



# ANNUAL CONFERENCE 2023

Builders Of The Original  
Hybrid Networks





## EXECUTIVE DIRECTOR'S MESSAGE

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It was 10 years ago last month that CanWISP started. We have grown to over 50 rurally focused, facilities-based ISP members, and over 50 vendor members. Over that time, we've presented to the CRTC, met many times with ISED, talked with MPs and MPPs and most recently a Senate Standing Committee. What does this matter to you and what does this mean for rural Canadians?

More rural Canadians have internet, and better internet, today than they did 10 years ago.

You continue to play a crucial role in connecting rural Canadians to the news, government services, educational resources, entertainment and to each other.

Over the past few years it's become clear that the Digital Divide is not about download speed or bits-and-bytes. It's about how dependent society is on the resources, services and communications that are only available with reliable internet service. The Digital Divide should not only be measured in the arithmetic between average urban download speeds and rural download speeds. The calculation must also include a measure how much of daily life has moved online. Without connectivity, those resources and services and people are farther away from underserved Canadians. That is the Digital Divide. That is the problem you solve every day.

You don't need a "Thank You" from CanWISP because you get that from your customers and neighbors – every time you connect another one of them to this crucial resource. But, because you don't hear it often enough – "Thank You" for your service and perseverance. Hundreds of thousands of rural Canadians depend on you.

Thank you to the Board of Directors for their service to the organization and industry. Thanks also to Storm Internet for providing CanWISP with office internet and to Jen French for the time she volunteers as our Executive Assistant.

Please visit the booths. Talk with the vendors. These manufacturers and suppliers are the ones who are committed to the rural ISP industry. They have lots of technology and even business ideas that will make you a better operator.

A handwritten signature in purple ink, appearing to read 'J Black'.

Jonathan Black  
Executive Director, CanWISP  
jblack@canwisp.ca







## PRESIDENT'S MESSAGE

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# Welcome to the 11th Annual CanWISP Conference. We are excited to see everyone in person again!

Each year I look forward to re-connecting with members, industry partners and manufacturers to share insights, knowledge and discuss challenges we each face in the everchanging landscape of Fixed Wireless. We move into 2023 after completing a record number of consultations with ISED in 2022 and while we may not have achieved all the results we hoped for, we are encouraged by recent events and our invitation to speak with the Senate Committee last month. There is still much work to do, both politically and in the media.

However, our focus remains the same, on getting our messages, our challenges and our recommendations to stakeholders and policy makers.

We will continue to relentlessly advocate for the interests of our members and industry. I believe the future of fixed wireless is incredibly promising and new technology is enabling us to do things we never thought possible before.

I hope after the conference, you feel re-energized through conversations with other members, industry partners, vendors, and other attendees through the sharing of experiences and knowledge.

Now, please enjoy the show, and thank you all for being a part of this event.

Regards,

A handwritten signature in black ink that reads "Scott Holmes".

Scott Holmes  
President  
CanWISP







## TEAM MEMBERS

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**Andre Cleroux**  
CHAIRMAN, Board Member since 2020

Andre is the Vice President of Customer Relations & Wireless Networks at TekSavvy Solutions Inc. With over 15 years of experience in the telecom industry, he has been instrumental in several key initiatives including leading operations through rapid growth and success, the deployment of Fibre & Wireless facilities in Southwestern Ontario, and upholding TekSavvy as one of the premium customer-centric independent service providers.



**Scott Holmes**  
PRESIDENT, Board Member since 2018

Scott is an entrepreneur who is the founder of Extreme Technology Corporation, a parent organization that has subsidiary companies in software and telecommunications. Scott is the CEO of Niagara Wireless Internet Company (NWIC Inc), a WISP in Niagara which has 27 fiber backhauled POPS to deliver high capacity connectivity to several thousand customers in the region. Scott's passion for telecommunications started at the age of 18 when he required higher capacity in rural Niagara to start his business. When Scott is not working he spends time with family and volunteers in his church and the community.



**Jonathan Black**  
EXECUTIVE DIRECTOR

Jonathan was one of the founding members of CanWISP in 2013 during his time at Storm Internet. He has served the organization in various roles: Board Member, Treasurer, Chair, Conference Organizer and most recently as Executive Director. When he is not working on CanWISP he provides consulting services to WISP's and any other group trying to bring internet to underserved Canadians. His evenings and weekends are spent with his family, coaching their sports teams, losing at board games and skiing.



**Jennifer French**  
EXECUTIVE ASSISTANT since 2019

Jen helps where needed throughout the year with CanWISP tasks. She is in her 5th year assisting with planning the conference.



**Neil Smellie**  
TREASURER, Board Member since 2017. Treasurer since 2017

Neil was a founding partner of Muskoka.com in 1995, an early start up ISP. In 2007 Neil created Core Broadband. Core Broadband owned, built, and operated a broadband wireless network and was the first to bring wireless broadband Internet service to many rural communities in Muskoka and Seguin Ontario. The network had a unique open access business model and offered several other regional network operators the ability to extend their own network coverage across a shared network. The network grew to operate more than 100 points of presence in the area. Neil sold the wireless network in 2020.



**Christopher Pape**  
VICE CHAIRMAN, Board Member since 2014, Vice Chair since 2015, Secretary 2014

With over 20 years in the fixed and mobile wireless industry including Ericsson telecommunications and the technical operations at Rogers wireless, Virgin mobile and Clearnet (now Telus), Christopher brings strategic planning skills and governance experience to CanWISP.





## TEAM MEMBERS

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### **Jeff Pastuck**

**SECRETARY**, Board Member since 2015

Jeff Pastuck is the Wireless Network Manager of Seaside Wireless Communications located in Sydney, Nova Scotia. Seaside Wireless Communications was formed in 2008 and offers wireless broadband and has a sister company Seaside Communications that has been in business for 40 years offering TV, VoIP and Cable Internet. After gaining experience at an enterprise level working at a local university, Jeff moved on to join Seaside's wireless division not long after its founding.



### **Dan Risebrough Barnes**

**BOARD MEMBER**, CanWISP Board member since 2014, Chair 2016-2018, Secretary 2015

Connecting people and things in the rural markets is my passion. The rural digital divide has no place in today's connected world. I am passionate about making sure this divide is conquered. I was a founding member of CanWISP, Chairman of the Board of Directors for six years and have held various other roles in the organization. I started a rural WISP 20 years ago and that company is now a key player in fibre, cable, and wireless connections in the rural market. It was purchased by large telecom provider with a key focus on rural expansion.



### **Danny Frangione** **BOARD MEMBER**

Danny Frangione is the CFO of Storm Internet and is responsible for all corporate financial matters, treasury and risk management. Prior to serving as CFO, he held the roles of controller and accounting manager.

Mr. Frangione has spent 11 years in the telecom industry. Prior to Storm Internet, he was the senior tax accountant at Telesat Canada working specifically on all US and International tax compliance as well as the annual SRED claim. Prior to Telesat, he spent 6 years working in public accounting. Mr. Frangione is currently a member of the board of CanWISP and serves as Treasurer of the Ottawa Gatineau Internet Exchange (OGIX). He is a certified public accountant and holds a Bachelor's degree from Carleton University in Ottawa.



### **Steven Cole**

**BOARD MEMBER**, Secretary 2016-2018, Board Member since 2015

Steve is the President of Kingston Online Services which he founded 30 years ago.

