Leveraging the ACM Code Of Ethics against ethical snake oil and dodgy development

ACM Committee on Professional Ethics

Don Gotterbarn and Marty J. Wolf

ACM TechTalk 08 June 2020

chair@ethics.acm.org

Multiple AI ethics codes- A Great Idea ?

- No one has ever thought of this before, so I must do it myself
- Standards are great; Every one should have one

Multiple AI Ethics Code – A Great Idea ?

BBC News	March 4, 2019	FOX News	March 10, 2019
Abacus News	March 4, 2019	ABC News	March 9, 2019
CNET	March 10, 2019	Wired	March 7, 2019
		The Wall Street Journal	March 4, 2019

You can trust US

- Snake oil cures all! (mostly alcohol)
- Voting machines, avionics, automobiles
  - We know the system, so we are best equipped to test it.
  - We have tested it and can ASSURE that it passed with flying colors.
  - **NO!** you can't see the tests. Our systems are proprietary.

- South Carolina ++ ++ +[1]
  - More votes recorded than voters who cast ballots

Computing professionals' actions change the world. To act responsibly, they should reflect upon the wider impacts of their work, consistently supporting the public good.

We are not like THEM

- Want to get things done right.
- Want to be proud of what we do.
- Make a positive impact
  - Family
  - Community
  - Society
  - Employer

Computing professionals' actions change the world. To act responsibly, they should reflect upon the wider impacts of their work, consistently supporting the public good.

ACM is not like THEM

- “Dedicated to ... serving both professional and public interests ... by promoting the highest professional and ethical standards.”
- Has multiple committees and interactions designed to mitigate dodgy development and snake oil
- The Code of Ethics articulates the highest ideals of the profession.
- Why is there still computing rubbish??

The Code is designed to inspire and guide the ethical conduct of all computing professionals …

Computing confounds ethics

- Discrete vs. continuous systems
  - One bolt doesn't matter, but a comma does.
- System complexity
  - Often addressed by narrow focus on functional specifications
  - Getting it to work is what matters: Competent Completion
- We focus on technical complexity and lose sight of broader range of stakeholders.

1.2 Avoid Harm.

COVID-19 Contact Tracing App

- The technical complexity is immediately apparent.
- Do privacy concerns or technical complexity come first?
- Should it be implemented at all?
  - Who might be harmed?
  - Qatari government is enforcing its installation.
- There is an essential connection between technology and ethics.
  - The relationship to stakeholders is an essential part of every system.
  - Human interface systems

1.6 Respect privacy.

Airbus 320

-3.3

Airport

Error message during surgery!

Competent Completion

- Manufacturing mindset: Get it done! Rats in a race
- Faster and cheaper
- Academic experiences facilitate this approach.
- Minimize testing to get the system out the door.
- Challenge for us all: Undo this mindset!

3.1 Ensure that the public good is the central concern during all professional computing work.

Quality is Quantity

- Manufacturing Mindset: More is better.
- Lines of code written, number of errors found, verbose documentation[2]
  - Game the system: minimum work/maximum benefit
  - 1,000 lines of buggy code versus 100 lines of easy-to-use code
  - Do more insignificant things, avoid the tough problems.
- Using these metrics does not result in faster or cheaper code
- Testing is a waste of time in a rush to quantity.

3.6 Use care when modifying or retiring systems.

Employee Evaluations

- Manufacturing Mindset: Perverse incentives
- Don’t waste your time!
  - One test is enough.
  - Don’t fix it, mention it as a “feature” in the user manual, Patriot Missile, CMAX 737
  - Good, Fast, Cheap: Pick 2 out of 3
- Creates a negative culture
  - Not proud of what you do
  - Just earning some money not contributing to the world

3.2 Articulate, encourage acceptance of, and evaluate fulfillment of social responsibilities by members of the organization or group.

