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AUTHOR Ritchie, Ian
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ABSTRACT

The media industry is the fastest growing business in the world today; additional leisure time, coupled with increasingly global distribution, has created large international markets for information and entertainment. The United Kingdom is relatively strong in the three main areas concerned with new media publishing: information technology, telecommunications, and publishing. This paper reports on the state of publishing in several fields: corporate publishing; news and periodical publishing; scientific, technical and medical publishing; teletext and videotext; CD-ROM; and platform games. The paper concludes that the next decade will see development and convergence in all of these markets, which will be based around three distinct areas where emerging technologies will offer a dramatic improvement over current systems: (1) high bandwidth, low-cost communications channels; (2) low-cost, high-performance terminals (so-called Network Computers); and (3) easy methods of collecting payments, including small quantities of payments. (AEF)

New Media Publishing

By:

Ian Ritchie

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Ian Ritchie
British Computer Society, UK

1. Overview of the UK media industry

The media industry is the fastest growing business in the world today; additional leisure time, coupled with increasingly global distribution, has created large international markets for information and entertainment. The UK is relatively strong in the three main areas concerned with new media publishing: IT, telecommunications and publishing. The revenue of the telecommunications and IT industries in the UK is over £30 billion, similar in scale to that of healthcare. The UK broadcasting and publishing industries each stand at approximately £5 billion, representing around 10% of the world market.

Technology deployment in the UK is strong with a competitive telecommunications industry and widespread deployment of digital and optical fibre technology. The extent to which the UK consumer is willing to adopt new technology is also strong, indicated by the growth in satellite TV (the number of BSkyB subscribers having grown from 243,000 to 3,478,000 between 1989 and end-1994). One hundred and twenty-five franchises for cable television have been awarded and by mid-1995 4.7 million homes were capable of connection, of which approximately 900,000 are active customers. The current franchises awarded, when completed, have the potential to reach approximately 70% of all homes.

All of these factors would seem to indicate that the UK will continue to be an excellent breeding ground for the development of new media industries. The UK remains particularly strong in areas such as news gathering and distribution, television production and publishing, music production and publishing, and interactive games development.

2. New media publishing areas

New media technologies are being developed in a number of complementary and competing areas. It is interesting to compare and contrast such developments in the context of the knowledge that digital techniques for production, recording, archiving, distribution and delivery are fast becoming the standard.

This section reports on the state of publishing in several fields: corporate publishing; news and periodical publishing; scientific, technical and medical publishing; teletext and videotext; CD-ROM; and platform games. Although these fields seem at first sight to be quite distinct from each other it is likely that the distinctions between them will begin to blur during the coming decade.

2.1. Corporate publishing

In a typical large corporation, technical and procedural documentation line the walls of offices and maintenance workshops. Much of this material will almost certainly be outdated and most of it will never be read. While the need for information is rapidly expanding, printed documentation is proving ineffective when it comes to delivering large amounts of information at the point and time of need. In addition, printed matter can be extremely expensive to produce and distribute.

An average company or department of 500 workers generates over 1000 pages of new or updated policy, procedural and operational materials each year. An author needs on average six hours to compose each page (valued at, say, £200 per page), which will be passed along for review and returned for revision. Once written, each page costs the organisation more than £40 to print and distribute and another £10 each time it needs to be updated. Between publishing and revision, there are the added clerical costs of filing, storing and maintaining paper documents. Each year, the typical organisation with 500 employees can spend well over half a million pounds on paper-based information flow

Unlike a printed document where structural elements such as chapter headings are merely signposts, electronic hypermedia documents can allow readers to use these elements to zoom in or out of a chapter to greater or lesser levels of detail. For example, a reader can target a chapter heading to open that chapter and scan its list of subheads, then focus in on one of the subheads to expand and display its contents. A reader can also search through an electronic document or publication by following links created by the author to represent relationships between topics. Rather than being structural or hierarchical, these relational links connect topics that you might see cross-referenced in a book's index.

Increasingly such sets of electronic documents are being stored on a file server, accessible and downloadable over a computer network or recorded on a low-cost CD-ROM. Readers can find what they need without having physically to leave their tasks. If they have laptop computers, readers can access information whether they're at

their desks, on the shop floor or at a customer site.

