ENGINEERING
CHANGE
LAB

Workshop #11 Harvest

June 15-16, 2018
Montreal, Quebec

Hosted by

Université Concordia University
FACULTY OF ENGINEERING AND COMPUTER SCIENCE

PARTICIPANTS INCLUDED LEADERS FROM

Actua
Calgary Technologies
Canadian Engineering Education Challenge
Canadian Federation of Engineering Students
Concordia University
Energy Futures Lab
Engineers Canada
Engineers of Tomorrow
EngiQueers
Engineers Without Borders
Hydro One
McGill University
Memorial University
Ontario Ministry of Education
National Research Council
Natural Sciences and Engineering Research Council of Canada
Ontario Society of Professional Engineers
Ontario Centres of Excellence
Professional Engineers Ontario
Ryerson University
Suncor
UOIT
University of Toronto Institute for Leadership Education in Engineering
Urban Matters
York University

Focus: technological stewardship

FRAMING QUESTION

Imagine that Canada's engineering community members are radically responsible leaders in ensuring technology makes the world a better place for all.
What would that look like?

DRAFT DEFINITION

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

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

Embracing this role involves expansion -- of how engineers and others see their contribution, of who participates in evolving technology, and of the perspectives considered in this evolution.

PARTICIPANTS

gained a deeper understanding of technological stewardship

learned ways technological stewardship might be practiced

developed strategies for starting to practice tech stewardship in their own context

KEY QUESTIONS

Over the two days, participants helped answer the key questions:

- What behaviours illustrate technological stewardship?
- What values support technological stewardship?
- What opportunities does technological stewardship create?
- What are the challenges to technological stewardship?
- What are existing examples of technological stewardship?
- What actions are you willing to take towards technological stewardship?

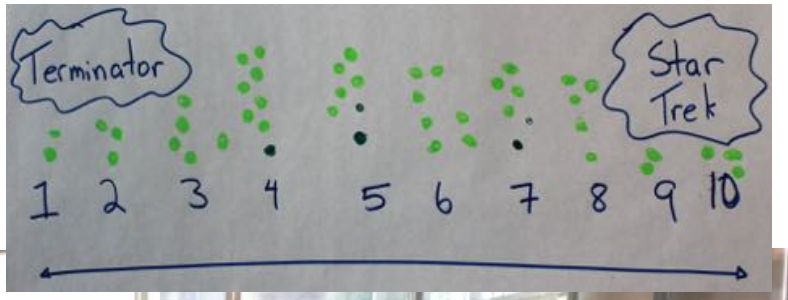
Day 1

GROUND RULES

- Be present
- Keep confidences
- Be open - challenge assumptions (yours and others)
- Be inclusive - create a democracy of time so everyone can speak / be heard

OPENING CIRCLE: INTRODUCTIONS & DISCUSSION

What do you think is the default trajectory of humanity's relationship with technology?



PANEL
Indigenous perspectives on technological stewardship

moderator: Lindsay Mitchell, Engineering Change Lab

"much needed voices, great kick-off to the time together; respectful, inclusive"

"timely and helped shape my thinking"

Melanie Goodchild
Senior indigenous research fellow and associate
Waterloo Institute for Social Innovation and Resilience

Randy Herrmann
Director
Engineering Access Program, University of Manitoba

Steve Vaivada
President
Scout Engineering & Consulting

"inspiration to get involved in making the world a better place""

INTERACTIVE SESSION

Connecting technologies to problems that matter

led by **Jason Blackstock**, Associate Professor of Science and Global Affairs, University College London

Featuring highlights from the *How to change the world* program, which challenges students to engage with the UN Sustainable Development Goals

Discussion focused on the potential for adapting the program to various contexts in Canada.

INTERACTIVE SESSION / PANEL

Beyond the Engineering Bubble

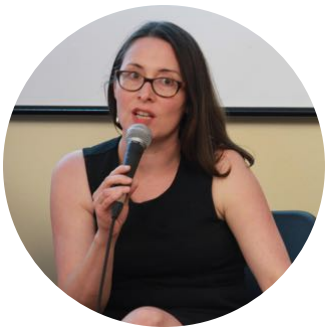
moderator: **Govind Gopakumar**, Associate Professor and Chair, Centre for Engineering in Society, Concordia University

interactive framing activity: **Layial El-Hadi,** Lecturer, Centre for Engineering in Society & Graduate Program Director, Graduate Certificate in Innovation, Technology and Society, Concordia University

panelists:

Brandiff Caron
Assistant Professor and Associate Chair, Centre for Engineering in Society, Concordia University

Artur De Matos Alves
Professor, Department of Human Sciences, Arts and Communication, TÉLUQ University



Ketra Schmitt
Associate Professor, Centre for Engineering in Society, Concordia University

"great discussion and openness to change"

Day 2

INTERACTIVE SESSION
Managing the complex impacts of engineering work

led by **Christian Beaudrie**, Associate, Compass Resource Management

Featuring an overview and a facilitated engagement with **Structured Decision Making**

“a cherished opportunity to reflect on issues that matter to me most and to feel part of a community of like-minded people””

COMMITTING TO ACTION
"What will I/we do in the next 30-90 days to forward tech stewardship?"

