



OECD Digital Economy Papers No. 37

Content as a New Growth  
Industry

OECD

<https://dx.doi.org/10.1787/236675130467>

**Unclassified**

**DSTI/ICCP/IE(96)6/FINAL**



Organisation de Coopération et de Développement Economiques  
Organisation for Economic Co-operation and Development

**OLIS : 14-May-1998**  
**Dist. : 22-May-1998**

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**DIRECTORATE FOR SCIENCE, TECHNOLOGY AND INDUSTRY**  
**COMMITTEE FOR INFORMATION, COMPUTER AND COMMUNICATIONS POLICY**

**Working Party on the Information Economy**

**CONTENT AS A NEW GROWTH INDUSTRY**

**65521**

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## **FOREWORD**

This report was presented to the Working Party on the Information Economy at its meeting in 1997, and was declassified by the Information, Computer and Communications Policy Committee (ICCP) in October 1997.

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## MAIN POINTS

This paper provides an initial analysis of the main issues in network-based production and delivery of music and audio-visual services content. It is intended to provide a basis for a more comprehensive comparative analysis of the international development of new network-based services by the main content-producing information and entertainment industries (printed, music and motion picture, radio and TV broadcasting). It uses statistical data and estimates from a variety of sources to illustrate the main features of the sectors involved and consequently care should be exercised in interpreting some of the figures.

The paper identifies the developing differences and inter-relationships between two broad categories of network-based content markets:

- First, traditional audio-visual and music content, which is broadcast by single producers to a wide audience ("one-to-many"), who consume it passively. Though new, enhanced versions of these services, such as video-on-demand, are being developed on digitised networks which will allow a degree of consumer choice in terms of timing of reception of individual programmes, these programmes and their component contents are still very much pre-formed by the original producer, with the consumer remaining uninvolved in the programming of content.
- Second, multimedia services combining digitised text, data, audio and still (but increasingly also moving) visual content distributed via physical media such as CD-ROM or the Internet -- sometimes called the "new media". This type of media incorporates computer software programming, formatting and networking technologies to provide users with a high degree of interactivity in relation to the content involved. Though at present many of the content components are pre-formed, user involvement in the process of content formatting and programming is increasing.

The focus on the creation and distribution of music and audio-visual content is for two reasons: First, in most OECD countries, the content of text media is regulated far less heavily than that in audio-visual media and therefore raises fewer issues of concern to policymakers. Second, there is a question of timeliness. Policymakers must now begin to focus on how the network-based production and delivery of audio-visual content will affect the regulatory issues traditionally attached to these services within the context of their policy commitment to expanding markets for network-based content markets on the Global Information Infrastructure.

Many OECD countries and media companies -- as well as some Hollywood studios -- face a fundamental question. Are the investment costs involved in the digital technologies required for modern blockbusters so high that, given the existing size and structure of audio-visual content markets, further concentration will occur, or do the technologies themselves offer opportunities for less concentrated and

wider markets by reducing the heavy capital and labour costs traditionally associated with making movies. The answer to this question will lie in the impact which the emerging structures of demand and supply developing for these technologies has on the traditional costs of audio-visual production and delivery.

On the supply side, important changes have already occurred with the digitisation of audio-visual production. Content creation for large media companies is already often outsourced to small and medium sized enterprises (SMEs) for a range of audio-visual products, as well as for new CD-ROM and on-line multimedia services. SMEs are in a number of instances becoming the seedbeds of innovative content-creation in digital technologies. In addition, there is the possibility that SMEs can increasingly deliver content to broad audiences via the Internet as easily as large enterprises. Heavy capital investments and personnel costs required for music and audio-visual production, and the subsequently large economies of scale needed to achieve adequate returns, may no longer be as vital to successful product and market development as in the past.

However, with growing competition in audio-visual markets, the fruitful outcomes of technological development on the supply side may be unsustainable unless improvements can also be facilitated on the demand side, where the picture is more ambiguous. New, enhanced digital TV networks potentially bring about further competitive pressures in the traditional structure of content markets, but while offering a very large number of channels, audio-visual production is likely to remain very much a centralised broadcasting activity, and content creation still a hierarchically controlled process. This trend may be counter-balanced by increasing local production of content by service providers, as they seek to target particular audience tastes more precisely, but the financial pressures of competition may also encourage retrenchment unless possibilities for alternative product development are facilitated.

Major possibilities for alternative product development of content lie in the interactive environment of Internet network-based services. Whether expansion of employment in new activities for the production and sales of network-based services occurs will depend upon two conditions being fulfilled. First, changes in the traditional financing, pricing and structuring of final consumption which are occurring for both traditional and new multimedia audio-visual services need to be facilitated to support future product and market development. Secondly, governments will need to ensure regulatory frameworks are in place which support these structures. Governments will need to take into account the implications of interactivity offered by Internet-based network services compared to traditional broadcasting ones (even "narrowcast"); the blurring of distinctions, through interactivity, between consuming, producing and advertising; and the capabilities for the international production and delivery of content which these technologies allow.

A stocktaking of existing policies and regulations for the promotion of audio-visual content would be a useful starting point for a debate on the optimal framework for the sustained growth of network-based services. Such a stocktaking is the subject of a separate report by the OECD Secretariat.

## CONTENT AS A NEW GROWTH INDUSTRY

### 1. Introduction

The report for Phase I of the Technology, Productivity and Job Creation project identified emerging markets for network-based multimedia services as a basis for future economic growth and employment. These markets will emerge through the development of a Global Information Infrastructure (GII), composed of competitively provided digital communications networks, which radically reduce transport costs for the rapid delivery of information and entertainment services to markets around the world. But the digital technologies involved in the communication of information and entertainment services are also changing how the content of these services is produced, delivered, and shared. This is not only because many of the technologies for communication and production are the same or similar, but because production itself is increasingly occurring through a process of ongoing communication between content creators, programmers and consumers.

The changing nature of content production has eroded the traditionally distinct definitions of many textual, audio, and visual services, expanded the possibilities for market development, and broadened the range of economic interests concerned with how the value of intellectual content can be realised under different market and regulatory conditions. However, a diverse set of obstacles currently exist which hamper the optimum job-creating and growth-generating potential of these new service possibilities.<sup>1</sup> The ability of companies to produce and deliver content to expanding global markets within the GII will therefore be affected significantly by regulatory reforms of existing content markets which policymakers are able to introduce at national and international levels.

Developing a regulatory framework adapted to the new environment presents a major challenge to policymakers because of the important and complex social and economic issues at stake. The aim of the OECD in this enterprise is outlined in the 1996 ICCP Statement of Policy Recommendations on the "Global Information Infrastructure -- Global Information Society (GII-GIS)" as encouraging economic efficiency and more equitable access to media and content resources.<sup>2</sup> Towards this end, the Secretariat will seek to provide Member countries with an empirical and analytical basis for deciding upon reforms which encourage best practices amongst companies in content-producing sectors and which ensure growth in global content markets, at the same time as respecting cultural identities and diversity and the economic growth of creative new enterprises.

