

Chapter 10

Multimedia: products and markets

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THE MULTIMEDIA REVOLUTION

This chapter aims to give an overall picture of the multimedia industry today: a picture which in fact easily eludes our grasp. Multimedia is situated at the crossroads of a large number and variety of technologies and economic sectors. Furthermore, the industry is developing all the time, and available statistics therefore quickly become unreliable and out of date. This problem is compounded by a lack of coherent definitions, which obscures both factual and conceptual analysis. On many points there are differing opinions, and it is not the purpose of this brief overview to support any particular view, but simply to provide the reader with the information needed to understand the ways in which this rapidly expanding sector is developing.

The basic and fairly limited definition of multimedia, is that of 'media in which spatial data (text, image and sound) are merged with temporal data (voice and video), by means of a unifying object – the computer'. On the basis of this definition, a much broader one with the accent on the transformation of the media could be suggested. In this light, the multimedia revolution is seen to result from the development of the following three types of media:

- computers: thanks to high-level languages such as Hypertalk, Lingo and Java, multimedia producers no longer need to be computer experts to create documents which combine text, sound and image on a compact disk-read only memory (CD-ROM), CD-Interactive (CD-I), Digital Versatile Disk (DVD) or the Internet.
- digital video: television is moving towards interactive television (I-TV) and video on demand, offered by cable distribution networks.
- network superhighways carrying Internet traffic and the information of the future, on which all kinds of interactive services such as electronic mail, voice telephony and videoconferencing, electronic commerce are already flourishing, and soon, perhaps, television on demand.

Multimedia can also be defined in terms of industries. In this context, it can be said to be a result of the convergence of several 'traditional' industries, mainly computer science and communications, and the 'content' industries, such as the audiovisual, publishing, sound recording and media industries. As was seen in Chapter 1, businesses in these different sectors are merging or forming partnerships and alliances, thus blurring the boundaries between sectors which used to be relatively autonomous.

Lastly, this multifarious revolution has had a number of political and economic consequences: decompartmentalization of the media industries following the deregulation of the communications industry, convergence of networks, globalization of the cultural industries, and the creation of major multimedia conglomerates which control both content and the vehicles for providing that content (see also Chapters 3 and 6 for discussions on these questions).

FROM HYPERTEXT TO INTERACTIVE MULTIMEDIA

Hypermedia came into being in the 1980s with the 'Hypertext' of Apple computers, and subsequently spread to all types of data (graphics, fixed images, video sequences, animations, sound) which could be digitized. But it was the 'hyperdocument', closely identified with a given language and material, which became what we now know as 'multimedia', and applied not only to off-line productions such as CD-ROMs or interactive terminals, but also to applications available on networks and on the Internet in particular.

The development of 'hypermedia' was made possible by the following three basic processes:

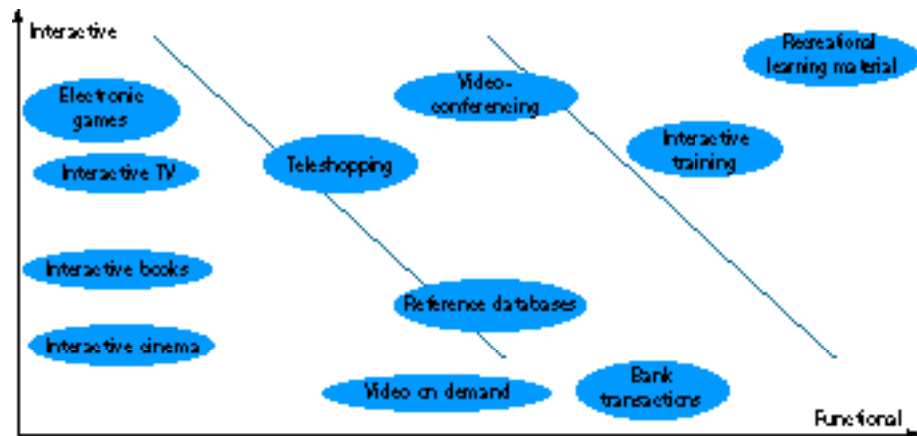
Digitization. In multimedia, the computer's main function is no longer calculation, but management, creation and publishing of vast masses of digitized data – both content and services – in text, graphic, audio or audiovisual form. The original media through which these data were transmitted were extremely

diverse. Today, digitized electronic data is the single medium and a computer is the common processing tool. This creates an entirely new environment where the possibilities for creation and use are endless, and probably as yet largely unexplored.