Ethics: What? Why? The answer matters

- Mistakenly equate law and ethics
  - Mere compliance with business rules is easy.
  - “Learn Ethics” means signing off on “I listened to the ethics training.”
  - Ethics is irrelevant to my coding or project management plan.
- Feigning interest in ethics (ethics theater)
  - Create a list and post it on a wall or use as a coaster for your coffee cup.
  - Brag about having once created a list

1.1 Contribute to society and to human well-being, acknowledging that all people are stakeholders in computing.

Ethics: Not science but a matter of opinion

- Merely comes from someone's religious upbringing
- Merely a subject of endless irrelevant philosophical debate
  - Pick your formal ethical system
  - Ethics is okay to ignore except for the philosophers
- Merely a flag our company waves to make customers feel good.

3.4 Articulate, apply, and support policies and processes that reflect the principles of the Code.

A workable approach to “Ethics”

- Any behavior with a **Positive or Negative** impact on society, its citizens, or the environment (cultural and natural)
- Ethical decision making requires the ability to imagine the effects of a behavior.
- Professional computing ethics is:
  - Any behavior of computing professionals during the design, development, construction, and maintenance of computing artifacts that affects other people.

Professional competence also requires skill in communication, in reflective analysis, and in recognizing and navigating ethical challenges. Upgrading skills should be an ongoing process …

Ethics versus Ethicking

- Academic study
- Applied ethics – Ethicking (Terry Winograd)[3]
  - Applying values to make proactive ethical decisions
- Having done a thing does not necessarily make it a good thing
  - Ethicking distinguishes what is done versus what should be done.
  - Just how do we do that?? **Its should be easy!**

Professional competence also requires skill in communication, in reflective analysis, and in recognizing and navigating ethical challenges. Upgrading skills should be an ongoing process …

Ethical decisions are easy

- Second nature:
  - Trained by parents on how to interact
  - Training in school
  - Training by religious institutions
  - Training by government and legal rules
  - Societal norms
- Socio-technical concerns:
  - Electronic stalking
  - Rights regarding images and content
  - Who can record and store what? and when?
  - How are these rules set?
  - What ancient holy book mentions Twitter?

3.7 Recognize and take special care of systems that become integrated into the infrastructure of society.

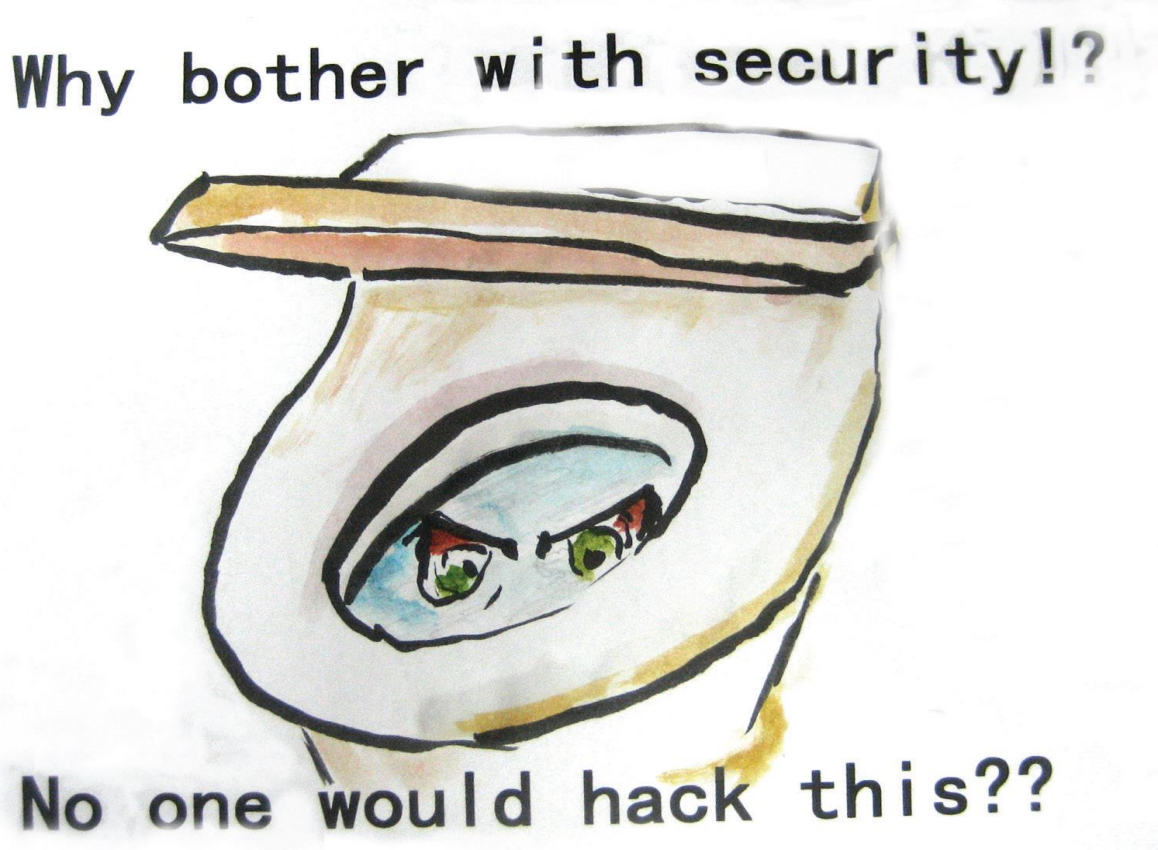
Fatal Premise[4]

