

“Canadian” Spectrum Policy
Context and Insights

May 2, 2013

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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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?

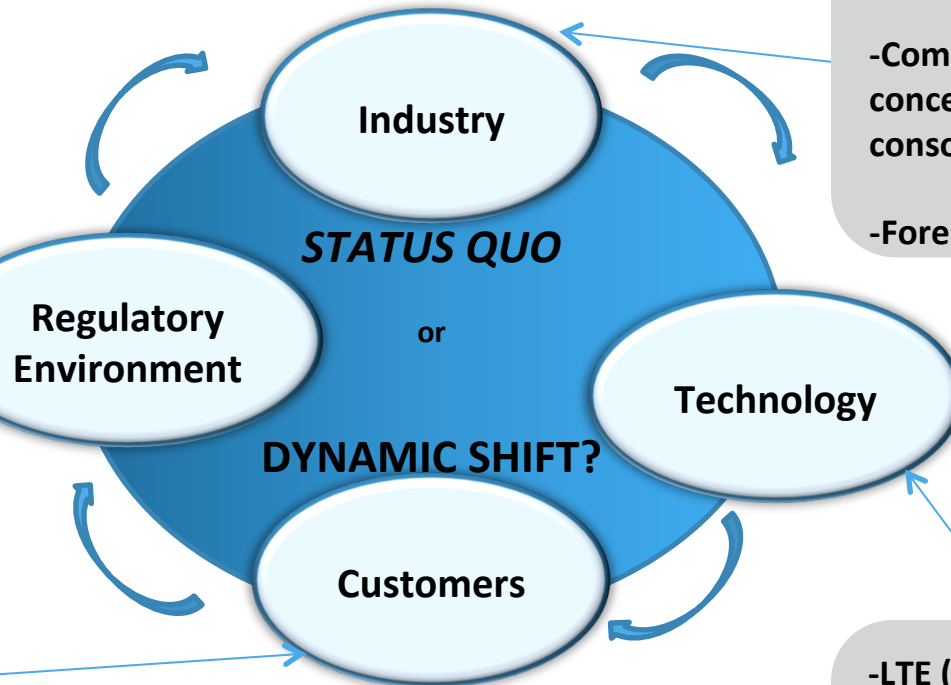
-Data demand

-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

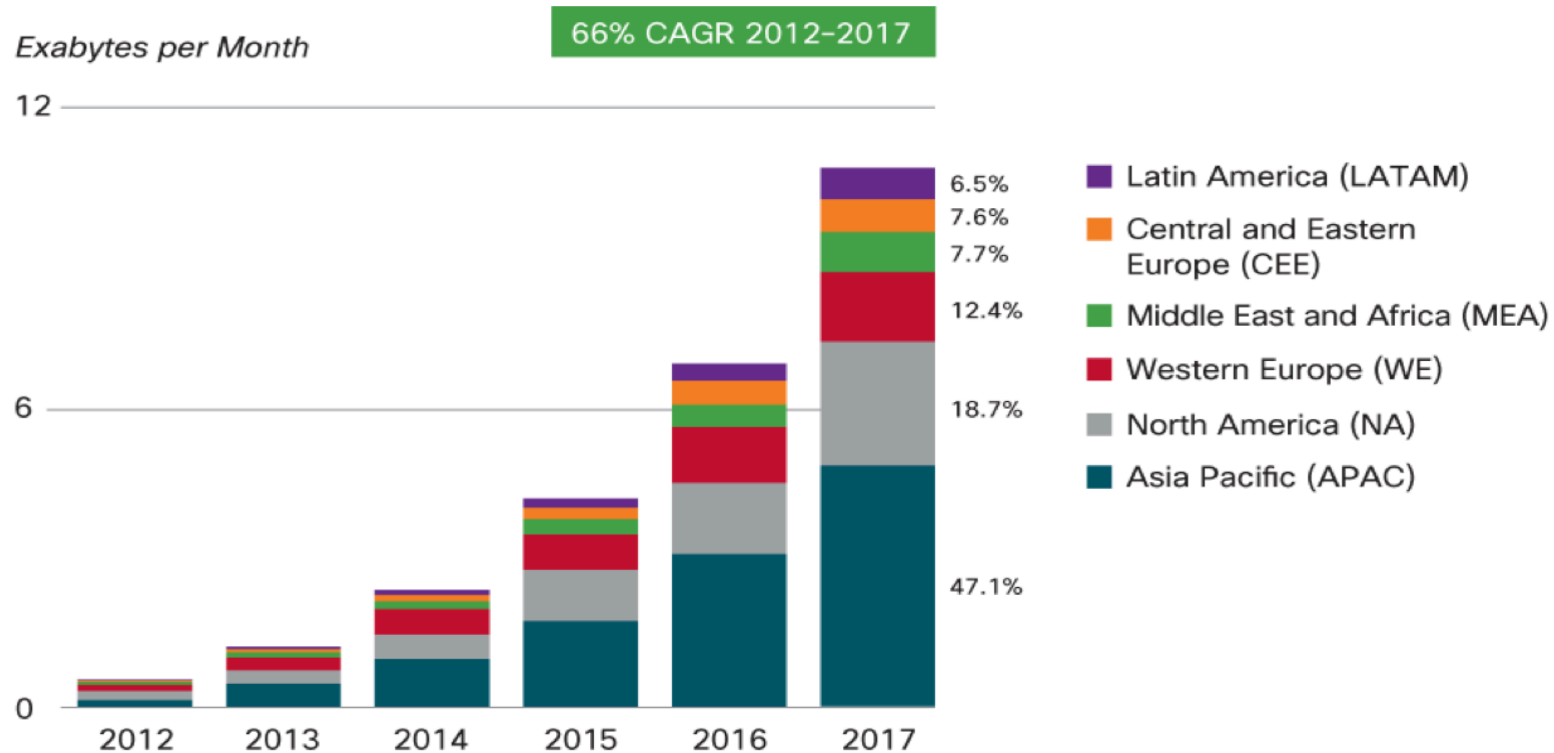
2. **Wireless industry context**

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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 >

