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Industry Canada
300 Slater Street
Ottawa, Ontario K1A 0C8

Dear Sir:

Re: Canada Gazette Notice No. SMSE-018-10 November 30, 2010 – Part I
Consultation on a Policy and Technical Framework for the 700 MHz Band and Aspects Related to Commercial Mobile Spectrum

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We have focused our comments exclusively on the policy objectives of the Ministry of Industry in addressing "*the need to provide spectrum access for new services and technologies including broadband, the impact of such a framework on all stakeholders*" and the "*Spectrum Policy Framework for Canada*" (SPFC) policy objective to maximize the economic and social benefits that Canadians derive from the use of the radio frequency spectrum (SMSE-018-10 page 1, Section 2: Policy Objectives).

Our aim in this submission is to demonstrate the need for cellular compatible mobile spectrum allocation to the Provinces and Territories Healthcare infrastructures, to improve efficiencies in the Canadian Healthcare Sector. We believe the need for a dedicated Pan Canadian "**Secure Wireless Health Network (SWHN)**" spectrum-compatible with commercial mobile is essential to the future of the healthcare sector.

1. Provinces and Territories are dependent today on public/commercial networks operating in their territory. These networks lack the required applications, immediacy, privacy, security and seamless integration on a Pan Canadian scale, so critically needed in the healthcare sector.

2. Development of IT transport applications connecting Patients, Doctors, Pharmacies and Hospitals is dependent today on the availability, suitability, lack of congestion, and price of the local public/commercial networks.

3. A dedicated secure wireless network in the 700 MHz Band would become the foundation for rapid development of health-specific applications. This secure network will improve privacy, security and efficiencies in retrieval, assortment, transport and storage in a fully mobile setting so vital for real time health information management.

4. The network would support health initiatives of the Government agenda to reduce waiting lists, primary care reform, as well as supporting the training of health professionals. It is believed that the introduction of mobile health applications combined with a fully integrated Electronic Health Record infrastructure would provide efficiency improvement that could save on a national basis **around $15B annually**.

The Telecommunications Act (1993, c.38), being the fundamental basis for the "Spectrum Policy Framework for Canada" (SPFC), provides a number of Policy objectives in Section 7.

5. In addressing <u>all</u> stakeholders' needs we believe that Sections (a); (h) and (i) take priority to section (f) when the social needs of Canadians and their Healthcare and Privacy needs are considered in relation to the needs of general commercial mobile undertakings.

   In Section (a) the Act is very explicit as to the objective: "*to facilitate the orderly development throughout Canada of a telecommunications system that serves to <u>safeguard</u>, <u>enrich</u> and <u>strengthen</u> the <u>social</u> and economic fabric of Canada and its regions*."

   In Section (h): "*to respond to the economic and <u>social</u> requirements of the users of telecommunications services*"

   And finally in Section (i): "*to contribute to the protection of the privacy of persons*".

6. These objectives of facilitating telecommunication systems to safeguard the social and privacy needs of Canadians, have not been achieved in the healthcare sector, yet it seems the objective of Section (f): "*to foster increased reliance on market forces for the provision of telecommunications services and to ensure that regulation, where required, is efficient and effective*;" has to date taken priority in consideration, as far as the spectrum allocation is concerned. The provinces do not have the budgets and should not have to compete in a commercial auction to support the social and privacy needs of the Canadian Healthcare Sector.

7. Healthcare in Canada is not governed by market forces. It is a social service funded by Canadian taxpayers and operated by the Provinces and Territories. Its access to vital dedicated spectrum – the life line of a secure, private and immediate accessible mobility needs cannot be met through market forces.

UNIQUE REQUIREMENTS OF HEALTH CARE INDUSTRY

8. Healthcare is the largest governmental social service industry, with annual budgets over $190B, many times larger than the military and all Canadian public safety agencies combined. Its spectrum needs for the deployment of a dedicated SWHN is similar to the Military, Public Safety, Transportation, and Resource Exploration industries, which require dedicated communications infrastructure under their own control and management in order to preserve operational security and privacy and access to immediate information. SWHN will be designed to meet the unique Healthcare industry requirements and will be dedicated (always available everywhere it's needed).

9. The Public/Commercial Networks, structured by definition as a telephony utility, are not designed to meet individual industries' specific needs as is the case for the Military, Public Safety, Airlines, Railways, Resource Exploration, and other private and Government owned/controlled industries.

10. An independent, secure SWHN with 700 MHz will stand alone apart from the incumbents' infrastructure, to meet the unique operational, security and privacy requirements of the Canadian Healthcare Industry and will be compatible with the spectrum bands deployed by the commercial carriers to allow dual mode operations in a single handheld device.