'Multimediation' of data. It may be appropriate here to establish the difference between audiovisual and multimedia material. Audiovisual producers work on documents containing data in several formats, for example image, voice/sound, text and graphics. It is not possible to merge all these data, however, because they are organized differently and use different languages. Producers therefore piece the data together in the form of a 'collage', rather than, accurately speaking, merging them. For example, a film with sound or a slide show requires separate editing processes and meticulous synchronization. Hypermedia, on the other hand, digitizes all the data and stores it in memory. It is therefore the computer, with its high-level languages, which controls all the operations involved in production, processing and reading. Although there is a single basic medium, hypermedia allows a whole range of formats to be used in an integrated manner, from the creation of the product through final use. People who use, consult or work on multimedia products do not do so sequentially, i.e. from start to finish, as when reading a book or watching a film. They move around in this universe of knowledge, guided simply by their intuition, the questions they ask, association of ideas or sensations. They 'navigate' their way around knowledge!

Interactive language. The power to navigate in a non-linear fashion, i.e. by association of ideas, within a relational database, is greatly increased by the ability to act at any given moment. The designers or users of hypermedia products have an ongoing 'dialogue' with the product they are designing/using via their computer. The interactivity of the new systems opens up vast possibilities for human partners who are able to control operations and anticipate results at all times. The key idea of the computer as

Figure 10.1 → Positioning of multimedia products and services along the main axes of added value



Source: Groupe SECOR.

a knowledge navigator should be recalled here: knowledge has many paths since the nature of memory is topographical, after all, and knowledge can be likened to a complex search operation in all directions. In other words, a multimedia application is defined as a product or service designed for entertainment, information, communication, promotion, education or transaction, which combines text, sound and image (fixed and moving) in the form of digitized data. Multimedia applications are also characterized by interactivity, the degree of which may vary considerably according to content.

THE BLURRED BOUNDARIES OF THE MULTIMEDIA MARKET

The provisional definition of multimedia proposed earlier is bound to change rapidly and spread to all media. The interactive counterparts of the traditional media are flourishing: interactive television, interactive cinema, interactive press, etc. All cultural industries will soon be 'invaded' by multimedia. Furthermore, everyday the Internet makes further inroads into the areas of commerce, business and industry, resulting in the development of an increasing number of multimedia products such as intranets, extranets, electronic commerce, reference databases, and so on.

Multimedia represent one stage in the development of traditional methods for producing, processing, sending and disseminating data. One of the main

characteristics of multimedia is its added value in the case of games, reference works, promotional tools, bank and commercial transactions, training and communication. Multimedia can also be a way of creating innovative concepts. The evolution of supply and demand for these new types of products and services will be closely bound up with technological developments and the adoption of multimedia technologies. Between 1997 and 1998, the introduction of all-digital data turned the multimedia production and distribution landscape upside down.

Two main axes – the functional and the interactive – relating to this 'added value' can be distinguished. The first is a measure of the increased degree of productivity and efficiency compared to those of traditional methods, and the second is a measure of the level of interactivity, simulation and real-time use. This classification provides a basis for assessing the value of multimedia and the positioning of the different products and services likely to be offered in the short and long term, as well as establishing the likelihood of their penetrating the market. For example, applications which are high on both the functional and interactive axes, such as recreational learning applications (which teach as well as entertain), interactive training, etc., are the most complex and difficult applications to set up.

Figure 10.1 illustrates the positioning of different types of applications along these two axes.

As described in Chapter 1, all players involved in the multimedia industry are affected by the changes taking place. There have been a great many acquisitions and mergers; firms have restructured; new players and production companies are springing up all the time; geographical 'areas of excellence' are growing and new products are constantly being developed. The consequences of this constantly-changing market are so great that the usual definitions and data do not adequately reflect the true economics of multimedia. Instead, they are an illustration of 'imperfect' statistical systems inherited from the past, which have difficulty in keeping up with the changes brought about by the transformation of the media and cultural industries. For this reason, it is important to identify methodological signposts and the market trends.

A DESCRIPTIVE MODEL OF MULTIMEDIA PRODUCTION

Figure 10.2 and Table 10.1 summarize the descriptive model adopted.

The added value process of today's communications industries is strongly influenced by the impact of multimedia. It may therefore be said to be 'technology-driven'. This is shown by the vertical central arrow in Figure 10.2, which illustrates the major repercussions of digitization and convergence on multimedia products and services. The market is made up of three main sectors of targeted end-users: individuals and consumers, companies and economic organizations, and institutions (national and local governments, and the public sector).

