PRINCIPLES OF TECHNOLOGICAL STEWARDSHIP FOR THE ENGINEERING COMMUNITY

Seek purpose direct technological development to maximize positive outcomes for all

Take responsibility consider, anticipate and manage the complex impacts of technology across the entire life cycle

Expand involvement integrate a broad range of non-technical experts and ideas into technological development

Widen approaches explore alternative ways to solve problems

Advance understanding foster dialogue about technology and technological stewardship

Realize diversity ensure technological development contributes to creating equity

Deliberate values consider underlying values and make intentional decisions

Shared action we can only succeed together

PRINCIPLES OF TECHNOLOGICAL STEWARDSHIP FOR THE ENGINEERING COMMUNITY

Seek purpose

direct technological development to maximize positive outcomes for all

- How will this work impact the world?
- Are we thinking beyond “can we do this?” to also include “should we do this?”
- How does this problem engage with urgent global issues?

old paradigm

Technology developed in response to market forces or to directly address client requests.

new paradigm

Consider broad outcomes in project conceptualization and rationale.

PRINCIPLES OF TECHNOLOGICAL STEWARDSHIP FOR THE ENGINEERING COMMUNITY

Take responsibility

consider, anticipate and manage the complex impacts of technology across the entire life cycle

- What potential impacts have we considered (economic, environmental, social, etc…)?
- Have we considered the entire life-cycle?
- How will we track impacts?
- How might this technology be misused or abused, who could be affected, and what preventative measures are in place?
- What will we do in the case of serious unintended impacts?

old paradigm

Consideration and mitigation of impacts focuses on regulatory requirements and ad-hoc knowledge of those directly involved.

new paradigm

Consideration and mitigation of a broad range of complex impacts over time and across domains is prioritized.

PRINCIPLES OF TECHNOLOGICAL STEWARDSHIP FOR THE ENGINEERING COMMUNITY

Expand involvement

integrate a broad range of experts and ideas into technological development

- Who are we working with aside from our immediate team, and how?
- What “experts” beyond engineering are we working with?
- How have we connected our work with other expertise and approaches?
- What kind of approaches are we not including?

old paradigm

Technical experts create and develop technology in silos and other expertise and approaches are not considered.

new paradigm

Prioritizes seeking out and integrating a broad range of expertise and potential approaches.

PRINCIPLES OF TECHNOLOGICAL STEWARDSHIP FOR THE ENGINEERING COMMUNITY

Widen approaches

explore alternative ways to solve problems

- Are we up-to-date on new technological developments?
- Are we considering a broad range of technologies to address the problem?
- Are we aware/knowledgeable enough about new technological developments to reasonably consider how they might apply to this problem?
- Is there anyone else we should consult around ways to address this problem?

old paradigm

Tendency to rely on existing knowledge and default approaches.

new paradigm

Proactively keeping informed of advances in science and technology and seeking connections to possible applications in current work.

PRINCIPLES OF TECHNOLOGICAL STEWARDSHIP FOR THE ENGINEERING COMMUNITY

Advance understanding

foster dialogue about technology and technological stewardship

- How are we communicating about our work?
- In what ways do our communications create barriers to understanding?
- What are we doing to ensure the information shared facilitates meaningful engagement?
- Does the way we communicate build capacity for others to engage in issues related to technology?

old paradigm

Technical knowledge is esoteric and communicated largely in jargon.

new paradigm

Broad understanding of technology and technological stewardship is prioritized and promoted through clear, audience-focused communication.

PRINCIPLES OF TECHNOLOGICAL STEWARDSHIP FOR THE ENGINEERING COMMUNITY

Realize diversity

ensure technological development contributes to creating equity

- What are we doing to understand the needs of stakeholders and users?
- How does our team represent society?
- How are different perspectives incorporated into choices?
- How does our work reinforce or challenge dominant social power structures?
- Whose voices are missing?

old paradigm

Limited capacity and efforts to incorporate the diversity of society into technological development.

new paradigm

Creating equity for all is prioritized.

PRINCIPLES OF TECHNOLOGICAL STEWARDSHIP FOR THE ENGINEERING COMMUNITY

Deliberate values

consider underlying values and balance tensions

- What values are connected to this project?
- Which values are we choosing to reinforce?

old paradigm

Technological development is understood as a rational activity that does not connect to values, so values are not discussed.

new paradigm

Understand technological development as inherently infused with values, and actively discuss value trade-offs related to projects.

Shared action

we can only succeed together

old paradigm

If individuals act ethically, the overall results will be ethical.

new paradigm

Complex, interconnected activities require shared attention and collective efforts to ensure optimal results.