This paper aims to provide an initial analysis of some of the key issues involved in developing content production and delivery as a new growth industry. In this way, the paper provides a basis for a more comprehensive and comparative analysis of the international development of new network-based services by the main content-producing information and entertainment industries (printed, music and motion picture, radio and TV broadcasting). The paper:

- provides an initial analysis of the size, structure and dynamics of music and audio-visual content production and delivery, and the changes occurring in the digitisation of these processes;

- identifies the ways in which network-based content production and delivery acts as a basis for new economic growth and job creation;
- identifies the changing structures of final consumption and revenue generation which are developing in network-based services.

## 2. Market scope, definition and rationale

Given the scope of convergence occurring between the information, entertainment and computing sectors, content markets for network-based services can be very broadly conceived. However, this paper will seek to identify the developing differences and inter-relationships between two broad categories of network-based content markets:

- First, traditional audio-visual and music content, distributed via physical media such as video tapes, CD-ROMs and cinema, but also broadcast on over-the-air terrestrial, satellite, cable TV and radio networks. This type of content is traditionally broadcast by single producers to a wide audience ("one-to-many"), who consume it passively. Though new, enhanced versions of these services, such as video-on-demand, are being developed on digitised networks which will allow a degree of consumer choice in terms of timing of reception of individual programmes, these programmes and their component contents are still very much pre-formed by the original producer, with the consumer remaining uninvolved in the programming of content. In some of these media, however, content is becoming less and less "broadcast" than "narrowcast" ("one-to-few" or "one-to-one").
- Second, multimedia services combining digitised text, data, audio and still (but increasingly also moving) visual content distributed via physical media such as CD-ROM or the Internet -- sometimes called the "new media". This type of media incorporates computer software programming, formatting and networking technologies to provide users with a high degree of interactivity in relation to the content involved. Though at present many of the content components are pre-formed, user involvement in the process of content formatting and programming is increasing.

The following box gives an illustrative economic outline of some of the traditional and new media industries in Canada.



## CANADA'S COPYRIGHT AND NEW MEDIA INDUSTRIES

(figures in C\$)

In 1992, the BOOK AND PERIODICAL PUBLISHING INDUSTRIES AND THE NEWSPAPER INDUSTRY contributed \$4 billion to the total gross domestic product. Revenues of the newspapers industry were \$ 2.9 billion in 1992. Revenues generated by the 367 book publishers and exclusive agents were \$ 1.6 billion in 1992. These firms published 9 056 new titles and reprinted 7 419 titles. Total profits averaged around 5.6 per cent of revenues. The 1 047 periodical publishers earned \$ 852 million in revenues and recorded an average profit of 5.4 per cent of revenues in 1992. There were 1 400 periodicals sold with an average circulation per issue of 37 000 copies. The book and periodical publishing provided full-time employment for 11 300 people and an additional 1 600 part-time jobs in 1992. Total salaries and wages amounted to \$ 470 million.

The FILM AND VIDEO INDUSTRY is divided into four main activities: production, laboratory and post production services, distribution and exhibition. Despite the unfavourable economic climate of the past few years, there are signs that the film and video industry is coming of age. In 1992, it contributed \$ 824 million to the gross domestic product. Production for television, including commercials, accounted for 69 per cent of all 16 113 productions created for the market in 1992. Revenues generated by producers reached \$ 697 million in 1992; post-production activities revenues totalled \$ 309 million while film distributors and videocassette wholesalers received \$ 1.2 billion in revenues, and exhibitors earned \$ 510 million. The industry provided full-time and part-time jobs for 17 900 employees and for 7 800 freelancers. Wages and salaries totalled \$ 431 million.

One portion of the SOUND RECORDING INDUSTRY is engaged in the creation, replication and distribution of musical recordings and managing intellectual property rights associated with these works. The record production and distribution segments of the industry contributed \$ 240 million to the gross domestic product in 1992. The music-instrument manufacturing segment of the industry contributed \$ 260 million to the gross domestic product in 1992. In 1992, this industry released 6 275 new recordings, sold 86 million compact discs (CDs), tapes and vinyl albums. It generated \$ 834 million in total revenues with a net profit of \$ 136 million. The industry provided employment for 2 800 people and disbursed \$ 87.1 million in salaries and wages.

Canada's BROADCASTING INDUSTRY consists of the traditional off-air radio, television and cable television service providers. In 1994, approximately 42 per cent of its revenues were generated by the cable television services, including pay- television and speciality services. The broadcasting industry's contribution was 0.4 per cent of total gross domestic product in 1994, while the computer service industry's was 0.9 per cent of the total economy. The broadcasting industry fared significantly worse than the whole economy with an increase of 2 per cent, against the economy average of 5 per cent in 1994; though the broadcasting industry provided 46 000 jobs, there was a decrease of 4 000 in 1994. The average annual salary in the broadcasting industry was \$ 44 000. The broadcasting industry earned \$ 7 billion, with profit margins of around 15 per cent. Total assets for the broadcasting industry were valued at \$ 14 billion.

The COMPUTER SERVICE INDUSTRY consists of software products development, professional and processing services and is composed of approximately 13 000 establishments with over 81 per cent having less than 250 employees. The computer service industry's contribution of total gross domestic product in 1994 was 0.9 per cent of the total economy. The computer service industry's rate of growth was 7 per cent of Canada's gross domestic product in 1994. In 1994, the computer service industry provided 99 000 jobs, which increased by a remarkable 20 000 over the previous year. Earnings of employees in the computer and broadcasting industries were substantially higher than average. The average annual salary in the computer service industry was \$ 47 000. These earnings compare favourably with the average \$ 38 000 for the Canadian economy. The computer service industry earned almost \$ 15 billion, and profit margins ranged between 5 per cent to 7 per cent. The total assets for the computer service industry were valued at \$ 7 billion.

The primary focus on the creation and distribution of music and audio-visual content in this paper is for two reasons:

- First, in most OECD countries, the content of text media is regulated far less heavily than that in audio-visual media and therefore raises fewer issues of concern to policymakers. Despite some of the recent controversy over the existence of pornographic discussion groups on the Internet and other on-line services, the regulations in regard to audio-visual content pertain not just to social questions of decency and cultural heritage, but also to issues of domestic industry promotion and foreign content restrictions. The combination of network-based audio-visual and printed content raises overlapping issues of pluralism, freedom of expression and cross media regulations.
- Second, there is a question of timeliness. While the delivery of text and still images are now prevalent on the Internet, delivery of broadcast-quality sound and moving pictures is technically either non-existent or in its very earliest stages. However, close and informed observers of the Internet in both the research and corporate communities estimate that full real-time voice and video capabilities on the Internet will probably be available within three years.

