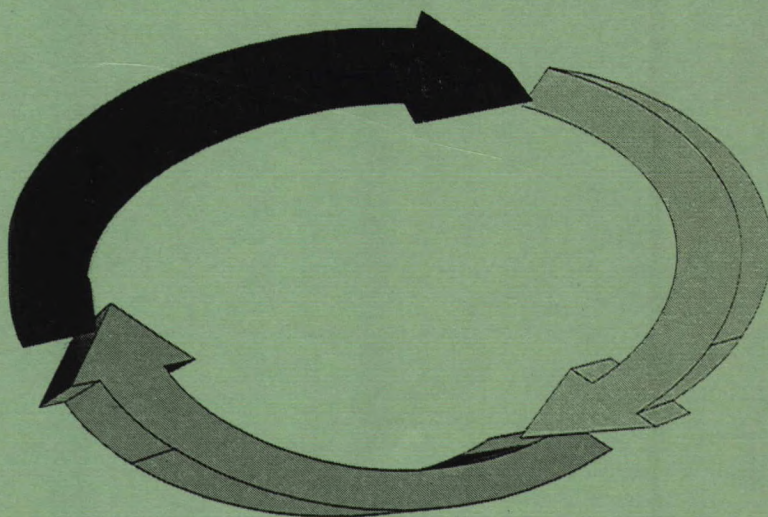


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The Canadian Telecommunications Service Industry

1990 to 1996



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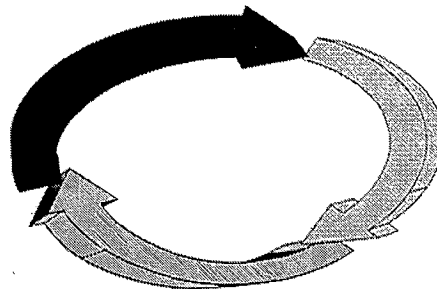


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Highlights

The Information and Communication Technologies (ICT) services industry is divided into three broad segments: telecommunications carriers, broadcasting, and software & computer services.

In 1995, the ICT services industry's contribution to GDP was \$26.3 billion or 4.9% of Canada's entire GDP. For the period 1990 to 1995, the industry's GDP growth, at 35.9%, was much higher than the economy's growth of 7.7%. The majority of the industry's contribution to GDP was by telecommunications carriers (\$18.2 billion), followed by software and computer service industry (\$6.0 billion) and then broadcasting (\$2.1 billion). Both telecommunications carriers and software & computer services experienced strong value-added growth of 33.1% and 62% respectively. Broadcasting was the only segment whose 6.9% growth was below the economy-wide average of 7.7%.

In 1995 the ICT services industries employed 317,886 people or 2.4% of the total employed labour force in the economy. Software & computer services led the way, growing by 72.1% between 1990 and 1995, and surpassing telecommunications carriers' employment level by the second quarter of 1996. At the other end of the spectrum, employment in broadcasting decreased by 7.3% from 1990 to 1995.

With the introduction of long distance competition in 1992 and the general corporate restructuring that telephone companies undertook during the first half of the 1990s, the number of persons employed by telecommunications carriers declined during the early 1990s. However, by 1995 the level of employment among telecommunications carriers was above 1990 levels.

Table 1

Segmental Breakdown of ICT Services GDP and Employment, 1995

	GDP (billions of 1986 dollars)	Employment (persons)
Telecommunication Carriers	\$18.2B (69%)	144,551 (45%)
Broadcasting	\$2.1B (8%)	50,023 (16%)
Software and Computer Services	\$6.0B (23%)	123,312 (39%)
Total ICT Services	\$26.3B (100%)	317,886 (100%)

Source: Statistics Canada, (Cat. No. 15-001, and Cat. No. 71-001).

The ICT sector is one of the most R&D intensive sectors of the economy. In 1995, total R&D expenditures by the ICT manufacturing and services industries were \$2.9 billion, 38.7% of Canada's industrial R&D expenditures.

The Telecommunications service industry (i.e. wireline and wireless telecommunications firms) is the primary focus of this report. The telecommunications services firms can be categorized as telephone companies (independent or Stentor), alternative service providers, wireless carriers, or overseas carriers.

Stentor alliance companies include nine regionally based full member telephone companies, two associate members, and Telesat Canada, a domestic satellite services firm. There were more than fifty independent telephone companies in 1995, which accounted for approximately 3% of telecommunications services revenues. Both Stentor and independent telcos offer local telephone services. Bell Canada, serving all of Ontario and parts of Quebec, is by far the largest firm, accounting for 55% of Stentor alliance's total revenues in 1995. It was followed by BC Tel at 16% and TELUS Corporation at 10%.

Table 2

Distribution of Operating Revenues by Category of Telecommunications Service Provider, 1991 and 1995

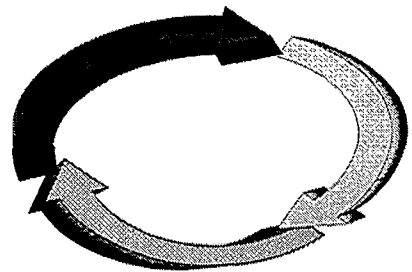
	1991	1995
	<i>(billions of dollars)</i>	
Stentor Alliance* and Independent Telephone Companies	\$14.2B (89%)	\$15.4B (79%)
Alternative Service Providers	\$0.5B (3%)	\$1.6B (8%)
Overseas Carrier	\$0.3B (2%)	\$0.5B (2%)
Wireless Carriers	\$0.9B (6%)	\$2.1B (11%)
Total	\$15.9B (100%)	\$19.6B (100%)

* (Including associate members and Telesat Canada)

Source: Annual reports to shareholders

Revenue growth of telephone companies was considerably lower than that of alternative service providers and wireless providers. The most significant change has been in the long distance services market where the Stentor telephone companies' revenues decreased after competition was allowed in 1992. From 1993 to 1996, their long distance services market share decreased from 83% to 69%. Most of Stentor's lost market share was captured by the top four alternative service providers (AT&T Canada Long Distance Services Company, Sprint Canada, fONOROLA, and ACC TelEnterprises) although more than four hundred alternative service providers are registered with the CRTC. The wireless communications market also experienced significant growth. The largest company in the wireless market is Rogers Cantel Mobile Communications Inc., which accounted for approximately 40% of the wireless market revenues in 1995. The rest of the market is predominantly occupied by regionally-based companies which are members of Mobility Canada, an association affiliated with the Stentor telephone companies, which together account for most of the remaining wireless revenues.

Ninety-six percent of the telecommunications services market in which telecommunications carriers operate is presently open to competition. The only exceptions are facilities-based overseas services (Teleglobe Inc.) and facilities-based domestic fixed satellite services (Telesat Canada). As part of 1997 WTO agreement on trade in basic telecommunications services, monopolies held by Teleglobe and Telesat's will end in the year 1998 and 2000 respectively.



Section 1

The Telecommunications Service Industry:
Contribution to the Canadian Economy

Section 1 The Telecommunications Service Industry's Contribution to the Canadian Economy

1.0 Introduction

Canada's existing telecommunications infrastructure puts the country at a relative advantage compared to its trading partners. An advanced communications infrastructure is increasingly important as we move toward a knowledge-based economy. One reason for this relative advantage is that Canadian policy and regulatory frameworks are continually being adapted so as to respond to the new electronic ways in which transactions are undertaken by households, businesses and governments. The growing alliances, partnerships, and competition among various companies, including the wireline and wireless telecommunications and broadcasting companies are an indication of the transformation that will assist new industries to deal more effectively with the changing way in which transactions take place. However, telecommunications services, linked with software and computer service and products, and increasingly broadcasting services, are the means by which these changes will occur.

At the same time traditional industries, including the telecommunications and broadcasting industries, are being altered through the introduction of increased competition and reliance on market forces to determine the supply and demand for products and services.

With the recent telecommunications and broadcasting regulatory decisions, consumers will be able to acquire the core services of the existing telecommunications and broadcasting service providers from a growing range of competitive service providers, including some not traditionally associated with these industries.

This report focuses on an overview of the supply side of the telecommunications service industry, an important but not exclusive, component of the ICT (information and communications technologies) sector.

It is increasingly difficult to provide an overview of the telecommunications service industry. This is partly due to the rapid pace of change within the industry. As well, there is no consensus on the definition of the ICT sector. International efforts to harmonize existing definitions are currently underway. For the purposes of the analysis presented in this report, the ICT sector is defined as the ICT service industries and the ICT goods industries.

- The ICT service industries include telecommunications services, broadcasting, and the software and computer services industries.
- The ICT goods industries includes consumer electronics, communications and other electronic components, computer equipment and instrumentation industries.¹

Highlights of the performance of the telecommunications service industry within the ICT services industries and comparison to the overall economy are provided in **Section 1**. **Section 2** provides an overview of the telecommunications service market segments.

¹ For a more detailed discussion of the issues surrounding the measurement of the ICT sector, see Government of Canada, *"Measuring the Global Information Infrastructure for a Global Information Society: Concepts and Performance Indicators"*, January 1997. For more detailed data related to the ICT sector, see Industry Canada, *"ICT Statistical Review, 1990 - 1995"*, May 1997 (available on Industry Canada's *Strategis* Website).

Section 3 provides an analysis of the wireline and wireless telecommunications parent companies. **Section 4** provides an analysis of major broadcasting-based parent companies with interests in telecommunications. There are two reasons for an analysis of parent companies.

- First, many of Canada's telecommunications firms are subsidiaries of larger companies.
- Second, publicly available information at the firm level is increasingly scarce and what is available is provided on a confidential basis to either the CRTC or Canada's central statistical agency, Statistics Canada.

Given the introduction of competition in the telecommunications service market segments, as described in **Section 5**, it is not surprising that certain data are increasingly considered commercially sensitive information and therefore not readily available to the general public.

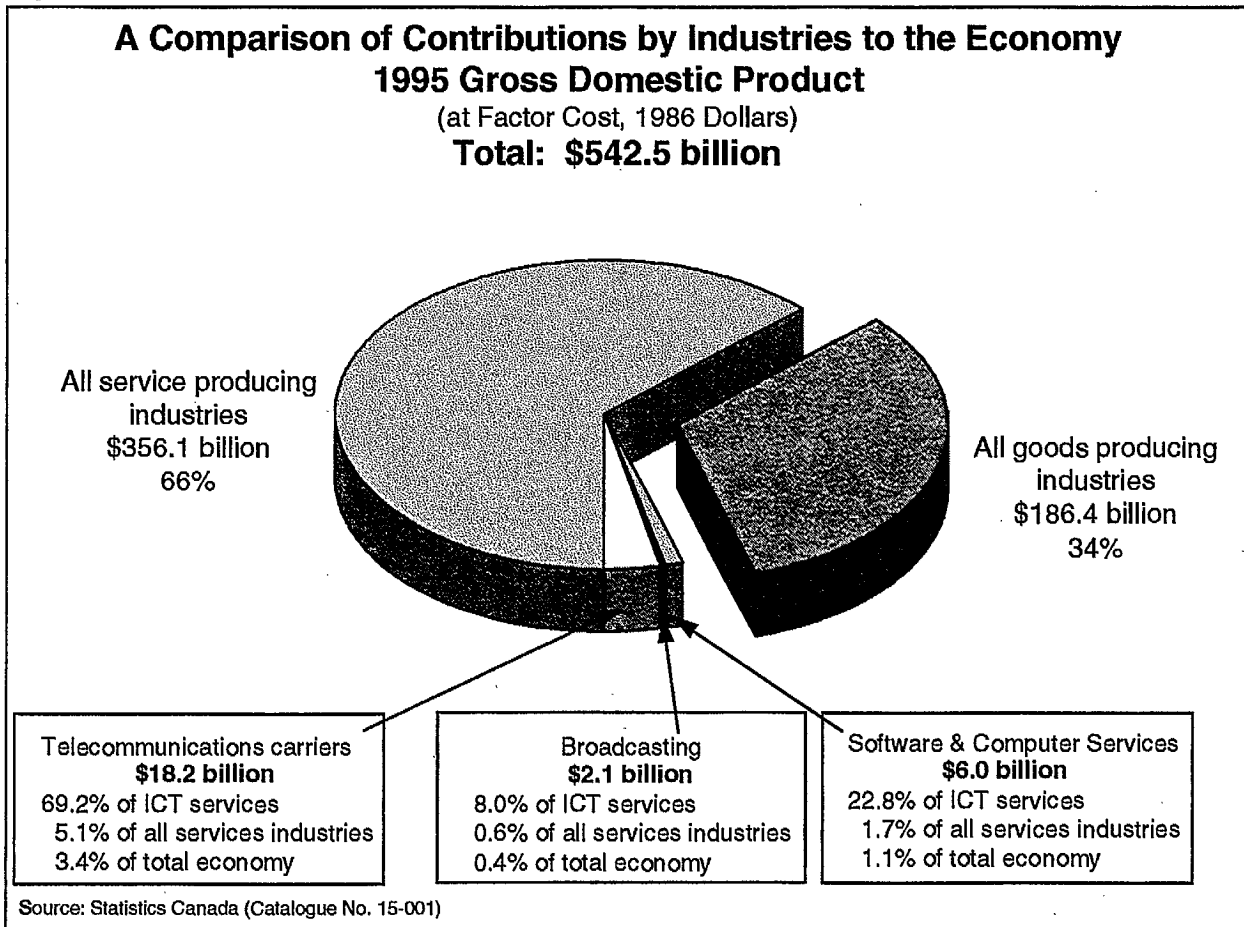
In this rapidly evolving environment, policy makers, in close co-operation with central statistical agencies, are developing new surveys with a view to collecting and disseminating more meaningful information on the wireline and wireless telecommunications service industry. Efforts are well underway in Canada to achieve this objective.

The following provides an overview of the telecommunications service industry's contribution to the ICT services industries, and the Canadian economy using the following indicators: gross domestic product, employment, revenues, research and development expenditures, and trade. More detailed tables are provided at the end of each section of this report.

1.1 Total Value Added (Gross Domestic Product)

In 1995, the telecommunications service industry contributed \$18.2 billion or 3.4% to the total \$542.5 billion value added of the economy.² This \$18.2 billion also represented 5.1% of the \$356.1 billion value added by all service producing industries in the economy, and 69.2% of the \$26.3 billion value added by the ICT service industries, i.e., telecommunications, broadcasting, software and computer service industries (Figure 1).

Figure 1.



The broadcasting industry contributed \$2.1 billion or 0.4% to the total value added of the economy, 0.6% of the value added by all service producing industries in the economy, and 8.0% of the value added by the ICT service industries in 1995 (Figure 1).

In 1995, the software and computer service industry contributed \$6.0 billion or 1.1% to the total \$542.5 billion value added of the economy.³ This \$6.0 billion also represented 1.7% of the \$356.1 billion value added by all service producing industries in the economy and 22.8% of the \$26.3 billion value added by the ICT service industries (Figure 1).

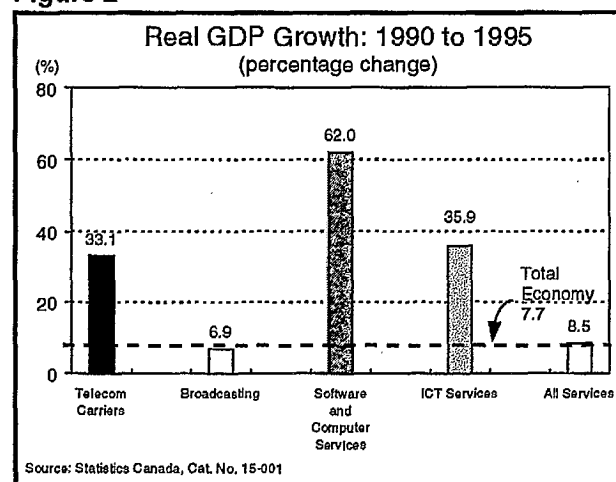
² Real GDP is measured in constant 1986 dollars so as to net out the effect of inflation.

³ Ibid.

In total, the ICT service industries contributed 4.9% or \$26.3 billion to the total value added of the economy, and 7.4% of the value added by all service producing industries in the economy in 1995 (Figure 1).

By comparison, all the ICT goods industries (i.e., the consumer electronics, the communications and other electronics components, the computer equipment, and the Instrumentation industries) contributed a total of 2.0% or \$11.3 billion of the total value added in the economy and 6.1% of the \$186.4 billion value added by all the goods producing industries in the economy.⁴ Thus the total ICT sector, consisting of the ICT services and goods industries, contributed 6.9% or \$37.6 billion to the total \$542.5 billion value added by the Canadian economy in 1995. Of the \$37.6 billion, 70%, or \$26.3 billion, came from the ICT services industries and 30%, or \$11.3 billion, came from the ICT goods industries in 1995.

Figure 2



Growth in the telecommunications service industry, and the ICT services industries overall, consistently outperformed the growth of the overall economy. Output, as measured by real GDP, in the ICT services industries increased by 35.9% between 1990 and 1995, whereas the overall economy experienced output growth of 7.7% during that interval (Figure 2).

The software and computer services industry achieved the highest rate of real economic growth among the ICT services industries between 1990 to 1995. Its output increased by 62.0%, or from \$3.7 billion in 1990 to \$6.0 billion in 1995. The GDP of telecommunications carriers increased by 33.1% between 1990 and 1995, increasing from \$13.7 billion to \$18.2 billion. The broadcasting industry's real output increased by 6.9% during the period, increasing from \$2.0 billion to \$2.1 billion (Figure 2 and tables 5, 6 and 7).

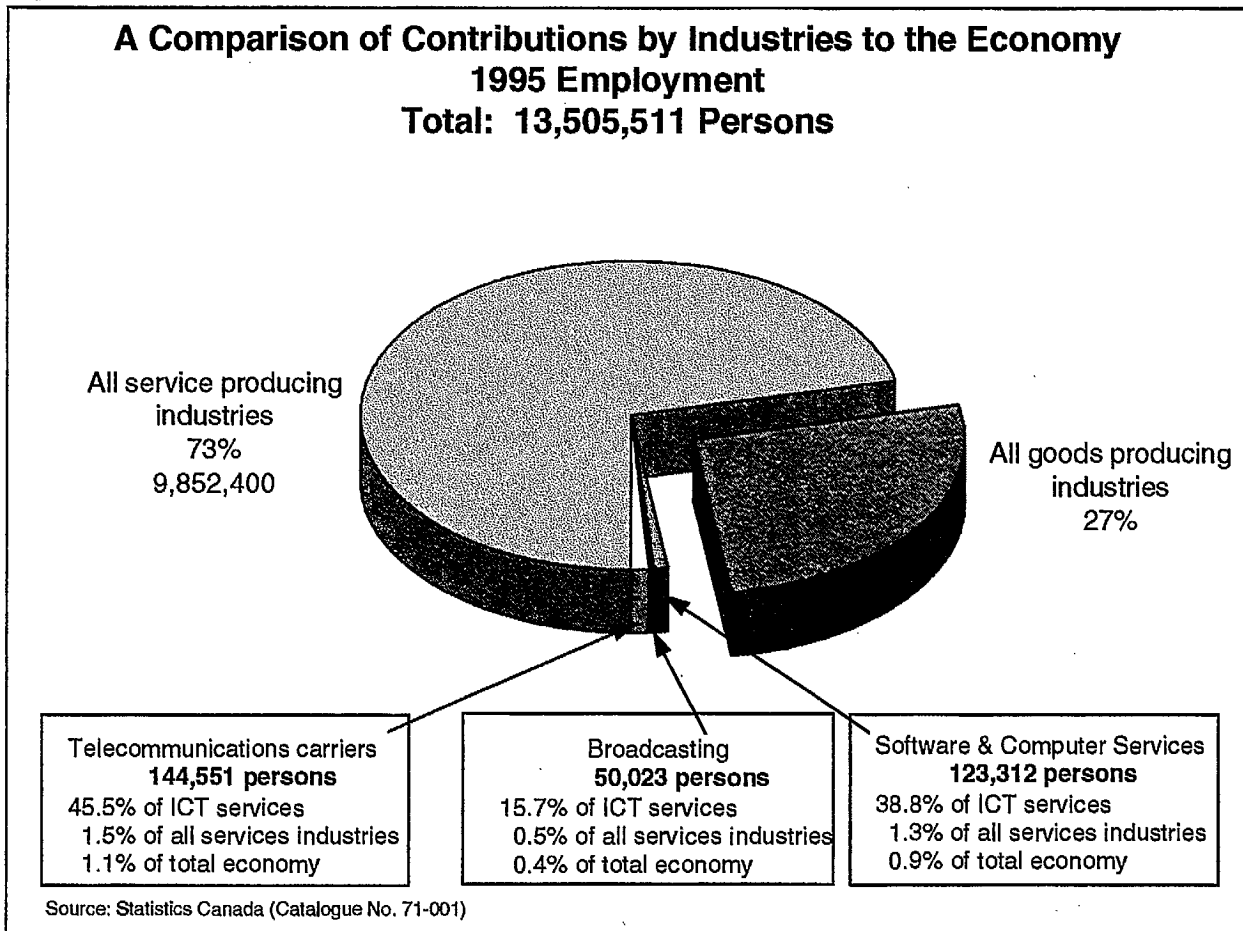
1.2 Employment⁵

In 1995, the telecommunications service industry employed 144,551 full-time, part-time and self-employed persons or 1.1% of the employed labour force. This also represents 1.5% of the total employed labour force in all service producing industries and 45.5% of those employed in the ICT service industries (Figure 3)

⁴ For more detailed data related to the ICT goods (manufacturing) industries, see Industry Canada, "ICT Statistical Review, 1990 - 1995", May 1997.

⁵ Includes full-time, part-time and self-employed

Figure 3



The total ICT sector provided 415,217 or 3.1% of all the jobs in Canada in 1995. Of this total, 76.6% or 317,886 came from the ICT services industries and 23.4% or 97,331 came from the ICT goods industries.⁶

Total employment in the ICT services industries grew by 18.7% during the 1990 to 1995 period, substantially faster than the 2.6% increase in the size of Canada's employed workforce during that period (Figure 4 and table 4).

Between 1990 and 1995, employment growth of 72.1% in the software and computer services industry far exceeded the 1.7% increase in employment among telecommunications carriers (Figure 4). This relatively higher level of growth enabled the number of persons employed in the software and computer services industry to surpass the number of persons employed by telecommunications carriers in the second quarter of 1996 (Figure 5).

⁶ In calculating the total employment in the ICT goods industries, Industry Canada estimated the 1995 employment of 97,331 based on the "Annual Survey of Manufacturers", Statistics Canada, (Cat. No. 31-201) which includes only full-time equivalents. "The Labour Force Survey", Statistics Canada, (Cat. No. 71-001) was used to estimate the ICT services employment of 317,886 data. All other data noted above came from the Statistics Canada, (Cat. No. 71-001). See Industry Canada, "ICT Statistical Review, 1990 - 1995", May 1997, for more details.

Figure 4

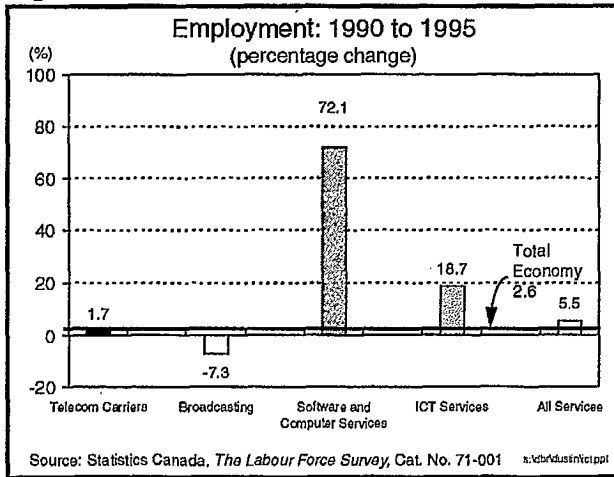
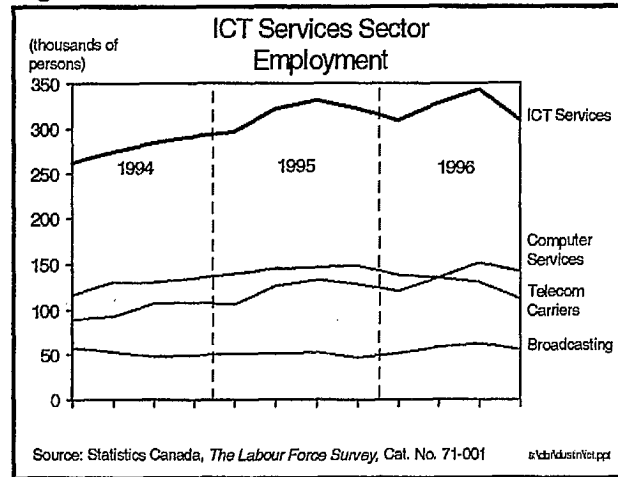
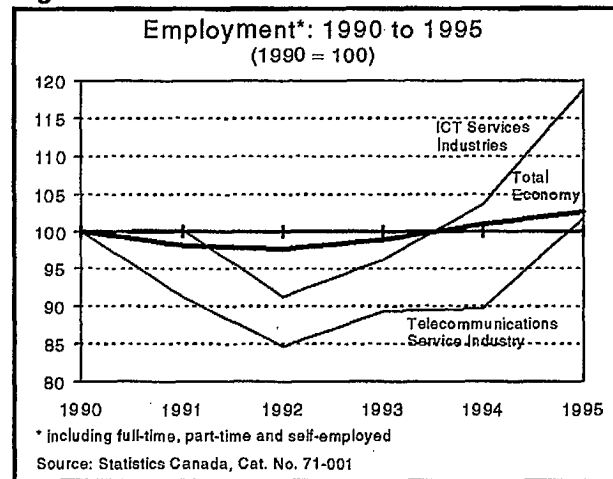


Figure 5



Although there was a sharp decrease in the level of ICT services employment, including a decrease by telecommunications carriers, in the last quarter of 1996, there has generally been an upward trend over the twelve quarters leading up to the last quarter of 1996 (Figure 5).

Figure 6

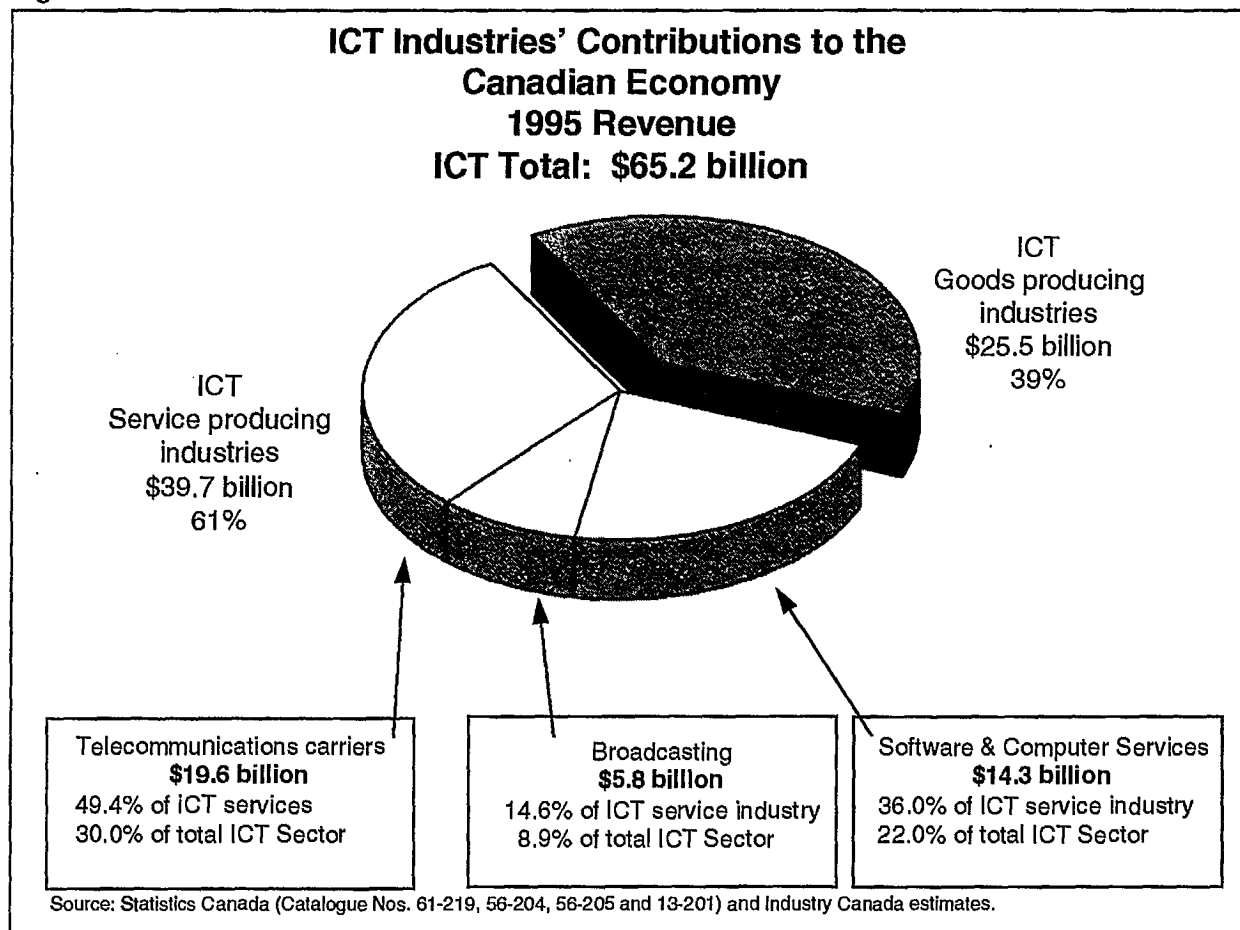


Relative to 1990, the pattern of change in employment in the ICT services industries mirrored that of the overall economy — bottoming-out in 1992, and then rising in 1993, 1994, and 1995 to levels above that of 1990. Nevertheless, employment levels relative to 1990 in the ICT services industries exhibited a greater degree of fluctuation. In the telecommunications service industry, the level of employment dropped sharply in the early 1990s. After bottoming-out in 1992, the level of employment began to recover. By 1995 it was only 1.7% higher than the 1990 level (Figure 6). In an increasingly competitive marketplace, telecommunications carriers have made efforts to increase their productivity. One way they have done this is through reductions in the size of their workforce. However, new entrants to the industry have contributed to the growth in employment, especially in 1994 and 1995 (Figure 6).

1.3 Revenues

The telecommunications service industry generated estimated revenues of \$19.6 billion in 1995. This represents 49.4% of the \$39.7 billion operating revenues of the ICT services industries and 30% of the \$65.2 billion operating revenues generated by the total ICT sector.⁷

Figure 7



The broadcasting industry generated 1995 operating revenues of \$5.8 billion. The software and computer service industry generated an additional \$14.3 billion. The combined ICT goods industries had total shipments (revenues) of \$25.5 billion. The overall ICT sector had revenues of \$65.2 billion of which 61% or \$39.7 billion came from the ICT services industries and 39% or \$25.5 billion came from the ICT goods industries.

The \$39.7 billion revenues for ICT services in 1995 increased by 3.5% from the \$38.3 billion in 1994 and by 42.7% increase between 1990 (\$27.8 billion) and 1995 (Figure 8). Revenue growth of 42.7% in the ICT services sector outperformed that of the 16.5% growth of the overall Canadian economy between 1990 and 1995 (Figure 8). The software and computer

⁷ The "Annual Survey of Manufacturers", Statistics Canada, (Cat. No. 13-201) with Industry Canada estimates were used for the \$25.5 billion ICT goods industry revenues. Data for the software and computer services industry and telecommunications service industry are from Statistics Canada, (Cat. No. 61-219). Industry Canada estimates were added for telecommunications services. Statistics Canada, (Cat. No. 56-204), and Statistics Canada, (Cat. No. 56-205) were used for calculating the operating revenues for broadcasting.

services industry experienced the highest rate of revenue growth during this period. Its revenues grew by 72.4%, increasing from \$8.3 billion in 1990 to \$14.3 billion in 1995.

Revenues for telecommunications services grew by 30.2% between 1990 and 1995 almost twice the growth rate of the total economy, increasing from \$15 billion in 1990 to \$19.6 billion in 1995 (Figure 8 and 9).

Figure 8

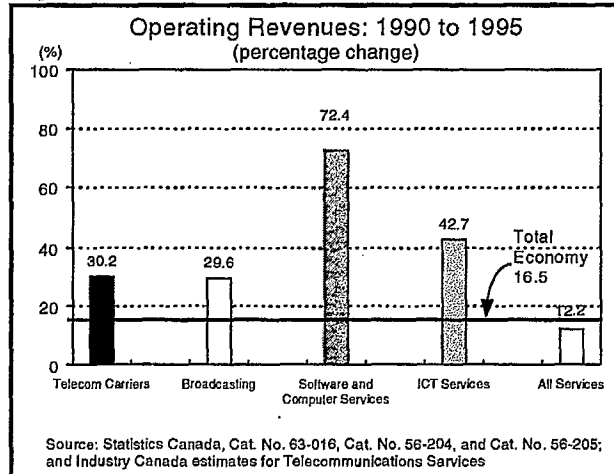
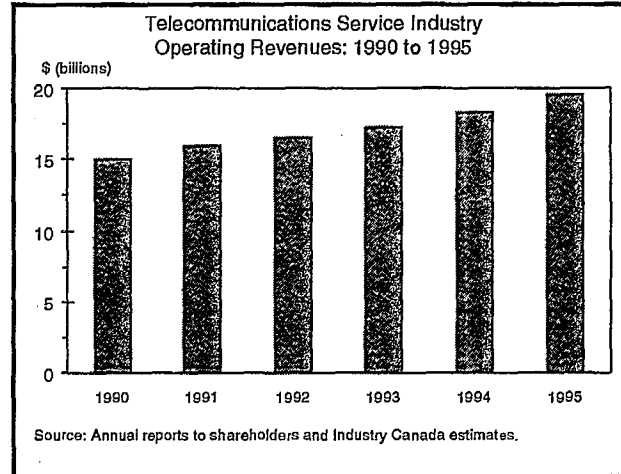
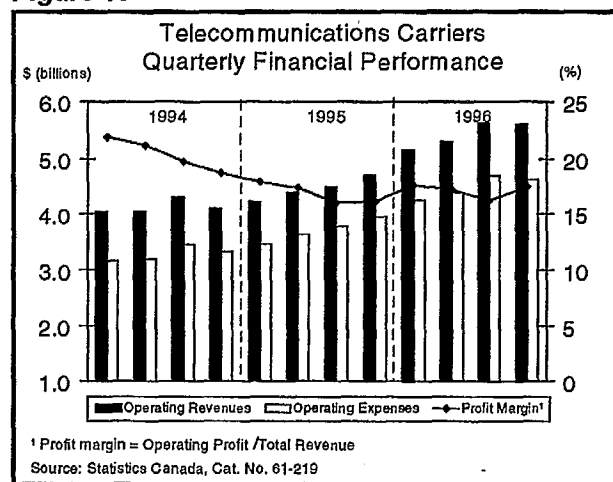


Figure 9



Though the software and computer services industry outperformed the telecommunications service industry, both grew faster than the overall economy between 1990 and 1995. Growth in broadcasting was smaller but also outperformed the 16.5% growth of the total economy and the 12.2% growth of all service producing industries in the economy. (Figure 8)

Figure 10



The operating revenues of telecommunications carriers have been growing steadily since the first quarter of 1994. However, operating expenses have been growing at a faster rate, and as a result, the industry's overall profit margin declined (Figure 10 and Table 5).

1.4 Research and Development (R&D)

Between 1990 and 1995, the estimated R&D expenditures for the total ICT sector increased from \$1.9 billion in 1990 to \$2.9 billion in 1995 — a 49.1% increase. Telecommunications equipment manufacturers were, by far, the largest spenders on R&D during the period. In 1990, telecommunications equipment manufacturers accounted for 38.4% (\$739 million) of R&D expenditures in the ICT sector (\$1,923 million); by 1995, this industry's share rose to 46.9% (\$1,345 million) of the total \$2,868 million. As well, the telecommunications equipment industry's R&D expenditures rose faster than all other ICT industries (excluding record players, radio and TV receivers industry) during the period. R&D expenditures of telecommunications equipment manufacturers increased by 82.0% (Table 3).

Table 3

ICT Sector R&D expenditures ¹ : 1990 to 1995	1990 - 1995							avg annual change (compounded) %	period change
	1990	1991	1992	1993	1994	1995			
	\$ (millions)								
• Software and Computer services	262	231	280	313	353	467	12.3	78.4	
• Telecommunications and Broadcasting ²	139	147	173	252	253	236	11.2	70.0	
ICT services industries	401	378	453	565	606	703	11.9	75.5	
• Record players, radio and TV receivers	3	7	10	11	12	12	30.7	282.1	
• Telecom. equipment	739	773	734	904	1,102	1,345	12.7	82.1	
• Other communication and electronic equipment	374	374	409	422	447	385	0.6	2.9	
• Electronic parts and components	43	41	49	49	52	54	5.0	27.7	
• Electronic computing and peripheral equipment	275	302	320	281	297	254	-1.6	-7.8	
• Electronic and other office, store and business machines	24	27	25	28	30	32	5.8	32.3	
• Indicating, recording, and controlling and other instruments and related products	65	63	67	70	78	83	5.0	27.7	
ICT goods industries³	1,522	1,588	1,613	1,764	2,018	2,164	7.3	42.2	
Total ICT sector	1,923	1,966	2,066	2,329	2,625	2,868	8.3	49.1	
Total industrial R&D	5,244	5,438	5,844	6,548	7,018	7,410	7.2	41.3	
ICT sector as a percentage of all industrial R&D	36.7%	36.2%	35.4%	35.6%	37.4%	38.7%	--	--	

¹ Data refer to intramural R&D expenditures by industries, including R&D by governments and educational institutions

² Includes broadcasting, telecommunications carriers

³ For more details see Industry Canada, "ICT Statistical Review 1990-1995", May 1997

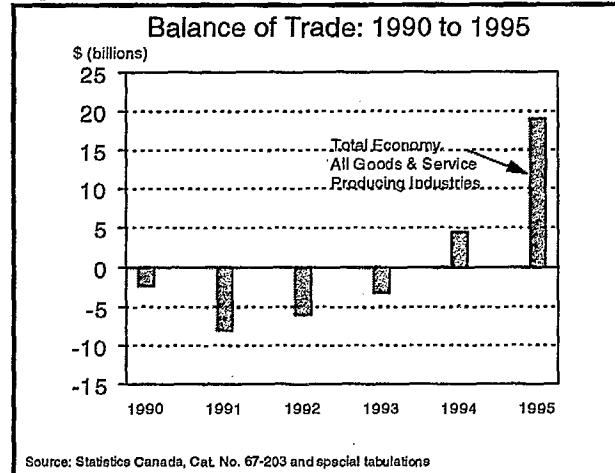
Numbers may not add up due to rounding.

Source: Statistics Canada, Special tabulations for Industry Canada (Feb. 1997); Statistics Canada, "Service Bulletin", Cat. No. 88-001, Vol. 20, No.5.

1.5 Trade

Between 1990 and 1995, growth in Canada's level of exports for the whole economy outpaced that of its imports. This led to a significant improvement in Canada's balance of trade during that period, from a deficit of \$8 billion in 1991 to a surplus of \$19.0 billion in 1995 (Figure 11).

Figure 11



For the ICT sector, growth in exports also outpaced imports. However, the balance of trade in ICT services and in ICT manufacturing industries remained in deficit (Figures 12 & 13).⁸

Figure 12

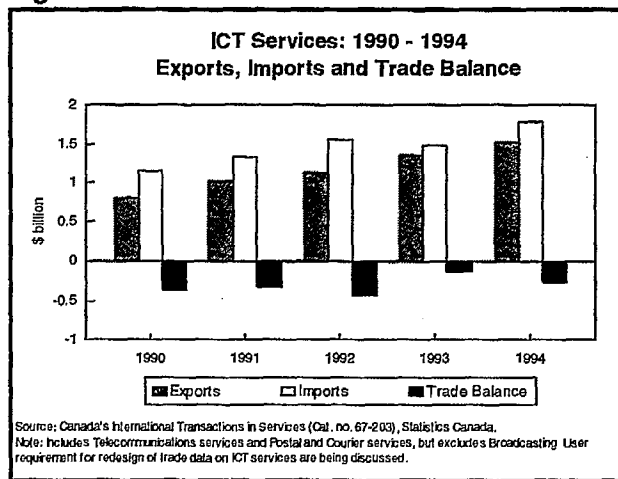
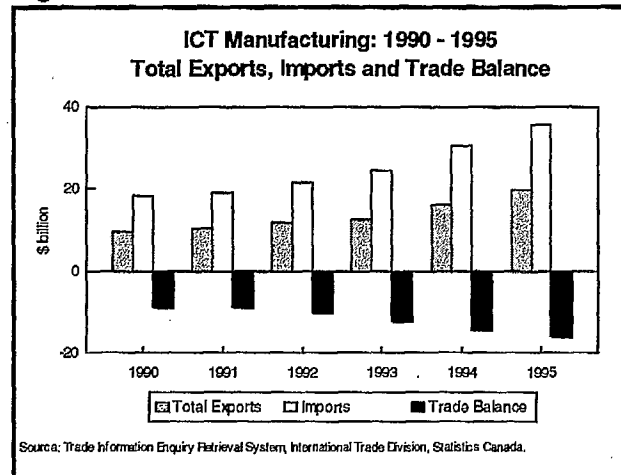


Figure 13



Most of the trade activity in the ICT sector involves the manufacturing industries. For the ICT manufacturing sector overall, Canada has been running a consistent and growing deficit. Most of the increase in ICT goods imports between 1990 and 1995 arises from shipments of electronic parts and components which accounted for nearly 70%.⁹ However, since 1990, Canada has been consistently running a significant trade surplus in telecommunications equipment.

⁸ Unfortunately there is insufficient publicly available data on trade in the total ICT sector. Efforts are being made to improve these data. Trends reflected in this report are based on available data. Further information can be obtained by referring to "ICT Statistical Review, 1990 - 1995", Industry Canada, May 1997.

⁹ Industry Canada, "ICT Statistical Review, 1990 - 1995", May 1997.

Table 4 summarizes the economic and financial performance of Canada's ICT services industries, all service producing industries, and the overall Canadian economy from 1990 to 1995.

