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Virtual Patients and Simulations

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BSc Surgery and Anaesthesia
Innovation Training and Safe Delivery

January 2013

Medical Media and Design Laboratory
Division of Surgery

Summary

- Virtual Worlds - Public and Private
- Training in virtual worlds
- Innovation – Designing clinical facilities and services
- Innovation – Delivering services
- Virtual patients and team training
- Major Incident rehearsal

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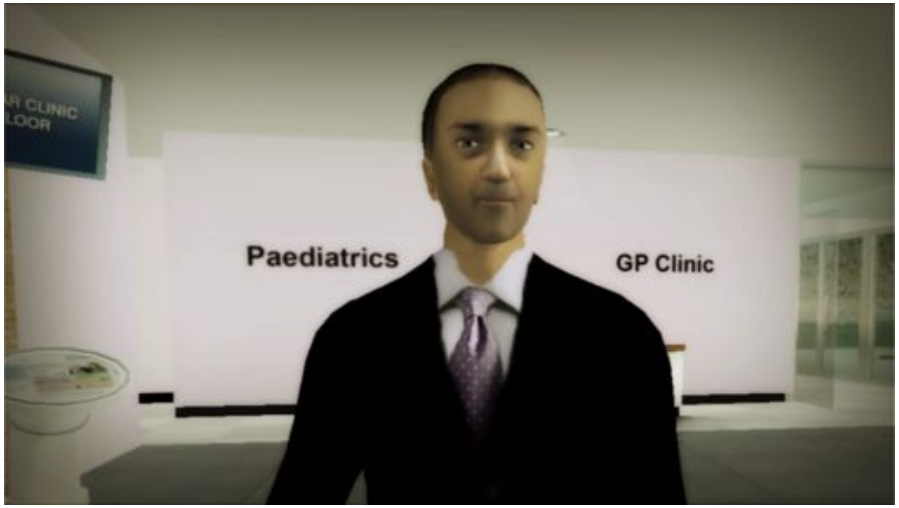
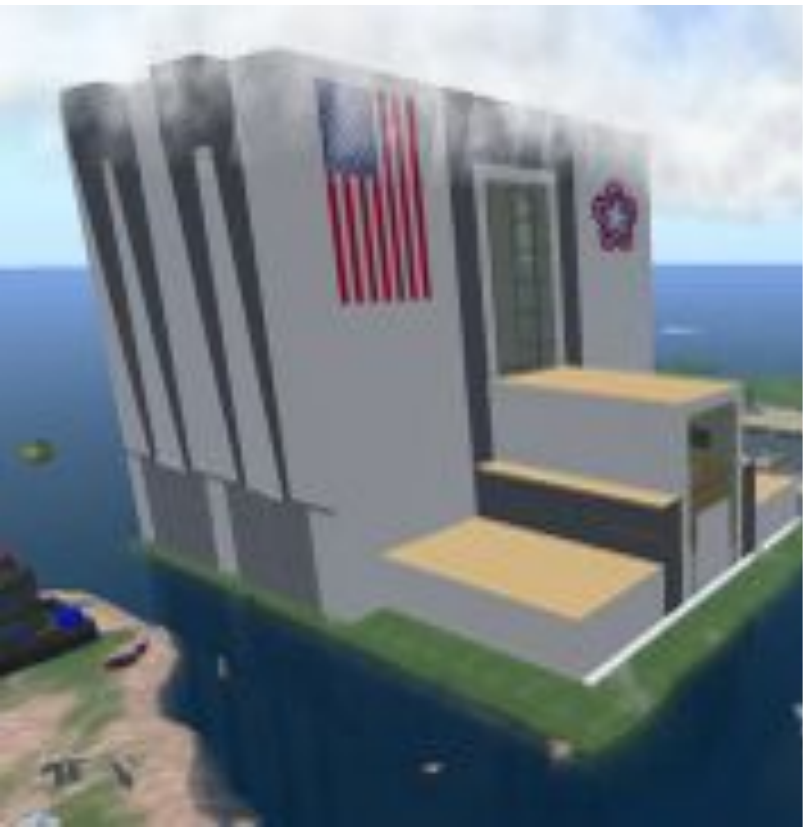
Virtual Worlds – Immersive, 3D experiences

- Users interact with each other via personalised avatars
- Easily accessible technology, fully recordable and reproducible scenarios
- International Collaborations
- Remote Healthcare



