

# **The economic value of the wireless communications industry to Canada**

**Stewart Anderton**

**stewart.anderton@ovum.com**

**21 April 2010**



## Study objectives

The key objectives of the study were:

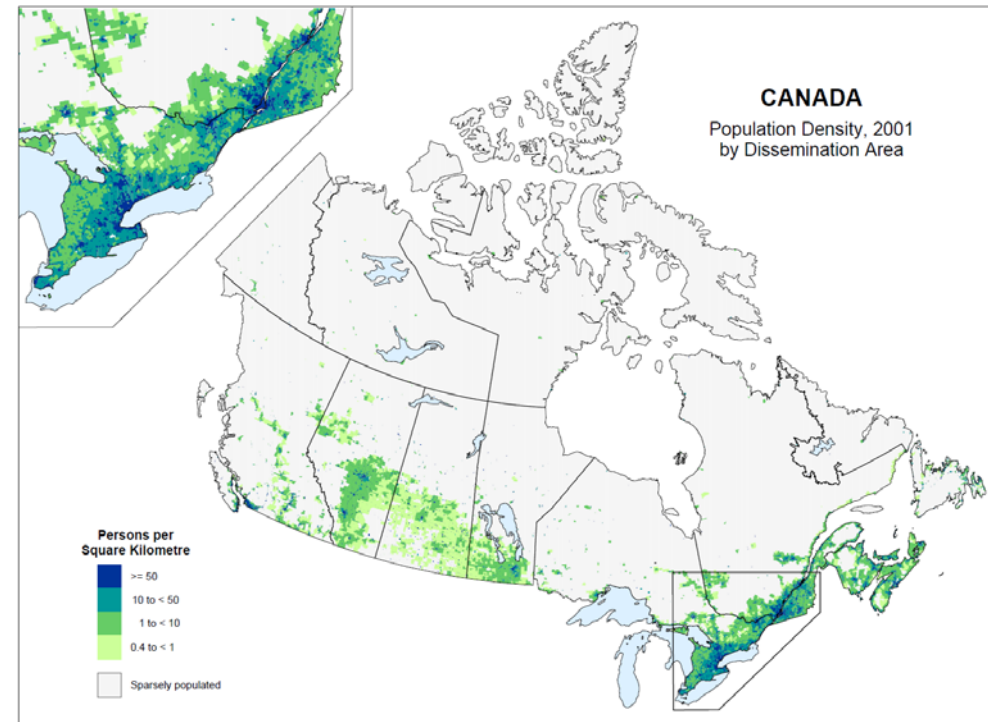
- to identify and demonstrate the supply side economic benefits of mobile services in Canada in terms of contribution to gross domestic product (GDP) and employment
- to identify the productivity gains that accrue from wireless services
- to assess the consumer surplus - the welfare and social benefits that mobile services provide for consumers, from a quantitative and qualitative perspective.

## The context for the study

- Study assessed the impact of the wireless industry in Canada on the Canadian economy (based on 2008 data)
- Economic value exceeds the operators' and service providers' revenues and the value generated to the government through taxes and annual spectrum licence fees (\$130 million p.a.) and one off spectrum auction payments (AWS \$4.26 billion and PCS \$1.48 billion)
- Spectrum is a key and vital input for the wireless industry. Due account should be taken of the value and benefits accruing from the provision of wireless services when assessing a "fair return" for the use of spectrum resources
- For an enabling infrastructure such as wireless, it is reasonable for the sector to be supported with policies, regulations and actions that will reduce barriers which might inhibit investment and expansion.

## Wireless services in the Canadian context

- There is huge geographic area to serve, with low overall population density:
  - Canada: 4 people per sq. km.
  - Europe: 70 people per sq. km.
  - US: 30 people per sq. km.
- Canadian operators manage to cover 99% of the population. Inevitably requiring a high level of capital expenditure
- Canada is served by 57 licensed operators (national or regional coverage)
- Network and site sharing as required by Industry Canada
- Network operators have high operating and capital costs, due to low population density in many provinces



## Key findings - 1

- The Canadian wireless communications industry generates significant value for the Canadian economy.
- A total economic value of \$39 billion:
  - mobile network operators generated \$15.94 billion in revenues
  - the wireless communications services industry directly contributed \$16.3 billion to Canadian GDP
  - with a sectoral output multiplier<sup>1</sup>, this amounts an economic benefit from the supply of wireless services of \$30 billion
  - the use and availability of wireless telecom services and products created an estimated \$8.8 billion consumer surplus

<sup>1</sup> The 'output multiplier' is a statistical tool which enables the economic impact of demand on contributing suppliers in the supply chain to be assessed, based on the demand for end-user services. Statistics Canada provides a multiplier of 0.87 for the integrated telecommunications industry. This has been applied to the wireless sector in this study.

## Key findings - 2

- The value from the wireless industry with a direct GDP contribution of \$16.3 billion compares favourably with other major Canadian industries:
  - automotive manufacturing (\$20.6 billion)
  - food manufacturing (\$18.2 billion)
  - agricultural crop production (\$16.6 billion).
- Also comparable to the 2008 GDP of Newfoundland and Labrador (\$20 billion)

## Key findings - 3

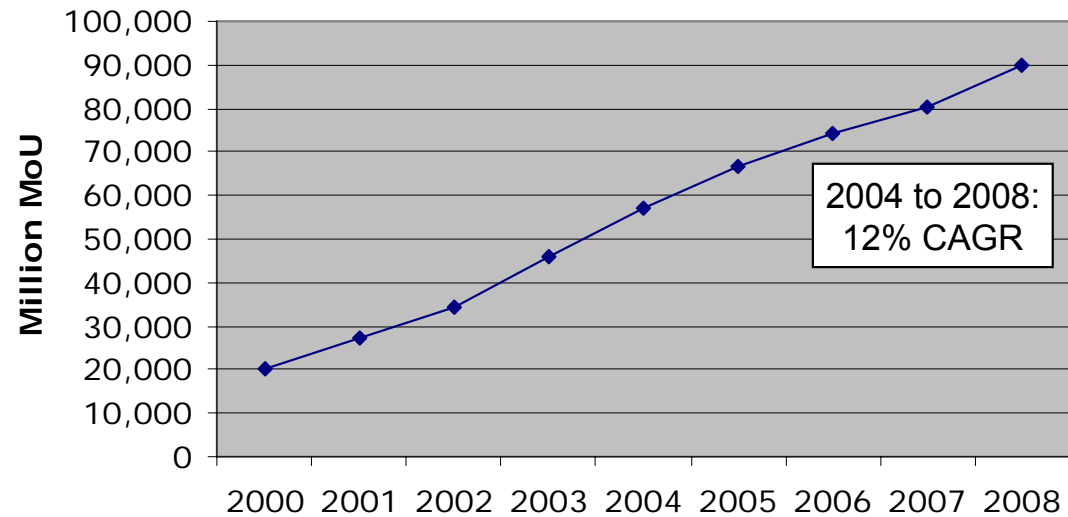
- The value from the wireless industry flows into the Canadian economy through many routes
- In employment and value added:
  - between 293,000 and 410,000 jobs are directly and indirectly dependent (including induced employment) on the Canadian wireless telecommunications industry - up to 2.4% of all jobs in Canada
  - the wireless sector offers high value employment – it has an average salary level of \$59,000. This compares to a Canadian average salary of \$42,640.
  - value-added per employee directly employed in the Wireless Communications Services industry of \$195,000<sup>1</sup>, compared with \$71,000<sup>2</sup> for the national average employee's added value

