



woven

by **IBI GROUP**

*The digital fabric of
your community*



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About IBI Group

WHO WE ARE

IBI Group is a globally integrated engineering, planning, architecture, and technology firm. For more than 45 years, our dedicated professionals have helped clients create livable, sustainable, and advanced residential environments.

IBI Group is a global leader working on building the communities of today and planning the communities of tomorrow on five continents. With a strong presence in Alberta, British Columbia, and Ontario, our staff provide innovative and practical solutions to meet the needs of our clients in remote and urban locations.

Our Broadband team has worked on numerous community fiber optic and broadband projects and are highly experienced in this field of telecommunications. We know broadband; it's the digital fabric of communities. We understand the benefits and challenges of community broadband services models and broadband networks, and we want to help guide you through the process of obtaining better broadband for the benefit of your residents and businesses, making it a profitable and successful investment for your community.

Who We've Helped

- City of Lethbridge, AB
- Foothills County, AB
- Durham Region, ON
- York Region, ON
- Town of Canmore, AB
- Parkland County, AB
- Cowichan Valley Regional District, BC
- Beaver Lake Cree Nation, AB
- Little Red River Cree Nation, AB
- Elgin County, ON
- City of St Albert, AB
- Chhattisgarh Infotech Promotion Society, India
- Government of India
- Municipality of San Pedro Sula, Honduras
- Bristol City Council, UK
- Glasgow City Council, UK
- Southend Borough Council, UK

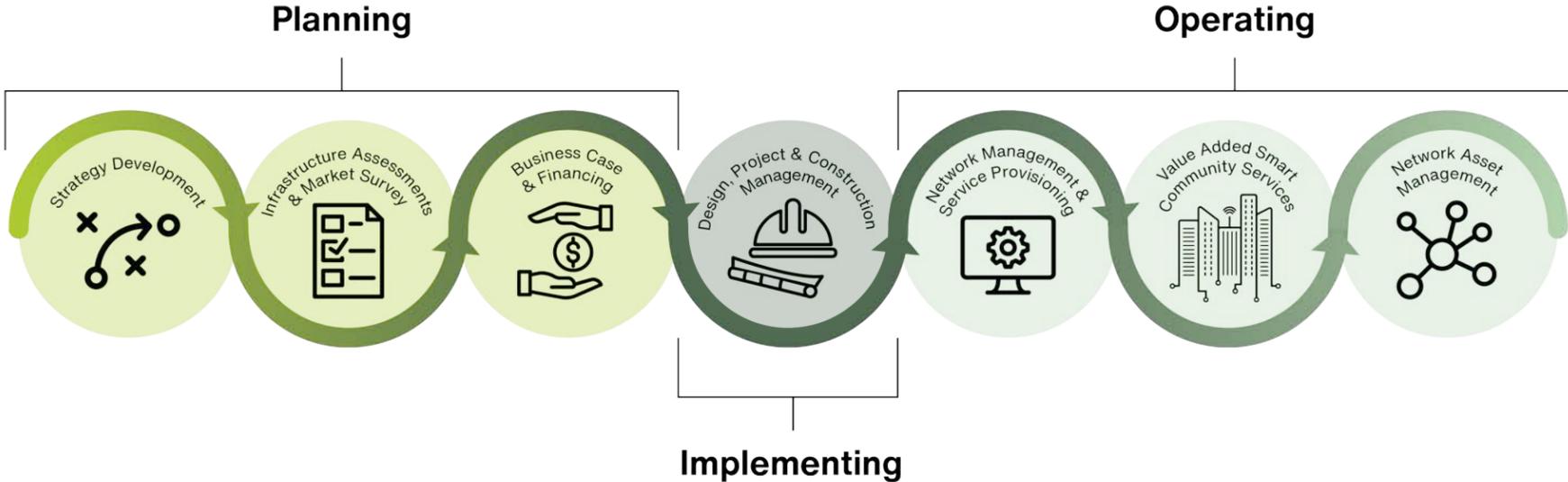


Our Range of Broadband Services

The broadband services we offer can help communities with little to no internet and those with reliable networks already in place.

