



**Professional Engineers  
Ontario**

**Welcome to the**

## **VOLUNTEER LEADERSHIP CONFERENCE**

**Protecting the Public Interest:  
staying aligned with our  
North Star during rapid change**

**we will begin at 10am**



### **Reminders**

- Have video on if possible
- Identify yourself before you speak
- If you have a question during the call, enter it into the Zoom chat function

### **While you're waiting:**

- Please say hello to check that your audio is working and then put yourself back on mute
- Practice toggling from Speaker to Gallery view
- Send a practice chat greeting to Aislinn, who will be providing technical support

# Welcome On Behalf Of the VLC Committee

Márta Ecsedi, P.Eng., FEC (Chair)

Member, Advisory Committee on Volunteers

Guy Boone, P.Eng., FEC (Vice Chair)

Eastern Region Councillor 2019-2020

Marisa Sterling, P.Eng., FEC

PEO President 2020-2021

Eric Nejat, P.Eng., FEC

Member, Advisory Committee on Volunteers

Arthur Sinclair, P.Eng.

East Central Region Councillor

Viktoria Aleksandrova

Committee Coordinator

Adeilton Ribeiro, P.Eng.

(Acting) Manager, Chapters

Julie Hamilton

Chapter Coordinator

**President's Welcome & Introduction**  
**Marisa Sterling, P.Eng., FEC**

# Introducing the Facilitation Team

Mark Abbott (Co-Lead)	ECL Secretariat
Ariel Sim (Co-Lead)	MaRS Discovery District
Arlene Williams	ECL Secretariat
Beryl Strawczynski	Volunteer Facilitator (Engineers Canada)
Jason Lajoie	Volunteer Facilitator (University of Waterloo)
Lynsey Kissane	Volunteer Facilitator (Ryerson University)

## Technical Support

Aislinn Malszecki      MaRS Discovery District

Zoom Chat / Email: [amalszecki@marsdd.com](mailto:amalszecki@marsdd.com) / Phone: 416-457-8105

# Land Acknowledgment

We recognize that our work, and the work of PEO members, takes place on traditional Indigenous territories across Ontario.

We invite those attending virtually today to self-reflect on your personal commitments towards truth and reconciliation with Indigenous Peoples.

# Workshop Goals

Help enhance PEO's ability to  
**protect the public interest** within a rapidly  
changing world by supporting the development  
of a **longer-term vision** for the organization

