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THE NEW ROLE OF GAMING

How games move outside entertainment

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Abstract: The potentials of using games and gaming for other purposes than just entertainment are very promising. While today initiatives mainly are focusing on the learning capabilities of games and gaming there are many other potential uses. This new use focuses on combining the advantages of gaming (motivation, stimulation and engagement) while in the same time solving different "serious" and time critical tasks. But along with promises comes economic and cultural differences between the game industry (the developers) and the traditional industries (the users). Even though many of these problems can be avoided by setting up projects differently the biggest challenge is to perhaps to fight the prejudices and preconceptions surrounding both camps.

Key words: Games, gaming, support technologies, modelling & simulation

1. INTRODUCTION

Last decade economic growth and technical development of the game industry has created an interest from industries and organisations outside entertainment:

- Research institutes are being established focusing on how to use games for military purposes [1], [2].
- Visual simulation companies see the potential of using cheap and effective game technology in their solutions.
- Educational sector see the potential of using games as a learning method to students in all ages [3].

Many initiatives are focusing on the benefits of using games for pedagogical reasons. But there are bigger challenges taking games and

gaming to the next step. Studying game technology, market and the phenomena of *gaming* in conjunction with societal and economy trends and needs leads to a variety of new viable uses. The report "Spelandets roll i framtiden" [4] and the newly established Game Studio at Swedish Defence Materiel Administration [5] are initiatives in this direction providing answers how and why to use gaming in many different contexts. Following the work a two-day conference was arranged in October 2001 [6] called "Game Intersections" to further elaborate on the issue.

This papers deals with the major potentials on this subject, how digital games and gaming can be used solving tasks in traditional companies and organisations. Finally a brief discussion examines the initial barriers preventing further rapid progress.

2. POSSIBILITIES

What are the main things making games and game industry so interesting? Why should we even bother to study the technology and phenomena within this consumer-oriented domain? The answer is based on two facts; game technology is now on the bleeding edge shouldering other industries development and more people play games, not only kids and teenagers [7]. These two items, technology and gaming, are also the basis for the new applicable use outside entertainment.

2.1 Game Technology

The game industry has in recent years shouldered a lot of the technical developments from other industries partly because the market growth but also because of the competitive environment. Game **graphics** can render astonishing and impressive environments that used to belong only in designers dreams. Today anybody can license the rendering technology from game developing or third party companies. The graphics hardware in today personal computers are tremendously powerful compared to the cost – all thanks to the vast game market. **Artificial Intelligence** – a domain that died out from medias attention in the nineties still lives and prospers within the game industry. Even though AI in games doesn't implement the heaviest AI algorithms or theories from the academia they certainly set standard of what can be done with limited resources. This has lead to a new interest in the field. Online **architectures** enabling thousands of users sharing the same gaming world really challenges the network capabilities. A capability that only grows bigger with the spread of broadband. Since developing basic

algorithms over and over for every title is a costly effort more developers are turning to **middlewares** and **toolkits** to solve the frequently occurring components in games. A variety of tools from physics to multiplayer support are easily accessible by developers.

2.2 Gaming Method

While the game technology advances rapidly the core in games and why customers buy the titles have nothing to do with any technical attributes. *Gaming* is when a player uses a game – the activity where the user is immersed and absorbed in the intriguing game world, forgetting time and place of the real world. This activity is the utterly most important factor for all game titles. It is the parameter that differentiates a fun game from a boring regardless all the technology it is moulded in. It is the factor forcing gamers to spend 10-40 hours a week with their favourite game.

But it is also the major potential when discussing uses outside entertainment. What constitutes good gaming? What are the key attributes that every title tries to catch? Without being bogged down by deep human behavioural science there are some qualities a game must have. A fun and attractive gaming are interactive, narrative, challenging, motivating, absorbing and engaging. It steals the users full attention but in return the player receives a lustful and enjoyable experience. With this background the core and main question arises: isn't it possible to use this activity in other contexts and for other purpose than just to entertain?

3. THE NEW AREAS

Answering previous question is quite easy when combining several trends of today with the benefits of games and gaming. Below is some of the examples listed in categories depending on what task are to be solved. In all the examples gaming is an integrated part of the supported system, i.e games is used transparently to the user in the overall system.

3.1 Product development

Development in any industry especially complex product development requires full and clear understanding between engineers, designers and management of what is being produced. This is very true when facing a development process concerning several physical disparate participants, perhaps residing in different continents. With gaming the product could be

set in the contemplated environment. The players would then try different parameters of the product, studying and examining the implications and hopefully avoid mistakes in the model rather in the real world. The use of gaming in this category has a close relation to modelling and simulation (M&S)[1]. Examples in this category can be car and aircraft development, road and city planning.

3.2 Command & Control

The process of issuing commands and gaining control is increasingly important in today society where practically any organisation are faced with a fast-moving and changing environment. Command and control is also the core process in military decision making (Figure 1). Therefore using gaming to teach, educate and prepare military forces is no surprise. But in a corporate environment this is perhaps something new and strange. Using games in these circumstances is the idea of trying different rules of actions, getting a rapid response of the consequences of issuing one alternative from others and how the participants (players) behave in these situations. Potential users in this category (apart from the military) can be board of directors in a regular company, strategy developers or practically any instances involved in decision making as their core business.

