Digital Ethics and Data Privacy

Project - Building Ethical Products

Ethical Issues in EdTech Products

YouTube Kids App

Tik Tok

Roblox

Amazon Echo Dot Kids

edmodo

Why Ethics Is Important

Impact on Users

Trust and Reputation

Legal Implications

Innovation and Sustainability

Professional Growth

Social Responsibility

Case Scenario: Technology for Good or Bad

- Imagine you're a developer at a tech company that has created a powerful deepfake technology. This technology can create incredibly realistic video and audio content by altering existing footage or simulating individuals.

- On one hand, this technology can be used in the film industry to create special effects or resurrect past actors, saving money and time.

- However, it can also be misused to spread fake news, cause public unrest, or invade personal privacy.

1 — Technology is neutral

Release the technology publicly and let users decide its use.

2 — Mitigate potential harm through control

Keep the technology private and sell only to trusted businesses.

3 — Balance approach to counteract potential misuse

Develop a companion technology to detect deepfakes and release both.

Option 1: Technology is Neutral

Release the Technology Publicly and Let Users Decide Its Use

Pros:

- Innovation and Creativity: Empower creators, artists, and developers to drive rapid advancements.

- Economic Opportunities: Foster an ecosystem of businesses, entrepreneurs, and freelancers to promote economic growth and job creation.

- Free Market Ethics: Support freedom of choice and places trust in users to act responsibly.

Cons:

- Uncontrolled Misuse: Societal risks of fake news, manipulated political videos, and fraudulent activities.

- Loss of Trust: Erode public trust in media, societal inability to distinguish between real and fake content.

- Legal and Ethical Backlash: Company may face legal challenges and public outrage, leading to damage the company's reputation.

Option 2: Proactive Approach

Keep the Technology Private and Sell Only to Trusted Businesses

Pros:

- Controlled Usage: Maintain control over how the technology is used and reduce the risk of misuse

- Brand Reputation: Build a reputation as a responsible innovator and can attract customers, partners, and investors who value corporate responsibility.

- Compliance and Regulation: Compliance with existing and future regulations regarding AI and deepfakes.

Cons:

- Limited Innovation and Creativity: Stifle innovation and limit the number of creative applications.

- Missed Economic Opportunities: Reduce revenue opportunities that could arise from a wider adoption of the technology.

- Black Market and Piracy Risks: Could still be reverse-engineered, leaked, or pirated.

Option 3: Balanced Approach

Develop a Companion Technology to Detect Deepfakes and Release Both

Pros:

• Ethical Responsibility: Demonstrate a commitment to mitigating the potential harms associated with its innovation.

• Public Trust: Maintain public trust in media and digital content.

• Broader Adoption with Safeguards: Promote broad access to the deepfake technology while combating its misuse.
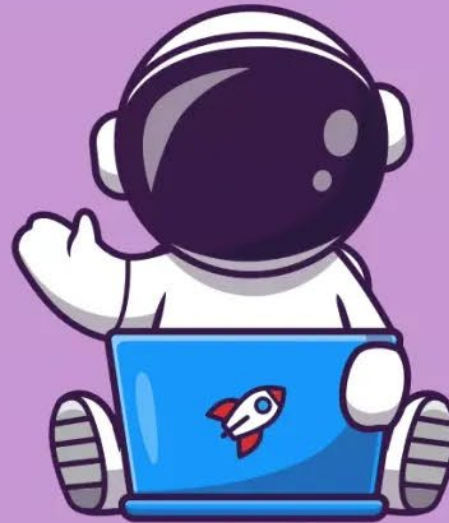
Cons:

• Arms Race Scenario: Could lead to an arms race between those who create deepfakes and those who seek to detect them.

• Complexity and Cost: Developing, maintaining, and updating detection tools adds complexity and cost to the company's operations.

• Uncertain Effectiveness: Sheer volume of deepfake content could overwhelm the ability to detect and flag malicious uses effectively.

Three Broad Ethical Frameworks

	Consequentialist	Duty	Virtue
Deliberative process	What kind of outcomes should I produce (or try to produce)?	What are my obligations in this situation, and what are the things I should never do?	What kind of person should I be (or try to be), and what will my actions show about my character?
Focus	Directs attention to the future effects of an action, for all people who will be directly or indirectly affected by the action.	Directs attention to the duties that exist prior to the situation and determines obligations.	Attempts to discern character traits (virtues and vices) that are, or could be, motivating the people involved in the situation.
Definition of Ethical Conduct	Ethical conduct is the action that will achieve the best consequences.	Ethical conduct involves always doing the right thing: never failing to do one's duty.	Ethical conduct is whatever a fully virtuous person would do in the circumstances.
Motivation	Aim is to produce the most good.	Aim is to perform the right action.	Aim is to develop one's character.

Source: A Framework for Making Ethical Decisions

Case Scenario: Ethical Frameworks

- Imagine you are a software developer in a leading tech company. Your team is developing an AI-based job recruitment tool. The tool uses machine learning algorithms to screen resumes, helping companies reduce the time taken to shortlist potential candidates.

- During the testing phase, you notice that the AI tool is consistently shortlisting fewer resumes from candidates who attended junior colleges and polytechnics compared to those who attended well-known universities.

- You suspect this bias may be due to the training data, which mostly includes successful applicants from prestigious institutions.

1 Diversity is beneficial and produces best results (most good)

Revise AI Tool

2 Duty to ensure fairness

Revise AI Tool

3 Right thing to do; reflects virtues of fairness, justice and integrity

Revise AI Tool

Option 1: Revise AI Tool (Most Good)

This option aims to generate the most overall good by ensuring the AI tool doesn't perpetuate bias and is fairer to all candidates.

Pros:
- The tool becomes more equitable, potentially benefiting a wider range of job candidates.
- May improve the company's reputation by promoting fairness and equal opportunity.