Second Life is a public space



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Healthcare – Patients are there

Patient group meeting: May 2006

Patient groups in Second Life:

Neurological Disorders
Nutrition
Obsessive Ambulatory Disorder
Organ donors
Polycystic Ovary Syndrome
Chronic Pain
Psychosis
Prostate Cancer
Self Harm
Sexual Health
Epilepsy
Social Anxiety
Spina Bifida
Traumatic Brain Injury
Sensory and Motor Disability
Substance Misuse

Mental Health
Cluster Headache
Counseling
Chrohns and Colitis
Deaf community
Dementia
Depression
Diabetes
Disability
Red Cross
Endometriosis
Fibromyalgia
Dissociative Identity Disorder
Horses for healing
Hospices

Irritable Bowel Symptom
Aging
Leukemia and Lymphoma
Facial Differences
Loss, death and bereavement
Manic depression
Muscular Dystrophy
Mobility Impaired
Mental Health
Multiple Sclerosis
Multiple Personality Disorder
Smoking

Sources: slhealthy.wetpaint.com and HealthInfo Island

International Virtual Association of Surgeons, Apr 2008

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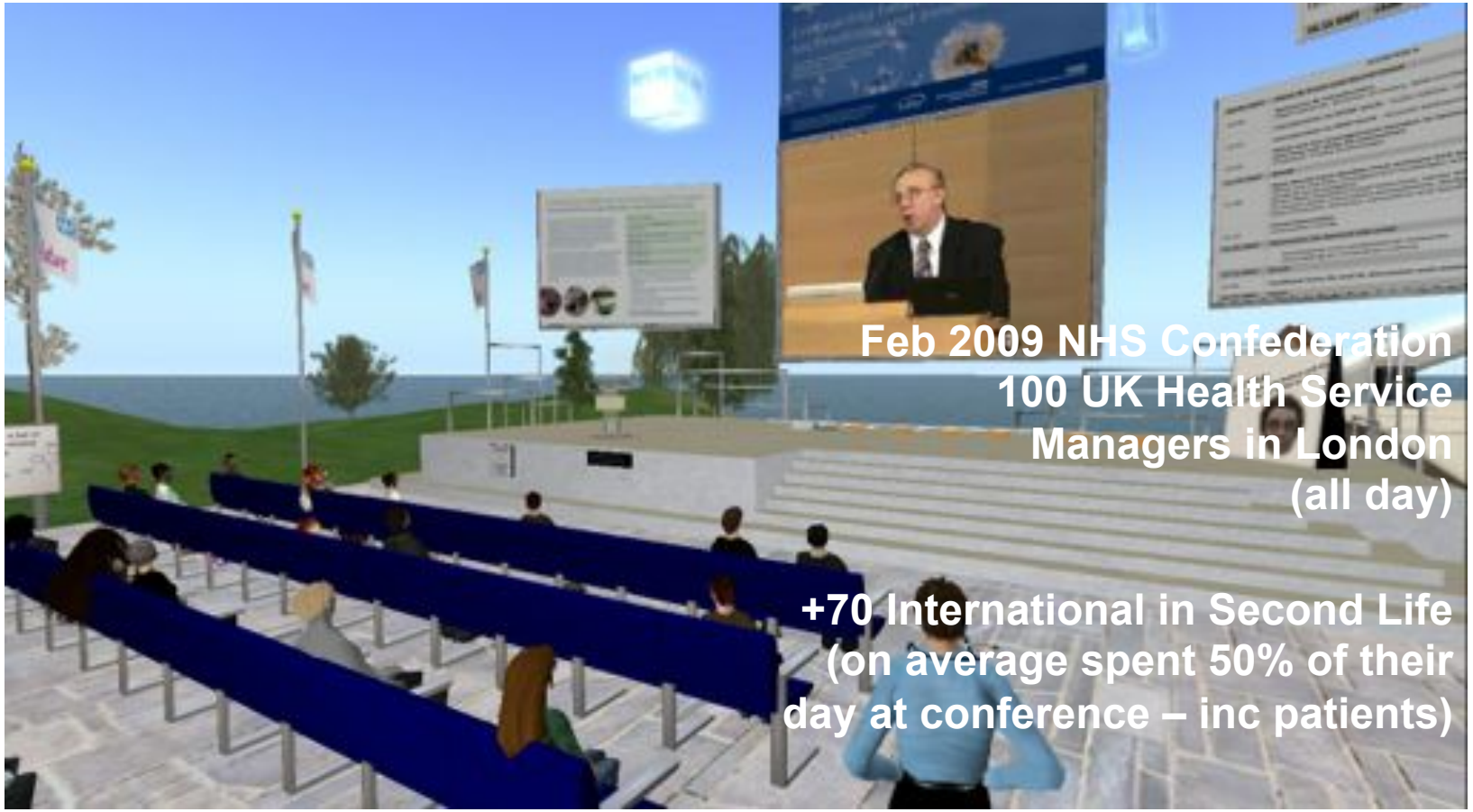
NIHR CLAHRC for Northwest London
Accelerating research into better care

