ATTACHMENT 3

INNOVATION CASE STUDIES OF MEMBERS OF CANADIAN OPERATORS NETWORK INC.

FROM

SECOND INTERVENTION OF CANADIAN OPERATORS NETWORK INC.
DATED 27 JUNE 2014

IN

REVIEW OF WHOLESALE SERVICES AND ASSOCIATED POLICIES, TELECOM NOTICE OF CONSULTATION CRTC 2013-551, 15 OCTOBER 2013, AS AMENDED BY REVIEW OF WHOLESALE SERVICES AND ASSOCIATED POLICIES, TELECOM NOTICE OF CONSULTATION CRTC 2013-551-1, 24 NOVEMBER 2013

21 DECEMBER 2015
4.4 A Focus on Underserved Rural and Minority Communities

59. At least 5 CNOC members provide dedicated services to ethnic minority communities in their serving areas. This includes providing customer service in the native language of the community. In fact, one CNOC member provides 24 x 7 customer support in 7 languages: English, Mandarin, Cantonese, Hindi, Punjabi, Urdu and Vietnamese. This level of community focused support simply cannot be replicated by large incumbent carriers.

60. Many CNOC members also strive to bring quality telecommunications services to rural areas where access is not otherwise available. Often, this is achieved by deploying reliable fixed wireless services given that area density and geography is not amenable to a practical or cost effective wireline service deployment. CNOC members continue to push the speed and coverage boundaries of these technologies – to the benefit of a segment of consumers that have long been deprived of the benefits of modern connectivity.

4.5 Case Studies

61. CNOC wishes to highlight certain case studies included in this section that consist of select member responses to CNOC(Bell Canada)28Mar14-4 and CNOC(CRTC)28Mar14-4. As noted at the outset of this Part, these case studies further demonstrate the full range of innovations and the associated consumer benefits that some members have come to realize in virtually all aspects of their operations. It is important to underline that these case studies come directly from CNOC members. Accordingly, this evidence respects the voice of the participating companies on issues that are fundamental to their corporate identities.

62. CNOC also wishes to refer to the information that its member Primus has already put on the record in its capacity as a separate party to the proceeding. Paragraphs 23-43 of Primus’ first

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47 CNOC(Bell Canada)28Mar14-4 asked CNOC members to list the non-price retail service innovations that they have introduced within the last 24 months.

48 CNOC(CRTC)28Mar14-4 asked CNOC members to describe how they add value to the telecommunications markets that they serve, including the broadband Internet services market, and how they are able to differentiate their competitive service offerings given the existing mandated wholesale services framework.

round intervention provide a thorough overview of the company’s business including its evolution as a hybrid competitor and its strong record of investments and innovations. In CNOC’s view, this information also constitutes a very compelling account of the type of innovations and contributions that create real value for the industry and consumers.