Cons:
- Retraining the AI could delay the development schedule and require additional resources.

Option 2: Revise AI Tool (Duty)

This option is based on the duty to act according to principles of honesty and transparency, regardless of the outcome.

Pros:

- Fulfills ethical duty to report potential ethical issues.
- The decision-making responsibility falls on superiors, reducing personal burden.

Cons:

- If superiors decide to proceed without addressing the bias, the issue remains.
- May create workplace tension if others do not view the bias as an issue.

Option 3: Revise AI Tool (Virtues)

This option involves fostering a culture of fairness and inclusivity within the company, such as pushing for diversity in training data and transparency in AI systems.

Pros:
- Contributes to long-term organizational change and the cultivation of virtuous practices.
- Mitigates the risk of similar biases occurring in future projects.

Cons:
- Changes may take time to implement and encounter resistance.
- If changes are not supported by management, this could lead to job insecurity or conflict.

Are Self-Driving Cars Ethical?

"Trolley Problem"
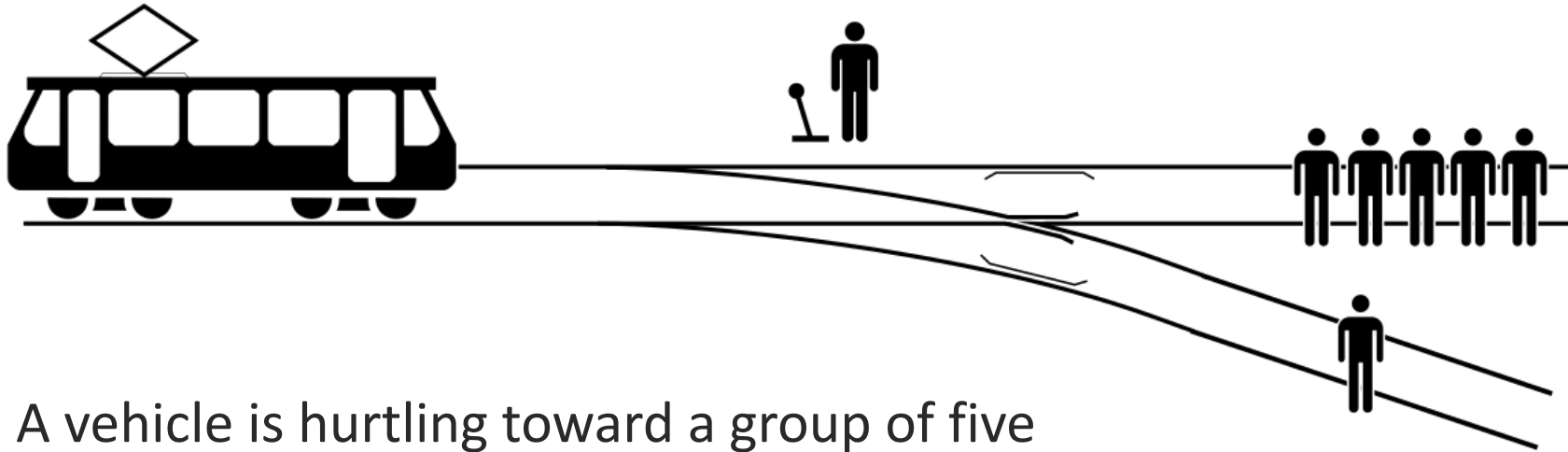
A vehicle is hurtling toward a group of five pedestrians, and the only way to save them is to swerve and run over a single pedestrian instead.

Caution VS Competitive Advantage

Self-Driving Car Dilemma

- You are a software engineer working for a company that develops autonomous driving software. You're currently working on an update to the decision-making algorithms for emergency scenarios.

- A recently surfaced issue is the "trolley problem," a hypothetical situation where the autonomous vehicle must choose between two harmful outcomes:
  - The car, to avoid a group of five pedestrians who suddenly appear in its path, could swerve into a wall, likely seriously injuring the single passenger inside.
  - The car could continue on its path, likely injuring or even killing the five pedestrians.

- **Question** : Should you modify the algorithm to always prioritize the lives of multiple people over one, even if that one is the passenger?

Which is most ethically sound?

A. Implement the change, as protecting multiple lives over one is ethically permissible, even if it harms the passenger.

B. Reject the change, as it's not ethically permissible to directly harm the passenger, regardless of the potential benefits.

C. Implement the change, but also inform all potential customers about this feature, allowing them to make an informed decision.

