

WEBINAR UNIVERSIDAD COMPLUTENSE DE MADRID

SERIOUS GAMES DESIGN KNOWLEDGE

PER BACKLUND, 2024-06-18

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ABSTRACT



Abstract

Serious games is an effort to combine the engagement and motivation from games with some sort of utility beyond mere entertainment. In this talk Per Backlund will revisit and analyze a set of SG development projects to explore the design space for serious games and derive design guidelines for serious games. By analyzing these projects as well as their outcomes a set of design principles for serious games can be generated to conceptualize of the design space for serious games. One main contribution is to explicate the game design component in serious games and relate it to the utility dimension. Doing so, adds to the understanding of serious games from a game perspective, which is relevant to any development effort intending to use the persuasive and motivational power of games. The talk will offer several examples and experiences from practical serious games development.



A FEW WORDS ABOUT ME

- Professor of Informatics
- Background in business informatics and information systems
- Active researcher in serious games since 2005
- Specific focus on organizational implementation and usefulness
- Program director and teacher in our master program in serious games since it started in 2008



Bild 3



UNIVERSITY OF SKÖVDE



Bild 4

HÖGSKOLAN
I SKÖVDE

UNIVERSITY OF SKÖVDE

- Strong focus on game development
- + 600 students in game development
- + 40 teachers and researchers focusing on games
- Scandinavian style and international profile



Bild 5

HÖGSKOLAN
I SKÖVDE

OUR WORKING DEFINITION OF SERIOUS GAMES

Serious games are games that engage the user and contribute to the achievement of a defined purpose other than pure entertainment (whether or not the user is consciously aware of it). This purpose may be formulated by the users themselves or by the game's designer, which means that a commercial off-the-shelf game used for non-entertainment purposes, may also be considered a serious game.

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A SERIOUS GAME IS A UTILITY SYSTEM

Some key words:

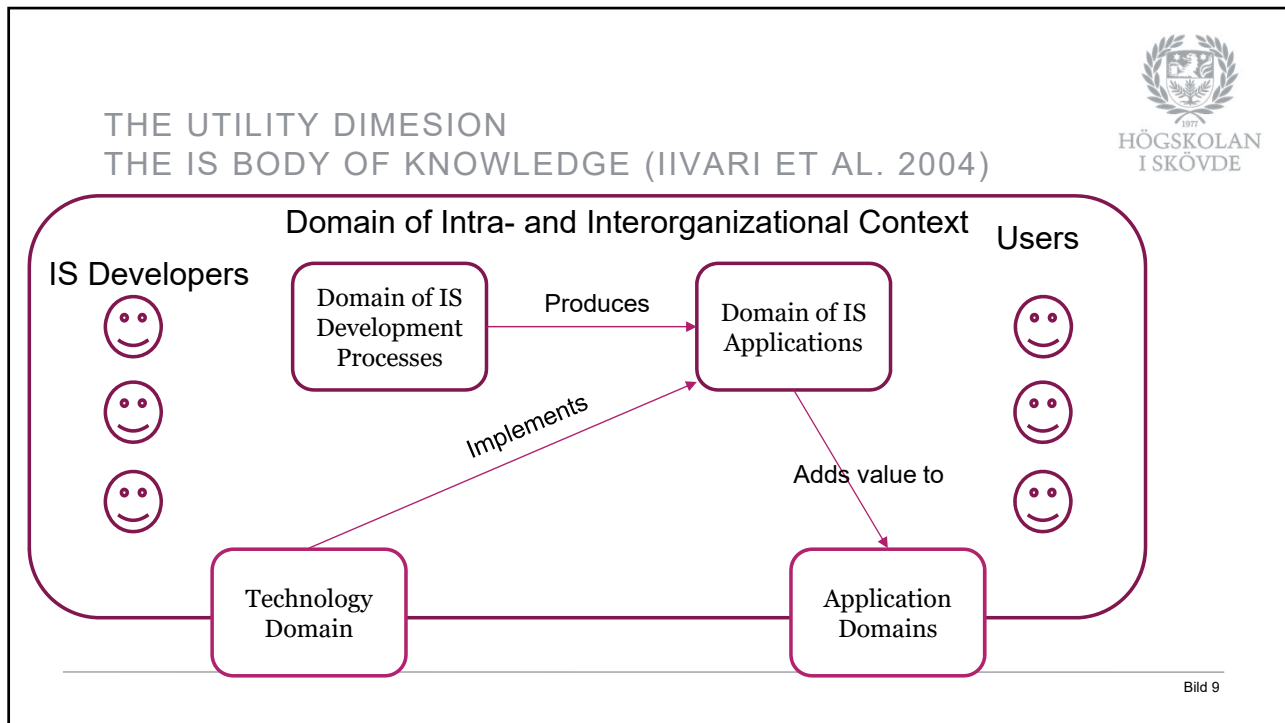
- Typically IT based
- Utility and organizational value
- Human-in-the-loop

