Mobile contextualized learning games for decision support training

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JTELE Summer School, Ischia, 07.07.2015

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Page 1
What is a mobile serious game?

Image: Phil Rogers,
http://www.flickr.com/photos/erase/5572308872/sizes/l/in/photostream/
Mobile Serious Games

- Mobile Serious games allow connecting learning, gaming and situation
  - Embedded in Context
  - Exploration and utilization of context
  - Augmentation of reality
- 3 case studies in decision training performed
  - Bystander decisions processes in emergency situations
  - Hostage taking situation
  - Decisions in logistical value chain
Some contextual dimensions

CONTEXT?

Location

Movement

Task

Community

Objects

Time
Location

Technologies
• GPS
• Indoor Navigation
• Identification points (NFC, QR-Codes)

Use cases
• Location dependent information
• Orientation tasks
• Proof of location
Time

Technologies
• Clock
• Global game time
• Task-based timers

Use cases
• Reminder
• Alarm
• Events
• Time restricted tasks
Task

Technologies
• Game process
• Learning process

Use cases
• Process support
• Questions
• Feedback collection (recording of audio, video, pictures, text)
Community

Technologies
- Network
- Teams
- Roles
- Communication

Use cases
- Competition
- Collaboration
- Team building
- Responsibilities
Objects

Technologies
• Camera
• QR
• NFC

Use cases
• Object explanation
• Object dependent tasks
• Object augmentation
Movement

Technologies
• Accelerometer
• Camera
• Electronic compass

Use cases
• Gestures
• Movement training
• Activity recognition
Examples from three projects

CASES
Case 1 – EMURGENCY
Decision and behaviour training for cardiac arrest

• Cardiac arrest one of the main causes of death
• Only 20% of affected people survive
• The survival rate could be doubled if
  – Immediate help by laymen would be in place
  – Professional help would earlier be in place
• But:
  – Bystanders often don’t know what to do
  – Bystanders don’t help when they fear to do the wrong things
Case 1 – EMURGENCY

Game design

• Roles
  – AED player: needs to find defibrillator and bring it to victim
  – CPR player: needs to find victim and perform CPR
  – Documentation player: needs to document behaviour of other players for later reflection

• Game goal
  – Teach concrete skills and motivate behavioural aspects
Case 1 – EMURGENCY
Game design

AED Player
- AED notification → POI Arrival & AED pickup → POI Arrival & AED application

CPR Player
- Incident notification → POI Arrival & CPR steps → Coordination → Debriefing with gold-standard → Debriefing with instructor

Documentation Player
- Performance recording → Upload → Synch point → Routing Support
Case 1 – EMURGENCY

Game

Welcome message
Welcome to the Heart Run game. It will help you to be prepared in case of emergency. The instructions on your device will tell you how to save a life.

Scan AED
Go to the next AED.
If you stand in front of it, scan the barcode attached to it.
To do this, **press the barcode icon** below and hold the advice in front of the barcode. It will scan automatically.

CPR
Push hard and fast in the center of the person's chest to the beat of the disco song “Stayin’ Alive.” It has more than 100 beats per minute — the correct rate to push on the chest during CPR.

The game is based on messages which will appear on your device. When closing this message, you will already see the next one. You close this message by using the BACK Button. To open a message, you have to click on it. Messages which you have read are greyed out.

Continue CPR until an AED arrives or emergency providers can take over.
If other bystanders are present, change the person giving chest compressions.
Case 2 – UNHCR
Decision training for hostage taking situations

• Office of the United Nations High Commissioner for Refugees (UNHCR) works in crisis regions worldwide and is constantly confronted with kidnappings

• Employees confronted with such situations need to be trained

• UNHCR uses role-playing as training method
Case 2 – UNHCR

Game design

• Roles
  – Head of Office
  – Security Officer
  – Staff Welfare

• Game goals
  – Creation of reusable variations of a game-design
  – Enabling ‘on the fly’ messaging and real-time assessments
  – Semi-automatic management of the game
  – Logging game activities for debriefing
Case 2 – UNHCR
Game design
Case 2 – UNHCR
Game
Case 2 – UNHCR
Game

- assemble team
- Correct
- Question
- Important Message

A message has arrived from the DO, please click the play button below to listen to the voice message.

As requested by the DO, please list the required actions to be taken if the hostage is released using maximum one sheet of flip-chart paper. You have **10 minutes** to complete this activity. When the list is complete, please take a **photograph** of the list and upload it for review by the DO.

To do this, please press the **menu** button below and select **provide answer**.
Case 3 – SALOMO
Decision training for exception handling in logistics

Klemke, R., Kurapati, S., & Kolfschoten, G. (2013, 6 June). Transferring an educational board game to a multi-user mobile learning game to increase shared situational awareness. Presentation at the 3rd Irish Symposium on Game Based Learning, Dublin, Ireland.
Container terminal: complex logistic processes involve many independently operating stakeholders

Source: Voss et al. (2008)

Klemke, R., Kurapati, S., & Kolfschoten, G. (2013, 6 June). Transferring an educational board game to a multi-user mobile learning game to increase shared situational awareness. Presentation at the 3rd Irish Symposium on Game Based Learning, Dublin, Ireland.
Internal disruptions

External disruptions
Case 3 – SALOMO
Game design

• Roles
  – **Control tower**: overview, permissions to other actions
  – **Vessel planner**: plans the unloading and loading of the ship
  – **Yard planner**: decides the storage positions for containers
  – **Sales**: responsible for the bookings and financial transactions between the clients and the terminal
  – **Resource planner**: Assigns resources to each vessel
Case 3 – SALOMO
Game design

• Game goal
  – Generate situational awareness among different roles to improve their behaviour in disruption situations

• Approach
  – Give increasing access to communication means during the game process
Case 3 – SALOMO
Game design – Level 1
Case 3 – SALOMO
Game design – Level 2
Case 3 – SALOMO

Game

Version 1: Board game

Version 2: Mobile game in ARLearn
ARLearn: platform for mobile serious games

- Open Source
- Authoring Environment
- Clients for Android and iOS

http://ou.nl/arlearn
Workshop Tasks

1. Concept & Process (groups 3-6)
   - Think of a **shared decision making scenario** (or continue the example from Alessandra’s workshop) as basis for a game
   - Describe the game in a **schematic way** and esp. think of:
     - Which contextual dimensions are relevant and why?
     - Which influence should these dimensions have for the game play?
     - What are connections between players and context?

2. Media
   - Think of media you might need to support the scenario
     - How can the scenario become realistic & immersive?
     - Can you instantly produce media?
     - Which media can you expect your players to produce during game play?
Workshop Tasks: Schedule

• Group work: 40 minutes
• Group presentations: 20 minutes (ca. 5 minutes per group)
• Wrap-Up discussion: 10 minutes