4.5.1 Comwave Networks Inc. Case Study

<table>
<thead>
<tr>
<th>CNOC(Bell Canada)28Mar14-4</th>
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<tbody>
<tr>
<td>• Mobile App for Blackberry to control a hosted office extension, make and receive calls on smartphone as if in office.</td>
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<tr>
<td>• Mobile App for Iphone to control a hosted office extension, make and receive calls on smartphone as if in office.</td>
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<tr>
<td>• Mobile App for Android to control a hosted office extension, make and receive calls on smartphone as if in office.</td>
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<tr>
<td>• Internet Explorer control toolbar for controlling office phone, making &amp; receiving calls, reviewing call logs.</td>
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<tr>
<td>• Outlook control toolbar for controlling office phone, making &amp; receiving calls, reviewing call logs and integrating with contacts.</td>
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<tr>
<td>• Softphone/Ephone application for making Voip calls from Blackberry</td>
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<td>• Softphone/Ephone application for making Voip calls from Iphone</td>
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<td>• Softphone/Ephone application for making Voip calls from Android</td>
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<td>• Softphone/Ephone application for making Voip calls from Ipad</td>
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<td>• Softphone/Ephone application for making Voip calls from windows PC</td>
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<td>• Softphone/Ephone application for making Voip calls from Android Tablet</td>
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<tr>
<td>• Softphone/Ephone application for making Voip calls from Blackberry tablet</td>
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<td>• Business customer portal displaying map of customers network and status of all locations around the world integrating numerous underlying carriers and providing ticketing &amp; updates.</td>
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<tr>
<td>• Access design incorporating both cable and telco access lines for diversity and redundancy with real time monitoring and auto failover</td>
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<tr>
<td>• Hosted PBX service offerings for business customers</td>
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<tr>
<td>• P. Zero touch auto provisioning system for PPoE DSL customers</td>
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<td>CNOC(CRTC)28Mar14-4</td>
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<tr>
<td>• Provide attractive service bundle combinations with enhanced features and capabilities.</td>
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<tr>
<td>• Provide certainty with respect to usage charges</td>
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<tr>
<td>• Manage implementation of business networks across ILECs, cablecos and others in North America.</td>
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<tr>
<td>• Provide businesses with managed networks for security, performance and troubleshooting across all ILEC and independent territories in North America and beyond</td>
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<tr>
<td>• Provide unique diversity and redundancy options for business networks combining both cable and telco access facilities</td>
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<tr>
<td>• Provide real time network and CPE status monitoring of business locations.</td>
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<tr>
<td>• Provide business customers with proprietary network</td>
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<tr>
<td>• View, providing status and automated trouble ticketing across all locations</td>
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4.5.2 Execulink Telecom Inc. Case Study

CNOCE(Bell Canada)28Mar14-4

Account Management
- Remote management of the customer modem so that if they lose their configuration Execulink can restore it.
- Remote management of services by customer through single sign on for all service categories
- Configuration Management, monitoring and access controls for customers wishing for Managed Services from Execulink

Billing
- Time of Day Usage Based Billing
- Ability to temporarily change the Pre-Approved Payment Date to any day of the month to be more flexible to customers
- Visibility of detailed information though our Member Services area so customers can manage their usage and review charges when it’s convenient for them

Speeds
- Introduce bonding of DSL services to increase both upload and download speeds
- Implemented DOCSIS 3 in Cable Plant.
- Introduction of Ethernet over copper to provide superior performance to people over copper facilities

Quality
- Enable QoS features for PPPoE customers
- Implemented TR-069 to gather DSL ‘health’ information’ in troubleshooting changes in line conditions.
- Implemented h.264 transcoding to reduce bandwidth of IPTV content to be viable on more constrained broadband connections
- Implemented DDoS detection and mitigation
  In-house designed Linux based load balancer in front of distributed systems such as DNS and mail servers

New Products
- Introduction of IPTV
- Launched cellular service
- IPTV over Fiber
- IPTV over VDSL
- MPLS based services to provide L2 services over L3 links
- Introduction of Hosted ACD
- Voice over fixed wireless
Execulink takes great pride in taking care and being there for our customers. As a result, our customers are continually praising us about our exemplary service, spreading the word to their friends and family who are looking for a company who will ensure they have a great experience. This level of service is often cited as the number one reason our customers come to us and stay with us.

Tailoring our solutions to the needs of our customers is one way we go above and beyond to service their needs. When working with our business clients, we create custom solutions specific to their business. We often create new product offerings to suit their company’s needs; for example, our Multilink (MLPPP) product offering grew from the need to supply our clients with faster speeds via the DSL platform. We are deploying Fibre to the Home and Business to rural communities in South-western Ontario giving those customers levels of service their urban counterparts would envy. We are continually working on product development to provide customers with a better telecommunications experience in their home and offices.
4.5.3 Iristel Inc. Case Study

CNOC(Bell Canada)28Mar14-4

- **SMS to E-MAIL and E-MAIL to SMS Product**
  Enhancement to the Wholesale Targeted SMS Product, which allows text messages received by end users with Iristel DIDs to be directed also to e-mail. In addition, E-mails sent to end users with this feature enabled, will be replicated as text message.