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<https://openclipart.org/>

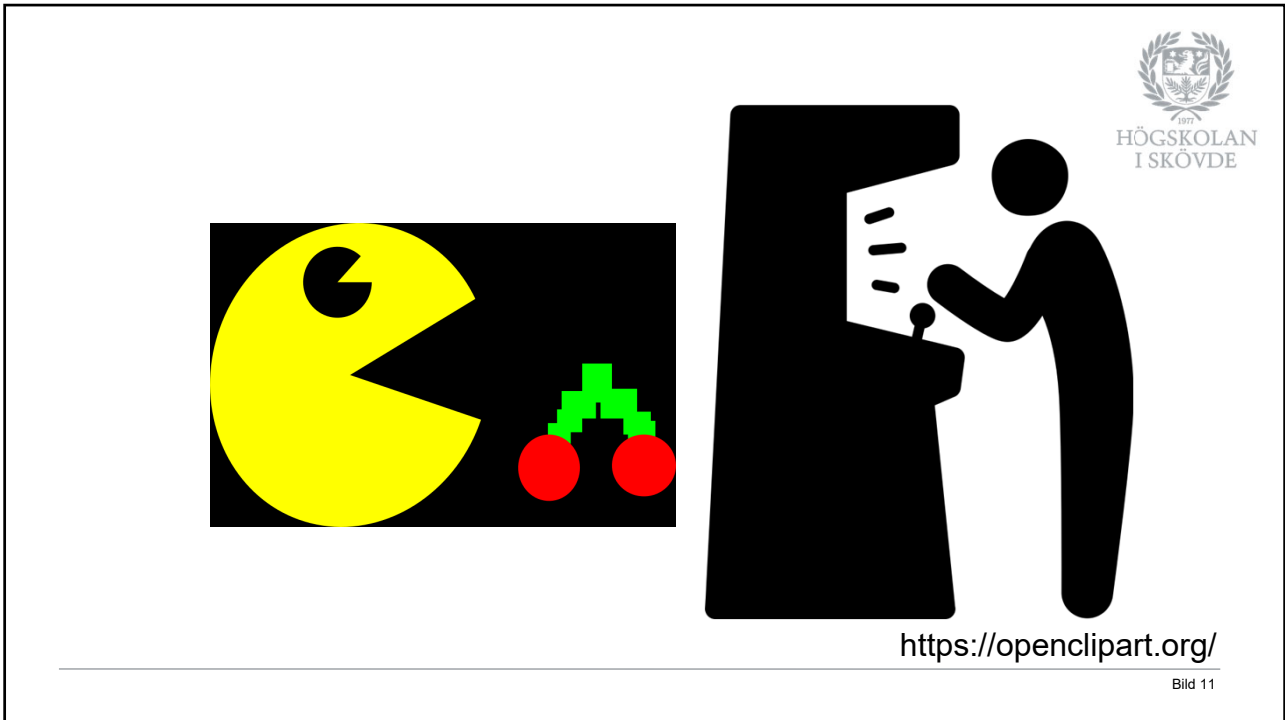
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BUT A SERIOUS GAME IS A GAME

- Voluntary and enjoyable
- Separate from the real world
- Unproductive in that the activity does not produce any goods of external value
- Part of human culture
- Important social function
- A meaningful activity in its own right
- ...

