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# Mobile Phones as Interfaces to Serious Games

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# Presentation Outline

1. **Starting points** of mobile phones as interfaces to serious games:  
Opportunities and challenges
2. **Case studies:** Mobile games for promoting healthy lifestyles

# Opportunities

- ④ Recent mobile phone models have **many exiting features:**
  - Voice communication
  - High capacity data transfer (GPRS, Bluetooth, and Wi-Fi)
  - Text messaging (SMS)
  - Multimedia messaging (MMS)
  - Imaging
  - Audio and video recording, editing & playback
  - Video conferencing

# Opportunities (cont.)

With memory cards and hard disk drives, the storage capacity can now be up to gigabytes  
FM radio reception; soon digital television broadcast reception (DVB-H and others)

Context awareness:

- ③ Location (GPS, cell id, Bluetooth and Wi-Fi hotspots)
- ③ The presence of other users
- ③ Soon there will be available a variety of sensors for collecting data describing the context: acceleration, temperature, etc.

# Challenges: Pricing

- ③ Mobile games that utilize rich online multimedia content require large amounts of data transfer
- ③ In mobile games requiring data transfer, **cellular network pricing** is a key decisive factor:
  - Users are held back by too expensive, or unclear pricing models for data transfer
  - Flatrate fees are a solution
  - Wi-Fi is becoming a viable alternative as its covering extends and more mobile phones support it

# Challenges: Input Methods

- ④ 12(+) key numpad is almost universal; miniature QWERTY in very few models
- ④ However, numpad is not an obstacle for most kids who type fast with it
- ④ Nevertheless, there is need for a hands-free input method, enabling truly mobile applications

# Challenges for Developers

- ④ Mobile phone devices vary a lot, meaning that in two models:

Input methods may vary, resulting in a very different user experience

The OS version may be different, meaning in the worst case that a game may not work

In standardization, Java2ME (MIDP & MIDP2) is a step in the right direction

# Challenges for Developers (cont.)

## ④ From the viewpoint of game development:

Size of display on mobile phones...

- ④ ... or rather, how to properly format the content to the display

Development tools

- ④ There are few tools for mobile game development
- ④ One exception is MUPE...

# Multi User Publishing Environment



- ⊕ Platform for rapid development of mobile multi user applications
- ⊕ Built-in context data handling
- ⊕ Applications are implemented on the server-side with Java2SE and XML
- ⊕ All applications are used with a single client software
  - Available for many mobile phone models supporting Java2ME (MIDP2)
- ⊕ Developed in Nokia Research Center, available under Nokia Open Source license:

[www.mupe.net](http://www.mupe.net)

# Case Studies: Mobile games in MyHeart Project



- ⊕ Health issues caused by child and teenage obesity are a growing problem
- ⊕ The possibilities of using mobile games to promote healthy lifestyles were explored by developing two game prototypes:

*Life Force Quest*

*Sneakers!*

# Hypothesis of Mobile Games and Wellness Activities

- ④ Starting a wellness activity like jogging or going to the gym can be initially exciting, but sustaining it can often be hard

Could games be of help in starting a new wellness activity and then sustaining it?

# Hypothesis of Mobile Games and Wellness Activities (cont.)

- ④ Games adapt to the player's skill level
  - Many wellness activities are such that they should become more demanding over time
- ④ Games can build confidence by giving feedback and visualizing progress. Reaching short term goals keep the player motivated.
  - This applies nicely to wellness activities
- ④ Multiplayer games can provide inclusion and support:
  - If players collaborate within the game, there is potential for peer support in the wellness activity, especially to get past the difficult moments
  - Motivation can increase through shared goals, experiences, and achievements
- ④ Key question: **how to intertwine mobile gameplay and wellness activities?**

# *Life Force Quest*

- ③ Dungeon-style multiplayer game for kids and teens
- ③ Each player controls an adventurer who has to complete missions in the game world



# *Life Force Quest*

- ③ “Life Force” is energy that represents the player-character’s wellbeing in the game
- ③ A game mission cannot be completed unless the player is rewarded with extra “Life Force” after performing well in a real-world exercise program or for following a dietary program defined by a health professional

Progress made in the real world is visualized as progress in the game world

# *Life Force Quest*

- ④ The exercise and dietary programs are viewed on the mobile phone, and a journal for keeping track of these activities is also available

An alternative form of reporting is that users can take pictures of their meals with the phone

# *Life Force Quest*

- ④ Key technologies in implementation:
  - Symbian Series 60 mobile phones
  - MUPE
  - GPRS



# *Life Force Quest* – Lessons Learned

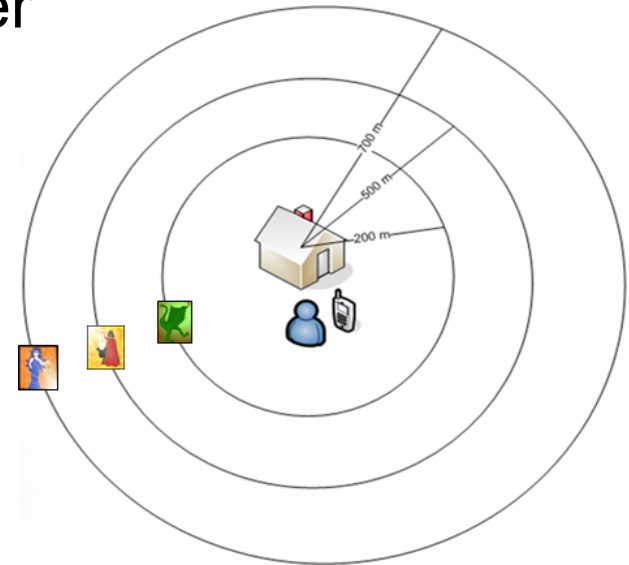
- ⊕ Progress in the training program had to be observed by a health professional. This should be automated instead.
- ⊕ A problem is that exercise activities are separate from the game. *Life Force Quest* is played on mobile phones, rather than that the game would utilize the mobility of the player.

# *Sneakers!*

- ④ Location-based collectible and trading card game for multiple players
- ④ Target group: 10-12 year olds
- ④ The player's goal is to complete his or her card collection
- ④ Virtual cards are placed with a certain radius of the player's home

# *Sneakers!*

- ③ Cards are collected when player walks through GPS hotspots
- ③ The distance to the cards increases as the player makes progress:
  - Finds cards
  - Moves more and gets into a better shape
- ③ Community aspects: forming groups, showing each individual's progress, text chat



# *Sneakers!*

- ⊕ Key technologies in implementation:
  - Symbian Series 60 mobile phones
  - MUPE
  - GPS
  - GPRS



# *Sneakers!* - Lessons Learned

- ⊕ In location-based games, players need **clues on how to move in the real world** in order to progress in the game world
- ⊕ It is important to consider in the game system the actual locations where items are placed, so they will not be near dangerous places like highways. **Safety and supervision** must be taken carefully into account in the game design.

# Future Possibilities

- ③ Mobile game content that adapts on the basis of the player's context
- ③ “Mixed reality gaming”: Mobile games that intertwine real-world activities with game activities
- ③ Utilizing mobile phones' rich features in games, for example by combining multimedia publishing with gameplay
  - Seeing the mobile phone as a multimedia tool for recording and reporting everyday life, and using that as an input to various games.

# Acknowledgements

Thanks to my colleagues Ciarán Harris for the *Sneakers!* game design and Riku Suomela for the original idea, Jouka Mattila for insights, Eero Räsänen and NRC trainees Heidi Sarkama, Olli Etuaho, Matti Nelimarkka, Simo Poranen & co. for their contribution to the games.