1. [Wireless operator revenues - (commission to dealers + payments to terminal suppliers & network equipment vendors + other capex + payments to wireline operators + support services) + (70%\*dealer revenues)] / (wireless and dealer staff)

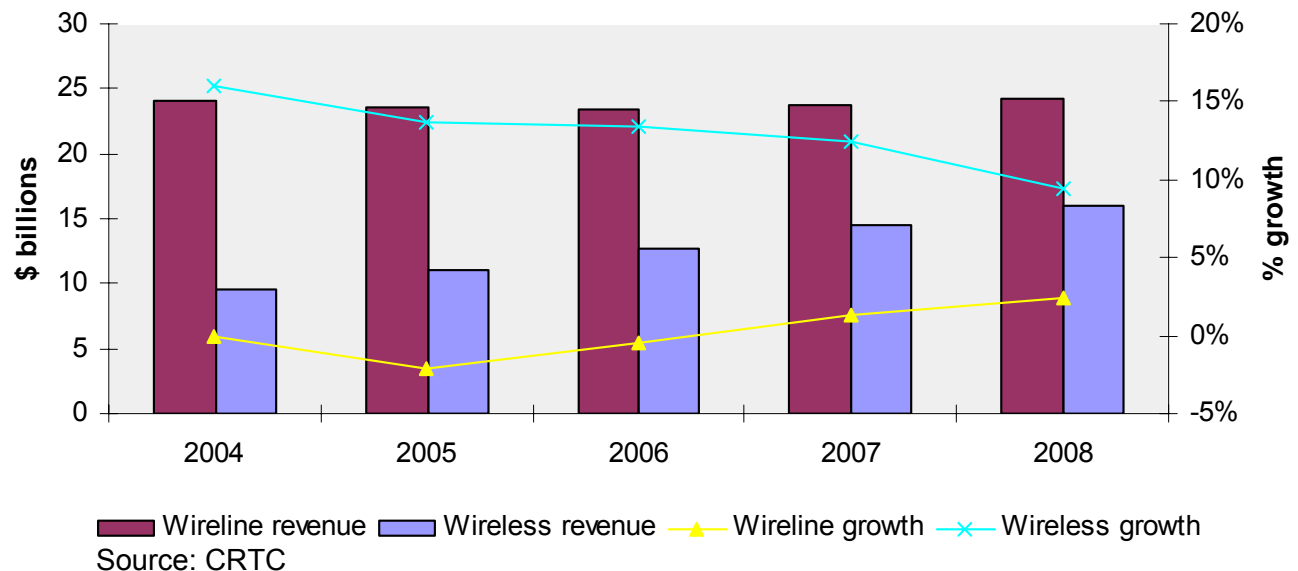
2. Statistics Canada

# Continual growth in wireless communications

- Wireless market expanding on the demand side. Steady growth in wireless:
  - minutes of use (12% CAGR, 2004 to 2008)
  - revenues (still 10% p.a)
  - data (35% growth in 2008)
- Wireless subscriber conn'ns increased 7% between Q2 2008 to Q2 2009
- Wireline revenues flat
- Wireless market expanding on the supply side also. (57 licensed operators and service providers)



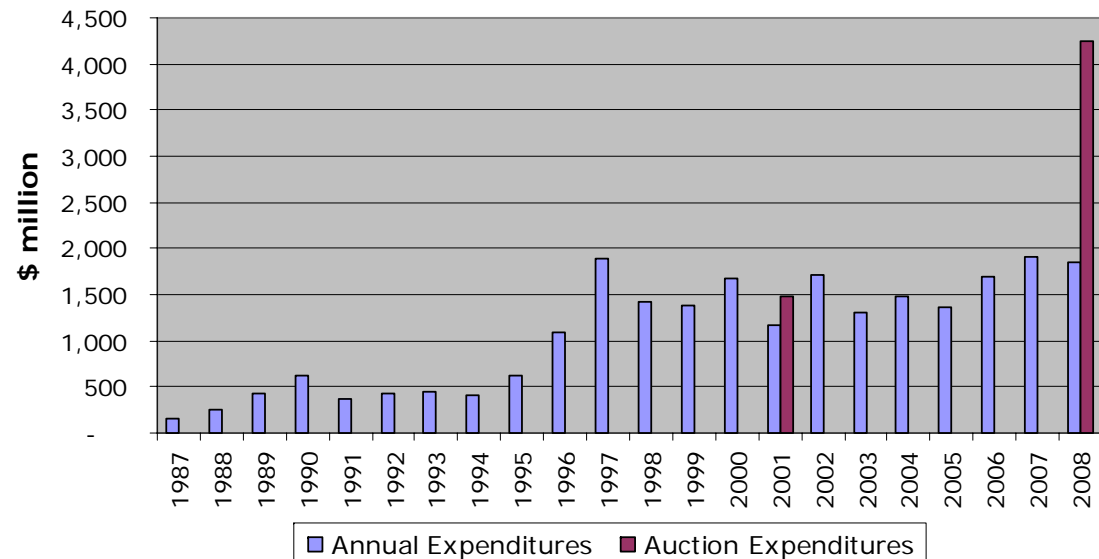
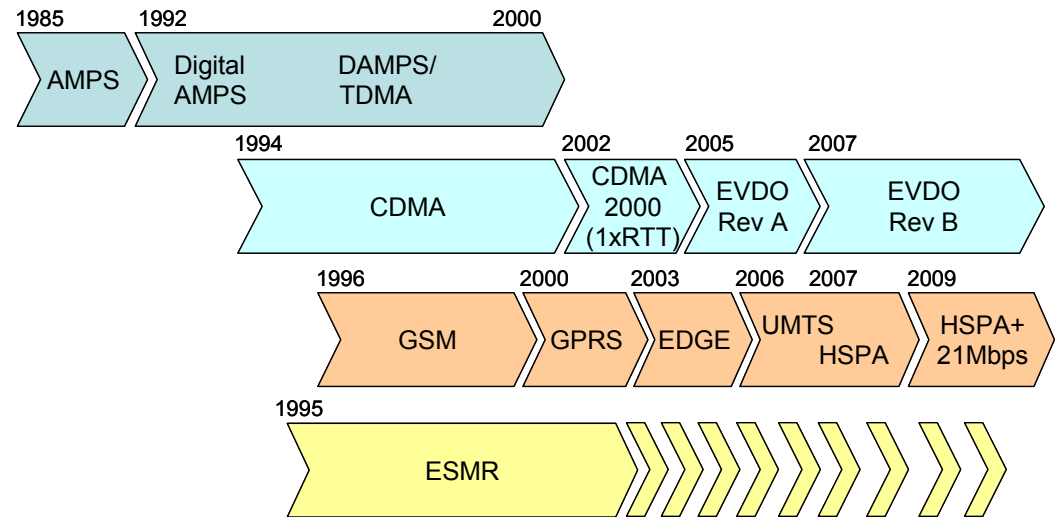
Source: Wireless Intelligence and Ovum analysis



