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Decisive Ethics

The reliability of software in high-stake use cases should be held accountable by creating more competition in that area and effectively avoiding extreme governmental regulations and certifications. The example of Atomic Energy of Canada Limited's THERAC-25 medical machine that killed patients due to software errors could have been handled better by having more options for radiation therapy provided for the hospital.

Competition needs to be catalyzed for software reliability. This answers the question of how much testing is necessary for these high-stake situations. If there are multiple companies producing their own products then some companies will be cheaper but less reliable and others will be more expensive but more thoroughly tested. The amount of testing necessary depends on the quality of the product that the company wants to deliver. In the example of THERAC-25, Atomic Energy of Canada Limited would be seen as an unreputable provider for reliable software due to their lack of testing. The hospital should have multiple companies providing these machines so that there are options from more reliable providers and less reliable providers. Competition encourages companies to provide reliable products so that their products are favored over others. Dawn-Marie Driscoll, Advisory Board member at the Hoffman Center for Business Ethics at Bentley University, in her article *Why Ethics Matter: A Business Without Values Is A Business At Risk* notes this, "It seems clear that businesses without values are businesses at risk.

Their reputations suffer in the marketplace, depressing stock prices and eroding consumer confidence;"

Governmental regulations and certifications should stay kept at a minimum for software reliability. While many non-software engineers have required certification processes, certifications for software engineers should not be required by the government. Instead, certifications should be required only by the employers of the software engineers. If a company wants to visibly provide reliable software, then they should require certifications from their software engineers. Because there are no heavy governmental regulations on software companies, it is important to know which companies are reputable. A way to assess a company's software reliability is to have third party inspections which can provide insight on that company's practices and the software that they provide. The Association for Computing Machinery (ACM) states in their *ACM Code of Ethics and Professional Conduct* section 2.5, "Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis of possible risks." Companies should be allowed to produce bad software so long as it is made clear and risks are analyzed. If a company refuses to cooperate with inspections then their software would be known as unreliable.

Competition and reputation are crucial for transparency of reliable and unreliable software providers. In the bigger picture, people can't be forced to practice good ethics; instead, they must decide for themselves. Jeremiah 17:9 from ESV: Study Bible states "The heart is deceitful above all things, and desperately sick; who can understand it?" This means that people are naturally evil. Some people will keep their bad ethics while others will want to do good; some software companies will cheap out on testing while others will want to succeed from their software's reliability.

Works Cited

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