

# Concordia Re-Tech project (CRT project)

November 05, 2022

## Overview

The Concordia Re-tech project is a student, staff, and faculty-driven project that will make Concordia University's unwanted technology available for reuse to the wide community. These items will be collected from IITS, from technology depots and labs across both campuses, and through donations from community members. Student staff and volunteers will assess the e-waste and make them available either as-is or for parts. The impact of the project will be meticulously tracked through a database that categorizes the items and their usage for the environmental and financial impact. Our team will provide workshops, know-how, and a space to safely explore and work with e-waste, providing a backdrop for critical reflection and research on the consumption and disposal culture and policies of electronics.

## Goals

1. **Provide a no-cost/low-cost option for student tech needs:** Students and community members need tech solutions for their academic and extra-curricular activities now more than ever. The pandemic accelerated adoption of new technologies for connection, group work, and classroom interactions<sup>1</sup>. Additionally, project work in Engineering and Fine Arts can often benefit from students acquiring tech components to realize concrete projects and experiments. However, students and community members do not always have the resources to acquire the hardware needed to participate fully in this shift and these hands-on learning opportunities. The Re-tech project will make all of its diverted electronics available at no or low-cost to community members, with a particular emphasis on access and promotion to students. We will also collaborate with Fine Arts staff technicians to identify electronic materials that their programs use, and funnel those items directly to the depots.
2. **Reduce emissions from production of electronics and prevent toxic chemicals from reaching the landfill:** Each year, 53.6 Mega Tonnes of e-waste are generated globally but only 17.4% were recycled<sup>2</sup>. Each year at Concordia, 1.8 tonnes of computers, monitors, and printers are donated externally for reuse, while over 7 tonnes of e-waste are sent for recycling. This comprises a total of over 10,000 e-waste items handled. However, the quantity of unwanted electronics sent to landfill or simply sitting in department offices and community members' homes is unknown. The reality is that our current e-waste processes need to be improved; according to the waste hierarchy, recycling should be

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<sup>1</sup> How technology is shaping learning in higher education, McKinsey, June 2022, <https://www.mckinsey.com/industries/education/our-insights/how-technology-is-shaping-learning-in-higher-education>

<sup>2</sup> Global E-waste Statistics and Facts, Oct 10 2022, <https://www.statista.com/topics/3409/electronic-waste-worldwide/#dossierKeyfigures>





the near-last option, with a priority on reduction and reuse. By extending the life of electronics and their components through reuse instead of recycling, we will achieve the double benefit of avoiding the emissions from production and distribution of new tech, as well as reducing the emissions from recycling processes and toxic contribution of e-waste to landfills.

3. **Nurture a critical and creative lens on the design and consumption of tech and develop know-how on e-waste reuse:** Planned obsolescence and design for disassembly are complex topics involving considerations like business sustainability, externalized costs, and proprietary restrictions. We all know that electronic products are designed to have a limited useful life, and that the natural pace of technological advancement often makes tech obsolete even before the product fails<sup>3</sup>. However, the environmental stakes of continuing as-is are too high to justify. Our space and workshops will train generations of Concordia students on electronic reuse and repair, skills that we hope will continue to grow beyond their time as students.
4. **Create a model operation for e-waste reuse and support research capacity:** Our project will create a community that not only hosts discussions and workshops but also catalyzes research and mobilizes new procedures to share with the world on how to do better. Montrealers, as are citizens of many cities, are faced with few convenient options for sustainable disposal of electronics. When items are valuable enough, they can be sold on online marketplaces. But many simply don't make the grade, and are then destined to head for recycling facilities, in the best case, or landfills, as is most often the case. The truth is that EcoCenters, Montreal's main disposal option, are simply not accessible to most; they require vehicles to access and are few and far between. Even more lacking are spaces that collect and make e-waste available for reuse, or repair workshops to build community knowhow. As far as we know, such a project does not exist on university campuses, making this proposal a first-of-its-kind. Part of the hesitancy in pursuing such a project is likely the high requirements for ensuring data security and health and safety. Re-tech aims to fill these gaps by piloting a community circular economy model that keeps electronics in circulation for as long as possible before being sent to recycling, while ensuring high standards of data security, and health and safety of participants.