The central driving force of the model consists of the notions of vehicles (the result of telecommunications and computer technologies) and content (cultural products in the general sense of the word) which correspond to a process that develops horizontally, from one end of the system (upstream) to the other (downstream). Between the two, the idea of integration has been introduced to reflect a sector

which acts as a packager, or distribution/dissemination intermediary, between vehicles (computerized systems and networks) and content (media, new media, and cultural industries) (see Table 10.1).

Table 10.1 shows that multimedia is present in all fields: from the media to the arts, education, consultancy services and museums. However, it is very difficult to pinpoint the extent to which products in these areas can be said to be truly 'multimedia'. Similarly, it is difficult to estimate the economic weight of multimedia in its various forms. In museums, for example, multimedia may account for only one particular aspect of a specific work or exhibition (such as production of a CD-ROM or an interactive system). The degree of multimedia found in the above-mentioned fields is small but growing, although it is often difficult to determine the percentage of true multimedia activity. For example, there is multimedia content on the Internet, but the Internet as a whole cannot be said to be multimedia, since at least 80% of its content consists of on-line text, i.e. electronic data in text form. It is very difficult, or even impossible, to determine the exact percentage of true multimedia activity as the concept of interactivity is infinitely elastic, and there is a world of difference between the interactivity of a video recorder and that of a video-game console. Similarly, although there is much talk now of interactive television, very few households actually possess this technology and, as a result, there are as yet no statistics on the subject.

MULTIMEDIA PRODUCTS

Multimedia products can be developed on various types of media, such as diskette, CD-ROM, CD-I, DVD-ROM, interactive terminals, and 'closed' or on-line networks. However, they tend to be grouped into two broader categories: on-line media and off-line applications. On-line products can be consulted via telephone networks, cable or broadband networks known as 'information superhighways' such as the Internet. Off-line multimedia contents are not

Figure 10.2 → Technology-driven 'added value' process

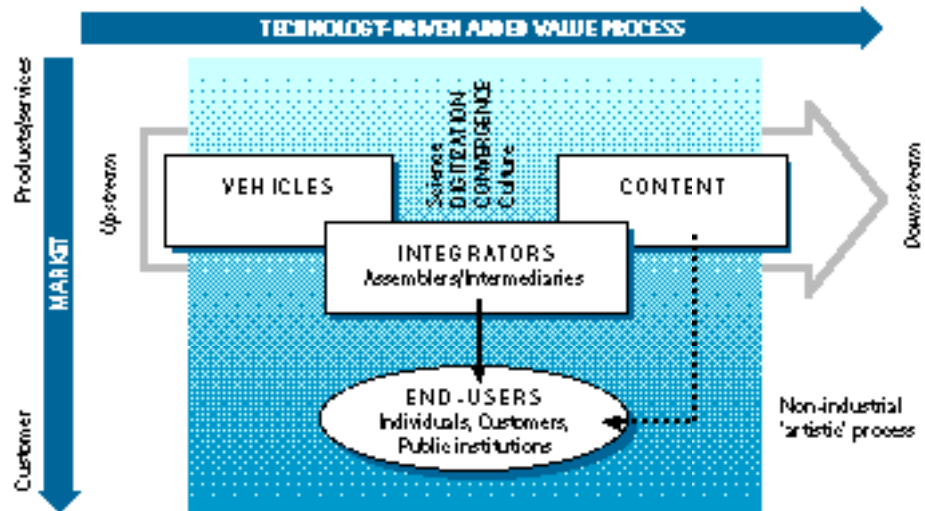


Table 10.1 → Examples of activities involved in the descriptive model (Figure 10.2)

VEHICLES	INTEGRATORS	CONTENT
Design and manufacture of computer equipment/systems and networks	Distribution	Creation of on-line content
Design and manufacture of electronic consumer products and systems (television sets, disk drives, etc.)	Programming for radio broadcasting and cable distribution	Consultancy services
Operation of networks	Development and publishing of electronic content	Design of printed material
Radio Broadcasting	Publishing and distribution of printed material, audio products and software	Photography
ICT laboratories	Photographic, sound and audiovisual studios and/or technical laboratories	Audiovisual production
	Audiovisual screening (cinemas) and productions (concert, theatre, music, dance)	Audio production
	Portal sites	Radio
		Art and design
		Design (graphic design, architecture, 'object' design)
		Performing arts
		Music, opera, dance
		Heritage (museums)
		Education and training
		Sports

Table 10.2 → Distribution of world sales of multimedia applications (in thousands of millions of \$), 1995–2000

	North America	Europe	Pacific	Total
1995	4.1	3.3	1.7	9.8
2000	6.1	7.4	5.5	22.2
Annual growth	8.3%	17.5%	26.5%	17.8%

Source: Frost & Sullivan, 1994.

transmitted directly via networks, but are pre-recorded. In other words, they are contained on a tangible medium such as a diskette or compact disc.

