Research Methods and Professional Practice January 2022

« Collaborative Learning Discussion 1

Navaratnasingam Arunanthy

Initial Post

4 days ago

2 replies

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The case study selected, Medical Implant, debates about an implantable heart health monitoring device with a potentially vulnerable hard-coded value. Based on a researcher's proof-of-concept, using the hard-coded value stored in the implant device, a nearby secondary device could alter commands sent to the implant to force the device to reset. However, the technical leaders from the organisation who industrialised the monitoring device consulted with the researcher and articulated the device's capabilities, which enabled the researcher to rate the risk of destruction with this attack as insignificant (ACM, n.d.).

This organisation worked with regulators from various countries to meet the regulatory requirements, aligning with the ACM Code of Ethics, principle 2.3 (ACM, 2018). Also, they did their part by implementing numerous measures such as cryptography and vulnerability disclosure that adheres to robust security goals. In addition, they also used the standard cryptographic algorithm for encryption, aligning with The Chartered Institute for IT (BCS) code of conduct (BCS, n.d.). This establishment also works with charity organisations to enable vulnerable people to access these devices, whose financial condition may have prevented them from accessing, demonstrating their commitment to society and human well-being, aligning with the ACM Code of Ethics, principle 1.1 (ACM, 2018). Additionally, the organisation leaders responded timely and responsibly to determine the issue's magnitude to manage the risk once a possible vulnerability was discovered, demonstrating their commitment to comply with the BCS code of conduct (BCS, n.d.).

References:

ACM (2018) ACM Code of Ethics and Professional Conduct. Available from: https://www.acm.org/code-of-ethics#h-2.3-know-and-respect-existing-rules-pertaining-to-professional-work [Accessed 25 January 2022].

ACM (N.D.) Case: Medical Implant Risk Analysis. Available from https://ethics.acm.org/code-of-ethics/using-the-code/case-medical-implant-risk-analysis/ [Accessed 25 January 2022].

BCS (2021) Code of Conduct for BCS Members. Available from: https://www.bcs.org/media/2211/bcs-code-of-conduct.pdf [Accessed 25 January 2022].

Reply

2 replies

1  Post by **Steph Paladini**

10 hours ago

Re: Initial Post

Hello,

this was quite an interesting case to discuss.

Of course, anything set in the healthcare system adds complexity to the framework, and make all the considerations about privacy and ethics even more stringent and sensitive.

I would be quite curious to know how they have reached the decision to go for a specific encryption protocol for the device, and what were the evaluation points taken into account.

Best wishes,

Steph

Reply

2  Post by **Jan Küfner**

now

peer response

Not knowing when state of the art encryption and authentication was established for the device it can nonetheless be stated that hard coded passwords within implants shall not be used. This is because there is a more secure way of storing passwords. This can for example be done within an area in memory, where access is limited to certain functions from within the application. The implementation of this special memory comes with negligible effort compared to the benefit. Given that the device is implanted all actions shall be taken to prevent malicious actors from tampering with data (e.g., deletion of serious cardiac issues detected by the device) or stealing of private health information. To my understanding the company lacks necessary ethics to produce medical implants. They seem to prioritize other actions such as maybe selling more devices over making them state of the art secure. They seem to neglect to have regard for public health, which for a medical device company should not be a position to have.

References

BCS (2021) Code of Conduct for BCS Members. Available from: https://www.bcs.org/media/2211/bcs-code-of-conduct.pdf [Accessed 25 January 2022].

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