Week 7 Written Assignment: Quality Counts

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Writing for Inflectra, Sandman describes Quality Assurance as a process that "checks that a product or service meets certain quality standards and functions as intended" (Sandman, 2024). For a software product to be successful, one of the foundational requirements when producing the product is that the product functions as intended. One can ensure that this is possible by ensuring that procedures and processes that promote Software Quality Assurance are put in place. This is also true for a software product like Pallas. With our user group being responsible for the safety of communities all across the nation, ensuring that Pallas meets predefined quality standards is tantamount to ensuring citizen lives are safeguarded. This starts with ensuring that the right quality assurance practices are a part of the SQA plan that would be devised for Pallas. Two processes that are definitely required would be defect / error collection and analysis, along with security management. I would employ two standards to ensure quality in my product: CJIS (FBI) data standards, and the ISO 9001:2015 standard. By nature of serving the public safety sector, Pallas would also need high availability and reliability goals to be considered a quality product.

While all Software Quality Assurance processes should be considered when coming up with an SQA plan, Pallas will above all need to focus on defect / error collection and analysis and security management to ensure that it is a quality product. *In Software Engineering: A Practitioner's Approach* Pressman defines defect / error collection and analysis as a process that "collects and analyzes error and defect data to better understand how errors are introduced and what software engineering activities are best suited to eliminating them." Since Pallas will integrate an AI model to assist with providing real time predictions of future crime occurrences, rigorous examination of the model will be needed to find how the model misbehaves and then

collaboration to determine how best to approach the engineering task of retraining the model to account for said errors will need to be undertaken. If the model continually provides incorrect predictions, Pallas cannot be considered a quality product that police departments can rely on. Pressman also defines security management as a process that "ensures that appropriate processes and technologies are used to achieve software security". Since Pallas will potentially be dealing with CJIS information about citizens, it is imperative that we ensure that we review our security policy for the software and ensure its implementation is sound. Other SQA processes would be beneficial to consider for Pallas' SQA plan, but error analysis and security management both would be top of mind.

Having a standard to measure Pallas against, we can ensure that our product is perceived as a quality product. Pallas has two standards that would be beneficial to adhere to including the FBI's CJIS guidelines regarding individuals' data, and the ISO 9001:2015 standard. The CJIS standard regulates measures that need to be taken to ensure that individuals' Personal Identifying Information (PII) is protected. Since Pallas will be integrating with other public safety systems that will house this type of data, it is important to ensure that we follow this standard closely to ensure that agencies feel confident that this product will protect their data. The ISO 9001:2015 standard is an internationally recognized standard for ensuring a company's quality assurance processes are effective and promote satisfaction of customer expectations. By ensuring that Pallas abides by both of these standards, we can give customers' confidence that they are receiving a quality product.

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Availability and reliability goals are excellent ways to ensure that Pallas strives for Software Quality Assurance. Pressman defines software reliability as “the probability of failure-free operation of a computer program in a specified environment for a specified time”. Public Safety by nature is a 24 hour a day, 7 day a week, 365 day a year undertaking. With this in mind, it is imperative to ensure that Pallas has an incredibly high reliability / availability goal to ensure that we are providing a quality product. A reasonable goal would be to ensure that reliability is kept at or above a score of 0.999 for a given 24 hour period. This ensures that agencies feel confident that the product is stable, and always available to assist them in their daily duties.

Successful Quality Assurance practices are critical to deliver a quality product. For Pallas, we need to ensure processes like error analysis and security management are undertaken to verify that both the AI model is properly trained, and user data is protected. Adhering to standards like CJIS and the ISO 9001:2015 ensure that we can build consumer confidence that our product can be relied upon as stable and secure. By setting a high availability / reliability operating goal, we can ensure that Pallas will always be available when it is needed by our users. With these measures undertaken in earnest, we can provide a superior product that meets our defined standards of quality.

References

Sandman, A. (2024, September 30). Full Guide to Software Quality Assurance. Inflectra. https://www.inflectra.com/Ideas/Topic/Software-Quality-Assurance.aspx

Pressman, R. S., & Maxim, B. R. (2020). Software Engineering: A Practitioner's Approach (9th ed.). McGraw-Hill Education.