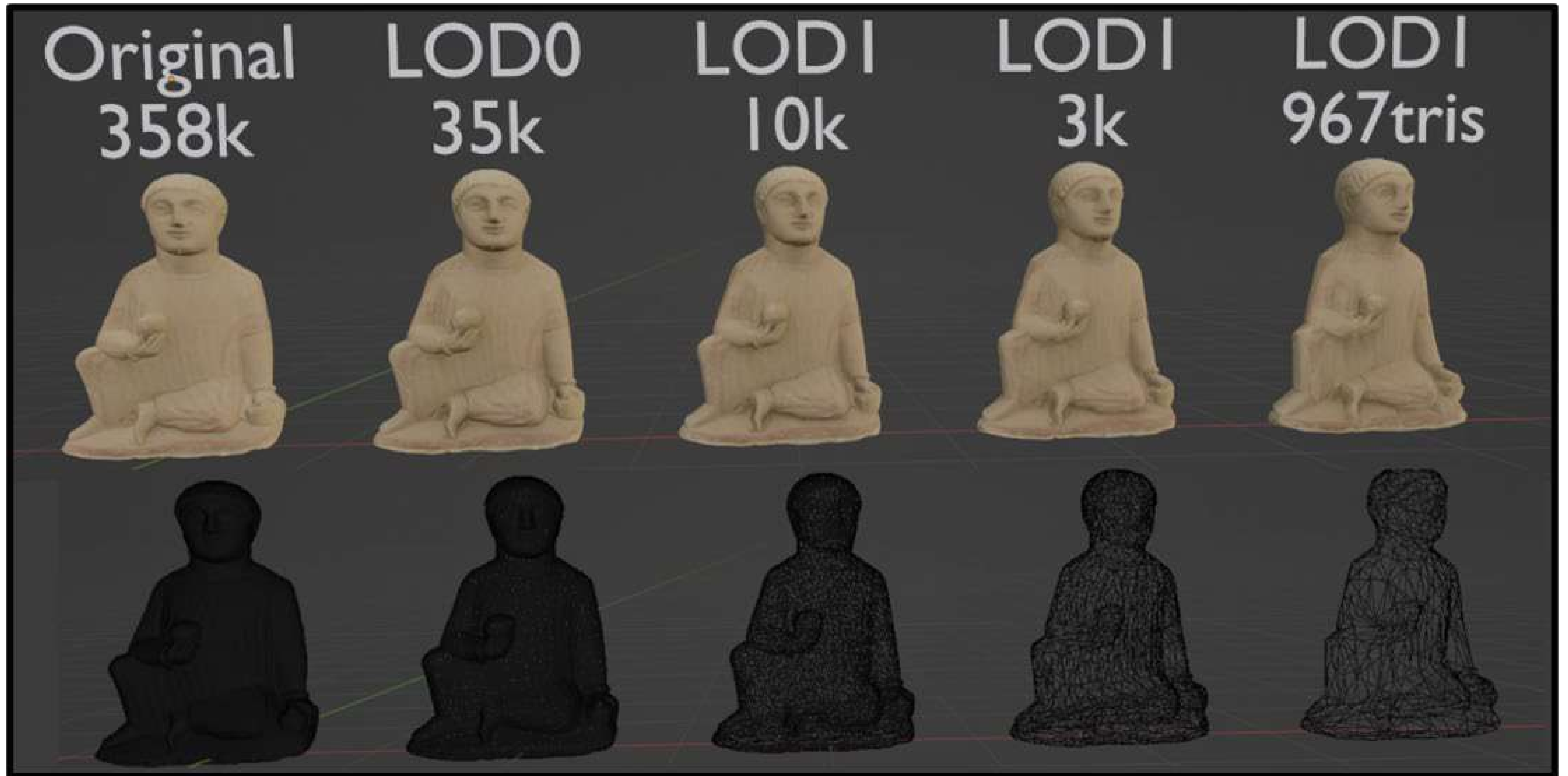


- Digital Artist extraordinary
- Architect
- Cinematographer
- ...
- McGyver





Models were preprocessed to be game ready





Role - Curator

- Occasionally, as you play, new artifacts arrive at the museum, and you need to identify the real one.
- If you succeed, you can host the artifact in your museum.
- Artifacts attract visitors, that bring income to the museum from donations.