NHS National Institute for Health Research



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Surgical Skills Lecture

Surgical Training

Anatomy

Opensim – behind the firewall

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United States Army Simulation and Training Technology Center: Military Open Simulator Enterprise Strategy (MOSES)

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Innovation - Designing healthcare facilities and services .....

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Memorial Sloan-Kettering Brooklyn Infusion Clinic

Real World

Virtual World

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Innovation – delivering services

Are there other ways that behaviour is affected by using virtual worlds?

The Proteus Effect: Appearance and actions of your avatar affects your behaviour

- Having a tall or more attractive avatar boosts confidence– effect persists in physical world *Yee and Bailenson 2007)*

- Exposure to own avatar running on a treadmill leads to higher physical activity 24 hours later than if avatar was inactive (Fox & Bailenson 2009)

Virtual worlds obesity study

Virtual World (VW) and face to face (F2F) programs ran for 12 weeks

Participants met 4 times per week

Meetings centred on Nutrition Physical activity Habit change Social support

Both groups lost weight (VW: 3.98kn, F2F: 2.74kg).

- VW group conducted more exercise
- They also improved on confidence in their ability to exercise and lose weight
-F2F group had no significant different in these measures

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Obtaining valid consent from people with LD…

- People with learning disabilities have poorest access to health care and receive least comprehensive service
- People with learning disability learn best from multimodal experiences
- Immersive VR has been shown to support learning
- Use a virtual hospital experience to discover if we can enhance recall and understanding

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grace eyre

University of Brighton

Sussex Partnership NHS
NHS Foundation Trust

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Virtual patients – Vish Patel

OpenLabyrinth HOME CREATE MY ACCOUNT HELP LOGOFF

Patient in Bay 1

This is your patient. He has sounded the nurse call button twice but the evening nurse was unable to make her way to him.

Unisex Changing Room

Talk to Patient.

Charts at the end of the bed

Hand Sanitiser in Bay 1

Case Information

Case: THOTH scenario version 0_1 (918)
ID: 29700
Score: 100

Restart Case

Case Pathway

Review your pathway

Outside the Training Centre.

Recovery Ward

Nurses Station

Patient in Bay 1

Case Score

Number of times washes hands (0)

