

SG4ChildD: Adaptive Serious Games to Strengthen Emotional Competencies in Children with Depression

Status Quo Serious Games and G4H – Catalogue – SG4ChildD

PD Dr.-Ing. Stefan Göbel

Serious Games Research Group
Technical University of Darmstadt, Germany

stefan_peter.goebel@tu-darmstadt.de ← *slides*

<https://www.etit.tu-darmstadt.de/serious-games>



Serious Games – Definition

Serious Games

- A *serious game* is a digital(?) game that was created with the intention to entertain and to achieve at least one additional goal (e.g., learning or health). **These additional goals are named *characterizing goals*.**

Dörner, R., Göbel, S., Effelsberg, W., & Wiemeyer, J. (Eds.). (2016). *Serious Games: Foundations, Concepts and Practice*. Springer.

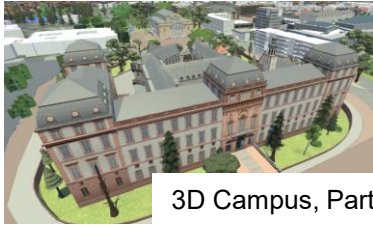


Gamification

- *Gamification* means to add game elements to a non-game area, whereas *games with a purpose* denote games designed to exploit crowdsourcing in order to achieve a non-game purpose.
- *Gamification* is the transfer of game methodologies or elements to non-game applications and processes. For example, in their customer loyalty program the sports apparel manufacturer Nike uses badges, achievements, challenges and rewards – concepts typically found in games. **Thus, the result of gamification is not necessarily a game.**

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011, September). From game design elements to gamefulness: defining gamification. In *Proceedings of the 15th international academic MindTrek conference: Envisioning future media environments* (pp. 9-15). ACM.

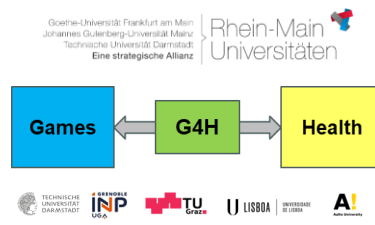
Serious Games – *more than fun*



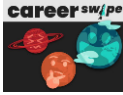
3D Campus, Participation, Recruitment



Exercube



Learning



Teaching

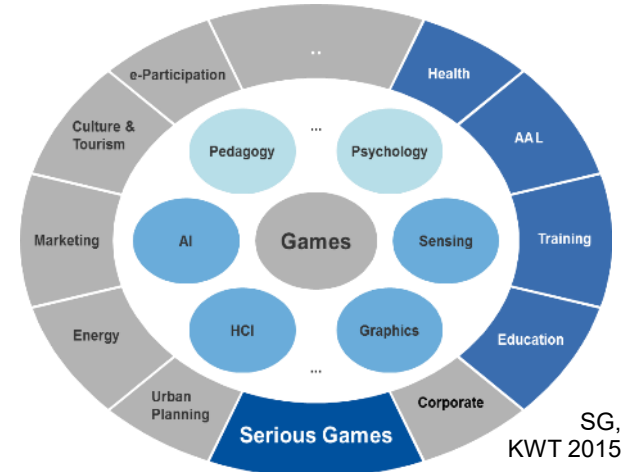


Approach

- Game Technology & Concepts + RTD Concepts → Apps

Characteristics

- Real Data & Users
- Complex, interdisciplinary
- Personalisation & Adaption
- Authoring, Control & Evaluation



Status Quo – „Grand Challenges“ (SG, G4H)

1) User Acceptance

- Quality of games (GX, fun factor: Graphics, Design, Audio, Story..)
- Ethics: Privacy, Security, .. Medical App

Lennart Nacke, Anders Drachen, Stefan Göbel. Methods for evaluating gameplay experience in a serious gaming context. *International Journal of Computer Science in Sport*, vol. 9, no. 2, 1-12, 2010.