- I am a good person.
- “Evil is done by evil people.” QED
  - I don’t need to worry about ethics. Let me get on with real work!!
- New situations require extra time. Yeah, right!
- People miss the obvious because of the Fatal Premise and only focus on the technology.

1.5 Respect the work required to produce new ideas, inventions, creative works, and computing artifacts.

Japanese bidet: On target

- Functions
  - Water on and off
  - Water temperature control
  - All via a Bluetooth app
- Met functions, on schedule, within
- But it was a failure.



2.9 Design and implement systems that are robustly and usably secure.

Technical progress and the Fatal Premise

- Psychological studies show the Fatal Premise very common.[5]
  - We think we are basically good.
- Business focus on technical training exemplifies the Fatal Premise.
  - Technology first. Ethical impacts if there is time.
  - But there is never time!
- Professionals and organizations need to identify how systems impact others.

Computing professionals should be fully aware of the dangers of oversimplified approaches …

Ethics has nothing to do with $ PROFIT $

- Employees
  - Pride in work and loyalty
  - Better retention reduces turnover and training costs
  - Reduced internal conflict and tension
- Customers
  - Increased trust and loyalty
  - Reduced advertising cost
- Time spent on ethics pays dividends

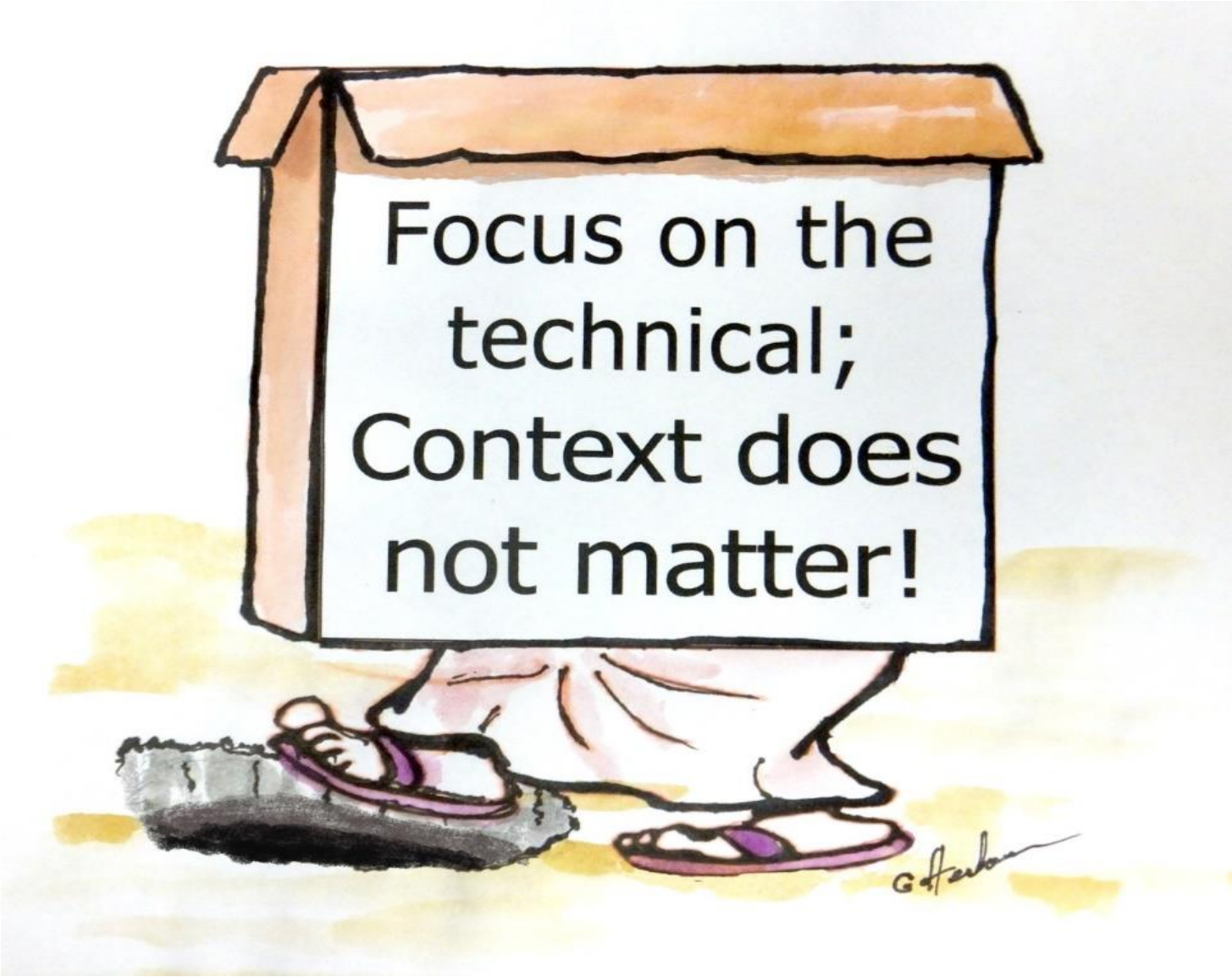
2.7 Foster public awareness and understanding of computing, related technologies, and their consequences.