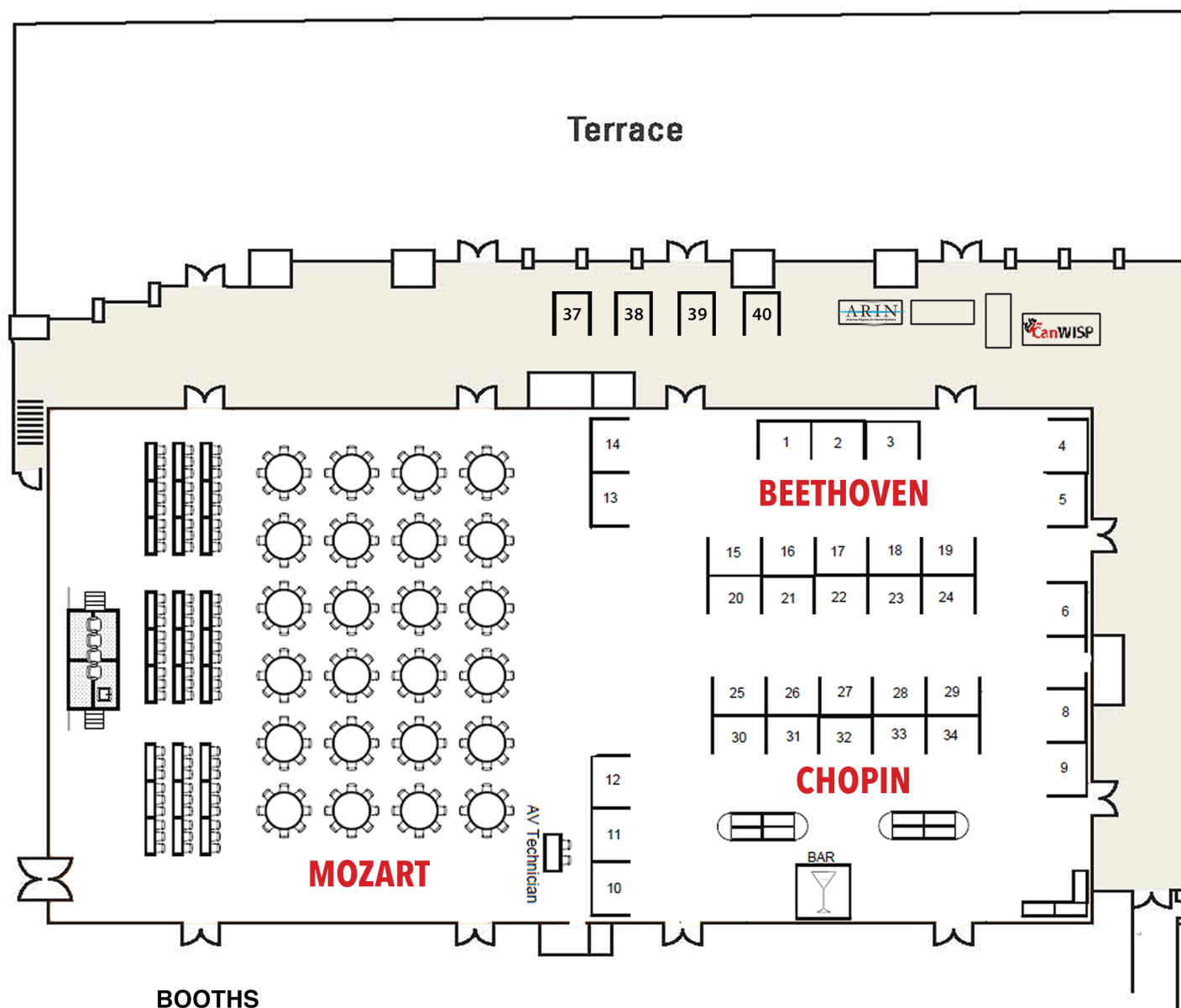


### **Brenda Bouchette**

**BOARD MEMBER**, Board Member since 2020

Board Member since 2020 Brenda has worked in the telecommunications industry for 25 years, and in the WISP industry for 15 years, as a project engineer, wireless network designer, and regulatory policy analyst. Today, Brenda works with Tacit Law. Brenda lives in BC and does her best to take advantage of it.

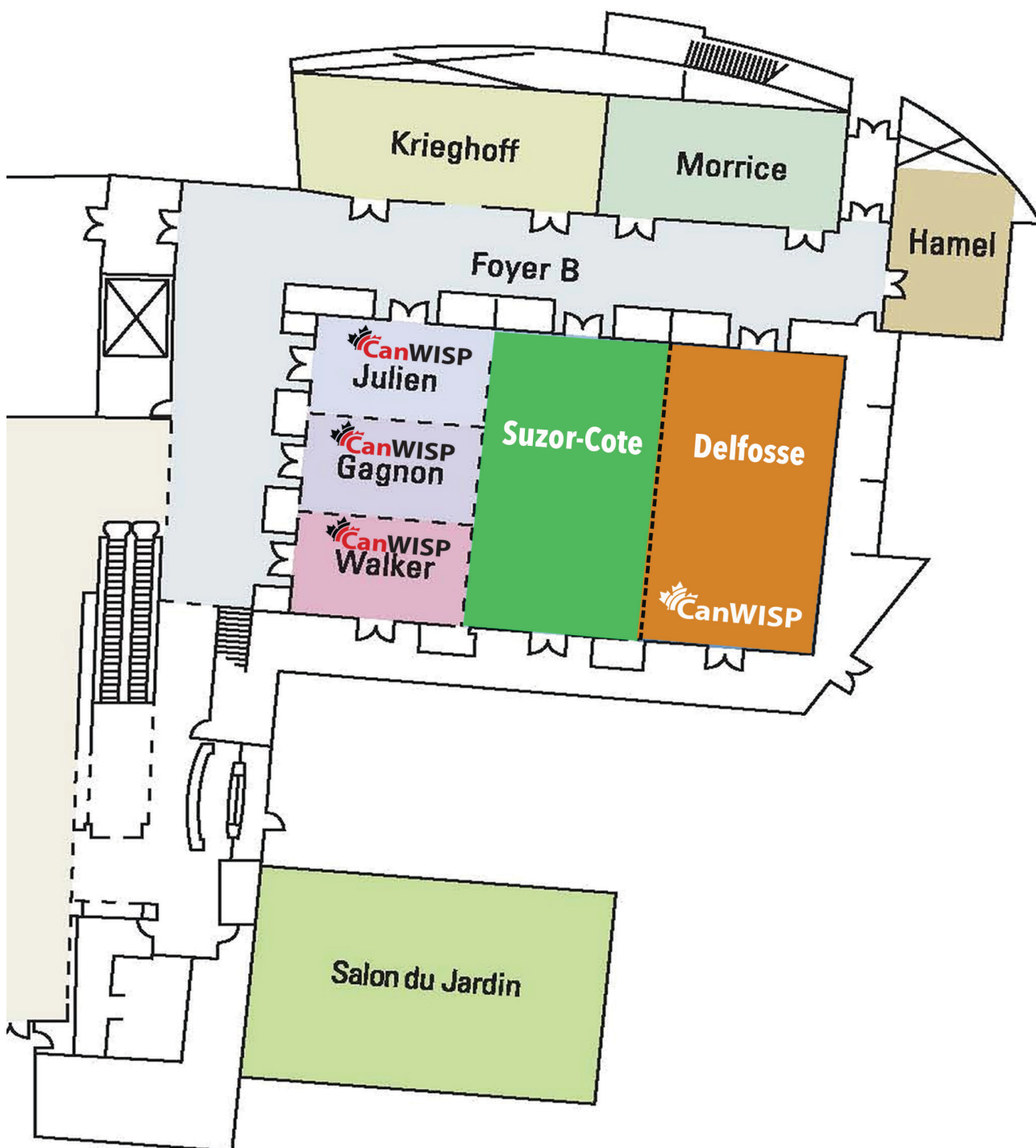




#### BOOTHS

Booth 1	atmail	Booth 17	Double Radius
Booth 2	Canadian Centre	Booth 18	Connect Telecom
	Cyber Security	Booth 19	LINK Technologies
Booth 3	Fonex Data Systems	Booth 20	ISED
Booth 4	Tacit Law	Booth 21	CTI Connect
Booth 5	Volatus Aerospace	Booth 22	NOKIA
Booth 6	Preseem	Booth 23	Crossover Distribution
Booth 7	KGPCo	Booth 24	dura-line
Booth 8	Alliance Corporation	Booth 25	tp-link
Booth 9	Superior Essex	Booth 26	Kuro Partners
Booth 10 -12	MBSI WAV	Booth 27	NORAMCO
Booth 13	Ciena	Booth 28	PHNX Technologies
Booth 14	Tarana Wireless	Booth 29	Wirewerks
Booth 15	Calix	Booth 30	GRANDSTREAM Networks
Booth 16	Siklu	Booth 31-33	TDL Gentek
		Booth 34	Airspan Networks