If your community needs/wants better broadband, we'll help you get there with a realistic and implementable roadmap that includes strategy, assessments, business cases, design, and project management.

If additional broadband support is what you seek, our operating services will be the most beneficial, helping you manage and maintain your network and then implementing smart community applications to make the most out of your broadband infrastructure.



Digital Divide

CLOSING THE DIGITAL DIVIDE & CREATING DIGITAL EQUITY

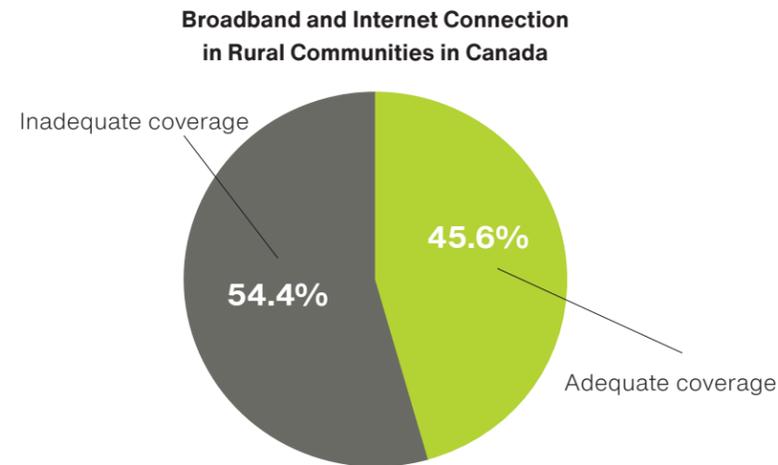
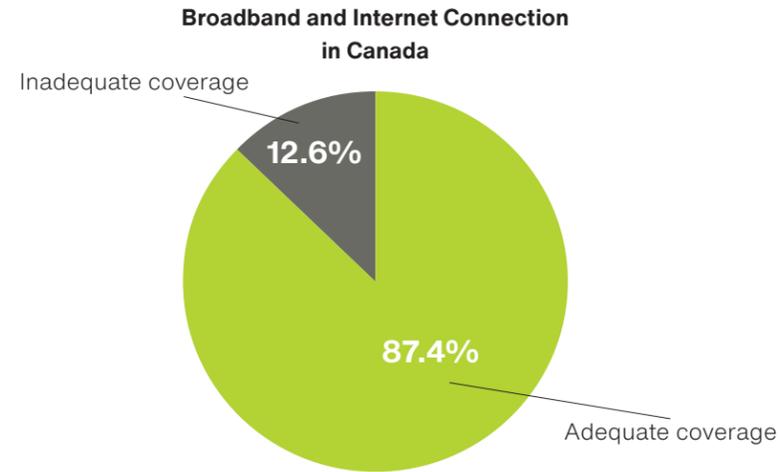
With the widespread use of technology, our lives rotate around digital platforms and environments. We live, learn, work, and play technology—supposedly. According to the Government of Canada, only 45.6% of rural communities in the country have proper broadband and internet connection compared to 87.4% of Canada as a whole.

In what's known as the digital divide, internet service between rural and urban populations is vastly different when it comes to reliability and affordability, and what was once seen as a luxury has now become a necessity. Essential resources such as education, telehealth services, and work from home requirements can be inaccessible for rural populations who are much more likely to be cut off from digital technologies than their city counterparts.

That's where we can help.

We believe in digital equity and connectivity for all. All individuals and communities should have the information technology capacity needed for full participation in our society, democracy, and economy. There's no reason why rural communities should be isolated and not connected to the grid.