Framing Out

- Divide and conquer gets the job done.
- It helps frame out distractions.
- Put a frame around the context we are focusing on
  - *Only winning matters*- use of performance enhancing drugs in sports
  - *Only profit matters*- save money (in the short term) by minimize safety
- Framing Out is sometimes missed
  - We do things that we think have nothing to do with ethics.

3.1 Ensure that the public good is the central concern during all professional computing work.

Frame out context and stakeholders!



Anatomy of an ethical decision

- First an immediate intuitive reaction
- Second is slower, more conscious, and uses more cognitive attention and energy
  - **C**onsider stakeholders and ethical elements.
  - **A**nalyze the impact.
  - **R**eview responsibilities and alternative approaches.
  - **E**valuate the trade-offs.
- Our work affects others. The interaction should not be haphazard.

2.5 Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis of possible risks.

Organizational Framing Out

- "Business ethics" versus "ethics": a false dichotomy
  - "Business decisions versus ethics"
- Business ethics frequently frames things out, including ethics
- Framing everything in terms of the "bottom line"
  - Safety, quality, honesty are outside consideration.
  - There is no time for ethics.
- New situations require extra time to think outside the Frame.

3.2 Articulate, encourage acceptance of, and evaluate fulfillment of social responsibilities by members of the organization or group.