#### KIOSKS

Kiosk 37	Thurtek
Kiosk 38	Juniper Networks
Kiosk 39	Trispec
Kiosk 40	Avateq

#### Reception

CanWISP  
ARIN

## MONDAY - MARCH 27

Mozart	Beethoven/Chopin	Julien/Gagnon/Walker	Delfosse
10:00 am - 6:30 pm Registration Open			
11:45 am - 12:00 pm <b>Welcome &amp; Introduction</b> Minister Gudie Hutchings			
12:00 pm - 12:45 pm <b>Can fixed wireless networks deliver a good Quality of Experience?</b> Gerrit Nagelhout, Preseem			
12:45 pm - 1:30 pm <b>Quick Fire Sessions</b> Sponsors and Exhibitors			
1:30 pm - 2:00 pm <b>The National Cyber Threat Assessment for 2023-2024</b> Kenny Jamer, Canadian Centre for Cyber Security			
2:00 pm - 2:15 pm <b>COFFEE BREAK</b> 		2:00 pm - 3:00pm Experience with Gigabit	2:00 pm - 3:00 pm Vendor Showcase TP-LINK
2:15 pm - 3:00 pm <b>Planning your IPv6 Network</b> Jon Worley, ARIN			
3:00 pm - 3:30 pm <b>Vice-Chairperson Telecommunications</b> Adam Scott, CRTC			
	3:30 pm - 6:30 pm EXPO HALL	3:30 pm - 4:00 pm 50/10 Wirelessly	
4:30 pm - 6:30 pm <b>Welcome Event</b> Sponsor: TDL Gentek			



### Adam Scott, Vice-Chairperson Telecommunications, CRTC

With over 20 years of telecommunications policy and regulatory experience, Adam has managed complex files with technological, economic, social and legal dimensions, including Canada's 5G spectrum auctions. He has 12 years of experience at the executive level and brings a wealth of legislative, policy, regulatory, and program expertise to the telecommunications space. During his time at Innovation, Science and Economic Development Canada, he was responsible for developing strategies on how to optimise social and economic benefits of wireless spectrum in Canada.

For many years, he developed government programs to improve broadband access in rural and remote parts of Canada, and developed a vision and strategy for improving Canada's communications infrastructure, addressing rural gaps, affordability issues, competition, innovation and investment.



### My Experience with Gigabit

New multipoint technology – short range, very high bandwidth is enabling operators to achieve gigabit speed to subscribers in unlicensed spectrum. Let's look at what 60 GHz spectrum can do for us!

### 50 / 10 Wirelessly

In our country, FWA is under pressure to perform. We need higher, more consistent data rates to create stable systems. Let's look at what it takes to determine if the wireless gear you have now, or maybe you're planning to upgrade in the future – has what it takes to create 50/10 or higher service rates to your subscribers.

### Dave Clelland, Systems Engineer, MBSI WAV



### Vendor Showcase TP-LINK

Introducing TP-Link Aginet, an agile and pragmatic solution for internet service providers. Cloud Managed Wi-Fi Solution. For ISPs dedicated to simplifying operation, reducing costs over the entire ISP service lifecycle, and providing comprehensive monitoring and remote troubleshooting for all your CPEs.

### Benjamin Liu, Director, B2B Sales and Product Management, TP-Link Canada Inc.



## SESSIONS



### Opening Comments: Gudie Hutchings, MP, Minister of Rural Economic Development

Gudie Hutchings is Canada's Minister of Rural Economic Development. She brings over 30 years of experience as a small business owner in the Atlantic Canadian tourism industry. Since 2015, she has been proudly serving her community as the Member of Parliament for the Long Range Mountains in Newfoundland and Labrador. As Minister of Rural Economic Development, she has been focused on implementing the \$2.75 billion Universal Broadband Fund, accelerating high-speed Internet access to all Canadians. As well, she is focused on improving rural housing supply, access to transit services, and workforce development in rural and remote communities.

Working across government, she has been a constant advocate for rural priorities, ensuring a rural lens is applied to all decision-making. Before she was appointed to Cabinet, she served as Parliamentary Secretary for Small Business and Tourism, as well as the Parliamentary Secretary to the Minister of Women and Gender Equality and Rural Economic Development, where she played a key role in the development of a national action plan to end gender-based violence and the Government's signature program to deliver universal connectivity.



### Can fixed wireless networks deliver a good Quality of Experience?

QoE is all about how the subscriber perceives your service. Poor QoE generally results in "slow internet" complaints. Dive deep into an insightful database of real world measurements that impact QoE.

### Gerrit Nagelhout, CEO, Aterlo Networks

As CEO and co-founder of Aterlo Networks and Preseem, Gerrit's passion is helping ISPs understand and improve subscriber Quality of Experience (QoE) on their networks while uncovering new opportunities to help customers thrive and scale. Prior to co-founding Aterlo/Preseem, Gerrit spent 12+ years developing products and managing engineering teams for platforms used by some of the largest ISPs in the world. Now, however, he's dedicated to helping local and regional operators take on the big guys and solve network problems with products that people love. Gerrit has a degree in computer engineering from the University of Waterloo.



### The National Cyber Threat Assessment for 2023-2024

The Canadian Centre for Cyber Security (the Cyber Centre) is part of the Communications Security Establishment (CSE). It is the single unified source of expert advice, guidance, services and support on cyber security for Canadians. The partnership branch of the CCCS will present the National Cyber Threat Assessment for 2023-2024 with Key Judgements for the telecommunications sector.

### Kenny Jamer, Telecommunication Sector, Canadian Centre for Cyber Security

Kenny is a Security Architect with the Partnerships Directorate of the Canadian Centre for Cyber Security. He has worked with the CCCS/CSE since 1999 helping to secure Canadian networks by developing standards, systems testing, incident handling, and helping Critical Infrastructure partners mitigate risks in their networks. Away from work Kenny spends as much time in the Great Outdoors as possible.



### Planning your IPv6 Network

Did you know that IPv6 can help your WISP grow? IPv6 provides a significantly larger pool of addresses compared to IPv4. This can help WISPs support the growing number of connected devices and ensure long-term growth. Obtaining IPv6 addresses from ARIN (American Registry for Internet Numbers) is a straightforward process and provides provider-independence and sufficient resources to run your WISP business. Attendees will learn the basics of IPv6, the appropriate IPv6 block size to request, and options for supporting IPv4 in their network.





### Jon Worley, Senior Technology Architect, ARIN

Jon Worley has been an integral member of the ARIN team since 2004, currently serving as the Senior Technology Architect. He possesses extensive knowledge and expertise in all aspects of ARIN policies and procedures, specifically concerning the requesting, managing, and transferring of IP addresses and AS numbers, and technical services such as ARIN's RESTful API. Jon has shared his expertise on these subjects, as well as IPv4 depletion and IPv6 adoption, as a speaker at numerous ARIN events.



