Security and Clinical Devices. Oxymoron?

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“During the first few months of 2016, the healthcare industry experienced

an increased number of cyber threats that struck numerous hospitals across North America and around the globe.”

- “ANATOMY OF ATTACK: MEDJACK.2”, TrapX Research Labs

Vulnerability alerts

Alert (ICS-ALERT-13-164-01)

Medical Devices Hard-Coded Passwords

Original release date: June 13, 2013 | Last revised: October 29, 2013

Advisory (ICSA-15-174-01)

Hospira Symbiq Infusion System Vulnerability

Original release date: July 21, 2015

Advisory (ICSMA-16-089-01)

CareFusion Pyxis SupplyStation System Vulnerabilities

Original release date: March 29, 2016


Case Study
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"…(the) compromised medical device learned where the PACS systems were located, and attempted to perform a pass-the-hash attack to gain access to the PACS systems."

- "ANATOMY OF ATTACK: MEDJACK.2", TrapX Research Labs

“Our analysis enabled us to track the attacker back through the network to a backdoor within the MRI system...”

- “ANATOMY OF ATTACK: MEDJACK.2”, TrapX Research Labs

Threats, Risks, Vulnerabilities

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Threats to medical devices

- Malware (including ransomeware)
- Network attacks
- Lost/stolen devices (many contain ePHI on board)
- Tampering
- Unauthorized access

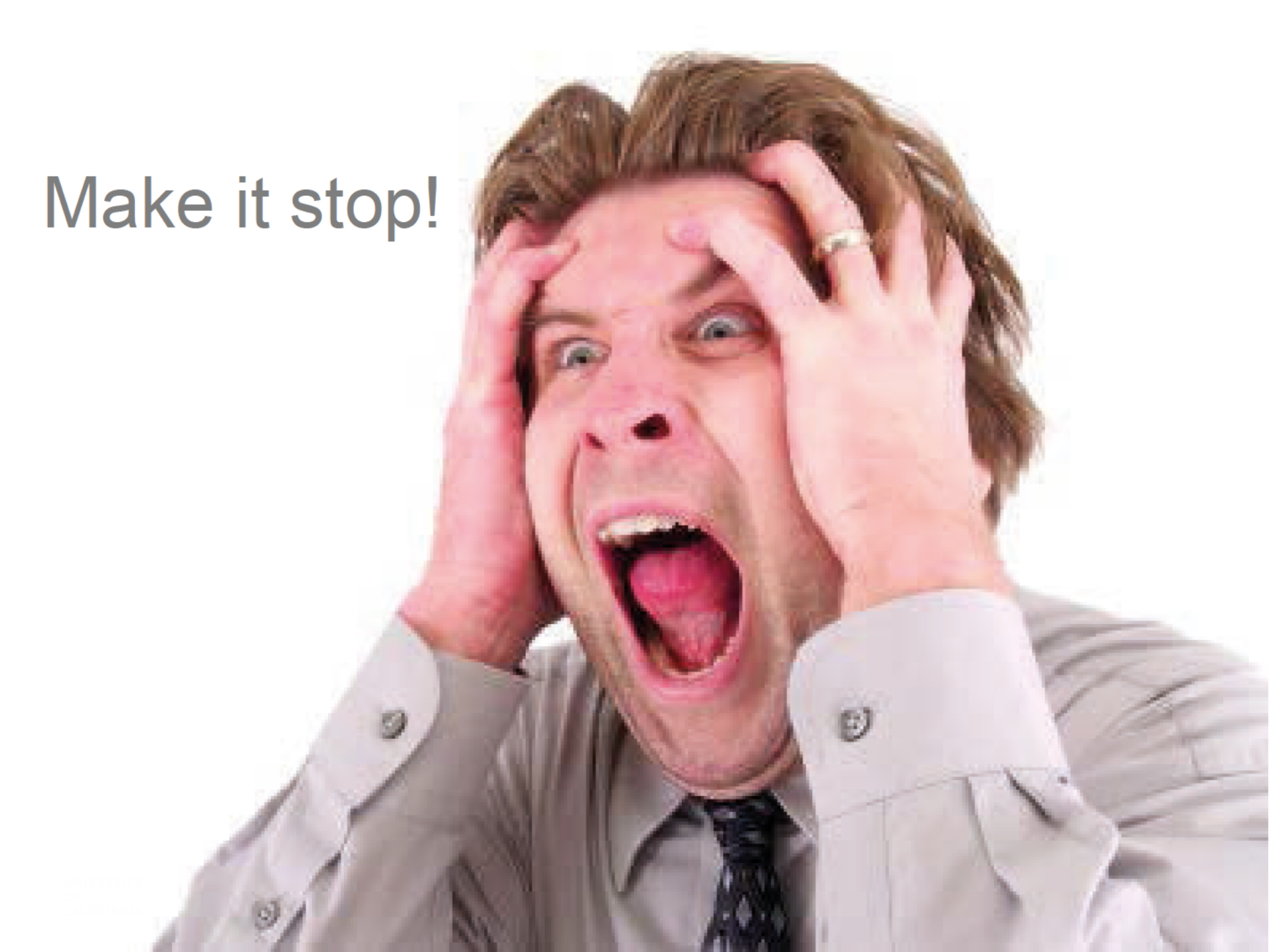
Medical device risks/vulnerabilities

- Lack of regular manufacturer patching
- Customers not able to patch either
- Typically no encryption – at rest or in transit
- Inconsistent anti-malware implementation

