

DR. SARAH ABRAHAM

CS349

CREATING ETHICAL PRODUCTS

WHAT DOES IT MEAN FOR A PRODUCT TO BE ETHICAL?

- ▶ No deception of the consumer
- ▶ No mistreatment of employees
 - ▶ Including outsourced or supply-line workers
- ▶ Minimal negative impact on the environment and communities affected by the business

CASE STUDY

- ▶ You are on a team building a graphics card, but when the standard benchmark testing starts, your hardware cannot compete with its competitor in terms of performance. You make some modifications that allow your graphics card to outperform the competition, but it also means using more power than advertised.
- ▶ When you bring this modification up with your project lead, she says to put in a flag that will activate your code when running a benchmark, but otherwise the card will run within power specifications.

OBVIOUSLY UNETHICAL CASES

VOLKSWAGEN EMISSIONS SCANDAL

- ▶ VW sold diesel cars in the US claiming low emissions
- ▶ In 2015 it was revealed that low emission standards met by creating a “defeat device”
 - ▶ Car detected when it was in a test scenario and modify power and performance to meet emission standards
- ▶ Emitted nitrogen oxide pollutants up to 40 times what is allowed in the US
- ▶ 11M vehicles affected

HEALTH CONSEQUENCES?

- ▶ Estimated 59 early deaths due to excess emissions
- ▶ Overall increase in asthma, bronchitis and emphysema
- ▶ Overall increase in smog and particulate in cities

VW RESPONSE

- ▶ At first denied allegations as technical glitches until evidence of defeat device proven
- ▶ CEO Martin Winterkorn resigned
- ▶ Head of brand development, head of research and development, and research and development chief suspended
- ▶ Over \$120M in benefits to affected customers
- ▶ VW pled guilty to conspiracy, obstruction of justice
 - ▶ \$2.8B criminal fine
 - ▶ \$1.5B in civil penalties
 - ▶ 6 executives charged

WHAT ABOUT THE ENGINEERS?

- ▶ First conspirator to be sentenced was James Liang
- ▶ Received a sentence of 40 months in prison, 2 years of supervised release and a \$200k fine
- ▶ Worked for VW since the 1980s
- ▶ Did not mastermind the defeat device but headed the engineering team to create one

NOT THE FIRST TIME THIS HAS HAPPENED!

- ▶ In 1974 VW was fined for switching off the emissions control system based on temperature
- ▶ In 1995 GM faced recall and fine for turning off the emissions control system when the air conditioner was activated
- ▶ In 1998 Ford faced recall and fine for overriding emissions when vans driven at highway speeds
- ▶ In 1998 Honda faced fines for disabling misfire monitoring system

PROBLEMS WITH THE SYSTEM?

- ▶ EPA testing extremely gameable
 - ▶ Representative engine hooked up to dynamometer and driven for 31 minutes (travels 11 miles at average speed of 21mph with maximum speed of 57mph)
 - ▶ Representative engine then tested for high-speed driving with air conditioning on
 - ▶ Manufacturing company can use specific drivers which allows them to produce lower emissions than the average driver
 - ▶ Engine can be modified if it fails first test round

DISCUSS: HOW DO WE FIX THESE SYSTEMS?

- ▶ Break into small groups
 - ▶ Discuss either the VW case or a case you know like it
 - ▶ Consider why companies try to game these systems and why employees go along with it
 - ▶ Consider:
 - ▶ What can government do to help this problem?
 - ▶ What can companies do to help this problem?
 - ▶ What can consumers do to help this problem?

INSTAPOLL QUESTION: RESPONSIBILITY FOR UNETHICAL SOFTWARE

- ▶ Who is responsible for curtailing development of unethical software?
Please choose one or more of these options and feel free to explain if you'd like.
 - ▶ The company itself
 - ▶ The company shareholders
 - ▶ The company employees
 - ▶ The product consumers
 - ▶ Government entities
 - ▶ Other entities (please explain)

WHAT IS RANSOMWARE?