## AGENDA

### TUESDAY - MARCH 28

Mozart		Beethoven/Chopin	Julien/Gagnon/Walker	Delfosse
8:00 am - 9:00 am	Breakfast 			
9:00 am - 10:00 am	Wisper ISP The WISP Business Nathan Stooke, Founder and CEO			
10:00 am - 10:45 am	Geographic Information System (GIS) Wireless Experiences Jeff Buell, CIRA	10:45 am - 5:00 pm Expo Hall Coffee Break 		
11:15 am - 12:15 pm	Vendor Showcase - MBSI WAV			
12:15 pm - 1:00 pm	LUNCH BREAK 			
1:15 pm - 2:00 pm	The Accessible Canada Act, and other legal issues affecting WISP's C. Cliff, C. Copeland, TacitLaw	2:15 pm Coffee Break 	1:15 pm - 2:15 pm Vendor Showcase CALIX	1:15 pm- 2:15 pm Raising Capital
			2:30 pm - 3:30 pm Vendor Showcase ATMAIL	2:30 pm - 3:30 pm Vendor Showcase TARANA
			3:30 pm - 5:00 pm CEO ROUNDTABLE	
5:00 pm- 7:00 pm	GALA RECEPTION (Le Baccara) MBSI WAV			



#### MBSI WAV Vendor Showcase

MBSI WAV is evolving with our customers – network operators, integrators, Managed Service Providers, and corporate network managers from pure broadband wireless offering to hybrid fiber / wireless networks. Let's us talk about this evolution and see what MBSI WAV can do for you!

**Dave Clelland, Systems Engineer, MBSI WAV**



#### The Accessible Canada Act, and other legal issues affecting WISPs

Participants will learn about the Accessible Canada Act ("ACA"), which came into force in 2019 and applies to federally regulated entities. The goal of the legislation is to create a barrier-free Canada by 2040. We will give a high-level overview of WISPs' obligations under the ACA and other accessibility laws and the approaching deadlines for creating and publishing accessibility plans; setting up feedback processes; and developing progress reports. We will also provide a brief update on employment law issues affecting WISPs.

**Catherine Cliff, Lawyer, Tacit Law**

#### CEO ROUNDTABLE

If you are an OWNER, CEO or GENERAL MANAGER you'll want to be here. It's a closed session for you to talk about whatever you want to talk about.





## SESSIONS



### The WISP Business

There's a reason it's called a Business. Nathan has grown his business from Day 1. He's learned that the WISP business is not just about bits, bytes, throughput, ping time, SN Ratios and jitter. Hey, if it was easy - Everyone would be doing it.

### Nathan Stooke, Founder and CEO, Wisper Internet

In the last 19 years, Nathan Stooke went from programming PCs to building Wisper into a successful multi-million dollar Internet service provider. With headquarters in Mascoutah, IL, Wisper now services Illinois, Kansas, Missouri, Indiana, Arkansas, and Oklahoma. In 2018, the FCC announced that Wisper ISP won \$220.3 million of federal funding in the FCC's rural broadband auction, the Connect America Fund Phase II. This money will be distributed to Wisper over a period of ten years. Wisper was one of 103 providers to win financial support from across the country.

As CEO of Wisper, Nathan has provided high-speed Internet service to tens of thousands of happy customers; many in rural, underserved areas where previous service providers had been spotty or nonexistent.



### Geographic Information System (GIS) in your Business

Customers are out there anxious for better internet service. ISPs would be willing to expand infrastructure, but they need to have confidence in a return on their investments. Data, particularly spatial data, can play a big role in matching customer demand to service expansion opportunities. Jeff will highlight some of the various data sources, data types and software you need to assist wireless ISPs, particularly in rural areas.

### Jeff Buell, IPT Program Manager, CIRA

Jeff is the Internet Performance Test (IPT) Program Manager. The IPT is the most advanced internet quality test in Canada that provides public access to the performance results. Jeff is an advocate for how IPT data, maps and reports can help stakeholders identify areas with limited access, improve funding decisions, evaluate the success of funded projects and do so at a high degree of geographic granularity.



### Vendor Showcase: TARANA

#### How Tarana ngFWA is Closing the Digital Divide and Delivering Reliable Broadband Service Worldwide

Tarana's ngFWA (next-generation fixed wireless access) broadband platform, Gigabit 1 (G1), is taking the world by storm. No longer just a concept, more than 200 ISPs in 19 countries are actively deploying ngFWA to connect their customers. Join our vendor showcase session to learn about the benefits these operators are realizing with G1, and to take a deep dive into the technology required to provide reliable broadband service in challenging locations.

### Vardin Amiri, Sales Engineering, TARANA

Vardin Amiri is a highly seasoned technical sales engineer with more than 23 years of experience in the Wireless industry. He has worked for manufacturers of Point-to-Point, Point-to-MultiPoint wireless solution built on proprietary and standard based technologies, such as LTE and 802.11xx chipsets.

### Raising Capital

#### Come and hear from some ISPs that have been successful in raising capital

Capital comes in many shapes and sizes, from formal and informal sources. Debt and Equity are the primary categories, but there is also seed capital, venture capital and private equity. We'll provide an overview of the process and the ISPs will share their experiences.

### Moderator: Jonathan Black

Panelists: Nathan Stooke, Wisper Internet

Birket Foster, Storm Internet

Hank Wall, Valley Internet




## WEDNESDAY - MARCH 29

### Mozart

8:00 am - 9:15 am **Breakfast** 

9:15 am - 10:00 am **The Road to 2030 Opportunities and Obligations**  
Brenda Bouchette, Tacit Law

10:30 am - 11:30 am **3800 MHz Spectrum Auction Overview and Demonstration**  
Matthew Kellison Chad Paquette, ISED

11:45 am - 12:30 pm **Lunch Break** 

12:30 pm - 1:30 pm **CRTC Under New Management: What does it mean for Rural ISPs**  
Peter Menzies,  
Monica Song  
Rachael Thomas, MP

1:30 pm - 2:00 pm **State of the Industry**  
Jonathan Black, CanWISP  
Our annual survey of rural ISPs reveals a lot about how much we do for Rural Canadians.

2:00 pm - 2:45 pm **Independent ISP Update**  
Jay Thomson, CCSA  
Geoff White, CNOC  
Jonathan Holmes, ITPA  
Bob Allen, BCBA  
Jonathan Black, CanWISP

2:45 pm - 3:00 pm **Closing Comments**  
Andre Cleroux, Jonathan Black

### Beethoven/Chopin

9:00 am - 12:30 pm  
Expo Hall

10:00 am - 10:30 pm  
**COFFEE BREAK**



### Julien/Gagnon/Walker

8:30am - 9:15 am  
**AGM Meeting**



### Independent ISP Associations' Annual Update

There are several associations of independent ISPs. They each have distinctive interests but share some common ideals and goals. What challenges do other independent ISPs face?



**Jay Thomson**, CEO, Canadian Communications Systems Alliance (CCSA),



**Geoff White**, Executive Director, Canadian Network Operators Consortium (CNOC),



**Bob Allen**, Executive Director, British Columbia Broadband Association (BCBA),



**Jonathan Holmes**, Executive Director, Independent Telecommunications Providers Association (ITPA)



**Jonathan Black**, Executive Director, Canadian Association of Wireless ISPs (CanWISP)



### **The Road to 2030 – Opportunities and Obligations**

Canada's goal is to connect 100% of Canadians by 2030. What will this look like for rural operators? With the clawback of 3.65 GHz spectrum, what spectrum can operators use to build rural networks? And what new requirements will ISPs have to meet? Brenda will discuss the opportunities and obligations that are on the horizon for rural ISPs.

