The Legal Space of the Internet of Things, Law Enforcement And Public Safety

CAE Cyber Security Forum

https://caecommunity.zoom.us/my/caeforum

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Introduction/Abstract

- Each IoT opportunity for social benefit is also an opportunity for criminal attack and exploitation.

- The interplay between the technical facts of the Internet of Things and the laws that regulate and protect people create challenges for privacy and security.

- It is essential that technical systems of protection be integrated into the meta-system of the administration of justice as a way to best secure people in response to the Internet of Things.

- *And, yes, this is not meant to be legal advice in any way, form or manner!!!!!*

- *AND we do need your thoughts on this as we build a framework of safety and protection with the Internet of Things*

How do we build a framework for analysis, defense and remediation?

- What is the problem?

- Or is it better to look at-*what are the problems*?

- Can we then map to technical, legal and social responses?

- *Thanks, again, to the NSA CWE cohort for their thoughts, the NSA for its project support, Ross Anderson at Cambridge for his teaching materials, and the program committee of the Internet of Safe Things Workshop 2019 for their guidance on these issues*

Ubiquitous computing in the Internet of Things, its cyber security and local law enforcement

- The Internet of Things and pervasive computing puts interconnected devices everywhere.

- public safety and cybersecurity are an integrated endeavor

- Consider cyber security within the traditional public safety framework.

- We map IoT concerns Generally to Structures for legal regulations
- We Discusscybersecurity training from this traditional LE perspective.
- Our findings suggest
  - great potential within this group for expanding effective cyber security protections for communities.
  - They further suggest a commensurate need for training and support to realize this potential.
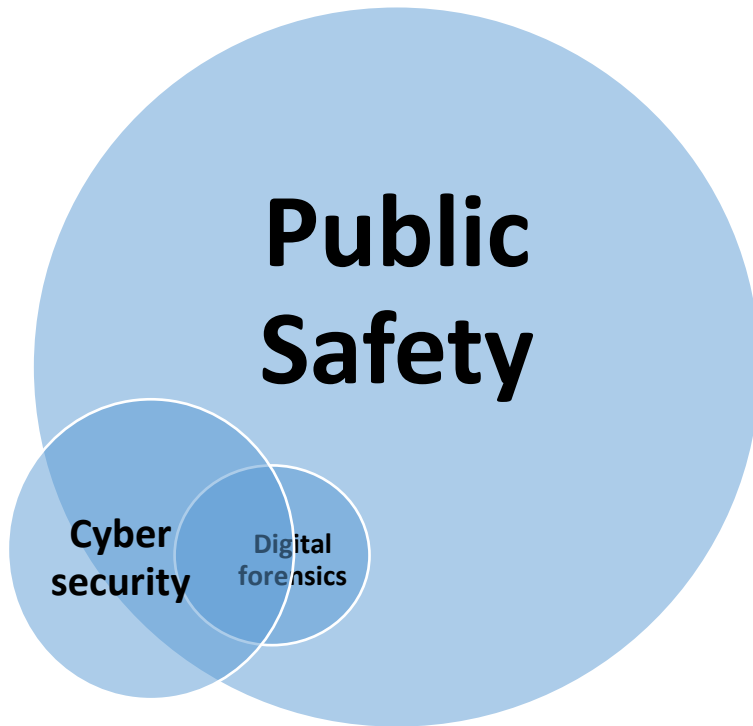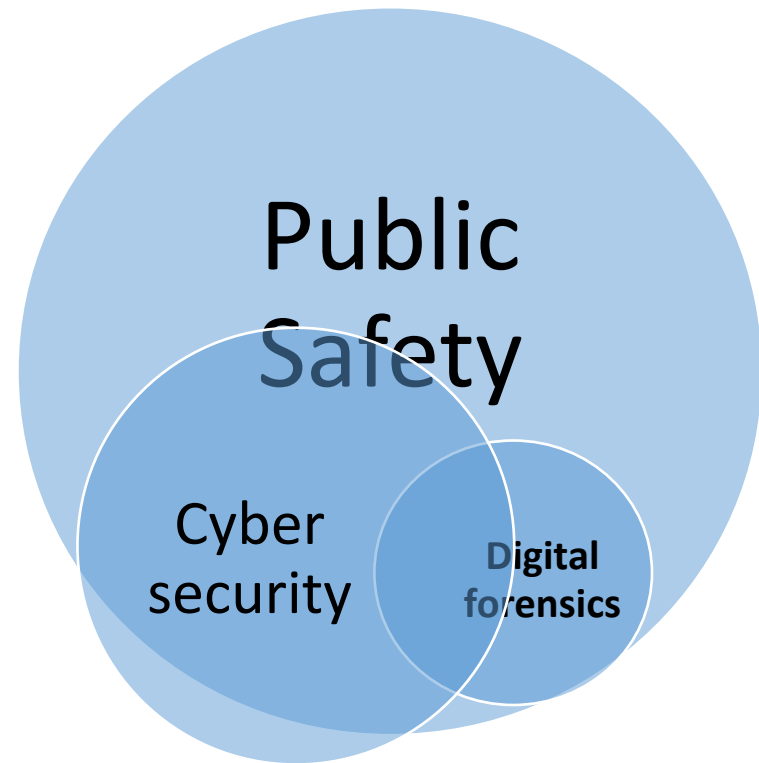
Context
Back in the day