D. Reject the change and seek a third solution that doesn't risk harming either the passenger or pedestrians.

Consequentialist

Duty

Virtue
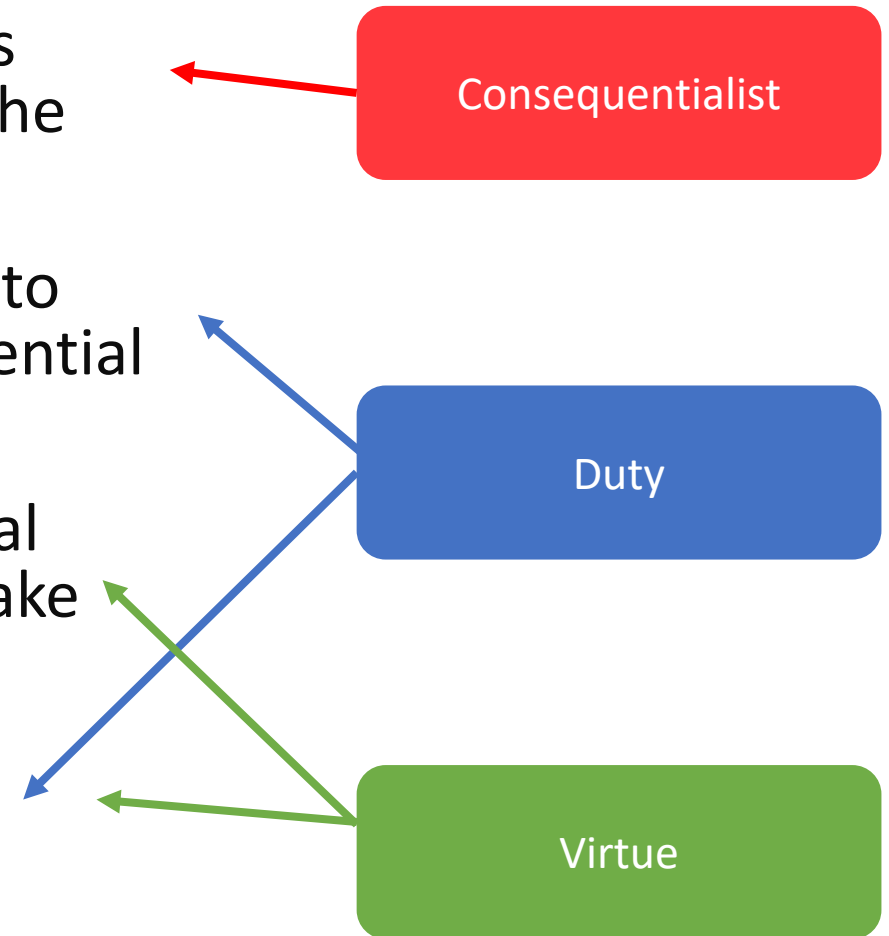
Other Considerations

- Human Override and Control:
  - Human-in-the-Loop: Allow human intervention in critical decision-making moments. This approach ensures that a human can take control of the vehicle when an ethical dilemma arises.
  - Manual Override Option: Equip self-driving cars with a manual override system, enabling passengers to take control in emergency situations.

- Stakeholder Engagement:
  - Public Consultation: Engage with the public to understand their values and preferences regarding ethical decision-making in self-driving cars. Public input can help shape the ethical frameworks used by these vehicles.
  - Collaboration with Ethicists: Work with ethicists and philosophers to explore and address the complex moral questions posed by autonomous driving technology.

Principle of Double Effect (PDE)

- If an action has two possible outcomes - one **good** and one **bad** - then it may be permissible to perform that action if the person intends only for the good outcome and takes reasonable steps to avoid or minimize the bad outcome.


Intention → **Ease Suffering**

Unintended side-effect → **Death**
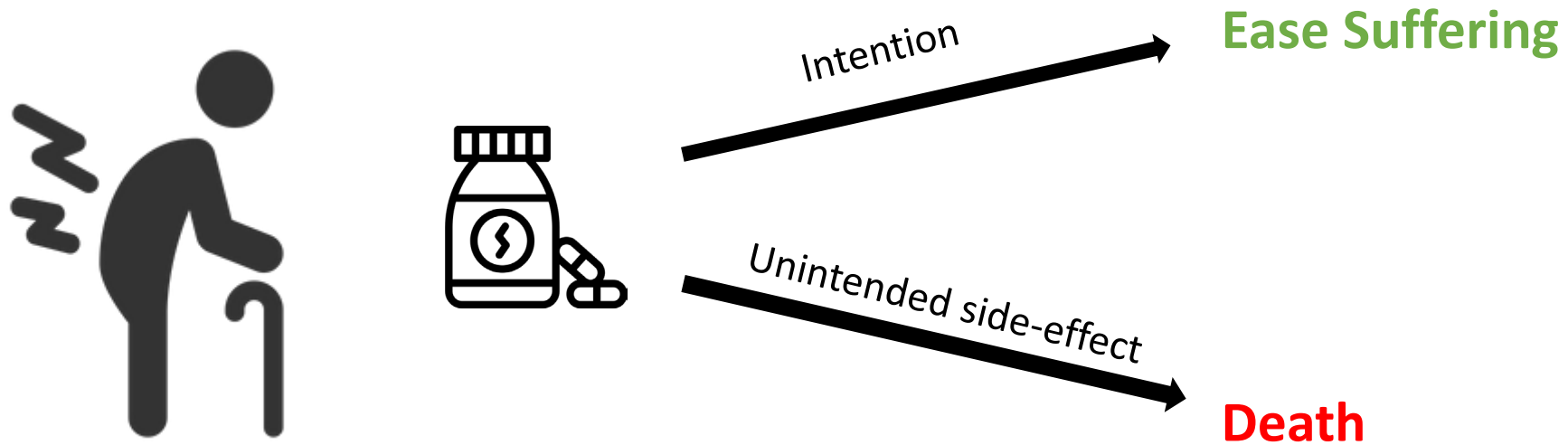
What is Permissible?

- The Principle of Double Effect states that it is morally permissible to carry out an action that has two effects, one good and one bad, under certain conditions. These conditions typically include:

  1. The intended effect of care must be positive
  2. Any harmful effects of care should be predicted but not intended
  3. Harmful effects of care should not be used as a way to achieve beneficial results
  4. The beneficial effects of care should outweigh the harmful effects
  5. Interventions should be appropriate and proportionate

Trolley Problems

- Which of the following 2 is permissible?