#### **Brenda Bouchette, Technical and Economics Advisor, Tacit Law**

Brenda is a professional engineer with 26 years' experience in the telecommunications industry. Brenda has designed fixed and mobile networks across Canada and internationally, for large carriers and small operators. She has extensive knowledge of telecommunications network design and the business challenges facing network operators. She is also well-versed in economics and its application to the telecommunications industry.

### **3800 MHz Spectrum Auction – Overview and Demonstration**

ISED will walk us through what happens in a spectrum auction. From preparation to participation. A demonstration of the auction process through several rounds of bidding will also be presented.

#### **Matthew Kellison- Acting Director General, Spectrum Policy Branch, Innovation, Science and Economic Development**

Matthew Kellison is the Acting Director General for ISED's Spectrum Policy Branch, and was previously Senior Director of Auction Operations. He has previously worked for the Patented Medicine Prices Review Board as the Director of Regulatory Affairs, and spent ten years at the Competition Bureau leading a variety of enforcement and policy files, particularly in the telecom sector. Matt has a Master's in economics from Queen's University.

#### **Chad Paquette – Manager, Auction Informatics, Spectrum Policy Branch, Innovation, Science and Economic Development.**

Chad has been involved in ISED's spectrum auction program for over 20 years. During that time, he's held several key roles. In the beginning, he developed the auction results mobile browsing interface for the PCS auction held in 2001. In his current role as Manager of Auction Informatics, he's responsible for ISED's auction rooms which includes IT equipment, network infrastructure as well as overall auction security. He also manages the bidding software during the conduct of ISED's spectrum auctions.

### **CRTC: Under New Management. What does this mean for rural ISPs?.**

A panel of regulatory, legislative and telecommunications experts will provide their commentary on the current form of the CRTC.

#### **Monica Song, Partner, Dentons**

Based in Ottawa, Monica Song is the national co-leader of Dentons Canada's Regulatory group. Monica is a senior administrative and public policy lawyer with a deep understanding of the Canadian legislative and public policy landscape who specializes in advising clients spearheading growth and innovation in the digital economy.

#### **Peter Menzies, Senior Fellow, Macdonald-Laurier Institute**

Peter Menzies spent almost 10 years as a CRTC Commissioner following three decades as a working journalist and newspaper executive, most notably with the Calgary Herald where he served as its editorial page editor, editor in chief and, finally, publisher. He worked briefly in the Parliamentary Press Gallery and Alberta Legislature Press Gallery, and won National Newspaper and Association of Opinion Page Editors awards for the objective of his work. At the CRTC he served initially in a part-time capacity followed by four years as regional commissioner for Alberta and the Northwest Territories and then four more as Vice Chair of Telecommunications. He was involved in major decisions involving service to northern and other remote communities, the establishment of the national emergency alerting system and the setting of the criteria establishing the Basic Service Objectives for telecommunications in Canada.

#### **Rachael Thomas, MP, Lethbridge**

As a dedicated listener and tireless advocate, Rachael has served as a powerful voice for the Lethbridge riding since she was first elected as the Member of Parliament in 2015. Grounded in the belief that every Canadian deserves to be treated with dignity, equality, and respect, Rachael is committed to putting people first. Empowered by the stories people share with her, Rachael puts a human face to government policies when she speaks in the House of Commons. Rachael currently serves as the Shadow Minister for Canadian Heritage, where she passionately defends Canadians' rights and freedoms and seeks to empower Canadians to use their gifts, talents, and abilities to further themselves and build a Canada we can all be proud of. She believes the Canadian people—not government—are the problem solvers, solution makers, and wealth generators that will get our country back on track.



## COMPANY PROFILES

### 6Harmonics | Booth MBSI WAV | [www.6harmonics.com](http://www.6harmonics.com)

6Harmonics broadband UHF radio network solutions solve many widely different connectivity challenges. We have great success providing rugged, low-latency, high-capacity, real-time broadband at greater distances and with more coverage! We deliver capacity at a great distance, onshore and offshore, for fixed and mobile assets.

### ADTRAN | Booth TDL Gentek | [www.adtran.com](http://www.adtran.com)

Broadband connectivity is foundational to our communities supporting all we do – remote working, telehealth, virtual learning, economic development, sustainable energy. Telecom providers are unlocking their community's potential by embracing the intelligent, self-optimizing fiber-everywhere future. With unprecedented levels of infrastructure funding available, thousands of communities are delivering AI-driven, gigabit broadband to every customer. Adtran offers the most comprehensive portfolio of fiber networking solutions from metro core to customer premise. Learn more at [adtran.com](http://adtran.com)

### Airspan Networks | Booth 34 | [www.airspan.com](http://www.airspan.com)

**BRONZE SPONSOR**

Airspan Networks is a U.S.-based provider of groundbreaking, disruptive software and hardware for 5G networks, and is a pioneer in end-to-end Open RAN solutions that provide interoperability. As a result of innovative technology and significant R&D investments to build and expand 5G solutions, Airspan is well-positioned with 5G indoor and outdoor, Open RAN, private networks for enterprise customers and industrial use applications, fixed wireless access, and CBRS solutions to help mobile network operators of all sizes deploy their networks of the future, today. With over one million cells shipped to 1,000 customers in more than 100 countries, Airspan has global scale.

### Alliance Corporation - Booth 8 | [www.alliancecorporation.ca](http://www.alliancecorporation.ca)

**SILVER SPONSOR**

Alliance Corporation is full-service value-added distributor of products and solutions for the Wireless industry. We are your source for Cambium, Siklu, BlinQ, Ceragon, Baicells, Rajant, DragonWave, ICT, Wade, and many more manufacturers. We have warehouses in Mississauga and Calgary with staff across Canada, and carry a broad range of industry-leading products so we can help you choose the right equipment for your project. Celebrating 30 years of business this year, Alliance has supported the Wireless Internet Service Provider community for over 20 years, stocking radios, antennas, cable, and stand-alone towers. Drop by to say hello!

### At Mail | Booth 1 | [www.atmail.com](http://www.atmail.com)

**SILVER SPONSOR**

Our mission is to enable you to engage and delight your customers with a flexible service approach to email to meet individual customer needs. Our service will **increase** your average revenue per user (ARPU) through seamlessly integrated in-app purchases and will **decrease churn** with simple one-click personal domain email offerings. Atmail is a white-label cloud-native email service designed specifically for telcos and ISPs. Powered by our managed AWS public cloud or leveraging yours if you prefer, Atmail is highly scalable to many millions of email accounts, is highly secure, and is always available. Free up valuable time by transitioning email from a cost centre to a cloud-based profit and retention machine.

With over 2 decades of experience, we are ready to welcome you and your customers to a service you can be proud of.

**atmail - cleverly commercialize your email services.**

### ARIN | Reception Booth | [www.arin.net](http://www.arin.net)

ARIN is a nonprofit, member-based organization that administers IP addresses & ASNs in support of the operation and growth of the Internet. Established in December 1997 as a Regional Internet Registry, the American Registry for Internet Numbers (ARIN) is responsible for the management and distribution of Internet number resources such as Internet Protocol (IP) addresses and Autonomous System Numbers (ASNs). ARIN manages these resources within its service region, which is comprised of Canada, the United States, and many Caribbean and North Atlantic islands.

### Avateq Corp. | Kiosk 40 | [www.avateq.com](http://www.avateq.com)

Avateq Corp. is an engineering company located in Markham, Ontario, specializing in complex DSP systems design. Solid knowledge of the latest technological and theoretical advancements combined with Avateq's core intellectual assets allows the company to undertake the most challenging projects and to provide practical industry solutions.