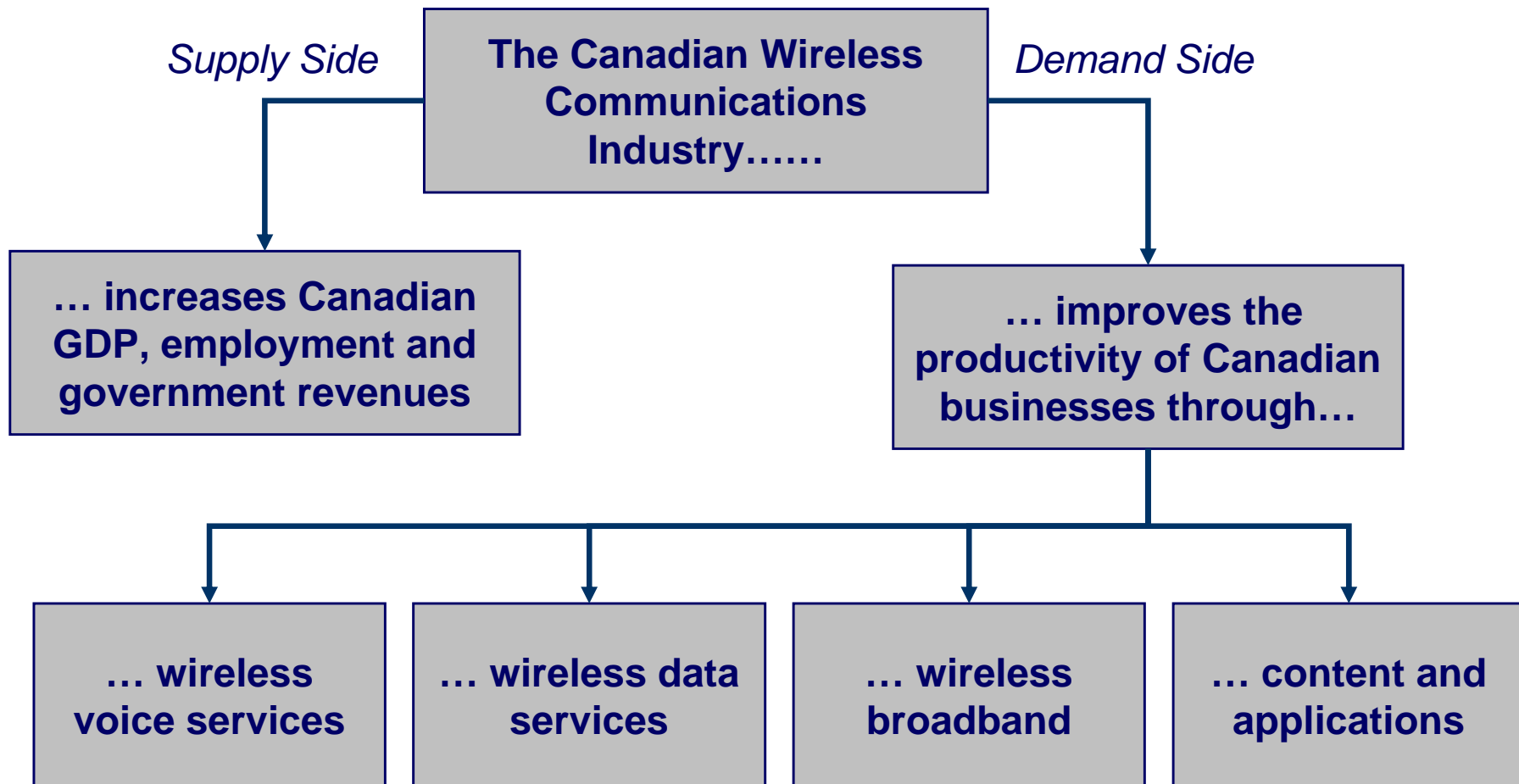
Source: CRTC

## With a dynamic technology landscape

- Technology evolution will not stand still:
  - HSPA+, LTE
  - LTE Advanced, IMT-Rel. 10
- Devices and applications: increasing performance demands bandwidth to match
- Industry capex: between \$1.1bn and \$1.9 bn every year since 1996
- Spectrum auction fees additional:
  - \$1.48 billion for PCS Auction
  - \$4.26 billion for AWS Auction
- And \$130 million p.a. licence fees
- Investment makes HSPA+ (21MB/s) available to 93% of Canadians

