

Implementation of a Videogame: Legends of Girona

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Introduction

- Serious game: The main purpose is other than enjoyment (although enjoyment is also desirable)
- Purpose of the game: Teach the history and legends of the city of Girona in Spain to students
- In particular, the Siege of 1285 and the legend of the flies of St Narcis.
- Also: Technology demonstrator for the research being carried out in the graphics group.

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1 Introduction

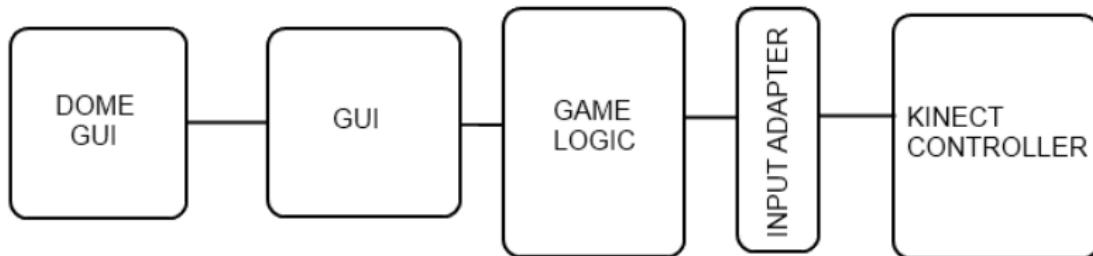
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Game Architecture

- Unity game engine: Multiplatform (Windows, Mac, Flash, Android, IOS, game consoles).
- A set of independent libraries to handle the different aspects of our research
- Separation of logic and interface in a MVC approach

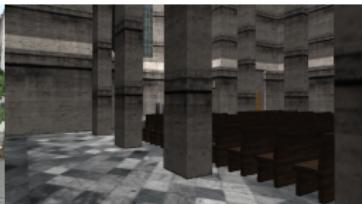


Game Levels

Current-day Girona



St Feliu Church



Outside of the City, 1285



City Walls Puzzle

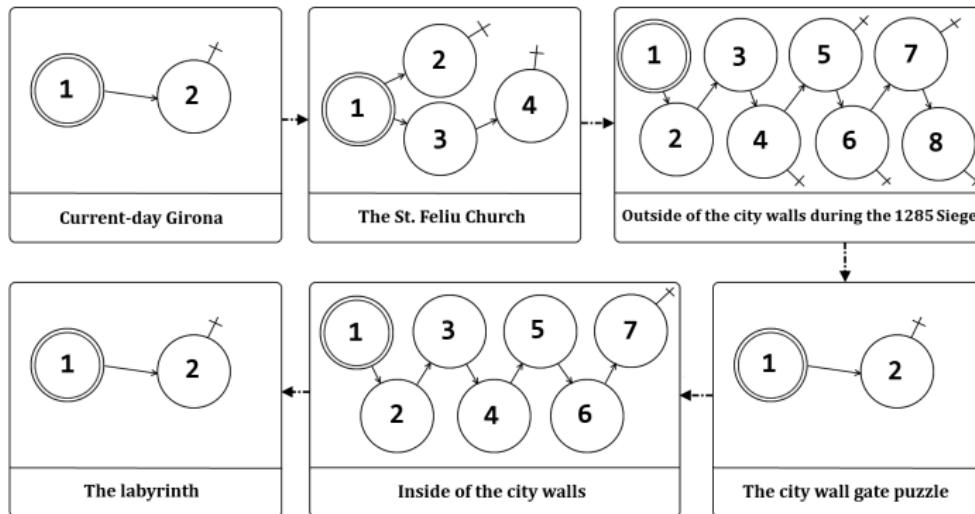


Inside the city walls

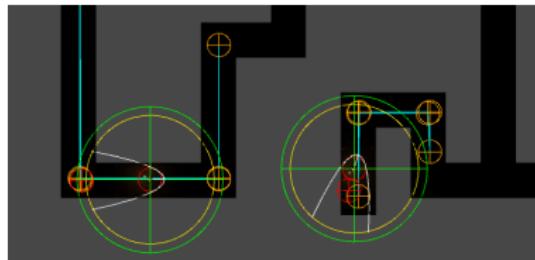


Labyrinth

Game Levels and State Diagram



Artificial Intelligence



Pathfinding and detection zones for soldiers

- Pathfinding algorithms for patrolling and movement
- Detection algorithms
- Prediction and anticipation

