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*N*ew media are combinations of media, technologies and content resulting in a wide range of new information products, applications and services. They offer new means to create, organize and share information. The potential of new media is not limited by technology but only by the imagination and skills of those who develop and use them.

New media change the way we do business. The economy itself is increasingly based on timely and well-targeted information. New media services shift the boundaries among the old media industries, which are extending their services into new areas. New media markets are more attuned to the users' needs and are experiencing a rapid rate of growth.

Though the impact of new media is still small compared to the impact of old media (television, film, cable, radio, sound recording, publishing), the economic, social and cultural consequences will be considerable.

Canadians require an advanced information infrastructure which will support the sophisticated new media products and services that they are capable of developing. Also required is an enabling policy framework, which will facilitate new media developments and guarantee that these sustain Canadian values.

The mission of the Department of Communications is to support Canadian culture as a cornerstone of national identity and to ensure the orderly evolution of Canadian communications and information systems as key elements in the development of the economy and Canadian society. To prosper and develop in the information age, Canadians must be able to create their own information and have the means to distribute and communicate it to others.

A new media information policy is required, based on the existing legislative framework and programs. Together, the Radiocommunication, Broadcasting and Copyright Acts and the Telecommunications Bill set the stage for new media information policy development. This framework ensures the orderly development of communications pathways and support for the creators of information and cultural programming.

Canada's new media information policies must ensure that its citizens have access to world-class media services; allow producers and creators of new media to find new markets and audiences for their products; enable our country to be ranked among the top countries as a provider of new media products and services; and assist our businesses, our heritage institutions, our libraries and our cultural industries in their pursuit of opportunities generated by new media technologies.

The Department of Communications will follow an integrated approach in developing an information policy that takes new media fully into account and reflects Canadian economic, social and cultural values. Broad consultation with industry and industry associations, academia, consumers and federal and provincial partners is a key element of this approach. In particular, the Department will undertake to :

❖ *provide policy directions which will facilitate the ongoing development of an advanced new media information infrastructure capable of adapting to new media innovations as they arrive;*

❖ *develop policies which ensure that Canadian content has a core presence within new media services available to Canadians;*

❖ *propose amendments to copyright and intellectual property laws required by new media developments;*

❖ *develop policy principles for the guarantee of access to information and the protection of personal privacy;*

❖ *identify electronic databases with Canadian content and ensure their integrity and protection;*

❖ *conduct research into the economic, social and cultural implications of the new media information society;*

❖ *develop a strategy to maximize Canada's new media resources, in order to strengthen existing organizations and foster the development of new ones;*

❖ *develop policies to facilitate the orderly development of new media with regard to technical standards for interconnection, delivery systems, bandwidth availability and spectrum allocation;*

❖ *define and develop the domestic market for new media products and services, so that their evolution, distribution and consumption are facilitated.*

The Department of Communications will provide focus, opportunity and leadership for Canada as we move successfully into the new media information society.

1 INTRODUCTION

Media, from prehistoric cave paintings to newspapers, to television and satellite broadcasting, have been transforming our societies, economies, and cultures. Media inform and communicate about the neighbourhood, the country, the continent and the globe, providing a wide array of forms of cultural expression. Media create linkages, reduce distances and save time – from calling home to calling up stock market quotations.

The sophisticated and effective use of media has become a hallmark of Canadian life. We have been early adopters of media as they arrived, from the telephone to compact discs (CDs). And we have picked wisely from among the options available to us. Governments, corporations, institutions of learning, families and individuals – all have participated in the process.

New media are combinations of media, technology and content which result in a wide range of new information applications, products and services. The newness lies in their power to transform existing services or to create different possibilities.

Now, the media era has entered the next phase. New media engage, intrigue, and enrich us as never before, and challenge us in innovative ways. The media we will examine in this paper mean new choices – and new ways of choosing. The time to start assessing their implications is right now. New media are here to stay. They are shaping the present and will be part of shaping the future.

Information – new media provide the means to create and share it. They enable us to organize, combine and store it for future use. They are also the forms information takes – some of which are familiar to us: text, sound (voice or music) graphics, photographs, or still and full-motion video.

Broadcasting, publishing, sound recording, film and telecommunications are "old media" which have had enormous impact on our culture, our economy and our social lives. Where old media intersect with newer products such as computers, new media services such as online database services are created. Where new media intersect, products and services such as multimedia software emerge.

Ten years ago, few imagined that a disc the size of a 45 RPM record would contain an entire album – impeccably recorded. And nobody would have guessed that the same size disc might contain an entire encyclopedia, complete with pictures.

For some time now, newspapers have been composed electronically, transmitted by satellites and printed only at their final destination – just before they are delivered by truck and handed to the reader. Light and sound, major components of stage performances, are now orchestrated by maestros at computer control panels. Banks transfer funds electronically, businesses send bills, pay bills, track merchandise and monitor delivery vehicles – all without paper.

New media complement these traditional media and also combine traditional information in new and interesting ways. They give us new ways of thinking about ourselves as individuals and Canadians, that is, as members of the information society. Businesses are finding more useful and profitable ways to handle information; educational institutions are exploring new means to teach our children; artists are developing new forms of expression; and consumers are accessing more and more information in a wider variety of fields of interest.

In making the information society more accessible, new media pose new kinds of questions. Will Canadians and Canadian industries be supported by an advanced communications infrastructure which enables them to create, communicate and use information? Can we meet the challenge of ensuring that Canadian cultural values and ideals are conveyed by new media?

The Department of Communications has been closely following the developing role and impacts of media in the evolution of the information society. With this paper, the department hopes to initiate a productive exchange on the key issues raised by new media, and on ways of addressing them. Canada must equip itself with public policies that position it advantageously. It is the responsibility of each government in Canada, within its own jurisdiction, to define and chart its course of action. In view of the scope, complexity and nature of the issues, cooperation and consultation will be indispensable in order to develop the policies that will help manage the evolution of new media.

Our prosperity and competitiveness in a changing world, the strength of our economic, social and cultural values, and the quality of life for all Canadians – all depend on how we make the choices opened up for us by new media.

OUR CHOICE
IS TO
MANAGE THE
INEVITABLE
CHANGE OR
LET THE
CHANGE
MANAGE US.

EXAMPLES
OF
NEW
MEDIA

CD-ROM: Literally, Compact Disc – Read Only Memory. The CD-ROM is an inexpensive but high-density storage device compatible with many personal computers and a variety of display devices. With its capacity to hold many thousands of text pages, the CD-ROM has made entire encyclopedias, or the holdings of museums, available at our fingertips.

DESK-TOP VIDEO: As we have seen, the addition of graphics capabilities to the personal computer opened up a myriad of new business opportunities (in such fields as desktop publishing). Desk-Top Video, which incorporates moving images into computer memories and display devices, is likely to bring about another revolution. With Desk-Top Video, audio-visual representations (in business or educational applications) might include extracts from films, creatively reworked and put to new uses.

DIGITAL SOUND RECORDING: The Mini-Disc (a recordable version of today's compact disc) and Digital Audio Tape will make it possible for consumers to record music in digital form.

GEOGRAPHIC INFORMATION SYSTEMS (GIS): Geographic Information Systems allow private or public entities, such as municipalities, to combine information from a variety of sources and display this in useful ways. For example, data on real estate densities and traffic patterns might be combined within an integrated map.

HIGH DEFINITION TELEVISION (HDTV): HDTV is an emerging television system which represents a significant improvement in the quality of sound and image over the current system.

DIGITAL VIDEO CONFERENCING: This technology combines features of telephone communication and television transmission.

MULTIMEDIA SOFTWARE: Multimedia software allows for the combination of sound, text, graphics and video. It will enable information providers and users to re-package existing information, create new categories of content, and devise a multitude of new applications. Multimedia software will facilitate the learning process in a variety of novel ways.

ONLINE DATABASE SERVICES: These link information and telecommunications services, allowing users to access databases from a personal computer connected to the telephone lines. Many newspapers, for example, have made their archives available in this form.

VIRTUAL REALITY: Virtual reality products provide the experience of entering three-dimensional audio-visual environments. Applications range from architectural design to jet pilot training.

2 NEW TOOLS – NEW IMPACTS

N ew media are at the core of the information society. They offer the choice of organizing information when we need it, and in whatever format desired. If we can imagine how we want to communicate our ideas, new media will enable us to bring them to life.

New media can be found all around us in diverse forms – the compact disc and multimedia personal computers, to mention but two. Just as we do not need to understand the workings of the automobile we drive, we do not need to be experts in new media technologies to use and enjoy the new products and services. Some appreciation of the basic make-up of new media, however, is helpful in understanding the impact they are having on virtually every aspect of our lives.

NEW MEDIA ARE DOING THEIR JOB WHEN WE DON'T WORRY ABOUT HOW THEY WORK.

NEW MEDIA – TECHNOLOGIES

The technological advance at the heart of new media is digitization: the transformation of all kinds of information into a uniform system based on two terms, the binary digits 0 and 1, and the infinite possibilities for combining these.

Digitization has transformed the ways in which we use information in two important ways. To begin with, it has eliminated much of the noise or interference which inevitably occurs when information is copied, manipulated or transmitted over distances. We do not need to have too fine an ear to detect the clarity of the musical sounds produced by a compact disc compared to the traditional vinyl record.

In addition, digitization has increased the compatibility of different sorts of information. As music, moving images and text are recorded in digital form, they may all be sent via digital communications carriers. These carriers recognize such messages as bits of information rather than distinct audio or visual forms. Think of how a fax machine may transmit text and image with equal efficiency because it detects no difference between them; they are both just areas of light or dark.