It is therefore important that policymakers begin to focus now on how the network-based production and delivery of audio-visual content will affect the regulatory issues traditionally attached to these services within the context of their policy commitment to expanding markets for network-based content markets on the Global Information Infrastructure.

### **3. Size, structure and trends in content markets**

In 1995, world-wide sales of pre-recorded music reached almost US\$ 40 billion, a growth rate of 9.9 per cent over the year, while for OECD countries it was around \$ 34 billion.<sup>3</sup> Gross box office revenues for motion pictures in Europe, North America, Australia and Japan during 1994 were smaller at just over US\$11 billion,<sup>4</sup> while broadcasting revenues for the OECD countries reached approximately US\$122.87 billion.<sup>5</sup> The installed base of TVs, telephone lines and personal computers in 1994 was, respectively: 1 160 million, 645 million, 180 million.<sup>6</sup>

National markets for music and audio-visual services exhibit vast differences across a range of production and consumption indicators. The United States is consistently the largest market for music and audio-visual sales by virtually all forms of measurement. (See Tables 1 and 2). The U.S. is also the largest producer of audio-visual content: Table 3 gives percentages for U.S.-produced films in Europe, the world's second biggest market for audio-visual content. Table 4 gives market shares of domestic and foreign films in Japan for the period 1983-93. Growth in demand has been most rapid in developing countries, though growth varies wildly between countries and is also prone to falls in sales which can be as extreme as growth rates. Of Hollywood's 1995 \$ 17 billion world-wide revenues, foreign revenues grew by 18 per cent compared to domestic growth of 1.8 per cent.<sup>7</sup> The market for the production of music content is more balanced than for audio-visual, though still concentrated, with 5 companies holding around 70 per cent of world sales: BMG (Germany), PolyGram (Netherlands) Sony (Japan), Time Warner (U.S.), and EMI (U.K.).

**Table 1: Top 10 Countries Share of World Music Market by Sales**

1995	Retail Value (USD millions)	per cent Share
USA	12 102.0	30.5
Japan	7 552.1	19.0
Germany	3 269.6	8.2
UK	2 571.6	6.5
France	2 391.8	6.0
Canada	1 113.1	2.8
Brazil	1 053.1	2.7
Netherlands	716.5	1.8
Australia	680.5	1.7
Italy	582.7	1.5
TOTAL	32 032.8	80.7

Source: IFPI

**Table 2: Cinema exhibition in Europe and other continents: key facts 1994**

	Europe	USA	Japan	Australia
Population	383 m.	ca. 257 m.	ca. 125 m.	ca. 17 m.
Number of screens	18.805	26.586	1.747	1.028
Number of inhabitants per screen	ca. 20.400	ca. 9.700	ca. 71.000	ca. 16.500
Gross Box Office Revenues** (in million ECU)	3.058*	4.293	1.259	281.0
Admissions (in millions)	ca. 688.7*	1.210	123	63.6
Frequency per head of population	1.9*	4.7	1	3.7
Average ticket price (ECU)	ca. 4.44*	3.55	10.23	4.42

\* Not including Ireland and Portugal.

\*\* ECU Values 31 Dec 94: 1 ECU = 1.223 US\$; 1 ECU = 122 Yen; 1 ECU = 1.583 A\$

Data referring to Europe include the following countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Source: European Cinema Yearbook 1995.

**Table 3: Market shares of US films in Europe (per cent)**

	1989	1990	1991	1992	1993	1994
Belgium *	69.5	73.4	79.6	72.9	71.8	74.7
Denmark	63.7	77.0	83.3	77.7	74.0	66.7
Finland	70	80	80	63.0	63.0	66.0
France	55.5	55.9	58.0	58.2	57.1	60.0
Germany	65.7	83.8	80.2	82.8	87.8	81.6
Greece	86	87	88	92	-	82
Ireland	75	87	91.5	-	-	-
Italy	63.1	70.0	58.6	59.4	68.1	65.0
Luxembourg	87	80	85	78	80	84
The Netherlands	75.6	85.8	92.5	78.8	89.3	90.0
Norway	72.0	70.0	65.0	68.0	74.0	72.7
Portugal	81.0	85.0	85.0	-	61.2	-
Spain	73	72	69	77.1	75.5	72.3
Sweden	69.3	82.3	70.5	65.5	72.7	70.0
Switzerland	71	76	77	67.3	** 72.4	79.8
United Kingdom	84	89	84	90.6	94.2	-

\* Brussels only

\*\* Non-European films, i.e. US and other countries

Source: European Cinema Yearbook 1995.

**Table 4: Japanese Film Market: Releases and Annual Revenue (1983-1993)**  
(in millions yen)

Year	Number of Films		Revenue		Total Revenue
	Domestic	Western	Domestic	Western	
1983	317	181	41 442	37 331	78 773
1984	333	232	33 120	35 086	68 206
1985	319	264	35 295	34 080	69 375
1986	311	289	36 182	36 454	72 636
1987	286	351	30 638	33 098	63 736
1988	265	485	32 532	32 993	65 525
1989	255	522	31 272	35 883	67 155
1990	239	465	29 407	41 675	71 082
1991	230	467	27 847	38 687	66 534
1992	240	377	28 134	34 227	62 361
1993	238	352	25 692	46 119	71 811

Source: Cinema Almanac, Jijeigatsushinshah, Inc. Information provided by the Japan Information Network.

However, a radical restructuring of content production and delivery practices may well be taking place. As we shall consider in detail below, content creation for large media companies is already often outsourced to small and medium sized enterprises (SMEs) for a range of existing printed and audio-visual products, as well as for new CD-ROM and on-line multimedia services. SMEs are in a number of instances becoming the seedbeds of innovative content-creation in digital technologies. In addition, there is the possibility that SMEs can increasingly deliver content to broad audiences via the Internet as easily as large enterprises. This opens the possibility that the traditionally heavy capital investments and personnel costs required for music and audio-visual production, and the subsequently large economies of scale needed to achieve adequate returns, may no longer be as vital to successful product and market development as in the past. In this case, if appropriate market and regulatory frameworks were devised, a more internationally dispersed structure of production could well become a viable possibility.

A number of OECD countries would like to encourage these possibilities through policies which support on-line content creation by their domestic SMEs. Despite the possibilities for alternative forms of content creation and delivery on information infrastructures such as the Internet, however, it remains unclear to what extent (i) SMEs face significant constraints on investment, growth and job creation within the existing structures of sectoral production and delivery; and (ii) to what extent more dispersed forms of production and delivery (such as offered by the Internet) provide viable alternative media for demand and job creation in network-based content creation and delivery.<sup>8</sup> Addressing these issues requires analysing similarities and differences in digitising the production and delivery of different kinds of music and audio-visual content. In particular, it is necessary to consider the ways SMEs and large enterprises can and are developing different kinds of new content, both in their own right and in relation to each other, and the financing and pricing measures being developed to support these new services. It will then be possible to consider the ways in which both companies and governments can stimulate new forms of demand for content.