Table 4

ICT Services Industries All Service Producing Industries and Total Economy: 1990 to 1995

Economic and Financial Data	1990	1991	1992	1993	1994	1995	1990-1995	
							avg. annual change (compounded)	period change
ICT Service Industries								%
	<i>(\$ (millions - Can dollars) or persons)</i>							
GDP (1986\$)	19,355	20,467	21,322	22,317	24,296	26,306	6.3	35.9
Employment ¹	267,790	268,311	244,201	257,481	277,588	317,886	3.5	18.7
Operating revenues (Industry Canada estimates)	27,784	30,837	32,324	33,963	36,331	39,661	7.4	42.7
R&D expenditures	401	378	453	565	606	703	11.9	75.3
Exports	807	1,022	1,130	1,361	1,525	n.a.	17.2*	89.0*
Imports	1,159	1,326	1,547	1,480	1,784	n.a.	11.4*	53.9*
Balance	-352	-304	-417	-119	-259	n.a.	--	--
	<i>(percentage of total economy)</i>							
GDP	3.84%	4.14%	4.28%	4.37%	4.57%	4.85%	--	--
Employment	2.03%	2.08%	1.90%	1.98%	2.09%	2.35%	--	--
Operating revenues	2.26%	2.60%	2.73%	2.78%	2.81%	2.77%	--	--
All Service Producing Industries and Total Economy								
	<i>(\$ (millions - Can dollars) or persons)</i>							
GDP - Services sector (1986\$)	328,113	327,361	331,419	338,565	349,158	356,072	1.6	8.5
GDP - Total economy (1986\$)	503,659	494,542	497,599	510,616	531,951	542,497	1.5	7.7
GDP - Total economy (current \$)	669,467	676,477	690,122	712,855	750,053	776,299	3.0	16.0
Exports of services	23,361	24,615	25,788	28,118	31,519	36,504	9.3	56.2
Imports of services	34,363	36,189	38,055	40,606	40,949	45,860	5.9	33.5
Balance on trade in services	-11,002	-11,574	-12,267	-12,488	-9,430	-9,356	--	--
Exports of services and goods	168,916	164,848	181,190	209,369	250,877	290,325	11.4	71.9
Imports of services and goods	171,222	172,806	187,256	212,534	246,454	271,291	9.6	58.4
Balance	-2,306	-7,958	-6,066	-3,165	4,423	19,034	--	--
Employment - Services sector	9,335,700	9,334,000	9,385,300	9,567,000	9,746,400	9,852,400	1.1	5.5
Employment - Total economy	13,165,087	12,916,105	12,841,973	13,014,689	13,291,612	13,505,511	0.5	2.6
Population	27,791,000	28,120,000	28,542,000	28,941,000	29,248,000	29,413,000	1.1	5.8
Operating revenues - Services sector	730,827	717,979	700,114	742,180	785,635	819,715	2.3	12.2
Operating revenues - Total economy	1,229,127	1,184,042	1,183,994	1,222,217	1,361,701	1,431,769	3.1	16.5

* figures are calculated for 1990 to 1994 period

1. includes full-time, part-time, and self-employed (The Labour Force Survey)

Source: Statistics Canada and Industry Canada

Table 5 summarizes the economic and financial performance of Canada's telecommunications service industry and its contribution to the overall economy between 1990 and 1995.

Table 5
Telecommunications Service Industry:
1990 to 1995

Economic and Financial Data	1990	1991	1992	1993	1994	1990-1995		
						1995 (compounded)	period change	
	\$ (millions - Can dollars) or persons					%		
GDP (1986 dollars)	13,663	14,248	14,687	15,361	16,753	18,188	5.9	33.1
Employment ¹	142,157	129,621	120,217	126,910	127,529	144,551	0.3	1.7
Operating revenues (Industry Canada estimates)	15,010	15,927	16,535	17,214	18,331	19,550	5.4	30.2
Operating profits (Industry Canada estimates)	3,532	3,898	3,947	3,660	4,041	3,810	1.5	7.9
Operating revenues (Statistics Canada)	12,264	13,712	14,278	15,877	16,502	17,818	7.8	45.3
Operating profits (Statistics Canada)	2,946	3,429	3,549	3,277	3,360	3,004	0.4	2.0
	<i>(percentage of total economy)</i>							
GDP	2.71%	2.88%	3.14%	3.01%	3.15%	3.35%	--	--
Employment ¹	1.08%	1.00%	0.94%	0.98%	0.96%	1.07%	--	--
Operating revenues (Industry Canada)	1.22%	1.35%	1.40%	1.41%	1.35%	1.37%	--	--
Operating profits (Industry Canada)	5.31%	7.69%	9.05%	6.60%	5.05%	4.00%	--	--
	<i>(operating profits as a percentage of operating revenues)</i>							
Operating margin (Industry Canada estimates)	23.5%	24.5%	23.9%	21.3%	22.0%	19.5%	--	--
Operating margin (Statistics Canada)	24.0%	25.0%	24.9%	20.6%	20.4%	16.9%	--	--

¹ includes full-time, part-time, and self-employed (The Labour Force Survey)

Source: Statistics Canada, Cat. No. 61-219; employment data from Cat. No. 71-001; GDP from Cat. No. 15-001. Industry Canada estimates added to the financial data as noted below.

The financial data in Table 5 (above) includes Industry Canada estimates of industry revenue as well as Statistics Canada's enterprise data for operating revenues and profits. Statistics Canada's enterprise data exclude crown corporations such as SaskTel, MTS, and carriers with less than \$25 million in revenues. A sample survey is used for service providers with operating revenues between \$25 million and \$100 million. Industry Canada has estimated operating revenues and profits in order to adjust for industry data gaps arising from omissions in the statistical enterprise database.

Table 6 summarizes the economic and financial performance of Canada's broadcasting industry and its contribution to the overall economy between 1990 and 1995.

Table 6

**Broadcasting Industry -
Radio and Television Broadcasters and
Cable Television Operators:
1990 to 1995**

Economic and Financial Data	1990	1991	1992	1993	1994	1995	1990-1995	
							avg. annual change (compounded)	period change
	<i>(\$ (millions) or persons)</i>						%	
GDP (1986 dollars)	1,999	2,104	2,076	2,026	2,057	2,137	1.3	6.9
Employment ¹	53,973	48,675	51,960	51,550	51,003	50,023	-1.5	-7.3
Operating revenues	4,459	4,644	4,957	5,144	5,416	5,777	5.3	29.6
Operating Profits	287	220	458	361	509	596	15.7	107.7
	<i>(percentage of total economy)</i>							
GDP	0.40%	0.43%	0.42%	0.40%	0.39%	0.39%	--	--
Employment ¹	0.41%	0.38%	0.40%	0.40%	0.38%	0.37%	--	--
Operating revenues	0.36%	0.39%	0.42%	0.42%	0.40%	0.40%	--	--
Operating profits	0.43%	0.43%	1.05%	0.65%	0.64%	0.63%	--	--
	<i>(operating profits as a percentage of operating revenues)</i>							
Operating Margin	6.4%	4.7%	9.2%	7.0%	9.4%	10.3%	--	--

¹ includes self-employed (The Labour Force Survey)

Source: Statistics Canada Cat. No. 56-204 and 56-205; employment data from Cat. No. 71-001 and GDP data from Cat. No. 15-001.

Table 7 summarizes the economic and financial performance of Canada's software and computer services industry and its contribution to the overall economy between 1990 and 1995.

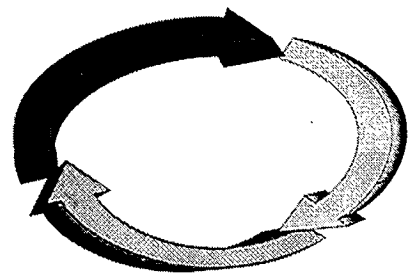
Table 7

**Software and Computer Services Industry:
1990 to 1995**

Economic and Financial Data	1990	1991	1992	1993	1994	1995	1990-1995	
							avg. annual change (compounded)	period change
	<i>(\$ (millions) or persons)</i>						%	
GDP (1986 dollars)	3,693	4,115	4,559	4,930	5,486	5,981	10.1	62.0
Employment ¹	71,660	90,015	72,024	79,021	99,056	123,312	11.5	72.1
Operating revenues	8,315	10,266	10,832	11,605	14,583	14,334	11.5	72.4
Operating Profits	752	78	408	302	771	628	-3.5	-16.5
	<i>(percentage of total economy)</i>							
GDP	0.73%	0.83%	0.92%	0.96%	1.01%	1.08%	--	--
Employment ¹	0.54%	0.70%	0.56%	0.61%	0.75%	0.91%	--	--
Operating revenues	0.68%	0.87%	0.91%	0.95%	1.07%	1.00%	--	--
Operating profits	1.13%	0.15%	0.94%	0.54%	0.96%	0.66%	--	--
	<i>(operating profits as a percentage of operating revenues)</i>							
Operating margins	9.0%	0.8%	3.8%	2.6%	5.3%	4.4%	--	--

¹ includes self-employed (The Labour Force Survey)

Source: Statistics Canada, Catalogue No. 61-219; employment data from Cat. No. 71-001 and GDP data from Cat. No. 15-001.



Section 2

Telecommunications Service Market Segments

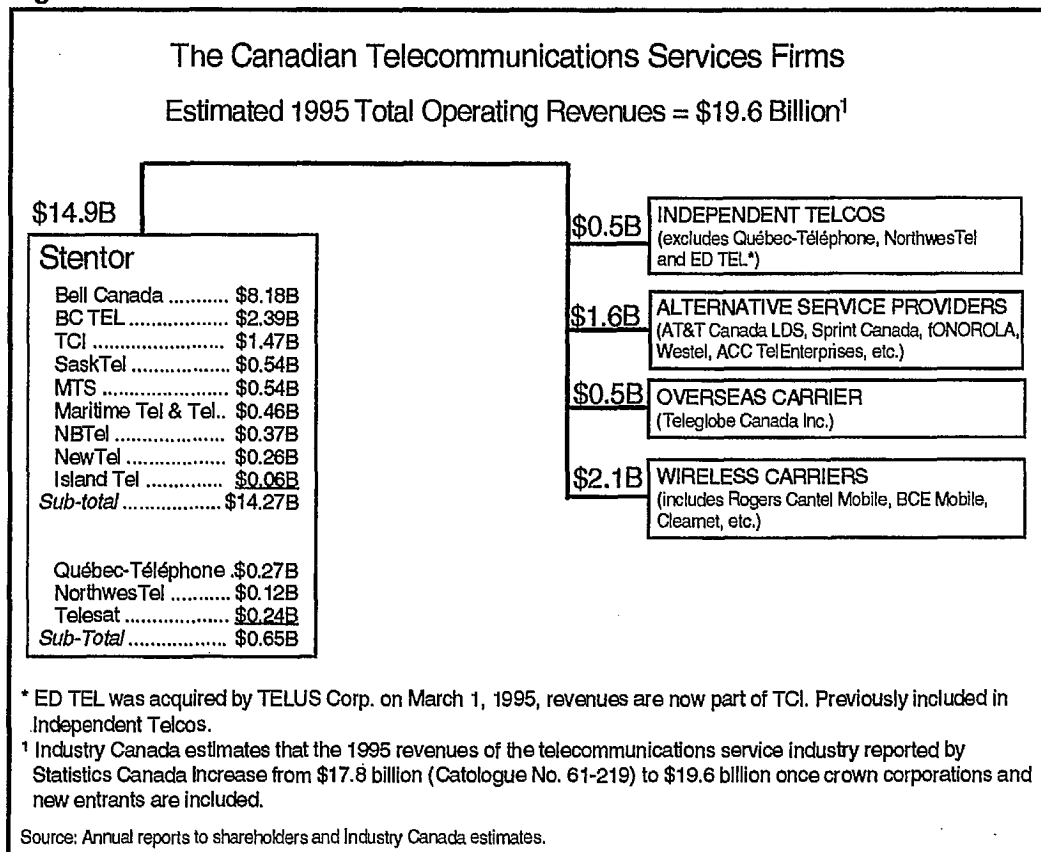
Section 2 Telecommunications Service Market Segments

The number of firms in the telecommunications service industry has evolved and continues to evolve due to the rapid technological changes and regulatory changes that have, by 1996, dramatically altered the composition of the industry. The following provides a profile of the key players, market size, and growth of the telecommunications service market segments for the years 1990 to 1995, and where available for the year 1996. It is based on the annual operating revenues of telecommunications firms. This section also provides estimates of the local and long distance revenues of the Stentor member telephone companies. Finally a breakdown of the total long distance market size and share of key market participants is provided, followed by an estimate of the size of the competitive and non-competitive market segments of the Canadian telecommunications service industry.

Given the recent decision of the CRTC to introduce competition in the provision of basic local telephone service (see section 5), it will become increasingly important to monitor the changing market shares in both local and long distance telecommunications services as well as the changing number of companies participating in each of these markets. (A more detailed listing of the Canadian telecommunications parent companies and firms, as of May 1997, is provided in Annex A.)

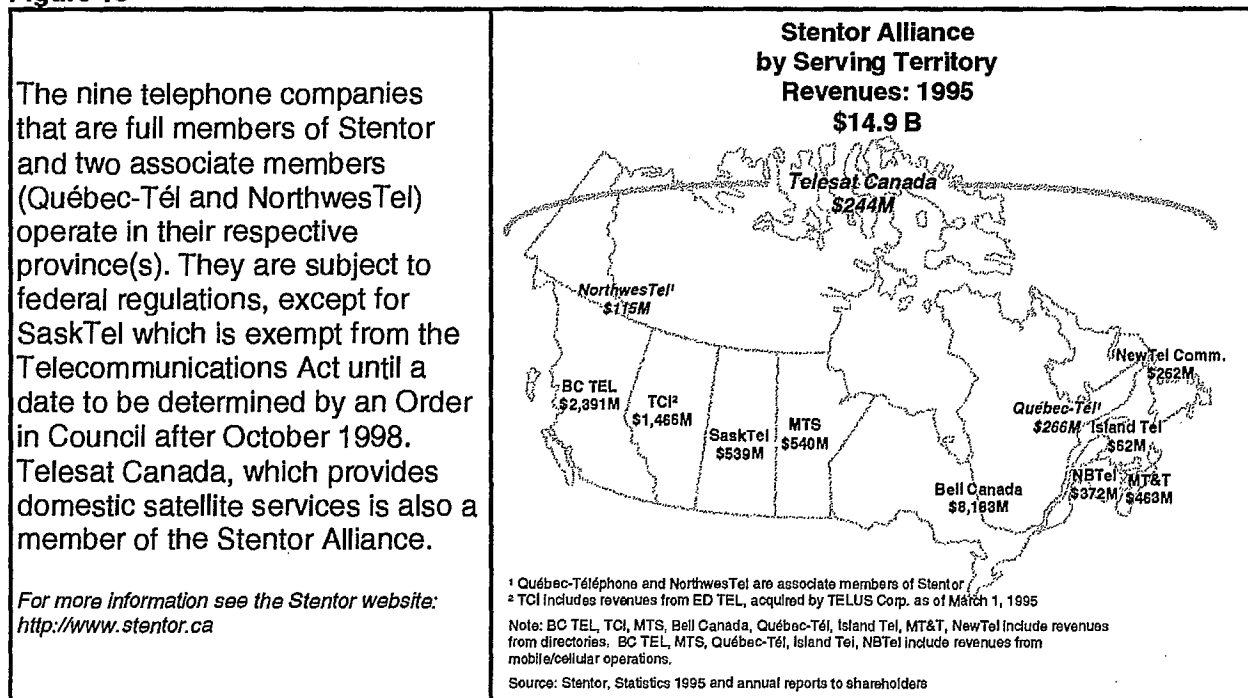
2.1 Key Players and Market Size

Figure 14



Canada's nine major regional telephone companies (Bell Canada, BC Tel, TELUS, SaskTel, Manitoba Telecom Services, Maritime Tel & Tel, NBTel, NewTel Communications Inc., and Island Tel) are all members of an alliance referred to as Stentor. In 1995, the Stentor member companies generated revenues of \$14.3 billion from the provision of telecommunications services. Bell Canada, the largest telephone company in Canada, generated 57% of that total. The three associate members of Stentor, Québec-Tél, NorthwesTel, and Telesat Canada, generated an additional \$650 million in 1995. Combined, the Stentor members and associate member companies had revenues of just over \$14.9 billion in 1995. This accounted for 76% of the estimated \$19.6 billion in telecommunications service industry revenues in 1995. Preliminary figures for 1996 indicate that the Stentor group had revenues of approximately \$16 billion that year. Of significance in 1995: TELUS Corp., the parent company of TELUS Communications Inc. (TCI) (formerly AGT Limited) acquired ED TEL, an independent telephone company formerly owned by the City of Edmonton.

Figure 15



In 1995, there were approximately 50 independent telephone companies of which 9 were municipally owned and the rest were privately owned¹⁰. Both the Stentor telephone companies and the independent telephone companies offer interexchange, basic local telephone service as well as other telecommunications services. All the independent telephone companies came under federal regulation in 1994. Excluding Québec-Téléphone and NorthwesTel, the independent telephone companies had estimated revenues of \$500 million in 1995. However, the size of these individual companies varies.

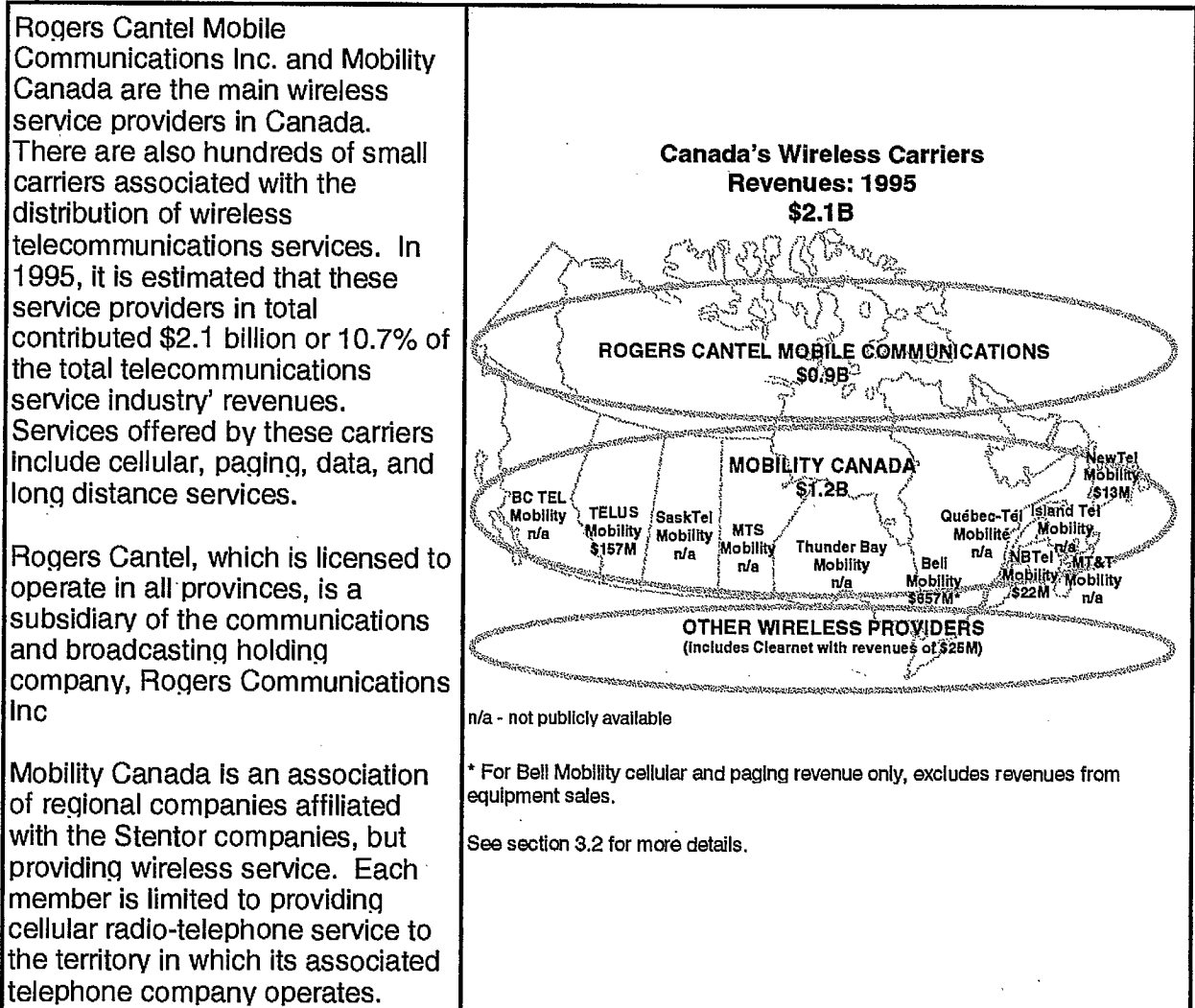
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For a full list of companies, see the CRTC website at <http://www.crtc.gc.ca> and Annex A of this report.

Most of the independent telephone companies operate in Ontario and Québec except for NorthwTel which operates in the Northwest Territories, Yukon, and northern British Columbia; and Prince Rupert Telephone of Prince Rupert, British Columbia. (a complete list of companies can be found in Annex A)

The Stentor member companies along with the independent telephone companies compete with a range of telecommunications service providers including alternative service providers. The alternative service provider category includes both facilities-based carriers of telecommunications services such as AT&T Long Distance Services Company ("AT&T LDS"), Call-Net Enterprises, parent company of Sprint Canada, and fONOROLA Inc., as well as more than 400 resellers which have registered with the CRTC to provide telecommunications services without ownership of telecommunications carriage facilities. Increasingly, the telephone companies are also finding themselves in competition with wireless communications providers such as Rogers Cantel Mobile Communications Inc., Microcell Communications Inc., and Clearnet Communications Inc.

Figure 16



Both BCE Mobile and Rogers Cantel experienced steady growth in their cellular subscribers base between 1991 and 1996. Each company's paging subscribers base also grew but not at as fast a pace over the same time period (Figure 17).

Figure 17

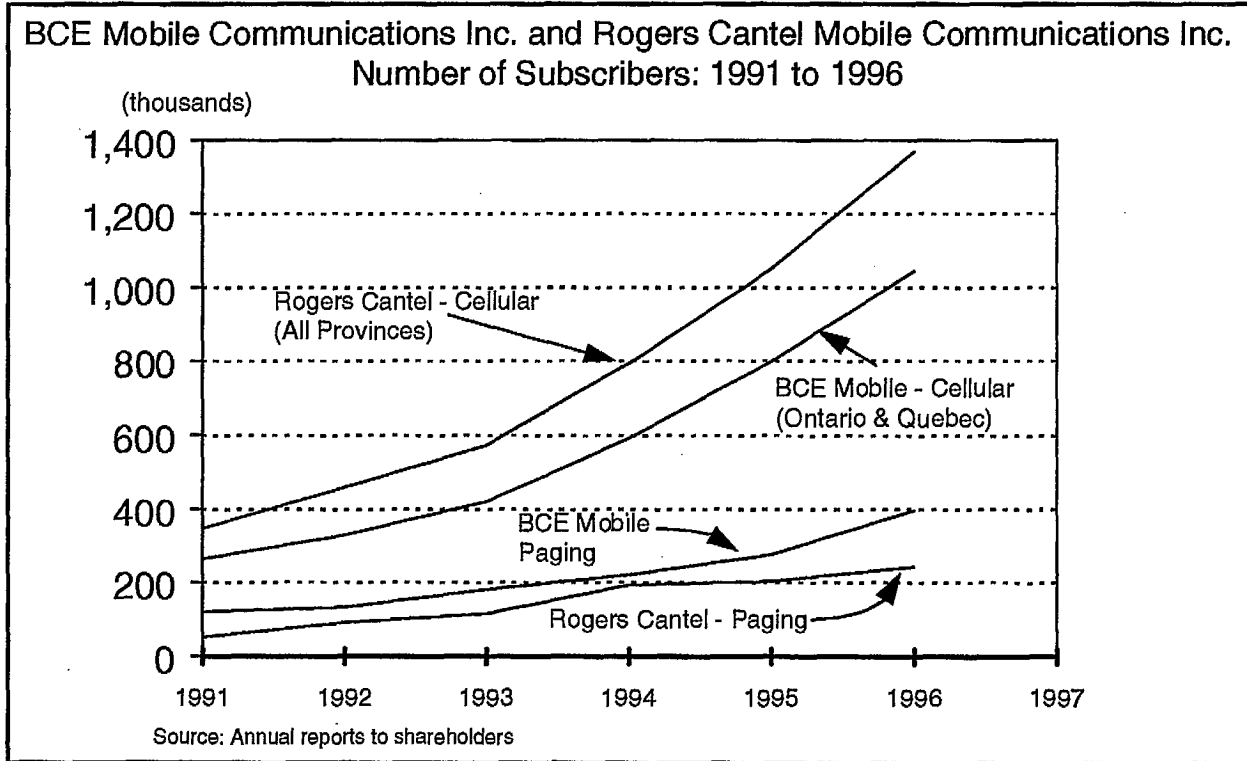
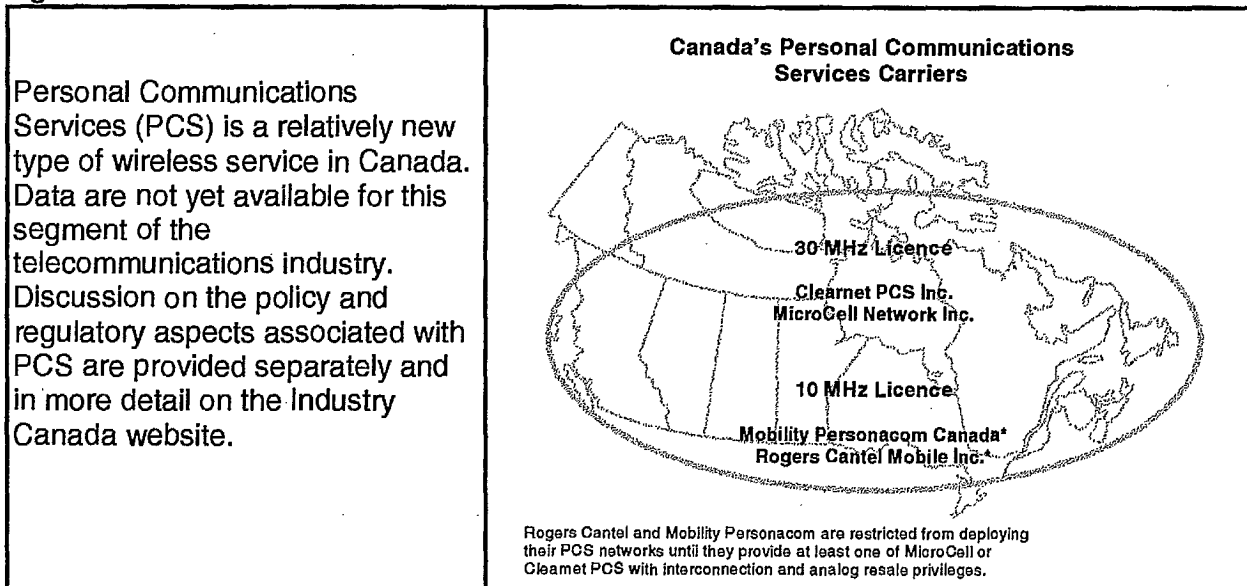


Figure 18



2.2 Growth in Market Segments

The rate of revenue growth of 2.0% between 1990 and 1995 for the telephone companies (including Telesat Canada) was considerably lower than the rate of revenue growth experienced by the other segments of the telecommunications service industry. Most of the recent growth experienced in the telecommunications service industry came from the alternative service providers. Their revenues grew by compounded annual growth rate (CAGR) of 33.3% between 1991 to 1995. The revenues of wireless communications providers also grew relatively quickly between 1990 and 1995. This market segment's revenues grew by a CAGR of 18.8% between 1990 to 1995 (Table 8).

Table 8

Telecommunications Service Industry Key Players	Estimated Revenues: 1990 to 1996								
	Estimated Revenues						1990-1995		Forecasted
	1990	1991	1992	1993	1994	1995	Avg. annual change (compounded)	Period change	1996
	\$ (millions)						(%)		\$ (millions)
Wireline Service Providers									
Telephone Companies (incl. Telesat Canada) ¹	13,894	14,176	14,383	14,629	15,091	15,370	2.0	10.6	16,139
Alternative Service Providers ²	n/a	526	590	852	1,149	1,616	33.3*	169.6*	2,182
Overseas Carrier (Teleglobe Canada)	234	280	316	374	413	478	15.4	104.3	550
Wireless Communications ³	882	945	1,246	1,359	1,678	2,086	18.8	136.6	2,811
Telecommunications Service Industry	15,010	15,927	16,535	17,214	18,331	19,550	5.4	30.3	21,682
	Growth from previous year (%)								
Wireline Service Providers									
Telephone Companies (incl. Telesat Canada) ¹	5.51	2.03	1.46	1.71	3.16	1.85	n/a	n/a	5
Alternative Service Providers ²	n/a	n/a	12.17	44.41	34.86	40.64	n/a	n/a	35
Overseas Carrier (Teleglobe Canada)	-1.68	19.66	12.86	18.35	10.43	15.74	n/a	n/a	15
Wireless Communications	95.90	7.18	31.92	9.04	23.45	24.33	n/a	n/a	35
Telecommunications Service Industry	8.32	6.11	3.82	4.10	6.49	6.65	n/a	n/a	11
<p>¹ Telephone companies include all members of Stentor as well as all the other independent telephone companies and Telesat Canada.</p> <p>² Alternative Service Providers include both resellers of telecommunications services and facilities-based carriers.</p> <p>³ Industry Canada has estimated that the Canadian wireless industry had revenues of \$2.1 billion in 1995. The \$200 million difference between Industry Canada's estimate and Statistics Canada's survey results as reported can be attributed to the fact that several Stentor telephone companies do not report their cellular revenues separately from their wireline revenues. These revenues were therefore reported in Industry Canada's estimates as part of the wireline revenues for these companies.</p> <p>* CAGR and period change are for the 4 year period from 1991 to 1995.</p> <p>Industry Canada estimates that the 1990 to 1995 revenues of the telecommunications service industry, as reported by Statistics Canada (Catalogue No. 61-219), increase once crown corporations and new entrants are included.</p>									
Source: Annual reports to shareholders and Industry Canada estimates						s:\dbr\lisa\daniel\greenbk\key-play.wk4			

Generally speaking, the telephone companies' market share, based on total revenues of the telecommunications service industry, decreased from 89.0% in 1991 to 78.6% in 1995. This is a decrease of 11.7% during this period. The share of industry revenues attributable to alternative service providers more than doubled between 1991 and 1995. Their share was 3.3% in 1991. In 1993, their market share was estimated to be 5.0%, by 1994 it had grown to 6.3%, and by 1995 it had grown to 8.3% (Table 8 and Figure 19).

Wireless communications also gained considerably. Their share was 5.9% in 1991, and grew to 10.7% by 1995. The remaining market share in this analysis can be attributed to the overseas carrier. It's share of industry revenues grew from 1.8% to 2.5% (Table 8 and Figure 19).

Figure 19

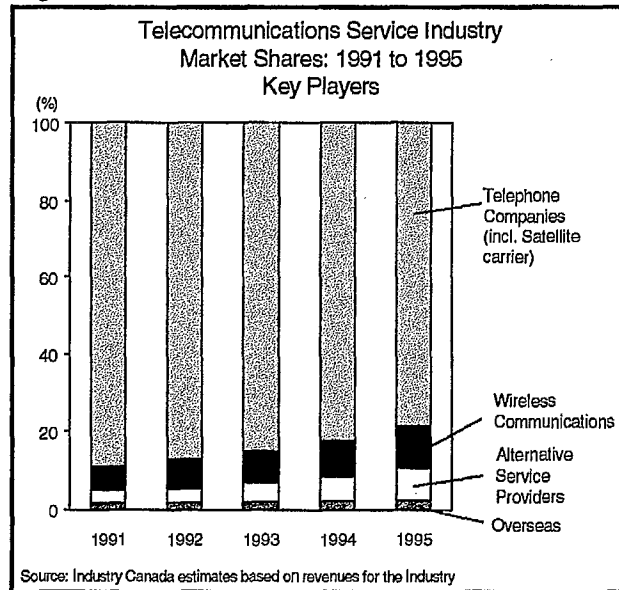


Figure 20

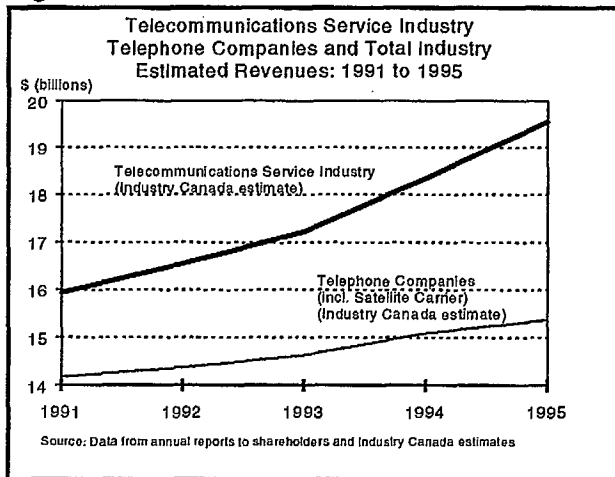
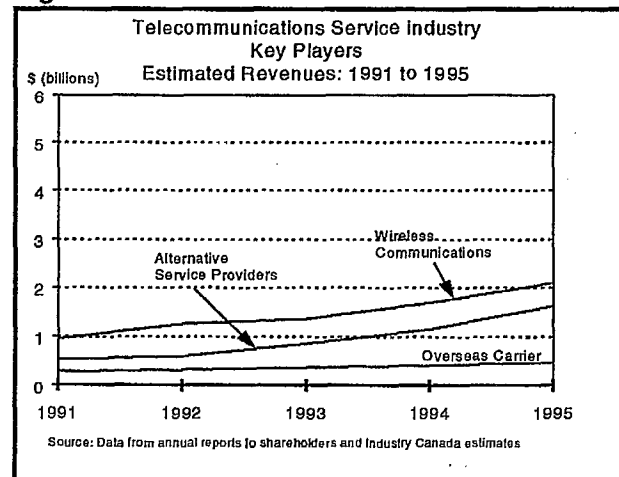


Figure 21



Although the telephone companies market share declined, revenues for the overall telecommunications service industry continued to grow. Between 1990 and 1995, revenues for the telecommunications services industry increased by 30.3%, a CAGR of 5.4% (Table 8 and Figure 20).

2.3 Local and Long Distance Market Segments

Certain telephone companies consistently provide a breakdown of their local and long distance revenues. For other companies, this split needs to be estimated. A summary of local and long distance revenues for the Stentor member telephone companies and a further breakdown for Bell Canada is provided below (Table 9). Generally, between 1984 and 1995, revenues grew for both local and long distance services and the ratio of local and long distance revenues varied by company.

Table 9

Stentor Member Companies Wireline Local and Long Distance Telecommunications Services Estimated Revenues: 1984 to 1996 \$ (billions)								
Year	Estimated for Total Stentor (see notes)				Bell Canada			
	Total Revenues	Local Services	Long Distance	Misc.	Total Revenues	Local Services	Long Distance	Misc.
	\$	\$	\$	\$	\$	\$	\$	\$
1984	9.0	3.5	4.8	0.7	5.3	2.2	2.6	0.5
1985	9.7	3.6	5.3	0.8	5.8	2.3	2.9	0.6
1986	10.4	3.7	5.7	1.0	6.3	2.3	3.2	0.8
1987	10.7	3.8	5.9	1.0	6.4	2.4	3.2	0.8
1988	11.4	4.5	5.7	1.2	6.6	2.5	3.3	0.8
1989	12.4	4.4	6.6	1.4	7.3	2.7	3.6	1.0
1990	12.3	4.0	6.4	1.9	8.7	2.4	3.8	2.5
1991	13.5	4.6	6.9	2.0	8.7	2.6	3.7	2.4
1992	13.7	4.9	6.8	2.0	7.8	2.7	3.7	1.4
1993	14.1	5.3	6.6	2.2	8.0	3.0	3.5	1.5
1994	14.4	5.9	6.2	2.3	8.1	3.3	3.3	1.5
1995	14.9	6.6	5.8	2.5	8.2	3.5	3.0	1.7
1996	16.1	7.5	5.7	2.9	8.7	4.0	3.0	1.7

Notes:

1) Method of collection and assignment of data to the three categories differ by company and therefore should be viewed as estimates. Also, unlike the United States, costs and revenues are not fully distributed. Certain parts of miscellaneous revenues can be attributed to both the local and long distance services, which would further increase the size of both market segments..

Source: Stentor, annual reports to shareholders and Industry Canada estimates.

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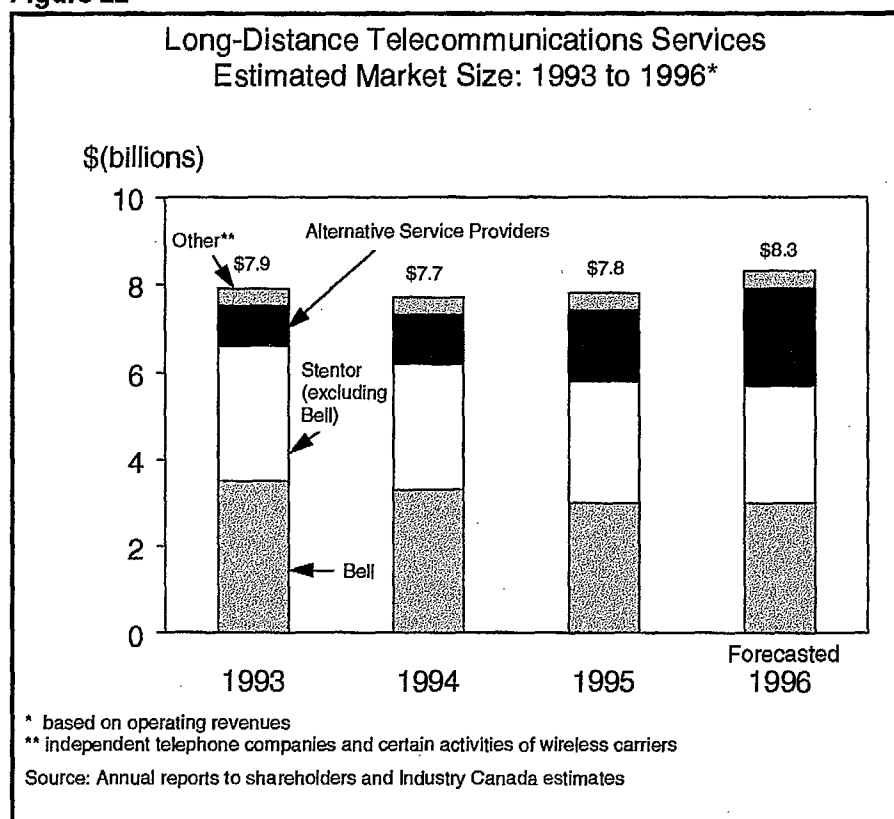
Estimated local revenues of the Stentor telephone companies increased from \$3.5 billion in 1984 to \$6.6 billion in 1995. Data for 1996 suggest Stentor revenues from local services were \$7.5 billion (Table 9).

The total long-distance revenues of the Stentor member companies increased from \$4.8 billion in 1984 to \$5.8 billion in 1995. After 1992, when competition in the provision of public long distance voice telephone services was introduced, there was a decline in their long distance revenues from \$6.6 billion in 1993 to \$5.8 billion in 1995. The overall size of the Canadian

long distance market has increased, however, over the past several years. From an estimated \$7.9 billion in 1993 to a forecasted \$8.3 billion in 1996 (Figure 22).

In 1992, competition and resale were permitted in the provision of public long distance voice telecommunications services, a subset of the total long-distance market segment. Public long distance voice services then referred to message toll services and wide area telephone service (WATS), a bulk rated long distance service used by business customers. These services have since evolved. Indeed, WATS has now been replaced by other bulk discount business services. In addition a number of discount long distance services have been introduced for residential customers.¹¹ Innovative, integrated voice/data value-added long-distance services continue to be introduced by the regulated telephone companies, alternative service providers and wireless telecommunications service providers.

Figure 22



A large portion of Bell Canada's operating revenues come from the provision of long distance voice telephone services (Table 9). However, Bell Canada's long distance market share has declined since 1993 (Figure 23). The long distance market share varies by company with certain companies more reliant on revenues obtained in the provision of other services.

Note that Table 9 shows a large increase in "miscellaneous" revenues some of which may be attributable to the long distance market but which are not included in Figure 22.

¹¹ For regulatory purposes data on the public long distance voice telephone service market segment are still tracked by the regulator through the information filed by the regulated Stentor telephone companies, excluding SaskTel. This continues to be important since contribution payments by alternative service providers are based on the data.

Another way to measure the long-distance market is by traffic in long-distance minutes. At this time, complete data on long distance minutes are not publicly available. However, given the relatively stable market suggested by long-distance revenues (Figure 22), the table below was assembled to provide another measure of this market. The data underestimate the market for several reasons: 1. The data are for switched, originating and terminating contribution-eligible minutes only, based on information submitted in the CRTC's annual contribution proceedings, and assume proportionate return of U.S. and overseas minutes. 2. They exclude cellular long-distance, direct access lines (DALs) and private line traffic. 3. In addition, only reseller traffic whose market share exceeds 0.5% is included. **No correlation can be drawn between the revenues shown in Figures 22 and 23 and the minutes shown in Table 10.**

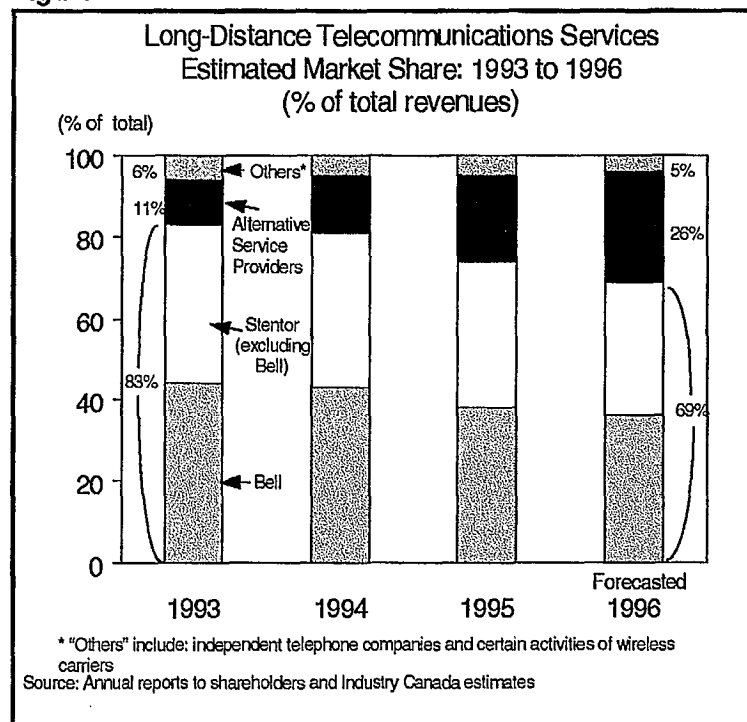
Nevertheless, the data demonstrate that, from 1993 to 1996, contribution-eligible long-distance minutes grew from 42,532 million to 49,433 million, an increase of 16.2% since facilities-based competitors entered the market.

Table 10

Contribution-Eligible Long Distance Minutes for 1993 to 1996 (Originating and Terminating Minutes in Millions)				
Years	1993	1994	1995	1996
Minutes	42,532	45,107	49,275	49,433
Source: Information submitted by parties in the context of the CRTC's annual contribution proceedings				

The Stentor member telephone companies' market share for long distance services has decreased from 83% (\$6.6 billion) in 1993 to a forecasted 69% (\$5.7 billion) in 1996. As a result, the alternative service providers captured an estimated 11% in 1993 and their market share increased to a forecasted 26% in 1996. Market shares vary across the country, however, with some incumbent telephone companies having retained greater market shares than others.

