



CityLAB Project Agreement Fall 2023	
<p>The role of the project agreement is to document the expectations for the project, define objectives, clarify constraints or limitations, and outline responsibilities to ensure clarity for the project. CityLAB can help you and your partner complete this document, feel free to reach out for help! Email us at citylab@hamilton.ca</p>	
<p>*COVID-19* As you plan for your project, please consider how it can be adapted to adhere to physical distancing regulations if needed. Taking some time to think through contingency plans with your partner will help ensure a successful and meaningful project, no matter the circumstances.</p>	
Project Title:	Pole Mounted Wi-Fi Router with Cellular Backhaul for Public Spaces
<p>Is this project continuing from a previous CityLAB project?</p> <p><input type="checkbox"/> Yes</p> <p><input checked="" type="checkbox"/> No</p> <p>If yes, what was the project title:</p>	
City staff details	City staff name: Kelly Austen and Cyrus Tehrani
Instructor and student details	Instructor name: Ishwar Singh Course name: Master of Engineering Design
<p>Project Description (what is the problem you are trying to solve and what is the context?)</p> <p>If applicable, use the original challenge description found on www.citylabhamilton.com/challenges. Please make any changes as needed or simply leave as is.</p>	<p>Current Challenges:</p> <ul style="list-style-type: none"> - Deploying Wi-fi in public spaces is often cost prohibitive due to lack of existing connectivity options (electrical and wireline/wired internet). - Trenching and electrical installation to support access points is costly and time-consuming to install. - Cellular “data only” plans often for the City are on a shared data model which does present challenges versus “unlimited” corporate data plans specific for cell phones. The latter often have MAC address limits that carriers block them from being used for multiple connection access that would be required (1 to many connection) for a

	<p>public use cellular-based public wi-fi access point.</p> <ul style="list-style-type: none">- Management, login/acceptable use landing pages and potential for content filtering would be a nice to have.- Remote management or Wi-Fi access point nice to have.- Ideally, solutions that do not have a significant licensing fee for hardware would help minimize monthly / yearly operating costs.- All-in-one solution that is easy to install, year-round weatherproof for Hamilton climate is a required.- Often exterior Wi-Fi access points are Power over Ethernet (POE, POE+ or POE++ etc) whereas street lighting is often 110V so solution would need to take into account power conversion and weatherproof nature of any power conversion equipment- Esthetics for a visually pleasing solution (within reason of how pretty can an access point get but not minimizes installed equipment) that can be adapted to fix various exterior fixture types would be ideal.- Need to consider the potential for vandalism (i.e. running junction boxes from base power plate and conduit up the pole has not been successful in the past and often leads to vandals trying to access / steel wiring for copper recycling).- Ideally, an existing commercially available product not a custom made hardware solution,- Cost management of cellular data and the ability to possibly time limit per mac address, daily usage time limit caps, and bandwidth slicing per user nice to have.
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	<ul style="list-style-type: none"> - Filtering of high data streaming services would be ideal to allow “convenience” public wi-fi. Not intended to support Online streaming, video conferencing and high-bandwidth use applications. - Could involve narrowing down to 2 or 3 potential solutions, procuring and piloting (both bench testing and in-situ real word testing could be part of scope) <p>Four locations of priority interest (in order) with 1 and 2 being the primary initial focus.</p> <ol style="list-style-type: none"> 1) Eastgate Mall Bus Terminal (Ward 5) 2) Limeridge Mall Bus Terminal (Ward 7) 3) Promenade Park (Ward 2) 4) Pier 4 Park / Bayfront Park (Ward 2)
<p>Challenge summary (summarize the challenge in plain language)</p> <p>If applicable, use the original challenge summary found on www.citylabhamilton.com/challenges. Please make any changes as needed or simply leave as is.</p>	<p>Solution Required:</p> <ul style="list-style-type: none"> - A low cost, easy to install exterior Wi-Fi access point that can be deployed on a variety of street lighting poles and would utilized cellular/data SIM card for backhaul and connect to power via existing NEMA plug on top of street lighting or park lighting fixtures.
<p>In Scope (from original project description)</p> <p>Clarify the particular elements that you will be taking on in this project.</p>	<ul style="list-style-type: none"> - Spend considerable time with the community partner to acquire a good grasp of the issue. Regular meetings/consultation with community partner. - Meet and report on progress and seek feedback of the community partner on a regular basis, as agreed upon between the community partner and faculty-lead. - Suggest solution directions to the community partner and/or stakeholders, including getting community partner’s buy-in on solution directions.

	<ul style="list-style-type: none"> - If development of prototype or proof-of-concept is included in the scope, the development of: <ul style="list-style-type: none"> o Budget for the prototype or proof-of-concept, and o The prototype or proof-of-concept. - Follow all regulations of M. Eng. Projects course(s): SEP 700, SEP 704, SEP 799 and/or MANUFACT 701, including report(s) and presentation(s). 	
Out of Scope (optional) Clarify particular elements from original project description that this project won't take on.		
Background Research (what research will be required to pursue the challenge?)		
Communication with Staff	Communication: Other (please specify) Both Students or Faculty can communicate with staff.	
Project Deliverables, Timelines, and Strategic Priorities For the below table, please select all options that apply to your project. The dropdown boxes contain common checkpoints and milestones to help you envision the partnership. Please use the notes column for extra detail as needed and feel free to add in your own relevant items.	Alignment with City of Hamilton Strategic Priorities: <input type="checkbox"/> Community Engagement and Participation <input checked="" type="checkbox"/> Economic Prosperity and Growth <input type="checkbox"/> Healthy and Safe Communities <input type="checkbox"/> Clean and Green <input checked="" type="checkbox"/> Built Environment and Infrastructure <input type="checkbox"/> Culture and Diversity <input type="checkbox"/> Our People and Performance	
Meetings and Draft Work	Notes	Date
Choose an item.		
Choose an item.		
Choose an item.		
Choose an item.		



Choose an item.		
Choose an item.		
Final Deliverables		
Choose an item.		
Choose an item.		
Choose an item.		
Choose an item.		
CityLAB Deliverables		
Infographic and 3-minute Video		Friday December 1, 2023
Presentation at Project Showcase		Friday December 8, 2023
<p>Where will the work go and what will it be used for: Work will inform future potential options for City staff to consider for pilot deployment at city sites and well as inform future budgeting approval if/as appropriate for potential deployment.</p>		

Please submit your project agreement to CityLAB by emailing citylab@hamilton.ca before September 8, 2023 for Winter semester projects.

CityLAB Deliverables and Semester Schedule	
Project Agreements Due	September 8, 2023
Pre-Semester Student Survey link sent to faculty (to be completed by students)	September 16, 2023
Mid-Semester Check-in (CityLAB and faculty)	October 23-27, 2023
Project Showcase Materials Due	December 1, 2023
Project Showcase	December 8, 2023
Student Exit Survey link sent to students	December 8, 2023
Project Data and Reports due (final day of classes)	TBD
Exit Surveys sent to faculty and City staff (to be completed by staff and faculty)	December 15, 2023
Post-Project Check-in with City staff	January 8-12, 2023