Broadband services offered by IBI Group help rural communities get multiple steps closer to closing the digital divide. We can support your broadband goals from start to finish, from creating a practical broadband strategy and securing external capital to designing your network and ensuring its long-term operability and success. We've helped numerous communities improve their broadband and weave their community together more closely. We can improve yours, too.

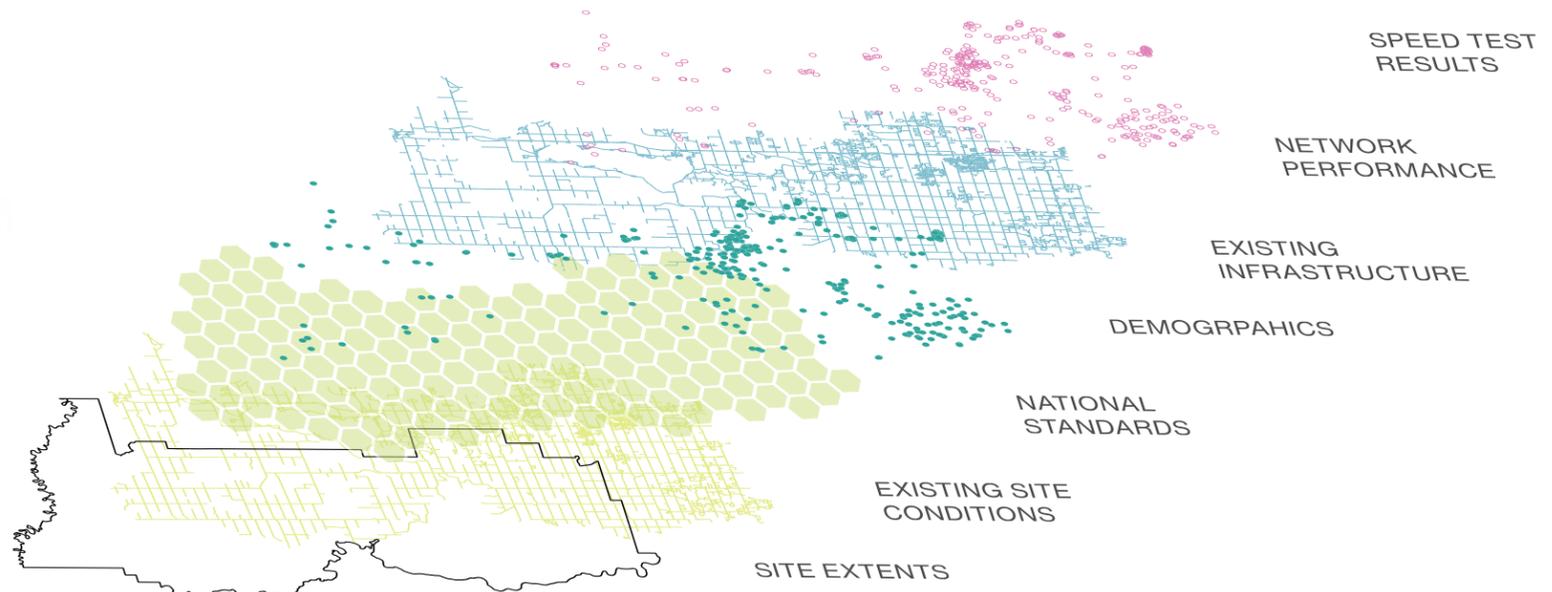


Planning & Broadband Assessments

One of the first broadband services we offer is broadband assessments. These answer the question of whether your community has a viable business case for improving local internet. Broadband assessments include the review, witnessing, and acceptance of network performance test results, including error rates and how performance measures up to manufacturer specifications. By completing broadband assessments, we can help you determine if broadband upgrades are feasible for your community.