Operating theatre induction and teams

Medical Infusion Device Study

Surgical Prep Rehearsal – McGill University

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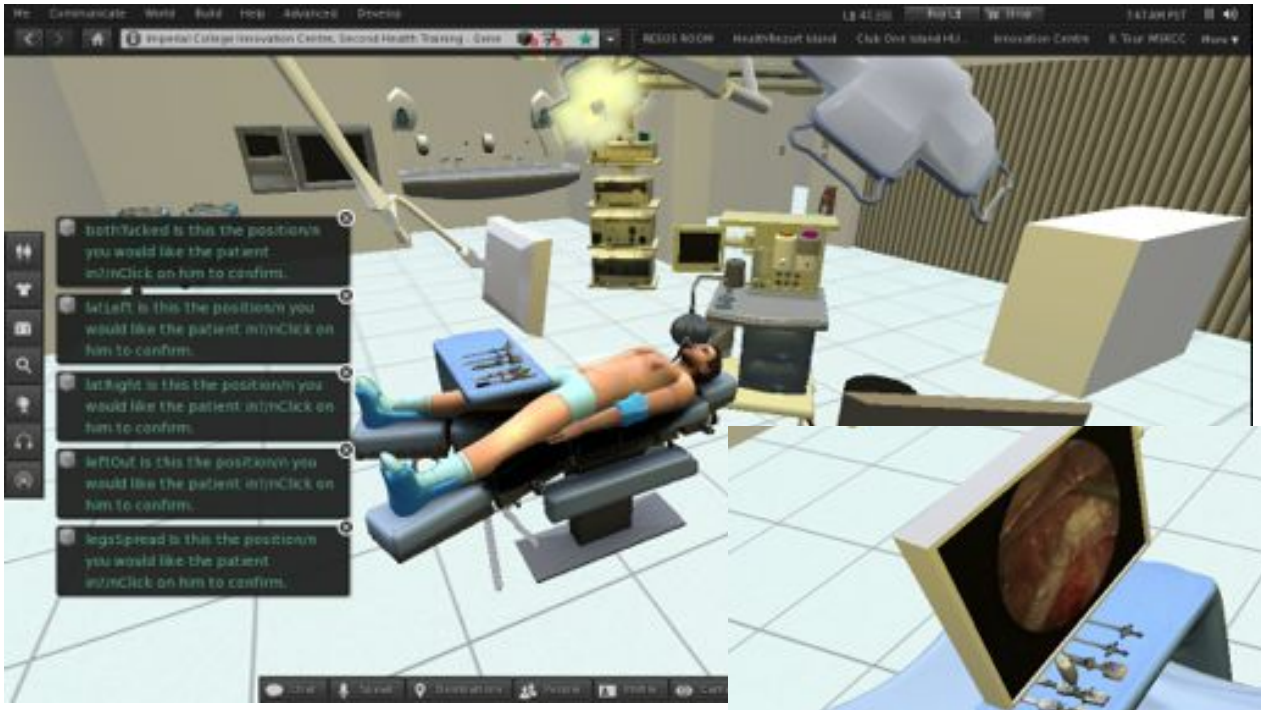
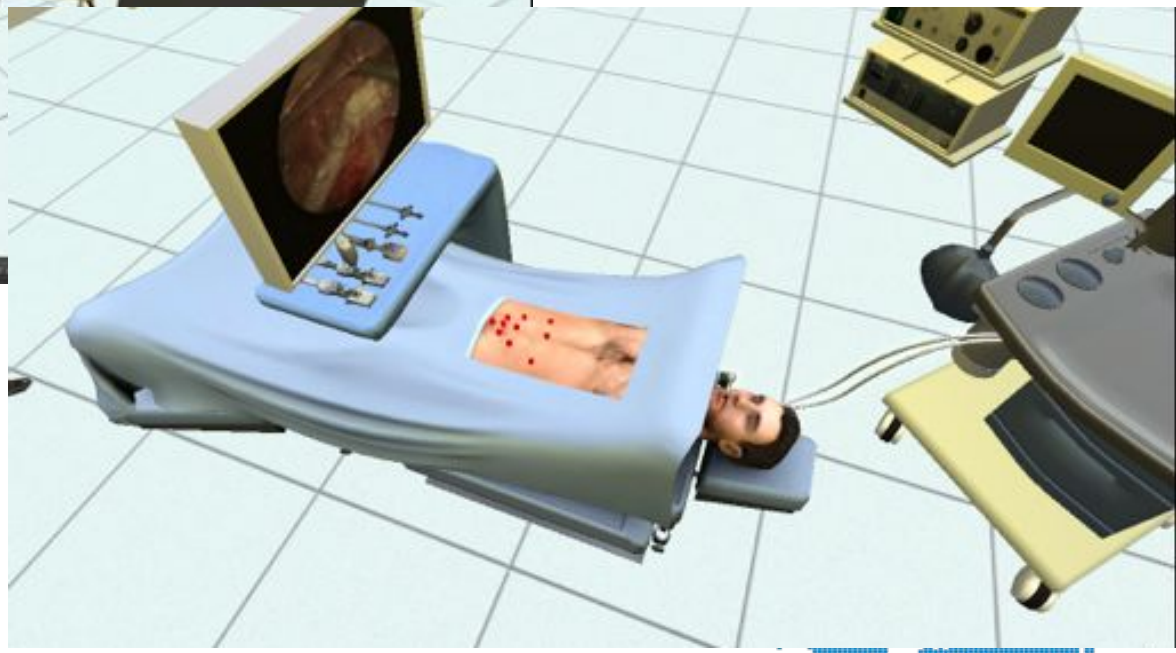