According to Canadian data for 1995 (DJC Research, 1995), most multimedia applications are still designed for diskette or CD-ROM. The third most common medium (37% of users) for multimedia applications is the interactive terminal, followed by closed and on-line networks. However, mixed applications (part on-line, part off-line) are coming into use: Internet sites twinned with a DVD, for example (the DVD serves as the mass memory and contains the majority of data, while the Internet site makes it possible to update information, and communicate with the network). However, as on-line multimedia services flourish, the proportion of off-line applications, such as CD-ROMs, should decrease. Some believe that optical discs will eventually disappear as the popularity and capacity of networks increase.

Interactive kiosks are another way in which multimedia products can be used by the general public. For example, Canadian job centres have installed interactive kiosks in public places in order to advertise job vacancies. Similarly, a growing proportion of venues of cultural interest and tourist attractions are equipped with such kiosks to promote their products and services, as are department stores and shopping malls.

Different sources of information on sales of multimedia products and services all show a marked

increase in the income generated by this sector since the beginning of the 1990s, and this increase is set to continue over the next ten years. The international study by Frost and Sullivan – World Multimedia Application Market – points to a significant increase in this sector.

The overall growth in the market is reflected both in the demand for products on optical media and in the use of on-line services. The demand for multimedia products is mainly concentrated in North America, where in 1994 sales of applications totalled approximately \$4,000 million – nearly 50% of world sales. However, as Table 10.2 shows, the share of international revenue generated by the American market will decrease over time to the advantage of other geographical regions, in particular the Pacific.

Table 10.3 summarizes the types of applications to be found on-line and off-line.

Off-line products

Demand for multimedia products and services is currently measured in terms of the use of optical discs, since this is the most common support medium used for multimedia products and services. Direct, on-line access to these services is, in most cases, still at the development stage.

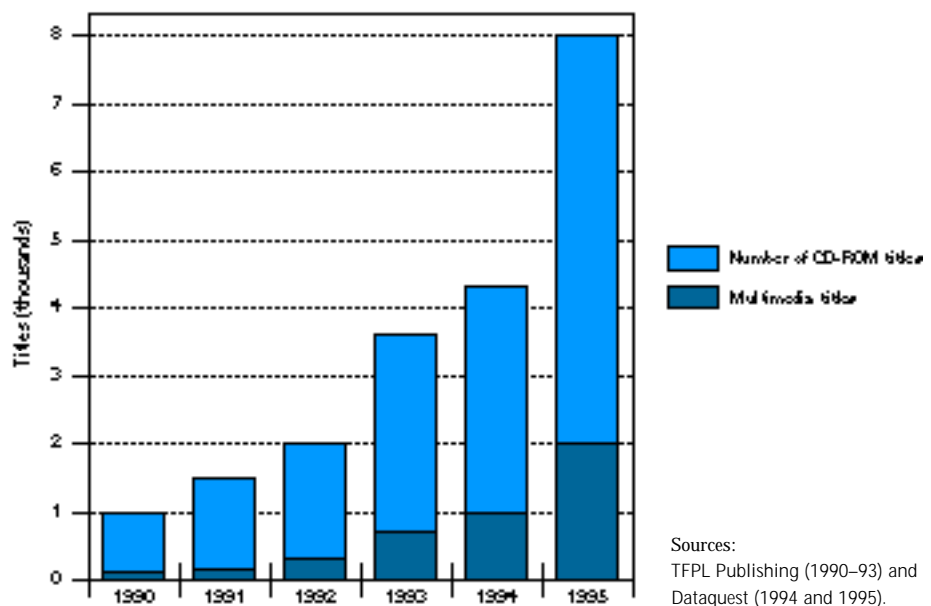
Worldwide sales of CD-ROMs (databases, images, sound and multimedia) totalled 8 million units in 1993, 16.5 million in 1994 and 53.9 million in 1995. The number of CD-ROMs available on the market also showed a staggering increase of 800% between 1990 and 1995, yielding an average annual growth rate of 51%. It should be said that multimedia productions in 1995 accounted for only 25% of the total number of CD-ROMs in circulation (75% of all CD-ROMs presumably contained other data). However, on the basis of the growth trends shown in Figure 10.3, it can be assumed that the proportion of interactive CD-ROMs will continue to grow steadily in the years ahead.