Generating counterfeit artifacts with AI

Ancient urn sculpted with Caryatids



Ancient urn painted with Caryatids



Ancient urn painted with Odysseus slaying a dragon





Generating counterfeit artifacts with AI

stability.ai



 DALL·E 2

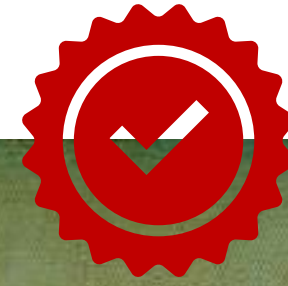


Got the idea during the Summer Camps on Game Development and AI at CYENS



Curator: Spot the real artifact (AI to create fakes)

Modified by AI



Modified by AI



Modified by AI





Curator: Spot the real artifact (AI to create fakes)

Modified by AI



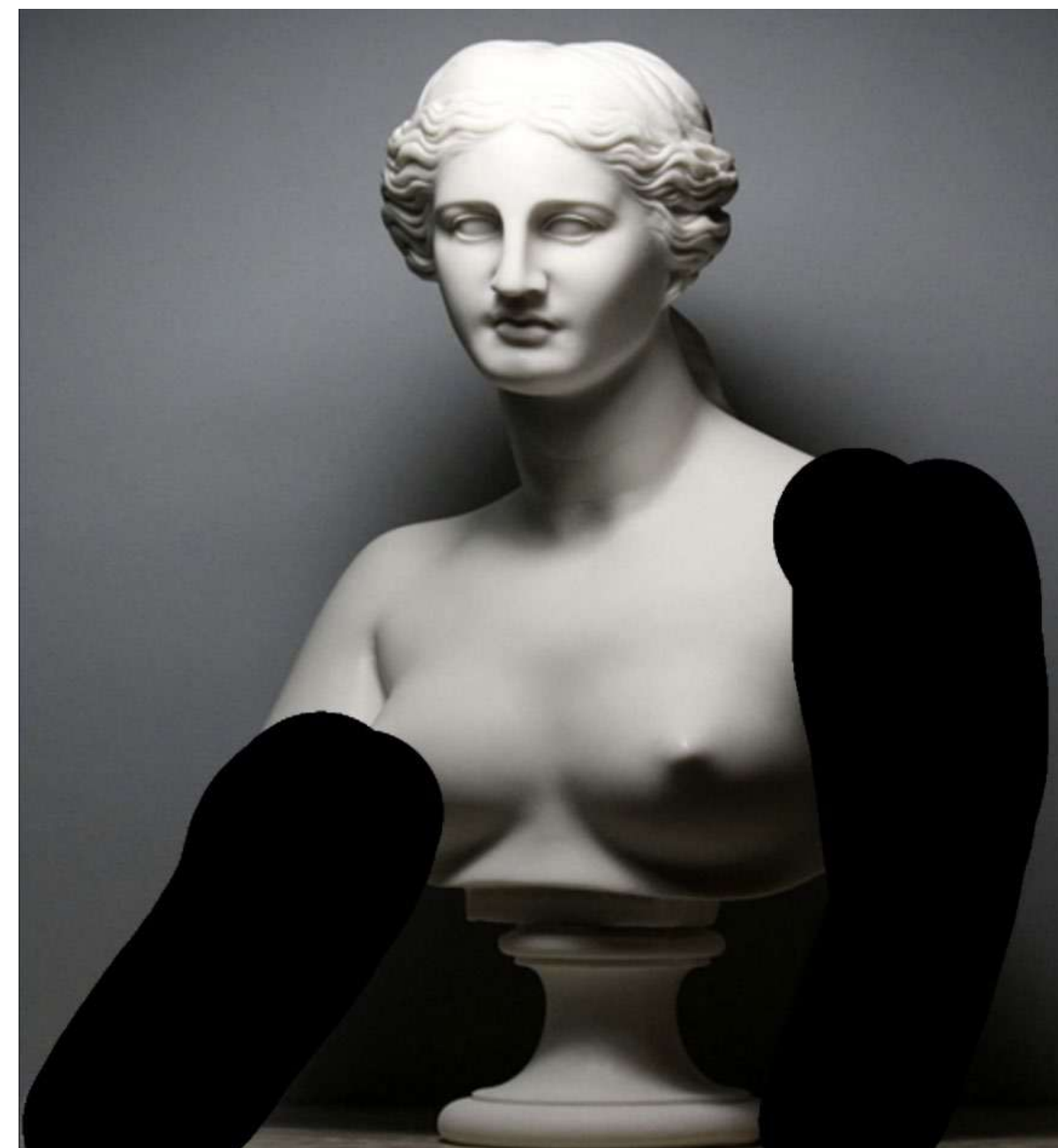
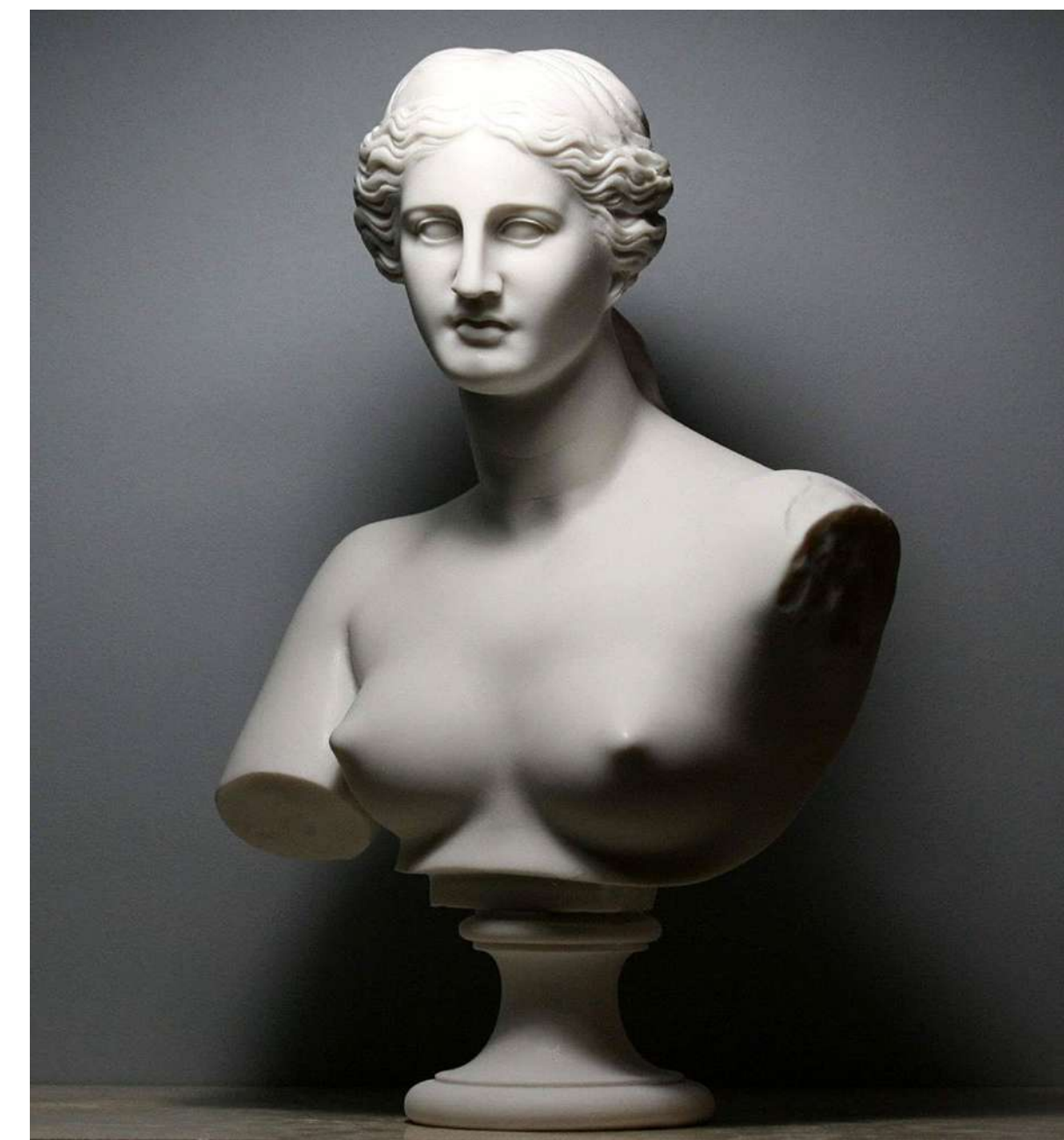
Modified by AI