Teamwork in Virtual Worlds

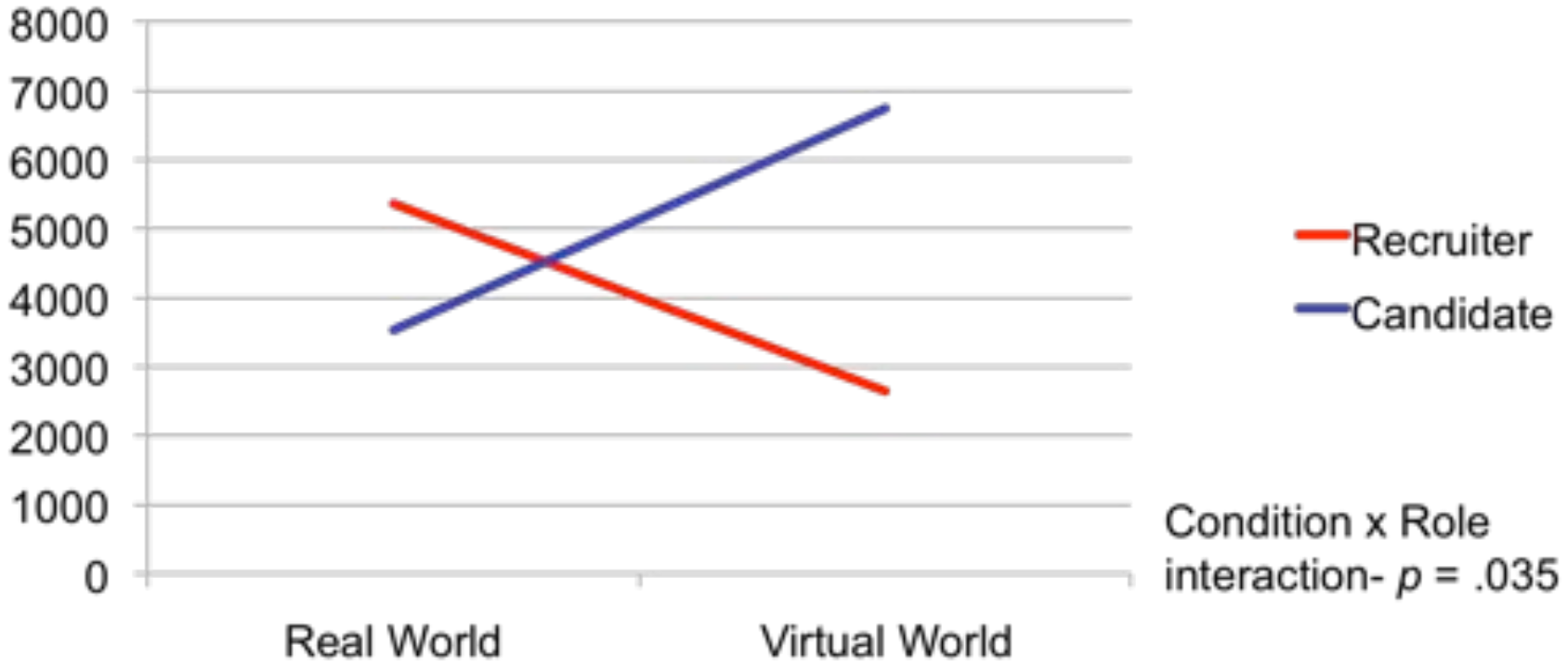
What do we mean by teamwork?

- Collaboration
- Negotiation
- Shared decision making

How can we measure this using objective quantitative measures?

