

“Canadian” Spectrum Policy
Context and Insights

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Delivered to
Canadian Spectrum Summit

Prepared by
Nordicity



Outline

1. Introduction
2. Wireless industry in context
3. Upcoming auctions
4. Beyond 700 MHz & 2500 MHz
5. Insights

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Interact:



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Introduction

High-stakes year:

- Industry Canada: more spectrum, new rules
- CRTC : intensified consumer focus
- Competition Bureau: stepping up scrutiny
- Foreign investment now a possibility (<10%)
- Parliamentary [Study on Broadband & Internet Access](#)
- Digital economy strategy ([consultation](#) in 2010)

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The wireless industry in context

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Industry Canada: More spectrum, new rules, conditions, AWS experience

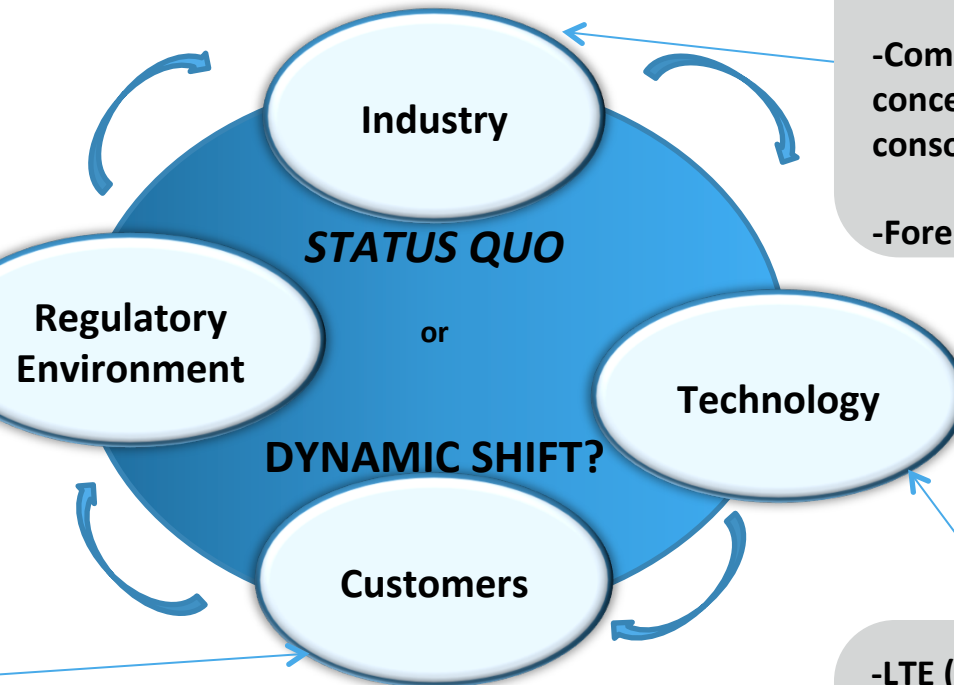
CRTC: Create, Connect, Protect

Parliament: More interest?

-Capacity / spectrum crunch

-Competition or concentration and consolidation?

-Foreign investment?



-Data demand

-Usage patterns / preferences

- ARPU ↑↓→

- Grassroots mobilization on consumer issues

-Northern/Rural connectivity (access, affordability)

-LTE (4G)