Modified by AI



Creating Fake Artifacts



Statue of Aphrodite, hands

stability.ai

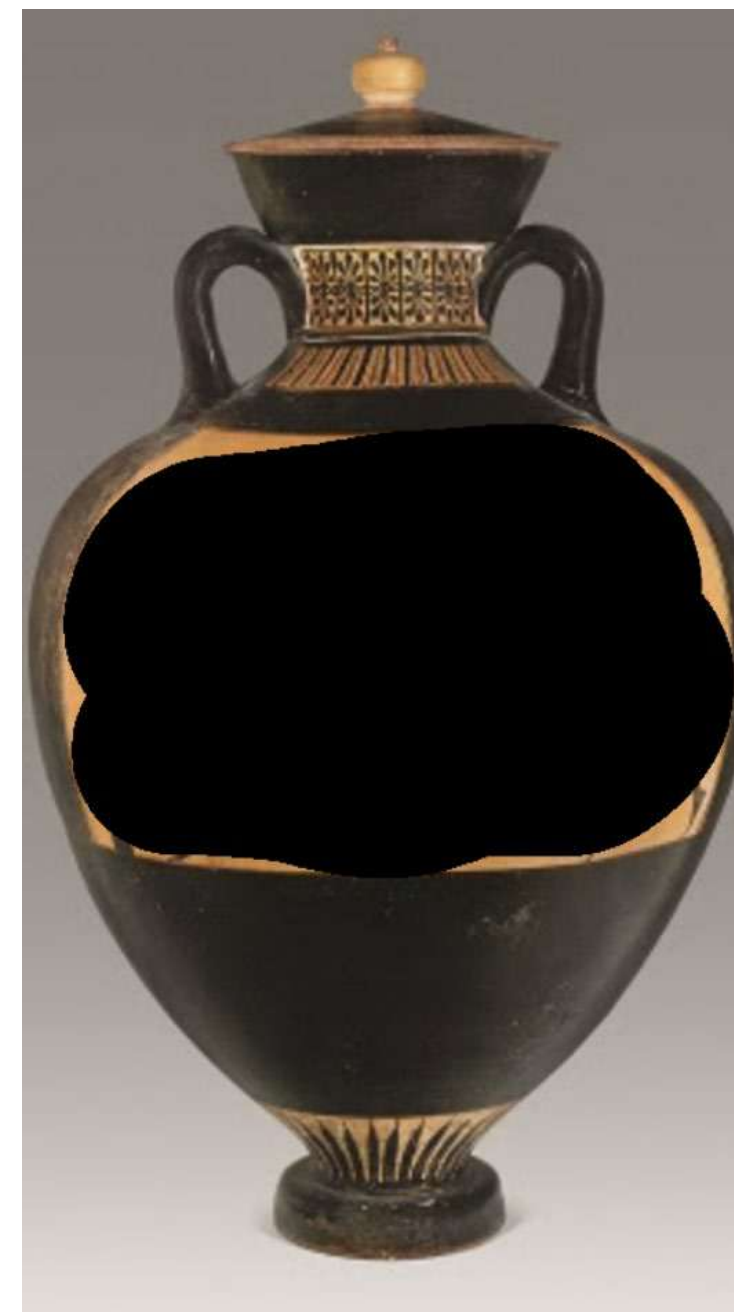
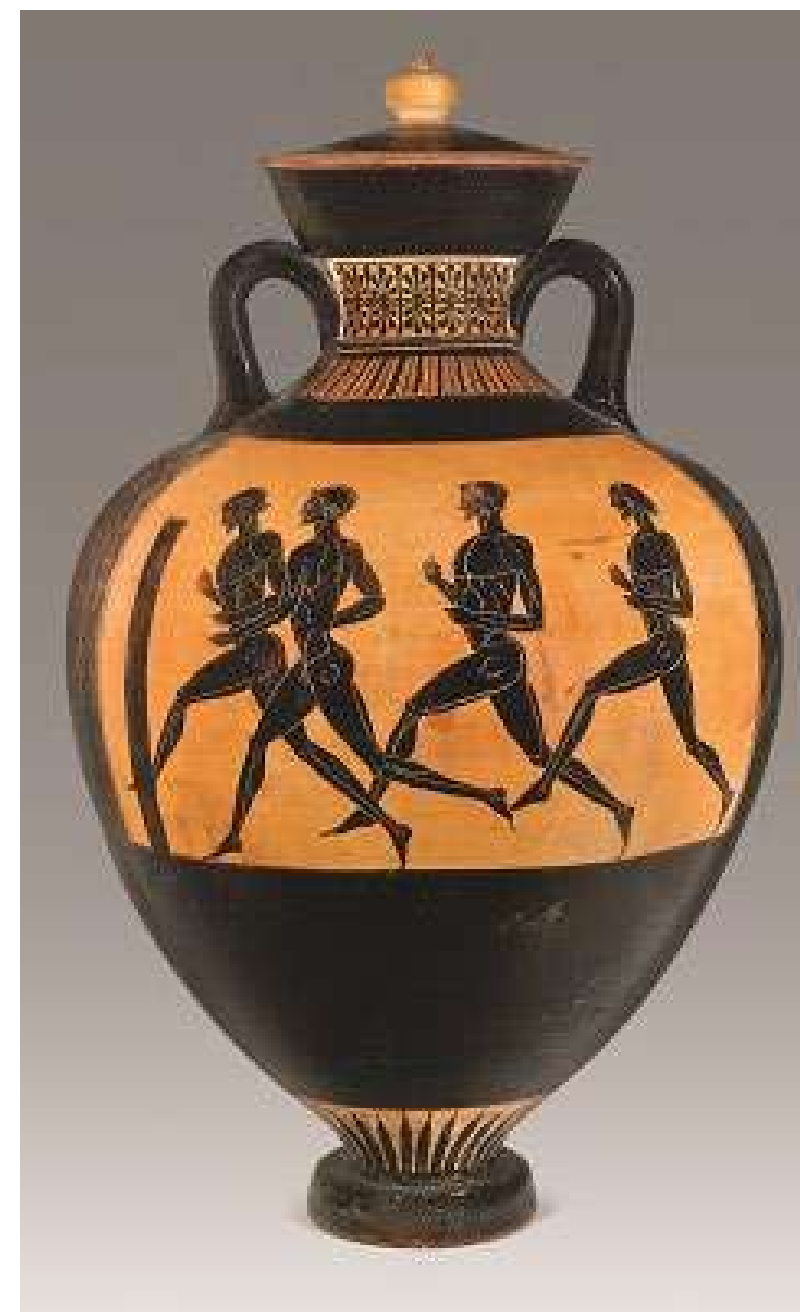