Negotiation scenarios

Effect on perception of hierarchy



Major Incidents

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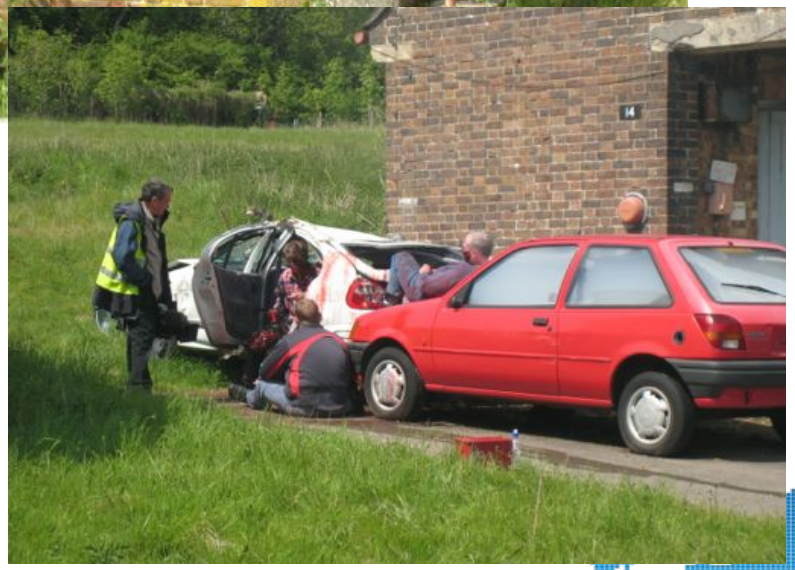
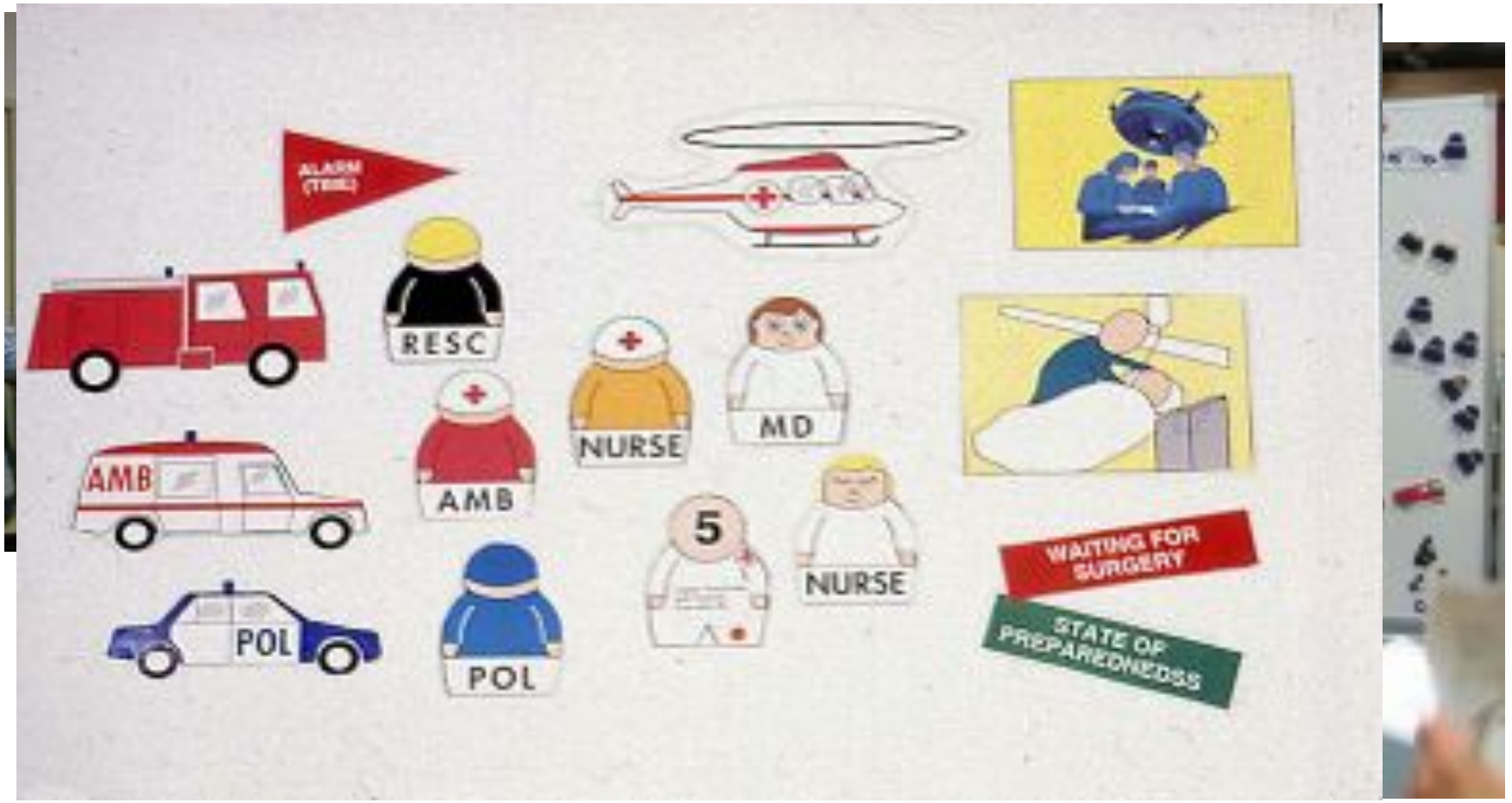
Hazardous Area Response Teams