- **CNAM services**
  Enhanced Caller ID feature, which allows called parties in the USA to visualize the Calling Name of the Iristel caller. This expands this basic functionality in Iristel services to areas which did not previously accommodate it.

- **iNUM**
  iNum stands for International Number. They are numbers from a dedicated numbering plan which are not restricted by cost or availability by their geographical origin, or use.

- **Call Treatment**
  This service allows customers to create powerful rules to manage how incoming calls are handled. Call Treatments can be used to help you manage calls in the following ways:

  Forward Calls to another number, any telephone in the world, to Fax Reception, or a SIP URI address

  Use Simultaneous ringing or Call Hunting to forward calls to up to 3 numbers either simultaneously or by hunting

  Force Anonymous calls to voicemail or an error message

  Force calls from a specific person to voicemail or an error message

- The partnership of Iristel Inc. and Ice Wireless resulted in significant enhancements to the mobile services provided in the Northern Territories
- Upgrade to 3G Network
- Free Data access to existing customers
- Free MMS services
Iristel is Canada’s largest and fastest growing carrier providing innovative communication services that are changing how consumers and businesses communicate. We offer our OTT, Voice Service Provider and Carrier customers a full suite of domestic and international Local Voice, Wholesale Voice, 911, SMS and Platform services that are supported by Iristel’s unified VoIP and GSM networks. Iristel operates Canada’s largest facilities-based local voice network extending Coast-to-Coast-to-Coast as well as Ice Wireless, a GSM carrier with operations in Canada's Far North.

Iristel has its own numbering plan and it runs on a native, redundant network infrastructure that enables us to provide real Canadian coverage without having to resort to leasing third party resources. Iristel’s unique coverage spans across every province in Canada, including the Northern Territories Iristel’s wholesale platform offers a complete portfolio of reliable services, empowered by high-end development tools such as our powerful, API compliant portal – EspressoDID – SOAP-based and REST APIs, enriched with a full-scale customer experience, through our 24/7 website, Customer Care and Technical Teams liaising experienced Key Account Managers.
4.5.4 ArbuTel Services Inc. dba Skyway West Business Internet Services Case Study

CNOCSBell Canada)28Mar14-4

- Internet bonding: Increase the speed capabilities of our bonding equipment to keep up with faster adsl and cable services. Continue to improve acceleration, traffic prioritization, management tools and ability to bonded different technologies and providers.
- Internet Failover: Develop capability and back end systems to allow sharing same IP among different services. Automate provisioning and integrate with business processes.
- Private networking: Emulate carrier MPLS network using CPE’s. For example, using CPE’s to provide class of service over point-to-point EVC’s. Extend across diverse carriers. Extend private network to include third party co-location facilities.
• We change residential quality adsl and cable services into enterprise services.
• Our staff are Wide Area Network experts
• We purchase adsl, cable, EoC (Ethernet over Copper) and fibre services that let us run our own IP addresses across them. Using our IPs allows us to combine services and providers to provide our single and multi-site customers the solution that best meets their needs given service availability, quality and cost.
• We monitor our services every six minutes to identify and begin resolving problems before customers call. Customers are automatically alerted of outages.
• Our systems collect health measurements such as packet loss, jitter, signal to noise ratios, usage graphs and other metrics measuring the health and suitability of any service for a specific customer. Customers can access much of this and set their own level for alerts
• Internet bonding: We bond any internet service with any other. Bonding increase the customer’s total up/down speed and provides “no loss failover” if one service fails. Meaning their VoIP calls, VPNs etc are not interrupted when a service fails. Bonding is used to increase upload speed where only 1 Mbps up adsl is available and cable isn’t available/suitable. It is also used to increase download speed when cable isn’t available/suitable and fibre or fixed wireless is too expensive. For example bonding four 25/5 adsl is much less expensive 100/20 alternatives.
• Internet Failover: We failover between any two technologies and use policy routing to make the best use of both technologies. For example, adsl is best for applications like VoIP that are sensitive to packet loss, latency, jitter and require packets to arrive in the correct order. Cable is best for bursty data like email, web and file transfers. We run the same IP’s over both links so the customer receives inbound as well as outbound failover. Inbound failover is critical to customers hosting servers.
• Private networking: We provide private IP addresses to customers to protect them from denial of service attacks that otherwise would congest and make unusable their internet service. Connecting to multiple carriers, using multiple technologies, and managing IP addresses across all services allows us to fully meet the needs of customer requiring private networks between sites.
• MPLS Networks: We use routers to emulate carrier MPLS and other advanced network features like Class of Service over different carriers.
4.5.5 TekSavvy Solutions Inc. Case Study