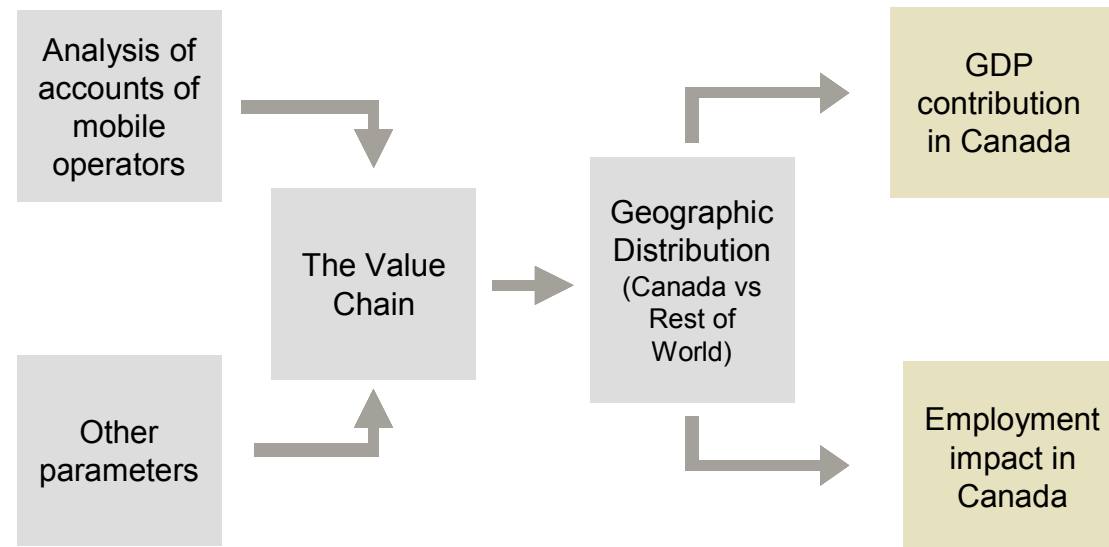


## The approach to determination of value

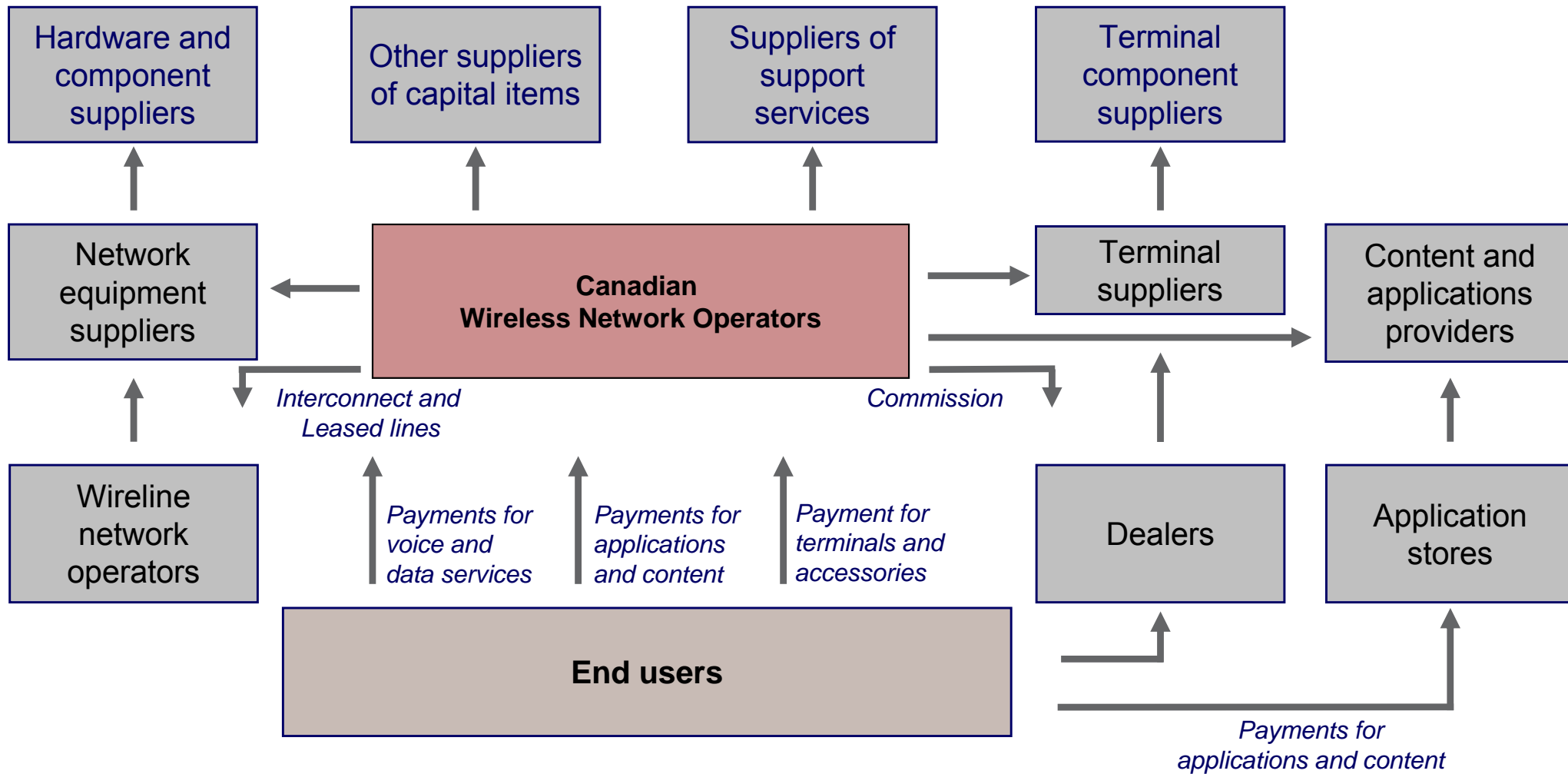


## The approach to determination of value

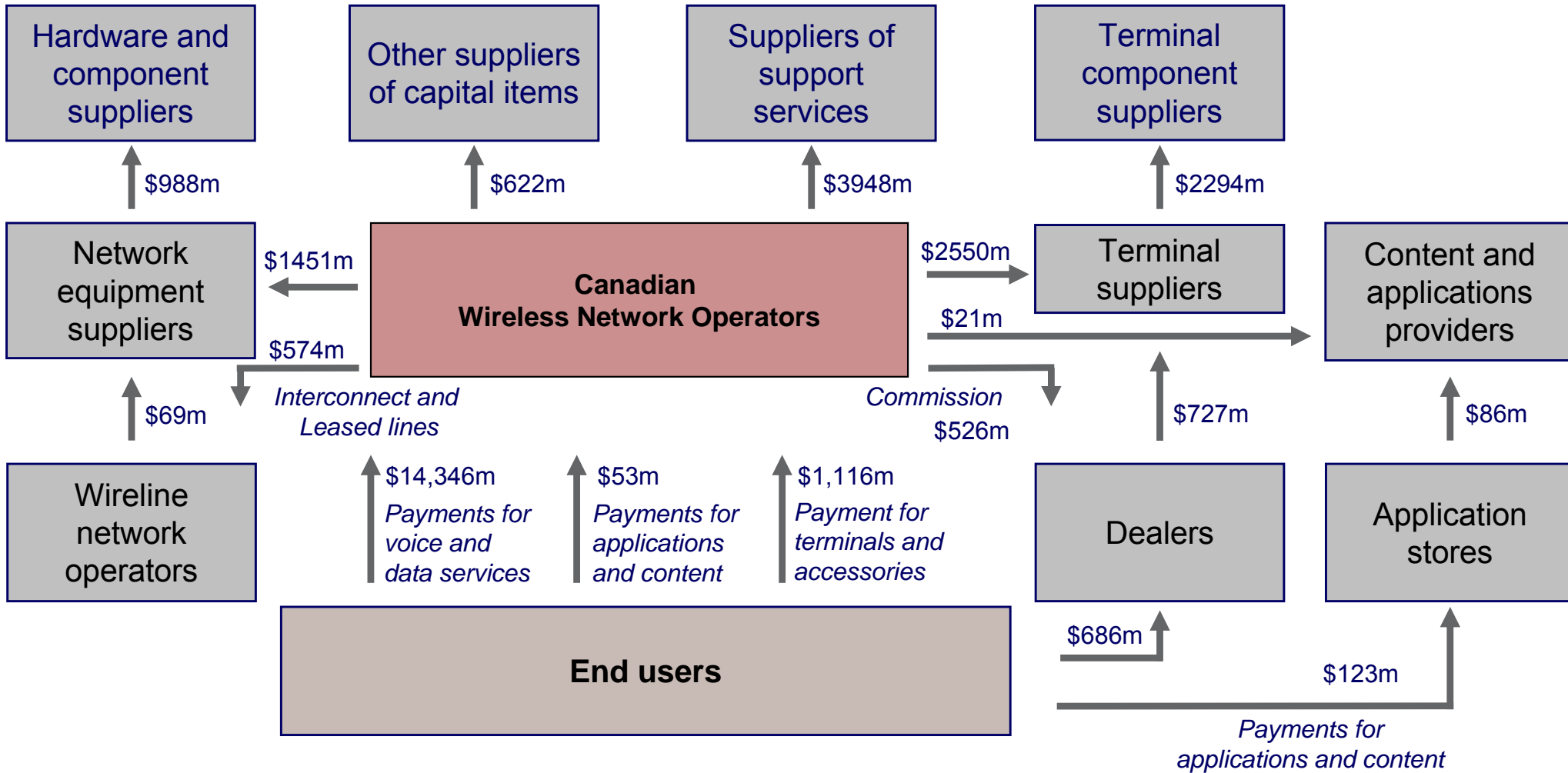
- **Step 1:** quantify the value chain: from the purchase of services and terminals - to the creation of the components
- **Step 2:** value add split between the Canada and the rest of the world.
- **Step 3:** estimate of GDP and employment generated by the wireless communications services industry in Canada.
- Added value spins off in all directions:
