Model Solutions for

Securing Emergency Response Vehicles with Engineering S.E.R.V.E.

Program by:

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CHDS 1203/1204

The Problem

False sense of reality

Acceptance of vulnerability

Controlled access mechanisms absent

Delay in reporting missing

Cultural Norms

- Vehicles left running and unattended

User authentication

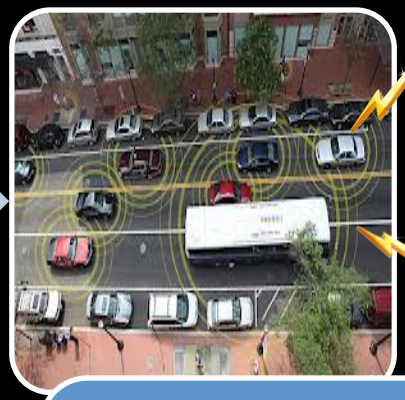
Mentally Ill, Criminals, Terrorist

- PS vehicles do not draw same suspicion

Securing Emergency Response Vehicles with Engineering S.E.R.V.E.

Disruptive

Disruptive



Tier I – Theft Prevention (Non-User Specific)

- *Common Sense – Locking doors*
- *Authentication Devices – Smart Key*
- *Interruption Technologies – eVID, Key Fob*

Tier II – Authorized Use

- *Tier I Measures*
- *On-Board Intelligence*
- *Driver Authentication Technology (DAT): PIN#, Password, Digital Signatures, Biometrics, etc.*

Tier III – Tracking and Recovery

- *Tier I and Tier II Measures*
- *Connectivity – V2I, V2V, V2M*
- *Alert Notification Built on Intelligence algorithm or protocols*
- *Geofencing, Inventory Control, Remote Access and Control of Vehicle Control Systems*

GPS

Anthropometrics ⟷ **Human-Centered** ⟷ **Future**

Limitations

Data regarding # incidents and background

LEA Sensitive and FOUO

Cloning

Terrorist rhetoric

Background

- April 15, 2012, a man steals ambulance that responded to makeshift bomb call in Tarpon Springs, Florida.
  - Ashley Porter, "Man Armed with Potatoe Steals Ambulance—Weird," *10 News*, accessed January 30, 2013, http://tarponsprings.wtsp.com/news/weird/115568-man-armed-potato-steals-ambulance.
- January 10, 2013, a homeless man steals ambulance out of fire station. The ambulance was not discovered missing for over 39 minutes only then discovered after the crew was dispatched to another call.
  - Jennifer Reeger, "Alert Pa. Officer Recovers Stolen Ambulance," accessed January 30, 2013, http://www.officer.com/news/10851490/alert-pa-officer-recovers-stolen-ambulance.
- July 26, 2012, a man steals ambulance fully stocked worth $140,000. Found 35 minutes later and tapes shows the man was driving with emergency lights on and ran traffic lights.
  - Kenneth Moton, "Stolen Ambulance Joyride Caught on Tape," ABC7News Chicago Illinois, accessed October 14, 2013, http://abclocal.go.com/wls/story?section=news/national_world&id=8750037.
- November 18, 2004, Healthcare system agrees to pay 12.5 million to the family of man killed by the mentally ill driver of a stolen ambulance.
  - "Catastrophic Ambulance Collision Lawsuit Settles for $12.5 Million," PRNewswired, accessed January 30, 2013, http://www.prnewswire.com/news-releases/catastrophic-ambulance-collision-lawsuit-settles-for-125-million-75481272.html.
- August 31, 2013, a woman was accused of stealing a police car and crashing into a group of people, killing one and injuring several others.
  - Matt Kroschel, Carri Walters, and Laura Christmas, "Update: Woman Charged Following Incident Involving Stolen Police Car in Fayetteville," WHNT 19 News, August 31, 2013, accessed October 14, 2013, http://whnt.com/2013/08/31/breaking-stolen-police-car-involved-in-deadly-wreck-in-fayetteville/.