As we have seen, the United States is the main

Table 10.3 → Types of applications produced on-line and off-line

TYPE OF APPLICATION	OFF-LINE	ON-LINE
General public: leisure		
Film/Animation	Video (CD or DVD)	Video on demand
Games	Video games, CD-ROM and CD-I	Games on demand
Museums/tourism	Collection on CD-ROM Virtual guided tours	Remote consultation of works Info/reservation/payment
Books	Interactive books	Publishing and ordering of books on demand
General Public: information		
Press	Compilation of newspapers on CD-ROM	Information on demand
Library	Works/books on CD-ROM	Remote consultation
Reference	Encyclopaedias/dictionaries on CD-ROM	Remote searching/retrieval
General Public: commercial		
Purchasing	Catalogues on CD-ROM	Remote orders/payment
Advertising	Promotional material on CD-ROM	Interactive on-line promotional messages
Bank	None	Management of accounts and transactions
Companies		
Communication	Presentation of company on CD-ROM	Videophone
Training	Training packages on CD-ROM	Videoconferencing
Information	Databases on CD-ROM	On-line databases
Education		
Teaching	CD-ROM and CD-I teaching packages	Tele-education, tele-classes, distance teaching
Reference	Encyclopaedias/dictionaries on CD-ROM	Remote searching/retrieval
Recreational learning	Educational games on CD-ROM	On-line educational games

Figure 10.3 → Number of CD-ROM titles in circulation worldwide (1996)



geographical market for multimedia applications. In 1994, 55% of all optical disk drives were used in the United States, compared to 19% in Japan, 14% in Europe and 12% in the rest of the world. The number of these drives – a variable which is directly related to the size of the market – has grown at a rate of 56% per year since 1992 in the United States.

On-line products

The enthusiasm for multimedia applications has also led to a significant rise in demand for on-line services, especially for data communications networks and direct-access databases. The Internet is the main data communications network on a world scale, and links some 100,000 networks in more than two hundred countries; more detailed statistics are given in Chapter 12 and in the Statistical Annex. It is clear that the explosion of this network has created a huge market of users of multimedia products. Unfortunately there are no reliable data on the subject.

CONTENT OF CD-ROMS

It is very difficult to compare differences and similarities between different countries regarding the use of multimedia products with any accuracy owing to the lack of reliable data and clear definitions at present. The following are very difficult to classify, for example: video games for children, recreational applications, erotic productions, tourism CD-ROMs, PlayStation CDs, Nintendo cassettes, vocational training CDs and educational CDs.

Despite these difficulties, several major trends can be distinguished – at least for the time being – in the world market of multimedia products for the following types of applications: computer games; dictionaries, encyclopaedias, knowledge databases, technical literature, etc.; arts and culture; educational and training software; and professional applications (advertising, representation, public relations).

In the United States, according to the study

carried out by the Information Workstation Group in 1993, most of the revenue from the multimedia sector came from professional and business applications. Products for the general public in the leisure and reference sector (dictionaries, encyclopaedias, information, etc.) account for 34% of the market, while educational products make up 12% of sales. At first sight, these results may appear dubious, since electronic games, which are reputed to be a strong point in the United States, come second in the list of the most widely used consumer CD-ROMs. If this is the case, one can only assume that PlayStation, Saturn and Nintendo applications were not taken into account in this study!

As regards sales of CD-ROMs in France (1997 figures), most products on the market fall into the categories of games, art, literature and cinema productions, and applications for children and professionals. Games account for only 49% of sales, five points down on the previous year. Most new products on the market fall into the 'education' category, and CD-ROM sales in this category – which have been boosted by the arrival of electronic encyclopaedias and dictionaries – have accordingly tripled in one year, from 7% in 1996 to 22% at the end of 1997, making this the highest-growth sector of all. The third-ranking sector, 'Art and culture', accounts for only 15% of sales of CD-ROMs, despite a 38% increase in the number of CD-ROMs issued. The category 'Practical information and tourism' has seen an increase similar to that in educational applications: 12% of sales in 1997, compared to only 7% in 1996.

According to a study by Industrie Canada (DJC Research, 1995), Canadian multimedia production seems geared primarily to the business, government and education sectors. However, given that most applications found on the market originated in the United States, these data do not give an accurate picture of the use of multimedia products and services.

The areas in which Canadian enterprises wish to develop multimedia applications in the coming years are shown in Table 10.4.

Table 10.4 → Breakdown of multimedia applications produced in Canada, by category, 1995

Content	Percentage
Education	23
Entertainment/games	21
Training	19
Information/reference material	17
Sales/presentation of companies	13
Other	7
Total	100

Source: DJC Research, 1995.