1

2
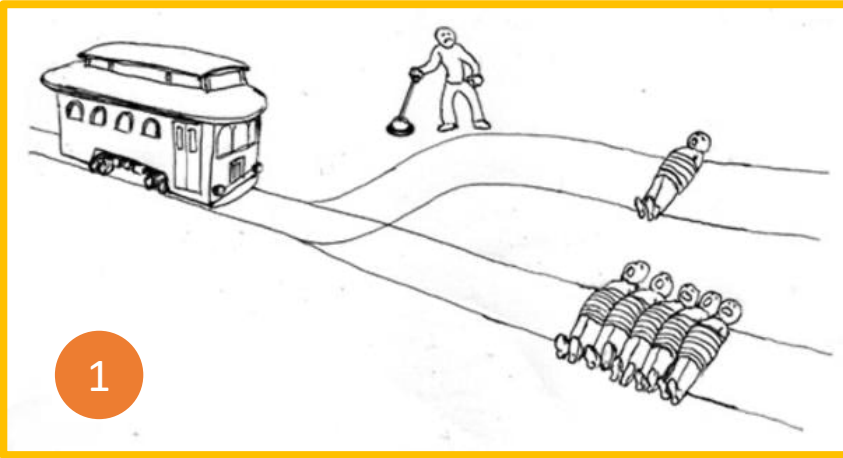
You can pull a lever to divert the streetcar onto another track in which only one man will be run over.

You can push the person off the bridge so their body will stop the streetcar, thus saving the five, but killing the man who was pushed.

Foresee **but do not** *intend* **the harm**

Harm was *intended*

Military Ethics

- Which of the following 2 is permissible?

2

atomic bomb dome
hiroshima, japan

You kill civilians to force an enemy to surrender (as in Hiroshima)

Harm was *intended*

1

JALALABAD TERRORIST TRAINING CAMP, AFGHANISTAN
PRE STRIKE

You drop a bomb on a terrorist training camp, killing one hundred terrorists, but, as collateral damage, killing ten innocent civilians.
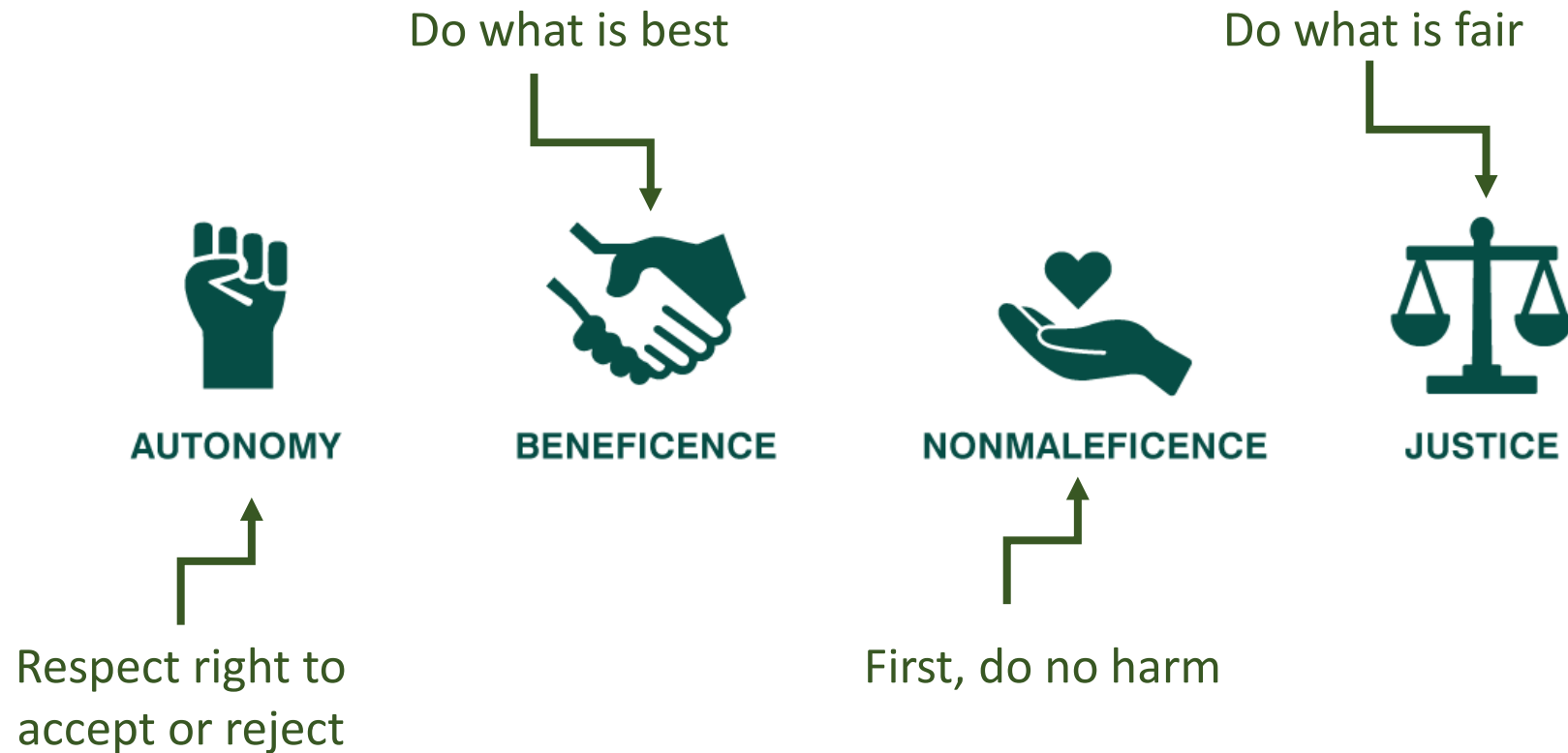
Foresee **but do not** *intend* **the harm**
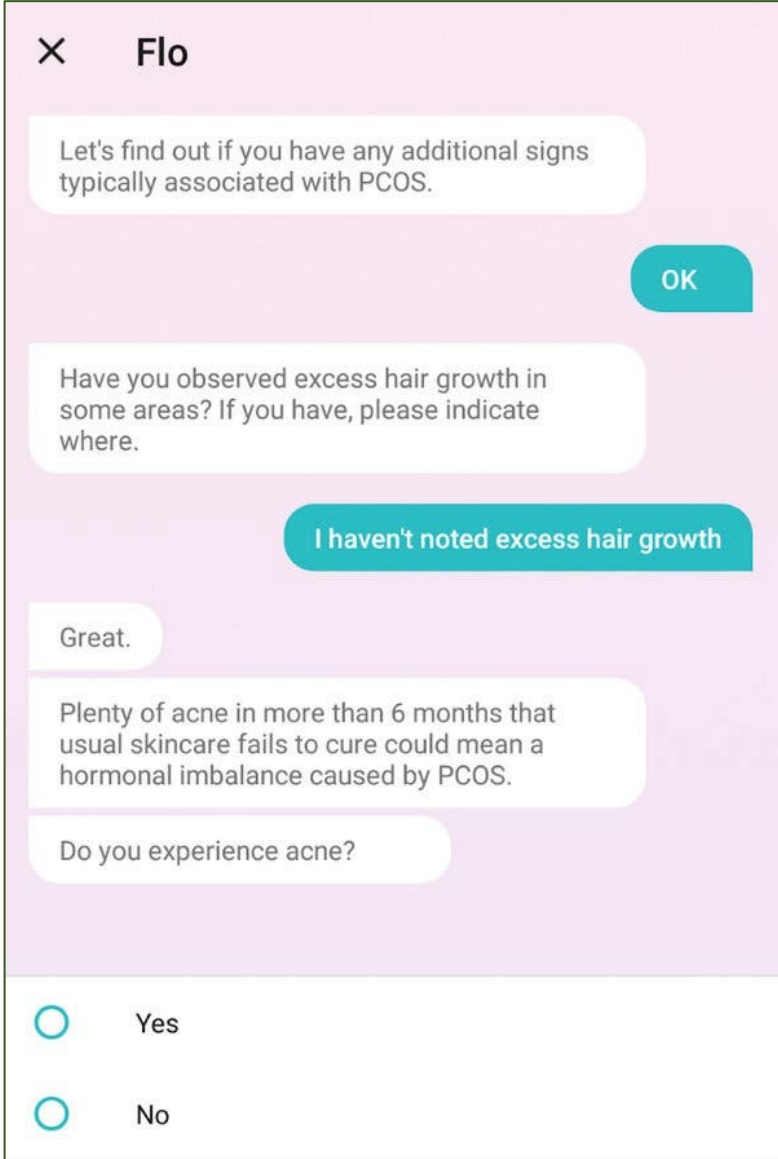
Classic Examples of PDE

