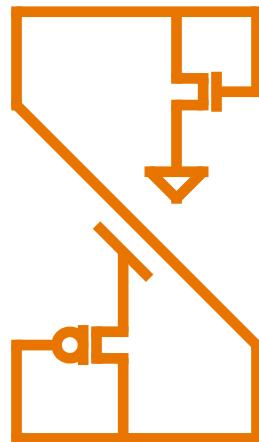


# Software Ethics for Practitioners



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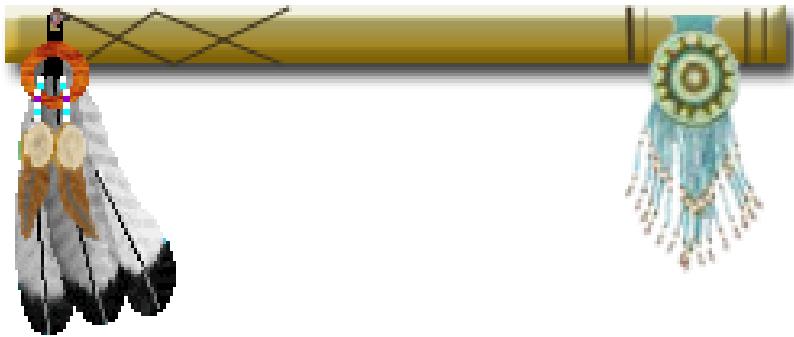
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# Talking Points



Ethical Foundations

Ethical Failures in Industry

Ethical Expectations

Ethical Advice for Practitioners

ACM Code of Ethics

Non Nobis Solem Nati Sumus

Explorare, Discere, Sociare

# Ethical Foundations

- Standards of Care
  - cultural
  - professional
- Ethics of Care
  - attentive
  - responsible
  - competent
- Rights and Responsibilities



# Ethical Failures in Industry

## Therac-25



- Therac-25, 1985 -- race condition w/ shared variables and bad UI design  
6 or more massive radiation overdoses, killed 3 people, rotten practice:  
an internal FDA memo stated that AECL had no formal software specifications or test plan for their device

## Space Shuttle Challenger



- Space Shuttle Challenger disaster, 1986
  - tremendous loss of life and property
  - killed all 7 crew members**
    - Thiokol **O-rings** unfit for conditions
    - forecast 22°F, only known OK at 53°F -- also icing issues
    - engineers *said so* ... apparently *overridden* by management

## Volkswagen Emissions Scandal



[Image by Mariordo Mario Roberto Duran Ortiz]

- intentionally disabled TDI emissions controls, except during testing
- vehicles emitted up to 40 times more NOx in real-world driving
- deployed in about 11 million cars worldwide
  - including 500,000 in the United States
  - in model years 2009 through 2015
- As of 1 June 2020, the scandal had cost VW \$33.3 billion in fines, penalties, financial settlements and buyback costs.

## Boeing 737-9 MAX door plug



- Boeing 737-9 MAX door plug blow-out, 2024
  - 4 key bolts missing after required repair
  - required production documentation deficient

# Ethical Expectations



- core standards
  - honest
  - fair
  - civil
  - competent
  - respectful
  - responsible
- 2 wrongs not right

# Ethical Advice for Practitioners

- Speak Up

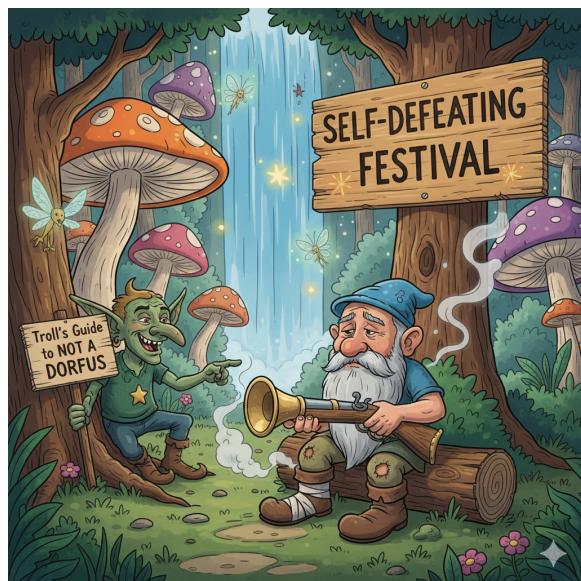


- **Get advice** if needed



- **NB: Pointless Pain is Pointless**

Yes, if you see something, say something ... **if it will help**. But if no good will come of it, leave it alone. If it will cause pointless pain, avoid it!