Cyber security

Digital forensics

Computer Information Systems and Engineering

Today
Phones, computers, routers, ..

Tomorrow
IOT, Smart City, Ubiquitous networking, Big Data...

Public Safety

Cyber security

Digital forensics

Public Safety

Cyber security

Digital forensics

Bringing Public Safety Personnel into Cybersecurity Careers

- Increase the pool of cyber security professionals in multiple domains
  - by identifying, recruiting and training practitioners and students in law enforcement and public safety disciplines.
- Integrate criminal justice systems and practices into cyber security
- Local law enforcement is at ground zero for cyber criminality and its victims
  - Can respond
  - Can advise
  - Can arrest

Who matters in the computing world of The Internet of Things?
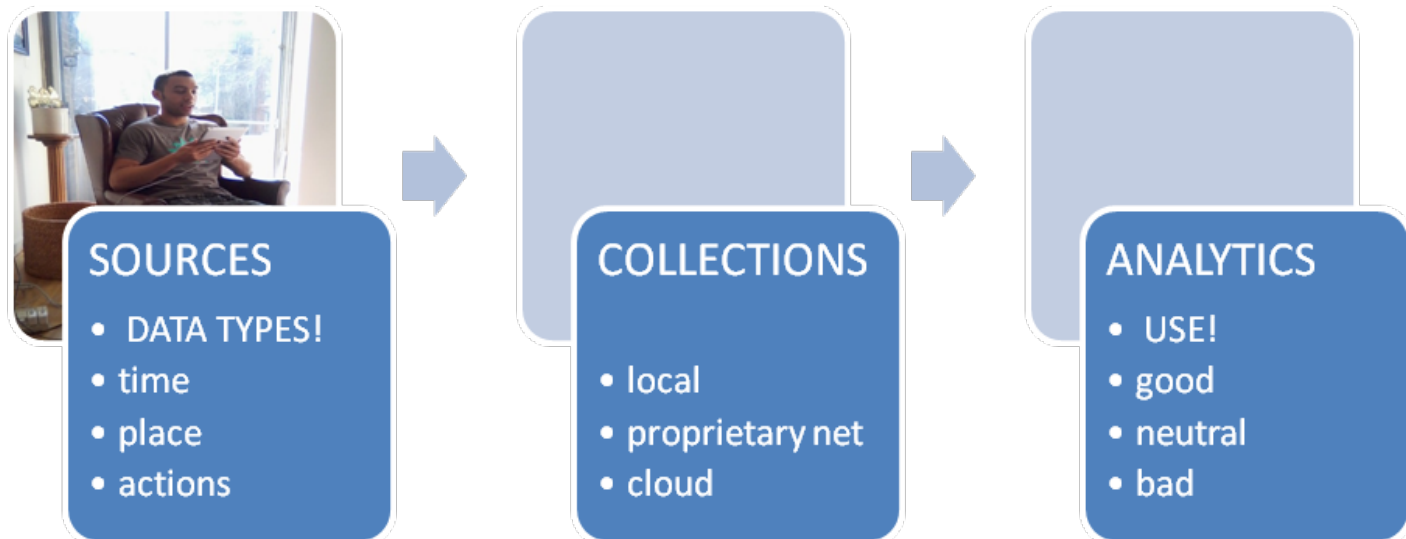## *It is a matter of <u>public safety</u>*