The creation of interactive electronic publishing has greatly increased the effectiveness of many organisations. As in many other fields of technology, corporate publishing has demonstrated what can be achieved, and the experience in this field is proving very helpful as these techniques become applied to other areas. These needs, along with other more general communication requirements have led to recent growth in 'intranet' or private closed services using Internet protocols but not connected outwith the organisation.

2.2. News and periodical publishing,

The newspaper and magazine market is an extraordinarily diverse one, where some mass-market daily newspapers (such as the *Sun*) sell 4 million copies every day and other expensively produced, well circulated and well regarded titles (such as the *Financial Times*) sell only a fraction of that. Each product, whether a newspaper or magazine, exists on a combination of revenue from subscription and advertising and the mix of these is crucial to the success of individual publications. All newspapers and magazines are subject to enormous competitive pressure and, in many cases, are experiencing long-term market decline. Goldman Sachs estimates that the total market size for newspapers worldwide was $137bn in 1993 and they believe that there has been a general 12% decline in market size over the preceding four years.

Mass market newspapers are relatively dependent on their cover price. Due to the fact that they have a very wide circulation most of their advertising is display advertisements for mass-market products and national retail chains. Other newspapers such as the national broadsheets, regional titles and specialist magazines can offer a more targeted audience and, as a result, command a higher relative value of advertising income, particularly classified advertising such as job recruitment and real estate.

The decline of the newspaper has been long forecast but the product has been very robust. New titles, such as *The Independent* in the UK and *USA Today* in the US, have shown that it has still been possible to launch new products into the market. One area of decline however has been in that of regional titles, particularly evening newspapers where most have lost circulation, year on year, for the last 20 years.

Specialist magazines have enjoyed a new lease of life following the development of desktop publishing (DTP) in the late 1980s. DTP has slashed the production costs of publications and has allowed many more titles to be developed economically than ever before. The sale of such titles shows a desire by consumers to obtain information specifically focused on their interests — a desire which is appropriate for emerging Internet publishing systems where specific interest groups can be easily served.

New production techniques have allowed products to be distributed more effectively. Even in a small country such as the UK all national newspapers are edited and typeset in one location and then printed in several satellite printing plants. Titles such as the *Financial Times* and the *Wall Street Journal* are printed simultaneously in many print plants all over the world, as are topical magazines such as *Newsweek*, *Economist*, *New Scientist* and *Time*.

The arrival of digital publishing over the Internet, particularly using commercial online networks and the World Wide Web, provides such publishers with potentially vast new outlets for their editorial content. A study conducted by American Opinion Research found that 19% of newspaper editors and publishers believe online services will become their biggest competitors within five years. Almost half were planning some online service version of their publication.

Dozens of newspapers are arriving on the Internet every month, from major international titles such as the *Financial Times*, the *New York Times*, the *Daily Telegraph* and the *Wall Street Journal* through leading regional titles such as the *San Jose Mercury*, through to small local newspapers. Most of these, however, are best described as 'work in progress', where the final mix of subscription and advertising has yet to be established.

The *Daily Telegraph*, which launched an edition on the Internet in November 1994, gets 10,000 accesses and 1000 e-mails a day. By asking users to register before they can view the newspages it can gather statistics about its readers and this evidence can be used to justify advertising rates. The Electric Telegraph is typical of many Internet newspapers projects in that:

- a small staff have been set up to repurpose existing editorial material from the newspaper to online availability;
- no fee is being charged for access;
- advertising is currently attracted but is much more limited than the print edition;
- the product is not editorially distinctive from its parent publication.

A few newspapers, such as the *San Jose Mercury* and *USA Today*, have tried to set up subscription charging but it seems unlikely at the moment that significant proportions of the target audience will pay extra for general interest information, particularly since much of their competition remains available for free. After originally attempting to charge a subscription of $12.95 per month, *USA Today* relented and have abandoned their subscription charge for the present. The *San Jose Mercury* is charging a subscription to access a very localised area of its site and this effort seems to be largely aimed at cross-marketing with their regular subscribers.

An example of the difficulty of introducing subscription is shown by the Colorado Springs *Gazette-Telegraph* which tried to sell access for $9 per month, or $5 per month if you had an Internet account with their local access provider. Visitors dropped from 300-500 a day when it was free to practically nil when they began charging for access.

