

Tech Stewardship as a foundation for Multi-Stakeholder Collaboration (MSC) to enable STI4SDGs

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Introduction

The 2030 Agenda for Sustainable Development, along with the STI4SDG roadmap and action plans, underscore the importance of harnessing the full potential of science, technology, and innovation (STI) to achieve the SDGs. Achieving this goal requires multi-stakeholder collaboration (MSC) that achieves broader inclusivity by taking cultural values into consideration.

In response to the struggles of the STI field to be inclusive of people and values, the Engineering Change Lab Canada (ECL) developed the concept of Tech Stewardship (TS) to foster the type of dialogue and collaboration necessary for breaking down professional silos and expanding the participation of underrepresented communities, youth, and historically marginalized populations. TS is a mindset that promotes the integration of values and principles into the design, implementation, and governance of technology. Its goal is to create more purposeful, sustainable, diverse, and responsible technology ecosystems aligned with the SDGs. This brief proposes that strengthening the shared ownership of the Tech Stewardship approach across governments, sectors, institutions, and regions is ideally suited to fostering the type of inclusive MSC required to harness STI in achieving the SDGs.

The Essence of Tech Stewardship

TS ensures that technology is beneficial for all: more purposeful, responsible, inclusive, and regenerative. The vision of the TS program is a cultural shift towards tech that benefits everyone by seeking ways to increase opportunities for individuals to practice TS values (and promote their adoption within their organizations and communities).

At its root, technology is how humans adapt their environment to meet their needs and wants. We have been “co-evolving” with our technologies since the dawn of humanity—“we shape our tools and then our tools shape us.” [1] Recognizing this intimate relationship, the TS philosophy and practice is predicated on three core commitments:

The Origins of Tech Stewardship

Tech Stewardship was born out of 8 years of deep sensemaking by the Engineering Change Lab Canada (ECL). With a mandate to explore the impact of engineering on society and the role engineers play in our shared future, ECL recognized an even greater underlying need to account for how technology’s impact crosses industries, institutions, and professions. Tech Stewardship emerged as a universal philosophy and practice for more sustainable, equitable, and inclusive technology to promote greater positive impact in our world.

Recognizing that the reciprocal relationship between society and technology meant broadening the traditional notion of a stakeholder, ECL established relationships with leaders in strategically chosen communities, such as the broader “Tech for Good” community, challenge-focused communities, social sciences, and a range of professions. To fundamentally challenge reductionist and extractive viewpoints about the nature of engineering and technology, ECL consulted with Canadian Indigenous Elders and leaders, and continues to seek to centre Indigenous worldviews in the evolution of Tech Stewardship.

1. **Advance Understanding:** we continuously deepen our understanding of our relationship with technology, challenge dangerously limited narratives and stereotypes.
2. **Deliberate Values:** we seek to understand how our values are shaping and being shaped by the technologies we build and scale.
3. **Practice Behaviours:** we support each other to practice the daily behaviours that enable progress in all its forms - from incremental steps all the way to breakthroughs.

Through the focus on these three core commitments, TS looks at finding BOTH/AND opportunities within value tensions, a process outlined in Figure 1.

