How Canada Should Navigate the Tension Between Jobs and AI-Driven Automation

Input for the ISED Consultation on Canada's AI Leadership on #**AI adoption across industry and governments**

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To dramatically change the course of Canada's adoption of AI and AI-powered robotics, drastic action is required. This means charting a path that is neither about resisting automation nor embracing it blindly, but instead **shaping it around Canadian values, communities, and shared prosperity**.

Background:

Driven by recent advances in AI, physical AI (e.g., AI-powered robotics) has become another technological focal point and a threat to the jobs of everyday people. Projections about how many jobs will be displaced due to automation (AI-based technologies in particular) and by when vary. Regardless of whose projections are right, we believe two facts are already clear:

- **AI-powered robotics** will **centralize power to those who develop and own fleets of robots**. The majority of these systems are being developed outside of Canada. Adoption of these technologies has implications for the well-being of Canadian workers and Canada's sovereignty.
- **AI-powered robotics will impact people's jobs**, whether through job displacement, job loss, job estrangement, or job evolution. Canada needs a strategic approach to AI-powered robotics that captures productivity growth while deliberately shaping its impacts on workers.

Over the past two years, the Open Roboethics Institute (ORI) and Canadian Robotics Council (CRC) have convened two multi-stakeholder consultations to examine how Canada can integrate workers' perspectives into robotics adoption [1]. In both rounds of consultations, participants across industry, union, and academia agreed that automation efforts are abandoned, lead to minimal productivity gains, and reduce worker well-being when organizations lack the time, structure, and culture to meaningfully engage the people whose jobs are being transformed. When workers are consulted only after systems are chosen, trust erodes, and potential benefits of technology integration are not realized.[1] Involving workers early in technology selection and design creates an

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[1] Projects supported by the Future Skills Centre (funded by the Government of Canada's Future Skills Program) echo this clearly. They find that organizations that incorporate employee perspectives (both on technical and broader implications of the technological change) and offer training early in the technology adoption process helps build user trust, and establish a culture of transparency. User trust is necessary for sustainable, long lasting adoption of technological change [9].

opportunity to plan for the changing nature of jobs in a deliberate and equitable way. If robotics adopters don't prioritize this effort, automation is often unsuccessful or only delivers a portion of the benefits that are possible.

Canada's Budget 2024 included $50 million over four years to upskill or reskill workers affected by AI [2]. While meaningful, this program falls short of recognizing how people will be interacting with AI and what types of worker engagement and training are best suited for emerging automation transitions. Many existing upskilling and reskilling programs related to technology, including some projects led by the Future Skills Centre [3], aim to provide training that will allow workers to use or adopt technological tools. Unfortunately, these upskilling programs for individuals will not be successful if the small to medium enterprises (SMEs), which made up 99% of Canada's employers in 2023 [4], remain hesitant about automation projects and do not feel confident about their own ability to successfully implement them [5, 6]. Canada's labour markets deserve thoughtful guidance and training in how to best design, integrate, test, and utilise promising new technologies.

Moreover, the need for deliberate worker engagement becomes even more critical with AI-powered robotics. In contrast to digital skills training, where widely distributed software (e.g., Microsoft Excel) can easily be distributed and installed for a hands-on learning experience, meaningful training for physical robotic systems is much more complex, costly, and context-specific. A mobile robot operating alongside people in a warehouse, for instance, demands different forms of expertise and safety training than a car-painting robot working behind barriers in the automotive industry. Even when addressing similar tasks, robotic systems can differ substantially in their effects on workers' autonomy, safety, and job design.

Challenges:

Findings from the ORI and CRC consultations and related research point to several barriers when it comes to engaging workers in robotics integration:

- **Lack of a structured engagement process, limited time, and insufficient resources:** Most organizations do not have a formal process for involving workers in robotics projects. Engagement is ad hoc, reactive, and often limited to training after installation. Without structured mechanisms, worker input comes too late to influence key design and deployment decisions. Even when companies value worker input, engagement is rarely built into the project budget or schedule. SMEs in particular lack the bandwidth to allocate resources for worker engagement.
- **Unclear roles and representation:** Firms often struggle to identify who should represent workers when it comes to the integration of robotics in the workplace and to what extent each stakeholder should be involved in the engagement process. Without clear guidelines or established practices, worker participation could become symbolic/procedural rather than impactful.
- **Fragile culture of trust and communication:** Successful engagement of workers in the integration of robotics requires mutual trust and a willingness to engage in a dialogue. However, many workers facing the possibility of automation integration experience anxiety and skepticism due to past experiences and public perceptions of robotic/AI technologies. In many cases (and often rightly so), workers myopically focus on the threat of these technologies as opposed to the potential benefits. Rebuilding trust requires transparency about goals, long-term planning, and respect for worker expertise.

Ways forward:

Insights from the ORI and CRC multi-stakeholder consultations point to three clear actions Canada can take to ensure responsible and worker-centred robotics adoption.

1. Empower workers as automation stewards

The kind of skills development Canada needs is not just about training individuals to *use* automation, but about equipping them to *shape* it. To make robotics adoption both responsible and competitive, the Canadian government, in partnership with the provinces, should create and support **automation steward roles:** workers trained to guide the responsible implementation of robotics from the earliest stages of design and deployment.