The Electric Telegraph is currently available free but is considering whether to introduce a subscription charge, as are other UK newspapers such as the Glasgow-based Herald and Times — a mixture of material

derived from the morning *Herald* and the *Evening Times*.

The most ambitious development in the UK however has been Times Newspapers, which has put the daily *Times* and the *Sunday Times* on the World Wide Web for free access. There is no sign that they plan to charge a subscription but this, like their recent price war in their printed titles, may primarily be a tactic to ensure that their competitors do not gain unfettered access to a new source of revenue

Another approach, used by the *Economist* in its d.Conn online publication and the Clnet technology cable channel, is to create wholly new titles which are directed at a specific target audience and are only available via the Internet. By being more specialist, there is perhaps a better prospect of charging a subscription fee in the future, or advertising targeted at their specialist audience.

After years of experimenting with a limited product on AOL the *New York Times* launched a full version of the newspaper on the World Wide Web in January 1996. Their pricing is unusual in that it is free in the USA but $35 per month elsewhere. Since, on the Internet 'nobody knows you are a dog' it is difficult to see how the *New York Times* knows whether or not you are an American!

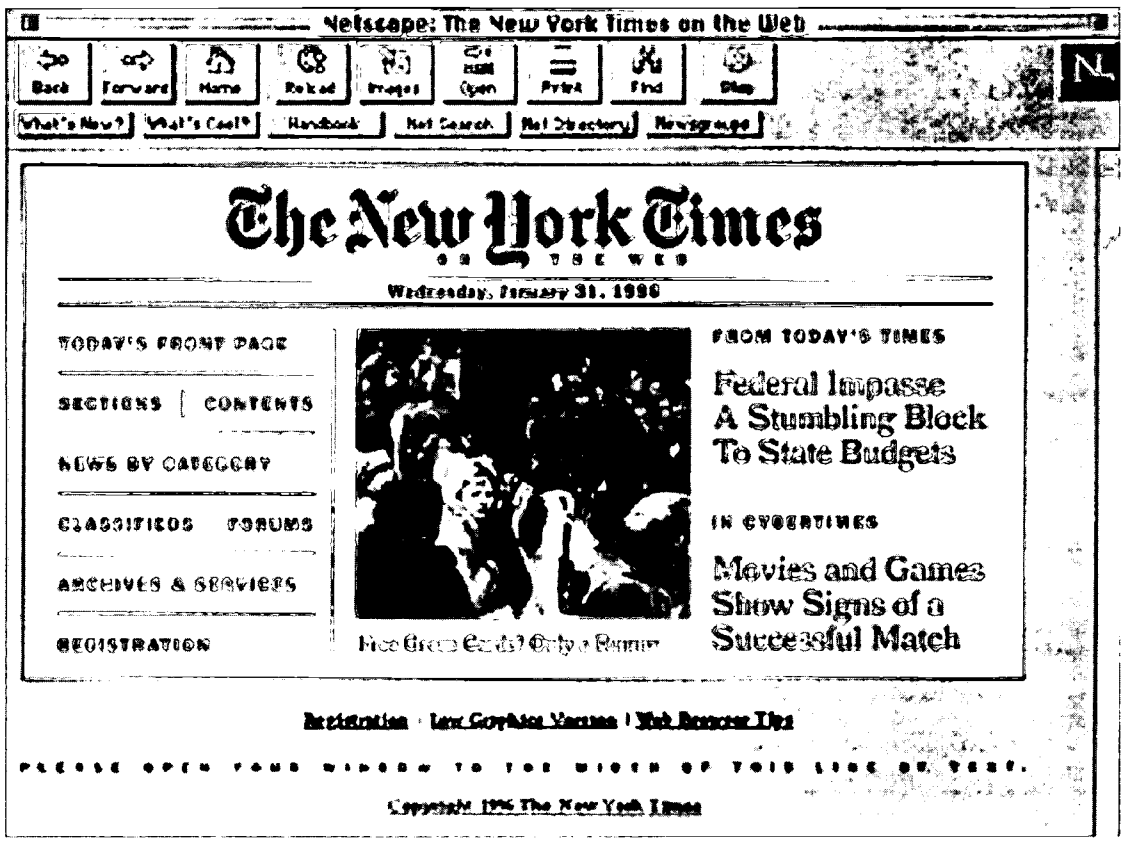

Figure 1: The New York Times 'electronic front page'.