  - broad ecosystem of associated technologies
  - incubators and technology zones
  - inward investment
  - high tech start ups



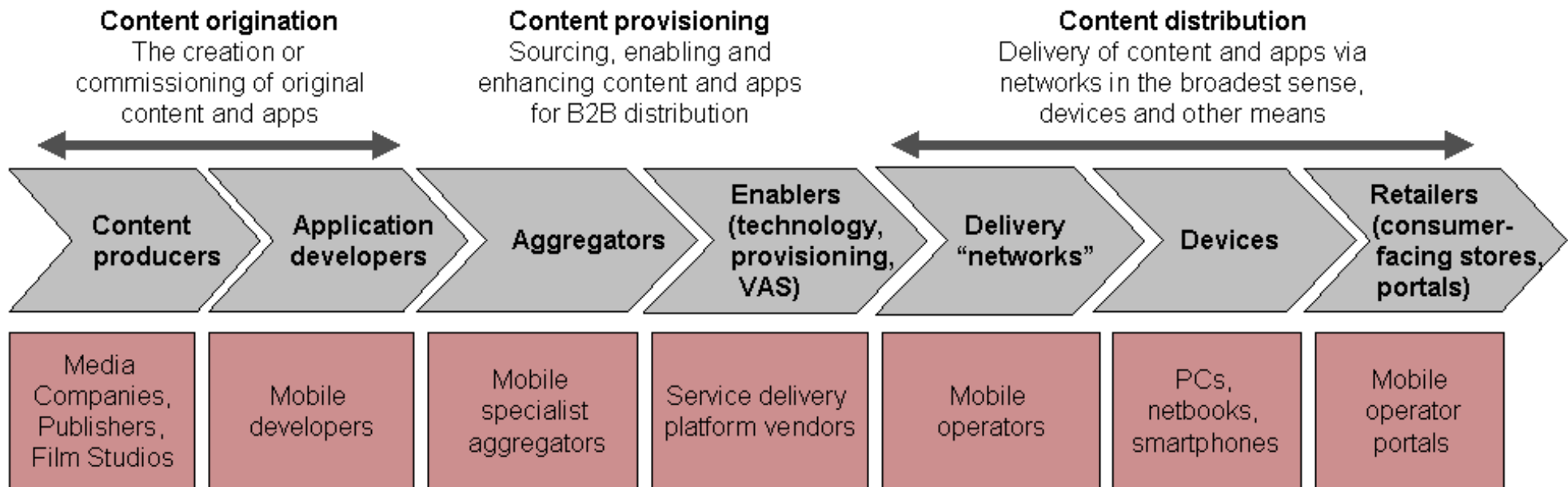
# The overall flow of value



# The overall value of the flow



## The emerging applications and content value chain



- A new and complex value structure
- Brings considerable added value to consumers
- Still in its infancy – but has evolved quickly
- Players are jockeying for position
- Modest value (currently) in the wireless sector (~\$200 million)