These stewards would:

- Represent worker perspectives during technology exploration and procurement
- Ensure automation aligns with organizational values, safety standards, and worker well-being; and
- Build internal expertise that strengthens SMEs' confidence and capacity to adopt robotics responsibly.

While robotics companies typically provide user training once their system is installed, responsible and sustainable adoption of a robotic system requires forethought and stakeholder engagement much earlier than the installation of a system. As noted in our consultations and in a 2018 Unifor report [1, 4], current practices leave workers merely informed about automation projects when implementation decisions have already been made by others. Canada can change the narrative around robotics by making responsible deployment the default, led by dedicated automation stewards who guide implementation and oversight.

2. Build collaborative infrastructure

Scaling worker-centered robotics integration requires shared spaces where organizations, workers, and researchers can safely experiment, co-design, and learn together. Companies developing or integrating robotics often lack structured support to consider how these technologies shape work, skills, and trust. One way to address this gap is for the federal and provincial governments to **support supplementary training for start-ups** on how to engage workers in the development and integration of robotics within existing innovation infrastructures, including incubators and accelerators. These environments can support participatory technology development and integration, where organizations test both new technologies and ways of working. Tools such as the ORI's Foresight into AI Ethics (FAIE) toolkit can further help structure engagement and reflection throughout the process [8].

A promising foundation for such an approach already exists through initiatives such as CENGN's Living Labs, funded through the Strategic Response Fund [10][2]. These labs enable Canadian startups and scaleups to prototype and validate advanced network and digital technologies under real-world conditions. Expanding their mandate to include societal impact evaluation and engaging workers in the development process would ensure

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[2] CENGN (Centre of Excellence in Next Generation Networks) is a federally funded organization that operates eight Living Labs across Canada. Supported by a $45 million investment from ISED Canada's Strategic Innovation Fund, the initiative provides co-investment funding to startups and scaleups to test, validate and certify network an digital solutions.ground for

that companies supported by the program have a foundational approach to responsible integration of robotics. By integrating considerations of job design, human-robot collaboration, and workforce wellbeing into the testing and validation process, Living labs could help organizations build both technical capacity and institutional trust, accelerating adoption that is both innovative, revenue-generating, and socially sustainable.

3. Pilot economic and governance models

Canada can become a testing ground for economic and governance models that empower workers as stewards, co-designers, and beneficiaries of robotics technologies. This includes:

- **Introducing financial mechanisms** that tie innovation funding to demonstrated worker engagement and job satisfaction. For example, grants or tax incentives could reward organizations that adopt participatory design or action research approaches in robotics integration.
- **Promoting economic models** for robotics deployment where workers share in productivity gains. This includes cooperative or profit-sharing arrangements structured around collaborative outcomes and innovation success.
- **Establishing governance frameworks** that formalize worker participation in decision-making and oversight. These could take the form of joint labor-management committees or regional robotics councils that embed worker voice throughout the technology adoption process.

By piloting these models through partnerships among government, industry, labour, and innovation networks such as CRC and CENGN, Canada can create replicable examples of responsible robotics integration that can strengthen both competitiveness and social cohesion.

Conclusion

Canada stands at a turning point in how it approaches AI-powered robotics. The question is no longer whether robotics will transform work, but whether Canada will lead that transformation responsibly. The consultations led by the Open Roboethics Institute and the Canadian Robotics Council made one thing clear: meaningful worker engagement is not a barrier to innovation; it is the foundation of sustainable and competitive adoption.

By empowering workers as automation stewards, building collaborative infrastructure for participatory technology integration, and piloting inclusive economic and governance models, Canada can ensure that automation enhances both productivity and the quality of work. Doing so would position Canada as a global leader in responsible robotics, one that treats technological progress not as a threat to workers, but as an opportunity to renew the social contract between innovation, labour, and shared prosperity.

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[2] Department of Finance Canada, "Budget 2024 - Fairness for Every Generation," His Majesty the King in Right of Canada (2024).

[3] Steven Tobin, "Unleashing AI into the skills development ecosystem," Future Skills Centre, Mar. 2024.

[4] "Key Small Business Statistics 2023," ISED. Accessed: Dec. 12, 2024. [Online]. Available: https://tinyurl.com/yse2xrv8

[5] NGen. Artificial Intelligence in Manufacturing: The Evolution of Technology & Jobs in the Sector. Future Ready / Next Generation Manufacturing Canada, March 2024.

[6] Chatti, R., Di Marco, A., & Li, W. Robotics Technologies Adoption: Insights from the Survey of Advanced Technology. Statistics Canada, Digital Insights, Catalogue No. 22-20-0001, August 28 2024.

[7] Unifor, "The Future of Work is Ours: Confronting risks and seizing opportunities of technological change," Jul. 2018.

[8] Open Roboethics Institute, "Foresight into AI Ethics: A toolkit for creating an ethics roadmap for your AI project," Vancouver, Canada, 2019. [Online]. Available: https://tinyurl.com/rc3mj24m

[9] Steven Tobin. (2024). Unleashing AI into the skills development ecosystem (pp. 1–6). Future Skills Centre.

[10] CENGN Living Labs. (2024, December 9). CENGN. https://www.cengn.ca/living-lab-initiative/