Figure 23

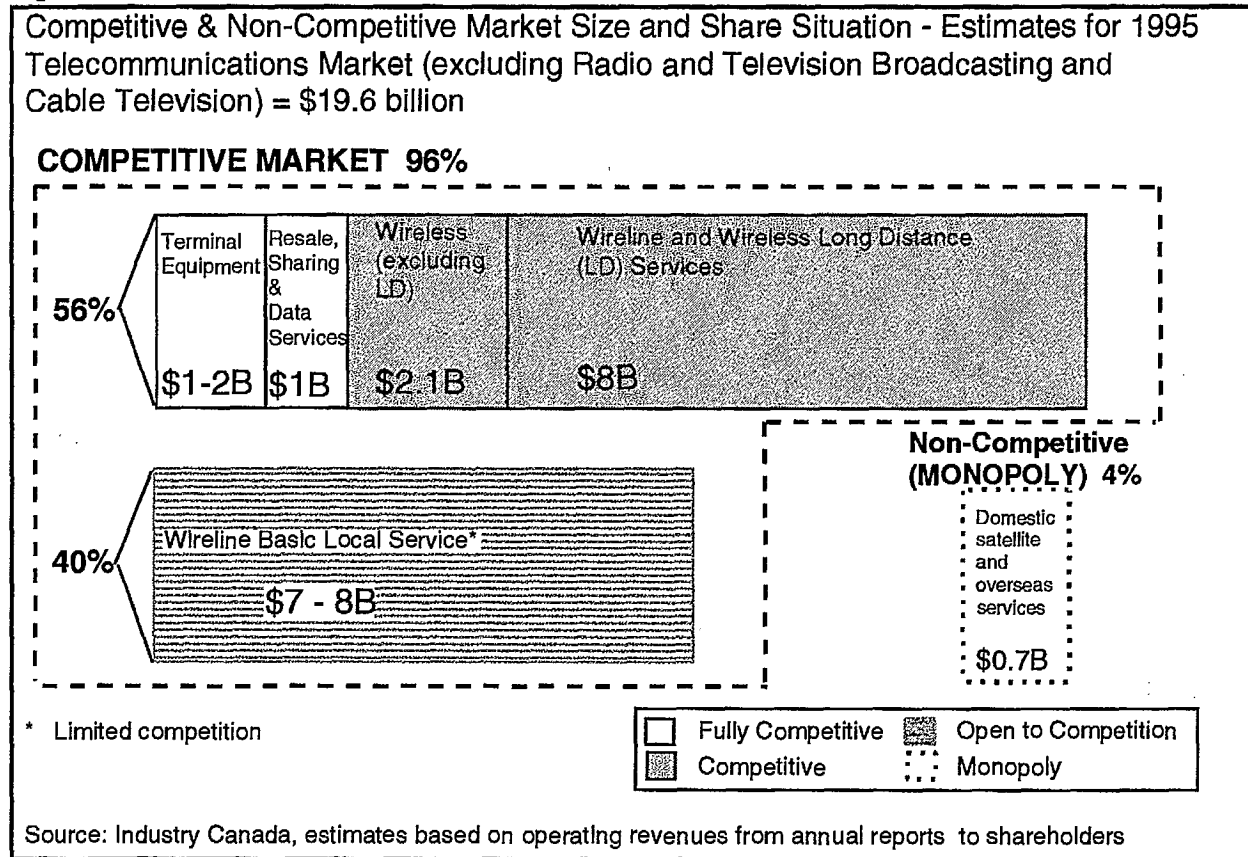


2.4 Competitive and Non-Competitive: Market Segments

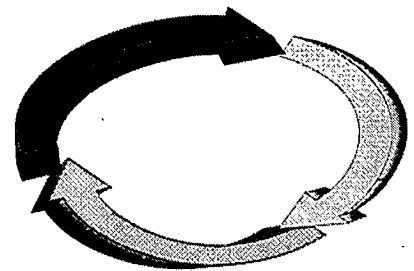
Another way to measure the size and share of the total local market segment is to exclude revenues of those services that are offered by competitors. The size of this now limited basic local market would then decrease considerably as revenues derived from the lease or sale of wireline and wireless telephones, other terminal equipment and optional services would be excluded. In addition, wireline and wireless long distance revenues would also need to be excluded.

Using this method, the total estimated wireline basic local telephone service market was approximately \$8 billion or 40% of the competitive market segment. The remaining 56% of the competitive market segment in 1995 consisted of those noted in Figure 24.

Figure 24



Ninety-six per cent of the telecommunications market, including wireline basic local telephone services, is presently open to some form of competition. The only exceptions are facilities-based overseas telecommunications carriage (excluding Canada - United States) and domestic fixed satellite services which represent 4% of the total (Figure 26). Both of these services are currently offered on a monopoly basis; however, the resale of overseas carriage and satellite services is permitted on a competitive basis. As part of the February 15, 1997 World Trade Organization (WTO) agreement on trade in basic telecommunications services, the Canadian government committed to end Teleglobe's monopoly on October 1, 1998, and Telesat's monopoly on March 1, 2000.



Section 3

Wireline and Wireless
Telecommunications Parent Companies

Section 3 Wireline and Wireless Telecommunications Parent Companies

3.0 Analysis of the Parent Companies

Many of Canada's telecommunications firms are subsidiaries of larger parent companies.

Table 11

Selected Parent Companies	Wireline Telecommunications Service Providers Revenues: 1990 - 1996								
	Year-end December 31							1990-96	
	1990	1991	1992	1993	1994	1995	1996	Avg. annual %change (compounded)	Period change
	(millions \$)							(%)	
Stentor Alliance*									
BCE Inc.	18,373	19,884	19,572	19,827	21,670	24,624	28,167	7.4	53.3
BC Telecom Inc.	1,853	1,936	2,037	2,210	2,295	2,325	2,517	5.2	35.9
TELUS Corp.	1,189	1,227	1,187	1,262	1,360	1,664	1,914	8.3	61.0
SaskTel	574	568	621	620	626	647	697	3.3	21.3
MT&T Company Limited	494	527	543	545	547	564	595	3.2	20.5
Manitoba Telecom Services Inc. (MTS)	542	539	527	539	531	540	589	1.4	8.7
Bruncor Inc.	350	367	362	368	386	405	447	4.2	27.9
NewTel Enterprises Ltd.	264	276	285	295	295	315	324	3.5	22.8
Alternative Service Providers**									
AT&T Canada LDS Company (not publicly traded)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Call-Net Enterprises Ltd. (Sprint Canada)	n/a	69	83	134	176	457	713	n/a	n/a
INOROLA Inc.	n/a	24	43	60	108	209	276	n/a	n/a
ACC TelEnterprises Ltd.	n/a	20	54	82	96	120	n/a	n/a	n/a
Cam-Net Communications Network Inc.***	3	5	19	48	51	46	23	40.0	652.8
Other Parent Companies	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Overseas									
Teleglobe Inc.****	404	376	438	544	643	719	758	11.1	87.6
	Increase from previous period (%)								
Stentor Alliance*									
BCE Inc.	10.1	8.2	(1.6)	1.3	9.3	13.6	14.4	--	--
BC Telecom Inc.	9.6	4.5	5.2	8.5	3.9	1.3	8.3	--	--
TELUS Corp.	1.5	3.2	(3.2)	6.3	7.7	22.3	1.0	--	--
SaskTel	3.8	(1.1)	9.3	(0.2)	1.1	3.3	7.7	--	--
MT&T Company Limited	8.9	6.8	3.0	0.3	0.3	3.3	5.4	--	--
Manitoba Telecom Services Inc.	4.8	(1.7)	(1.0)	2.1	(1.5)	1.8	9.0	--	--
Bruncor Inc.	7.8	5.1	(1.4)	1.7	4.7	5.0	10.4	--	--
NewTel Enterprises Ltd.	5.7	4.7	3.1	3.7	0.0	6.8	2.7	--	--
Alternative Service Providers**									
AT&T Canada LDS Company (not publicly traded)	n/a	n/a	n/a	n/a	n/a	n/a	--	--	--
Call-Net Enterprises Ltd. (Sprint Canada)	n/a	n/a	20.5	61.7	31.6	159.5	55.9	--	--
INOROLA Inc.	n/a	n/a	75.7	39.7	79.7	93.7	32.0	--	--
ACC TelEnterprises Ltd.	n/a	n/a	168.0	52.2	15.8	25.6	--	--	--
Cam-Net Communications Network Inc.****	234.7	55.5	311.8	149.8	6.4	(9.3)	--	--	--
Other Parent Companies	n/a	n/a	n/a	n/a	n/a	n/a	--	--	--
Overseas									
Teleglobe Inc.	9.0	-6.9	16.5	24.1	18.2	11.9	5.4	--	--

* Telesat Canada is listed on Table 12. **includes resellers

*** Fiscal year ends February 28

**** Data for Teleglobe Inc. parent company should not be confused with revenues of Teleglobe Canada Inc.

Source: Annual reports to Shareholders, data compiled by Industry Canada

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Table 12

Selected Parent Companies	Wireless Telecommunications Service Providers Revenues: 1990 - 1996								
	Year-end December 31							1990-96	
	1990	1991	1992	1993	1994	1995	1996	Avg. annual %change (compounded)	Period change
	(millions \$)							(%)	
BCE Mobile Communications Inc.	324	361	433	497	617	781	926	19.1	185.7
Rogers Cantel Mobile Communications Inc.	411	398	517	606	750	900	1,103	17.9	168.4
Microcell Telecommunications Inc.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	--	--
Cleartel Comm. Inc.*	n/a	n/a	12	12	18	32	39	--	--
Glentel Inc.	132	24	21	20	26	40	61	(12.0)	(53.6)
Telesat Canada	n/a	n/a	n/a	n/a	n/a	n/a	n/a	--	--
	Increase from previous period (%)								
BCE Mobile Inc.	37.8	11.3	20.2	14.7	24.0	26.7	18.5	--	--
Rogers Cantel Mobile Communications Inc.	n/a	(3.2)	29.9	17.2	23.8	20.0	22.5	--	--
Microcell Telecommunications Inc.	n/a	n/a	n/a	n/a	n/a	n/a	--	--	--
Cleartel Comm. Inc.*	n/a	n/a	n/a	3.1	46.6	78.6	21.9	--	--
Glentel Inc.	n/a	(81.5)	(11.6)	(4.7)	25.8	55.0	52.5	--	--
Telesat Canada	--	--	--	--	--	--	--	--	--

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Source: Annual reports to Shareholders, data compiled by Industry Canada

Lists of selected wireline and wireless parent companies, along with their associated operating revenues, are provided in Tables 11 and 12. A more detailed listing is provided in Annex A.

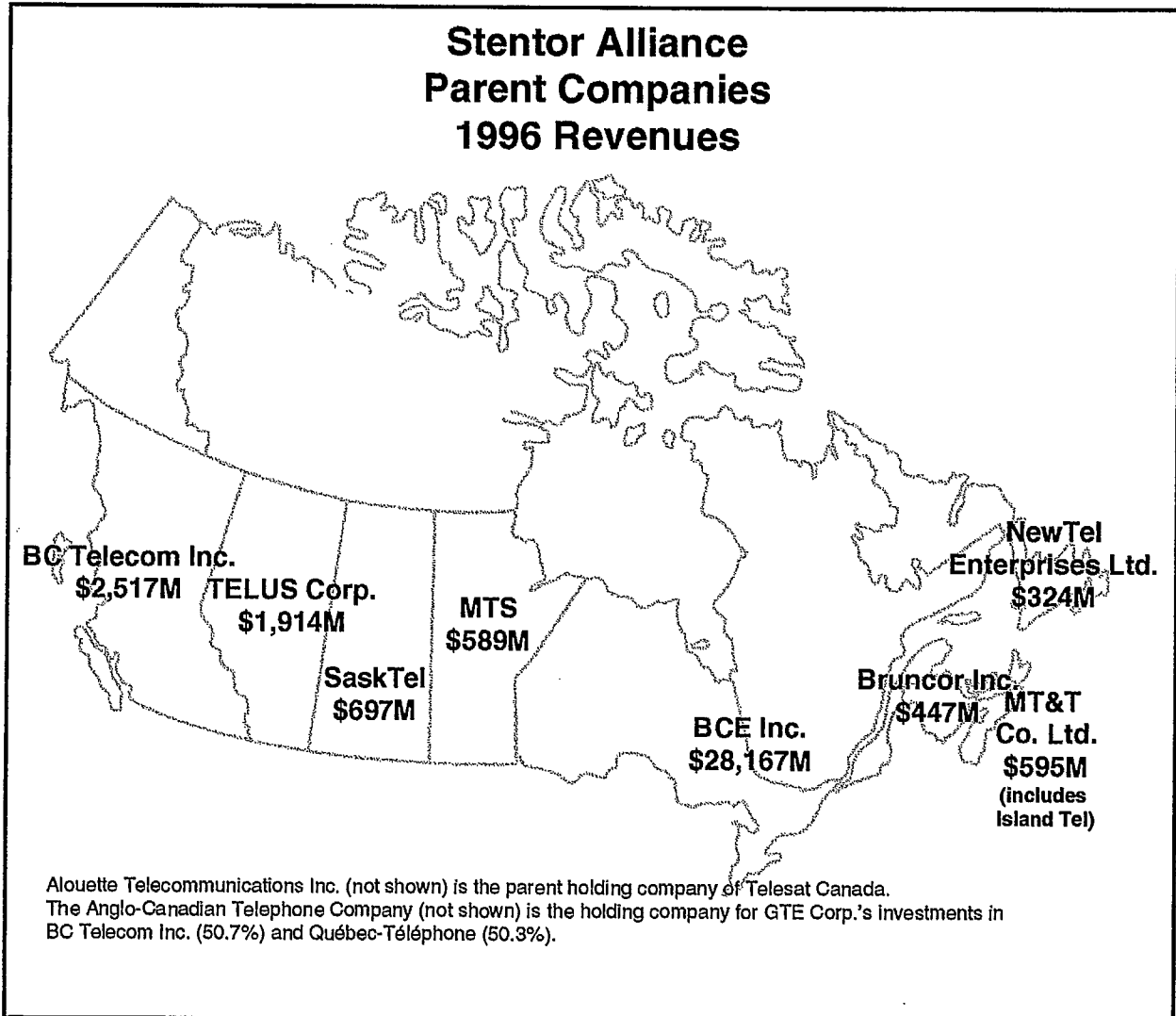
This section of the report first provides an overview of 14 selected telecommunications parent companies grouped according to those associated with: the Stentor alliance, the alternative service providers (including resellers), and the wireline parent company of the overseas carrier, Teleglobe Canada. Second, this section provides an overview of 6 selected wireless parent companies.

3.1 Wireline Parent Companies

A. Stentor Alliance Parent Companies

By January 1996, all the major Stentor member telephone companies had become subsidiaries of larger parent holding companies.

Figure 25



A.1 BCE Inc.

BCE Inc. (Includes data on BCE Mobile Inc.)	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$782 M	\$24,624 M	\$38,861 M	\$2,804 M	121,000
1996	\$1,152 M	\$28,167 M	\$41,261 M	\$3,128 M	121,000
Percentage change 1995/1996	47%	14%	6%	12%	0%

BCE Inc. is the largest telecommunications holding company in Canada. Bell Canada, the largest telephone company in Canada, is a wholly owned subsidiary of BCE Inc. BCE Inc.'s other primary subsidiaries include BCE Mobile Communications Inc. (BCE Mobile), Bell Canada International Inc. (BCI), Northern Telecom (Nortel) Ltd. (the largest telecommunications equipment manufacturer in Canada) and Tele-Direct (Publications) Inc. BCE also has significant equity stakes in several other Canadian telecommunications holding companies including a 55.6% stake in NewTel Enterprises Ltd., a 45% stake in Bruncor Inc., a 35.5% stake in MT&T Company Ltd., a 24.3% stake in Teleglobe Inc., and a 58.7% stake in Telesat Canada. In 1996, BCE Inc. also had a 39.5% equity stake in ExpressVu Inc.; on April 15, 1996, the CRTC gave BCE Inc. the green light to increase its stake in ExpressVu to 70.7%.

In 1995, BCI owned 20% of Mercury Communications Ltd. (the second largest telecommunications operator in the United Kingdom) and 42.2% of Bell Cablemedia Plc (one of the largest telecommunications and cable-television operators in the United Kingdom). By the beginning of 1996, these ownership shares were reduced to 15% and 32.5% respectively. However, additional transactions are taking place regarding these holdings which started in the Fall of 1996.

In October 1996, BCI, Cable & Wireless Plc and NYNEX Corp., (one of the largest Regional Bell Operating Companies — RBOC — in the United States) entered into an agreement associated with their individual holdings in the United Kingdom. The agreement would combine Mercury, and Bell Cablemedia Plc as enlarged by the further acquisition of Videotron Holdings Plc. The U.K. agreement also combined NYNEX CableComms Group operations in the U.K. This now results in a newly formed holding company in the United Kingdom called Cable & Wireless Communications Plc (CWC). A number of other transactions had to take place. Assuming completion of all transactions, the fully diluted share capital of CWC will be owned 14.2% by BCI, 52.6% by Cable & Wireless, 18.5% by NYNEX Corp. and the remainder by public shareholders.

BCI, which oversees BCE's international operations sold of its 25% interest in CLEAR Communications Ltd. of New Zealand in March 1996.

In May 1997, Bell Canada received approval from the CRTC to begin market trials under the *Broadcasting Act*, for licences to carry on broadcasting distribution undertakings (BDUs) One trial will be in part of Repentigny, Quebec and the other in part of London Ontario. The trials shall each serve a maximum of 3,500 individual subscribers (Broadcasting Decision CRTC 97-192).

BCE Inc. had worldwide revenues of \$28.2 billion, net profit of just under \$1.2 billion, and employed 121,000 persons in 1996. Its total assets were valued at \$41.3 billion, and its capital expenditures amounted to \$3.1 billion in that year.

A.2 Anglo-Canadian Telephone Company

Anglo-Canadian Telephone Company	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$136 M	\$2,596 M	\$5,243 M	\$656 M	15,900
1996	\$143 M	\$2,798 M	\$5,498 M	\$656 M	14,350
Percentage change 1995/1996	5%	8%	5%	0%	(10%)

The Anglo-Canadian Telephone Company is the second largest telecommunications holding company in Canada with revenues of \$2.6 billion in 1995. Through the Anglo-Canadian Telephone company, GTE Corp. of Stamford, Connecticut owns 50.7% of BC Telecom Inc., the parent company of Canada's second largest telephone company, BC TEL and 50.3% of Québec-Téléphone.

A.2.1 BC Telecom Inc.

BC Telecom Inc.	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$244 M	\$2,325 M	\$4,588 M	\$588 M	13,851
1996	\$238 M	\$2,517 M	\$4,758 M	\$583 M	12,356
Percentage change 1995/1996	(3%)	8%	4%	(1%)	(11%)

Like several other telephone companies in Canada, BC Telecom Inc. has begun to make forays into the distribution of video programming. In December 1995, BC Telecom Inc.'s subsidiary, BC Tel Systems Support, took a 20% stake in Pacific Place Cable Ltd. (80% is held by MultiActive Communications Inc.). Pacific Place Cable Ltd. was granted a broadcasting license in June 1996 allowing it to provide cable-television services to condominiums built at the former site of the Expo '86 World's Fair.

BC Telecom had total revenues of \$2.5 billion, net profit of \$238 million, and 12,356 regular full-time employees in 1996. Total assets were valued at \$4.8 billion, and capital expenditures amounted to \$583 million that year.

A.2.2 Québec-Téléphone

QuébecTel	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$31 M	\$266 M	\$507 M	\$70 M	1,677
1996	\$31 M	\$277 M	\$525 M	\$66 M	1,651
Percentage change 1995/1996	0%	4%	4%	(6)%	(2)%

Québec-Téléphone, an associate member of Stentor, provides telecommunications services to municipalities surrounding Québec City, in the Gaspé region of Québec, and along the north shore of the lower St. Lawrence River and the Gulf of St. Lawrence. QuébecTel has two major wholly-owned subsidiary companies: QuébecTel International Inc., and QuébecTel Communications Inc. QuébecTel International provides technology and management consultancy services to telecommunications companies outside of Canada. QuébecTel Communications Inc. oversees the company's Internet access services and other non-regulated lines of business such as terminal equipment sales and service.

In 1996, Québec-Téléphone recorded net income of \$31 million on revenues of \$277 million. The book value of its assets were \$525 million in 1996, its capital expenditures amounted to \$66 million, and the company employed 1,651 persons.

A.3 TELUS Corporation

TELUS Corp.	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$191 M	\$1,664 M	\$4,572 M	\$463 M	9,225
1996	\$243 M	\$1,914 M	\$4,404 M	\$486 M	9,539
Percentage change 1995/1996	27%	15%	4%	5%	3%

TELUS Corporation, formerly Alberta Government Telephone (AGT) was privatized by the Alberta provincial government in 1990. In March of 1995, TELUS Corporation acquired ED Tel, a municipal telephone company providing wireline and wireless telecommunications services in the City of Edmonton.

TELUS Corporation is the parent company of Alberta's telephone company, TELUS Communications Inc. (TCI). Its other subsidiaries include TELUS Communications (Edmonton) which holds the assets of the former ED TEL, TELUS Mobility, TELUS Advertising Services (directory publishing), Canadian Mobility Products (provides distribution services for cellular telephones, pagers and accessories across Western Canada), TELUS Advanced Communications (markets high speed data, Internet services and video conferencing to business customers), and TELUS Marketing Services (call centres). As of December 1996, TELUS Corporation held a 50% stake in Telecentinal Communications, a cable/telephony operation in the U.K., and ISM Alberta, an information service management firm that is owned in partnership with IBM Canada.

In May 1997, TELUS Corporation received approval from the CRTC to commence market trials in the provision of broadcasting distribution services to a maximum of 2,000 subscribers in Lake Bonavista, a subdivision of Calgary, and a maximum of 1,400 subscribers in the

communities of Greenfield and Rhatigan Ridge, subdivisions of Edmonton. The trials will be conducted by TELUS Multimedia, a subsidiary of TELUS Corporation (Broadcasting Decision CRTC 97-193).

TELUS Corporation had revenues of \$1.9 billion, net profit of \$243 million, and employed 9,539 persons in 1996 — an increase of 314 over 1995. It had total assets of \$4.4 billion, and capital expenditures of \$486 million in 1996.

A.4 SaskTel Holding Corporation

SaskTel Holding Corp. (data includes SaskTel)	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$192 M	\$647 M	\$1,181 M	\$161 M	3,845
1996	\$84 M	\$697 M	\$1,164 M	\$176 M	3,896
Percentage change 1995/1996	(56)%	8%	1%	9%	1%

The Saskatchewan Telecommunications Holding Corporation (SaskTel Holding), the parent company of SaskTel, is a crown corporation owned entirely by the provincial government of Saskatchewan.

On September 26, 1995, SaskTel Holdings sold its 56% stake in LCL Cable Communications Ltd., a cable/telephony operation in the United Kingdom to a British firm. It was sold for \$137 million and generated an investment gain of \$114 million for SaskTel Holdings.

SaskTel Holding had total operating revenues of \$697 million in 1996, net profit of \$84 million, and employed 3,896 full-time and part-time employees. It had total assets of \$1.2 billion, and capital expenditures of \$176 million in that year.

A.5 MT&T Company Ltd.

MT&T Company Ltd. (data includes Island Tel)	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$32 M	\$564 M	\$1,523 M	\$133 M	3,512
1996	\$48 M	\$595 M	\$1,477 M	\$94 M	3,095
Percentage change 1995/1996	50%	5%	(3%)	(3%)	(8%)

MT&T Company Ltd. is the parent holding company for Maritime Tel & Tel and Island Telephone Company Ltd. (52 percent held by MT&T Company Ltd.) which provide telecommunications services to Nova Scotia and Prince Edward Island respectively. As of December 1996, BCE Inc. held a 35.5% stake in MT&T Company Ltd. but had restricted voting rights.

The parent company's revenues were \$595 million in 1996, and net profit was \$48 million. Employees working in Nova Scotia totaled 2,795, while the number of employees working in Prince Edward Island totaled 300. Total assets were valued at \$1.5 billion in 1996, and capital expenditures were \$94 million.

A.6 Manitoba Telecom Services (MTS)

MTS	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$15 M	\$540 M	\$1,549 M	\$156 M	3,956
1996	\$32 M	\$589 M	\$1,608 M	\$151 M	N/A
Percentage change 1995/1996	113%	9%	4%	(3%)	N/A

MTS undertook a major reorganization in 1995. As of January 1, 1996, it became a holding company and transferred its operations to three wholly-owned subsidiaries: MTS NetCom Inc., MTS Mobility Inc., and MTS Advanced Inc. MTS NetCom Inc. provides local and network services, and services in the competitive segments of the industry. MTS Mobility oversees cellular and other wireless communications operations. MTS Advanced provides enhanced telecom services.

In January of 1997 the Manitoba government privatized MTS through a public share offering that raised over \$900 million. The proceeds were used to reduce MTS's debt and make capital investments to the province's telecommunications network. The government's privatization plan included a limit of 33% on foreign ownership, and further restrictions at the corporate level that will maintain control of MTS within Manitoba.

MTS had operating revenues of \$589 million, and net profit of \$32 million in 1996. Total assets were \$1.6 billion, and capital expenditures were \$151 million.

A.7 Bruncor Inc.

Bruncor Inc. (data includes NBTel)	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$37 M	\$405 M	\$845 M	\$110 M	2,326
1996	\$45 M	\$447 M	\$886 M	\$125 M	N/A
Percentage change 1995/1996	22%	10%	5%	14%	N/A

As of December 1995, Bruncor Inc. was the parent company of NBTel, including NBTel Mobility and held a 51% in DataCor/ISM Information Systems Management. Bruncor also had a 51% interest in New North Media, a 29.9% interest in Regional Cable T.V. (Atlantic) Inc., and a 49% interest in Gensys Laboratories (Canada) Inc. It also had an interest in Bruntel Holdings. As of December 1996, BCE Inc. held a 45% stake in Bruncor Inc.

Bruncor is one of the innovators with respect to call centres. In 1995 alone, call centres created more than 3,000 jobs in New Brunswick. At the same time, with the increase use of 1-800 type telecommunications services, these call centres increased the revenues of NBTel.

Like several other telecommunications companies, Bruncor Inc., the parent company of NBTel, has spent the last couple of years moving away from a strategy of diversifying into business activities such as leasing, financial services, and real estate, in order to focus on its core

operations. In 1995, Bruncor sold its assets in the discontinued operations of Chancellor Corp. (financial services), and sold several of its non-telecommunications-related real estate.

Bruncor has been building a fibre optic network in New Brunswick that will allow it to provide two-way video programming services. The company plans to apply for a cable distribution licence and begin offering video services in 1998.

In 1996, Bruncor Inc. had total revenues of \$447 million, and net profit of \$45 million. Assets were valued at \$886 million, and capital expenditures were \$125 million.

A.8 NewTel Enterprises Ltd.

NewTel Enterprises Ltd.	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$25 M	\$315 M	\$748 M	\$81 M	2,004
1996	\$31 M	\$324 M	\$733 M	\$57 M	1,951
Percentage change 1995/1996	24%	3%	(2%)	(30%)	(3%)

NewTel Enterprises is the parent holding company of NewTel Communications Inc., which provides telecommunications services in Newfoundland and Labrador. NewTel Enterprises' other subsidiaries are NewTel Mobility Ltd, NewTel Information Solutions Ltd. (information technology services), NewTech Instruments Ltd. (telecommunications, marine and defense electronics manufacturer), Paragon Information Systems Inc. (systems integration, software development and computer networking), and Infotext Ltd. (telephone directories). As of December 1996, 55.6% of NewTel Enterprises Ltd. was owned by BCE Inc.

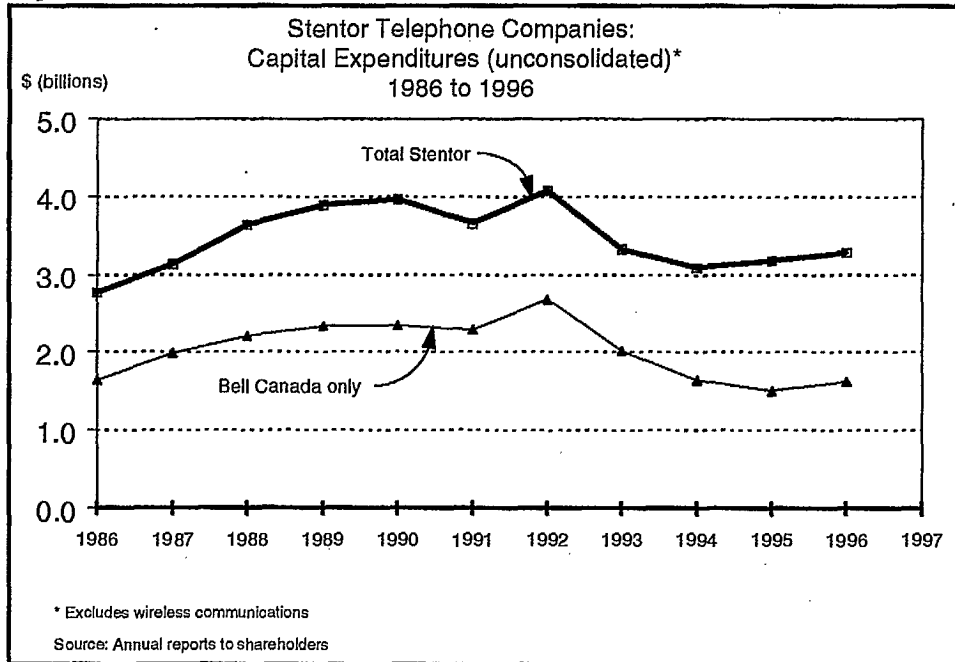
The company has achieved the second highest penetration of fibre-optic transmission systems in Canada, and completed a second system from St. John's to Nova Scotia in early 1996. It is also a leader in the development of distance tele-medicine and tele-education services.

Newtel Enterprises Ltd. had total revenues of \$324 million, net profit of \$31 million, and employed 1,951 persons in 1996. The company's assets had a book value of \$733 million, and capital expenditures were \$57 million.

A.9 Capital Expenditures for Stentor Alliance

The capital expenditures of the wireline Stentor alliance, excluding wireless communications, peaked in 1992 and then declined sharply (Figure 25). The more recent decline in total outlays by Canada's largest telecommunications services providers are of concern to policy makers. In 1995, the federal government varied a regulatory decision (Telecom Decision, CRTC 95-21), to delink mandated decreases in long-distance rates from increases in basic local telephone service rates, citing the need for investment and stability in the telecommunications market which will further enhance innovation and economic development in Canada.

Figure 26



The 1996 data indicate that capital expenditures for both Bell Canada, and the Stentor alliance, increased slightly from the 1995 levels (Figure 26).

A.10 Research & Development Expenditures for Bell Canada

Research and development expenditures for Bell Canada increased to \$75 million in 1996 from \$58 million in 1995.

Table 13

Bell Canada Estimated Research & Development Expenditures 1995 and 1996		
	1995	1996
	<i>(millions of dollars)</i>	
R&D Expenditures	58	75
Operating Revenues	8,183	8,700
	<i>(percentage)</i>	
<i>R&D as a % of Op. Revenues</i>	<i>0.71</i>	<i>0.86</i>

Source: Annual reports to shareholders s:\dbr\dust\in\cap_ex.wk4

As a percentage of total operating revenues, Bell Canada's R&D expenditures increased from 0.71% in 1995 to 0.86% in 1996.

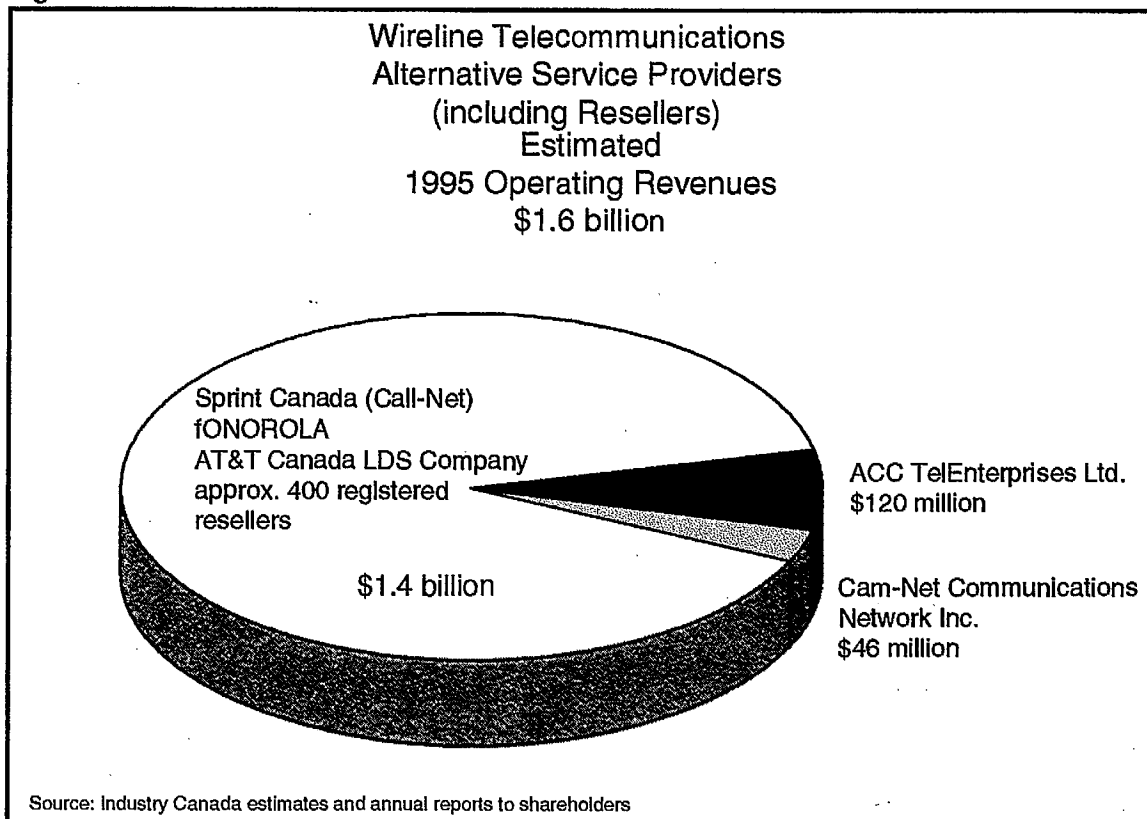
B. Wireline: Alternative Service Providers (including Resellers)

The major alternative long-distance service providers are the facilities based carriers, AT&T Canada Long Distance Services Company (AT&T Canada LDS), Sprint Canada, fONOROLA and the resellers ACC TelEnterprises, Cam-Net Communications Network Inc. and an estimated 400 registered resellers. A list of the registered resellers compiled by the CRTC is provided in Annex A.

All of the alternative service providers, as well as the telephone companies, can offer national long-distance services and provincial long distance telecommunications services as well as other telecommunications services such as private and data networks. Most of the larger service providers offer national and provincial long-distance services. Enhanced services, or value added services such as customer billing, are also being offered by certain alternative service providers.

It is increasingly difficult at this time to provide publicly available data on alternative service providers since financial information on certain service providers is not publicly available. In addition, there are continued mergers and acquisitions taking place. Based on available data it is estimated that their combined revenues for 1995 were \$1.6 billion (Figure 27).

Figure 27



B.1 Call-Net Enterprises Ltd. (Sprint Canada)

Call-Net Enterprises Ltd. (data includes Sprint Canada)	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$(65) M	\$457 M	\$525 M	\$61 M	1,150
1996	\$(7) M	\$713 M	\$576 M	\$60 M	1,400
Percentage change 1995/1996	89%	56%	51%	2%	22%

Call-Net Enterprises is the parent company of Sprint Canada, one of Canada's largest alternative service providers. Through Sprint Canada, Call-Net offers long distance voice services as well as data and network services. Call-Net also has a 19% equity stake in Microcell Telecommunications Inc., one of Canada's national PCS licensees, and has formed a subsidiary that will oversee the development of local telecommunications services to compete with the Stentor telephone companies.

B.2 fONOROLA Inc.

fONOROLA Inc.	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$(7)M	\$209 M	\$231 M	\$35 M	N/A
1996	\$(3) M	\$276 M	\$247 M	\$26 M	N/A
Percentage change 1995/1996	57%	32%	7%	(26%)	N/A

fONOROLA Inc., based in Montreal, Quebec was initially a reseller of telecommunications services. However, over the past couple of years it has been increasingly restructuring itself as a facilities-based carrier. In April 1995, fONOROLA entered into a 50% partnership with the Canadian National Railway Co. (CNR) that permits fONOROLA to install fibre-optic plant along CNR's right-of-way.

B.3 ACC TelEnterprises Ltd.

ACC TelEnterprises Ltd.	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$0.6 M	\$120	\$59 M	\$4 M	220
1996	N/A	N/A	N/A	N/A	N/A
Percentage change 1995/1996	N/A	N/A	N/A	N/A	N/A

ACC Corp. of Rochester, New York is a multinational provider of telecommunication services operating with subsidiaries in the United States, United Kingdom, and Canada. ACC TelEnterprises is the Canadian affiliate of ACC Corp.

In August 1995, ACC TelEnterprises Ltd. acquired Metrowide Communications Inc. (a former reseller), which added local service capabilities to the company's portfolio of commercial

products. In late 1996, ACC Corp. took the ACC TelEnterprises private, as a result, the company's financial information is no longer publicly available.

B.4 Cam-Net Communications Network Inc.

Cam-Net Communications Network Inc.	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995 (fiscal year end February)	\$(24) M	\$51 M	\$53 M	\$3 M	N/A
1996 (fiscal year end February)	\$(49) M	\$46 M	\$35 M	\$3 M	N/A
Percentage change 1995/1996	(104%)	(10%)	(34%)	0%	N/A

Cam-Net Communications Network Inc., with its subsidiary Preferred TeleManagement, provides long distance as well as other telecommunications services to both residential and business customers in Ontario, Quebec, British Columbia and Alberta.

In January of 1997, the company filed for court protection under the Companies' Creditors Arrangements Act. In April 1997, Primus Telecommunications Inc. of Herndon, Virginia, which operates as a reseller in Canada, acquired the Canadian customer list of Cam-Net.

B.5 AT&T Canada LDS Co.

AT&T Canada LDS Co. (formerly Unitel Communications Inc.)	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	N/A	N/A	N/A	N/A	N/A
1996	N/A	N/A	N/A	N/A	N/A
Percentage change 1995/1996	N/A	N/A	N/A	N/A	N/A

In January 1996, Unitel Communications Inc. completed an agreement with its creditors worth \$250 million. Under the agreement, AT&T Canada, a unit of AT&T Corp. of New York, NY acquired a 33% interest in Unitel Communications Holding Inc. (the holding company of Unitel Communications Inc.), with the Bank of Nova Scotia, Toronto-Dominion Bank and Royal Bank of Canada sharing ownership of the remaining 67% of voting stock. After the agreement was reached, Unitel was renamed to AT&T Canada Long Distance Services Co. Data are not publicly available.

C. Wireline: Teleglobe Inc.

Teleglobe Inc. (data includes Teleglobe Canada Inc.)	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$96 M	\$719 M	\$2,080 M	\$127 M	1,804
1996	\$113 M	\$758 M	\$2,310 M	\$96 M	1,882
Percentage change 1995/1996	18%	5%	11%	(24%)	4%

Teleglobe Inc., based in Montreal, Quebec, is the parent company of Canada's sole overseas carrier, Teleglobe Canada Inc. In addition to Teleglobe Canada, Teleglobe Inc. also has other international telecommunications operations. These include Teleglobe USA Inc. (Delaware) which is an international carrier and reseller serving the U.S., and Teleglobe International (U.K.) which provides international telecommunications services in the United Kingdom. Teleglobe Inc. also has interests in U.S. insurance systems, through ISI Systems Inc. (Delaware) and mobile communications services, through IDB Mobile Communications Inc. (Delaware) and is involved in two joint ventures in international mobile communications: ORBCOMM and Odyssey. As of December 1996, BCE Inc. owned 24.3% (on a fully diluted basis) of Teleglobe Inc.

Since its privatization in 1987, Teleglobe Canada Inc. has had the exclusive mandate to act as Canada's carrier of international non-U.S. telecommunications traffic. As part of the February 15, 1997 World Trade Organization (WTO) agreement on trade in telecommunications services, the Canadian government committed to end Teleglobe Canada's monopoly on October 1, 1998.

In 1996, Teleglobe Inc. recorded net profits of \$113 million on operating revenues of \$758 million. The parent company had capital expenditures of \$96 million, an asset base with a book value of \$2.3 billion, and employed 1,882 persons.

3.2 Wireless Parent Companies

Wireless telecommunications currently represents one of the fastest growing segments of the Canadian telecommunications industry. BCE Mobile Communications Inc. and Rogers Cantel Mobile Communications Inc. are Canada's two largest wireless telecommunications parent companies. Both offer cellular, paging, and other wireless telecommunications services and will soon offer Personal Communications Services (PCS). Six wireless parent companies are profiled in this section. The corporate structures of five of these selected wireless parent companies are provided in Annex B.

A.1 BCE Mobile Communications Inc.

BCE Mobile Communications Inc. (Data included in BCE Inc.)	Net income	Operating revenue	Assets	Capital expenditures	Subscribers	Employees
1995	\$51 M	\$781 M	\$1,130 M	\$242 M	1,075,000	2,441
1996	\$64 M	\$926 M	\$1,269 M	\$330 M	1,443,000	2,681
Percentage change 1995/1996	25%	19%	12%	36%	34%	10%

65.3% of BCE Mobile Communications Inc. is held by BCE Inc. (BCE Inc. consolidates the results of BCE Mobile Communications with that of its other subsidiaries. Therefore the financial results reported by BCE Inc. include the results of BCE Mobile Communications Inc.)

BCE Mobile Communications Inc. has a 100% interest in Bell Mobility which provides cellular, paging and SkyTel services. It also has a 60% interest in Bell Mobility-Ardis Inc. and a 48% of Iridium Canada Inc.

In 1996, BCE Mobile Communications Inc. acquired TeleZone, a paging company. The company's cellular telephone subsidiary, Bell Mobility, divested its holdings in Teletech Financial Corp. so that it could focus on its core business. It also sold its investment in Cleamnet Communications Inc. As well, in 1996, BCE Mobile Communications Inc. acquired Motorola Canada Ltd.'s minority interest in Bell-Ardis.

BCE Mobile Communications Inc. had net income of \$64 million in 1996 on revenues of \$926 million. Cellular service and hardware sales accounted for 88% of these revenues or \$814 million. Capital expenditures were \$330 million, and the asset base had a book value of \$1.3 billion.

Capital Expenditures increased by \$88 million as a result of expenditures required to increase the capacity of the company's analogue cellular network, expenditures related to the introduction in 1997 of digital PCS, and non-network expenditures designed to improve customer service and productivity. Part of these expenditures went to 2 new switches, 170 new cell sites, 320 radio channels, and 254km of fibre-optic cable. The company plans to adopt Code Division Multiple Access (CDMA) as the digital technology platform for its 800MHz cellular and 1.9GHz PCS operations. Capital expenditures in 1996 consisted of \$229 million for cellular service and \$110 million for paging service and other operations.

A.2 Rogers Cantel Mobile Communications Inc.

Rogers Cantel Mobile Communications Inc. (Data included in Rogers Communications Inc.)	Net income	Operating revenue	Assets	Capital expenditures	Subscribers	Employees
1995	\$(40) M	\$900 M	\$1,291 M	\$186 M	1,251,200	2,770
1996	\$(68) M	\$1,103 M	\$1,764 M	\$554 M	1,612,400	N/A
Percentage change 1995/1996	(70)%	23%	37%	198%	29%	N/A

Rogers Cantel Mobile Communications Inc. is controlled by Rogers Communications Inc. (RCI) (Profile in Section 4). RCI consolidates the results of Rogers Cantel Mobile Communications with that of its other subsidiaries. Therefore the financial results reported by RCI include the results of Rogers Cantel Mobile Communications Inc. RCI, directly and indirectly, holds approximately 97.6% of the votes attached to the voting shares of Rogers Cantel and holds 80% of the total outstanding equity shares in the company.

