ENGINEERING
CHANGE
LAB

hosted by

BGC

Workshop #12 Harvest

PILOT: Technological Stewardship for Organizational Cohorts

October 11-12, 2018
Vancouver, BC

COHORTS OF LEADERS FROM

BGC Engineering
Canadian Federation
 of Engineering Students
Concordia University
Ryerson University
Suncor
Urban Matters
York University

WORKSHOP GOAL

To support participants and their organizations to step into greater technological stewardship.

AGENDA

Introduction

Step 1 - Tech Stewardship: A New Paradigm

Step 2 - Exploring Opportunities

Step 3 - Principles To Guide Action

Step 4 - Moving To Action

→ Post-workshop support & evaluation

Each cohort identifies a "pathfinder project"
4 x 30 day cohort check-ins
4 x 30 day table guide check-ins
Ongoing evaluation
120 day end-direct-support survey
365 day longer term impact survey

PILOT GOAL

To evaluate the effectiveness and replicability of the workshop format and content

Evaluation strategies included

- surveys (pre & post)
- design team observations
- verbal feedback
- feedback forms
- cohort participation
- project sheets

DESIGN TEAM

CONTRIBUTED TO WORKSHOP DEVELOPMENT AND EVALUATION

Mark Abbott, Engineering Change Lab (co-facilitator)
Monica Pohlmann, Reos Partners (co-facilitator)
Arlene Williams, Engineering Change Lab (co-facilitator)
Liz Nilsen, Purdue Agile Strategy Lab (Strategic Doing support)
Sara Bateman, Blue Castle Creative (evaluation lead)
Steve Mattucci, Canadian Engineering Education Challenge
Melanie Goodchild, Waterloo Institute for Social Innovation and Resilience
Vanessa Raponi, Engiqueers

"I have coworkers who need to be here."

OPENING: Introductions and stage setting

WORKSHOP = WAYFINDER OPPORTUNITY

• Participants are already leaders -- opportunity to take leadership further

• Core concepts forged through the ECL's work

• Piloting application to organizational cohorts

• Get feedback on concepts, means of engaging, and usefulness

paradigm: an idea or model about how something works; often unstated, because it is obvious to the people who share it

KEY CONCEPT

Paradigm shift needed around our relationship with technology in order for us **to create the world we want to see**

➡️ **technological stewardship**

Behaviour that ensures technology is used to make the world a better place for all -- more equitable, inclusive, just, and sustainable.

"Technological Stewardship is the future of engineering."

To accomplish this, technological stewardship calls on those who create and influence technology to step into a greater responsible leadership role.

Embracing this role involves expansion of:

- how engineers and others see their contribution
- who participates in evolving technology, and
- the perspectives considered in this evolution

parallel to shift to **environmental stewardship** in the 1960s

REFLECTION
What do you need to suspend in order to do your best work over the next few days?

➡️ Idealism
Engineering definition today
Not be dominant in my opinions
Ideas/answers – answer will be ours/collective
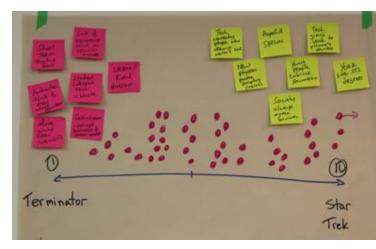Pessimism

STEP 1: A New Paradigm

LEARNING OUTCOME:
At the end of this step, participants will be able to explain Technological Stewardship and why it is important

GUIDING QUESTION 1:
What is the default trajectory of humanity's relationship with technology?

Participants shared where they were on a spectrum from pessimistic (Terminator) to optimistic (Star Trek).

GUIDING QUESTION 2:
What is required to ensure technology is as beneficial as possible?

- diversity of perspectives to relentlessly attend to the question of "beneficial" tech: who it is for, what its impact is, and why we need to fight for it
- paying attention to subsystems and legislation
- recognition of complexity and unpredictability of effects
- ensure people understand implications of tech (e.g. location data)
- make sure we interrupt implementation of technology to ask whether it is necessary - do we need it or are we just used to it?

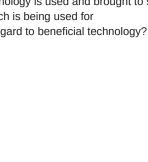- being thoughtful about how technology is being adapted from its original forms
- clear intentions around how technology is used and brought to society
- transparency around what the tech is being used for
- what does success look like in regard to beneficial technology? how do we measure this?

GUIDING QUESTION 3:
What trends or examples are you already seeing with respect to Technological Stewardship?

• half of the graduating attributes for engineering degrees relate to thinking and caring about engineering impacts

• questions about how to balance with bottom line (i.e. what organizations should do vs what they could do to be economically successful) ;

• increasing conversations about alignment with UN SDG goals

• align with positive trends such as corporate social responsibility and user centric design

STEP 2: Sensing Opportunities

LEARNING OUTCOME:
At the end of this step, participants will be able to outline how shifting to technological stewardship opens up personal and professional possibilities for creating the world they want to see.