INEFFICIENCY OF PRESENT DEPLOYMENT

11. Following the 2008 AWS (Advanced Wireless Service) Auction, excess spectrum is now available to the 3 major carriers and the new entrants, who have more spectrum than they could deploy efficiently (see: DGTP-002-07 Mobilexchange – Final http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/dgtp-002-07-rep-MobilexchangeLtd.pdf/$FILE/dgtp-002-07-rep-MobilexchangeLtd.pdf

    and

    DGTP-002-07 LYA-Spectrum Holdings – Overview – May 2007 Appendix http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/dgtp-002-07-rep-MobilexchangeLtd-LYA-Report-AppendixII.pdf/$FILE/dgtp-002-07-rep-MobilexchangeLtd-LYA-Report-AppendixII.pdf

12. *Despite continuous **perceived** demand for additional spectrum below 2 GHz by the Canadian wireless operators, allocating a portion of the 700 MHz spectrum to the Healthcare sector will not impede the continuous evolution and growth of the public/commercial wireless broadband networks and services*.

13. In 2007 prior to the AWS auction, we have shown during the consultation leading to the auction, that Canadian carriers had much more spectrum than their U.S. counterparts, and with *one-tenth* the population.

Example:
New York – 18.7 million population: T-Mobile had 50 MHz post AWS Auction
Toronto – 4.8 million population: Bell had 55 MHz prior to AWS Auction

Do Canadian Public Wireless Carriers (mainly the 3 dominant ones) really need additional 84 MHz in 700 MHz band on top of the 65 MHz AWS auctioned in 2008?

14. Public commercial wireless carriers in much more heavily populated areas around the world are able to deploy efficient broadband G3, G4 & LTE systems with a much greater customer base using the same or less spectrum as provided to Canadian equivalent operations. Advances in antenna design and signaling continuously provide for greater and greater spectral efficiencies which should be deployed prior to allocation of additional scarce mobile spectrum resources. (see http://itworldcanada.com/news/breakthrough-said-to-double-wireless-capacity/142540?sub=280664&utm_source=280664&utm_medium=comminfra&utm_campaign=enews

TIME IS OF THE ESSENCE

15. There may never be a similar opportunity to allocate some of the 700 MHz to the Provinces and Territories for SWHN deployment, as mobile spectrum in this band is extremely scarce.

    Dedicated system deployment in a non-compatible band is not an option. Such deployment would require huge subsidies for the CPE (Customer Premise Equipment) and would not be compatible with cellular mobile, and would not be cost-effective and compatible with existing networks. Healthcare providers should not have to carry multiple devices on different networks. The cost of deploying equipment and software in non-compatible mobile bands would be ten-fold, in the absence of current mass production cost efficiencies deployed in the 2 GHz band.

HEALTH CARE SHOULD BE TREATED AS PUBLIC SAFETY

16. Healthcare by and large, as far as Industry Canada's category listing of "Public Safety" is concerned, does not appear at all, except to "Emergency Medical Services", ambulance services.

    Public Safety Categories:
    Category 1 – Police, Fire & Emergency Medical Services
    Category 2 – Forestry, Public Works, Public Transit …
    Category 3 – Other Government Agencies and certain non-Governmental Organizations or Entities

    These 3 public safety categories have National 24 GHz dedicated mobile spectrum:

    16 MHz : 768 – 776 MHz : 798 – 806 MHz
    6 MHz : 821 – 824 MHz : 866 – 869 MHz
    And other dedicated bandwidth in VHF and 4.9 GHz

How much of this 24 GHz Public Safety Spectrum has been deployed and how efficiently? Has any Public Safety Agency deployed a cellular spectrum efficient network which is compatible with the public wireless cellular networks?

In conjunction with U.S. 700 MHz deployment, I.C.'s consultation paper is proposing to allocate additional 16 to 26 MHz to the Public Safety Sector **yet not a single MHz for healthcare**.

BENEFITS OF SWHN

17. Both traditional public safety agencies as well as the healthcare sector would benefit immensely from dedicated infrastructure that would provide the security, privacy and immediacy required for their operations in a setting compatible with the public networks. A single handset device would accommodate operational communications through passwords and other security measures over the private dedicated secure network and allow a switch over to the public network for public communications.

