

GAME BOY COLOR

Nintendo

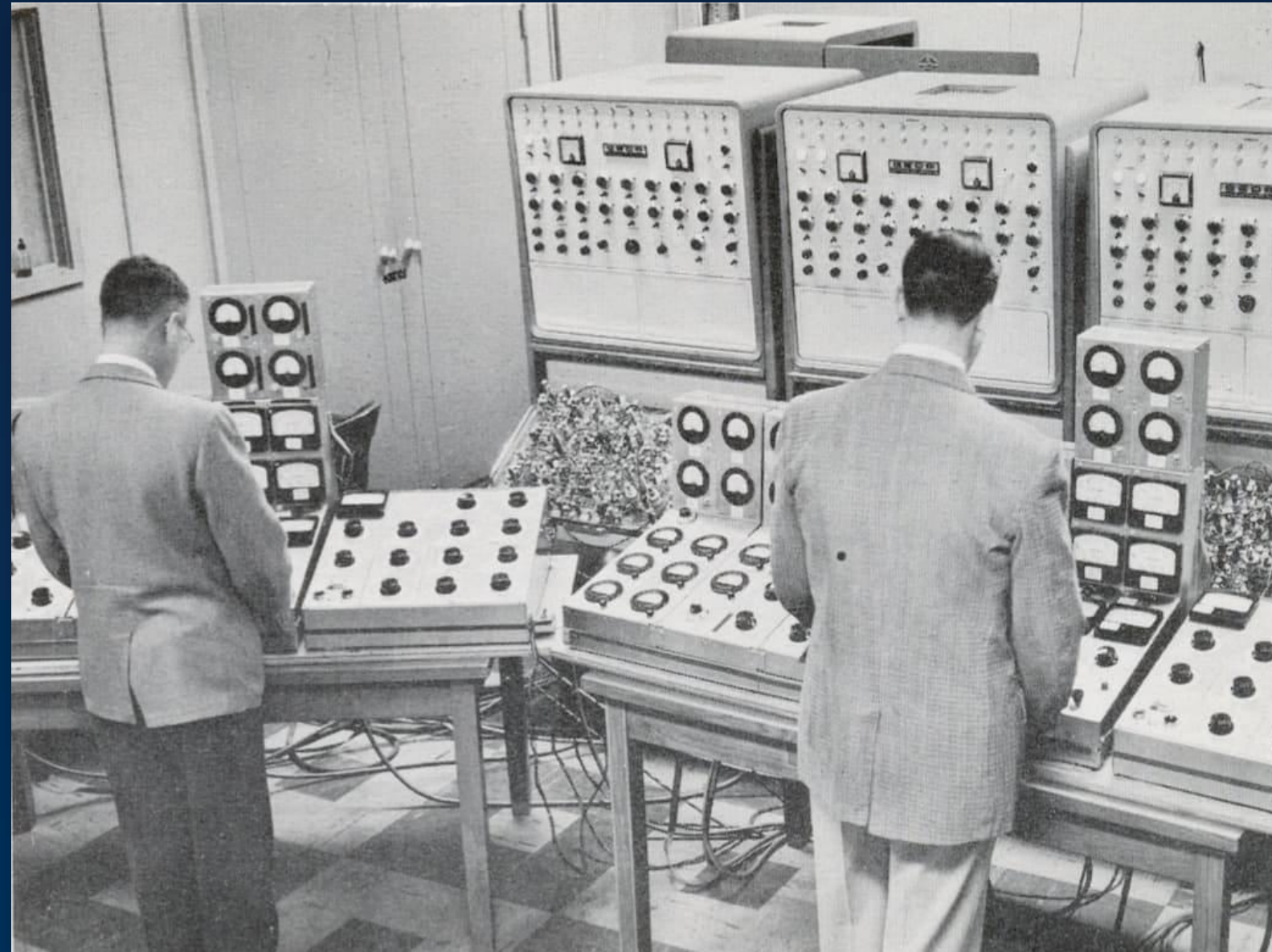
# Serious Games in healthcare

toys or validated tools?



# Serious Games

## A brief history



HUTSPIEL (1955)



IBM City One (2010)



Microsoft Flight Simulator (1982)

# Serious Games

vs

# Gamification

Serious Games are an Interactive computer applications, that have challenging goals, are fun to play and engaging, incorporating some scoring-mechanism, and supply the user with skills, knowledge, or attitudes useful in reality.

Gamification is the use of game design elements in non-game contexts.

