



# An intelligent product-information presentation in E-commerce

S.S. Manvi, P. Venkataram \*

*Protocol Engineering and Technology (PET)-UNIT, Electrical Communication Engineering Department,  
Indian Institute of Science, Bangalore 560012, India*

Received 2 May 2003; received in revised form 21 May 2004; accepted 12 January 2005

Available online 31 May 2005

---

## Abstract

Electronic commerce (E-commerce) web-sites must be equipped with multimedia presentations for effective marketing of their products. Providing required product-information to a genuine buyer is a complex task in the present day web-based service environments. In this paper, we propose a distributed proxy based electronic shopping model, which is intelligent enough to study the customer behavior and plan the presentations accordingly by using a flexible multimedia synchronization model.

The multimedia synchronization model is located at the proxy. The model triggers one of the three synchronization mechanisms, *point, real-time continuous or adaptive synchronization* based on the customer buying probability. The synchronization scheme employs a set of static and mobile agents: to estimate the network delays, to compute the skew, to monitor the loss and estimate the playout times of the presentation units of product-information.

We simulated the electronic shopping model and the synchronization model to evaluate their operation effectiveness in several network scenarios. The benefits of scheme are: intelligent planning of product-information presentations, asynchronous delay estimation, flexibility and adaptability.

© 2005 Published by Elsevier B.V.

*Keywords:* E-commerce; Agents; Multimedia; Synchronization; Customer behavior

---

## 1. Introduction

With increasing number of Internet users and the rapid growth of networking technologies, Electronic commerce (E-commerce) is perceived as one of the killer applications of the computer and communication technologies. E-commerce can be defined as “the buying and selling of information,

---

\* Corresponding author. Tel.: +91 803340855; fax: +91 803347991.

*E-mail addresses:* [sunil@protocol.ece.iisc.ernet.in](mailto:sunil@protocol.ece.iisc.ernet.in) (S.S. Manvi), [pallapa@ece.iisc.ernet.in](mailto:pallapa@ece.iisc.ernet.in) (P. Venkataram).

products, and services via Computer networks”. It has changed the way that sellers distribute their products and services to customers. Several approaches to online shopping over a computer network are:

- Visiting a vendor site and search/browse for a product.
- Compilation of voluntary user ratings and reviews of vendor products (Recommender system).
- Comparison-shopping for finding products under best terms among the vendors.

The works given in [1–3] uses buyer mobile agents that are dispatched to vendor sites, where they negotiate orders and deliveries, and returns to the buyer with their best deals for approval. Some of the URLs listing of agent based E-commerce sites are listed in [4]. Secure agent fabrication, evolution, and roaming architecture is proposed in [5] that manages and serves agents in E-commerce. Working of recommender systems in E-commerce and some of the related work are presented in [6]. Some of the works are based on comparison-shopping agents, which query several sites to gather product-information and provide a virtual market place for the customers [7–9]. The work given in [10] provides private labeled Voice-Over-IP calling, callback and web collaboration solutions for Internet commerce. An intelligent shopping architecture is proposed in [11], which learns user personal preferences and autonomously shops on their behalf while protecting their privacy.

The mission of E-commerce is to help shoppers zero in on a product they want to buy and determine which vendor they want to buy it from based on price, reputation, product availability and service. Shopping web-sites should be designed in an attractive way to convert browsers into buyers: it should be user friendly and easy to navigate with proper product-information presentation [12–14]. A customer should be provided with sufficient information about the product to make buying decisions especially in case of high budget products such as automobiles, biomedical equipments, commercial softwares, etc.

Multimedia presentations are effective marketing tools that can empower any E-commerce site whether it is selling products or services. The work given in [15] describes about the use of 3D virtual objects for entertaining and managing product categories, as well as maximize profitability of product categories. A virtual market place by using 3D objects representing the buyer agents, seller agents, market and products is presented in [31] that represents future trading environments. Multimedia stream presentations (audio, video, and images) increase the effectiveness of product-information presentations which may enhance the buyer’s confidence in purchasing. We made a survey of the E-commerce users (a sample size of 400) to get statistics of persons interested in buying over the Internet and the way they wanted the product-information presentation to be. It was found that 98% of the users opted for multimedia presentations (some kind of multimedia demos to get the feeling of the product) rather than textual based presentations to zero in on the product purchasing.

Multimedia presentations pose a problem of increased downloading time, where customers are made to wait for longer time. This problem can be eliminated by using streaming medias. Streaming technology reduces the playout latency, since there is no need to wait for complete downloading of a file: hence presentation can be started immediately after several parts of file are downloaded. SMIL (synchronized multimedia Internet language) is used for multimedia presentations in E-commerce, which performs only timeline-synchronized presentations [16].

Multimedia product-information presentations in E-commerce require intelligent and flexible presentation, synchronization mechanisms to optimally utilize the network resources such as bandwidth, buffers, etc., as well as persuade the customers to purchase the products online. The behavior of the customers differ from one person to another. Some of the users of E-commerce sites may not be genuine buyers (they may be just surfing the web), hence it is not required to waste the costly resources (either network or server resources) for them by providing detailed multimedia presentations of the product-information.

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات