Utilising an Educational Framework for the Development of Edutainment Scenarios

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Edutainement

- Edutainment has been designed to educate and amuse
- Edutainment scenarios must
  - combine interactivity, design and aesthetics
  - follow the principles of efficient educational course design: allow students to verify existing knowledge, challenge them to higher learning states, provide students with frequent and immediate feedback etc.
- Design of edutainment software and applications becomes complex
  - Align images, audio, graphics, video and interaction
  - Design the underlying learning process

The proposed solution

- A framework for developing edutainment scenarios
  - Focus on learning: Capitalize on the design of the learning process
  - Rapid prototyping: Bind together existing game development sources and rich media instead of developing new solutions
  - Soft programming: Prefer open source and loosely-coupled script-based solutions instead of custom gaming software

The framework

- A conceptual/operational framework for the development of edutainment scenarios
  - It is both game-based and rich-media oriented
  - Utilizes both game-development environments and multimedia programming environments
- The solution can be applied to different disciplines even by non-expert users (e.g. educators)
- The framework has been evaluated against several edutainment scenarios during a university course on edutainment

The scenario

- A rapid, adaptive or non-conventional development methodology needs to be employed for the development of a new edutainment system, based on existing game systems and platforms

Users, roles and factors

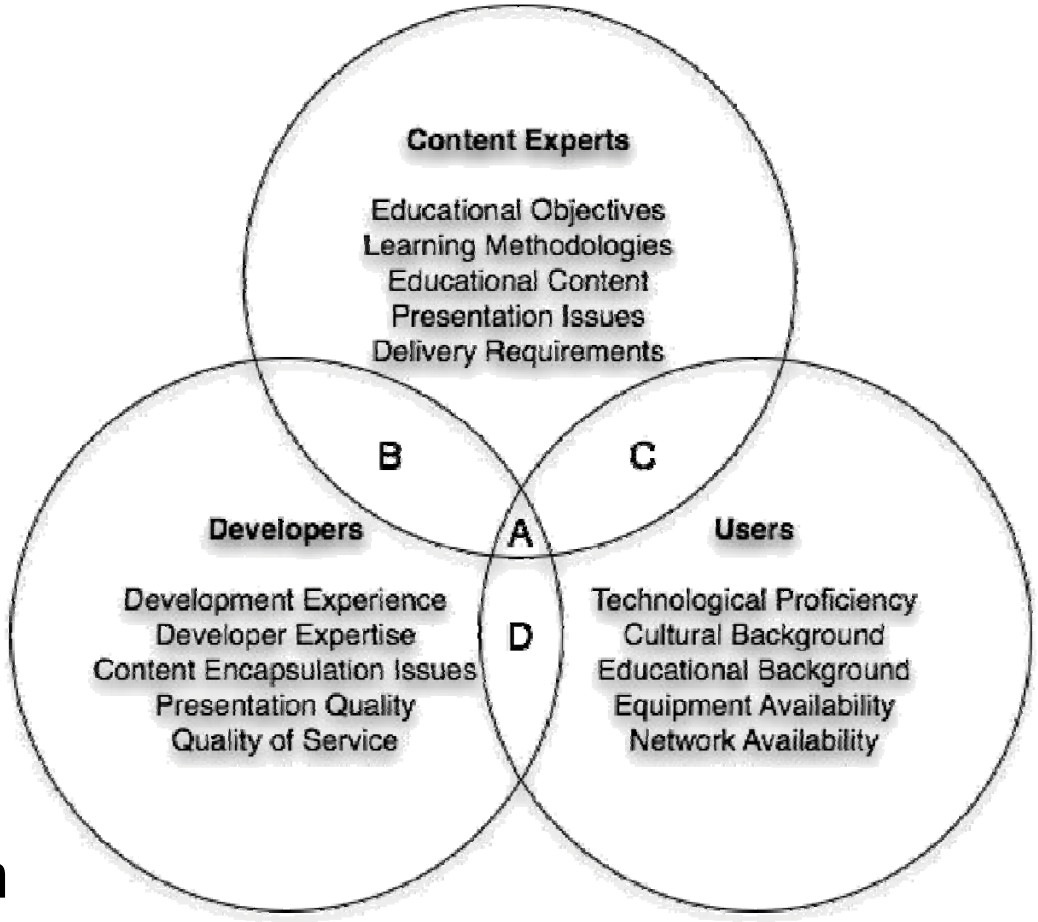
- that must be considered when designing the edutainment application