- Device / gear ecosystems

- Carrier aggregation

The wireless industry in context

1. Introduction

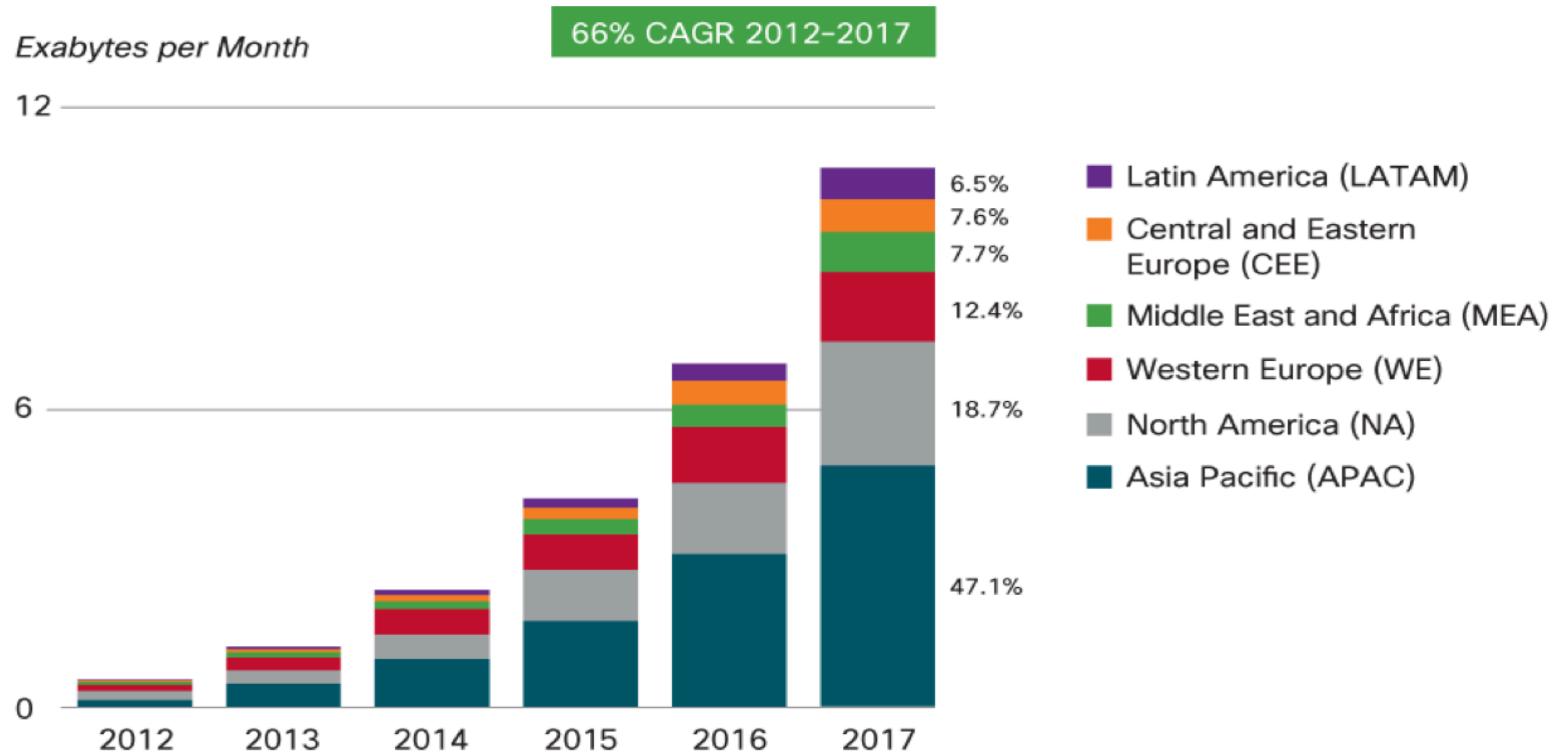
2. **Wireless industry context**

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The data surge



Source: [Cicso Global Mobile Data Traffic Forecast, 2012-2017](#)

Note also: [Study of Future Demand for Radio Spectrum in Canada 2011-2015](#)

The wireless industry in context

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Revenues >

	Wireless	Telecomms	Communications	ARPU growth (wireless)
2007	\$14.5B	\$38.2B	\$51.2b	5.9%
2009	\$16.9B	\$40.9	\$55.3B	(2.2%)
2010	\$18.0B	\$41.7B	\$57.4B	(1.5%)
2011	\$19.1B	\$42.7B	\$59.3B	0.2%