GUIDING QUESTION 1:
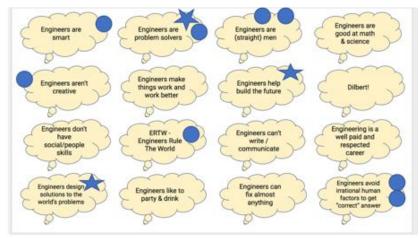What are the opportunities for technological stewardship to help create the World You/We Want To See?

- Tech literacy and understanding how people use technology (eg 1 year olds using ipads)
- Be empathetic - consider everyone as us (not us and them)
- Recognize critical relationship with nature and how technology relates
- Technology should enhance values, not degrade them
- Tech and values > what is driving technology? Are we in control? Or is tech dragging us along?
- Access > eg information, health care: equity for all
- Barriers to education > opening it to all; need better system to distribute $ and reduce barriers to knowledge
- Infinity symbol > fluid nature of change to continually seek balance. Balance connection, community, preserving key values, inclusive education, joy, belonging and other elements

compilation of participant drawings

Star – helps/ Circle - hinder

GUIDING QUESTION 2:
What opportunities could technological stewardship create for the engineering community?

Participants explored the narratives around engineers and how they help or hinder technological stewardship.

Métissage exercise: participants wrote reflections in three parts then shared with their group one part at a time, creating what resembled spoken work poetry. Some of the things participants noticed:

GUIDING QUESTION 3:
What does the shift toward technological stewardship open up for you personally?

- How well the story went together and yet the individual strands were present - thinking of a dissonant chord resolving itself through the weaving together
- Started high level and became more personal; when things got personal, helped see how to be a steward and have ownership; helped reconcile tension between personal and professional

- High level of good intentions: want to Influence positive change
- Felt liberating, then somewhat trapped through recognition of barriers; this lead to awareness of ways to change and how to create a legacy by focusing on this re-imagined world
- Feels like something big is trying to come into existence; not there yet but is emerging - danger and unknown)

STEP 3: Principles to Guide Action

LEARNING OUTCOME:
At the end of this module, participants will be able to understand the Principles of Technological Stewardship and use them to reflect on personal and organizational stretch opportunities.

"Fully relevant and important."

connects to involvement & diversity

too strong?

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

risk of uninformed opinions

Widen approaches — explore alternative ways to solve problems

Advance understanding — spread knowledge about technology and technological stewardship

Respect diversity — ensure technological development contributes to creating equity

charged word

Deliberate values — consider underlying values and make intentional decisions

Shared action — we can only succeed together

old paragidm: trust the leader; ned paradigm: no one is in charge needs more details

not quite the right word? too passive?

suggests answer is known & others don't know. how to do this in a non-colonial way?

REFLECTION

Which principle resonates with you the most? Least?

What is the greatest area of opportunity for your organization to stretch into technological stewardship?

What is the greatest area of opportunity for you personally to stretch into technological stewardship?

"Helped me articulate the vague feelings I have been feeling...provides a direction to focus energy."

"I would like the 8 principles to become the minimum standard of excellence."

"Will become more important as time goes on."

STEP 4: Moving to action

LEARNING OUTCOME:
At the end of this step, participants will have committed to both a personal stretch goal and a shared org pathfinder project to stretch into further TS and will have established next steps.

Strategic Doing™
Do More Together.

process from Purdue University's Agile Strategy Lab:
"enables people to form action-oriented collaborations quickly, move them toward measurable outcomes, and make adjustments along the way."

Cohorts engaged with Strategic Doing by framing an organizational stretch commitment inspired by technological stewardship, then developing an initial pathfinder project by working through key questions:

- What could we do?
- What should we do?

- What will we do?
- What's our 30/30? → Short-term actions to be completed before meeting again in 30 days

Final Presentation: Cohort Stretch Commitments & Projects

BGC
Empathetic earth simulator
Pathfinder Project: awareness of data and AI in applied earth science

CFES
Increasing consultation with non-engineering students
Pathfinder Project: bring reality check presenter at Congress

Concordia
A requirement that internal evaluations of grants consider the principles TS
Pathfinder Project: prepare a sales pitch to demonstrate how & why we should include the principles

Ryerson
What if each department had staff teams dedicated to the All-In Approach to Education?
Pathfinder project: create staff position to develop and implement

Suncor
Broadening our employees understanding of what it means to be an energy company
Pathfinder Project: generate an energy story that can be told at the OMT Conference

Urban Systems
What would it look like if clients and employees could understand and explain TS?
Pathfinder Project: Generate curiosity

York
TS will be embedded in our renaissance engineering approach - Bring knowledge and case studies into the classroom
Pathfinder Project: experiential learning activity pop-up workshop/lab

Closing: Check out
Participants gave one word to describe how they were feeling

PILOT EVALUATION

from the evaluation report:
"The workshop was highly successful both in terms of validating core hypothesis, and based on participant feedback."

93% of surveyed participants said they would recommend the workshop to colleagues

Thanks to all participants and contributors for making the pilot **Technological Stewardship for Organizational Cohorts** workshop a success -- and for helping advance technological stewardship!

If you or your organization is interested in participating in a future workshop, please contact us.

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