The non-price innovations we introduce into our retail service delivery are directed towards empowering consumers. In the last 24 months, these innovations have been directed towards four areas. We have sought to ensure that consumers who choose TekSavvy:

- know what they are getting,
- know what they are doing,
- can act freely, and
- are fully supported

Retail service innovations we have introduced in each of these areas include the following.

Consumers Should Know What They Are Getting

1. Over the last 24 months we have introduced new Internet speed and capacity plans based on non-limited-term, unbundled arrangements. Consumers know exactly what they are getting into without having to undertake the cognitive labour of wading through big-print numbers with small-print caveats. We ensure the presence of that option in the marketplace.

2. Based on survey research we commissioned, we rolled out a plan selection tool to assist consumers with assessing what plan best suits their requirements. Consumers should not be required to have advanced knowledge of bandwidth transfer speeds and volumes, so we empower them to make informed choices based on their own needs.

Consumers Should Know What They Are Doing

3. We have created a bandwidth monitoring platform based on an open Application Programming Interface (API). This provides for our customers not only to access their usage statistics freely, but also to use or program third-party application that, with user authentication, report these statistics in the way most convenient for the consumer.

4. In response to customer requests, we have developed information-rich tools for outage reporting to end-users. These tools ensure that they are updated every 24-hour period, even where there is no new information to report.
Consumers Should Act Freely

5. We have optimized access-segment bandwidth limitations in order to maximize consumers’ freedom to use the network. These “Zap the Cap” policies constrain bandwidth management to situations in which there is contention for network resources, by providing:

a) unlimited uploading;
b) unlimited off-peak downloading (2-8 am); and
c) a trade-off letting users trade speed limits for unlimited on-peak downloading.

6. We have continued to work with equipment vendors to source modems and wireless access points that best meet the needs of consumers, rather than default to what is already used in the marketplace.

7. By keeping the plans that we have rolled out over the last 24 months on a no-contract basis, we have reduced consumers’ switching costs to choosing between competitors in the marketplace. Our customers are free to leave whenever they like.

Consumers Deserve Our Full Support

8. We have invested significantly in highly-trained support teams located in Canada, and empowered both to take calls and to return calls to customers, in order to provide consumers with technology-savvy, personalized support and advice that they don’t have to sit on hold to receive.

9. We have built out our social-media-based support in a way that has allowed us to respond to many of our customer needs on sites like Facebook, Twitter, and the Web-based e-mail forum, DSL Reports, with extremely fast response time.

10. We reacted strongly to the receipt of a personal information request in respect of our users from a potential copyright troll, and helped clarify the law as it applies to Internet access providers’ stewardship of the personal information of users against which third parties have copyright claims.
TekSavvy Solutions Inc. (“TekSavvy”) has added value to the telecommunications markets we serve by empowering consumers. As a smaller company, we can work closely with our customer base, meet their needs rapidly, and work intensively to enable and delight them.

