

Applied Game Development

Are you having an applied game made or thinking of having one made? Are you a game developer making applied games or would like to start making them? Making a good entertainment game is already challenging, and the design, development and implementation of an applied game is even more so. Here are some tips to help you along the way.

The Expertise Center for Games and Game Design (EGG) would like to give you a head start. This handout will provide you with lessons learned regarding the challenges you will face in design, development and implementation of applied games.

The application of games for other purposes than entertainment alone is still in its infancy. We feel it is important to share lessons learned so far with both commissioners and developers. For commissioners of applied games this handout provides you with '10 Golden Rules', and for game developers an overview of '10 Common Pitfalls'.

Applied Games

While games are generally associated with entertainment, they can be designed and developed with goals and purposes besides pure entertainment. EGG terms these as 'Applied Games'. Currently applied games (a.k.a. serious games, exergames, persuasive games, advergaming, edutainment, etc.) are being developed and used for: learning and training, physical education and therapy, medical therapy, increasing awareness and intro-spection, changing behavior, problem solving through human computing and crowd sourcing. Examples of applied games in use can be found in domains such as health, safety, education, industry, government and advertising.

In general, well designed games have the innate ability to create engagement through stimulating challenges and environments.

Players are not only engaged with interesting storylines and immersive environments, but are encouraged to structure their own approach to overcoming game-play challenges. Furthermore, applied games are as much about the 'little game' (the game itself) as they are about the 'big game' (the playful context in which a game is played).



Test for GATE Health Pilot at Rehabilitation center *De Hoogstraat*

Much of what players experience through game-play parallels constructivist learning theories. Here players learn and are motivated through hands on experience. They are engaged with frequent and intensive sessions, simulated environments and other players. Traditional roles of teachers and therapist focus on facilitation instead of instruction and motivation.

10 Golden Rules for commissioners

So, do you want to have a game made or are you having one made? Applied games offer a

new and exciting way to approach learning and training, creating awareness and introspection, changing behavior, do physical therapy, crowd sourcing, etc. With a well designed and embedded applied game your goals can be met. In order to help you get the game that can best achieve your goals, EGG recommends looking at the following *10 Golden Rules* that have been taken from research.

#1: Applied games are not equally suitable for all purposes.

#2: It is important to define a clear goal for a game, as applied games work best when they serve a singular goal.

#3: As an applied game commissioner stick to defining the goal of the game, the parameters of your game and the intended outcome. Leave the design and concept details to the creative developer.

#4: Be aware that communication will be complicated due to differences in language and models used in both domains.

#5: Games are developed in short iterative development cycles. Your involvement in this iterative process will raise the quality of the resulting product substantially.

#6: It is important that you involve both content experts and representatives of the intended target audience to the table during the design and play-testing processes.

#7: Be aware of the importance of the context in which your game will exist. In other words design the 'big' game as well as the little game.

#8: You may need to be prepared to change the way the organization and its staff do things (e.g. teaching teachers to adapt their pedagogy).

#9: Plan to create support for the game within the organization. Don't forget to think about maintenance and even a possible sequel to the game.

#10: Allow for proper evaluation and validation. Ask yourself, "Does the game achieve my goal? What is the definition of success for this project?"

10 Bottlenecks for developers

Are you making applied games or want to begin making them? Unlike business models for entertainment games, applied games offer unique opportunities for business-to-business solutions. There are certain challenges you will face that having created entertainment games will not have prepared you for. For this reason EGG provides you with ten common bottlenecks which readily occur in the specification and development phase of an applied game. This is based on research.

“Does the game achieve my goal? What is the definition of success for this project?”

[1] Lack of Examples

There is a lack of good examples of functional and validated applied games. Lacking examples can make it difficult to convince clients that an applied game can help them with their goals.

[2] Lack of Design Knowledge and Transfer Effects

There is little operational design knowledge about applied games, and which game mechanisms best transfer particular behavior, knowledge and skills outside the game. Why? Alleged effects of applied games are often based on the gut feeling of the designer. Furthermore, due to the multidisciplinary nature of applied game design, knowledge can be stored in different (often academic) fields making it less accessible to game developers.

[3] The Struggle Between Content Versus Game-play

It is very difficult to find a sound balance between content and game-play. Clients find it difficult to articulate their knowledge into a game perspective. Game designers come from a different perspective and use different terminology. Content can easily become overemphasized in the game, which can compromise the game-play. The result can be described as 'chocolate covered broccoli': it looks delicious but its taste is far less attractive.

[4] Do Not Switch Seats

The game designer and domain expert are not the same person. The trick is to use expertise from professionals from the domain, without the designer trying to become the domain expert and domain expert becoming the game designer.