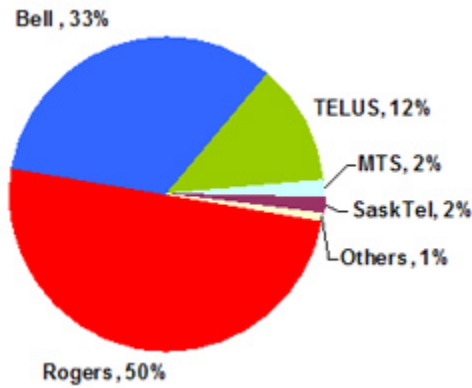
	# of major providers	Market share (subs) of top 2 providers
Canada	3	64%
US	4	64%
UK	5	54%
Australia	3	75%
Japan	3	76%

The wireless industry in context

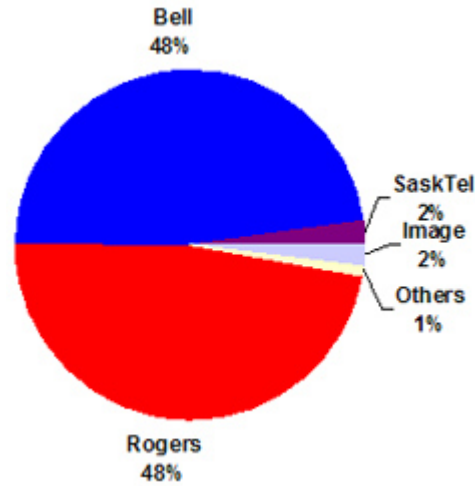
Spectrum shares (commercial mobile)

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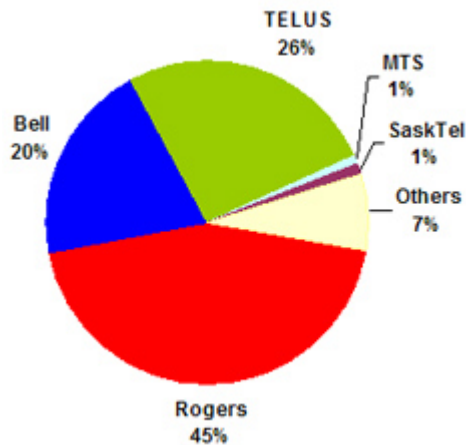
Cellular (800 MHz)



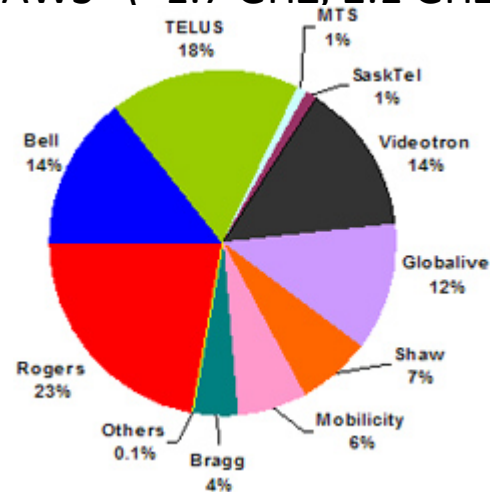
BRS (~2.5 GHz)