	Content Experts	Developers	Users
Factors	Educational Objectives	Development Experience	Technological Proficiency
	Learning Methodologies	Developer Expertise	Cultural Background
	Educational Content	Content Encapsulation Issues	Educational Background
	Presentation Issues	Presentation Quality	Equipment Availability
	Delivery Requirements	Quality of Service	Network Availability

- The definition of roles allows fuzziness (e.g. multiple roles per user)

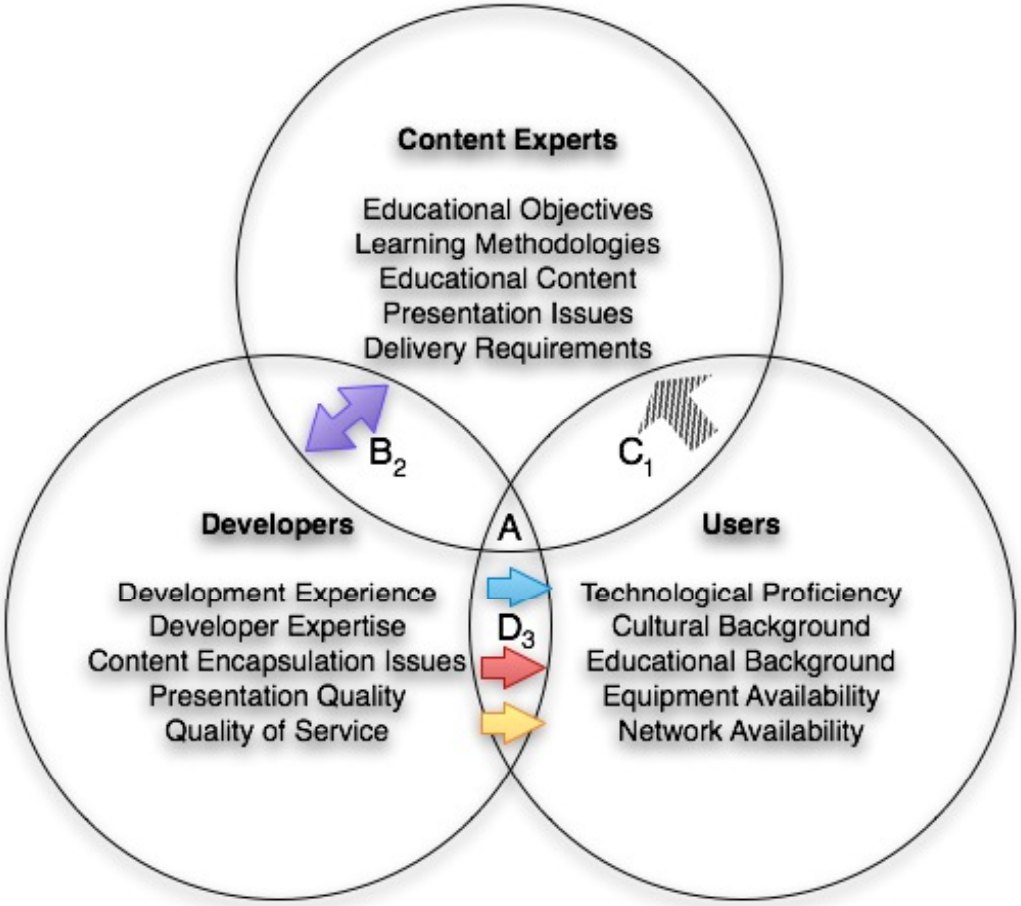
Interactions

- Content experts study the domain and analyse user needs (C) suggest the educational content and define the objectives
- they interact with developers who understand the system limitations (B)
- user-based system testing follows (D)
- A circular process which can initiate at any point