## Student and community impact

The project directly aligns with several strategic university priorities, including sustainability, EDI, and experiential learning, creating a particularly relevant student engagement opportunity designed for maximum participation and diversity of participants.

## Sustainability & Other Strategic Directions

Re-tech touches on several of Concordia's Strategic Directions. Sustainability is a core value driving the initiative; our process will prioritize reuse of as many of the intercepted electronics as possible and will strive to minimize the ecological impact of our operations while maximizing the social and economic benefits. This project directly aligns with following university and global sustainability strategies and goals:

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<sup>3</sup> Here's the truth about the 'planned obsolescence' of tech, BBC, June 2016, <https://www.bbc.com/future/article/20160612-heres-the-truth-about-the-planned-obsolescence-of-tech>



- Concordia's Sustainability Action Plan, [Zero Waste Action Plan Strategy 5: E-waste Reuse](#) “Explore avenues for offering non-reusable e-waste for parts to the community without compromising data and security”
- Supports multiple facets of [Sustainable Development Goal 12: Ensure Sustainable Consumption and Production Patterns](#) including the following targets:
  - 12.1. Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns
  - 12.2. By 2030, achieve the sustainable management and efficient use of natural resources
  - 12.5. By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse
  - 12.6. Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle
  - 12.8. By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

Beyond sustainability, our project touches on themes of digital literacy, next-gen cities innovation, and next-gen learning.

### Experiential learning

Re-tech provides a unique experiential opportunity for students and community members from all disciplines and backgrounds to participate in a sustainable re-imagining of our relationship with electronics. Our first phase in winter 2023 will be dedicated to ideating and developing an operating model through the [Innovation Challenge](#), hosted by the Innovation Lab. A multi-disciplinary team of students will consider the context of the e-waste reuse challenge, informed by staff at Concordia University and experts in the field of e-waste and data security, and present solutions to the operational needs. Following this, students will have the opportunity to materialize their vision as we pilot the project into the summer and fall semesters of 2023. Our vision is to ensure that students from all faculties are staffing our operation as the project is institutionalized.

### Artist workshops and residencies

Art provides an important opportunity to reuse what are often unwanted pieces of outdated technology. Concordia already offers several programs for students interested in electronics arts, including Intermedia, Computation Arts, and Electroacoustics. In collaboration with FASA (Fine Arts Student Alliance), Re-tech will invite students and staff from these programs to give workshops about creative ways to turn salvaged electronics into art. These workshops will cover topics such as circuit bending, robotics, wearable technology, and interactivity. We will also host Concordia students at regular artist residencies with the mission of using unwanted electronics in both visual and audio artworks. The work produced during these residencies will be displayed in regular exhibitions, showcasing these unique but important outlets for electronic waste and giving student artists the opportunity to further incorporate sustainability into their practices.

### Setting the stage for research

Innovating a new way of working with e-waste as a community provides a unique opportunity for research collaborations. Building off of the model developed for the Concordia University Centre for Creative Reuse, research can investigate the challenges around e-waste reuse and maximizing participation. Additionally, the



detailed data on reused e-waste will allow for life cycle assessments to compare status quo with the new processes, and make a case for new policies and programs to be widely adopted.

### Prioritizing inclusivity and accessibility

Re-tech will be a safe and inclusive space that deliberately elevates the voices and opportunities for typically excluded members of tech spaces. The team will develop guidelines and community norms for respectful dialogue and collaboration with all members of Concordia's community, and ensure that participants are informed and comfortable with our approach.