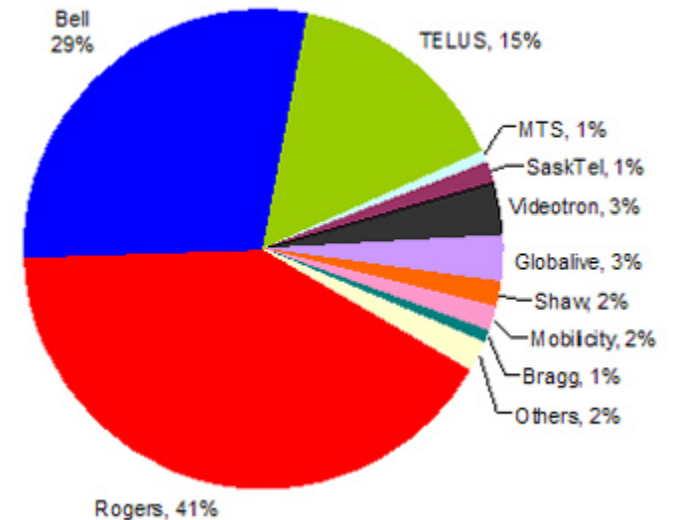
PCS (~1800 – 1900 MHz)



AWS (~1.7 GHz, 2.1 GHz)



TOTAL

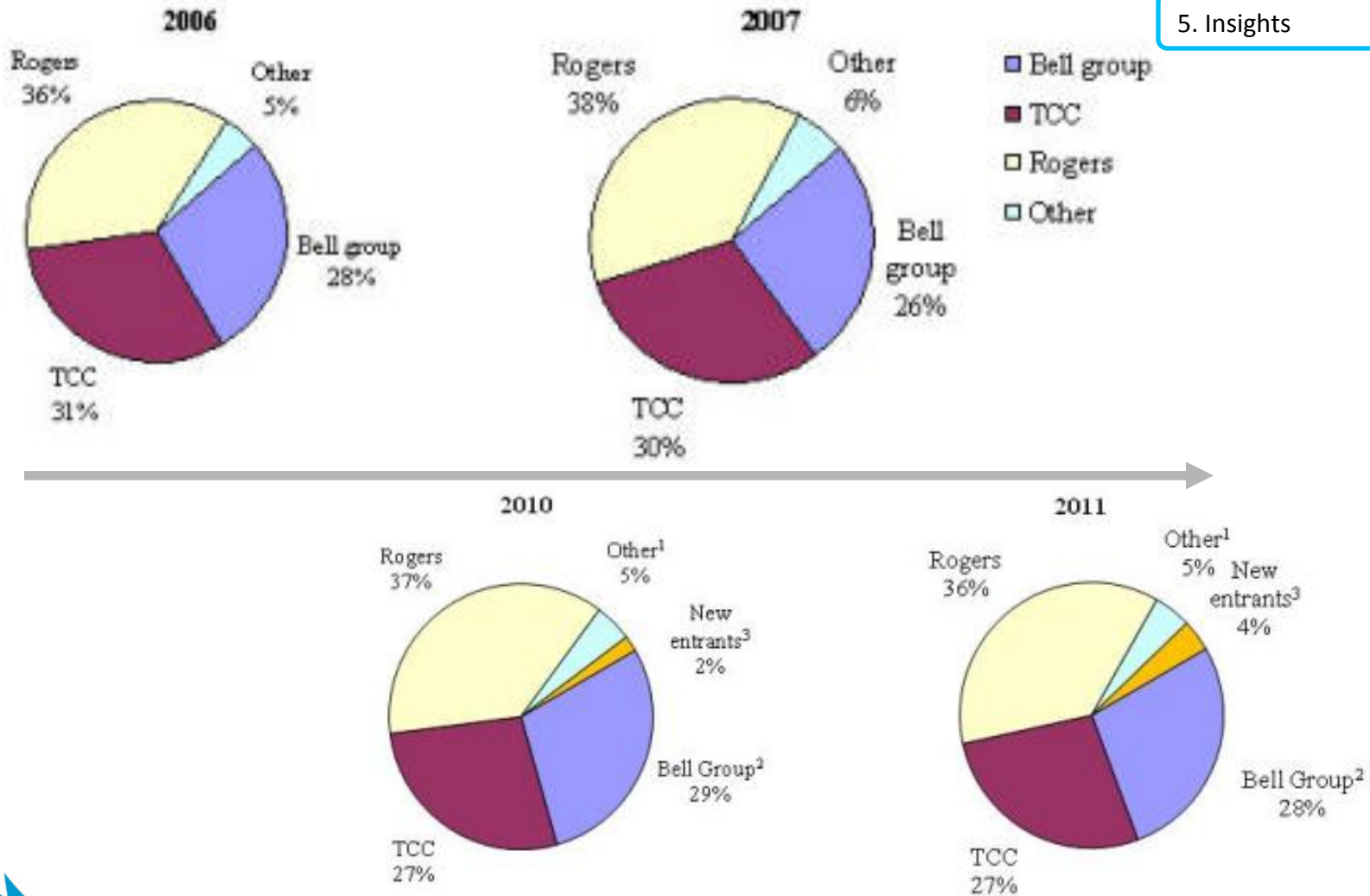


Source: Industry Canada

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...

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- 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)

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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