In November of 1996, Rogers Cantel Mobile Communications Inc. formed a strategic alliance with AT&T Corp. of New York City. Rogers Cantel Mobile will adopt the AT&T brand name and have access to AT&T's services, technology, and marketing expertise. In return, AT&T will receive royalty payments, one seat on Cantel's board of directors, and warrants that give the company an option to buy up to 1% of Cantel's equity.

Rogers Cantel has been able to provide national cellular telephone service since 1985. It also can offer nationwide paging services and PCS services, and operates a number of retail stores which sell, install and service cellular telephones.

Rogers Communications Inc. also has subsidiaries that offer cable-television, and radio and television broadcasting services. Rogers Cantel has entered into agreement with Rogers Cablesystems to share certain microwave and fibre-optic transmission facilities.

Rogers Cantel Mobile Communications Inc. has a wholly-owned subsidiary Rogers Cantel Inc, and an 80% interest in Airone Canada Holdings Inc. In 1994, it acquired the paging business of Maclean Hunter Ltd. This acquisition had an impact on Cantel's services and financial position in 1995 and 1996. In addition, Cantel reduced its ownership interest in Claircom Communications Group Inc, a company providing air-to-ground cellular service and linked to AT&T Wireline Services Inc., which has an interest in Claircom Communications Group Inc. Presently Cantel has a nominal amount invested in Claircom.

Rogers Cantel recorded a net loss of \$68 million on revenues of \$1.1 billion in 1996. The company had an asset base valued at \$1.8 billion in that year and made capital expenditures amounting to \$554 million.

Capital expenditures increased three-fold between 1995 and 1996, from \$186 million to \$554 million. 74.5% of 1996 capital expenditures were for increased network capacity and coverage; the remaining 25.5% was used for general capital expenditures including information technology (e.g., software and computers) call centres, and mall stores.

A.3 Clearnet Communications Inc.

Clearnet Communications Inc.	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$(17) M	\$32 M	\$599 M	\$128 M	375
1996	\$(75) M	\$39 M	\$804 M	\$125 M	over 1,000
Percentage change 1995/1996	(341)%	22%	34%	(2)%	167%

Clearnet Communications Inc. has been a wireless telecommunications company since 1984. However, it was only in October 1994 that it became a publicly traded company. Several companies and retirement funds have a stake in Clearnet Communications including Lenbrook Inc., Madison Dearborn Capital LP, the Ontario Municipal Employees Retirement Fund, Motorola Canada Ltd., and NEXTEL Communications Inc.

Clearnet Communications Inc. is the parent company of two subsidiaries: Clearnet Inc. and Clearnet PCS Inc. Clearnet Inc. offers specialized mobile radio network services across Canada and enhanced specialized mobile radio network services in the Ontario-Quebec corridor.

Clearnet Communications Inc. was awarded one of the four national PCS licences in Spring, 1995 along with the Mobility Personacom consortium, Rogers Cantel Mobile Communications Inc. and Microcell Communications Inc. Its subsidiary Clearnet PCS Inc. is overseeing the development of the PCS network that will be rolled out in mid-1997.

Cleartnet Communications' most recent audited financial statements are for the 12 months ended December 31, 1996. During that 12 month period the company recorded a net loss of \$75 million on revenues of \$39 million. Its asset base had a book value \$804 million at year-end and its capital expenditures were \$125 million for the 12 month period. By December 31, 1996, the company employed over 1,000 persons, up from 375 on December 31, 1995.

The build-out of Cleartnet's PCS network will require substantial capital expenditures over the next few years. The company estimates that it will spend \$260 million in 1997, and \$150 million in 1998 to achieve coverage of Canada's top 33 population centres. The completion of the company's ESMR network in the Ontario-Quebec corridor will require an additional \$75 million in 1996.

A.4 Microcell Telecommunications Inc.

Microcell Telecommunications Inc.	Net Income	Operating revenue	Assets	Capital expenditures	Employees
1995	N/A	N/A	N/A	N/A	N/A
1996	N/A	N/A	N/A	N/A	N/A
Percentage change 1995/1996	N/A	N/A	N/A	N/A	N/A

Microcell Telecommunications Inc. was awarded one the four national PCS licences in Spring, 1995 along with the Mobility Personacom consortium, Rogers Cantel Mobile Communications Inc. and Cleartnet Communications Inc.

Microcell Telecommunications is a good example of a recent alliance among telecommunications, broadcasting, and cable-television parent companies.

- Call-Net Enterprises Inc., one of the largest alternative telecommunications service providers, has a 19% interest in Microcell.
- Telesystem Ltd., a holding company that has a 20% interest in Teleglobe Inc., also has a 33.3% interest in Microcell.
- Shaw Communications has significant holdings in broadcasting and cable-television. Its affiliate Shaw Cablevision Ltd. also has a 10% share in Microcell.
- Le Groupe Videotron, the second largest cable-television holding company has a 10% interest in Microcell. (Le Groupe Videotron has a 21.9% interest in Investissement T.E.L. Inc. which in turn has a 42.5% stake in Microcell Telecommunications Inc.)

In November 1996, Microcell launched its PCS network in Montreal using GSM (Global Standard for Mobile) technology. This technology is the European standard for digital cellular ad PCS and is also being adopted by a number of American PCS licensees and other wireless service providers throughout the world.

A.5 Glentel Inc.

Glentel Inc.	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$11 M	\$40 M	\$50 M	\$2 M	N/A
1996	\$3 M	\$61 M	\$51 M	\$5 M	248
Percentage change 1995/1996	(73)%	53%	2%	150%	--

Glentel Inc, of Burnaby, B.C, has four main lines of business.

First, Glentel is a wireless communications service provider mainly focused on sales and services in the satellite industry. Specifically, Glentel offers mobile satellite (MSAT) services in partnership with TMI Communications (a wholly-owned subsidiary of BCE Inc.). The satellite, which provides MSAT, is presently owned and operated by TMI Communications.

MSAT (Mobile SATellite) provides mobile communications capabilities to 85% of Canada's land mass and a population of 3 million people. MSAT covers the United States, Central America and the northern region of South America. It can provide voice and data applications, primarily used for phone but other applications such as packet data, dispatch radio and fax are being developed through MSAT. Most of the satellite messaging or paging services are one-way, though two-way has also been introduced.

Second, Glentel through an agreement with Orbcomm,(the owner of the world's first wireless two-way data and message communications systems) provides global satellite communications coverage. Thus through the partnerships with TMI and Orbcomm, Glentel offers both domestic and global satellite communications and applications. Third, Glentel, through the acquisition of Motorola's Wireline Centres in 1995 provides support systems, including engineering expertise and sales and hardware management,. Fourth, it is an alternative telecommunications service provider (reseller).

Glentel is a debt-free company with significant cash and assets. In 1996, the company had net income of \$3 million on operating revenues of \$61 million. The company has an asset base valued at \$51 million and 248 employees.

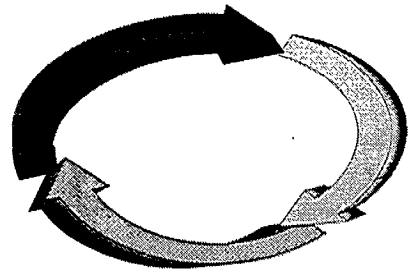
A.6 Telesat Canada

Telesat Canada (Satellite Carrier)	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	N/A	N/A	N/A	N/A	N/A
1996	N/A	N/A	N/A	N/A	N/A
Percentage change 1995/1996	N/A	N/A	N/A	N/A	N/A

Telesat Canada is owned and controlled by the members of the Stentor alliance along with Spar Aerospace. Each has a voting stake in Telesat's parent holding company Alouette Telecommunications Inc.

Telesat Canada currently has a monopoly on domestic fixed satellite services in Canada. (Resale of satellite services is permitted on a competitive basis.) As part of the February 15, 1997 World Trade Organization (WTO) agreement on trade in telecommunications services, however, the Canadian government committed to end Telesat Canada's monopoly on March 1, 2000.

In April 1997, Telesat Canada was awarded the 91° West Longitude DBS Telesat Canada will provide DBS satellite facilities for the Direct-to-Home (DTH) service providers which to date are AlphaStar Canada Inc. (owned by Tee-Comm Electronics Inc.), Star Choice Television Network (owned by Shaw Communications), and Expressvu (76% owned by BCE Inc.).



Section 4

Major Broadcasting-Based Parent Companies
with Interests in Telecommunications

Section 4 Major Broadcasting-Based Parent Companies with Interests in Telecommunications

4.0 Introduction

Within the ICT services industries, all of the broadcasting service providers are grouped together separately from telecommunications carriers (see Annex D to this report). Broadcasting services are grouped into radio and television programming services and broadcasting distribution undertakings such as cable-TV and DTH satellite services. Increasingly, however, broadcasting-based companies are becoming involved in the provision of telecommunications services, either directly, using their own facilities (e.g.: cable companies) or through cross-ownership of companies involved in telecommunications, or both. Cable-TV companies have been the most active broadcasting-based companies making inroads into telecommunications.

Both government policy and CRTC regulation support such "convergence". In its August 1996 Convergence Policy Statement, the government recognized that facilities-based broadcasting distribution undertakings such as cable-TV companies which provide telecommunications services on the same facilities used to deliver broadcasting are also telecommunications carriers subject to federal regulation under the *Telecommunications Act*. That policy also established a framework for convergence and competition in telecommunications and broadcasting distribution. Through subsequent decisions and proceedings, the CRTC is establishing the regulatory framework which will govern the provision of telecommunications services by cable-TV operators.

In most cases, revenues from telecommunications remain a relatively small part of these companies' total revenues, and are not disaggregated from broadcasting revenues. Revenues and other financial and economic data from these services are therefore not captured within Sections 1 and 2 of this report. Nevertheless, telecommunications is a growth area for many cable-TV operators. With a view to taking into account these developments, this section profiles the major broadcasting parent companies with significant interests in telecommunications. A brief statistical overview of the cable-TV industry concludes this section.

4.1 Analysis of the Parent Companies

The following is a list of selected major Canadian broadcasting parent companies that have interests in telecommunications services.

Table 14

Major Broadcasting-Based Parent Companies with Interests in Telecommunications	Major Broadcasting-Based Parent Companies with Interests in Telecommunications 1990 - 1996 Operating Revenues								
	Year-end August 31							1990-96	
	1990	1991	1992	1993	1994	1995	1996	Avg. annual %change (compounded)	Period %change
Broadcasters and Cable-Television Operators	Revenues (millions \$ CAN)							(%)	
Rogers Communications Inc.*	906	1,011	1,149	1,336	2,250	2,693	2,482	18.3	174.0
Le Groupe Vidéotron Ltée	422	469	535	580	634	741	847	12.3	100.7
Shaw Communications Inc.	112	141	166	233	287	436	584	31.7	421.8
WIC Western International Communications	204	238	296	296	392	422	460	14.5	125.5
Cogeco Inc.	116	165	177	191	194	207	215	10.8	85.3
Fundy Cable Ltd/Ltée	n/a	n/a	n/a	35	43	52	71	n/a	n/a
	Increase from previous period (%)								
Rogers Communications Inc.*	n/a	11.6	13.6	16.3	68.4	19.7	-7.8	--	--
Le Groupe Vidéotron Ltée	n/a	11.1	14.2	8.3	9.4	16.8	14.4	--	--
Shaw Communications Inc.	n/a	25.9	17.7	40.4	23.2	51.9	34.0	--	--
WIC Western International Communications	n/a	16.7	24.4	0.0	32.4	7.7	9.0	--	--
Cogeco Inc.	n/a	42.2	7.3	7.9	1.6	6.7	3.9	--	--
Fundy Cable Ltd/Ltée	n/a	n/a	n/a	n/a	22.9	20.9	36.5	--	--

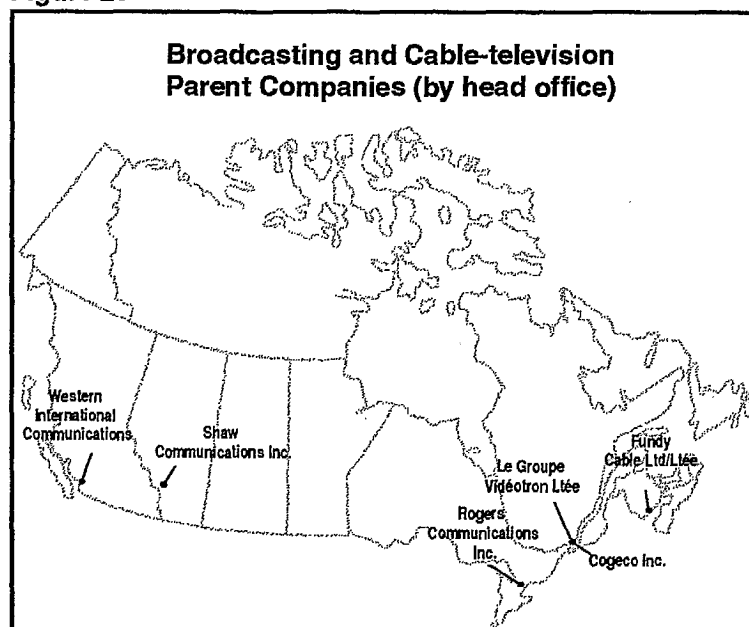
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* Fiscal year is from January 1 to December 31.

Source: Annual reports to Shareholders, data compiled by Industry Canada

Broadcasting parent companies and their associated cable-television operators provide services in various cities across Canada. The figure below shows the location of the head office of the parent companies listed in Table 14 (Figure 28).

Figure 28



A.1 Rogers Communications Inc. (RCI)

Rogers Communications Inc. (RCI)	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$(283) M	\$2,693 M	\$5,789 M	\$600 M	N/A
1996	\$(278) M	\$2,483 M	\$6,014 M	\$945 M	N/A
Percentage change 1995/1996	2%	(8%)	4%	58%	N/A

Rogers Communications Inc.'s (RCI's) most recent reorganization divides the conglomerate into three areas of primary operation: Rogers Cablesystems Ltd., Rogers Multimedia Inc., and Rogers Cantel Mobile Communications.

In 1996, RCI recorded a loss of \$278 million on revenues of just under \$2.5 billion. Revenues were off by 8% compared to 1995, but this can largely be attributed to the removal of Sun Publishing's revenues from RCI's income statement. Capital expenditures were \$900 million in that year, and the book value of the asset base was approximately \$6.0 billion.

Rogers Cablesystems Ltd. provides cable-television service to over 2.6 million subscribers or 32.6% of total subscribers. It also provides telecommunications services. It generated revenues of \$992 million in 1996. Rogers Multimedia Inc. which oversees RCI's radio and television broadcasting, and remaining publishing operations generated \$387 million in revenue in 1996, down from \$731 million, due to RCI's divestiture of Sun Publishing. Rogers Cantel Mobile Communications Inc. accounted for \$1,103 million of RCI's revenues in 1996

The relative contribution of RCI's various lines of business to its overall revenues has changed significantly between 1988 and 1996. In 1988, just under 80% of the company's revenues were derived from its cable operations. The remaining 20% came from wireless communications and other lines of business, with only a small percentage coming from television and radio broadcasting. By 1992, cable-television had fallen to a 46% share, wireless communications had risen to a 41% share and television and radio broadcasting had a 13% share. Rogers Cablesystems Ltd provides telecommunications services in Toronto, Ottawa and Vancouver through Rogers Network Services. It is also rolling out Internet access services across its service territory.

A.2 Le Groupe Vidéotron Ltée

Le Groupe Vidéotron Ltée	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$19 M	\$741 M	\$2,504 M	\$411 M	N/A
1996	\$(34) M	\$847 M	\$3,257 M	\$520 M	N/A
Percentage change 1996/1995	N/A	14 %	30 %	27 %	N/A

Le Groupe Vidéotron Ltée, based in Montreal, Quebec, is a cable-television and broadcasting parent company with growing telecommunications operations. Through its subsidiary Vidéotron Ltée, the company operates cable television networks in Quebec and Alberta. With over 1.7 million subscribers, it is the second largest cable-television provider in Canada serving 20.2% of all cable TV subscribers. Through its 42.9% equity interest (99.8% voting interest) in Télé-Métropole Inc., Le Groupe Vidéotron provides french-language television programming via 3 Quebec-based television stations. Through its 83.5% stake in Optel Inc., the company

provides private cable-television services to 114,000 subscribers in the southwest United States, Denver, Chicago and Florida.

Le Groupe Vidéotron has begun to offer telecommunications services in Quebec through its subsidiary Vidéotron Telecom Ltée. Vidéotron Telecom owns and operates a fibre-optic cable network that spans Quebec's major urban centres and interconnects with competitive access networks. The current configuration of the network is such that Vidéotron can offer long distance services within the province in conjunction with other telecommunications service providers. As well, the company is rolling out Internet access services. Le Groupe Vidéotron's other lines of business include a chain of 90 videotape rental stores, and the provision of security services in Quebec.

Le Groupe Vidéotron underwent some drastic restructuring of its corporation in 1996. Like many other cable companies in the U.S. and Canada, Le Groupe Vidéotron Ltée was involved in a cable/telephony venture in Britain. Between 1988 and 1996, Vidéotron Holdings Plc (56% owned by Le Groupe Vidéotron Ltée, the rest held by Bell Cablemedia Ltd. and the public) built a hybrid fibre-coaxial network in London and Southampton, England.

In October 1996, Vidéotron announced that it had reached an agreement to sell its British assets to Bell Cablemedia Plc, a subsidiary of BCE Inc., for \$825 million. Several factors were cited in this decision: relief from the high debt load incurred through the venture; the trend towards consolidation of cable companies in Britain brought on by high capital costs, and lower than expected returns; and a desire to concentrate on North American operations.

In Spring 1996, Vidéotron acquired 100 percent of the multiple voting shares and nearly 100 percent of the subordinate voting shares of CFCF Inc. However, the CRTC ruled that before the acquisition can be completed, Vidéotron must sell-off Télévision Quatre Saisons. On April 12, 1997, Québecor Inc., a printing and publishing company based in Montreal, announced that it would purchase Télévision Quatre Saisons in partnership with CANCOM (which is 51% owned by WIC Western International Communications). This allows Vidéotron to proceed in consolidating the cable-television assets of CFCF Inc. with its own.

In 1996, Le Groupe Vidéotron recorded a net loss of \$34 million on total revenues of \$847 million. Its capital expenditures were \$620 million in that year, and the book value of its asset base was over \$3.2 billion.

A.3 Shaw Communications Inc.

Shaw Communications Inc.	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$31 M	\$439 M	\$2,124 M	\$91 M	N/A
1996	\$68 M	\$584 M	\$2,188 M	\$191 M	N/A
Percentage change 1995/1996	119 %	\$33 M	3 %	109 %	N/A

Shaw Communications Inc. (Shaw) is Canada's third largest broadcasting and cable-television parent company. Its main lines of business include radio broadcasting, cable-television distribution, television programming and telecommunications services. In 1996, Shaw unveiled Internet access via cable. Shaw Communications, through its subsidiary Shaw cablesystems is Canada's third largest cable-television provider with over 1.5 million subscribers representing 18% of the Canadian market.

Through its exchange of franchises with RCI in 1995, Shaw became the sole provider of cable television in Calgary, Alberta and Victoria, British Columbia. In 1995, Shaw completed its acquisition of CUC Broadcasting Ltd., a cable television company in Southern Ontario that also operates a paging service, has a 34% interest in YTV Canada Inc. and a 50% interest in LCL Communications Inc. Shaw traded the cable operations to RCI, kept the stake in YTV, and sold the interest in LCL to TELUS Corporation. It also acquired Classic Communications Ltd., a cable television supplier in Southern Ontario that also provides business telecommunications services to commercial customers.

Shaw's radio broadcasting division operates nine radio stations (4 in Alberta, 3 in Ontario, 2 in British Columbia).

Shaw's subsidiary Shaw FiberLink provides telecommunications services as a competitive access provider in Calgary and Toronto. It offers data, video, and voice transmission as well as Internet access to business customers over its fiber-optic network. Although Shaw FiberLink's revenues were only \$6.3 million in 1996, the company expects revenues to double in 1997 and reach \$50 million by the 2000.

Shaw had initially intended to launch a DTH service as part of a consortium of cable companies under the brand name HomeStar. However, on March 7, 1997, Shaw folded its HomeStar operation and entered the DTH market by purchasing a 50% stake in StarChoice Television Network Inc. of Fredericton, New Brunswick, for \$55 million. The company expects to roll-out its DTH service in April 1997.

During 1996, Shaw acquired the remaining 68% of YTV. It also acquired the assets of National Pageette Messaging Inc. and Page Direct.

In 1996, the company had net profit of \$68 million on total revenues of \$584 million. Capital expenditures that year were \$191 million, and the book value of its asset base was just under \$2.2 billion.

A.4 WIC Western International Communications Ltd.

WIC Western International Communications Ltd.	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$15 M	\$422 M	\$713 M	\$25 M	2,025
1996	\$8 M	\$460 M	\$681 M	\$33 M	2,090
Percentage change 1995/1996	(47%)	9%	(4%)	32%	3.2%

WIC Western International Communications Ltd. is another diversified broadcasting parent company. It has radio and television stations in British Columbia, Alberta, Manitoba, and Ontario. The company also has stakes in pay-television programming, in satellite broadcasting (through a 53.7% stake in CANCOM), in wireless local multipoint communications (LMCS), and direct-to-home (DTH) satellite services.

WIC owns 7 television stations operating in Alberta and British Columbia as well as one operating in Ontario. The company also operates pay television and pay-per-view services for western Canada, and has interests in The Family Channel (50%), Teletoon (53.3%), and Electronic Digital Delivery Inc.(50%), a national video on demand service.

WIC owns 12 radio stations: 4 in Ontario, and 8 in Western Canada.

Through CANCOM, WIC offers satellite network services such as broadcasting, two-way mobile messaging, two-way data communications, and Internet access.

WIC's wholly-owned subsidiary WIC Connexus Ltd. (formerly CellularVision Canada Ltd.) received a licence from Industry Canada in early 1997 allowing it to offer LMCS services to 33 urban areas across Canada.

LMCS technology is suitable for wireless transmission of voice, data, audio and video. LMCS will be capable of providing local telephony, "wireless" cable television, pay-per-view video, broadband Internet access and high speed data links.

WIC also has an indirect interest in RegionalVision, another LMCS licensee. WIC's stake is through CANCOM's 49% interest in the company. RegionalVision will offer LMCS services to rural areas. Both licensees plan to begin rolling-out their service in 1997.

WIC also has a minority stake in ExpressVu Inc. (a national DTH company majority owned by BCE Inc.) which plans to roll-out its service in 1997. Its ownership of ExpressVu is through a combination of direct ownership and indirect ownership through CANCOM.

A.5 Cogeco Inc.

Cogeco Inc.	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$5 M	\$207 M	\$507 M	\$42 M	1,065
1996	\$8,000	\$215 M	\$511 M	\$36 M	995
Percentage change 1995/1996	(100 %)	4 %	1 %	(14 %)	(7%)

Cogeco Inc. is a diversified communications parent company which has interests in cable-television distribution, television and radio broadcasting, and newspaper publishing. Through its 74% ownership of, Cogeco Cable Inc., the company operates cable television franchises in Quebec, Ontario, Saskatchewan, Alberta and British Columbia serving 455,000 subscribers. Its subsidiary Cogeco Radio-Television Inc operates four television stations and two radio stations in the province of Quebec. Les Productions Carrefour Inc., a subsidiary of Cogeco Radio-Television Inc., produces french-language television programs for distribution to Cogeco's own stations as well as its competitors. Cogeco's publishing subsidiary, Publications Dumont Inc. publishes thirty weekly newspapers with a combined circulation of 800,000

In 1996, Cogeco Inc. lost out to Le Groupe Vidéotron Ltée in a bid to acquire Montreal based CFCF Inc. Cogeco did however reach an agreement with RCI, to acquire 25 cablesystems (approximately 300,000 subscribers) in Ontario. Cogeco will continue to seek out opportunities to purchase cable-television franchises that are geographically contiguous to its existing systems.

Cogeco's only major divestiture during 1996 was the sale of three radio stations in Quebec.

In September 1996, Cogeco Cable Inc. announced that it had formed a consortium with FONOROLA Inc., Hydro-Quebec and Metrix Interlink to establish a long distance fibre-optic cable between Montreal and Quebec City. The company is also rolling out Internet access services under the WAVE brandname.

In 1996, the parent company had a net profit of \$8,000 on revenues of \$215 million and an asset base of \$507 million. The company did however have a net profit of \$10 million before the impact of unusual items was taken into account. A \$19.5 million write-down related to the value of the Publications Dumont's circulation rights combined with an \$8.4 million gain on the sale of Cogeco's interest in CFCF Inc. generated unusual expenses of \$11.1 million and reduced Cogeco's net income. Capital expenditures for 1996 amounted to \$36 million.

A.6 Fundy Cable Ltd/Ltée

Fundy Cable Ltd/Ltée	Net income	Operating revenue	Assets	Capital expenditures	Employees
1995	\$0.5 M	\$52 M	\$200 M	\$13 M	N/A
1996	\$17 M	\$71 M	\$211 M	\$31 M	500+
Percentage change 1995/1996	3,300 %	37 %	5.5 %	138%	N/A

Fundy Cable Ltd/Ltée, based in Saint John, New Brunswick, is largely involved in cable-television, however, it also has four radio stations in Atlantic Canada, and through its Fundy Telecom division is beginning to offer telecommunications services.

Fundy's cable-television operations served 184,000 customers in New Brunswick, representing 98% of the province's cable market.

In August 1995, Fundy Cable Ltd., as part of its continuing strategy of growth through acquisitions, completed the acquisition of Cable 2000 Inc. of Bathurst, New Brunswick. In September of that year, Fundy liquidated its 23% stake in LCL Cable Communications, a cable/telephony operation in the United Kingdom; the net proceeds amounted to over \$43 million. This sale was part of Fundy Cable's strategy of re-focussing upon cable-television services and telecommunications opportunities in Atlantic Canada.

Fundy Cable's telecommunications division, Fundy Telecom, was officially launched in January 1996. Using the company's province-wide fibre-optic network, this competitive access provider will offer high-speed video, voice and data transmission to businesses, governments and alternative long distance service providers.

During 1996, FundyTelecom announced two strategic alliances. One was with iStar Internet Inc. to offer high-speed Internet access, the other was with AT&T Canada LDS to provide dedicated access services to AT&T's business customers.

Fundy recorded a net profit of \$17 million in 1996 on revenues of \$71 million and assets with a book value of \$211 million. Capital expenditures were \$31 million in that year.

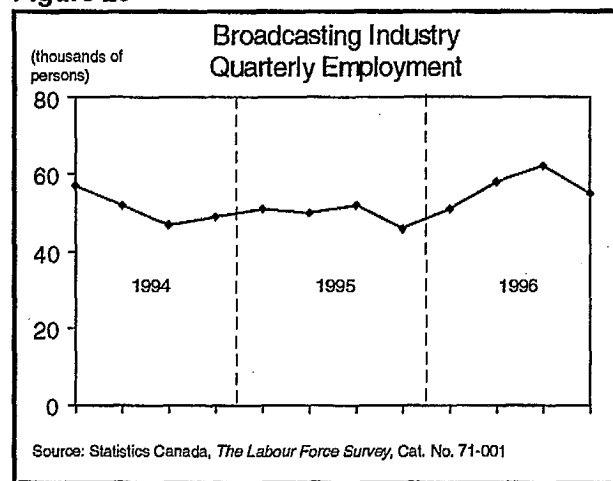
4.2 Broadcasting Industry (Radio and Television Broadcasters and Cable-television Operators)

Since the convergence policy statement announced by the federal government in August 1996, there has been increased demand for a comparison of the broadcasting industry to that of the telecommunications services industry. In the near future, not only will broadcasting parent companies be increasingly engaged in telecommunications activities, but telecommunications parent companies will also be engaged in broadcasting activities.

Overall the financial performance of the broadcasting industry did not fare as well as either the telecommunications carriers or the software and computer services industry.

The industry experienced a 6.9% increase in output, along with a 29.6% increase in revenues, and a 115.3% increase in profits between 1990 and 1995 (Table 7).

Figure 29



Employment in the broadcasting industry actually declined by 7.3% between 1990 and 1995. Overall, it appears that employment in 1996 increased over that in 1995 despite the downward trend in the fourth quarter of 1996 (Figure 29).

4.3 Cable-television Operators

For the cable-television operators, earnings before interest, taxes, depreciation and amortization (EBITDA) grew at 6%, compounded annually, between 1990 and 1995. The net profits of cable-television operators fluctuated between 1990 and 1995; they were at their highest in 1995, when they reached \$216 million (Figure 31).

Figure 30

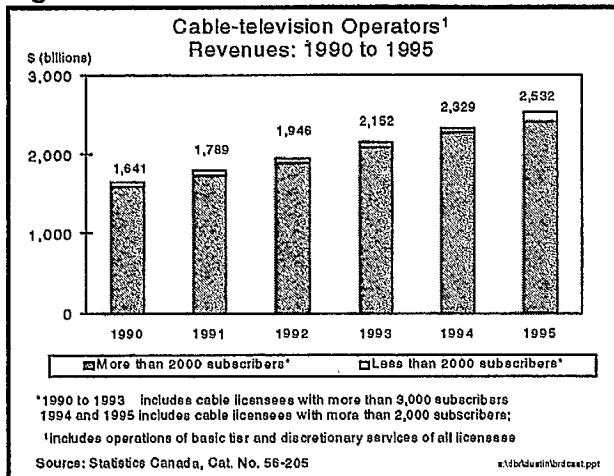
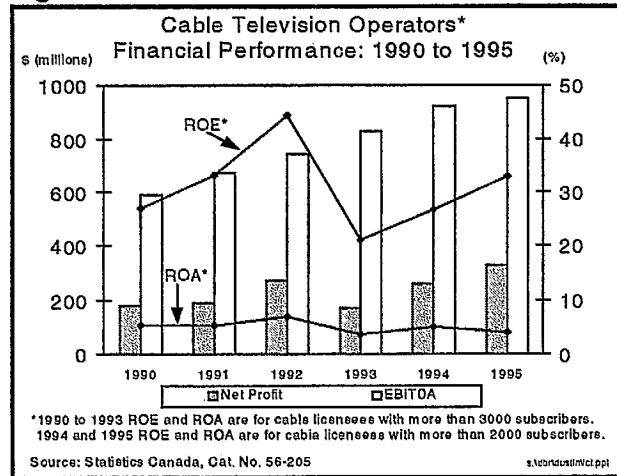


Figure 31



The cable-television operators' most profitable year was 1992, when return on equity (ROE) and return on assets (ROA) were 32% and 5% respectively. This was followed by the least profitable year, 1993, when ROE and ROA both declined to 15% and 2.6% respectively (Figure 31).

Capital expenditures decreased at a compounded annual rate of 16% between 1990 and 1992. From 1992 to 1995, the trend reversed itself as capital expenditures increased at a compounded annual rate of 21%. Other investments were substantial in 1992, 1993, and most significantly in 1995. From 1994 to 1995, total investments increased by more than 300%, nearly all of which was due to the increase in other investments. These other investments were financed mostly by debt which is reflected in the almost tripling of the debt-to-equity ratio from 1994 to 1995 (Figure 32).

Figure 32

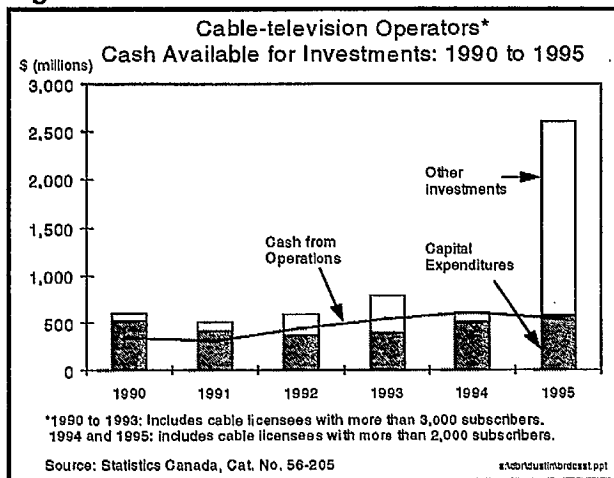
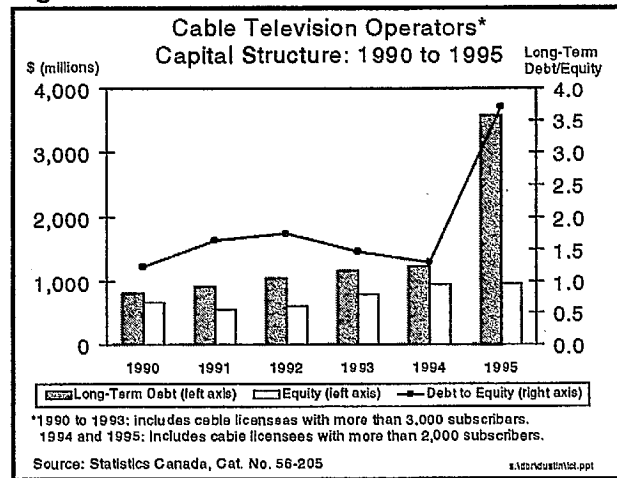
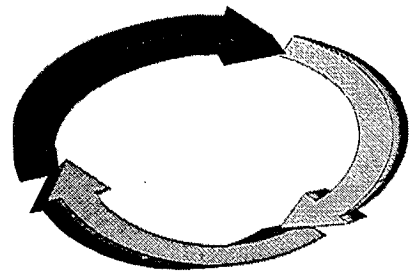


Figure 33



The debt-to-equity ratio, which had ranged from a low of 1.2 in 1990 to a high of 1.8 in 1992, shot up to 3.7 in 1995 as the level of long-term debt held by cable-television operators increased from \$1.2 billion to just under \$3.6 billion (Figure 33).



Section 5

Telecommunications Act,
Policy and Regulations in Canada

Section 5 Telecommunications Act, Policy & Regulations in Canada

5.0 The 1993 Telecommunications Act

A. Background

Canada's *Telecommunications Act* came into force on October 25, 1993. The new Act, passed by Parliament on June 23, 1993, consolidated and updated laws governing Canadian telecommunications, some of which dated from 1908. It represents a hard-won consensus, built on consultations with industry, business users, consumers, unions and provinces. Key factors underlying the need to modernize Canadian law in this field included:

- rapid developments in telecommunications technologies and accelerated introduction of new services;
- a global trend toward greater reliance on market forces and more competition in telecommunications services; and
- a 1989 Supreme Court decision which recognized federal authority over all Canada's major telephone companies (the members of Telecom Canada, now "Stentor").

The *Telecommunications Act* established a new legislative framework for all federally-regulated common carriers. In so doing, it provides for an integrated Canadian market for telecommunications services. In addition, it allows the federal regulator, the Canadian Radio-television and Telecommunications Commission (CRTC) to put in place a more flexible regulatory framework which will facilitate innovation and the development of Canada's principal high-technology industry. This will be increasingly important as domestic and global markets become more competitive.

B. Application

The Act provides for the supervision and, *where required*, regulation of telecommunications common carriers under federal jurisdiction who own and/or operate transmission facilities. These are referred to as "Canadian carriers". Currently these include: all but one of the "Stentor" telephone companies (Bell Canada, BC Tel, Island Tel, Manitoba Telephone System, Maritime Tel & Tel, NBTel, Newfoundland Tel, Telus), some 50 independent telephone companies, and national carriers such as Telesat, Teleglobe, AT&T Canada Long Distance Services and Sprint Canada. By federal-provincial agreement SaskTel is exempt from federal regulation until a date to be determined after October 1998. "Resellers" who do not own or operate transmission facilities but who lease facilities from Canadian carriers to provide services to the public are not subject to direct regulation under the Act. All carriers who make use of the radio spectrum are subject, as well, to licensing and regulation under the *Radiocommunication Act*.

C. Policy Objectives

The new Act includes a statement of Canadian Telecommunications Policy (s. 7). This policy (see next page) recognizes the strategic importance of telecommunications in the maintenance of Canada's identity and sovereignty and for the social and economic development of the country. Its nine objectives strike a balance between traditional concerns such as universal, affordable access to services, and newer considerations such as the need for increased reliance on market forces and a competitive, efficient, telecommunications industry. As well, it provides for Canadian ownership of "Canadian carriers".

D. Major Powers of the Government and the Regulator

Various provisions of the Act outline the respective powers of the Governor in Council (i.e., Cabinet), the Minister and the CRTC.

The Governor in Council has the authority to issue directions on broad policy matters to the CRTC (s.8) and to review, vary, rescind or refer back any CRTC decision (s. 12). The Minister has the authority to establish technical standards and to require the CRTC to enforce these standards (s. 15). However, the provinces must be informed and have an opportunity to consult before any of these powers are used. In addition, the Governor in Council can make regulations to implement the Canadian ownership objective.

The CRTC has the full range of regulatory powers of an independent, quasi-judicial regulatory agency (s. 22-71). Under s. 47, the CRTC must exercise its powers with a view to implementing the policy in s. 7 of the Act and any directions issued by the GIC. The CRTC must ensure that rates are just and reasonable, and that Canadian carriers do not discriminate unjustly, or accord any undue preference. The CRTC also has important new powers: it can exempt classes of carriers from the application of the Act where this is in the public interest (s. 9); it may forbear from regulating where this is in the public interest and must forbear where it finds that there is effective competition (s. 34). It can use any method of regulation it considers appropriate (e.g.: alternatives to traditional rate-base, rate-of return regulation) (s. 27(5)).

E. Legislation amended or repealed

The legislation brought amendments to the *Radiocommunication Act*, and to the *Special Acts* relating to Bell Canada, BC Tel, Teleglobe Canada and Telesat Canada. The new Act repealed the *National Telecommunications Powers and Procedures Act* and the *Telegraphs Act*, and those sections of the *Railway Act* which formerly dealt with telecommunications.

F. The 1993 Telecommunications Act - Section 7

The following is an excerpt from the Telecommunications Act, the "Canadian Telecommunications Policy" in Section 7.

"7. It is hereby affirmed that telecommunications performs an essential role in the maintenance of Canada's identity and sovereignty and that the Canadian telecommunications policy has as its objectives

- (a) to facilitate the orderly development throughout Canada of a telecommunications system that serves to safeguard, enrich and strengthen the social and economic fabric of Canada and its regions;
- (b) to render reliable and affordable telecommunications services of high quality accessible to Canadians in both urban and rural areas in all regions of Canada;
- (c) to enhance the efficiency and competitiveness, at the national and international levels, of Canadian telecommunications;
- (d) to promote the ownership and control of Canadian carriers by Canadians;
- (e) to promote the use of Canadian transmission facilities for telecommunications within Canada and between Canada and points outside Canada;
- (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;
- (g) to stimulate research and development in Canada in the field of telecommunications and to encourage innovation in the provision of telecommunications services;
- (h) to respond to the economic and social requirements of users of telecommunications services; and
- (i) to contribute to the protection of the privacy of persons."

Telecommunications Act

Table 15

**Toward a Competitive, Integrated Canadian Telecommunications Market
Major Milestones 1979 - 1997**

- | | |
|-------------|--|
| 1979 | - Competition in private line and data services. |
| 1980 - 1982 | - Competition in customer premises equipment (terminal attachments). |
| 1984 | - Licensing of competitive cellular telephone service providers. |
| 1984-90 | - Resale and sharing of telecom services permitted and expanded. |
| 1987-92 | - Privatizations: Teleglobe (1987), Telesat (1992), privatization of government telecom holdings in the CNR Group (50% CNCP, and two small telcos) |
| 1989 | - Supreme Court confirms federal jurisdiction over "Stentor" telcos (AGT decision).
- Radiocommunication Act updated. |
| 1991 | - New "technology neutral" <i>Broadcasting Act</i> comes into force. |
| 1989 & 94 | - Free Trade Agreements: Canada-U.S. (1989) and NAFTA (1994)- open Canadian market for competition in enhanced telecommunications services. |
| 1992 | - Competition introduced in long-distance (voice) service. |
| 1993 | - Trunk-side access permitted for resellers.
- New pro-competitive Telecommunications Act comes into force. |
| 1994 | - Supreme Court: federal jurisdiction over "independent" telcos (Guèvremont decision).
- Federal government announces commitment to Canadian Information Highway Strategy; Minister establishes Information Highway Advisory Council (IHAC).
- Global and Regional Mobile Satellite Policy announced. |
| 1994 - 97 | - CRTC establishes new Regulatory Framework for telecommunications, based on increased reliance on market forces and competition in all market segments. |
| 1995 | - Policy directions to the CRTC establish competitive framework for Direct to Home satellite broadcasting; CRTC licences competitive DTH services.
- IHAC Final Report released.
- Rate Rebalancing confirmed for 1996, 1997 - bringing local rates closer to costs. |
| 1996 | - Licensing of competitive wireless Personal Communications Services (PCS).
- Digital Radio Broadcasting (DRB) allotment plan published.
- MSAT launch
- Federal government releases Information Highway Plan of Action
- Regulatory proceedings for local telephone competition underway
- Government's Convergence Policy - supports network interconnection, unbundling, resale and sharing and competition, including framework for cable-telco competition |
| 1997 | - Licensing of Local Multipoint Communications Systems (LMCS).
- CRTC Decisions on Local Competition, Price Cap Regulation and related issues
- Decisions related to convergence: telephone companies receive trial multimedia broadcasting licences. |

5.1 Responsibility Centers

A. Policy Authority: Industry Canada

Responsibility for telecommunications policy and spectrum management rests with Industry Canada, the government department under the Minister of Industry. The relevant legislation is the *Telecommunications Act* (1993) and the *Radiocommunication Act* (1989). Under the *Telecommunications Act*, the Governor in Council (Cabinet) has the authority to issue directions of general application on broad policy matters to the regulator, the Canadian Radio-television and Telecommunications Commission (CRTC), and to review CRTC decisions - either on its own motion or in response to appeals from interested parties. The Governor in Council may vary, rescind or refer back CRTC decisions for reconsideration within one year after the date of the decision. Appeals must be filed within 90 days of a decision. The power to review CRTC decisions has existed since 1976 and has been used sparingly (18 times in 20 years). The power to issue policy directions has not been used under the *Telecommunications Act*; although a policy direction was issued under the *Broadcasting Act* for Direct to Home satellite broadcasting.

B. Spectrum Management

Radio authorizations issued by Industry Canada are required for the use of the radio spectrum (with minor exceptions) to provide wireless communications services. The radio frequency spectrum is allocated and assigned and utilized to advance public policy objectives, and managed to maintain technical standards, prevent harmful interference and enforce international obligations.

- Under the *Radiocommunication Act*, the Minister of Industry, when exercising powers under the Act, may take into account all matters which the Minister considers relevant for ensuring the orderly establishment or modification of radio stations and the orderly development and efficient operation of radiocommunications in Canada.
- The same Act provides that the Minister, in exercising these powers, may have regard to the Canadian telecommunications policy objectives set out in the *Telecommunications Act*.

The Minister may also take into account other policy pronouncements, such as the objectives and principles for the Information Highway, established by the Department from time to time.

C. Canadian Radio-television and Telecommunications Commission (CRTC)

The CRTC is an independent federal agency with quasi-judicial status. The CRTC is responsible for the supervision and, where required, regulation of telecommunications and broadcasting in Canada. Its institutional structure and powers are outlined in the *CRTC Act*, the *Broadcasting Act* and the *Telecommunications Act*. Members of the CRTC (Commissioners) are appointed by the federal Cabinet. The *CRTC Act* provides for up to 13 full-time members and not more than 6 part-time members, the latter who deal with broadcasting matters only. The CRTC is headed by a Chairperson; as of August 12, 1996 the Chairperson is Mme Françoise Bertrand.