AI Tools

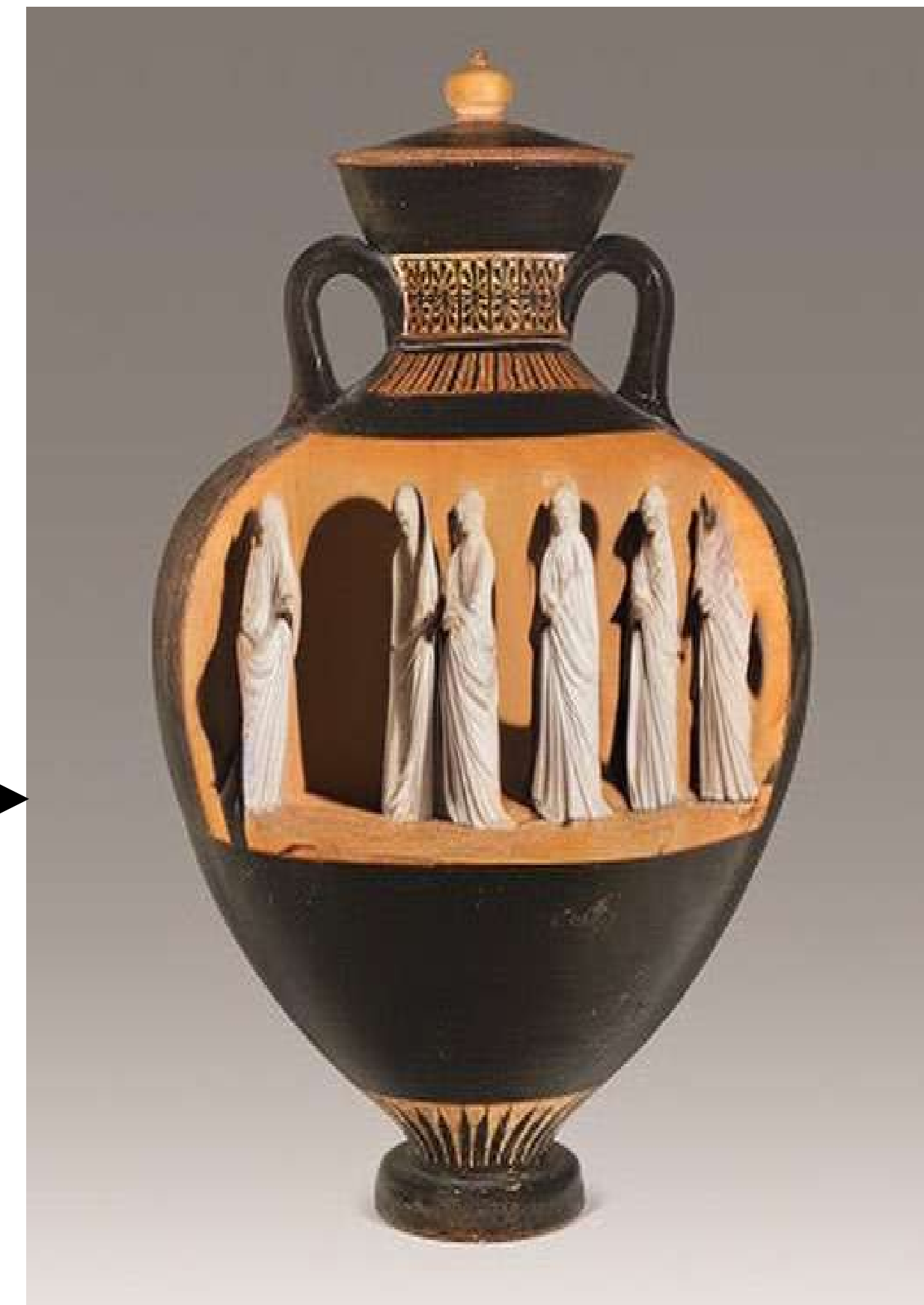
Edit existing images

- Text + part of Image → Image
- Edit existing images



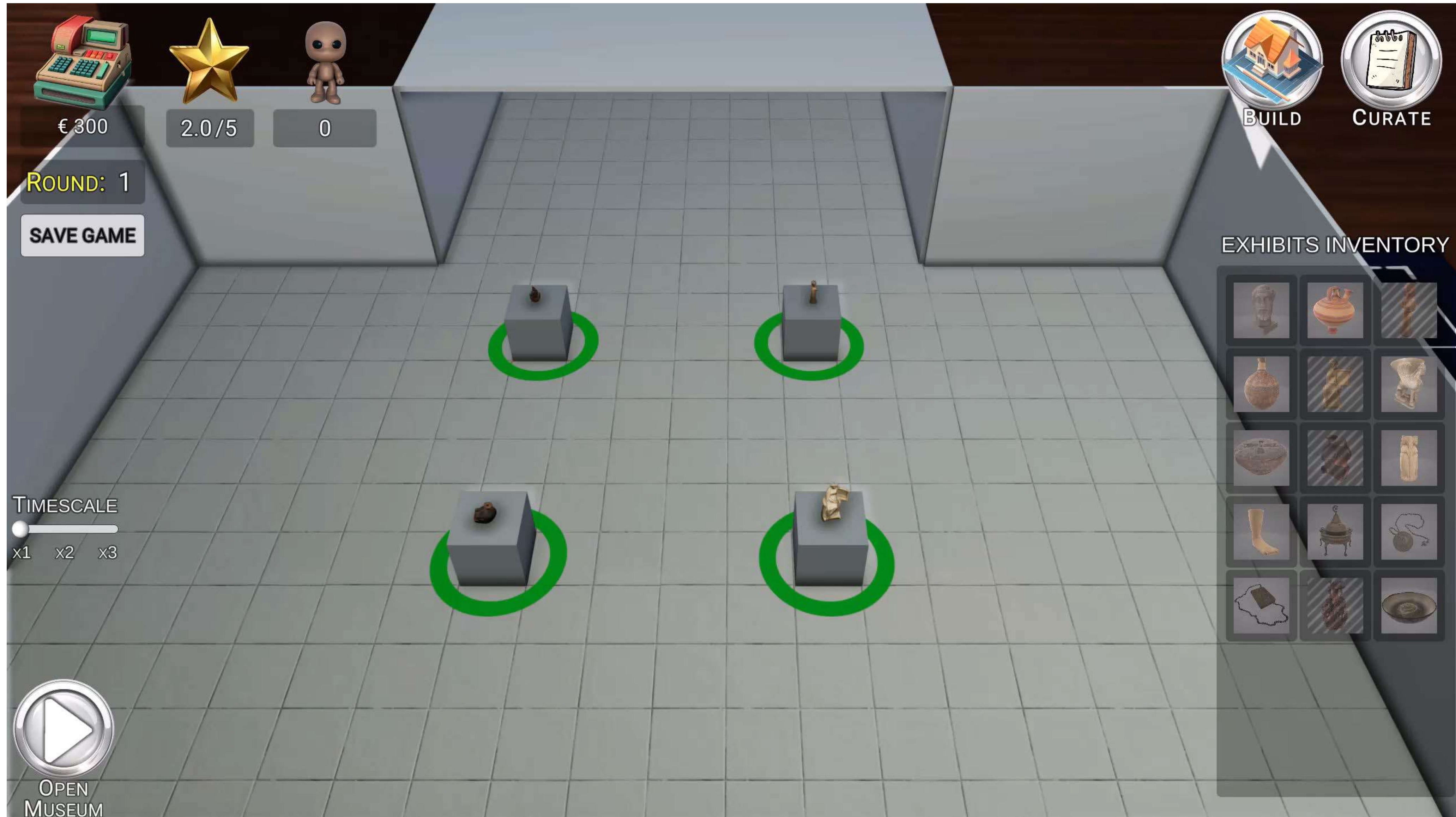
Painted
Caryatides

stability.ai





Exploring Exhibits



<https://youtu.be/uQuZwN3n50Q>

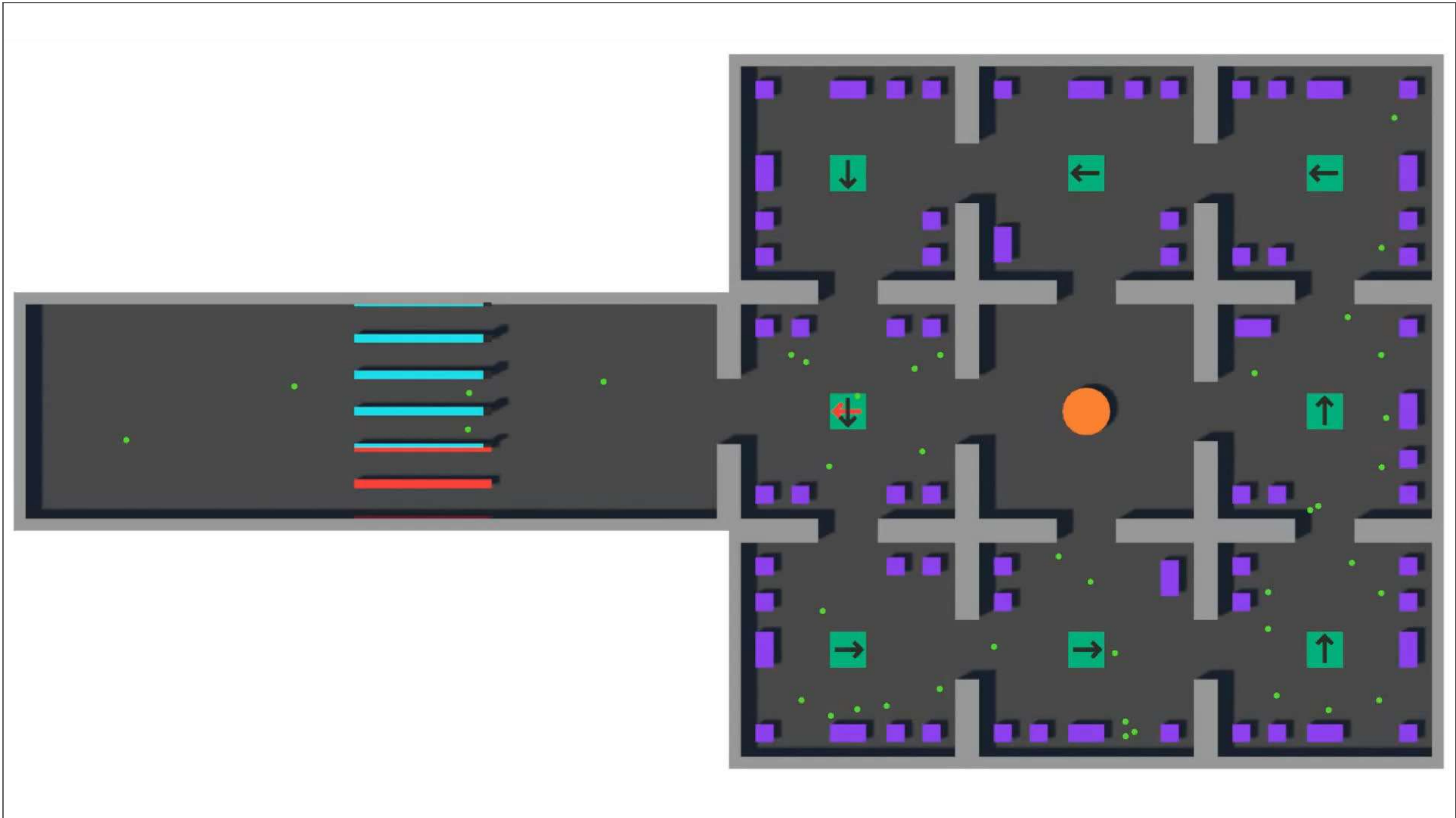


Non-Playable Characters



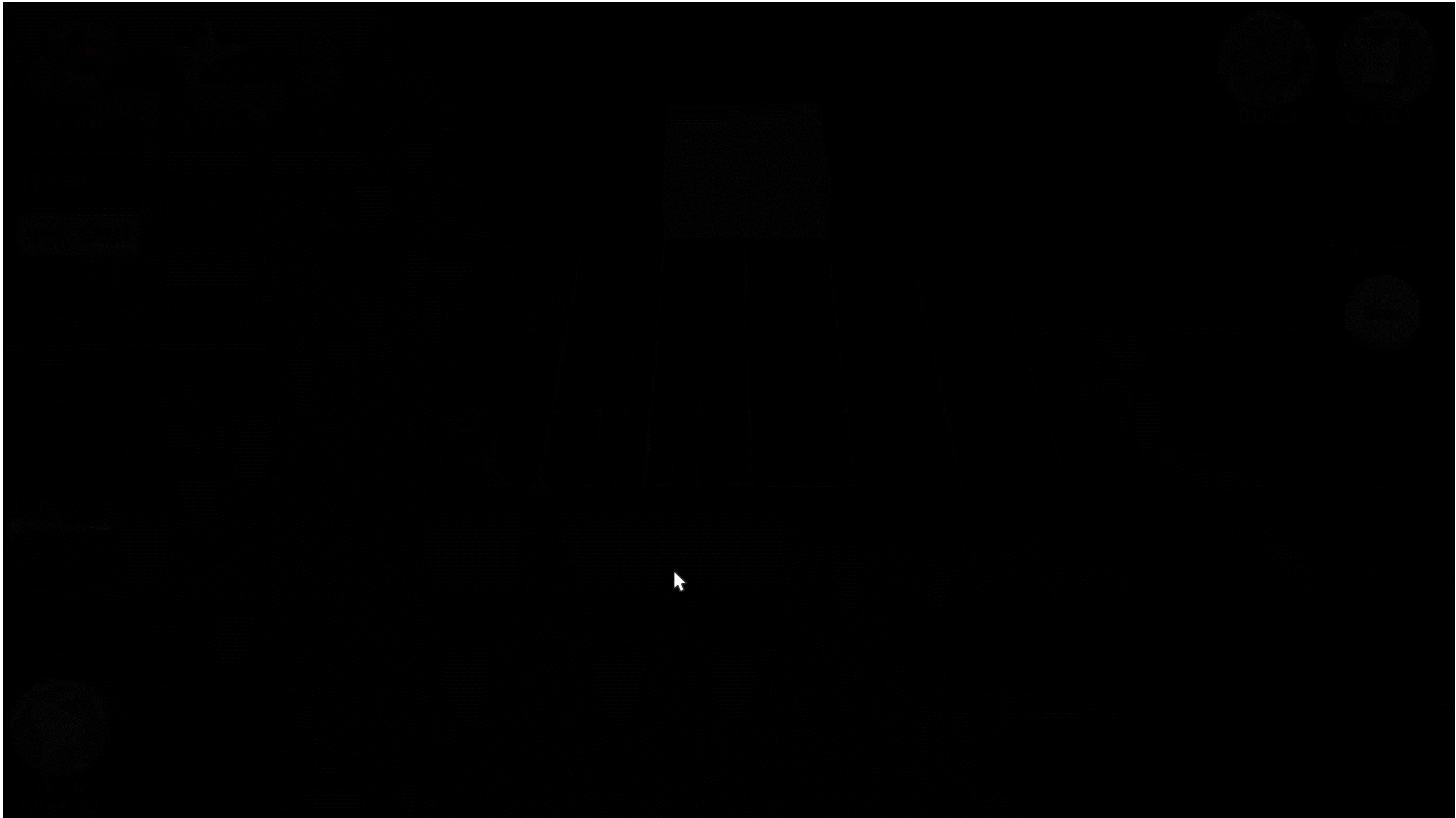
<https://youtu.be/xVTKTWQyAMI>

An AI system was developed





Tutorial – Main Functionality



<https://youtu.be/Gm9KbVWatVU>



During Development



During Development





Our “Deliverables”

For us, this is part of the Innovation Contributions of the ReInHerit project

- **The process**
 - Documentation of the Game Development Process
 - Blog Posts on Digital Hub
 - Game Design Documents (GDDs)
 - 10-page