- COVID-19 Vaccinations
  - All vaccines, however well-tested, have a small probability of causing adverse effects, and in some cases, deaths.
  - Is Government-enforced vaccination against COVID-19 ethical?

- Israel-Hamas Conflict
  - On 7 Oct 2023, Hamas militant group launched attacks in Israel. Israel Defense Forces (IDF) immediately declared war on Hamas and counter-launched attacks against Hamas positions in the Gaza Strip.
  - Is the IDF war against Hamas in Gaza a just war?

- Many more:
  - Self-Defence
  - Removing cancerous uterus in pregnancy
  - Administering medicines with side-effects
  - …

Medical Ethics: Hippocratic Oath

Do what is best

Do what is fair

AUTONOMY

BENEFICENCE

NONMALEFICENCE

JUSTICE

Respect right to
accept or reject

First, do no harm

Misleading Users on Privacy

- Flo, a period- and [fertility-tracking app](#) used by more than 100 million women.

- Flo shared sensitive health details on millions of users for years with numerous third parties (Facebook and Google).

- Risk of third-party using data used for advertising and other purposes.

A Digital Hippocratic Oath

We will make health care easier to access, understand, and use.

We will ask, "What would I want for my own patient care and for my family?" for all decisions.

AUTONOMY   **BENEFICENCE**   **NONMALEFICENCE**   **JUSTICE**

We will allow patients to decide how their data is used.

We will protect and secure patient data.
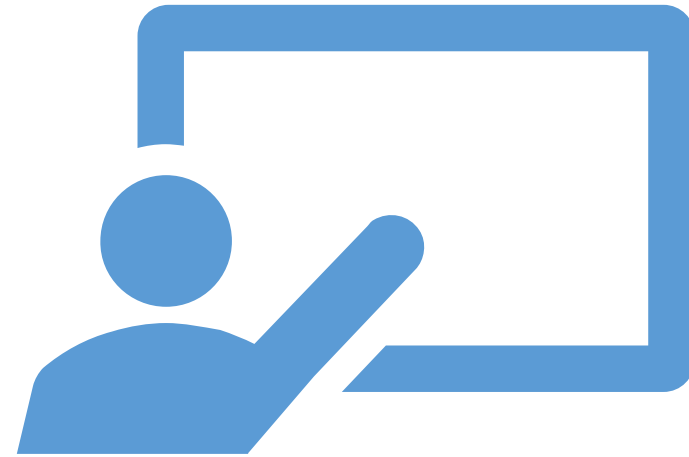
Designing and Building Ethical Products

https://bluewhaleapps.com/blog/the-importance-of-ethical-considerations-in-digital-product-design

Group Project

Proposal

Pitch

Project Due Dates

Week 4 Sunday 2359	Project Proposal Submission	Each team will submit a project proposal outlining their selected digital product and preliminary ideas for their digital product. The proposal should identify the primary ethical considerations of the project. A proposal document with 3-6 pages is recommended.
Week 11 Sunday 2359	Product Pitch Deck Submission	Each team's product pitch should be a clear and engaging presentation of their digital product proposal and the ethical considerations around it. Please refer to the Product Pitch assignment for details of the pitch components.
Week 12 (Tutorial Slot)	Product Pitch	Each team will present a product pitch during the tutorial session in front of the tutorial group, which will include a Q&A to gather peer feedback for the final product report. Teams are encouraged to use this time to discuss how they would use feedback from their product pitch to further improve their project work. Each team is limited to 10 mins for the pitch.

