

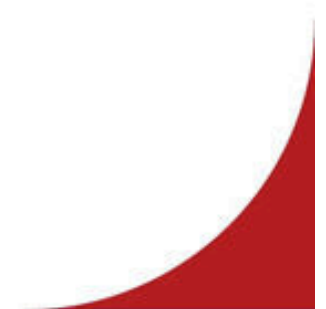


Secure IoT use in Digital Health

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Yes, you can!





IoT use in Digital Health

- Implantable Medical Devices
- Body Area Networks
- Assisted Living
- ...



Cyber Security Threats in Health IoT

- Telemetry interface
 - Eavesdropping
 - Jamming
 - Replay attacks
 - Forging attacks
- Malware
 - Altering the software on the device
 - Injecting command and control software on to the device
- Compromising trust
 - Forcing sensor/actuator failure through denial of service
 - Remotely activating or deactivating sensors and actuators
 - Malicious data injection

Cyber Security Threats in Health IoT

- Data Exfiltration
 - Intellectual Property
- Resource Harvesting
 - E.g., use in Botnets



Attackers are not always external

Malicious insiders across the chain – from manufacturers and suppliers through to primary and second care professionals

The problem of Contextual Access



We have been here before!

- Ease of use and interoperability vs. Security

Security

Confidentiality

Integrity

Availability

Non-repudiation



Resilience

Safety

Reliability

Availability



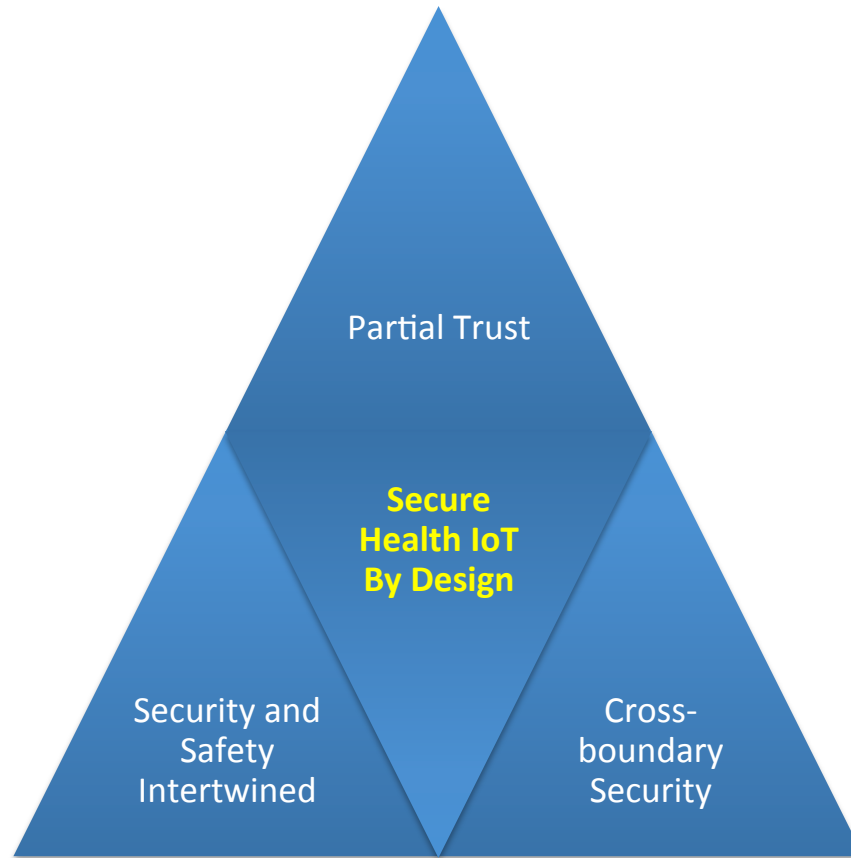
What needs to be done?

- Much stronger regulatory environment
 - **If it is not secure, it is not safe**
 - Needs to be coupled with effective cyber security metrics for Health IoT and clearly traceable means to measure those metrics
 - Better means to translate from technical measures to high level security-safety goals
 - Understanding cyber risk across the chain
 - How various entities across the chain assess and respond to cyber risk
 - The problem of boundaries
- 

What needs to be done?

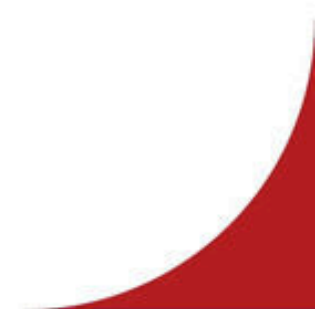
- Technology only protects technology not information flow.
 - What is the information network, how does information flow?
This includes people!
 - New security models for protecting information flow in such settings.





A useful resource

- Michael Rushanan, Aviel D. Rubin, Denis Foo Kune, Colleen M. Swanson: **SoK: Security and Privacy in Implantable Medical Devices and Body Area Networks**. *IEEE Symposium on Security and Privacy 2014: 524-539*.



Argumentum AD Ignorantiam

*Absence of evidence is not evidence
of absence*