The need for simulations

Emergo Train



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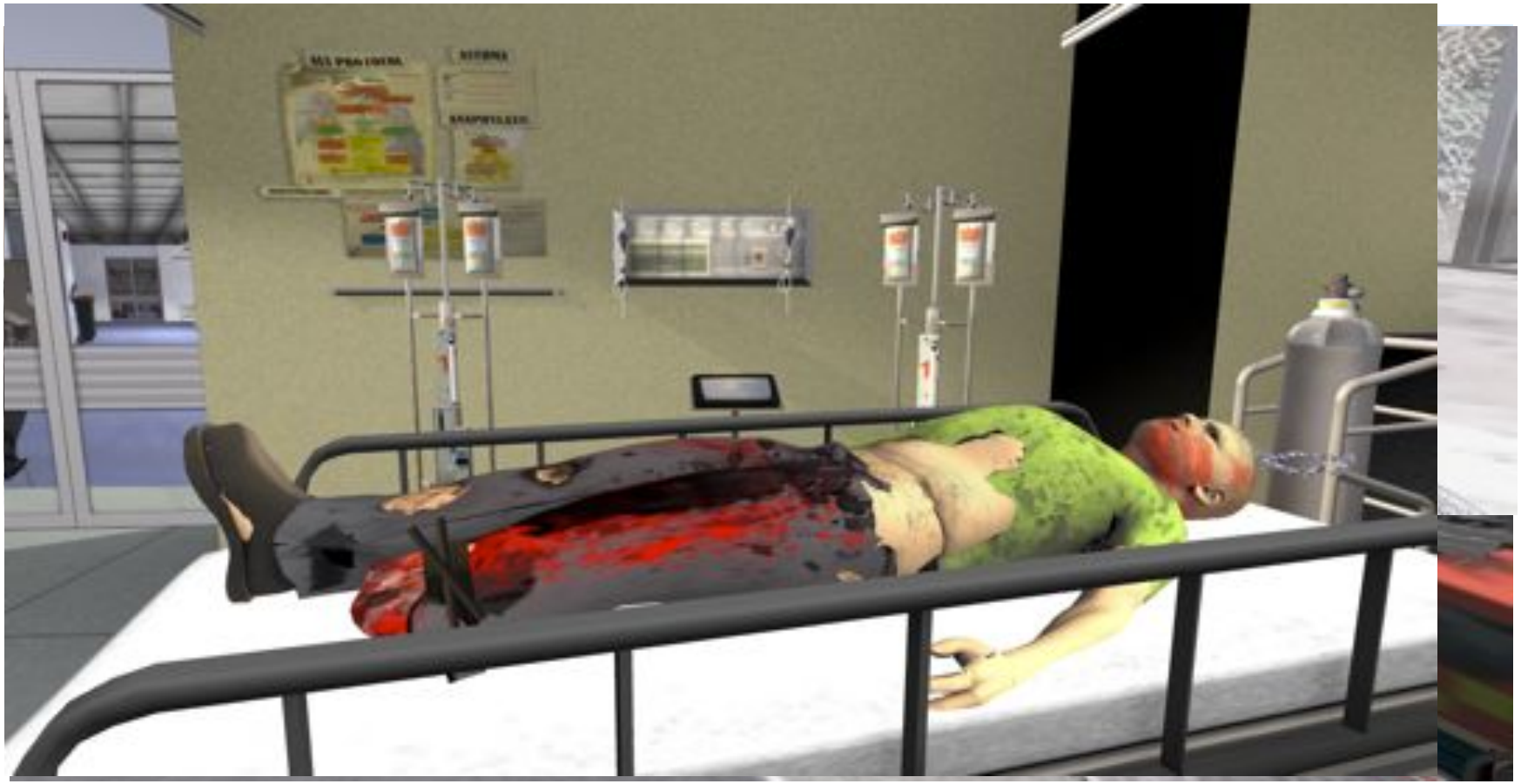
Major Incident and Patient Simulation