[5] Reach Beyond Your Gut Feeling

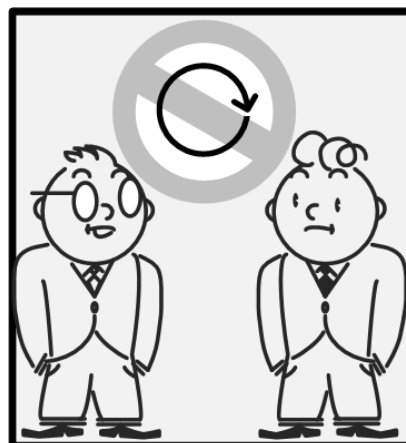
The development team might lack experts in the field of user research, testing and validation. Having this kind of expert on your development team can help support the validation and evaluations of the game's ability to achieve its goals.

[6] Validation is Part of the Design Process

There is often too little time or budget planned for validation testing with the target audience. Since validation of the game in its proper user context is often not included in the development process, it is wise to include this in planning and include it in a project.

[7] Iteration is the Name of the Game (Design)

It is often difficult to convince the client of the importance of an iterative design process. Not having the chance to fine-tune and balance the design can have lasting negative effects on the potential of the game to achieve its goals.



[8] What and How do we Validate?

Few applied games are validated afterwards, which is mainly due to the lack of good methods to test the effectiveness of games.

[9] Did We Mention the Importance of a Shared Language?

Clients often know little about games or the jargon surrounding them, so it will be difficult to find a common language. For example, what a developer may define as 'concept', 'prototype' or 'game design', may differ between clients and how the client defines them.

[10] The Client's Question Might Not Cover the Client's Real Need

Clients may not be clear enough about what they want a game to do Worst case scenario, "We want something with gaming." To help this kind of client requires a substantial amount of time to properly articulate their needs and specify a game design demand.

Expertise Center for Games and Game Design

EGG believes that applied games can be very powerful tools if their purpose is formulated correctly, the design process is supervised properly and the game is embedded correctly.

Our activities can be separated into the following phases:

Articulation of Demand:

In this phase we help the (potential) commissioner determine their problem or goal. Next, we determine if an applied game is a suitable solution. If an applied game is suitable, then we help the commissioner to formulate the design and development constraints.

Game Design and Implementation:

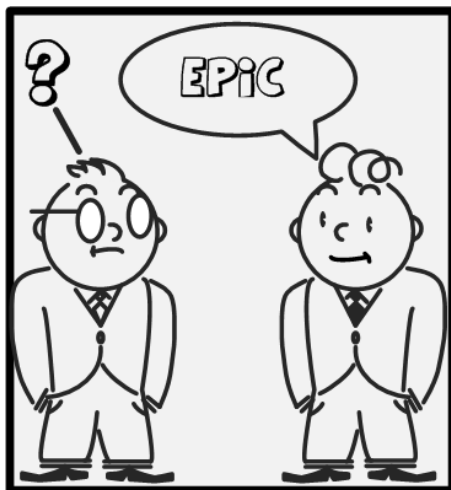
In this phase we work together with the developer to determine what works best for the

commissioner's purpose and target audience, while also providing consultancy to help facilitate communication with the commissioner. We also offer insight and workshops into game design methodologies.

Game Embedding:

In this phase we help to prepare the users and the commissioner's organization in using the game.

Ultimately, our goal is to help commissioners and developers alike to avoid reinventing the wheel with each project, so that the Dutch game industry can continue to concentrate on innovation.



Literature

- * Clark, Richard E. "Learning from Serious Games? Arguments, Evidence, and Research Suggestions." *Educational Technology* 2007.
- * Ritterfeld, Ute, Michael J. Cody, and Peter Vorderer. *Serious Games: Mechanisms and Effects*. New York: Routledge, 2009.
- * Winn, Brian M. "The Design, Play, and Experience Framework." *Handbook of Research on Effective Electronic Gaming in Education*. Hershey, PA: Information Science Reference, 2009.

The Expertise Center for Games and Game Design (EGG) was established to contribute to the development of high-quality applied games in the Netherlands. EGG does this by offering existing and potential clients and developers expertise and advice. In doing this, the Expertise Center focuses on literature reviews and concluded projects, as well as games currently in development, and it maps out what lessons can be learned for the development and application context. This creates a framework of expertise that clients, developers, researchers and other interested parties can build on. This saves every project from having to reinvent the wheel, and the Dutch game industry can continue to foster innovation in the field of applied games.

The Expertise Center for Games and Game Design is a collaborative project between the Dutch Organization for Applied Scientific Research (TNO), Utrecht School of the Arts and the Task Force Innovation Utrecht Region. The project is part of the broader Dutch Game Valley project, which was established with funding from the national Pieken in de Delta program of the Ministry of Economic Affairs, with support from the municipality of Utrecht, Utrecht province and the municipality of Amersfoort.

More information:

www.expertisecentrumgames.nl

info@expertisecentrumgames.nl