Bild 10



AND A GAME IS A GAME

- Voluntary and enjoyable
- Separate from the real world
- Unproductive in that the activity does not produce any goods of external value
- Part of human culture
- Important social function
- A meaningful activity in its own right
- ...

Conflict ?

Serious Games

- Effectiveness
- Usefulness
- “Productive”
- Organizational value
- Business value
- Work
- Additional purpose
- ...

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GAME DEVELOPMENT



Game design knowledge

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GAME DEVELOPMENT

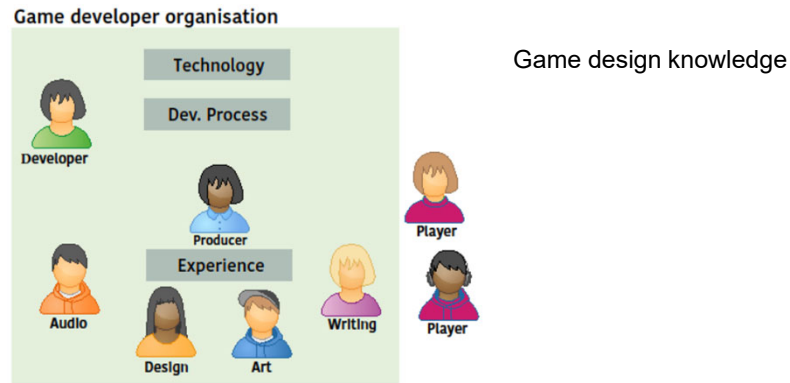


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THE ADAPTED IS BODY OF KNOWLEDGE (BASED ON IIVARI ET AL. 2004)

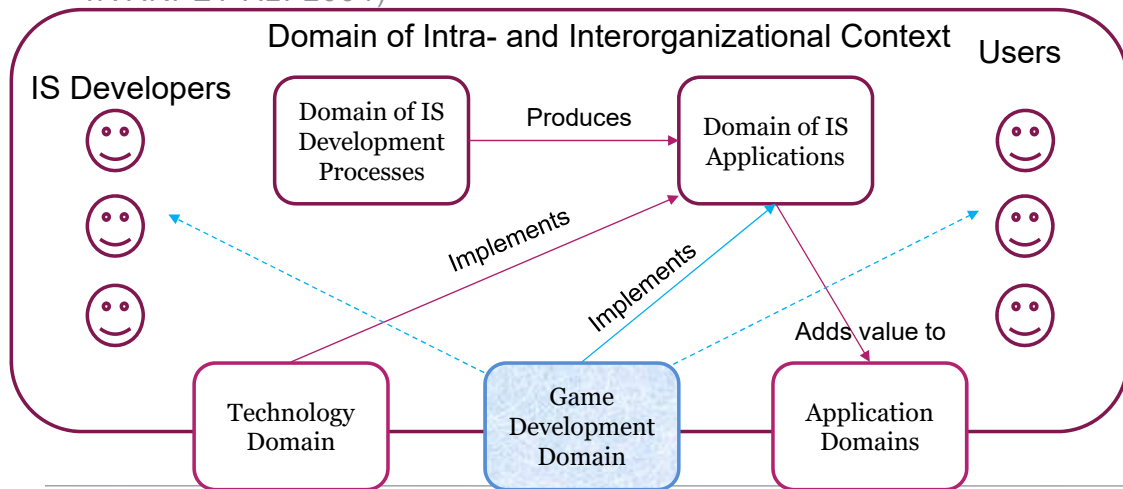


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ELINOR

- Application: stroke rehabilitation
- Partners: Regional neurology rehabilitation unit, neurology researchers
- Time span: 2007-2009
- Goal/vision: home-based stroke rehabilitation for non-typical players