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PLAY

Dashcam video from Summerville police department
©CBSNEWS.com

Background

- April 11, 2005: using a fire truck loaded with explosives, insurgents try to take over a Marine base in Baghdad, Iraq. This is reported to be the second time in less than two weeks this emerging tactic was seen.
  - Ellen Knickmeyer, "New Tactic Seen in Attack on Marine Base," *The Washington Post*, April 12, 2005.
- February 24, 2007: a suicide bomber drove a stolen ambulance that was filled with explosives into a police station in Ramadi, killing at least 14 people.
  - Ryan Lucas, "Suicide Bomber Driving Ambulance Strikes Police Station in Ramadi, Second Bombing in a Week in Volatile Anbar Province," *America's Intelligence Wire*, February 2007.
- September 2, 2008: an ambulance with unusual markings was spotted at the Republican National Convention in St. Paul. Activist loaded the ambulance with weapons and 55-gallon drums of feces and urine.
  - Anthony L. Kimery, "'Cloned' Vehicles Continue to be Security Problem," *HS Today*, December 11, 2008, accessed October 14, 2013, http://www.hstoday.us/blogs/the-kimery-report/blog/cloned-vehicles-continue-to-be-security-problem/c7f442710dc2fc583590b681f319234e.html.
  - Gary Ludwig, "EMS: Stolen Ambulance," *Firehouse Magazine*, December 3, 2012.
- February 3, 2013: a suicide bomber "driving a police car and wearing a police uniform" killed 36 and wounded 105.
  - Yasir Ghazi, "Dozens Die in Attack on Police in Iraqi City," *New York Times*, accessed October 22, 2013, http://www.nytimes.com/2013/02/04/world/middleeast/suicide-attack-kills-dozens-in-northern-iraq.html?_r=0.

Imagination

Griffin, D. R. (2005). The 9/11 Commission report: Omissions and distortions. Olive Branch Press.

Short Memory

Cite

Motives

Mentally ill

Intoxicated

Mischievous

Malicious

- American Symbols of Safety
- Access to Protected Critical Infrastructure

Contributing Factors

12 Ambulance Thefts

- Left unattended
- Keys in ignition
- Left running
- Drugs and alcohol
- Parked outside of hospitals

IAFC Knowledge Net

knowledge.iafc.org/communities/community-home/viewthread?GroupId=205&MID=9439&tab=digestviewer&CommunityKey=f057b6e7-8125-4b81-98c5-7...

Apps | Orlando, FL Local Ne | Apple | Yahoo! | Google Maps | YouTube | Wikipedia | News | Popular | Imported From Safar | New Fire Chief

Customize and control Google Chrome

Michael Johansmeyer, EFO
yesterday Hello Chief, Your are not alone in public safety vehicle theft. Many department across the cou...

1. Ambulance Security Ignition Device

0 Recommend

David L. Smith

Actions

Posted 3 days ago

Reply to Discussion

We recently (2 weeks ago) had an ambulance stolen from an ER parking area in the St. Louis metro area. The vehicle was found with no damage about 2 miles away and no one was hurt. We have since researched a product (SECURE-IDLE) and are in the process of installing the solution in each vehicle. I am looking for any type of policy or directive that your organization might have in place on how you ambulances or other apparatus are secured, at hospitals, in quarters or while out in the public. I just don't want to reinvent the wheel if someone has something I can modify. I know, I know, I have heard this many times in the past two weeks "don't your crews lock the thing?", well, all I can say is they will now and will will have a policy and device to inhibit this from happening again. Thanks for any help that will be forthcoming.....