- ▶ Website or e-mail fools user into clicking a link that installs a virus on their machine
- ▶ Ransomware installed and encrypts computer's harddrive
- ▶ User must pay ransom to get back files before files are destroyed
- ▶ AIDS Trojan was first known ransomware attack in 1989
- ▶ Industry has grown with Internet use

RANSOMWARE INDUSTRY

- ▶ Ransomware payments reached \$2B in 2017
- ▶ Ransomware can be packaged and sold to clients like regular software on the dark web
 - ▶ Sales over \$6M
 - ▶ DIY kits also available
 - ▶ Mostly controlled by organized crime

TRENDS IN MALWARE/RANSOMWARE

- ▶ Industry only continuing to grow
 - ▶ NotPetya attack resulted in \$310M in damages to Merck, \$300M for FedEx, and \$200M to Maersk
- ▶ Developing of ransomware that runs on GPU
 - ▶ Harder for current anti-malware tools to catch
 - ▶ Harder to shut down computer in time to prevent it
- ▶ Sophisticated malware engines allow for adaptable viruses that are hard to detect using anti-malware machine learning and modeling techniques

QUESTIONABLY UNETHICAL CASES

CASE STUDY

- ▶ You are building a website for a pharmaceutical company that provides general information about the conditions their drugs can treat. One of the features of the site is a quiz that helps teenage girls assess their symptoms and medications that may be associated with treating those symptoms.
- ▶ When you ask the company what answers the choices for the quiz should lead to, you are told all answers should lead to a particular drug this company is promoting.

<<https://medium.freecodecamp.org/the-code-im-still-ashamed-of-e4c021dff55e>>

INSTAPOLL CHECK IN: WHAT WOULD YOU DO?

- ▶ How would you handle having your boss ask you to build a website quiz to promote a particular drug to teenage girls?
 - ▶ Build the quiz
 - ▶ Research the drug in question before deciding
 - ▶ Refuse to build the quiz
 - ▶ Build the quiz but start looking for a new job
 - ▶ Bring this to the attention of the media/a regulatory body

CONTRACTING VERSUS EMPLOYMENT

- ▶ Differences for employer
 - ▶ Does not withhold income tax, Social Security or Medicare from wages for independent contractors
 - ▶ Does not pay for unemployment after contract ends
 - ▶ Not required to pay minimum wage or overtime
- ▶ Differences for contractor
 - ▶ Must handle income tax, Social Security, and Medicare taxes
 - ▶ Can work for multiple companies simultaneously

THE “SHARING” ECONOMY

- ▶ “On demand” workers (i.e. independent contractors) get business through middle man company when available
 - ▶ Examples: Uber, Lyft, Airbnb
- ▶ Contractors can pick up extra work
- ▶ Companies avoid expensive regulations

BENEFITS?

- ▶ What are the benefits for:
 - ▶ The company?
 - ▶ The employees?
 - ▶ The consumers?

DRAWBACKS?