New media are hybrids: they combine appropriate electronic technologies with content or media forms to make packages of products and services which are less costly and easier to use with each generation. For example, when the Newtek Video Toaster was introduced, it permitted artists (such as the musician Todd Rundgren) to manipulate video images and computer graphics at a fraction of the cost of anything else on the market. New media enhance the capacity of people to appropriate information and to achieve higher levels of creativity. New media may be extensions of the businessperson's presentation, the author's pen or the painter's brush.

NEW MEDIA
ARE HYBRIDS
OF HARDWARE
(COMPUTERS AND
ELECTRONICS),
SOFTWARE
(PROGRAMS AND
CONTENT),
NETWORKING
(TELECOMMUN-
ICATIONS AND
BROADCASTING),
MADE POSSIBLE
BY MICRO-
PROCESSORS,
DIGITAL
TECHNOLOGY AND
INNOVATORS
THROUGHOUT
THE WORLD.

In short, new media are constantly evolving, and, as they do, they are adapting to our natural desire for flexibility and stimulating our creativity and innovation. Desk-top video, for example, permits us to manipulate video images and computer graphics with greater ease than previously possible and at much more affordable prices.

Sometimes these hybrids are completely integrated within a single new media product, such as hand-held CD-ROM units which display text and graphics. In other cases, the hybrid may represent an enhancement of traditional media, one that has been augmented by the new media elements which have been grafted onto it – such as a book and a compact disc that have been designed to complement one another.

However the synthesis is achieved, the old ways of displaying information, dictated by the technologies they used, give way. New forms arise, new choices are made, and our imagination is the only limit.

It also takes a lot of imagination to foresee the course of new media's evolution. *Instant World*, a report published in 1971 by the Department of Communications, spoke of advances brought about by computer chip technology and the digitization of telephone systems:

> TELECOMMUNICATIONS SYSTEMS DESIGNED PRIMARILY FOR THE TRANSMISSION OF INFORMATION IN ANY FORM, MAKING THE CONTENTS OF DATA BANKS AND THE PROCESSING POWER OF COMPUTERS COMMONLY AND READILY AVAILABLE, MAY OPEN THE WAY TO NEW DIMENSIONS OF KNOWLEDGE, NOT ONLY IN BUSINESS AND INDUSTRY BUT EQUALLY IN THE HOME AND AT SCHOOL. MOREOVER, THE INTER-ACTIVE TWO-WAY CAPABILITY OF SUCH SYSTEMS SUGGEST THE POSSIBILITY OF MUCH WIDER PARTICIPATION IN POLITICS, COMMUNITY AFFAIRS, BROADCASTING AND THE ARTS. EVENTUALLY FOR THOSE WHO CAN AFFORD IT, THE STANDARD TELEPHONE MAY INCORPORATE VIDEO-SCREEN, KEYBOARD, AND PRINT-OUT EQUIPMENT, GIVING INSTANT ACCESS TO ALL AVAILABLE INFORMATION… (1971: 161)

The authors of this report saw the shape of things to come. However, writing when they did, they could not foresee that the personal computer, as well as the telephone, would one day connect our desks to information systems all over the world. Both could "incorporate video-screen, keyboard, and print-out equipment."

Hybrid new media have evolved, and do not depend on telecommunications networks exclusively. They can be linked to any communications system which serves people's needs in an efficient and cost-effective fashion. Sometimes telephone lines are suitable; at other times, linkages to cable networks or broadcast satellites are more appropriate. And let us not forget that postal services can be an ideal choice, such as when sending CD-ROMs from one place to another. A new media communications infrastructure will use all of these – either separately or in combinations.

Choice is what new media are all about, and flexibility in choosing a delivery system is only the beginning. Businesses and institutions of all kinds are finding they are free to choose new ways of reaching customers, clients, and users. Shareware producers, for example, use bulletin board networks to sell and service their products directly to the end-user.

New media also enable us, as individuals, to choose new ways of creating and using information, and indeed, to customize the information to meet our own needs and to do so in a way designed to match our natural way of doing things. The video cassette recorder (VCR) allows us to watch a program when we want to. Authoring systems allow us to navigate our way through vast databases. Similarly, expert systems allow mechanics to find the real problem with malfunctioning automobiles.

New media give each person more control to meet the challenges of work, permit students to explore and to learn at their own pace, and enhance the creative capabilities of artists.

NEW MEDIA – IMPACTS

Whatever the underlying technology, however advanced the equipment and components, the issues related to new media are not primarily issues of technology itself. The power, the intensity, and the pervasiveness of new media within the information society are having tremendous economic, social, and cultural impacts.

All the traditional media and information industries used to have a speciality, a niche, a defined role. Each of these industries is changing itself by using new media to transform its business. For example, publishers now prepare texts in electronic format for editing and production purposes. Once they have assumed electronic form, texts can be published on paper, online, or on compact disc.

The availability of electronic databases and electronic business transactions is changing the market within which traditional information service providers operate.

But information is no longer the province of specialized industries alone. On the contrary, knowledge and data are now considered a strategic resource throughout corporate Canada. Companies have realized that information constitutes a non-depleting resource. Current information can be sold. Then, when it has become dated, it can be resold as historical data. This data on the past can then serve to help develop forecasts. The trend projection industry itself is a major vendor and buyer of information.

In business and elsewhere throughout our society, receiving information is no longer the final step. The ways we create and use information are becoming more dynamic. We have access to more information than ever before. We are able to alter it, organize it in different ways and explore information sources in as much depth as we require.

Some of our greatest repositories of information, such as libraries and archives, are being transformed from providers of the print medium to providers of information services in diverse media.

Learning institutions are a key part of the information society. Teachers take advantage of new media to transform the classroom into a "classworld." Learning becomes continuous and life-long rather than organized around a curriculum with an "end." A variety of new skills are required to adapt to the changing information economy. These are not simply the technical skills required to operate new technologies. People need knowledge to make informed choices in using new media and to take full advantage of the opportunities they offer.

The ways in which cultural industries produce and deliver their products are changing. Artists and other creators are exploring new forms of expression. New delivery systems, such as videocassettes and pay television, have already transformed the film industry. As the range of recording formats grows to include digital audio cassettes and recordable mini-discs, sound recording companies will face new challenges and opportunities. Magazine publishers are already incorporating compact discs and holographic art within their products. Failure to adapt to the changes brought about by new media in the creation, distribution and consumption processes may compromise the viability and existence of Canadian cultural industries.

How we use what the cultural industries produce is governed by copyright. Compensation to creators assumes greater complexity when hybrid media expand the range of activities considered creative in nature.

As the importance of information grows, social issues arise. Questions about equitable access to information, who has access to it and under what conditions, need to be re-examined, particularly with the growing concern regarding the information-rich and the information-poor. In an information society, opportunity is linked to information access.

When the amount of personal information in electronic form increases, and when the ways of finding, transforming, and circulating that information multiply, the issue of privacy becomes more acute.

New media can contribute to an improved quality of life for all Canadians. For example, barriers for the mobility impaired can be overcome, providing access to learning, entertainment and work which together create a greater sense of community for all of us.

In summary, the Department of Communications is well aware that the emergence of new media affects our lives, our society and our culture. The economic basis of the information society as a whole is clearly undergoing change. Industries are evolving and new business patterns are arising. Producers and distributors, from the communications and the cultural industries, are developing new media products and services. The relationship among the public, artists and creators, and museums, libraries and archives is being transformed.

Just as new media are hybrids, so too the policies which encourage their development and deployment, which promote a hybrid infrastructure to carry them and which establish the rules for legal issues such as copyright or issues of access and privacy will be hybrids. Traditional boundaries are melding in content, technology and media – our policies must facilitate the choices this affords.

The development of well-focused policies will be increasingly important if Canada is to be well-positioned in the information society.
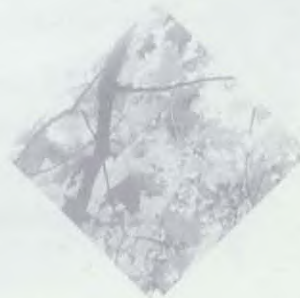
NEW MEDIA
AND THE
INFORMATION
SOCIETY:
SOME
BENEFITS

As our society becomes more and more information-based, and as we confront the challenges of new media, we may expect the following benefits.

MORE EFFECTIVE AND ATTRACTIVE SERVICES AT MORE AFFORDABLE COSTS:

For consumers, the significant thing is not the technological basis of new media. Consumers want services which provide information of high quality in large quantities. They will demand that this information be more personalized, tailored to their specific tastes and needs, schedules and ability to pay.

For businesses, information will become an essential resource if they are to react strategically to changes in their markets. More and more information will be required, and the speed of access will become crucial. The ability to sift through large quantities of available information and pull out that which has immediate strategic value will become paramount in an increasingly competitive economy.

For governments, information will become an essential tool for interacting with the public and with other levels of government. We can expect that governments will become major providers and users of information.

A GREATER VARIETY OF INFORMATION PROVIDERS

As the number of information providers increases, we may expect growing pressures for deregulation. Traditional boundaries between industries and technologies are breaking down, and we are confronting the "bursting box" phenomenon, as information providers – telephone companies, cable firms, and broadcasters, for example – seek to expand their activities beyond the walls which have kept them apart.

GREATER EXPERTISE THROUGHOUT THE CHAIN IN INFORMATION SERVICES

With new levels of competitiveness, and with the emergence of a host of competing players in each information sector, we can expect increased levels of expertise. Information providers, such as news organizations, must become expert in the most efficient ways of distributing information, just as those involved in delivering information – for example, cable systems – must learn to master the wide range of products and services available to them. Information brokers will emerge.

INCREASED COMPETITIVENESS OF INFORMATION-BASED FIRMS

As information processing becomes a significant part of everyone's cost of doing business, the pressure to keep costs down and to offer expanded and more efficient services will increase. An increasing number of value-added services will be offered to consumers.