#### **4. Digitisation of content production and delivery**

Value adding in the production and delivery of content in the music and audio-visual industries of the OECD has occurred in two ways over the last decade or so. First, improved economic management of delivery and consumption has allowed greater targeting of particular audiences and greater economies of scope. Second, digital technologies have been used to restructure production and delivery in order to target these more particular audience tastes (and allowing higher prices for content to be charged). Together, these developments have allowed greater value-added to be attained in OECD markets.

In music delivery, improved utilisation and management of radio frequencies has raised value-added through increasing the number of available broadcasting channels and facilitating the development of stations increasingly dedicated to particular audience tastes.<sup>9</sup> For instance, all-news radio stations have become a very profitable niche market today, and though fewer than four dozen all-news radio stations exist in the United States, they attract a premium advertising rate. New York city's WINS-AM made \$ 29.3 million in annual advertising revenue, second only to the all-sports news radio station in New York, and third nationally in advertising revenue.<sup>10</sup> Classical Radio, a station dedicated purely to classical music, has also become one of the most profitable stations in the U.K. Digital radio will expand the number of available channels even more.

Improvements have also occurred in the delivery of audio-visual content to consumers. In cinema, the development of multiplexes is making movie-going a broader-based and richer leisure and consumption experience. While the number of screens has increased, the number of seats per screen has in

virtually all OECD countries decreased (though there has also been the development of large screens). In a similar way, the development of high quality digital transmission to wide, flat, digital screens promises a richer audio-visual experience in the home. Moreover, these distribution channels -- whether they be satellite or cable or fibre-optic -- provide consumers with greater say over precisely what they see and when compared to traditional public broadcast regimes, and this will increase in the future.<sup>11</sup>

New digital satellite and cable TV (and digital terrestrial over-the-air) networks allow for hundreds of new channels (compared to the handful of traditional analogue over-the-air channels, and the 20-30 offered by traditional cable TV). This is providing strong incentives for the enhancement of traditional audio-visual services, such as in video-on-demand, as well as new interactive multimedia services. For instance, competition from telephone companies, direct-to-home satellite TV, and wireless cable could mean traditional cable TV providers in the U.S. will see subscribers drop from 64 million today to 61 million by 2005.<sup>12</sup> In response, cable operators are introducing high capacity cable modems, which allow delivery of multimedia content (including video), thus further advancing the technological possibilities for adding more value.

While these improvements in delivery techniques do offer the possibility of greater economies of scope by tailoring content to meet particular audience tastes, increased value-adding in content creation itself lies in using digitisation to lower the costs of production. This has already occurred in the music recording industry. Digital production, storage and delivery of content have already been well developed (though as yet delivery is largely restricted to music-only CDs, multimedia CD-ROMs and broadcast video-clips), which has led to the promotion of more localised talent by music companies in overseas and regional markets. The experience and skills of multimedia content creation gained in the music industry provides a platform for their application in audio-visual markets by those companies (Sony and Time Warner are leading examples) with both music and audio-visual interests.

Within the film industry itself, adding value in audio-visual content creation goes back at least to the early 1970s, when Dolby systems which had been developed in the music industry to improve audio quality were introduced into movie sound production. Following the establishment of Industrial Light and Magic (ILM) in 1975 by George Lucas (director of *Star Wars*), a growing number of firms developing digital visual special effects have been spawned, such as Silicon Graphics, Digital Domain, Rhythm & Hues, and Pixar. Warner and Sony, two of the world's big music leaders, have also set up in-house digital visual special effects facilities.

An increasing number of Hollywood blockbusters have shown the value that digitisation of audio-visual content can contribute to sales, beginning with *Star Wars* and *ET* in the 1970s, through *Jurassic Park* and *The Terminator 1* and *2*, to *Forrest Gump*, *The Mask*, *Babe*, and *Twister* and others. The initial reaction to these increased possibilities for adding value was a rise in film production by the Hollywood studios. Twentieth Century Fox, for instance, went from producing 15 films a year to 30 films,<sup>13</sup> while the total number of Hollywood releases rose 9 per cent to 426 in 1995.<sup>14</sup> While total output increased, however, production and marketing costs rose 10 per cent, and demand in the North American market rose only 1 per cent.<sup>15</sup> Consequently, a number of box office failures have occurred, and most of the major studios have now announced cutbacks in the number of future releases planned. In addition, studios have restructured to maximise the value of digital processing by focusing upon expensive "event" pictures, such as the recent hit, *Independence Day*, which cost \$ 71 million to make, and low-budget films, such as *The Truth About Cats and Dogs*, which cost \$ 15 million, while cutting out middle range \$ 30 to \$ 40 million films.<sup>16</sup>

Adding value to popular films through digital special effects can be very expensive, however, and the cost of recent successes has risen from around \$ 40 to \$ 50 million two to three years ago, to over \$ 70 million today. Variety Magazine has reported that the cost of the digital visual effects alone for such blockbusters has risen from on average \$ 5 million five years ago to \$ 24 million today.<sup>17</sup> As Table 5 shows, average production costs for Hollywood feature films has more than doubled since 1985.

**Table 5: Cost Changes for Feature Film Production (USA)**

	Average Production Cost Per Feature (\$000's)
1995	36 389.8
1994	34 288.0
1993	29 910.3
1992	28 858.3
1991	26 135.5
1990	26 783.2
1989	23 453.5
1988	18 061.3
1987	20 050.5
1986	17 454.8
1985	16 779.2

Source: Motion Picture Association of America, 1995 U.S. Economic Review.

Within this context, many OECD countries and media companies -- as well as some Hollywood studios -- face a fundamental question. Are the investment costs involved in the digital technologies required for modern blockbusters so high that, given the existing size and structure of audio-visual content markets, further concentration will occur? Or do the technologies themselves offer opportunities for less concentrated and wider markets by reducing the costs traditionally associated with making movies?

Production of audio-visual products has for quite a while been outsourced to SMEs by studios and broadcasters in many if not most OECD countries. The life of these SMEs may be extremely short, particularly in filmmaking, where it may be only the time required to produce one film. This traditional form of outsourcing was usually based upon the craft nature of the work involved in audio-visual content production, and the desire on the part of studios and TV broadcasters to circumscribe their investment risk in such unpredictable creative activities. Heavy investment costs in capital and labour have traditionally been associated in movie-making with activities such as creating scenery by hand, stunt work, and cast extras.