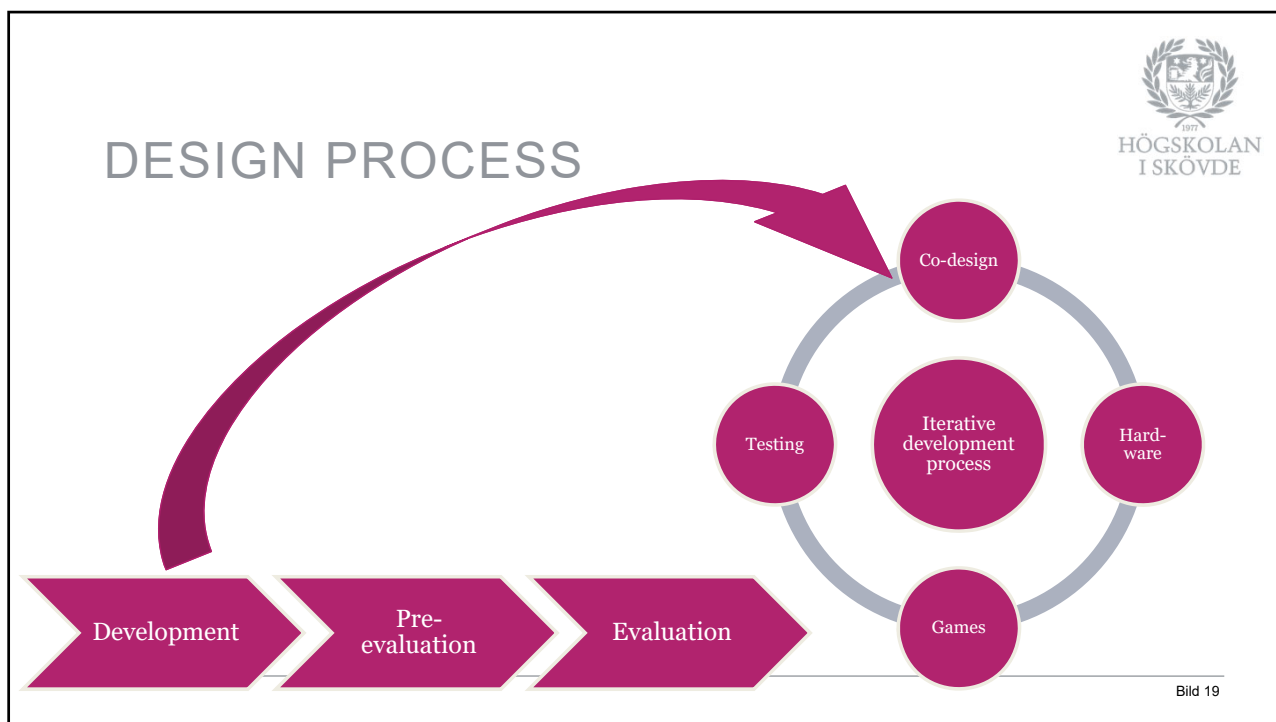


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STROKE REHABILITATION

- Stroke is the most significant cause of adult disability in the United States and Europe. In Sweden, the incidence for stroke is around 30,000 cases annually.
- Rehabilitation has an effect even a long time (6 months +) after the stroke. However, experiences show that motivation for training drops already after a few weeks.

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EVALUATION PROCESS

The table outlines the evaluation process across three stages: Start-up, Week 1-5, and Week 6. The logo of Högskolan i Skövde is in the top right corner.

Start-up	Week 1-5	Week 6
<ul style="list-style-type: none"> • Screening test • Introduction to the Elinor system • Tests by rehabilitation specialists • Semi-structured interview • Delivery of Elinor machine 	<ul style="list-style-type: none"> • Weekly follow up at the clinic 	<ul style="list-style-type: none"> • Tests by rehabilitation specialists • Semi-structured interview

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EVALUATION ASPECTS

Gaming behavior

- Time
- Flow

Rehabilitation effect

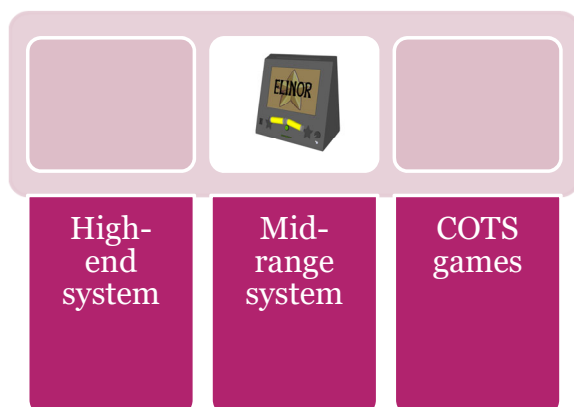
- User experiences
- Measurements

Acceptance

- Adapted TAM
- Patients
- Healthcare professionals

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MAIN TAKEAWAYS



- (At the time) Many claims concerning game based rehabilitation in the home – surprisingly, no empirical evaluation in actual home environments.
- The identification and demonstration of a mid-range segment that could be used in the home of patients.
- Game tasks -> rehabilitation needs