In the whimsical woods, even a dwarf's misstep with a blunderbuss reminds us: self-inflicted pain serves no purpose. Choose wisely, for pointless harm only leaves a lasting ache in a world full of wonder. Avoid the shot; embrace the joy.

[[Gemini AI Generated Picture and Caption]]

- **Avoid harm**



- Learn and follow best practices (e.g., *prevention* and **recovery**)
- If you *disregard best practices*, you *invite ethical failures*
  - \* more likely to deliver solutions that don't work
  - \* more likely to force employees to over-extend themselves
  - \* more likely to put employees in an ethical bind
  - \* more likely to cheat customers
  - \* more likely to cheat employees
  - \* more likely to cheat employers

- **Maintain/Expand Competence**



- Engage in life-long learning
- Maintain your skills: classes, conferences, communities
- Monitor your progress
- Build in Quality
  - \* Software Quality in the Large  
promote software quality in team settings
  - \* Software Quality in the Small  
acquire and practice personal protocols to deliver quality results

- **Maintain** the public good



- Promote ethical behavior

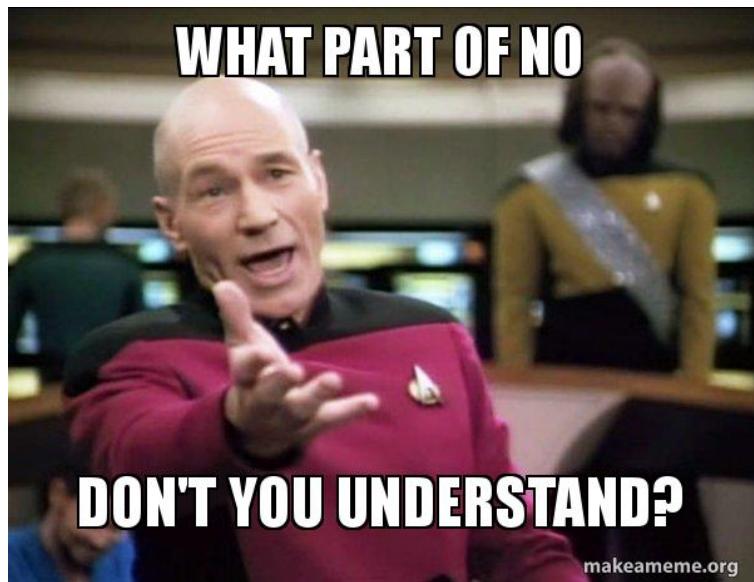
## BEWARE OF ETHICAL DANGER ZONES

-  **CONFLICTING GOALS WITH SIGNIFICANT PRESSURE**  EMPLOYEES MAY COMPROMISE ETHICAL STANDARDS AND LOSE TRUST IN THEIR MANAGERS.
-  **FEAR OF RETALIATION**  A POWERFUL CAUSE OF INACTION IN ORGANIZATIONS.
-  **AVOIDANCE**  IGNORING BAD THINGS CAN LEAD TO WORSE BEHAVIOR ("WE DON'T CARE" CULTURE).
-  **RATIONALIZATION**  THE "EVERYBODY'S DOING IT" MINDSET CAN LEAD PEOPLE INTO MURKY ETHICAL WATERS.
-  **LOWERED THRESHOLDS**  WITH EACH UNETHICAL DECISION, THE NEXT ONE BECOMES EASIER.
-  **EUPHEMISMS**  USING NEUTRAL TERMS TO DESCRIBE QUESTIONABLE ACTIONS (E.G. "CREATIVE ACCOUNTING").

Source: SHRM, "Creating an Ethical Workplace" & Beebole

- **Communication** is Key

- clear
- complete
- timely
- accurate
- realistic
- know when to say no
- learn how to say no



# ACM Code of Ethics --- a few Key Points



[<https://www.acm.org/code-of-ethics>]

- 1.2 Avoid harm.
- 1.3 Be honest and trustworthy.
  
- 2.2 Maintain high standards of professional competence, conduct, and ethical practice.
- 2.6 Perform work only in areas of competence.
  
- 3.1 Ensure that the public good is the central concern during all professional computing work.

# Non Nobis Solem Nati Sumus



- We all have skin in the game.
- We are all in this together.
- Not unto ourselves alone are we born.
- Not for ourselves alone are we here.

**The only thing necessary  
for the triumph of evil  
is for good people to do nothing.**

# Explorare, Discere, Sociare

**To explore, to learn, to work together**

- Image: [wikimedia.org/?curid=6992433]
- We are all in this together.
- We all need to work together.
- We all need to respect each other.
- We all need to learn from each other.
- We all need to teach each other.
- We all need to be trustworthy.
- We all need to know *when* to trust.



# The End



[Fin]