3.3 Analysis

Exploring complex data, analyzing large quantities of information is no easy task that benefit from various support technologies. Gaming forces the participants to understand the underlying scenario and the relation of different game objects. Properly crafted any situation that includes vague information and complex data can be made as a game with several goals. To contribute in the game participants are forced to understand the data in order to reach the goal states. As a side effect participants gains knowledge and insight. Example situations where this might be useful are crisis management, e.g major traffic accidents, terrorism or natural catastrophes.

[1] Modelling is the methodical development of models. Models are suitable representations of phenomenon (organisations, functions, processes etc). Simulation is the process of studying the model over time in different environments and with different aspects. Gaming in this sense is about using simulations with participants and with clear goals. So, in a sense gaming can be defined as an extension to M&S.

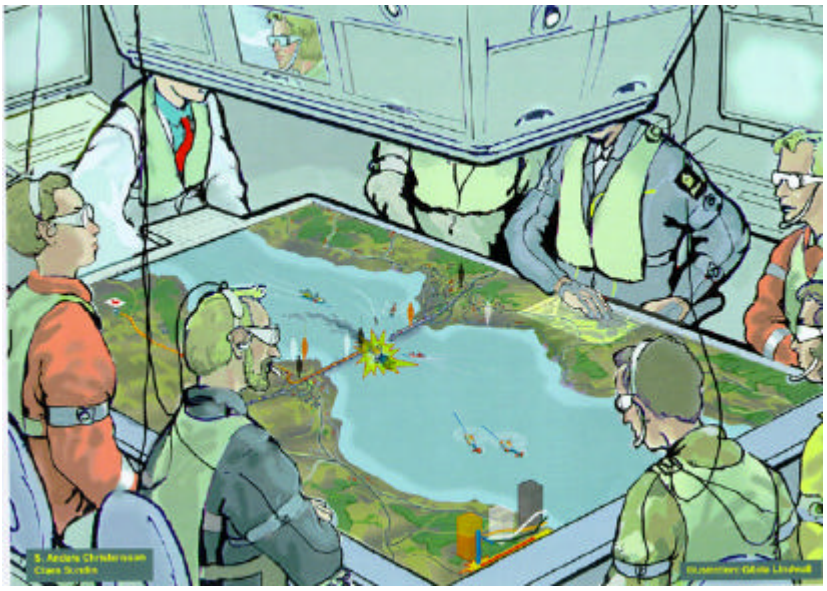

Figure 1. ROLF 2010 [8]. A conceptual idea of a future joint command where gaming can be used integrated in the decision cycle.

3.4 Marketing

Full attention and concentration of a gamer user seems like a dream opportunity for advertising. Even though selling messages with games as a carrier are beginning to spread the advertisement does not have to be explicit as hanging banners in the game world. It may very well be connected to hidden or symbolic representations within the game plot. As in previous examples the stimulated gaming experience should not be tapered with, too much information interfering and disturbing should be avoided for playability reasons. A good example in this category can be a marketing campaign for shoes where the game centralize the plot around attitude, image and cool-factor. Small symbolic clues along the way in the game add up to the right image the marketing campaign want to sell to their audience – without even explicitly revealing the shoe brand.

4. OBSTACLES

Even though there are many potential new uses for games and gaming there are several obstacles preventing rapid progress. These barriers originate in both economic and cultural differences between game industry collaborating with other industries. The game industry has an economic

model and a value chain much similar to the music industry. Supplying an industry outside game market requires a change in the value chain and economic models of the game companies. Game developers will face customers with single installed licenses instead of thousands and the new customers want continuity when building solutions based on a product of a game developer company. There are also problems with developing methodologies. In general game developing is three to five years behind adopting the latest tools, methodologies and technologies for producing applications. Developing in collaboration with other IT developers may then cause inconsistencies and imbalances.

Regarding cultural differences there are many prejudices and preconceptions from both camps. Suggesting game companies to be new contractors for "serious" applications is sometimes controversial. Game developing is often discarded as unserious business from other high tech companies. Game developers on the other hand are seldom ecstatic about producing content to other instances than game market. *"Game dev's do what game dev want to play"* is often heard in this context and it implies there are other things required in a creative process than just money. If you are planning to use the intellectual property of a game company the task must be motivating enough.

One approach to override these potential problems is to make use of intermediaries. The intermediaries form a virtual organisation consisting of members from both industries; half customers and half game developers. The role intermediaries take is to bridge any potential differences between them, both technological and cultural. By having a team from both industries will set aside problems with confusions, ability to have dialogue and indistinctness. Hopefully this constellation also manifests the same creative environment associated with traditional game developing companies.

5. CONCLUSIONS

Our conclusions are that the mix of rapid technical development, the benefits of gaming and trends in both economic and society converge into several interesting new uses in different contexts. We foresee that gaming will be an integrated part in other systems solving serious and time critical tasks. Even though there are potential obstacles on the way we believe the core message are far too important to be neglected.

But many of the proposed examples above require both courage and time before we will see it in everyday life. Courage from investors, managers and problem owners to boldly explore and invest in this relatively uncharted

terrain. Time because many problems originate in generation issues, not only in cultural differences. The next generation, grown up *close* with computer and video games, will probably set new standard of how to utilize computers in best way. We strongly believe that games and gaming will qualify to one viable alternative.

6. REFERENCES

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