A tool for ethicking: The Code

- Built a taskforce
  - Computing ethics scholars, practitioners
  - ACM SIGs, regional organizations, committees, USACM, ACM Council, SIGCAS…
  - Commercial organizations (internationally): Google, TATA, Intel, and Oracle…
  - Other IT societies: ACS, BCS, IFIP Deutsche Gesellschaft, IEEE-CS, and CIPPS…
- Three drafts in an open and transparent process [6]
  - Described what changed and why for each draft
  - Circulated drafts to stakeholders
  - Their feedback was incorporated into the next draft
  - ACM members gave their overwhelming assent
    - Sometimes “disagree” meant the position was not stated strongly enough

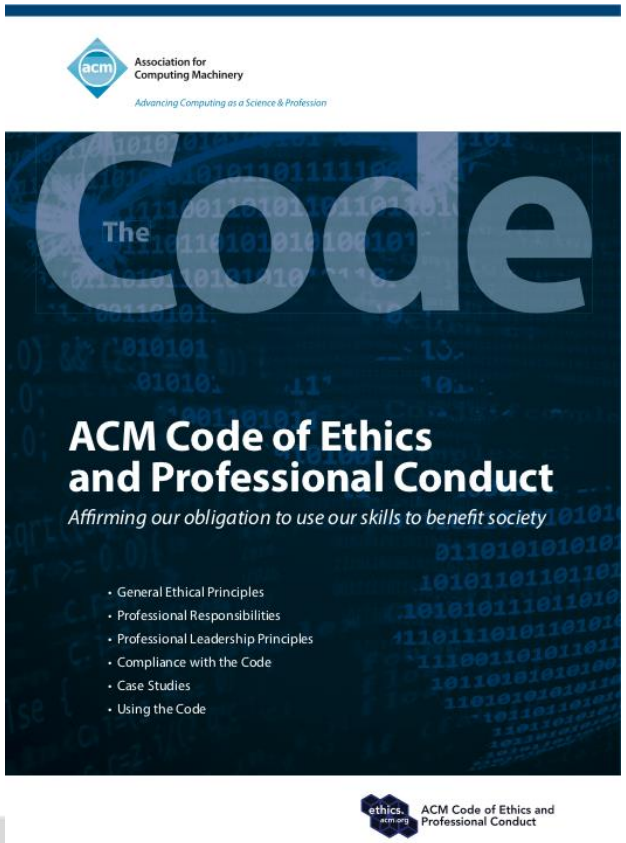
2.7 Foster public awareness and understanding of computing, related technologies, and their consequences.

The Code: a basis for decision making

- People bring diverse experiences to ethics.
- Professional ethics has
  - Common values for the ideal computing professional.
  - The Code as a support for decision making.
- Need to organize our ethical reasoning: CARE
- Leverage the Code to develop better computing systems and a better world.

Questions … can best be answered by thoughtful consideration of the fundamental ethical principles, understanding that the public good is the paramount consideration.

Proactive CARE



Consider alternatives, actors, stakeholders, anticipated effects, context.

Analyze obligations to stakeholders, the affect of alternatives, technical facts, relevant Code Principles, values.

Review relevant responsibilities, policies, choices, outcomes, creative alternatives, methods for evaluating the decision, and loop back to “Consider” and “Analyze” before proceeding.

Evaluate to identify the best option and know its trade-offs.

Proactive CARE: ethically on guard

- **Consider** broadly who is affected.
  - Whose behavior and work process will be affected?
  - Whose circumstances or job will be affected?
  - Whose experiences will be affected?
  - Consider a range of plausible alternatives addressing different stakeholder needs and impacts.
  - Who is needed to pursue these alternatives?

2.2 Maintain high standards of professional competence, conduct, and ethical practice.

Proactive CARE: ethically on guard

- **Analyze** obligations to and rights of stakeholders.
  - How do alternative solutions meet function and meet ethical obligations?
  - Review the Code to help identify stakeholder rights.
  - What technical facts are most relevant to your system?
  - What Principles of the Code are most relevant?
  - What personal, institutional, or legal values should be considered?