NEW FORMATS FOR PROCESSING INFORMATION

The transformation of information into digital form has expanded the range of ways in which it can be packaged, delivered and displayed. Different formats appropriate to the skills, tastes, and financial resources of information users are likely to proliferate. For example, analog cassettes, compact discs, mini-discs and digital audio tape will now compete as ways of packaging prerecorded music.

REDUCTION OF COSTS

The costs of most information technologies normally follow a declining curve over time, as markets expand and competition increases. We have seen this in the markets for personal computers and videocassette recorders and, more recently, with CD-ROM players and software.

In summary, new media will serve as catalysts in shaping the opportunities and choices of an information society, increasing access to information just as they make information an essential resource within our social, cultural and economic life. New media will be the principal channel through which we become aware of the benefits and challenges which the information society has brought us.
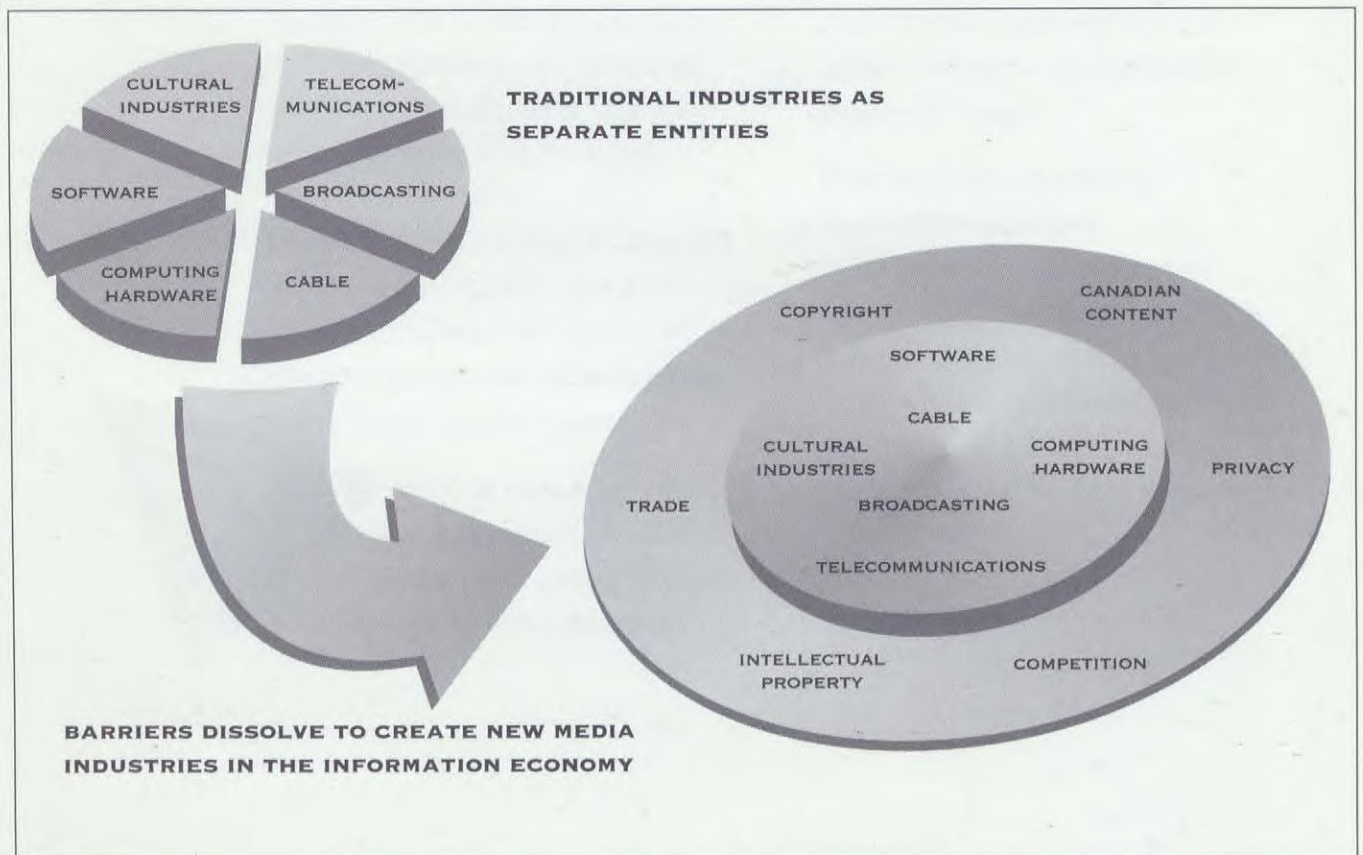
3 CHANGING INDUSTRY STRUCTURES

As the information society evolves, so does the relationship between the communications and cultural industries. Changes in industry structures are not limited to these sectors, however. The boundaries that have traditionally separated information industry sectors from each other, and from the rest of the economy, are shifting as new media technologies bridge sectors and create new linkages. Throughout the economy, business patterns are changing as enterprises merge and form alliances with one another, to position themselves more strategically within the growing new media information marketplace.

SHIFTING INDUSTRY BOUNDARIES

Canadians are used to thinking of media industries as separate from each other. There are historical reasons for this. The telephone, cable and broadcasting industries traditionally used different channels to connect us to each other and to our common culture. The technologies underlying these industries were unique. Broadcast signals came over the air, while cable and telephone lines entered through holes in our walls. Newspapers arrived in printed form on our doorsteps.

TRADITIONAL INDUSTRIES AS SEPARATE ENTITIES

CULTURAL INDUSTRIES · TELECOM-MUNICATIONS · SOFTWARE · BROADCASTING · COMPUTING HARDWARE · CABLE

COPYRIGHT · CANADIAN CONTENT · SOFTWARE · CABLE · CULTURAL INDUSTRIES · COMPUTING HARDWARE · PRIVACY · TRADE · BROADCASTING · TELECOMMUNICATIONS · INTELLECTUAL PROPERTY · COMPETITION

BARRIERS DISSOLVE TO CREATE NEW MEDIA INDUSTRIES IN THE INFORMATION ECONOMY

Historically, these industry sectors in Canada have been separate and distinct, each with its own structure and technology, each recognizable as a client group, each with a set of "rules of the game," regulatory framework, licensing procedures, associations, subsidies, policy issues or policies linked to it. These industry sectors and their relationship to the consumer are changing dramatically. In today's new media world, we no longer look to different industries for different kinds of information. We want customized information. Consumers and businesses are interested in what information services can do for them; they are not concerned about what the underlying technology is or which industry provides the service.

Businesses providing services we once thought of as separate are now moving to compete as providers of diverse information services. They are vying for the right to enter markets once considered outside their spheres of operation. Carriers of information are supplementing their traditional sources of revenue by becoming sources of information. Broadcasters are considering new ways to offer information services. As a result of these trends, the expertise acquired by companies to develop traditional products with new technologies is increasingly transferable to the development of new product and service lines.

Business and cultural institutions which have traditionally been **sources of information** are finding new channels to reach the public. Canadian news organizations – some of the finest in the world – are developing innovative ways of packaging and delivering journalism, such as *Newsworld* or Info Globe. Heritage institutions no longer wait for individuals to visit them in person. They offer access to some of their treasures over a variety of new media channels: CD-ROM and CD-I (Compact-Disc Interactive), as well as through online databases and satellite videoconferences.

At the same time, those sectors we thought of as **deliverers of information** are turning into active packagers of new media services. Today, cable companies are introducing new information services, such as home security monitoring and online data access. In 1990, Videoway launched a successful interactive system developed in Canada in a cooperative venture between private industry and the Department of Communications' Canadian Workplace Automation Research Centre (CWARC). Also, broadcasters are looking to offer data over the unused portion (vertical blanking interval) of their over-the-air signals.

Who else may potentially compete to deliver information services? Real estate developers are already offering fibre optic cable as an option, and intelligent buildings are being constructed which will facilitate the transmission of information.

FROM BANKING TO HEALTH CARE, BIG CHANGES IN DEMOGRAPHICS AND TECHNOLOGY ARE CREATING ENORMOUS OPPORTUNITIES AND ENTIRE NEW INDUSTRIES. THE TRADITIONAL SOURCES OF WEALTH... ARE FAST BEING OUTDISTANCED BY A SECTOR BASED ON KNOWLEDGE, EXPERTISE AND ELECTRONIC IMPULSES.

(CANADIAN BUSINESS, JUNE 1992)

The cross-fertilization due to the new media information industry is increasing as expertise and products are shared. This will serve to accelerate the dynamics by which we produce and create, store and process, transmit and use information in a range of electronic formats. With segmentation of markets and mass-customization, and with the focus moving from the technology to the service, the industry will be providing an array of services not only designed for the consumer but capable of being designed by the consumer.

The requirement for information and for improved access to and retrieval of information will result in the emergence of brokers between the originator of the information and the consumer. The value-added service function will be one which collects, condenses, organizes, streamlines, and provides easy and timely access to information – and bills for the information product.

Those media technologies once considered single-purpose receivers are now becoming multi-function information vehicles. By punching in a few numbers on the Touch-Tone telephone, pressing a couple of buttons on the remote control, or typing a command on the computer keyboard, we can have access to what we need – while behind the scenes, messages navigate their way through complex networks of information pathways.

Throughout its existence, the Department of Communications has worked hand-in-hand with industry to ensure the orderly development of our media infrastructure. As the boundaries which have segregated this infrastructure are rearranged and as the role of the consumer in customizing a product or service increases, the department must consult both providers and the marketplace.

DIGITIZATION AND OUR CHANGING INFORMATION INFRASTRUCTURE

In Canada, as in most countries of the world, separate systems for carrying different sorts of information have evolved over time. Throughout the post-war period, we have been accustomed to thinking of the airwaves, telephone lines and cable television systems as distinct channels developed for distinct categories of messages. Telephone messages could reach homes on an individual basis, broadcast signals were received by thousands of people simultaneously, and cable lines carried a uniform package of television channels to those who paid subscription fees.