Concentration >

	# of major providers	Market share (subs) of top 2 providers
Canada	3	64%
US	4	64%
UK	5	54%
Australia	3	75%
Japan	3	76%

The wireless industry in context

Spectrum shares (commercial mobile)

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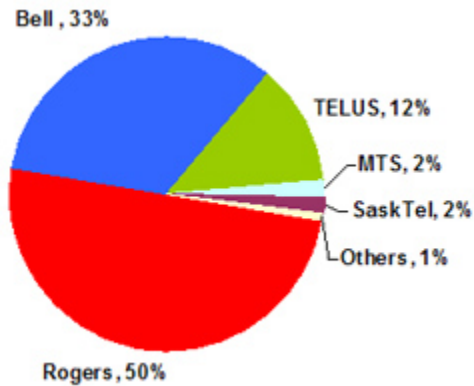
2. **Wireless industry context**

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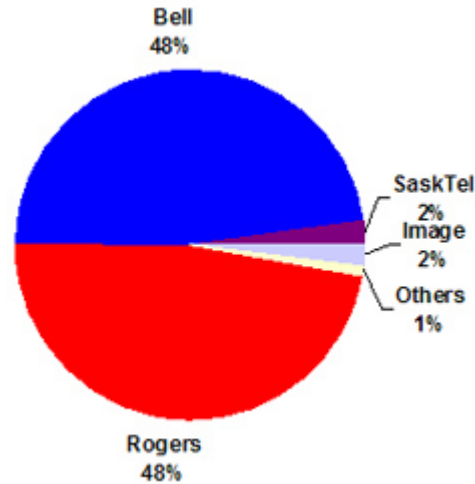
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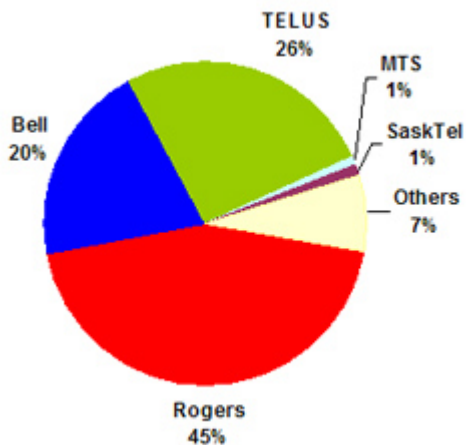
Cellular (800 MHz)



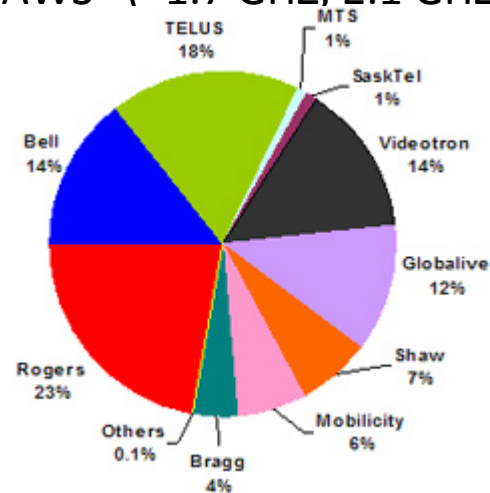
BRS (~2.5 GHz)



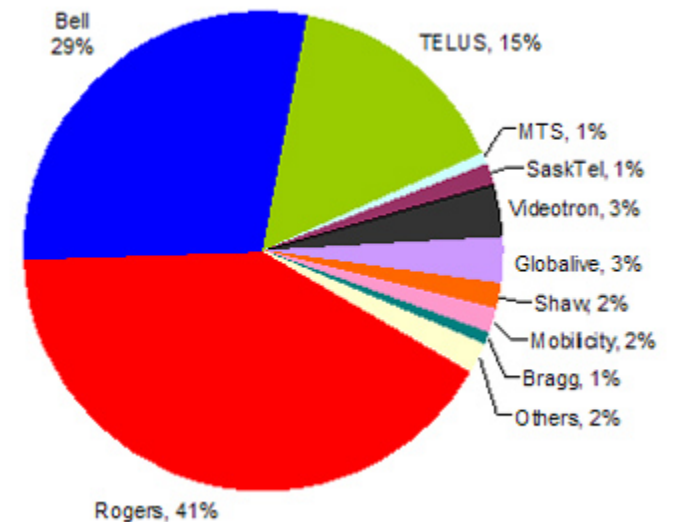
PCS (~1800 – 1900 MHz)