**Past** —————→ **Present** —————→ **Future**

# Public Interest

**Practice of Engineering**

**Contribution of PEO**

**Contribution of parts of PEO**

**Contributions of Individuals**

# Engineering in a Changing World



## Process of Engineering

Craftsperson → Assembly Line → Computer Based → AI / Software

## Products of Engineering

Steam Engines → Internal Combustion → Onboard Computer → Driverless Fleet

## Public Interest Questions

Reliability → Affordability → Safety → Trolley Problem

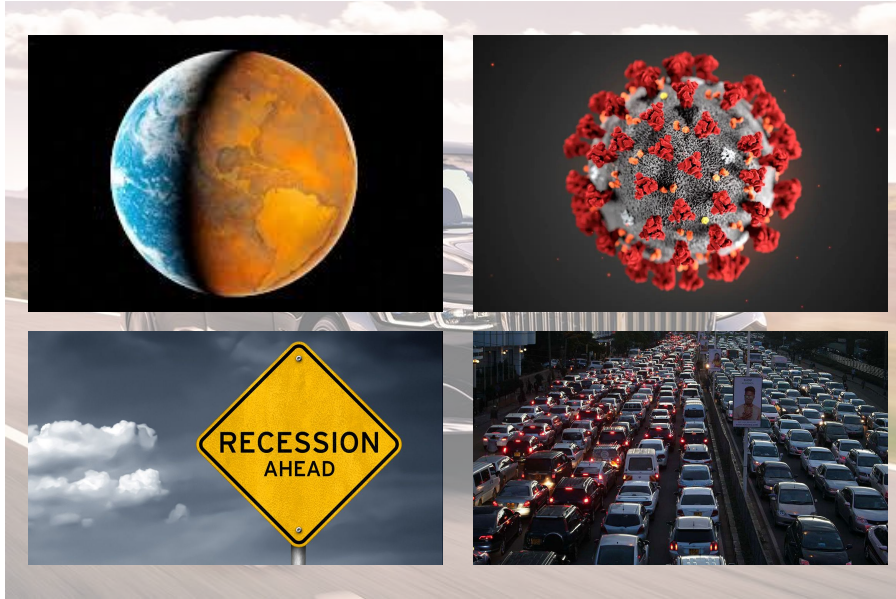


# **Complexity Theory & Diverse Voices: No one person can create a car by themselves.**



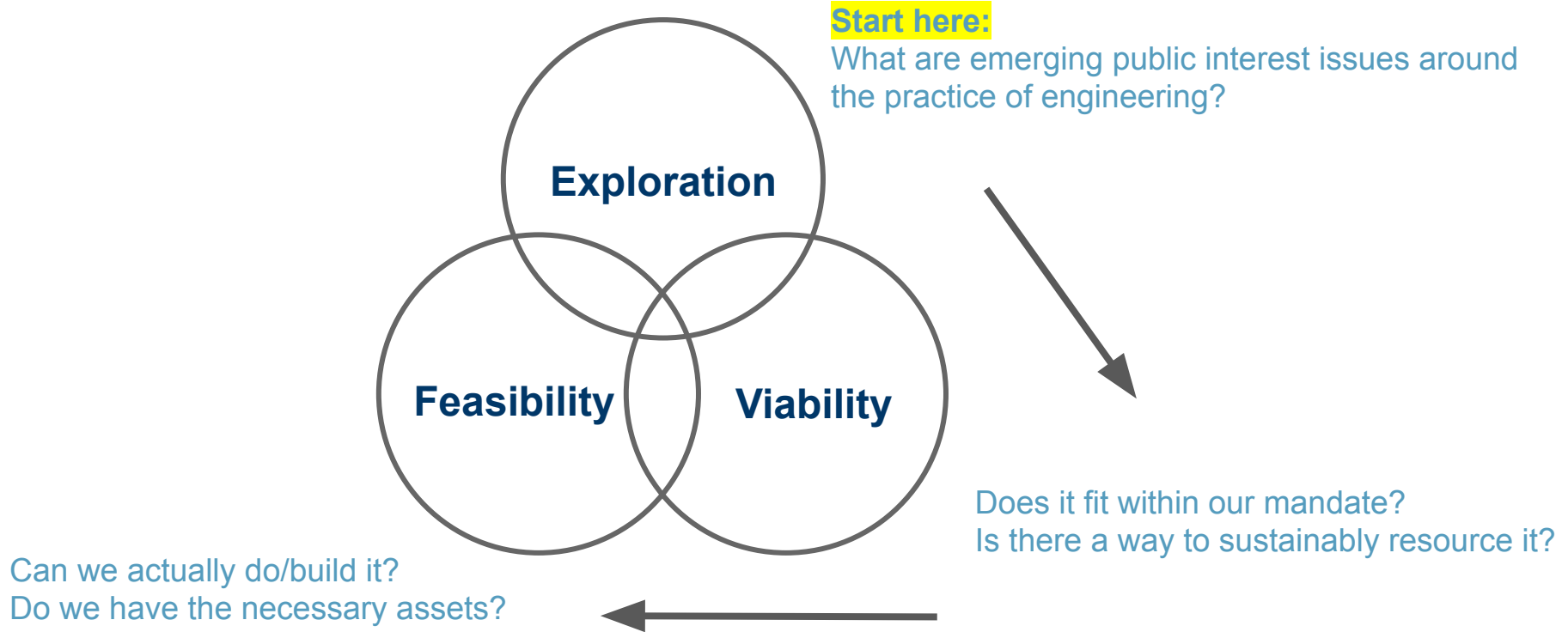
Just as we need diverse skills & perspectives to create a car, we need diverse skills & perspectives to prepare for the challenges in our changing world.

# Complexity Theory & Diverse Voices: No one person can create a car by themselves.



Just as we need diverse skills & perspectives to create a car, we need diverse skills & perspectives to prepare for the challenges in our changing world.

# The Balanced Breakthrough



# Workshop Agenda

- 10:00 Welcome
  - Session 1: Exploring Public Interest In A Changing World
- 11:00 **BREAK**
  - Session 2: Engaging With A Case Study
- 12:10 **LUNCH**
- 13:00 Session 3 - Moving towards our North Star
  - Part 1 - Setting our Compass
- 14:00 **BREAK**
  - Part 2 - Next Steps in the Journey
  - Closing & Next Steps
- 15:00 **END**

# Workshop Ground Rules

1. Keep **confidences**.
2. Be fully **present** in the workshop.
3. Allow space for all voices / **diversity** is our strength.
4. “Yes and” / focus on open **exploration**. We will filter out ideas that don’t match budget and resources later.  
For now, we want to explore all possibilities.

# **Session 1**

**Exploring Public Interest in a  
Changing World**

## Session 1 Goals

To identify **key trends** shaping our world and consider what they mean for protecting the **public interest** when the **practice of professional engineering** is involved

# Physical & Digital Engineering

VIRTUAL/AUGMENTED REALITY

ADDITIVE MANUFACTURING

AI / MACHINE LEARNING

QUANTUM COMPUTING

BIG DATA / ANALYTICS

RENEWABLE ENERGY

INTERNET OF THINGS

CYBERSECURITY

BLOCKCHAIN

NANOTECH

CRISPR

**The 4th industrial revolution is one of networks, platforms, people, and digital technology and is “blurring the lines between physical, digital and biological spheres.**

