# Games Technology to Facilitate Large-scale Training in Cybercrime Response

Abertay University I Droman Crime Solutions | Police Scotland Collaboration

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## Aim: Transform The Delivery Of First Responder Training In Tackling Cybercrime





#### CYBERCRIME

- Technology has a footprint in virtually every crime.
- Not limited to crimes which violate the Computer Misuse Act, eg hacking, phishing, ransomware, data theft..
- Need 1<sup>st</sup> Responders who can competently investigate cybercrime
  - Has a crime been committed?
  - What devices could be relevant?
  - How should those devices be handled?
  - How to interact with the victim?



#### **FIRST RESPONDER GUIDE**

 35 page guidebook, difficult to update, difficult to measure engagement



#### **CLASSROOM-BASED** TRAINING

Used during cadet training. Additional use of this mechanism is expensive, time consuming. Not effective in training Scotland's 17,000 police officers to the new challenge of cybercrime. Cost £5k to provide 1 week's training in the classroom for 1 officer



Need for training?



### **ENGAGEMENT**

New recruits (millennials) are digital natives – typically gamers. Games are engaging for all age-groups. They create opportunity for customers | users | players | learners to interact with services & products.



### MOTIVATION

Games help drive intrinsic motivation, behaviours that result in internal rewards, like enjoyment, positive feelings and happiness.



#### **IMPROVED LEARNING**

These foster a drive to complete actions – such as learning. Research indicates games can deliver improvements if designed correctly.



## FEEDBACK

Game features are also strong at feeding back to users. Leaderboards, points, badges and progress bars are not in themselves "fun". However feedback is the foundation for engagement, get feedback right and you retain users.



Why Games...



#### **INITIAL FUNDING**

- Funding from the Scottish Funding Council to develop a prototype gamification of 1<sup>st</sup> Responder Training. The funding was used for:
  - a game jam
  - scenario development
  - prototype development
  - initial evaluation with police officers

#### WHAT'S A GAME JAM?

- Gathering of game developers to plan, design and create 1 or more games in a short period of time (24-72 hrs)
- Opportunity to focus on problem-solving through games. Often based around a specific theme.
- Designed to challenge student teams to develop rapid prototypes and present them to peers and industry.
- Low risk development which benefits all invested parties.



## EXAMPLE ABERTAY GAME PROJECTS



Bluedoor Games | BAFTA 'Ones to Watch' Nominee

#### AMONG THE STONES

Follow a young adventurer discovering the secrets of a mysterious island with the help of the living stone people. It is a 3D platformer with creative building mechanics.

Client: University of St Andrews | Microsoft | Serious Play Awards Gold Medal 2015 SANITARIUM

Create a game about Tuberculosis that would mimic the disease developing in a person, how treatment might cure the disease and explore how new treatments might work in the future.



#### FIRST RESPONDER GUIDE SERIOUS GAME JAM

- management, sound production students
- Responder Guide
- 2 days to produce their 'asset' their game idea to address the problem
- Lots of free pizza, coffee and bacon rolls
- Each team presented their design to a team of judges
  - Winning team were then paid to develop a prototype over a 6 week period

• 50 students; 13 teams – artists, programmers, ethical hackers, digital forensics, games production

• Students provided with the project brief and an overview of the current paper version of the First

# Winning asset

...prior to prototype development phase



### WHAT THE JUDGES LIKED

- Adaptable to different platforms and OS
- Virtual environment that could be 'explored' with objects that required user interaction
- Environment that allowed user to navigate from different views (2d, 3d and crouch)
- Assets requiring 'time critical' decision making
- Modular-design enabling changing or adding elements to suit new developments, different concepts, jurisdictions, culture
- Short game play <5 minutes to complete a level</li>



## WHAT NEEDED TO BE DONE

- Complete Rebuild of Game (bug fixing)
- Scenario development with Police Scotland
- Improved graphics









### **PLAYABLE PROTOTYPE – 6 WEEK DEVELOPMENT**

- Working on Multiple Platforms (iOS, Android, PC, Mac)
- 1 Crime scene (bedroom, kitchen and living room) •
- Numerous assets (eg fridge, laptop, mobile phone)
- 1 static Non-Playable Character,
- Scenario Editor
- Testing Tools > data analytics

#### **SCENARIOS** $\leftrightarrow$

- 1. A pre-planned operation involving indecent Images of children
- 2. A reactive enquiry in which a complainant received threatening messages via social media
- 3. Spontaneous enquiry involving an attempted business fraud via spearphishing

#### **QUALITATIVE EVALUATION**

- Tested with a small group of Police  $\bullet$ Officers
- Interview -> game play -> ● questionnaire
- Lots of excellent feedback and suggestions
- ✓ Game approach
- × Navigation







# NEXT STEPS







- •
- Videos operational briefing for each scenario
- More varied environments (3 crime scenes to choose from)
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## PROJECT PHASE 2 – 3 MONTH DEVELOPMENT

- Produce beta version of the game Hyper Luminal
- Academic input -> usability, focus on issues identified in 1<sup>st</sup> evaluation. Eye tracking software and HCI
- Scottish Qualifications Authority validation for CPD
- Bigger evaluation with 100 police officers, facilitated by Scottish Institute for Policing Research (SIPR) - > measure learning

#### GAME IMPROVEMENTS DURING STAGE 2

New optional movement system to assist navigation Improved user feedback

- More scenarios (3 per crime scene, 9 in total)
  - More interactive assets
  - Better UI
  - Non Playable Character Population



## **Detective Inspector Eamonn Keane**



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# QUESTIONS



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