BENEFITS TO YOU:

- A yes or no answer to whether a viable business case for broadband improvements in your community exists
- Know exactly how your current broadband is performing



TOWN OF CANMORE BROADBAND STRATEGIC PLAN

CLIENT: TOWN OF CANMORE

IBI Group was engaged to provide a broadband strategic plan for the Town, including advisory services and recommendations to improve broadband in Canmore. The broadband strategy will allow the Town to make decisions on the long-term deployment and support of a future broadband network.

CLIENT DELIVERABLES

- Current state analysis to assess market opportunity
- Survey and bandwidth testing compared to provincial and national averages
- Market demand analysis
- Network engineering and design and support plans
- Business model options



Demand Aggregation, Competitive Analysis & Community Engagement



Community engagement is a key piece to gaining interest in your broadband improvement project. We interact with your community and get to know their broadband needs. Whether through in-person events, virtual gatherings, or door-to-door visits, we discover exactly what your residents desire for improved broadband connectivity, helping make this community fabric stronger.

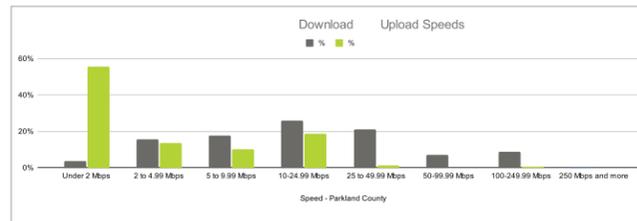
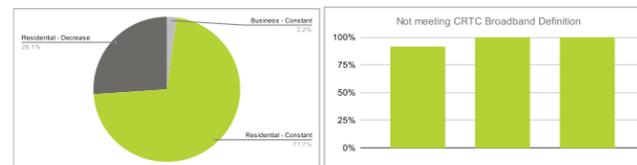
When it comes time to build broadband connectivity demand, IBI Group can provide your community with a demand aggregation tool, enabling you to collect grassroots demand for better broadband and pre-sell internet connections. This tool helps build your broadband network, finding interested customers, signing them, and then spreading the word and increasing your chances of success.

As a partner in this process with you, we will give you access to COS Service Zones, a tool that ensures a community driven process to questions like “when will I get connected?”, “what is the competition offering?”, and “what services could the community want?”. It provides market intelligence, competition, and market potential, giving greater visibility into the network’s future revenue potential.

COS Service Zones allows you to survey your community and divide it into competing zones to help build out your network faster. From this survey you will gain competitor names and insight into the competitive landscape, what services are used in your community, which services residents desire, and how likely residents are to sign up for them. Your community zones will be competing to fulfill this survey and sign up take-rate target, so their zone is built first. They do this by encouraging their neighbors to complete a survey or sign up. Promoting friendly community competition means sooner access to internet for residents.

BENEFITS TO YOU:

- Build your broadband network faster
- In-depth market intelligence
- Intelligence and evidence for wholesale and retail revenue forecasting
- A community presence and increased demand from residents



PAUL FIRST NATIONS BROADBAND ASSESSMENT

CLIENT: PAUL FIRST NATIONS

IBI Group engaged with the Nation to identify the current state of broadband services and communicate and consult with residents on their current broadband connectivity and requirements for improved connectivity. With COVID-19 gathering restrictions limiting in-person community meetings and a lack of basic connectivity (cellular, wireless, and land based) to many households, in-person consultations were needed. The consultations were performed with physically distanced door-to-door surveys and paper surveys available at community gathering points. An online digital engagement survey was available and could be accessed at community locations (e.g., band office and library) where broadband connectivity was present. This survey identified households with no access to or very poor broadband connectivity. Survey results were geocoded, mapped, and summarized in a report for the Nation.

We worked closely with the Nation to hire and train local residents to perform door-to-door surveys and manage the paper surveys that were completed, resulting in local employment and skills development.