CONTENT ON THE INTERNET

Information is a vast category, covering stock-market transactions, financial information (such as the Dow Jones), daily news services such as Reuters, and databases such as Nexis and Lexis. According to Simba Information, this market is worth \$11,000 million, but at present not all these services can be accessed via the Internet – far from it! For example, in the field of financial services, the research company Forrester estimates that the volume of financial transactions taking place on-line this year will be worth \$111,000 million, and that this figure will have reached \$474,000 million by the year 2000. Swarb, a San Francisco stockbroking firm, estimates that one sixth of its business last year was done on line, accounting for a total of 700,000 transactions. A further thirty broking firms offer similar services.

There are hundreds of journals and magazines on the Internet, and several major newspapers already have electronic versions, whether these are partial or total, adapted or identical to the paper version (see Box 6.1). Some operations were amazingly successful, such as *Hot Wired* (the Web site of the American journal *Wired*), but other magazines closed when the electronic version proved stronger than the paper

version. It should be added that not all on-line information is of a multimedia nature; only a very small proportion does in fact combine text, image and video sequences in an interactive language.

Erotic content sells well when the confidentiality of transactions is ensured. The research firm Forrester states that 10% of sales via the Internet are of a sexual nature, whether in the form of books, video-clips, photographs, on-line interviews, or other items. These sales amount to \$52 million, and there are thousands of sites on the Internet. The Seattle-based Internet Entertainment Group has 50,000 subscribers paying for its on-line service, the same as the number of subscribers to the *Wall Street Journal*!

Travel is another sector which is becoming increasingly important on the Internet. Most airline companies have a Web site through which they sell seats directly, often offering a discount of 5%, the equivalent of the travel agent's commission (as is the case, for example, with Northwest and Continental airlines). However, Expedia, the leader in its category, has total sales of nearly \$1 million, with Internet sales accounting for at most 1% of its total revenue. According to Forrester, again, sales in this sector are set to increase by 50% over the next three years.

Retail trade is also making a considerable breakthrough, but companies specializing in catalogue sales have realized that the operation will be long and difficult. These firms make only a small fraction of their catalogue available on line, since creating an interesting and attractive on-line catalogue is still a difficult and time-consuming task.

CDs and books sell well on the Internet. CD sales are set to reach \$20 million, with profits in the region of \$200,000, according to *The Red Herring*. However, MCI, a telephone company, has just closed its 1-800-Music-Now site, after spending \$40 million and selling only 400 CDs. . . . Nevertheless, the research firm Jupiter predicts that in the year 2000, \$186 million – 2% of total revenue – will be generated in this way in this sector. Two major American sites,

Barnes & Noble and Borders, are competing with the British Bookshop site. However, more optimistic predictions put the figure for revenue generated via on-line networks in the year 2000 at 8%, not 2%, citing the unprecedented success of the Amazon Web site.

Automobiles are also sold via networks on sites such as Auto-buy-tel, which was set up by Peter Ellis in California. For a monthly fee of between \$250 and \$1,000, 1,400 people posted car-sale advertisements on the site, generating revenue of \$6.5 million for the company. Out of 15 million cars sold in the United States, 2 million vehicles were bought after just one visit to the sales room, which indicates that purchasers know exactly what they want (and could have bought on the Internet). Chrysler sold 1.5% of its cars through its Internet address, and believes it can increase this figure to 25%. It costs customers only \$25 to buy a car through a Web site.

Advertising and marketing are well represented on the Internet, as each day thousands of corporate sites, featuring multimedia to varying degrees, are created. However, this does not mean that all these marketing operations are effective. Just because a company advertises on the Internet does not mean that it necessarily wins 50,000 new customers!

THE COSTS OF PRODUCTION AND MARKETING

The cost of a multimedia application varies enormously according to the type of product. Two main factors influence the total costs and how these costs are broken down: the quality of the finished product (high- or low-quality item), the type of product and the market sector for which it was designed (consumer product, educational product, or corporate product), and lastly, the scale of the finished product. To give an idea, it may be said that production costs vary between \$135,000 and \$4 million. Of these figures, 60% represents the cost of the production itself, with the rest divided between pre-production, post-production and miscellaneous costs (SIMBA, 1994).

It should be remembered that some dictionaries and encyclopaedias cost from \$1 million to \$4 million to produce, if the years of research necessary for finalizing the content are taken into account. Apart from the overall costs, how costs are broken down according to different components varies according to the type of product. For example, a 'game'-type application requires much more programming than an educational application (see Table 10.5).