David Smith
Deputy Chief / CMO
Kirkwood Fire Dept
Kirkwood MO

BUGLE BRIEF
Leadership news and tips delivered twice monthly.
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2. RE: Ambulance Security Ignition Device

0 Recommend

Posted 2 days ago

Reply to Discussion

Cite

Tier I – Theft Prevention

- Common sense
- Lock the doors
- Authentication Devices
  - Smart Key
- Interruption devices
  - Electronic key fob

Tier 1 - Limitations

Battery failure

Misplaced keys – lost or brought home

Multiple operators

Device kept in place – human centered

Driver memory

Tier II – Authorized Use

- Tier I
- On Board Intelligence
  - Biometrics
- Driver Authentication
  - Smart card
  - Pin #
  - Password
  - Biometrics
- Automatic

Tier II - Limitations

Biometric technology not there yet

- lack of universal characteristics
- noisy signal
- error rates
- performance time
- cloning

Reprogramming

Sharing of security information among users

Tier III – Tracking and Recovery

Tier I and Tier II

Connectivity V2V, V2I, V2M

Geofencing - Alert notifications built on algorithms and protocols

GPS

Vehicle location device

Tier III - Limitations

Cost

- Technology
- Public Sector Reporting Sector

Tier IV – Human Machine Interface

Critical Task Proficiency

Human Centered Design

Disruptive (radical) and Incremental Change

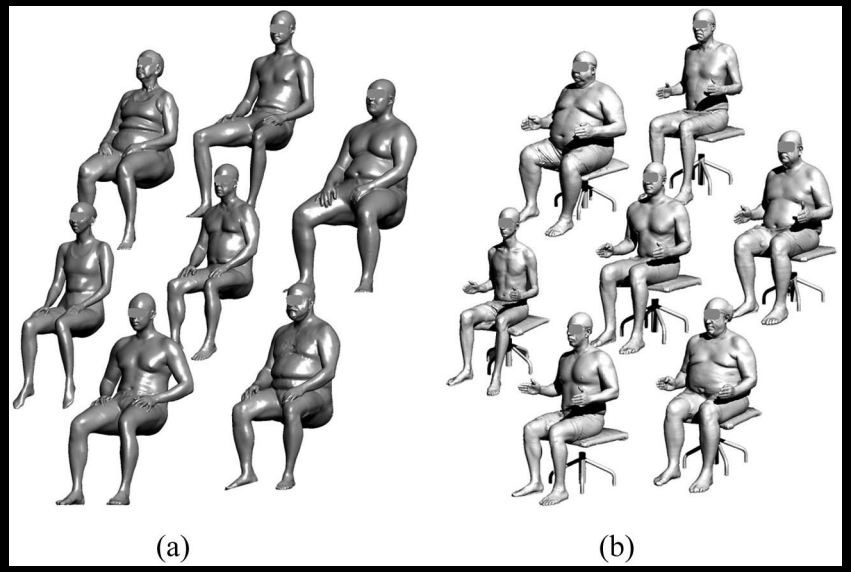
Tier IV – Human Machine Interface

Anthropometrics

- performing duties under stress
- cab design
- ergonomic considerations
- long authentication processing time
- lack of convenience

Anthropometrics

- 3D Modeling
- Captures 95% of end users regarding job task, equipment use, individual variances



Michael J. Karter and Joseph L. Molis, "US Firefighter Injuries—2011," National Fire Protection Association, accessed October 22, 2013, http://www.nfpa.org/~/media/Files/Research/NFPA%20reports/Fire%20service%20statistics/osffinjuries.pdf, 12.

Leaders in the Public's Safety

- School/Public Busses
- HazMat Carriers
- Homeland Security Grant Program
  - Rolling stock
- Universities

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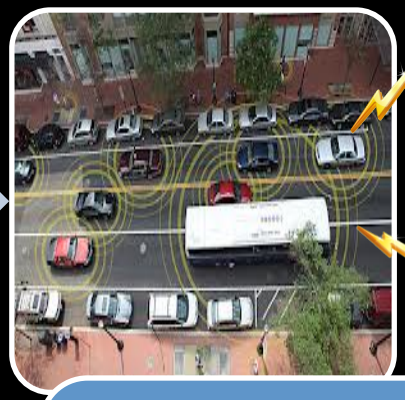

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- What is your policy?
- What technologies does your agency utilize?

Thank You

MICHAEL JOHANSMEYER