

UNFinished Business

Senior RFID Product

A comprehensive study on Shortcomings

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CIS 3253 – Legal and Ethical Issues in Computing

A study on “Senior RFID product” software rollout was conducted to understand the shortcomings of the product in the context of legal and ethical issues. Three of the shortcomings are documented below.

Shortcoming #1: Security & Privacy

Since the RFID tag is so small, the size of a grain of rice, the data cannot be encrypted. ID and personal information could be in plain text. Anyone with right scanner and close to the person with RFID implanted can activate and read its contents. This is an invasion of one’s privacy. Seniors are more vulnerable to mental and physical abuse, theft of personal properties. Having personal information in the hands of criminals could be dangerous. In case of military personnel situations, this information could potentially be used to spy, to extract military secrets, and to disrupt the plan in motion. Knowing the personal information could lead to property theft in the house, and the stolen identity could be used in financial institutions. Criminals could use the phone number to make harassing and threatening phone calls, demand ransom etc., Since cell towers are used for cellular data transmission, the data can be eavesdropped. Stolen phone with mobile app can be abused as well.

To overcome above legal and ethical issues related security and privacy, the data stored in RFID device can be encrypted. A mechanism to periodically update the data using varying encrypting logic in RFID device would help just like password change. The stolen data by the criminals won’t be valid once new data got updated on the device. Along with ID, software sensors can be added to gather vital health conditions in real-time in case of eventualities. SSL encryption of data between RFID devices to Cellular tower and from cellular tower to monitoring station/mobile app can be implemented to make sure the data integrity is guaranteed and no one tampered the data during transmission.

There are laws and policies to govern cellular data and identity theft but those laws vary from state to state. In California, it is a crime to skim RFID tags. There is a need to have uniform laws and policies across the country similar to Healthcare HIPAA. Until then, the existing laws and policies could be improved to include prison time and hefty fine.

Reference: www.technovelgy.com/ct/Technology-Article.asp?ArtNum=5

Shortcoming #2: Posting RFID tag on preconfigured Social media Facebook & Twitter account

Facebook and Twitter accounts are social networking websites/applications to share content. The content shared on these websites can be viewed and commented on by others who are part of the network/group. Therefore, RFID tag posted on these social media is easily accessible within the group. RFID tag should be treated as PHI or financial data and it needs to be kept secret closer to a few who care. Facebook/Twitter applications are just a click away in most of the smart phones nowadays. It makes much easier for anyone to check the loved one’s position on social media. But the privacy and identity theft are the issues here. Most of the legal and ethical issues reported under *shortcoming #1* are equally applicable in this case as well.

Social media applications are the most vulnerable to hacks. Personal information posted can be stolen and misused. Criminals could use the location to harm seniors. It could lead to theft of personal property, violent crimes and loss of life. Customer should know the risks involved in posting in RFID tag on social media. Customer awareness TV campaign

would help. A printed easy-readable instruction sheet can be included in the product, listing the laws and ethical issues related to social media posting. A soft-copy can also be included in monitoring software package. A software edit can be added to the monitoring software before posting RFID tag by forcing the customer to read the disclaimer and accept the risk associated with the posting. Additional information could be added in the user's guide of the software on how to restrict the content and restrict access on Facebook and in Twitter account.

At present each one of the social media platforms has their own set of rules and regulations. After the suspected Russian meddling in last year presidential election, federal regulators are taking a note and paying attention to social media platforms and the deceptive content being posted in them. Social Media Regulation Act 2017 is with congress. Upon passing the bill, there will be social media regulations similar to those of cellular/satellite communication regulations.

Shortcoming #3: Risk of losing signal with cellular tower

Cellular communication transmits and receives microwave radio signal using land based cell towers. Microwave radio signals do not pass through solid objects. In cities with large number of tall buildings or mountains or no nearby cell towers or when towers are too far away in case of suburb/villages, there is a risk of weak signal or dropped signal. This could potentially defeat the purpose of tracking seniors at crucial time.

The above shortfall can be overcome by satellite communication. Satellite communication transmits and receives data utilizing satellite orbiting far above the earth. Satellite signal covers wider area compared to cellular microwave radio signal as they do not rely on land based cell towers. Satellite communications especially useful in remote places regardless of how remote location, whether land, sea or air.

Federal Communications Commission is responsible to regulate cellular and satellite communication originating and or terminating in the US. To ensure legal and ethical issues are addressed in data transmission involving cell tower and satellites, the consumer and Government Affairs Bureau develops and implements the FCC's consumer policies.

Reference: <http://www.vizocomsat.com/blog/difference-cellular-satellite-communications/>

Recommendation:

Senior RFID product would be even a better product if the above shortcomings are addressed in the next upgrade.