Table 10.5 → Breakdown of cost according to different components by percentage

Component	Educational	Games	Information	Commercial
Management	10	8	10	5
Design	15	15	25	10
Research/editing	20	5	10	10
Transfer, master copy and test	5	2	10	4
Production and animation	25	10	–	49
Graphics and text	10	5	–	8
Programming	10	40	35	10
Integration	5	15	10	4
Total	100	100	100	100

Source: Innovitech, 1995, Canada.

Table 10.6 → Breakdown of sales of multimedia products, by distribution network

Distribution	Percentage
Computer distributors	65
Hypermarkets	20
Bookshops	10
Mail order	5
Total	100

Analysing the distribution of CD-ROMs is often difficult. It is not always clear whether they should be classed as computer products, literary or artistic works, or video games. In the United States, 40%–45% of all CD-ROMs are 'bundled' – in other words offered free with the purchase of multimedia equipment or specialized journals. When CD-ROMs are sold individually, most are distributed through specialist computer distributors, as shown in Table 10.6.

In France, sales from hypermarkets are not increasing as much as they are through other market channels. Hypermarkets now account for only 34% of all software sold, compared to 40% in 1996. Most sales are now made in specialized computer hypermarkets, which sold 39% of software in 1997, compared to 36% in 1996. Two other categories of distributor have seen their market shares rise. These are games and CD specialists, which now sell some 11% of leisure software, compared to 9% in 1997, and toy specialists, with 5% of sales, compared to 3% the previous year (see also box 10.1).

The issue of copyright in the area of multimedia is dealt with in Chapter 8 and only two points will be mentioned here. Firstly, since digitization means that works can be transmitted, used and perfectly reproduced very easily, one may suppose that the authors of protected works will need new mechanisms to control the use of their works to calculate and ensure receipt of royalties and to protect themselves. Secondly, the fact that previously separate media may

now be fused makes the question even more complex. Thus, the producer of a CD-ROM containing music, a newspaper article, visual material and sequences from a television programme must obtain authorization from each copyright holder in order to use the relevant extract. This applies to all rights involved.

CONCLUSION

The multimedia industry is expanding rapidly, but it is very difficult to identify exactly what percentage of cultural products can be labelled 'multimedia'. To illustrate this point, in the case of Canada, the Ministry of Industry put the total revenue of the content industries for the year 1994/95 at \$13,000 million, broken down as follows: 51% for publishing, 15% for film and visual material, 8.4% for sound recording and 25% for radio and television. For electronic content (multimedia, databases, electronic publishing and video games), experts claim that 8-10% should be added. IBM, meanwhile, claims the on-line business sector was worth \$15,000 million in 1997, and will be worth \$70,000 million in 2001.

It has already been noted how difficult it is to set clear boundaries in this industry. There are several reasons for this. First, multimedia is not simply a new content industry: to a large extent, it revolutionizes both the content and the vehicle of other cultural industries (for example, CD-ROM encyclopaedias compared to paper encyclopaedias, and news on the Internet compared to news in newspapers or on radio and television). In the long term, what proportion of publishing will be in multimedia form? How quickly will television become interactive? With the arrival of DVD, when will film become a multimedia product? When will networks be able to support truly multimedia applications? Furthermore, problems of methodology mean that it is impossible to obtain reliable statistics, since multimedia products can be classed as belonging to the computer industry, the cultural industry, the leisure industry (games, tourism, erotica, etc.), or the business world (electronic

Box 10.1 → Young people, new media

Research teams from twelve countries, co-ordinated by the Media Research Group at the London School of Economics under the direction of Dr Sonia Livingstone, have recently conducted extensive research on children's personal ownership and use of old and new media. Approximately 15,000 children and young people have been surveyed in Belgium (Flanders), Denmark, Finland, France, Germany, Israel, Italy, the Netherlands, Spain, Sweden, Switzerland and the United Kingdom. The comparative research was conducted by most countries on 4 age groups (6-7, 9-10, 12-13 and 15-16) making it inappropriate to quote a single figure for all children. The case of 12-13 year-olds is taken here as paradigmatic of that for the other three age groups.

Findings show that, although television in the home is more or less ubiquitous, the numbers of young people having their own set differs greatly between countries (see

Table 10.7). In Denmark and the United Kingdom, children and young people are more likely to have a television set in their own room than in other European countries and they also tend to spend more time watching television on the average (see Table 10.8). In the United Kingdom in particular there is a 'screen entertainment' culture with children and young people being more likely to own their own equipment.