That is how we differentiate ourselves. At bottom, those consumers to whom we appeal appreciate that we listen to what they are saying, act on it, and do so with a constant concern for doing the right thing. As outlined in our response to CNOC(Bell Canada)28Mar14-4, our consumers know what they are getting, know what they are doing, act freely, and have our full support:

- Our service offerings have no strings attached and very little fine print to read. Consumers know what they are getting into. The price they are offered does not have an asterisk. They can leave any time they like—we try to keep customers by doing more for them, not by locking them up.

- Our bandwidth monitoring platform is based on an open Application Programming Interface (API) in order to enable an ecosystem of usage measurement for those instances in which we are forced to move towards limited bandwidth-based charges. We have developed responsive outage reporting tools. Our customers know what they are doing online and how it fits into their plan—we do not want their Internet usage to be constrained by constant concern.

- We have optimized the modems we provide to our users, which we source, and worked carefully to narrow bandwidth use limitations to maximize consumers’ freedom to use the network. These “Zap the Cap” policies constrain bandwidth management to situations in which there is genuine contention for network resources: we offer unlimited uploading and off-peak downloading, and a trade-off letting users swap speed limits for unlimited on-peak downloading, too.

- On privacy support, we have sought to defend our users’ privacy, underlining the importance of weighing any third-party subscriber information requests against privacy rights. On technological support, we have invested in highly-trained support teams located in Canada, and empowered them to take and return calls and go out on the Internet to make sure consumers have friendly, technology-savvy support and advice on all platforms and social media forums. We support our customers strongly.
We believe that by competing in a different way and holding our competitors’ feet to the fire, we have offered and put pressure on all market participants to offer lower wholesale and retail prices, greater choice in telecom services, and product features and service delivery alternatives that consumers want.

All of this has added value to telecommunications markets in a few key ways, including enhancing competition at every level; reaching more, and different, consumers; fostering more innovation; and incenting infrastructure investment:

1. We have enhanced competition in a few ways. With respect to connectivity, we have enhanced the state of competition for consumer Internet and voice services, and for wholesale telecommunications services markets in which we participate. We have lowered barriers to entry, such as through our support for and participation in cooperative Internet exchanges in Toronto and, now, Montreal.

2. We reach specific consumer niches. Two in particular stand out.

One are the more technology-savvy users seeking an ISP that will engage with them directly on technical and other issues of concern, and configure their service offering to respond to it. We do that. Large incumbents are simply not set up to do so. As we scale, ensuring that we continue to maintain and extend a “tech-savvy” culture is one of our key challenges—because it matters to our customers.

The other niche is those who seeking a closer connection with their ISP for other reasons, like more interactive tech support. This is often those who are less experienced at using the Internet. With TekSavvy, they are able to reach support technicians who care and are engaged—and who can call back. Our goal is to be the ones who take the load off the tech-savvy child or grandchild that a customer might reflexively look to to help configure things or fix them, but who sometimes isn’t a position to do so.
3. We have helped foster innovation. If the CRTC is now engaged in a major review of its television policy, for instance, our user base is at the heart of that process, with an extremely high proportion of cord-cutters, combined with an extremely high proportion of our network traffic devoted to video consumption. We have fought to win for our users the kind of unmetered usage and open, neutral network connectivity that incents permissionless innovation, and have worked hard to ensure that that model of Internet delivery is available in Canada, in part through the Zap the Cap! innovations described above.

4. We reduce, and hope to continue to reduce, infrastructure deployment risk by acting as a supplementary driver for use of access networks that might otherwise go unused. When an Internet user is frustrated with an ILEC or a cable incumbent, they have the option of switching to TekSavvy—and the incumbent continues to earn revenue from that access line, rather than see it lie fallow. In our view, that adds value to all market participants, including incumbents for whom we represent a major and, we hope, valued customer.