Project Proposal

1. **Introduction & Background:** Briefly describe the project's purpose and the problem it aims to solve.

2. **Preliminary Ethical Consideration:** Identify possible ethical considerations linked to the proposed project.

3. **Product Value:** Provide high level descriptions of the product value with a focus on the societal and environmental impact.

Proposal Assessment Criteria

1. Product Idea Clarity: Is the product idea well-defined, with a clear understanding of the target market and potential user base?

2. Ethical Consideration: Does the proposal effectively identify potential ethical issues associated with the product?

3. Value Articulation: Does it identify a clear value proposition that will make the product attractive to customers?

4. Societal and Environmental Relevance: Does the proposal outline the potential societal benefits, such as improving quality of life, health, or social equity? Does it also consider the environmental impact, offering ideas for sustainable design and operation?

Framework For Ethical Impact Assessment

Simplified FISh Model

Step 2: **Investigate**

Gather the Facts
Apply Codes of Ethics
Evaluate Possible Solutions
Act and Justify
Review and Reflect

Step 3: **Share**
Share and Discuss

Step 1: **Focus**
Identify the Ethical Issue
Identify the Stakeholders

Nerantzi & Uhlin, 2012

Product Pitch

- Each team is required to develop a Product Pitch deck which is a set of PPT slides to showcase your product and team to either senior management or potential investors.

- Max Duration: 10mins

- Tips:
  o Don't have too many wordy slides
  o Use Power of 3 – Have 3 points of less
  o Minimize the use of technical jargon
  o Start strong – grab your audience attention
  o Be excited and passionate
  o Practice, Practice, Practice
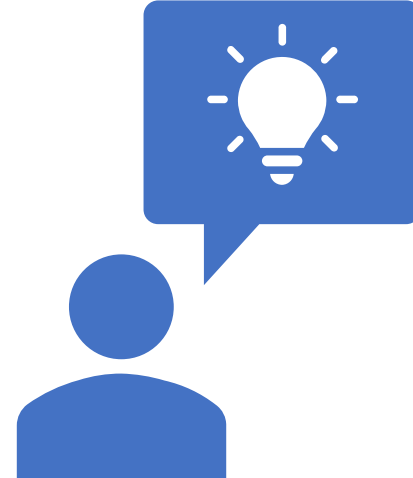
Product Pitch

Product Pitch Component	Description
Introduction	Problem Statement, Target Market, Value Proposition
Sustainable Business Model Canvas	Environmental and Societal Values.
Ethical Considerations (FISh)	Ethical implications of Product; Potential Harm and Mitigation.
Conclusion and Q&A	Summarized Key Points; Question and Answer.

Product Pitch Assessment Criteria

1. Product Overview Clarity :

- Description: Does the pitch provide a clear and concise description of the product that can be easily understood by all stakeholders?
- Differentiation: Are the product's key features and unique selling points effectively highlighted?

2. Value Proposition Articulation:

- Relevance: How well does the pitch demonstrate the product's relevance to the target market's needs?
- Benefits: Are the benefits to the users clearly articulated and compelling?

3. Sustainable Business Model Presentation:

- Environmental Impact: How well does the pitch address the product's environmental sustainability?
- Social Impact: Does the pitch effectively communicate the societal benefits of the product?

4. Ethical Considerations Integration :

- Ethical Issue Coverage: Are all significant ethical issues identified and clearly explained?
- Mitigation Strategy Effectiveness: Are the mitigation strategies presented as credible and well-reasoned?

Further Reading

1. The self-driving trolley problem

https://theconversation.com/the-self-driving-trolley-problem-how-will-future-ai-systems-make-the-most-ethical-choices-for-all-of-us-170961

2. A Framework for Making Ethical Decisions

https://sts.brown.edu/events/events-archive/making-choices/framework-making-ethical-decisions

3. The Principle of Double Effect

https://daily-philosophy.com/ethics-of-war-double-effect/

4. Responsible Innovation COMPASS

https://innovation-compass.eu/

5. Creating a digital Hippocratic oath for the 21st century

https://www.statnews.com/2022/02/15/creating-a-digital-hippocratic-oath-for-the-21st-century/

6. Israel's Gaza War: A Morally Complex Conflict

Israel's Gaza War: A Morally Complex Conflict - RSIS

Q & A

List of Product Ideas

You may choose any of the following product ideas for your project work, or develop a different one on your own:

1. **Digital Education Platform** - a variety of tools and features to support student learning, including personalised recommendations, fun assessments, a chatbot, etc.

2. **Mobile Wellness Platform** - a one stop solution for tracking the user's lifestyle via wearables, as well as managing health records and appointments.

3. **Digital Bartering Platform** - a peer-to-peer marketplace for Singaporeans to buy, sell, and rent their items.

4. **Digital Shopping Assistant** - a one-stop platform to simplify and personalise consumer's shopping experience, offering personalized recommendations, filtered reviews, group buys, etc.

5. **Digital Travel Assistant** - an application that offers travel itinerary planning that enables millennial travellers to plan their trips with confidence and ease.

Product 1: Digital Education Platform

- **Background:**
  - Country: Singapore
  - Children as young as 11-13 years old are given mobile phones.
  - MOE sees potential of mobile device such as smartphones to enhance learning in schools, but also concerned about distraction.

- **Product Brief:**
  - Your product must either be made up of hardware, software, or learning content, or a combination of any of these.