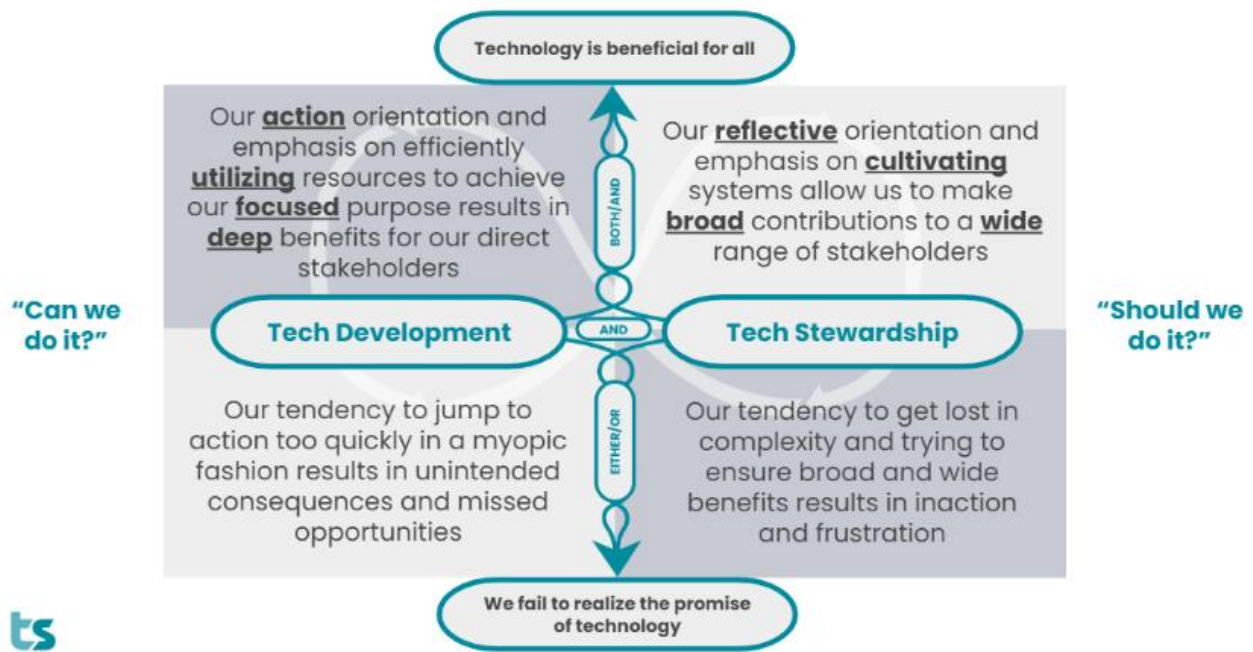


Figure 1: Polarity Map [2] for Tech Stewardship

Developing MSC centred in inclusion and co-creation

While the UN global sustainable development agenda has been instrumental in advocating for a MSC approach to tackle sustainable development challenges,[3] its full potential in the STI4SDG domain has yet to be realized. For example, existing technology transfer models do not adequately meet the needs of developing countries.[4] This is also applicable when considering underrepresented urban and rural communities in developed countries.

Since 2019, the UN Technology Facilitation Mechanism (TFM) has been exploring ways to establish MSC aimed at leveraging STI to support the achievement of SDGs.[5] While TFM understands the need for MSC in achieving this goal, the lack of funding for TFM activities is a significant constraint to fostering collaborations. Indeed, most of the TFM activities remain unfunded.[5] As a result, current approaches to tech governance may not be equitable, as they typically involve simply making western technologies, pedagogies, and values available to the global south. However, TFM should focus not just on how to spread technology, but also on how technologies are developed by supporting MSC centered on the kinds of inclusive values espoused by TS.

A Focus on Tech Stewardship Governance

Given the complex interdependencies between the individual SDGs, sustainable development requires 1) horizontal collaboration to address potential synergies and unintended consequences of technology and 2) vertical collaboration to coordinate the interplay between individuals, business ventures, civil society, and policy makers across sectors and governance levels.[5] Diverse perspectives from a wide range of stake- and rights-holders must be meaningfully included in conversations around how tech is designed, developed and deployed, and deeper consideration must be paid to value-laden questions like “Should we do it?” (Figure 1).

Ensuring diverse perspectives requires facilitated collaboration among a wide range of stakeholders and rights-holders. TS is designed to serve as both a means and an end to achieving inclusive tech governance. A recent example is a project led by the University of Manitoba with York University and Memorial University to pursue TS-focused research. Its aims are twofold: study the impacts of the TS Practice Program on students, and build on previous engagement with Indigenous leaders and communities to inform the development of TS concepts. This initiative has received a significant \$1 million CAD four-year grant from the Suncor Energy Foundation (SEF), illustrating the importance of bringing together diverse perspectives and

expertise in pursuit of ethical and equitable technology development.