AWS (~1.7 GHz, 2.1 GHz)



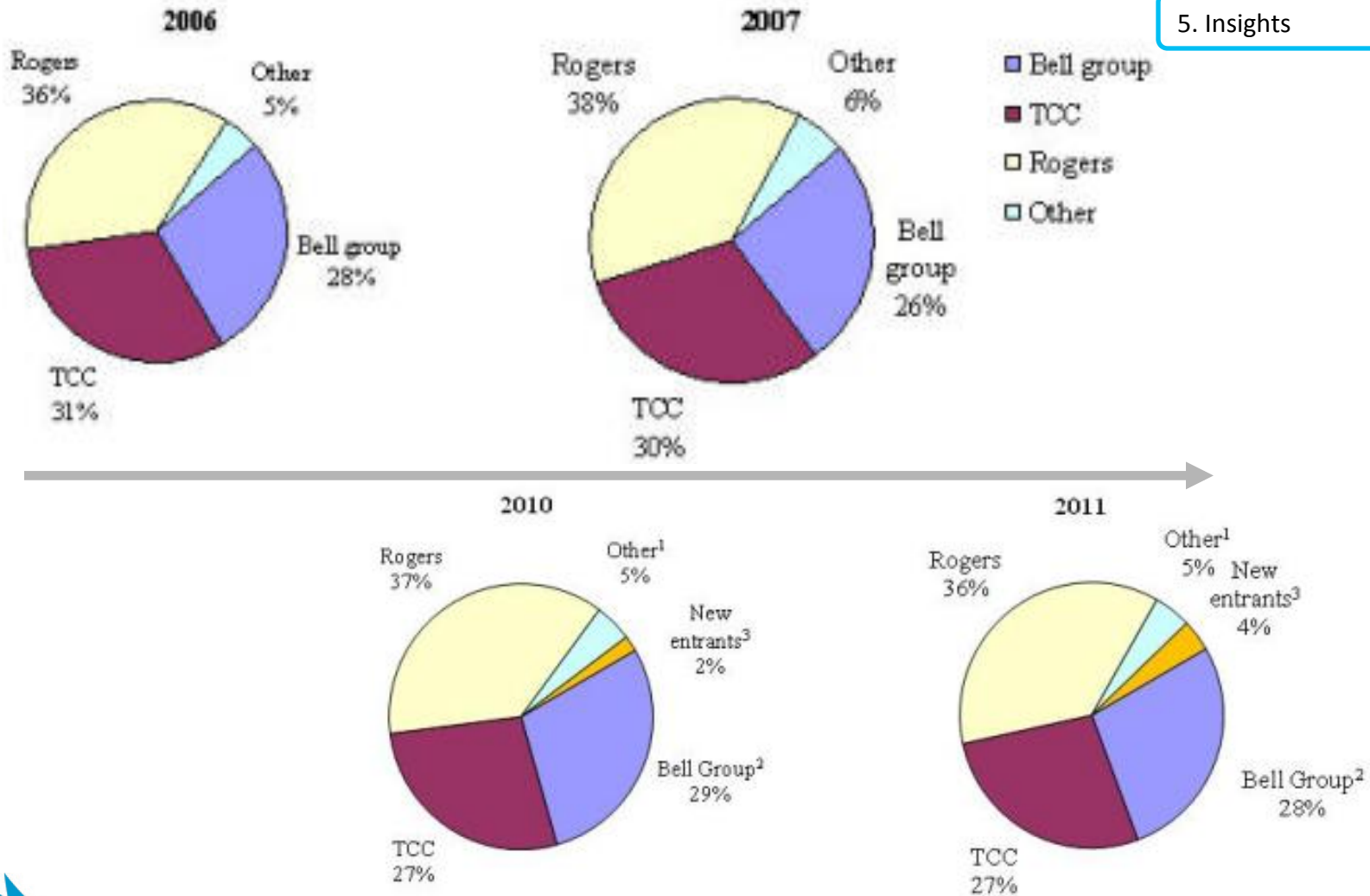
TOTAL



The wireless industry in context

Then and now...

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Upcoming Auctions

700 MHz

- Harmonized with US band plan
- CCA auction in **November 2013**
- **Tier 2**
- Former TV broadcast spectrum; attractive characteristics
- The result of several contentious consultations

2500 MHz

- Mobile, fixed or broadcasting services
- ITU band plan
- Tier 3
- Auction in **2014**; rules essentially final
- Same CCA format as 700 MHz
- More spectrum available than in 700 MHz band, but higher frequency (more towers, more power required)

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Importance of 700MHz

- Harmonized with US band plan
- CCA auction in **November 2013**
- ‘Gold Standard’
 - propagation characteristics – think town & country coverage
e.g. condo in Toronto & cottage in the Kawarthas
 - corresponding lower CAPEX & OPEX
 - healthy gear ecosystem that has developed for NA operators
since Feb. 2008 US 700 auction
 - Anchor spectrum for dual & tri-mode phones
- Rules:
 - The result of several contentious consultations
 - Tier 2 licence areas & absence of set asides

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Beyond 700 and 2500...

- More spectrum (licensed and unlicensed) coming on line > 750 MHz extra by 2018 (528 MHz planned; 222 MHz TBD) ([Industry Canada release plan](#))
- Unlicensed spectrum
 - [Unlicensed use of TV White Spaces](#) (more later in conference)
 - Note: FCC Citizens Broadband Service” [proposal](#) (100 MHz in the 3.5 GHz band using small cell and database technologies); [Renewal process for 2.3 and 3.5 GHz licences](#);
- Carrier aggregation technology (Qualcomm recent [trial](#))
- Partnering
 - MVNO / reselling
 - Associated Entity bidding consortia – joint coordinated bidding (sharing the cap, competing at retail level)