CLIENT DELIVERABLES

- Broadband assessment
- Community engagement
- Connectivity strategy
- Infrastructure plan



Business Case, Partnership Development & Funding Proposals



Once we have confirmed the demand for broadband in your community and have created a business case, our knowledge and experience can help you secure capital to build this much-needed infrastructure and the digital fabric of your community. IBI Group has a successful track record assisting with federal and provincial broadband grant programs and other investment options including Canada Infrastructure Bank and private investment.

As your trusted partner and advisor, we can help develop technical design material suitable for grant proposals, including GIS files; site data tables, equipment data tables, and site lists; identification of network design parameters; backhaul capacity and future system growth projections; and speed tests that show stakeholders why better broadband is a crucial investment for the growth and long-term needs of your community. IBI Group can research, investigate, write, and track successful grant proposals for you, significantly reducing the risk of proposal rejection.

To support joint grant applications and business cases, we have also developed and coordinated partnership programs with internet service providers and neighbouring counties for regional network investment projects.

BENEFITS TO YOU:

- Submit proposals that have a strong chance of success
- Reduce the risk of grant application rejection
- Avoid spending consuming amounts of time writing, collecting data, and researching
- Capitalize on partnerships for increased chances of success
- Eliminate the worry of funding your community's broadband future



CLEARWATER COUNTY DESIGN & PROJECT MANAGEMENT FOR BROADBAND SERVICE DELIVERY

CLIENT: CLEARWATER COUNTY

IBI Group provided strategic advisory services, engineering design, and project management services to support Clearwater County's multi-year broadband program. We worked closely with the County to develop and submit UBF grant applications and manage the award and administration of CTI grant programs that allow for the advancement of broadband infrastructure investment in the County. We also facilitated outreach to local internet service providers and businesses to understand criteria for developing partnerships with the County under an open access network model and establish business and technical frameworks for third-party connection into the County's fiber optic infrastructure.

CLIENT DELIVERABLES

- Developed and submitted UBF grant applications
- Managed award and administration of CTI grant programs
- Local partnership outreach
- Project management
- Strategic advisory services
- Engineering design



Design & Project Management



Just as important as receiving better broadband connectivity is designing a suitable network that can support all your community internet needs. The network must weave together community aspirations and resident wants with the larger digital economy. The project must also be carefully managed to ensure residents can access the long-anticipated connectivity when they are promised.

Our extensive knowledge and expertise with network design will help you build the exact network you need—for your current residents and future generations. We'll help design the proposed fiber route and determine optimal routing and place of fiber optic backbone routes.

With IBI Group managing your broadband initiative, you won't have to worry about angry residents, unfulfilled promises, or a project that runs behind schedule and over your budget. We will develop and manage the project schedule, manage the tender process (including administrating and facilitating the evaluation and award of construction tenders), and resolve construction quantity and quality issues if any. As an added bonus, we can also help develop and facilitate partner relationships with local and national internet service providers and agreements and coordination of activities with neighbouring counties.

Our broadband experience means your broadband success.

BENEFITS TO YOU:

- A broadband network design that meets your current and future community needs
- Comprehensive project management capabilities
- Happy community members



DURHAM REGION BROADBAND NETWORK

CLIENT: DURHAM REGION

Durham Region engaged IBI Group to support them on their broadband initiatives, which has included developing a preliminary network design, operating model, and a financial analysis on broadband investment options in the Region. IBI Group has also identified alternatives with respect to open access network models and the role of the municipality, exploring different project delivery vehicles including Region led, public/private partnerships, municipal service corporations, and possible debt and private equity structures and alternatives.