Medical device risks/vulnerabilities

- No authentication
- Default passwords
- Unnecessary services
- Many contain ePHI on board

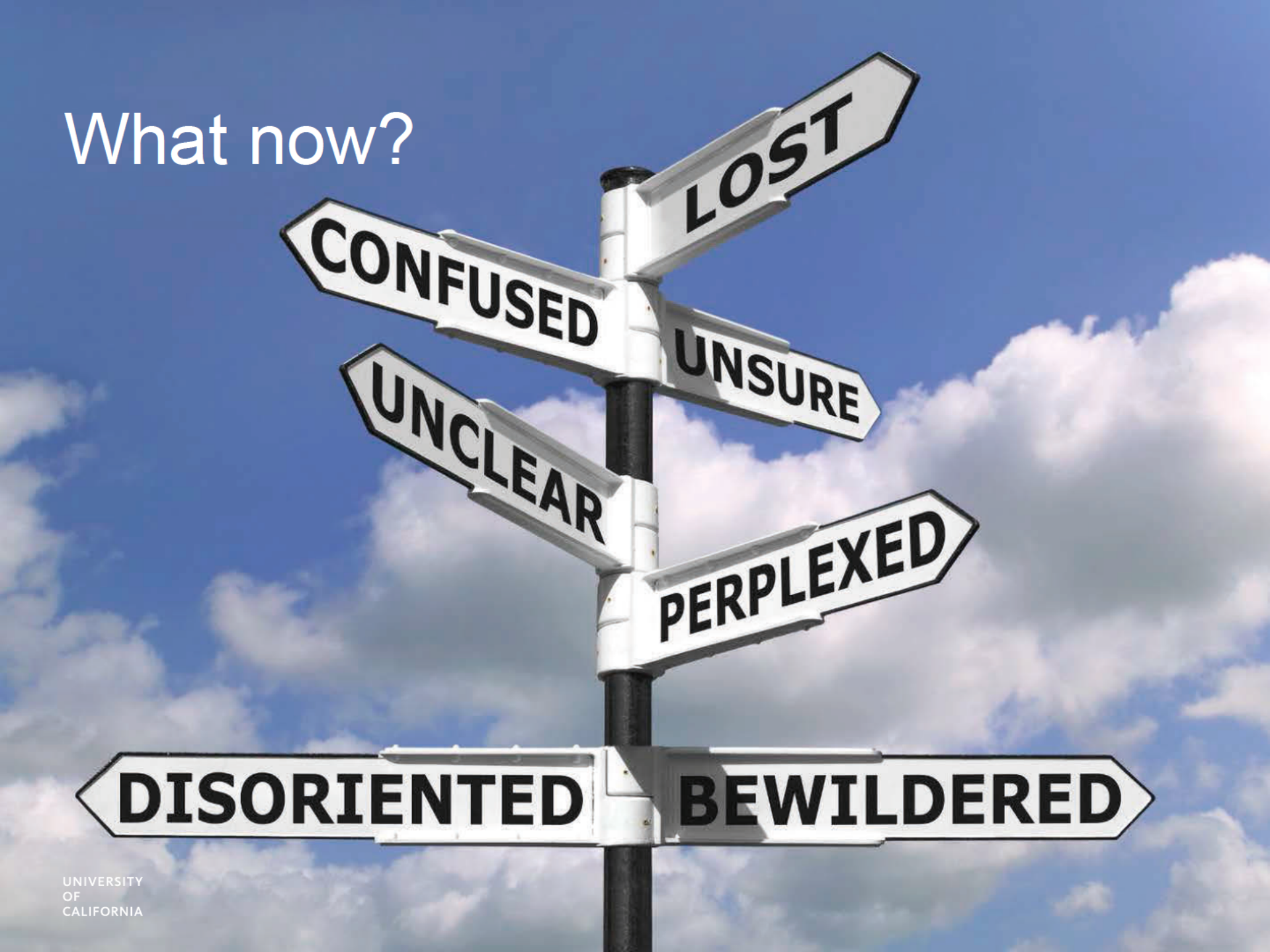
Make it stop!



Medical device manufacturer issues:

- Security has not been top of mind
- Patient safety is the focus
- FDA cybersecurity guidance is not a requirement/mandatory
- Most still do not incorporate security (source code analysis, encryption, authentication)

What now?



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UC Davis Health

- Risk assessment
- Segmented clinical networks
- Security “perimeter” controls on clinical networks
- Vendor reviews for all new technology
- Participation in FDA workgroups
- Strong partnership between IT and Clinical Engineering

What can you do?

- Know your environment – what do you have?
- Know your risks
- Network controls: segmentation/isolation/protection
- Vendor reviews and accountability– demand security
- Participate in FDA workgroups

What can you do?

- Participate in Information Sharing Analysis Organization (ISAO) and ISACs
- Physical security - devices that aren't connected still matter (ePHI on board)
- Build/foster relationship between IT and Client Engineering

What questions do you have?


Thank you!
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