Ultra-Long-Range Wireless Backhaul (ULRWB) is an ATSC 3.0-based system being developed in collaboration with Humber College's Broadcast-Broadband Convergence B2C Lab (<http://b2convergence.ca>). This point-to-point communication infrastructure with Tx/Rx stations located over 60 miles (100km) will allow bringing high-speed Internet to rural and remote areas. Operated in sub-1GHz frequencies, ULRWB has spectral efficiency of more than 5bps/Hz, enabling 400Mbps of user data in 30MHz channels with less than 25 milliseconds round-trip latency. You can find us at Kiosk #40, where our experts can answer your questions, and showcase our latest innovations to help you take your business to the next level.

### Calix | Booth 15 | [www.calix.com](http://www.calix.com)

Broadband service providers (BSPs) of all sizes leverage the Calix broadband platform and managed services to simplify their businesses, excite their subscribers and grow their value. The Calix platform and managed services enable our customers to grow their subscriber base, revenue, profitability, and subscriber satisfaction—and ultimately transform the communities they serve. Calix is dedicated to driving continuous improvement in partnership with our growing ecosystem to support the transformation of our BSP customers and their communities.



## COMPANY PROFILES

### Canadian Centre for Cyber Security | Booth 2 | [www.cyber.gc.ca/en](http://www.cyber.gc.ca/en)

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The Canadian Centre for Cyber Security (Cyber Centre) is part of the Communications Security Establishment (CSE) and opened in 2018 as a key initiative under Canada's National Cyber Security Strategy. As Canada's technical authority on cyber security, we use our expertise to keep safe the information and systems that Canadians rely on every day. We work to protect and defend the country's valuable cyber assets. We lead Canada's federal response to cyber security events. We raise Canada's cyber security bar so Canadians can live and work online safely and with confidence.

### Ciena | Booth 1 | [www.ciena.com](http://www.ciena.com)

Ciena (NYSE: CIEN) is a global leader in networking systems, services, and software. We build the most adaptive networks in the industry, enabling customers to anticipate and meet ever-increasing digital demands. For three-plus decades, Ciena has brought our humanity to our relentless pursuit of innovation. Prioritizing collaborative relationships with our customers, partners, and communities, we create flexible, open, and sustainable networks that better serve all users—today and into the future. For updates on Ciena, follow us on LinkedIn, Twitter, the Ciena Insights blog, or visit [www.ciena.com](http://www.ciena.com).

### Connect Telecommunications Solutions | Booth 18 | [www.connect-telcom.com](http://www.connect-telcom.com)

Connect Telecommunications Solutions is a leading supplier of outside plant solutions for FTTx applications. With a focus on field support, Connect's been helping Canadian service providers build robust networks for 25 years.

### Crossover | Booth 23 | [www.crossoverdistribution.com](http://www.crossoverdistribution.com)

Founded in 2007 by a group of industry veterans looking to provide value to the industry beyond pushing boxes for hundreds of vendors, Crossover has taken a focused approach to the wireless broadband and cellular industries. Focusing on best of class wireless solutions, Crossover provides outstanding support, design and engineering expertise with every product it sells. This is Crossover's commitment to you: We Don't Just Bridge The Gap, We Help You Crossover.

#### WHY Crossover:

Focused Wireless Distribution including:

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Infrastructure (Alpha Wireless, Alpha Tech, Poynting, RFS, Shireen, Sinclair, Wade);

In-Building & WiFi (BTI, Nextivity, Fiplex, Galtronics, iBwave, JMA, Microlabs, Rajant, Westell, Zinwave)

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### CTI Connect | Booth 21 | [www.cticonnect.com](http://www.cticonnect.com)

CTIconnect helps operators build bridges to a world where reliable connectivity rules. But we don't just sell the next box. We trade in trust. Because your vision is our mission. We work as an extension of your organization to provide technical expertise, hardware and services that help grow your business and crush your financial goals. We dedicate an experienced team of engineers, product managers and sales reps to your project so we can tailor solutions to your specific needs. By engineering lasting relationships with you, we build a better world together. CTIconnect. Committed to Connectivity.

### Double Radius | Booth 17 | [www.doubleradius.com](http://www.doubleradius.com)

Founded in 2001, DoubleRadius has been helping companies build better wireless and Wi-Fi networks across North America and now Canada. We understand how important connectivity is and being able to obtain cutting-edge equipment when you need it. We rely on strong partnerships with leading wireless manufacturers to support service providers, enterprise business customers, K-12 education, & WLAN customers. Being a major stocking distributor for names like Cambium, RF elements, and Ubiquiti we can better serve our customers in and out of the country. With over 20 years of experience, we have earned the title of being a trusted industry expert.

### Grandstream Networks | Booth 30 | [www.grandstream.com](http://www.grandstream.com)

Grandstream has been connecting the world since 2002 with unified communications and networking solutions that make communicating more impactful than ever before. Our award-winning solutions provide everything needed to build a seamless, easy-to-manage communication platform, offering a one-stop-shop for all networking, unified communications, collaboration and physical security solutions. Headquartered in Boston, MA, USA, Grandstream solutions are used in over 150 countries and trusted by global enterprises and small business alike for their quality, reliability, and innovation.

### Juniper Networks | Kiosk 38 | [www.juniper.net](http://www.juniper.net)

Juniper Networks is dedicated to dramatically simplifying network operations and driving superior experiences for end users.

Our solutions deliver industry-leading insight, automation, security and AI to drive real business results. We believe that powering connections will bring us closer together while empowering us all to solve the world's greatest challenges of well-being, sustainability and equality. Additional information can be found at Juniper Networks ([www.juniper.net](http://www.juniper.net)) or connect with Juniper on Twitter, LinkedIn and Facebook.





## COMPANY PROFILES

**KGP Canada | Booth 7 | [www.kgpco.ca](http://www.kgpco.ca)**

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KGP Canada is the premier product distribution and supply chain logistics supplier to telecom service providers, MSOs, and utilities. With the largest network of OEMs in the industry, our stock on hand includes thousands of the most in-demand products. Our Solution Innovation Center and ecosystem of the top telecommunications and technology partners, enables us to help companies navigate today's challenges and implement tomorrow's innovations.

**KURO PARTNERS | Booth 26 | [www.kuopartners.com](http://www.kuopartners.com)**

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Kuro Partners (pronounced Koo Row) is a business consulting firm that specializes in ISPs.

•Turn-around Management •Operational Effectiveness •Financial Reporting, Analysis and Forecasting •Owner and Management Transitions •Strategic Planning •Sale / Acquisition Preparation and Integration

We work closely with clients to prepare them for corporate transitions and guide them through the change. In other words, we prepare them for what's coming and help them get there. Whether it's an ownership change, defining and implementing internal process or upgrading your management reporting, they all require extra time and attention.

**Link Technologies | Booth 19 | [www.linktechs.net](http://www.linktechs.net)**

Link Technologies, Inc. is your one-stop shop for your WISP/FISP needs. We offer both business and technical consulting services, as well as DDOS, MikroTik Cloud and other services as well. We are a Master Distributor for 9DOT and MikroTik products in North America.

**MBSI WAV | Booth 10-12 | [www.mbsiwav.com](http://www.mbsiwav.com)**

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MBSI WAV is the industry's premier distributor serving the Canadian wireless market with strong stocking positions both in Alberta and Ontario. MBSI WAV provides the depth of knowledge and expert services required to fully address the specific technology and value-add needs of the WISP, VAR and Solution Provider community. Along with providing professional value-add services, MBSI WAV offers up to date product knowledge with support for multi-vendor solutions. For more information call (866) 597-6274 or visit our website at: [www.mbsiwav.com](http://www.mbsiwav.com)

**Nokia | Booth 22 | [www.nokia.com](http://www.nokia.com)**

At Nokia, we create technology that helps the world act together. We are delivering the next evolution in critical networking through technology leadership and trusted partnerships: networks that sense, think and act. We see the potential of digital to transform business, industry and society. When the world's organizations, machines and devices are in sync with each other and the people they serve, a new capability unfolds to create a more productive, sustainable and accessible future.