Case study

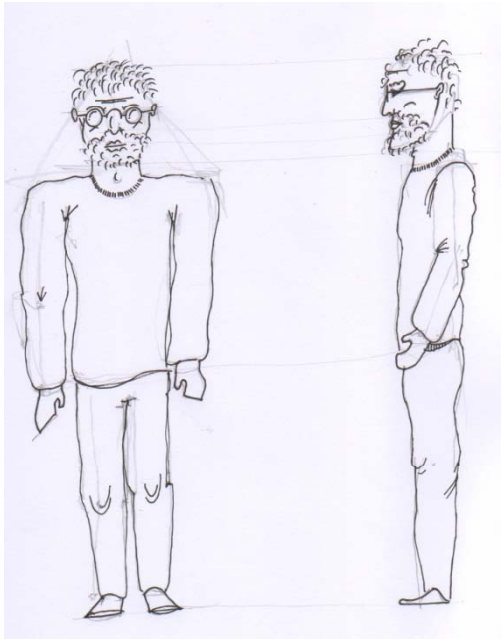
- Department of Audio and Visual Arts, Ionian University, Corfu, Greece in the “Edutainment” course
- Content experts take up the leading role
- Numbers next to C, B and D are used to indicate the order of actions

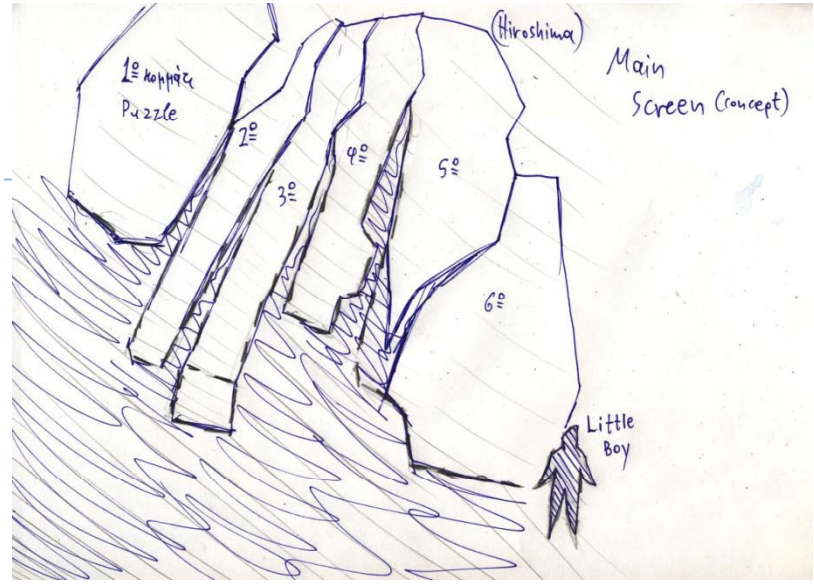


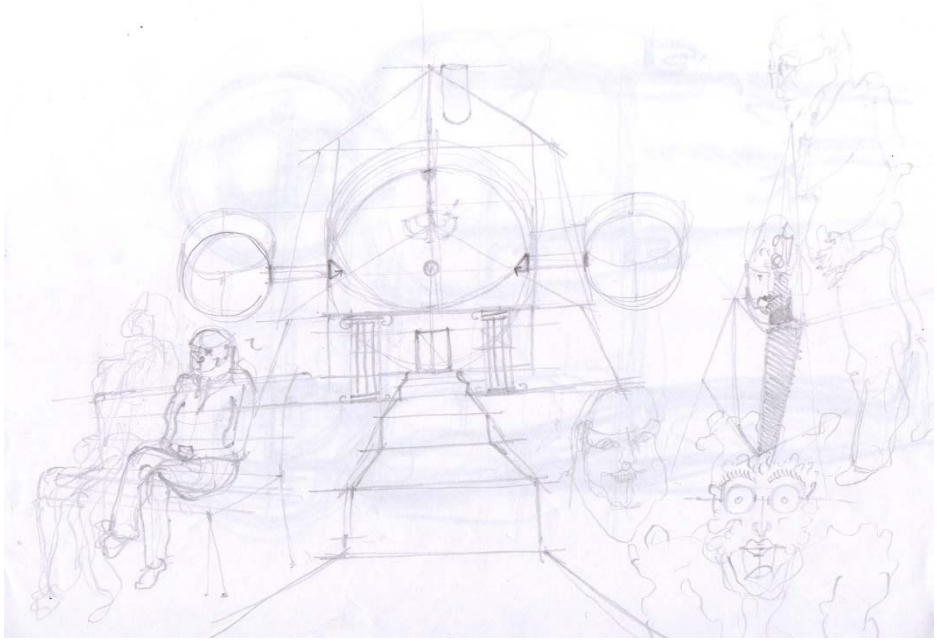
Basic game scenario

- Educate fellow students about modern art and enable them to recognise it in a museum setting
- Students developed a first-person “serious” adventure game
- The game takes place into gallery rooms where puzzle pieces need to be collected and matched correctly in order to progress to the next level.
- As the game progresses, the challenges become more difficult as time-based scoring introduced