Major Incident Rehearsal

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Whole Hospital Scenario

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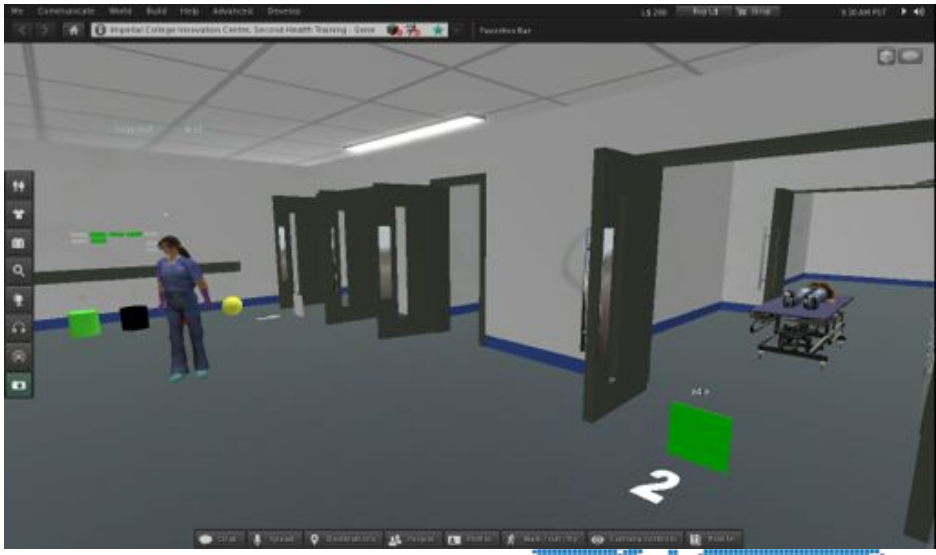

Whole Hospital Scenario

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Whole Hospital Scenario

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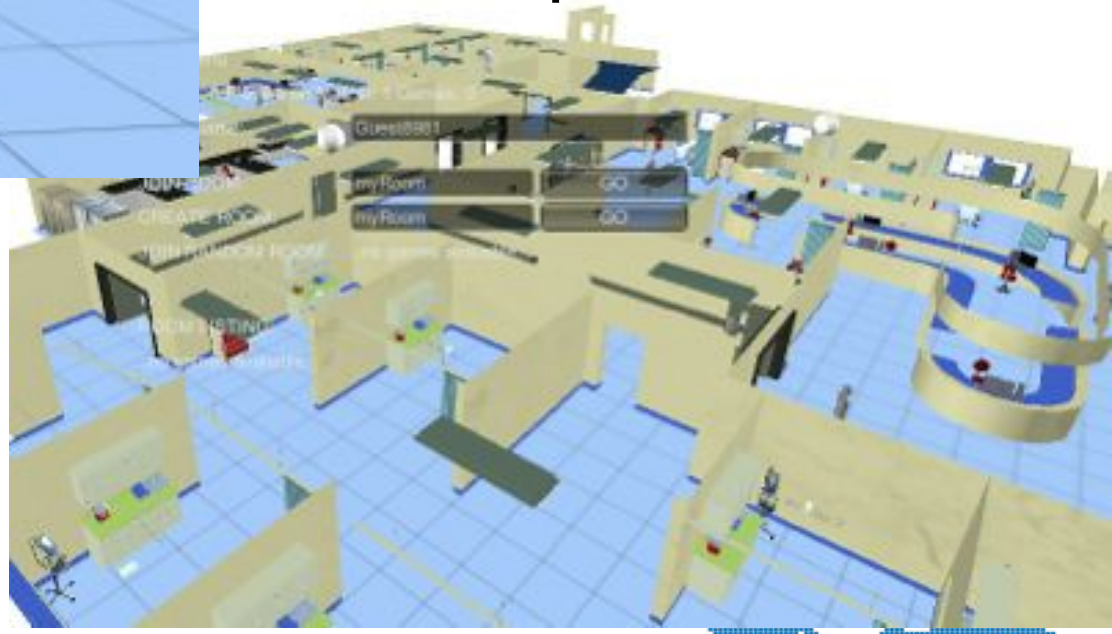
Benefits

- Learn from errors – can use extreme scenarios to force errors
- Exaggerate key features of an incident
- Give training on common and rarely occurring incidents
- Realistic or exaggerated resource constraints
- Train for situational awareness
- Observe others performance
- Record and provide detailed feedback

Productisation

- Accessible in web browser or on tablet
- Any major incident
- Custom hospital layouts
- Soundscape and distractions



- Customisable departments
- Customisable resources
- Script your own virtual patients

Future – Linked/Multi-level/Multi-agency …

Acknowledgements

Virtual World Team:

- Nicola Batrick
- Barry Paraskeva
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