

Calgary



The Call for Collaboration for the 5G Digital Playground

Updated November 8, 2021

Market Notification

Definitions

Experimenters: individuals, industry, public sector, and academia authorized to access the Playground.

Network Operator: Responsible for building, monitoring, upgrading, and sustaining a 5G network to the defined specifications for the life of the Playground.

Playground: 5G Digital Playground

Testbed Operator: Provisions the environment for The City and Experimenters to access each Playground to test 5G applications.

Project Purpose

The City of Calgary is looking to explore new opportunities presented by fifth generation wireless networks (5G). The goal of the 5G Digital Playground (Playground) is to provide a testbed environment for collaborators to experiment and research the capabilities of 5G while providing feedback to further develop and sustain the delivered network(s) within the testbed. The City is seeking to establish and deliver one or more Playgrounds. The first Playground is anticipated to include the geographic area as shown by Figure 1. Alternative locations will be considered.

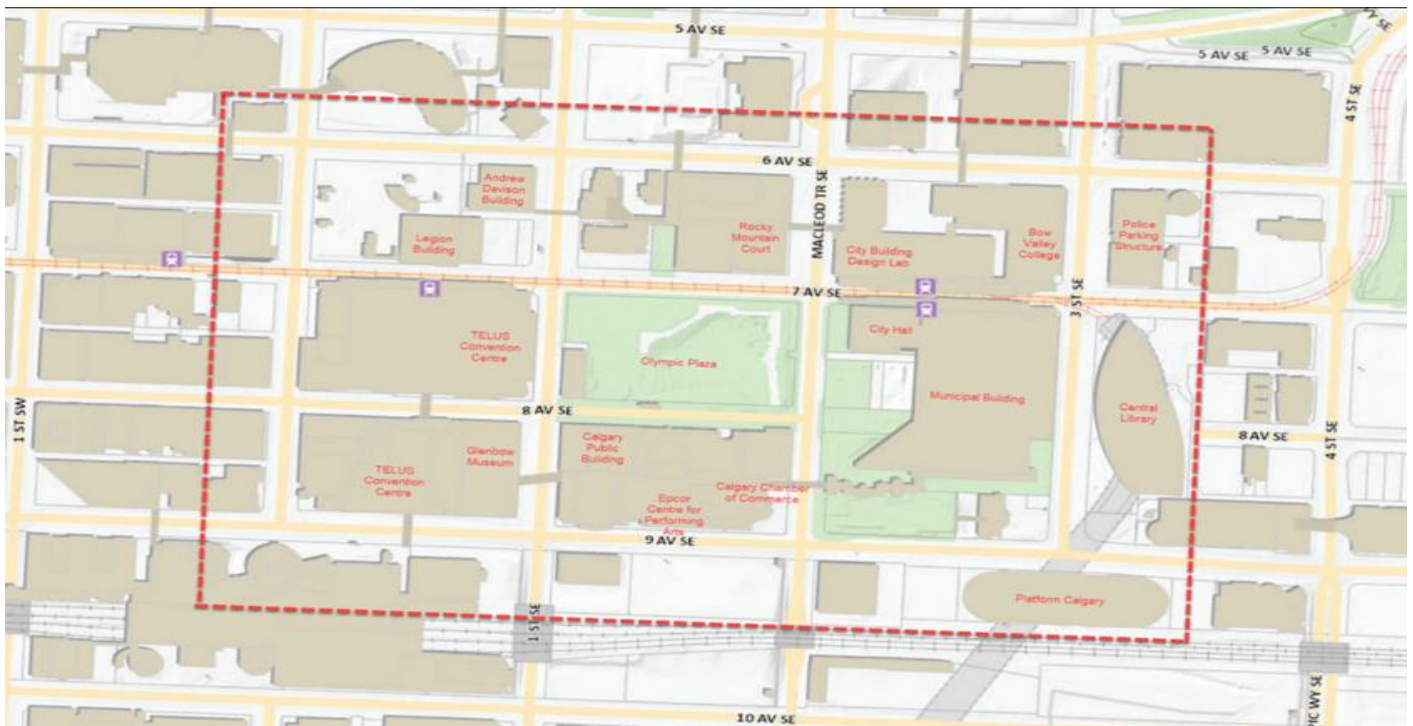


Figure 1.0 – Proposed Location for Pilot Playground

The City is inviting one or more interested parties to act as the Network Operator within the Playground who will:

- a) Be responsible for building, monitoring, upgrading, and sustaining a 5G network to the defined specifications for the life of the Playground.
- b) Be spectrum license holders.
- c) Sign a master agreement with The City to access City-owned assets for the installation of wireless equipment.

The success of Playgrounds will rely heavily on the relationships built between external stakeholders such as government agencies, wireless service providers, small to medium enterprises, etc. to ensure the successful delivery of key 5G characteristics. The City will facilitate coordination between government agencies, wireless service providers, local businesses, start-ups, researchers, and industry partners to understand and reap the benefits of 5G.

The lessons learned will establish new models that harness emerging technology which may be incorporated in future test beds and broader smart city use cases.

Funding

There is no funding from The City for the Network Operators. Respondents must be prepared to ensure the necessary resources are in place to build, monitor, upgrade, and sustain a 5G network to the defined specifications, for the life of the Playground.

Important Dates

Table 1 Market Notification—Call for Collaboration

Date	Description
End of Day January 12, 2022	Closing date for response. Responses will be considered by The City as they are received. The City will notify parties as soon as reasonably possible.