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SAREK

- Application: medical simulation and training
- Partners: Regional ambulance unit, prehospital researchers
- Time span: 2012-2017
- Goal/vision: Develop a simulator training environment to improve live-role play training in a prehospital context.



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THE PREHOSPITAL PROCESS



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EXPLORING IMMERSION IN SERIOUS GAMES

- The concept of immersion is frequently used in the game development community
- Defined as: “Immersion is the subjective impression that one is participating in a comprehensive, realistic experience” by Dede (2009)
- Building on the work of Jennett et al. (2008) we aimed to transfer this concept into the prehospital training domain

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CONTEXTUALIZATION

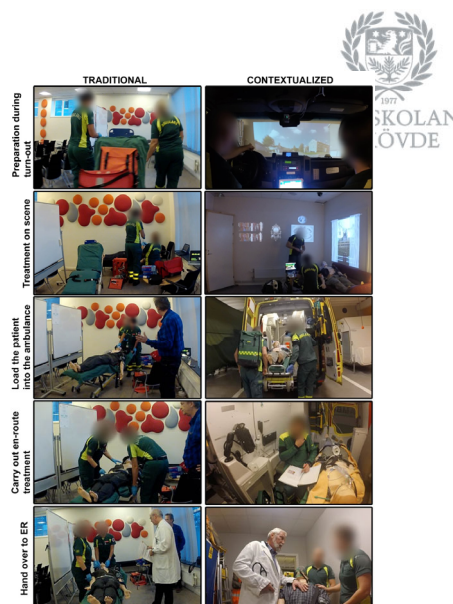
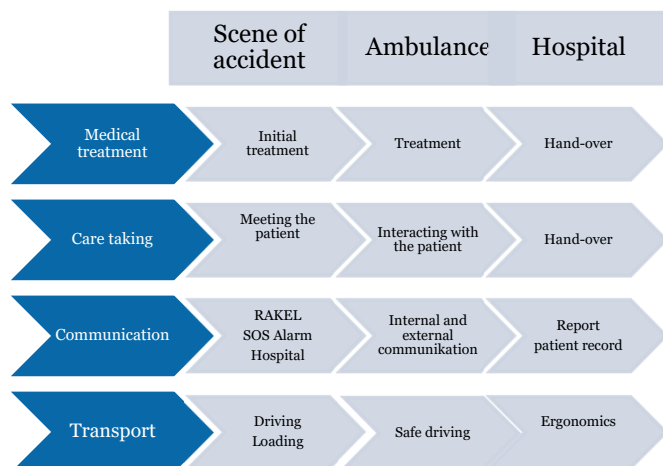


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MAIN TAKEAWAYS

1. A novel way of medical simulation training for prehospital contexts
2. A new interpretation of the concept of immersion applied to the prehospital simulation training context
3. Higher immersion in the contextualized version of the medical scenario
4. A follow-up study of the effect of immersion on team performance in simulation –it seems that contextualization matters in expert decision making

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HIDDEN IN THE PARK

- Application: risk-awareness
- Partners: Change Attitude, World Childhood Foundation,
- Time span: 2014-2015
- Goal/vision: addressing sensitive topics with the help of a game



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HIDDEN IN THE PARK

- Online grooming is an increasing societal problem
- Lower and lower in ages
- Challenging to address and inform about – target groups from 7 years of age.
- How to address such a topic in a game?