New digital technologies can lead to a dramatic reduction in such costs. In the film *Forrest Gump*, for instance, 1 000 extras were digitally copied to appear as a 50 000 crowd in an anti-War demonstration.<sup>18</sup> The development of digital camcorders is also bringing down the cost of broadcast-quality equipment significantly for many forms of audio-visual production, though top-end film making still requires special equipment. These declining costs could change the commercial structure of content-creation for much of the audio-visual sector by reducing investment requirements and allowing programme makers to produce films and services before offering them for sale to commissioning editors and broadcasters.<sup>19</sup>

Similar possibilities are becoming available for audio-visual editing and post-production techniques with the development of powerful, mass-produced PCs, and low-end computing equipment and software is even viable for many audio-visual digital special effects. The high-end graphics design equipment produced by companies such as Silicon Graphics (creators of many of the digital special effects

in recent Hollywood blockbusters) is being increasingly challenged by lower priced equipment, the most recent example being by Sun Microsystem's network computer, and by Compaq's new range of computers based upon standard Intel Pentium Pro chips and Microsoft NT software. Silicon Graphics is also bringing down the cost of its own equipment with the O2, a powerful workstation whose \$ 7 500 price is less than half that of the lower-powered work stations it replaces.

The production of blockbusters nevertheless remains crucial, and few argue that the quality of such low-end equipment is as good as high-end workstations. Silicon Graphics continues to innovate at the high-end in production equipment with the Origin 2000 line of servers, which is expandable from 2 to 128 microprocessors, as users' needs grow; prices range from \$ 12 000 to \$ 4 million.<sup>20</sup> One of the important economic contributions of blockbusters is as an investment pole and testbed for digital technologies with much wider economic applications. Companies who have been developing advanced digital audio-visual technologies for the film industry (such as, for instance, Silicon Graphics) are further able to develop new, more popular services (which SG is now working on in on-line interactive games with Sega's U.S. subsidiary) as delivery systems improve. Smaller scale productions, by contrast, cannot draw the same scale of risk capital for technological innovation (8 out of 10 blockbusters fail but can be paid for by the two which are successful in global markets).

The development of multi-channel broadcasting has eroded the tight market structure for content production and delivery which previously existed in the industry, encouraging a search for cheaper and more varied sources of content production. Tables 6 and 7 show the large number of programmes now offered with the growth of cable networks in Europe and the USA.

New, enhanced digital TV networks potentially bring about further competitive pressures in the traditional structure of content markets. Though interactivity between viewers and programmers will be somewhat limited in direct-to-home satellite delivery, with audio-visual programming remaining a centralised broadcasting activity and content creation a hierarchically controlled process, this trend is likely to be counter-balanced by increasing local production of content by digital cable and over-the-air service providers, as they seek to target particular audience tastes more precisely.

**Table 6: Cable TV in Europe 1995**

Countries	Number of Operators	Minimum TV programmes in basic package	Maximum TV programmes in basic package
Austria	270	22	33
Belgium	35	19	38
Denmark	40	12	42
Finland	102	8	14
France	10	15	30
Germany	1	n.a	31
Ireland	5	12	15
Netherlands	169	20	32
Norway	800	6	18
Spain	28	12	31
Sweden	63	6	35
UK	appr. 40 105 franchises	12	42

Source: European Cable Communications Association 1996: 247-256



**Table 7: Cable TV in US 1993-1994**

Network Type	1993		1994		93-94 Change
	Number of Networks	per cent of Networks	Number of Networks	per cent of Networks	
Basic	80	79.21	94	73.44	17.5
Premium	9	8.91	20	15.63	122.22
Pay-per-View	7	6.93	8	6.25	14.29
Combination	5	4.95	6	4.69	20
Total	101		128		26.73

Source: National Cable Television Association 1995:7

Further possibilities for extensive and radical alternative product development of content lie in the interactive environment of Internet network-based services. The packet-switched architecture of the Internet mitigates against hierarchical forms of production and delivery. In addition, with relatively very little capital investment (mainly in network servers, PCs, and software), Internet-based small-scale enterprises can produce and distribute content. Though the sheer volume of information which is becoming available on the network has also produced a counter-tendency towards general programming sites, the ability to search for individual and customised content is also being reinforced by the development and commercial release of intelligent agents, such as offered by Agentware of the U.K. ("Autonomy" currently offered on one month free trial) and NetAngels of the U.S. (whose product is currently being Beta tested).

Network-based production of service content has been growing throughout the 1980s and 1990s. Most if not all of this growth production has been based on internal corporate data networks. The growth of the Internet has now facilitated the development of this phenomenon onto the "virtual" public network of cyberspace, or on "intranets" which allow employees within a given company to do on-line collaborative work over Internet-like environments. The technological development of these services is moving at a rapid pace. The U.K.'s Oftel has noted "text and static colour images - rather than moving images - form the basis of many Internet transactions. Even for these images, reception can be slow for the many users connected via an analogue telephone line and a modem."<sup>21</sup> However, private sector companies are moving rapidly to develop audio-visual capabilities. During the summer Olympic Games, General Electric's NBC and Intel Corp. announced the first use of Intel's InterCast technology -- which allows TV to be received on a specially equipped PC. The PC must have a Pentium 133 megahertz microprocessor, Windows 95 software, and a special board that combines video capture technology and a TV tuner. The board adds about \$ 200 to the PC's cost.<sup>22</sup>

## **5. Job creation and employment trends**

As computer-generated digital production and visual special effects technologies are developed and contribute a greater proportion of the value of film making, audio-visual production companies are seeking employees with computer authoring and networking skills. The world supply of such skilled labour is at present restricted and wages are high and rising.<sup>23</sup> Nevertheless, significant job creation has occurred in audio-visual media. Despite (or perhaps because of?) the cost savings produced by digital technologies, the motion picture industry in the United States has since 1985 created over a quarter of a million jobs, according to the Motion Picture Association of America, with most of these being in production or distribution and video sales (see Table 8). As important as the major studios are the smaller

independent production companies. According to a report for the American Film Marketing Association (AFMA), in 1994 independent productions generated more than one third of all jobs in the industry. In Los Angeles County alone, independent productions directly employed about 131 000 people across all sectors of the motion picture industry, with a total payroll of more than \$ 2.1 billion. Nationwide, independents had a payroll of nearly \$ 2.5 billion in 1993, or 29 per cent of the industry total of about \$ 8.3 billion. The total jobs in all sectors of the independent film industry were about 148 000, or almost 36 per cent of the employees of the film industry.<sup>24</sup>

In Europe and Canada, too, employment has grown in all countries in the audio-visual and related sectors (see Table 9 and 10).<sup>25</sup> These fruitful trends in production have been facilitated by the growing competition in markets for audio-visual delivery, with the most notable increases in employment occurring in those countries which have allowed an expansion of private broadcasters of audio-visual content.