### Partners

Our partners list is growing quickly and we will continue to expand our network during the fall '22 semester

Category	Groups	Roles
Administrative departments	Facilities Management	Providing space Operational support (in-kind staff, financing for staff, distribution)
	Office of Sustainability	Promotion Student and staff sustainability ambassadors
	IITS (discussion in progress)	Access to decommissioned tech Data destruction
Research clusters	Milieux / Innovation Hub	Host innovation challenge on e-waste reuse
	CERC Smart Cities / Next Gen Cities Institute	Support participation of research students Support expansion of model to external communities and fundraising
Student Associations	Fine Arts Student Alliance (FASA)	Host e-waste artist residencies and art exhibit Connect with fine arts labs for e-waste diversion Promote to fine art students/faculty
	Engineering and Computer Science Association (ECA) (discussion in progress)	Connect with engineering labs for e-waste diversion Promote to engineering students/faculty
Industry, non-profits, government agencies (in-progress)	We intend do reach out to our current e-waste recycling vendor partners ( <a href="#">OPEQ</a> , <a href="#">Quantum Lifecycle Solutions</a> , <a href="#">Electrobac</a> ) and governmental organizations ( <a href="#">EcoCenters</a> , <a href="#">RecycQuebec</a> ) to establish partnership	To provide additional electronics for reuse To continue to provide certified recycling services for e-waste that can't be reused Knowledge support Research collaborations Financial contributions

### Proposed timeline

#### I. Development phase - fall '22 / winter '23



- Grant applications (Sustainability Action Fund, Big Hairy Ideas)
- Partnership recruitment (Student associations, faculties, research clusters, technology depots)
- Use the Innovation Challenge to develop a detailed operating plan and/or ideate and prototype solutions to sticking points

## 2. Pilot launch - summer/fall '23

- Based on the results of the Innovation Challenge and development by the core team and partners, launch a pilot operation, including a space with open hours, an online inventory, tracking and assessment database.
- Staff the operations with at least two part-time student positions from Fine Arts and Engineering and Computer Science.
- Promote the services through web content with UCS, the Office of Sustainability, and Zero Waste Concordia, and through on-campus marketing opportunities.
- Host artist residencies, e-waste art workshops, repair workshops, and e-waste art exhibits in partnership with FASA, ECA, and industry partners.

## 3. Assessment, operationalization, broad promotion - summer/fall '24

- Assess the operating costs, service quality, and strengths and weaknesses of the project to propose an operating budget from Property Management and continuing and new partners.
- Present data collected through the OpenData Concordia platform and connect with researchers who can use study our results and operations as a case study.
- Share our model with the broader community, including the city of Montreal, and at practitioner conferences like the AASHE conference.

## Operating plan

**Space & Equipment** - We have confirmed the former space of the Concordia University Centre for Creative Reuse (CUCCR) in the Hall building basement as the future space for the e-waste reuse pilot project. The area is secured by a locked cage and is already fitted with a large working table that will allow for workshops to be conducted. An area will be sectioned off for receiving new items, weighing, input of data into our tracking database, and sorting by condition and type. Shelving and various other storage compartments will be used to display available electronics. In keeping with the mandate of the project, equipment will be sourced second-hand whenever possible.

**Sourcing** - The project will prioritize sourcing of tech waste from Concordia's existing operations, from partners like IITS and faculties, whether from instructional technology, staff equipment, or equipment depots. Additionally, and as a service to students and the broader community, the team will host semesterly e-waste collection drives for large e-waste in partnership with e-waste recycler [Quantum Lifecycle Solutions](#), a certified e-waste recycler, in order to ensure that collect electronics that cannot be reused are recycled. Secure drop-off bins for large e-waste may also be established in the long term.

**Administration, Staffing, and Promotion** - The project will operate as an initiative of the Zero Waste Concordia Program, allowing for use of the available administrative support and internal funds to receive funding and pay staff and purchase any equipment needed to operate the project. Volunteers will be recruited through existing avenues developed through Zero Waste and the Office of Sustainability. The team will be overseen by full-time staff in Property Management, including the Environmental Specialist and the Sustainability Technician. Project promotion will also be conducted through existing outlets (UCS, Office of Sustainability, Zero Waste) including social media accounts, newsletters, the Concordia website, and digital and print displays on campus.