2.1 Strive to achieve high quality in both the processes and products of professional work.

Proactive CARE: ethically on guard

- **Review** potential actions that might make a difference.
  - What responsibilities, authority, practices, or policies seem to be most important in your analysis?
  - Are there creative alternatives to the options you've considered so far?
  - Apply the Code's international professional values.
  - Reconsider **Care** and **Analyze**.

2.3 Know and respect existing rules pertaining to professional work.

Proactive CARE: ethically on guard

- **Evaluate** your work so far.
  - Which of the options considered seems to be the best?
  - What are the trade-offs?
  - Are there creative alternatives to the options you've considered so far?
  - Are there now other Principles in the Code that are more relevant to your deliberations about this action?
  - Monitor the decision.

4.1 Uphold, promote, and respect the principles of the Code.

App feature considerations

- Select font and write font enlargement function
- Proactive CARE: Who are “non-standard” stakeholders?
- Skills: Rust and Mutation testing … related to task
- Other skills are needed.
- Stakeholders: What are your best options for someone with dyslexia?

2.6 Perform work only in areas of competence.

Teams

- Systems are socio-technical creations.
- We need to involve others with appropriate technical and ethical expertise.
- Systems improve with continuous testing.
  - Use technical tests to proactively identify and remove faults throughout the process.
  - Use ethical tests to proactively identify and remove faults throughout the process.

2.2 Maintain high standards of professional competence, conduct, and ethical practice.

Proactive CARE: an ethically on guard team

- **Consider** broadly who is affected collectively.
  - Consider the complexity of the system.
  - Identify needed expertise.
  - Consider a range of plausible options to stakeholder needs.

2.2 Maintain high standards of professional competence, conduct, and ethical practice.

Proactive CARE: an ethically on guard team

- **Analyze** obligations to and rights of stakeholders.
  - Avoid the march to mere competent creation.
  - What technical facts and moral solutions are available?
  - What Principles of the Code are most relevant?
  - View the process as a way to improve the product.

2.5 Give comprehensive and thorough evaluation of computer systems and their impacts, including analysis of possible risks.

Proactive CARE: an ethically on guard team

- **Review** the product, the plan, and actions of the team.
  - Review questions suggested by the Code of Ethics.
    - What assumptions are we making about stakeholders?
    - How might the systems be used by users with a disability?
  - Review Code Principles to suggest design alternatives.
  - How do the alternatives support the Code's international professional values?

2.3 Know and respect existing rules pertaining to professional work.

Proactive CARE: an ethically on guard team

- **Evaluate** good options and know their trade-offs.
  - Beware the negative influence of ego in final evaluations.
  - Which of the options considered seems to be the best? Why?
  - Select a technically and ethically workable alternative.
  - Has the paramountcy of the public good been upheld?
  - Clearly articulate the ethical trade-offs of the alternative.
  - Monitor the decision.
  - A team decision reduces the need for a Moral Hero.

4.1 Uphold, promote, and respect the principles of the Code.

Management and leadership

- “Leader” means any member of an organization or group who has influence, educational responsibilities, or managerial responsibilities.
- Stakeholders to be considered include the developers.
  - In hiring
  - In the review and promotion processes

3.3 Manage personnel and resources to enhance the quality of working life.

Hiring the best person

- Be careful not to assume the Fatal Premise
  - Quality requires a broad skill set
  - Technical skills
  - Mental flexibility
  - Alertness to potential ethical issues
    - When do you seek advice from a supervisor or colleague?
    - How do you learn about people who will use the software you write?
    - Think about developing an application such as a timer for a ventilator so that it turns off for 3 hours after 22 hours of continuous operation. What concerns would you have about doing so?

1.3 Be honest and trustworthy.

Reward the socio-technical problem solver

- In performance reviews, ask about being ethically on guard.
- Who are the critical stakeholders you addressed in this project?
- Is there anything you noticed that we should worry about in the system?
- In what ways can we improve the project you are working on?

3.2 Articulate, encourage acceptance of, and evaluate fulfillment of social responsibilities by members of the organization or group.