CLIENT DELIVERABLES

- Project management
- Preliminary network design
- Operating model
- Financial analysis on broadband investment options
- Partner relations



Open Access Network Provisioning & Management



The open access network model builds on the concept of layers:

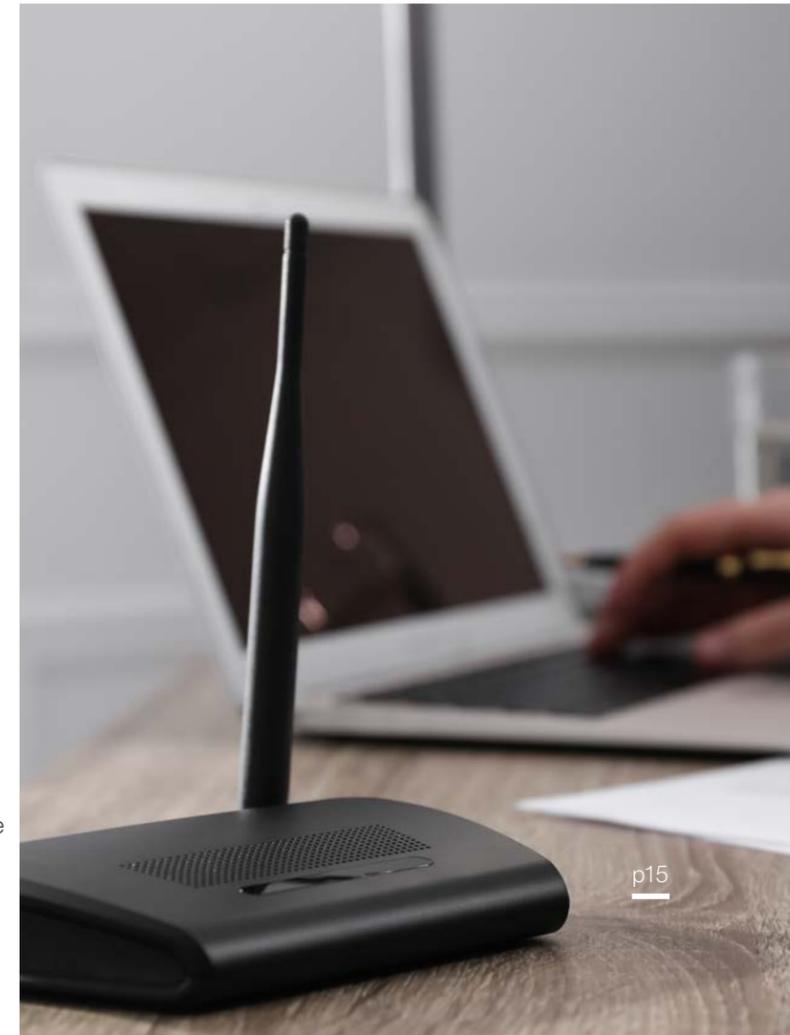
- The first layer is infrastructure, which is the conduit and physical cables that make up the network. It's also called the passive layer.
- The second layer is operations, which lights up the physical network with electronics and makes it all work. It's also called the active layer.
- The third layer is services, which consists of all the services delivered over the network. People tend to think of the traditional internet, phone (VOIP), and TV (IPTV) services, but we see an increase in others like telehealth, home security, IoT, and other smart services.

The idea is to separate these layers, so one entity can own and maintain the infrastructure layer and lease it out for others to deliver services, much like an airport. One entity builds the airport, and all the airlines pay when they use it. Imagine how ridiculous and expensive flying would be if every airline had to build their own airports! That is how telecommunications generally work today.

Customers can freely choose between providers and on a service-by-service level. They have the freedom to build exactly the bundle of services from any number of providers that suits them best. This means maximum power to the consumer, an open and level playing field for any kind of provider, and no restrictions for introduction of future services.

Advantages

- With all the investment in fiber and electronics done, there's a very small hurdle for providers to start selling services on the network. With the ONT being installed by the community network, the investment for providers is low.
- The common monopolistic problems of high prices and low quality of service will be reduced since customers have full choice of providers and services.