The move towards network-based (particularly Internet) services will have the effect of reducing employment in traditional media delivery systems, which, as Table 8 indicates, is a growing source of personnel costs. Stand-alone information and entertainment systems such as video cassettes and CD-ROMs (and movie reels) require heavy investment in manufacturing plant, shops and physical distribution systems, where both capital and labour investments are relatively intensive. The move away from such systems is already apparent in the printed text business. For instance, Encyclopaedia Britannica Inc. citing "fundamental changes in North American consumer buying patterns," is moving to electronic and direct mail sales only. As part of this move, Britannica is laying off 140 sales representatives in the U.S. and Canada and disbanding a similar sales network of 300 independent sales contractors. Britannica will move to distribution via CD-ROM and the Internet, and will increase on-line, television and direct mail advertising.<sup>26</sup> A similar impact in employment can be expected in stand-alone multimedia markets. A study of multimedia producers for the Canadian government found that while CD-ROM based delivery of content was expected to remain the largest medium in the next two years, development of "new delivery media and modes, such as cable and telephone, are expected to see rapid growth in the number of entrants."<sup>27</sup> While reducing employment in retail sales channels, network-based distribution of content is expected to increase demand for staff in technical, creative and management/administration and direct marketing positions.<sup>28</sup>

Despite reductions in employment in physical distribution channels as a result of the development of network-based delivery, significant economic growth and job creation in the software development industries at the heart of new network-based multimedia services is already growing rapidly. In Canada, the computer service industry provided 99 000 jobs in 1994, an increase of a remarkable 20 000 over the previous year. Moreover, earnings of employees in the computer service industry (average annual salary \$ 47 000) were substantially higher than the average \$ 38 000 for the Canadian economy. According to the New York Times, roughly 50 000 jobs in 1996 were created in Silicon Valley, while average real wages grew 5.1 per cent after accounting for inflation -- more than five times the national average.<sup>29</sup> Average annual earnings among software companies came to \$ 78 400 in 1995. This compared with \$ 74 300 in the semiconductor industry.<sup>30</sup>

**Table 8: U.S. Motion Picture Industry Employment**  
(Number as at September)

Year	Total	Production/ Services	Distribution/ Video Tape*	Theatres
1995	590 300	314 400	160 100	115 800
1994	506 100	237 400	158 800	109 900
1993	417 700	171 900	141 200	104 600
1992	382 800	147 900	136 600	98 300
1991	388 600	149 500	132 800	106 300
1990	394 500	154 800	131 800	107 900
1989	377 000	132 592	137 750	106 658
1988	354 200	114 800	131 478	107 922
1987	231 158	115 167	12 500	103 489
1986	219 356	103 044	11 302	105 010
1985	220 967	101 400	11 411	108 156

\* Dept. of Commerce now includes videotape sector of Industry (1988-1995)

**Table 9: European Employment Audiovisual and Other Cultural Services**  
(Absolute figures in thousands, and as percentages of total employment)

	Belg.	Den.	Ger.	Fra.	Gr.	Ire.	Italy	Lux.	Neth.	Port.	Spain	U.K.	Total
1985	35 1.1%	46 1.8%	226 0.9%	224 1.1%	43 1.2%	14 1.4%	N/A N/A	1 0.8%	88 1.7%	N/A N/A	N/A N/A	528 2.2%	1208 1.1%
1986	44 1.2%	44 1.7%	227 1.0%	240 1.1%	47 1.3%	15 1.4%	N/A N/A	1 0.9%	N/A N/A	24 0.6%	125 1.2%	538 2.2%	1354 1.1%
1987	41 1.2%	45 1.7%	267 1.0%	248 1.2%	47 1.3%	17 1.6%	N/A N/A	1 0.7%	114 2.0%	30 0.7%	156 1.4%	562 2.3%	1528 1.2%
1988	39 1.1%	47 1.8%	279 1.0%	254 1.2%	48 1.3%	18 1.6%	N/A N/A	1 0.9%	119 2.0%	33 0.7%	144 1.2%	618 2.4%	1599 1.2%
1989	41 1.1%	51 2.0%	297 1.1%	255 1.2%	44 1.2%	19 1.7%	N/A N/A	1 0.9%	115 1.9%	34 0.7%	160 1.3%	630 2.4%	1647 1.3%
1990	44 1.2%	54 2.1%	321 1.1%	255 1.2%	46 1.2%	20 1.8%	N/A N/A	1 0.9%	126 2.0%	39 0.8%	175 1.4%	630 2.4%	1711 1.3%
1991	51 1.4%	55 2.1%	405 1.1%	288 1.3%	48 1.3%	21 1.9%	N/A N/A	1 0.9%	140 2.2%	40 0.8%	193 1.5%	619 2.4%	1862 1.3%

Source: Eurostat Labour Force Survey.

**Table 10: Film, Video and Audio-visual Production Industry Canada,**  
Employment Summary, 1990-91 to 1994-95

	1990-91	1991-92	1992-93	1993-94	1994-95
Full time	3 387	2 821	2 463	3 400	3 561
Part-time	3 080	2 545	1 712	2 755	2 326
Freelancers	---	10 156	8 500	8 382	9 857
Working proprietors	68	103	59	58	65
Total	6 535	15 625	12 734	14 595	15 809

Source: Statistics Canada - 87F0010XPE.

Such growth in computer software development is spreading into multimedia content-creating activities. According to a recent study by Coopers & Lybrand, total new media employment in the New York Metro area (NJ & CT) was 71 500 workers in 1994, up 28 500 since 1992. The other leading centre in the U.S., San Francisco, had over 2 200 new media companies employing 62 000 workers. The study also estimated that New York Metro area new media employment would increase by 39 000 employees from 1996 to 1998. The average New York area annual pay for new media employees was \$ 31 421.<sup>31</sup> The study also estimated that the size of the new media industry in the New York metropolitan area had more than doubled in the last year to become a \$ 3.8 billion a year business. The New York Times, comparing the 70 000 new media workers in the New York City metro area with the 17 000 television industry workers, and fewer than 14 000 in the book publishing industry, noted in a lead editorial the next day that, while New York City was "justly proud of its world-class television, book publishing, and newspapers industries...these traditional businesses are not the largest media industries in the region -- that honour belongs to the new-media industry."<sup>32</sup> By 1994, the broadly defined "copyright industries" were estimated to contribute 5.72 per cent of GPD (US\$ 385.2 billion) and to have created almost 6 million jobs (or 4.81 per cent of the total workforce) in the United States.<sup>33</sup> As we shall now consider, however, sustained expansion of growth and job creation in the production and delivery of new network-based services depends upon new forms of financing, pricing and final consumption being allowed to develop.

## 6. Financing, pricing and structuring of final consumption

As we have seen, the development of multiplex cinemas, differentiated and multi-channel broadcasting, and an interactive Internet are changing the framework of traditional content delivery, while digital production techniques are reducing the traditional capital and cost structures for the production of much audio-visual content. These developments go hand-in-hand with changes in the traditional financing, pricing and structuring of final consumption for both traditional and new multimedia audio-visual services. Future product and market development will depend upon these new forms of revenue generation being facilitated.

Traditional broadcast media relied upon license fees to pay for terrestrial over-the-air delivery of content to final consumers in many OECD countries. During the 1970s and 1980s, the entrance of private broadcasters marked the start of advertising as an important element in final consumption and financing structures. With the development of cable and satellite delivery in the 1980s and 1990s, monthly subscriptions and pay-per-view have become increasingly significant elements.