The *Telecommunications Act* (summary in Section 5.0), gives the CRTC a broad range of powers, including the regulation of telecommunications rates and conditions of service, approval of interconnection agreements, and quality of service standards. Canadian telecommunications carriers that own or operate transmission facilities (facilities-based carriers) are subject to CRTC regulation under the *Telecommunications Act*. The CRTC must ensure that rates are just and reasonable and that carriers do not engage in undue preference or unjust discrimination.

Consistent with the telecommunications policy objectives of increased reliance on market forces for the provision of telecommunications services and ensuring that regulation where required is efficient and effective, the CRTC may forbear from regulating services, or exempt carriers from the *Act*. It must forbear from regulating services where it finds that there is sufficient competition to protect the interest of users. The CRTC can use any method of regulation it considers appropriate (e.g. rate of return regulation, price caps, etc.).

CRTC General Information (819) 997-0313 <http://www.crtc.gc.ca>

D. Telephone Numbering Authority

Industry Canada and the CRTC share regulatory authority for telephone numbering.

E. Complaints Regarding Telecommunications

Complaints can be lodged with the CRTC, the federal Minister of Industry, or Members of Parliament.

In addition, complaints regarding market practices of the telecommunications service providers may be filed with the Competition Bureau, a branch within Industry Canada. The *Competition Act* is a law of general application, and contains no telecommunications sector-specific provisions. However, the *Competition Act*, does contain specific provisions to deal with abuse of market dominance. The application of the *Competition Act* to telecommunications carriers is qualified by the existence of industry specific regulation by the CRTC.

5.2 Recent Policy Initiatives

A. WTO Agreement on Basic Telecommunications Services

The World Trade Organization (WTO) negotiations on basic telecommunications, held under the GATS framework, concluded on February 15, 1997 with an agreement which is to be implemented on January 1, 1998. The two primary objectives of the negotiations were allowing more competition in the provision of telecommunications services, and establishing a transparent and predictable framework for trade and investment in telecommunications services. Canada's goal in the negotiations was to help Canadian telecommunications companies gain secure access to foreign markets such as the United States, Europe, Japan and developing markets in Asia and Latin America, and to ensure that Canadians continue to benefit from world-class communication services at competitive prices provided by a strong domestic industry.

As part of the Agreement, Canada will eliminate the monopolies in the two remaining areas closed to competition - international (overseas) telephony and fixed domestic satellite services (not including broadcasting). Canada will also remove foreign ownership restrictions in the areas of global mobile satellite services and in the ownership of submarine cable landings. The end of Telesat Canada's monopoly on domestic telecommunications carriage has been advanced to March 1, 2000. On the same date, foreign satellites will be able to provide telecommunication services to Canadians. Teleglobe's monopoly will end on October 1, 1998, and its special ownership restrictions will be eliminated. Canada will also remove traffic routing rules for all international services and all satellite services by March 1, 2000.

The WTO agreement establishes a dispute settlement process which provides the necessary safeguards to ensure that countries respect their commitments. The Agreement on Basic Telecommunications follows the recently signed Information Technology Agreement which liberalizes trade in information technology equipment. The combined effects of these Agreements will spur telecommunications investment around the world, increasing opportunities for Canadian telecommunications service providers and equipment manufacturers. Canada's open and competitive telecommunications market has produced highly competitive Canadian companies which are well positioned to take advantage of the new international business opportunities presented by the Agreement.

B. Strategy for the Information Highway

The Information Highway Advisory Council (IHAC) was created in 1994 and tasked with looking at how the Information Highway should be developed in ways that benefit Canadian business, consumers and content providers. The Council's final report contains over 300 recommendations dealing with issues ranging from access to competition, from privacy to support for Canadian content and culture in the information age. The recommendations provide valuable input to the government's overall information highway strategy. Many of the recommendations have already been implemented or are under study by interdepartmental working groups.

In May, 1996, the federal government unveiled its plan for building the Information Highway in a report entitled *Building the Information Highway: Moving Canada into the 21st Century*. The report outlines a number of initiatives, in partnership with other levels of government, private industry, labour and associations, to take full advantage of the enabling potential of the Information Highway to foster Canada's economic, social and cultural development objectives. The government's strategy is made up of four strategic thrusts which involve the following policies and initiatives: a) Building Canada's Information Highway by creating a dynamic competitive, consumer-driven policy and regulatory environment consistent with the public interest; b) encouraging the growth of Canadian content on the Information Highway; c) realising the full economic and social benefits of the Highway for all Canadians; and d) ensuring better, more affordable and accessible government services. In particular, by 1997, the ministers of Industry and Canadian Heritage will develop a national access strategy involving policy, regulatory and other measures to ensure affordable access to essential communications services. A follow-up report from the IHAC is expected in June 1997.

C. Convergence Policy

On August 6, 1996, the Government issued its Convergence Policy Statement, which established broad policy objectives for telecommunications and broadcasting in the context of the information highway, including the policy framework for competition between cable-TV companies and telephone companies. The Policy Statement was issued following an extensive public consultation process launched by the issuance of an Order-in-Council in October 1994.

The Convergence Policy Statement covers three broad subject areas: network facilities, Canadian content, and competition. In summary the Policy supports:

- interconnection, interoperability, unbundling, resale and sharing of network facilities that deliver telecommunications services to the public;
- continued measures to support the production and exhibition of Canadian content in broadcasting; and
- competition in facilities, products and services for the Information Highway.

Of particular interest, the Statement establishes a framework for competition between telecom carriers and cable-TV companies in their core markets. Adopting a "no head starts" rule, the policy states that telecom carriers may enter broadcasting distribution only after the CRTC has set the regulatory framework for competition in local telephone service and that the CRTC has approved related tariffs filed by the telcos. On May 1, 1997, the CRTC issued Public Notice CRTC 1997-49, stating that by January 1, 1998, barriers to entry into local telephony will have been sufficiently addressed that telephone companies should be permitted to carry on broadcasting distribution undertakings as of that date.

The Convergence Policy also supports regulatory safeguards to ensure that competition is fair and that policy objectives are met.

Consistent with the Policy Statement, the Bell Canada Act has been amended to remove the prohibition on Bell holding a broadcasting licence.

D. Harmonization of Telecom and Broadcasting Ownership Rules

In the Convergence Order-in-Council, the Government undertook to update the Canadian ownership rules for broadcasting licensees to allow increased access to foreign capital by harmonizing these rules with those in place for telecommunications carriers. In October 1995, revised ownership rules for broadcasting were issued, which allow both types of undertakings the same access to foreign sources of capital.

However, the Convergence Policy Statement, Issued in August 1996, subsequently clarified that it is not government policy to ensure ongoing harmonization of the ownership rules for broadcasting and telecommunications, and that companies wishing to be involved in both fields would have to ensure that the rules for both are respected.

E. Licences Issued for New Wireless Services

E.1 Personal Communications Services (PCS)

PCS is a new family of advanced wireless digital telecommunications services that will offer an alternative to existing cellular and wired services. In December 1995, Industry Canada selected four companies to provide PCS services on a competitive basis across Canada. Two 30 MHz PCS licences were awarded to Clearnet PCS Inc. and MicroCell Network Inc. Two 10 MHz PCS licences were awarded to Rogers Cantel Mobile Inc. and the regional shareholders of Mobility Personacom Canada Ltd.

E.2 Wireless Broadband

A policy and call for applications for Local Multipoint Communications Systems (LMCS), was issued on February 29, 1996. LMCS can be characterized as wireless broadband distribution systems, operating in a cellular fashion, possibly providing an array of video, data and telephony services directly to residential and business subscribers. The Department conducted a detailed comparative review of the fourteen applications received during the spring and summer of 1996. On October 29, 1996 the Minister announced the three companies that had been selected to receive a licence: WIC Connexus Ltd. (33 major markets), MaxLink Communications Inc. (33 major markets) and RegionalVision Inc. (127 smaller communities).

F. Policy Direction to CRTC on DTH Satellite Broadcasting

In July 1995, the Government issued Policy Directions which called for the licensing of competitive Direct to Home (DTH) satellite broadcasting services and set the policy framework for DTH. The CRTC has since licensed five DTH distribution services. It has also licensed five DTH pay-per-view services. The launch of these services has been delayed; some have launched and others expect to launch in 1997. This is for a variety of reasons, including technical problems, and the March 1996 partial failure of Telesat's Anik E-1 satellite. Industry Canada has been working with the industry to resolve the satellite capacity problem and in November 1996, issued a call for applications to develop and operate Direct Broadcast Satellites (DBS). On April 3, 1997, Telesat Canada was awarded one of Canada's Direct Broadcast Satellite (DBS) orbital positions. This satellite is expected to meet the foreseeable needs of the Canadian direct-to-home (DTH) television industry.

G. Canadian Ownership Policy

The Canadian Telecommunications Common Carrier Ownership and Control Regulations establish the Canadian ownership rules for facilities-based telecommunications carriers under the *Telecommunications Act*. There are no similar restrictions on resellers and enhanced service providers. Under the Regulations, Canadians must own a minimum of 80% of voting shares in facilities-based carriers, and at least 80% of the board of directors of facilities-based carriers must be Canadian. Investor companies in such carriers are treated as Canadian if at least 66 2/3% of their voting shares are held by Canadians. In combination, this allows a total of 46.7 % foreign ownership of voting shares. There are no limits on non-voting shares. The

Regulations further specify that Carriers exceeding such limits as of July 22, 1987 and continuously operating since that date are "grand fathered" under the ownership and control policy, but are subject to restrictions on their operating territory. This provision applies to BC Tel and Quebec-Telephone which are approximately 51% owned and controlled by GTE Corp.

Company specific provisions include:

- Teleglobe Canada Inc.: A foreign carrier, a "non-resident" or an "associate" may not hold any voting shares in Teleglobe Canada Inc. (see Teleglobe Canada Act, s. 5 (2)).
- Global and Regional Mobile Satellite Systems: These systems may provide service in Canada, provided that Canadian voting equity participation is proportional to the use of such systems in Canada.

These company specific ownership provisions are being terminated as part of Canada's commitments to the WTO Agreement on basic telecommunications services.

H. Canadian Network for the Advancement of Research, Industry and Education (CANARIE)

CANARIE is a non-profit corporation with over 140 private and public members. CANARIE's seven-year Business Plan outlines three areas of activities: upgrading of the National R&D and Educational Network (CA*Net); establishing a high-speed experimental test network; and stimulating the development of new networking technologies, products, applications, software and services. It is a model of public/private sector partnership with over \$500 million in direct and indirect investment expected, of which the government is contributing \$104.5 million.

I. National Access Strategy

Canadians now enjoy almost universal access to telephone and broadcasting services. As we move to a knowledge-based economy and society, the government has made a commitment to develop a national access strategy to ensure the continued universal availability and affordability of basic telephone and broadcasting services, accelerate access to new services such as the Internet, and provide access to government services in electronic format. The proposed access strategy should put in place measures to ensure that geography or low income do not separate the country into "information haves" and "have nots", and assist in the economic renewal of rural Canada.

J. SchoolNet

SchoolNet is a partnership involving the federal, provincial and territorial governments universities, colleges and industry. Created to stimulate learning and teach the skills that will required in the information economy, SchoolNet provides teachers and learners alike with an easy-to-use, single platform from which to connect to the Information Highway. SchoolNet will facilitate the connection of all of Canada's 16,500 schools and 3,400 public libraries to the Internet by 1998.

K. Community Access Program (CAP)

By the year 2000, the Community Access Program will connect up to 5,000 rural communities to the Internet, enabling many thousands of Canadians to take advantage of new education and business opportunities. CAP will encourage use of the Information Highway for training, job and business creation, as well as the electronic delivery of public services. Some 380 communities were selected in a first wave in December 1995. A second wave of nearly 350 communities was selected in January, 1997, making a total of some 750 to date. Negotiations are underway with various provinces to create joint programs which will leverage CAP funds. The Connect New Brunswick program, which will set up 200 community access sites in the province by the end of 1998, represents the first example of such a collaborative approach.

5.3 Regulatory Framework and Proceedings

A. Competition in the Telecommunications Market

Competition has been gradually introduced in Canada, starting in 1979 with private lines, and customer premises equipment in 1980, then moving to resale and cellular in the 1980's and, in 1992, public long-distance voice services, followed by other newer wireless services such as PCS and LMCS. On May 1, 1997, the CRTC announced the regulatory framework for competition in basic local telephone services (see section F.4 below), and competition could begin in 1998. (See major milestones earlier in this section.)

Resale is permitted for most telecommunications services. Resellers in Canada number more than 400 and are not subject to direct regulation under the Telecommunications Act.

There are two telecommunications market segments where competition is not yet authorized.

- Teleglobe Canada Inc. is the sole authorized Canadian operator of facilities used to provide Canadian/overseas telecommunications. As part of the WTO Agreement on basic telecommunications services Teleglobe's monopoly will end by October 1, 1998.
- Telesat Canada is the sole authorized Canadian operator of satellite space segment facilities used to provide national and Canada-U.S. "fixed" satellite services, and is the sole authorized Canadian operator of earth stations for "fixed" satellite services between Canada and the United States. Under the WTO Agreement, the end of Telesat Canada's monopoly has been advanced to March 1, 2000.

B. Tariff Setting

The *Telecommunications Act* states that no Canadian carrier shall provide a telecommunications service except in accordance with a tariff approved by the regulator, the CRTC, that specifies the rates to be charged for the service. However, the CRTC has the power to forbear from the exercise of this duty where the Commission finds that to refrain would be consistent with telecommunications policy objectives, and must forbear where it finds that the service is subject to competition sufficient to protect the interests of users. Tariffs are submitted by individual carriers for approval unless the CRTC has forborne from regulating a particular class of services or exempted a particular carrier from regulation.

C. Contribution Charges

Competition in the provision of specific telecommunications services was introduced gradually by market segments. This enabled Canada to maintain subsidies between various telecommunications services where deemed to be in the public interest. The most prevalent subsidy in the telecommunications service industry, and the only explicit subsidy, is from long distance services to basic local telephone service. All providers of long distance toll services (including, toll traffic carried between wireless and wireline stations, and long distance voice and data network services provided through line-side and trunk-side connections, except paging and Internet services) are obliged to contribute towards the maintenance of subsidies in the form of contribution charges paid to local telephone companies. On May 1, 1997, the CRTC announced in Telecom Decision 97-8, *Local Competition*, that local telephone companies are to remit the toll contributions they collect to a central fund to be administered by a third party. Periodically, these contribution revenues will be disbursed to local telephone companies based on their subsidy requirement (which will be based on the incumbents' costs and revenues). Contribution charges are being reduced as rate rebalancing proceeds, the scope of contribution paying services broadens and market forces increasingly determine the various prices of telecommunications services.

D. Access and Interconnection Charges

The *Telecommunications Act* states that the CRTC may order a Canadian carrier to connect or provide access to any part of its network or facilities to any other telecommunications facility.

Access to the public switched telecommunications network requires payments to the major telephone companies or other carriers that own the network. The Commission approves the charges in addition to determining the conditions for compensation. The CRTC makes such determinations following a public proceeding. Such payments differ for end users and for alternative telecommunications service providers.

- Interconnect or access charges among competitive carriers are tariffed and filed for approval by the CRTC. They can differ by service and by carrier.
- Access to the public switched network by households, businesses and other users requires the payment of fixed (usually monthly) or usage sensitive *access charges* to the telephone companies or alternative carriers.

E. Universal Service

The realization of universal telephone service has long been a fundamental goal of telecommunications policy in Canada. The *Telecommunications Act* of 1993 includes as one of Canada's policy objectives "to render reliable and affordable telecommunications services of high quality accessible to Canadians in both urban and rural areas in all regions of Canada" (s.7.(b)). The wording suggests that a range of telecommunications services, not merely telephone service should be accessible in all regions of the country. The level of penetration of basic telephone service is often used as a measure of universality. Current data indicate that 98.5 per cent of all Canadian households have telephone service (note: 1996 data, which excludes Yukon and NWT).

Most recently, the CRTC noted that flat rate local calling and access to direct-dialled long distance service are considered essential elements of basic local service by the vast majority of subscribers (CRTC Telecom Decision 96-10). More importantly, the Commission recognized that the definition of basic service is evolving and will vary depending on the perspective of the user and the capabilities of technology. (See section below on affordability issues.)

F. Regulatory Framework for the Major Telephone Companies

On 16 September 1994, the Commission released Telecom Decision CRTC 94-19, *Review of the Regulatory Framework*, following a two year proceeding. This decision reflected the policy objectives included in the 1993 *Telecommunications Act* and the high priority that the government has placed on the development of a competitive communications environment.

The objectives of the review were to streamline or eliminate regulation, to place greater reliance on market forces, to establish safeguards to protect against abuses of market power, to encourage the provision of innovative new services and to assess alternatives to rate of return regulation.

The review led to the following significant regulatory changes:

- splitting the rate base of incumbent telephone companies between Competitive and Utility segments, allowing the Commission to focus on regulation of the Utility segment;
- gradual deregulation of the telephone companies Competitive services segment, effective January 1995;
- a move from rate of return regulation to Price Cap regulation for the Utility segment;
- opening up local telecommunications services to competition;
- initiating the process of rebalancing local rates in light of declining long-distance rates; and
- allowing telephone companies to invest in content services.

F.1 Public Proceedings to Implement Aspects of the Regulatory Framework

Several public proceedings are required to implement aspects of the regulatory framework for the major telephone companies. These are discussed below.

F.2 Splitting the Rate Base of Local Exchange Telephone Companies

In 1995, the Commission released *Telecom Decision CRTC 95-21, Implementation of Regulatory Framework - Splitting of the Rate Base and Related Issues*. The decision dealt with a number of implementation issues arising from its previous CRTC Telecom Decision 94-19.

Decision 95-21 focussed on four major issues:

First, the Commission had to rule on a methodology for splitting the rate base of the telephone companies between Utility and Competitive segments in a manner that is fair to telephone companies, competitors as well as subscribers. The CRTC opted to split the rate bases of the telephone companies along the lines of its "Phase III" costing methodology as proposed by Stentor. The CRTC chose a method based on Return on Equity (ROE) of the utility segment only, rather than company-wide ROE, which was proposed by Stentor. This methodology will be used until the introduction of price caps.

Second, the Commission had to decide how to treat the investments in Stentor's "Beacon" or Broadband Information Highway Initiative so that basic telephone subscribers and competitors do not bear an unreasonable portion of these costs. The Commission determined that all related investments should be allocated to the competitive segment of the rate base.

Third, the Commission was obligated under Order in Council P.C. 1994-2036, issued in December 1994, to assess the accuracy and reliability of its costing methodology by comparing the costs of Canadian carriers with external benchmarks, specifically with those of the U.S. carriers. On balance, the Commission found that costs in Canada were comparable to those in the U.S. and that differences were not significant.

Fourth, the Commission was obligated under Order in Council P.C. 1995-2036 to reconsider its decision to initiate rate rebalancing by increasing the monthly rate for basic local telephone service by \$2.00 on January 1, 1995, 1996 and 1997 with corresponding decreases in basic long-distance rates. The CRTC confirmed its rationale in Decision 94-19 that rate rebalancing was in the public interest. It approved rate increases of \$2.00 for the monthly rate of local telephone service effective January 1, 1996 and 1997. The third and final stage of rate rebalancing is being considered in the context of setting the rates going into the price cap period which will begin January 1, 1998. In *Telecom Decision CRTC 97-9, Price Cap Regulation and Related Issues*, released May 1, 1997, the CRTC announced that the third round of rate rebalancing will be limited to no more than \$3.00 on average across each company's serving territory.

After due consideration of petitions from seven telephone companies and a group known as the People for Affordable Telephone Service, on December 19, 1995, the Federal Cabinet varied CRTC Decision 95-21 by de-linking mandated basic long distance rate decreases from local telephone service rate increases, which were allowed to proceed. This decision was taken to ensure market-based prices in the long distance market as well as to bring local telephone rates more in line with the cost of service. More economically efficient pricing should assist in fostering competition in the local telephone market and ultimately bring more choice, greater stability and innovative service to the marketplace.

F.3 Local Competition

a) Interconnection and Unbundling

In Telecom Decision CRTC 94-19, the CRTC decided that increased competition in the local telecommunications market was in the public interest; that restrictions on entry into the local market should be removed; and that principles of open access, unbundling and co-location should be pursued. The CRTC later initiated public processes to establish terms and conditions for local interconnection and network component unbundling, number portability, and co-location.

On May 1, 1997, the CRTC released *Telecom Decision CRTC 97-8, Local Competition*, which dealt with the rules to facilitate the entry of new service providers into the local exchange market. The elements of the Decision recognize two key concepts: that efficient and effective competition will be best achieved through facilities-based competitive service providers; and that new entrants are not simply customers of the incumbents, but co-carriers, equal in status. Decision 97-8 dealt primarily with five specific issues:

Unbundling: The CRTC ordered incumbent telephone companies to “unbundle” components of their local networks so that new entrants can have access to these components at reasonable rates.

Interconnection: In order to ensure that subscriber-to-subscriber access is maintained, the CRTC requires all local telephone companies to interconnect with each other and with all long distance carriers and wireless service providers. Within exchanges, the costs of interconnection between local telephone companies are to be shared equally. With respect to compensation for call termination, the CRTC adopted the “bill and keep” method, whereby originating carriers are not required to compensate terminating carriers for call termination expenses within established local exchanges, unless it is demonstrated that traffic between local carriers is not balanced for a significant period of time.

Resale: Although of the view that the full benefits of competition can only be realized with facilities-based competition, the CRTC also found that resale competition can help promote the development of a competitive market. Accordingly, the Commission concluded that the incumbents must allow for unrestricted resale by competitors of unbundled components, and for the resale of residential service. However, the Commission did not mandate wholesale discounts for the incumbents’ retail services.

Contribution: In order to maintain universal service and affordability of service, the CRTC instituted a “portable subsidy” mechanism which will allow new local telephone companies to provide service in high cost and rural areas by having access to the same subsidy as the incumbents.

Consumer Safeguards: The Commission determined that new entrants to the local market will have to adhere to a set of consumer safeguards, including: complying with regulatory requirements to protect customer privacy; the provision of 911 emergency service and message relay service; and providing customers with detailed information (e.g., billing policies, local calling area boundaries, details of service options, etc.).

b) Co-location

Co-location refers to an arrangement whereby alternative service providers can terminate their own transmission facilities in the telephone company's central office. This can be done physically (termination inside the central office), or virtually (termination at a point outside the central office, but with the same level of service at the same rate).

In Telecom Decision CRTC 94-19, the Commission found that co-location would facilitate competition by providing competitors with the option of delivering their traffic to local switches over either leased or owned facilities, based on cost and efficiency considerations. The Commission added that co-location might foster increased entry by creating an additional source of supply of local channels to end-users and to resellers. Accordingly, the Commission ordered the telephone companies to file proposed co-location tariffs. On March 20 1995, the Commission issued Telecom Public Notice CRTC 95-13, Implementation of Regulatory Framework - Co-location, seeking comments on the proposed co-location tariffs of the telephone companies. A decision is expected in June 1997.

c) Local Number Portability

On November 10, 1995, the Commission issued Telecom Public Notice CRTC 95-48, Implementation of Regulatory Framework - Local Number Portability and Related Issues, initiating a public process to examine the issue of local number portability (LNP). In order to facilitate the timely implementation of LNP, the Commission established a working group of interested parties to examine the technical, administrative and regulatory issues related to LNP. The method of LNP accepted by industry participants is a database solution. One issue that is still outstanding is the location of the LNP master database. The industry is presently in the process of choosing a LNP database administrator and the location of the database.

On May 1, 1997, in *Telecom Order CRTC 97-591*, the Commission announced that local telephone companies would be responsible for the recovery of its own LNP costs. The Commission will be initiating a proceeding to quantify and address the recovery of the incumbents' costs specific to LNP.

G. Price Cap Regulation

On May 1, 1997, the Commission issued *Telecom Decision CRTC 97-9, Price Cap Regulation and Related Issues*. Viewed as an effective way to manage the transition to a fully competitive local service environment, price cap regulation limits, or caps, the price charged for a particular basket of services. Price caps are designed to imitate a competitive marketplace by controlling prices, not profits.

The CRTC has introduced a four-year price cap plan, beginning January 1, 1998, under which all capped services will form a single "basket" and will be subject to a price cap index (PCI). The PCI will constrain changes in prices to the annual change in the rate of inflation minus an adjustment for productivity gains of 4.5% (productivity offset), adjusted for limited exogenous factors arising from events which are beyond the telephone company's control. The productivity offset serves to ensure that overall telephone rates continue to decline relative to inflation. Three sub-baskets consisting of basic residential local services, basic business local services, and other local services will be subject to additional pricing constraints (basic residential local service rate increases will be limited to inflation). In its decision, the CRTC

authorized telephone companies to come forward with a further round of rate rebalancing increases in the price of basic telephone services as they go into price cap regulation. These increases are not to exceed \$3.00 on a weighted average basis, for each company.

H. Forbearance from Regulation of Toll Services

In September 1995, the Commission had determined that it was appropriate to conditionally forbear from regulating most of the services offered by non-dominant carriers (e.g., FONOROLA, Rogers Network Services, Sprint Canada, AT&T Canada Long Distance Services, Westel). This decision led to asymmetrical regulation in the Canadian toll market.

On July 24, 1996, in view of the evolving competitiveness of the toll markets, the CRTC issued Telecom Public Notice CRTC 96-26, Forbearance from Regulation of Toll Services Provided By Dominant Carriers, seeking comments on whether, and to what extent, the Commission should forbear from regulating the toll market.

Arguments that favour deregulation include: reducing the direct costs associated with regulation, overcoming the dampening effects of regulation on risk taking and innovation, enabling regulated firms to react more quickly to changing market conditions, and reducing the ability of competitors to lockstep pricing. Competitors argue that, while some benefits from competition have been realized (lower prices, increased investment, new business growth), Stentor-member companies retain significant market share and market power and regulation is required to ensure continued competition, at least until the local services market is effectively open to competition.

I. Affordability Issues

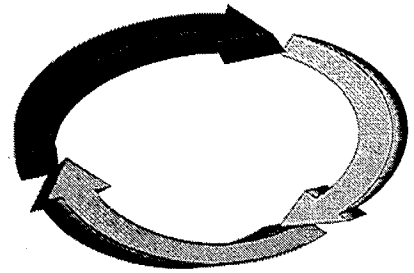
Decision 96-27, Local Service Pricing Options, issued on November 15, 1996, addressed concerns about the potential impact of future rate increases on the affordability of basic telephone service. The Commission directed the telephone companies to develop an affordability monitoring program to begin collecting quarterly data on telephone penetration rates by mid/1997. As well, to assist mainly lower income households, the Commission ordered the telephone companies to allow subscribers to spread payments related to installation charges and security deposits over six months and to provide free blocking of long distance service. The Commission also indicated its intention to initiate a separate proceeding to review affordability and access issues in remote and rural areas should this question not be fully addressed in the local competition proceeding.

Decision 97-9, dealing with price cap regulation, reflects the desire to ensure continued affordability of basic telephone service. The introduction of a "portable subsidy" mechanism will allow new competitive providers of local service to provide local service in high cost and rural areas by having access to the same subsidy as the incumbent telephone companies.

Price cap regulation will ensure that, on average, annual basic local residential rate increases will not exceed inflation. The Commission also noted in Decision 97-9 that rural rates for local service should not exceed urban rates.

J. Resale and Sharing of Cellular Services

In Resale and Sharing of Cellular Services, Telecom Public Notice CRTC 95-53, 12 December 1995, the Commission initiated a proceeding to consider issues regarding the resale and sharing of cellular services. Subsequent to the issuance of PN 95-53, the federal government announced that it had awarded operating licences for the provision of PCS. Accordingly, on 19 February 1996, in Telecom Public Notice CRTC 96-7, the Commission amended the cellular resale proceeding to include PCS. This proceeding is now closed, and the Commission is expected to render a decision in Spring 1997. Government policy supports resale and sharing of facilities to the greatest extent practicable.



Annex A

List of Companies

List of Companies*

Telecommunications Carriers - Major Parent Holding Companies (by head office)	
British Columbia BC Telecom Inc.	Alberta TELUS Corp.
Saskatchewan Saskatchewan Telecommunications Holding Corp.	Manitoba MTS
Québec BCE Inc. Anglo-Canadian Telephone Company	Ontario BCE Inc.
Newfoundland NewTel Enterprises Ltd.	New Brunswick Bruncor Inc.
	Nova Scotia & Prince Edward Island MT&T Co. Ltd.

Telecommunications Carriers - Stentor Members (by operating region) (further information may be obtained on the Stentor web site at http://www.stentor.ca)	
Québec Bell Canada Québec-Téléphone*	Ontario Bell Canada
British Columbia BC Tel	Manitoba MTS Netcom Inc.
Saskatchewan SaskTel	New Brunswick NBTel
Prince Edward Island The Island Telephone Co. Ltd.	Nova Scotia Maritime Tel & Tel (MT&T)
Newfoundland NewTel Communications Ltd.	Alberta TELUS Communications Ltd.
	Yukon, Northwest Territories & Northern British Columbia NorthwesTel Inc.*

* Associate members of the Stentor alliance

* This does not constitute a full listing of all Telecommunications Services Companies.

The Canadian Independent Telephone Companies (by operating region)
 (further information may be obtained on the CRTC web site at <http://www.crtc.gc.ca>)

Ontario

Abitibi-Price Telephone Exchange
 Amtelecom Inc.
 Brooke Telecom Co-operative Limited
 Bruce Municipal Telephone System
 Cambray Telephone Company
 Cochrane Public Utilities Commission
 Coldwater Communications Inc.
 Dryden Municipal Telephone System
 Durham Telephones Ltd.
 Gosfield North Communication
 Cooperative Limited
 Hay Communications Co-operative
 Limited
 Huron Telecommunications Co-operative
 Limited
 Hurontario Telephones Ltd.
 Keewatin Municipal Telephone System
 Kenora Municipal Telephone System
 Lansdowne Rural Telephone Company
 Ltd.
 Manitoulin Telephone Inc.
 Momington Communications
 Co-operative Limited
 North Frontenac Telephone Company
 Ltd.
 North Norwich Telephones Ltd.
 North Renfrew Telephone Company Ltd.
 Northern Telephone Limited
 Ontario Northland Telecommunications
 Commission (O.N. Tel)
 Otonabee Telephones Ltd.
 People's Telephone Company of Forest
 Ltd.
 Quadro Communications Co-operative
 Inc.
 Roxborough Telephone Company
 Limited
 South Bruce Rural Telephone Company
 Ltd.

Ontario (cont'd)

Taylor Telephone Company
 Thunder Bay Telecommunications
 Tuckersmith Communications
 Co-operative Limited
 Westport Telephone Company
 Wingham Telephone Limited

Québec

Co-op de Téléphone de Valcourt
 La Cie de Téléphone de Courcelles Inc.
 La Compagnie de Téléphone de
 Lambton Inc.
 La Compagnie de Téléphone de St-Victor
 La Compagnie de Téléphone de Warwick
 La Compagnie de Téléphone Upton Inc.
 La Corporation de Téléphone de la Baie
 Le Téléphone de St Liboire de Bagot Inc.
 Le Téléphone de St-Éphrem inc.
 Québec-Téléphone
 Sogetel Inc.
 Télébec Limitée
 Téléphone Guèvremont inc.
 Téléphone Milot Inc.
 Téléphone Nantes Inc.

Alberta

TELUS Communications (Edmonton)
 Inc.¹

**Yukon, Northwest Territories & Northern
 British Columbia**

NorthwestTel Inc.

British Columbia

Prince Rupert City Telephones

¹ As of March 1995, EDTel was amalgamated with TELUS Corp.

Alternative Interexchange Carriers**National**

AT&T Canada Long Distance Services Company
MOTOROLA Inc.
Sprint Canada
Westel Communications Inc.

Overseas Telecommunications**National**

Teleglobe Canada Inc.

Satellite Telecommunications**National**

Telesat Canada

Wireless Telecommunications - Personal Communications Services (PCS)**National**

Cleamnet PCS Inc.
MicroCell Network Inc.
Mobility Personacom Canada Ltd.
Rogers Cantel Mobile Inc.

* This does not constitute a full listing of all Telecommunications Services Companies.

Wireless Telecommunications - Cellular	
<p>National Rogers Cantel Mobile Communications Inc.</p> <p>Québec Bell Mobility Québec-Tel Cellular</p> <p>British Columbia BC TEL Mobility Cellular Inc. Prince Rupert City Telephone</p> <p>Saskatchewan SaskTel Mobility</p> <p>Prince Edward Island Island Tel Mobility</p> <p>Newfoundland & Labrador NewTel Mobility</p>	<p>Ontario Bell Mobility NorTel Mobility Inc. Thunder Bay Cellular Mobility</p> <p>Manitoba MTS Mobility Inc.</p> <p>New Brunswick NBTEL Mobility</p> <p>Nova Scotia MT&T Mobility Inc.</p> <p>Alberta TELUS Mobility Inc.</p> <p>Yukon, Northwest Territories & Northern British Columbia Northwestel Mobility Inc.</p>

Wireless Telecommunications - Paging Companies	
<p>National 833909 Ontario Ltd. (Cantel related) Bell Mobility Paging Inc. Cleynet Inc. Communications Métro-Montréal Inc./Télé-Page Glentel Inc. Integrated Messaging Inc. Mobility Canada NPC Corporation (Shaw owned) Prime Communications Corporation Rogers Cantel Inc. Telelink Communications Inc.</p> <p>Nova Scotia Digipage Communications (Halifax) Halifax Message Centre (Halifax) MT&T Mobility</p>	<p>Québec Bonaventure Communication (Trois-Rivieres) Linton Telephone Answering Service (Dorval) Petit-Page Téléavertisseur Inc. (Gatineau) Service Téléphonique Plus enr. (Ville Vanier) Télé-Message Service (St. Jérôme) Télé-Page (Montréal)</p> <p>Prince Edward Island Message Centre PEI (Charlottetown)</p> <p>Newfoundland TAS Communications Systems Ltd. Tele-Link Message Exchange (St. John's)</p>

* This does not constitute a full listing of all Telecommunications Services Companies.

Wireless Telecommunications - Paging Companies (cont'd)	
<p>Ontario</p> <p>Advanced Alarm Systems (Smiths Falls) Alert Telephone Answering (Thunder Bay) Algoma Telephone Systems (Sault Ste-Marie) All Call Communications (Georgetown) Alliance Communications (Kingston) Answer Plus Inc. (Toronto) Brockville Premier Communications (Brockville) Canpage Communications Ltd. (Brockville) Canpage Communications Ltd. (Cornwall) Chedoke-McMaster Hospitals (Hamilton) Christie and Walther Communications Ltd. (Ottawa) Early Bird Communications Inc. (Kitchener) Extend Communications Inc. (Brantford) Extend Communications Inc. (Cambridge) General Mobile Radio Service Ltd. LanSer Telecom Ltd. Metrolert Ltd. (Ottawa) Mobile Business Communications Ltd. Northern Communications (North Bay) Northern Communications (Timmins) Northern Communication Inc. (Sudbury) Pager Plus Inc. Pasword Communications Inc. (Burlington) Pasword Communications Inc. (Hamilton) Rogers Cantel Paging Inc. (Toronto) Simcoe Answering Service (Simcoe) Simcoe Message Centre Inc. (Barrie) TAS-Page Communications (Peterborough) Telephone Answering Service (Quinte) Co. Ltd. (Belleville) The Executive Club (Grimsby) The Message Centre Inc. (Ottawa) The Message Network (Kingston)</p>	<p>Ontario (cont'd)</p> <p>Universal Teleresponse Corporation (Toronto) VoiceNet Communications Inc. (London) Williams Communications Service Ltd.</p> <p>Saskatchewan</p> <p>G & L Mobile Communications National Pagette Messaging Inc. Telephone Duty (Regina) Tridon Communications-Lloydminster</p> <p>British Columbia</p> <p>Allied Answering Service (Fort St-John) City Answering Service 1990 Ltd. (Fort St-John) Connections Answering Service (Squamish) CVX Message Centre (Vancouver) Dial Direct Paging Ltd. (Vancouver) Excel Message Centre (Port Alberni) Fraser Valley Teleserve Ltd. (Abbotsford) Jarvis Business Centre Inc. (Kelowna) K.A.S. Business & Communication Services (Cranbrook) Madison Telecommunications Inc. Message Masters Communications Corp. (Dawson Creek) Omega Paging Service Ltd. P&M Answering Service Ltd. (Mackenzie) Professional Answering & Paging Vancouver Inc. (Richmond) Province-Wide Communications Ltd. Shuswap Communications (Salmon Arm) Valley Communications (Penticton) Vernon Business/Answering Service (Vernon)</p>

* This does not constitute a full listing of all Telecommunications Services Companies.

Wireless Telecommunications - Paging Companies (cont'd)	
<p>New Brunswick Allstar Communications (Moncton) Premier Telecommunications Centre Ltd. (St. John)</p> <p>Manitoba Fine Line Communications Ltd. (Winnipeg) Gene's Electronics Ltd. Integrated Messaging Inc. (Winnipeg) National Pagette Messaging Inc.</p> <p>Alberta Answerphone (Airdrie) Page-Direct Ltd (Calgary) Western Answering Services Ltd. (Calgary)</p>	<p>Alberta (cont'd) 9 to 5 Office Management Services (Sherwood) City Centre Communications (Medicine Hat) Drumheller Answering & Office Services (Drumheller) Hinton Telephone Answering Service (1983) Ltd. (Hinton) National Pagette Messaging Inc. Select Communications Inc. (Grande Prairie) Teleconnect International (Wetaskiwin) Tridon Communications-Fort McMurray Tridon Communications-Lloydminster Valley Communications Services Ltd (Drayton Valley)</p>

Telecommunications Resellers: Registered with the CRTC (further information may be obtained on the CRTC web site at http://www.crtc.gc.ca)	
<p>1127720 Ontario Inc. c/o Ad-Tel Communications 1214620 Ontario Ltd. 2485694 Nova Scotia Limited 3-A Téléméeting Inc. 3111415 Canada Inc. 3252647 Canada Inc. (CTE Network) 3271684 Canada Inc. (Union Telecom) 3297691 CANADA INC. (G.H.C.) 503197 N.B. Limited c/o McCarthy Tétrault 600977 Ontario Limited 606109 Alberta Ltd. 777 Long Distance Inc. 989021 Ontario Inc. of Toronto c/o Ad-Tel Communications A & A Call link Telesolution Inc. A & A Call Link Telesolutions (Vancouver) Limited A & H Telecom</p>	<p>A.C. Telecommunications Group AB TEL Systems of Stouffville c/o Ad-Tel Communications Abel Canada Communications ABS Home Tel (Div. of 1104435 Ontario Inc.) c/o Long Distance Corporation ACC TelEnterprises Ltd. Access Calling Services Inc. Access Inc. Achat Plus Ad-Tel Communications (Halton) of Brampton Ad-Tel Communications of Toronto Advanced Multi-Point Conferencing Inc. Adverticall of Toronto c/o DFD Telebroadcasting Inc. AIC - Arnos Instruments & Computer Systems (Canada) Inc. Alberta Quick Line Communications Inc. Alberta Real Estate Association</p>

* This does not constitute a full listing of all Telecommunications Services Companies.

Telecommunications Resellers: Registered with the CRTC (cont'd)	
<p>Alberta Trucking Association Alldial Communications Inc. c/o Cam-Net Communications Inc. Allied Telecom Inc. ALTEL Canada Altline Communications American Communications Network Inc. c/o Stikeman, Graham & Keeley AmeriTel Systems Andromeda Telecom Inc. Antillara Communications Anvicon Communications Inc. Appel Inter Onix III Inc. Approvisionnement - Montréal Santé et services sociaux Argent Communications Inc. ASC Telecom Inc Asia International Services (Ontario) Corporation ASP Northern Ltd. Atlantic Canada Telecom Atlas Communications Aurora International Telecommunications Inc. B & C List (1982) Ltd. B & J Telecard (Canada) Inc. B.V. Communications (3095959 Canada Inc.) BBS Babillard Officiel du Quebec BC Hotel Service Bell Advanced Communications 1996 Inc. Bell Advanced Communications Inc. (BAC Inc.) Bell Global Solutions (A Division of Bell Sygma Inc.) Bentley International Communications Better Business Bureau of Mainland B.C. Blue Jay Communications Bonanza Enterprises (Comet Telecom) Boulton Communications BPA Gescom Inc.</p>	<p>Bradson Business Centre British Columbia Trucking Association Buehner Fry Business Communications Inc. Business Information Depot Business Tel Butler Communications Inc. Buytel Inc. C-Com Corporation C.R. Télécommunications Inc. Cabletec Limited Cabletec Nfld. Ltd. Call For Less Call-Ur Communications Inc. c/o Ad-Tel Communications Cam-Net Communications Inc. Call Savers Longdistancing Call-Share Management Ltd. c/o London Telecom Canada International Centre Canada Calling Limited c/o Osler, Hoskin & Harcourt Canada Telecom Network Inc. Canadian Home Builders' Association of Canadian Satellite Communications Inc. (CANCOM) Canadian Telecom Exchange Inc./ Interurbains Canadien Telecom Inc. Canadian Telecommunications Development Corp. (CTDC) c/o Tacit & Traynor Canadian Telephone & Telegraph Inc. (CT&T) Canadian Telesave Club Inc. Canadian Tire Acceptance Limited (CTAC) c/o McCarthy Tétrault CanaVox, Inc. Captelco inc. Cardcaller Canada Inc. Caribe Via Toronto Inc. CashCom Ltd.</p>

* This does not constitute a full listing of all Telecommunications Services Companies.

Telecommunications Resellers Registered with the CRTC (cont'd)	
Centre City Tel	Direct Dial Inc.
Choice Telecom, (1121932 Ontario Inc.)	Discount Dialling Inc.
City 2 City Inc,	Distributel Communications Limited
City Access Telecom Inc.	Distribution Pavel Inc.
City Dial Network Services Ltd.	Ditell Consultants Inc.
c/o Tacit & Traynor	DM Classic Veracity Distributors Inc.
City Telecom Inc. (B.C.)	Double D Promotions
Classic Communications Ltd.	E.D.S. of Canada Ltd.
Clubtel, (Girlec Telecom Inc.)	East European Connection Inc.
Commsen Communications Inc.	Eastbound Marketing Inc., (Info-Tel Directory)
Commstar Voice Messaging	Econet Telecommunications Corporation
Communication Mont-Tel	Econolink
Community Connections Global Inc. - CCG	Économux Telecom Inc.
Community Long-Distance Group of Toronto	Econovox Télécom Inc.
Competitive Telecommunications Association (CTA)	EDC Telecom Canada
Compu-Link Inc.	EMI Communications Corporation
Compu-Tel	c/o LeBoeuf, Lamb, Leiby & MacRea
Concept Tel	Emtel Canada Network Inc.
Concert Global Networks Limited	c/o Delfin Communications Inc.
c/o McCarty Tétrault	Enhanced Services Provider Incorporated (ESPI)
Connectel Communications Corporation	Entreprises Marie Darbouze Inc.
Connections Communications Limited	Esprit Telecom Ltd.
Conquest Operator Services Corporation	Eureka Telecom Inc.
c/o Technologies Management Inc.	Excel Com (Excel)
Consolidated Technologies Inc.	Excell Solution Partners Inc
Contour Telecom Management Inc.	Executive Telecard Ltd.
CTX Telecommunications Inc.	Extend-A-Call
Cybercomm Telecommunications Inc.	c/o Ad-Tel Communications
Cybervoice Services Ltd.	Fastel Communications
Data General (Canada) Inc.	c/o DFD Telebroadcasting Inc.
DDR Communications (2) Inc.	Fernandez Enterprises Limited
Debitron	c/o Williams, Roebathan, McKay & Marshall
c/o Rodem Administration Communications	Ferst Telecommunications Inc.
Delaware Teleresources Inc.	Fifth Wave Marketing
Delfin Communications Inc.	c/o DFD Telebroadcasting Inc.
c/o Ad-Tel Communications	Flat Rate Telecom Inc.
DFD Telebroadcasting Inc.	c/o DFD Telebroadcasting Inc.
DH&A Network Services	fONOROLA Inc.
Dial-Tel Network, (1032468 Ontario Inc.)	Fourseas Asialink Corporation
Digital Courier International Inc.	Freedom Communications Network
Direct Connect Ltd.	