The number of homes with up-to-date computers varies from almost two thirds in Belgium and Denmark to just over one quarter in the United Kingdom. Personal ownership by young people of such computers is comparatively rare. Despite its lead in the distribution of entertainment-oriented screen technologies, the United Kingdom, together with France, lags furthest behind as regards both home provision and personal ownership of up-to-date PCs by children. Internet access in the home is the most common in Belgium, where half of all

Table 10.7 → Access to television, TV-linked games machines, books, PCs with CD-ROM and Internet by children aged 12-13

	Television		Games machine		Books		PC with CD-ROM		Internet link	
	% in home	% in own room	% in home	% in own room	% in home	% in own room	% in home	% in own room	% in home	% in own room
Belgium	97	30	69	22	99	89	63	12	49	4
Denmark	98	72	38	24	96	83	61	19	27	5
Finland	95	42	47	22	93	88	54	18	31	8
France	98	30	65	35	98	94	31	8	12	4
Germany	100	48	39	24	95	88	44	18	10	1
Israel	94	44	42	21	90	74	57	32	34	18
Italy	95	52	53	34	90	74	37	23	11	5
Netherlands	100	39	58	23	100	96	47	3	15	0
Spain	96	37	62	42	96	89	41	13	11	4
Sweden	94	51	69	41	93	89	52	16	33	8
Switzerland	92	15	45	18	95	88	48	11	18	2
United Kingdom	99	69	64	42	84	64	28	6	8	1

Table 10.8 → Mean average number of minutes spent per day on television, games machines, books, PC and Internet by children aged 12-13

	Television		Games machine (at home)		Books (not for school)		PC (not for games)		Internet	
	Users	All	Users	All	Users	All	Users	All	Users	All
Belgium	105	100	19	10	23	20	23	13	5	1
Denmark	158	156	49	25	21	17	24	18	15	10
Finland	156	156	22	15	42	37	16	15	7	6
France	N/A	91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18
Germany	105	103	N/A	N/A	23	20	20	10	5	1
Israel	129	124	40	N/A	39	28	48	28	30	23
Italy	N/A	N/A	38	30	N/A	N/A	44	23	11	4
Netherlands	134	122	13	8	25	23	18	14	4	1
Spain	134	134	34	19	N/A	N/A	30	17	9	4
Sweden	141	138	26	16	21	18	32	26	19	15
Switzerland	92	90	56	32	35	33	19	12	10	3
United Kingdom	164	164	32	21	32	17	26	10	11	3

homes have it, followed by the Scandinavian countries and Israel where around a third have access. Once again the United Kingdom and France lag behind, as do Germany, Italy and Spain.

There is some evidence of a trade-off between watching television and reading books in leisure time (see Table 10.9). Swiss children spend the least amount of time watching television and read more. The reverse also holds true: the least amount of time is spent reading in the United Kingdom and Denmark, where children spend larger amounts of time watching television. However, other factors are clearly influential: young people in Finland manage to spend time both with television and books, while Swedish children, who spend only average amounts of time with television, spend comparatively little time reading. Interestingly, provision of books both in the home and in the child's bedroom is lowest in

the United Kingdom, where there are more homes with television sets than a shelf of books, and as many children own their own TV sets as books (see Table 10.7). Israeli children are particularly likely to own a multi-media PC and thus, unsurprisingly, spend considerably more time on serious PC use than any other group of young people with the exception of those in Sweden, where around half have access to a family PC with CD-ROM, and in Italy, where personal ownership by children is also high. Time spent on the Internet is also highest in Israel.

For more information, consult:
www.psych.lse.ac.uk/young_people ; Special Issue of the European Journal of Communication, Vol. 13, No. 4, December 1998.

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commerce, training, marketing, etc.). Lastly, the technology and art of multimedia is constantly developing. Applications show varying degrees of interactivity. For example, on the Internet, it is not easy to distinguish between interactive content and non-interactive content.

Today, the multimedia sector is creating its own market as it develops, which presents a major obstacle for all companies working in the field. The industry's rapid growth may also be seen as an obstacle. The fast progress and development of the multimedia industry means that products often have a very short shelf-life, as they are constantly being updated and rapidly become obsolete.

As regards production, the difference in cost between amateur products and top-of-the-range products is enormous: costs range from \$25,000 to \$4 million. As far as copyright is concerned, multimedia is creating a completely new situation, since this industry is one of recycling and re-using existing media of all kinds, a practice which calls into question the role of collection companies, the evaluation of the audience actually reached, the definition of the right to transform products, and so forth.

The multimedia industry risks irreversibly transforming cultural industries (as regards production and distribution), the world of business and industry (electronic commerce, intranets and telecommuting) and the world of public and private services. This is both very exciting and more than a little worrisome.

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