*The Fourth Industrial Revolution,  
Klaus Schwab, World Economic  
Forum, 2016*



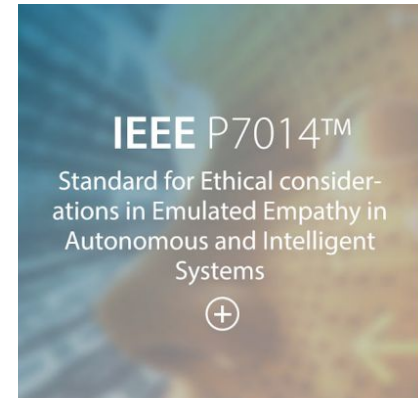
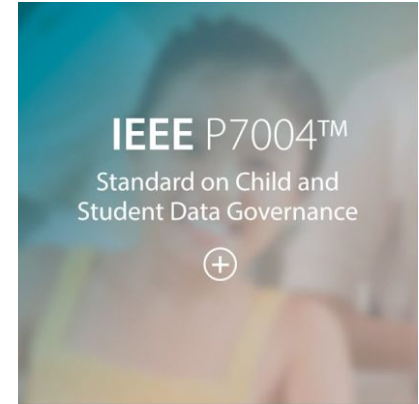
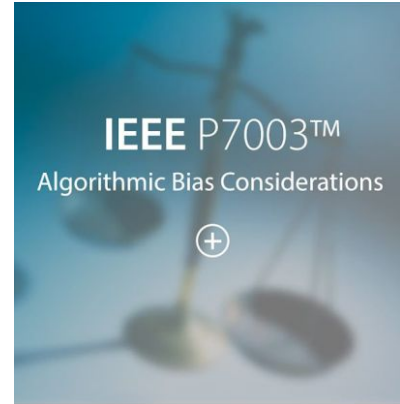
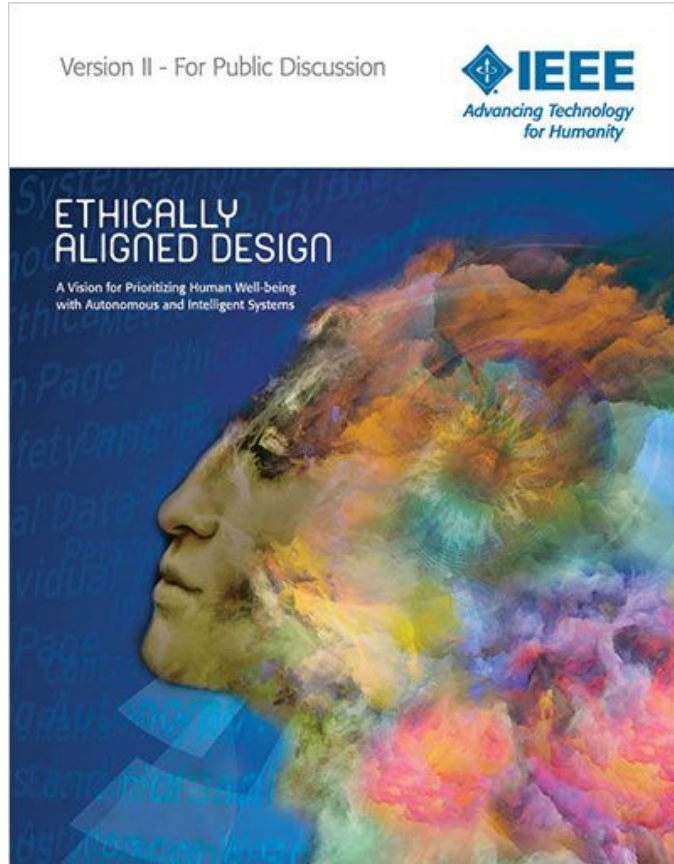
# Micro vs. Macro Ethics

**Micro** ethical issues relate to the individual engineer and/or licence holder and their internal relation to PEO and the engineering profession.

**Macro** ethical issues relate to the collective social responsibility of the profession and to societal decisions about technology.

*Reference: “Ways of Thinking about and Teaching Ethical Problem Solving”  
from Science and Engineering Ethics (2005), Herkert, J.R.*

# Engineering + Macro Ethics



# Engineering in a Changing World



**Physical Technologies**

**Digital Technologies**

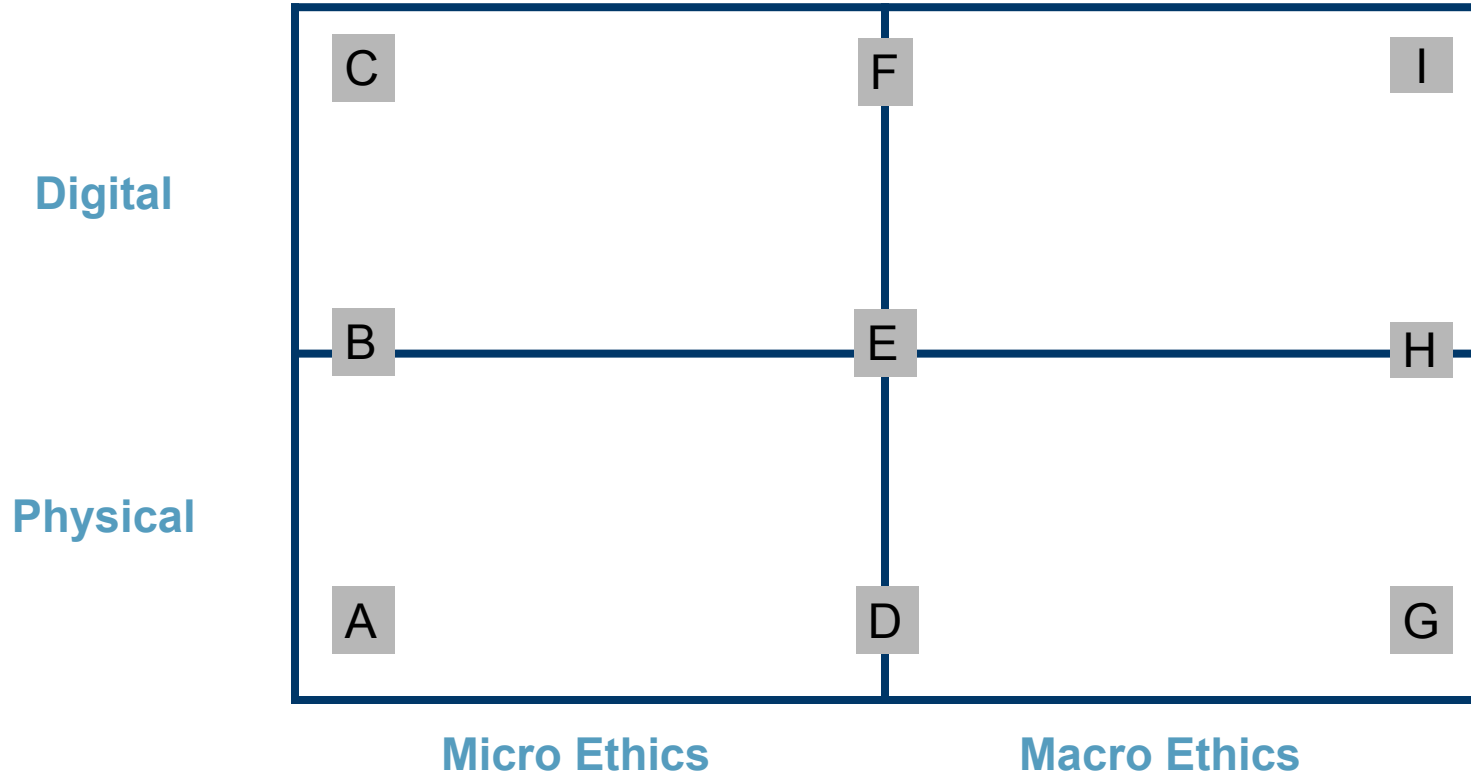
Micro Ethics - what we build and how we build it