DEEP DIVES

Participants suggested and met into group organized into topics for further discussion:

- Technological Stewardship competencies
- Technological stewardship content to share and teach
- OPSE and How to Change the World
- Future of Engineering Education
- Technological stewardship application in engineering practice
- Indigenous Engagement and technological stewardship
- Integrating technological stewardship into K-12 education

“great people and conversation”

30/30 ACTION PLANS

Participants developed individual and group action plans to implement technological stewardship in their context

Groups scheduled additional meetings 30 days in the future to discuss progress and set new goals for the next 30 day

.

CLOSING CIRCLE: COMMITMENTS AND REFLECTIONS

Participants shared their action plans and and one word that described how they felt at the end of the two-day experience.

“met and got to know lots of motivated people for change from across Canada””

HIGHLIGHTS

Responses to key questions

Over the two days, participants contributed hundreds of ideas about technological stewardship.

What behaviours illustrate tech stewardship?

- integrate diverse perspectives in decision making
- change engineering culture
- embrace complexity and complex identities
- consider and ask “why”
- promote others - not oneself
- collaboration - democratic creation / development process
- self-awareness - ongoing consideration of personal bias and blind spots
- leadership - being an individual role model
- conscious problem identification - consider who needs most help/impact + raise them up
- intentionally consider implications - awareness of values
- education & research - give the power to the students to choose the trajectory of their education
- values based/driven - having the courage to speak up when something isn’t right

What values support tech stewardship?

- Caring / empathy
- Intentionality
- Long Term Perspective
- Emotional Intelligence
- Integrity
- Creativity
- Selfless
- Humility - asking for help
- Equitable Inclusion
- Constant Learning + Sensing
- Awareness of broader social context / implications (e.g. enviro, societal, economic)
- Personal Health

What opportunities does tech stewardship create?

- Testing in a “safe to fail” way’
- monitor and reflect on impacts
- Education on negative impacts
- Reflect on past failures
- Inventors better connected to society problems - eg. Grand Challenges
- Focus on societal purpose, not on tech.
- engaging about tech stewardship with government / politics
- Reframing our role - from Engineers Rule The World to Engineers Serve The World but W as universe, not just humans
- First step of solving a problem is admitting you have one
- Connecting societal values and technology in education
- More indigenous engineers - improve onboarding at high school level
- Workshop to help companies brainstorm/stretch on tech stewardship / the SDGs
- Stewardship bootcamp

What are the challenges to tech stewardship?

- Testing in a “safe to fail” way’
- monitor and reflect on impacts
- Education on negative impacts
- Reflect on past failures
- Inventors better connected to society problems - eg. Grand Challenges
- Focus on societal purpose, not on tech.
- engaging about tech stewardship with government / politics
- Reframing our role - from Engineers Rule The World to Engineers Serve The World but W as universe, not just humans
- First step of solving a problem is admitting you have one
- Connecting societal values and technology in education
- More indigenous engineers - improve onboarding at high school level
- Workshop to help companies brainstorm/stretch on tech stewardship / the SDGs
- Stewardship bootcamp

What are existing examples of tech stewardship?

- Testing in a “safe to fail” way’
- monitor and reflect on impacts
- Education on negative impacts
- Reflect on past failures
- Inventors better connected to society problems - eg. Grand Challenges
- Focus on societal purpose, not on tech.
- engaging about tech stewardship with government / politics
- Reframing our role - from Engineers Rule The World to Engineers Serve The World but W as universe, not just humans
- First step of solving a problem is admitting you have one
- Connecting societal values and technology in education
- More indigenous engineers - improve onboarding at high school level
- Workshop to help companies brainstorm/stretch on tech stewardship / the SDGs
- Stewardship bootcamp

What actions are you willing to take towards tech stewardship?

- Help students think through TS in their design / capstone projects
- Engagement /events/dialogue about tech stewardship
- Practice being respectful
- Learn/ask from a respectful place
- Listen
- Educate myself and put effort into learning
- Take care of self - mitigate overwork + mental health
- Lead by example
- Put effort into learning indigenous history
- Reconciliation is also a verb

Thanks to all participants and contributors for making Workshop #11 a success and helping forward technological stewardship!

ENGINEERING
CHANGE
LAB

365 Bloor Street East, Suite 2000
Toronto, ON

secretariat@engineeringchangelab,ca
www.engineeringchangelab.ca
@EngChangeLab