* This does not constitute a full listing of all Telecommunications Services Companies.

Telecommunications Resellers: Registered with the CRTC (conf'd)	
<p>FreeTime Communications, Inc. Frontier Communications Futronics Future Link Telecommunications Future Tech Inc. General Recorders Ltd. General Telephone Company Inc. c/o Hubert E. Mantha Generation Broadcasting Inc. Genisys International Georgian Discount Dialing Gescom FRL Inc., (2756-7163 Québec Inc.) Girlec Telecom Inc. Glentel Inc. Global Link Communications Gold Line Telemanagement Inc. Gold Line Telemanagement Inc. (Ontario) Gratuitel Greater Toronto Telecom, (1052062 Ontario Inc.) Greenland Corporation Groupe Leonart Inc. Groupe Negotel Inc. Groupe Nu Pro International Inc. Groupe Telecom (Formerly Mon-Tel Communications) GTE Telecom Incorporated Hakim Ezith Import Export Inc. Halton Discount Dialing Inc. Hamilton Telecom Henderson Telecom. Hogan Computer Corporation Hongkong Telecom (Canada) Honig & Kilborn Horizon Network Communications LLC Hospitality Information Services (H.I.S.) Hub Incorporated IAS Informed Approach Systems Inc. Icon International Communications Network INCOTEL Info Systems Info-Tel Directory Info-Tel Inc.</p>	<p>Infosat Telecommunications Infront Communications INSTANT ACCESS COMMUNICATIONS Integrated Network Services Inc. (INSINC) Intelink (1072163 Ontario Inc.) (Formerly Call-Direct) Intelnet Inc. Inter-City Network Inter-Conn Telecomm Inter-Urbains InterAccès (Les Services de Télécommunications InterAccès) Interban Inc. International Exchange Networks, Ltd. (iXnet) International Telecommunication Services Inc. (ITS) International Telephone Products Ltd. Interpretel (Canada) Inc. Intertec Telecommunications Inc. Intertel Discount Telephone c/o Telenetics Controls Ltd. Island X Change Communications ISM Corporation Isotel Communications Inc. c/o Boivin Deschamps, Avocats ITN Corporation Jay's Trading Co. Ltd. Jeskha Ltée Jump Spring Canada Inc. K.M. Dardarian and Associates Kawartha Communications Network King Telecom c/o DFD Telebroadcasting Inc. Kit Communication La Compagnie de Téléphone Bonaventure & Gaspé, Limitée LanSer Wireless Inc. Laser In-Vitro Testing Limited LCI International Telecom Corporation LDS Network Limited Le Groupe Nu Pro International Inc. Les Interurbains Nationaux</p>

* This does not constitute a full listing of all Telecommunications Services Companies.

Telecommunications Resellers: Registered with the CRTC (cont'd)	
Les Services de Secrétariat Exécutif M & M Inc.	Netlinks Telecom Inc.
Lightel Inc.	Netwell Communications Inc.
Lightwave Communications	Network Teleconnect
Link-On Telecomm	c/o Cam-Net Communications Inc.
c/o DFD Telebroadcasting Inc.	Netx Telecom Ltd
LinkStar Telecommunications	Netxchange Corporation
London Telecom Network	c/o Meighen Demers
Long Distance Atlantic	New Edge Data Systems
M&M Inc.	New Wave Telecommunications Ltd.
Macro Communications Inc.	Niagara Connections
Magic-Tel Communications Ltd.	Niagara Satellite Communications
Maginex Communications Ltd.	Niagara Telecomm Inc.
Maidens Communications	Norstan Network Services, Inc.
Mainchan Communications Group Inc.	Norstar Communications Inc.
Managed Network Systems Inc.	North American Network Company Inc.
Matri-Comm Marketing Inc.	Northline Telecommunications Inc.
Metcom Canada Limited	Northquest Telecom Inc.
Metrix Interlink Corporation	Northwoodcare Inc.
Metro Access Ltd.	Olympo Call Company
c/o Burns, Vasan, Christmas,	Ontel Long Distance
McLeod & Ci	Optel Communications Corporation
Metro East Telecommunications Inc.	Opticom (One Call Communications Inc.)
Metro Telepoll Services	Optimum Communications Inc.
(A Division of 839286 Ontario Ltd.)	Orion Communications Inc.
Metro-Wide International Communications	P.A.V.E.L. (division de 2989557 Canada Inc.)
Metro-Wide Residential Commercial Services	P.M. Hayward & Associates
MetroPlus Communications Corporation	Pacific Datanet - Canada
MFS Communications of Canada Inc.	Pacific Gateway Exchange, Inc.
c/o Osler, Hoskin & Harcourt	c/o Swidler & Berlin, Chartered
MG Communications Inc.	Pacifictel Communications
MHM Enterprises	Papa Amadou N'DIAYE
c/o DFD Telebroadcasting Inc.	Patrick Gabriel, CGA
Milebar Network Systems Inc.	Peinet Inc.
Minerva Communications	c/o Stewart, McKelvey, Stirling & Scales
Mobisoft Communications	Perfect Health Group
Motorola Canada Limited	Pestano, Mr. Jaime
c/o Fraser & Beatty	c/o Stuart F. Crown
MT&T Advanced Communications	Phoenix Telecom
MTC Telemanagement Corporation	Phone Club of Canada, Ltd, The
Multi-Sync Communications	Phone Saver
Municipal Tel	Posicom Inc.
National Telephone Corporation	Power Point Micro Systems Corporation Inc.
Netcruiser On-Line Communication Services, Inc.	PowerTel Communications Inc.
	Preferred Telemanagement Inc.

* This does not constitute a full listing of all Telecommunications Services Companies.

Telecommunications Resellers: Registered with the CRTC (cont'd)	
Premiere Communications Inc.	Simcoe County Long Distance Corporation
Primus Telecommunications, Inc. c/o Swidler & Berlin Prismtel	Slave Lake Communications Ltd.
Professional Regulatory Services Inc.	SMC Management (Red Deer) Inc.
Pronto Long Distance Inc.	Société de Radio et Télécommunications
Protocall Message Centre	Média Casting Inc.
PSI Net (Limited) c/o Fraser & Beatty	Société nationale des télécommunications du Québec (SNTQ)
PTT Telekom, Inc	Sonco Property Development & Services Company Inc.
Public Communications Corporation c/o Hoey Associates	Sonicraft Inc.
Telecommunications	Sprint Canada Inc.
PYRAMID OAK TREE INC.	Starfire Communications Inc.
QTC Interurbains	Starflight Technical Sales & Services
Quadnet Communications Inc.	STEM-Net
Quality Connections Communications Inc.	Stratford Telecom c/o Ad-Tel Communications
Quality One Ltd.	Symphony Telecom Inc
Quest Communications c/o Technologies Management Inc.	Talk is Cheap (Telehop)
Quick Link	Talking to Communications RN (Regional Niagara) Computer Services
Quickcall	TAR-BANI CANADA LTD.
R. & P. Telecom	Tarif Fixe Inc.
RACO International Ltd.	Techno-Tell Inc.
Rapi-Tel Communications Services Inc.	Tel Saver
RCI Long Distance Canada Ltd.	Tele 360 Communication Inc.
Real-Tel International Corporation	Tele-Plus Communications Group Inc.
Rebel Communications	Téléban
Relay Communications (858692 Ontario Inc.)	Telecard Regulatory Services, Inc
Resort Long Distance Service	Telecom Media International Italy-Canada Inc.
Revenue Plus Limited	Télécommunications Interville Inc. (2949-7164 Quebec Inc.) c/o Pierre Lupien
Richard Cuthbert & Associates	Telehop Communications Inc. (Sister company Telehop Bradford)
Rodstrom, Mr. L.M.	TeleLink Canada (739651 Ontario Limited)
Rosenbrewer Communications	Telemar Communications Inc.
S.E.B. Inc. Company	Telepass Canada
SCL Atlantic	Telephone Communications Inc.
Sears Phoneplan	Telepower International Inc.
Seaview Communications Ltd	Telesave Communications
ShadowTel/The Linc c/o Mantas Bouwer & Rosen	
Shared Network Services Inc.	
Shared Technologies of Canada (STOC) (O&Y Telecom Inc.)	

* This does not constitute a full listing of all Telecommunications Services Companies.

Telecommunications Resellers: Registered with the CRTC (cont'd)

Telesavings Canada Inc.	USX Consultants Inc.
TELMANOR Enrg.	UUnet Canada Inc.
Telmax Telecommunications Inc. (9003 4059 Quebec Inc.)	Uxbridge Tele-Com
TelRoute Communications Inc.	Valu-Tel Communications
Teltech Communications	Vancouver Telephone Company Ltd. (VTC)
The Free Call Network	Venture Elite Communications
The Linc	Vercom
c/o Mantas Bouwer & Rosen	VicComm Communications Inc.
The London Free Press Printing Company	Visiontel Communications Inc.
c/o Free Press Community Phone Link	c/o Cam-Net Communications Inc.
The Owl Corporation	VSoft Communications
Thrifty Call Canada Limited	W.G.T. Teleserve Canada
Thundertel Communications	Wedit Inc.
Toll Free Communications Inc.	c/o Kanservu Bureau Inc.
Toll-Free Telecom	West Can Telecommunications Inc.
Toronto Telecom Co.	Westel Telecommunications Ltd.
Total Telecom Ltd.	Western Canadian Telephone
Touch 9 Services Inc.	Western Télécom
Touchstone Communications Inc.	Westinghouse Communications
Trans-Canada Audit	(A Division of Westinghouse Canada Inc.)
Transaction Network Services, Inc.	Whistler Telephone Company Ltd.
Transfax	William Tel Ltd.
Treex Community Servers Inc.	Wise Advantage Inc.
TRI Group Investments Inc.	Wiznet Inc.
Tri-City Telecom Corporation	World Telecommunications Company (WTC)
c/o DFD Telebroadcasting Inc.	World Wide Telecom
Trilogic Communications	(A Division of Toronto Direct Telecom Inc.)
True Savings Limited	WXL Communications Inc.
TTI Telecommunications Inc.	c/o Osler, Hoskin & Harcourt
TTN Teletalk Network	Xentel Interactive Inc.
Tyroute Communications Inc.	York Discount Dialling Inc.
U.S. Long Distance Inc.	York University
U.S. Signal Corporation	c/o McCarthy Tétrault
U.S. South Communications Inc.	ZENEX Long Distance, Inc.
Unidial	
Union-Tel Communications Inc.	
Universal Telecommunications of Toronto	
c/o Ad-Tel Communications	
Unlimited Call Network (UCN)	
(3113493 Canada Inc.)	
Unlimited Telecom Network	
Upper Canada Communications Group Inc.	

* This does not constitute a full listing of all Telecommunications Services Companies.

Major Broadcasting-Based Parent Companies with Interests in Telecommunications (by head office)**Québec**

Cogeco Inc.
Le Groupe Vidéotron Ltée

Ontario

Rogers Communications Inc.

Alberta

Shaw Communications Inc.

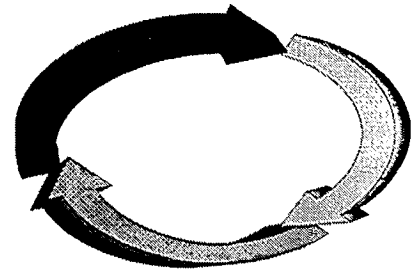
British Columbia

Western International Communications
Inc.

New Brunswick

Fundy Cable Ltd./Ltée

* This does not constitute a full listing of all Telecommunications Services Companies.



Annex B

Parent Companies:
Corporate Structures

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Wireline Telecommunications Companies: Corporate Structures

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Alternative Service Providers (including resellers)

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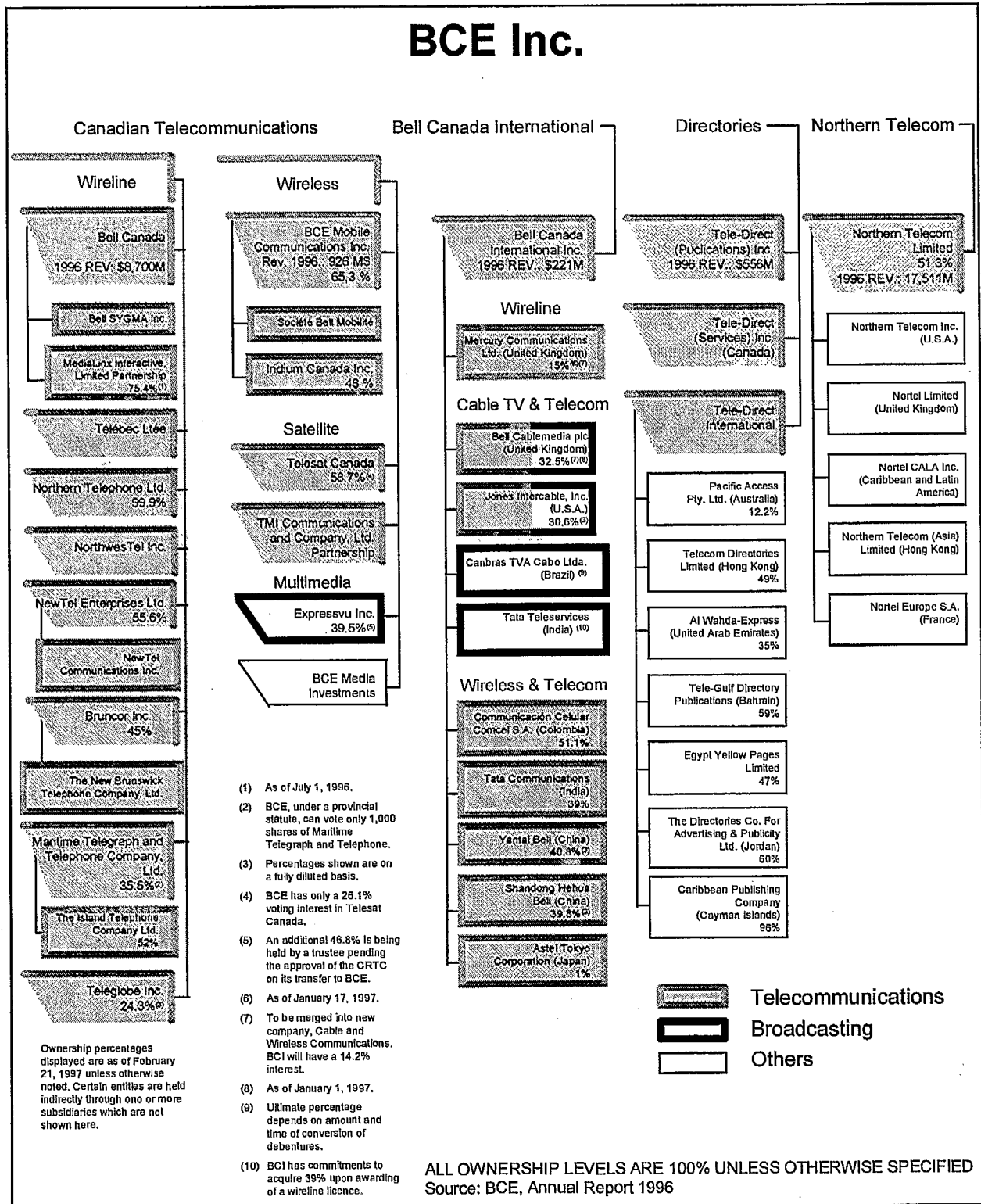
Wireless Telecommunications Companies: Corporate Structures

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Major Broadcasting-Based Parent Companies with Interests in Telecommunications: Corporate Structures

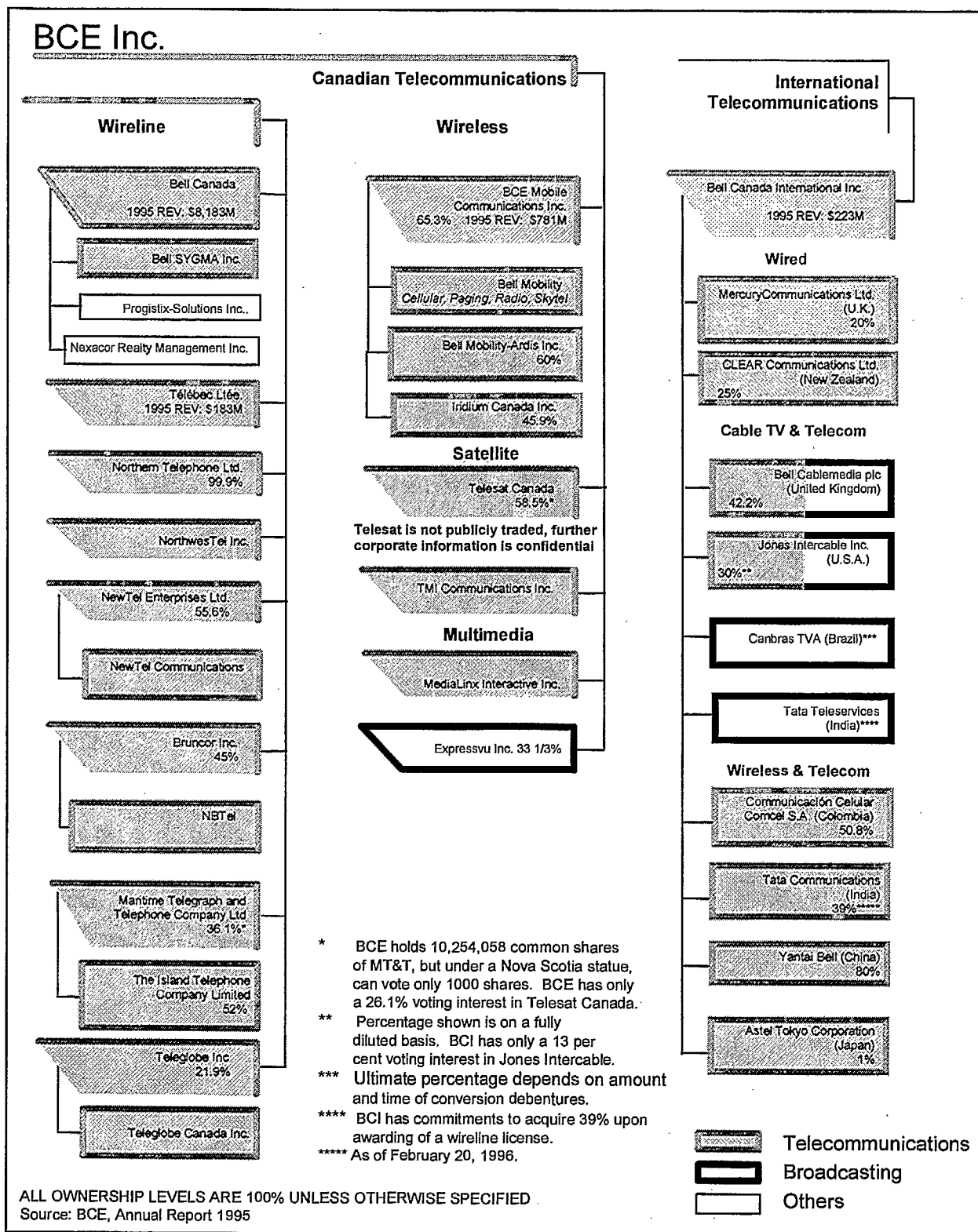
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Rogers Communications Inc. (RCI)	B-25
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WIC Western International Communications Ltd.	B-28

BCE Inc. - 1996 Rev.: \$28,167 M*

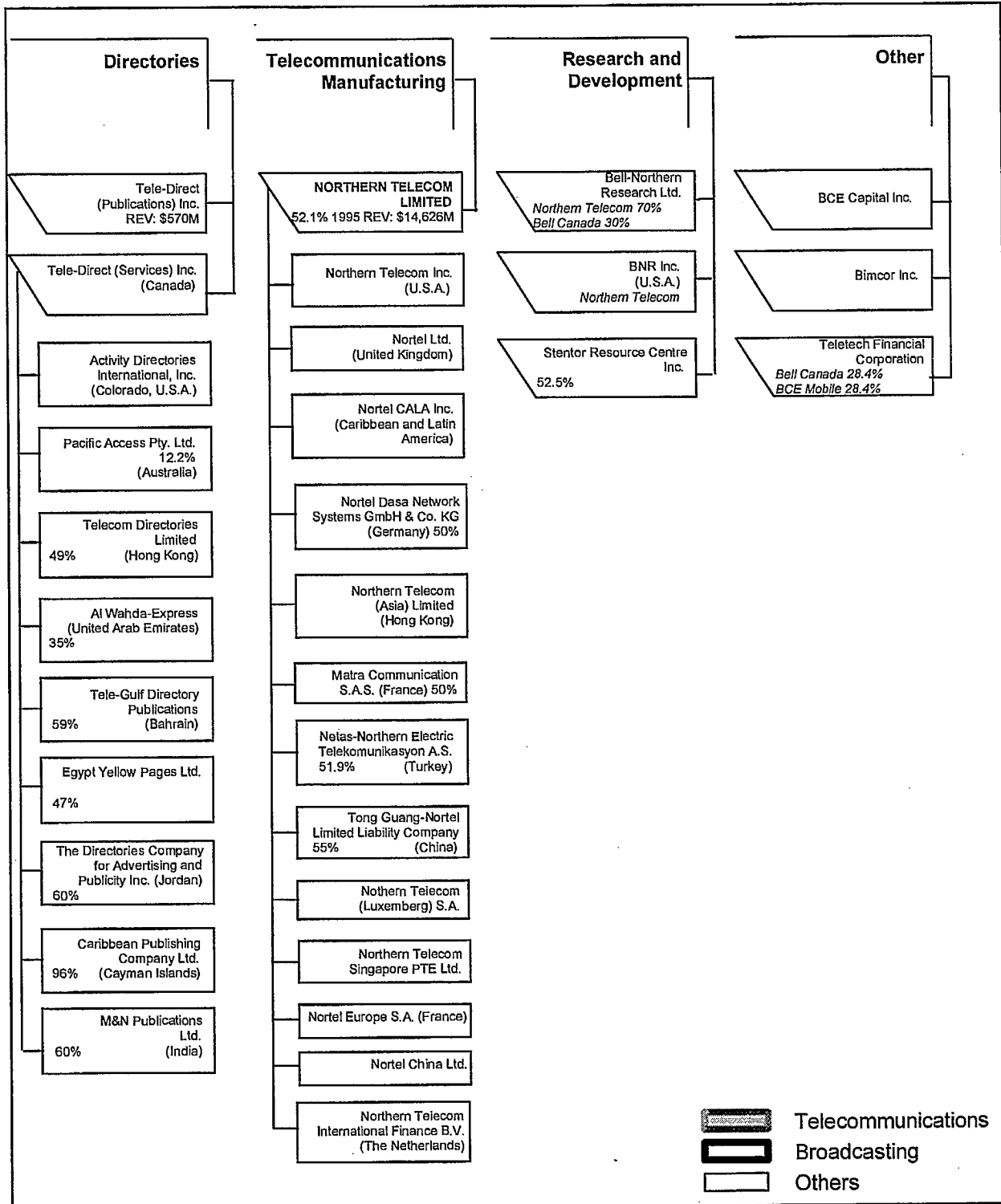


*Corporate structure as of December 1996

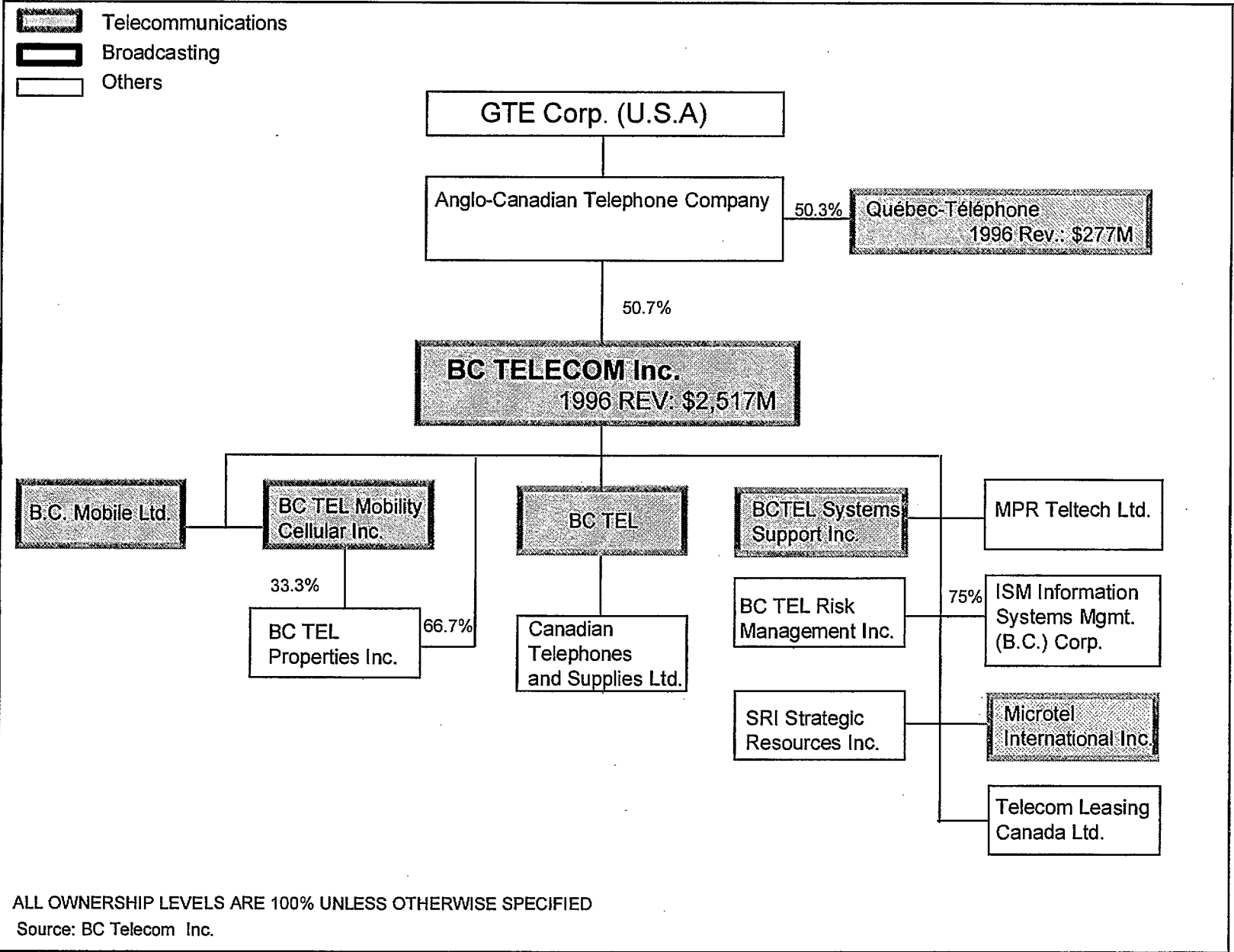
BCE Inc. - 1995 Rev.: \$24,624 M*



*Corporate structure as of December 1995

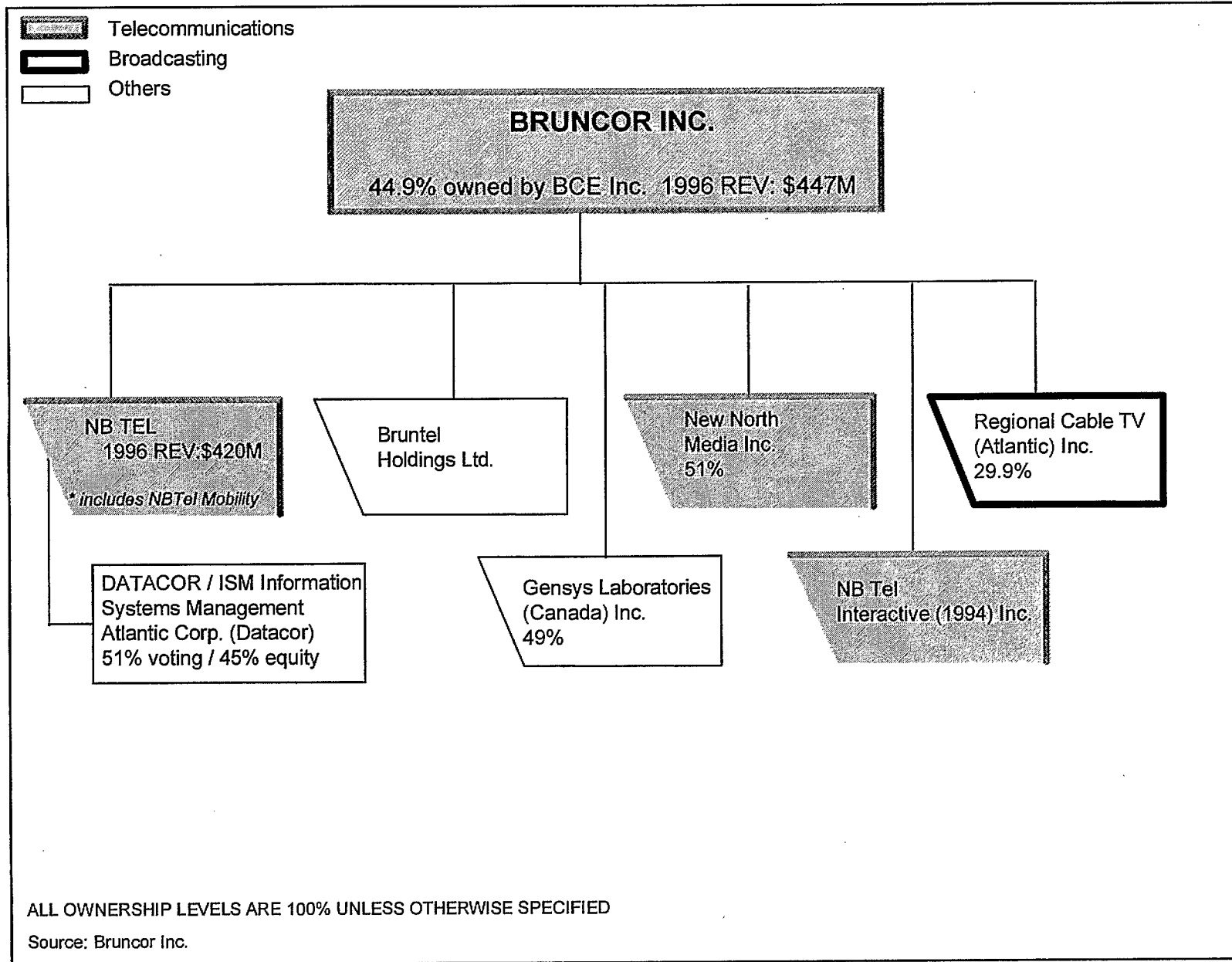


BC Telecom Inc. - 1996 Rev.: \$2,517 M*






*Corporate structure as of November 1996

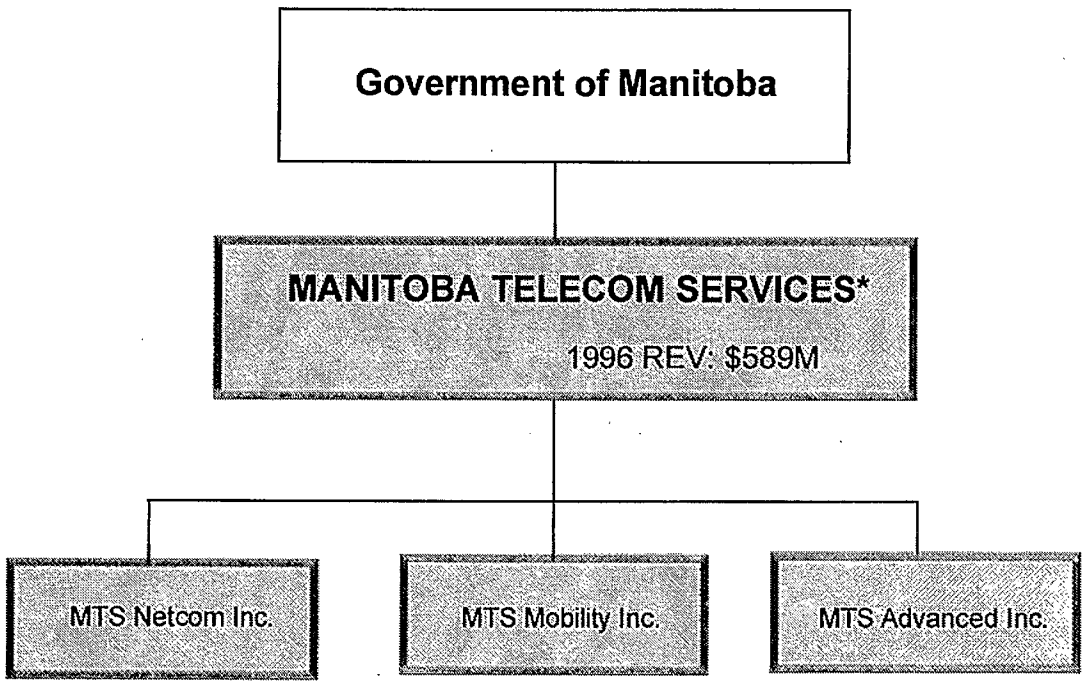
Bruncor Inc. - 1996 Rev.: \$447 M*



*Corporate structure as of 1995

Manitoba Telecom Services (MTS) - 1996 Rev.: \$589 M*

-  Telecommunications
-  Broadcasting
-  Others



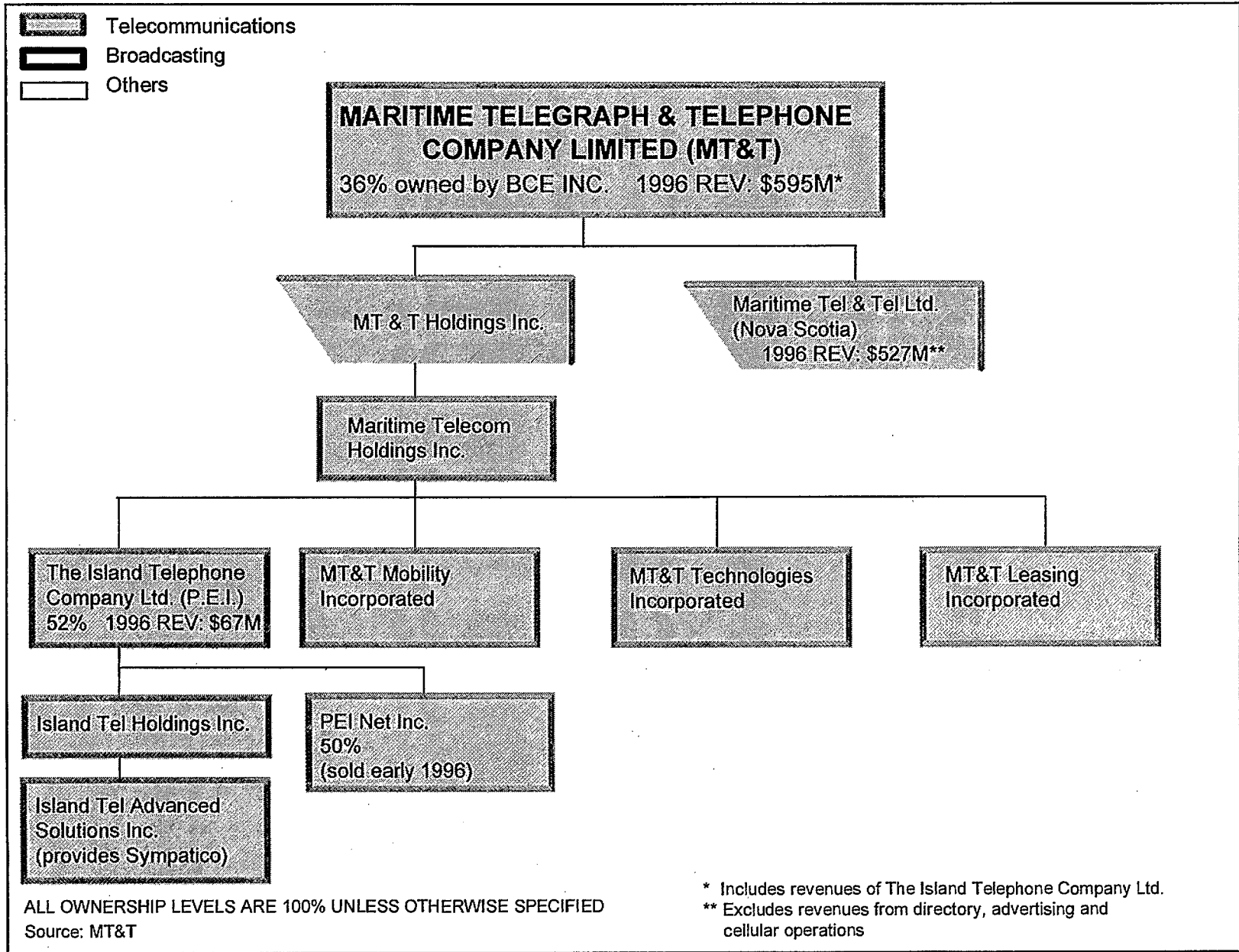
* Effective Jan 1/96 MTS was restructured into a holding company with 3 wholly-owned subsidiaries.

ALL OWNERSHIP LEVELS ARE 100% UNLESS OTHERWISE SPECIFIED

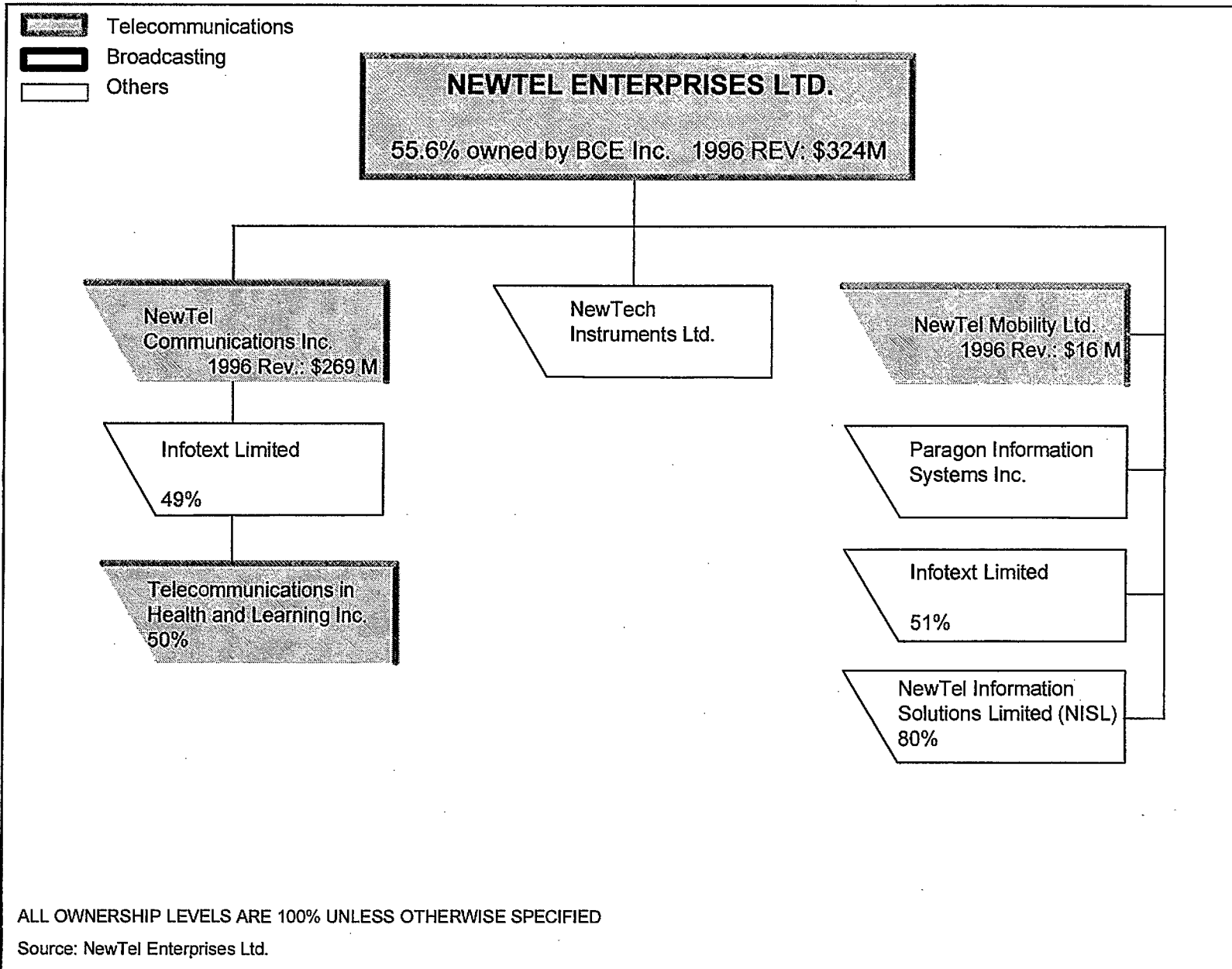
Source: Manitoba Telecom Services

*Corporate structure as of January 1997 when MTS was privatized.