Macro Ethics - the broad impacts of what we do on society

# Exploring The Range Of Possible Responsibility

Digital		
Physical		
	Micro Ethics	Macro Ethics

# Exploring The Range Of Possible Responsibility



# Session 1 - Breakout Discussions

- Which of these scenarios can the public expect the PEO to help mitigate today?
- Which of these scenarios should the public hold the PEO responsible for mitigating in the future?

***Self Reflect -> Breakout Group Discussion***

# Public Interest Failure Scenarios

- A. A bridge collapses because of an incorrect input into design software
- B. A car company uses a software cheat to circumvent environmental regs
- C. An error in a software patch causes a plane to crash
- D. Engineers pay kickbacks and cut corners on infrastructure projects under pressure from their company
- E. A cyber security vulnerability results in a power plant being taken down
- F. Facial recognition software has difficulty identifying people with darker skin because training data was biased
- G. City infrastructure is designed to isolate disadvantaged communities
- H. A bridge collapses due to errors inherent in the design software
- I. The design of a news platform enables misinformation that impacts an election



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## **Time for a 10 Minute Coffee & Stretch Break!**

Ariel Sim has volunteered to lead some light stretching.

Just keep your line open if you'd like to hear the instructions.



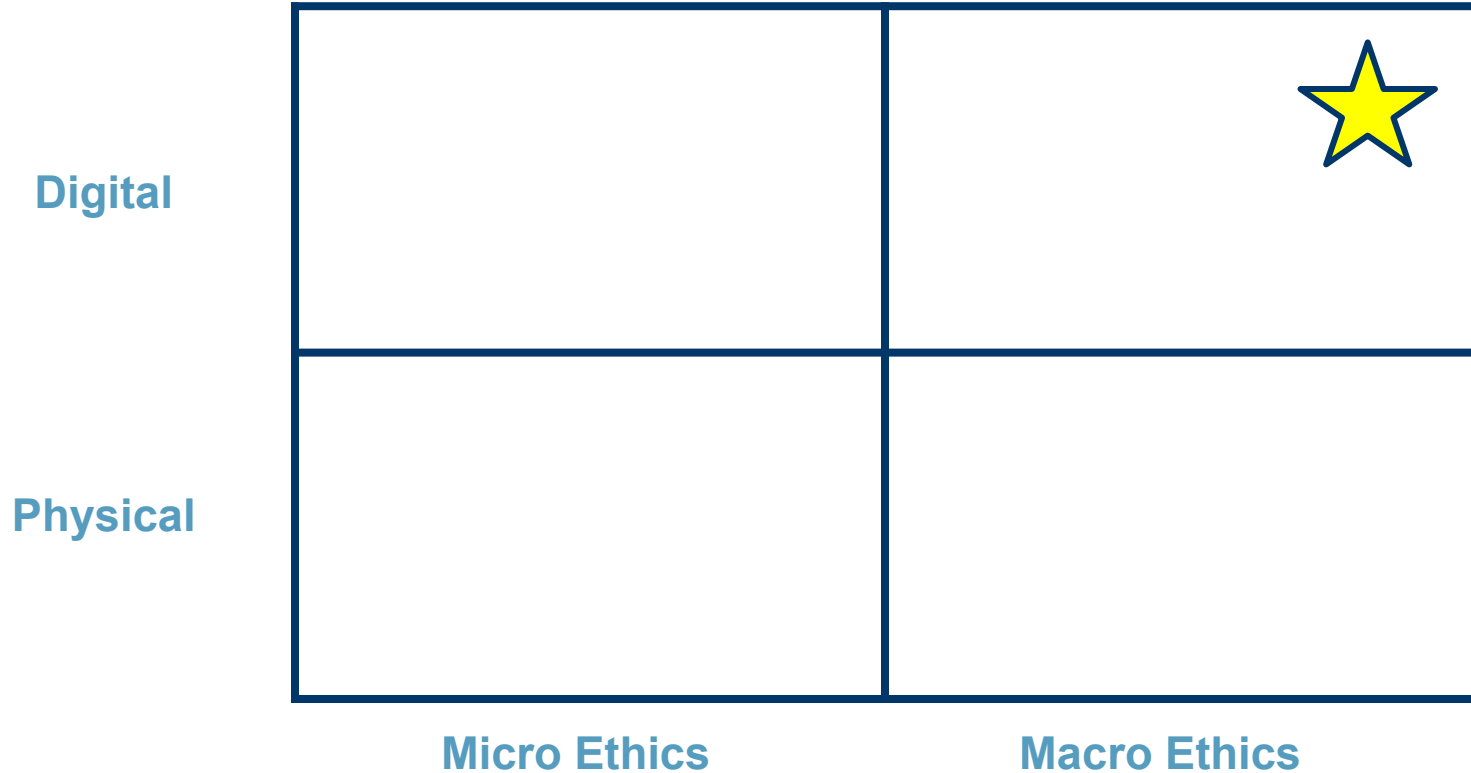
# Session 2

Engaging with a Case Study

## Session 2 Goals

To use a case study to demonstrate the **public interest** risks around a new technologies and the need to consider complex societal context