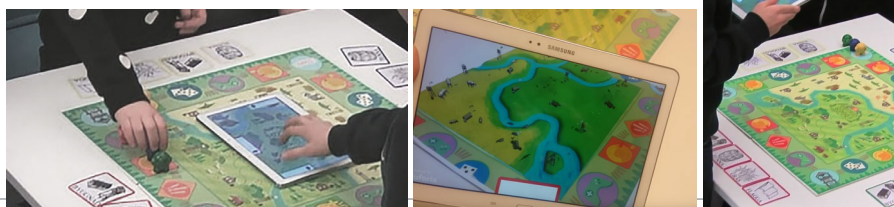


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GAMEPLAY



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GAMEPLAY

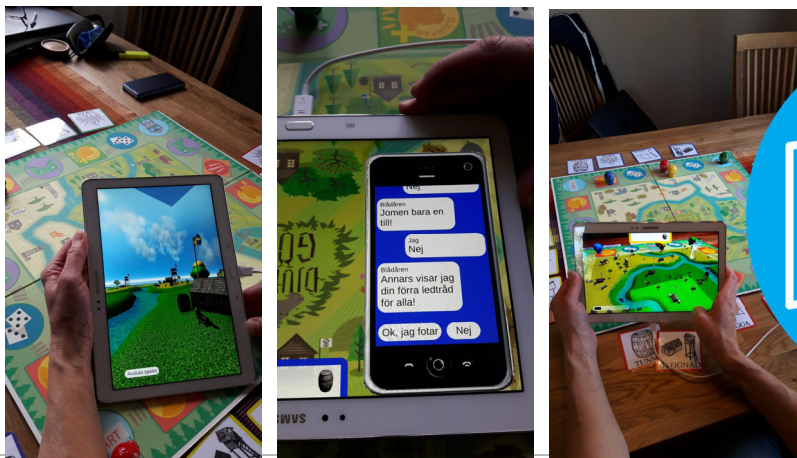


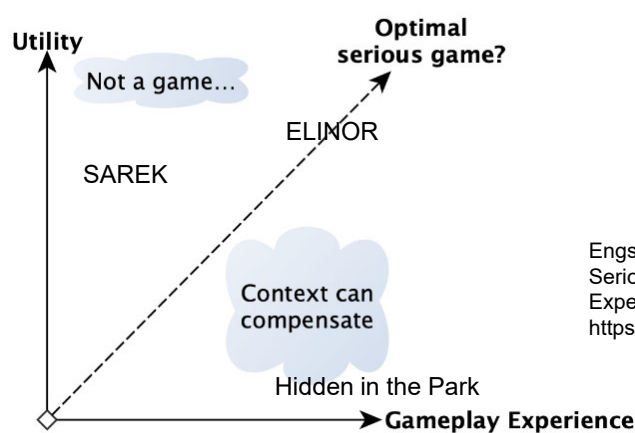
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MAIN TAKEAWAYS

- The game worked as a game for the target group – the combination of board game and AR was appreciated.
- AR worked well as a “wow-factor” – but it is a double edged sword...
- The game worked well as a basis for discussion and the kids could relate to the patterns
- The teacher manual is an important part of the concept

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DESIGN SPACE FOR SERIOUS GAMES



Engström, H. and Backlund, P. (2021)
 Serious games design knowledge –
 Experiences from a decade (+) of serious games development.
<https://eudl.eu/doi/10.4108/eai.27-5-2021.170008>

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SUMMARY OF DESIGN PRINCIPLES

#	Design principle
1	Game design expertise is crucial and needs to be an integrated part of the process of developing serious games.
2	Games are not typical IS applications and cannot be understood as such. There is a conflict between the fundamental tenets of games and organisational IS applications that needs to be considered.
3	The gameplay experience and the utility of a serious game are determined by the organisational usage situation. This entails that the design space for serious games is different from both games and utility software.
4	The “wow-factor” of serious games may drive technology use for the sake of technology. This is not optimal from a utility perspective and needs to be considered during development.
5	Developers of serious games should convey some understanding of game design to the client.
6	Serious games is a distinct domain outside game design as well as IS design. This entails a new ontological domain with specific contributions to IS development.
7	Serious games aim to introduce concepts and ideas from the game design domain into the IS domain. The underpinnings and goals are different and not necessarily transferrable without adaptation.

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THANK YOU FOR YOUR ATTENTION!



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