- You

- Me

- Our families

- Our friends and colleagues

- Our faith community

- Our *Department*

- Our political community

  - Government

  - *Everyone?*

# What matters? - Core systems of computing world and the Internet of Things
knowing the targets of attack

- 1.Sources and Types
- 2.Collections and Connections
- 3.Analytics and Use

SOURCES
- DATA TYPES!
- time
- place
- actions

COLLECTIONS
- local
- proprietary net
- cloud

ANALYTICS
- USE!
- good
- neutral
- bad

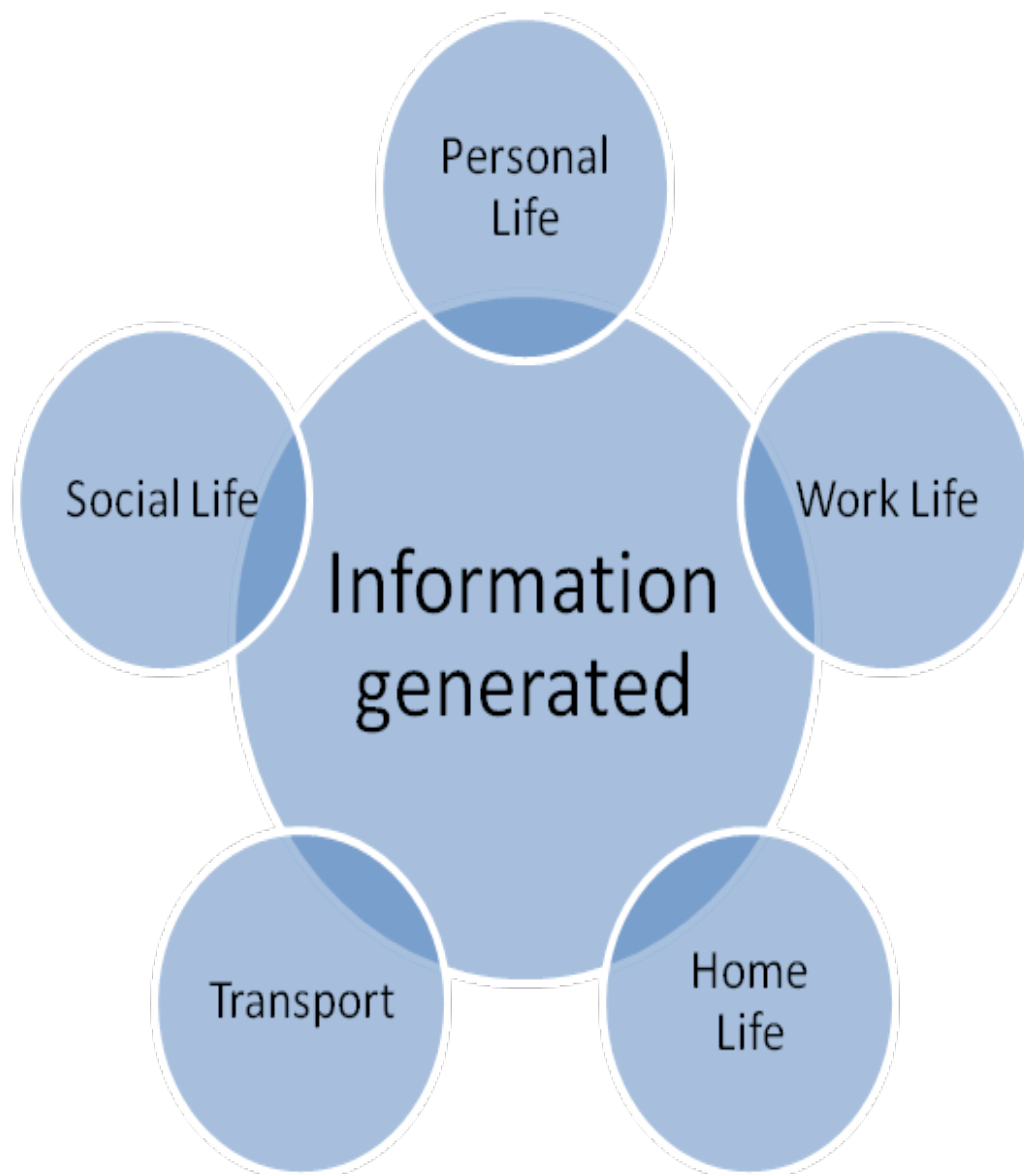# places of activity – who/<u>Where?</u>

- Targets:
- People
- Workplace
- Transportation
- Homes
- Commerce & Social
-
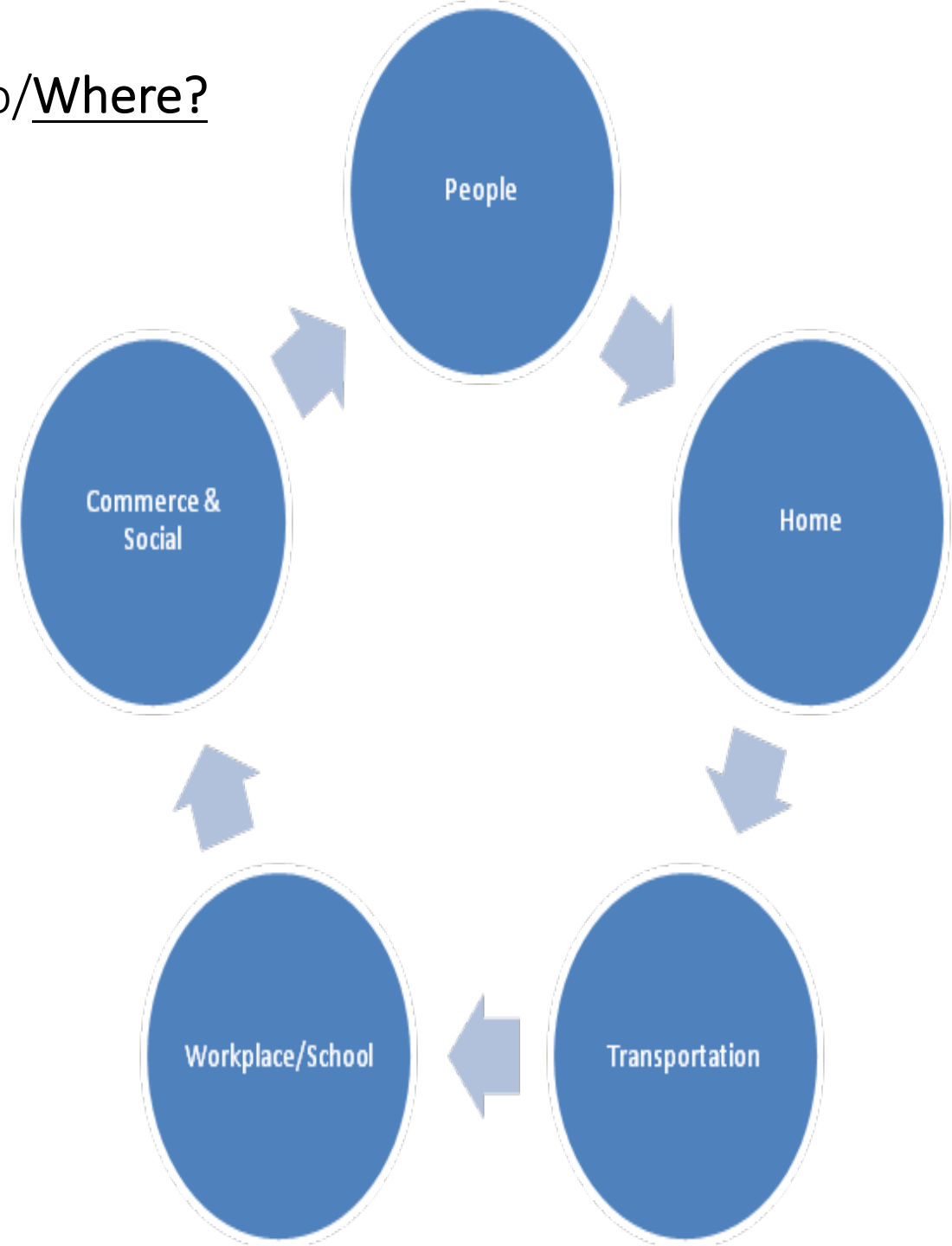
Sources in social and civic life: <u>activities?</u>
Who/what/where/why an attack?

- People
- Work
- Home
- Transportation
- Social Life

Case Data-IoT in Federal Cases (US)

- Issues relating to the Internet of things are beginning to impact the legal system.

