



Broadcast–Broadband Convergence *B²C* Lab

b2convergence.ca

Lab Overview

Introduction / Infrastructure / Engagement

Orest Sushko – Director, B²C Lab



B²C Lab – Introduction

Barrett Centre for Technology Innovation

- 93,000 sq ft Industry Innovation Makerspace
- Platinum Status/Net-Zero energy emission environment
- Industry 4.0 focus – Digital Transformation

BCTI Consortium Partners

- Cisco Canada
- SICK Canada
- Magna International
- Javelin Technologies
- DMG MORI Canada
- Festo Didactic, Inc
- KUKA Canada
- Rockwell Automation
- SEW-EURODRIVE



June 2, 2023

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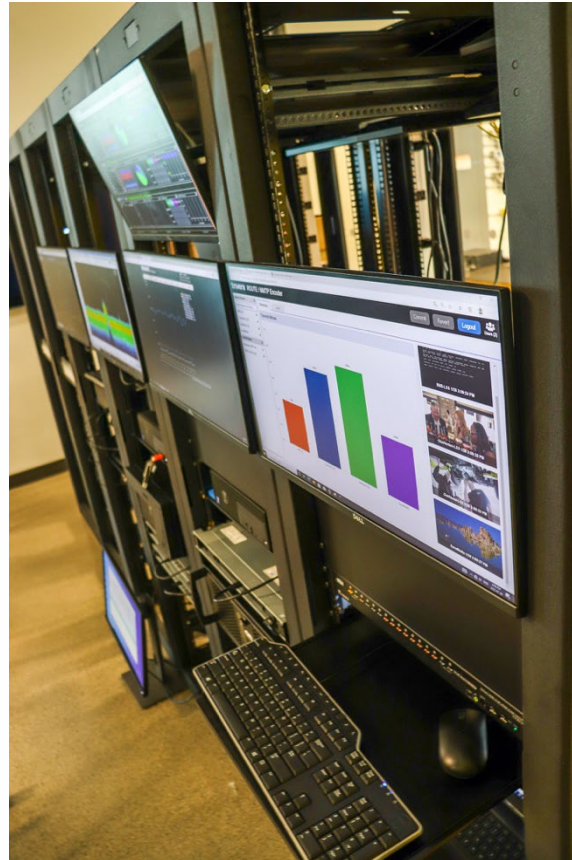
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B²C Lab – Introduction

- ❑ Front-facing industry lab and first R&D test bed in North America equipped with both **ATSC 3.0 IP-based broadcast ecosystem and 5G core network** combining the best of global data delivery standards technologies
- ❑ **RF anechoic chamber** supporting development and testing of wide range of wireless devices and prototypes
- ❑ ATSC 3.0 OTA developmental licensing (first and currently only experimental license in Canada)
- ❑ World-class OTA test bed including multiple ATSC 3.0 T/Rx transmitter-antenna configuration for Inter-Tower Communications Network (ITCN) and SFN development

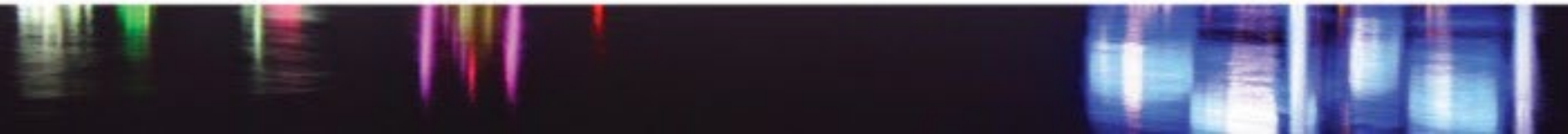
B²C Lab – Infrastructure



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B²C Lab – Infrastructure



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B²C Lab – ATSC 3.0 OTA Test bed