The *Wall Street Journal*, after experimenting for nearly a year with a limited product, is now publishing a full online product on the World Wide Web. They have set an annual subscription at a highly attractive price of under $50. Both the *New York Times* and the *Wall Street Journal* are clearly attracting a steady stream of advertising and it seems likely that these publications are already contributing significant revenue to their owners.

One key question for interactive publishing projects is this — when users are able to select freely from any publication around the world, what will make them choose yours? The generation of some form of loyal user base, or 'community', will be vital.

We will probably also see the splitting of editorial and classified advertising, creating difficulties for many existing publishing markets. Currently the business model of newspapers such as the *Daily Telegraph*, *Guardian* etc. is heavily dependent on delivering classified advertisements effectively to a key audience. The newspaper is a complete package which for its purchase price delivers a combination of editorial and specialist advertising.

It is highly likely, however, that a batch of free World Wide Web 'publications' will begin to appear funded entirely on classified advertisements, each directed to a specific audience. Online advertisements are capable of being much more focused on the needs of the user and can cheaply include colour photographs, audio files etc. In this context it may be a significant fact that in the UK local newspaper market there are more 'freesheets' than local paid-for newspapers.

If classified advertising starts to move to online delivery it will have a devastating effect on many existing publishing franchises, such as broadsheet newspapers and the technical and trade press.

2.3. Scientific, technical and medical publishing,

To a large extent the scientific, technical and medical (STM) publishing market is, or has the potential to be, ahead of more general markets in adopting electronic publishing since the academic and research community are almost entirely 'wired' up to the Internet already. For a number of reasons, mostly due to commercial inertia and the inherent conservatism of a field where the medium of publication (ideally a highly regarded peer reviewed journal) carries almost as much value as the content of the material itself, this has not been the case.

Traditional STM publishing is the means by which scientific endeavour becomes promulgated, challenged and further developed. Researchers submit papers describing the results of an area of research to a suitably respected journal. The editors of the journal submit it to a number of referees, experts in the field, and after satisfying the referees that the material is sound it is printed in the journal. The readers of a journal are normally the same community as the authors.

STM publishing companies such as Oxford University Press, Elsevier and Springer-Verlag provide added value to this process by ensuring the quality of the editorial, production and marketing of the journals. The subscribers for such journals are often the technical library of a university or the research department of a company. As the customer is not an individual it has become possible to charge relatively high prices for the journals, well in excess of their production costs, much of which is required to recoup the marketing expenses. The effect of this is that major established journals with relatively large circulations have become highly profitable.

This system is now beginning to break down. To save money, libraries are challenging their users to cancel all but the most necessary journals, and online researching systems such as Blackwell's Uncover allow working researchers to identify specific published papers and have them retrieved, on a per copy basis, from central copyright libraries, eliminating the need to hold the copies locally.

Academics are also challenging the need for publication on paper, given the costs both in time and money. By using the Internet to publish their results, researchers can eliminate most of the expensive parts (typesetting, printing, warehousing, distribution and shipping) of the publication process. The other essential components, editorial quality and marketing, may not necessarily need the services of a traditional STM publishing company. Editorial quality has always crucially depended on the academic community in any case. As regards marketing, most technical fields have established extensive channels of communication via professional and learned societies, newsgroups, and listservs. News about a new form of publication can be made available to such a group very effectively.

An early example of this new form of by-passing STM publishing is HEP, a 'pre-print' archive of papers in high energy physics run by Paul Ginsparg at Los Alamos laboratory. This project began in August 1991 and has since gathered almost all the papers published in the field of high energy physics worldwide, submitted by the authors in 'pre-press' form but in most cases revised when the final papers are published in traditional journals. (HEP can be reached via the World Wide Web at *http://xxx.lanl.gov/* and is receiving accesses from around the world at the rate of 35,000 a day). Currently this system co-exists with the printed journals but increasingly the HEP archive will become the natural resource for access to research information in its field, calling into question even the need for the paper versions to be produced.

This kind of development has major implications for the STM publishers and most are beginning to experiment with electronic publications, such as Springer-Verlag's *Journal of Computer Science* which is proposed as a simultaneous electronic/paper product. Due to the lack of current charging systems capable of collecting small amounts of money these systems are implemented by subscription systems which are accessed by password control.