**NORAMCO | Booth 27 | [www.noramco.ca](http://www.noramco.ca)**

Noramco is one of the largest distributors of electrical, electronic, datacom, fiber optic cable, cable accessories and wire in Canada. With nine warehouse locations across Canada & long-tenured staff who are vertical specialists, we can assist you in sourcing those 'hard to find' items and navigating the vast product offerings available for the Electrical marketplace.

**Preseem | Booth 6 | [www.preseem.com](http://www.preseem.com)**

Created by Aterlo Networks in Waterloo, Ontario, Preseem is an Edge Network Quality of Experience (QoE) Solution for ISPs. Our mission is to enable local and regional operators to thrive by solving network problems with products that people love. Preseem measures QoE by collecting metrics directly from subscriber traffic and network elements like access points. We then tie those back to the network topology to create actionable scores and analytics that help ISPs proactively improve QoE and network performance. Preseem provides a complete picture of the experience being delivered—from our inline hardware elements all the way to the subscriber's home. As a result, our customers can address issues before they affect subscribers, find and resolve capacity and RF problems, and make strategic investments in their networks. Our system reduces latency, subscriber churn and support costs, while empowering non-technical staff, increasing the efficiency of in-house experts, and improving network ROI.

**Superior Essex Communications | Booth 9 | [www.superioressexcommunications.com](http://www.superioressexcommunications.com)**

**SILVER SPONSOR**

Superior Essex Communications has been a leading manufacturer of communications cables for more than 90 years. We have innovated optical fiber, copper and hybrid communications cables to meet any Premises, Outside Plant (OSP) and Wireless cabling need to serve and sustainably connect the communications industry Everywhere You Live and Work®.

**Siklu | Booth 16 | [www.siklu.com](http://www.siklu.com)**

Siklu delivers multi-gigabit fiber-like wireless connectivity in urban, suburban, and rural areas. Operating in the millimeter-wave bands, its wireless solutions are used by leading Tier-1 service providers and system integrators to provide gigabit services, 5G fixed wireless, and safe city and smart city projects. Thousands of carrier-grade systems are delivering interference-free performance worldwide. Easily installed on street fixtures or rooftops, price-competitive radios have proved to be ideal for networks requiring fast and simple deployment of secure, fiber-like, and future-proof connectivity.



## COMPANY PROFILES

### Tacit Law | Booth 5 | [www.tacitlaw.com](http://www.tacitlaw.com)

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Tacit Law is a boutique law firm that provides a broad range of legal and consulting services to clients in the information technology, communications, regulated industries, and broader commercial and not-for-profit sectors. We welcome clients of all sizes and levels of sophistication. Our mission is to provide expert legal and consulting services in a personalized and client-centric manner. We also provide outsourced General Counsel services to clients who need ongoing legal services to support their operations. In addition, we are pleased to assist our clients with all forms of dispute resolution. We are proud to offer our services directly in nine Canadian Provinces and two Territories, and with the assistance of our partner law firms in the rest of Canada and internationally.

### Tarana Wireless | Booth 14 | [www.taranawireless.com](http://www.taranawireless.com)

Tarana's mission is to accelerate the deployment of fast, affordable internet access around the world. Through a decade of R&D and more than \$400M of investment, the Tarana team has created a unique next-generation fixed wireless access (ngFWA) technology instantiated in its first commercial platform, Gigabit 1 (G1). It delivers a game-changing advance in broadband economics in both mainstream and underserved markets, using either licensed or unlicensed spectrum. G1 started production in mid-2021 and has been embraced by more than 200 service providers globally. Tarana is headquartered in Milpitas, California, with additional research and development in Pune, India. Visit [taranawireless.com](http://taranawireless.com) for more on G1.

### TDL Gentek | Booth 31-33 | [www.tdlgentek.com](http://www.tdlgentek.com)

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TDL Gentek is a top Canadian-owned and managed distributor headquartered in Canada and focused only on the Canadian market. With more than 250 world-class brands under one roof, we are uniquely positioned to support the Canadian IT Channel. We are proud to have provided Canada's finest channel partners, value-add resellers, and broadband operators with best-in-class products and services for over 45 years.

We are headquartered in Trenton, Ontario, and operate over 60,000 square feet of distribution space across Canada. With offices located across Canada in Ontario, Quebec, Alberta and British Columbia we are uniquely positioned to provide our customers and all Canadian distribution partner.

For more information visit: [tdlgentek.com](http://tdlgentek.com)

### Thurtek | Kiosk 37 | [www.thurtek.ca](http://www.thurtek.ca)

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Welcome to the world of telecommunication contracting, where communication is key and connectivity is everything. Our company is a cutting-edge player in this dynamic industry, providing top-notch solutions for businesses and organizations of all sizes. We specialize in designing, building, and maintaining state-of-the-art telecommunications systems that enable our clients to communicate effectively and efficiently, no matter where they are. Our team of expert technicians and engineers is committed to delivering superior quality services that are customized to meet the unique needs of each of our clients. With years of experience and a passion for innovation, we are poised to make a significant impact in the telecommunication industry. Join us on this journey as we help organizations stay connected and thrive in today's fast-paced business environment.

### TP Link | Booth 25 | [www.tp-link.com](http://www.tp-link.com)

Founded in 1996, TP-Link is a global provider of reliable networking devices and accessories, involved in all aspects of everyday life. The company is ranked by analyst firm IDC as the No. 1 provider of Wi-Fi devices for a consecutive 12 years, supplying distribution to more than 170 countries and serving billions of people worldwide. With a proven heritage of stability, performance, and value, TP-Link has curated a portfolio of products that meet the networking needs of all individuals. Now, as the connected lifestyle continues to evolve, the company is expanding today to exceed the demands of tomorrow.

TP-Link has extend its focus from consumer market to ISP market by launching Aginet solutions. TP-Link Aginet is committed to providing flexible products, agile and pragmatic solutions, and incomparable services. We provide the best performance for any budget with a wide range of carrier-grade products for high-speed broadband connectivity and home Wi-Fi coverage. These products include Wi-Fi routers, whole home mesh Wireless router, Wi-Fi systems, xPON OLTs, and xPON ONTs.

To know more about us, please contact Benjamin.Liu@tp-link.com

### Volatus Aerospace Corp. | Booth 5 | [volatusaerospace.com](http://volatusaerospace.com)

Volatus Aerospace Corp. is a leading provider of integrated drone solutions throughout Canada, the United States, Latin America and most recently Europe. Operating a vast pilot network, Volatus serves commercial and defense markets with imaging and inspection, security, and surveillance, equipment sales and support, training and design, manufacturing, and R&D. Through its subsidiary, Volatus Aviation, Volatus carries on the business of aircraft management, charter sales and cargo services using piloted, remotely piloted, and autonomous aircraft.

### Wirewerks | Booth 29 | [www.wirewerks.com](http://www.wirewerks.com)

Wirewerks is a global manufacturer of advanced optical fiber and copper connectivity solutions that delivers even under the toughest supply chain conditions. Our strong culture of collaboration is present in all the areas of our business, from project pre-design to network deployments and ongoing support. We collaborate with our customers every step of the way to develop flexible, scalable, and innovative solutions that provide the crucial cabling infrastructure necessary for their mission critical networks. The Power of We with Wirewerks. Learn more at [www.wirewerks.com](http://www.wirewerks.com)



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A collage of various networking equipment including satellite dishes, power supplies, and antennas. The DoubleRadius logo is prominently displayed at the top left, featuring a stylized 'C' shape with a red dot in the center. The text 'DoubleRadius' is in a large, bold, white font with a red outline, and the tagline 'Your Partner for Building Better Networks' is in a smaller, italicized font below it. The background is dark with a grid pattern.