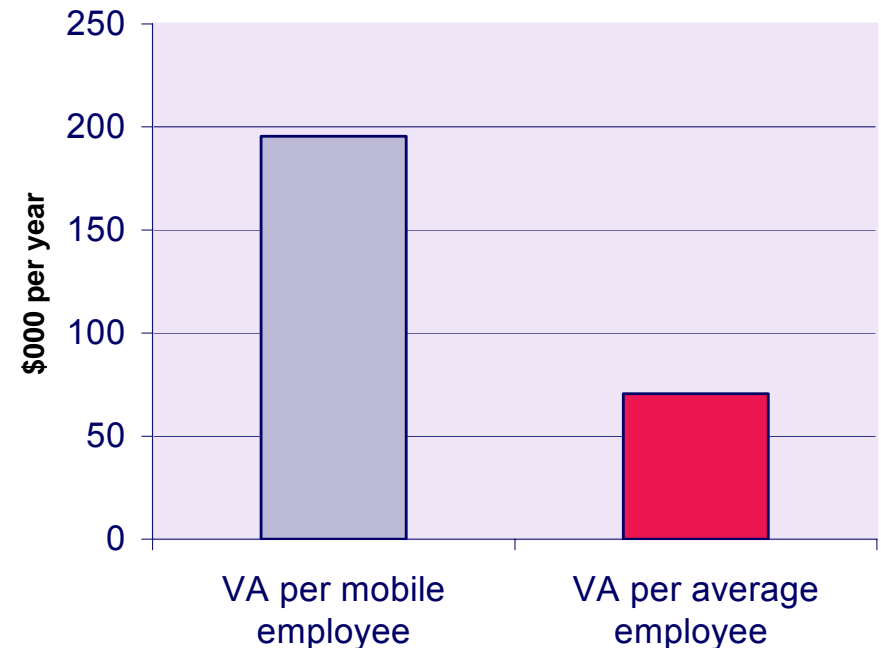
## Value added in Canada - by wireless-related sector

- \$16.3 billion total value from wireless communications services
  - \$14.346 billion directly to MNOs for network services
  - \$1.802 billion for devices and applications
  
- Support services increasingly important as outsourcing increases
  - includes legal and financial support, media and advertising
  - includes network support: maintenance and operations

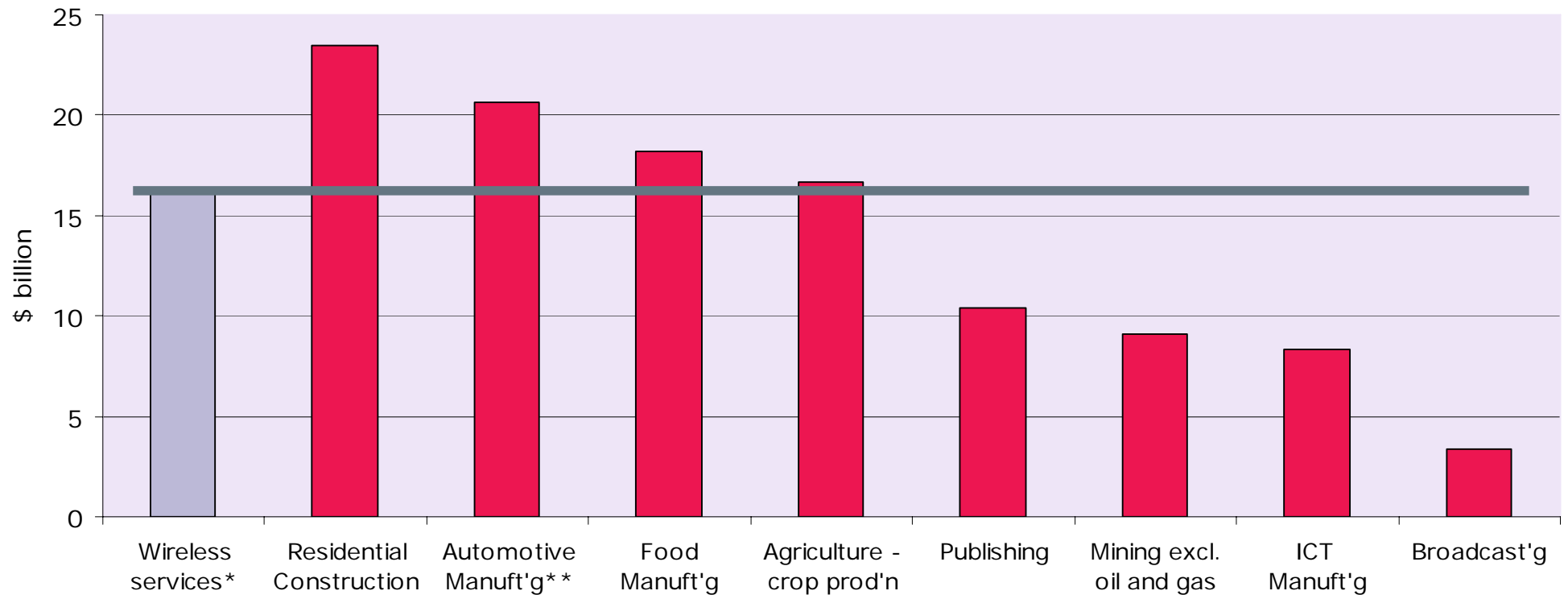
	Percentage of total value added
Wireless operators	45%
Support service suppliers	34%
Dealers and app. stores	5%
Other capex suppliers	5%
Wireline operators	4%
Hardware and components	2%
Terminal suppliers	2%
Terminal component suppliers	2%
Network equipment suppliers	1%
Total	100%

## Value added by employee

- Value added per employee in the wireless sector (including dealers and mobile operators):
  - $\sum [\text{Value add (wage costs) + Value add (profit, interest, tax)}] \div \sum \text{Employment}$
  - Wireless sector: value added per employee of \$195,000 per year
  - National employment: value added per employee of \$71,000 per year.



## How does the wireless sector compare with others?



- Wireless is one a par with other major industry sectors: cereals, oil, mining, forestry, food growing and production.

\*\* The Canadian Vehicle Manufacturers' Association (CVMA) reports that automotive manufacturing contributes approximately 12% of Canada's manufacturing GDP, which, based on Statistics Canada data for manufacturing GDP equates to around \$20 billion in value added

## Impact on employment

- Direct employment: those employed directly by businesses in the value chain.
- Support employment: e.g. those employed by professional services, IT, outsourced customer support and outsourced network operations and maintenance
- Indirect employment: tax, interest payments and profits generate employment
- Induced employment:
  - due to the spending power of those employed directly in the industry or in support services
  - economists estimated vary, with factors ranging from 1.1 to 1.7
  - which would lead to a total of 294,000 – 410,000 employed as a result of the wireless communications services industry.