2.4. Teletext and videotext

There is a tendency to assume that online services are new but in the early 1980s several online services were developed both in Europe and the USA, based on a connection between a terminal connected to a telephone line and a television or computer as a display. Several large publishing, telecommunications and media companies launched services, most of which lost a great deal of money and were closed. In the USA these included Gateway, from Times Mirror, which was killed in 1986 after an estimated $20 million investment and a system from Time Inc., launched in 1982 in San Diego and Orlando, which was shut down after one year and an investment of more than $25 million.

In the UK the Post Office Telecommunications (now BT) marketed Prestel in the late 1970s which, apart from being widely adopted in the UK travel services industry, has never achieved its potential and has been scaled back.

A variant of videotext, called teletext, uses spare capacity in the broadcast television signal to send data along with the broadcasts. This is now built in to most televisions sold in Europe and is supported by services of news, information and listings, often supported by advertising and commercial data. In the UK this service is called Ceefax (BBC) and Oracle (ITV). It is broadcast-only and users must wait for the desired 'pages' to cycle round before loading into their television.

A new teletext-like initiative called Intercast was announced in October 1995 by an alliance of 13 companies including Intel, NBC, CNN, Viacom, WGBH, QVC, Comcast, America Online, Asymetrix, En Technology and Netscape. It allows HTML encoded documents to be broadcast embedded in the broadcast signal. Suitably equipped personal computers will be able to receive such broadcasts and assemble electronic documents, which might be of general interest, or might be used to add value to a specific television broadcast (*http://www.intercast.org/*). A similar document broadcasting system is currently being planned for Europe by a

partnership between BT and BSkyB.

The undoubted success story in the world of videotext is Minitel in France, where the terminals were originally given to telephone subscribers in lieu of a telephone directory.

Minitel uses a small, easy-to-use terminal with a keyboard and a screen using a character-based display with simple graphics. The service operates at 1200 baud and gives access to more than 25,000 online business, leisure, financial and information services. A total of 6.5 million Minitel units have been installed, two-thirds of which are used by households, and in the last year over 1 billion Minitel calls were made.

France Télécom collects transaction fees on behalf of information providers and bills the customer on their telephone bill: last year $605 million was paid in this way to information suppliers. France Télécom continues to develop the Minitel service: it has raised the speed of the service to 9600 baud for the 'Teletel Vitesse Rapide' variant and ISDN at 64 kb/s is also being provided in the form of 'Teletel Acces Numeris'.

2.5. CD-ROM

From a slow start (players for PCs have been available for over 10 years) CD-ROMs are now becoming a normal part of the configuration of most PCs sold. During 1994 54 million CD-ROMs were sold (according to Dataquest) and the installation of CD-ROM players is one of the fastest growing areas in the personal computer market. There are two distinct types of CD-ROM publication, corporate and consumer.

2.5.1. Corporate and database CD-ROMs

The CD-ROM, which can hold approximately 650 Mb of storage for a per-copy cost of well under £1, has been seen to be ideal for publishing large archives of technical, financial and reference materials. Companies such as Dun & Bradstreet and KR OnDisc publish such products but the largest player in this field is SilverPlatter, which has over 200 current titles on subjects such as Agriculture Research, Cumulative Book Index, Health and Drug Information Library and Petersen's College Database. Most of the SilverPlatter titles are co-published with an existing specialist publisher: in most cases the content has already been assembled and the conversion costs of moving the information to CD-ROM, including the addition of searching software and the user interface, is relatively low. They can also usually be marketed through the same channels and in cooperation with the co-publisher who will already have access to special interest groups.

2.5.2. Consumer CD-ROMs

As a contrast to corporate and database publications, very few consumer CD-ROM publishing companies are currently making much money. The problem lies with the economics of multimedia development and with the difficulties of reaching the customers through the distribution channels. It costs typically £150,000 or more to develop a reasonably professional CD-ROM title, and even more if third party rights have to be negotiated. A CD which sells for £30 at retail will return £12 or so in revenue to the publisher (after the distributor and dealer have received their margin) and, based on a typical royalty rate of 10% of net income, the developer can expect to get approximately £1.20 for each copy sold. It is therefore necessary to sell well over 100,000 copies in order to recoup the development costs alone. Book publishers don't have this kind of problem — a book is normally written by a single individual, often using discretionary time, and is edited part-time by another person. The cost of developing a title is therefore only a few thousand pounds. If a book turns out to be a success everybody starts to make money very quickly. When a CD-ROM is a success — and 250,000 copies is currently the kind of sales figures which would be regarded as a considerable success — the profit margins are still not huge. Many of the CD-ROM publishing companies which expanded in the boom times of 1994 have now been forced to cut back. For example, one of the earliest and well-regarded publishers in this field, Compton's New Media, has recently reduced its product range from over 300 to 60 and has laid off 30% of its workforce.

