

# **REU 2024 - Ethics Class #1**

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Introduction to practical ethical decision making  
Basic Ethics Theories

# Engineering Ethics

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- Does an engineer have a responsibility other than to produce the best product or process?
- Why are ethics important?
- What are the possible consequences of not using ethics?
  - Loss of life
  - Loss of property
  - Going out of business
  - Loss of reputation
  - ....

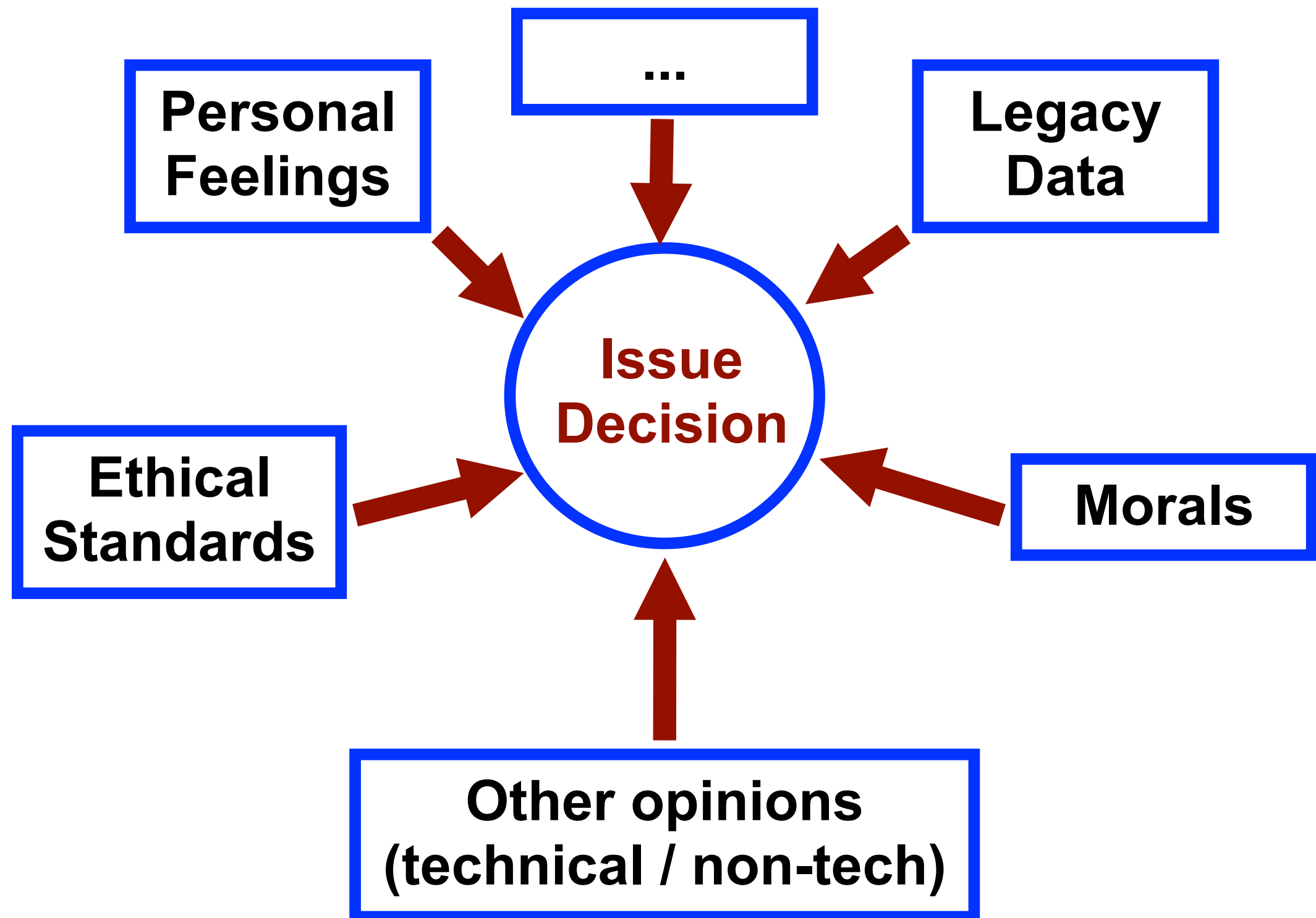
# Being ethical – is it really this simple?

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- Standards for ethical decision making
  - ABET – Accreditation Board for Engineering and Technology
  - NSPE – National Society of Professional Engineers
  - ASME – American Society of Mechanical Engineers
- These are only ***guidelines***
- Ethics are achieved by following a mixture of moral, legal, and personal values.

# Ethical Decision Framework

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# Evolution due to the Information Age

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- New car design & production times have decreased by over 50% in the last 15-20 years
- Software design times were up 5-6 years in the mid 90's.
  - Now less than 12 months
- How does this affect ethical decision making?



# Morality and Ethics

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- How does morality mix with ethics?
  - What other items/traits does this bring to answering ethical issues?
    - Emotions
    - Personal experiences
    - Religious
- What is the biggest problem with including morals in an ethics procedure?

# Ethics and Law

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- Should ethics have to be enforced legally?

Legal enforcement has many characteristics:

1. Laws have to be passed and then enforced
2. Breaking of a law has to be proven
3. Decisions are often made by non-technical citizens

# Ethics and the Engineer

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- Engineers are increasingly becoming required to foresee problems and design their solutions

**Is this fair?**

**Question:** How do you do it?

**Answer:** You approach this problem like any other in engineering

**Gather data, analyze and make an intelligent choice**



# Consequentialist

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- Commonly referred to as “the end justifies the means”.
  - Focuses on outcomes of decisions
- Look at a decision in terms of effect on individuals involved
- Correct decisions produce “the greatest good for the greatest number” - John Stuart Mill (1806-1873)

# Other types of Consequentialist

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- Altruism - Decisions should benefit all
- Egoism - Decisions should benefit oneself the most

# Deontological Theory

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- Focus on the decision and reasoning behind it
  - Some decisions are wrong regardless of outcome
- Often reduced to morality and should be governed by the *Categorical Imperative* (Immanuel Kant, 1724-1804):
  - Always treat humanity as an end and never as a means
  - Examples?

# Deontological Theory

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- The general idea is that all people are considered valuable and worthy of moral respect
- Or, said another way
- “Do unto others as you would have them do unto you”

# Virtue Theory

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- Aristotle (384-322 BC)
- Focus is on the individual over his/her entire life
  - Does not focus on individual decisions
- A virtuous person has wisdom through experience and knows how to apply this to practical decision making
- Rather than using formulas, codes, or standards, judgement is used to make decisions

# Homework

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- Look up information on Theranos and Elizabeth Holmes
- ‘The Inventor: Out for Blood in Silicon Valley’ Max
- ‘The Dropout’ Hulu
- ‘60 Minutes: Elizabeth Holmes and the Theranos Deception’ Youtube
- ‘Elizabeth Holmes: Valley of Hype’ Youtube