Regulatory guidelines, industry priorities and technological limitations meant that these systems remained within their separate spheres of activity.

As the telephone and cable companies digitize their communications networks, and as broadcasters announce plans to do so, the boundaries between these sectors are being redefined. Digitization has meant that each of these systems may carry virtually all forms of information. Technical developments affecting signal capacity have led their owners to consider offering new services.

THE ROLE OF COMMUNICATIONS AND CULTURAL INDUSTRIES

THE COMMUNICATIONS AND CULTURAL INDUSTRIES ARE UNDERGOING PROFOUND CHANGE.

Since their inception, the communications and cultural industries[1] in Canada have had separate identities and associations. These industries are now recognizing the trend for more information-intensive activities throughout the economy by entering into alliances or mergers to share skills and expertise related to previously separate sectors of activity.

Time and Warner have merged, Matsushita has purchased MCA, AT&T has formed an alliance with Alcatel, Toshiba with IBM, Hitachi with Sun and Hewlett Packard. In Canada, Vidéotron and Télémédia are part of the same group and Maclean Hunter combines publishing, cable and broadcasting. These mergers and alliances indicate the necessity to link various industries, and to combine capital, technology and expertise to create the synergies required to capture new media markets.

With the rise of large, multimedia conglomerates, the need for individual creativity has not disappeared. On the contrary, the number of "boutique" publishers, specialized record companies or home-based software companies has increased dramatically in recent years.

Simultaneously, two things are happening within our national and global economy. Previously separate media industries are combining to better coordinate the launch and marketing of new products. At the same time, growing competition and fragmentation in the media marketplace has opened up a host of new opportunities for small-scale creators of cultural products.

The figures in Table A show the size of the communications and cultural industries in Canada. The growth of these industries over time offers a further indication of their importance for the future.

In facing the future, Canadian industry must develop its market share at home just as it seeks the opportunities opening up in a global market. In doing so, we must draw upon our traditional strengths while developing the skills and structures required by new market conditions.

In the course of their history, Canadians have set in place a communications infrastructure which is the envy of the world. During the same period, we have nourished a tradition of excellence in such creative domains as film and visual arts. Individual needs and a changing marketplace will increasingly enable us to link and combine these accomplishments. As we face the opportunities of the future, we will draw strength from our past.

1

Communications industries produce and distribute telecommunications equipment and services. Cultural industries are engaged in publishing, film, video, sound recording, and broadcasting and cable activities. Arts include performing and visual arts; heritage institutions are comprised of museums and archives.

TABLE A[2]

REVENUES OF KEY
INDUSTRIES IN
THE INFORMATION
SOCIETY

1990 – CANADIAN $ (BILLIONS)

CATEGORY	REVENUES
TELECOMMUNICATIONS EQUIPMENT AND SERVICES	22.9
COMPUTER EQUIPMENT AND SERVICES	12.8
CULTURAL INDUSTRIES	12.7
ARTS AND HERITAGE	1.9

Figure 1 illustrates the continuous growth of the communications, computer and cultural industries in Canada between 1986 and 1990. These industries and the ways they merge will continue to have significant impact upon the Canadian economy. It is imperative that Canadian industry be positioned to maintain their domestic market share in the new media information society and continue to develop in the significantly growing global market.

FIGURE 1

Revenues of Key Industries in the Information Society 1986-1990 Canadian $ (billions)
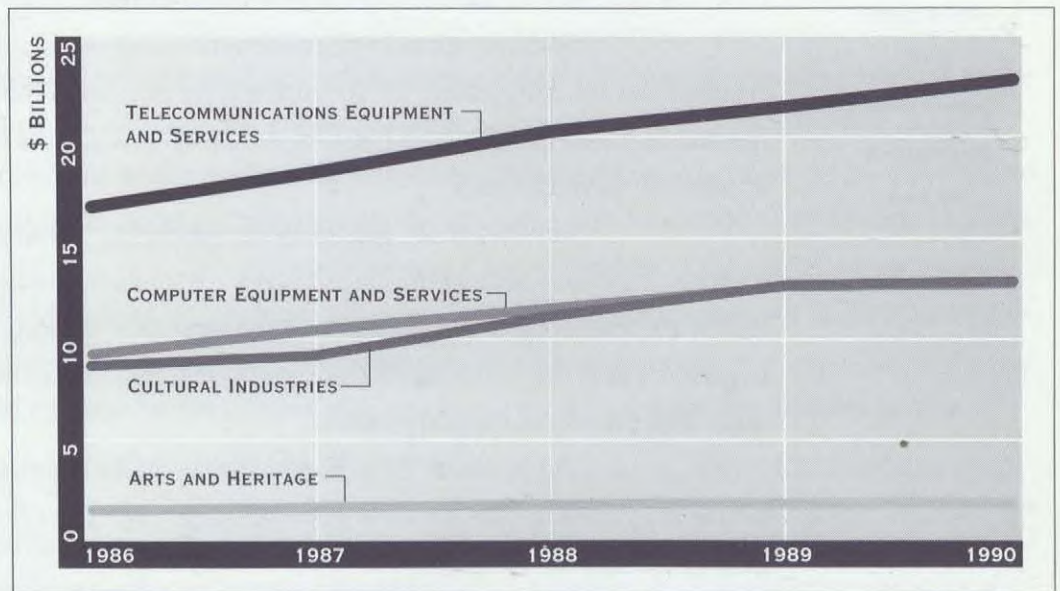
THE SHIFTING ECONOMY

Our move to a knowledge-based economy has implications extending far beyond those industries specializing in information and culture. Business patterns as a whole are changing.

In particular, businesses involved in the service sector, such as travel agencies or consulting firms, are linking up to vast information networks which span the globe. Meanwhile, what we think of as traditional core businesses – those involved in the

manufacturing and distribution of goods – find that more of their time and money are spent on the processing of information. Manufacturing industries require information at every step of the way. As they make, store, package and distribute goods, firms find that the effectiveness of each decision depends on the quality of information coming in and going out.

Industries will continue to change as they realize that they have important assets in their information holdings, and begin to earn revenue from them. The New York Stock Exchange earns 20% of its revenues from organizing and selling historical data.The aircraft manufacturer Hughes Canada found that its geographic and meteorological database was so valuable that it now regards it as one of the company's primary assets and sources of future growth and revenue.

These trends demonstrate the important role that information can play in determining gross revenue, profit and market share, and reflect the recognition by companies that they are moving into the information business. This is a trend that will increase as information supplements or displaces a company's primary products as an important source of revenue.

PREDICTED SHIFT
IN BUSINESS
PATTERNS
1990 → 2010

ADAPTED FROM *2020 VISION*
(1991: 109)

	REVENUE SHARE	PROFIT SHARE	MARKET SHARE
THE TRADITIONAL CORE BUSINESSES	80% → 50%	50% → 20%	80% → 20%
THE NEW-GENERATION INFO-BUSINESSES	20% → 50%	50% → 80%	20% → 80%

We see businesses changing and new market patterns emerging all around us. The playing field is changing. New questions are raised – new choices are being offered.

Will the game have totally new rules? What industries or combinations of industries will meet the growing demand for information services? Will Canadians have access to world-class new media services and will the context be Canadian? Will prices drive Canadians to by-pass the domestic market? What will be the impact on our cultural industries? Will costs in Canada prevent us from developing Canadian-content databanks with the same quality of information services as those which, developed abroad, relate to their country of origin?

To address these questions successfully, we must face the new dynamics of the communications and cultural industries.

4 NEW MEDIA – THE MARKETS

When radio was invented, near the turn of the century, people imagined it mainly as a means of communication between ships at sea. After all, it was argued, individuals on land who wanted to talk to each other could use the telephone. It took several years before radio became a medium of mass communications – broadcasting information and entertainment to thousands of people at a time.

The uses and markets we associate with media are very often different from those for which they were intended. Telecommunications satellites were designed to bring information to people in remote areas, outside the reach of conventional communications lines. Today, the vast majority of people linked to satellites live in cities and towns.

As we move to a media-based economy, it is not enough to invent an endless stream of new products. We must find and create the markets for those products. The laser disc failed as a home consumer item in the early 1980s and retreated to the specialized educational and library markets for almost a decade. In the 1990s, it is finally re-entering our homes, riding a tide of positive word-of-mouth from those who sought it out during its lean years.

Not all cases have such a happy ending. It may be useful to remember some failed or disappearing inventions – the 8-track tape or the quadraphonic album. Other innovations, like the fax, exceeded their inventors' expectations, finding unimagined uses and unforeseen markets.

While the fate of each media innovation is unpredictable, one overall trend is clear. The use of new media has followed a continuous upward curve, despite economic downturns and an often baffling succession of new inventions.

HOME MARKET

In today's information society, new media are just as likely to be based in the home as in the workplace. Television cameras, computers, electronic games and a wide range of communications and information services have all found new markets by becoming domesticated, allowing in the living room what was once possible only outside the house.

The range and size of the market for home-based electronic products and services in Canada can be seen in Table B.

If we add the revenues from telephone and cable television, we see that carrier services account for the greatest component of household spending on media and information in Canada. Together, they were responsible for over $7 billion in revenues in 1990.

THOMAS EDISON'S FIRST PATENT WAS AN ELECTRIC VOTING MACHINE. CONGRESS, FOR WHOM IT WAS DESIGNED, REJECTED THE IDEA OF INSTANTANEOUSLY RECORDING ALL VOTES ON AN ISSUE. EDISON DECIDED THEN THAT HE WOULD "NEVER AGAIN INVENT ANYTHING NOBODY WANTED."