Frequent performance reviews by line manager

- Encourage interaction.
- Show respect for the problem solvers insight.
- Separate these reviews from financial incentives.
- Support ethicking through coaching by immediate supervisor.
  - Ethics is more relevant when not taught by an outsider.
- This is part of the technical and social testing of a product.

3.5 Create opportunities for members of the organization or group to grow as professionals.

Whistleblowing: Out and In

- Tell on evil people doing evil things.
- Proactive “internal whistleblowing”
  - Gives voice without retribution.
  - Facilitates giving voice to concerns.
  - If the concern is reasonable it may help improve the final product.

1.7 Honor confidentiality.

The exposure notification API[7]

- Notification function
- Stakeholders, community, individual, heath care workers,…
- Effective system needs to be used, eliminate fear of privacy violation, and misuse of geolocation data
- Work with public health, individuals control personal information
- Designed to reduce unethical use of the API
- Multiple Code Principles apply. There are trade-offs.

2.8 Access computing and communication resources only when authorized or when compelled by the public good.

Supporting Proactive CARE

- Good Practices
- Develop proactive techniques to mitigate impact of fatal premise
- Pre-commitment devices: reminders to think about ethics
  - Ask what would you be proud of in this project?
  - What would stakeholders say was your contribution to the project?

3.5 Create opportunities for members of the organization or group to grow as professionals.

Organizations supporting Proactive CARE

- Regular reminders rather than annual 15 minute training
  - Add Ethics principles to the Planning Document.
    - Serves as proactive alert while executing the plan
  - Ask team to identify relevant principles for their project.
  - Place them in the requirements.
- Encourage employee activism
  - Corporate public service hackathon
  - Comp time for socially responsible volunteer work
- Leverage the Code and its international support to do positive things

3.4 Articulate, apply, and support policies and processes that reflect the principles of the Code.

Miscreants do exist ☹

- What do you do when bad people ask you to do a bad thing.
- Be a Moral Bailout: Quietly resign, or, yikes, do the evil deed!
- Be a Moral Hero: Blow the whistle and lead the public outrage.
- Recognize that there is a range of options, e.g.
  - Point out the value to company to not do the deed.
  - Ask “Would the company get sued if somebody found out?”
  - Get rewarded for helping the company.

2.4 Accept and provide appropriate professional review.

Ethicking

- The complexity of the work, lack of awareness of the Fatal Premise, and the tendency to frame out “distractions” contribute to the unintentional harm.
- Leverage the Code to address these issues for better software and a better world.

2.4 Accept and provide appropriate professional review.

Grady Booch has said

> “Every line of code has a moral and ethical implication.”

We say

> “Every decision we make that affects other people has a moral implication.”

THE CODE GIVES VOICE TO VALUES

It is the voice of the computing professional

ACM: Advancing computing as a science and profession.

> We see a world where computing helps solve tomorrow’s problems – where we use our knowledge and skills to advance the profession and make a positive impact.

References

1. https://www.thestate.com/news/politics-government/article224084080.html
2. vicious, kode (2019) “Master of Tickets”, ACM QUEUE November-December p1-2
3. Winograd, Terry (1995) “Computers Ethics and Social Responsibility” in Computers, Ethics and Social Values, eds, D. Johnson, Helen Nissenbaum
4. DeMarco, T. (2012) Forward to: The Responsible Software Engineer: Selected Readings in IT Professionalism eds: Colin Myers, Tracy Hall, Dave Pitt. Springer Science & Business Media p.4.
5. Tenbrunsel, A. & Messick, D. (2004) “Ethical Fading, the Role of Self-Deception in Unethical Behavior,” Social Justice Research
6. https://ethics.acm.org/code-of-ethics/code-2018-update-project/
7. https://9to5mac.com/2020/05/23/apple-and-google-exposure-notification-api/ and Morley, J. et al, (2020) “Ethical guidelines for COVID-19 tracing apps,” Nature, Vol. 582, 4 June 2020