Augmented Reality in HAZMAT Training

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Outline of Workshop

• Requirements / Concept (Mitch)
• Definition of augmented reality (Cesar)
• Application (Mitch)
• The exercise (Peter)
Requirements and Concept

• Develop air monitoring exercise in real time
• Create a “real life” scenario/more realistic experience
• Simulates actual air monitoring equipment
• Simple user interface and set up
• Learner experience with “air monitor”
• Learner decision making
- Detect and classify hazards
- Delineate exclusion, contamination, and support safety zones
- Operate hazard sensors and interpret readings
- Implement communications protocols
- Single learner, teams, or multiple simultaneous teams
- All while wearing PPE

Sensor behaves as if the hazards were real because the simulation is aware of reality.
Each Beacon Simulates a Hazard

- Programmable strength and dispersion
- Chemical or radiological
- Mobile app displays exposure readings accounting for distance to ALL hazards
- Readings continuously updated even as learners and hazards move
Behind the Curtain

- GPS (coarse absolute position of learner)
- Bluetooth Beacons (fine relative position of hazards)
- Sensor Readings
- Current Locations
- Simulated App
- Sensor Simulator App
- Exercise Parameters
- Activity Log
- Augmented Reality Web Server (Cloud)
- Instructor Web Site

Diagram shows the integration of various sensors and technologies to track and simulatelearner movements and hazards.
A More Sophisticated Version of Another Augmented Reality App
Time for Product to Gain 50 Million Users

- Airlines: 68 yrs
- Automobiles: 62 yrs
- Telephone: 50 yrs
- Electricity: 46 yrs
- Credit Card: 28 yrs
- Television: 22 yrs
- ATM: 18 yrs
- Computer: 14 yrs
- Cell Phone: 12 yrs
- Internet: 7 yrs
- iPods: 4 yrs
- Youtube: 4 yrs
- Facebook: 3 yrs
- Twitter: 2 yrs
- Pokémon Go: 19 days
Training Exercise

1. The beacons
2. The app
3. The experience
Install the App
Conclusions

• Teach learner decision-making
  – Any scenario requiring air monitoring
  – Field exercises, drills, indoors, outdoors

• Easy to use and reconfigurable
  – Single-user or multi-user exercises

• Inexpensive
  – Works with your existing training assets
  – Use a dedicated phone, or BYOD
  – Internet not required in the field
Try It in Your Training!

• Between now and March 2020, NIEHS grantees gets three hazards of their choice, the app, and three hours of videocall support for $400.

What is your application?
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