The financing of audio-visual content production of movies in cinemas has also undergone a fundamental change. Most blockbusters make little or no direct returns on their costs through cinema showings, but rather through the sales of other goods in multiplex cinemas, and associated items such as clothing, toys and videos. Video sales, for instance, accounted for 49 per cent of Hollywood's world-wide revenues in 1995.<sup>34</sup> But the success of a movie in terms of video sales and TV viewing is considered to be vitally dependent upon its reception in the cinema.<sup>35</sup> In this way, cinema showing becomes a marketing or advertising tool for downstream content distribution, which makes the marketing and advertising of movie releases increasingly important in their initial reception at the box office. Table 11 gives figures on both the increase in advertising costs and their breakdown between different media outlets for large movie producers in the United States. In addition, though, movies are increasingly used to advertise or promote other goods through their use as props in popular hits such as the James Bond movies: the sharp distinction between advertising as a means of financing, on the one hand, and media content, on the other hand, is beginning to erode in content production and delivery.

**Table 11: Marketing Costs of New Features**

	MPAA Companies Combined Average Advertising and Print Costs (\$m)	MPAA Companies Average Advertising Costs (\$m)	MPAA Distribution of Advertising Costs by Media				
			<i>Newspaper</i>	<i>Network</i>	<i>Spot TV</i>	<i>Trailers</i>	<i>Other</i>
1995	17,737	15,383	19.5	23.0	24.4	4.6	28.4
1994	16,060	13,871	21.8	21.3	22.8	4.6	29.5
1993	14,066	12,125	22.0	21.5	22.7	4.4	29.4
1992	13,456	11,485	22.3	21.2	22.3	4.0	30.2
1991	12,064	10,410	22.4	21.9	21.2	5.3	29.2
1990	11,967	10,241	23.8	21.2	23.0	N/A	32.0

*Source:* Motion Picture Association of America.

Traditional media rely heavily upon advertising as a source of finance for content creation. The Newspaper Association of America, for instance, notes that total newspaper advertising revenue rose 5.7 per cent to \$ 36 billion in 1995. Newspaper total advertising revenue is expected to have roughly a 6 per cent increase this year.<sup>36</sup> Currently, newspapers count on classified ads for about 40 per cent of their ad revenues. In the United States, advertisers are expected to spend about \$ 12 billion (out of \$ 172 billion) on radio advertising this year. This figure is up 6 per cent over 1995.<sup>37</sup> While some early analysts evaluate market dominance by number of outlets, and the resulting programming or "content" control, others follow the advertising market shares.<sup>38</sup> The Wall Street Journal found that despite a decline in the networks audience, advance sales of advertising time on the broadcast networks for the 1996-97 season are expected to match last year's record figure. Projected advance sales for the networks are

expected to reach \$5.6 billion. "Most networks said they are selling between 75 per cent and 85 per cent of their total inventory in advance." Lower ratings and stable advanced sales means advertisers are effectively paying more per viewer.<sup>39</sup> Table 12 gives some provisional figures for spending in various traditional media in OECD countries by advertisers.

**Table 12: Distribution of advertising spending in the OECD area, 1994**  
(ECUs Millions)

	TV	Newspapers	Magazines	Radio	Cinema	Outdoor/ Trans.	Total
Australia							
Austria	277.2	401.4	210.6	123.4	4.9	59.7	1 077.2
Belgium	351.5	171.9	231.8	88.2	10.1	97.3	950.8
Canada							0
Denmark	170.6	340.8	117.9	21.9	5.8	17.8	674.8
Finland	134.9	279.8	73.7	25	0.7	18.7	532.8
France	2 355.4	1 426.9	1 569.6	562.1	42.5	872.8	6 829.3
Germany	3 250.4	5 811.4	2 606.9	655.3	159.9	509.2	12 993.1
Greece	534.8	78	89.9	35.9	n/a	16	754.6
Iceland							0
Ireland	97.2	121.3	14.9	30	2.9	17	283.3
Italy	2 413.1	643.3	675.8	57.8	n/a	116.3	3 906.3
Japan	16 435	11 211	3473	2029	n/a	18 534	51 682
Lux.							0
Mexico							0
Nether.	495.3	949.2	493.9	104.3	9.7	83.4	2 135.8
N.Z.							0
Norway	125.9	251.8	74	32.3	5.8	15.6	505.4
Portugal	325.2	67.9	78.2	29.4	n/a	38.2	538.9
Spain	1 318.3	757.9	452.2	331.6	29.1	161	3 050.1
Sweden	248	602.8	109.9	17.9	8.7	62.4	1 049.7
Switz.	162	832.1	233.7	50.9	18.4	232.8	1 529.9
U.K.	3 147.3	2 350.8	1 261.8	285	56	360.9	7 461.8
USA	24 989.4	16 633.9	7 776.1	8 054.9	n/a	784.9	58 239.2

Source: Communications Outlook 1997.

This market is increasingly fragmenting as new delivery media develop. An annual survey of Advertising by DeWitt Media Inc. says marketers will continue to shift advertising dollars from the broadcast networks to other new media as broadcasters lose viewers. About 40 per cent of marketers said they planned to reallocate advertising dollars. Of the 28 per cent that said they would shift advertising dollars, 80 per cent will shift to cable television. Other media include direct mail, interactive media and computer on-line services.<sup>40</sup> USA Today reported that spending for advertising placement on the World Wide Web in the first quarter of 1996 was \$ 26 million, up 110 per cent from \$ 13.6 million in the last quarter of 1995. Top advertisers were: 1) IBM, \$ 1 528 300; 2) Microsoft, \$ 1 010 900; 3) Netscape Communications, \$ 929 000; 4) c/net, \$ 612 300; 5) AT&T, \$ 606 700.<sup>41</sup> Microsoft, in a bid to create new

Internet (world wide web) businesses, will launch an information, arts and entertainment on-line network and go after the newspapers' classified advertising market.

Again, however, the development of interactive, Internet-based network services marks a radical trend shift from the structures of final consumption associated with traditional copyright content. With increased interactivity between producer and consumer inherent in the Internet, the sharp distinction between advertising as a means of financing, on the one hand, and media content, on the other hand, which is beginning to erode in content production and delivery in traditional media is becoming even more advanced on the Internet. According to research firm Datagreat, fewer than 5 per cent of all web sites charge fees for access, though the number rises for the sites of major media programmers.<sup>42</sup> Within this context, companies are finding other ways of making money, including: licensing software, charging for premium areas, and advertising.<sup>43</sup> Other companies have a strategy of offering subscribers free members-only services, such as an electronic news agent, a portfolio tracking service, an on-line encyclopaedia, Internet telephone calls, and free individual home web pages.<sup>44</sup> This change is connected to an increasingly close relationship between the "producer" and the "consumer", whereby the latter is becoming partially involved in programming, with consumption becoming less of a series of one-off events external to production and more an ongoing and integral part of the product development. Governments will need to modify existing regulations for content production and distribution to facilitate this development.