2.6. Platform games

A very large publishing market which has emerged in recent years is that of platform games, dominated by the manufacturers Nintendo and Sega and recently joined by Sony. These manufacturers sell special-purpose graphics computers without a keyboard which use a television set as a display device and have a cartridge interface which can be used to install individual programmes. These cartridges, which typically cost £50 or more at retail, will contain one game stored on computer read-only memory. Most of these games are highly visual and interactive and have high quality animation and sound effects.

Platform games are a 'hit parade' business with the top 10 games making a huge profit. Last year's top selling game, 'Donkey Kong Country' developed by Rare Ltd in Warwickshire, sold over 7.5 million copies in the six months following its launch in November 1994. This single game therefore represents a market that is comparable in size to the entire global wordprocessing market for personal computers (or about half the size of the UK commercial television industry). Rare recently announced that it had sold a 25% equity stake to Nintendo and that the proceeds would be used to increase its staff from 84 to 250 in the next two years.

One characteristic of platform games is that the manufacturers, Nintendo and Sega, retain a great deal of control over the software and charge a royalty on all games sold. Another characteristic is the furious pace of development: Nintendo and Sega have regularly upgraded their products capabilities and have been challenged by CD-ROM based platforms such as the Sony Playstation, Philips' CD-i and 3DO which has been brought to market by Panasonic. They are retaliating by launching upgraded platforms themselves: Sega with the new CD-

ROM based Saturn platform and Nintendo with its forthcoming Ultra64.

One recent development in the world of platform games is an added Internet capability. Both CD-i and Sega Saturn have announced add-on kits which will turn their platforms into Internet terminals.

The Nintendo Ultra64, due for release in the autumn of 1996, is a remarkable feat of practical mass market technology. It will contain much of the computer graphics display power of a top of the range Silicon Graphics workstation (currently priced at over $100,000). The Nintendo Ultra64 on the other hand will sell for $250 or so when it reaches the shops.

Development of titles for platform games has up to now been a fairly specialised task. But increasingly development tools are being made available which allow developers to create a product for a number of different formats, including CD-ROM for personal computers.

3. Convergence

The next decade will see remarkable development and convergence in all of these markets. These developments will be based around three distinct areas where emerging technologies will offer a dramatic improvement over current systems:

- high bandwidth, low-cost communications channels;
- low-cost, high-performance terminals (so called Network Computers);
- easy methods of collecting payments, including small quantities of payments.

Telecommunications operators, cable television companies and satellite broadcasters are aiming to provide high bandwidth connections by deploying new technologies such as ADSL, ATM and localised or satellite broadcast high-frequency radio. It is quite likely that such delivery channels will enable a range of attractive consumer products to be developed and sold, such as video on demand, and that on the back of such channels it will be possible to deploy highly sophisticated multimedia publishing products.

The arrival of the Network Computer will allow a low cost, easy-to-use device to be marketed for domestic use which it is hoped will be less technologically intimidating than the modern multimedia personal computer. Several companies such as Oracle and Acorn have already announced product and many of the platform games manufacturers will undoubtedly see this as their natural market.

The growth of the Internet and the potential development of Network Computers could create an environment which will encourage a great deal of convergence. Existing publishers, from television and radio broadcasters, newspaper and magazine publishers through to games developers could all gain a common new mass-market distribution method and potentially access to a fast-growing market. Organisations as diverse as BT, the BBC and Virgin have recently announced online entertainment and information products which will be launched soon.

One of the main reasons that Internet-based new media publishing has not taken off commercially is that it is currently very difficult to collect money for your product. Several banks and financial services companies have been developing electronic payment systems and it is now very likely that low-cost payment systems will soon arrive which will allow anyone to freely buy and sell material over the Internet.

We are poised at the beginning of the development of an exciting new industry, which will transform the way in which we will communicate with each other during the 21st century.

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