TABLE B

TOTAL HOUSEHOLD
SPENDING ON
SELECTED
ELECTRONIC
PRODUCTS AND
SERVICES, CANADA
1990 – Canadian $ (millions)

CATEGORY	SPENDING
TELEPHONES	5,900
COMPUTERS	175
CABLE TELEVISION	1,150
HOME ENTERTAINMENT EQUIPMENT AND SERVICES	3,900
ELECTRONIC GAMES AND HOBBY EQUIPMENT	45
TOTAL	**11,170**

Next, we find spending on home entertainment products and services, reaching almost $4 billion during the same year. This category includes purchase of hardware items (VCRs, televisions, audio CD players, etc.), as well as "services" such as video rentals.

While comparatively small, the amount spent on personal computers in 1990 represents an increase of 226% over four years. There were 1.2 million personal computers in private homes in 1990, compared to 530,000 in 1986. In comparing statistics from different countries with varying populations, overall industry revenues are not the ideal indicator. Far more revealing are the "media penetration figures," which measure the percentage of the population owning a media product or subscribing to a media service.

As Figure 2A shows, Canada leads the OECD (Organization for Economic Co-operation and Development) countries in telephone penetration (defined as access lines per 100 people.) Figure 2B demonstrates what industry experts have long proclaimed – that Canada has the highest cable TV penetration rate among the world's major

FIGURE 2A

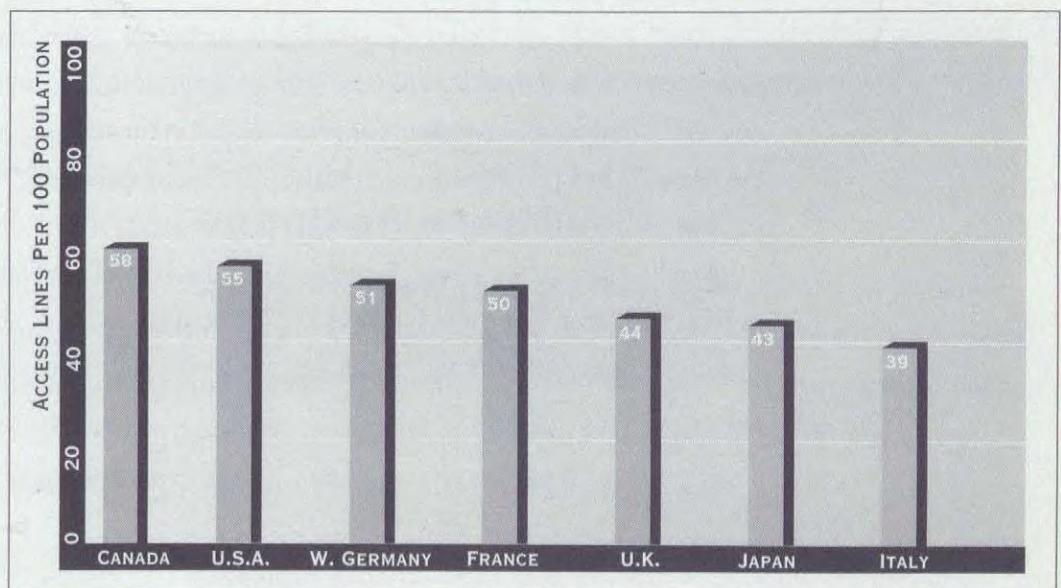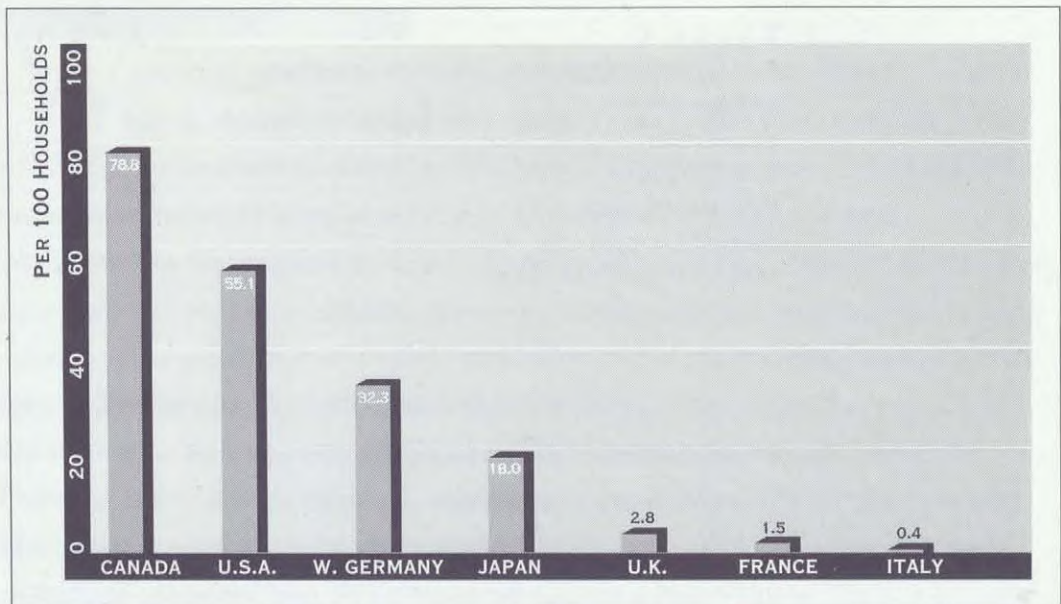*Telephone Penetration, Selected Countries (January 1991)*

FIGURE 2B

*Cable Television
Penetration,
Selected Countries
(January 1989)*

industrialized nations. Finally, Figure 2C tells us that the penetration level for television sets in Canada is within the top five among industrialized nations, while the penetration level for videocassette recorders is higher in Canada than in any member nation in the European Community.

These figures suggest a population which has a voracious appetite for communications products and services. They confirm the conclusions of a 1992 Japanese report: "In 1990, Canada had the largest information supply volume per person, followed in turn by the U.S., the Netherlands and Japan" (*New Era of Telecommunications in Japan,* No. 163, July 1992, p.4).

Many factors affect the home market for communications media. In ideal circumstances, hardware and software sales go hand in hand, but this is not always the case. According to music industry experts, sales of compact discs have been held back by the relatively low penetration of CD players in Canada (around 25%). One would suspect the same relation holds between CD-ROM players and CD-ROM discs. If we look to future new media markets, we would do well to keep this type of relation in mind. For example, as High Definition Television is introduced in the years to come, coordination between equipment manufacturers and broadcasters will obviously be of paramount importance.

FIGURE 2C

Television and VCR Penetration, Selected Countries (1988)
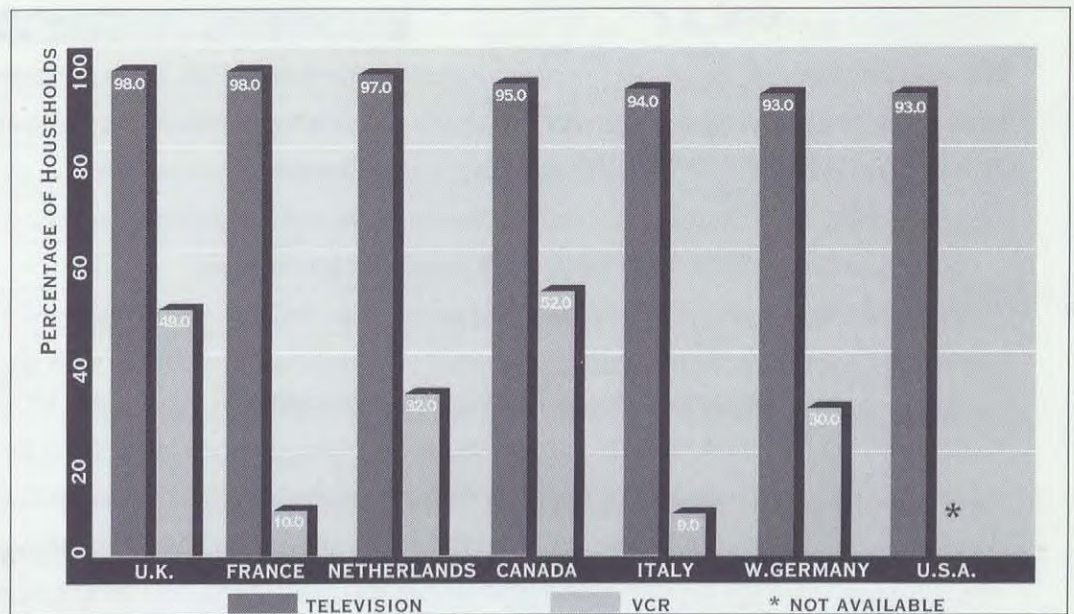
While new media often end up in the home, they do not usually begin there. Business applications will contribute significantly to the further development of new media, as a recent study by Technology Futures noted:

> IT IS THE BUSINESS MARKET THAT WILL MOST LIKELY DRIVE THE EARLY ADOPTION OF MULTIMEDIA PRODUCTS AND SERVICES BECAUSE IT HAS THE DOLLARS TO INVEST IN THEIR DEVELOPMENT. (1992: XI)

Both the home and business markets are positioned to exploit new media products, services and applications. If the mass market characteristics of the traditional, old media markets are any indication, the influence, penetration and impact of new media will be enormous – economically, culturally and socially.

BUSINESS MARKET

New media innovations form part of our economy's larger information technology sector which is comprised of goods and services. The size and importance of this sector may run counter to our common beliefs about the Canadian economy. The information technology market is larger than that for transportation services and has surpassed the market of a traditional sector like pulp and paper.