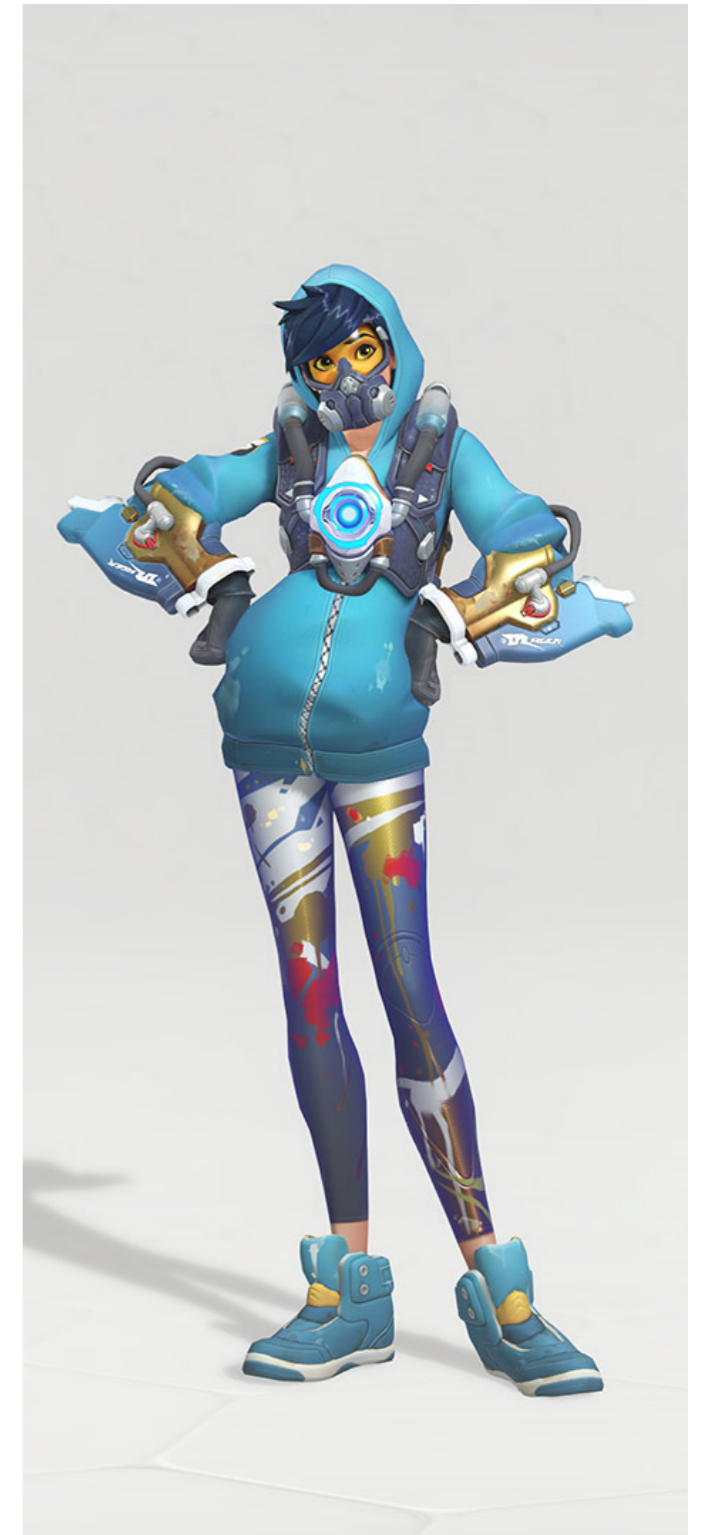
- ▶ What are the drawbacks for:
 - ▶ The company?
 - ▶ The employees?
 - ▶ The consumers?

ISSUES

- ▶ Safety related to contractor background checks
 - ▶ Uber fined \$8.9M for bad background checks
 - ▶ Uber threatened to pull out of Maryland if fingerprinting drivers is required
- ▶ Less regulation than in competing commercial industries
- ▶ Long term may not be favorable to contractors

DESIGNING FOR ADDICTION

- ▶ In 2010 a man successfully sued NCSoft for making Lineage II (an MMO) too addictive
- ▶ Rise of mobile games led to increase in “free-to-play” mechanics
 - ▶ Loot boxes look a lot like slot machines
 - ▶ Skinner box mechanics specifically designed to condition players to pay
- ▶ In 2017 Star Wars Battlefront II jumps the shark and receives massive backlash for the scale of its loot box monetization



QUESTIONS

- ▶ What makes loot boxes different from, say, a random drop in Diablo 2?
- ▶ Are pay wall mechanics acceptable in games where gamers can play for free?
- ▶ Who is responsible for playing a video game responsibly?
- ▶ How would you feel as a programmer creating addictive mechanics?

OUTCOME AND CURRENT TRENDS

- ▶ Belgium has deemed loot boxes a form of gambling
- ▶ China requires loot boxes to reveal odds of receiving a reward
- ▶ Australia seeking to regulate and/or ban loot boxes
- ▶ Hawaii introducing legislation to only allow people 21 and up to buy games that have randomized rewards
- ▶ UK has called for a ban on loot boxes in games for children

WHY CREATE ETHICAL PRODUCTS?

HOW DO YOU KNOW IF YOU'RE CREATING ETHICAL PRODUCTS?

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