# A Case Study At The Edge





[Technology](#)

[Products](#)

[Solutions](#)

[News](#)

[About](#)

[Careers](#)

[Contact](#)

 Search

# Hyper-Real Digital Heroes from Digital DNA™

Animates AI



WELCOME TO  
**SOUL MACHINES**

## Session 2 - Breakout Discussions

- What public protection considerations would you have as an engineer working for Soul Machines?
- Assuming Soul Machine was based in Ontario, what role could PEO possibly play in ensuring the company's impact is in the public interest?

***Self Reflect -> Breakout Discuss -> Share Back***

# Macro Ethical Prompts (The Artefact Group)

1. **If your product was entirely dedicated to empowering the lives of an underserved population, what kind of impact could you make?**
2. **When you picture your user base, who is excluded?**
3. **What could a "bad actor" do with your product?**
4. **What would using your product "too much" look like?**
5. **What's the worst headline about your product you can imagine?**
6. **Who or what disappears if your product is successful?**
7. What could cause people to lose trust in your product?
8. How might cultural habits change how your product is used? How would a community of your most passionate users behave?
9. If two friends use your product, how could it enhance or detract from their relationship?
10. What happens when 100 million people use your product?
11. If the environment was your client, how would your product change?

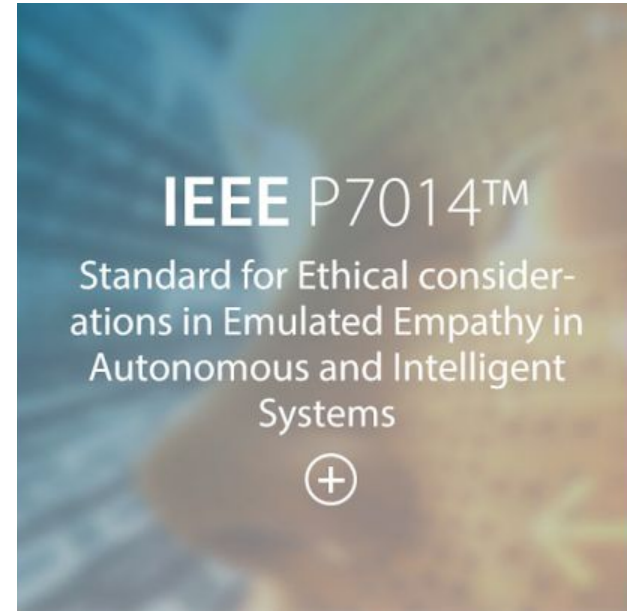
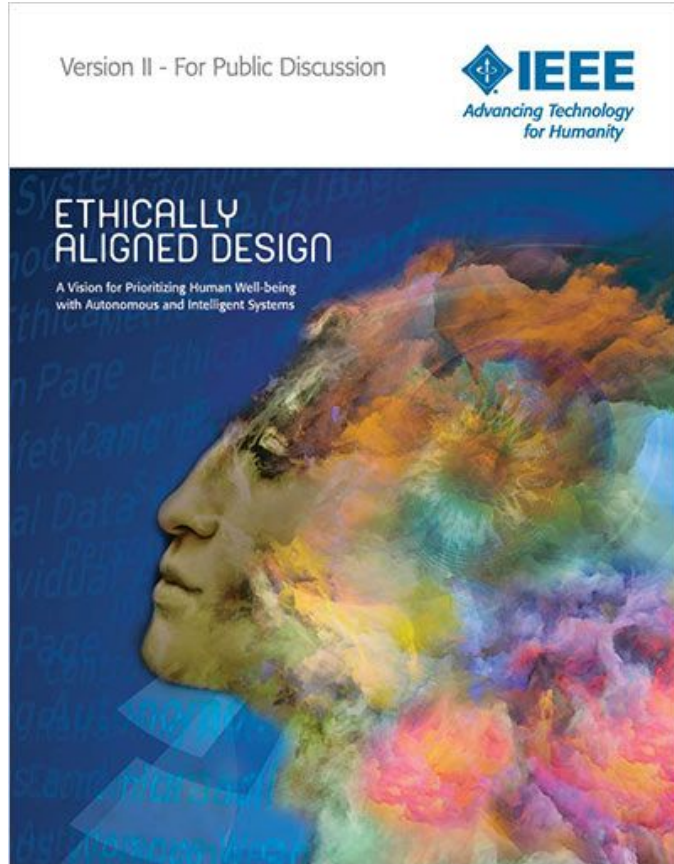
# Whole Group Share Back

What are your top 2 or 3 insights from Sessions #1 and #2 regarding the future of protecting the public interest when the practice of professional engineering is involved?

