



Toronto Metropolitan University  
Re-engineering Competition Fall 2024  
Abstract

**Background:**

It is extremely difficult to provide sustainable, dependable, and safe transportation for the people living in many urban regions. Growing population needs are frequently not met by the transportation infrastructure that is in place, which leads to traffic jams, pollution, and safety issues. The capacity to develop a more effective and environmentally friendly urban environment might be hampered by the high cost and difficulty of implementing novel mobility options. In many cities, solving this problem calls for a multimodal strategy that incorporates cutting-edge technology and astute planning in addition to the construction of physical transportation infrastructure. The problem is further complicated by the fact that time and financial restrictions frequently act as roadblocks to the implementation of these essential innovations. Although effective and sustainable transport systems may be developed with the aid of good urban planning, certain cities find it difficult to upgrade their infrastructure without substantial funding. The challenge facing engineers and urban planners is to provide creative, cost-effective, and reliable transportation options that also guarantee sustainability and safety. The creation of public transportation networks, the encouragement of active transportation options like walking and bicycling, and the use of smart technology to improve traffic flow and lessen environmental effects are all examples of this. These approaches take into account the time, money, and general requirements of metropolitan regions in order to provide a more sustainable, safe, and healthy living environment for all citizens.

**Challenge:**

Develop solutions to re-engineer TTC's service, safety, reliability, and sustainability. Solutions may involve integrating smart systems (AI, Internet of Things) into current physical infrastructure or improving only physical infrastructure. The proposed system must integrate seamlessly with existing TTC infrastructure. The solution should enhance TTC performance through technological advancements, better resource allocation, better security in public areas, and improved service frequency and coverage.

**Deliverables:**

One report for the provided case. This report must be emailed to the provided email address by the end of the design phase.

The report must consist of the following:

- Proposed Changes (functionality, utility)
- Technical Characteristics (space, tools, environment, reliability, etc.)
- Commercial Feasibility (cost, production, marketability)
- Ergonomic/human factor considerations

A 15-minute presentation which you will present in front of a panel of judges on Sunday. At the end of your presentation, there will also be a 7-minute question period during which the panel will ask you any questions they may have.

## JUDGING CRITERIA

<b>Solution</b>	<b>/40</b>
Functionality of Proposed Changes	/10
Environmental, Social and Economic Feasibility	/10
Technical Feasibility	/10
Real World Applicability	/10
<b>Report</b>	<b>/15</b>
Clarity	/5
Writing Style and Professionalism	/5
Content Quality	/5
<b>PRESENTATION</b>	<b>/25</b>
Visual Aids	/10
Voice, Articulation and Timing	/10
Response to Questions	/5
<b>TOTAL</b>	<b>/80</b>

<b>Point Penalties</b>	
Plagiarism	Elimination
Insufficient citation	-50
Documents received after deadline	-50
Absent team member	-25
Entering presentation room before allotted time (after first offense)	-10
Solution makes no attempt to solve the problem within the constraints of the problem statement	-50
<b>Total</b>	