- Regulatory opportunities
 - [RP-019](#) (cellular access in unserved, underserved areas) – to be reviewed to include other frequencies.
 - [Consultation on transfers](#) (Comments due April 3; Reply comments due May 3)

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Insights: CDN Spectrum Management

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- Goals of timely, regular release of spectrum:
 - Sets market value for the band but also reference point for fees in other bands,
 - Encourages entry of new competitors,
 - Discourages spectrum hoarding,
 - Enables introduction of new technologies
- IC has tracked behind other spectrum regulators in releasing spectrum, updating fees
 - However, this has not resulted in significant delays in the introduction of applications & services
 - CDN operator networks technology & performance are world class
 - CDN prices – adjusted for subscriber usage profiles & # handsets compares favourably re. [Nordicity report Feb 2011

2013 CCA 700MHz Auction model

Canadian Spectrum Management

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- Replaced SMRA auction processes post 2008 AWS auction – criticized for length & use of a set aside
- CCA applied in various jurisdictions in Europe & most recently in Australia
- However, untested on this scale: 96 licence areas.
- Designed to encourage value bidding however, its complexity is source of uncertainty & barrier for some potential bidders
- Could yield multiples of 4x – 8x reserve in 700 MHz and 2500 MHz

Nordicity

Strategy, Policy and Economic Advice

Contacts

Toronto
Ottawa
London, UK

Stuart Jack

Partner

+1 613 234 0120

sjack@nordicity.com

Geoff White

Nordicity, Ottawa

+1 613 234 5852

gwhite@nordicity.com

nordicity.com

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