A rep from each will have a chance to to share  
While listening, feel free to add comments in the chat plus  
An open dialogue will follow the group presentations



# Engineering + Macro Ethics



# Looking Ahead to the Post Conference Survey

- How important is it that PEO's vision addresses the application and creation of digital technologies?
- How important is it that PEO's vision addresses macro ethical concerns?
- What else must PEO's vision address?
- Who must we engage or consult during our visioning process?
- What must be true for a visioning process to be successful?



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## **Lunch Time - 50 min**

If you'd like to eat lunch with one to three other people, please let Aislinn know and we will setup a breakout room for you.

You can ask for random assignment, or you can indicate who you'd like to invite. Lunch breakout rooms will begin to open at 12:30

Please be back and ready to go at 12:55

# Session 3

## Moving Toward our North Star

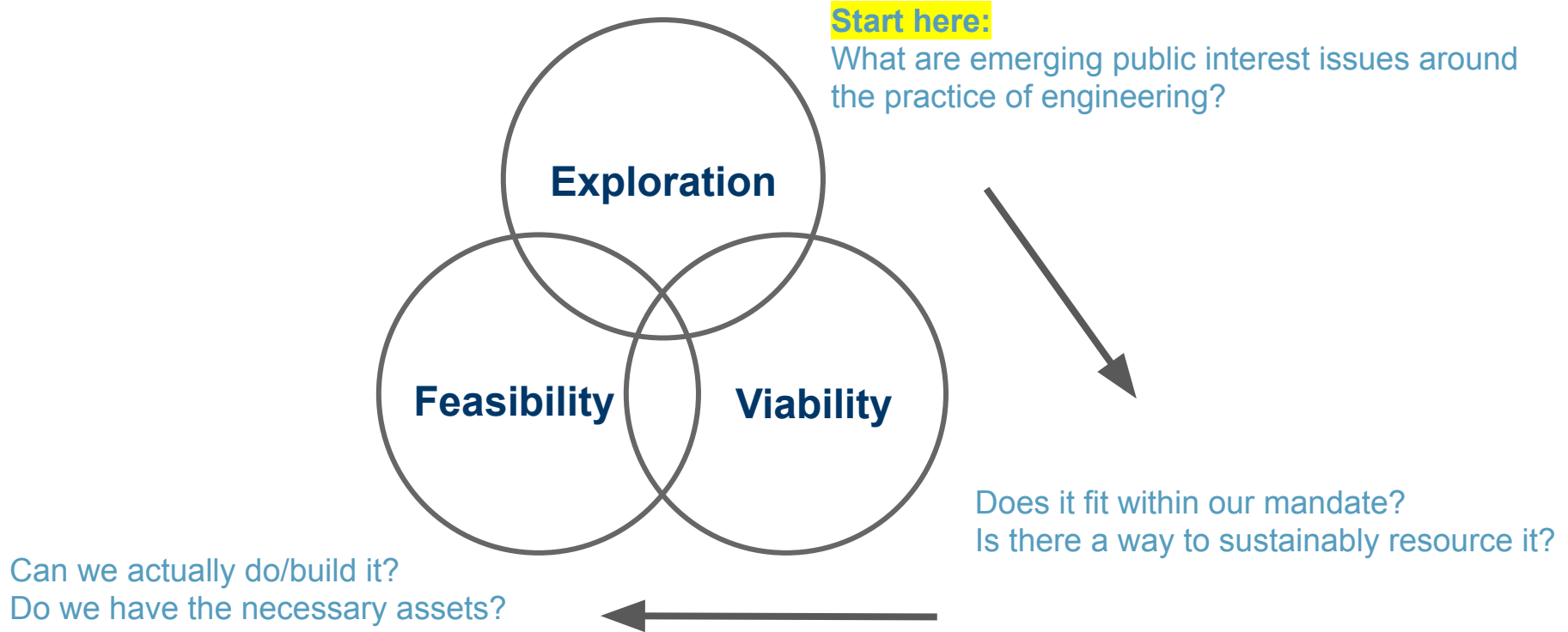
Part 1. Setting our Compass

Part 2. Next Steps in the Journey

# Workshop Goals

Help enhance PEO's ability to  
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# The Balanced Breakthrough