Communications Canada, using Industry, Science and Technology Canada analyses of Statistics Canada data, has estimated that the domestic market for

TABLE C

DOMESTIC MARKET
FOR COMMUNICATIONS
AND INFORMATION
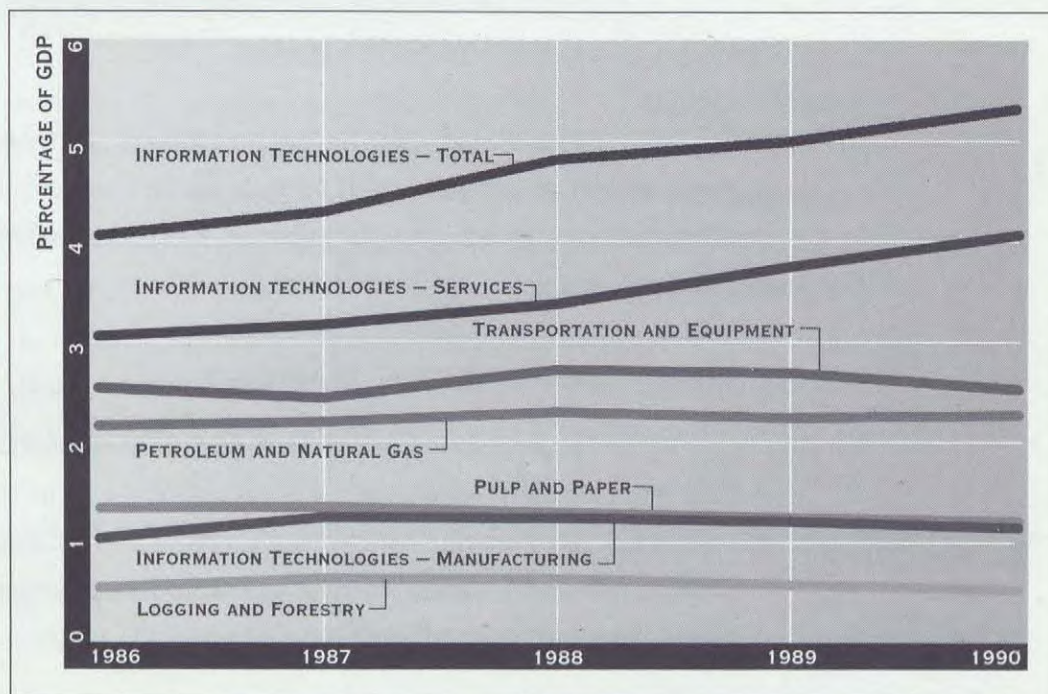EQUIPMENT AND
SERVICES

CANADA 1990, $ BILLIONS

TELECOMMUNICATIONS AND ELECTRONIC COMPONENTS	23.9
COMPUTER EQUIPMENT, SOFTWARE AND SERVICES	15.3
CABLE TELEVISION INDUSTRY	1.6
CONSUMER ELECTRONICS	1.8
INSTRUMENTATION	3.3
TOTAL	**45.9**

communications and information equipment and services was $45.9 billion in 1990. Table C illustrates the major constituents of this domestic market and their market share. Preliminary analysis suggests that new media account for as much as one-fifth of the domestic market for communications and information equipment and services.

The expansion of this market over time is even more revealing. Figure 3 shows how those industries which make up the Information Technologies sector have grown in the five-year period 1986-1990, while others have remained flat or declined.

We can gauge the importance of this market from any visit to a store or office. Check-out scanners in supermarkets, call management systems in department stores and quick electronic bank transactions all testify to the ways in which new media products and services are changing the business world.

FIGURE 3

Selected Canadian Industries as a Percentage of Gross Domestic Product (GDP)

Electronic Data Interchange (EDI) and Electronic Funds Transfer (EFT) have increased the speed of economic activity in our society, letting manufacturers and retailers send information or funds at lightning speed. These systems have, at the same time, generated significant revenues of their own. In 1990, the Canadian market for EDI amounted to $78.1 million. It is expected to triple to $241 million by 1994.

Image-processing is one of the new frontiers in business technology. Filmmakers today are likely to shoot simultaneously on film and digital video, then use their video copy as a "master" in the editing process. At the same time, their films may incorporate video-based special effects or computer-generated graphics which were previously unimaginable.

NEW MEDIA ARE CONSUMER- DRIVEN: THEY RESPOND TO SPECIFIC NEEDS AND TASKS WITH EASE OF USE AND FLEXIBILITY OF CONTROL.

Businesses which handle countless documents of different kinds have turned to image-processing as a way of resolving problems of information storage and retrieval. By turning these documents into digital information, banks or insurance companies have come to control the constant influx of pieces of paper.

Geographic Information Systems (GIS) combine a database with an electronic map of a given terrain. They provide an invaluable resource to the mining and transportation sectors, as well as to municipal governments.

Education and training offer a significant market for new media. Classroom consoles allow an instructor to control lighting systems, video projectors, 16-mm projectors and slides from a single touch-sensitive computer screen. For the student, new media offer ways of adapting knowledge to their own needs and schedules through "courseware," new ways of coordinating information and instruction. In 1990, the Canadian courseware market was estimated to be $28 million, a 15% increase over the previous year.

MARKET ISSUES

Twenty years ago, we ran to see a new movie which grabbed our attention, convinced that if we put it off the opportunity might be lost. Today, we know that if we wait we can rent it from the corner store, order it from a pay-per-view system or watch it on a specialty movie network to which we subscribe. If we wait even longer, it will come to us free as a network movie in prime time.

In this example, we see the promise, the challenge and the ability to choose which come with new media. As consumers who expect convenience, we insist that media providers adjust to our own schedules and willingness to pay. As cultural producers confronting a mix of old and new media, film companies find new sources of revenue and new ways of reaching their public.

THE
POTENTIAL
OF NEW MEDIA
IS NOT
LIMITED BY
TECHNOLOGY
BUT ONLY
BY THE
IMAGINATION
AND SKILLS OF
THOSE WHO
DEVELOP
OR USE IT.

Our media-based society generates a torrent of information. We depend on finding a piece of information at the moment when it is wanted. If one provider is not up to the task, we turn quickly to another. More is at stake here than our own satisfaction or convenience. The ability to provide information at the right moment is a matter of survival for Canadian businesses in a competitive global market.

New media are consumer-driven for a number of reasons. During the last decade, we have grown accustomed to an abundance of media products and services. Competition and hybridization are expanding the range of new media available to us, and we are less willing to compromise. We have learned to be creative with new media, and we expect them to cater to us. We assume that new media will respond to our individual needs or desires. And if we are not satisfied by one product or service, we turn to another.

Most important, perhaps, we expect new media to enhance our natural ways of doing things, rather than challenging or restricting them. Senior information executives attending a seminar at the Aspen Institute called this the most important issue posed by information technology. Business people expect their computers to change rather than they themselves. Graphic artists and designers demand that software programs build upon their more traditional skills rather than imposing a set of new ones.

The more complex and sophisticated new media become, the less they require of us that we understand arcane techniques or languages. This is a development few would have foreseen in our recent past. Rather than widening the gulf between high-tech activity and traditional creativity, each successive innovation in new media shrinks it. Typesetting, once the guarded secret of a few, is now available to anyone with a few hundred dollars and an inventive imagination. The mixing of sound recordings, a once time-consuming and expensive task, now takes place on people's desks.

Market success in the cultural industries, for example, demands that we shift our attention from the purely technical aspects of new media and begin to develop creative and imaginative content. Making movies involves more than the ability to understand the workings of a camera. It depends upon the imagination of someone aware of the camera's possibilities and the willingness to explore them. The new media market will grow in proportion to the creative talents of those who are able to provide quality content.

Content is also crucial in the education and training market. Education and training using multimedia are less costly than conventional classroom approaches, and studies indicate that it is more effective. People retain information better when they can see

and hear it, and even more when they can interact with it. A recent U.S. study reveals that students can achieve learning objectives 30% faster with multimedia, and perform 25% better than students trained by conventional methods. (*Canadian Business*, 1991: 94)

Literacy, once considered a casualty of the media age, is now its motor. The information society resulting from new media requires more literacy not less: it takes highly skilled people to design and develop new media products and services.

New media will help meet this challenge by bringing education and training to wherever they are needed, and providing opportunities for lifelong learning. Workers need the skills to adapt to the requirements of an information intensive society, and new media will be an important vehicle for this adaptation.

Market scenarios for the new media information society will be essential components for analysis and decision-making. Understanding the characteristics of the marketplace – domestic and global – requires assessment of a variety of factors such as long-term costs, productivity, choice, responsiveness, competitiveness, efficiency, alternatives, and affordability. And for Canadians – Canadian content.

There is every indication that the new media market will continue to grow very significantly in the years ahead. The pace and extent of this growth, however, will depend on the capability of the Canadian information infrastructure to deliver new media products and services to homes and businesses. What should this infrastructure look like? How will it serve as a focus for the further development of the Canadian new media market? How should such an infrastructure be managed to achieve this objective?

THE
INFORMATION
WORKFORCE
WILL REQUIRE
NEW MEDIA
SKILLS
AND NEW
MEDIA
WILL BE
PART OF THE
WAY THE
WORKFORCE
WILL BE
TRAINED
IN THOSE
NEW SKILLS.

5 NEW MEDIA: INFRASTRUCTURE AND POLICY

I f Canadians are to enjoy a high level of economic prosperity, and to maintain and improve their quality of life, they must seize the opportunities offered by new media. The "tracks" they will need to make this journey are two-fold:

a) an advanced information infrastructure which will support the sophisticated new media products and services developed by Canadians; and

b) an enabling policy framework, which facilitates developments and guarantees that these preserve Canadian values.

INFORMATION INFRASTRUCTURE

YOU CAN'T
RIDE
ON TRACKS
YOU HAVEN'T
LAID DOWN.