- **Education Statistics Digest 2021**
  - Statistical information on schools, enrolment, teachers, educational outcomes, employment outcomes and finances.
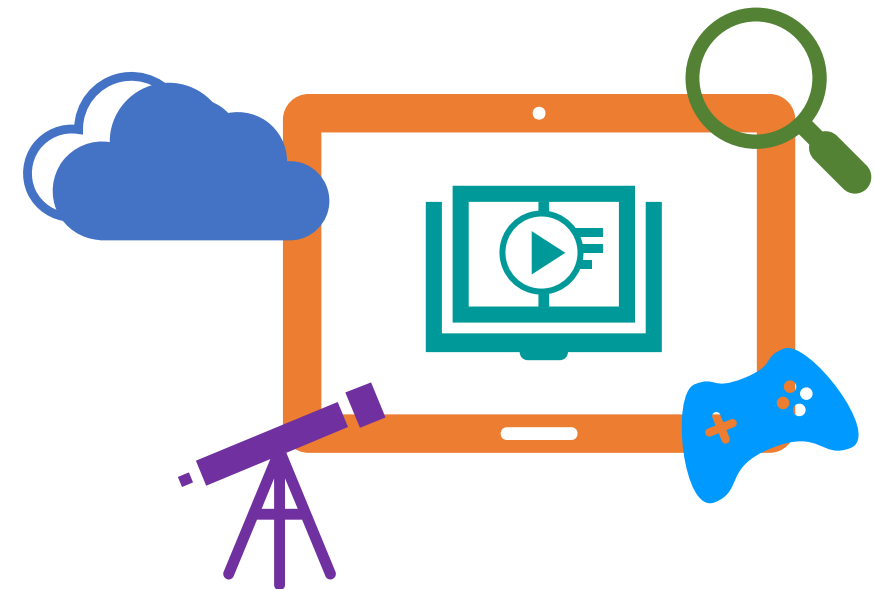
Use of Technologies & Benefits

Technologies:

1. Use of AI and Chatbots to boost learning outcomes

2. Use of AR/VR to engage and enhance learning experience

3. Use of biometric authentication to provide security

4. Use of Gamification to make learning fun

Value Proposition:

1. Available Any Time: Accessible at the point of need, on-demand, anytime.

2. Mobile: Works with various mobile devices for on-the-go access.

3. Convenience: Conveniently available to learners whenever they need it.

4. Multimodal: Includes handbooks and multimedia content, training systems for hands-on practice, and social learning collaboration with peers and teachers.

5. Learner-Specific: Customizable to learner-specific needs.

Product 2: Mobile Wellness Platform

Web Portal

Wearable Tracker

Web Client
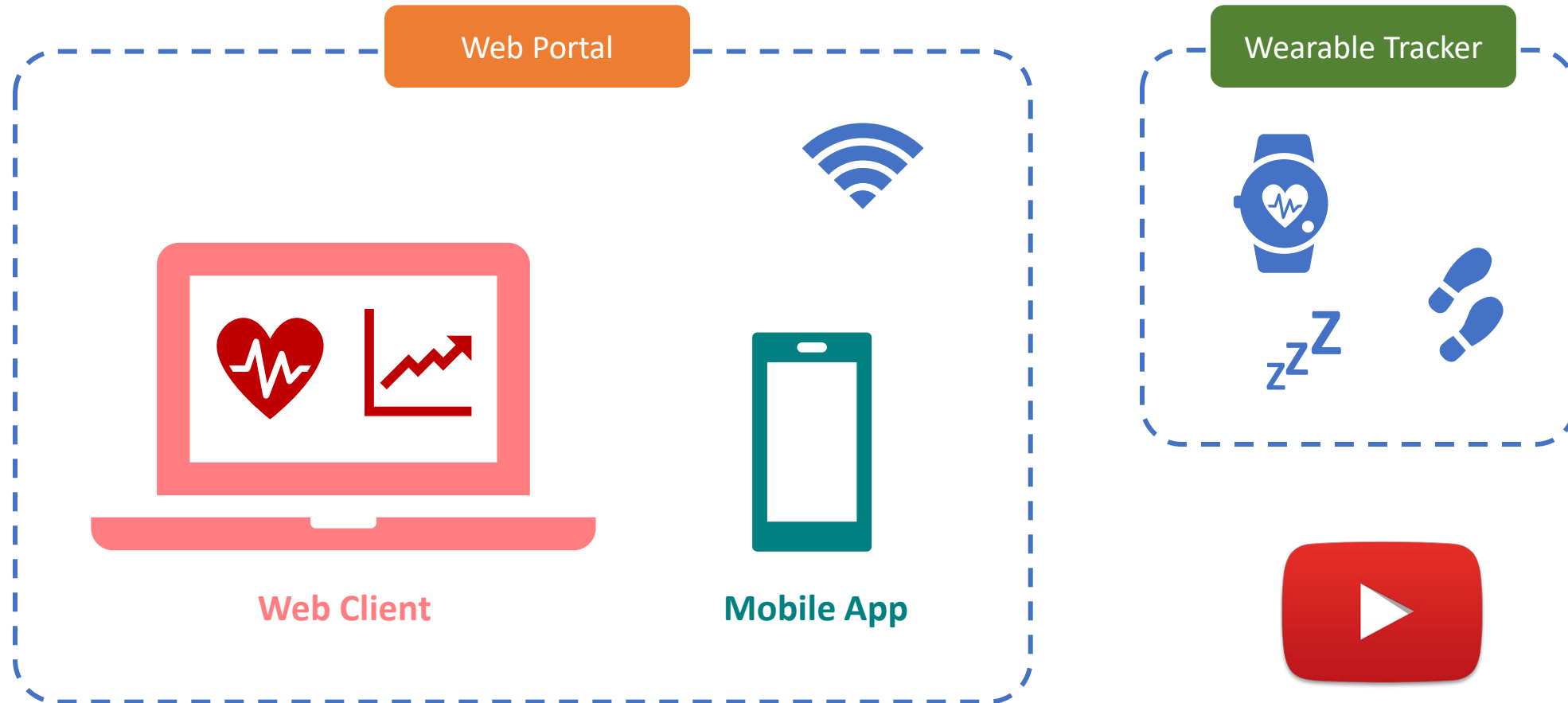
Mobile App

Key Objectives

- Provide one-stop health information and services web portal and mobile application that empowers citizens to take charge of their health and that of their loved ones.