	(000)	Direct	Support	Indirect	Total
Dealers and app. stores		4.5	3.4	3.4	11.4
Wireless network operators		26.3	37.7	51.5	115.4
Support service suppliers (incl. n/w support)		12.0	75.1	18.8	105.8
Wireline network operators		3.4	4.7	2.4	10.5
Other capex suppliers		5.8	5.8	2.9	14.6
Terminal suppliers		1.6	1.9	0.4	3.9
Terminal component suppliers		1.9	2.2	0.5	4.5
Network equipment supply		1.2	1.4	0.3	2.9
N/w IT platforms and component suppliers		2.2	2.6	0.6	5.4
<b>Total</b>		<b>58.9</b>	<b>134.8</b>	<b>80.7</b>	<b>274.5</b>

## Productivity gains from wireless telecom services

- Wireless penetration has a positive and significant relationship to productivity<sup>1</sup>. A 1% increase in wireless subscribers per capita raises GDP per employee by about US\$69
- Wireless penetration increase of ten percentage points would increase productivity by 0.36%
- However, penetration is an imperfect measure of wireless usage. A more accurate measure of wireless usage is minutes of use.
- Major operators in Canada report usage of between 300 and 400 minutes of use per month.

	Minutes of use per head of population per year	Minutes of use per mobile subscription per year
Canada	2700	>4000
UK	2779	2300
Italy	2534	1500
Germany	1466	1400
France	2095	2800
Finland	4300	2700

- In some countries, many users have >1 subscription, which overstates the penetration.

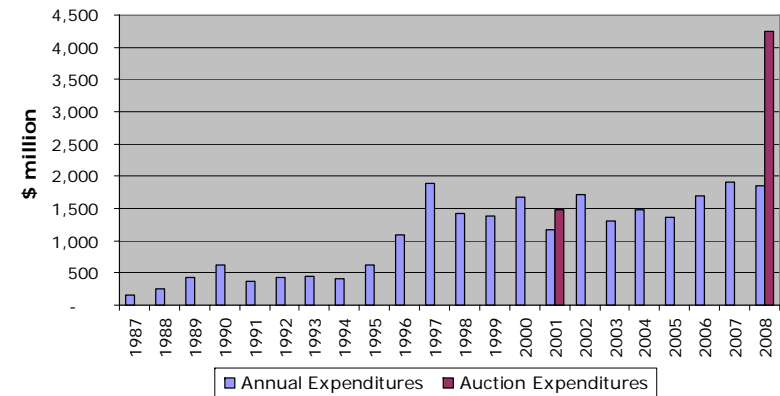
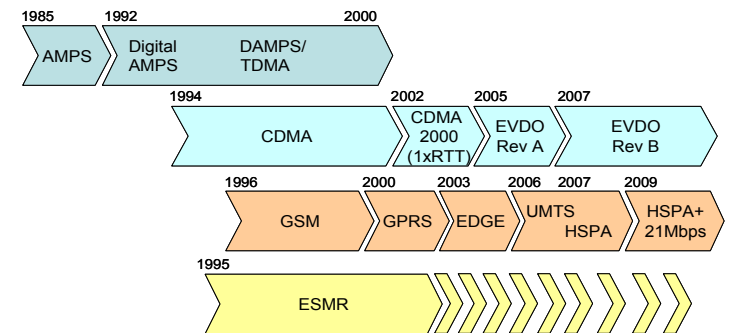
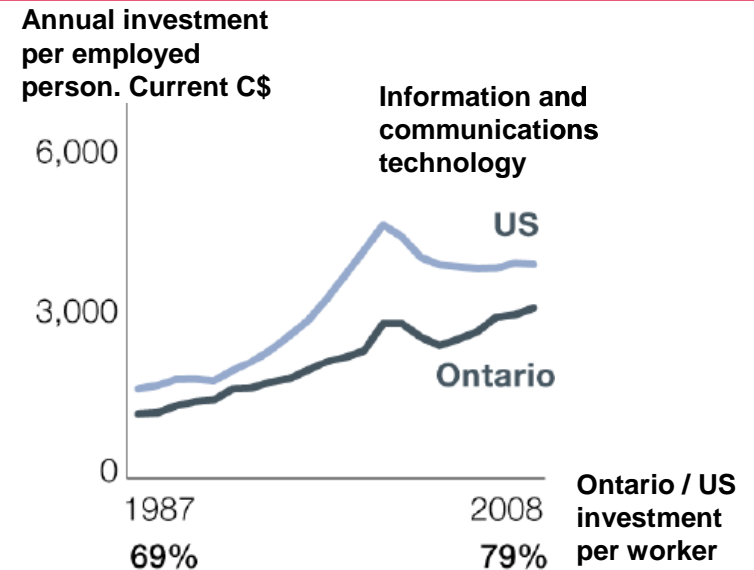
1. Wireless Telephone Penetration And Productivity: State Level Evidence From The United States 1999 To 2006. Kalpesh Unune

# Investment

- “The significant drop in investment that occurred during the recession included spending on new technology, which could have helped firms address coming economic challenges. The relatively slow recovery expected in our most important trading partner, along with ongoing sectoral adjustments, means that firms have to find new markets. In doing so, they will face increased competition. For example, due to exchange rate moves and stellar productivity performance, the competitiveness of the U.S. corporate sector has improved significantly. **The need for capital investment by Canadian businesses to meet these challenges is clear.**”

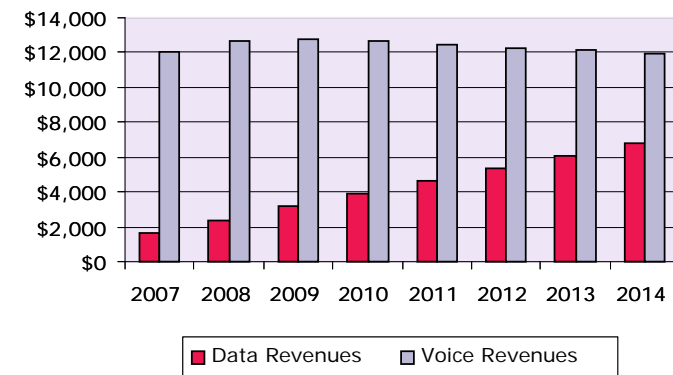
- In the period from 1996 to 2008, the wireless communications industry has invested between \$1.1 billion and \$1.9 billion every year in capitalised equipment and services.