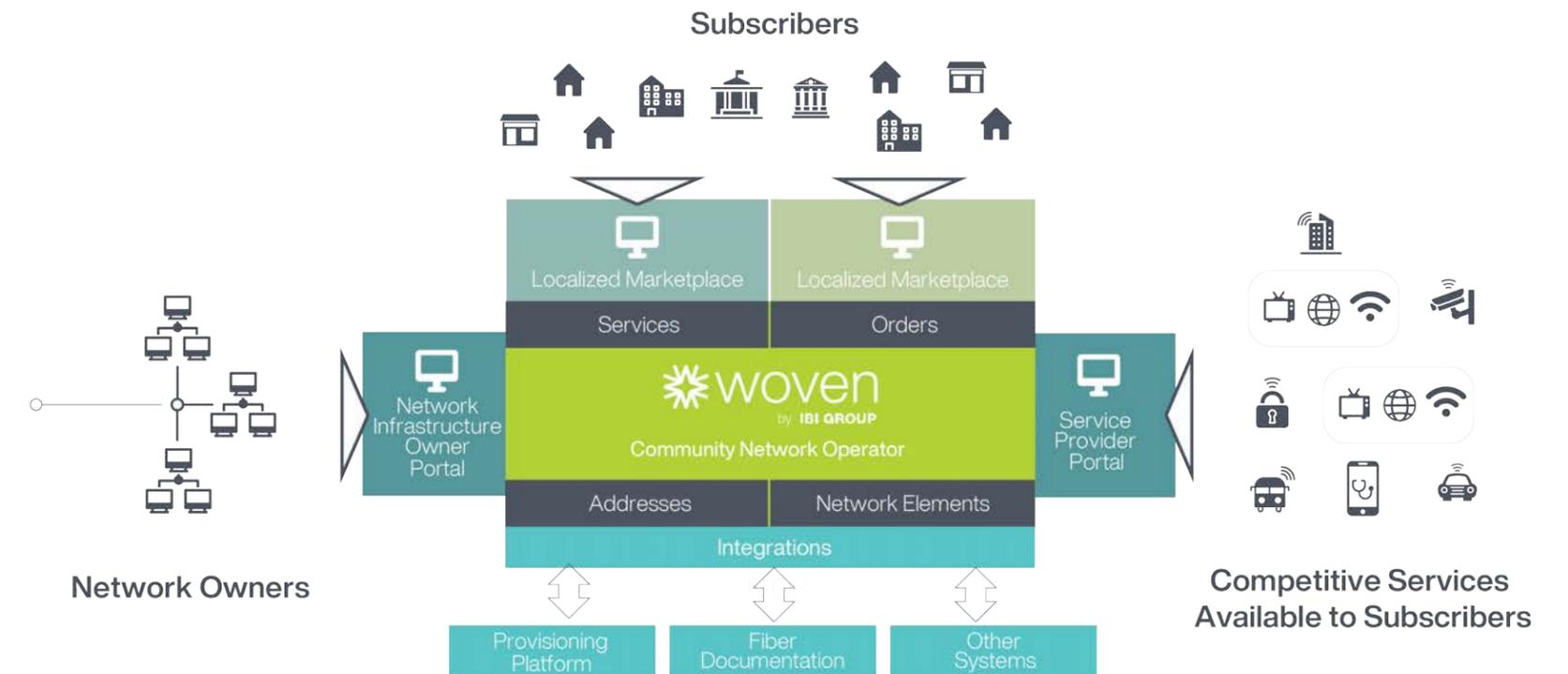
- The assortment of services with multiple providers will be larger, and providers who are not selling the traditional internet service can come on the network since customers can buy services from multiple providers at the same time.
- Lower prices, higher quality, and bigger assortment will improve take-rates, and revenue and other benefits of a higher utilization will increase.
- The community owns the entire network and can freely rollout Smart City services and decide which providers of other IoT and Smart City services are welcome to deliver services on the network.
- Investment in electronics is minimum, since new hardware will only be installed when needed (never two half full switches from two different providers in the same rack).