Maritime Tel & Tel Company Limited (MT&T) - 1996 Rev.: \$595 M*

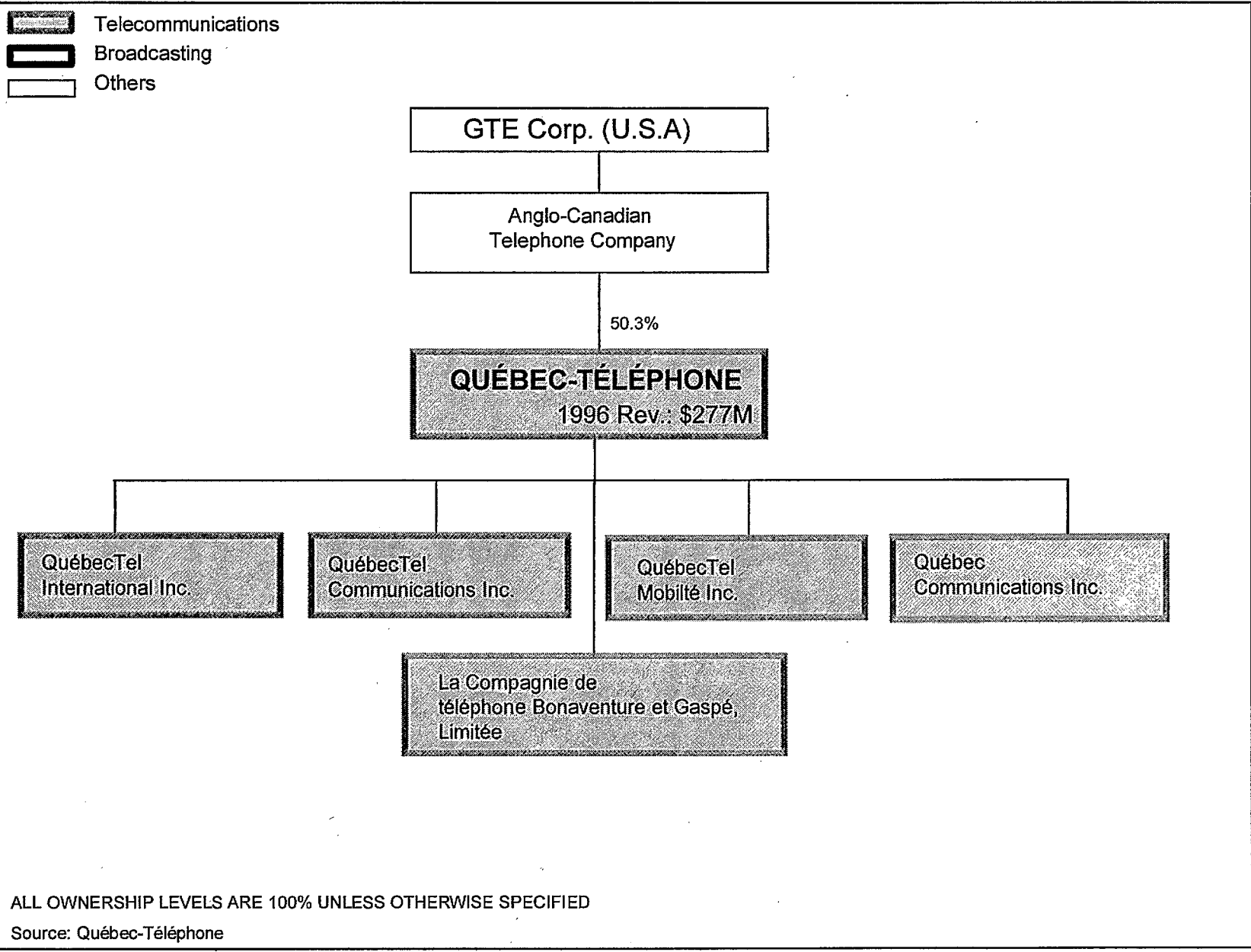


*Corporate structure as of April 1996



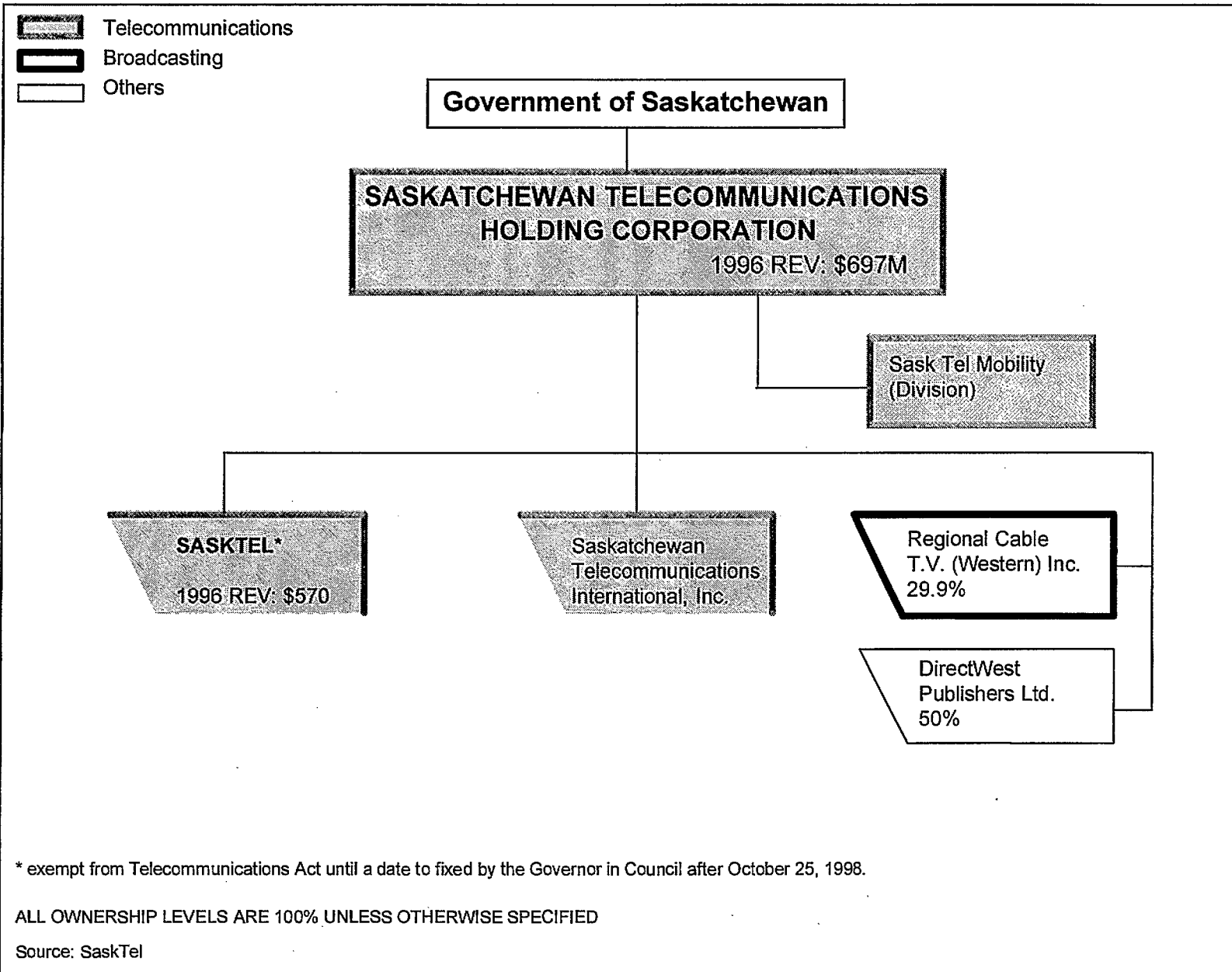
*Corporate structure as of December 1996

Québec-Téléphone - 1996 Rev.: \$277 M*



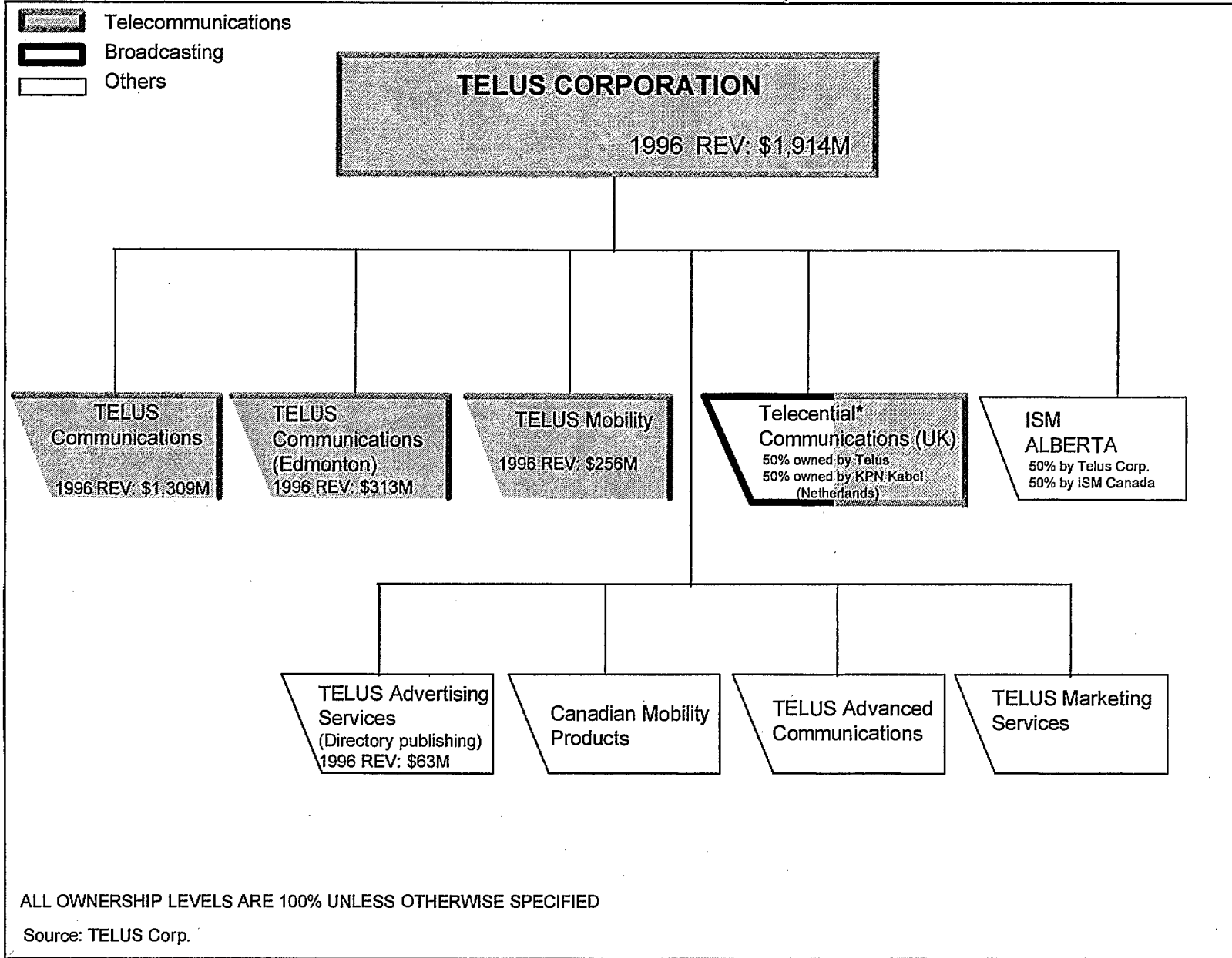
* Corporate structure as of March 1996

**Saskatchewan Telecommunications Holding Corporation -
1996 Rev.: \$697 M***



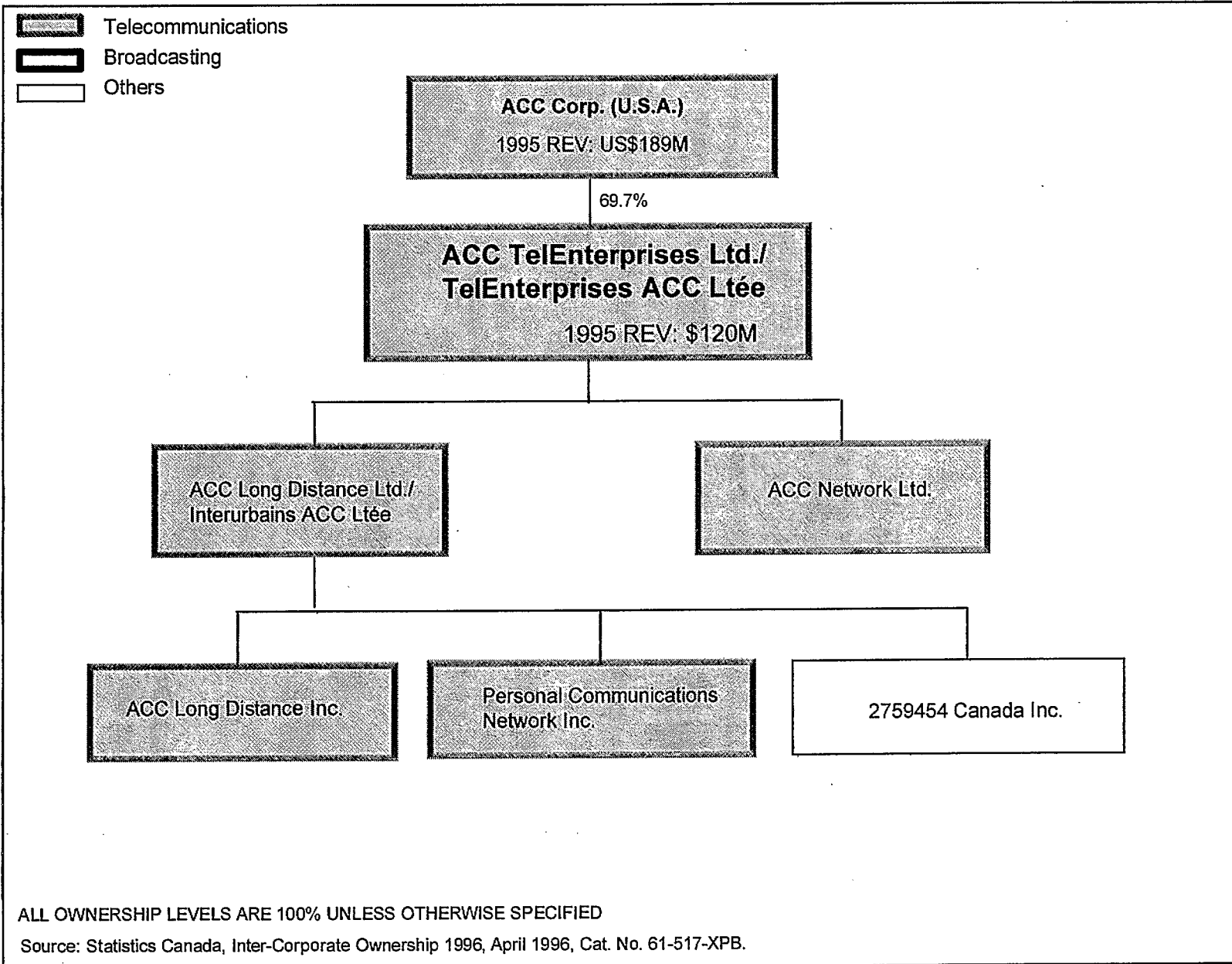
*Corporate structure as of December 1995

Telus Corporation - 1996 Rev.: \$1,914 M*



*Corporate structure as of December 1996

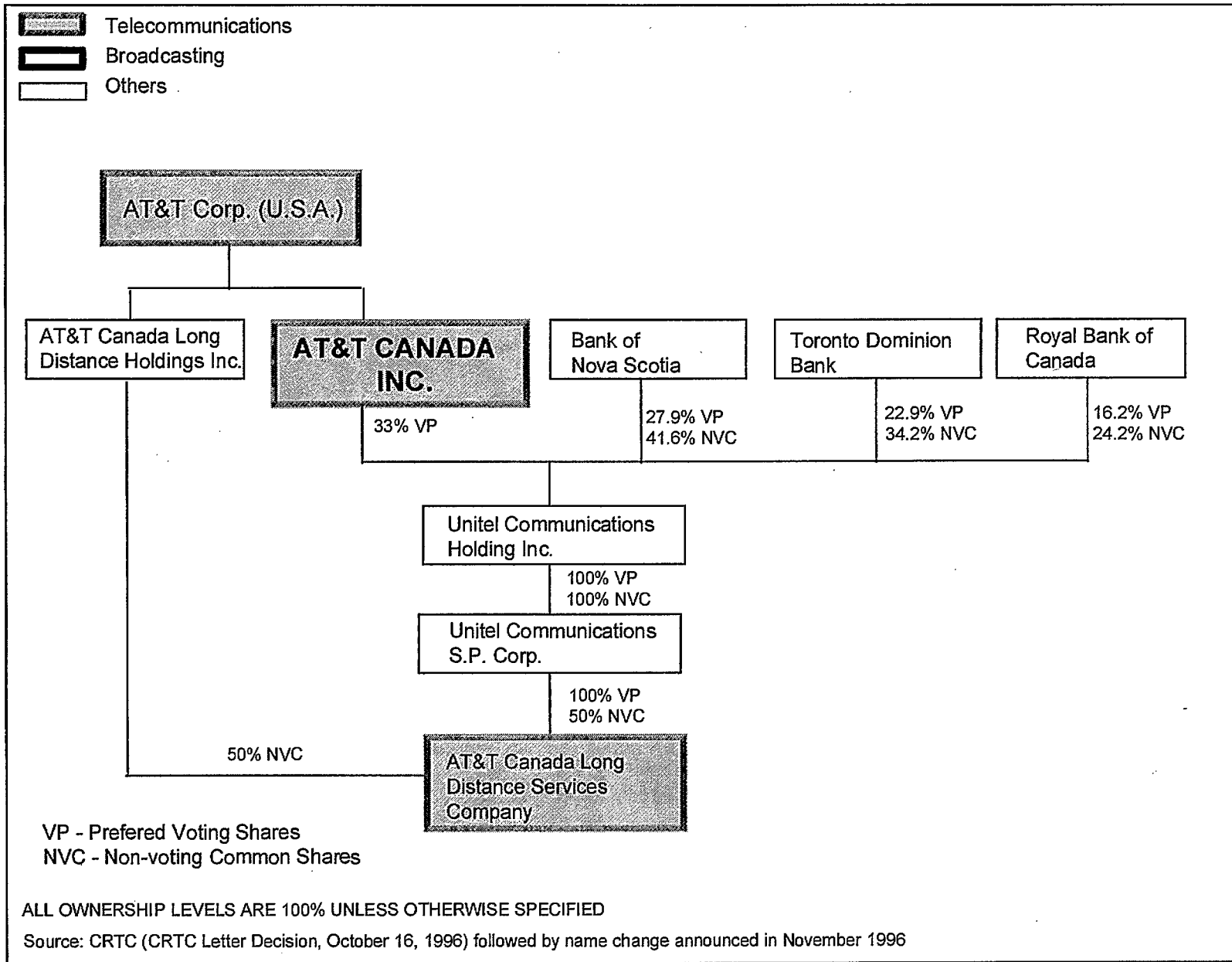
ACC TelEnterprises Ltd. - 1995 Rev.: \$120 M*






*Corporate structure as of April 1996

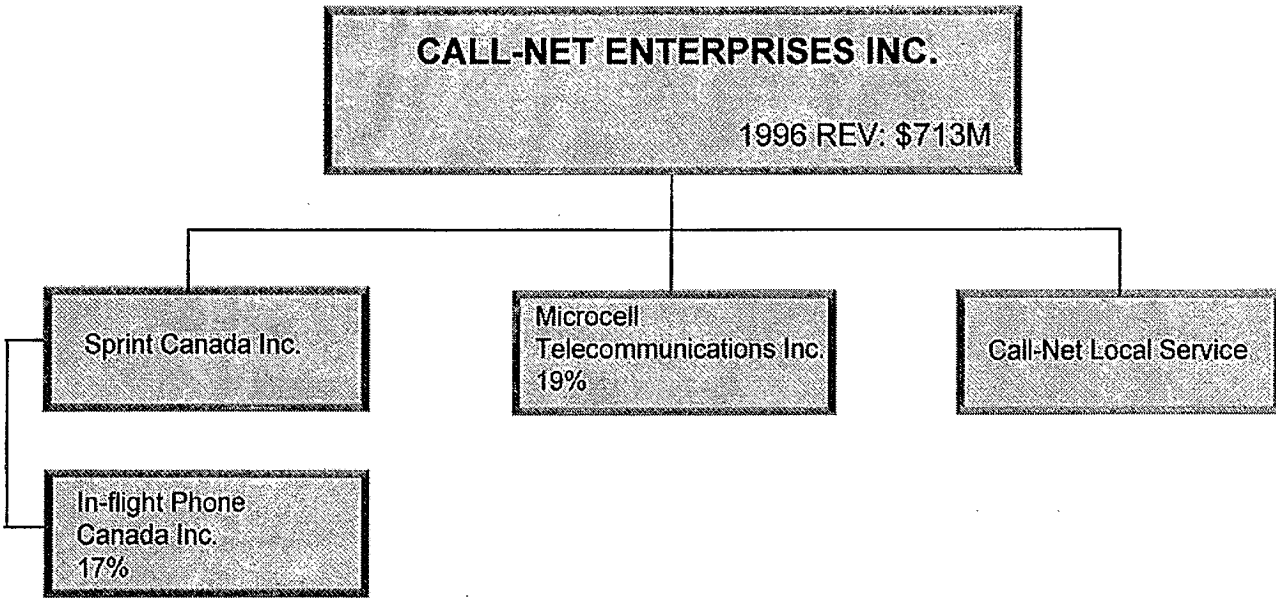
AT&T Canada Inc.*

*Corporate structure as of November 1996



Call-Net Enterprises Ltd. - 1996 Rev.: \$713 M*

-  Telecommunications
-  Broadcasting
-  Others



Call-Net Enterprises Inc. is:

approx. 25% owned by Sprint Corporation (US) virtually all through a special call of non-voting shares.

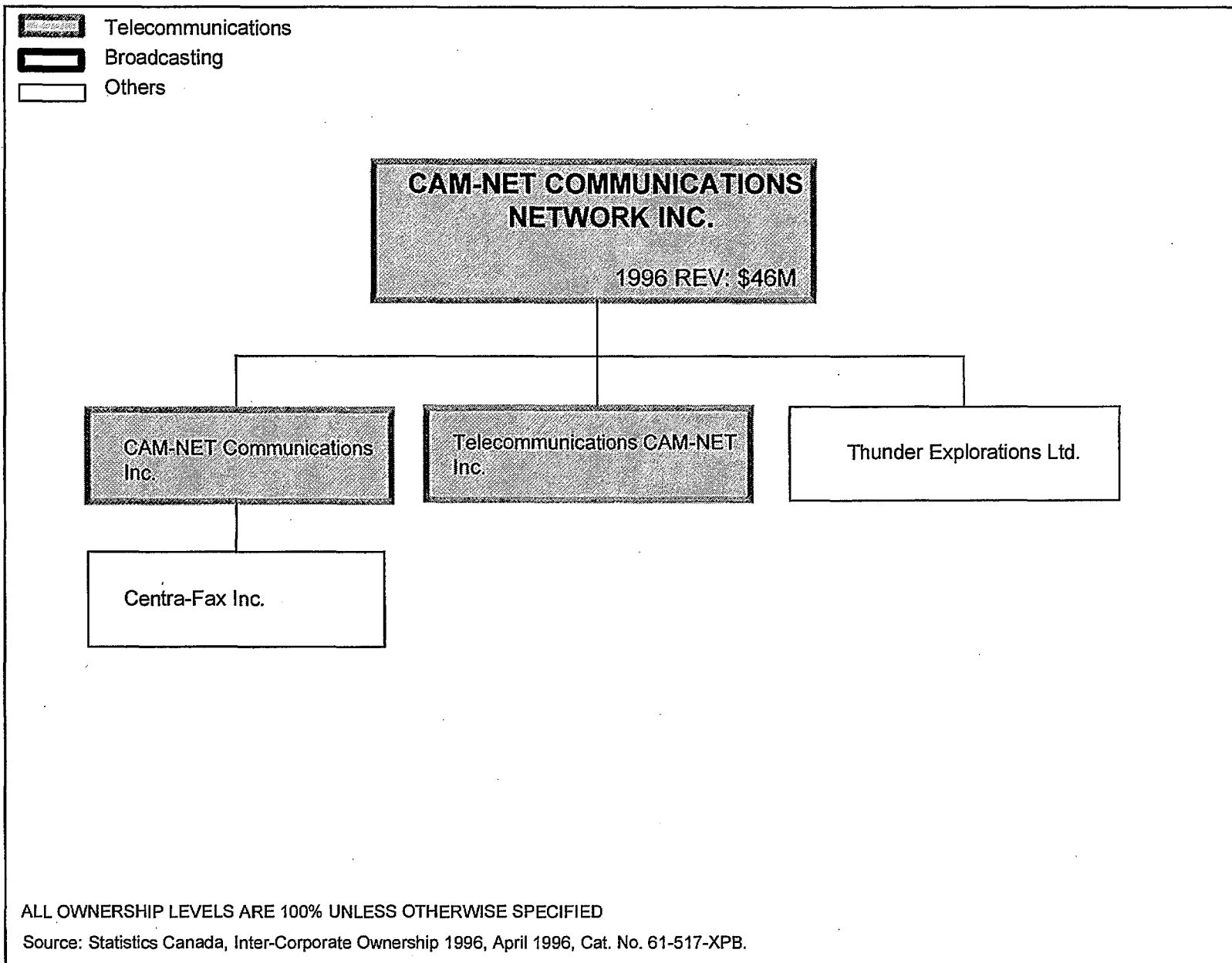
Remainder widely held by public and management.

ALL OWNERSHIP LEVELS ARE 100% UNLESS OTHERWISE SPECIFIED

Source: Call-Net Enterprises Inc.

*Corporate structure as of December 1995

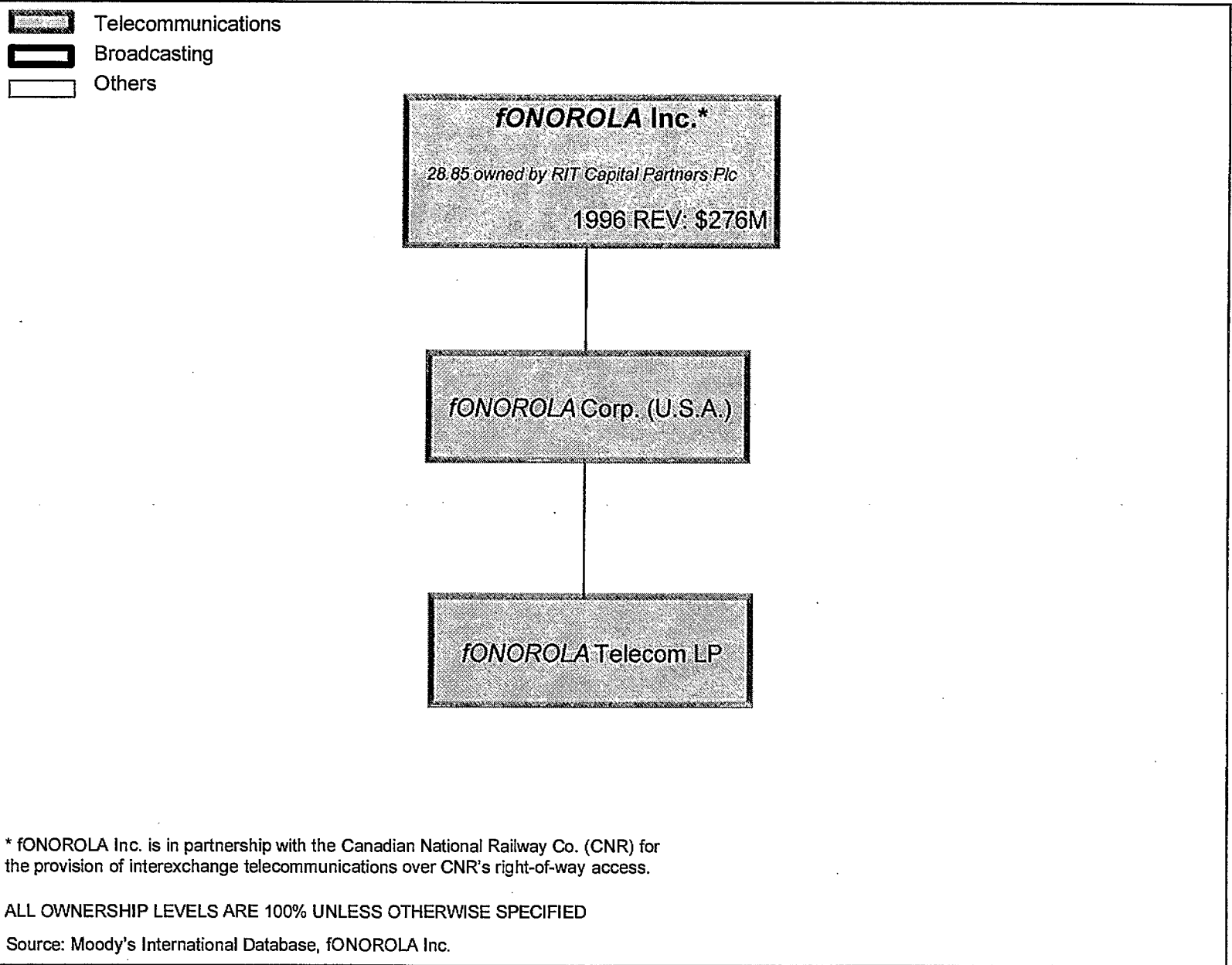
Cam-Net Communications Network Inc. - 1996 Rev.: \$46 M*



ALL OWNERSHIP LEVELS ARE 100% UNLESS OTHERWISE SPECIFIED
Source: Statistics Canada, Inter-Corporate Ownership 1996, April 1996, Cat. No. 61-517-XPB.

*Corporate structure as of April 1996

fONOROLA Inc. - 1996 Rev.: \$276 M*



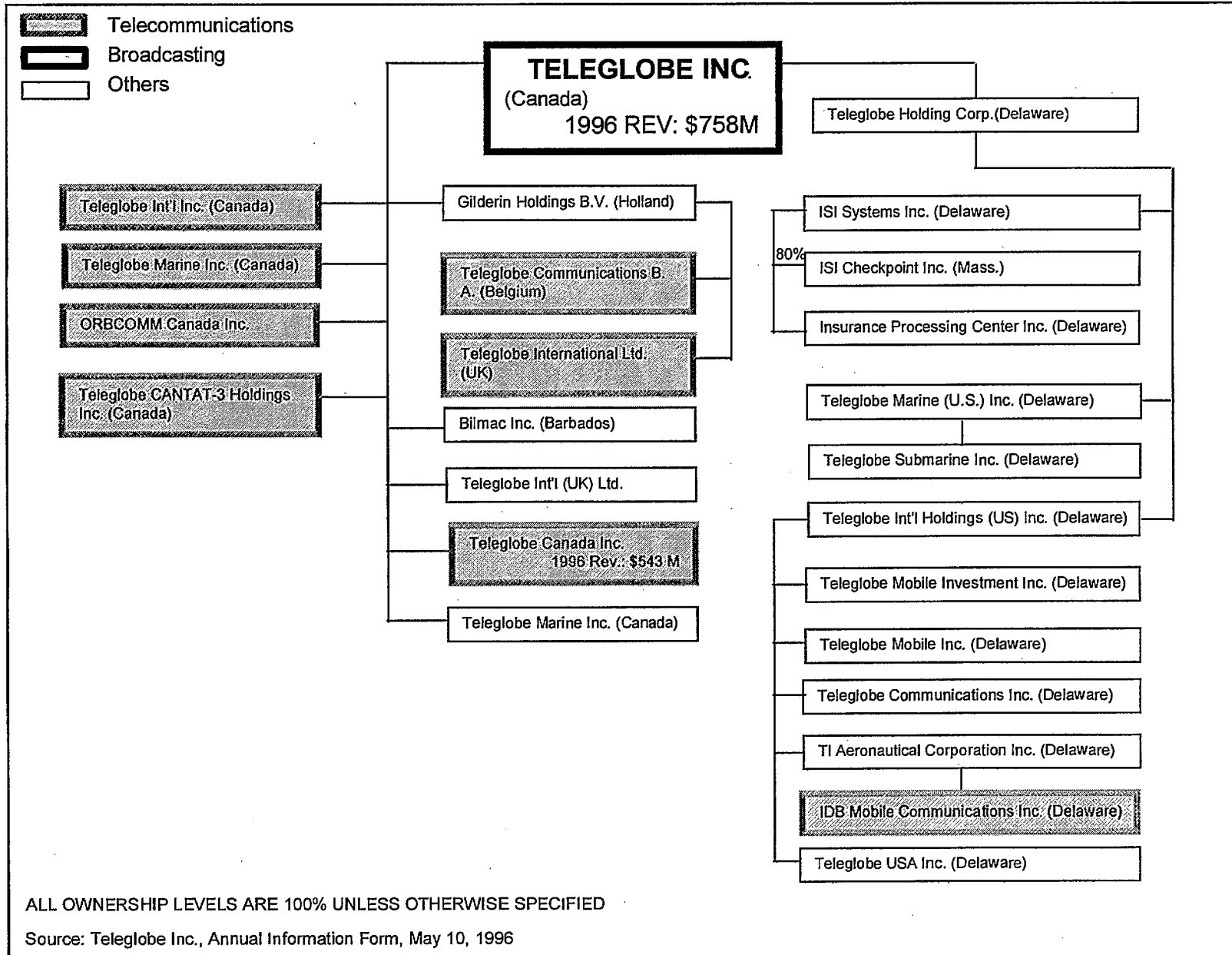
* fONOROLA Inc. is in partnership with the Canadian National Railway Co. (CNR) for the provision of interexchange telecommunications over CNR's right-of-way access.

ALL OWNERSHIP LEVELS ARE 100% UNLESS OTHERWISE SPECIFIED

Source: Moody's International Database, fONOROLA Inc.

*Corporate structure as of August 1996

Teleglobe Inc. - 1996 Rev.: \$758 M*

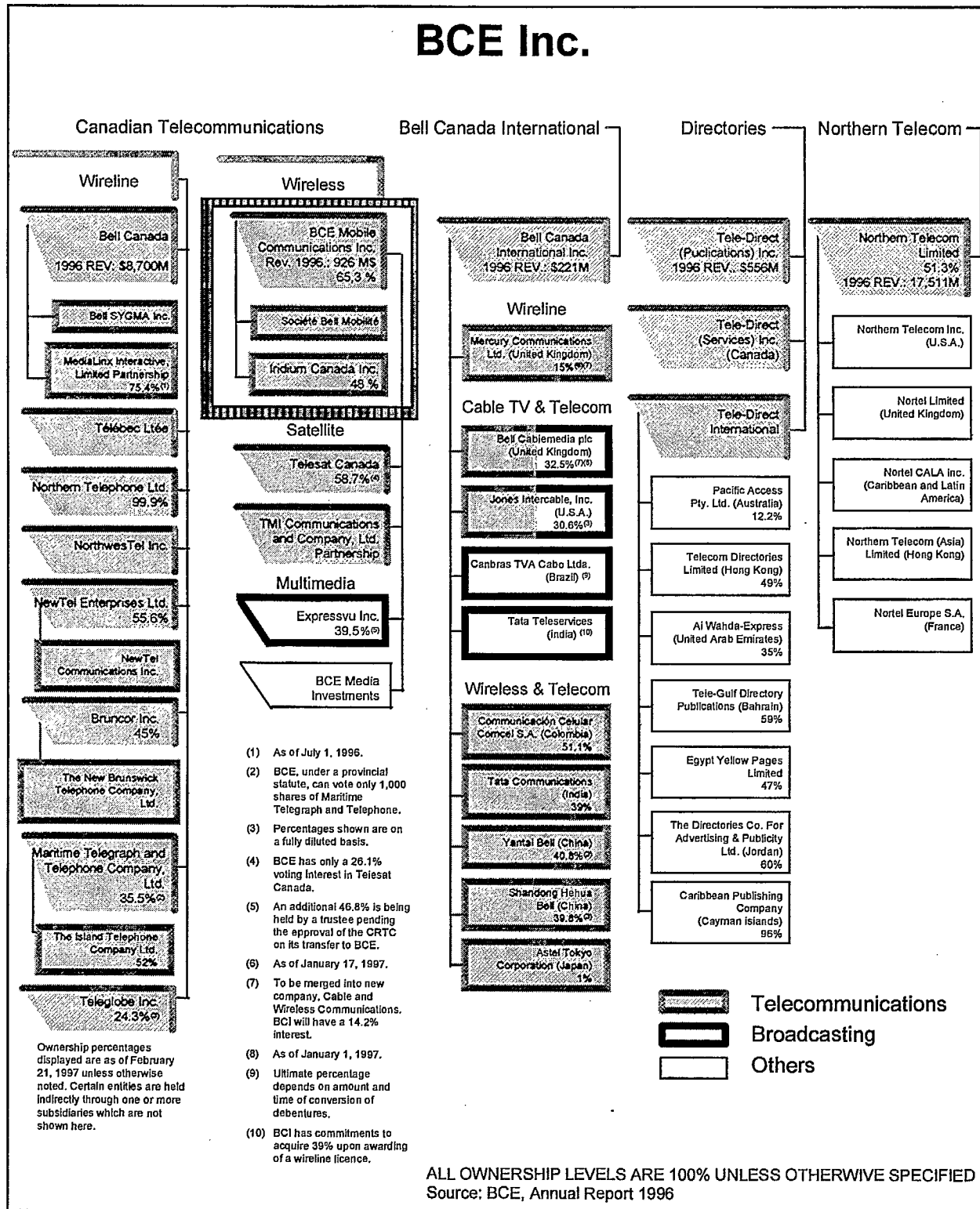


ALL OWNERSHIP LEVELS ARE 100% UNLESS OTHERWISE SPECIFIED

Source: Teleglobe Inc., Annual Information Form, May 10, 1996




*Corporate structure as of December 1995

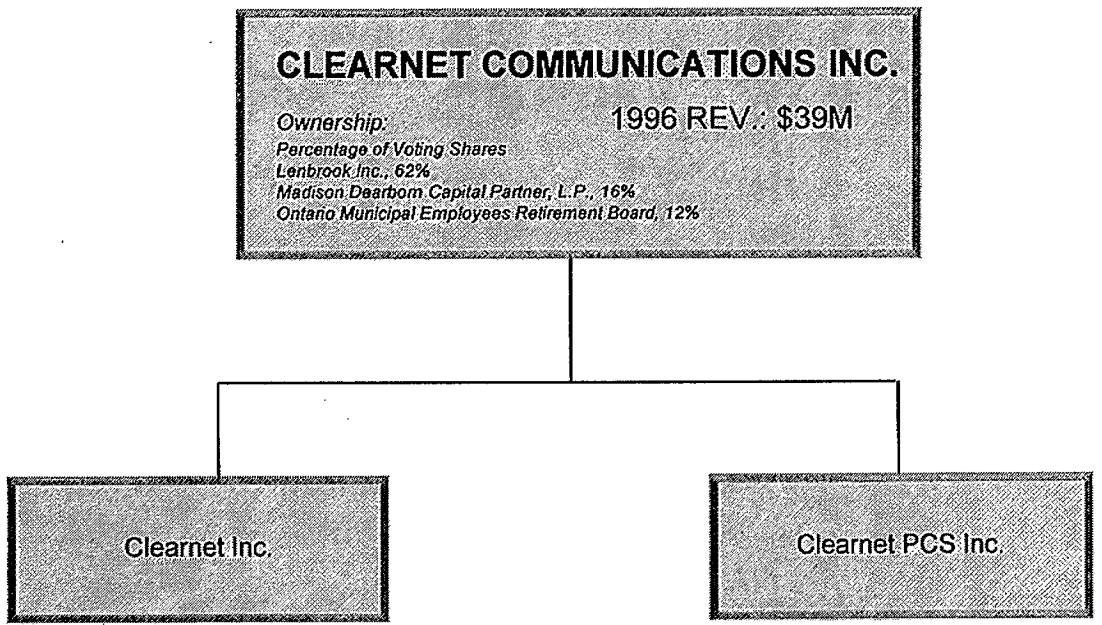
BCE Mobile Communications Inc. - 1996 Rev.: \$926 M*



*Corporate structure as of December 1996

Clearnet Communications Inc. - 1996 Rev.: \$39 M*

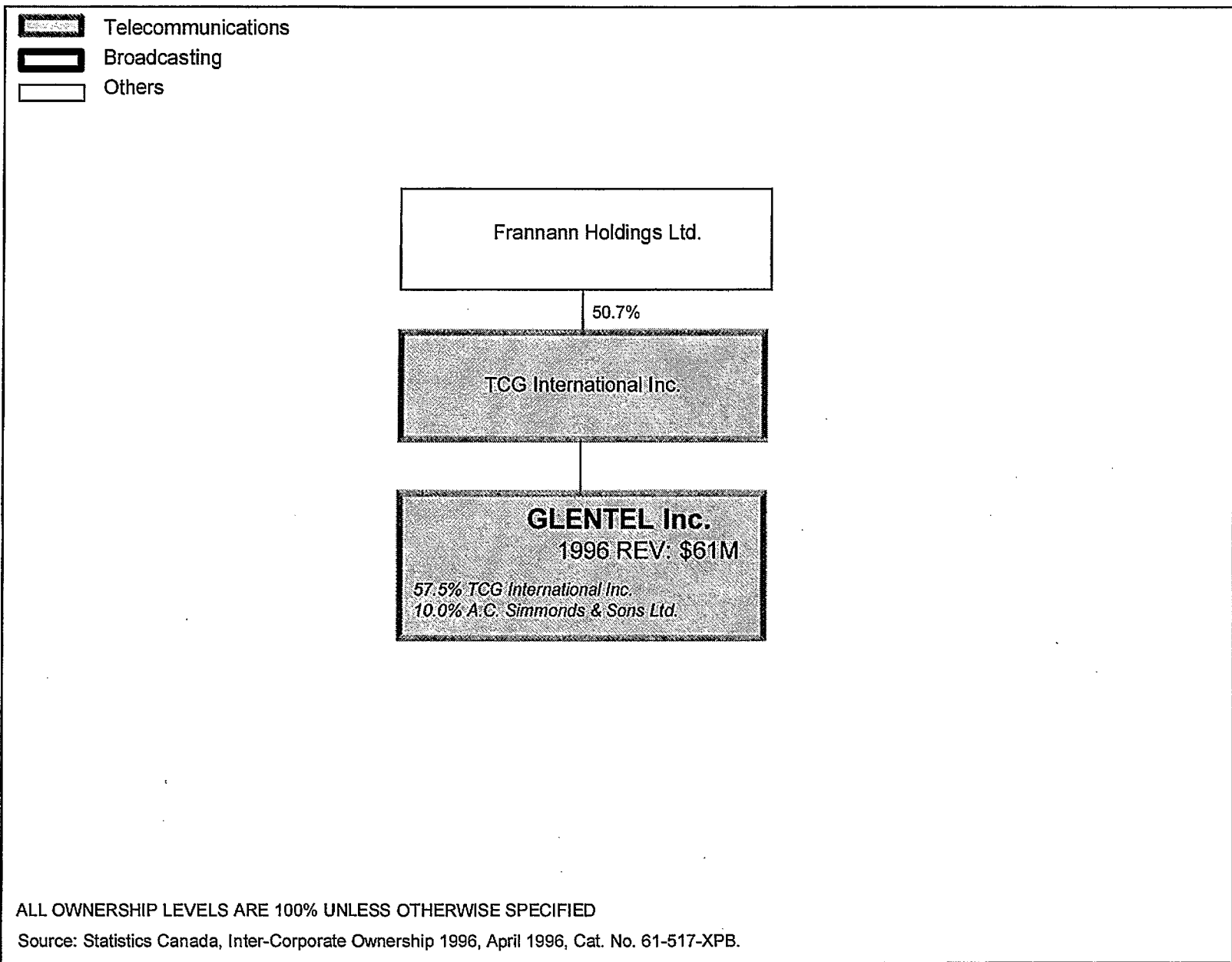
-  Telecommunications
-  Broadcasting
-  Others



ALL OWNERSHIP LEVELS ARE 100% UNLESS OTHERWISE SPECIFIED
Source: Clearnet Communications Inc., 1995 annual report to shareholders