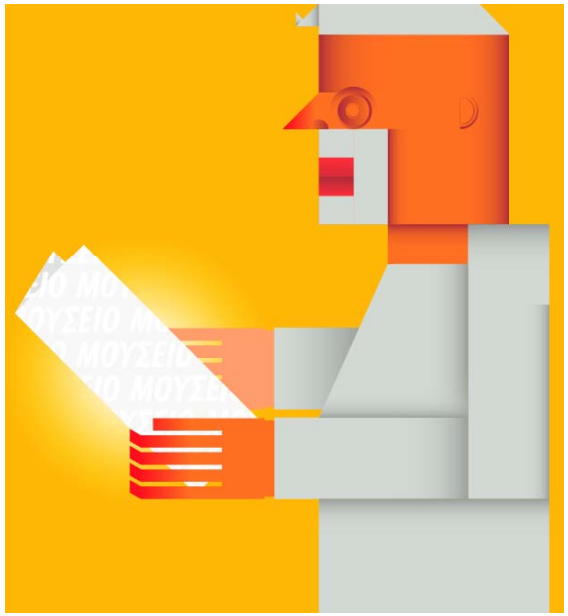
From concept art…

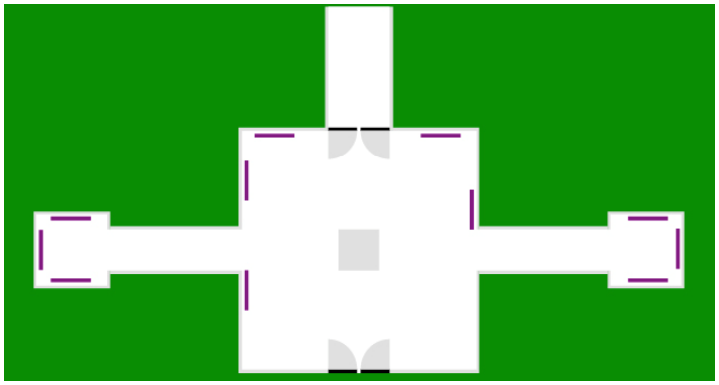


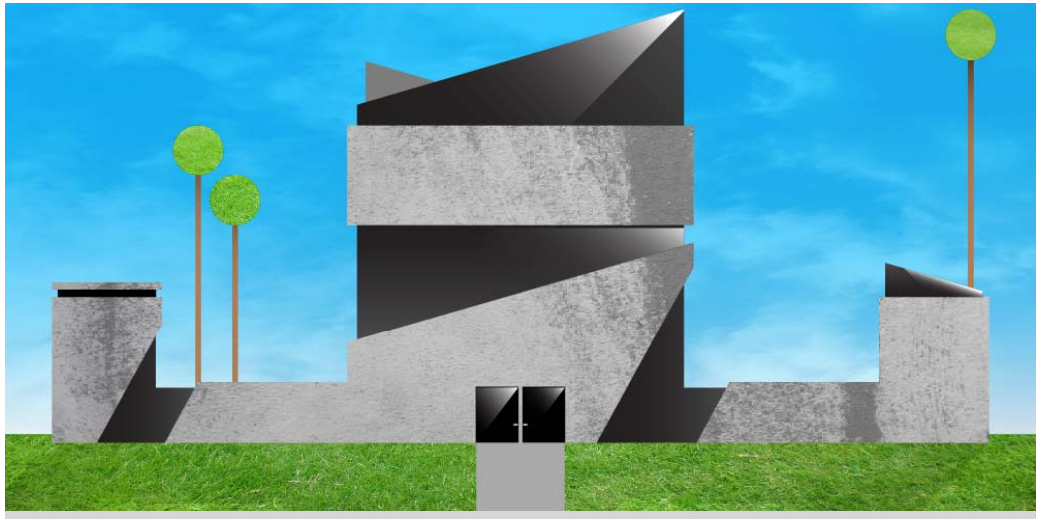




… to the prototype





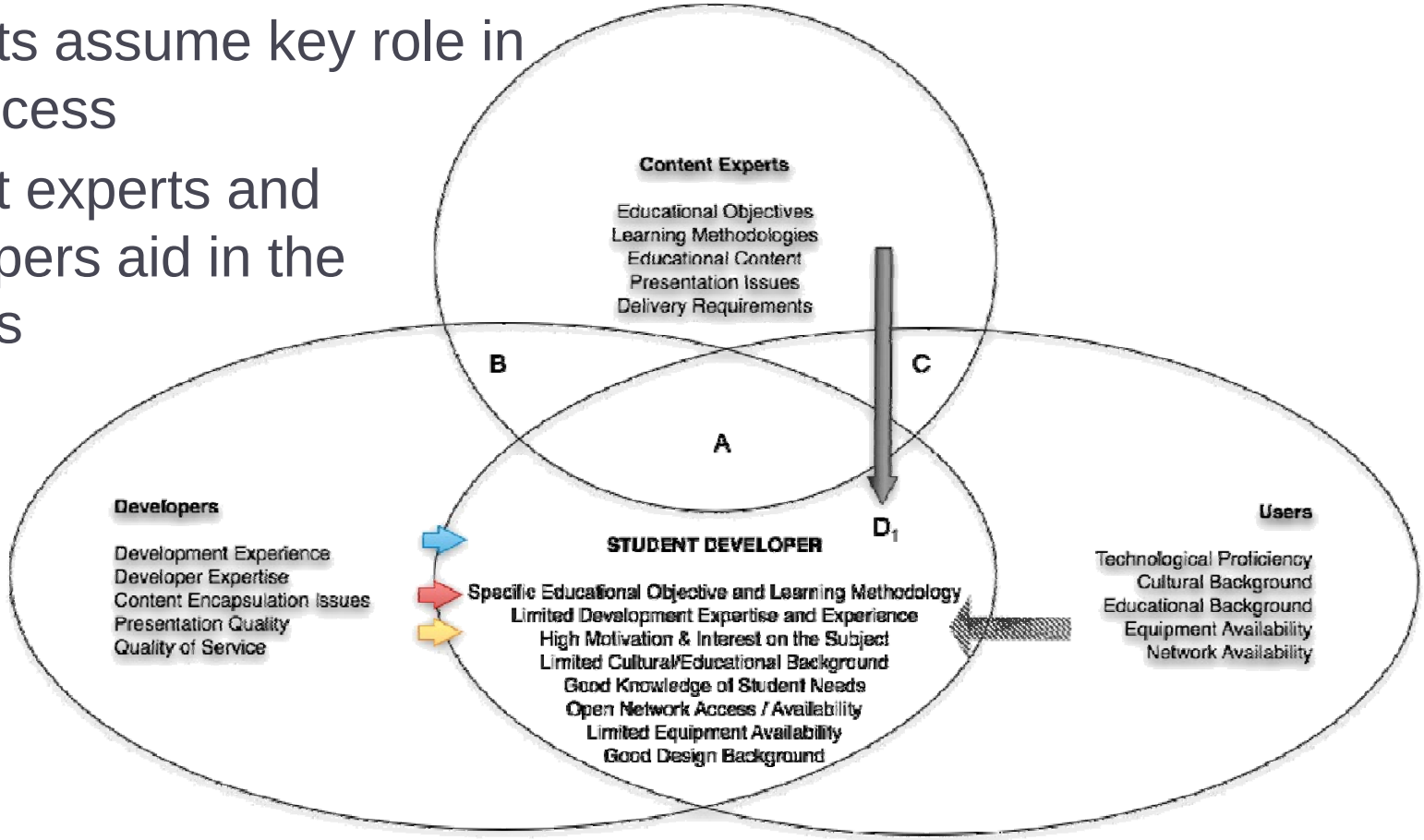


Technologies

- Web based game: Java/JavaScript/HTML/CSS
- State-of-the-art software packages for graphics/3D: Illustrator CS5, Softimage 2011, cinema 4d
- Sound is composed and processed through: Ableton, Logic, Reason 4
- Game environment development: unity 3d

Interactions

- high interaction complexity
  - students assume key role in the process
  - content experts and developers aid in the process



Conclusions

- The framework offers a graphical representation for proficiently representing development cases featuring interdisciplinary knowledge
- It defines the interactions between the various participants and assigns roles and responsibilities
- It can easily capture simple interactions between participants from the same discipline and assist rapid development of the edutainment software
- More complex cases may require additional lettering/numbering to be added, while for transient systems more than one graphs may be used.