BENEFITS TO YOU:

- Stay in control of a large investment
- Track daily work and necessary tasks
- Keep costs in check
- Enable self service for residents
- Exceptional customer service
- Monitor what services are provisioned where in the network
- Accelerate growth and increase your return on investment
- Thousands of validations and cross checks to ensure consistency and integrity of data
- Automated processes



The Central Engine That Automates Your Operations



Value Added Smart Community Services

Smart communities use a combination of digital technology and data to make better community decisions and improve the quality of life for their residents. With high-performing broadband as a foundation, they increase their competitiveness, efficiently use resources, and support economic sustainability by using technology and creativity to raise the IQ of their built environment. Community services such as mobility, communication, education, health care, land use planning, water and energy management, and more can be significantly enhanced, helping your community reduce its environmental footprint.

A smart community is attainable for a large number of communities—if you have the right strategic advisor by your side. IBI Group is a leader in the realm of smart communities. We've helped municipalities across the globe (Canada, USA, India, Honduras, UK) develop award-winning smart community strategies and implementation processes. With our assistance and extensive knowledge, these communities have flourished by using the data they already had at their fingertips.

BENEFITS TO YOU:

- Become a community that really responds to the needs of your residents
- Improve decision-making for the community
- Efficiently manage and use your resources
- Reinvigorate your community's economy
- Reduce your community's environmental impact
- Make your community attractive to future generations



CITY OF EDMONTON SMART CITY CHALLENGE

CLIENT: CITY OF EDMONTON

The City of Edmonton prepared a submission to the Canadian Smart Cities Challenge competition. IBI Group prepared the proposal and stakeholder engagement events and activities for the City. The submission proposed the creation of a Healthy City program, which focused on a personalized health experience based on health data and innovative technologies and leveraging new relationships in the community. The aim of the submission was to improve the quality of life and well-being of residents. This was to be achieved by creating partnerships and leveraging connected technology and data to understand the challenges in the community and solutions for a more sustainable and healthy future.

The submission incorporated Smart City principles to encourage the integration of technology. These principles were foundational in the Smart City framework of the submission and built upon the objectives of developing partnerships, assessing privacy and security, collecting data, performing analysis, and storytelling and taking action.

The project was shortlisted as one of the top five cities in the \$50M funding category.

CLIENT DELIVERABLES

- Smart City proposal creation and strategy
- Stakeholder engagement events



Fiber and Network Asset Management



When you have a broadband network in place for your community, it's key to manage the long-term success of arguably one of your most valuable assets. Building it is one part of the puzzle and managing it is another. It's like spending time researching and saving up for a vehicle only to let it fall into disrepair and have it become undriveable. It doesn't make sense.

Many infrastructure grant recipients are not in the position to operate and manage the broadband networks they are currently building due to lack of knowledge and experience. However, with the help of IBI Group, you can manage your network and maintain the success of your broadband investment. Our experience includes fiber asset management, GIS visualization, capacity planning, and field work order and fault management services.

BENEFITS TO YOU:

- Learn the skills needed to manage your broadband network
- Rely on the expertise of broadband professionals to help guide you



MTO FIBER INVENTORY PROJECT

CLIENT: MINISTRY OF TRANSPORTATION OF ONTARIO (MTO)

The MTO fiber optic network implemented over the past 35+ years includes a total linear length in excess of 500 km. It's a highly valuable asset constantly evolving to connect the innovative intelligent transportation systems solutions deployed throughout the network. To facilitate efficient management of this asset, IBI Group was retained to develop a fiber network management tool to visualize the geographical layout of individual fiber optic cables across the MTO network, while establishing a template for storing physical assets.

CLIENT DELIVERABLES

- Visualization tool for fiber optic network layout
- Data management tool for fiber optic network assets
- Inventory of existing fiber optic network
- Training and documentation for rollout of the fiber network management solution





We are a global architecture, engineering, planning, and technology firm defining the cities of tomorrow.



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