 - Full GDD
 - Future Directions
- **The Game**
 - Museum Management Game
 - Runnable on the Hub - <https://reinherit-hub.eu/game/>
- **Game Project, Assets, & Tools**
 - Source Code
 - 3D Models
 - Images
 - AI Tools (Mod/Creation Tools)

Processes and tools for museums interested in building Video Games





The Game Design Document



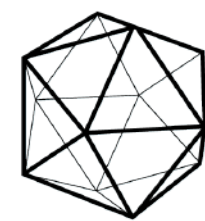
Niki Kyriakou
Project Manager

Contents

- 1 Introduction 7
- 2 Game Concept 8
 - 2.1 The Design process 8
 - 2.1.1 Brainstorming, collaboration with partners and consideration of final users and experts 8
 - 2.1.2 Game Concept – Museum Management 10
 - 2.2 Source Code and Links 11
- 3 The game 11
 - 3.1 Concept 11
 - 3.2 Game Flow – The Player’s Journey 11
 - 3.2.1 Overview 14
 - 3.2.2 How the game progresses..... 14
 - 3.2.3 Task Difficulty 14
 - 3.3 Game Rules 14
 - 3.3.1 Winning and Losing the Game 14
 - 3.3.2 Opening and Closing the Museum 15
 - 3.4 Game Roles 16
- 4 Technical Section 16
 - 4.1 User Interface and User Experience 16
 - 4.1.1 User Interface 20
 - 4.1.2 User Experience 20
 - 4.2 Art Style 20
 - 4.2.1 Characters 20
 - 4.2.2 Museum Model..... 21
 - 4.2.3 Background environment – Skybox 21
 - 4.3 Building Museums and the progression in the game 22
 - 4.4 Assets 22
 - 4.4.1 Artifacts..... 25
 - 4.4.2 Adding New Artifacts 27
 - 4.4.3 Preparing and Importing a Photogrammetry Model 30
 - 4.4.4 Generating/Applying Textures for building blocks..... 32
 - 4.4.5 Generating Sprites and Icons for the User Interface..... 32
 - 4.5 Character Navigation 32
 - 4.5.1 Character Navigation 32
 - 4.5.2 Navigation Mesh (NavMesh) Components 33

- 4.5.3 Reciprocal Velocity Obstacles (RVO) 34
- 4.6 Character Behavior Control 35
 - 4.6.1 Keeper 35
 - 4.6.2 Visitor 36
- 4.7 Character Animation 37
 - 4.7.1 Character Control..... 38
 - 4.7.2 Humanoid Avatars..... 40
 - 4.7.3 Inverse Kinematics (IK)..... 41
- 4.8 Game Events 41
 - 4.8.1 Game Event Manager 45
- 4.9 Artifacts Quiz..... 46
 - 4.9.1 Technologies Used 48
- 5 Digital Ethics..... 48
- 6 Conclusion..... 49

Will be hosted on the Hub
<https://reinherit-hub.eu/game/>



CYENS
CENTRE OF EXCELLENCE

Thank you



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 739578



This project has received funding from the Government of the Republic of Cyprus through the Deputy Ministry of Research, Innovation and Digital Policy.

