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<td><strong>Author(s)</strong></td>
<td>Balaji, V.</td>
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Paper No. 31
Cashing in on E-Commerce and Internet Multimedia Services

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Introduction

There is considerable interest in electronic commerce (E-Commerce) because of its extraordinary potential. It is estimated that the annual transactions in E-commerce will reach a level of USD 10 billions by the year 2000 [1]. Developments in Multimedia technologies (some prefer to use the term "new media technologies" [2]) and the potential for its integration with internet (similar to the way the World Wide Web integrated graphics into hypertext) have raised considerable interest as to their commercial value. In this brief paper, we shall provide an overview of the ongoing developments and issues, and the potential of these systems to become part of international trade.

E-Commerce

The very rapid rise in the popularity of World Wide Web (WWW) has resulted in many store fronts being floated on the web. Already a fair amount of software selling goes on on the web, with internet software being sold more readily than others. Credit cards are still the dominant mode of payment in E-Commerce. But the issue of security of transaction tends to hamper the rapid increase in E-Commerce that is otherwise possible.

Further, unlike conventional trading, E-Commerce is yet to lead to substantial market - matching so that the buyer is able to leverage the ubiquity of internet to
his / her advantage. There are web-based services (eg. www.autobytel.com) which enable purchase of automobiles while avoiding the human interface; discounts and special prices can be worked out. And legally viable quotations can be provided. But these are relatively few examples of advanced use of internet for trading.

The payment verification on internet is a challenge being addressed by a consortium like the Commerce Net [3]. A set of standards are necessary to enable variety of business organisations to make use of internet traffic under high security conditions. The Commerce Net is one major attempt to tackle this. The paradigm shift to E-Commerce is schematically explained in Figure - 1.

**Multimedia Services**

In his authoritative analysis of the evolution of databases (through the past 50 years, in particular), Gray (of Microsoft Research) concluded that the period since 1995 would be characterised by multimedia database management systems [4]. Such systems are characterised by the variety in types of data: discrete, such as text / numbers and streaming, such as video / audio. Creating a shift towards a multimedia communications paradigm appears to occupy an important position in current research in communications (excellent reviews can be found in references [5,6]). There is a major engineering issue involved: of creating a network that has sufficient bandwidth to allow bursty WWW communications with streaming video and audio. The asynchronous transfer mode (ATM) has, for quite sometime, been a favored option providing very high rate of data transmission from the "producer" side with lower rates from the "user" side. This, however, does not use the standard interest protocol, and will require a separate network. The emergence of "internet 2" may improve internet bandwidth, but will limit availability to research and educational institutions.

There is the question of interactivity. The value of multimedia technology lies primarily in the interactivity it can provide. Intricacy of interaction will generate enormous strains on the network traffic. One proposal that is likely to become
prominent is to deliver the content as well as tools to the user side who would then compose the scenes, so to speak [7]. The emerging MPEG-4 standard, likely to become international by the beginning of 1999, is expected to provide this level of interactivity (Figure 2). (The MPEG-2 standard, already adopted by the FCC/USA and the European Digital Video Broadcasting (DVB) Consortium, brings broadcast quality video to desktop PC).

Another key issue in rendering multimedia services on the internet is the searchability. Directory services on the web, such as YAHOO!, and search engines such as HOTBOT, accept queries in the form of text. This has been found to be inadequate in providing quality multimedia network service. New techniques, based on visual recognition and summarisation, are being evolved fast [2] and their availability will improve the commercial viability of multimedia services on the internet.

Conclusion

The internet provides a cheap and ubiquitous broadcast medium. However, integration of commerce and multimedia services with the advantages of this medium pose new engineering challenges which are being addressed seriously. A review of these developments indicates that many practical solutions that combine the advantages of internet with new services are likely to be in place by the year 1999.

References


[4.] Gray, Jim "Evolution of Database management systems" Computer 29(10), 38-46


[7.] same as [2] above
Figure 1

E Commerce: the present & the future
Figure 2

Overview of an MPEG-4 terminal