2) Economic Aspects

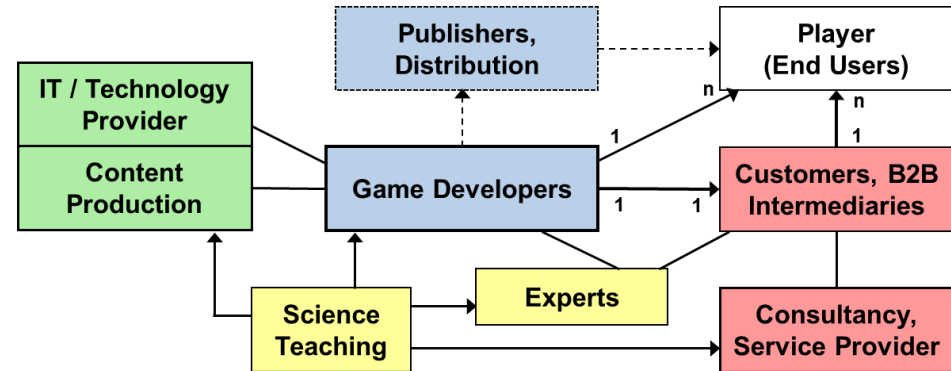
- Cost-benefit ratio – for users and developers
- Price – Serious Games „for free?“

Stefan Göbel, Oliver Hugo, Michael Kickmeier-Rust, Simon Egenfeldt-Nielsen. Serious Games – Economic and Legal Issues. In: Dörner, R., Göbel, S., Effelsberg, W., Wiemeyer, J.: *Serious Games – Foundations, Concepts and Practice*. Chapter 11, p. 303-318. Springer International Publishing. 2016.

3) Research and Development

- Characteristics of a SG: Game AND „serious part“
- Interdisciplinary approach is necessary

Roles: Where are you?



S. Göbel, wtt Serious Games (2019), derived from Göbel et al. (2016) *Serious Games – Economic and Legal Issues*. In: Dörner, R., Göbel, S., Effelsberg, W., Wiemeyer, J.: *Serious Games – Foundations, Concepts and Practice*. Chapter 11, p. 303-318. Springer International Publishing. 2016.

Status Quo – Transforming Health(care)

What works?

1) Milestones and Trends (Industry)

- ReMission (2008): Study, adherence effects

Kato, P. M., Cole, S. W., Bradlyn, A. S., & Pollock, B. H. (2008). A video game improves behavioral outcomes in adolescents and young adults with cancer: a randomized trial. *Pediatrics*, 122(2), e305-e317.

- EndeavorRX (2020): FDA proven game as drug (ADHS)
- Exergames as SGB V certified prevention tool/course

Martin-Niedecken, A. L., Mahrer, A., Rogers, K., de Bruin, E. D., & Schättin, A. (2020). "HIIT" the ExerCube: comparing the effectiveness of functional high-intensity interval training in conventional vs. exergame-based training. *Frontiers in Computer Science*, 2, 33.

- Meister Cody (dyslexia, acalculia) @school, @therapy



ErgoActive



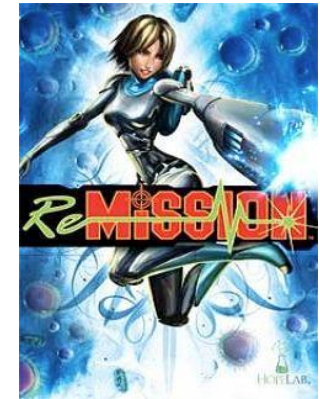
EndeavorRX



Meister Cody



ExerCube

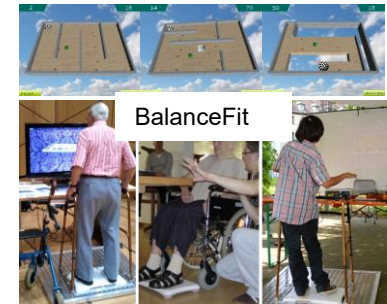
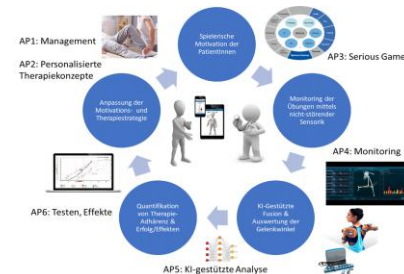


2) Research and Development (Academia)

- Authoring, Control, Evaluation (RCT, effects)
- Personalization & Adaptation, e.g. DDA

