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The Therac-25, a radiation therapy machine, was involved in a number of accidents that caused injuries or deaths of patients due to software issues. The software being only created by a single person had limited testing. Had the machine received more testing and had a larger team working on it, they could have most likely avoided the incidents caused by the machine. However, the issue of development cost would arise jeopardizing the products availability. The ethical dilemma of justifying availability over reliability of technology must be addressed by companies and software engineers. Technology must be held to a standard of reliability but should not greatly impact its availability.

The level of reliability technology should possess should be determined by looking at the function of the technology. The technology's purpose should help determine the quality of the product. For example, should its purpose be for medical use the standard for the reliability of technology will be high as it could impact lives. While technology that has a main purpose for entertainment would not have serious negative impacts besides mild inconvenience. The purpose can determine how significant an impact can be, "But take care that this right of yours does not somehow become a stumbling block to the weak"(Corinthians 8:9). The consequences caused by the failure of the technology should only produce negligible and temporary harm. Technology should only have the possibility of serious harm to an individual if measures have been taken to

reduce the possibility to a low probability and have great benefits to a significant number of individuals. As stated in the ACM code of ethics, “When harm is an intentional part of the system, those responsible are obligated to ensure that the harm is ethically justified” (acm.org). There will always be cases where technology will have a possibility of harming individuals since no technology is perfect. However, the consequences should never be overlooked due to benefits but balanced carefully.

Software engineers hold some responsibility to ensure the reliability of a product. A certification could be implemented like the non-software engineers process however it would most likely be too inefficient. Software products do not have a clear measurement of reliability. Since software products vary greatly being used in numerous fields with different requirements of reliability. Software products are also constantly changing as technology develops. That being said software engineers should still refer to code of ethics like the ACM code of ethics and take measures to ensure a product’s reliability. To take the place of certification, the companies that hire these engineers should ensure the reliability of the product they sell and hold their engineers accountable.

The Therac-25 incident is a major failure for the computer professionals community as it showed the lack of moral obligation towards reliable software products. However, this incident wasn’t without benefit as it encouraged society to have a greater moral obligation in ensuring reliable software products. Computer professionals were impacted by this incident to consider the ethical issue of reliability versus availability. Computer professionals would have their own responsibility towards a reliable product. One way professionals can determine how much

responsibility they have towards a product is by this statement “Do to others as you would have them do to you”(Luke 6:31). A computer professional must remember that there is someone using their product and ask themselves how they would feel about using their product.

Technology should have large availability, but less of a priority then the reliability of the technology. The Therac-25 incident showed the importance of the reliability of technology. Both computer professionals and companies selling products have an obligation to ensure the reliability of their product without cutting corners for greater availability.

Works Cited

“*AMC Code of Ethics and Professional Conduct*.” *AMC*, www.acm.org/code-of-ethics. Accessed 11 Sep. 2024.

Christian Standard Bible, CSB. Edwin A. Blum, Trevin Wax. Holman Bible Publishers, 2017.

N. G. Leveson and C. S. Turner, "An investigation of the Therac-25 accidents," in *Computer*, vol. 26, no. 7, pp. 18-41, July 1993, doi: 10.1109/MC.1993.274940.