1. Mark Carne, Governor of the Bank of Canada. Winnipeg Chamber of Commerce, 4 February 2010



## Benefits of Voice and Data services

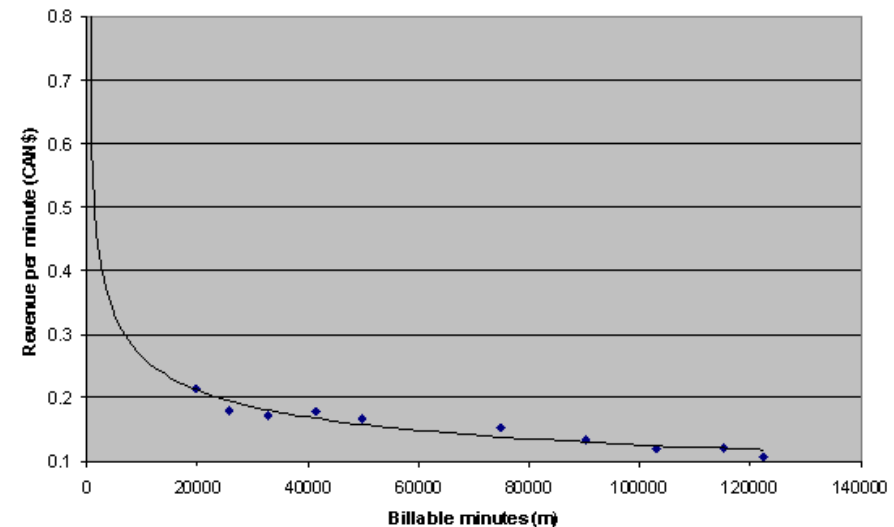
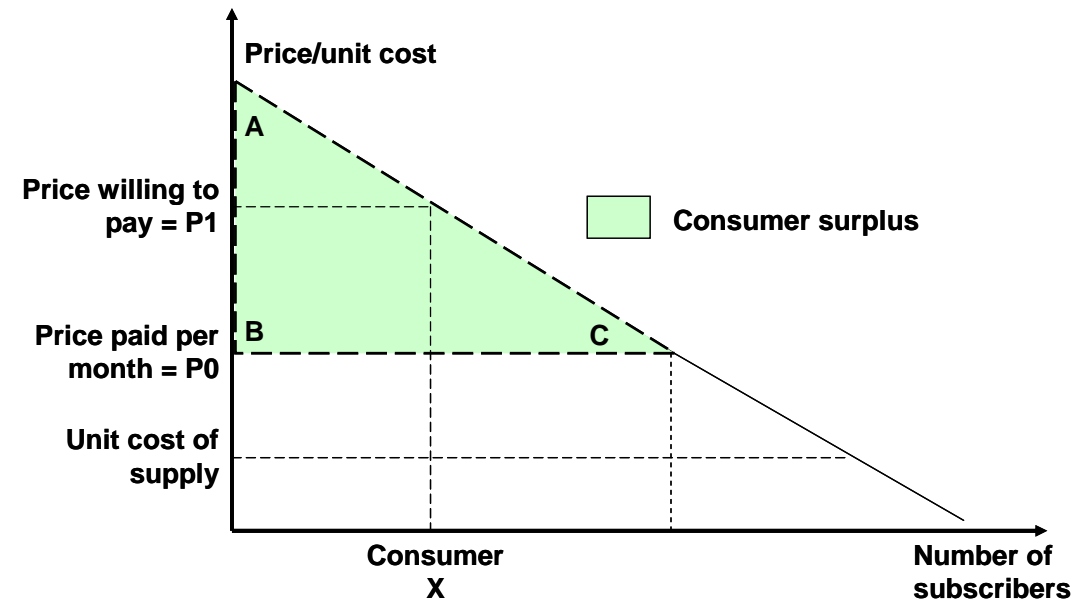
- The productivity benefits for businesses and consumers:
  - reduction in unproductive travelling time
  - significantly improve logistics
  - enable faster and more efficient decision-making
  - empowers small businesses
  - particularly in rural areas
- Mobile video will represent 66% of all mobile data traffic by 2014, global mobile data traffic is growing 2.4 times faster than global fixed broadband data traffic (Source: Cisco)
- Ovum's forecast for mobile broadband and data services shows CAGR of 22% in revenues over the period from 2007 to 2014



- Higher bandwidth mobile broadband stimulates demand - requiring significant investment in network infrastructure and backhaul
- The consumer benefit can be assessed through the consumer surplus

## Consumer surplus

- Consumer surplus is the amount that consumers benefit by being able to purchase a product for a price that is less than they would be willing to pay. It therefore reflects value that the consumer enjoys, above and beyond what they have to spend on the service.
- We estimate that the lower bound of consumer surplus of \$8.8 billion
- This is based on historic analysis of mainly voice and basic data (SMS) revenues and usage



## Conclusions

- The industry generates \$39 billion for the Canadian economy:
  - direct contribution through the sale of goods and services, the sector generates over \$16 billion
  - an additional \$14 billion benefit due to the economic flow through in the supply chain
  - consumer benefit, they value service at least \$9 billion more than they pay for the services.
- Over 294,000 people are employed in Canada as a result of the wireless industry:
  - 26,300 staff are employed by the mobile network operators
  - 59,000 are employed directly as a result of the industry with 135,000 in support services
  - 81,000 are employed indirectly – as a result of spending by government of tax revenues and spending by financial institutions and shareholders
  - further induced employment, by virtue of the employees' spending in the economy.
- HSPA+ 21Mb/s mobile broadband services available to 93% of the population.
- ICT investment and productivity are linked (Bank of Canada). Industry investment is significant and ongoing. It should be encouraged by government, particularly as the economy seeks to recover from a recessionary period and a Canadian trade deficit.
- Government and policy makers should recognise the wider benefits of wireless and set policy and operational processes that will allow the sector to maximise the value and contribution to the national economy.
- In particular, the significant contribution made by the wireless industry to the Canadian economy should be taken into account when setting the level of spectrum licence fees.

# Thank you

**Stewart Anderton**

[stewart.anderton@ovum.com](mailto:stewart.anderton@ovum.com)

**21 April 2010**