Sebastian Deterding et. al: "From game design elements to gamefulness: defining 'gamification'"

(B. P. Bergeron: "Developing Serious Games")



# Serious Games in Healthcare



Re:Mission 2 (2013)



mySugr (2012)



Cureo (2018)

# Benefits

- ▶ Improvement of the patients' knowledge about their disease
- ▶ Positive effects on self-efficacy
- ▶ Increased motivation
- ▶ Increased therapy adherence
- ▶ Risk-free learning of repetitive or dangerous tasks

# High costs and effort

- ▶ High development costs
- ▶ Multiprofessional team required
- ▶ Distribution could be difficult
- ▶ Low market penetration



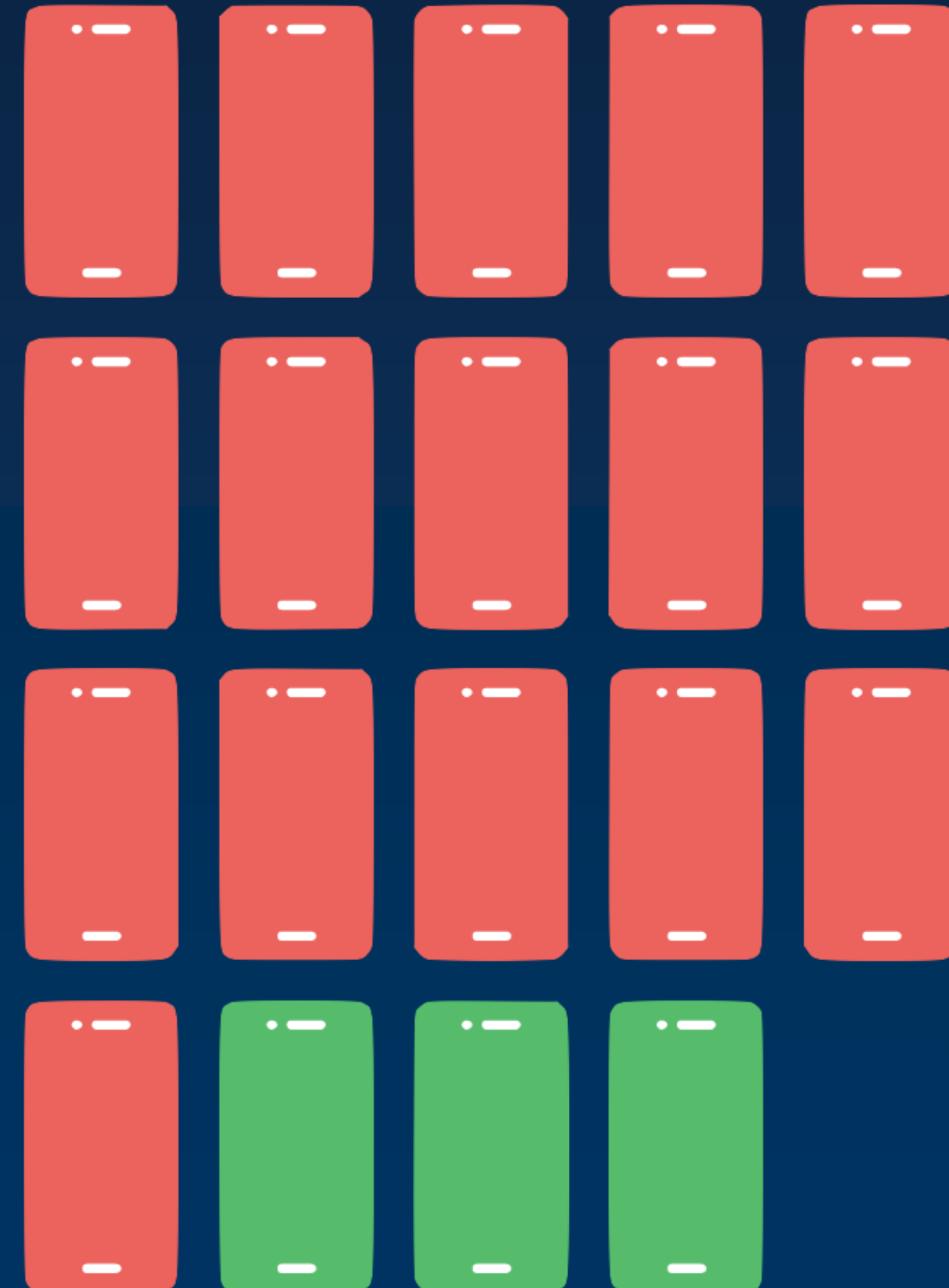
# Lack of high quality studies

- ▶ Problems with methodology
- ▶ Only small numbers of high quality RCTs
- ▶ Mixed results in Meta-Analyses over different fields
- ▶ Unclear reasons for using serious games

# Regulatory Issues

**19** of the **143** most popular gamified health apps available for Android and iOS could be considered as medical devices.

**84.2%** of these do not have the required quality labeling as medical devices.



# Lack of game/gamification design expertise

- ▶ Complex area that combines psychology with computer science and design
- ▶ Many bad role models
- ▶ Overused as a buzzword
- ▶ Consequences:
  - ▶ Lower motivational effect
  - ▶ Lower user retention rate
  - ▶ Lower clinical effect

# Conclusion

- ▶ Serious games and gamified applications could be an effective tool when used properly
- ▶ The areas of use should be carefully selected
- ▶ MDR requirements should be considered right from the start
- ▶ High quality evaluation should be conducted

# What we do differently

1. Patient perspective from the start
2. Game design expertise
3. Collaboration with regulatory experts
4. Incorporation of learning theory principles
5. Use of the the lean startup principle



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