(2020 VISION,
1991: 145)

The term "infrastructure" is often misleading. Our need for an information infrastructure does not demand that we build a single, all-pervasive system of information pathways. Canada is already well-served by its airwaves and telecommunications, cable and satellite networks.

Novel ways of linking media providers and delivery systems, new services which combine existing media, a proliferation of end-points where users are connected to information networks – all of these are needed if our knowledge-based society is to be democratic, prosperous and fulfilling.

Nations all over the world are preparing for the transition to an information-intensive economy. They are developing the technologies, building the infrastructures and conceiving the policies which will make this transition possible.

In France, for example, the public communications system offers households more than 13,000 services combining voice, text and graphics. Over the telephone lines, individuals may scan job listings, read movie reviews and check the stock market.

In Japan, over 70 municipalities have been designated as "Teletopia" and transformed into model communities of the future. Complete information infrastructures, from computer-based local area networks to multi-channel cable TV services have been set in place. In a densely-populated nation, these experiments have helped to re-establish a sense of local community and improve the quality of life.

Each of these experiments has changed the ways people are linked to each other, and we may learn from their examples. We must remember, however, that these initiatives serve to drive economic and technological development in the countries which have launched them. They stimulate the progress upon which world leadership in the markets for new media depends.

We cannot afford to wait patiently for the results of experiments taking place somewhere else. If we do, we are likely to find our own information infrastructure at a competitive disadvantage. Our ability to shape that infrastructure so that it benefits all Canadians will be diminished. Businesses in Canada will see attractive opportunities pass them by.

Canada has signed with Japan an agreement on an International Value-Added Network (I-VAN). This agreement permits free trade in enhanced telecommunications services and provides open access to each other's markets in that area. It provides Canadian industry, suppliers and users with the opportunity to export high-quality competitive services as well as to benefit from the most cost-effective services available within the countries who have concluded the agreement. A 1-800 number, for example, called by a Canadian consumer wanting a service downloaded from a central service facility, may well be located in Japan. The Canadian consumer may not even be aware that the service provider is in Japan.

What this also means, however, is that if a Canadian new media infrastructure will not support and Canadian industry does not develop information services, those services will be provided by infrastructures and industries in other countries. If we default, non-Canadian firms will develop the capacity and expertise in managing first rate information services which are strategic to Canadian governments and industries.

Many of Canada's traditional industries face difficult competitive conditions in world markets and strong foreign competition in domestic ones. A lack of focus on new media by Canadian companies would allow foreign firms to consolidate their already favourable positions.

What is needed to ensure the orderly and effective introduction of new media services? A 1989 report from the OECD offers some answers. In Japan and the U.S., where the transition to an information-based economy has been smoothest and most successful, we find significant interplay between governments and industry. Effective public policies, based on cooperation and consultation between all interested players, are the key to leadership in this area.

As competition in a globalized world marketplace becomes ever more fierce, the challenge to those countries with smaller economies is clear. We cannot afford not to play an active role in the international race for new communications products and services.

CANADIANS
NEED NEW
MEDIA
AND AN
ADVANCED
INFORMATION
INFRASTRUCTURE
TO COMPETE
IN GLOBAL
MARKETS.

Canadians will require that a new media information infrastructure realize a number of benefits. This infrastructure should:

- provide the latest in media services and features. Canadians should have the opportunity to access world-class new media, which use and combine voice, data, image, video and graphics. Nothing less than our competitive advantage and creative potential is at stake;

- create the greatest possible opportunities for Canadians to participate in the development of new media goods and services. In databases, computer-based learning materials and multimedia entertainment available to us, we should expect to find a high level of Canadian content and input. Forecasters predict that there will ultimately be only five countries which provide new learning technology materials. Given our linguistic duality and our cultural diversity, Canada should be one of them;

- support global trade, providing the base for a competitive advantage for Canadian industry;

- assist our heritage institutions, such as museums and libraries, in their exploration of the opportunities brought by new media technologies;

- enable our cultural industries to find new markets and audiences for their products, drawing on the accomplishments of the past and taking advantage of the opportunities which lie ahead;

- stimulate our social and cultural life just as it ensures prosperity for our economy. If our experience with new media has taught us anything, it is that these objectives cannot be separated;

- help Canadian businesses to position themselves strategically as exporters of information services, in a global economy where such services have become central;

- enable Canadians to enjoy products and services developed by Canadians, knowing that these represent the very best available.

THE PUBLIC POLICY IMPERATIVE

Canadian policy-makers have long seen the wisdom of linking communications to culture. The mandate of the Department of Communications is based on the recognition that broadcasting, telecommunications, cultural industries and information media will interact in important ways as our social, cultural and economic lives change. We need an overview of these changes, so that those values which Canadians hold sacred – the right to privacy or the health of our cultural industries – stay with us as we seek expanded markets and economic growth.

THE POLICY ISSUES RELATED TO NEW MEDIA ARE NOT PRIMARILY TECHNOLOGICAL; THEY ARE ECONOMIC, SOCIAL AND CULTURAL.

The mission of the department is rooted in two fundamental needs: the need to support Canadian culture as a cornerstone of national identity; and the need to ensure the orderly evolution and operation of Canadian communications and information systems as key elements in the development of the economy and Canadian identity.

There are two aspects to this mission: first, to ensure that our systems of communications develop in an orderly fashion, that they are on the cutting edge of international developments, providing Canadians with the most highly developed services at an affordable price; and second, to provide Canadians with the freedom to choose a wide range of Canadian cultural products and information services. In this perspective, particular attention must be given to our cultural and communications industries, because they allow Canadians from one end of the country to the other to exchange their ideas and knowledge. In order to prosper and develop in the information age, Canadians must be able to create their own information and have the means to distribute and communicate it to others. In short, culture and communications go hand in hand. They serve Canadians all the more effectively when they are mutually reinforcing.

A number of questions that confront us as we become a media-based society become clear. How will we prosper in an economy whose motor is the exchange of information and knowledge? How will we encourage capital investment? How will we develop our expertise, so that the goods we produce are of world-class quality? How can we best use our domestic market as a base for global competition and trade? In what ways will we express and preserve our cultural heritage, transforming our past into a valuable foundation for the future? Who will guarantee our privacy, and in what ways? How will we protect intellectual property, so that creativity is rewarded and innovation encouraged? How can we guarantee that access to medical, social and cultural services is the same for all Canadians, irrespective of their mobility or where they live?

A NEW
MEDIA
INFORMATION
POLICY
IS REQUIRED.

These are questions which Canadians together will confront in the years to come. Through legislation or programs, and by collaborating and consulting with all those concerned, the Department of Communications is working to chart a course towards the future which opens at our doorsteps.

❖ **The Legislative Framework**

Legislative initiatives already undertaken by the department in both communications and culture have set the stage for new media information policy development.

Canada's communications infrastructure operates within a distinctive legislative framework. Together, the *Radiocommunication*, *Broadcasting* and *Copyright* Acts and the Telecommunications Bill form the basis of this framework. Through it, the orderly development of communications pathways and support for the creators of information and cultural programming have been ensured.

The *Radiocommunication Act* of 1989 governs the management of the radio frequency spectrum, a public resource whose value and limited capacity have long been recognized. The Act provides for the issuing of radio licenses. It establishes technical requirements and standards for radio equipment. Those new services which will use the airwaves to reach the public, such as Digital Audio Broadcasting (DAB), fall under the jurisdiction of the *Radiocommunication Act*.

As tabled in Parliament, the Telecommunications Bill is designed to ensure that Canadians, living in all regions of the country, have access to a reliable telecommunications system at an affordable cost. The legislation contains provisions that will cover the domestic market and ensure the efficient and orderly development of the system. It will allow for the continued infrastructure development necessary for the information society and the use of new media by Canadians.

The *Broadcasting Act* of 1991 continues and extends the government's commitment to maintaining and strengthening our national identity and cultural sovereignty. Under the Act, the roles and obligations of all broadcasters – private and public – are made clear. The *Broadcasting Act* is shaped by the recognition that programming, rather than specific technologies, provides the key to our cultural vitality. For this reason, the Act is technology-neutral. It guarantees that a significant proportion of the programming provided by domestic broadcasters will be produced in Canada, by Canadians. At the same time, the Act places no restrictions on the channels – over the air, by cable, by satellite or other – through which that programming will reach our homes.

With enormous growth in the number of channels available to those who create, we should separate the question of intellectual property from the material forms in which it reaches its markets and audiences. Musical compositions, for example, may assume the form of analog cassettes, compact discs, digital mini-discs or any number of new recording formats. They may be heard on movie soundtracks, television commercials or through electronic jukeboxes. Copyright legislation must be flexible enough to accommodate and encourage these new developments, while being consistent in its commitment to equitable use, fair compensation, and the promotion of creativity.

EXISTING
PROGRAMS
MUST
INCORPORATE
NEW MEDIA
TO GENERATE
NEW
OPPORTUNITIES.

Like the *Broadcasting Act*, the *Copyright Act*, first modified in 1988 and currently under review, is technology-neutral. The legislation will offer protection for cultural property released by any technology, whether existing or not yet invented. For conventional media, such as films, photographs or sound recordings, it offers additional protection to creators. As new media are invented and introduced, it provides a flexible framework for dealing with these innovations.

❖ Existing Programs

In fulfilling its mandate, the Department of Communications has developed a number of innovative programs involving new media. Bringing together concerned parties from the public and private sectors, these programs are models of the sorts of cooperation we will need in the years to come.

The Canadian Heritage Information Network (CHIN) is an excellent example of a program at the cutting edge of developments in new media. CHIN meets the information needs of the museum community in Canada and abroad, has nourished the growth of museum databases, and has helped in the production of CD-ROM products used by museums around the world. Through this program, the growth of a vital cultural sector in Canada has gone hand in hand with the extension of information access to the public at large.