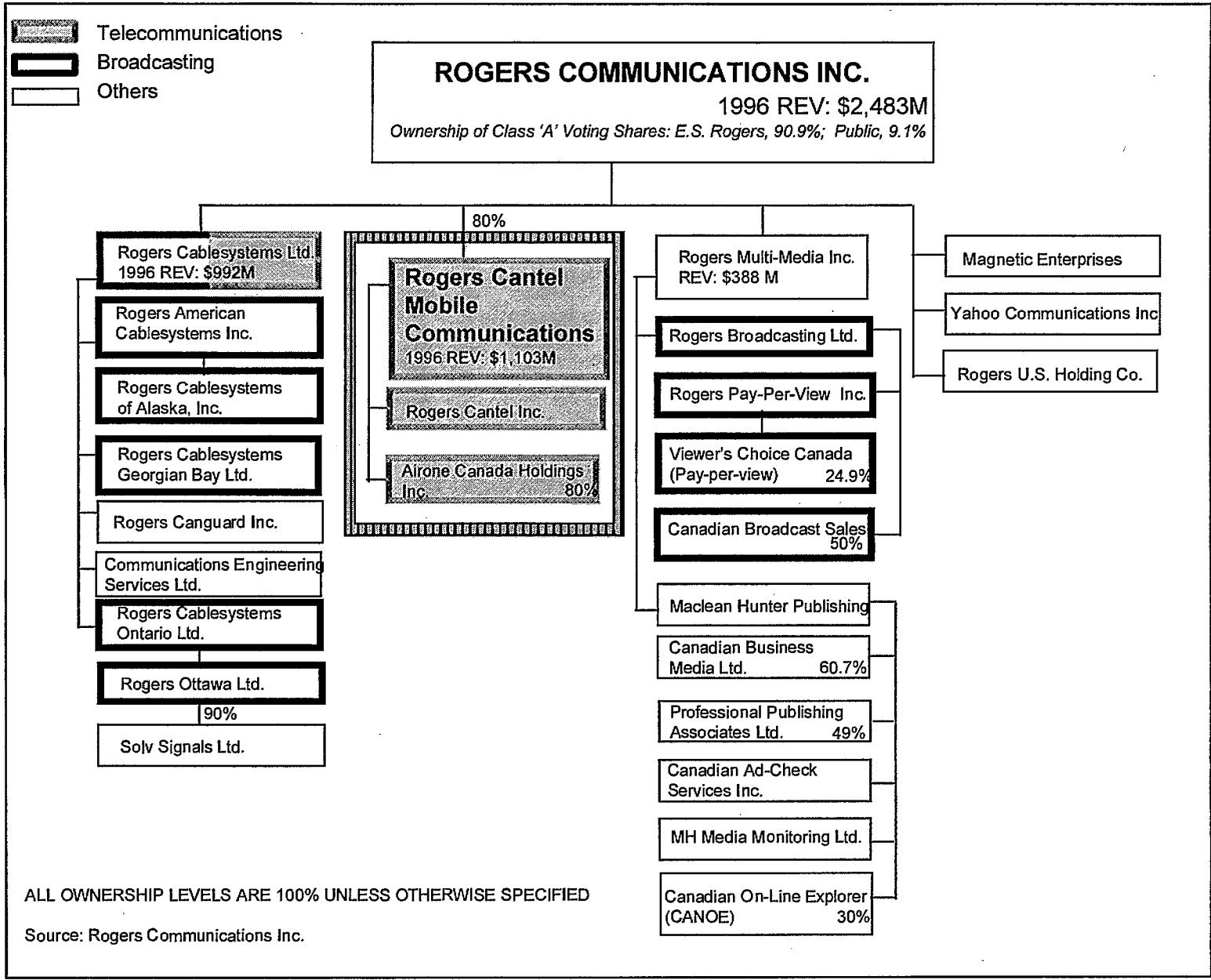
*Corporate structure as of December 31, 1995

Glentel Inc. - 1996 Rev.: \$61 M*






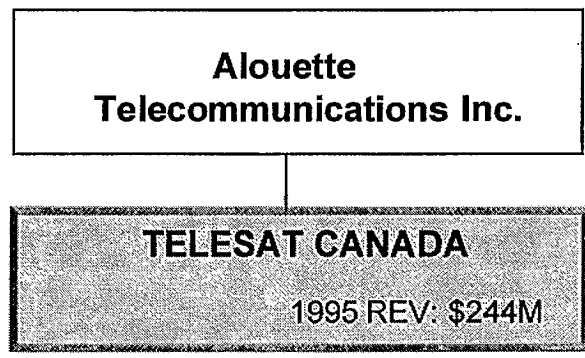
*Corporate structure as of April 1996

Rogers Cantel Communications Inc. - 1996 Rev.: \$1,103 M*



*Corporate structure as of August 1996

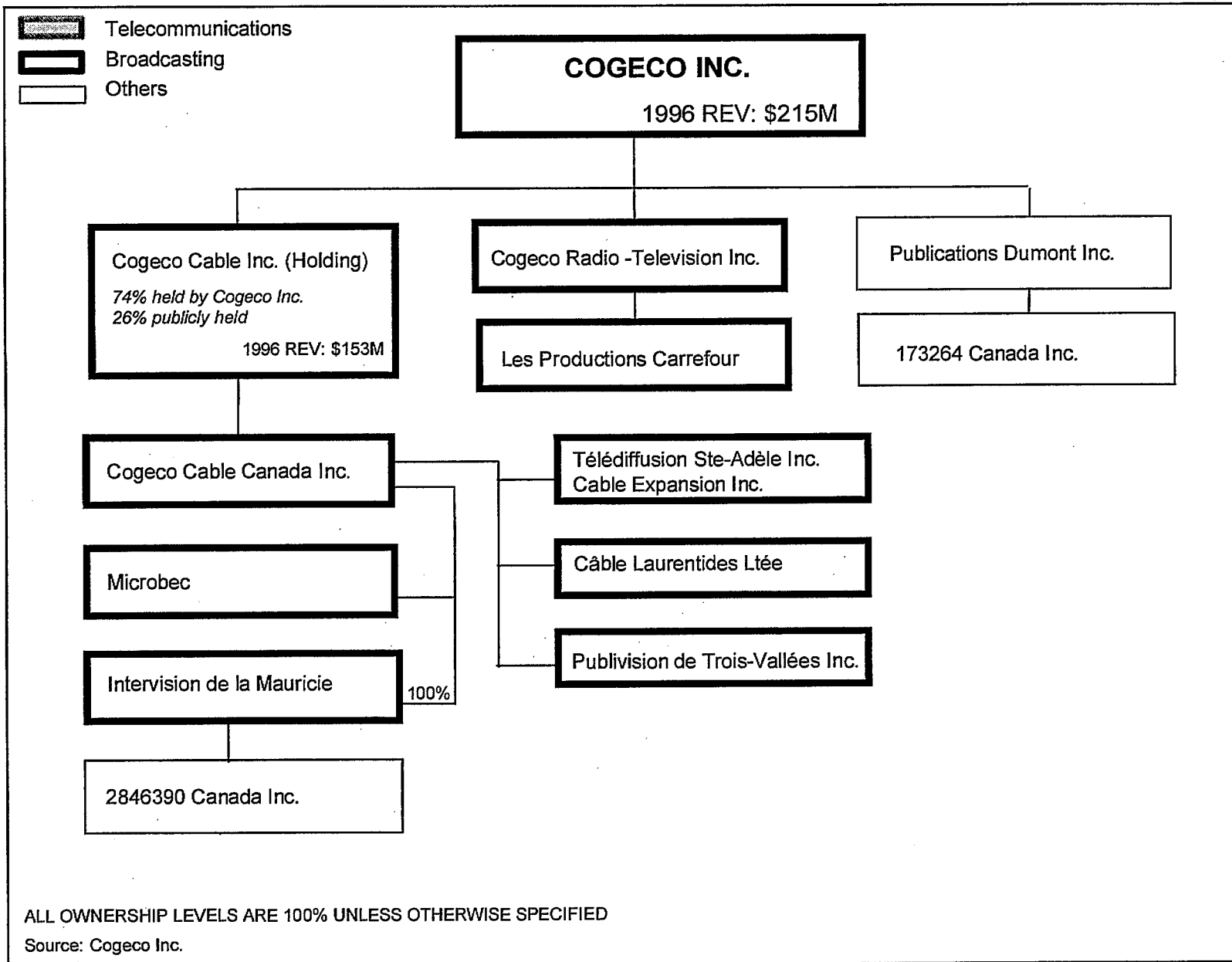
-  Telecommunications
-  Broadcasting
-  Others



ALL OWNERSHIP LEVELS ARE 100% UNLESS OTHERWISE SPECIFIED

Source: Telesat Canada; Stentor Members

*Corporate structure as of December 1995

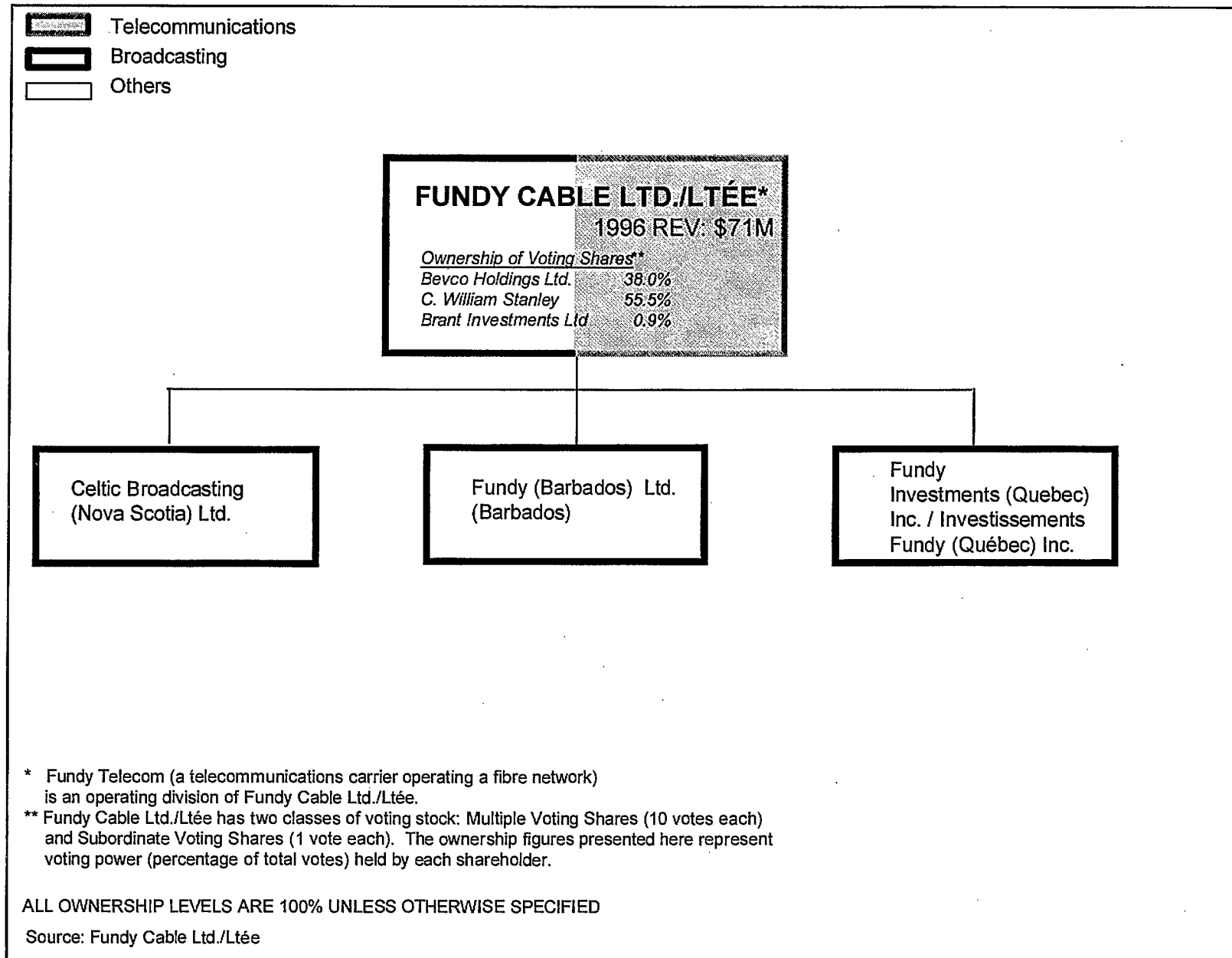


ALL OWNERSHIP LEVELS ARE 100% UNLESS OTHERWISE SPECIFIED

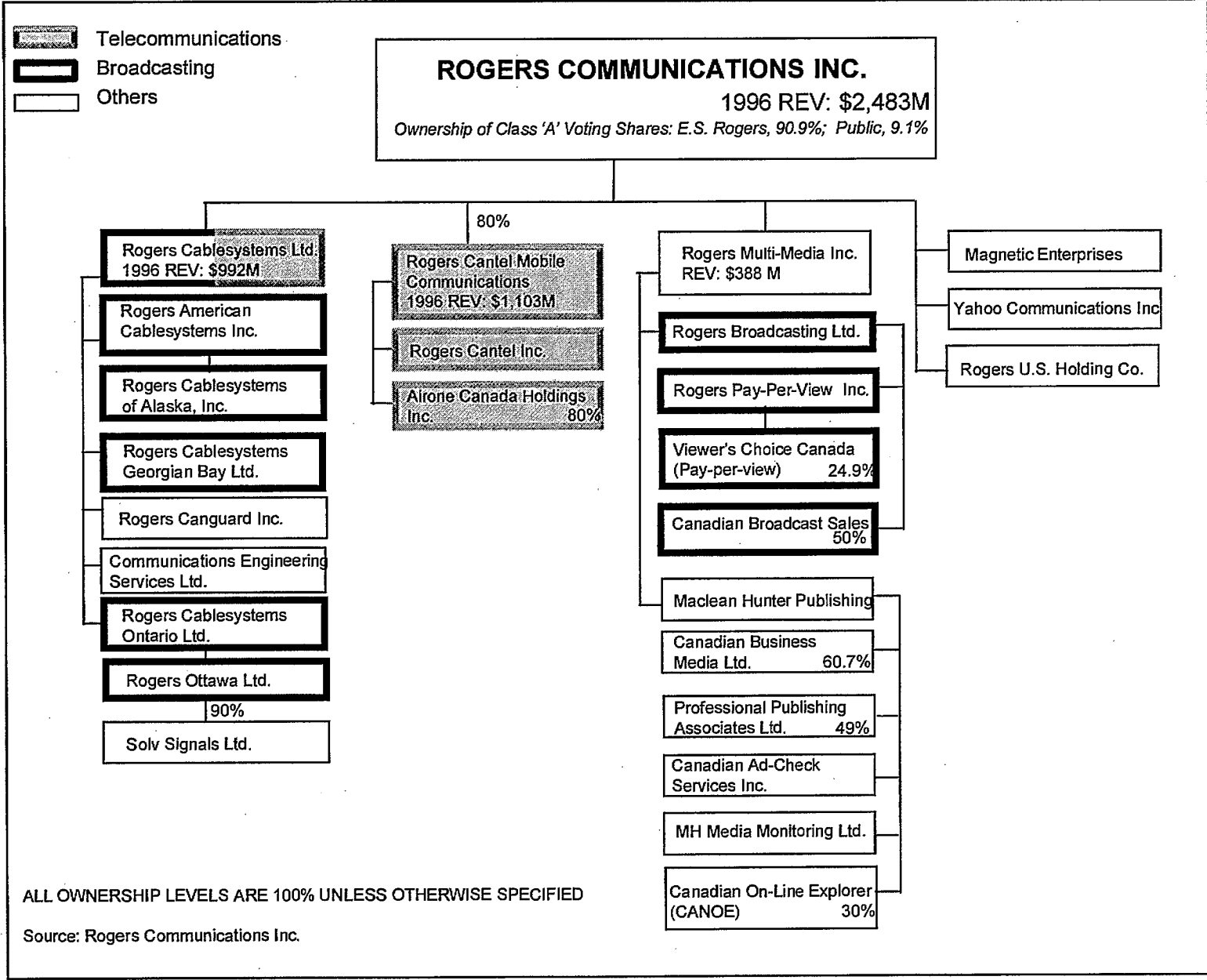
Source: Cogeco Inc.

*Corporate structure as of August 1995

*Corporate structure as of August 1996

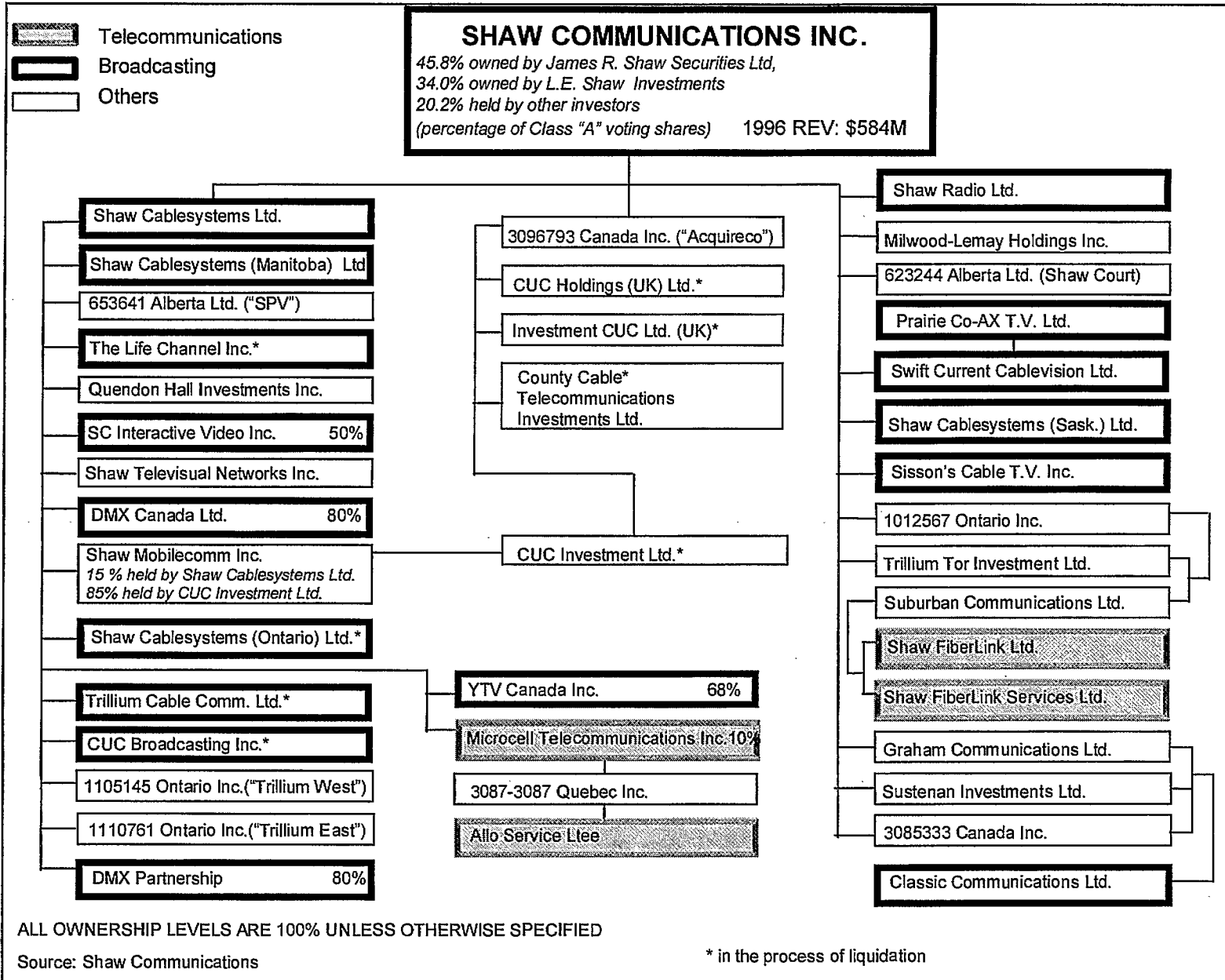


Rogers Communications Inc. - 1996 Rev.: \$2,483 M*

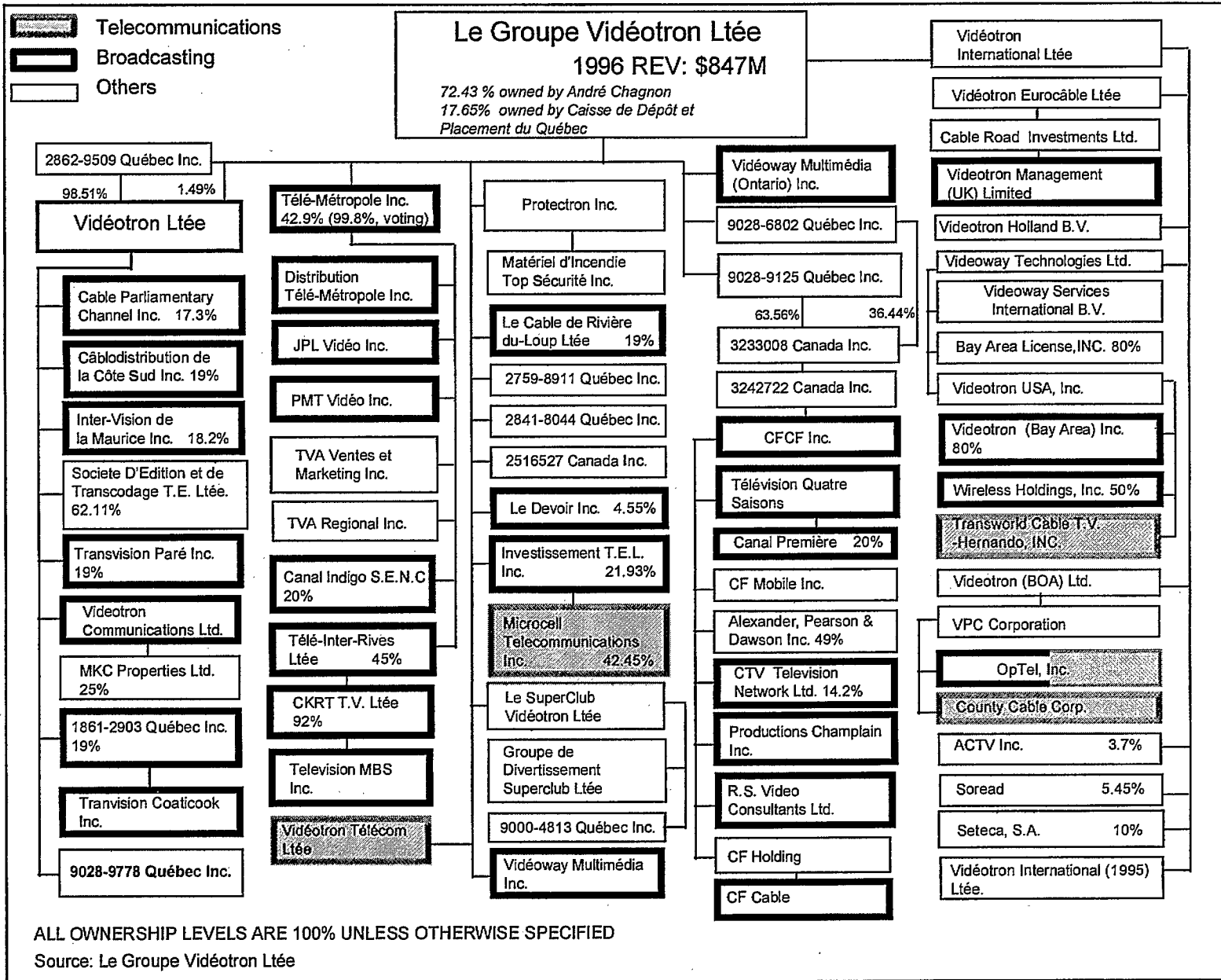


*Corporate structure as of August 1996

*Corporate structure as of January 1996

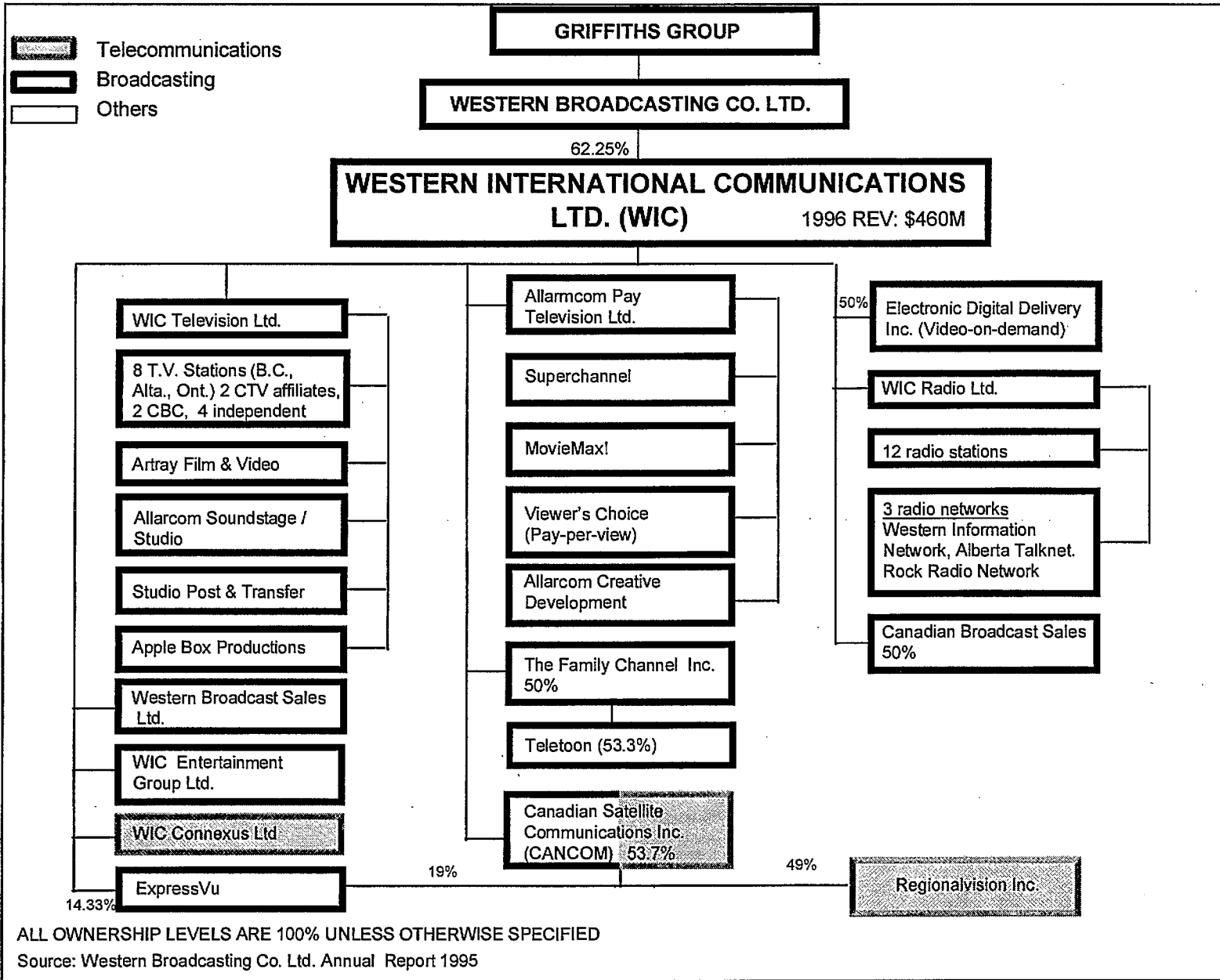


*Corporate structure as of December 1996

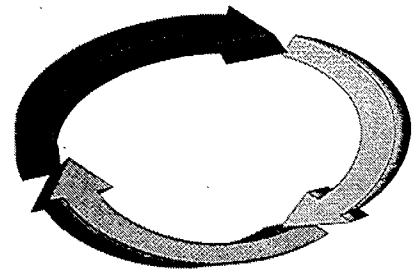


Le Groupe Vidéotron Ltée - 1996 Rev.: \$847 M*

*Corporate structure as of August 1996



WIC Western International Communications Ltd. - 1996 Rev.: \$460 M*



Annex C

Glossary of Terms

Annex C Glossary of Terms

C.1 Glossary of Financial and Economic Terms

Asset

Any possession that has value in an exchange.

Average Annual % Change (Compounded) or CAGR (*Compounded Annual Growth Rate*)

$$(((a / b)^{1/t}) - 1) \times 100$$

a = End of period number

b = Beginning of period number

t = Number of years

Capital Expenditures

Amount used during a particular period to acquire or improve Long term assets such as property, plant, or equipment.

Cash From Operations

The capital generated from operating activities and used to assume the cost of capital expenditures.

Debt-to-Equity Ratio

Represents the portion of capital financed by long-term debt.

$$\frac{\text{Long Term Debt}}{\text{Shareholders' Equity}}$$

EBITDA (*Earnings before interest, taxes, depreciation and amortization*)

The operating revenue net of operating expenses and before including charges for depreciation and amortization, interest expenses and taxes.

Equity (*or shareholders' equity*)

Includes capital invested by shareholders through the purchase of common and preferred shares and the accumulated earnings from profitable operations.

Exports

The value of goods shipped to other countries and the value of payments received from other countries for services rendered.

GDP

Is a measure of an industry's value-added to the economy. GDP at factor cost is essentially total sales by the industry (gross output) less input of goods and services provided by sources other than the industry itself.

C.1 Glossary of Financial and Economic Terms

Imports

The value of goods received from other countries and the value of payments made to other countries for services rendered.

Long Term Debt / Equity

Long Term Debt
Shareholders' Equity

Net Income

The company's total earnings, reflecting revenues adjusted for costs of doing business, depreciation, interest, taxes and other expenses

Net Profit (Loss) Margin

The net income measured as a percentage of operating revenues.

Operating Expenses

Costs associated with sales and administrative functions as distinct from those associated with production.

Operating Margin

$$\frac{(\text{Operating Revenue} - (\text{Operating expenses} + \text{Depreciation \& Amortization})) \times 100}{\text{Operating Revenue}}$$

Operating Profit

Operating revenue after operating expenses are deducted

Operating Revenues

The income earned from the provision of services and the sale of goods during a given period.

Other Investments

Investments in assets other than capital assets. For example, an acquisition of another business' assets.

Percentage Change 1995 / 1996

$$\frac{a \times 100}{b} - 100$$

a = End of period number

b = Beginning of period number

C.1 Glossary of Financial and Economic Terms

Period % Change

$$\frac{(a - b) \times 100}{b}$$

a = End of period number

b = Beginning of period number

Profit Margin

$$\frac{\text{Profit (Loss)} \times 100}{\text{Operating Revenue}}$$

An Indicator of profitability.

Return on Assets

$$\frac{\text{Profit (Loss)} \times 100}{\text{Total Assets}}$$

Return on Equity

$$\frac{\text{Profit (Loss)} \times 100}{\text{Total Equity}}$$

An indicator of profitability that is based on net profit after taxes.

Total Value Added

When a company makes a basic product or service more desirable to the customer by adding some sort of enhancement.

Trade

The exchange of goods and services between countries.

Trade Balance

Exports minus imports during a period of time.

C.2 Glossary of Regulatory Terms

CRTC Definitions

Actual Price Index (API)

An index which measures the aggregate price level of actual rates for all capped services.

Additional Tax Deductions (ATDs)

As a result of its 1990 re-organization and privatization, the tax bases of TELUS Communications Inc.'s assets were established at amounts which exceeded their net book values. The excess of the tax bases over net asset values gave rise to the additional tax deductions.

CCS7

Common Channel Signalling System 7 -- the digital signalling system used by the telephone companies to route telephone calls and to provide other services.

CLEC

Competitive Local Exchange Carrier -- the new competitive entrants.

Consumer Productivity Dividend (stretch factor)

An adjustment factor of the additional efficiency the companies are expected to achieve, as a result of the streamlining of regulation through price caps and the incentives incorporated with pricing flexibility, in the form of savings for ratepayers.

Contribution

Refers to the flow of revenues from services with rates above cost to those with rates below cost, mainly basic local residential services; specifically, the revenues that flow from toll services to subsidize residential services.

Depreciation Reserve Deficiency (DRD)

A depreciation reserve deficiency arises if the currently-estimated useful life of a class of assets is less than that used to determine past depreciation expenses. As a result, the accumulated depreciation is lower than it would have been if the depreciation expense had been determined on the basis of the currently-estimated useful life.

Economy-wide TFP

A measure of national productivity growth which reflects output per unit of factors of production inputs.

C.2 Glossary of Regulatory Terms

CRTC Definitions

Essential Facility

Defined in the Decision on Local Competition to be a facility, function, process or service that meets three criteria: it is monopoly controlled; a CLEC requires it as an input to provide services; and a CLEC cannot duplicate it economically or technically. Facilities that meet this definition shall be subject to mandatory unbundling and mandated pricing. ILECs must also treat the tariffed rates for these facilities as costs in applying the imputation test.

Exchange

The basic unit for the administration and provision of telephone service by an ILEC, which normally encompasses a city, town or village and adjacent areas. Within an exchange and to other exchanges that have extended area service (EAS) or similar services with that exchange, all subscribers may place an unlimited number of calls of any duration to all other subscribers without incurring long distance toll charges. Exchanges for which EAS or similar services have been established continue, nevertheless to be separate and distinct exchanges.

Exogenous Factor (Z-Factor)

A component of the price cap formula incorporating a change, specific to the telecommunications industry, resulting from legislative, judicial or administrative actions which are beyond the control of the company.

Explicit and Implicit Subsidy

Local residential rates have traditionally been set below cost. The resulting shortfall has been funded by profits (i.e., contribution) from other services. The toll contribution is an explicit charge on long distance services and service providers. Implicit subsidies represent the internal flow of profits from certain local services, such as optional and some business services.

Gross Domestic Product Price Index (GDP-PI)

An index which measures the cost of a fixed basket of goods and services that make up the GDP in a particular base year. This is the inflation factor (I) used in the Price Cap Index.

ILEC

Incumbent Local Exchange Carrier -- the existing monopoly telephone companies.

Imputation Test

A test adopted by the Commission to detect anti-competitive targeted pricing strategies. This test is to ensure that all telephone company services are priced to recover all causal costs including contribution and network access charges.

C.2 Glossary of Regulatory Terms

CRTC Definitions

Input Price Differential (IPD)

The difference between the telecommunications industry and economy-wide input price growth rates.

LEC

Local Exchange Carrier, defined in the Decision on Local Competition to mean either an ILEC or a CLEC.

Local/Access Shortfall

The term "local/access shortfall" refers to the deficit that occurs because the revenues from combined local and access services are not sufficient to cover the associated costs.

Network Access Service (NAS)

A connection or line that provides customers with access to the public-switched telephone network.

NPA

Numbering Plan Area -- the first 3 digits of the 10-digit telephone number usually used to designate a geographic area.

NXX

The first 3 digits of the 7-digit telephone number, also known as central office codes.

Phase I Directives

The principles, approaches and procedures established, in Decisions 78-1 and 79-9, for telecommunications carriers under the Commission's jurisdiction relating to matters of depreciation, accounting, deferred taxes and rate base determination.

Phase II Costing Methodology (Phase II)

A long-run incremental costing methodology relied on by the Commission to estimate the costs ILECs incur in providing a tariffed service.

Phase III Costing Methodology (Phase III)

The methodology used by the Commission to determine the costs and revenues of various categories of telephone company services. This is done by assigning the investment, expense and revenue accounts of the telephone company's regulated operations to the appropriate service category.

Portable Subsidy

Subsidies currently going to the ILEC for a service that reverts to the CLEC when the CLEC takes over the service receiving the subsidy.

C.2 Glossary of Regulatory Terms

CRTC Definitions

Price Cap Index (PCI)

The constraint which specifies the maximum allowable value of the Actual Price Index. The PCI consists of an inflation factor (I), a productivity offset (X) and an exogenous factor (Z).

Productivity Offset (X-factor)

A target productivity to offset the inflation rate in the price cap formula. Basically, it represents the telecommunications industry productivity gains in excess of those experienced in the general economy. Furthermore, it includes a Consumer Productivity Dividend to ensure that consumers receive the first benefits of an increased efficiency resulting from price cap regulation.

Rate Rationalization

Moving telecommunications service rates closer to their associated costs.

Rate Rebalancing

The term "rate rebalancing" refers to an increase in the price of local/access services in order to bring the rates for these services more closely in line with their costs and the corresponding reduction in the toll contribution rate, thereby reducing the subsidy that flows between these two classes of services.

Service Band Index (SBI)

An index which specifies the aggregate price level of a sub-basket of services charged by the regulated firm.

Service Band Limits (SBLs)

A constraint which limits the increase or decrease in the price of a sub-basket of services.

Service Baskets

A group of services, based on criteria such as homogeneity and similarity in demand price elasticities, subject to pricing constraints under price regulation.

Toll Contribution Rates

Rates paid by providers of long distance service to subsidize the local/access shortfall.

Total Factor Productivity (TFP)

A measure of the economic efficiency of a firm's operations. TFP is defined as the ratio of outputs to inputs.

C.2 Glossary of Regulatory Terms

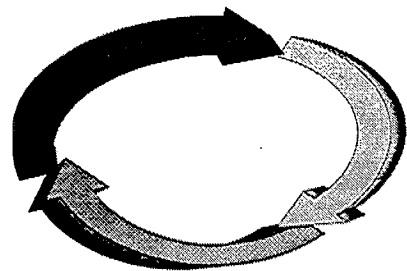
CRTC Definitions

Unbundling

The policy of requiring ILECs to make available individual essential facilities on a tariffed basis.

WSP

Wireless Service Provider (e.g. cellular and personal communications services) who is not acting as a CLEC.



Annex D

Standard Industrial Classifications
Data Sources

Annex D Standard Industrial Classifications and Data Sources ¹

Data Definitions & Sources

For the purpose of this publication the following definitions of the ICT sector of the key suppliers are used:

- the ICT manufacturing industry (e.g., consumer electronics, communications and other electronic components, computer equipment, and instrumentation).
- the ICT services sector (software and computer, telecommunications and broadcasting).

The inter-relationships between the ICT manufacturing indicators and the ICT services industries justify their being grouped together. This allows for a better appreciation of the ICT sector's growing roles and influences on the supply side of the information economy.

Classification frameworks are based on the "*Canadian Standard Industrial Classification (1980), Cat. No. 12-501*". It is expected that the implementation of the North American Industry Classification System (NAICS) by 1997 will greatly facilitate defining the ICT sector. More information on the 1997 NAICS can be obtained from Statistics Canada and/or its website at <http://www.statcan.ca/english/Subjects/Standard/>.

The ICT sector is not a recognized grouping in the existing industrial classifications. As a result, data aggregations for this sector pose a number of problems. In the ICT goods sector, in particular, data for some component industries are either not collected or are available only at higher levels of aggregation. These aggregation problems differ by economic variable studied, depending on the data source.

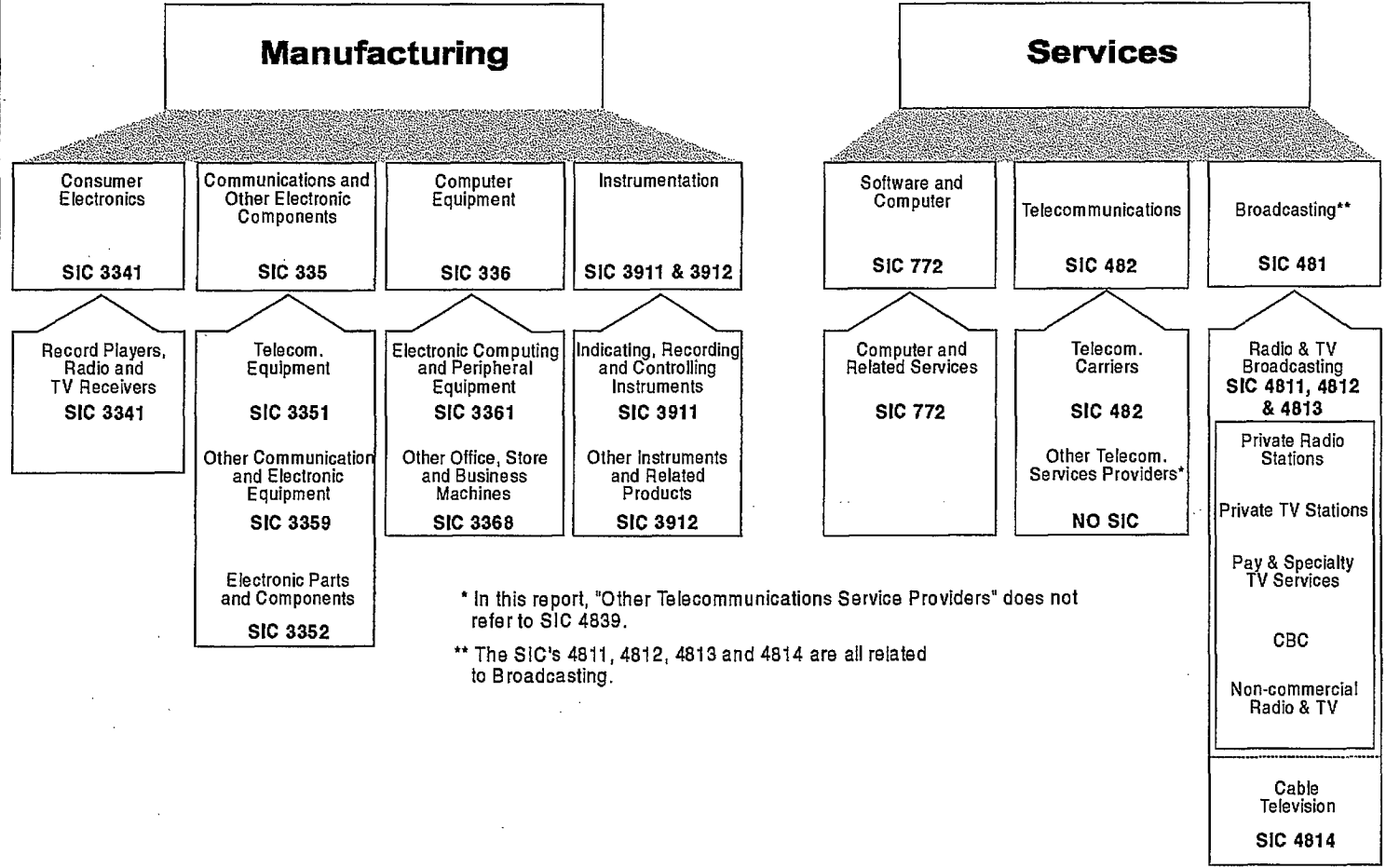
For section 1 of the report, the data used come mainly from a multitude of Statistics Canada's databases. ² Most of these data, which originate in both administrative and survey sources, are contained in the following Statistics Canada publications or special tabulations: GDP data in "*Gross Domestic Product by Industry, Cat. No. 15-001*", published by the Industry Measures and Analysis Division; employment data in "*The Labour Force, Cat. No. 71-001*", published by the Household Surveys Division; financial data in "*Financial and Taxation Statistics Enterprises, Cat. No. 61-219*", published by the Industrial Organization, R&D data special tabulations Science and Technology Redesign Project; trade data for goods producing industries by SIC from special tabulations by the International Trade Division and for services in "*Canada's International Transactions in Services, Cat. No. 67-203*", published by the Balance of Payments Division.

Sections 2, 3 and 4, relied mainly on data obtained from the annual reports to shareholders, websites of specific companies and company filings with *Moody's International Company Data* and *Compact Disclosure Canada*. In addition, both the private and public sector were consulted specifically to verify and expand where appropriate the data used in preparing the corporate structure and financial profile of the key players analyzed in this report.

¹ For more detailed information on Standard Industrial Classifications sources and technical notes please refer to "ICT Statistical Review 1990-1995", Industry Canada, May 1997.

² Ibid.

Information and Communication Technologies Legend



* In this report, "Other Telecommunications Service Providers" does not refer to SIC 4839.
 ** The SIC's 4811, 4812, 4813 and 4814 are all related to Broadcasting.

Source: "Canadian Standard Industrial Classification - 1980", Statistics Canada, Cat. No. 12-501. For more details also refer to "ICT Statistical Review 1990 - 1996", Industry Canada, May 1997

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