- Equips citizens with information on medical conditions, medical listings and secure access to health records at their fingertips. Citizens are able to manage their medical appointments and view their key medical records, including hospital discharge summary, lab test results (chronic diseases), screening records, future medical appointments and their children's health records.

Product 3: Digital Bartering Platform

- Designs and builds an innovative **peer-to-peer marketplace** for **eco-conscious fashion enthusiasts**, allowing them to revamp their wardrobes **sustainably and effortlessly** through buying, selling, renting and trading garments.

- Offers a user-friendly interface, fun features, and intelligent solutions that reduce friction in fashion transactions, making the process enjoyable and seamless.
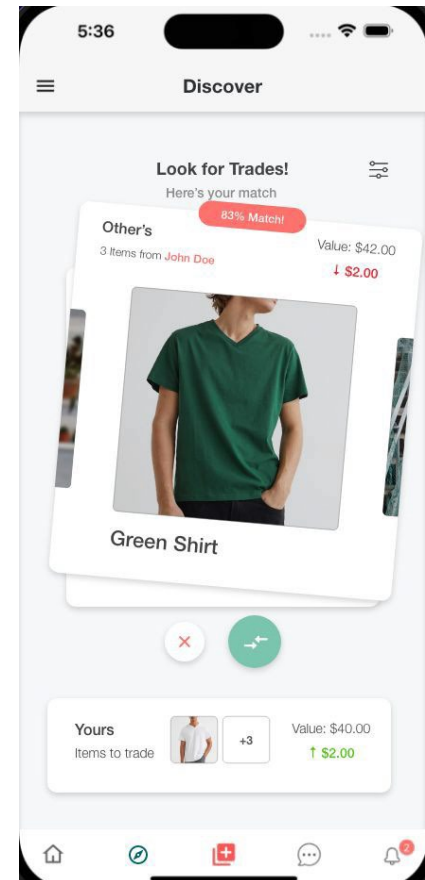
Problem: Fast Fashion

- The mass production of trendy clothes that are designed to be worn only a few times before being discarded.
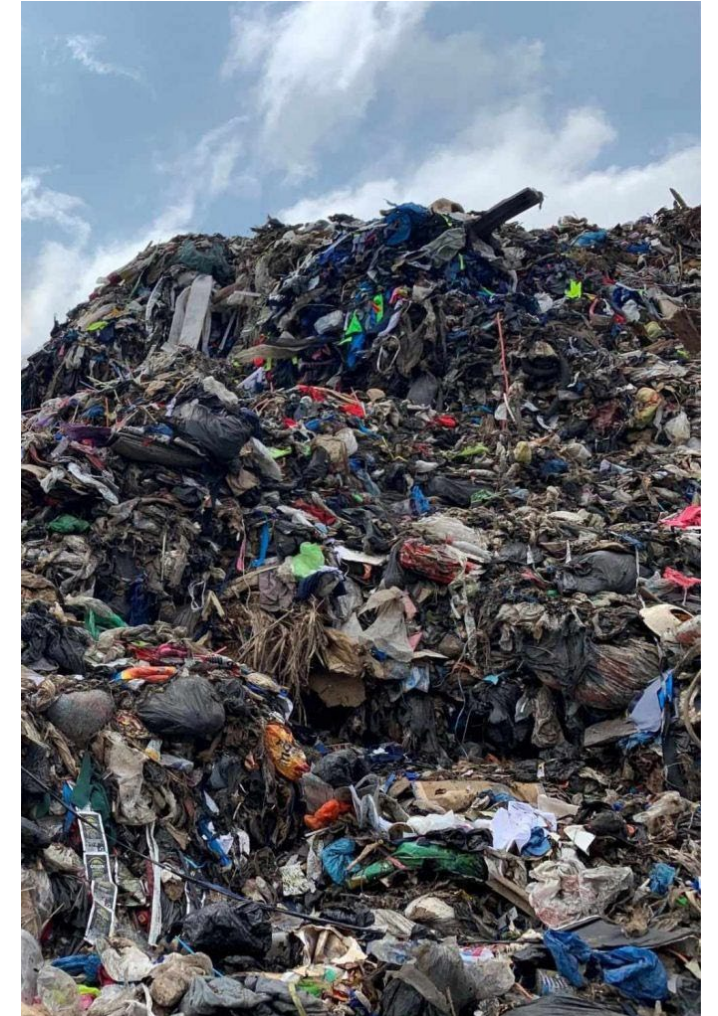
Product 4: Digital Shopping Assistant

Comparing product listings
is time consuming & tiring

App reccos not catering to the
decision making factors of each individual

Uninformative Product Reviews

Coordinating with friends for group
shopping is inconvenient

Key Features

Fast, Convenient Shopping

- Listings Comparisons Summarised
- Reviews Personalised
- Recommendations

Delightful Shopping

- Shopper's MBTI
- Group Shopping

Product 5: Digital Travel Assistant

Provide a comprehensive and user-friendly itinerary planning application that enables travellers to plan their trips with confidence and ease.

Make the travel-planning process as stress-free as possible through easy-to-use user interfaces, trustworthy data and helpful advice.

What Customers Want

Plan Effectively

Plan and book a trip with ease and confidence

Find Accurate Info

Find reliable travel information easily

Feel Safe & Secure

Ensure safety and security when travelling to new destinations