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**Past**



**Present**



**Future**

# Public Interest

**Practice of Engineering**

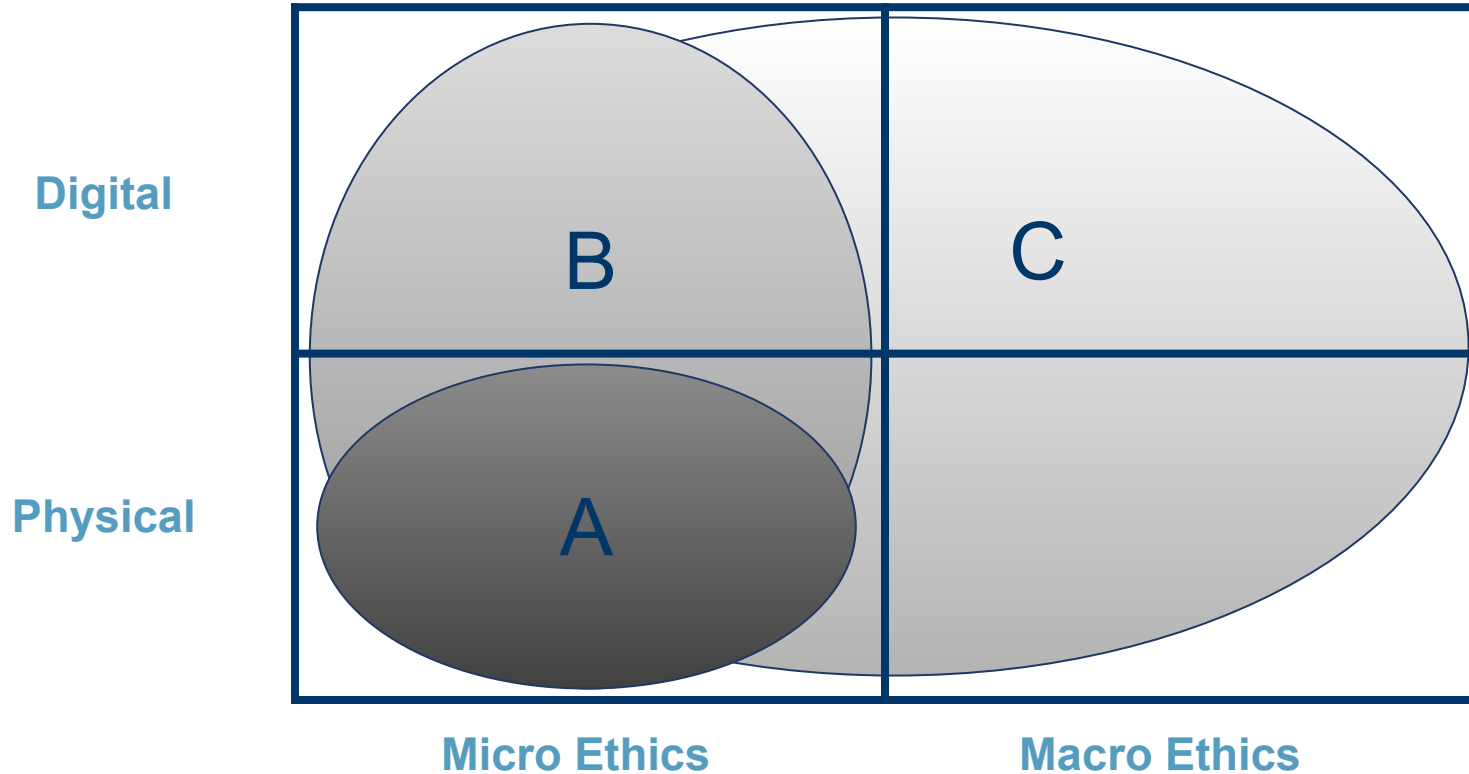
**Contribution of PEO**

**Contribution of parts of PEO**

**Contributions of Individuals**



# Exploring The Range Of Possible Responsibility



## Session 3 Part 1 Goal

Inform PEO's 10-year vision by brainstorming  
**possible futures**

### Setting our Compass

Imagine a future where engineering regulation is living up to its full potential in ensuring public interest with respect to the full range of practice and public interest issues that we explored in the earlier sessions. Imagine what PEO's contribution to this looks like.

# Activity - Setting our Compass

Imagine a future where PEO has **expanded** its contribution to protecting the **public interest**.

- What headlines would appear in the news?
- What behaviours would we see in society, at work, and at home?

***Self Reflect -> Breakouts -> Share Back (after Part 2)***

# Professional Engineers Fight For Data Privacy

Date: June 12th, 2030

A highly publicized case came to a close today as XYZ Industries was found guilty of the wrongful dismissal of professional engineer ABC. XYZ are makers of educational software for K-12 students, and their software design work falls under PEO's practice standard regarding Child and Student Data Governance, which is based on an IEEE international standard. ABC was fired when she refused as a professional engineer to modify the design of their software in a manner that would significantly circumvent the intent of the standard. Based on a PEO investigation, the company's certification of authorization was revoked, a decision that contributed to today's landmark court decision.



## Statistic:

90% of data-driven businesses with significant operations in Ontario have committed to PEO's practice standards, which are fast defining the minimum legal standard of care

*"As Professional Engineers we must stand together and not be afraid to wade into complex ethical questions in our efforts to protect the public interest."*

**2030 PEO Registrar**

**Headline:** [fill in the blank]

**Date:** June 2030

**Full Article:** [fill in the blank]

Insert Image

Insert Key Figures  
& Stats

Insert Key Quote

# Possible Future Scenarios

## (A) Process / Products

- Additive Manufacturing
- AI / Machine Learning
- Quantum Computing
- Big Data / Analytics
- Renewable Energy
- Internet of Things
- Virtual Reality
- Cybersecurity
- Blockchain
- Nanotech
- CRISPR
- etc...

## + (B) Public Interest Issues

- Environmental
- Income Equality
- Intellectual Property
- Public Health & Safety
- Homelessness
- Attention Economy
- Algorithmic Bias
- Fake News
- Biased AI
- Data Privacy
- etc...

# Brainstorming Aid

## Headline of the Future

1. What is a scenario that highlights one of the biggest public interest questions around the future practice of engineering?
2. What role could PEO play to help mitigate risks?
3. Who else could be involved? (people and organizations)
4. What behaviours would we be able to observe that are different than today?
5. How would the positive change be measured / tracked?

If you're stuck, ask yourself: What is the one major risk / issue that if reduced / addressed would help make Canada a better, **healthier**, more **sustainable**, **safer**, and/or more **equitable** place?