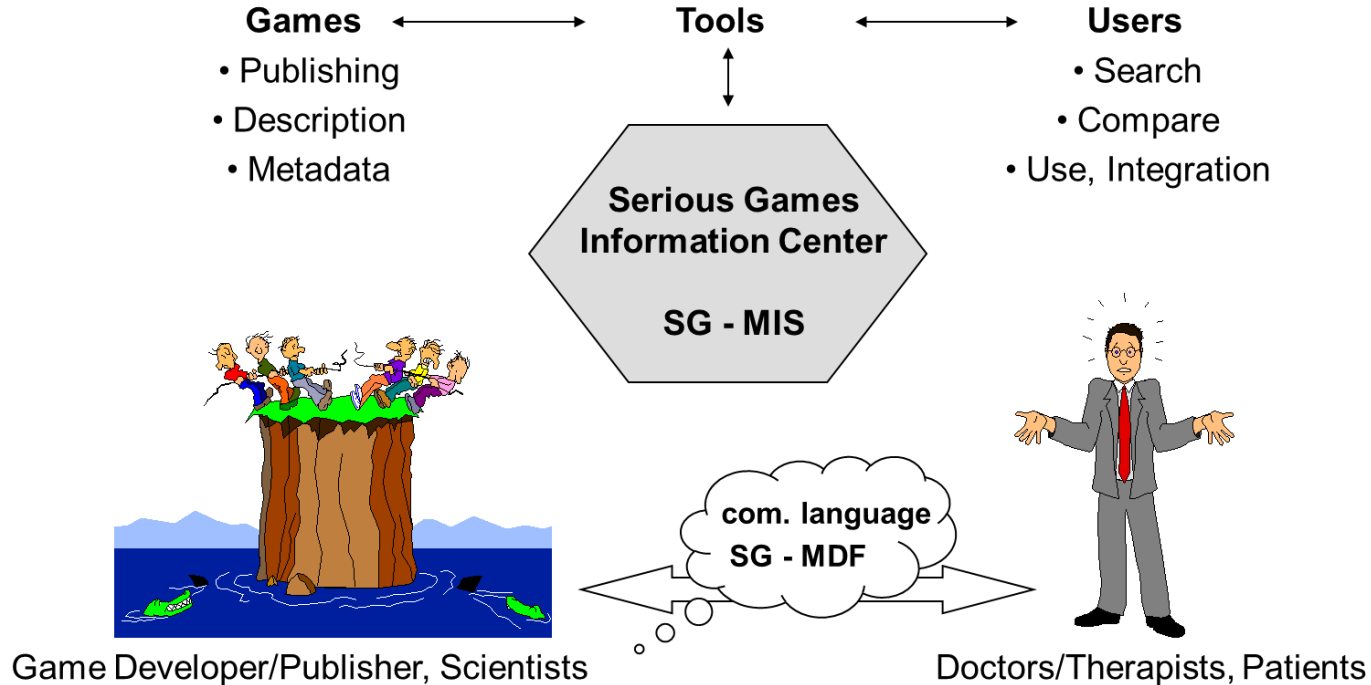
Göbel, S., Hardy, S., Wendel, V., Mehm, F., & Steinmetz, R. (2010, October). Serious games for health: personalized exergames. In *Proceedings of the 18th ACM international conference on Multimedia* (pp. 1663-1666).

SG4smartmedication



BalanceFit

Which Serious Games are available?



Serious Games Information Center

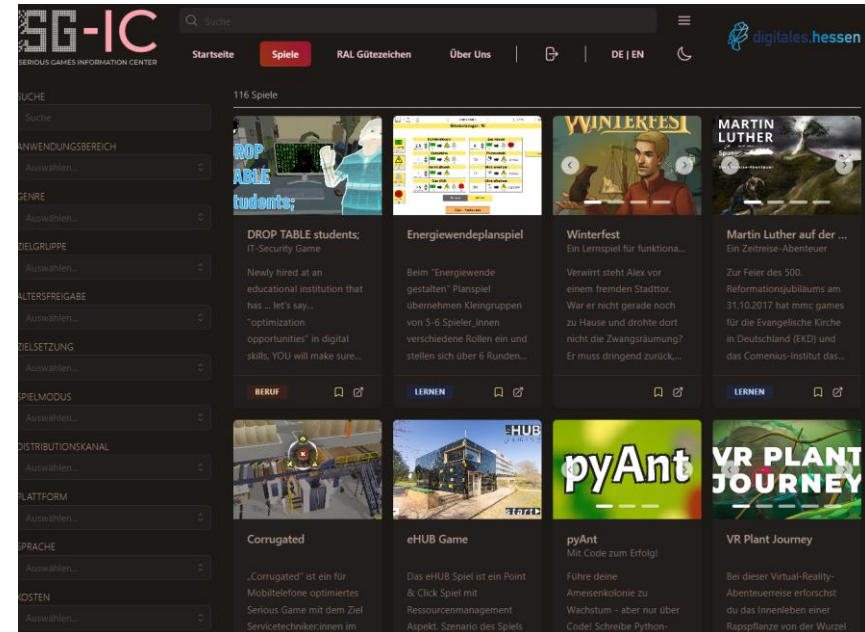
Catalogue system (dt. & engl.)