## **7. Conclusions**

Network-based delivery of content offers OECD Member countries the possibility of developing a whole new range of content creating activities. This promise will only be realised, however, if governments act to promote content-creating capabilities in their countries and to facilitate new forms of economic supply and demand. In addition, regulatory reforms are needed which take into account the more interactive multimedia production and delivery of content now increasingly available via networks, in place of the single-media frameworks of the past.

It is too early to say in detail of what such a framework would consist. It is also inappropriate for OECD governments to by themselves dictate such a framework, as the private sector will and should play a leading role in deciding the optimal conditions necessary for the development of network-based content production and delivery. But a stocktaking of existing policies and regulations for the promotion of audio-visual content would be a useful starting point for a debate on the optimal framework for the sustained growth of network-based services. Such a stocktaking is the subject of a separate report by the OECD Secretariat.

## NOTES

- <sup>1</sup> For a discussion of some of these obstacles, see the Summary Report of the Tokyo Symposium on "New Economic and Social Approaches to a Multimedia World" March 1996.
- <sup>2</sup> OCDE/GD(96)93, sections 2.5.1 and 2.5.2.
- <sup>3</sup> International Federation of the Phonographic Industry, *IFPI World Sales 95*, (London: April 1996).
- <sup>4</sup> *European Cinema Yearbook, 1995*; Industry Canada; OECD analysis.
- <sup>5</sup> OECD Communications Outlook 1997.
- <sup>6</sup> ITU World Telecommunication Development Report 1995, p.20.
- <sup>7</sup> Foreign revenue figure taken from *Wired*, February 1996, p.62; domestic revenue figure from Motion Picture Association of America.
- <sup>8</sup> Thus a report for the Australian government argues that: "Australian content development industries relevant to emerging interactive multimedia production are currently worth around \$8.4 billion in domestic wholesale revenues, plus nearly \$700 million in exports and overseas royalties (see Figure 7). This provides the industry base and capital stock upon which to build an interactive multimedia industry. However, there is not a solid record of export success, despite recent progress in some areas such as music. Content industries may be generally characterised as local market-oriented, with significant imported content." See Cutler & Company, "Commerce in Content: building Australia's international future in interactive multimedia markets" A report for the Department of Industry Science and Technology, CSIRO, and the Broadband Services Expert Group (September 1994).
- <sup>9</sup> For a general discussion of trends in frequency allocation in OECD countries, see ICCP 33, *The Economics of Frequency Allocation* (1993).
- <sup>10</sup> *New York Times*, D7, 24 June 1996.
- <sup>11</sup> An interesting possibility in the future would be that delivery of movies to the cinema screen could be via satellite, cable or fibre optic, instead of on the physical reels of today. Once network operators have in place the servers capable of handling such video distribution on a national basis, there would seem to be no reason why they could not offer cinema chains national movie-on-demand broadcasting.
- <sup>12</sup> Paul Kagan Associates, cited in *USA Today*, 1B/2B, 24 April 1996.



<sup>13</sup> *Wall Street Journal*, B1/B6, 21 June 1996.

<sup>14</sup> *Financial Times*, 18 June 1996.

<sup>15</sup> *Financial Times*, 18 June 1996.

<sup>16</sup> *Wall Street Journal*, B1/B6, 21 June 1996.

<sup>17</sup> *Financial Times*, 16 July 1996.

<sup>18</sup> See *Financial Times*, 16 July, 1996.

<sup>19</sup> See *Financial Times*, “Television by numbers,” 2 December 1996.

<sup>20</sup> “Silicon Seeks New Believers on Wall Street,” *New York Times*, January 6, 1997.

<sup>21</sup> Office of Telecommunications, “Beyond the Telephone, the Television and the PC” Consultative Document (8/95), Ch. 3.

<sup>22</sup> *USA Today*, 2B, 28 June, 1996.

<sup>23</sup> See *Financial Times*, 22 July, 1996.

<sup>24</sup> Arthur Anderson Economic Consulting and Arthur Anderson LLP, *The Economic Consequence of Independent Film Making*, January 1995.

<sup>25</sup> Note that the European figures compared to the ones for the U.S. include all audio-visual activities. This makes comparison tricky, but is relevant in so far as (as noted earlier in the paper) a large proportion of content production in Europe is carried out by broadcasters, whereas in the U.S. there was a legal barrier from broadcasters doing so.

<sup>26</sup> *New York Times*, D8, *Wall Street Journal*, A4, 25 April, 1996.

<sup>27</sup> DJC Research with Quantum Leap Inc. in association with Industry Canada Information Technology Industry Branch, “IMAT: Survey of the Multimedia Industry in Canada” (Toronto: DJC Research, June 1995), p.21.

<sup>28</sup> DJC Research with Quantum Leap Inc. in association with Industry Canada Information Technology Industry Branch, “IMAT: Survey of the Multimedia Industry in Canada” (Toronto: DJC Research, June 1995), pp. 28-29.

<sup>29</sup> “Gold Rush From Software Animates Silicon Valley,” *New York Times*, 13 January 1997.

<sup>30</sup> “Gold Rush From Software Animates Silicon Valley,” *New York Times*, 13 January 1997.

<sup>31</sup> *New York Times*, D1/D4, 15 April 1996.

<sup>32</sup> *New York Times*, A20, 16 April 1996.

<sup>33</sup> See Copyright Industries in the U.S. Economy: the 1996 Report by Stephen E. Siwek and Gale Mosteller, Economists Incorporated, prepared for the International Intellectual Property Alliance (Washington D.C., 1996).

<sup>34</sup> *Wired*, February 1996, p.62.

<sup>35</sup> See OCDE/GD(96)60, Committee on Competition Law and Policy, “Competition Policy and Film Distribution”, Series Roundtable on Competition Policy, No. 3. See also, OECD, *Competition Policy and a Changing Broadcast Industry* (Paris: 1993).

<sup>36</sup> *USA Today*, 1B, 29 March, 1996.

<sup>37</sup> *USA Today*, 2B, *New York Times*, D1/D5, and *Wall Street Journal*, A3/A4/B1/B4/B6, 21 June, 1996.

<sup>38</sup> See, for instance, *Wall Street Journal*, A3/A4/B1/B4/B6, *USA Today*, 1B/2B, and *New York Times*, A1/D1/D5, 21 June, 1996.

<sup>39</sup> *Wall Street Journal*, B2, 5 June, 1996.

<sup>40</sup> *New York Times*, D11, 22 April, 1996.

<sup>41</sup> *USA Today*, 1B, 5 June, 1996.

<sup>42</sup> *USA Today*, 1B, 30 April, 1996.

<sup>43</sup> For example, see *USA Today*, 1D, 25 April, 1996.

<sup>44</sup> See *Wall Street Journal*, B9, 15 April, 1996.