[www.DoubleRadius.com](http://www.DoubleRadius.com)



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Drawing on more than four decades of experience in the communications and information technology sectors, our firm provides a broad range of legal, strategic and business advice to businesses, not-for-profits and government clients who wish to obtain high-quality, cost-effective, personalized services. The educational backgrounds and expertise of our professional staff include engineering, business economics and human resources, in addition to legal training and experience. We provide our services using a variety of traditional and innovative outsourcing business models.

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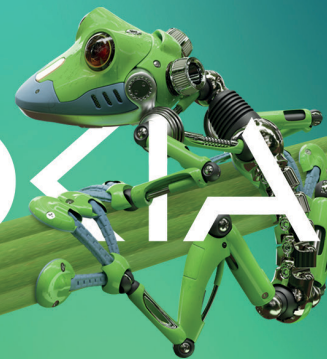
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# EXPERTS

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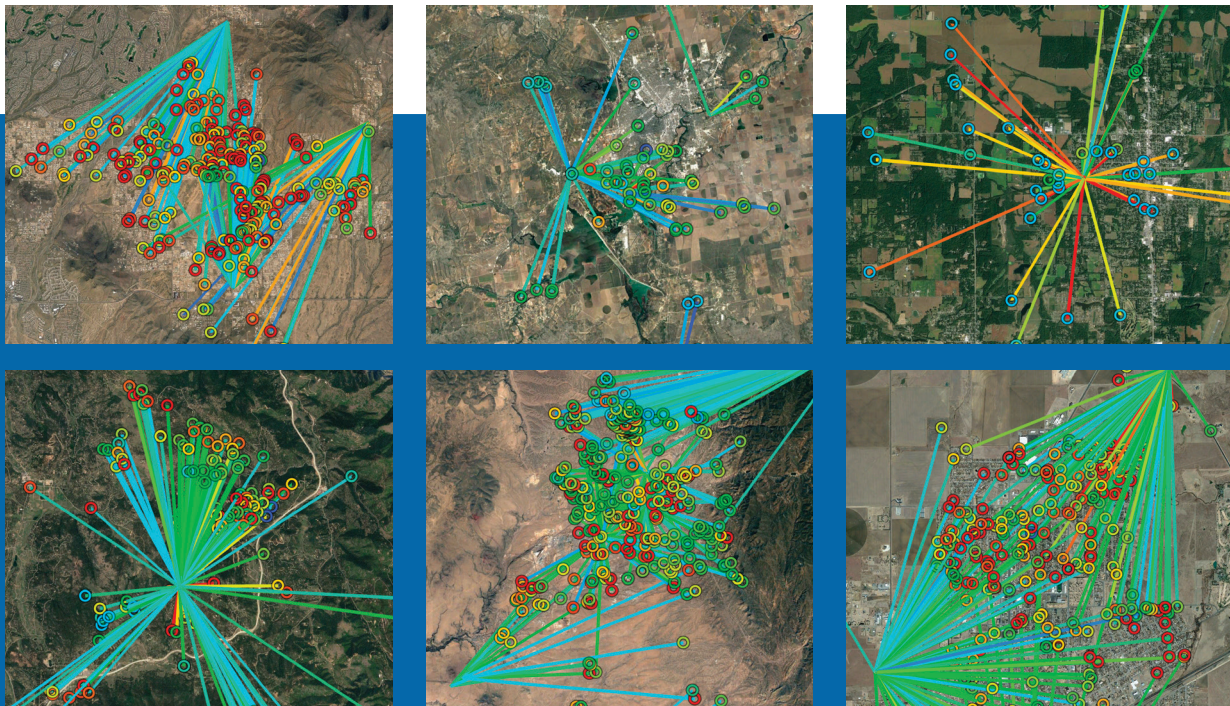
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Degree of Link  
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0 dB

nLoS

NLoS

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○ Interference at RN

— Degree of Link Obstruction

Metrics sourced from RNs via Tarana Cloud Suite (TCS). Excess pathloss = measured minus free-space.





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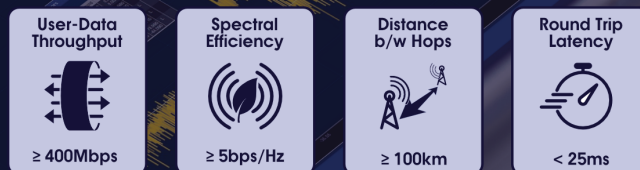
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## Ultra-Long-Range Wireless Backhaul Link



## Intelligent Engineering Solutions

Idea | Concept | Implementation

A full-page background image of Wayne Gretzky in an orange hockey jersey, skating on ice and holding a hockey stick.

“I skate to where the puck is going  
to be, not where it has been.”

Wayne Gretzky

A square logo icon for Kuro Partners, featuring a stylized Japanese character '黒' (kuro) in white on a red background.

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## TP-Link Aginet Unified Cloud (TAUC)

Cloud Managed Wi-Fi Solution For ISPs dedicated to simplifying operation, reducing costs over the entire ISP service lifecycle, and providing comprehensive monitoring and remote troubleshooting for all your CPEs.



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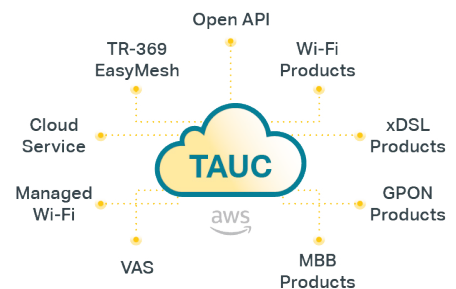


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## Giving All Canadians Access to Our Interconnected World

At CanWISP, we strongly believe that all Canadians deserve outstanding access to broadband service.

To accomplish this, we take part in regulatory discussions with the Canadian Government and promote and share best practices within the industry.

CanWISP members ensure that rural and exurban communities across Canada have access and reliable connectivity to high-quality voice, video and data services. We work and live in the communities we serve, which gives us a greater understanding of our customers' needs and a much more personal aspect to our service.

Our goal: to continue working with stakeholders to ensure that spectrum, a public resource, is used in an efficient and beneficial manner for all Canadians, no matter where in the country they live.

## Permettre à tous les Canadiens d'avoir accès à notre monde interconnecté

Chez CanWISP, nous croyons fortement que tous les Canadiens méritent d'avoir un accès à l'infrastructure technologique. Pour réaliser ceci, nous participons à des conférences sur la réglementation avec le gouvernement du Canada afin de promouvoir et partager les meilleures façons de faire entre le gouvernement et l'industrie.

Les membres CanWISP s'assurent que les communautés rurales et exurbaines du Canada aient accès à un service haute vitesse fiable de grande qualité autant au niveau de la voix, des vidéos et des données. Nous travaillons et habitons dans les communautés desservies. Ceci nous permet de bien comprendre ce dont les clients ont besoin et nous permet d'offrir un service beaucoup plus personnalisé.

Notre objectif : travailler avec plusieurs intervenants afin de s'assurer que le spectre, qui est une ressource publique, soit utilisé le plus efficacement possible afin que tous les Canadiens puissent en bénéficier, peu importe où ils sont situés.



Canadian Association of Wireless Internet Service Providers  
Association des fournisseurs de service internet sans fil (CanWISP)

1000 Innovation Drive, Suite 500  
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