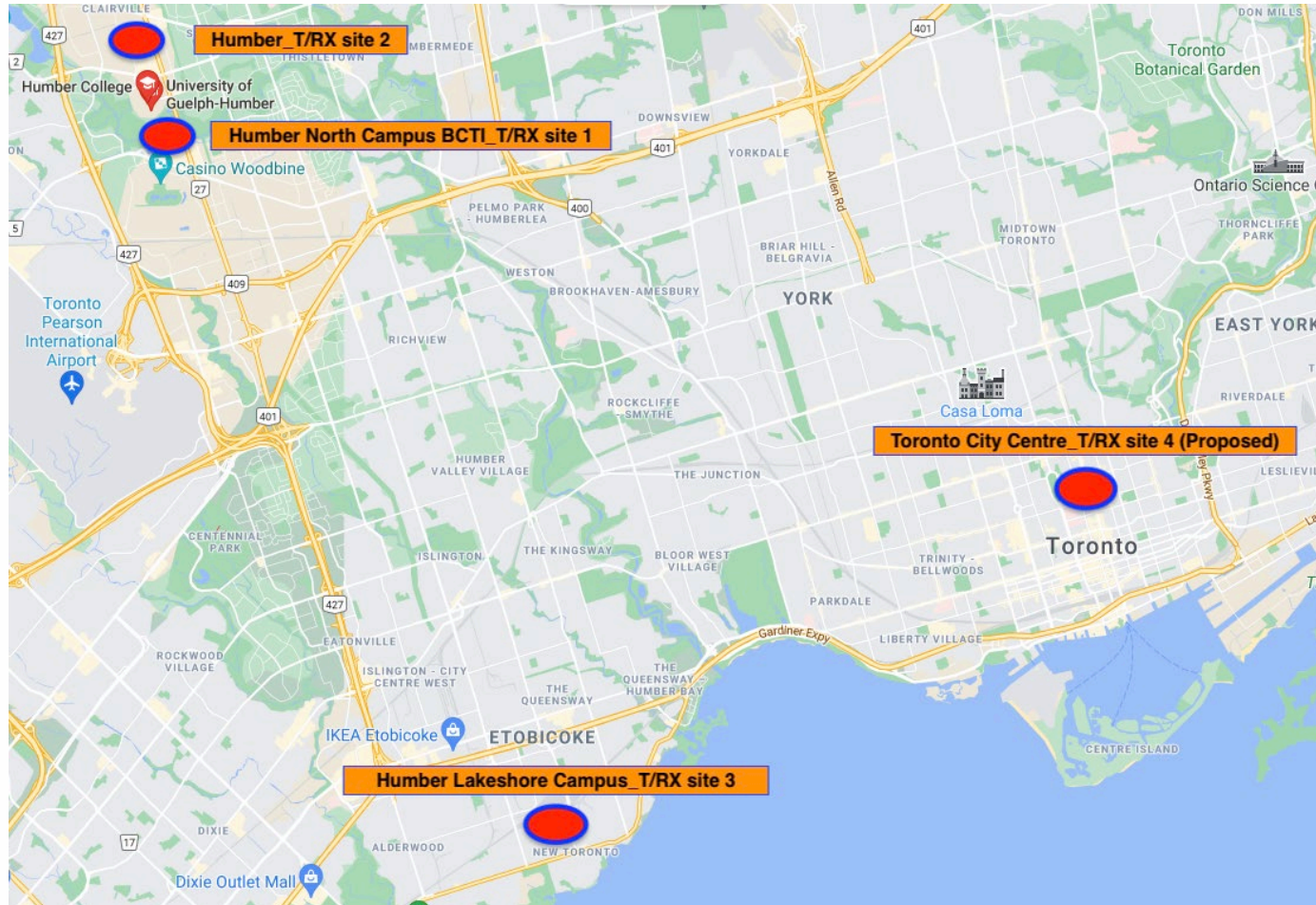


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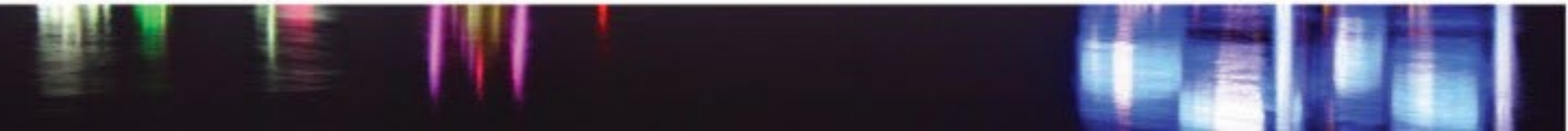
B²C Lab – Infrastructure



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B²C Lab – Industry Project Rooms



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Television Interactivity

Hybrid TV experience with web portals and apps/Direct connection to consumer via broadcast with returnable data from application via broadband/addressable advertising/content substitution/enhanced emergency alerting

Data Delivery

ATSC 3.0 as capacity multiplier/Hybrid 3.0-5G architectures/combined broadcast-unicast value propositions offering greater efficiencies in use of spectrum:

- Connected vehicles – Navigation/Infotainment/SW-FW updates
- Multisectoral IoT (Agriculture, Mining, Smart cities, Distance education-remote learning)
- ATSC 3.0 Ultra-Long-Range wireless backhaul – Rural, remote internet integration

GPS Augmentation-backup/Geo-positioning

Precision timing source inherent in ATSC 3.0 physical layer/DTV emissions for geo-positioning

Joint Research with ATSC, Communications Research Centre (CRC) Ottawa, University of Basque Country, Spain & ETRI, South Korea

ATSC 3.0 Broadcast inter-tower communications network (ITCN) – Connecting broadcast towers to form an IP and 5G-based network. ITCN R&D will push the gateway to the tower allowing for insertion of local data at each tower. Broadcast tower becomes a ‘smart’ tower/facilitates reconfiguration of broadcast network emulating a cell network (*ATSC IT5*)

Creation of broadcast core network (BCN) – ATSC is developing a BCN for the North American broadcast industry. BCN will connect all broadcast facilities (contribution, production, distribution) enabling the broadcast industry to introduce point-to-multi-point services (*ATSC S43*)

Convergence with 5G core network – 3GPP has approved a new study item to study non-3GPP broadcast technologies for potential inclusion in the 5G ecosystem in Release 18 (2024), alongside other non-3GPP RANs including Wi-Fi, Satellite, Bluetooth, etc. ATSC 3.0/5G Convergence - at PHY layer, IP layer, Core layer, and within the handset (*ATSC TG3-11 AHG 3.0/5G Harmonization*)

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B²C Lab – Industry Partner Engagement

- ❑ **Fostering partnerships** between Humber College and private sector leading to **business innovation** at local, regional and national levels
 - Facilitating **commercialization** through innovation
 - Technology transfer/**Adaptation** in marketplace
 - Supporting **adoption** of ATSC 3.0 in Canada
- ❑ Development research funding **matched 1:1 with industry partner contributions** leveraging more cost-effective R&D in low-risk innovation environment
- ❑ Anticipate 150 students to be hired as research assistants working with industry partners
- ❑ **Innovator-friendly intellectual property (IP) policy** remains with industry partner
- ❑ All cash & in-kind Canadian industry partner contributions **SR&ED tax deductible** (*Scientific Research and Experimental Development Tax Incentive Program*) / Multinational industry partners welcome
- ❑ Technology Access Centre (TAC) pathway for the lab

Thank you to our Supporting Organizations



NORTH AMERICAN BROADCASTERS ASSOCIATION



Canada



Society of Motion Picture & Television Engineers®



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Thank you!

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