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**We will restart at 1:56pm.**

Ariel Sim has volunteered to lead some light stretching.

Just keep your line open if you'd like to hear the instructions.

**10:48**





## Session 3 Part 2 Goal

Identify opportunities and possible next steps in the journey **towards our North Star** and towards formalizing a **new shared vision for PEO**.

### Next Steps in the Journey

Building from where we are right now, what would it look like to begin navigating towards the future we imagined in the previous session?

What should our ongoing visioning process look like and how can you as a PEO leader best contribute?

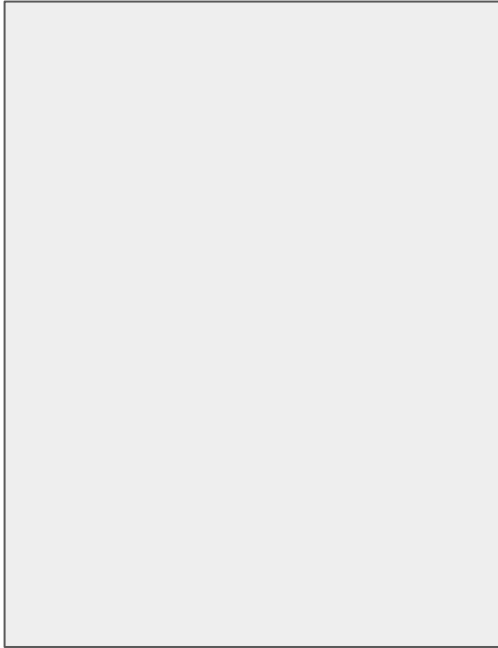
## Part 2 - Activity - Next Steps in the Journey

- Brainstorm possible near, mid, and long term steps that could help PEO move towards our North Star
- Prioritize: What are the top 2 or 3 ideas that you would like to share?

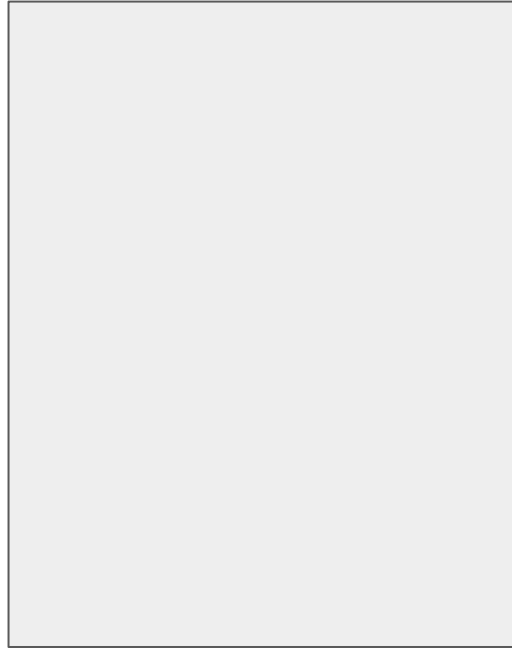
***Self Reflect -> Breakouts -> Share Back***

# What actions can PEO take?

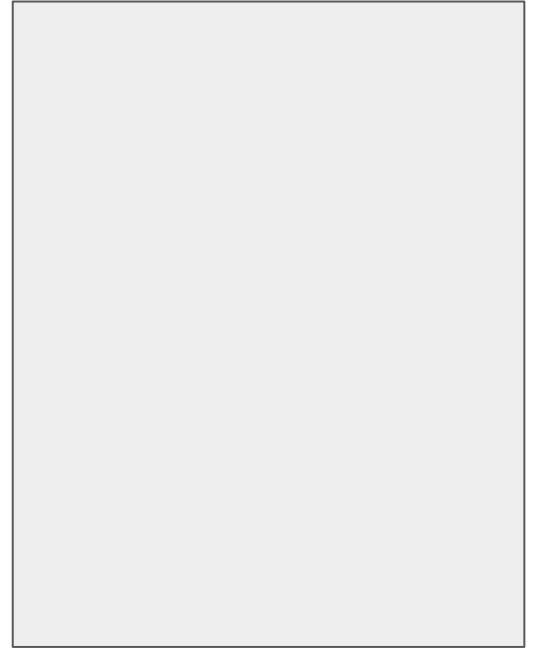
## Near Term

A large, empty rectangular box with a thin black border, intended for listing actions to be taken in the near term.

## Medium Term

A large, empty rectangular box with a thin black border, intended for listing actions to be taken in the medium term.

## Long Term

A large, empty rectangular box with a thin black border, intended for listing actions to be taken in the long term.

# Whole Group Share Back

1. Brief summary of your future news story
2. What are the top 2-3 actions that PEO could take regarding the future of protecting the **public interest** when the **practice of professional engineering** is involved?

A rep from each will have a chance to to share  
While listening, feel free to add comments in the chat plus  
An open dialogue will follow the group presentations

# Thank You On Behalf Of the VLC Committee

Márta Ecsedi, P.Eng., FEC (Chair)

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Julie Hamilton

Chapter Coordinator

# Closing & Next Steps - Survey

- How important is it that PEO's vision addresses the application and creation of digital technologies?
- How important is it that PEO's vision addresses macro ethical concerns?
- What else must PEO's vision address?
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**Thank You For Participating!**

Please take 15 minutes to complete the survey that you will be receiving shortly via email.

Your responses will be reviewed, summarized and shared with PEO council to help shape the visioning process.