The role of book publishers in a new media culture is changing rapidly. New technologies have made it easier to publish books in printed form. They have also given us new forms in which texts may be embodied, like the CD-ROM or floppy disk.

The Department of Communications' Book Publishing Industry Development Program supports Canadian publishers in their efforts to improve their efficiency and profitability in the midst of these changes. As publishers become producers of a wide array of new media products, cooperation in developing and taking advantage of new markets is essential.

The Communications Research Centre (CRC) is experimenting with multimedia in various forms including interactive videodiscs and Digital Video Interactive (DVI), both accompanied by natural language recognition. Research in the area of voice, image and video compression is also under way. Investigations into High Definition Television and Digital Audio Broadcasting are among CRC's other new media research activities aimed at developing Canada's communications infrastructure.

❖ **Collaboration and Consultation**

As we have seen, industry boundaries are intersecting, and new opportunities are arising daily. The need to stay abreast of these developments is of strategic importance. By collaborating and consulting with industry, media users and other levels of government, the Department of Communications has a crucial role to play.

For example, telephone and cable networks are increasingly capable of delivering new and competing products and services. The Canadian information industries know much is at stake, and important questions must be resolved. In 1991, the Department of Communications established a Local Networks Convergence Committee. This body, which involves major players in both the telecommunications and cable sectors, advises the government on potential new developments. Issues of cost, choice and accessibility are central to these consultations.

The development of a domestic database industry is an important key to Canada's competitiveness in a knowledge-based economy. The Department of Communications has joined with the Information Technology Association of Canada, an industry trade group, to seek ways of strengthening the Canadian electronic database industry. One result of these consultations has been the development of an overall strategy for database industries – the Support and Promotion of Information Retrieval Through Information Technology (SPIRIT).

The Minister recently announced an initiative to support multimedia research through a network of centres across Canada. CWARC is coordinating the initiative by establishing strategic alliances with a number of research centres including: the Centre for Image and Sound Research in Vancouver, the Banff Centre for the Arts in Alberta, CulTech at York University in Ontario, the ECHO Centre in Montreal, the Canadian Language Technology Institute in New Brunswick, and the Smartship Program at the Canadian Centre for Marine Communications in St. John's, Newfoundland. By adopting a pan-Canadian perspective, these efforts can be coordinated and the expertise shared to the country's benefit.

In an information-based society, industries may come together in the development of markets. The Department of Communications has agreed with the Council of Ministers of Education, Canada (CMEC) to fund projects to stimulate the development and evolution of Canadian publishing and courseware production so as to provide new media products which meet the educational requirements of the provinces. In collaboration with private sector firms, the Department is also promoting the use of telecommunications networks and new media tools for distance learning at home and abroad. Canada also promoted the Commonwealth of Learning, established in Canada and serving 50 Commonwealth countries, and the Consortium international francophone de formation à distance (CIFFAD) within the Francophonie, which serves 41 countries and governments.

An information industry without technical standards is an industry that risks inefficiency. Collaboration between government and industry on the question of standards has long been deemed essential. As new ways of storing and retrieving information in audio-visual form continue to emerge, the need for this collaboration will grow.

At the domestic level, the Department of Communications is a member of the Standards Council of Canada and the Canadian Standards Association. These bodies provide the framework in which collaboration and consultation take place.

Internationally, the Department of Communications participates in the International Telegraph and Telephone Consultative Committee (CCITT) and the International Standards Organization (ISO). As we move towards a worldwide marketplace, the importance of international agreement on technical standards has grown.

More general collaboration is required at the international level as well. Electronic Data Interchange (EDI) systems are the nervous system of our global economy. In consultation with the European Economic Community, the Department of Communications is examining the policy issues related to the efficient international flow of data. A Canadian EDI Committee, co-chaired by representatives of industry and the department, has been set up to address these issues from the Canadian perspective.

In order to accelerate the diffusion and use of EDI in international business, the Department of Communications played a key role in the establishment of the EDI World Institute in Montreal. Given that other organizations are already tackling EDI standards development, the Institute's mission is to solve strategic issues affecting the global uptake of EDI by businesses.

It is also necessary to strike a balance between the economic imperatives and social concerns of Canadians within the information society. Safeguarding the privacy of individual users of telecommunications services is a matter of concern for the Department of Communications. The Minister of Communications has proposed Telecommunications Privacy Principles for addressing this issue.

It is essential that collaboration and consultation continue. The department's support and sponsorship of conferences, task forces and other forums provide occasions for defining issues, addressing policy requirements and encouraging broader forms of cooperation.

The National Summit on Information Policy and the Multimedia Communications '93 Conference are important examples of the initiatives the department supports. Through them, we will work collectively towards the development of a pro-active New Media Information Policy for Canada.

The new media information society encompasses a much broader range of activities, legislation, policies and programs than those within the mandate of the Department of Communications. Other federal government departments and agencies, and provincial governments, are developing and implementing initiatives within the context of the new media information society. The information society will require increased linkages, consultation and coordination among all these players.

❖ Next Steps

Where do we go from here? We must build on existing initiatives and Canadian strengths to provide a foundation for our future. As we move to enhance Canada's position in a global new media information society, the following steps lie ahead of us:

Complete the required legislative framework so that Canada and Canadians may benefit fully from our move to a knowledge-based information society.

Review and adjust existing programs so that they will open up the opportunities which come with new media and position Canadians to compete in this emerging and exciting field.

Collaborate and consult with industry to devise comprehensive strategies for meeting the needs of a new media information society. Cooperation between industry and government must focus on the economic, social and cultural needs of Canadians.

Consult with all levels of government to bring about the development of a coordinated strategy for the new media information society.

Formulate policies and develop programs to facilitate the evolution of new media, while ensuring that this evolution benefits all Canadians.

❖ New Media Information Policy

The broad objectives of a new media information policy for Canada have been stated. We must seize the opportunities which new media have opened up, while never losing sight of the principles which have long shaped our economic, social and cultural development.

Many issues face Canada in a new media environment:

An advanced communications infrastructure is necessary to support new media products and services.

The degree of Canadian ownership, operation and control in this new sector of our economy must be determined.

We must, as a nation, develop the skills which a new media society will require. These skills will be essential in all walks of life, not simply those at the core of the media information sector.

Canadians must become experts at developing, adapting and exporting new media products and services.

In order that new media industries will be successful and competitive, we must ensure the timely development of both domestic and international markets. The opportunities of one will depend on our ability to find advantage in the other.

Cultural electronic databases, often developed by non-profit or under-funded organizations, require special attention, e.g., assistance in developing profiles, use and revenues, and in solving copyright issues.

The role and purpose of Canadian-content requirements for new media services must be understood and defined and related to the anglophone and francophone markets served.

To ensure the rapid development and deployment of new media services, a level and competitive playing field is essential. Creators and providers of new services should find the path to markets and audiences smooth and unencumbered.

NEW MEDIA INFORMATION POLICY MUST BE SHAPED IF CANADIANS ARE TO REALIZE HOW TO SEIZE THE OPPORTUNITIES THAT NEW MEDIA AFFORD AND AVOID SOCIALLY UNDESIRABLE EFFECTS.

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Canadian banks and other financial institutions must be encouraged to work in partnership with new media information industries if Canada is to be successful in global electronic trade and commerce.

The loss of sources of Canadian information must be avoided by securing Canadian-content databases. Building a strong and internationally competitive database industry in Canada is a necessity.

The principles of access to information and the protection of individual privacy must be at the heart of the guided evolution of new media.

Copyright and intellectual property laws must be examined in light of the new media information economy to address such issues as varying regimes for each type of work, reasonable authorization procedures and compensation for copying, use, and "look and feel."

Canadians must understand the transformation of industries in the information economy and the revenue potential and asset value of information.

We must develop and perfect the economic indicators which measure the scope and development of new media and the information economy. This information is crucial if we are to excel in the strategic planning this economy will require.

Mechanisms should be examined to explore the potential of new media to reach as many Canadians as possible.

Canada's heritage institutions (museums and archives) and public libraries should be encouraged to pursue their contribution as key players in producing, distributing and consuming information in a new media environment, particularly with regard to heritage preservation.

The Department of Communications has an important role to play in addressing the cross-sectoral issues raised by new media. A key element of our integrated approach is to consult as broadly as possible with industry and industry associations, academia, consumers and federal and provincial partners.

In particular, the Department of Communications will undertake to:

1. Provide policy directions which will facilitate the development of a new media information infrastructure in Canada. This infrastructure will be advanced, capable of adapting to new media innovations as they arrive. We will seek to define Canadian ownership, operation and control; to ensure that basic and universal service at reasonable cost is guaranteed; and to establish a competitive and level playing field in the domestic market for new media.

2. Develop policies which ensure that Canadian content has a core presence within new media services available to Canadians.

3. Propose amendments to copyright and intellectual property law required by new media developments. Questions of compensation, fair use and authorization, and differences between forms of intellectual work must be addressed.

4. Develop policy principles for the guarantee of access to information and the protection of personal privacy.

5. Identify electronic databases with Canadian content and ensure their integrity and protection.

6. Conduct research into the economic, social and cultural implications of the new media information society. The effects of changes in technologies, industry infrastructures and ways of life must be examined in full if we are to realize the highest possible benefits from new media.

7. Develop a strategy to maximize Canada's new media resources whether in production and distribution of services or in research and development to build and strengthen existing organizations and foster the development of new ones.

8. Develop policies to facilitate the orderly development of: technical standards for new media, such as for the interconnection of telecommunications and computer technologies; delivery systems, such as for the availability of bandwidth at world-competitive prices; and spectrum allocation.

9. Define and develop the domestic market for new media products and services, so that their evolution, distribution and consumption are facilitated.

The Department of Communications will provide focus, opportunity and leadership for Canada as we move successfully into the new media information society.

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