Meaningful engagement benefits from the development of customised programming relevant to the specific contexts of various sectors, institutions, professions, or regions. A current example is the collaboration between MaRS Discovery District (one of North America's largest innovation hubs) and the Energy Futures Lab (EFL), to develop programming related to the energy transition. EFL Fellows, energy sector leaders in Alberta, will inform its educational content to drive change. This initiative is funded by the Business & Higher Education (BHER) Roundtable with the goal of better preparing students for the future of work.

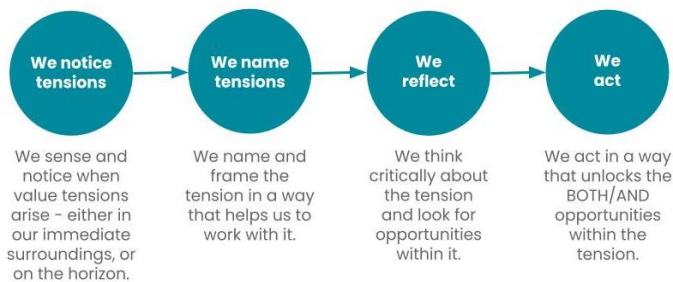


Figure 2: The essence of Tech Stewardship Practice

What this example also shows is that customized Tech Stewardship programming can be created at a "bespoke level" that is connected to the overall Tech Stewardship framework, sharing the values and perspectives of the broader TS approach while also allowing for a more tailored approach to addressing specific challenges and needs to create a more just and equitable society. The example is especially important since energy corporations have historically been seen as a source of tension when it comes to climate action. However, driving dialogue across sectors, institutions, professions, and regions while engaging these sorts of tensions is the essence of what it means to be a Tech Steward.

Summary

In a time when rapidly evolving technologies threaten to exacerbate persisting environmental challenges and social inequalities, our ability to achieve MSC is vital to meet the UNs SDGs. Developing truly inclusive MSC requires broadening values-based education and uptake of inclusive, sustainable, and deliberative values across governments, sectors, institutions, professions, and regions. Having

demonstrated its effectiveness in reaching these goals, Tech Stewardship is ideally suited to foster the type of inclusive MSC required to harness STI in achieving the SDGs.

Recommendations

A Tech Stewardship approach can support TFM activities across sectors and regions, specifically through surfacing tensions underlying our development of technology. As this brief has demonstrated, Tech Stewardship provides a collaborative environment for fostering MSC to enable STI4SDGs. Positioning this framework as an international shared ownership model would facilitate more effective sharing of knowledge, values, and perspectives.

Therefore, to support MSC that is based in a Tech Stewardship approach aimed at achieving SDGs, the authors make the following recommendations to the UN TFM and STI Forum:

1. **Incorporate** Tech Stewardship into the guidance for preparation of STI4SDG roadmaps.
2. **Recommend Tech Stewardship programming to academic, governmental, industry, and non-profit partners** to enhance their contributions to the SDGs
3. **Convene conversation with key partners** about leveraging Tech Stewardship shared infrastructure to unlock individual, organizational and community contributions to STI4SDGs.

With these recommendations established, we would further recommend that the UN TFM and STI Forum:

4. **Help expand and anchor a collaborative governance and shared ownership model** for Tech Stewardship at the international level, with a particular focus on the global south.
5. **Enhance the impact of existing Tech Stewardship initiatives**, especially MSC customized to facilitate inclusion for the global south, including:
 - a. Strengthening the existing Tech Stewardship initiative that partners academic institutions and students with professionals in a variety of sectors, industries, governments.
 - b. Promoting Tech Stewardship within climate action, similar to the involvement of the UN Environment with TFM.

References

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