- cases with IOT issues increased by 60% from 2017 to 2018 in federal litigation in the United States.
  - Though still small, with five cases in 2017 and eight cases in 2018, this is a leap from only one such reference prior to 2016.
  - And these case now show IOT as the focus of the litigation instead of a collateral issue.

A Framework for Discussion?

- Problems
- Case law and regulatory structures
- Technical needs and imperatives

Problems

- With devices of the Internet of Things, what might go wrong?
- Your list:
    - 1
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7

Cases in point- US v Jones, Boston Bombing

- It may *"alter the relationship between citizen and government in a way that is inimical to democratic society."*

- The good and the bad of this altered relationship may be seen in investigation of the 2013 Boston Marathon terrorist bombing.

- In sum, the benefits do and will far outweigh the risks when the rights and liberties in a democratic society are observed and protected. The Smart City and the Internet of Things offer us much. But we must not let it take that which makes us who we are.

- The central role of law enforcement and public safety in our lives extends to the cyber world, as well. We ignore it at great risk.

Legal and regulatory structures: Generally, the Law Responds to Conduct That Injures Others

- Areas of Injury, Generally
  - Life and Person
    - Loss of life, physical/mental injury to person
  - Liberty and personal autonomy
    - Privacy rights and control of personal information
    - Reputation and public image
    - Freedom of action and person
  - Property
    - Rights and interests
      - Destruction, damage, dispossession, interference with use
    - Informational
    - Costs of remediation and recovery

- Consider such injuries as aspects of Information Security categories to protect against such injury
  - Security Attacks
  - Security Mechanisms
  - Security Services

Compare "property" to crimes

- Information
  - Trade Secret
  - Copyright
  - Patent
  - Trademark
- "Private & Confidential" – perhaps
- Systems
  - Computers
  - Networks

- Theft of property, liberty and life
- Trespass to rights in property, liberty and life
- Destruction of property, liberty and life

Supreme Court (US) Case Law- New and Applicable

- Jones

- Riley

- Carpenter

Statute (US)- *Sui Generis* Computing and Traditional Law

- Unauthorized access
- Unauthorized interception of data streams
- Unauthorized access to stored communications
- Criminal copyright infringement
- Criminal trade secret appropriation
- Assault
- Invasion of privacy
- Murder/manslaughter/reckless homicide

Technical Issues and Needs

- System impact

- System access

- System compromise

- System modification

- System security

- These begin to represent the fundamentals information security which are then mapped to the harm downstream, not just locally to the system itself

Consider Mining Data Life in IoT

Sensor	Data	impact
On-person miner IOT devices	data alert, environment monitoring, service, navigation, tracking,	Direct-Location, mine environmental conditions, miner health Inferential-associations, actions
Capital equipment IOT devices	speed, acceleration, braking, safety device usage, vehicle status, operational status	Direct-Location, use activity, potential criticalities Inferential-Association, actions
Telephony / messaging	Telephony activity	Direct-associations, content, activity Inferential-associative networks
Internal Security Cameras	Identification, time, location, mine activity	Direct-Location, identification, actions, associations Inferential-associations, actions
Public Security Cameras	Identification, time, location data , external products	Direct-Location, identification, actions, associations Inferential-associations, actions

Table 2 - Automotive Data Life

Consider Automotive Data Life in IOT

Sensor	Data	impact
Vehicle support	data alert service, navigation, tracking, Stolen Vehicle Slowdown, Remote Ignition Block	Direct-Location Inferential-associations, actions
OBD/EDR	speed, acceleration, braking, seatbelt usage, vehicle status, airbag deployment	Direct-Location, driving practices Inferential-Association, actions
Telephony/ messaging	Telephone and contact numbers, messages, texts	Direct-associations, content Inferential-associative networks
GPS	trip data, home site, backtrack data	Direct-Location Inferential-actions, associations
Public Security Cameras	Identification, time, location data	Direct-Location, identification, actions, associations Inferential-associations, actions
Traffic Cameras	Identification, time, location data	Direct-Location Inferential-associations, actions
Toll/fee devices	Identification, time, location data	Direct-Location Inferential-associations, actions

Problems Redux, Remediaton Nos

- How do might our perspective on problems change and how might we remediate them?
- Your list:
    - 1
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7

Local Law Enforcement & Cyber Security- the Opportunity for Safety

Thoughts?