- <https://seriousgames-portal.org/en>
- Application Profiles „Education“, „Vocational Training“ and „Health“
- Metadata Editor, Search & Retrieval

Please join, for free!

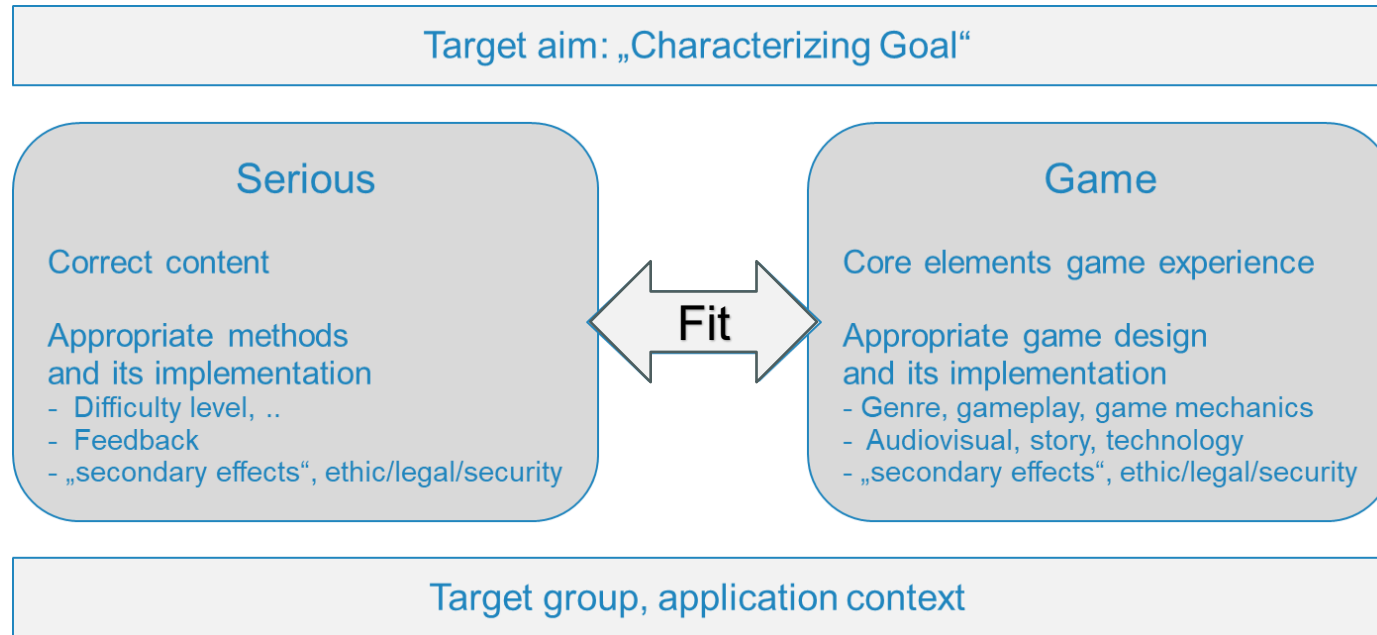
Serious Games Metadata Format

- 42 Persons, 37 Institutions
- DIN/SPEC 91380



Göbel, S., Vogt, S., & Konrad, R. (2018, October). Serious games information center. In *European conference on games based learning* (pp. 143-146). Academic Conferences International Limited.

What makes a good Serious Game?