Table 2 Network Operator

Date	Description
Q1 2022	<ul style="list-style-type: none"> a) Playground location confirmed and approved. b) Refine and if required release a Testbed Operator Call for Collaboration (Appendix 1)
Q4 2021 – Q2 2022 (dependent on respondent)	<ul style="list-style-type: none"> a) Collaboration agreement, Playground governance and data governance negotiated and executed. b) Establish protocols for data sharing, management, privacy, and security.

Date	Description
Q4 2022	Construction completed.
Q4 2022 - Q4 2027 (or as otherwise agreed)	Monitoring, upgrading, and sustaining the Playground; the expected lifespan is three to five years.

Project Scope

There is no funding from The City for the Network Operators. Respondents must be prepared to ensure the necessary resources are in place to build, monitor, upgrade, and sustain a 5G network to the defined specifications, for the life of the Playground.

The City is seeking Network Operators that will:

- I. Build
 - (a) Explore optimal placement and design of infrastructure.
 - (b) Secure the necessary spectrum or test spectrum allocation from the regulator to enable the Playground.
 - (c) Plan and design a Playground with the following network characteristics indicative of 5G (enhanced characteristics from previous generations of wireless networks):
 1. 1000 times higher (in comparison to 4G) mobile data volume per geographical area.
 2. 10 to 100 times more (in comparison to 4G) connected devices.
 3. 10 times to 100 times (in comparison to 4G) higher typical user data rate.
 4. 10 times (in comparison to 4G) lower energy consumption.
 5. End-to-End latency of < 1ms (or as otherwise agreed to match the purpose of the proposed Playground such as <10ms, <5ms)
 6. Ubiquitous 5G access.

- II. Monitor, Upgrade and Sustain
 - (a) Maintain the minimum quality of service.
 - (b) Provide necessary software or hardware for testbed Experimenters to access the network.
 - (c) Provide open access to the network with barriers only limited to authentication, authorization and the processes set out by the Testbed Operator.
 - (d) Monitor network resources to ensure a secure and safe network environment.
 - (e) In collaboration with The City of Calgary, establish and meet data security standards.

- (f) Allow for network adjustments in response to feedback from Experimenters on key functions of the network including but not limited to reliability, network resource usage, energy consumption, data performance, and radio performance.
- (g) In collaboration with The City, establish and meet testing provisions, design metrics and measurement tools.

Out of Scope

Research with The City on solutions for complex municipal use cases including prototyping and proof of concept.

- a. All co-creation 'partnerships' will be secured by The City through a Request for Information (RFI). If required, a Request for Proposal (RFP) will be released by The City.
- b. The RFI/RFP process will establish mechanisms for research data to be collected, secured, shared, and stored.

Governance

The City anticipates one or more steering committees will be established to manage the Playgrounds.

Intellectual Property

Ownership of intellectual property will be addressed through subsequent legal contracts.

Testbed Operators

Interested respondents agree to work with The City to secure the Testbed Operator. The Network Operator may undertake all or part of the Testbed Operator role (Appendix 1).

The Testbed Operator may include any, or combination of, equipment vendors, *academia*, *researchers*, *start-up companies* or *technology partners willing to collaborate in conducting trials and demonstrations of 5G use cases*.

Response

Interested respondents shall respond no later than end of day January 12, 2022. Respondents may submit prior to this deadline. The City of Calgary will review all responses as received, inform respondents as soon as reasonably possible and make public announcements as agreed by both parties.

Please include the following information in your response:

	Response		Comments
Funding (section 4)	Acceptable	<input type="checkbox"/>	
	Not Acceptable	<input type="checkbox"/>	
Important Dates (section 5)	Acceptable	<input type="checkbox"/>	
	Not Acceptable	<input type="checkbox"/>	
Scope of Work - Build (section 6)	Acceptable	<input type="checkbox"/>	Please provide details/ examples for the scale and depth of resources that your organization has or can deliver.
	Not Acceptable	<input type="checkbox"/>	
Scope of Work - Monitor, Upgrade and Sustain (section 6)	Acceptable	<input type="checkbox"/>	Please provide details/ examples for the scale and depth of resources that your organization has or can deliver.
	Not Acceptable	<input type="checkbox"/>	
	Not Acceptable	<input type="checkbox"/>	
Testbed Operators (Section 10)	Acceptable	<input type="checkbox"/>	
	Not Acceptable	<input type="checkbox"/>	

Who To Contact?

Respondents may email wid@calgary.ca for more information or to provide their response.

Appendix 1

The Testbed Operators will collaborate with the Network Operator and The City of Calgary to:

- (a) Establish a public platform to provide access to testbed information
- (b) Establish a public platform for Experimenters to submit inquiries.
- (c) Create an application process for experimenters to provide information related to their use cases with defined QOS and QOE including but not limited to:
 1. Capturing the necessary information from the testbed directly from Experimenters (user experience questionnaires) as well as measured results from the network.
- (d) Establish a communications plan that is open and transparent.
- (e) Provide avenues for feedback from experimenters including the collection and reporting on Experimenter ratings of key functions of the network including but not limited to:
 1. Reliability.
 2. Network resource usage.
 3. Energy consumption.
 4. Data performance.
 5. Radio performance.
- (f) Build partnerships to provide Experimenters with resources including:
 1. Equipment
 2. Expertise and resources to enable the success of Experimenters such as:
 - i. Media and promotional support to demonstrate use cases to a wide audience.
 - ii. Linking Experiments to vendors to evaluate the application for different verticals (e.g., transportation use case applicable to smart cities or public health).