



The background of the slide features a complex pattern of overlapping triangles in white and various shades of grey, creating a sense of depth and geometric complexity.

ENGG 513 ERA #1

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Resources



Value-Based Engineering With IEEE 7000

Extra Resource #1

- ❖ Value-Based Engineering with IEEE 7000
- ❖ Sarah Spiekermann, Till Winkler
- ❖ Will cover Conceptual Normative Uncertainty
- ❖ Provided on D2L



Cultural Influence

- ❖ I found it very interesting when the voice assistants were asked the same question it would give a different response depending on the culture which developed it. This can clearly cause cultural differences and reflect the different values which are prioritized in that culture



United States vs Russia

- ❖ This example discussed how the Alexa voice assistant responded differently to the phrase “I am so sad” and enforced different values in the U.S vs Russia. Personally, I believe this is important as it ensures that the different cultures around the world can maintain their values and not conform to a “global norm.” Without this, each culture which differs from this norm would begin to lose their identity and assimilate to the values and beliefs of another culture.

Designing for Inclusivity

Strategies for Universal
Washrooms and Change Rooms in
Community and Recreation Facilities

Extra Resource #2

- ❖ Designing for Inclusivity
- ❖ HCMA
- ❖ Another Conceptual Normative
Uncertainty challenging cultural norms
- ❖ Provided on D2L



An Opposing Approach

- ❖ I believe the approach of universal bathrooms in this document is an example of an approach which opposes the previous one. The attempt is to include everyone and ensure all groups feel as they can use the bathroom freely, providing a more welcoming space. On the other hand, this approach also forces other cultures to adhere to the sharing of these bathrooms despite what their culture may believe is right/wrong.



Balance

- ❖ While reading about this article more in depth, it raised the question: “At what point does an ethical action to me become an unethical action for someone else?” This is one of the larger issues we have spoken about where it may become difficult to adhere to everyone’s morals and ethics when there is such a broad range of what may or may not be acceptable



Extra Resource #3

- ❖ The Ford Pinto Case
- ❖ Mark Dowie
- ❖ Technical vs System Accuracy
- ❖ Found Online



A Rapid Solution

- ❖ This article covers a case where the car manufacturer “Ford” rushed the creation of a product to compete against “Volkswagen” and releasing it to the public despite knowing of a lethal fault in the cars. The fuel system was too exposed and would likely be damaged during a rear end collision, causing fires which would be extremely deadly



Inaccurate Decision

- ❖ This was a perfect example of creating a solution which considered only technical accuracy and not system accuracy. The main concern was to create a product to battle competition while disregarding the bigger picture: the safety of their consumers. In the long run this problem estimated to cause around 500 deaths which could have been avoided if Ford redesigned their fuel tank for the Pinto.



Money > Ethics

- ❖ The overall concern of profit over an ethical product is something we need to prevent as engineers. We have great power to create innovative technology which may improve the well-being of others in their day-to-day lives, but it means nothing if it is not done in an ethical way. A conscious effort must be made in every project to ensure we act in a way that ensures the safety of our communities



Extra Resource #4

- ❖ Therac-25 Incident
- ❖ Nancy G. Leveson + Clark S. Turner
- ❖ Rule 1 of APEGA
- ❖ Found Online



Overlooked Issues

- ❖ The Therac-25 was a radiation therapy machine which would allow doctors to control the amount of radiation they wanted to give their patients. A software bug caused the machine to deliver deadly doses of radiation which caused deaths in patients. This was due to the unit testing of the machine to be overlooked as it was tested as a system instead

FIVE RULES OF CONDUCT REFERENCE GUIDE



This reference guide provides an overview of the five Rules of Conduct that make up the Code of Ethics. For more information, refer to the *Ethical Practice* guideline at apega.ca.

If you have questions or would like to have a confidential conversation about an ethical dilemma, please contact APEGA at professionalpractice@apega.ca.

RULE 1

Professional engineers and geoscientists shall, in their areas of practice, hold paramount the health, safety, and welfare of the public and have regard for the environment.

SEVEN KEY CONCEPTS OF RULE 1

PROTECTING THE PUBLIC INTEREST



- ▶ You're responsible for protecting the public interest and the interest of public safety by safeguarding life, health, the environment, and the property and economic interests of the public.
- ▶ Some factors include:
 - protection of people
 - the environment
 - sustainability and future generations
 - implications of emerging technology
 - societal values and needs
 - the economic interests of the public

ENSURING SAFE WORKPLACES



- ▶ You are a trusted leader providing direction that protects the overall health, safety, and welfare of the public and workers.
- ▶ You are expected to be aware of the Occupational Health and Safety Act, relevant safety regulations, and environmental protection requirements.
- ▶ A safe physical workplace helps individuals feel valued, creates productive work environments, enables continuous improvement, and reduces work-related injuries, illness, or death.
- ▶ A psychologically safe workplace enables people to freely and safely bring forward concerns, and it promotes collaboration, improves problem solving, and inspires innovation.
- ▶ Some key points to keep in mind include:
 - identifying and mitigating potential workplace hazards
 - providing training to all individuals in the workplace
 - keeping workplaces safe during all phases of work

HOLDING PARAMOUNT



- ▶ Holding paramount means that the health, safety, and welfare of the public, and having regard for the environment, take precedence over all other considerations.
- ▶ This means you must:
 - Always put the safety of the public first, even if that means going against your own interests or the interests of your employer or client.
 - Ensure employers and clients are aware of societal and environmental concerns.
 - Raise any concerns with your employer or client to allow them the opportunity to correct the action.

PROVIDING PROFESSIONAL LEADERSHIP



- ▶ Lead by example and set the tone for competent and ethical conduct.
- ▶ You may be the only person who has a legal obligation to protect the public interest.
- ▶ Encourage equity within the engineering and geoscience professions.
- ▶ Ensure interactions are respectful, courteous, and fair.
- ▶ Promote safety and support a culture of belonging.
- ▶ Receive and respond to feedback in a way that encourages discussion and learning.

Breach of Conduct

- ❖ As stated in the first rule of APEGA, an engineer must “hold paramount the health, safety and welfare of the public” which in this example, was clearly broken. This rule was introduced in the 5 new rules of APEGA a few years after this incident, which I believe could’ve been considered as some of the Therac-25 machines were in Canada (6). An accident like this demonstrates the importance of such a rule where the wellbeing of the public must be heavily considered in such a product.

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