Caserman, P., Hoffmann, K., Müller, P., Schaub, M., Straßburg, K., Wiemeyer, J., ... & Göbel, S. (2020). Quality criteria for serious games: serious part, game part, and balance. *JMIR serious games*, 8(3), e19037.

Serious Games Landscape

WTT Serious Games Project

Community Building

- Developers
- Publisher
- Service Provider
- Research
- Users

<https://wtt-serious-games.de/landkarte/>

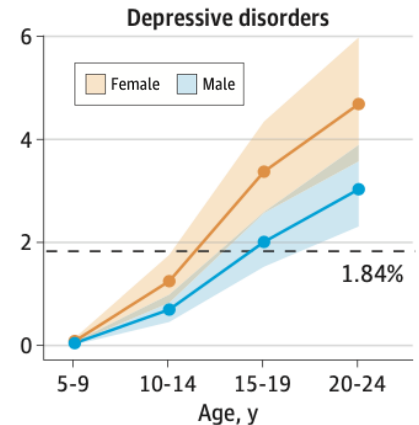
Join for free!



SG4ChildD (BMFTR, Gamki, 2025 – 2028)

Interactive and Gamification-based technologies to support mental health in childhood age

- Motivation: Increasing prevalence, mental disorders start in childhood age with negative ongoing effects, care deficits/barriers (e.g. long waiting periods)
- Goal: Strengthen emotional competencies/regulation (ER) with Serious Games and Gamification, provide low-threshold tool
- Approach: User-centred design (kids, environment, experts (med, games))
- RTD: ER exercises/therapy program, adaptive Serious Games, Gamification
- Results: Game-based app (kids), psycho education (parents) with StoryTec Web, evaluation studies (research: effects of game-based app: psycho/med, game)

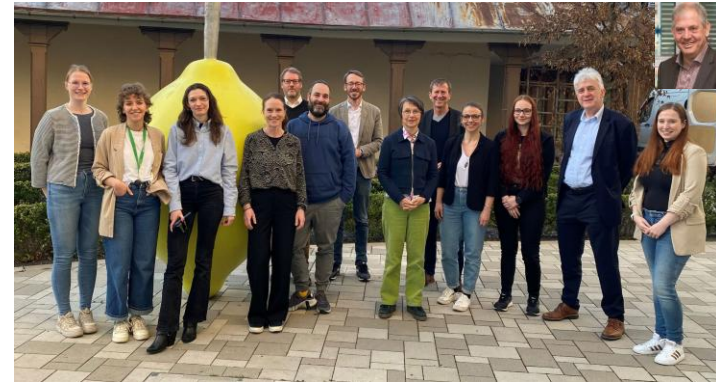


Adapted from Kieling et al., 2024

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Kickoff, LMU München, März 2025



Bundesministerium
für Forschung, Technologie
und Raumfahrt



JOHANNES GUTENBERG
UNIVERSITÄT MAINZ



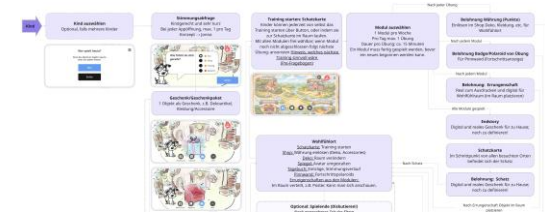
smart medication



SG4ChildD – work in progress

Interactive and Gamification-based technologies to support mental health in childhood age

- Requirement Analysis: Huge expectations and game ideas, complex psychological/medical requirements for ER (program)
- Conceptual work: Game design concept (story, exercises/modules, companion), concpets for personalized/adaptive game design (e.g. DDA) and gamification (PBL), tool/templates for psycho education
- Next: Development (app, backend/dashboard, StoryTec Web), user testing/evaluation studies, market and regulatory aspects



Thank you!

SG4ChildD

- Updates, eval: next year

Games for Health Community

- G4HEU meets
 - Serious Play Europe, June 18-19, Mainz, Germany
 - European Conference on Games-based Learning, Sep 30 – Oct 2, TU Darmstadt, Germany
 - Joint Conference on Serious Games, Dec 3-4, Malta
- Serious Games Information Center
 - <https://seriousgames-portal.org/en>
 - Describe your Serious Games/G4H, join for free



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