MOBILE IN THE HEALTH CARE SECTOR TO DATE

18. Significant work has been done in Canada on deployment of eHealth mobile applications and the benefits of leveraging Mobile in the healthcare sector have been proven:

For Clinicians – access to real-time information when and where needed

- Speed decisions via access to patient records, test results and alerts
- Single view of the patient at clinician fingertips vs 'finding a workstation'
- Access to medical literature and knowledge-bases

For Patients – supports patient centric care

- Information access to personal health records
- Self-service and speed of patient administration
- Safety, Compliance and Monitoring

For the Healthcare System – reduces operational cost

- Improves key clinical process
- Increases productivity of mobile homecare and community teams[1]

19. However the use of public wireless systems pose Confidentiality, Integrity and Availability challenges that could only be solved through a dedicated Secure Wireless Health Network (SWHN).

    - **Confidentiality** means that data or information is not made available or disclosed to unauthorized persons or processes

    - **Integrity** means that data or information have not been altered or destroyed in an unauthorized manner

    - **Availability** means that data or information is accessible and useable upon demand by an authorized person[2]

20. According to the FDA and many international medical device regulatory agencies, all components that store, transmit, or transform clinical data that could affect patient diagnosis, therapy, or safety are themselves medical devices:

    Health Canada
    December 3, 2010
    File number: 10-125797-779
    Notice
    Subject: Software Regulated as a Class I or Class II Medical Device[3]

21. In a standardized national deployment of SWHN, the network and its devices will need to meet both the FDA and Health Canada regulations in order to protect the confidentiality, integrity and availability of Canadian health information and personalized Electronic Health Record (EHR).

[1] Source: IBM: Mobile Healthcare Summit, Janaury 26, 2011 Toronto
[2] Source: Elliot Sloane: Mobile Healthcare Summit, January 26, 2011 Toronto
[3] Source: Elliot Sloane: Mobile Healthcare Summit, January 26, 2011 Toronto

22. At present, over public wireless networks such standards may not be met. It is critical to provide a dedicated wireless SWHN network that is always on and available anywhere it is needed, so that critical health information does not have to compete with music and video downloads that may take priority due to commercial undertakings. The public wireless networks are not designed to accommodate healthcare industry needs.

CRITICAL HEALTHCARE MOBILE CHALLENGES OVER THE PUBLIC MOBILE NETWORKS:

- Wireless devices lose network access and/or interfere with one another
- Clinician may not receive critical data in time
- Newly captured clinical data may not be sent to the electronic health record or may be defective
- Some data is life-critical (e.g., impending heart attack), but network speed is not guaranteed
- Wireless "jamming" devices are dirt cheap!
- A day (or week) of home blood glucose tests or vital signs data that is lost in a car accident or by theft may be irreplaceable, and may risk patient safety
- Tampering can be used to cause injury or death
- Consumer-grade wireless systems are relatively easy to "hack" into, exposing data to tampering or destruction
- Tampering may be hidden from view or other detection[4]

RECOMMENDATIONS

23. We therefore respectfully recommend that a similar allocation as is currently under consideration for Public Safety i.e. between 16 and 26 MHz, be allocated to the Provinces and Territories for the deployment of the Secure Wireless Health Network (SWHN). The SWHN will be deployed to be public network compatible and transparent across the country and within the operating bands of commercial wireless networks.

[4] Source: Elliot Sloane: Mobile Healthcare Summit, January 26, 2011 Toronto

24. We recommend that 10 + 10 MHz (about 18%) should be held back from the total 108 MHz planned for an auction. The 20 MHz should be reserved for the deployment of SWHN across the country.

25. We respectfully believe that the Federal Government and by extension Industry Canada should play a major role in revamping the Canadian Healthcare system, by allocating the spectrum and ensuring that the efficiency and safety contributions of the SWHN are achieved.

26. Spectrum allocation is an appropriate role for the Federal Government:

- Spectrum is under Federal jurisdiction
- This initiative requires Federal Government involvement to proceed
- Using a resource in Federal jurisdiction (Spectrum) to support programs under Provincial and Territorial jurisdiction (health care)
    - Respects provincial and Territorial autonomy
    - Is consistent with New Government's Agenda
    - Shows Canadian federalism working at its best

27. We believe that the SWHN deployment could be totally funded by the private sector, an opportunity for Private/Public joint undertaking. **No Federal funding would be required**. There would be sufficient interest from the private sector.

28. A reliable SWHN available to all the Provinces and Territories will play a similar role as the dedicated networks used by the Military, the RCMP and other public safety organizations, airlines and other private security minded organizations. SWHN will pave the way for other public safety allocated spectrum deployment in a compatible manner to allow secured and dedicated communications combined with public communications on a single device.

29. The proprietary infrastructure will foster rapid development of a myriad of health care IT applications to increase the accuracy and availability of health information between patients, doctors, pharmacies and hospitals, reducing duplications and improving dramatically the access availability to Health Care resources.

Sincerely,

MOBILEXCHANGE LTD.

Michael Kedar
President