Realistic Graphics effects

Stylized Rendering



Video

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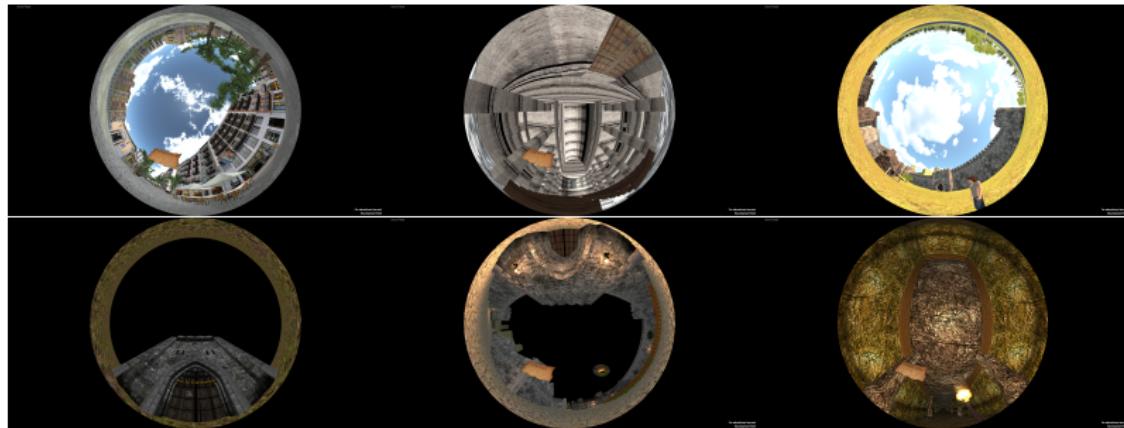
Kinect



Immersive displays



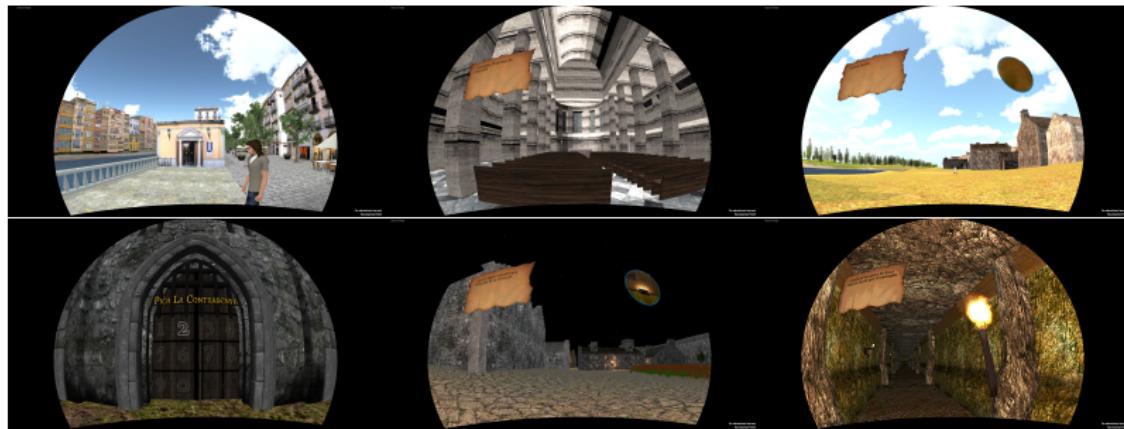
Dome transform



Dome transform code

- Creation of a cubemap texture
- GPU shader applies azimuthal equidistant projection (center of the image is up) and accesses the cubemap texture
- Some orientation parameters of the camera are also used
- Black is returned outside of the domain of the projection

Immersapod transform



Immersapod transform code

- Creation of a cubemap texture
- GPU shader applies azimuthal equidistant projection (center of the image is forward) and accesses the cubemap texture
- The orientation parameters of the camera are also used
- Black is returned outside of the domain of the projection

IOS port

- iPad 2: More limited than PC
- Simplification of poligonal models: balconies, trees
- Reduction of active lights, texture quality
- Reduction in visibility: make current-day Girona a night scene
- Specific controller using touch gestures

Resulting game

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Conclusions

- We designed a serious game about medieval Girona which people find enjoyable
- The modular design allows us easy integration of novelty input and output devices, to aid immersiveness and enjoyment
- Although the engine is multiplatform, each platform still requires testing and tweaking
- We have explored different visualization techniques (PR & NPR) with good reviews from final users

Future work

- Increase the realism of the medieval city by using models of real houses from the epoch
- Add more legends (12 are envisioned)
- Extend the number of supported I/O devices
- Commercialization :o)

Thanks

- Colleagues at the Education department who provided storyboard help and historical advice

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Questions and Comments

Thank you for your attention.

Questions and comments are welcome.